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Maintenance Bureau Specification 2001-03
for
Changeable Message Sign, Vehicle-Mount
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This document describes the features and specifications for a vehicle-mounted, “Changeable Message Sign”. The message sign shall meet or exceed the following: 1) Current adopted edition of the MUTCD, chapter 6, section entitled “Portable Changeable Message Signs”, 2) Section 742 of the current Edition of the ALDOT Standard Specifications for Highway Construction, and 3) the specifications contained herein. All products must be inspected by the State Signal shop for acceptance on to the Approved Products List (APL) for the State. Proper paper work and fees shall be on file prior to any inspection taking place. All products submitted for bid shall be pre-qualified and included in the Alabama Department of Transportation’s “Materials, Sources, & Devices with Special Acceptance Requirements” (APL), List IV-3, “Work Zone Traffic Control Devices”, sub-heading “*Message Boards*”.

1.0 General

The following items will be addressed in the following sections: cabinet, display, control system, power plant, and mounting assembly.

- 1.01 Bonded delivery and warranty of the product shall be made available.
- 1.02 All wire, cable, and other electrical components shall be properly sized/rated for the unit and its operation and shall be suitable for exposed, outdoor installations subject to adverse weather conditions. The wiring harness shall be securely fastened inside the message sign to reduce fatigue and chaffing.
- 1.03 The changeable message sign shall not be affected by the use of mobile radios or phones.
- 1.04 The message sign shall be visible from a minimum of 0.5 miles under both day and night conditions and legible from a minimum distance of 650 feet.
- 1.05 The system shall be protected against short circuit, overload, and reverse polarity by appropriate fuses and protective devices.
- 1.06 The message sign shall be supplied with all software and hardware required for the operation and maintenance of the message sign, this is to include all manuals and guides.
- 1.07 Manufacturers exact model # including current configuration shall be readily visible.

2.0 Cabinet

- 2.01 The message panel/cabinet shall be constructed of extruded aluminum channel, approximately 1/8 inch thick minimum.

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- 2.02 The cabinet shall have convection and/or fan cooling adequate to protect components under high heat conditions.
- 2.03 The message cabinet shall be sealed to withstand all types of weather conditions.
- 2.04 The front face of the message cabinet shall be covered with an impact-resistant material and shall be non-glaring.
- 2.05 The cabinet and panel face shall be painted/coated non-reflective/flat black.
- 2.06 A weep hole shall be provided in the bottom of the message cabinet to provide for drainage of condensation as needed.
- 2.07 The mounting hardware for the sign shall be capable of obtaining a minimum height, of 7 feet, from the roadway to the bottom of the sign cabinet/panel.
- 2.08 The face of the display shall be accessible to allow safe and easy maintenance and repair of display.

3.0 Display

- 3.01 The element color shall be yellow, green-yellow, orange, or orange-yellow on a flat/non-reflective black background.
- 3.02 The display shall automatically adjust its brightness under varying light conditions, to maintain legibility and shall not be affected by headlights or street lights.
- 3.03 The display shall, at a minimum, be able to display 8 characters/line, for a minimum of 2 lines and legible as per paragraph 1.04.
- 3.04 On a full-matrix message sign, the display shall also be capable of displaying standard traffic and custom symbols.
- 3.05 The grid matrix for the display shall be easily accessed and modular for ease of repairs.
- 3.06 On a full-matrix message sign, the system shall be capable of performing the following arrow board modes as follows, if needed as per the flashing and sequential rates outlined in the MUTCD:
 - 1. Flashing Arrow, Left & Right
 - 2. Sequential Arrow, Left & Right
 - 3. Sequential Chevron, Left & Right
 - 4. Flashing Double Arrow
 - 5. Flashing Caution.

4.0 Control System

- 4.01 The control system shall include a display screen upon which messages can be reviewed before being displayed on the message sign.
- 4.02 The control system shall be capable of being mounted within the vehicle that the message sign is mounted on.
- 4.03 The control system shall be housed in a weather resistant, lockable box.

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- 4.04 The control panel shall be password protected to prevent unauthorized tampering of the message.
- 4.05 The control system circuitry shall be capable of providing, at a minimum, character/symbol intensity regulation over the range of 10.0 to 15 volts DC.
- 4.06 The controller shall be capable of adjusting the display rates, so that the entire message can be read at least twice at the posted speed, the off-peak 85th percentile speed prior to work starting, or the anticipated operating speed.
- 4.07 The controller shall be capable of connecting to a laptop PC for message configuration and control.

5.0 Power Plant

- 5.01 The power for the message sign shall be accomplished through a remote battery terminal, fused, and connected to the vehicle's charging system.
- 5.02 The power system for the message panel shall be isolated from the vehicle's battery by a properly sized battery isolator.

6.0 Mounting Assembly

- 6.01 The mounting assembly shall be capable of raising and lowering the arrow panel from within the vehicle to which the message panel is attached.
- 6.02 The mounting assembly shall also be capable of having the message panel raised or lowered from the outside of the vehicle via a hand-held control box.
- 6.03 Vehicle specific mounting assemblies shall be inspected and approved based on type of installation and vehicle installed on.