

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
INTEGRATION, ADVANCED TRAFFIC MANAGEMENT SYSTEM SOFTWARE

MET:RDM

1 of 6

APPR:EG:MS:10-05-21

a. Description. This work consists of performing device confirmation testing, and unit testing and software integration of closed-circuit television (CCTV) cameras, dynamic message signs (DMS), microwave vehicle detection systems (MVDS), and other ITS devices with the MDOT statewide Advance Traffic Management System (ATMS) software as called for by the contract. Procure the MDOT ATMS vendor as a subcontractor to perform device confirmation testing, unit testing, and software integration as described in this special provision so that the ITS devices will perform with complete functionality using the ATMS as described in the contract. Ensure that all devices procured under this contract can be integrated into the ATMS with full ITS functionality of each device as called for in the contract.

1. Request the MDOT ATMS vendor contact information from the Engineer.

2. The ATMS software integration must include two separate phases for each device. Contract with MDOT ATMS vendor to complete and document this work as a part of this contract.

A. Confirmation Testing. A test for each combination of device, make, model, and firmware version for compatibility with the ATMS software. Perform and document confirmation tests prior to any installation of equipment in the field. Submit results of confirmation tests to the Engineer for review and approval.

B. Unit Testing and Software Integration. A test of each individual device once installed in the field and ready for integration with the ATMS software. Perform unit testing and software integration prior to final acceptance testing of the system.

3. Work covered within this special provision is for individual combinations of type, manufacturer, make, model, and firmware version that are currently functional within the ATMS software or previously integrated into the ATMS software product. MDOT ATMS vendor is to provide the Contractor with the information necessary to confirm device interoperability with the ATMS software.

4. If a combination of type, manufacturer, make, model, and firmware version is selected by the Contractor, which has not previously been deployed or accommodated for use in the MDOT ATMS software, MDOT ATMS vendor must provide testing services based on the documented device protocols, cut sheets, and development efforts associated with integration of the new device combination with the ATMS software. MDOT ATMS vendor will have 5 working days to review protocols and cut sheets to form an accurate integration cost estimate for new device combinations selected by the Contractor. Any new software development or modifications to the ATMS software must be covered at no additional expense to the contract.

5. The Department will not grant an extension of time or any increase in cost associated with the use of devices, equipment, and/or manufacturers that have not been previously tested with the ATMS software. If a piece of equipment procured by the Contractor is unable to be fully integrated into the ATMS software, that piece of equipment must be considered defective and the Contractor must replace it with a device that is able to be integrated into the ATMS at no additional expense to the contract.

b. Materials. No materials need to be provided as a part of this special provision. Furnish labor, technical expertise, and any required specialized test equipment to perform the tasks as detailed herein.

c. Construction. Notify MDOT ATMS vendor in writing when devices are ready for confirmation testing, unit testing, and software integration.

1. Provide MDOT ATMS vendor with the following items:

A. Provide required operational and configured communications devices, such as IP modems or others, as required for communications to a device for testing.

B. MDOT ATMS vendor must perform confirmation testing within 5 working days of receipt of the device; upon successful completion of the confirmation testing all devices provided by the Contractor must be returned to the Contractor.

C. Coordinate confirmation test dates such that minor issues can be resolved through phone call, email, or on-site support from the Contractor during the confirmation test. This coordination assumes minor issues are diagnosed and resolved, and retesting is able to occur the same day.

D. Ensure communications for all devices is routed to a point on the network that is accessible to the ATMS software.

2. Document and furnish the results of the confirmation tests, unit tests, and software integration for each device type; to the Department for review and approval.

3. CCTV camera.

A. Confirmation testing.

(1) The Contractor must ship to MDOT ATMS vendor all equipment necessary to complete testing the CCTV camera system for all functions called for in the contract, including:

(a) One CCTV camera (with an integrated digital video encoder) for each make/model/firmware.

(b) One modem consistent with each type of communication method being employed.

(c) A Pan/Tilt/Zoom (PTZ) unit, if separate from the camera.

(d) Power supplies necessary to operate the camera and its modem.

(e) Furnish cut sheets, manuals, documentation, and a packing listing for all shipped equipment.

