Ohio Administrative Code

Rule 4501-5-02 School bus construction standards.

Effective: July 1, 2025

[Comment: For dates and availability of material incorporated by reference in this rule, see paragraph (S) of rule 4501-5-01 of the Administrative Code.]

These standards apply to any school bus used to transport school children to and from school and/or school related activities and events.

(A) Access steps shall be installed (except "Type A" buses). Access steps include:

(1) Steps installed on each side of the school bus to allow access to windshield for cleaning.

(2) Grab handles securely mounted in a suitable position to assist in using the steps.

(3) In lieu of steps installed on each side, the steps are permitted in or on the front bumper if the windshield can be accessible for cleaning from that position.

(B) Air compressor for accessories.

An accessory compressor that supplies air to accessories only shall be sized appropriately and are not to be connected to the braking system in any way.

(C) Aisles shall meet minimum measurements. Minimum aisle measurements include:

(1) Twelve inches at floor level.

(2) Twelve inches between seats at seat level.

(3) The aisle is not to be less than twelve inches wide between any two objects from the service doors to the aisle in the passenger area from floor to ceiling.

(4) Hold-down fastening devices used on inside engine cover are to designed to prevent hooking or catching on shoes or clothing.

(D) Axles and suspensions shall meet minimum standards. Minimum axle and suspension standards include:

(1) The front and rear axles, including suspension assemblies, and all frame-to-ground components, are to have a gross axle weight rating when measured at the ground at least equal to that portion of the load as would be imposed by the chassis manufacturer's maximum gross vehicle weight rating.

(2) Heavy-duty, double-acting shock absorbers compatible with the manufacturer's rated axle capacity are to be installed on the front and rear of the school bus chassis.

(3) Suspension assemblies as specified are to maintain/control stability of school bus under all conditions.

(E) Battery.

(1) "Type B, C and D" buses:

(a) A battery or batteries of at least eight hundred cold cranking amperes for a gasoline powered engine.

(b) A battery or batteries of at least one thousand two hundred fifty cold cranking amperes for a diesel powered engine.

(2) "Type A I and A II" buses:

(a) A battery or batteries of at least six hundred cold cranking amperes for a gasoline powered engine.

(b) A battery or batteries of at least one thousand cold cranking amperes for a diesel powered engine.

(3) A battery or batteries of at least one thousand two hundred cold cranking amperes if equipped with a lift.

(4) One-piece, non-spliced battery cables that conform to SAE standard J541 with respect to electrical resistance shall be provided by the chassis manufacturer.

(5) "Type A I and A II" buses may have the battery/batteries located at the manufacturer's standard. Batteries for "Types B, C, and D" buses shall be mounted in the body skirt by the body manufacturer. Rear engine buses may have batteries mounted in engine compartment.

(6) A drawer-type pull-out tray shall be installed whenever the battery/batteries are accessed through the body fender skirt. The batteries shall be enclosed by a compartment constructed of mill-applied zinc coated steel, or other acid resistant material, provided with drain ports, hold-down carrier mounted so as to avoid blocking filler ports, and latching device to prevent accidental opening. Drawer assembly shall be covered with acid-resistant paint or material. Battery tray shall be equipped with a positive locking device to keep tray from sliding completely out to prevent battery from being dropped.

(F) Body construction shall meet minimum standards. Minimum body construction standards include:

(1) All construction components (except door handles, grab handles, interior decorative parts, other interior plated parts, and components heavier than twelve-gauge), are to be of prime commercial quality mill-applied zinc coated steel, other anti-corrosive coating or composite materials. Components are to meet or exceed current strength and durability and all applicable "Federal Motor Vehicle Safety Standards." The zinc plating are to be one hundred twenty grams per meter square minimum coating weight (G60) or equivalent applied by either hot dipping or electroplating. All such construction materials are to be fire resistant.

(2) All metal surfaces that will be painted are to be chemically cleaned, etched, zinc-phosphate coated, and zinc-chromate or epoxy-primed, or conditioned by equivalent process.

(3) In providing for the requirements in paragraphs (F)(1) and (F)(2) of this rule, particular attention are to be given to lapped surfaces, welded connections of structural members, cut edges, punched or drilled holed areas in sheet metal, closed or box sections, unvented or undrained areas, and surfaces subject to abrasion during vehicle operation.

(4) Upon final assembly of the bus body and after mounting body upon chassis, the total unit strength of the school bus are to meet or exceed all strength criteria as established by FMVSS 571.220 and FMVSS 571.221.

(5) Body construction is to provide a dustproof and watertight unit.

(6) Exterior body panels are to meet or exceed FMVSS 571.221.

(7) Floor.

(a) The floor is not to beless than fourteen-gauge mill, corrosive resistant coated steel or composite materials. If zinc plated, the plating is to be one hundred twenty grams per meter square minimum coating weight (grade sixty) or equivalent applied by either hot dipping or electroplating.

(b) The floor may be flat.

(c) "Type A" buses have an additional step from the step well.

(d) A fuel access plate is to be installed for easy access to fuel gauge mechanism. ("Type A" buses excluded)

(8) Rub rails.

(a) Manufacturers are to install one rub rail at approximately seat level, except for the opening for engine compartment side door in a rear engine bus. This rail is to extend from the main vertical post behind the service door to the forward-most vertical post on the left side of the body, including left side emergency door. (Rear emergency door exempted)

(b) A second rub rail is to be installed at approximately the floor line and cover the same longitudinal area as the seat level rail, except at wheel housings, and needs only to extend to the radii of right and left rear corners.

(c) A third rub rail may be installed on the lower edge of the body skirt.

(d) All rub rails are to be attached at each body post and all other upright structural members.

(e) Each rub rail is to be four inches or more in width in its finished form and be constructed of sixteen gauge metal or other material of equivalent strength suitable to help protect body side panels from damage.

(f) All rub rails are to be mounted outside of body panels.

(g) Additional external rub rails are permissible if they form an integral part of the body construction and meet the fastening requirements.

(9) Fold out steps may be installed at the regular service entrance.

(a) The fold out step will provide a step level that is six inches or less to ground level.

(b) The fold out step may be power activated or manually operated.

(10) If the ceiling is so constructed to contain lap joints, the forward panel is to be lapped by the rear panel and the exposed edges are to be beaded, hemmed, flanged or otherwise treated to minimize sharp edges.

(11) All body components are to be designed and constructed so as to avoid the entrapment of moisture.

(G) Brakes.

All braking systems and components shall meet or exceed the minimum requirements specified in

applicable Federal Motor Vehicle Safety Standards 571.105 or 571.121 and the following:

(1) Air or hydraulic brake systems are acceptable. If brakes are air actuated, they are to be of the cam drum type on front and rear wheels, disc front and drum rear or four-wheel disc. Brakes that are hydraulically actuated, are to be disc front and drum rear or four-wheel disc.

(2) All air brake systems are to have both visual and audible warning systems that activate as required by FMVSS 571.121. Hydraulic brake systems that utilize hydraulic power assist are to have both visual and audible warning systems that activate as required by FMVSS 571.105.

(3) For air brake systems, an air pressure gauge are to be provided in the instrument panel capable of complying with CDL pre-trip inspection requirements.

