CHAPTER 5

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CHAPTER 5

EQUIPMENT REQUIREMENTS

1. INTRODUCTION. This chapter, comprised of excerpts from the California Vehicle Code (VC) and Title 13 California Code of Regulations (13 CCR). These sections cover equipment requirements that relate to school bus, school pupil activity bus (SPAB), youth bus, general public paratransit vehicle (GPPV), and farm labor vehicles. Transportation personnel involved in the operation of these vehicles should be familiar with the material contained in this chapter.

2. FEDERAL MOTOR VEHICLE SAFETY STANDARDS - 13 CCR 1240. The following section is quoted from 13 CCR:

> 1240. A Federal Motor Vehicle Safety Standard that conflicts with an equipment provision of this title as to the same aspect of performance shall supersede that specific provision of this title with respect to vehicles manufactured and maintained in compliance with applicable federal standards.

3. DATA REQUIRED BY FEDERAL STANDARDS - 13 CCR 1271. The following section is quoted from 13 CCR:

> 1271. (a) In addition to the provisions of this Article, the provisions of Parts 567 and 568, Certification, of Title 49, Code of Federal Regulations applicable at the time of manufacture shall apply to all school buses manufactured after January 1, 1973.
>
> (b) Buses, as defined in this subchapter, manufactured on and after April 1, 1977, shall not be used as school buses unless they comply with the provisions of Parts 567 and 568 of Title 49, Code of Federal Regulations in effect at time of manufacture.
>
> (c) No vehicle manufactured on or after September 1, 1989, shall be used as a school bus unless the vehicle meets the definition of a school bus or a multipurpose passenger vehicle, as defined in Part 571 of Title 49, Code of Federal Regulations, and unless the vehicle meets all Federal Motor Vehicle Safety Standards (49 CFR Part 571) in effect on the date of manufacture for a school bus of the appropriate gross vehicle weight rating.
>
> (Register 89, No. 29)

4. DATA DISPLAY AND CHASSIS CERTIFICATION - 13 CCR 1272. The following section is quoted from 13 CCR:

1272. School buses shall comply with the following:

(a) Display of Data. Plates or labels displaying the following data shall be permanently attached in each school bus except Type 2 school buses manufactured before July 1, 1970, and shall be readily visible either in the driver's compartment or where prescribed in Part 567, Certification, of Title 49, Code of Federal Regulations:

(1) Gross vehicle weight rating (GVWR)

(2) Minimum tire size and minimum acceptable load range rating

(3) Gross axle weight rating (GAWR) - Front, intermediate (if applicable), and rear

(4) Unladen weight of vehicle as defined in Vehicle Code Section 660.

(5) For vehicles manufactured on or after September 1, 1989 and classed as multipurpose passenger vehicles (MPV) as defined in Part 571 of Title 49, Code of Federal Regulations, the statement: "This multipurpose passenger vehicle meets or exceeds the requirements of all Federal Motor Vehicle Safety Standards in effect on the date of manufacture for a school bus having a Gross Vehicle Weight Rating of (10,000 pounds or less) (More than 10,000 pounds)." The statement shall be completed with only one of the GVWR ranges shown in parentheses, not by including both and striking out one.

(b) Chassis Manufacturer's Certification. A chassis shall not be used on either any Type 2 school bus manufactured on or after July 1, 1970, and prior to April 1, 1977, or any Type 1 school bus manufactured prior to April 1, 1977, unless the manufacturer of the chassis, as defined in Section 1201 of this title, has filed with the Commissioner a certified statement on the departmental form setting forth the gross vehicle weight rating of such chassis. For buses manufactured after January 1, 1973, and prior to April 1, 1977, the manufacturer of the chassis shall file, on a departmental form, only a certified statement that the models listed comply with all applicable laws and regulations.

(c) Chassis Modifications. Repowering with other than original engines, or other chassis modifications shall be done only with the written permission of the vehicle manufacturer(s) listed on the Federal certification label or data plate. If such permission cannot be obtained, a modification may be made if:

(1) It duplicates an original installation or a previously approved installation on the same make and model of school bus, or

(2) It is done in accordance with engineering plans provided by the component manufacturer or an independent engineering firm, and

(3) In either case, the bus is reinspected by an authorized department employee before it is used for pupil transportation.

(Register 91, No. 18)

5. MAJOR CHANGES - 13 CCR 1241. The following section is quoted from 13 CCR:

1241. Unless otherwise specified, these regulations shall not require major reconstruction or major additions to vehicles in service on March 1, 1965. However, this section shall not limit the power of the department to promulgate regulations for changes or additions based upon a demonstrated need in the interest of safety.

6. AUXILIARY AIR TANKS - 13 CCR 1252. The following section is quoted from 13 CCR:

1252. Airtanks having an inside diameter of more than 6 inches and used for the operation of auxiliary equipment that is not part of the brake system but has the same source of compressed air shall comply with the following requirements:

(a) Air Tanks 1971 and Later. Auxiliary air tanks on vehicles first manufactured and registered after January 1, 1971, shall be constructed and marked in accordance with the 1962 or any later edition of section VIII, Unfired Pressure Vessels, ASME Boiler and Pressure Vessel Code (American Society of Mechanical Engineers), or with SAE Standard J10 in the 1965 or any later edition of the SAE Handbook.

(b) Air Tanks Before 1971. Auxiliary air tanks on vehicles registered prior to January 1, 1971, shall meet the requirements of preceding subsection (a), or they shall be designed and constructed in accordance with recognized engineering practices and standards with a safety factor of not less than four times the tank working pressure.

(c) Securement. Auxiliary air tanks shall be positioned and secured so that, when the vehicle is fully loaded, the bottom of the tank and any connection thereto is not lower than the lowest horizontal edge of the vehicle axle.

(d) Tubing and Hose Requirements. All tubing and hose used in the installation of air tanks subject to this section shall comply with the specific requirements for brake tubing and hose in Section 1245(h) through (k) of this title. This provision shall not apply to auxiliary air-actuated systems equipped with air pressure protection devices that prevent the air pressure in the service brake system from dropping below 60 pounds per square inch in the event of air pressure loss from any portion of the auxiliary system,

provided the tubing, hose, and fittings used in such installations are designed for air pressure applications.
(Register 92, No. 20)

7. STORAGE BATTERIES - 13 CCR 1248. The following section is quoted from 13 CCR:

1248. Every storage battery on a motor vehicle first sold and registered after January 1, 1967, unless located in the engine compartment, shall be protected by a substantial and securely fastened enclosure or removable cover. Battery compartments and all adjacent metal parts subject to corrosion from battery leakage shall be finished with an acid-resistant substance, and the compartments shall be vented to provide adequate battery ventilation and drainage. Cables passing through a metal compartment to the starting motor shall be insulated against grounding by acidproof and waterproof bushings. When both the battery and the fuel tank are installed under the driver's seat, they shall be separated by a partition, and each compartment shall be provided with independent covering, ventilation, and drainage.

8. SCHOOL BUS BODIES - 13 CCR 1273. The following section is quoted from 13 CCR:

1273. School buses shall comply with the following requirements:

(a) Engine Compartment. The engine compartment shall be sealed from the passenger space, to prevent entrance of exhaust gases, and insulated with fireproofing or other materials to prevent the floor from overheating and the passengers from being injured. All closures between the engine compartment and the bus body shall be fitted with gastight gaskets, and pedal openings shall be closed by bellows, or self-closing gastight boots or gaskets.

(b) Construction. A Type 1 school bus manufactured on and after January 1, 1957, and a Type 2 school bus manufactured on and after July 1, 1970, shall comply with the following additional requirements:

(1) Floors. Floors in Type 1 school buses constructed after January 1, 1957, shall be at least 14-gauge steel or equivalent or 5-ply, 5/8 inch laminated wood, marine type, and constructed and maintained to prevent entrance of exhaust gases. Floors in Type 2 buses constructed on and after July 1, 1970, shall be strong enough to support loads and constructed and maintained to prevent entrance of exhaust gases.

(2) Body. The bus body shall be reasonably dustproof and watertight and construction (except of the floor) shall be of prime commercial quality steel or other material with strength at least equivalent to all steel as certified to the

department by the bus body manufacturer. If nonmetallic materials are used, they also shall meet the flammability specifications for interior materials in FMVSS 302. In addition, the bus body (including roof bows, body posts, and floor) shall:

(A) Be of sufficient strength to support the entire weight of the fully loaded vehicle on its top or side if overturned.

(B) Have sufficient strainers in the roof structure and corners to provide adequate safety and to resist damage on impact.

(C) As evidence that Type 1 school bus bodies manufactured prior to April 1, 1977, meet these standards, the manufacturer shall furnish to the department for each current body model certification that the bus body meets the "Static Load Test Code for School Bus Body Structure" as issued by the School Bus Body Manufacturers Association.

(3) Inside Height. In a Type 1 school bus manufactured on or after January 1, 1965, the inside body height, measured at the centerline from the back of the door opening to the back of the next to the last row of seats, shall be a minimum of 70 inches

(4) Interior. The interior of school buses shall meet the following requirements:

(A) The ceiling shall be free of all projections likely to cause injury to a pupil.

(B) Except as otherwise provided, the ceiling over any aisle shall not have any projection that protrudes more than 3/4 inch or that reduces the minimum inside height requirements.

(C) Ceilings may have projections over the aisle for air conditioners provided that no portion of the projection is more than 35 inches from an emergency exit and no portion projects below the top of the emergency exit opening.

(D) Type 1 school bus ceilings shall not have any projection over any seat where the minimum distance from the highest point of the seat cushion to the projection is less than 40 inches.

(E) No ceiling projection over any seat shall project lower than the top of any window.

(F) The interior walls on Type 1 school buses and Type 2 school buses manufactured on or after July 1, 1970, shall be lined. Hoses, tubing, and piping installed on interior walls for air conditioning or heating shall be equipped with protective covering designed to prevent puncture or injury.

(G) Materials used on the interiors of school buses manufactured on or after September 1, 1972, shall comply with the specifications of Federal Motor Vehicle Safety Standard 302 in effect at the time of manufacture. Any material used in refurbishing bus interiors shall be fire resistant and shall comply with the standards in effect for new vehicles at the time of installation.

(5) Modifications. No person shall render inoperative, in whole or in part, any device or element of design or equipment of a school bus in compliance with FMVSS 220.

(Register 81, No. 24)

9. USED OR CHANGED SCHOOL BUS - 13 CCR 1274. The following section is quoted from 13 CCR:

1274. If a new or used body is placed on a new or used chassis, or a used vehicle not previously certified by the Department for use as a school bus is placed into service as a school bus, the vehicle shall comply with all current regulations and laws applicable to new school buses, except that Federal Motor Vehicle Safety Standards specifically adopted by reference in this title shall apply only when a vehicle was manufactured on or after the effective date of the standards. A previously certified bus reinstated in school bus service by the same or different owner shall meet the requirements of all regulations and laws that would have applied if the bus had not been removed from school bus service.

10. CHASSIS MOUNTING - 13 CCR 1275. The following section is quoted from 13 CCR:

1275. The rear end of the chassis frame or any extension thereof on Type 1 school buses constructed after January 1, 1950, and on all Type 2 school buses constructed on or after July 1, 1970, shall support the rearmost sill of the bus body.

11. SERVICE BRAKES ON ALL WHEELS - 26311 VC. The following section is quoted from the VC:

26311. (a) Every motor vehicle shall be equipped with service brakes on all wheels, except as follows:

(1) Trucks and truck tractors manufactured before January 1, 1982, 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.

(2) Any vehicle being towed in a driveaway-towaway operation.

(3) Any vehicle manufactured prior to 1930.

(4) Any two-axle truck tractor manufactured prior to 1964.

(5) Any sidecar attached to a motorcycle.

(6) Any motorcycle manufactured prior to 1966. Such motorcycle shall be equipped with brakes on at least one wheel.

(b) Any bus, truck, or truck tractor may be equipped with a manual or automatic means for reducing the braking effort on the front wheels. The manual means shall be used only when operating under adverse road conditions, such as wet, snowy, or icy roads.

(c) Vehicles and combinations of vehicles exempted in subdivisions (a) and (b) from the requirements of brakes on all wheels shall comply with the stopping distance requirements of Section 26454.

(Ch. 774, Stats. 1981. Effective January 1, 1982.)

12. REQUIRED BRAKE SYSTEM - 26450 VC. The following section is quoted from the VC:

26450. Every motor vehicle shall be equipped with a service brake system and every motor vehicle, other than a motorcycle, shall be equipped with a parking brake system Both the service brake and parking brake shall be separately applied.

If the two systems are connected in any way, they shall be so constructed that failure of any one part, except failure in the drums, brakeshoes, or other mechanical parts of the wheel brake assemblies, shall not leave the motor vehicle without operative brakes.

(Ch. 369, Stats. 1967. Effective November 8, 1967.)

13. CONDITION OF BRAKES - 26453 VC. The following section is quoted from the VC:

26453. All brakes and component parts thereof shall be maintained in good condition and in good working order. The brakes shall be so adjusted as to operate as equally as practicable with respect to the wheels on opposite sides of the vehicle.

(Ch. 2183, Stats. 1959. Effective January 1, 1982.)

14. BRAKING - ALL VEHICLES - 13 CCR 1245. The following section is quoted from 13 CCR:

1245. (a) Reciprocating Compressor Discharge Line—Every part of the first 24-inch length of a reciprocating air compressor discharge line, measured from the compressor discharge port, shall be designed to withstand at least 450 degrees Fahrenheit for continuous service and, if flexible hose, shall be reinforced by at least one layer of wire braid. The entire air discharge line and its couplings shall show no leakage under a pressure of 200 pounds per square inch for 5 minutes. This provision does not apply to school buses manufactured prior to January 1, 1968, or to vehicles manufactured on and after March 1, 1975, in compliance with FMVSS 121 (49 CFR 571.121).

(b) Check Valves—Motor vehicles equipped with a check valve in compliance with Vehicle Code Sections 26507 and 26522 shall have a readily accessible means for testing proper operation of the valve, and tools needed for the test shall be carried in the vehicle. The means shall not consist of loosening any connection between the source of compressed air or vacuum and the check valve. This provision does not apply to Type 1 school buses manufactured prior to January 2, 1968.

(1) In air brake systems, the means shall be a manually operated drain cock or other device between the check valve and the compressor.

(2) In vacuum systems, the means may be the stopping of the engine.

(c) Air Reservoirs—Property-carrying vehicles first sold and registered after January 1, 1967, school buses, farm labor vehicles, and Type 1 buses, equipped with air or vacuum brakes, shall have a reserve capacity sufficient to ensure a full service brake application with the engine stopped without depleting the air pressure or vacuum below 70 percent of that indicated by a gauge immediately before the brake application. Such vehicles manufactured on and after March 1, 1975, and equipped with air brakes shall have a reserve capacity sufficient to ensure a full brake application with the engine stopped without depleting the air pressure below 85 percent of that indicated by a gauge immediately before the application.

(1) Air Reservoir Specifications—Air brake reservoirs installed as original equipment on vehicles manufactured in compliance with FMVSS 121 (49 CFR 571.121) are not required to be marked. Replacement air brake reservoirs shall met SAE J10 in the 1965 or later edition of the SAE Handbook and be marked with the manufacturer's initials followed by "SAE J10 150 psi Rated Working Pressure" and the date of manufacture. Auxiliary air tanks shall meet the requirements of Section 1252 of this title.

(2) Air Reservoir Drains—Air reservoirs used in brake systems shall have means other than a plug for draining water and contaminants from the lowest portion of the reservoir. Multicompartment air brake reservoirs shall provide such means for draining each compartment.

(d) Air Flow Restriction—Any valve or other mechanism of an air brake system that restricts the free flow of compressed air between the brake application control and the brake actuators at application pressures above 10 pounds per square inch under normal operating conditions shall comply with the brake equipment requirements in Article 12, Chapter 4, of this title, beginning with Section 1061, except as provided in Vehicle Code Section 26311(b) governing reduced braking effort on front wheels.

(e) Detachable Connections—Detachable air or vacuum connections shall be constructed, installed, and maintained to ensure against accidental disconnection. When connections at the end of flexible air lines are left detached, they shall be adequately protected against the entrance of dirt.

(f) Brake Tubing and Hose Requirements—Tubing, pipe, and hose used in air, vacuum, or hydraulic brake systems shall be:

(1) designed and constructed in a manner that ensures proper, adequate, and continued functioning,

(2) sufficiently long and flexible to accommodate without damage all normal motions of the parts to which it is attached,

(3) suitably secured against chafing, kinking, or other mechanical damage,

(4) installed in a manner that prevents contact with the vehicle's exhaust system or other source of high temperature, and

(5) installed in a manner that ensures proper continued functioning and that is free of leaks, constrictions, or other defects.

(A) Tubing or pipe shall be supported to minimize fatigue.

(B) Metal-to-metal contact shall be avoided by the use of soft nonmetallic cushions at points of support.

(C) Tubing or pipe shall be protected against road hazards either by a protected location or adequate shielding at exposed areas.

(D) Protective loom, where used, shall be both water and acid resistant.

(E) Vacuum brake systems shall be connected to the engine manifold with fittings at least 3/8 inch in inside diameter.

(g) Brake Tubing and Hose Connections—Connections for air, vacuum or hydraulic brake systems shall:

(1) be adequate in material and construction to ensure proper continued functioning,

(2) be designed, constructed, and installed to ensure an attachment free of leaks, constrictions, or other defects when properly connected, and

(3) use fittings that meet SAE J512 OCT 80, Automotive Tube Fittings, or SAE J246 MAR 81, Spherical and Flanged Sleeve (Compression) Tube Fittings, for tubing splices made on a vehicle on or after July 1, 1992.

(h) Brake Tubing—Metallic tubing shall only be used where relative movement in the line does not occur.

(1) On vehicles manufactured after July 1, 1992, and on any replacements made to the brake line on any vehicle after this date, nonmetallic (plastic) brake tubing shall only be used where relative movement does not occur or through an articulation point provided movement is less than 4.5 degrees in a vertical plane and 7.4 degrees in a transverse horizontal plane. Plastic tubing shall not touch or be attached to leaf, coil, or air suspension springs.

(2) Brake Hose and Coiled Nonmetallic Tubing—Brake hose and coiled nonmetallic brake tubing is for use where substantial relative movement in the line occurs or the line is exposed to potential tension or impact such as between the frame and axle in a conventional suspension system. Only coiled nonmetallic brake tubing or brake hose may be used for connections between towed and towing vehicles or between the frame of a towed vehicle and the sliding subframe of an adjustable axle of that vehicle. If coiled nonmetallic brake tubing is used in these locations it shall be encased in a spring guard or similar device which resists kinking of the tubing at the fittings to which it is attached.

(i) Air Brake Tubing Standards—Air brake tubing that is original equipment on a vehicle at time of manufacture is not required by FMVSS to meet any requirement but is subject to National Highway Traffic Safety Administration (NHTSA) recall if it become a safety defect. Replacement brake tubing installed on or after July 1, 1992, shall meet the following Society of Automotive Engineers Standards:

(1) Metallic Tubing—Metallic tubing shall be copper tubing or galvanized steel pipe meeting SAE J1149, Metallic Air Brake System Tubing and Pipe. Copper tubing shall be permanently and legibly marked "Air Brake."

(2) Nonmetallic Tubing—Nonmetallic tubing shall meet SAE J844, Nonmetallic Air Brake System Tubing, Type B (reinforced). Such tubing shall be identified in contrasting color with the markings "Airbrake, SAE J844 Type B," the nominal outside diameter of the tubing in inches, and the tubing manufacturer's name or symbol.

(j) Brake Hose Standards—Air, hydraulic, and vacuum brake hoses installed on and after September 1, 1974, shall comply with FMVSS 106, Brake Hoses (49 CFR 571.106), except S12 and S13.

(1) Original Equipment Components—Components that are original equipment on a vehicle at time of manufacture are not required by FMVSS to be identified in any manner but are subject to NHTSA recall for noncompliance with the performance requirements of the standards.

