

- B. The bumper shall wrap around the back corners of the bus. It shall extend forward at least 12 inches, measured from the rear-most point of the body at the floor line, and shall be mounted flush with the sides of the body or protected with an end panel.
- C. The bumper shall be attached to the chassis frame in such a manner that it may be removed. It shall be braced to resist deformation of the bumper resulting from impact from the rear or the side. It shall be designed to discourage hitching of rides by an individual.
- D. The bumper shall extend at least one inch beyond the rear-most part of the body surface, measured at the floor line.
- E. The bottom of the rear bumper shall not be more than 30 inches above ground level.

#### **CAMERA SYSTEM – not brand specific (optional)**

School bus camera systems shall be constructed to provide reliability to withstand extreme hot and cold temperatures, road vibrations, high humidity, and airborne dust/dirt caused by unpaved roads.

##### **A. Interior**

- 1. Interior camera system shall permit a minimum connection for four cameras.
- 2. Camera systems shall provide audio and video day/night recording.
- 3. May be either a hard or solid-state drive recorder system.
- 4. A dash camera may be installed for exterior traffic monitoring.
- 5. Cameras may be mounted in the front, side, back, and/or mid-ship of the bus. If mid-ship, they must be mounted off center and over a seat back. Corners and sharp edges shall be rounded or covered with a protective material.
- 6. Recording equipment shall be mounted as not to produce any tripping hazard if floor mounted.
- 7. The exterior camera system monitor may be incorporated as part of the interior rear-view mirror as long as when the monitor is inactive, it does not interfere with the normal use of the mirror.

## B. Exterior

1. Cameras shall be a color not contrasting to its background and it shall not interfere with any safety system lettering. Back up cameras are exempt from the contrasting color requirement. These camera housings shall be black or school bus yellow.
2. Exterior cameras shall not extend over six inches from the surface of the bus.
3. Exterior cameras shall be mounted as high as possible.
4. Stop arm: Exterior camera may be mounted at or near the stop arm.
5. Backup camera shall be used on Type D buses with a rear-engine.
6. Exterior camera system monitors shall not be mounted if it blocks the driver view in any direction.
7. Exterior camera system monitors shall only activate when the bus is in reverse for a rear camera or in park for side cameras. For buses without a park position in the transmission, the monitor shall only activate when the parking brake is applied. A forward-facing system monitor shall only activate with the red 8-way light warning system.
8. Exterior camera system monitors shall be automatically controlled without requiring driver action.

## **CAPACITY PLATE**

A label indicating the maximum design capacity of the bus shall be located near or incorporated in the bus body identification label.

## **CERTIFICATION**

The chassis and body manufacturer(s) shall certify, upon request to the Mississippi Department of Education, that (their) product(s) meets Mississippi's minimum standards on items which are not covered by certification requirements of 49 CFR, Part 567: *Certification*.

## **CHILD CHECK SYSTEM – (not brand specific)**

All school buses shall be equipped with a child check system. A child check system shall

be provided meeting the following specifications:

The child check system shall activate when the eight-way warning lights have been activated and fully cycled.

Once the child check system has been activated, the following procedures should take place before the driver can exit the bus (open the entrance door) without the horns sounding until the system is deactivated.

- A. The door must be closed before the ignition is turned off or the key is turned to the accessory position, the driver must walk to the rear of the bus and manually operate a deactivation switch, which shall be located above the rear door or in the rear bulkhead area and clearly labeled.
- B. Immediately upon deactivating, the interior dome light or such indicators shall activate to identify the system has disarmed.
- C. The interior dome light shall illuminate and remain on for a minimum of 60 seconds after deactivating.

Any attempt to exit the bus by opening the entrance door will sound the horn until the system has been de-activated.

#### **COLLISION MITIGATION SYSTEM (OPTIONAL)**

There may be an option for passive and/or active electronic collision mitigation system(s).

