



# **Out-of-Service Criteria Emergency Egress 49CFR §393.62 - FMVSS 217**

**Bus Maintenance and Repair Council**

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# Topics

- ▶ Background
- ▶ Applicability
- ▶ Provision of Emergency Exits
  - Calculation of Required Exit Space
  - Exit Types and Operation
- ▶ Marking Requirements
- ▶ Current Out-of-Service Criteria – CVSA Resources



# Background

- ▶ National Highway Traffic Safety Administration (NHTSA)
- ▶ Federal Motor Vehicle Safety Standard (FMVSS)
  - Minimum performance standards for manufacturers
  - Requirements minimize the likelihood of occupants being ejected from the bus and provide a means of readily accessible emergency egress.
  - Current standard went into effect September 1994
  - Incorporated by reference into 49 CFR §393.62 of the Federal Motor Carrier Safety Regulations (FMCSRs)





# Applicability

- ▶ Emergency exits only apply to vehicles that meet the definition of a bus in FMVSS 571.3:

“Bus means a motor vehicle with motive power, except a trailer, designed for carrying more than 10 persons.”

- ▶ FMCSR bus definition does not apply.



# Determining the Provision of Emergency Exits



\*\*\*Vehicles manufactured after September 1994



# Determine the Provision of Emergency Exits

## ► Original Manufacture VS. Modified Configuration

- Complete Manufactured Vehicle
- Second Stage Manufactured Vehicle
- Modified Vehicle (Altered from original configuration)
- The original configuration of the bus, even if it was manufactured as a school bus, is irrelevant.

## ► FMVSS lists requirements for two types of buses.

- Buses Other than School Buses (Method One)
- School Bus requirements (Method Two)







# Determine the Provision of Emergency Exits

What type of bus is it?



School Bus

Buses other than  
a School Bus

Transportation of students to and  
from school or related events.

All other Buses!



# Method One

Buses Other Than School Buses





# Method One – Buses other than School Buses

## ► Method One – Buses other than School Buses

- Identify the number of seating positions including the driver, folding or jump seats.
- Marking of seating locations - “Not for use while vehicle is in motion” is no longer permissible.
- Seating Positions per manufacturer or actual seating capacity whichever is higher.
  - ⑩ Certification Plate
  - ⑩ Visual Count
  - ⑩ Modified seating (Seating positions in a row) - Calculation per 571.10 – Definition of Designated Seating Position (DSP)



# Method One – Buses other than School Buses

## ► § 571.217 S5.2.2.1 - Required Exit Space

- Must provide **unobstructed openings** for emergency exit which *collectively amount*, in total square centimeters, *to at least 432 (67 sq. in.) times the number of designated seating positions on the bus.*
- *At least 40 percent of the total required area* shall be provided on each side of a bus.
- No emergency exit, regardless of its area, *shall be credited with more than 3,458 square centimeters (536 sq. in.)* of the total area requirement.

# Exit Location, Type, Size and Operation

## ► Location and Type of Emergency Exit

- 40% on each side (distributed evenly – may be provided by doors or windows)
- Rear exit requirement – If unable to have rear exit, must provide roof hatch in rear portion of the bus. (Includes modified buses where rear door is blocked/eliminated)
- Entrance Door may or may not be a required emergency exit in a non-school bus.



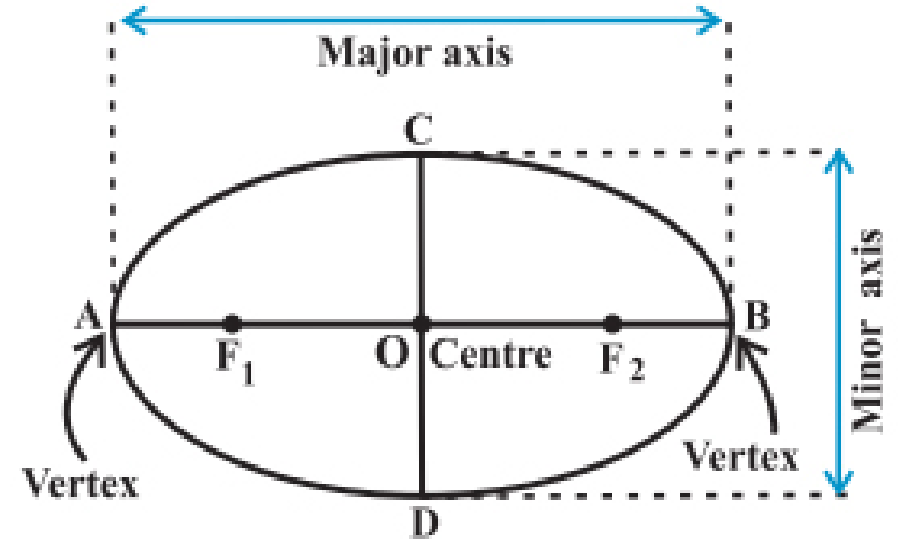
# Exit Location, Type, Size and Operation