(2) Brake Hose—Air, hydraulic, and vacuum brake hose manufactured on or after September 1, 1974, shall be marked in letters at least 1/8 inch high with "DOT," the hose manufacturer's designation, the month and year of manufacture, and the nominal inside diameter of the hose. FMVSS 106 does not require these markings to be visible on a completed brake hose

assembly.

(3) Replacement Air Brake Hose Assemblies—Replacement air brake hose assemblies manufactured on or after September 1, 1974, with end fittings attached to the hose by crimping or swaging shall have at least one end fitting etched, stamped, or embossed with a designation at least 1/16 inch high that identifies the hose assembly manufacturer.

(4) Air Brake Hose Fittings—Air brake hose fittings manufactured on or after September 1, 1974, that are not crimped or swaged shall have at least one component etched, stamped, or embossed in block capital letters, numerals, or symbols at least 1/16 inch high with "DOT," a designation that identifies the manufacturer of that component of the fittings, "A" for nonreusable fittings at "AI" or "AII" for reusable fittings, and the nominal inside diameter in inches or millimeters (or outside diameter of plastic tubing) to which the fitting is properly attached.

(5) Hydraulic Brake Hose Assemblies—Hydraulic brake hose assemblies manufactured on and after September 1, 1974, shall have at least one end fitting etched, stamped, or embossed with a designation at least 1/16 inch high that identifies the manufacturer of the assembly. Each hose shall have at least two clearly identifiable stripes at least 1/16 inch wide placed on opposite sides of the hose parallel to its longitudinal axis, except where the end fitting prevent its installation in a twisted orientation on either side of the vehicle.

(6) Vacuum Brake Hose Assemblies—Vacuum brake hose assemblies manufactured on or after September 1, 1974, with end fittings that are attached to the hose by crimping or swaging, or to plastic tubing by heat shrinking or interference fit, shall have at least one end fitting etched, stamped, or embossed with a designation at least 1/16 inch high that identifies the manufacturer of the assembly.

(7) Manufacturer's Option-At the manufacturer's option, brake hose assemblies may instead be marked by a band around the assembly with the letters "DOT" and with a designation that identifies the hose assembly manufacturer, in letters, numerals, or symbols at least 1/16 inch high.

(k) Air Leakage Rates-Air leakage with the engine stopped and the air reservoir pressure at governor cutout as specified in Section 1061(b) of this title shall not exceed the following rates.

(1) With service brake released and air or spring parking brakes applied:

2 pounds per square inch per minute for single vehicles,

3 pounds per square inch per minute for combinations of two vehicles, and

5 pounds per square inch per minute for combinations of three or more vehicles.

(2) With service brakes applied and air or spring parking brakes released:

3 pounds per square inch per minute for single vehicles,

4 pounds per square inch per minute for combinations of two vehicles, and

6 pounds per square inch per minute for combinations of three or more vehicles.

(3) No leakage shall occur in tubing or hose even if the overall leakage is less than the specified limit.

(l) Hydraulic Brakes—The pressure of hydraulic brakes shall not be higher than the manufacturer's rated capacity of the hose assemblies.

(Register 95, No. 36)

15. BRAKES - SCHOOL BUSES AND FARM LABOR VEHICLES - 13 CCR 1246. The following section is quoted from 13 CCR:

1246. The following additional brake requirements shall apply to school buses and farm labor vehicles:

(a) Air Brakes—Type 1 school buses having 10 or more rows of seats and manufactured after January 1, 1970, and prior to April 1, 1977, shall be equipped with full compressed air brakes. Type 1 school buses equipped with air brakes and manufactured after January 1, 1953, shall have at least two reservoirs connected in series. On all school buses manufactured on or after July 1, 1970, the air-actuated devices outside the service and emergency brake systems shall also be provided with a reservoir equal to at least six times the total volume at full travel of all auxiliary devices supplied by the reservoir. The reservoir requirement for the air-actuated devices outside the service and emergency brake systems shall not apply to school buses manufactured on or after March 1, 1975, in compliance with FMVSS 121 (49 CFR 571.121).

(b) Warning Devices—Type 1 school bus brake systems shall have warning devices as follows:

(1) Air brakes shall have a buzzer or other audible warning signal and a visual, air-operated, flag-type warning device, both used exclusively for the brake system. Both devices shall give a continuous warning when the air supply pressure in the first reservoir to receive air from the compressor, or any service reservoir, drops below a fixed pressure as specified by Vehicle Code Section 26506. The flag-type device is not required on vehicles manufactured on or after March 1, 1975, in compliance with FMVSS 121 (49 CFR 571.121).

(2) Vacuum brakes shall have a buzzer or other audible warning signal and a visual, vacuum-operated, flag-type warning device, both used exclusively for the brake system. They shall provide continuous warning to the driver when the vacuum in the supply system drops to 8 inches of mercury and less. The requirement for the flag device shall not apply to vehicles manufactured with a dual or split type service brake system

powered by power-assist vacuum chambers.

(3) The visual warning devices required in (1) and (2) shall be readily visible to the driver when seated in the normal driving position.

(4) Override switches are prohibited for audible warning devices required in (1) and (2).

(5) The requirements in (1) and (2) for warning devices to be used exclusively for the brake system shall not be construed to prohibit multichannel warning devices that monitor other vehicle systems in addition to the brake system if such devices provide a clear brake system warning that cannot be activated by any of the other monitored vehicle systems.

(c) Brake System Modification—Brakes on Type 1 school buses may be modified only with the written approval of the school bus chassis manufacturer or by using brake system options of a type available from the bus manufacturer and represented by the bus manufacturer as suitable for use on the specific model school bus. Modifications shall not render the brake system in violation of the provisions of this title or of any other law or regulation. Modifications shall not render inoperative any item of brake-related equipment nor diminish any aspect of performance of a brake system manufactured in compliance with FMVSS 121, except as permitted by written ruling of the National Highway Traffic Safety Administration.

(1) Air system cleaning devices, such as automatic condensate drains and air dryers, are not considered a modification of the brake system if they are installed in accordance with the component manufacturer's instructions.

(2) A conversion from an air brake chamber that has an air applied parking brake or emergency stopping system function to a brake chamber that has a spring applied parking brake or emergency stopping system function, or vice versa, is not considered a modification if the conversion is made in accordance with the substitute component manufacturer's instructions.

(3) Any advisory recommendations by the component manufacturer shall be considered mandatory. The instructions shall be retained by the school bus operator for reference by California Highway Patrol personnel for comparison with the completed installations.

(d) Service Brake System—Type 1 school buses manufactured on and after January 1, 1968, shall comply with the following requirements:

(1) Foot Pedal Travel—The travel of hydraulic brake foot pedals shall not exceed 60 percent of the available travel when measured statically at the minimum pedal force required for compliance with Vehicle Code Sections 26454 on stopping distance.

(2) Air or Vacuum Reservoirs—The combined volume of all service reservoirs shall be at least 12 times the combined volume of all service brake chambers at maximum travel of the pistons or diaphragms.

(3) Check Valves—Brake systems safeguarded by the check valve referenced in Section 1245(b) of this title shall meet the following requirements:

(A) Air Brake System—At least half of the required air reservoir capacity shall be safeguarded to prevent the stored air from being depleted by any failure or leakage in the connection to the source of compressed air. Air supply for the service brakes shall be protected so that failure of the air-actuated devices outside the service brake system will not drop the service brake supply system pressure to less than 60 pounds per square inch.

(B) Vacuum Brake System—The required vacuum brake system reservoir capacity shall be safeguarded to prevent the stored vacuum from being depleted by any failure of leakage in its connection to the source of vacuum. The supply of vacuum for all devices or systems other than the brake system shall be drawn from between the brake system check valve and the source of vacuum.

(e) Emergency Stopping System—Type 1 school buses manufactured after January 1, 1968, shall comply with the following emergency stopping system requirements:

(1) The brakes shall be capable of being applied, released, and reapplied by the driver but shall not be capable of being released from the driver's seat after any reapplication unless energy is available for an immediate reapplication.

(2) The brakes shall be manually applied and released under modulated control by the driver to maintain directional stability during a complete emergency stop.

(3) Failure or malfunction of any part in either the emergency stopping system or the service brake system shall not leave the vehicle without operative brakes capable of stopping the vehicle loaded up to the manufacturer's gross vehicle weight rating within the requirements of California Vehicle Code Section 26508(k)(3).

This provision does not apply to a failure in the mechanical parts of the wheel brake assemblies or the brake pedal and linkage to the brake valve or master cylinder.

(4) School buses manufactured on or after March 1, 1975, in compliance with FMVSS 121 (49 CFR 571.121) and maintained in compliance with that standard, shall be deemed in compliance with this subsection.

(5) Reservoir Capacity—The reservoir capacity of school buses and farm labor vehicles shall be sufficient to complete one operation of the doors after the engine has stopped and the brakes have been fully applied.

(Register 95, No. 19)

16. ADJUSTMENT AND USE OF SPECIAL DEVICES - 26502 VC. The following section is quoted from the VC:

26502. (a) Airbrakes of every motor vehicle and combination of vehicles shall be so adjusted and maintained as to be capable of providing full service brake application at all times except as provided in subdivision (b) of Section 26311. A full service brake application shall deliver to all brake chambers not less than 90 percent of the air reservoir pressure remaining with the brakes applied.

(b) The department may by regulation authorize the use of special devices or systems to automatically reduce the maximum air pressure delivered to the brake chambers in order to compensate for load variation and to obtain balanced braking. Permitted systems shall be of the fail safe type and shall not increase the vehicle stopping distance.

(Ch. 1789, Stats. 1965. Effective September 17, 1965.)

17. AIR GOVERNOR - 26504 VC. The following section is quoted from the VC:

26504. The air governor cut-in and cut-out pressures of every motor vehicle equipped with airbrakes or equipped to operate airbrakes on towed vehicles shall be adjusted so that the maximum pressure in the air system and the minimum cut-in pressure shall be within limits prescribed by the department. In adopting regulations specifying such pressures the department shall consider the safe operating capacities of the various airbrake systems which are now or may be used on motor vehicles and shall be guided by the designed capabilities of those systems.

(Ch. 1578, Stats. 1967. Effective November 8, 1967.)

18. AIR GOVERNOR ADJUSTMENT - 13 CCR 1061. The following section is quoted from 13 CCR:

1061. Air compressor governors shall be adjusted to operate as follows:

(a) Cut-in Pressure. Cut-in pressure shall not be less than 85 psi for full air brake systems on any motor vehicle and not less than 65 psi for air-assisted hydraulic brakes on motor vehicles with a gross vehicle weight rating of not more than 25,000 pounds.

(b) Cut-out Pressure. Cutout pressure shall not be more than 130 pounds per square inch unless the maximum air delivered to the brake system reservoir is regulated to provide between 100 and 130 pounds per square inch, in which case the cutout pressure shall be adjusted to not more than 150 pounds per square inch.

(Register 80, No. 5)

19. CHECK VALVE - 26507 VC. The following section is quoted from the VC:

26507. A check valve shall be installed and properly maintained in the air supply piping of every motor vehicle equipped with airbrakes, either between the air compressor and the first reservoir or tank immediately adjacent to the air intake of said reservoir, or between No. 1 reservoir (wet tank) and No. 2 reservoir (dry tank) immediately adjacent to the air intake of the No. 2 reservoir; provided, that the air supply for the brakes is not drawn from the No. 1 reservoir and that the No. 1 and No. 2 reservoirs are connected by only one pipeline.
(Ch. 510, Stats. 1959. Effective September 18, 1959.)

20. CHECK VALVE - 26522 VC. The following section is quoted from the VC:

26522. Vehicles required to be equipped with power brakes and equipped with vacuum or vacuum-assisted brakes shall have a check valve installed and properly maintained in the vacuum system between the source of vacuum and the vacuum reserve.
(Ch. 386, Stats. 1963. Effective September 20, 1963.)

21. EMERGENCY STOPPING SYSTEM - 26508 VC. The following section is quoted from the VC:

26508. Every vehicle or combination of vehicles using compressed air at the wheels for applying the service brakes shall be equipped with an emergency stopping system meeting the requirements of this section and capable of stopping the vehicle or combination of vehicles in the event of failure in the service brake air system as follows:

(a) Every motor vehicle operated either singly or in a combination of vehicles and every towed vehicle shall be equipped with an emergency stopping system.

(b) Motor vehicles used to tow vehicles which use compressed air at the wheels for applying the service brakes shall be equipped with a device or devices with both a manual and automatic means of actuating the emergency stopping system on the towed vehicle as follows:

(1) The automatic device shall operate automatically in the event of reduction of the service brake air supply of the towing vehicle to a fixed pressure which shall be not lower than 20 pounds per square inch nor higher than 45 pounds per square inch.

(2) The manual device shall be readily operable by a person seated in the driver's seat, with its emergency position or method of operation clearly indicated. In no instance may the manual means be so arranged as to permit its use to prevent operation of the automatic means.

(c) Motor vehicles manufactured prior to 1964 shall be deemed to be in compliance with subdivisions (e) and (f) when equipped with axle-by-axle protected airbrakes using a separate air tank system for each of at least two axles, provided that each system independently meets all other requirements of this section. Each system shall be capable of being manually applied, released, and reapplied from the driver's seat but shall not be capable of being released from the driver's seat after any reapplication unless there is available a means which can be applied from the driver's seat to stop and hold the vehicle or combination of vehicles.

(d) Towed vehicles shall be deemed to be in compliance with this section when:

(1) The towed vehicle is equipped with a no-bleed-back relay-emergency valve or equivalent device, so designed that the supply reservoir used to provide air for the brakes is safeguarded against backflow of air from the reservoir through the supply line.

(2) The brakes are applied automatically and promptly upon breakaway from the towing vehicle and maintain application for at least 15 minutes, and

(3) The combination of vehicles is capable of stopping within the distance and under the conditions specified in subdivisions (k) and (l).

(e) If the service brake system and the emergency stopping system are connected in any way, they shall be so constructed that a failure or malfunction in any one part of either system, including brake chamber diaphragm failure but not including failure in the drums, brakeshoes, or other mechanical parts of the wheel brakes, shall not leave the vehicle without one operative stopping system capable of complying with the performance requirements in subdivision (k).

(f) Every emergency stopping system shall be designed so that it is capable of being manually applied, released, and reapplied by a person seated in the driver's seat. The system shall be designed so that it cannot be released from the driver's seat after any reapplication unless immediate further application can be made from the driver's seat to stop and hold the vehicle or combination of vehicles. The emergency stopping system may also be applied automatically.

(g) No vehicle or combination of vehicles upon failure of the service brake air system shall be driven on a highway under its own power except to the extent necessary to move the vehicles off the roadway to the nearest place of safety.

(h) No vehicle or combination of vehicles shall be equipped with an emergency stopping system that creates a hazard on the highway, or increases the service brake stopping distance of a vehicle or combination of vehicles, or interferes in any way with the application of the service brakes on any vehicle or combination of vehicles.

(i) Any energy-storing device which is a part of the emergency stopping system shall be designed so that it is recharged or reset from the source of compressed air or other energy produced by the vehicle, except that energy to release the emergency stopping system may be produced by the driver's muscular effort from the driver's seat. No device shall be used which can be set to prevent automatic delivery of air to protected air supply reservoirs of motor vehicle emergency stopping systems when air is available in the service brake air supply system.

(j) Any vehicle manufactured on or after January 1, 1964, which uses axle-by-axle protected airbrakes as the emergency stopping system shall use a separate air tank system for each axle, except that motor vehicles equipped with a dual or tandem treadle valve system need have no more than two protected air tanks in such system, one for each valve.

(k) Every motor vehicle or combination of vehicles, at all times and under all conditions of loading, upon application of the emergency stopping system, shall be capable of:

(1) Developing a stopping force that is not less than the percentage of its gross weight tabulated herein for its classification.

(2) Decelerating in a stop from 20 miles per hour at not less than the feet per second per second tabulated herein for its classification, and

(3) Stopping from a speed of 20 miles per hour in not more than the distance tabulated herein for its classification, such distance to be measured from the point at which movement of the emergency stopping system control begins.

EMERGENCY STOPPING SYSTEM REQUIREMENTS			
Classification of vehicle and combination of vehicle	Stopping force as a percentage of gross vehicle or combination weight	Deceleration in feet per second	Stopping distance in feet
A. Single-motor vehicle	16.7	5.5	90
B. Combination of vehicles	19.0	6.0	90
C. Single-motor vehicle with 3 or more axles manufactured prior to 1964	12.1	4.0	120

(l) Tests for deceleration and stopping distance shall be made on a substantially level, dry, smooth, hard surface that is free from loose material and where the grade does not exceed plus or minus 1 percent. No test of emergency stopping system performance shall be made upon a highway at a speed in excess of 25 miles per hour.

(m) The provisions of this section shall not apply to:

(1) Auxiliary dollies, special mobile equipment, or special construction equipment.

(2) Motor vehicles which are operated in a driveaway-towaway operation and not registered in this State.

(3) Disabled vehicles when being towed.

(4) Vehicles which are operated under a one-trip permit as provided in Section 4003.

(5) Vehicles which because of unladen width, length, height or weight may not be moved upon the highway without the permit specified in Section 35780.

(n) The emergency stopping system requirements specified in subdivision (k) shall not apply to a vehicle or combination of vehicles being operated under a special weight permit nor to any overweight authorized emergency vehicle operated under the provisions of Section 35002.

(o) Every owner or lessee shall instruct and require that the driver be thoroughly familiar with the requirements of this section. The driver of a vehicle or combination of vehicles required to comply with the requirements of this section shall be able to demonstrate the application and release of the emergency system on the vehicle and each vehicle in the combination.

(Ch. 1578, Stats. 1967. Effective November 8, 1967.)

22. BRAKES AFTER ENGINE FAILURE - 26452 VC. The following section is quoted from the VC:

26452. All motor vehicles shall be so equipped as to permit application of the brakes at least once for the purpose of bringing the vehicle to a stop within the legal stopping distance after the engine has become inoperative.

23. PARKING BRAKE SYSTEM - 26451 VC. The following section is quoted from the VC:

26451. The parking brake system of every motor vehicle shall comply with the following requirements:

(a) The parking brake shall be adequate to hold the vehicle or combination of vehicles stationary on any grade on which it is operated under all conditions of loading on a surface free from snow, ice or loose material. In any event the parking brake shall be capable of locking the braked wheels to the limit of traction.

(b) The parking brake shall be applied either by the driver's muscular efforts, by spring action, or by other energy which is isolated and used exclusively for the operation of the parking brake or the combination parking brake and emergency stopping system.

(c) The parking brake shall be held in the applied position solely by mechanical means.

(Ch. 774, Stats. 1981. Effective January 1, 1982.)

24. PRESSURE GAUGE - 26505 VC. The following section is quoted from the VC:

26505. Every motor vehicle equipped with airbrakes or equipped to operate airbrakes on towed vehicles shall be equipped with a pressure gauge of reliable and satisfactory construction and maintained in an efficient working condition, accurate within 10 percent of the actual air reservoir pressure, and visible and legible to the driver at all times.
(Ch. 1578, Stats. 1967. Effective November 8, 1967.)

25. SAFETY VALVE - 26503 VC. The following section is quotes from the VC:

26503. Every motor vehicle equipped with airbrakes or equipped to operate airbrakes on towed vehicles shall be equipped with a standard type safety valve which shall be installed so as to have an uninterrupted connection with the air reservoir or tank. It shall be adjusted and maintained so that it will open and discharge the air system under any condition at a pressure of not to exceed 150 pounds per square inch and close and reseat itself at a point above the maximum air governor setting. The department may by regulation prescribe a higher maximum opening pressure for air pressure systems designed for, and capable of safely operating with, pressure safety valves with a higher opening pressure.
(Ch. 1578, Stats. 1967. Effective November 7, 1967.)

