**Section 441.APPENDIX D Electrical System through Fenders**

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| a) | ELECTRICAL  SYSTEM | | |  | | | |
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|  | | 1) | Circuits |  | | | |
|  | | | | PROCEDURES/SPECIFICATIONS:  Shall be arranged in at least nine regular circuits as follows: | | | |
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|  | | | | 1) | Head, tail, stop (brake) and instrument panel lamps; | | |
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|  | | | | 2) | Clearance lamps and any lamp in or adjacent to step risers; | | |
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|  | | | | 3) | | Interior lamps; |
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|  | | | | 4) | | Starter motor; | |
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|  | | | | 5) | | Ignition, emergency exist alarm signals and other alarm signals; | |
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|  | | | | 6) | | Turn signal lamps; | |
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|  | | | | 7) | | Alternately flashing signal lamps and stop signal arm lamps; | |
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|  | | | | 8) | | Horn; | |
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|  | | | | 9) | | Heater and defroster. | |
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|  | | | | A separate fuse or circuit breaker for each circuit, except starter motor and ignition. | | | |
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|  | | | | REJECT VEHICLE IF:  Breaks in insulation are present. Not on proper circuit or properly wired. | | | |
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|  | | 2) | Fuses |  | | | |
|  | | | | PROCEDURES/SPECIFICATIONS:  Two extra fuses for each size fuse used on the bus shall be conveniently mounted on the bus today. | | | |
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|  | | | | REJECT VEHICLE IF:  Fuses are not present or are not conveniently mounted. | | | |
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|  | | 3) | Switches |  | | | |
|  | | | | PROCEDURES/SPECIFICATIONS:  Check operation and condition. | | | |
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|  | | | | REJECT VEHICLE IF:  Switches are not operating properly or are missing. | | | |
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|  | | 4) | Wiring |  | | | |
|  | | | | PROCEDURES/SPECIFICATIONS:  All wires shall be properly insulated and securely attached at not more than 18.1 inches (460 mm) intervals. Check condition. | | | |
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|  | | | | REJECT VEHICLE IF:  Insulation is frayed or missing. Wiring not securely attached. | | | |
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| b) | EMERGENCY  EXITS | | |  | | | |
|  | PROCEDURES/SPECIFICATIONS:  All buses must be equipped with either a rear emergency door or a left side emergency door and a rear emergency window. (49 CFR 571.217)  Additional emergency exits, including roof hatches, may be required on buses manufactured on or after September 1, 1994. (49 CFR 571.217) (See Section 441.Illustration F)  For those buses manufactured on or after May 2, 1994, each opening for a required emergency exit must be outlined around its outside perimeter with a minimum 1 inch (2.54 cm) wide yellow retroreflective tape. This yellow retroreflective tape must be on the exterior surface of the bus. (49 CFR 571.217)  Optional emergency roof hatches are allowed. They must be installed according to manufacturer's specifications.  Open and close roof hatches (required or optional) to verify their operation. | | | |
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|  | | | | REJECT VEHICLE IF:  Emergency exits do not meet requirements. Roof hatches do not open. | | | |
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|  | | 1) | Side |  | | | |
|  | | | | PROCEDURES/SPECIFICATIONS:  Inside release mechanism must be protected against accidental release; easily accessible; and readily operated manually without the use of remote control, power device, or tool.  Shall be hinged on front side and open outward. Shall be equipped with safety glass (or equivalent). Glass shall be located in upper portion of the door. Door shall be of at least the same gauge metal as the body. Shall be 24 inches or more clear horizontal opening, with forward edge of opening in line with the rearmost edge of a seat back. Shall have 45 inches or more clear vertical opening. Door and rubber seal must not be defective. (See Alarms and Locks in this subsection for requirements.)  For buses manufactured on or after September 1, 1994, there must be at least 11.7 inches (30 cm) measured from the door opening to the seat back in front. (49 CFR 571.217)  REJECT VEHICLE OF:  Release mechanism is not protected, accessible, or operable (inside and outside); unable to open easily; hinge is located at incorrect location; location and size of opening is incorrect. General condition of door and/or rubber seal is defective. | | | |