(4) Air compressors that supply air to brakes must have sufficient rated capacity that meets or exceeds FMVSS 571.121 (minimum of thirteen cubic feet per minute) and are to be pressure oil fed. Clean air to all compressors is to be supplied and filtered through engine air cleaner.

(5) All air supplied from the air tanks is to be taken at or above the center line of the air tank to avoid contaminates entering the braking system or air operated accessories.

(6) All school buses equipped with air brakes are to require a desiccant type air dryer with a renewable or replaceable desiccant cartridge (filter). Dryer is to incorporate an automatic purge and drain cycle with heating element.

(H) Bumpers shall meet minimum standards. Bumper minimum standards include:

(1) Front bumper for all buses having a GVWR of twenty-one thousand five hundred pounds or less is to be manufacturers standard. ("Type A" buses)

(2) Front bumper for all buses having a GVWR greater than twenty-one thousand five hundred pounds rating:

(a) Bumper is to be at least three-sixteenths of an inch thick pressed steel channel, one-piece

construction, with a minimum width of eight inches after forming. Materials other than pressed steel may be used if equivalent in strength and durability of pressed steel.

(b) Bumper is to be contoured to offer maximum protection of fender lines without permitting snagging or hooking.

(c) Bumper is to be attached to the frame and extended forward of grille, head lamps, fender, or hood sections and extend the entire width of the bus to provide maximum protection.

(d) The bumper is to be of sufficient strength to permit lifting the bus with a bumper type lift for servicing

(3) Rear bumper.

(a) Bumper is to be of sufficient strength to permit lifting the bus with a bumper type lift for servicing and is to be one piece, heavy-duty type of pressed steel channel, at least three-sixteenths inch of thickness. Materials other than pressed steel may be used if equivalent in strength and durability of pressed steel.

(b) Bumper is to be a minimum of eight inches in height after forming.

(c) Bumper is to be wrapped around back corners of bus and extend forward at least twelve inches, measured from rear-most point of body at floor line. Rear bumper is to also protect rear corners of body by extending beyond the body exterior side panels. The bend of the rear bumper at the rear body corners is to be sufficient to allow the entire contour of the forward end of the rear bumper to extend no more than one inch beyond the body line of the exterior side panels.

(d) Bumper is to be fastened to chassis frame side rails in such a manner as to develop full strength of bumper section from rear or side impact. Bracing materials is to have an impact ratio comparable to that of bumper material and be fastened at the ends and radii of the bumper, attached to the side of the frame only and not to the body at any point.

(e) Bumper is to extend beyond rear-most part of body surface at least one inch, measured at floor

line.

(f) No spaces, projections, or cutouts that will permit a handhold are permitted.

(g) Front ends of the bumper is to be enclosed by endcaps or other protective metal or have the ends rounded or tucked in and be free from sharp edges or projections likely to cause injury or snagging.

(h) A rubber or metal strip is to be installed to close any opening exceeding one-fourth inch between rear bumper and body metal.

(i) The vertical distance between the bottom of the bumper and the ground is not to exceed thirty inches when the vehicle is empty.

(I) Bus must meet color standards. Bus color standards include:

(1) Bumpers are to be black.

(2) Fender and body are to be painted national school bus yellow.

(3) Hood may be painted non-reflective national school bus yellow or flat black (except "Type A").

(4) Frame is to be painted black.

(5) Grille may be painted national school bus yellow, black or chrome or anodized aluminum in finish. Rear engine bus grille area(s) are to be national school bus yellow.

(6) Steel wheels are to be black and/or gray. Aluminum wheels are permitted.

(7) All lettering and numbering on exterior is to be black.

(8) Background area and optional hoods for warning lights are to be black.

(9) Rub rails are to be black.

(10) Service door may be black. Note:

(a) Special service doors are not to be black.

(b) Left side driver's door on "Type A and A II" buses are not to be black.

(J) Cooling system shall meet minimum standards. Cooling system minimum standards include:

(1) Cooling system is to be manufacturer's standard.

(2) Cooling fan(s) may be variable speed.

(3) The cooling system is to have a means of checking the coolant without having to remove the radiator cap.

(K) Defroster system shall meet minimum standards. Defroster minimum standards include:

(1) Defroster system is to meet or exceed SAE standard J381 performance requirements without use of auxiliary fan.

(2) The defroster system is to be of sufficient capacity to keep windshield area, left front side driver's window, and service door glass area free of condensation or ice under all possible combinations of pupil load and climatic conditions.

(3) Defroster system is to be capable of providing at least sixty per cent fresh air.

(4) Two adjustable six-inch auxiliary fans shielded with small mesh metal or polypropylene guards are to be installed. Only one adjustable six-inch auxiliary fan is required for "Type A" buses.

(a) Each auxiliary fan(s) is/are to be controlled individually by a multi-speed switch.

(b) The switch is to be located within easy reach of the driver while seated.

(L) Drive shaft and differential shall meet minimum standards. Drive shaft and differential minimum standards include:

(1) Drive shafts and universal joints are to be original equipment manufacturer standard.

(2) Metal drive shaft guards are required for each drive shaft section extending lengthwise under the floor of the passenger compartment to prevent projecting through the floor or dropping to the ground if broken. The drive shaft guard is to be at the end of the shaft which is provided with a sliding connection (spline or other such device) to prevent whipping of the shaft in event of failure thereof or any of its component parts.

(3) The rear axle ratio is to be compatible with engine, transmission and tire size.

(M) Driver's seat shall meet minimum standards. Minimum driver's seat standards include:

(1) Minimum distance between steering wheel and back rest of driver's seat is to be eleven inches. Driver's seat is to have vertical adjustment of not less than four inches and horizontal adjustment of not less than four inches.

(2) The driver's seat and driver's area are to have a restraining barrier meeting FMVSS 571.222 positioned immediately behind the driver's area.

(3) The driver's seat upholstery is to meet FMVSS 571.302 (Flammability of interior materials).

(4) A "Type II" seat belt is required for the driver. Belts are to be equipped with protective boots of sufficient quality and strength to keep it retracted and off the floor and within easy reach of the driver. Belt is to be adjustable on one side only and keep the driver from sliding sideways under the belt.

(5) Seating options allowed:

(a) Adjustable air driver's seat;

(b) Internal heating provided by manufacturer; and

(c) Driver alert technology.

(N) Electrical system.

(1) Alternator.

(a) Minimum of a one hundred forty five ampere alternator on all "Type A" buses.

(b) Minimum of a two hundred ampere alternator on all other buses.

(2) All wiring is to conform to current society of automotive engineers standards.

(O) Emergency equipment shall be on the bus and mounted in an easily accessible location. Minimum emergency equipment includes:

(1) Bus is to be equipped with at least one dry-chemical-type fire extinguisher of at least five-pound capacity, 3A - 40 B.C. rating, located outside of the passenger area, mounted in a quick release-type bracket and easily accessible by the driver. The extinguisher is to be equipped with a dial-type graduated gauge which indicates loss of pressure. Fire extinguisher is to be of the type that permits the dry-chemical base to be refilled by ordinary procedures.

(2) First aid kits are to be dustproof, plainly labeled, mounted in a location easily accessible to the driver, located outside of the passenger area, and securely mounted in a metal or plastic container.