26. SAFETY VALVE ADJUSTMENT - 13 CCR 1062. The following section is quoted from 13 CCR:

1062. Airbrake safety valves shall be adjusted to operate as follows:
(a) Normal Discharge Pressure. Safety valves in airbrake systems with an air governor cutout pressure of not more than 130 pounds per square inch shall open and shall relieve the pressure so that it will not exceed 150 pounds per square inch under any condition.
(b) Above Normal Discharge Pressure. Safety valves in airbrake systems with an air governor cutout pressure of 130 to 150 pounds per square inch, as provided in Section 1061(b) of this article, shall open and shall relieve the pressure so that it will not exceed 170 pounds per square inch under any condition. In no case shall the safety valve be set to open at more than the maximum allowable working pressure of the airbrake reservoirs.
(Register 83, No. 18)

27. VACUUM GAUGE - 26520 VC. The following section is quoted from the VC:

26520. Motor vehicles required to be equipped with power brakes and which are equipped with vacuum or vacuum-assisted brakes shall be equipped with a properly maintained vacuum gauge of reliable and satisfactory construction, accurate within 10 percent of the actual vacuum in the supply reservoir, and visible and legible to the driver at all times.

This section shall not apply to a two-axle motor truck operated singly.

(Ch. 386, Stats. 1963. Effective September 20, 1963.)

28. WARNING DEVICE - 26506 VC. The following section is quoted from the VC:

26506. (a) Every motor vehicle airbrake system used to operate the brakes on a motor vehicle or on a towed vehicle shall be equipped with a low air pressure warning device that complies with either the requirements set forth in the Federal Motor Vehicle Safety Standards in effect at the time of manufacture or the requirements of subdivision (b).

(b) The device shall be readily visible or audible to the driver and shall give a satisfactory continuous warning when the air supply pressure drops below a fixed pressure, which shall be not more than 75 pounds per square inch nor less than 55 pounds per square inch with the engine running. A gauge indicating pressure shall not satisfy this requirement.

(Ch. 1241, Stats. 1992. Effective January 1, 1993.)

29. WARNING DEVICE - 26521 VC. The following section is quoted from the VC:

26521. Motor vehicles required to be equipped with power brakes and equipped with vacuum or vacuum-assisted brakes and motor vehicles used to tow vehicles equipped with vacuum brakes or vacuum-assisted brakes shall be equipped with either an audible or visible warning signal to indicate readily to the driver when the vacuum drops to 8 inches of mercury and less. A vacuum gauge shall not be deemed to meet this requirement.

This section shall not apply to a two-axle motor truck operated singly nor to any motor vehicle manufactured prior to 1964.

(Ch. 386, Stats. 1963. Effective September 20, 1963.)

30. BUMPERS - 13 CCR 1290. The following section is quoted from 13 CCR:

1290. Bumpers on Type 1 school buses constructed after January 1, 1950, and on Type 2 school buses constructed on and after July 1, 1970, shall be installed front and rear and shall be attached directly to the chassis frame or other structural members of sufficient strength. Bumpers shall be strong enough to permit the bus to push a vehicle of equal gross loaded weight or be pushed without permanent distortion of bumper, chassis, or body. Rear bumpers of Type 1 school buses shall be designed to prevent anyone from getting a toehold and hitching a ride. A rear bumper is not required when a vehicle is equipped on the rear with a wheelchair loading device that, when retracted, meets or exceeds the protection provided by the original bumper.

31. COLOR REQUIRED FOR FORMER SCHOOL BUS - 27603 VC. The following section is quoted from the VC:

27603. When a motor vehicle formerly used as a school bus is sold to any person and is used exclusively for purposes other than the transportation of pupils pursuant to Article 3 (commencing with Section 39830) of Chapter 5 of Part 23 of the Education Code, it shall be painted by the purchaser a color different than that prescribed by the Department of the California Highway Patrol for school buses before it is operated on any street or highway other than to have the vehicle painted or moved to a place of storage.

The provisions of this section shall not apply where the ownership of a school bus is transferred to a nonprofit organization under a contractual arrangement under which the ownership is required to be retransferred to the original owner within 90 days of the date of the original transfer.

(Ch. 676, Stats. 1980. Effective January 1, 1981.)

32. DRIVE SHAFT PROTECTION - 13 CCR 1266. The following section is quoted from 13 CCR:

1266. A drive shaft guard to prevent broken shafts from whipping through the floor or dropping to the ground shall be required on:

(a) School Buses—On all Type 1 school buses constructed after January 1, 1950, and all Type 2 school buses constructed on or after July 1, 1970, each segment of the drive shaft shall be equipped with a guard.

(b) Other Vehicles—All Type 1 buses and all farm labor vehicles designed for more than 16 passengers and the driver shall be equipped with at least one guard or bracket if the drive shaft extends under the passenger compartment.

33. FIRE EXTINGUISHERS - 13 CCR 1242. The following section is quoted from 13 CCR:

1242. Every motor vehicle or combination of vehicles (except those otherwise specified below) shall be equipped with one fully charged fire extinguisher having at least a 4B:C rating.

(a) Approvals. Each fire extinguisher shall have been rated and labeled by one of the following test labs approved by the State Fire Marshal to test and label portable fire extinguishers for sale in California.

(1) Underwriter's Laboratories, Northbrook, Illinois. All sizes and classifications.

(2) Factory Mutual Research Corporation, Norwood, Massachusetts. Sizes 10B:C, 1A 10B:C, 2A 40B:C, 3A 40B:C, and 4A 80B:C fire extinguishers filled with Halon 1211 or Halon 1301.

(b) Prohibited Extinguishers. Fire extinguishers using any carbon tetrachloride, chlorbromomethane, or methyl bromide as extinguishing agents shall not be carried for use in or about any vehicle.

(c) Exceptions. This section shall not apply to vehicles (except school buses, SPABS, youth buses, farm labor vehicles, and GPPVs) operated solely within a 5-mile radius of one or adjoining municipalities, vehicles subject to more restrictive provisions in this title or other code, or vehicles in any "driveaway-towaway operation" as defined in Section 303 of the Vehicle Code.

(d) Securement. Each fire extinguisher shall be securely mounted on the motor vehicle or trailer in a conspicuous place or a clearly marked compartment and readily accessible.

(e) Maintenance. Each fire extinguisher shall be maintained in efficient operating condition and equipped with some means of determining if it is fully charged.

(f) School Bus Fire Extinguishers. In addition to the other requirements of this section, school buses shall be equipped with one or two extinguishers having an aggregate rating of not less than 8B:C units, provided each extinguisher is rated at not less than 4B:C. A wheelchair school bus shall be equipped with two extinguishers, each one rated at not less than 8B:C; one to be placed in the driver's compartment and the other at the wheelchair loading door or emergency exit.

(1) School bus fire extinguishers shall be inspected and serviced only by a person, firm, or organization authorized to do so by the State Fire Marshal.

(2) Inspection or servicing shall be done at yearly intervals or at intervals prescribed in regulations adopted by the State Fire Marshal, whichever intervals are shorter.
(Register 88, No. 34)

34. FIRST AID KITS - 13 CCR 1243. The following section is quoted from 13 CCR:

1243. (a) Vehicles Required to Carry Kits. Every school bus, youth bus, farm labor vehicle, and GPPV shall carry a readily visible, accessible, and plainly marked first aid kit.

(b) Construction. The kit shall be constructed to prevent dust and moisture from reaching the contents and maintained in good condition. The kit shall be removable from the place secured.

(c) Minimum Requirements. The required contents of school bus first aid kits and the required number of units (determined by the number of passengers a school bus is designed to carry) are shown in Table I. Each youth bus and farm labor vehicle shall be equipped with a 10-unit first aid kit (Table I). First aid kits in use that conform to the former U. S. Department of Transportation regulations on first aid kits for buses will continue to be accepted.

TABLE 1. REQUIRED UNITS IN FIRST AID KITS

	Number of Passengers		
UNIT	1-16	17-42	43 or More
1-in. adhesive compress	1	2	2
2-in. bandage compress	1	2	2
3 in. bandage compress	1	1	2
4 in. bandage compress	1	1	2
Eye dressing packet (3 cotton eye pads, 3 sets adhesive plastic strips)	-	-	1
Plain gauze pads (3 x 3 in.)	1	1	1
Gauze roller bandage (2 rolls, 2 in. x 6 yd)	1	1	2
Plain absorbent gauze (1/2 sq. yd.)	1	2	4
Plain absorbent gauze 24 x72 in.	1	2	3
Triangular bandages (40 in.)	1	3	4
Scissors, tweezers	1	1	1
TOTAL UNITS	10	16	24

(Register 98, No. 16)

35. ROADSIDE WARNING DEVICES - 13 CCR 1292. The following section is quoted from 13 CCR:

1292. Every school bus shall be equipped with and display emergency reflectors as specified in Vehicle Code Section 25300.

36. EMERGENCY EXITS - 13 CCR 1268. The following section is quoted from 13 CCR:

1268. Buses (except school buses and buses operated by law enforcement agencies to transport prisoners) and all farm labor trucks shall be equipped with emergency exits as follows:

(a) September 1, 1973, and Later—Every Type 1 bus manufactured on or after September 1, 1973, shall comply with the Federal Motor Vehicle Standard 217 applicable at the time of manufacture.

(b) Before September 1973—Every Type 1 bus manufactured before September 1, 1973, shall be equipped with at least one of the following:

(1) An emergency door on the left side to the rear of the driver's seat

(2) An emergency door at the rear center of the bus

(3) Escape windows of the push-out type

(c) Type 2 Bus—Every Type 2 bus shall be equipped with at least one emergency door or push-out escape window either at the rear of the bus or on each side, to the rear of the driver's seat.

(d) Federal Standard—Buses equipped with emergency exits conforming to FMVSS 217 are deemed in compliance with this section.

(e) Exemption—Any bus in service within single or adjoining municipalities or business or residential districts adjacent to and commercially part of such municipalities is exempt from emergency exit requirements when equipped with a door next to each passenger seat or (in addition to the front entrance) an exit door that can be easily opened by a passenger in an emergency. Open air type buses shall be deemed in compliance with this subsection if the side enclosures do not exceed 50 inches in height measured from the vehicle floor and the open area meets the emergency exit size and location requirements in FMVSS 217 for buses of 10,000 GVWR or less.

(f) Specifications for Emergency Doors--Every emergency door shall have:

(1) An opening from the floor to the top of the window line or higher and at least 24 inches wide

(2) A latch that can be readily opened by a passenger in an emergency

(3) On buses (other than farm labor) a warning device that is not directly connected with any lighting circuit and will actuate, when the door is unlatched, either an audible signal or an easily seen red light on the instrument panel

(4) A sign reading "Emergency Door" on the interior of each emergency door or center exit door used in lieu thereof, except that farm labor vehicles shall have

signs reading "Emergency Exit" on the exterior and interior of emergency exits printed in English and the language of the workers being transported

(g) Emergency Exit Locking Device. Every emergency exit locking device shall be designed and installed in such a manner that it cannot move to a locked condition as a result of vehicle vibration, vehicle movement or other unintentional causes.

(h) Farm Labor Truck Emergency Exits—Every farm labor vehicle with side enclosures more than 50 inches high, or with clearance of less than 30 inches between the upper edge of the side enclosures and the top, or with vertical roof supports less than 30 inches apart shall have an emergency exit remote from the entrance. Vehicles conforming with emergency exit requirements of subsection (f) of this section shall be deemed in compliance.

(1) Size of Door Opening. Farm labor vehicle emergency exit doors shall have an opening at least 7 sq ft in area and 2 ft wide. They shall be operable from both the interior and exterior of the vehicle. Single-panel hinged side doors shall be hinged on the front edge.

(2) Aisle Space. Farm labor vehicle aisle space shall be sufficient to permit rapid movement or unloading of passengers in event of an emergency. In no event, shall an aisle or other access to any emergency exit be blocked by baggage or other obstacles.

(Register 93, No. 17)

37. SIDE WINDOWS AS EMERGENCY EXITS - 13 CCR 1269. The following section is quoted from 13 CCR:

1269. Side windows used as emergency exits on buses (other than school buses and buses operated by law enforcement agencies to transport passengers) and all farm labor vehicles shall have the following:

(a) Type 1 Bus—On a Type 1 bus, an unobstructed opening at least 17 3/4 x 13 inches The total escape area shall be at least 67 sq inches for each seating space, including the driver's. At least 40% of the escape areas shall be located on one side of the bus.

(b) Type 2 Bus and Farm Labor Vehicle—On a Type 2 bus and any farm labor vehicle not a Type 1 bus, one or two openings, of at least 564 square inches, with a minimum dimension of at least 12 inches

(1) In lieu of compliance with Section 1268(h)(1), a farm labor vehicle less than 80 inches wide may be equipped with not less than one sliding or push-out escape window on each side of the passenger compartment. Each window shall provide an unobstructed opening of not less than 17 ¾ x 13 inches and shall be constructed and latched so that passengers can open it readily in an emergency. The total escape areas shall equal at least 67 square inches for each seating space, and not less than 40% of this escape area shall be located on one side of the vehicle. This does not apply

to passenger(s) seated in the driver's compartment separated from the passenger compartment.

(2) Rear emergency windows that may be used in lieu of emergency exit doors shall provide an unobstructed opening of not less than 6 sq ft and a minimum width of 16 inches.

(3) All push out windows shall have instructions for operation on the interior.

(Register 95, No. 19)

38. EMERGENCY EXITS TYPE 1 SCHOOL BUSES - 13 CCR 1282. The following section is quoted from 13 CCR:

1282. Type 1 school buses constructed on and after January 1, 1950, shall comply with the following requirements:

(a) Location and Type. Each school bus shall be equipped with an emergency door located on the left side near the rear of the bus at floor level, and a center rear emergency exit, which may be either a floor level door or an emergency window. If a bus is equipped with a center rear, floor level emergency door, the left side floor level emergency door may be located anywhere on the left side to the rear of the driver's seat. A school bus equipped to transport fewer than 26 passengers may meet the requirement with a single, center rear, floor level emergency door.

(b) Openings. Each emergency door shall provide an unobstructed opening not less than 24 inches wide and 45 inches, high.

(c) Rear Emergency Windows. Each emergency window shall provide an unobstructed opening of not less than 16 x 54 inches, and shall be designed to ensure against accidental closing.

(Register 91, No. 50)

39. EMERGENCY EXITS TYPE 2 SCHOOL BUSES - 13 CCR 1283. The following section is quoted from 13 CCR:

1283. Type 2 school buses constructed on and after July 1, 1970, shall have at least one emergency exit to the rear of a line drawn crosswise to the bus directly to the rear of the driver's seat. When the required emergency exit is not located at the rear of the bus, emergency exits shall be provided on both the left and right sides. Emergency exits shall provide at least 564 square inches of escape area with a minimum dimension of 12 inches.

(Register 78, No. 33)

40. EMERGENCY EXITS - ALL SCHOOL BUSES - 13 CCR 1284. The following section is quoted from 13 CCR:

1284. On all school buses, except Type 2 school buses manufactured prior to July 1, 1970, emergency exits shall meet the following requirements:

(a) Opening. Emergency exits shall be capable of being opened outward from both the interior and exterior of the bus except as exempt in 1293(d)(1)(C). The emergency exit shall be equipped with a positive latching device to keep it closed, but of a type that can be readily opened for authorized use.

(b) Latch Obstruction. No obstruction shall be placed over the handle of an emergency exit.

(c) Identification and Operation of Controls. All interior controls for emergency exits shall be readily identifiable and operable by passengers; control of such exits from the driver's seat is not permitted.

(1) Buses manufactured on or after April 1, 1977, shall have operating instructions describing the motions necessary to unlatch and open the emergency exit, in letters at least 3/8 inch high, of a color that contrasts with its background, and located within 6 inches of the door handle on the interior.

(2) A sign reading "Emergency Exit" in letters at least 2 inches high shall be on the interior and exterior of the bus at each emergency exit. Interior letters shall be in a color that contrasts with the background. Exterior letters shall be black, at or above eye level.

(d) Door Glass. All doors shall be equipped with approved safety glazing material.

(e) Side Doors. Single-paneled side emergency doors, if hinged, shall be hinged on the forward edge.

(f) Attachments. No part of a seat shall be a part of or attached to an emergency door.

(g) Aisle to Side Floor-Level Door. The aisle leading between the seats to a side floor-level emergency door shall not be obstructed by any post, wheelhousing, or other obstacle. For purposes of this subsection, a seat is not an obstacle if applicable provisions of FMVSS 217 are met.

(h) Door Guard. Each emergency door opening may be provided with a securely attached safety guard installed completely across the interior of the door opening. On at least one end, the guard shall be equipped with an easily detachable quick release that is releasable under tension and secured at points on each side of the door frame not more than 6 inches above or below the horizontal centerline of the door. The guard shall not interfere with the opening of the door.

(i) Additional Emergency Exits. Additional emergency exits may be installed, but all shall conform with the minimum specifications in the applicable FMVSS.

(j) Emergency Exits in Wheelchair School Buses. School buses used to transport physically handicapped pupils in wheelchairs shall conform to the provisions of this section as well as the provisions of Section 1293 of this subchapter.
(Register 92, No. 12)

41. EXHAUST SYSTEMS - 13 CCR 1261. The following section is quoted from 13 CCR:

1261. Exhaust systems shall comply with the Vehicle Code and the following:

(a) Every motor vehicle propelled by an internal combustion engine shall be equipped with a system to direct the discharge of combustion exhaust gases.

(b) No part of an exhaust system shall be located where its position would likely result in burning, charring, or damaging the electrical wiring, the fuel supply, or any combustible part of the motor vehicle.

(c) No exhaust system shall discharge to the atmosphere at a location directly below the fuel tank or the fuel tank filler pipe unless a shield is installed in a manner that prevents spilled fuel from contacting the exhaust system.

(d) The exhaust system of a Type 1 bus, other than a school bus, powered by a gasoline engine shall discharge to the atmosphere at or within 6 inches forward of the rearmost part of the bus.

(e) The exhaust system of a Type 1 bus, other than a school bus, using fuels other than gasoline shall discharge to the atmosphere either:

(1) At or within 15 inches forward of the rearmost part of the vehicle, or

(2) To the rear of all doors or windows designed to be opened, except windows designed to be opened solely as emergency exits.

(f) 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. This requirement shall not apply to airport tank trucks used exclusively to fuel aircraft.

(g) Exhaust system repairs shall permit no leakage or discharge of exhaust gases at any location other than the discharge location required or permitted by this section.

(h) The exhaust system shall be securely fastened to the vehicle.

(i) Exhaust systems may use hangers which permit required movement due to expansion and contraction caused by heat of the exhaust and relative motion between engine and chassis of a vehicle.

(j) School Buses. The exhaust pipe of each Type 1 school bus and each Type 2 school bus constructed on or after July 1, 1970, shall project beyond the rear or side of the body of the bus but not beyond the bumper and shall not discharge near an entrance or exit, except that exhaust pipes may discharge near, but not directly under, doors designed to be opened solely as emergency exits. No flexible pipe or tubing shall be used except where necessary to prevent breakage.
(Register 91, No.46)

42. ADEQUATE MUFFLER REQUIRED - 27150 VC. The following section is quoted from the VC:

27150. (a) Every motor vehicle subject to registration shall at all times be equipped with an adequate muffler in constant operation and properly maintained to prevent any excessive or unusual noise, and no muffler or exhaust system shall be equipped with a cutout, bypass, or similar device.

(b) Except as provided in Division 16.5 (commencing with Section 38000) with respect to off-highway motor vehicles subject to identification, every passenger vehicle operated off the highways shall at all times be equipped with an adequate muffler in constant operation and properly maintained so as to meet the requirements of Article 2.5 (commencing with Section 27200), and no muffler or exhaust system shall be equipped with a cutout, bypass, or similar device.

(c) The provisions of subdivision (b) shall not be applicable to passenger vehicles being operated off the highways in an organized racing or competitive event conducted under the auspices of a recognized sanctioning body or by permit issued by the local governmental authority having jurisdiction.

(Ch. 558, Stats. 1977. Effective January 1, 1978.)

43. FENDERS AND MUDGUARDS - 27600 VC. The following section is quoted from the VC:

27600. No person shall operate any motor vehicle having three or more wheels, any trailer, or semitrailer unless equipped with fenders, covers, or devices, including flaps or splash aprons, or unless the body of the vehicle or attachments thereto afford adequate protection to effectively minimize the spray or splash of water or mud to the rear of the vehicle and all such equipment or such body or attachments thereto shall be at least as wide as the tire tread. This section does not apply to those vehicles exempt from registration, trailers and semitrailers having an unladen weight of under 1,500 pounds, or any vehicles manufactured and first registered prior to January 1, 1971, having an unladen weight of under 1,500 pounds.

