

# Special Specification 6028

## Dynamic Message Sign System



### 1. DESCRIPTION

Transport, install, and test Department-furnished Dynamic Message Signs (DMS), controller, and equipment cabinets.

### 2. MATERIALS

Provide all materials not supplied by the Department necessary for the DMS installation. All materials provided by the Contractor must be new. Include a task in the project schedule for delivery of Department furnished materials and provide a minimum of 30 days' notice to the Department for pick-up of Department-furnished materials. Unless otherwise shown on the plans, DMS will be stored by the Department for pick up at location shown on the plans.

Ensure that all materials and construction methods necessary to complete the installation conform to the requirements of this Item, the plans and the pertinent requirements of the following Items:

- Item 432, "Riprap"
- Item 441, "Steel Structures"
- Item 445, "Galvanizing"
- Item 449, "Anchor Bolts"
- Item 618, "Conduit"
- Item 620, "Electrical Conductors"
- Item 656, "Foundations for Traffic Control Devices"

### 3. CONSTRUCTION

- 3.1. **Installation.** Perform a site survey in advance of the proposed DMS location in order to determine the horizontal and vertical angles of the sign for optimum legibility, based on the manufacturer's recommendations.

Install DMS on overhead sign structures in accordance with this Item and the lines, grades, details and dimensions as shown on the plans or as directed. Maintain safe construction practices. Ensure the mechanical execution of work complies with NEC, Article 110.12. Equipment shall be installed in a neat and workmanlike manner.

Adjustments or additions of sign attachment hardware, support brackets, and appurtenances, such as walkways, conduit, etc., may be necessary for compatibility with specified sign positioning recommended by the manufacturer, as shown on the plans, or as directed. All adjustments or additional materials will not be paid for directly but will be subsidiary to this Item.

Prevent damage to all sign components. Replace any portion of the sign assembly that is damaged or lost during transportation or installation. Do not use any materials furnished by the Department on any work which is not required by and which does not constitute a part of the contract. Materials not used which were furnished by the Department must be returned undamaged to the location from which the materials were obtained upon completion of the work. Any unused or removed material deemed salvageable by the Engineer shall remain the property of the Department and shall be delivered to a designated site. Accept ownership of unsalvageable materials and dispose of in accordance with federal, state, and local regulations.

Stockpile all materials designated for reuse or to be retained by the Department within the project limits or at a designated location as directed.

Equipment to be installed at each DMS field site shown on the plans may include, but not be limited to, the following:

- Dynamic Message Sign (DMS), controller and cabinet (provided by the Department)
- Cabling and connectors from power source to DMS connection point as specified by the DMS manufacturer (Provided by the Contractor).
- Cabling and connectors from telecommunications source to DMS connection point as specified by the DMS manufacturer when required (Provided by the Contractor).
- Communications as shown on the plans
- Power and communication cabling and connectors from controller to DMS shall follow NEMA TS4, Section 4, "Controller to Sign Interface," (cables and termination provided by the Contractor)

Make all arrangements for connection to the power supply and telecommunications source including any required permits. Supply and install any required materials not provided by the utility companies (power or communications service provider).

Construct the foundation for DMS Controller cabinets, when required as shown on the plans, in accordance with Item 656, "Foundations for Traffic Control Devices", unless otherwise directed. Include a 6 ft. x 6 ft. x 5 in. (L x W x D) riprap maintenance pad with foundation, unless otherwise directed. Provide a 5/8-in. diameter by 8 foot copper clad steel ground rod in the foundation of each DMS Controller cabinet.

After the signs have been erected, wash the exterior of the entire sign with a biodegradable cleaning solution, approved by the Engineer, to remove all dirt, grease, oil smears, streaks, finger marks, and other foreign particles.

- 3.2. **Technical Assistance.** Ensure that a manufacturer's representative is available to assist the Contractor's technical personnel at each sign installation site. The manufacturer's representative must provide technical assistance in following areas:

- Site survey for horizontal and vertical angles of sign's mounting orientation
- Sign to structure installation (final responsibility of the Contractor, see 3.3., "Working Drawings.")
- Sign controller cabinet installation
- Sign to controller cabling
- Testing requirements given in Section 3.4., "Testing."

Do not execute the initial powering up of the signs without the permission of the manufacturer's representative.

- 3.3. **Working Drawings.** Before fabrication submit for approval 5 prints of the working drawings for attachment of each DMS. Show the details of any additional sign brackets, sign support connections, and methods of attachment of the signs to the sign support. Have a licensed professional engineer sign, seal and date the working drawings.

- 3.4. **Testing.** Testing of the sign system is for the purpose of relieving the Contractor of maintenance of the system. The Contractor will be relieved of the responsibility for maintenance of the sign system in accordance with Item 7, "Legal Relations and Responsibilities," after all testing is successfully completed.

After delivery of the DMS to the storage site, an approved demonstration test will be conducted prior to transporting the sign to the installation site. Have a manufacturer's representative available to assist with making all necessary connections and preparations for this testing.

After all signs have been installed, the Department and the DMS manufacturer will conduct approved continuity, stand alone, and DMS system tests on the installed field equipment with central, remote, and

laptop equipment. A final acceptance test will be conducted to demonstrate all control, monitor, and communication requirements for 90 days. The Engineer will furnish a Letter acknowledging the final acceptance testing commencement date stating the first day of the final acceptance test. The completion of the final acceptance test occurs when system downtime due to mechanical, electrical, or other malfunctions to equipment furnished or installed does not exceed 72 hr. and any individual points of failure identified during the test period have operated free of defects. Assume responsibility only for test failures directly related to the work in accordance with this Item. Upon completion of successful final acceptance testing, permanently mark acceptance date and project identification information inside the controller cabinet. The Department will pay for electrical energy consumed by the system.

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**4. MEASUREMENT**

This Item will be measured as each DMS system installed and tested.

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**5. PAYMENT**

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Installation of Dynamic Message Sign System" of cabinet mounting type specified (pole mounted, foundation mounted or wall mounted). This price is full compensation for transportation and installation of DMS; furnishing and installing any new mounting hardware, and DMS controller cabinet foundation when required; storing the DMS when required; cleaning and testing the DMS; replacement/repair of damaged components; disposal of unsalvageable material and for all manipulations, labor, tools, working drawings, equipment and incidentals.

New overhead sign supports or relocation of existing overhead sign supports will be paid for under Item 650, "Overhead Sign Supports." New drilled shaft foundations will be paid for under Item 416, "Drilled Shaft Foundations." Sign walkways will be paid for under Item 654, "Sign Walkways."