(3) A twenty-four unit kit is required for all buses. Note: The first aid kit may be installed at time of manufacture by the manufacturer, installed by dealer, or installed by the owner/operator of the school bus.

(4) Three triangle reflectors with weighted stands are to be properly encased for easy storage. The triangle reflectors are to meet FMVSS 571.125. The storage container is to be mounted to prevent

movement and be mounted within easy access of the driver.

(5) One body fluid kit is required. The kit is to contain the following items:

(a) Effective chlorine absorbent deodorant.

(b) Effective germicidal detergent. If detergent contains alcohol, no more than one fluid ounce is permitted in a single-use disposable container.

(c) Single-use, disposable bag.

(d) Single-use, disposable scraper.

(e) Minimum of one pair of disposable, single-use, effective protective gloves.

(f) Effective hand rinse. If hand rinse contains alcohol, no more than one-half fluid ounce is permitted in a single-use disposable container.

(g) The body fluid clean-up kit is to be easily accessible to the driver in the area of the first aid kit and be securely mounted in a metal or plastic container.

(h) If alcohol is included, the body fluid clean-up kit is not to contain more than one and one-half fluid ounces of alcohol.

Note: The body fluid kit may be installed at time of manufacture, installed by dealer or the owner/operator of the school bus.

(P) Emergency exits shall meet minimum standards. Emergency exit minimum standards include:

Any installed emergency exit is to comply with the design and performance requirements of FMVSS 571.217 applicable to that type of exit, regardless of whether or not that exit is required by FMVSS 571.217. Additional exits are allowed in addition to the minimum required by this rule.

(1) Emergency doors.

(a) Emergency doors are to meet FMVSS 571.217. An interior handle is to be provided to pull the door shut from the inside which may be used as a protection against accidental release.

(b) When the interior handle is not in the position that causes the emergency door to be closed, a continuous warning sound is to be audible at the driver's seating position and in the vicinity of the emergency door and the dome lights (driver's dome light excluded) are to illuminate with the ignition switch in any position.

(c) Exterior door handle is to be of permanent hitch-proof design and mounted with enough clearance to permit opening without touching door surface.

(d) All emergency door openings are to be completely weather-stripped.

(e) There is to be no step-type mechanism in the use of the emergency door.

(f) There is to be a head bumper pad installed on the inside at the top of the emergency exit frame. This pad is to be approximately four inches in width and extend across the entire top of the emergency exit opening and meet FMVSS 571.302 for flammability standards of interior materials.

(2) Rear emergency door.

(a) On all buses, except rear-engine design, an emergency door is to be located in the rear of the school bus body and centered with respect to the body.

(b) Emergency door is to have a minimum horizontal opening of twenty-four inches and a minimum vertical opening of forty-eight inches measured from floor level.

(c) Rear emergency door is to be hinged on right side and open outward.

(d) The rear emergency door is to contain upper and lower glass panels. Glass in emergency door is to provide maximum area of visibility for safe operation of the school bus.

(e) The rear emergency door is to have a prop rod/lock out bar.

(3) Left side emergency door.

(a) On all rear-engine school buses, a left side emergency door is to be installed.

(b) If a door sill or heater line extends above the floor line, a ramp is to be provided covering the area over which a foot must pass when an individual exits through the door.

(c) The left side emergency door is to have a prop rod/lock out bar.

(4) Emergency side window exits.

(a) Emergency window is to display the words "emergency exit" at the top of or directly above, or at the bottom of the emergency window exit on both the inside and outside of the bus, in a color contrasting the background.

(b) Emergency windows, when not fully latched, is to activate a continuous warning sound that is to be audible in driver's compartment and activate all dome lights (driver's dome lights excluded). Warning sound and dome lights is to be operational with the ignition switch in any position.

(5) Emergency window, rear-engine buses.

(a) An emergency window is to be installed above the engine compartment.

(b) Window is to be hinged from top and provided with a device to ensure against accidental closing when open.

(c) Emergency window in rear is to be equipped with a latch on the inside, and also be equipped with a handle of hitch-proof design which will permit opening from the outside.

(d) Emergency window is to display the words "emergency exit" at the top of or directly above, or at

the bottom of the emergency window exit on both the inside and outside of the bus, in a color contrasting the background.

(e) Emergency window, when not fully latched, is to activate a continuous warning sound that is to be audible in the driver's compartment and all dome lights are to activate (driver dome lights excluded). Warning sound and dome lights will be operational with the ignition switch in any position.

(6) Emergency roof exits.

(a) A continuous warning sound that is to be audible in the driver's compartment and all dome lights are to activate when the hatch is opened in the escape position (driver dome lights excluded). Warning sound and dome lights are to be operational with ignition switch in any position.

(b) If a bus is not manufactured with a static vent, the emergency roof exit is to be a static-type with exhaust vent.

(7) Number of emergency roof exits required.

(a) One roof hatch is required for a bus with a manufacturer's rated shell capacity of one to forty-five.

(b) Two roof hatches are required for a bus with a manufacturer's rated shell capacity of forty-six and above.

(Q) Engine speed governor shall be installed on all buses. Setting shall comply with manufacturer's maximum recommended governed speed. A revolution per minute limiter in lieu of the engine speed governor is acceptable. Note: Recommended governed speed will reference maximum speed limits established in section 4511.21 of the Revised Code.

(R) Exhaust system shall meet minimum standards. Exhaust system minimum standards include:

(1) Exhaust pipe, muffler or a diesel particulate filter in lieu of the muffler, and tailpipe are to be

outside bus body and attached to chassis.

(2) The tailpipe and after-treatment system are to be constructed of a corrosion-resistant tubing material at least equal in strength and durability to sixteen-gauge steel tubing of equal diameter.

(3) The tailpipe may be flush with, or is not to extend more than two inches beyond, the perimeter of the body for side-exit pipe or the bumper for rear-exit pipe. The exhaust is to be designed such that exhaust gas will not be trapped under the body of the bus.

(4) The tailpipe is to exit to the left or right of the emergency exit door in the rear of the vehicle to the left side of the bus, in front of or behind the rear drive axle, or the tailpipe may extend through the bumper. The tailpipe is not to exit beneath any fuel filler location, emergency door, or lift door.

(5) The exhaust system is to be insulated in a manner to prevent any damage to any fuel system component.

(6) The design of the after-treatment systems is not to allow active (non-manual) regeneration of the particulate filter during the loading and unloading of passengers. Manual regeneration systems will be designed such that unintentional operation will not occur.

(7) Right side discharge exhaust systems are not permitted.

(S) For after treatment systems that require diesel exhaust fluid (DEF) An optional left side discharge exhaust system is permitted. If a left side discharge, the tailpipe shall be located at least three inches and not more than eighteen inches in front of the rear wheel opening and angled down at a forty-five degree angle six inches from the end of the pipe. The discharge shall extend to the edge of the body.

(1) The composition of the DEF must comply with ISO 22241-1.

(2) The DEF supply tank shall be sized to meet a minimum ratio of three diesel fills to one DEF fill.

(T) Fenders shall meet minimum standards. Minimum fender standards include:

(1) Total spread at outer edges of front fenders, measured at fender line, is to exceed total spread of front tires when front wheels are in straight ahead position.