(Ch. 215, Stats. 1970. Effective November 23,1970.)

44. FUEL TANK CAPS - 27155 VC. The following section is quoted from the VC:

27155. No motor vehicle shall be operated or parked upon any highway unless the filling spout for the fuel tank is closed by a cap or cover of noncombustible material.

(Ch. 453, Stats. 1965. Effective September 17, 1965.)

45. LIQUID FUEL SUPPLY TANKS AND SYSTEMS - 13 CCR 1253. The following section is quoted from 13 CCR:

1253. Motor vehicles (except school buses) propelled by fuel that is liquid at normal atmospheric pressures and temperatures shall be equipped as follows:

(a) General Requirements. Every tank or container that contains fuel for the motor vehicle upon which it is installed shall be substantially constructed, free of leaks, securely mounted, maintained in good condition, and sealed by a cap or plug with a bayonet-type joint, screw threads, or other equally effective means of securement. No fuel system shall permit direct gravity or siphon feed to the carburetor or injector.

(b) Projection. No part of any fuel tank, container, or intake pipe, including valves and pipes, shall project beyond the overall width or forward of the front axle of the motor vehicle upon which it is installed. Drains and fittings attached to the bottom of diesel fuel tanks shall be mounted as close to the tank as practicable.

(c) Installation. Fuel supply lines shall be properly supported to minimize vibration.

(1) Fuel lines shall not extend between the towed and towing vehicles of a vehicle combination in motion.

(2) Selector valves for regulating fuel feed from more than one tank shall not be operable while the vehicle is in motion unless they are within easy reach of the driver.

(d) Additional Requirements for Motor Vehicles Manufactured after July 1, 1997.

(1) A fuel line which is not completely enclosed in a protective housing must not extend more than two inches below the fuel tank or its sump. Diesel fuel crossover, return, and withdrawal lines which extend below the bottom of the tank or sump must be protected against damage from impact.

(2) Excess Flow Valve. When pressure devices are used to force fuel from a fuel tank, advice which prevents the flow of fuel from the fuel tank if the fuel feed line is broken must be installed in the fuel system.

(Register 96, No. 25)

46. LIQUEFIED AND COMPRESSED GAS FUEL SYSTEMS - 13 CCR 1254. The following section is excerpted from 13 CCR:

1254. Motor vehicles fueled by compressed or liquefied natural gas or liquefied petroleum gas shall be equipped with fuel containers and systems that comply with Article 2, commencing with Section 930 of this title. A school bus that has been modified to use compressed or liquefied natural gas or liquefied petroleum gas shall not be used to transport pupils until the fuel system installation has been inspected by the department.

(Register 95, No. 36

47. TRANSPORTING LIQUEFIED PETROLEUM OR NATURAL GAS - 27909 VC. The following section is quoted from the VC:

27909. Any vehicle which carries liquefied petroleum gas fuel or natural gas, in a tank attached to a vehicle, in any concealed area, including trunks, compartments, or under the vehicle, shall display on the exterior of the vehicle the letters "CNG," "LNG," or "LPG," whichever type fuel is utilized, in block letters at least one inch high. The letters shall be of contrasting color and shall be placed as near as possible to the area of the location of the tank. Any vehicle fueled by liquefied petroleum gas fuel or by natural gas may also comply with this section by displaying on each side of the vehicle words or letters at least 0.25 inch high indicating that the vehicle is fueled by liquefied petroleum gas or natural gas. It is unlawful to dispense liquefied petroleum gas fuel or natural gas into any tank in a concealed area of any vehicle registered in California, unless the vehicle complies with the requirements of this section.
(Ch. 142, Stats. 1983. Effective January 1, 1984)

48. FUEL TANKS AND FUEL LINES - 13 CCR 1255. The following section is quoted from 13 CCR:

1255. (a) Fuel lines shall not enter or pass through the passenger compartment of any bus, except to provide fuel to a combustion heater installed in compliance with Section 1259.

(b) Fuel tanks on school buses shall be located entirely outside the passenger compartment.

(c) Type 1 Buses. Fuel tanks on Type 1 school buses constructed after January 1, 1950, and prior to April 1, 1977, shall have a capacity of not less than 18 gal and shall be mounted between the front axle and a point not less than 18 inches from the rear end of the frame or body and to the right side. However, if insufficient space is available on the right side of a short wheel base chassis designed to carry fewer than 30 pupils, the tank may be placed on the left side. The tank shall not extend above the side member of the chassis or beyond the outer edge of the body. Filler, vent, and drain openings shall be outside the bus body. The filler shall not project beyond body panels. Except for diesel fuel systems, fittings through which fuel is drawn shall be located above the normal "full" line of tanks installed after January 1, 1974.

(d) Type 2 Buses. For fuel tanks on Type 2 school buses manufactured on and after July 1, 1970, those specifications set forth in the regulations of the Department of Transportation, National Highway Traffic Safety Administration, Federal Motor Vehicle Safety Standards applicable at time of manufacture shall apply.
(Register 83, No. 18)

49. GLAZING MATERIAL - 13 CCR 1287. The following section is excerpted from 13 CCR:

1287. Glazing material shall be free of cracks and breaks or defects that would endanger the driver and passengers or other persons.

50. SAFETY GLAZING MATERIAL - 26701 VC. The following section is quoted from the VC:

26701. (a) No person shall sell, offer for sale, or operate any motor vehicle, except a motorcycle, manufactured after January 1, 1936, unless it is equipped with safety glazing material wherever glazing materials are used in interior partitions, doors, windows, windshields, auxiliary wind deflectors or openings in the roof.

(b) No person shall sell or offer for sale any camper manufactured after January 1, 1968, nor shall any person operate a motor vehicle registered in this state which is equipped with that camper, unless the camper is equipped with safety glazing materials wherever glazing materials are used in outside windows and doors, interior partitions, and openings in the roof.

(c) No person shall operate a motorcycle manufactured after January 1, 1969, equipped with a windshield containing glazing material unless it is safety glazing material.

(d) No person shall sell, offer for sale, or operate any motor vehicle equipped with red, blue, or amber translucent aftermarket material in any partitions, windows, windshields, or wind deflectors.

(e) No person shall sell, offer for sale, or operate any trailer coach manufactured after January 1, 1977, that is capable of being towed with a fifth-wheel device unless the trailer coach is equipped with safety glazing materials wherever glazing materials are used in windows or doors, interior partitions, and openings in the roof.
(Ch. 540, Stats. 1993. Effective January 1, 1994.)

51. REPLACEMENT OF GLAZING MATERIAL - 26703 VC. The following section is excerpted from the VC:

26703. (a) No person shall replace any glazing materials used in interior partitions, doors, windows, or openings in the roof in any motor vehicle, in the outside windows, doors, interior partitions, or openings in the roof of any camper, or in windows, doors, interior partitions, or openings in the roof of a trailer coach capable of being towed with a fifth-wheel device, with any glazing material other than safety glazing material.

(b) No person shall replace any glazing material used in the windshield, rear window, auxiliary wind deflectors, or windows to the left and right of the driver with any material other than safety glazing material.
(Ch. 900, Stats. 1976. Effective January 1, 1997.)

52. WINDOWS - TYPE 1 SCHOOL BUS - 13 CCR 1285. The following section is quoted from 13 CCR:

1285. The windows on Type 1 school buses shall be as follows:
(a) Size of Opening. Windows shall open and lower vertically and shall provide unobstructed openings not less than 12 inches in height and 264 square inches in area.
(b) Exceptions. These windows may be stationary and of lesser dimensions:
(1) Rear windows and the rearmost side windows.
(2) Windows in or immediately adjacent to an entrance or emergency door.
(3) Side windows located forward of the entrance door required by Section 1281.
(4) A window on the left side located between the driver's window and the window adjacent to the nearest passenger seat.
(c) Driver's Window. The foremost window to the left of the driver may be of lesser dimensions and may open and close horizontally.
(d) Banding. All exposed edges of glass in windows shall be banded.
(e) Latches. On Type 1 school buses constructed on or after January 1, 1957, window latches shall be designed so that no sharp edges protrude.
(Register 83, N0. 18)

53. WINDOWS - TYPE 2 SCHOOL BUS - 13 CCR 1286. The following section is quoted from 13 CCR:

1286. The windows on Type 2 school buses constructed on and after July 1, 1970, shall conform to the following requirements:
(a) Banding. All exposed edges of laminated glass used in windows shall be banded.
(b) Latches. Window latches shall be designed so that no sharp edges protrude.
(Register 78, No. 33)

54. WINDSHIELDS: EXCEPTION - 26700 VC. The following section is quoted from the VC:

26700. (a) Except as provided in subdivision (b), a passenger vehicle, other than a motorcycle, and every bus, motortruck or truck tractor, and every firetruck, fire engine or other fire apparatus, whether publicly or privately owned, shall be equipped with an adequate windshield.

(b) Subdivision (a) does not apply to any vehicle issued identification plates pursuant to Section 5004 which was not required to be equipped with a windshield at the time it was first sold or registered under the laws of this state, another state, or foreign jurisdiction.

(Ch. 222, Stats. 1983. Effective January 1, 1984.)

55. MATERIAL OBSTRUCTING OR REDUCING DRIVER'S VIEW - 26708 VC. The following section is quoted from the VC:

26708. (a) (1) No person shall drive any motor vehicle with any object or material placed, displayed, installed, affixed, or applied upon the windshield or side or rear windows.

(2) No person shall drive any motor vehicle with any object or material placed, displayed, installed, affixed, or applied in or upon the vehicle which obstructs or reduces the driver's clear view through the windshield or side windows.

(3) This subdivision applies to a person driving a motor vehicle with the driver's clear vision through the windshield, or side or rear windows, obstructed by snow or ice.

(b) This section does not apply to:

(1) Rearview mirrors.

(2) Adjustable nontransparent sunvisors which are mounted forward of the side windows and are not attached to the glass.

(3) Signs, stickers, or other materials which are displayed in a 7-inch square in the lower corner of the windshield farthest removed from the driver, signs, stickers, or other materials which are displayed in a 7-inch square in the lower corner of the rear window farthest removed from the driver, or signs, stickers, or other materials which are displayed in a 5-inch square in the lower corner of the windshield nearest the driver.

(4) Side windows which are to the rear of the driver.

(5) Direction, destination, or termini signs upon a passenger common carrier motor vehicle or a school bus, if those signs do not interfere with the driver's clear view of approaching traffic.

(6) Rear window wiper motor.

(7) Rear trunk lid handle or hinges.

(8) The rear window or windows, when the motor vehicle is equipped with outside mirrors on both the left-and right-hand sides of the vehicle that are so

located as to reflect to the driver a view of the highway through each mirror for a distance of at least 200 feet to the rear of the vehicle.

(9) A clear, transparent lens affixed to the side window opposite the driver on a vehicle greater than 80 inches in width and which occupies an area not exceeding 50 square inches of the lowest corner toward the rear of that window and which provides the driver with a wide-angle view through the lens.

(10) Sun screening devices meeting the requirements of Section 26708.2 installed on the side windows on either side of the vehicle's front seat, if the driver or a passenger in the front seat has in his or her possession a letter or other document signed by a licensed physician and surgeon certifying that the person must be shaded from the sun due to a medical condition, or has in his or her possession a letter or other document signed by a licensed optometrist certifying that the person must be shaded from the sun due to a visual condition. The devices authorized by this paragraph shall not be used during darkness.

(c) Notwithstanding subdivision (a), transparent material may be installed, affixed, or applied to the topmost portion of the windshield if:

(1) The bottom edge of the material is at least 29 inches above the undepressed driver's seat when measured from a point 5 inches in front of the bottom of the backrest with the driver's seat in its rearmost and lowermost position with the vehicle on a level surface.

(2) The material is not red or amber in color.

(3) There is no opaque lettering on the material and any other lettering does not affect primary colors or distort vision through the windshield.

(4) The material does not reflect sunlight or headlight glare into the eyes of occupants of oncoming or following vehicles to any greater extent than the windshield without the material.

(Ch. 533, Stats. 1989. Effective January 1, 1990)

56. SUN SCREENING DEVICES: REQUIREMENTS - 26708.2 VC. The following section is quoted from the VC:

26708. Sun screening devices permitted by paragraph (10) of subdivision (b) of Section 26708 shall meet the following requirements:

(a) The devices shall be held in place by means allowing ready removal from the window area, such as a frame, a rigid material with temporary fasteners, or a flexible roller shade.

(b) Devices utilizing transparent material shall be green, gray, or a neutral smoke in color and shall have a luminous transmittance of not less than 35 percent.

(c) Devices utilizing nontransparent louvers or other alternating patterns of opaque and open sections shall have an essentially uniform pattern over the entire surface, except for framing and supports. At least 35 percent of the device area shall be open and no individual louver or opaque section shall have a projected vertical dimension exceeding 3/16 inch.

(d) The devices shall not have a reflective quality exceeding 35 percent on either the inner or outer surface.
(Ch. 74. Stats. 1984. Effective January 1, 1985.)

57. TRANSPARENT MATERIALS - 26708.5 VC. The following section is quoted from the VC:

26708.2. (a) No person shall place, install, affix, or apply any transparent material upon the windshield, or side or rear windows, of any motor vehicle if the material alters the color or reduces the light transmittance of the windshield or side or rear windows, except as provided in subdivision (b) or (c) of Section 26708.

(b) Tinted safety glass may be installed in a vehicle if (1) the glass complies with motor vehicle safety standards of the United States Department of Transportation for safety glazing materials, and (2) the glass is installed in a location permitted by those standards for the particular type of glass used.
(Ch. 210, Stats. 1984. Effective January 1, 1985.)

58. HEATERS AND DEFROSTERS - 13 CCR 1259. The following section is quoted from 13 CCR:

1259. (a) Buses. Every bus shall have a safe, effective defroster and heating system, which shall produce sufficient heat to provide reasonable comfort for occupants. All heating system pipes and radiators shall be shielded to protect the occupants and their clothing, and the moving parts of all heaters and defrosters shall present no hazard to occupants. Air intakes shall be located to minimize the entrance of exhaust fumes into the bus. If combustion heaters are used, they shall be installed on new buses by the body or bus manufacturer, and on buses now in service, by authorized dealers or garages. Heaters and defrosters are not required for trailer-buses of open air construction.

(b) School Buses. Every school bus shall be equipped with an effective defrosting device of the hot air duct type.

(c) Trucks and Farm Labor Vehicles. Every truck and farm labor vehicle shall be equipped with an adequate mechanically operated defrosting device, or adequate air-circulating system that removes snow, ice, frost, fog, or internal moisture from the windshield.
(Register 83, No. 27)

59. HORNS OR WARNING DEVICES - 27000 VC. The following section is quoted from the VC:

27000. (a) Every motor vehicle, when operated upon a highway, shall be equipped with a horn in good working order and capable of emitting sound audible under normal conditions from a distance of not less than 200 feet, but no horn shall

emit an unreasonably loud or harsh sound. An authorized emergency vehicle used in responding to fire calls may be equipped with, and use in conjunction with the siren on that vehicle, an air horn which emits sounds that do not comply with the requirements of this section.

(b) Every refuse or garbage truck purchased after September 1, 1983, shall be equipped with an automatic back-up audible alarm which sounds on backing more than 36 inches and which is capable of emitting sound audible under normal conditions from a distance of not less than 100 feet or shall be equipped with an automatic back-up device which is in good working order, located at the rear of the vehicle and which immediately applies the service brake of the vehicle on contact by the vehicle with any obstruction to the rear. The back-up device or alarm shall also be capable of operating automatically when the vehicle is in neutral or a forward gear but rolls backward.

(c) At the first scheduled overhaul for any refuse or garbage truck, the operator shall consider equipping the refuse or garbage truck not equipped in accordance with the requirements of subdivision (b), with the alarm or device required under subdivision (b).

(Ch. 1144, Stats. 1983. Effective September 27, 1983.)

60. SCHOOL BUS WARNING SIGNAL SYSTEM - 25257 VC. The following section is quoted from the VC:

25257. (a) Every school bus, when operated for the transportation of schoolchildren, shall be equipped with a flashing red light signal system.

(b) (1) Every school bus manufactured on or after September 1, 1992, shall also be equipped with a stop signal arm. Any school bus manufactured before September 1, 1992, may be equipped with a stop signal arm.

(2) Any school bus manufactured on or after July 1, 1993, shall also be equipped with an amber warning light system, in addition to the flashing red light signal system. Any school bus manufactured before July 1, 1993, may be equipped with an amber warning light system.

(3) On or before September 1, 1992, the department shall adopt regulations governing the specifications, installation, and use of stop signal arms, to comply with federal standards.

(4) A stop signal arm is a device that can be extended outward from the side of a school bus to provide a signal to other motorists not to pass the bus because it has stopped to load or unload passengers, that is manufactured pursuant to the specifications of Federal Motor Vehicle Safety Standard No. 131, issued on April 25, 1991.

(Ch. 624, Stats. 1992. Effective September 14, 1992.)

61. SCHOOL BUS WARNING LAMPS - 13 CCR 696. The following section is quoted from 13 CCR:

696. (a) Number of Lamps and Required Locations. Four warning lamps are required on each school bus. Two alternately flashing lamps shall be rigidly mounted on the front, one at each side, at the same height above the top of the windshield; and two alternately flashing lamps shall be rigidly mounted on the rear, one at each side, at the same height, with the bottom edge of each lens not lower than the top line of the side window openings. A panel shall be installed to serve as a background for warning lamps that extend above the top of a school bus.

(b) Operating Switches. School bus warning lamp switches operated manually by the driver shall be located within easy reach of the driver's position.

(c) Pilot Indicator. A bright visible flashing signal not less than 12.7 mm (0.5 inch) in diameter shall be included in the circuit to give a clear and unmistakable indication to the driver when the warning signals are turned on. The indicator shall not be obscured from the driver's view by any part of the vehicle.

(d) Spacing and Visibility. Front and rear warning lamps shall be spaced as far apart laterally as is practicable, and in no case shall the distance between lamps be less than 100 cm (39 inches). Visibility of front and rear warning lamps shall be unobstructed by any part of the vehicle
from 5 deg above to 10 deg below horizontal and from 30 deg to the right to 30 deg to the left of the center line of the lamps.

(e) Warning Lamp Installation Dates. Warning lamps installed on school buses after 1965 shall be red Class C warning lamps. Those installed before 1966 and meeting requirements in effect at time of installation may continue to be used on the school buses on which they were installed.
(Register 95, No. 36)

62. SCHOOL BUS WARNING LAMPS - 13 CCR 682. The following section is quoted from 13 CCR:

682. School bus warning lamps shall be aimed to comply with the following requirements:

(a) Visual Aim. When aimed visually by means of an aiming screen or optical aiming machine, the lamps shall have the center of the high intensity zone on a vertical line straight ahead of the lamp center and on a horizontal line not higher than the level of the lamp center nor lower than 10 cm (4 inches) below this level.

(b) Mechanical Aim. When aimed with a mechanical aiming machine, warning lamps with three mechanical aiming pads on the lenses shall be between 0 and 4 down on the up and down scale and at 0 on the left and right scale of the aimer.

