

Special Specification 6079

Automated Portable Smart Traffic Monitoring System



1. DESCRIPTION

Furnish, install, relocate, operate, service, and remove various components of an automated, quickly deployable, portable, real time smart traffic monitoring system (STMS) meeting the requirements noted herein, and providing the maintenance of the complete system for the duration of the project or as directed by the Engineer.

Furnish an on-site System Coordinator. The Contractor is to maintain this system and shall be locally available to service and maintain system components, move portable devices as necessary and respond to emergency situations. The Contractor has oversight responsible for directing placement of devices in the project area. The Contractor is to be accessible seven days a week and twenty-four hours a day while the system is deployed. The Contractor shall provide contact information for the system coordinator and others responsible for maintenance of the system prior to installation of the system. The STMS is to be monitored throughout any period of deployment. .

Furnish a system capable of providing advance traffic information to motorists when there is a slowing of traffic due to congestion resulting from lane reductions or other conditions. The condition-responsive notification to the motorist occurs with the use of Portable Changeable Message Signs (PCMS) activated through real-time traffic data collected downstream of the PCMS location. This equipment must be a packaged system that operates as a stand-alone STMS meeting this specification. Conditions might exist that require multiple deployments of this system at a given time. The Department reserves the right to terminate this item at any time if it determines this STMS is not performing in accordance with this specification or the Contractor has met the responsibilities identified in this specification.

Provide an STMS that consists of the following field equipment: portable /battery (solar optional) powered non-invasive vehicle detection devices and solar/battery powered PCMS's. Provide a system capable of withstanding inclement weather conditions and can continue to provide adequate solar and battery power. The system must calculate and notify drivers via PCMS's of the traffic delay conditions ahead. All message dialog is to be approved by the Engineer prior to use. The number and location of detection, and message trailers are defined in the plans and as directed by the Engineer.

The decision to deploy or relocate field equipment is made by the Engineer and instrumented through the System Coordinator. The decision for equipment removal is made by the Inspector after work is complete.

The detector is capable of collecting traffic speed data. The processed data is used to remotely control PCMS's to display user definable, Engineer approved and locally stored messages. The message trigger state thresholds are user configurable. The STMS will provide the means to transmit the processed speed data to an external host and in accordance to the communication scheme and data format as defined in the plans.

The PCMS will be the line matrix type, at a minimum, in accordance with Item "Portable Changeable Message Sign" and all its required provision, with the additional capability of supporting communications via modem/radio/CDMA/GPRS, remote message and flashing-beacon control.

2. MATERIALS

Provide material that complies with the requirements of this Item and the details shown on the plans. All materials used shall meet the manufacturer's specifications and recommendations. The Contractor must maintain an adequate inventory of parts to support maintenance and repair of the STMS.

Provide Department approved portable changeable message signs (PCMS) to convey real-time traffic condition information to motorists. The PCMS shall comply with TxDOT Statewide Special Specification "Portable Changeable Message Sign" and all its required provisions, the 2011 TMUTCD and shall incorporate an approved portable trailer. Each PCMS battery backup shall have adequate capacity to allow continuous operation for a minimum 14 days during periods of darkness and inclement weather.

3. CONSTRUCTION

Provide all equipment, supplies, materials, and labor to make the system operational. Assume all communication costs including cellular telephone service, FCC licensing, wireless data networks, satellite and internet subscription charges, solar system support, and battery charging and maintenance. Additional to these requirements, the Contractor shall assume all responsibility for any and all damaged equipment due to crashes, vandalism, adverse weather, etc. that may occur during the contract period.

The STMS operates continuously when deployed on the project. The system is in a constant "data collection" mode. STMS Technical Support must be available for all periods of operation.

In the event, communication is lost between any field equipment, provide a means and staff to manually program a PCMS message. If communication is lost for more than 10 consecutive minutes, the system shall revert to a fail-safe ROAD/WORK/AHEAD message displayed on the PCMS(s) until communications is restored.

System Operator local control functions and remote management operations must be password protected.

The STMS shall be capable of acquiring traffic information and selecting messages automatically without operator intervention after system initialization. The lag time between changes in threshold ranges and the posting of the appropriate PCMS message(s) shall be no greater than 60 seconds. The system operation and accuracy must not be appreciably degraded by inclement weather or degraded visibility conditions including precipitation, fog, darkness, excessive dust, and road debris.

The system shall be capable of storing ad-hoc messages created by the System Coordinator and logging this action when overriding any default or automatic advisory message.

The STMS communication system shall incorporate an error detection/correction mechanism to insure the integrity of all traffic conditions data and motorist information messages. Any required configuration of the STMS communication system shall be performed automatically during system initialization.

Pre-deployment system acceptance is based on the successful performance demonstration of STMS for a 5 day continuous period in accordance to this specification and as set forth in the plans. Ensure compliance to all FCC and Department specifications. Supply a medical statement as to the safety of the detection unit to the general public when required.

4. MEASUREMENT

This Item will be measured by the calendar day, including Saturday and Sunday, for the detection unit(s) and portable changeable message sign(s) of the configuration system type(s) shown on the plans, required for the handling of traffic through the work areas on the project. All PCMS units shall be set up on the work area and operational before the calendar day can be considered measurable.

5. PAYMENT

The work performed and materials furnished in accordance with this Item and as provided under "Measurement" will be paid for at the unit bid price for "Automated Portable Smart Traffic Monitoring System". This price shall be full compensation for the use of all equipment, including labor to set-up, furnish, operate, relocate, and/or remove sign unit(s), replacement parts, maintenance, all related consumables, software, programming, and for incidentals necessary to complete the work.