(2) Front fenders are to be braced and free from any body attachment. Trailing edge of front fender is to extend to bottom of front body section. Fender extensions are acceptable.

(3) Fiberglass replacement fenders and cowl pieces are permitted.

(U) Floor covering shall meet minimum standards. Minimum floor cover requirements include:

(1) All floor covering is to have a calculated burn rate of .1 mm per minute or less using the test methods, procedures and formulas listed in FMVSS 571.302 and be permanently bonded to the floor and must not crack or lose its adhesive power when vehicle is subjected to sudden changes in temperature. Bonding or adhesive material is to be waterproof and recommended by the manufacturer of the floor covering material.

(2) Underseat areas are to have a fire-resistant floor covering, having a minimum overall thickness of one-eighth inch. The entire joint between the floor covering and the wall of the school bus body is to be covered with a fitted, rust-free metal or composite molding or reformed interior panel.

(3) Driver's compartment floor area is to be of the same quality material as the underseat floor covering. The driver's compartment floor covering is to be attached to the floor.

Exception - On "Type A" buses, the driver's compartment floor area is to be manufacturer's standard and be attached to the floor.

(4) Center aisle covering is to be fire-resistant, non-skid and wear-resistant. If ribbed, minimum thickness is to be one hundred eighty-seven thousandths inch measured from the top of the ribs.

(5) Metal, composite molding, bonding or non-metal welding is to cover all floor-covering joints.

(6) Molding around the wheel-well and floor covering is to be provided to seal floor covering with the wheel well.

(7) A fuel access plate is to be installed for easy access to fuel gauge mechanism and is to be installed above the regular floor covering when possible. The access plate is to not be undercoated. Panel is to be sealed to prevent any leakage or moisture. Diamond plate may be used as an access panel. ("Type A" buses and alternative fuel systems excluded)

(8) Floor covering on top step landing is to be one piece.

(9) A plywood floor is to be applied on top of the steel floor. Floor covering is to be applied on top of the plywood. Plywood is to be five-eighths inch five-ply type CD exterior grade. Plywood is to extend to fire-wall and under the driver's seat. Plywood is to be sanded and vacuumed before covering is applied. Waterproof sealing material is to be applied to seams in the sections of plywood floor. Plywood is to be four feet by eight feet sections, pieced only as necessary. Waterproof sealing applied on top of the plywood to hold the floor covering is considered as one method of sealing the seams in the plywood floor.

(10) Equivalent material applied to top of steel floor may be used in lieu of plywood, provided it has equal or greater insulation r-value, sound abatement, deterioration-resistant and moisture-resistant properties.

(11) If alternate materials are used in lieu of plywood, manufacturer must certify that FMVSS 571.222 and 571.302 are met.

(V) Frame shall meet minimum standards. Minimum frame standards include:

(1) Frame is to be designed to correspond with or exceed standard practice performance criteria for trucks of same general load specifications used for highway service.

(2) Chassis frame is to extend to rear edge of rear body cross member.

(3) Frame side members are to be one-piece construction with the following exceptions:

(a) Extension of these members are to be designed, furnished, and guaranteed by chassis or body

manufacturer. Installation is to be guaranteed by the company installing the extension. Extension of frame lengths are not to be for the purpose of extending wheel base.

(b) No holes are to be permitted in the chassis rails except those drilled at the chassis plant or authorized by the frame manufacturer.

(4) Welding to chassis rails is permitted only when guaranteed by the company making the modifications and authorized by the frame manufacturer. The Ohio state highway patrol is to be notified after the repair and authorized inspection have been completed and prior to the school bus being operated with students on board.

(W) Fuel fill opening- shall be in the body and be equipped with a hinged cover held closed by a spring or other conveniently operated device. The mechanism that holds this cover closed shall be sufficient to keep it closed under severe operating conditions. "Type B, C, and D" buses may be provided without a door only if a fuel bucket/spill containment is provided. Exception: On "Type A" buses, the fuel fill opening shall be manufacturer's standard.

(X) Fuel system-all fuel storage specifications shall meet minimum standards and conform to FMVSS 571.301 (fuel system integrity). Fuel system minimum standards include:

(1) Fuel tank is to have a minimum capacity of twenty-five gallons, for buses up to and including a shell capacity of fifty-nine passengers. School buses of sixty passengers and above are to have a minimum capacity of sixty gallons. It is to be filled and vented outside of the body. Construction will prevent the spillage or drainage of fuel on any part of the exhaust system.

(2) Fuel filter with replaceable element installed.

(3) In addition to the fuel filter, all diesel fueled engines are to have a water separator installed between fuel tank and the injector pumps. The fuel/water separator may be incorporated with the fuel filter but the fuel/water separator is not to serve as the fuel filter.

(4) Drain plug of at least one-fourth inch pipe thread located in center of the bottom of gas and diesel fuel tanks.

(Y) Glass.

(1) All glass shall be manufactured and maintained as follows:

Location	Glass type	Rating
Service door	Laminated	AS 1 or AS 2
Emergency door	Tempered or laminated	AS 2 or AS 3
Emergency window	Tempered or laminated	AS 2 or AS 3
Windshield	Laminated	AS 1
Driver's side glass	Laminated	AS 1 or AS 2
All other glass in passenger's area	Tempered or laminated	AS 2 or AS 3

Exception- On "Type A" buses the driver's door glass shall be manufacturer's standard.

(2) All other glass not noted in table shall meet FMVSS 571.205 glazing materials.

(Z) Heaters shall meet minimum standards. Minimum heater standards include:

(1) Heating systems are to provide evenly distributed heat throughout the bus body and provide defrosting for windshield, driver's left side window and service door.

(2) Buses are to be equipped with heaters capable of maintaining inside temperature of fifty degrees Fahrenheit using an ambient temperature of zero degrees Fahrenheit as measured per SAE standard J2233.

(3) Buses are to be equipped with a front heater.

(4) Heaters are to display the name plate rating in accordance with the standard code for testing and rating automotive bus hot water heater and ventilating equipment.

(5) All heaters are to be independently controlled by multi-speed switches.

(6) All hot water lines inside the driver's/passenger's area are to be enclosed.

(7) Heater cores and fans are to be completely encased, but designed to permit servicing heating assembly by removing all or part of the case.

(8) Heater hose installation in the engine compartment is to include two shut-off valves able to shut off coolant completely when necessary.

(a) One shut-off valve is to be mounted between the water pump inlet and heater hose connection.

(b) One shut-off valve is to be mounted between the engine block and the heater hose connection.

(9) There is to be a heater flow regulating valve installed for convenient operation when the driver is in a normal seated position.

(AA) "Type D" buses with an interior engine cover shall have a device or design to secure the engine cover when in the open position, or shall be fully removable.

"Type C" buses shall have a design for the hood that minimizes the risk of accidental closing.

(BB) Horns.

Buses shall be equipped with a horn(s) of standard make capable of producing complex sound in band of audio frequencies from two hundred fifty to two thousand hertz and having total sound level of one hundred to one hundred twenty decibels within these frequency limits when measured at fifty feet from the vehicle. Air horns are permitted.