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|  | | 2) | Rear | PROCEDURES/SPECIFICATIONS:  Inside release mechanism must be protected against accidental release; easily accessible; readily operated manually without use of remote control, power device, or tool.  Shall have permanently attached inside and outside release handles. Outside release handle must be non-hitchable.  Rear exit shall hinge on right; open outwards; have a 24 inch or more clear horizontal opening and 45 inch or more clear vertical opening above floor. Glazing shall be installed in upper and lower portions. Door and rubber seal must not be defective. (See Alarms and Locks in this subsection for requirements.)  Exception: Buses manufactured before September 1974 are exempt from glazing in lower portion of rear emergency door. | | | |
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|  | | | | REJECT VEHICLE IF:  Inside release mechanism is not protected. Inside and outside release mechanisms are not accessible or do not operate properly. Outside release mechanism is hitchable. Door does not open easily. Location of hinge is incorrect. Size of opening is incorrect. Glazing does not meet requirements. General condition of door and/or rubber seal is defective. | | | |
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|  | | 3) | Window | PROCEDURES/SPECIFICATIONS:  When the emergency door is located on the left side, a rear emergency window shall be provided. Minimum 16 inches high and 48 inches wide. Designed to be opened from the inside or the outside. Hinged on top, designed and operated to insure against accidental closing in an emergency. Inside handle shall provide for quick release. Outside handle shall be nondetachable and nonhitchable. (See Alarms and Locks in this subsection for requirements.)  Optional emergency windows are allowed. They must be labeled "Emergency Exit" in letters at least two inches high, of a color that contrasts with its background, located at the top of or directly above the window on the inside surface of the bus. | | | |
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|  | | | | REJECT VEHICLE IF:  If equipped, operating mechanisms do not function. Glass is cracked or broken. | | | |
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|  | | 4) | Alarms and  Locks |  | | | |
|  | | | PROCEDURES/SPECIFICATIONS:  Both audible and visible alarms shall alert the driver when engine is running and any emergency exit door either: | | | |
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|  | | | | A) | | Is not fully latched, or | |
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|  | | | | B) | | Is locked and not readily operated manually. | |
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|  | | | | An audible alarm shall alert the driver when engine is running and any emergency exit window either: | | | |
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|  | | | | A) | | Is not fully latched, or | |
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|  | | | | B) | | Is locked and not readily operated manually. | |
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|  | | | | The engine starting system shall not operate while any emergency exit door or window (optional or required) is locked from either inside or outside the bus. "Locked" means that the release mechanism cannot be activated and the exit opened by a person at the exit without a special device such as a key or special information such as a combination.  Alarm cut-off or "squelch" control is prohibited.  Exception: No alarm is required for roof hatches.  Exception: On a bus with chassis (incomplete vehicle) manufactured in March 1977 or earlier, the "not fully latched" alarm may only be audible to the seated driver. The engine starting system may operate while the emergency door is locked. | | | |
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|  | | | | REJECT VEHICLE IF:  Alarms do not alert driver as required. Locks do not meet requirements. | | | |
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| c) | ENTRANCE DOOR | | |  | | | |
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|  | | 1) | Physical  Requirements |  | | | |
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|  | | | | PROCEDURES/SPECIFICATIONS:  Minimum 24 inch horizontal opening. Minimum 68 inch vertical opening. Jack-knife or split type door required on buses purchased after September 1974. If split type door is used and one section opens inward and the other outward, front section shall open outward. Door shall be located on the right side near the front convenient to the seated driver's unobstructed vision. Entrance door shall be power or manually operated from the driver's seat and designed to afford easy release and prevent accidental opening. No parts of the over center door control shall come together so as to shear or crush fingers.  The over center door control must operate properly and must not bind or jam. Vertical closing edges shall be equipped with flexible material for a proper seal and to prevent injury. Lower and upper panels of door shall be of safety glass or equivalent. Bottom of lower panel shall be not more than 35 inches from ground when unloaded. Top of upper glass panel shall be not more than 6 inches from top of door. No door is permitted to left of driver.  A service door equipped with power shall also be capable of manual operation in case of power failure.  Exception: All buses purchased prior to September 1974 are exempt from split type door. They may be split, sedan, or jack-knife type. | | | |