## ► Size of Emergency Exit

- Must provide an opening large enough to admit unobstructed passage, *keeping a major axis horizontal at all times, of an ellipsoid generated by rotating about its minor axis, an ellipse having a major axis of 50 centimeters and a minor axis of 33 centimeters.*

- **What does that mean?**

*A football shape 19.7" X 13" must be able to pass through the opening.*



# Exit Location, Type, Size and Operation

## ► Emergency Exit Operation

- Exit must
  - ✓ Open and close securely as designed.
  - ✓ Allow opening by a single occupant.
  - ✓ Open to allow for passage meeting the required space.



## During Vehicle Inspections –

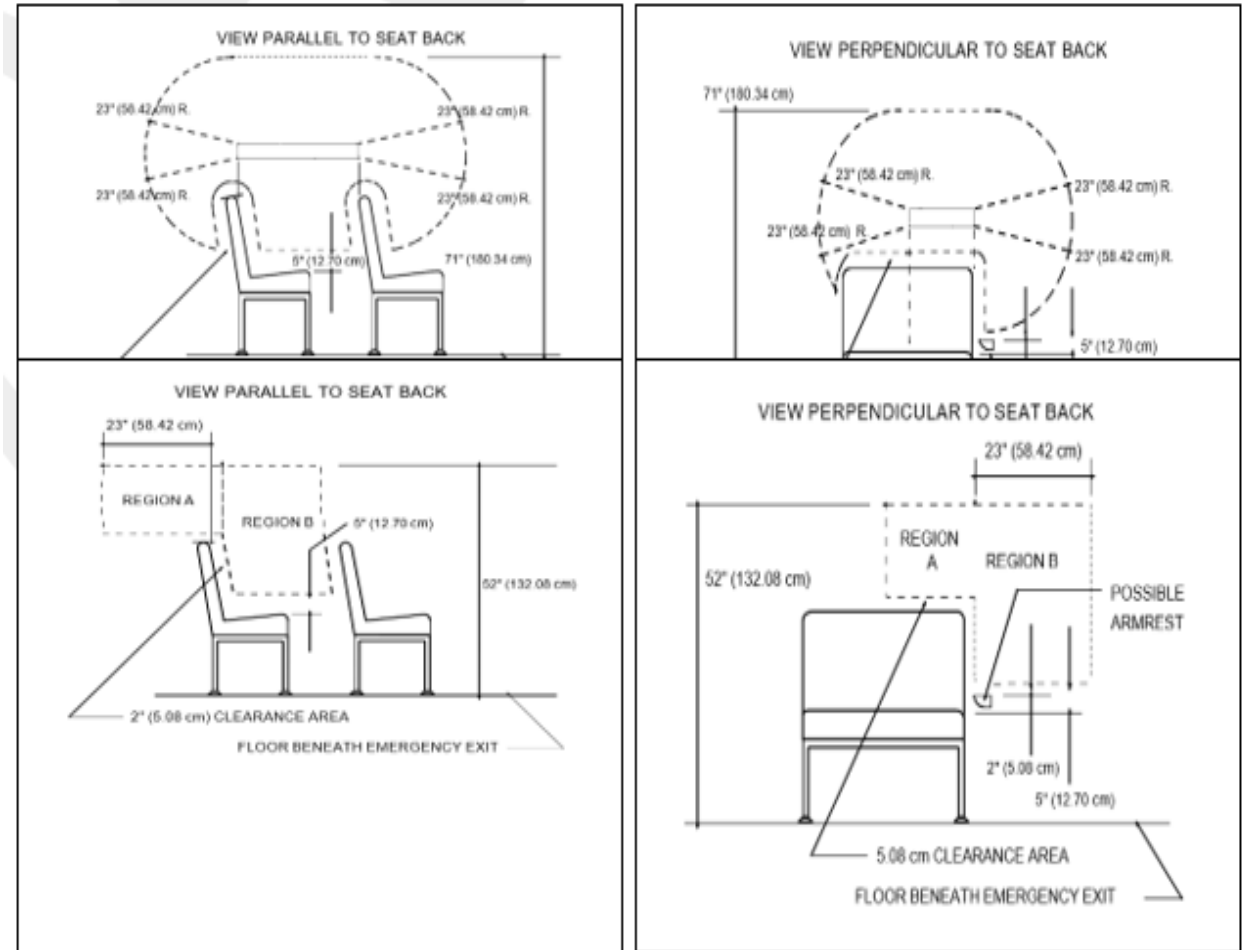
**Inspectors are instructed to NOT open exits. Drivers must operate each emergency exit.**