(CC) Electronic stability control shall be equipped on:

(1) Air brake equipped school buses with a build date of August 1, 2019 or later.

(2) All school buses with a build date of August 1, 2020 or later.

(DD) Instruments and instrument panel shall meet minimum standards. Instruments and instrument panel minimum standards include:

(1) Chassis is to be equipped with the following instruments and gauges. Lights in lieu of gauges are not acceptable.

(a) Speedometer.

(b) Odometer which will show accrued mileage up to nine hundred ninety-nine thousand nine hundred ninety-nine.

(c) A voltmeter showing the battery voltage. The voltmeter is to be off when the ignition switch is in the off position.

(d) Oil pressure gauge.

(e) Engine temperature gauge.

(f) Fuel gauge.

(g) Air brake systems is to have independent gauges indicating air pressure in the primary and secondary air tanks.

(h) Buses may be equipped with a tachometer.

(i) A diesel exhaust fluid (DEF) gauge is required for diesel engines.

(2) All buses are to have a warning system consisting of a light and optional audible warning to notify driver of low engine oil pressure, low engine coolant level, and coolant overheating. System is not to automatically shut off engine, unless warning signals have been displayed to the driver and the engine has derated for a period of time.

(3) The visibility and illumination of the instruments is to comply with FMVSS 571.101.

(EE) Insulation shall meet minimum standards. Minimum insulation standards include:

(1) Bus body is to be fully insulated in the roof and all body panels to deaden sound, reduce vibrations and heat transfer.

(2) Fire resistant fiberglass insulation or equivalent material of at least one-inch thickness is to be added in the roof, in addition to the usual sprayed on material.

(FF) Interior.

(1) Interior of the school bus is to be free of all projections.

(2) All school buses are to have inner lining on ceiling and walls and are toinclude acoustical (perforated) headlining in the driver area.

(3) The interior sound level at the driver's seating position is not to exceed ninety decibels when measured in accordance with test procedures found in 49 CFR 393.94(C).

(4) Cameras and other monitoring devices may be installed inside the bus as long as they do not intrude into the head impact zone. For "Type C and D" buses, cameras may be installed in the ceiling as long as they are above the window ling. Cameras mounted on the sidewall cannot protrude more than three inches. All camera mounting is to meet FMVSS 571.222.

(5) Padded/foam covered panels may be installed on the interior walls to prevent head injuries by self-abusive pupils.

(a) The padded panels are to be constructed of the same materials used in the construction of the bus seats.

(b) The padded panel may cover the window.

(c) The padded panel is to be attached to the sidewall of the bus.

(d) The padded panels are not to obstruct any portion of an emergency window or exit.

(e) Materials used in the padded panel are to comply with FMVSS 571.302.

(GG) Inside body height shall be a minimum of seventy-two inches measured from floor to ceiling at any point on longitudinal center line from the beginning of the aisle of the passenger compartment to the end of the aisle.

For "Type A" buses, the inside body height shall be a minimum of sixty-eight inches measured from floor to ceiling at any point on longitudinal center line from the beginning of the aisle of the passenger compartment to the end of the aisle.

Inside height measurement does not apply to air conditioning equipment.

(HH) Lamps, signals and backing warning device shall meet minimum standards. Minimum lamp, signal and backing warning device standards include:

(1) All lamps herein listed and their installation are to conform to current standards and recommendations of the society of automotive engineers and meet FMVSS 571.108.

(2) Construction of components:

(a) Directional signal, stop light, taillight, marker light, clearance light, identification light, back up light and reflector lenses are to meet applicable society of automotive engineers standards.

(b) All exterior lamp sockets are to be zinc-plated or chromated steel, or other suitable non-corrosive materials such as plastic or stainless steel.

(c) Alternately flashing warning signal lamps, body-mounted directional signals and stop lamps are to be grounded.

(3) When the ignition switch is in the off position, the hazard warning, stop light, marker lights, headlamps, passenger dome lights and emergency exit audible warnings are to be operational.

(4) The service door step-well light is to automatically operate when the headlights are in operation and be activated by a switch controlled by the service door.

(5) High beams are to be controlled by a column mounted dimmer switch.

(6) A maximum of two fog lamps may be installed. Fog lamps are to be amber in color.

(7) Daytime running lamps are required.

(8) One white strobe light is to be installed on the roof of the bus. The strobe light is to cycle sixty to two-hundred forty flashes per minute. The roof strobe light is to be installed on the top of the bus toward the rear as close to the center of the bus as is practical.

(9) Interior dome lights.

(a) Passenger dome lights when activated are to adequately and uniformly illuminate aisleway to three to four foot candles.

(b) All dome lights are to be equipped with clear/white shatter-proof lenses.

(c) Passenger dome lights are to be controlled by switches in the driver's console. Passenger zones may be switched separately. Power is to be provided when the ignition switch is in the "On" or "Accessory" position and be on a protected circuit.

(d) A separate driver dome light is to be provided and controlled by a single switch in the driver's console.

(10) Directional signals.

(a) Side and rear directional signals are to be wired to operate properly with the front directional

signals.

(b) Manufacturer is to install required signal lamps to the directional signal control switch so all directional signal lamps are operative. The directional signal system is to be installed on an integral part of the hazard warning signal switch activated by an independent switch furnished.

(c) Direction signals, when illuminated, are to be amber in color and meet society of automotive engineers specifications.

(d) Rear directional signals are to have a minimum of thirty-eight square inches of illuminated surface each. The rear directional signals are to be identical in type, shape, size, and location.

(11) Backing warning devices.

(a) Two back up lights are required and are to be mounted on or below the belt line on the school bus body. Back up lights are to conform to FMVSS 571.108.

(b) All school buses are to be equipped with an audible electrical warning device, automatically actuated when the bus is in reverse gear. Device is to be one hundred seven decibels or more, meeting SAE standard J994. Device is to be installed in an area on or behind the rear axle. A variable volume sounding device ranging from eighty-seven to one hundred twelve decibels may be used, maintaining a minimum of five decibels above the ambient noise level.

(12) Stop/tail lights.

(a) Each bus is to have two combination stop/tail lamps as required in FMVSS 571.108. These two lamps are to be identical in type, shape, and size.

(b) In addition to the two stop/tail lamps required by FMVSS 571.108, each bus is to be equipped with two combination stop/tail lamps with a minimum illuminated surface area of thirty-eight square inches, emitting red light plainly visible from a distance of five hundred feet to the rear. These lamps are to be as high as practical but below the window line and spaced as far apart laterally as practicable, but not less than three feet. Measurements are to be taken from lamp centers. These

additional two lamps are to be identical in type, shape, and size.

(13) A white light is to be installed to illuminate the area on the body near the left lower brake/tail lamp to illuminate the state identification number. This light may be incorporated into the lower left brake/tail lamp.

This light may be incorporated into the lower left brake/tail lamp.

(14) All school bus body lamps and reflectors are to comply with FMVSS 571.108.

Reflectors are not to be combined with any other lamp or items of associated equipment. Exception-front amber reflectors may be incorporated into a front lamp.

(15) All marker, clearance and identity lamps are to conform to society of automotive engineers standards for the type of lamp. These lamps are to be activated by the chassis headlight switch.