63. WARNING LAMP HOODS - 13 CCR 1288.1. The following section is quoted from 13 CCR:

1288.1. School bus warning lamps, required by section 25257 of the Vehicle Code, manufactured after January 1, 1973, shall be used in conjunction with lens hoods. The top of the hood shall project at least 120 mm (5 inches) in front of the foremost part of the lens. The sides of the hood at a vertical plane 60 mm (2.5 inches) ahead of the lens shall extend down to 15 + 5 deg above the horizontal place, measured from the lens center as shown in Figure 1. The shape of the hood may differ from that shown in Figure 1 provided it meets the specified dimensions. Warning lamps may not be transferred to another school bus unless used in conjunction with lens hoods.
(Register 81, No. 14)

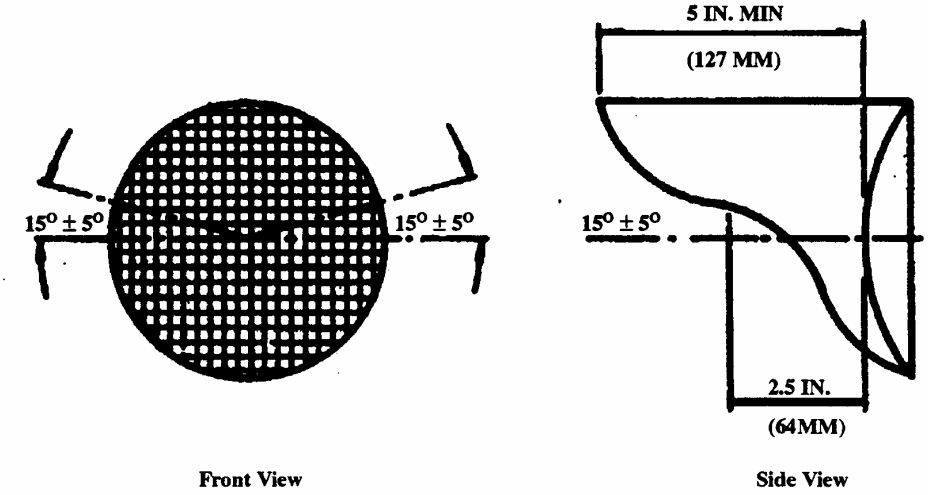

Figure 1. School Bus Warning Lamp Hood.

64. INTERIOR LAMPS - 13 CCR 1263. The following section is quoted from 13 CCR:

1263. All buses operated during darkness shall be equipped with a sufficient number of interior lamps to illuminate the interior of the bus without interfering with the driver's vision.

65. LAMPS ON SIDES OF SCHOOL BUSES - 25102.5 VC. The following section is quoted from the VC:

25102.5. (a) A school bus may be equipped with lamps mounted so as to be visible from the sides of the bus which may be lighted, in addition to other required lights, when, and only when, atmospheric conditions such as fog, rain, snow, smoke, or dust, reduce the visibility of other vehicles to less than 500 feet.

(b) The type and mounting requirements of such lamps shall be established by regulations adopted by the department. The regulations shall be adopted by January 1, 1980.

(Ch. 723, Stats. 1979. Effective January 1, 1980.)

66. SCHOOL BUS SIDELAMPS - 13 CCR 695. The following section is quoted from 13 CCR:

695. School bus sidelamps shall be installed as follows:

(a) Location. Two lamps shall be installed on each side, one toward the front and one toward the rear, with the front sidelamp as near as practicable to the front wheel. A third lamp may be installed near the center on buses 9.1 m (30 ft) or more in length.

(b) Spacing. Lamps on each side shall be as far apart as practicable and no closer together than 183 cm (72 inches).

(c) Height. All lamps on one side shall be at the same level, not lower than 61 cm (24 inches) nor higher than 107 cm (42 inches).

(d) Width. The lamps shall be installed so as not to exceed a total vehicle width of 2.44 m (96 inches). Installations that cause buses less than 2.03 m (80 inches) wide to equal or exceed 2.03 m (80 inches) will make necessary the installation of clearance and sidemarker lamps.

(e) Pilot Indicator. The system shall have an amber pilot indicator that is visible to the bus driver in his normal driving position and that is lighted when the sidelamps are lighted.

67. SCHOOL BUS STROBE LAMP - 13 CCR 695.5. The following section is excerpted from 13 CCR:

695.5. School bus strobe lamps shall be installed as follows:

(a) Location. The lamp shall be installed on the rooftop at or behind the center of the roof and equidistant from each side.

(b) Height. The top of the light-generating element inside the lamp shall not extend above the rooftop more than 1/20th of its horizontal distance from the rear of the bus. For the purpose of this section, the rear of the bus is defined as the vertical plane in contact with the rear most portion of the body. If a bus is equipped with roof mounted school bus signs or other vertical obstructions, the

light-generating element may extend above the level of the signs or obstructions not to exceed 1/20th of its distance from the rear of the bus. In no case shall strobe lamps be mounted so as to exceed the maximum height limits specified in Vehicle Code Section 35250.

(c) Mounting. The vertical axis of the lamp shall be installed perpendicular to the surface of the road.

(d) Switch and Pilot Indicator. The lamp shall be activated by a manual switch labeled with the word "strobelamp" and independent of all other switches. In addition, the system shall have a nonglaring amber or white pilot indicator that is clearly visible to the driver and that is lighted whenever the strobe lamp is lighted.
(Register 94, No.37)

68. TURN SIGNAL SYSTEM - 13 CCR 1288. The following section is quoted from 13 CCR:

1288. Type 1 school buses, and Type 2 school buses constructed on and after July 1, 1970, shall be equipped with amber turn signal lamps. Front turn signal lamps shall be mounted below the windshield. Rear turn signal lamps shall be separated from the tail lamps, stop lamps, and rear reflectors. On Type 1 school buses, rear turn signal lamps shall be mounted below the rear windows.
(Register 82, No. 24)

69. MIRRORS - 26709 VC. The following section is quoted from the VC:

26709. (a) Every motor vehicle registered in a foreign jurisdiction and every motorcycle subject to registration in this state shall be equipped with a mirror so located as to reflect to the driver a view of the highway for a distance of at least 200 feet to the rear of such vehicle.

Every motor vehicle subject to registration in this state, except a motorcycle, shall be equipped with not less than two such mirrors, including one affixed to the left-hand side.

(b) The following described types of motor vehicles, of a type subject to registration, shall be equipped with mirrors on both the left-and right-hand sides of the vehicle so located as to reflect to the driver a view of the highway through each mirror for a distance of at least 200 feet to the rear of such vehicle:

(1) A motor vehicle so constructed or loaded as to obstruct the driver's view to the rear.

(2) A motor vehicle towing a vehicle and the towed vehicle or load thereon obstructs the driver's view to the rear.

(3) A bus or trolley coach.

(c) The provisions of subdivision (b) shall not apply to a passenger vehicle when

the load obstructing the driver's view consists of passengers.
(Ch. 74, Stats. 1970. Effective November 23, 1970.)

70. MIRRORS ON SCHOOL BUSES - 13 CCR 1258. The following section is quoted from 13 CCR:

1258. All Type 1 school buses and Type 2 school buses constructed on and after July 1, 1970, shall be equipped with two exterior rearview mirrors, one on each side of the bus. Every school bus shall be equipped with a cross-view mirror mounted on the front exterior of the bus to provide the seated driver with a clear view of the area directly in front of the bus.

(a) Size of Rearview Mirrors. Type 1 school buses constructed after January 1, 1965, and Type 2 school buses constructed after April 1, 1977, shall have exterior side mounted rearview mirrors, each with at least 50 square inches in the reflective area.

(b) Size of Cross View Mirrors. All front exterior crossview mirrors required on Type 1 school buses shall have at least 40 square inches in the reflective area.

71. MIRRORS - 13 CCR 1257. The following section is quoted from 13 CCR:

1257. All buses subject to this title shall be equipped with interior mirror(s) that give the driver a clear view of the interior of the vehicle and any rear and center entrance or exit doors and stepwells. In lieu of mirrors, trailer-bus combinations and articulated buses may be equipped with closed circuit video systems or adult monitors in voice contact with the driver.
(Register 83, No. 27)

72. PASSENGER COMPARTMENTS - 13 CCR 1264. The following section is quoted from 13 CCR:

1264. (a) Signaling Device. All farm labor vehicles in which the passenger compartment is separated from the driver's compartment and all trailer-buses shall be equipped with a buzzer or other signaling device that can be actuated by the passengers to gain the attention of the driver. A horn, as required by Vehicle Code Section 27000, shall not be used to comply with this requirement.

(b) Vehicle Windows. Every farm labor vehicle shall have at least one window at each side near the front of the passenger compartment. Each window shall not be less than 10 inches high and 16 inches wide. This requirement may be met by windows complying with Section 1269 of this title.

(c) Broken Glass. All cracked or broken glass having sharp or jagged edges, in windows or elsewhere on a farm labor vehicle, shall be removed.
(Register 83, No. 27)

73. AISLES - 13 CCR 1279. The following section is quoted from 13 CCR:

1279. The aisle in Type 1 school buses shall be at least 12 inches wide; the aisle in Type 2 school buses manufactured on and after July 1, 1970, shall be at least 11 inches wide. Aisles shall provide unobstructed access to all seats on the aisle. The aisle on all Type 1 school buses and Type 2 school buses manufactured on and after April 1, 1977, shall provide unobstructed access to the rear floor-level emergency door, if so equipped. Aisles shall be surfaced with a nonslip material.
(Register 81, No. 20)

74. DOORS - 13 CCR 1281. The following section is quoted from 13 CCR:

1281. In addition to the provisions in Section 1267 of this title, the following regulations apply to nonemergency doors on school buses.

(a) Type 1 Buses. Doors on Type 1 school buses shall meet the following requirements:

(1) The entrance and exit door shall be on the right-hand side, toward the front of the bus, and directly within the view and under the control of the driver. The door will be deemed to be directly within the view of the driver only if the front of the opening is in front of a line drawn across the bus immediately in front of the driver's backrest.

(2) Although not required, there may be a door beside the driver for the exclusive use of the driver.

(3) School buses constructed after January 1, 1950, shall comply with these additional requirements.

(A) The entrance and exit door shall provide an unobstructed opening at least 24 inches wide and 65 inches high.

(B) Approved safety glazing shall be installed in door panels. In the lower panel, the bottom of the glazing shall not be more than 35 inches from ground level with the bus unloaded. In the upper panel, the top of the glazing shall not be more than 6 inches from the top of the door.

(C) Flexible material shall be affixed to the vertical-closing edges of the door.

(b) Door Padding. On all Type 1 school buses, and Type 2 school buses manufactured on and after July 1, 1970, the inside top door frame shall be cushioned by soft padding at least 1/2 inch thick, to prevent head injuries.
(Register 78, No. 33)

75. DOOR WARNING DEVICES - 13 CCR 1281.1. The following section is quoted from 13 CCR:

1281.1. On all school buses, except Type 2 buses manufactured prior to July 1, 1970, every emergency door and every floor level door located to the rear of the driver's seat shall have an electrical warning device that is both audible and

visible from the driver's seating position while the ignition switch is on. The visible device shall be a green or red light. The warning device shall be activated as follows:

(a) On Type 1 school buses manufactured on or after January 1, 1950, and all school buses manufactured on or after April 1, 1977, when the door latch is not in the closed position.

(b) On Type 2 buses manufactured on or after July 1, 1970, and prior to April 1, 1977, by opening the door.

(c) On all school buses manufactured after January 1, 1993, when the latch mechanism is not fully engaged and securing the door in the closed position. The warning device shall be activated by movement of the latch mechanism and shall activate prior to the latch reaching a position which would allow the door to open. A warning device which can be deactivated by operating the door handle or latch mechanism without closing the door does not meet this requirement.
(Register 93, No. 17)

76. BUS ENTRANCES AND EXITS - 13 CCR 1267. The following section is quoted from 13 CCR:

1267. The following requirements shall govern entrances and exits of all buses (except buses operated by law enforcement agencies to transport prisoners) and farm labor vehicles:

(a) Door and Step Clearance—Doors and steps shall be kept clear at all times to permit safe entrance and exit of passengers.

(b) Grab Handles—Every Type 1 bus and farm labor truck shall be equipped with grab handles, stanchions, or bars at least 10 inches long and installed within convenient reach of persons boarding or leaving.

(c) Safety Bars—To prevent passengers from falling into the step well, Type 1 buses shall have a safety bar or panel directly behind each step well.

(d) Door Construction and Maintenance—Doors in all buses and farm labor trucks shall be substantially constructed, in accordance with acceptable standards, and maintained in good working order to permit safe entrance and exit. All doors shall afford easy release in case of emergency but shall be prevented from opening accidentally. Manually operated doors shall be constructed so that no parts thereof can come together with an exposed shearing action. Chains, cables, or bars may be used on farm labor trucks instead of doors provided they are:

(1) Secured at not more than 6 inches (152.4 mm) above or below a horizontal centerline of the opening, and

(2) Equipped with a quick release device that allows only enough slack to permit easy operation.

(e) Doors Not Adjacent to Driver—In Type 1 buses (except school buses) any passenger door not immediately adjacent to the driver shall meet the following requirements: For buses manufactured prior to January 1, 1993, the term "not

immediately adjacent to the driver" shall mean that the door opening and steps are not within the direct, clear view of the driver, unassisted by mirrors or other devices. For buses manufactured on and after January 1, 1993, the term "not immediately adjacent to the driver" shall mean that the front of the door frame opening is more than 12 inches to the rear of a transverse vertical plane at the front of the driver's seat back rest with the seat adjusted to its rearmost position and the back rest adjusted to its most vertical position. The front of the backrest is that point, on the vertical centerline of the front of the backrest, which is midway between the seat cushion and the top of the seat back, excluding any movable head rest.

(1) Doors closed by power actuators shall be:

(A) Equipped with a sensitive edge, designed and maintained to release the door-closing force, and to reopen sufficiently to fully release a person or object caught in the closing doors.

(i) Except as provided in (iii), doors on buses manufactured on or after January 1, 1993, shall release when the door closes on an object as small as a 1/2-inch diameter smooth cylinder held perpendicular to the plane of the door opening at any point where the door halves meet, or if a single piece door, where the door edge meets the door frame.

(ii) The performance standard specified in (i) and (iii) shall not apply to the top two inches or the bottom two inches of the sensitive edge.

(iii) For buses equipped with a 4-inch or larger gap between the power-closed doors, the doors shall react as specified in (i) when closing on a 1-inch diameter smooth cylinder.

(B) Designed and equipped to signal the driver if the doors completely close on any part of a person's body or any object.

(C) Adjusted and maintained, when operated or actuated by treadle steps, to close in not less than 2 1/2 seconds after a person steps off such treadle.

(2) Doors closed by return springs, counterweights, or other passive means shall be:

(A) Designed to permit at least 4-inches of clearance between the solid or metal edges of doors when fully closed. This requirement shall not apply to a door opened by a power actuator and equipped with a sensitive edge that complies with (e)(1)(A) of this section.

(B) Adjusted to allow at least 1 1/2 seconds closing time from the fully open to the closed position.

(C) Designed and maintained so that the force required to start the doors moving away from the completely closed position does not exceed 20 pounds, applied at the solid edge of the door with the bus on a level surface. Door movement allowed by slack in the door closing mechanical linkage shall not be considered in determining compliance with this requirement.

(D) As an alternative to paragraph (C), doors closed by return springs, counter weights, or other means, may instead be equipped with sensitive edges meeting the same requirements as doors closed by power actuators.

(E) Designed and equipped with a door lock control operated by the driver while seated in the driver's seat, and equipped with a warning light visible to the driver to indicate when the door is unlocked.

(3) Except as provided in (C), all doors shall be interlocked with the brakes and accelerator so that the bus cannot move when the doors are open and the doors cannot open when the bus is moving without engaging the interlock.

(A) The interlock shall function so that:

(i) the brakes on at least one axle are applied, and

(ii) the accelerator is released when or before the doors begin to open, and

(iii) the brakes cannot be released nor the accelerator applied while the doors are open.

(B) In buses permitted by Section 1217 of this chapter to transport standing passengers, the interlock system may be equipped with speed sensors set at a speed of 3 miles per hour or greater at which speed the interlock may disengage.

(C) Buses may be equipped with a remote control not accessible from the driver's seated position, to override the interlock system to allow emergency movement of the bus if the doors cannot be closed. On buses equipped with such installations, placing the control in the override position shall actuate a warning consisting of an audible indicator and a red light indicator visible to the driver with a label intergral with or adjacent to the light stating "Warning-Interlock Deactivated" in letters at least 3/16 inch high.

(4) The provisions of this subsection shall not apply to a door not adjacent to the driver when equipped with a wheelchair lift that prevents persons from entering or exiting such doors while the bus is in motion.

(Register 95, No. 19)

77. SEATS - 13 CCR 1270. The following section is quoted from 13 CCR:

1270. The following requirements govern seats on buses and all farm labor vehicles.

(a) Bus Driver's Seat—The driver's seat shall be positioned so that the driver may assume a natural position while driving and have a clear view of the road and mirrors and sufficient leg room to operate the brake, clutch, and accelerator pedals and all other controls without cramping or interference. On a Type 1 bus, the driver's seat shall be readily adjustable backward and forward and up and down; on a Type 2 bus, at least backward and forward. On school buses and school pupil activity buses, the driver's seat shall also be equipped with a locking device to prevent accidental separation of the adjustable seat components. In addition, a safety belt meeting the provisions of FMVSS 209 shall be provided for the driver in school buses and school pupil activity buses.

(b) Bus Passenger Seats—Jump seats and seats in aisles shall not be permitted in any bus. Seats in school pupil activity buses shall be adequately secured and shall provide a seating space at least 13 inches wide for each passenger.

(c) Farm Labor Vehicle Passenger Seats—Seating accommodations for each passenger shall provide a space with a depth of at least 10 inches; a width of 16 inches; and a height (measured from the floor) of 15-19 inches for the seat and 32 inches for the top of the back of the seat. Aisles between facing seats shall be at least 24 inches wide. Headroom, measured from the ceiling to the top of the cushion at least 7 inches from the interior side wall, shall be at least 39 inches (except for seats installed by the original chassis manufacturer). The passenger compartment of every farm labor vehicle shall be enclosed to a height of at least 46 inches or equipped with other equally effective means to prevent passengers from falling off the vehicle. Farm labor vehicle seat frames and backs shall be rigidly constructed and maintained to ensure structural safety and resistance to displacement of any component in the event of an accident. For the sole purpose of establishing passenger capacity, weight per passenger and driver shall be calculated at 150 lb.

(1) Each seat cushion shall be fastened to the seat frame by not less than two positive locking devices at the front or rear of the cushion.

(2) Seats shall be secured to the vehicle by bolts at least 1/4 inch in diameter, uniformly spaced, and Grade 5 or better. Bolts shall meet the requirements of SAE Standard J429 (SAE Handbook, 1965 edition or later).

(3) Bolts shall be equipped with flat metal washers at least 1/16 inch thick and 1 1/4 inches in diameter or better. Bolts shall be secured by lock washers and nuts or self-locking nuts.

(4) Not less than four fasteners shall be used to secure each one- to three-passenger seat; at least six fasteners shall secure each four- to six-passenger seat, and at least two fasteners shall secure each additional 54 inches of linear seating space.

(5) Where vehicle design precludes the use of bolts, nuts, and washers, an alternate securement method may be used only if its strength equals or exceeds the fasteners specified in this section.

(6) Buses manufactured in compliance with FMVSS 222 shall be deemed in compliance with this section.

(Register 79, No. 19)

78. PUPILS' SEATS - 13 CCR 1278. The following section is quoted from 13 CCR:

1278. The following regulations apply to seating in school buses:

(a) Capacity and Weight Estimates. For the sole purpose of indicating the maximum capacity of a school bus, the manufacturer and purchaser shall allow a seating space 13 inches wide per pupil and shall estimate minimum weights of 130 lb per pupil and 150 lb for the driver. However, for Type 1 buses built before January 1, 1960, the weight of each elementary pupil may be estimated at a minimum of 80 lb, although the estimated weights of high school students remain at the minimum of 130 lbs each.

(b) Placement. Seats shall be positioned across the bus, not lengthwise. In Type 1 school buses, no pupil's seat shall be placed ahead of a line drawn across the bus and immediately behind the driver's seat. In Type 1 school buses constructed on or after July 1, 1968, there shall not be less than 25 inches between the front of the back of each seat and the rear of the back of the seat immediately ahead. In Type 2 school buses constructed on or after July 1, 1970, there shall not be less than 24 inches between the front of the back of each seat and the rear of the back of the seat immediately ahead. The foregoing measurements refer to the level plane parallel to the centerline of the vehicle immediately above the highest portion of the seat cushion. The measured distance shall not include any indentation or depression.