- ✓ Ensure drivers are trained to open AND close all emergency doors, windows and/or hatches.



# Exit Location, Type, Size and Operation

- ▶ **Emergency exit release mechanism.**
- ▶ Must be released by operating one or two mechanisms *located above the seat or arm rest* within that exit space, whichever is higher.
- ▶ An emergency exit *may not be opened with a tool* or remote control.





# Exit Location, Type, Size and Operation



# Unobstructed Openings.

## ► Seats in the sleeping position.

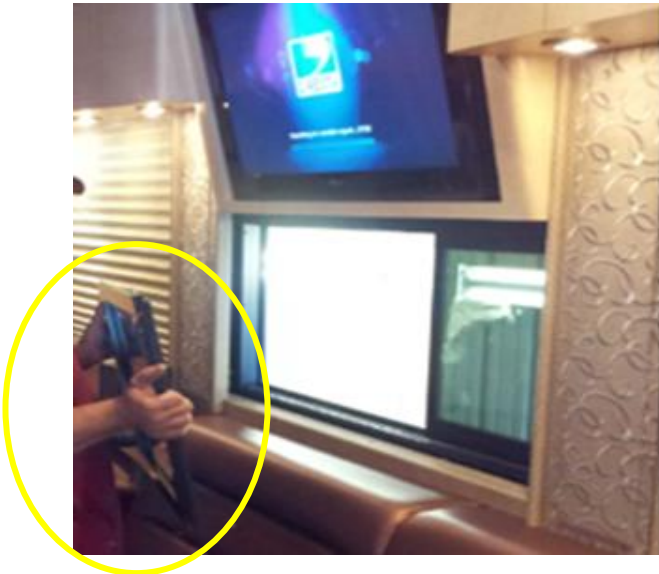
- Does the bus still meet the required amount of collective space?
- Are release mechanisms still in the required location?
- Do markings still meet the required visibility?



# Unobstructed Openings.

## ► Interior customizations.

- Does the bus still meet the required amount of collective space?
- Are release mechanisms still in the required location?
- Do markings still meet the required visibility?