(II) Alternately flashing warning signal lamps shall meet minimum standards. Minimum alternately flashing warning signal map standards include:

(1) Each school bus is to be equipped with a system of four red signal lamps and four amber signal lamps. Both red and amber lamps are to be installed in accordance with FMVSS 571.108 and the SAE standard J887. The four red signal lamps are to be identical in type, shape, and size.

(a) There is to be a system in place to allow the deactivation of the amber signal lamps without the need to open the service door or placing the ignition switch in the off position.

(b) These lamps are to alternately flash at a designated rate from sixty to one hundred twenty cycles per minute.

(2) Operation of alternately flashing warning signal lamps, stop signal arm and optional crossing control arm.

(a) Power for these devices are to be provided when the ignition switch is in the on position. An

optional master switch may be installed for these devices. If installed, a green pilot light is to illuminate to indicate the system is ready for operation.

(b) With the service door closed and the manual momentary (amber) start switch activated and released, the amber pilot light and amber warning lamps are to flash.

(c) When the service door is moved toward the open position, the amber pilot light and the amber warning lamps are to turn off and the red pilot light and red warning lamps are to flash.

(d) The stop signal arm and, if installed, the crossing control arm are to automatically extend when the red warning lamps flash. The stop arm signal lamps are to flash when extended.

(e) When the service door is closed, the red warning lights are to deactivate, the stop signal arm and, if installed, crossing control arm are to retract.

(f) With the service door open and the manual momentary (amber) start switch activated and released, the red pilot light and the red warning lamps are to flash and the stop signal arm and, if equipped, the crossing control arm are to extend. The stop signal arm lamps are to flash when extended.

(g) The service door switch that activates the red warning lamps are to be located in a position by a cover or guard that will prevent the switch from being activated or deactivated by persons boarding or leaving the bus.

(h) An emergency override system for activating the red warning lamps and extending the stop signal arm is to be installed. This emergency override system is to be operational with the ignition switch in any position.

(i) A red colored or red outlined emergency override switch is to be installed. This switch is to be marked with the words "Emergency warning lights" (abbreviation is acceptable). This is to be the only red colored or red outlined switch on the switch panel.

(ii) When the emergency override system is activated, the red pilot light and the red warning lamps

are to flash and the stop signal arm are to extend with the door in any position.

The stop signal arm lamps are to flash when extended.

(iii) Power for the system is to be on a protected circuit.

(3) Hoods may be installed above the lamps. If installed, all the lamps are to have hoods.

(4) Eight lamp warning system.

(a) LED "strobelike" effects may be used in the eight lamp warning system. All lamps are to conform to FMVSS 571.108.

(b) All eight amber and red lamps are to alternate between left and right at a rate of sixty to one-hundred twenty cycles per minutes.

(c) The "strobe" effect are to appear as a flash of varying intensity and not as separate flashes.

(d) All the warning lamps, amber and red, are to "strobe" in the same pattern. The same pattern is defined as the same number of flashes per lamp before the system alternates to the other side.

(e) All eight lamp warning systems on buses manufactured after January 1, 2027, are to be of LED type.

(JJ) Length of a school bus shall not exceed forty-five feet, excluding safety devices/bumpers.

(KK) Markings - body shall display identification (in black lettering if not indicated otherwise). The following are to be displayed:

(1) "School Bus" at least eight inches high on both the front and rear of the body. Lettering is to be placed as high as possible without impairment of visibility. The "School Bus" marking is to be on a background of retro reflective national school bus yellow material. The material is to be the same quality and type as Federal Motor Vehicle Safety Standards requires for the marking of emergency

exits.

(2) "Stop" on buses manufactured after January 1, 2027, are to be high-visibility (reflective) marking.

"Stop" on the rear of the bus in black letters not less than ten inches in height with red reflective material, meeting FMVSS 517.217 in between the black letters. Black letters are to have a brush stroke of one-half inches and placed on the metal panel of the rear emergency door, or for rear engine buses centered on the rear of the bus.

(3) Name of the private school, school district, school bus owner or operator is to appear on both sides of the vehicle at the belt line and be at least five inches high.

(4) The county in which the private school or the school district resides is to appear on both sides of the vehicle in a minimum of three-inch letters, unless the name of the city or exempted village appears as a part of the school district or private school name.

(5) When required by FMCSR 390.21, the ownership of the school bus (company name, city, state and USDOT number as required by FMCSR 390.21) is to appear on both sides of the bus. The right side markings are to be to the rear of the service door below the floor rub rail. The left side markings are to be in the area of the stop signal arm below the floor rub rail. The markings are to be in two inch high letters. Only the information required by FMCSR 390.21 is to be displayed.

(6) Local school bus numbers approximately five inches high and be located as follows:

(a) On body near the service door.

(b) On the body, near the right lower tail light.

(c) On the left side of the body in the area of the driver's window.

(d) Visible to the front, in an area designated by the operator.

(7) Buses are to be marked with reflectorized material as follows: All reflectorized material is to be a retro reflective material which meets FMVSS 517.217 for marking of emergency exits. In addition:

(a) All reflective material is to be able to retain at least fifty per cent of the reflective values for a minimum of seven years.

(b) All reflective material is to be warranted against peeling, cracking, separation and lifting due to weather conditions, pressure and mechanical washing for a minimum of seven years.

(c) Reflective yellow material two inches in width (plus/minus one forth inch) is to be applied to both corners of the rear of the bus and extend from the bumper vertically up to the top of the rear windows.

(d) All emergency doors and windows are to be outlined in yellow only. Emergency roof exits are to be outlined in either red, yellow or white around the outside perimeter with reflective material as required by FMVSS 571.217.

(e) Both sides of the bus body are to be marked with retro reflective national school bus yellow material, extending the length of the body (passenger area) and located at approximately the floor line. This marking is to be two inches in width and run parallel with the rub rails.

(f) Three seven by fourteen-inch wide pieces of white to white-silver in color reflective material is to be applied to the front and rear of the bus to accommodate the state identification and local bus numbers as follows:

(i) State identification number on the front of the vehicle is to be placed on a seven by fourteen-inch piece of reflective material which is to be applied and centered on the front bumper. If the bumper is manufactured with the holes in the center for two hooks, the seven by fourteen-inch piece of material may be located on the driver's side of the bumper. If the bumper is less than six inches in height, a seven by fourteen-inch plate will be permanently attached to the bumper to accommodate the seven by fourteen-inch reflective material.

(ii) In the rear, the state identification number and the local number is to be placed on individual

seven by fourteen-inch pieces of reflective material which is to be applied and centered on the flat surface near the left and right lower taillights as the bus body design will allow.

(8) Additional markings are permitted as follows and are optional:

(a) Vinyl stick-on lettering in lieu of painted-on letters, either on original equipment or as replacement letters.

(b) Maximum of two American flags, overall size of each decal is not to exceed six inches by eleven inches, is not to interfere with required markings and is not to obstruct the view of the driver.

(c) Buses used for transporting special needs may display two universal handicap emblems. The emblems are to be reflectorized white on blue located on the front and rear bumpers.

(d) Route number or marker bracket beside entrance door.

(e) Optional roof ID numbers, if used, are to be black in color and measure eighteen inches tall by ten inches wide with a brush stroke of three inches.