(c) Securement. Pupils' seats shall be securely fastened, as follows:

(1) Frames. Legs of all seat frames shall be secured to the floor with bolts or self-tapping screws. Bolts shall be of at least 1/4 -inch diameter and of Society of Automotive Engineers Grade 3 designation or equivalent strength. Bolts shall be secured by a flat washer of at least 1 1/4 -inch diameter, or equivalent securement, and a lock washer and nut or self-locking nut. Self-tapping screws shall be at least 5/16 inch in diameter and threaded through 12-gauge steel plating.

(2) Cushions. In Type 1 school buses constructed after January 1, 1957, and Type 2 school buses constructed after January 1, 1968, each seat cushion shall be fastened to the seat frame with a positive locking device at not less than two points on the front or rear of the cushion.

(d) Padding. All seats and seat backs shall be covered with padding. In addition, all school buses constructed after January 1, 1973, shall be equipped with interior protective padding capable of minimizing injuries from impacts, as follows:

(1) All exposed passenger seat rails, except the rearmost seats, shall be padded down to seat-cushion level, and the top rail of the driver's seat shall be padded unless separated from passenger seating by a padded restraining barrier.

(2) Stanchions shall be padded to within 3 inches of the ceiling and the floor.

(3) Guard rails shall be padded from the bus wall to the farthest support.

(e) Modification. No modification of factory seating shall be permitted on Type 2 school buses purchased on or after July 1, 1966, and manufactured before July 1, 1970, except as follows:

(1) A Type 2 school bus constructed before July 1, 1970, shall not transport more than 12 passengers and the driver unless it meets all regulations relating to Type 2 school buses constructed on or after July 1, 1970.

(2) Modifications to increase the seating capacity to 12 passengers shall be allowed only upon the approval of the department. Such approval shall be contingent upon the manufacturer's gross vehicle weight rating.

(f) Exception. This section does not apply to seats consisting of wheelchairs used in accordance with the provisions for wheelchair school buses in this title.

(g) Federal Requirements. School buses manufactured and maintained in compliance with Federal Motor Vehicle Safety Standard (FMVSS) 222 shall be deemed in compliance with the seating requirements of this section.

(Register 95, No. 19)

79. SAFETY BELTS: SCHOOL BUSES: STUDY: 27316 VC. The following section is quoted from the Vehicle Code (VC):

(a) Unless specifically prohibited by the National Highway Transportation Safety Administration, all schoolbuses purchased or leased for use in California shall be equipped at all designated seating positions with a combination pelvic and upper torso passenger restraint system, if the schoolbus is either of the following:

(1) Type 1, as defined in paragraph (1) of subdivision (b) of Section 1201 of Title 13 of the California Code of Regulations, and is manufactured on or after July 1, 2005.

(2) Type 2, as defined in paragraph (2) of subdivision (b) of Section 1201 of Title 13 of the California Code of Regulations, and is manufactured on or after July 1, 2004.

(b) For purposes of this section, a "passenger restraint system" means any of the following:

(1) A restraint system that is in compliance with FMVSS 209, for a Type 2 seatbelt assembly, and with FMVSS 210, as those standards were in effect on the date the school bus was manufactured.

(2) A restraint system certified by the schoolbus manufacturer that is in compliance with FMVSS 222 and incorporates a Type 2 lap/shoulder restraint system.

(c) No person, school district, or organization, with respect to a schoolbus equipped with passenger restraint systems pursuant to this section, may be charged for a violation of this code or any regulation adopted thereunder requiring a passenger to use a passenger restraint system, if a passenger on the schoolbus fails to use or improperly uses the passenger restraint system.

(d) It is the intent of the Legislature, in implementing this section, that school pupil transportation providers work to prioritize the allocation of

schoolbuses purchased, leased, or contracted for on or after July 1, 2004, for Type 2 schoolbuses, or on or after July 1, 2005, for type 1 schoolbuses, to ensure that elementary level schoolbus passengers receive first priority for new schoolbuses whenever feasible.

80. STEPS - 13 CCR 1280. The following section is quoted from 13 CCR:

1280. Steps of Type 1 school buses constructed after January 1, 1950, and of Type 2 school buses constructed after January 1, 1970, shall meet the following requirements:

(a) First Step. The first step to the entrance door in a Type 1 school bus shall be not more than 17 inches high, and on a Type 2 school bus not more than 20 inches high, measured from the ground when the bus is unloaded.

(b) Risers. When more than one step issued, risers of the upper steps shall be not more than 13 inches high.

(c) Covering. Steps shall be covered with a nonslip material.

(d) Foot Space. The space for passengers' feet shall not be decreased by any object (except wheelhousings) placed upon or protruding through the floor behind a line drawn across the bus in back of the driver's seat. "Foot space" does not include that part of the floor directly under a seat cushion or within 6 1/2 inches of the sidewall.

(e) Ramps. No floor ramp is permitted on school buses if it makes walking in the aisles hazardous. No such ramp that is less than 6 feet long or has a rise of more than 5 inches is permitted.

(Register 79, No. 15)

81. SCHOOL BUSES - 27906 VC. The following section is quoted from the VC:

27906. (a) Every school bus, while being used for the transportation of school pupils at or below the 12th-grade level shall bear upon the front and rear of the bus a plainly visible sign containing the word "schoolbus" in letters not less than 8 inches in height. The letters on schoolbus signs shall be of proportionate width. Except as provided in subdivision (b), no other vehicle shall display a sign containing the word "schoolbus."

(b) Notwithstanding subdivision (a), a school bus which is also used to transport persons of any age who are developmentally disabled, as defined by the Lanterman Developmental Disabilities Services Act (Division 4.5 [commencing with Section 4500] of the Welfare and Institutions Code), may display a sign containing the word "schoolbus" while transporting those persons to or from vocational, prevocational, or work training centers sponsored by the State Department of Developmental Services.

(c) Every schoolbus, when operated for the transportation of school pupils at or below the 12th-grade level, shall bear upon the rear of the bus, below the rear

windows, a plainly visible sign containing the words "Stop When Red Lights Flash" in letters not less than 6 inches in height. The letters on schoolbus signs shall be of proportionate width.
(Ch. 678, Stats. 1986. Effective January 1, 1987.)

82. IDENTIFICATION - 13 CCR 1256. The following section is quoted from 13 CCR:

1256. (a) Vehicles and Combinations. Every motor vehicle other than a school bus, or at least one vehicle in every combination of vehicles exceeding a total length of 40 feet, shall display on both sides the name or trademark of the motor carrier under whose authority the vehicle or combination of vehicles is being operated or the name of the lessor or lessee thereof. Required markings shall contrast sharply with the background and shall be readily legible during daylight from a distance of 50 feet.

(b) Each vehicle in a combination of vehicles registered with the Department of Toxic Substances Control for the transportation of hazardous waste shall display on both sides the name or trademark of the hazardous waste transporter, as required by Section 66263.23(e) of Title 22 of this code.

(c) Buses and other vehicles operated in passenger stage service by a passenger stage corporation, and such vehicles operated by an entity receiving financial transit assistance from the state, shall display in the interior of such vehicles in clear view of passengers a notice prohibiting smoking in the vehicle. The notice shall be displayed as a symbol and in English, as required by Section 25949.2 of the Health and Safety Code.
(Register 92, No. 20)

83. SCHOOL BUS COLOR AND SIGNS - 13 CCR 1256.5. The following section is quoted from 13 CCR:

1256.5. (a) Each school bus shall be identified as follows:

(1) Body and Trim Colors. Whenever in this section the color yellow is specified, it shall mean National School Bus Yellow unless otherwise stated. Exteriors (except bumpers, grills, lamp bodies, and other accessories) shall be yellow. The following items may be black:

(A) Moldings and rub rails.

(B) Seals, scratch guards, and other components manufactured from rubber or similar flexible synthetic materials.

(C) A border no more than 4 inches wide around stop lamps, turn signal lamps, or flashing red lamps. The border around turn signal lamps may incorporate an arrow indicating direction of turn.

(D) The wheels may be a color different from the body color, and the upper half of the engine hood may be black. The roof of a school bus may be painted white, but the words "SCHOOL BUS" shall have a yellow background.

(2) Identifying Signs and Numbers. Each school bus shall be identified with the exterior signs and numbers shown in subsection (b). Signs may be either adhesive decals or painted, and shall be maintained in legible condition. Letters and numerals of all signs required by subsection (b) shall be solid black on a yellow background unless otherwise specifically permitted or required, and width shall be proportionate to height. On school buses manufactured on or after January 1, 1992, required signs applied to curved or slanted surfaces shall have a projected height and width that comply with the size requirements of this section.

(3) Trim, logos, accessories, and other minor appearance items installed as standard factory equipment may have bright metal finishes such as chrome plating or stainless steel.

(b) Required School Bus Signs.

(1) School Bus. The words "SCHOOL BUS" or the word "SCHOOL-BUS" shall be displayed as required in Vehicle Code Section 27906(a), in uppercase lettering, and shall be located above the windshield and above the rear windows of the bus.

(2) Stop When Red Lights Flash. The words "Stop When Red Lights Flash" shall be displayed as required in Vehicle Code Section 27906(c).

(3) Carrier Name. The name of the motor carrier operating the school bus shall be displayed below the windows on both sides of the bus in letters not less than 4 inches nor more than 6 inches in height. As an alternative, a sign showing the name of the school in letters 4 to 6 inches in height and the name of the district or contractor 2 to 6 inches in height is permitted. Carrier names or lettering styles which constitute a registered trademark may include a registered trademark symbol displayed in close proximity to the carrier name. Addresses, telephone numbers, stripes, slogans, or graphic designs other than the lettering style of the carrier name shall not be considered part of the carrier name and are prohibited. Extremely ornate lettering styles which substantially reduce the legibility of the required sign from a distance of 50 feet shall not be used.

(4) Bus Number. The bus number assigned by the company or school shall be displayed in characters at least 4 inches in height in one of the following manners:

(A) On all four corners of the bus body.

(B) On both front corners and centered on the rear of the bus body.

(C) On buses manufactured on and after January 1, 1992, on both sides and both ends of the bus. Each number display shall be at least 6 inches from any other sign or manufacturer's logo. The front and rear numbers shall be displayed below the bottom edge of the passengers' side window glass, and may be displayed on the bumpers of the bus only if the background behind the number is yellow and extends at least one inch above, below, and to each side of the number. After January 1, 1992, any school bus, regardless of age, may be marked to comply with this subsection instead of subsection (A) or (B) above.

(D) Buses 30 feet in length or longer may display the bus number twice on each side, one display as close as possible to each end of the bus.

(E) No school bus shall display a bus number in more locations than authorized by this section. Except for older school buses permitted to be marked as described in subsections (A) and (B), no school bus shall display a number on a corner of the vehicle to serve as both a side and end number.

(5) Carrier Number. The carrier identification number assigned by the department shall be displayed in characters 2 inches in height on both sides of the bus, centered not less than 2 inches, nor more than 24 inches below the carrier name. The display shall consist of the letters CA followed by the digits assigned to the carrier. A space may be inserted between the letters CA and the digits.

(A) School buses may display the carrier's valid operating authority or identification number assigned by the Interstate Commerce Commission, the California Public Utilities Commission, or the United States Department of Transportation, in the manner specified above for carrier identification numbers, instead of the carrier identification number assigned by the department.

(B) Carrier identification numbers assigned by the department or identification numbers assigned by the Public Utilities Commission and displayed on school buses prior to September 1, 1989, may continue to be displayed irrespective of the size and location requirements of subsection (b)(5) of this section.

(6) Emergency Exit. A sign reading "EMERGENCY EXIT" in uppercase letters 2 inches in height shall be on the exterior of the bus on or above each emergency exit. Exterior emergency exit signs may have a white background if located above the emergency exit in the white area of school buses with white roofs. A sign reading "EMERGENCY EXIT" in uppercase letters at least 2 inches in height shall be on the interior of the bus on or above each emergency exit. Interior emergency exit signs shall be of any color that contrasts sharply with the background. Interior emergency exit signs may be backlighted if no glaring light is projected into the driver's eyes either directly or by reflection from any surface forward or to either side of the driver.

(A) For exterior or interior emergency exit signs, the words "EMERGENCY DOOR" in uppercase letters may be used to identify floor-level emergency doors instead of the words "EMERGENCY EXIT".

(B) Roof emergency exits shall be identified as described in subsection (b)(6) for other emergency exits, except that emergency exit signs for roof exits need not meet the size and color requirements of that subsection if they are clearly identified as emergency exits on the interior and exterior of the emergency exit assembly as supplied by its manufacturer.

(C) School buses manufactured prior to January 1, 1992, may have emergency exit signs applied as decals on the window glass of the emergency exit. If this option is exercised, the emergency exit decals shall meet the size and wording requirements of this subsection, but need not meet the color requirements.

(7) Stop Signal Arm. School buses manufactured on or after September 1, 1992, shall be equipped with at least one stop signal arm. School buses manufactured prior to September 1, 1992, may be equipped with stop signal

arms. Stop signal arms shall meet the requirements of FMVSS No. 131 (49 CFR 571.131) and the following:

(A) Size. The stop signal arm shall be a regular octagon which is at least 17.72 inches x 17.72 inches and not more than 18.25 inches x 18.25 inches in diameter.

(B) Color. The stop signal arm shall be red on both sides except as provided in subsection (C). The stop signal arm shall have a white border of 0.47 inch on both sides. The word "STOP" shall be displayed on both sides, in white upper-case letters. The letters shall be a minimum of 5.9 inches in height, and a maximum of 8.0 inches in height, with a minimum stroke width of 0.79 inch and a maximum stroke width of 1.0 inch.

(C) Location. The stop signal arm shall be installed on the left side of the bus, as close as practical to the rear of the bus. The stop signal arm may not be located on a door or emergency exit door, or in any location where it can be contacted by a door or an emergency exit door when the stop signal arm is deployed or retracted. A second stop signal arm may be installed on the left side of the school bus, as close as practical to the front of the bus. When two stop signal arms are installed on a school bus, the rearmost stop signal arm shall not contain any lettering, symbols, or markings on the forward side, and the forward side shall not be reflectorized. Each stop signal arm shall be located such that, when in the extended position:

1. The arm is perpendicular to the side of the bus, plus or minus five degrees;

2. The top edge of the stop signal arm is parallel to and not more than 6 inches from a horizontal plane tangent to the lower edge of the frame of the passenger window immediately behind the driver's window; and

3. The vertical center line of the stop sign is at least 9 inches away from the side of the school bus.

(D) Warning Lamps. Each side of the arm shall be equipped with two alternately flashing red lamps meeting the requirements of SAE J1133, April 1984. The lamps shall be centered on the vertical centerline of the stop signal arm. One of the lamps shall be located at the extreme top of the stop arm and the other at its extreme bottom.

(E) Strobe Lamps. In lieu of warning lamps, each side of the arm may be equipped with two alternately flashing red strobe lamps meeting the requirements of SAE J1133, April 1984. If strobe lamps are used in lieu of required warning lamps, the existing lamps shall be removed, and the strobe lamp shall be installed in compliance with subparagraph (D) of this section.

(F) Reflectorization. Except as provided in subsection (C), if reflectorization is used the entire surface of both sides of the stop signal arm shall be reflectorized with type III retroreflectorized material that meets the minimum specific intensity requirements of FMVSS 131, S6.1.

(G) In lieu of incandescent or strobe warning lamps otherwise required by this section, each side of the stop signal arm may be equipped with flashing light

emitting diodes (LEDs) that spell out the word “STOP,” meeting the requirements of FMVSS 131 (49 CFR 571.131). If LEDs are used in lieu of required warning or strobe lamps, the existing lamp-type stop signal arm(s) shall be removed, and the LED stop signal arm(s) shall be installed in compliance with subparagraph (C) of this section.

(H) Operation. The stop signal arm shall be operated by electricity, air or vacuum. Manual operation of the stop signal arm is prohibited. The stop signal arm shall be automatically extended whenever the alternately flashing red signal lamp switch is activated as required by Vehicle Code Section 22112. The stop arm shall not be activated or deployed at any other time.

(c) Optional school bus markings. The following signs, when displayed as specified, are permitted on school buses:

(1) An additional bus number may be placed on the roof for aerial identification. If used, this number shall be black on a white or yellow background. No size requirement shall apply to this number.

(2) Handicapped Sign. A white-on-blue international handicapped (wheelchair) sign may be displayed on any school bus equipped to transport pupils confined to wheelchairs. One sign may be displayed on each side and on the rear of the bus. Each sign shall be no larger than 12 inches in height and the width shall be proportional to the height. The sign shall not obscure any required sign on the bus.

(3) Additional Signs. Signs consisting of numbers, letters or illustrations with contents limited to special identification, bus routing information, warning against unauthorized entry, or an acknowledgment of a sponsor's donation of a school bus may be displayed. No color restrictions apply to this sign. The display area shall be a maximum of 12 inches by 12 inches on the sides of a school bus below the bottom edge of the passengers' side window glass and not closer than 12 inches from any required sign.

(4) Route Identification. A changeable sign designating the current route assignment of a school bus may be displayed on the right side of the bus above the entrance door or through the windshield as described in Vehicle Code Section 26708(b)(5). The sign, when installed above the entrance door, shall not exceed 6 inches in height and 16 inches in length, and shall not obstruct any required light. The face of the sign may be any color, and the body or housing of the sign shall be black or yellow. Such signs shall not emit any light. Any electrically changed signs shall be installed with all control cables protected by grommets where they pass through body panels, and shall be provided with a separate fuse or circuit breaker which does not supply power to any other device. Body or roof panels shall not be cut to recess such signs into the body or roof unless written concurrence is first obtained from the body manufacturer, stating that the proposed modification will not adversely affect the compliance of the bus with any Federal Motor Vehicle Safety Standard applicable at the time the bus was manufactured.

(d) On school buses operated for demonstration purposes and which are not certified by the department for pupil transportation pursuant to Vehicle Code Section 2807(b), the name of the manufacturer, dealer or owner may be displayed in any manner that clearly indicates the entity responsible for the operation of the bus.

(e) On a school bus leased, rented or lent to a school district, private school or contractor, for periods of not more than 30 days in any one school year, temporary signs bearing the carrier name and identification number of the school or contractor may be displayed on both sides of the bus near the name of the bailor in lieu of the permanent signs otherwise required by this section. Such temporary signs need not meet the color requirements set forth in subsection (a) of this section, but shall be displayed in characters of not less than 2 inches in height and in sharp contrast with the background. The temporary signs shall be removed immediately upon return of the bus to the bailor.

(f) Limitations on school bus markings. Colors, signs, bumper stickers, numbers or reflectorizing material not required or specifically permitted by this article shall not be permitted on school buses. A school bus operated for demonstration purposes which is not certified pursuant to Vehicle Code Section 2807(b) is not subject to the limitations of this subsection. However, prior to certification by the department for the transportation of school pupils, all signs, colors, and other graphic devices not required or permitted by this section shall be removed, and all required signs shall be applied.

(1) The rear bumper of a school bus may be marked with diagonal reflectorized material in accordance with Vehicle Code Section 25500. The rear of a school bus body may be marked with a strip of retroreflective yellow material no greater than 2 inches in width. The strip must be placed from the left lower corner of the required "School Bus" lettering, across to the left side of the bus, then vertically down to the top of the bumper, across the bus on a line immediately above the bumper to the right side, then vertically up to a point even with the strip placement on the left side, and concluding with a horizontal strip terminating at the right lower corner of the "School Bus" lettering. The upper horizontal strip of retroreflective material may be continued below the "School Bus" lettering to connect with the strip on the left side if the body design permits. Retroreflective tape may have interruptions to avoid and/or accommodate functional components such as rivets, rubrails, curved surfaces, hinges and handles, provided the tape is immediately adjacent to the these components.

(2) Emergency exits on school buses manufactured on or after May 2, 1994, shall meet the requirements of Federal Motor Vehicle Standard No. 217, S5.5.3 (49 CFR 571.217 S5.5.3) in effect at the time of manufacture. School buses manufactured prior to May 2, 1994, may be marked in accordance with FMVSS 217. Emergency exit markings in
compliance with FMVSS 217 S5.5.3 shall have precedence over any other retroreflective marking permitted by this section.