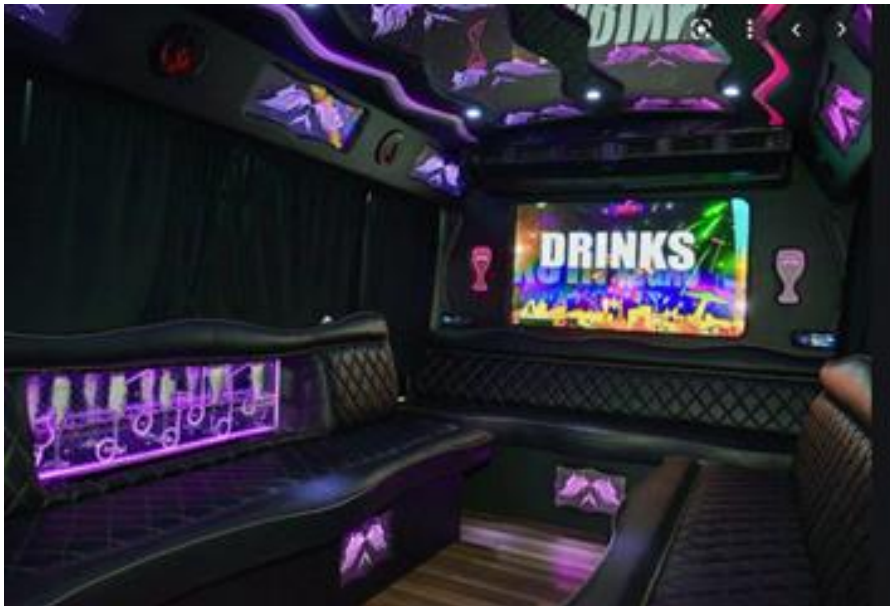




# Unobstructed Openings.

## ► Seats in the sleeping position.

- Does the bus still meet the required exit type and collective space ?
- Are release mechanisms still in the required location?
- Do markings still meet the required visibility?





# **Method Two**

## **Option A and Option B**

School Bus Provision

# Method Two – School Buses

- ▶ Method Two has two options referred to as Option A and Option B
  - Applicable to school buses operated by contractors in interstate commerce - outside of school bus operations. (home to school or school to home)
  - Applicable to buses other than school buses. (School Bus Provision)
    - Certified by original manufacturer or modified.
    - Components specific to school bus operations are not required in buses other than school buses certifying under Method Two.





# Method Two – School Buses

## ► School Bus –

- Removed from school bus operations
  - Providing transportation to adults will reduce the manufacturer's pupil seating capacity.  
(3 occupants to 2 per seating surface)
- School bus operations may vary by State and District. (exempt from interstate commerce requirements)
  - National Congress on School Transportation






# Method Two – School Buses

## ► Option A

- One Rear Emergency Door and the additional exits, if any, specified by Table 1.

SEATING CAPACITY	ADDITIONAL EXITS REQUIRED
1 - 45	None
46 - 62	1 left side exit door or 2 exit windows
63 - 70	1 left side exit door or 2 exit windows, and 1 roof exit
71 & ABOVE	1 left side exit door or 2 exit windows, 1 roof exit, and any combination of door, roof, or windows such that the total capacity credit specified in Table 3 for these exits, plus 70, is greater than the seating capacity of the bus



# Method Two – School Buses

## ► Option B

- One Side Emergency Door on the vehicle's left side and a Rear Push out Window and the additional exits, if any, specified by Table 2.

SEATING CAPACITY	ADDITIONAL EXITS REQUIRED
1 - 57	None
58 - 74	1 right side exit door or 2 exit windows
75 - 82	1 right side exit door or 2 exit windows, and 1 roof exit
83 & ABOVE	1 right side exit door or 2 exit windows, 1 roof exit, and any combination of door, roof, or windows such that the total capacity credit specified in Table 3 for these exits, plus 82, is greater than the seating capacity of the bus



# **Emergency Exit Marking Identification and Labeling**

# Marking Identification and Labeling

## ► Only three REQUIRED markings

- Emergency exit designation
- Release mechanism instructions
- Location of the release mechanism (if not in occupant space of a seat within the emergency exit area)

## ► REQUIRED content and location

- Visibility
- Should clearly convey message without confusion



# Marking Identification and Labeling







# Marking Identification and Labeling

- **Requirement 1** - Each required emergency exit shall have the designation "Emergency Door" or "Emergency Exit" as appropriate.



**EMERGENCY  
DOOR**



# Marking Identification and Labeling

- **Requirement 2** - Concise operating instructions *describing the motions necessary* to unlatch and open the emergency exit must be *located within 6 inches* (16 cm) of the release mechanism.



# Marking Identification and Labeling

- **Requirement 3** - If a release mechanism is not present in the occupant space of a seat *within the emergency exit area*, a label indicating the location of the *exit release mechanism*, must be placed within the occupant's space.





