**Section 442.615 Lamps, Reflectors, and Signals**

a) See the FMVSS for requirements (49 CFR 571.108). Light Emitting Diode (LED) lamps that meet applicable FMVSS or SAE Standards or SAE Recommended Practices are acceptable.

b) Alternately Flashing Signal Lamps. Each bus shall be equipped with an eight lamp alternately flashing signal system that conforms to S5.1.4(b) of the FMVSS 108 (49 CFR 571.108) and Section 12-805 of the Code. A separate circuit breaker and a master switch shall be provided for this signal system. When in its "off" position, this master switch shall prevent operation of the eight lamp system; shall prevent operation of any lamps mounted on the stop signal arm panel required under subsection (hh); and shall prevent operation of any electrically controlled mechanism that would cause the stop signal arm panel to extend. The controls for the eight lamp flashing signals, the stop signal arm panel, and the service entrance door shall be arranged so as to provide for the following sequence of operations while the engine is running:

1) Place the alternately flashing signal system master switch in its "off" position. Close and secure the service entrance door. Actuate the alternately flashing signal system hand or foot control. The alternately flashing signal lamps of either yellow (amber) or red color shall not go on.

2) With the master switch "off" and the hand or foot control actuated, open the service door. The alternately flashing signals of either color shall not go on and the stop signal arm panel shall not extend.

3) Deactivate the hand or foot control. Place the alternately flashing signal system master switch in its "on" position. Close and secure the service door. Then open the service door. The alternately flashing signal lamps of either color shall not go on and the stop signal arm panel shall not extend.

4) Close and secure the service door. Actuate the alternately flashing signal system by hand or foot control. A yellow pilot lamp in the view of the driver and the yellow alternately flashing signals shall go on.

5) Desecure but do not open the service door. The yellow pilot and the yellow alternately flashing signals shall go off. A red pilot lamp in the view of the driver and the red alternately flashing signals shall go on. The stop signal arm panel shall extend.

6) Fully open the service door. The red pilot and red signals shall remain on and the stop arm shall remain extended.

7) Close but do not secure the service door. The red pilot and red signals shall remain on and the stop arm shall remain extended.

8) Open the service door. The red pilot and red signals shall remain on and the stop arm shall remain extended.

9) Close and secure the service door. The red pilot and red signals shall go off and the stop arm shall retract.

10) Open the service door. Alternately flashing signals of either color shall not go on and the stop arm shall not extend.

c) Interior Lighting. A minimum of two interior dome lamps shall be installed to adequately illuminate the entire aisle, the emergency passageway, and the stepwell. At least the nosings of the service entrance steps and the floor around the stepwell shall be illuminated automatically by opening of the service door. No lamp shall be installed at or near the eye level of a pupil moving through the service entranceway to the aisle unless such lamp does not shine directly into the eyes of any such pupil. For buses designed to transport 33 or more passengers, at least two interior illumination lamps shall be installed.

d) Rear Turn Signals. Yellow turn signal lamps shall be mounted on the rear as far apart as practical and as high as practical but below the rear window. The effective projected illuminated area of these turn signal lamps shall be no less than required for the yellow alternately flashing signal lamps required under subsection (b) of this Section; i.e., .0122 m2 (19 in2).

e) Side Turn Signals. Two yellow side turn signal lamps conforming to SAE J914 shall be installed on each bus designed to transport 33 or more passengers. The lamps shall be "armored" and mounted on the body between the rub rails required in Section 442.260. The right lamp shall be within 1 m (39.4") of the rear of the service entrance. The left lamp shall be approximately the same distance from the front bumper as the right lamp.

f) Stop Signals. Red stop lamps shall be mounted on the rear as far apart as practical but closer to the vertical centerline of the bus than the rear turn signal lamps required in subsection (d) of this Section, and at the same height as those turn signal lamps. The effective projected illuminated area of these stop lamps shall be no less than required for the red alternately flashing signal lamps required under subsection (b) of this Section, i.e., .0122 m2 (19 in2).

g) Strobe:

1) *One per bus;*

2) *Shall emit white or bluish-white light;*

3) *Shall be visible from any direction;*

4) *Shall flash 60 to 120 times per minute;*

5) *Shall be visible in normal sunlight;*

6) *Mounted at or behind center of rooftop and equal distance from each side. Distance from rear will be calculated by measuring height of filament and multiplying same by 30 inches* (i.e., filament height measured from the base of the strobe x 30 = distance from rear of bus where lamp is to be located). (Section 12-815 of the Code)

7) If a roof exit, air conditioner, or the size of the bus interferes with the placement of a strobe as required by subsection (g)(6), the strobe can be placed to the rear of the roof exit or air conditioner as near as practicable above the rear axle and horizontally centered between the rear tires.

h) Reflectors.

1) Front:

A) *Two yellow rigid or sheet type (tape) front reflex reflectors shall be attached securely and as far forward as practicable.* (Section 12-202 of the Code)

B) The front reflectors shall be located between 15 and 60 inches above the roadway at either fender, cowl, or body and installed so as to mark the outer edge of the maximum width of the bus.

C) No part of the required reflecting material may be obscured by a lamp, mirror, bracket, or any other portion of the bus. No part of the required reflecting material may be more than 11.8 inches (300 mm) inboard of the outer edge of the nearest rub rail (12 inches on a bus with chassis manufactured in March 1977 or earlier).

D) The reflector may be any shape (e.g., square, rectangle, circle, oval, etc.). A rigid type reflex reflector may be any size if permanently marked either DOT, SAE A, or SAE J 594; otherwise, it shall display at least seven square inches of reflecting material (about 3 inch diameter if a solid circle).

E) A sheet type (tape) reflex reflector may conform to the surface on which it is installed but its forward projected reflecting area shall be at least eight square inches.

F) Exception: Buses that measure less than 80 inches wide are exempt. (49 CFR 571.108)

2) Left Side:

 *One amber no more than 12 inches from the front and one red no more than 12 inches from the rear. Mounted at a height not less than 15 inches and not more than 60 inches above the surface of the road.* (Section 12-202 of the Code) On buses 20 feet or more in length, one amber as near center as practicable must also be provided. Reflectors must measure a minimum three inches in diameter.

3) Right Side:

 *One amber no more than 12 inches from the front and one red no more than 12 inches from the rear. Mounted at a height not less than 15 inches and not more than 60 inches above the surface of the road.* (Section 12-202 of the Code) On buses 20 feet or more in length, one amber as near center as practicable must also be provided. Reflectors must measure a minimum three inches in diameter.

4) Rear:

A) *Two red reflectors on rear body within 12 inches of lower right and lower left corners.* (Section 12-202 of the Code) Minimum three inches in diameter.

B) Exception: Buses that measure less than 80 inches wide are exempt. (49 CFR 571.108)

AGENCY NOTE: See Section 442.258 for retroreflective tape requirements.

(Source: Amended at 31 Ill. Reg. 8238, effective May 25, 2007)