(3) One reflectorized yellow horizontal stripe of any length and not exceeding 12 inches in width may be on each side of a school bus. The carrier's name may be superimposed over the stripe, but if so, shall not be reflectorized as otherwise permitted in subsection (4) below.

(4) The characters of any required sign may be formed from or painted with black material, which may reflect white light. Optional signs and their backgrounds shall not be reflectorized, except that the optional roof aerial identification number permitted in subsection (c)(1) may reflect white light. The background of the roof number shall not be reflectorized.

(5) Interior signs. Posting of safe driving and riding instructions in the driver's compartment is permitted if it does not restrict the driver's view of traffic or the instrument panel.

(6) Vehicle Information Labels. Small exterior tags or labels with lettering of not more than one inch in height indicating operational information such as, but not limited to, type of fuel, tire pressure, air reservoir drain locations, coolant filler location, etc. are not considered signs for the purposes of this section. Markings on fuel containers and fuel filler locations for liquefied petroleum gas (LPG), compressed natural gas (CNG), and liquefied natural gas (LNG) shall comply with the marking requirements for those containers as specified in this title and Vehicle Code Section 27909 regardless of the requirements of this subsection. Vehicle markings required by National Fire Protection Association Standard 52 for CNG-powered vehicles are permitted as specified in NFPA 52-1988 published by that organization.

(7) Logos. Logos of the manufacturer(s) of a school bus are not considered signs for the purposes of this section; however, logos shall not be displayed within 6 inches of any required sign. Exterior signs of any size representing the dealer or distributor of the bus are not permitted unless the dealer or distributor is either the manufacturer of the bus or, in the case of school buses manufactured in two or more stages, the final stage manufacturer. Signs on step well risers that are visible through door glass are not considered to be on the exterior of the bus.

(Register 95, No. 49)

84. TABLE OF REQUIRED SIGNS. Table 1 is a quick reference for the required signs on a school bus. For more detailed information, refer to 13 CCR 1256.6.

CONTENT	HEIGHT OF LETTERS IN INCHES	LOCATION
"School Bus"	8	Front and rear, above window
"Stop When Red Lights Flash"	6	Below rear window
"Emergency Exit"	2	On the exterior and interior, above each emergency exit
Name of District or Private School	4-6	Directly below windows, on each side
Vehicle Identification number	4 minimum	All corners, or front corners and rear center
Carrier Identification Number	2	Center, 2-24 inches below district or contractor name

Table 1. Required Signs.

85. YOUTH BUSES - 27906.5 VC. The following section is quoted from the VC:

27906.5. Every youth bus, when operated for the transportation of school pupils, shall bear, upon the front and rear of the youth bus, a plainly visible sign containing the words "YOUTH BUS" in letters not less than 8 inches in height. The letters on youth bus signs shall be of proportionate width and the letters shall be in sharp contrast to the background.
(Ch. 383, Stats. 1982. Effective July 4, 1982.)

86. SPEEDOMETER AND ODOMETER - 13 CCR 1262. The following section is quoted from 13 CCR:

1262. School buses, school pupil activity buses, youth buses, and farm labor vehicles shall be equipped with an accurate speedometer and odometer. The speedometer shall be visible from the driver's seat and illuminated during darkness. School pupil activity buses may use means other than an odometer for determining accrued mileage.
(Register 82, No. 44)

87. STARTER INTERLOCK - 13 CCR 1277.1. The following section is quoted from 13 CCR:

1277.1. On school buses manufactured on or after January 1, 1968, that are equipped with automatic transmissions, the engine starter shall be inoperative when the transmission shift lever is in a forward or reverse drive position.
(Register 81, No. 20)

88. STEERING COMPONENTS - 13 CCR 1291. The following section is quoted from 13 CCR:

1291. No change shall be made to the steering gear, linkage, or related parts that would alter the manufacturer's intended geometry, nor shall any addition be made that would unsafely affect the operation or stability of a school bus. On school buses constructed after January 1, 1950, the outer rim of the steering wheel shall be at least 3 inches from the instrument panel, windshield frame, and other obstructive surface or mechanical device except the turn signal lever and a gearshift mounted on the steering post.

89. TIRE CONDITION AND USE - 13 CCR 1087. The following section is quoted from 13 CCR:

1087. (a) Defects. Tires shall not be used with boot or blowout patches or with any of the following defects:
(1) Unrepaired fabric breaks,
(2) Exposed or damaged cord,
(3) Bumps, bulges, or knots due to internal separation or damage,
(4) Cuts that measure more than 1 inch (25 mm) and expose body cord,
(5) Cracks in valve stem rubber.
(b) Regrooved Tires. Regrooved tires shall not be used on school buses or any vehicle other than a commercial vehicle. Such tires used on commercial vehicles

shall be of a type manufactured and designed for regrooving. Regrooved tires, regardless of size, shall not be used on the front wheels of buses, and regrooved tires which have a load carrying capacity equal to or greater than that of 8.25-20 8 ply-rating tires shall not be used on the front wheels of any other motor vehicle listed in Vehicle Code Section 34500.

(c) Recapped Tires. Tires recapped or retreaded for highway use shall have a tread pattern that complies with Section 27465 of the Vehicle Code and with this section. Recapped or retreaded tires shall not be used on front wheels of a bus or farm labor vehicle. Such tires shall not be used on the front wheels of truck tractors or motortrucks listed in Vehicle Code Section 34500 unless the tires are in compliance with the following requirements:

(1) Tires shall have been retreaded or recapped not more than 2 times and shall contain no casing repair other than that required by a nail puncture.

(2) Tires shall conform to the labeling and other requirements of the 1972 CRSC Retreading Specifications and Standards.

(3) A new-tire manufacturer who is assigned an identification number by the U.S. Department of Transportation (DOT) may certify adherence to standards equal to or better than CRSC standards for retreaded tires produced in his/her company-owned and -operated retreading facilities. Such certification shall comply with marking or labeling requirements of CRSC, except that the certification mark branded into the tire may be of original design. A certification mark of original design shall show the name or trademark and assigned DOT registration number of the manufacturer and designate which of his/her retreading facilities produced the tire.

(4) Successive Retreads. When a retreaded tire bearing the markings specified in preceding subsections is retreaded a second time, the prescribed label shall be canceled by a diagonal line or other distinctive mark through the label.

(5) Tires on Dual Wheels. The outside diameters of tires used on dual wheels shall be so matched that on a level roadway each tire will contact the surface at all times.
(Register 94, No. 38)

90. USE OF RECUT OR REGROOVED TIRES - 27461 VC. The following section is quoted from the VC:

27461. No person shall cause or permit the operation of and no driver shall knowingly operate any motor vehicle except a commercial vehicle, on any street or highway, which is equipped with one or more recut or regrooved tires. For purposes of this section a recut or regrooved tire is an unretreaded or unrecapped tire into which new grooves have been cut or burned.
(Ch. 1518, Stats. 1965. Effective September 17, 1965.)

91. REGROOVED TIRE DESIGN AND CONSTRUCTION - 13 CCR 1086. The following section is quoted from 13 CCR:

1086. Regrooved tires shall be designed and constructed as follows:

(b) Design. No tire shall be regrooved unless it is designed to permit a renewed or newly generated tread pattern and is marked "regroovable" at the time of manufacture or it has a retread designed to be regrooved and is marked "regroovable" when retreaded.

(a) Construction. Regrooved tires shall be constructed with at least a 3/32-inch (2.4-mm) layer of tread material between the cord structure and the new grooves, which shall be not less than 3/16 inch (4.8 mm) nor more than 5/16 inch (7.9 mm) wide. Regrooved tires shall not show evidence of ply, tread, or sidewall separation; sidewall wear that exposes the fabric; or tread or groove cracks extending to the fabric.
(Register 82, No. 4)

92. IRE AND RIM SIZE AND CAPACITY - 13 CCR 1085. The following section is quoted from 13 CCR:

1085. (a) Passenger Cars. Tires manufactured after January 1, 1968, and used on passenger cars manufactured after 1948 shall be of the sizes listed in one of the publications referenced in FMVSS No. 109 (49 CFR 571.109, June 6, 1983) or in a publication of the tire manufacturer which is provided to the public.

(b) Matching of Passenger Car Tires and Rims. Tires for all passenger cars manufactured after 1948, of sizes listed in one of the publications referenced in FMVSS No. 109 (49 CFR 571.109, June 6, 1983) or in a publication of the tire manufacturer which is provided to the public, shall be installed and used only on the appropriate rims specified for the particular tire size by the tire manufacturer or by organizations listed in FMVSS No. 109.

(c) Matching of Tires and Rims on Other Vehicles. Tires installed on vehicles other than passenger cars shall be mounted only on rims specified for the particular tire size by the tire manufacturer or by organizations listed in FMVSS No. 119.

(d) Tire Load Limits. Loads on tires shall comply with the following requirements:

(1) Passenger car tires used on passenger cars or station wagons shall not be loaded above the maximum load rating marked on the tire, or, if unmarked, the maximum load rating specified in one of the publications referenced in FMVSS No. 109 (49 CFR 571.109, June 6, 1983) or in a publication furnished to the public by the tire manufacturer. Passenger car tires used on other vehicles shall not be loaded beyond the foregoing maximum divided by 1.1.

(2) Tires for trucks, buses, trailers, motorcycles, or any vehicles other than passenger cars shall not be loaded above the maximum load rating marked on the tire, or if unmarked, the maximum load rating specified by the organizations listed in

FMVSS No. 119 or the tire manufacturer's recommendations for the tire size, ply rating, and service speed.

(3) Tires covered by FMVSS No. 119 may carry increased loads at speeds of 87 km/h (54 mph) or less in accordance with tables published by the organizations listed in that standard, provided that either:

(A) The speed of the vehicle is mechanically restricted to no more than the rated speed for the load carried by the tire, or

(B) The vehicle, or combination of vehicles carries, on the rear of the last vehicle, a sign showing the maximum speed for the tire load (Figure 1 shows the specifications for color and lettering). The sign shall be located so that a following driver can read it with ease. (Figure 1 shows the specifications for color and lettering). The sign shall be located so that a following driver can read it with ease.

(C) The background of the Speed Restriction Sign shall be yellow, extending at least 1 inch (26 mm) beyond the words. The letter on the sign shall be at least 4 inches (100 mm) high, with a stroke 1/2 inch (13 mm) wide. Al words may be on one line.

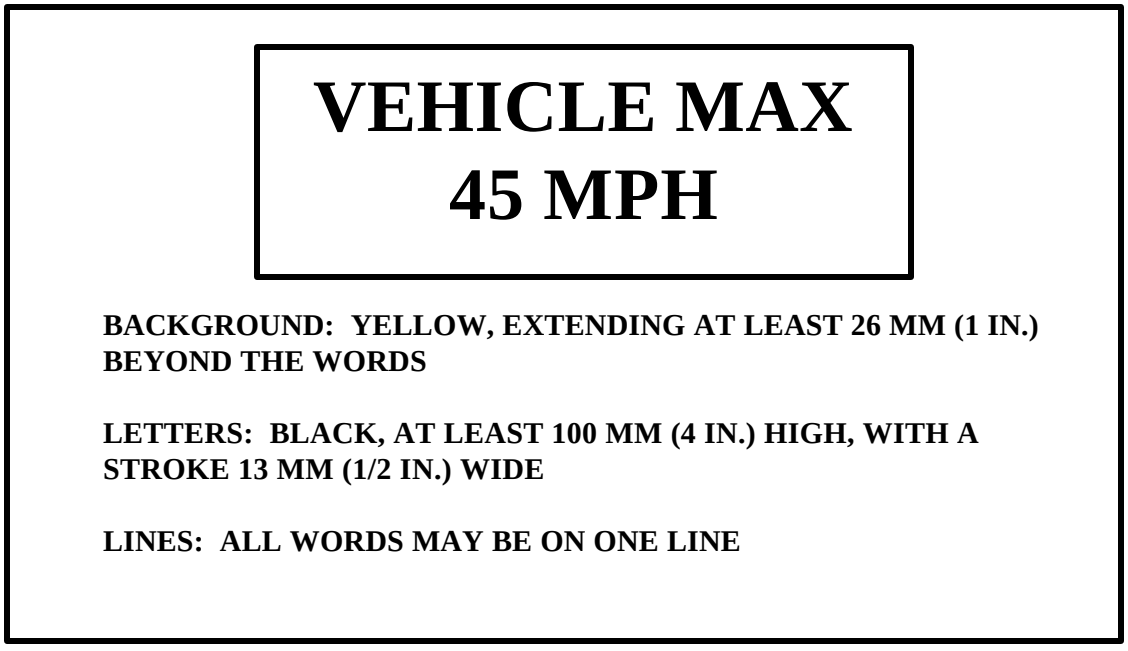

Figure 1. Speed Restriction Sign.

(4)Tire loading restrictions for manufactured homes. Tires used for the transportation of manufactured homes (i.e., tires marked or labeled 7-14.5MH or 8-14.5MH) may be loaded up to 18 percent over the load rating marked on the sidewall of the tire or, in the absence of such a marking,

18 percent over the load rating specified in any of the publications of any of the organizations listed in FMVSS No. 119, pursuant to 49 CFR 393.75(g). Manufactured homes which are labeled on or after November 16, 1998, shall comply with 24 CFR 3282.7(r), April 1, 1998. Manufactured homes transported on tires overloaded by 9 percent or more must not be operated at speeds exceeding 50 mph (80 km/h).

(5) Vehicles that do not have a mechanically restricted speed or the reduced speed sign, or do have the sign but do not comply with the reduced speed shown on the sign, shall not carry increased tire loads.

(e) LT Tires. Tires identified with the letters "LT" in the size markings (such as 7.00-15LT or LT 235/75R15) shall be used only on vehicles other than passenger cars and motorcycles.

(f) MH Tires. Tires identified with the letters "MH" after the size (such as 8-14.5MH) are designed for mobilehomes and shall not be used on other vehicles unless marked with the letters "DOT" in accordance with FMVSS 119.

(g) ML Tires. Tires identified with the letters "ML" after the size (such as 10.00-22ML) are designed for intermittent on/off road service such as mining and logging operations and shall not be used on vehicles traveling more than 55 mph (89 km) in any 1 1/2-hr period or at a speed of more than 55 mph (89 km/h). Certain sizes of ML tires marked with a 50-mph speed limit shall not exceed 50 mph (80 km/h) or 50 miles (80 km) in any 1 1/2-hour period.

(h) MS Tires. Tires permanently marked on one sidewall with the words "MUD AND SNOW" or any contraction using the letters "M" and "S" and designated by the tire manufacturer as being designed to provide additional traction in mud and snow in accordance with the definition of the Rubber Manufacturers Association may be used in lieu of tire chains where chain control signs permit snow tires.

(i) NHS Tires. Tires identified with the letters "NHS" after the size (such as 7.00-15NHS) are not designed for highway service and shall be used only on vehicles such as short haul mining, earthmoving and logging service at speeds not exceeding 40 mph (64 km/h) and shovels, front end loaders, dozers, and fork lifts at speeds not exceeding 10 mph (16 km/h). Tires identified as "NHS" may be used on cotton trailers (defined as implements of husbandry in Vehicle Code Section 36005) when such trailers are operated at not more than the speed limit labeled on the tire sidewall or, if not labeled, not more than 40 mph (64 km/h).

(j) SL Tires. Tires identified with the letters "SL" after the size (such as 9.00-16SL) are designed for limited service and shall be used only on agricultural and industrial equipment operated at not more than 20 mph (32 km/h).

(k) ST and Other Trailer Tires. Tires identified with the letters "ST" (such

as 7.00-13ST) or with the words"TRAILER" or "TRAILER SERVICE" after the size shall not be used on motor vehicles.

(l) T Tires. Tires identified with the letter "T" after the size (such as 3.75-19T) shall be used only on motorcycles or sidecars.

(m) Tires for Buses. Tires marked as follows are designed for buses and shall be used only as stated: "INTER-CITY" and "THRUWAY" may be used in any service at normal highway speeds. "INTRA-CITY" may be used only in slow speed start-stop service with maximum speed not exceeding 35 mph (56 km/h). "CITY-SUBURBAN" may be used only at speeds not exceeding 55 mph (89 km/h) for not more than one hour of continuous operation.

(Register 91, No. 18)

93. TIRES, RIMS, AND WHEELS - 13 CCR 1244 The following section is quoted from 13 CCR:

1244. All tires, rims, and wheels used on vehicles subject to these regulations shall comply with the requirements of Article 14, Chapter 4, of this title, beginning with Section 1080, and the following provisions:

(a) Aluminum Wheels. No aluminum alloy disc wheel demountable at the hub and manufactured on or before September 30, 1955, shall be used on the front or steering axle(s) of a motor vehicle or the leading vehicle of a vehicle combination.

(b) Spare Tires. Externally mounted spare tires shall be contained and supported by tire carriers or other means specifically designed for the purpose and secured to prevent accidental release of the tires.

(c) School Bus Tires and Rims. All tires and rims used on school buses shall comply with the following requirements:

(1) All tires on a school bus shall be of the same size, except as otherwise specified on the Federal data plate or label.

(2) All Type 1 school buses shall have dual tires on the rear axle.

(3) No tire shall be permitted inside a Type 1 school bus, nor shall any tire compartment project into the passenger compartment. Spare tires shall be secured to the vehicle and shall not be placed across a window, entrance, or any exit, or in any position that may endanger the occupants.

(Register 95, No. 19)

94. TIRE TRACTION DEVICE - 27459 VC. The following section is quoted from the VC:

27459. No person shall operate any motor vehicle, trailer or semitrailer upon any portion of a highway without tire traction devices when that portion of the highway is signed for the requirement of tire traction devices. In any case where a passenger vehicle or motortruck having an unladen weight of 6,000 pounds or less may be required by the Department of Transportation or local authorities to be equipped with tire traction devices, the devices shall be placed on at least two drive wheels, or the department or local authorities may provide, in the alternative, that the vehicle may be equipped with snow-tread tires on at least two drive wheels when the weather and surface conditions at the time are such that the stopping, tractive, and cornering abilities of the snow-tread tires are adequate. The snow-tread tires shall be of a type and design manufactured for use on snow as a replacement for tire chains or tire traction devices, shall be in good condition, and shall bear the marking of M-S, M/S, or other marking indicating that the tire was manufactured for use on snow, or, in the case of tires purchased before January 1, 1987, shall either bear the markings or, in the opinion of the inspecting officer, comply with the tread pattern requirements of Section 58.
(Ch. 71, Stats. 1990. Effective May 1, 1990.)

95. TREAD DEPTH OF PNEUMATIC TIRES - 27465 VC. The following section is quoted from the VC:

27465. (a) No dealer or person holding a retail seller's permit shall sell, offer for sale, expose for sale, or install on a vehicle axle for use on a highway, a pneumatic tire when the tire has less than the tread depth specified in subdivision (b). This subdivision does not apply to any person who installs on a vehicle, as part of an emergency service rendered to a disabled vehicle upon a highway, a spare tire with which the disabled vehicle was equipped.

(b) No person shall use on a highway a pneumatic tire on a vehicle axle when the tire has less than the following tread depth, except when temporarily installed on a disabled vehicle as specified in subdivision (a):

(1) One thirty-second (1/32) of an inch tread depth in any two adjacent grooves at any location of the tire, except as provided in paragraphs (2) and (3).

(2) Four thirty-second (4/32) of an inch tread depth at all points in all major grooves on a tire on the steering axle of any motor vehicle specified in Section 34500, and two thirty-second of an inch tread depth at all points in all major grooves on all other tires on the axles of these vehicles.

(3) Six thirty-second (6/32) of an inch tread depth at all points in all major grooves on snow tires used in lieu of tire traction devices in posted traction device control areas.

(c) The measurement of tread depth shall not be made where tie bars, humps, or fillets are located.

(d) The requirements of this section shall not apply to implements of husbandry.