(2) MDOT ATMS vendor must set up and test the equipment for the following:

(a) Verify a usable CCTV camera stream is available to the MDOT ATMS software through an open source VideoLAN Client (VLC) decoder.

(b) Verify Pan, Tilt, Zoom, Focus, and Iris controls through the ATMS software.

(c) Verify low atmospheric pressure alarm, if applicable.

B. Unit testing and software integration.

(1) Provide unit testing, software integration, and documentation required to integrate the video and PTZ control into the ATMS software, allowing all standard CCTV camera functions called for in the contract to be used for the new cameras including:

(a) Map icons.

(b) Inclusion in the database.

(c) Archive services.

(d) Inclusion in applications that use or refer to CCTV cameras.

(2) Perform testing and any possible modifications in preparation for ATMS software server integration.

(3) Update any ATMS software documentation to include the new CCTV camera inventory data.

4. DMS.

A. Confirmation testing.

(1) The Contractor must ship to MDOT ATMS vendor all equipment necessary to complete testing the DMS (excluding the sign cabinet and display boards) for all functions called for in the contract. This equipment must include:

(a) One DMS controller for each make/model/firmware.

(b) One modem consistent with each type of communication method being employed.

(c) Power supplies necessary to operate the controller and its modem.

(d) Furnish cut sheets, manuals, documentation, and a packing listing for all

shipped equipment.

(2) MDOT ATMS vendor must set up and test the equipment for the following:

- (a) Consistency with MDOT ATMS software control requirements.
- (b) The ability to communicate continuously with the ATMS software.

B. Unit testing and software integration.

(1) Furnish field personnel to confirm messaging from remote operations for each DMS during testing.

(2) Provide the configuration and possible software modifications to fully integrate the DMS into the ATMS software, allowing all functions called for in the contract to be used for the new signs including:

- (a) Map icons.
- (b) Inclusion in the database.
- (c) Archive services.
- (d) Inclusion in applications that use or refer to DMS.

(3) Perform testing and any possible modifications in preparation for ATMS software server integration.

(4) Update any ATMS software documentation to include the new DMS inventory data.

5. MVDS.

A. Confirmation testing.

(1) The Contractor must ship to MDOT ATMS vendor all equipment necessary to test complete the MVDS for all functions called for in the contract including:

- (a) One MVDS for each make/model/firmware.
- (b) One modem consistent with each type of communication method being employed.
- (c) Power supplies necessary to operate the MVDS and its modem.
- (d) Furnish cut sheets, manuals, documentation, and a packing listing for all shipped equipment.

(2) MDOT ATMS vendor must set up and test the equipment for the following:

- (a) Consistency with MDOT ATMS software control and data acquisition

requirements.

(b) The ability to communicate continuously with the ATMS software.

B. Unit testing and software integration.

(1) Provide the configuration and possible software modifications to seamlessly integrate the MVDS traffic data into the ATMS software, allowing all functions called for in the contract used for the new detectors including:

(a) Map icons.

(b) Inclusion in the database.

(c) Archive services.

(d) Inclusion in applications that use or refer to MVDS.

(2) Perform testing and any possible modifications in preparation for ATMS software server integration.

(3) Update any ATMS software documentation to include the new MVDS inventory data.

6. Ramp Meter Signal Controller.

A. Unit testing and software integration.

(1) Furnish field personnel to confirm ramp meter operation for each ramp meter signal controller during testing.

(2) Provide documentation required to integrate the ramp meter signal controller into the ATMS software. MDOT's current ATMS provider will upload their advanced ramp metering algorithm to each signal controller providing all standard and advanced ramp meter functions called for in the contract to be used for the new signal controller including:

(a) Map icons.

(b) Inclusion in the database.

(c) Archive services.

(d) Inclusion in applications that use or refer to ramp meter signal controllers.

(3) Perform testing and any possible modifications in preparation for ATMS software server integration.

(4) Update any ATMS software documentation to include the new ramp meter signal controller inventory data.

d. Measurement and Payment. The completed work, as described, will be measured as a lump sum and paid for at the contract price using the following pay item:

Pay Item**Pay Unit**

Integration, Advanced Traf Management System SoftwareLump Sum

Integration, Advanced Traf Management System Software includes the complete integration, testing, modification, and documentation of all the devices shown in the contract (with complete functionality called for in the contract) to the ATMS software called for herein.