

281—44.5(285) Construction of vehicles for children with mobility problems. The following shall apply to vehicles constructed for the transportation of children with mobility problems of such severity that the children are prohibited from utilizing the regular service door entrance. Vehicles constructed for transporting these children shall meet all FMVSS relating to school bus construction and Iowa school bus construction requirements as described in rules 281—44.1(285) and 281—44.4(285). The following standards shall also apply:

44.5(1) General requirements.

a. Certification of these vehicles as multipurpose passenger vehicles due to capacity rating shall not relieve the manufacturer of the responsibility to provide a completed vehicle meeting all FMVSS for school buses as well as rules 281—44.1(285) to 281—44.4(285) relating to the construction of a school bus.

b. Alteration of the interior of the vehicle is permissible if all seats and barriers, component parts, anchorages, wheelchair securement devices, and placement of seats and barriers and wheelchair securement devices comply with federal requirements as of date of manufacture. All equipment must be supplied by the original manufacturer and installed per the original manufacturer's specification. Alteration which would return the vehicle to conventional passenger seating shall include removal of all wheelchair securement devices, removal of the power lift, and rendering the special service door inoperable.

c. Any school bus that is used for the transportation of children who are confined to a wheelchair or other restraining devices which prohibit use of the regular service entrance shall be equipped with a power lift located on the right side of the bus body and forward of the rear wheels on a Type B, C, or D bus. Wheelchair lift placement behind the rear wheels is allowed on Type A buses only. See paragraph 44.5(2) "f."

d. The actual rated seating capacity following modification of a vehicle shall be placed at locations indicated in paragraph 44.4(20) "d."

e. Ramps are not permitted.

44.5(2) Specific requirements.

a. *Aisle.*

(1) Aisles leading from wheelchair placement(s) to the special service door and the service door shall at all times be a minimum of 30 inches wide.

(2) Aisles leading to all the emergency doors from wheelchair placement(s) shall at all times be at least 20 inches in width.

b. *Barriers.*

(1) Barriers shall comply with and be installed as required by federal standards as of date of manufacture.

(2) A heavy-duty padded barrier or stanchion shall be provided immediately to the rear of the step well opening extending from the side wall of the bus to approximately the aisle to prevent a person from accidentally falling into the step well opening from floor level. A barrier or stanchion as mentioned above shall also be placed directly behind the driver.

(3) The power lift mechanism shall be padded and protected to prevent a child from accidentally getting any part of the child's body caught in the power lift mechanism or special service door at any time.

c. *Glazing.* Tinted glazing may be installed in all doors, windows, and windshield.

d. *Heaters.* An additional heater(s) may be installed in the rear portion of the bus on or behind wheel wells.

e. *Identification.* Buses with wheelchair lifts used for transporting physically handicapped children shall display universal handicapped symbols located on the front and rear of the vehicle below the window line. Emblems shall be white on blue, shall not exceed 12 × 12 inches in size, and may be reflectorized.

f. *Power lift.*

(1) The lifting mechanism shall be able to lift a minimum payload of 800 pounds.

(2) The power lift shall be located on the right side of the body and in no way be attached to the exterior sides of the bus, but should be confined within the perimeter of the school bus body when not extended. The power lift shall be located forward of the rear wheels of the vehicle on Type B, C and D buses. Wheelchair lift placement behind the rear wheels is allowed on Type A buses only.

(3) When the platform is in the fully “up” position, it shall be locked in position mechanically by means other than a support or lug in the door.

(4) All lift controls shall be portable and conveniently located on the inside of the bus near the special service door opening. Controls shall be easily operable from inside or outside the bus by either a platform standee or person seated in a wheelchair when the lift is in any position. A master cut-off switch shall be located in the driver’s compartment. There shall be a means of preventing the lift platform from falling while in operation due to a power failure.

(5) Power lifts shall be equipped so they may be manually raised or lowered in the event of power failure of the power lift mechanism.

(6) The platform shall accommodate a wheelchair which is 30 inches wide. The platform shall be not less than 44 inches long, including guard panels or rails.

(7) The power lift platform shall be covered with skid-resistant material or be designed to prevent slipping.

(8) The lift platform shall be constructed to permit vision through that portion of the platform covering the window of the special service door when the platform is in the “up” position.

(9) All edges of the platform shall be designed to restrain a wheelchair and to prevent the operator’s feet from being entangled during the raising and lowering process.

(10) The platform shall be fitted on both sides with full width shields which extend above the floor line of the lift platform.

(11) An operating safety barrier shall be affixed to the outer edge (curb end) of the platform that will prohibit the wheelchair from rolling off the platform when the lift is in any position other than fully extended to ground level. The barrier shall not be capable of being manually operated.

(12) A self-adjusting, skid-resistant plate shall be installed on the outer edge of the platform to minimize the incline from the lift platform to the ground level. This plate, if so designed, may also suffice as the restraining device described in subparagraph (11) above.

(13) The power lift shall be designed so the lift will not operate unless the special service door(s) is opened and the lift platform is in the “down” or horizontal position.