(e) The department, if it determines that such action is appropriate and in keeping with reasonable safety requirements, may adopt regulations establishing more stringent tread depth requirements than those specified in this section for those vehicles defined in Sections 322 and 545, and may adopt regulations establishing tread depth requirements different from those specified in this section for those vehicles listed in Section 34500.

(Ch. 71, Stats. 1990. Effective May 1, 1990.)

96. WHEEL CLEARANCE - 13 CCR 1289. The following section is quoted from 13 CCR:

1289. School bus wheelhousings shall clear the wheels regardless of load, and permit the installation of chains; wheelhousings shall not project above the floor into leg space more than 11 inches Leg space is the area immediately forward of the front edge of a seat cushion to the floor.

97. VENTILATION - 13 CCR 1260 The following section is quoted from 13 CCR:

1260. Requirements for ventilation are as follows:

(a) Buses and Farm Labor Vehicles. All buses and farm labor vehicles shall provide ventilation that is adequate for passengers in any weather. Openings for ventilation through the front of a vehicle shall be equipped with screens that prevent passage of insects, gravel, and other objects.

(b) School Buses. School bus bodies shall be equipped with a suitable ventilating system of sufficient capacity to maintain adequate ventilation during operation without the opening of windows except in extremely hot weather. Ventilation shall be adequate to assure a complete change of air at least once every 3 minutes while a school bus is moving.

(Register 95, No. 32)

98. POWER OR GRADE ABILITY - 13 CCR 1277. The following section is quoted from 13 CCR:

1277. The gross vehicle weight of any Type 1 school bus and any Type 2 school bus manufactured on or after July 1, 1970, shall not exceed 175 lb per certified net published horsepower of the engine at the manufacturer's recommended maximum governed rpm. The gross vehicle weight of any school bus manufactured after January 1, 1973, shall not exceed 185 lb per certified net

published horsepower of the engine at the manufacturer's recommended maximum governed rpm.

99. SCHOOL BUS WEIGHT LIMITS - 13 CCR 1276. The following section is quoted from 13 CCR:

1276. Weights imposed upon the axles of school buses shall be limited as follows:

(a) One Axle. The gross weight on any one axle shall not exceed the rated capacity of the axle as certified to the department by the manufacturer of the chassis, or as indicated on the permanent data plate or labels required by Section 1272 of this title.

(b) Rear Axle. A school bus constructed after January 1, 1950, shall have no more than 75 percent of the gross vehicle weight on the rear axle, measured at the ground.

100. EQUIPMENT FOR TRANSPORTING WHEELCHAIRS - 13 CCR 1269.1The following section is quoted from 13 CCR:

1269. Equipment installed after January 1, 1980, on any bus, except a school bus, for transporting handicapped persons in wheelchairs shall meet the following requirements:

(a) Wheelchair Lift—Wheelchair lifts installed on such buses shall comply with Subchapter 4, Article 15 of this title, commencing with Section 1090 and shall be installed as follows:

(1) Gaps—On a bus in use, gaps between the platform and the bus in areas over which a wheelchair can roll shall not be greater than 15 mm (0.60 inch) horizontally or greater than 6 mm (0.24 inch) vertically.

(2) Effect on Gross Vehicle Weight—Installation of a wheelchair lift shall not cause the manufacturer's gross vehicle weight rating, gross axle weight rating, or tire rating to be exceeded.

(3) Padding—Except in locations within 8 cm (3.1 inches) of the bus floor, all readily accessible exposed edges or other hazardous protrusions on parts of lifts assemblies located in the passenger compartment or parts of the bus associated with the operation of the lift shall be padded with energy absorbing material to minimize injury in normal use and in case of accident. Padding is not required on buses on which each passenger seating position is equipped with passenger restraint system, which complies with FMVSS 208.S7, published in Title 49, Code of Federal Regulations, Part 571, October 1, 1995. On buses where padding is not installed, operators shall ensure that each passenger transported is properly secured by the restraint system at all times when the bus is in motion.

(4) Control Location—The controls for deploying, lowering, raising, and stowing the lift and moving the barrier shall be at a location where the bus driver or lift attendant has a full view, unobstructed by passengers, of the lift platform, its entrance and exit, and the wheelchair passenger, either directly or with partial assistance of mirrors. Lifts entirely to the rear of the driver's seat shall not be operable from the driver's seat but shall have an override control at the driver's position that can be set to prevent the lift from being operated by the other controls (except for emergency manual operation upon power failure).

(5) Control Interlock.

(A) Except as provided in subsection (B) or (C), wheelchair lift controls shall be interlocked with the parking brakes, the front or rear service brakes, and with the accelerator or transmission so the bus cannot be moved when the lift is not stowed and so the lift cannot be deployed unless the interlock is engaged. An accelerator or transmission interlock is not required for buses in which the engine must be turned off to operate the wheelchair lift controls.

(B) Buses manufactured prior to January 1, 1983, using hydraulic fluid pressure at the wheels for applying the service brakes, shall have the wheelchair lift controls interlocked with the parking brakes or the front or rear service brakes, so the lift cannot be deployed unless the interlock is engaged.

(C) As an alternative to the requirements in (A), on buses equipped with hydraulic brakes, an interlock system which complies with the American With Disabilities Act (ADA) requirements in title 49, Code of Federal Regulations, Section 38.23(b)(2), as published October 1, 1995, will be deemed to comply with the interlock requirements of this section subject to the provisions of 1., 2., 3., and 4 below.

1. The driver must set the vehicle’s parking brake before activating the lift control(s).

2. The bus must be equipped with an electrical warning device, clearly audible or visible from the driver’s seating position, which is activated at all time when the lift is not stowed and the ignition or run switch is in the “on” or “run” position.

3. If a transmission interlock is utilized, the transmission must be interlocked in the “Park” position.

4. A door interlock will satisfy the requirements only if the door is also interlocked with the vehicle’s brakes or transmission in a manner that meets the performance criteria set forth in (A), above.

(6) Certification—When the bus manufacturer or installer uses controls not supplied by the lift manufacturer or modifies the certified lift, the modifications shall comply with the wheelchair lift regulations, and the bus manufacturer or the installer shall so certify. The wheelchair lift shall be installed so the lift manufacturer's certification label, and the bus manufacturer's or installer's certification label, when appropriate, is readily visible and readable. The label(s) shall be maintained in good condition.

(b) Placement, Attachment and Alteration—The placement of the wheelchair lift, including any modification of the bus body or chassis, and modification of the lift or its controls, and the method of attachment shall be in accordance with the bus or lift manufacturer's recommendations and shall not diminish the structural integrity of the bus nor cause a hazardous imbalance of the bus. No part of the assembly when installed and stowed shall extend laterally beyond the normal side contour of the bus nor vertically below the lowest part of the rim of the wheel closest to the lift.

(c) Illumination—During darkness, the outboard end of a wheelchair lift in the down position shall have an illumination of at least 30 lux (2.8 feet-cd) measured on the platform surface.

(d) Securement of Wheelchairs—A device or devices shall be provided to secure wheelchairs during transportation to keep them restrained during normal movement of the bus as in starting, stopping and turning.

(e) Installation, Maintenance, and Operating Instructions—Wheelchair lift installation instructions and inspection and maintenance schedules and procedures shall be available to departmental employees in the location where the bus is garaged or maintained. Lift operating instructions shall be carried in every bus equipped with a wheelchair lift.

(f) Wheelchair Securement—GPPVs used to transport wheelchair passengers shall be equipped with securement devices conforming to the requirements in Section 1293(f).

(Register 96, No. 8)

101. WHEELCHAIR SCHOOL BUSES - 13 CCR 1293 The following section is quoted from 13 CCR:

1293. Wheelchair School Buses.

Provisions of this section shall apply to all school buses transporting pupils in wheelchairs.

(a) Construction of Body - Basic Provisions. Notwithstanding other provisions of this subchapter, a school bus body that is constructed, altered, or modified for the purpose of installing and operating equipment approved for loading, unloading, and transporting physically handicapped pupils and pupils in wheelchairs shall comply with this section and Section 1231. This requirement applies only to those portions of a school bus used to transport pupils in wheelchairs. Pupils not seated in wheelchairs shall be provided aisles, passageways, and exits that conform to all other provisions of law.

(b) Inspection. Each school bus that has been certified pursuant to Vehicle Code Section 2807, and is subsequently modified to conform to the provisions of this section, shall not transport pupils until all changes have
been inspected and approved by an authorized employee of the department. The vehicle owner shall provide a wheelchair to be used for testing the performance of vehicle equipment.

(c) Entrance Doors. Entrance doors used by pupils in wheelchairs shall be installed and maintained as follows:

(1) Type 1 school buses equipped with entrance doors that conform with Section 1281 of this subchapter may also be equipped with an additional entrance door which conforms to the provisions of this section. Each door shall be installed by the body manufacturer or with his written approval and statement, or the written statement of an approved independent engineering testing firm, that the installation of the door will not adversely affect the structural integrity of the vehicle.

(2) All such doors shall afford easy manual operation from inside or outside the vehicle in case of emergency and shall be protected from accidental opening, except that a means of opening the door from the inside is not required on doors with wheelchair loading devices obstructing the passageway.

(3) Instructions for the manual operation of the door and wheelchair loading device from outside the vehicle shall be displayed in clear view on the exterior of the vehicle at the exit.

(4) The door shall provide an opening not less than 24 inches wide. There shall be a soft head cushion at least 1/2 inch thick on the inside of the bus at the lower edge of the top of the door opening.

(d) Wheelchair Emergency Exits. School buses transporting pupils in wheelchairs shall have at least two floor-level doors. One door shall be used for the regular loading and unloading of wheelchairs as described in subsection (c). The additional floor-level door shall be an emergency door for the evacuation of pupils in wheelchairs. The additional door shall be equipped and installed at one of the locations specified in Section 1282 for emergency exits. The door shall provide an unobstructed opening not less than 24 inches wide. If a pupil's physical condition prevents that pupil from being readily evacuated through a door 24 inches wide, the door shall be as wide as necessary to permit rapid evacuation of that pupil during an emergency. Type 1 school buses transporting pupils in both wheelchairs and seats shall comply with the requirements of 1282 and 1284 of this subchapter.

(1) Alternate Emergency Exit. Type 2 school buses transporting pupils in wheelchairs and regularly seated pupils may meet the requirement for a left side emergency exit with two emergency windows on the left side providing:

(A) The required rear emergency door is inoperable from the interior due to a retracted wheelchair loading device.

(B) The vehicle is equipped with a right side floor-level emergency door located to the rear of the driver's seat.

(C) The alternate exit consists of not more than two windows each having a minimum opening dimension of 12 inches and a combined total area of at least 564 inches. Such exits need be identified and operable only from the bus interior.

(2) Aisles. Aisles on school buses transporting wheelchairs shall be provided as follows:

(A) An emergency passageway with a width of not less than 9 inches shall provide access to each wheelchair station from both the door used to load and unload the wheelchairs and to the floor level emergency exit door required by this section. A wheel well will not be considered an obstruction for the purposes of this subsection.

(B) Notwithstanding subsection (A), an aisle shall be provided as wide as necessary to effect a rapid evacuation of any wheelchair containing a pupil during an emergency and shall provide access to each wheelchair from both the door used to load and unload the wheelchairs and to the floor level emergency exit door required by this section. An aisle is not considered obstructed if the only obstruction is another wheelchair that can be readily removed.

(e) Wheelchair Loading Devices. Loading devices for the ingress and egress of pupils in wheelchairs shall be installed, maintained, and operated as follows:

(1) Any installation of a wheelchair loading device that requires modification of the vehicle chassis shall be performed by the chassis manufacturer or with the manufacturer's written approval and statement
that the chassis modification will not adversely affect the structural integrity of the vehicle.

(2) No loading device shall be constructed or operated in a manner that requires the driver to leave a pupil unattended on the loading device outside the passenger compartment, nor shall any driver permit a pupil to be unattended on a loading device outside the passenger compartment.

(3) Each hoist or elevator-type loading device shall be constructed with a positive method of preventing an unbraked wheelchair from rolling off during the lifting operation.

(4) Any loading device stored inside the vehicle shall be secured to the vehicle in a manner that will prevent hazardous movement during normal operation or in the event of an emergency stop, traffic accident, or vehicle overturn.

(5) Any loading device stored inside the vehicle shall be equipped with padding capable of minimizing injury-producing impact forces, and all exposed edges or other hazardous protrusions shall be padded to within 3 inches of the bus floor.

(6) The travel surface of all loading devices shall be covered with nonskid material.

(f) Securement of Pupils and Wheelchairs. Passengers shall be secured to wheelchairs by a restraining belt specified in subsection (g) while being loaded, unloaded, and transported. Wheelchairs shall be secured as follows:

(1) Wheelchairs shall be secured with fasteners of sufficient strength to prevent the chairs from rotating, prevent the chair wheels from leaving the floor in case of sudden movement, or support the chairs in the event the vehicle is overturned.

(2) Fasteners shall contact the wheelchair on at least three points and shall be spaced to provide the most effective securement. No fastener shall project more than 1 1/2 inches above the floor in the area between the wheel wells of the vehicle.

(3) Fasteners shall consist of either two webbed belts described in subsection (A) or two all-metal devices described in subsection (B), or one each of such devices, installed in conformance with this subsection.

(A) Webbed safety belts shall meet or exceed federal specifications for Type 2 pelvic restraint seat belts or be certified by the manufacturer to meet or exceed assembly strengths of 5,000 lb in loop fashion or 2,500 lb on each anchorage leg. Certification may be the manufacturer's specifications listed in catalogs or publications. All new construction of webbed fasteners and repairs to webbing shall conform with standards established by the manufacturer of the webbing. Webbed belts attached directly to the vehicle and securement track used for webbed fastener attachments shall be secured to the vehicle at not less than two separate points with bolts, nuts, and lock washers or self-locking nuts. Bolts used shall provide holding strength equal to or greater than that of two bolts 3/8 inch in diameter and of National Fine Thread SAE grade 5. All fastening of webbing and securement tracks shall be in accordance with the manufacturer's specifications provided that no standard established herein may be violated. Where mounting bolts do not pierce the vehicle frame, subframe, body posts, or equivalent metal structure, a reinforcement plate or washer not less than 1/16 inch in thickness and 2 1/2 inches in diameter is required. Smaller diameter washers may be used to install wheelchair securement track provided a minimum of four fasteners and four washers are used for each track installation. These washers shall not be less than 1 1/4 inches in diameter, not less than 1/16 inch in thickness, and have an appropriate inside diameter. In no event shall interior paneling constitute anchorage for a point of securement. When not in use, webbed belts shall be removed or retracted.

(B) All-metal fasteners shall be secured to the vehicle with bolt nuts and lock washers or self-locking nuts of National Fine Thread SAE grade 5 or equivalent. Such devices shall have two points of securement requiring bolts 3/8 inch in diameter or equivalent, or one point of securement requiring a bolt of 1/2 inch in diameter or equivalent. Where mounting bolts do not pierce the vehicle frame, subframe, body post, or equivalent metal structure, a reinforcement plate or washer not less than 1/16 inch in thickness x 2 1/2 inches in diameter is required. In no event shall interior paneling constitute anchorage for a point of securement.

(g) Equipment of Wheelchairs. Wheelchairs shall be equipped as follows:

(1) Brakes and Restraining Belt. Wheelchairs shall be equipped with brakes and a restraining belt properly maintained by the owner of the chair. Electric wheelchairs transported on school buses shall be capable of being locked in gear when placed in a school bus or shall have an independent braking system capable of holding the wheelchair in place.

(2) Batteries. Batteries used to propel electric wheelchairs transported on school buses shall be both leak resistant and spill resistant or shall be placed in a leak resistant container. Batteries shall be secured to the wheelchair frame in such a manner as to prevent separation in the event of an accident.

(Register 86, No. 16)

102. WINDSHIELD WIPERS - 26706 VC The following section is quoted from the VC:

26706. (a) Every motor vehicle, except motorcycles, equipped with a windshield shall also be equipped with a self-operating windshield wiper.

(b) Every new motor vehicle first registered after December 31, 1949, except motorcycles, shall be equipped with two such windshield wipers, one mounted on the right half and one on the left half of the windshield, except that any motor vehicle may be equipped with a single wiper so long as it meets the wiped area requirements in Federal Motor Vehicle Safety Standards Governing Windshield Wiping and Washing Systems.

(c) This section does not apply to snow removal equipment equipped with adequate manually operated windshield wipers.

(Ch. 196, Stats. 1978. Effective January 1, 1979.)

103. CONDITION AND USE OF WINDSHIELD WIPERS - 26707 VC. The following section is quoted from the VC:

26707. Windshield wipers required by this code shall be maintained in good operating condition and shall provide clear vision through the windshield for the driver. Wipers shall be operated under conditions of fog, snow, or rain and shall be capable of effectively clearing the windshield under all ordinary storm or load conditions while the vehicle is in operation.

104. WIRING - 13 CCR 1249. The following section is quoted from 13 CCR:

1249. Wiring and fuses on vehicles shall be as follows:

(a) Specifications. Wiring for circuits shall be constructed and installed to conform with mechanical and electrical requirements not less than those recommended for automobile wiring in the 1952 or any later edition of the SAE Handbook. Required lamps shall be connected to the source of power with stranded wire. This shall not prohibit use of the frame or other metal parts of a motor vehicle as a ground-return system, provided there is adequate electrical grounding between towing and towed vehicles.

(b) Wiring Protection. Wires shall be grouped together and protected either by nonmetallic tape, braid, or other covering capable of withstanding severe abrasion or a metallic sheath or tube. Wiring shall be properly supported and located so as to avoid becoming charred, overheated, or enmeshed in moving parts. Insofar as is practical, wiring shall not be adjacent to any part of the fuel system. Unless the wiring is metal covered, the edges of all holes in metal through which the wiring passes shall be rolled or bushed with a grommet of rubber or other suitable material.

(c) Wire Size and Connectors. Wires shall be of sufficient size to eliminate excessive voltage drop and to prevent overheating. All joints shall be soldered or fastened both mechanically and electrically with equally effective connectors and shall be insulated. Voltage at the bulb sockets when lamps are burning shall be at least 85 percent of the design voltage of the bulb with the engine running.

(d) Detachable Connections. The electrical wiring of detachable connections between towing and towed vehicles shall be contained in a cable, cables, or other substantially constructed protective device, and shall be mechanically and electrically adequate and free of short or open circuits. Suitable provisions shall be made for the prevention of an incorrect connection or an accidental disconnection. Any detachable connection made by twisting wires together from the towed and towing units is prohibited. Wires or cables shall have sufficient slack to accommodate all normal motion of the parts to which they are attached without damage to the connection.

(e) Spare Fuses. Each combination of vehicles or each motor vehicle if operated singly shall be equipped with at least one spare fuse or other overload protective device, if the devices used are not of reset type, for each kind and size used. In driveaway-towaway operations, spares located on any one of the vehicles will be deemed adequate.

(Register 96, No. 25)

105. SCHOOL BUS WIRING - 13 CCR 1250. The following section is quoted from 13 CCR:

1250. Additional requirements for school bus wiring are as follows:

(a) All school buses shall be equipped with spare fuses of each size used.

(b) All interior wiring for Type 1 school buses constructed after January 1, 1953, and Type 2 school buses constructed on and after July 1, 1970, shall be concealed, and all exposed wiring shall be protected with a waterproof insulation.

(c) The wiring of each Type 1 school bus constructed after January 1, 1953, shall be arranged in at least ten circuits: (1) starting, ignition, (3) headlamps, taillamps and dash lamps, (4) stop lamps, (5) flashing red/amber lamps lamps, (6) turn signal lamps, (7) clearance lamps and/or side-marker lamps and stepwell lamps, (8) interior lamps, (9) heaters, defrosters, etc., and (10) horn. Each circuit except ignition circuits shall be protected by a separate fuse or circuit breaker with a rating no greater than the safe capacity of the circuit. Fuses, circuit breakers, flashers, pilot lamps, and switches shall be mounted in accessible locations. Head lamps and tail lamps shall be illuminated by a common switch.

(d) Ignition circuits on all school buses manufactured after July 1, 1980, shall incorporate a key-type switch that will stop the engine when the switch is turned to the off position.

(Register 95, No. 36