

Texas Department of Transportation

Technical Provisions

Book 2

Attachment 17-2

Statewide Special Specification

SPECIAL SPECIFICATION**1238****Integration of LED Dynamic Message Signs**

1. **Description.** This Item shall govern for the integration of the Contractor installed LED dynamic message signs (DMS) system with existing LED DMS equipment and communications network.

The existing LED DMS manufactured by others have been installed and are currently in operation at locations as shown on the plans.

The materials and equipment to be furnished and installed and the work to be performed shall be as detailed in the corresponding special specifications in the contract, and as directed by the Engineer.

2. **Materials.**

- (1) **General Requirements.** All materials furnished assembled, fabricated or installed for this Item shall be new, corrosion resistant and in strict accordance with the details on the plans and in the specifications.

The integration of the existing LED DMS equipment shall include, but not be limited to, the following:

Review of the design and operation of the existing LED DMS equipment. Available documentation for the existing LED DMS will be supplied by the Department.

Modification and/or addition of equipment to interface the proposed LED DMS equipment with the existing LED DMS equipment to produce one completely compatible LED DMS system. No hardware changes shall be allowed on the existing equipment without prior approval of the Engineer.

Integration of the Contractor furnished proposed LED DMS equipment with the existing LED DMS equipment to produce one fully operational LED DMS system.

Any integration software required shall be supplied either by the Contractor, as approved by the Engineer, or by a third party developer approved by the Engineer.

Conducting subsystem tests of the integrated LED DMS subsystem.

Providing full documentation of the above work performed.

The Contractor shall be responsible for correcting all problems with existing LED DMS equipment and/or software, and repairing any LED DMS equipment damage, arising from the integration of the proposed LED DMS equipment with the existing LED DMS system.

- (2) **Electrical and Mechanical Requirements.** The Contractor shall furnish and install all cables necessary interconnect the existing LED DMS equipment with the proposed LED DMS equipment.

All connectors, terminal blocks, panels and surge arrestors shall be provided for the added wiring as shown on the plans and as directed by the Engineer.

Any special interface equipment or software required to interface the proposed LED DMS equipment with the existing LED DMS, at location(s) directed by the Engineer, shall be included in this bid item.

Any equipment added for this bid item shall comply with Special Specification, "LED Dynamic Message Sign System".

- (3) **Environmental Design Requirements.** Any material used or equipment provided shall meet the environmental requirements described in Special Specification, "LED Dynamic Message Sign System".

3. Construction Methods.

- (1) **General.** Any addition of equipment shall employ design and construction utilizing the latest available techniques with a minimum of different parts, subassemblies, circuits, cards and modules to maximize standardization and commonality.

The equipment shall be designed for ease of maintenance. All component parts shall be readily accessible for inspection and maintenance. Test points shall be provided for checking essential voltages and waveforms.

- (2) **Electronic Components.** All electronic components shall comply with Special Specification, "Electronic Components".

- (3) **Mechanical Components.** All external screws, nuts, and locking washers shall be stainless steel; no self-tapping screws shall be used unless specifically approved by the Engineer.

All parts shall be made of corrosion resistant material, such as plastic, stainless steel, anodized aluminum or brass.

All materials used in construction shall be resistant to fungus growth and moisture deterioration.

Dissimilar metals apt to corrode through electrolysis under the environmental operating conditions specified shall be separated by a dielectric material.

- (4) **Documentation Requirements.** Ten complete sets of operation and maintenance manuals shall be provided. The manuals shall, as a minimum, include the following:

Complete modification details to the existing LED DMS equipment.

Complete wiring and cabling details of the additions and modifications.

For additional equipment provided under this bid item, complete schematic diagrams, installation procedures, complete performance specifications, complete parts list, pictorial of components layout on circuit board, and complete stage-by-stage explanation of theory and operation.

All software provided for this project, whether commercial-off-the-shelf (COTS) or vendor developed, shall be provided with all original disks, packing materials, licensing, and software. Vendor shall pre-register all COTS software for the Department in the Department's name.

The documentation described above may be included in the DMS manuals with the approval of the Engineer.

- (5) **Testing.** The testing shall be in accordance with the Special Specification, "Testing, Training, Documentation, and Final Acceptance and Warranty", Article 2. and Article 5.
4. **Measurement and Payment.** No direct measurement or payment will be made for the work performed and materials and equipment furnished in order to provide the Integration of LED Dynamic Message Signs, made fully operational and tested in accordance with this specification, but all of the above shall be considered subsidiary to Special Specification, "LED Dynamic Message Sign System."