(14) The lift travel shall allow the lift platform to rest securely on the ground.

(15) A circuit breaker, fuse, or other electrical protection device shall be installed between the power source and the lift motor if electrical power is used.

(16) When hydraulic pressure is used in the lifting process, the system shall be equipped with adjustable limit switches or bypass valves to prevent excessive pressure from building in the hydraulic system when the platform reaches the full “up” position or full “down” position.

(17) All exposed parts of the power lift which are in direct line with the forward or rearward travel of a wheelchair student or attendant shall be padded with energy-absorbing material.

g. Ramps. Ramps are not permitted.

h. Regular service entrance.

(1) An additional fold-out or slide-out step may be provided which will provide for the step level to be no more than 6 inches from the ground level to assist persons with handicapping conditions that prohibit the use of the standard entrance step. This step, when stored and not in use, shall not impede or in any way block the normal use of the entrance.

(2) On power lift-equipped vehicles, service entrance steps shall be the full width of the step well, excluding the thickness of the doors in the open position.

i. Seating and seating arrangements.

(1) All seat spacing, seats, and related components shall comply with applicable federal standards as of date of manufacture.

(2) All seats shall be forward facing. Side-facing seats are prohibited.

(3) Seat frames may be equipped by the school bus body manufacturer with rings or other devices to which passenger restraint systems may be attached.

j. Special light. Light(s) shall be placed inside the bus to sufficiently illuminate the lift area and shall be activated from the door area.

k. Special service opening.

(1) There shall be an enclosed service opening located on the right side (curb side) of the body forward of the rear wheels to accommodate a wheelchair lift on Type B, C and D buses. This service opening may be placed on the right side (curb side) of the body behind the rear wheels on Type A buses only to accommodate a wheelchair lift in that location.

(2) The opening shall be at least 52 inches high and 40 inches wide and with doors open shall be of sufficient width to allow for the installation of various power lifts and related accessories as well as a lifting platform at least 32 inches wide.

(3) The opening shall be positioned far enough to the rear of the regular service door opening to prevent interference of the special service door(s) opening with the regular service doors.

(4) A drip molding shall be installed above the opening to effectively divert water from the entrance.

(5) Doorposts, headers, and all floor sections around this special opening shall be reinforced to provide strength and support equivalent to adjacent side wall and floor construction of an unaltered model.

(6) A header pad at least 3 inches wide, extending the width of special service door, shall be placed above the opening on the inside of the bus.

l. Special service door(s).

(1) All doors shall open outwardly.

(2) All doors shall have positive fastening devices to hold doors in the open position.

(3) All doors shall be equipped with heavy-duty hinges and shall be hinged to the side of the bus.

(4) All doors shall be weather sealed; and on buses with double doors, each door shall be of the same size and constructed so a flange on the forward door overlaps the edge of the rear door when closed.

(5) If optional power doors are installed, the design shall permit release of the doors for opening and closing by the attendant from the platform inside the bus.

(6) When manually operated dual doors are provided, the rear door shall have at least a one-point fastening device to the header. The forward-mounted door shall have at least three-point fastening devices: One shall be to the header, one shall be to the floor line of the body, and the other shall be into the rear door. These locking devices shall afford maximum safety when the doors are in the closed position. The door and hinge mechanism shall be of a strength that will provide the same type of use as that of a standard entrance door.

(7) If the door is made of one-piece construction, the door shall be equipped with a slidebar, cam-operated locking device.

(8) Each door shall have installed a safety glass window, set in a waterproof manner, and aligned with the lower line of adjacent sash and as nearly as practical to the same size as other bus windows.

(9) Door materials, panels, and structural strength shall be equivalent to the conventional service and emergency doors. Color, rub rail extensions, lettering, and other exterior features shall match adjacent sections of the body.

(10) The door(s) shall be equipped with a device(s) that will actuate a flashing visible signal located in the driver's compartment when the door(s) is not securely closed. (An audible signal is not permitted.)

m. Special student restraining devices.

(1) Each wheelchair station shall be equipped with a lap and torso restraint system that meets applicable FMVSS.

(2) Special restraining devices such as shoulder harnesses, lap belts, and chest restraint systems may be installed to the seats providing that the devices do not require the alteration in any form of the school bus seat, seat cushion, framework, or related seat components. These restraints must be for the sole purpose of restraining passengers.

n. Wheelchair securement systems.

(1) Securement systems for wheelchairs shall meet or exceed applicable FMVSS.

(2) All wheelchair securement systems or devices shall be placed in the vehicle so that, when secured, both wheelchair and occupant are facing toward the front of the vehicle. Fastening devices resulting in a side-facing wheelchair and occupant are not permissible.

(3) Straps or seat-belt devices running through the wheels of the wheelchair or around the student seated in the wheelchair for the purpose of securing the wheelchair to the floor are not acceptable.

(4) The wheelchair securement system(s) shall be located in a school bus so that when a wheelchair is not secured in place the floor attachment system shall not extend above the floor level more than $\frac{1}{2}$ inch.