(LL) Mirrors must meet minimum standards. Minim mirror standards include:

(1) The buses are to be equipped with mirrors meeting the requirements of FMVSS 571.111 for school buses.

(2) Interior rear view mirror is to be a minimum of six by thirty inches. Exception: "Type A" - Six by sixteen inches.

(3) All exterior mirrors are to be heated and fully adjustable.

(4) Mirror assemblies are to be warranted one hundred per cent replacement coverage for thirty-six months against rust, and corrosion, and against any reduction in clarity of view due to discoloration or other deterioration of the lens.

(MM) Mounting of body on chassis.

(1) Isolators shall be placed between the frame and body main cross-sill and intermediate members. The isolators shall be at least one-fourth inch thick and shall be attached to chassis frame or body members in a fashion to prevent the isolators from shifting, separating or displacement of the isolators under severe operating conditions.

(2) Bus body shall be attached to chassis frame in such a manner as to prevent shifting or separation of the body from the chassis under severe operating conditions.

(3) Body front shall be attached and sealed to the chassis cowl in such a manner as to prevent entry of moisture.

(NN) Mud flaps - All buses shall be equipped with mud flaps at all wheel positions. The mud flaps shall be installed as close as practical to the wheel. May use a system for suppressing flying spray on a wet surface. Such system may consist of filament type, which is installed around the fender wheels. A full width mud flap or a full-width filament type plastic skirt may be placed at the rear wheels. May utilize rubber fender extensions. Length shall be in accordance with section 5577.11 of the Revised Code.

(OO) Noise suppression switch shall meet minimum standards. Minimum noise suppression switch standards include:

(1) Installed within easy reach of the driver in a seated position.

(2) Switch to be be an on/off type.

(3) Deactivation of factory installed devices that produce noise. (Exception - devices installed in "Type A" buses during the manufacture of the chassis/cowl).

(a) AM/FM radios

(b) Heaters

(c) Air conditioner fans

(d) Fans

(e) Defrosters

(4) This switch is not to deactivate safety systems, such as windshield wipers, lighting systems or two-way communication systems.

(PP) Openings created in mounting of bus body to chassis shall be sealed by manufacturer to prevent entrance of gases, dust or moisture into passenger and driver's compartments. All openings made by the manufacturer in the floorboard and fire-wall shall be sealed by the manufacturer to prevent gases from entering the driver's compartment.

(QQ) Paint shall meet minimum standards. Minimum paint standards include:

(1) Paint finish coats to bus body, hood, cowl and all attaching sheet metal and fiberglass parts are to be warranted for sixty months or one-hundred thousand miles whichever comes first, one hundred per cent parts and labor, for adhesion and color retention.

(2) Paint finish to bus body, hood, cowl and all attaching sheet metal and fiberglass parts are to be applied for a total dry thickness at a minimum of one and eight tenths mils over all painted surfaces.

(3) Body exterior.

All exterior body and chassis sheet metal including fiberglass are to be painted with polyurethane paint or equivalent.

(4) All interior panels, walls, and roof surfaces are to be painted. Finished metal/plastic may be unpainted.

(RR) Passenger seats shall meet minimum standards. Minimum passenger seat standards include:

(1) All seating and restraining barrier design and construction is to meet the provisions of FMVSS 571.222. The top surface of the restraining barriers are to be the same height as the top surfaces of the seat backs

(2) All seats are to have a minimum depth of fifteen inches.

(3) Equipment installed above the seating area is to comply with head impact zone requirements found in FMVSS 571.222.

(4) All school buses equipped with attachment points, securement devices (seatbelts), and/or wheelchair securement systems are to also be equipped with a durable webbing cutter having a full width hand-grip and protected blade. The cutter is to be appropriately stored in the driver's compartment to the left of the driver. This equipment may be excluded from the manufacturer's bid and purchased separately.

(5) Seat construction.

(a) Seat, seat back cushion, seat bottom and restraining barrier are to be covered with flame-barrier fire-retardant seating material. Such material must pass the "National School Transportation Specifications and Procedures" school bus seat upholstery "Fire Block" test.

(i) The flame will not spread to seat back in front of the fire.

(ii) The flames on the rear seat will self-extinguish.

(iii) The flame-barrier, fire retardant seating material will successfully prevent the underlying padding material from being exposed to the flames.

(b) All seat backs and restraining barriers are to be covered with energy-absorbing padding material as required by FMVSS 571.222.

(SS) Engine power shall meet minimum standards. Minimum engine power standards include:

(1) Diesel engines are to have a minimum of two-hundred horsepower and five-hundred twenty foot pounds of torque.

(2) Gasoline engines are to have a minimum of two-hundred sixty-five horsepower and four-hundred sixty foot pounds of torque.

(3) All diesel engines are to be equipped with a block heater. Heater is to be a minimum of seven hundred fifty watts.

(4) Dry type air cleaner with an air filter restriction indicator.

(5) Engine is to be equipped with a fast idle (air, electronic, or manual) throttle.

(6) An electric powered school bus is to meet all federal motor vehicle safety standards and all society of automotive engineers standards that are applicable at time of manufacture. The school bus is to meet Ohio school bus construction standards at the time of manufacture or bid date.

(7) A factory build hybrid electric school bus is to meet all federal motor vehicle safety standards and all society of automotive engineers standards that are applicable at time of manufacture. The school bus is to meet Ohio school bus construction standards at the time of manufacture or bid date.

(TT) School safety zone decal

(1) The decal shall be approximately seven inches by seven inches. At the top of the decal shall be the word "NOTICE", underlined, and immediately below the word "NOTICE" the symbol for no handgun allowed. Below the no handgun symbol, the decal shall state in black lettering on a white background "Unless Otherwise Authorized By Law, Pursuant to Ohio Revised Code Section 2923.122, No Person Shall Knowingly Possess, Have Under The Person's Control, Convey Or Attempt To Convey A Deadly Weapon Or Dangerous Ordnance Onto A School Bus (School Safety Zone)."

(2) No other markings, symbols or lettering are allowed on the decal.

(3) The location of the decal shall be on the flat metal surface just above the seat rub rail to the immediate left of the service door. The right edge of the decal shall be within two inches of the end of the rub rail.

(UU) Service door shall meet minimum standards. Minimum service door standards include:

(1) Service door is to be outward-opening, split-type on all buses. Service door is to be air, electric, or manually-operated. Door is to be under the control of the driver and designed to afford easy release and prevent accidental opening.

(2) Service door is to be located on right side of bus opposite the driver and within the driver's direct view.

(3) Service door entrance is to have minimum horizontal opening of twenty-four inches and minimum vertical opening of sixty-eight inches.

(4) Glass in service door is to provide maximum area of visibility for operation of the bus.

(5) All edges of service door are to be sealed by a flexible material to prevent air from entering the door entrance when closed.

(6) There are to be no safety rail or handholds mounted on the inside of the service door.

(7) Only one handle or handhold may be placed on the outside of the service door.

(8) There is to be a head bumper pad installed on the inside at the top of the service door frame. This pad is to be approximately four inches in width and extend across the entire top of the service door opening and meet FMVSS 571.302 for flammability standards of interior materials.

(9) Service door is to have suitable access for easy lubrication.