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|  | | | | REJECT VEHICLE IF:  Binding or jamming is evident, mal-functions, over-ride device on power operated door does not function, control not accessible by driver.  Door is missing, loose, or damaged. Rubber seal is missing or torn. | | | |
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|  | | 2) | Locks and  Alarms |  | | | |
|  | | | PROCEDURES/SPECIFICATIONS:  A service door lock is not required, but if any type of service door locking system is installed on the bus, the system shall conform to at least one of the following: | | | |
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|  | | | | 1) | | The locking system shall not be capable of preventing the driver from easily and quickly opening the service door from inside the vehicle; or | |
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|  | | | | 2) | | A locking system that is capable of preventing the bus driver from easily and quickly opening the service door shall include an audiovisual alarm. The alarm shall be audible and visible and must alert the driver when the engine is running and the service door is locked. An alarm disconnect, "squelch control," or other alarm defeating or weakening device shall be prohibited; or | |
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|  | | | | 3) | | A locking system shall not be capable of preventing the bus driver from easily and quickly opening the service door except when a person outside the bus uses a key that is not capable of locking more than one of at least 1000 of the door manufacturer's key locking systems. | |
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|  | | | | REJECT VEHICLE IF:  Locks and alarms do not meet requirements. Bent, worn, or dislocated parts that would delay quick door release and opening are present. | | | |
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| d) | EXHAUST  SYSTEM | | |  | | | |
|  | PROCEDURES/SPECIFICATIONS:  "Exhaust System" includes each component used to conduct gas from an engine exhaust port (manifold) to authorized exit point, including each sealing, connecting, and supporting component. Exhaust system shall be outside body and attached to chassis. Size of tailpipe shall not be reduced after it leaves muffler. Any flexible component that contains exhaust gas shall be of stainless steel. System shall not leak. System shall have an outlet at its discharge end(s) only. | | | |
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|  | | 1) | General |
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|  | | | | REJECT VEHICLE IF:  All parts of system are not securely fastened and supported.  Any part of system is leaking or missing.  Any part of system contains holes not made by manufacturer. | | | |
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|  | | 2) | Shielding |  | | | |
|  | | | | PROCEDURES/SPECIFICATIONS:  Any flammable material, electrical insulation, brake hose, or fuel system component containing fuel that is located within 11 13/16 inches (300 mm) of a component containing exhaust gas shall be safeguarded by a heat shield.  Exhaust system shall be shielded from either accidental contact, "hitching to," or "standing on," except at discharge end. A chassis or body component may provide required shield.  Exception: Fuel system components on diesel powered engines that are located within four inches of a component containing exhaust gas shall be shielded. | | | |
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|  | | | | REJECT VEHICLE IF:  Shielding is not present (if applicable). | | | |
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|  | | 3) | Discharge |  | | | |
|  | | | | PROCEDURES/SPECIFICATIONS:  The exhaust system's discharge end (tail pipe) shall be within .98 inch (25mm) of bus side, rear, or rear corner. It must not extend more than one inch past the bumper. Exhaust fumes shall not be directed towards a door or other opening into bus body. In addition, the discharge end, or ends, shall not be located in any prohibited zone shown in Illustration B. | | | |
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|  | | | | REJECT VEHICLE IF:  Exhaust discharges into prohibited zones (see Illustration B).  Exhaust system (tail pipe) does not discharge in proper location  Tail pipe extends more than one inch past the bumper.  Exhaust fumes are released towards a door or other opening into bus body. | | | |
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| e) | FENDERS | | |  | | | |
|  | | | | PROCEDURES/SPECIFICATIONS:  Shall be properly braced and free from any body attachment.  There shall be approximately one inch located between front fenders and back face to cowl. | | | |
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|  | | | | REJECT VEHICLE IF:  Fenders are not solid or in bad condition.  Sharp edges are evident.  Fenders are loose or protrude out. | | | |
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(Source: Amended at 22 Ill. Reg. 11889, effective June 29, 1998)