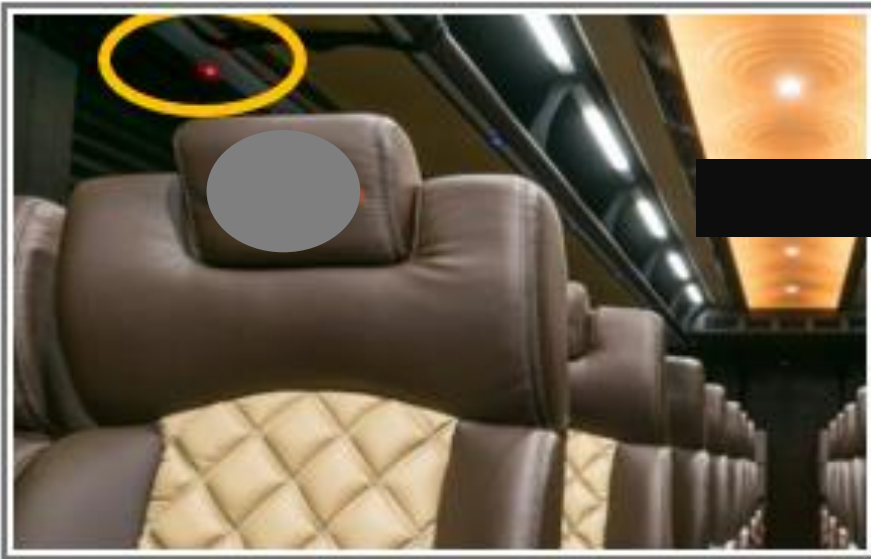
# Marking Identification and Labeling

- ▶ **Legible Markings.** Each required exit marking must be legible and capable of being read or deciphered when the only source of light is normal nighttime illumination from all specified locations near the emergency exit. These locations are:
  1. The seat(s) adjacent to (within) the emergency exit space,
  2. A seat beside the seat adjacent to the exit, and
  3. Standing in the isle beside these seats even when they are occupied.
- ▶ If the exit has no seats within the exit space, they must meet the legibility requirements for occupants standing in the aisle nearest to the emergency exit.



# Marking Identification and Labeling

- Some secondary manufacturers of limousines and custom coaches are placing red lights over emergency exit windows in lieu of the designation marking. This may be done in addition to the required labeling but does not meet the marking requirements in FMCSRs/FMVSS.



# Marking Identification and Labeling

- Many manufacturers or motor carriers apply labels to non-opening and/or non-emergency exit windows to indicate the location of the nearest emergency exit. *This is not a marking requirement in the regulations or FMCSRs/FMVSS.*







# **Investigations and Inspections Out-of-Service Criteria for Emergency Exits**



# Out-of-Service Criteria for Emergency Exits

- ▶ A required emergency exit, as determined by the emergency exit calculation/formula, has one of the following conditions:
  - Missing
  - Inoperative (does not open, close and/or secure as designed).
  - Not properly marked.
  - Obstructed (includes obstructions of the *markings, release mechanism and/or the opening* of the emergency exit.)



# Out-of-Service Criteria for Emergency Exits

- ▶ A *marked emergency exit* has one of the following conditions:
  - Inoperative (does not open, close and/or secure as designed).
  - Obstructed (includes obstructions of the *markings, release mechanism and/or the opening* of the emergency exit.)
- Some passenger vehicle manufacturers may offer emergency exits in excess of the required collective exit space. Although the additional exit may not be required, if it is marked with the emergency designation, it must comply with requirements.

# Avoiding Out-of-Service Conditions

- ▶ Identify certification method (Method One or Method Two) for each passenger vehicle in fleet and ensure each has adequate collective exit space, exit type and location.
- ▶ Ensure damaged or defective emergency exits are properly repaired.
  - Replace hinges, release mechanisms, etc. with compliant parts.
- ▶ Ensure all release mechanisms are operative and in the required location.



# Avoiding Out-of-Service Conditions

- ▶ Ensure each emergency exit is properly marked.
  - Ensure each marking meets the visibility requirements.
  - Ensure the marking conveys the proper message.
- ▶ Add Emergency Exits to pre-trip inspections.
  - Ensure all drivers know how to operate each type of emergency exit.  
(ESPECIALLY ROOF HATCHES)
  - Train drivers on how to inspect exit condition (open and close) and markings.
  - Require a walk-through inspection of exits by the driver after dropping off groups.
  - Ensure each bus/coach has a supply of markings on board to replace any missing or damaged markings that may occur during trips.



A banner at the top of the slide features a blurred image of a white bus on the left and the stars and stripes of the American flag on the right. The title 'Compliance Investigations' is centered in white text over the flag portion.

# Compliance Investigations

- ▶ Egress compliance will be inspected with on-site vehicle inspections.
- ▶ 90-Day Emergency Exit Inspection Records
  - Emergency windows, emergency doors, and emergency door markings must be inspected at least every 90 days.
  - A record of tests conducted on pushout windows, emergency doors, and emergency door markings on buses.