(10) Manual service door.

(a) When a manual lever is used, no parts are to come together so as to shear or crush fingers. Lever is to be equipped with an approved safety latch to prevent accidental opening which will lock in the over-center position when door is fully opened. Manually operated doors are to require no more than twenty-five pounds of pull to close and may be hydraulically assisted.

(b) Manual door control mechanism is to be heavy-duty bearing type, adjustable for wear, non-corrosive, anodized steel, or equivalent.

(11) On power-operated service doors, the emergency release valve, switch or device to release the service door is to be placed above the required head bumper or at the same height to the immediate left or right of the service door and be clearly labeled.

(a) When the switch or lever is in the released position, it will override door control in driver's area making it non-operational in any of the door control positions.

(b) Whenever the switch or lever is placed in the released position, it will allow the service door to be opened or closed freely.

(c) This switch and distribution block that control eight light warning system is tobe securely fastened near the door control valve and be easily accessible for service and repair.

(VV) Service door steps shall meet minimum standards. Minimum service door steps standards include:

(1) The first step of the service door cannot be less than six inches and not more than sixteen inches from the ground.

(2) Service door entrance is to be equipped with step risers that do not exceed ten inches. Risers in each case are to be approximately equal.

(3) Steps are to be enclosed to prevent accumulation of ice and snow.

(4) Steps are not to protrude beyond side body line.

(5) Hand rails of maximum length, but not less than ten inches long, are to be installed on both sides of the interior step-well area. These handles are to be stainless steel clad. Both hand rails are to be securely fastened and designed so as to prevent clothing or any other item from being caught. Hand rails may also be yellow polymer coated.

(6) Surface of steps are to be of non-skid material.

(a) Steps are to be covered with a covering material which have non-skid characteristics. Step covering is to have a turned-down nosing of a contrasting color of either white, silver, yellow, or bright orange.

(b) Step covering is to be securely fastened to the steps in a manner that will minimize tripping. This requires that the heads of mounting screws or bolts be below the top surface of the step tread.

(7) The service door steps are to have a restraining barrier that is in compliance with FMVSS 571.222 positioned between the stairwell and the passenger compartment. This barrier is to be equipped with a modesty panel.

(WW) Steering system shall meet minimum standards. Steering system minimum standards include:

(1) All school buses are to be equipped with heavy-duty, truck-type integral power steering.

(2) Steering mechanism is to provide for easy adjustment for lost motion.

(3) No changes are to be made in the steering mechanism unless approved by manufacturer.

(4) There is to be a clearance of at least two inches between steering wheel and any other surface or control.

(XX) Stop signal arm.

The stop signal arm(s) shall comply with the requirements of FMVSS 571.131 (School bus pedestrian devices).

(YY) Sun visor.

The school bus shall be equipped with at least one interior adjustable transparent sun visor, folding type, which is a minimum of six by thirty inches in size. If only one sun visor is installed, it shall be positioned for use by the driver. Exception - "Type A" shall be manufacturer's standard.

(ZZ) Tires, rims and wheels shall meet minimum standards. Minimum standards fro tires, rims, and wheels include:

(1) Manufacturer or authorized dealer is to balance all wheels and make necessary alignments prior to delivery.

(2) Dual rear tires and wheels are to be provided (except "Type A".)

(3) All tires on a given axle are to be of same size, tread design, construction and capacity.

(4) All are to be equipped with tubeless radial tires of proper size and load range that meets or exceeds chassis gross vehicle weight ratings and body combinations as required by FMVSS 571.120.

(5) Disc wheels are to be used.

(6) Wheel composition - wheels are to be made of steel or aluminum.

(AAA) Tow hooks.

(1) Two rear tow hooks shall be installed, with the hooks and their mounting of sufficient strength to tow the vehicle at the vehicle's curb weight.

(2) Two front tow hooks may be installed, with the hooks and their mounting of sufficient strength to tow the vehicle at the vehicle's curb weight.

(BBB) Transmission shall meet minimum standards. Minimum transmission standards include:

(1) Manufacturer is to furnish an automatic transmission or automated manual transmission.

(2) The torque rating of the transmission is to meet or exceed the maximum torque output of the engine.

(CCC) Vehicle identification plates - All chassis serial number identification plates shall be attached to the bus and be clearly identifiable and legible for the entire life of the bus.

(DDD) Wheel-housings shall meet minimum standards. Minimum wheel-housing standards include:

(1) Wheel-house is to be attached to floor components in such a manner to prevent water, dust or fumes from entering the bus body.

(2) Wheel-house openings are to allow for easy tire removal and service.

(3) Inside height of wheel-housing above floor line is not to exceed ten inches.

(4) Wheel-housing is to provide clearance to permit the installation of tire chains per SAE standard J683.

(EEE) Width - Overall width of a bus shall not exceed one hundred and two inches, excluding mirrors.

(FFF) Windows shall met minimum standards. Minimum window standards include:

(1) Driver's side window is to be capable of opening and be equipped with a lock-type closure. Exception - "Type A" buses are to be manufacturer's standard.

(2) Each side window in the passenger area is to be split sash and provide unobstructed opening at least nine inches high and twenty-two inches wide, obtained by lowering the upper sash. If the bus body design does not allow for all windows to meet the width dimension requirement, up to two side windows per side in the passenger area may be less than the twenty-two inches. They may or may not open.

(3) Individual windows are not to have a vertical opening greater than twelve inches. Stops are to be installed where needed to obtain this dimension.

(4) Windows may be tinted pursuant to section 4513.241 of the Revised Code. Any window tinting is also meet FMVSS 571.205.

(GGG) Windshield washers shall meet minimum standards. Minimum windshield washers standards include:

(1) The windshield washer fluid reservoir is to have a minimum capacity of two quarts in a rigid plastic container. It is to be mounted outside the interior of the bus and in a position readily accessible for refilling,

(2) Windshield washer is to incorporate a check valve in supply line. Check valve will not allow washer fluid to drain back into washer tank when not in use.

(3) Heated windshield wipers and heated washer fluid units are permitted.

(HHH) Windshield wipers shall meet minimum standards. Minimum windshield wiper standards include:

(1) Two heavy-duty windshield wipers.

(2) Windshield wipers to be operated by one or more electric motors.

(3) Windshield wipers are to be controlled with one switch. Switch is to provide multi-speed operation and incorporate an intermittent position.

(4) Wipers are to be wet arm type.

(5) The windshield wiper motor or motors are to have sufficient power and the wiper arms and blades are to be of sufficient length to provide the largest cleaning area possible.

(III) Wiring shall meet minimum standards. Minimum wiring standards include:

(1) All wiring is to conform to current society of automotive engineers standards. Wiring diagrams are tobe made available to school bus owners.

(2) Short circuit protective devices are to be provided for each major circuit and all other electrical functions, except starter motor and ignition circuits.

(3) All wires within body are to be insulated and protected by a covering which will protect them from external damage and minimize dangers from short circuits. Whenever wires pass through body members, additional protection in the form of an appropriate type of insert is to be provided.

(4) Wires not enclosed within body shell are to be fastened securely at intervals of not more than twenty-four inches.

(5) All joints are to be soldered or joined by equally effective connectors.