#### **COLOR**

- A. The school bus body shall be painted national school bus yellow.
- B. The body exterior paint trim, rub rails, bumper, lamp hoods, emergency door arrow, and lettering shall be black. (Exceptions to school system name can be found under "Identification.")
- C. The roof of the bus shall be painted white not to extend below the drip rails on the sides of the body.
- D. The chassis and front and rear bumpers shall be black. Body, cowl, hood and fenders shall be in National School Bus Yellow (NSBY).
- E. Wheels may be black, chrome, or yellow.



- F. Multifunctional School Activity Buses shall be exempt from this requirement. (See MFSAB specifications)

## **COMMUNICATION SYSTEMS**

Each bus shall be equipped with a two-way, voice communication system capable of providing communication with the operation's base, or at least local 911 operators where technologically feasible. All school buses that transport individuals with disabilities shall be equipped with a two-way electronic voice communication system that can be used at any point on the vehicle's route.

- A. The end user shall be responsible for the purchase, installation, and maintenance of the two-way communication system.
- B. CB radio systems will not meet this requirement.
- C. It is the responsibility of the local school system to comply with this specification.

## **CONSTRUCTION**

Construction shall be of prime commercial quality steel or other material with strength at least equivalent to all-steel as certified by the bus body manufacturer. All such construction materials shall be fire resistant. No exterior structural, fiberglass roof or side panels are allowed. All Type C and D shall meet the requirements of Section A below.

- A. Side Intrusion Test: The bus body shall be constructed to withstand an intrusion force equal to the curb weight of the vehicle or 20,000 pounds, whichever is less. Each vehicle shall be capable of meeting this requirement when tested in accordance with the procedures set forth below. The complete body structure, or a representative seven-body section mockup with seats installed, shall be load-tested at a location  $24 \pm 2$  inches above the floor line, with a maximum 10-inch diameter cylinder, 48 inches long, mounted in a horizontal plane.

The cylinder shall be placed as close as practical to the mid-point of the tested structure, spanning two internal vertical structural members. The cylinder shall be statically loaded to the required force of curb weight or 20,000 pounds, whichever is less, in a horizontal plane with the load applied from the exterior toward the interior of the test structure. When the minimum load has been applied, the penetration of the loading cylinder into the passenger compartment shall not exceed 10 inches from its original point of contact. There can be no separation of lapped panels or construction joints. Punctures, tears or breaks in the external panels are acceptable but are not permitted on any adjacent interior panel. Body companies shall certify compliance with this intrusion requirement, and include test

results, as requested.

- B. Construction shall be reasonably dust-proof and watertight, so that the bus does not leak under normal operating conditions.
- C. Body joints present in that portion of a Type A school bus body furnished exclusively by the body manufacturer shall conform to the performance requirements of FMVSS 221, "School Bus Body Joint Strength." This does not include the body joints created when body components are attached to components furnished by the chassis manufacturer.
- D. Type A school bus bodies shall be equipped with restraining barriers conforming to FMVSS 222, "School Bus Passenger Seating--Crash Protection," Sections 5.2 and 5.3.

### **CROSSING CONTROL ARM**

- A. All school buses shall be equipped with a crossing control arm mounted on the right side of the front bumper. When opened, this arm shall extend in a line parallel to the body side and aligned with the right front wheel.
- B. All components of the crossing control arm and all connections shall be weatherproofed.
- C. The crossing control arm shall incorporate system connectors (electrical, vacuum or air) at the gate and shall be easily removable to allow for towing of the bus.
- D. The crossing control arm shall be constructed of non-corrodible or nonferrous material or shall be treated in accordance with the body sheet metal specification.
- E. There shall be no sharp edges or projections that could cause injury or be a hazard to students. The end of the arm shall be rounded.
- F. The crossing control arm shall extend a minimum of 70 inches (measured from the bumper at the arm assembly attachment point) when in the extended position. The crossing control arm shall not extend past the end of the bumper when in the stowed position.
- G. The crossing control arm shall extend simultaneously with the stop signal arm(s), activated by stop signal arm controls.
- H. An automatic recycling interrupt switch may be installed for temporarily disabling the crossing control arm.