



CITY OF SUFFOLK

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ADDENDUM NO. 5

IFB #21023-JS
December 22, 2020
Purchasing Division
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The Invitation for Bid (IFB) for IFB 21023-JS for the Bridge Road Intersection project for the Department of Public Works has been amended. The following information, questions and answers is hereby made a part of the Contract Documents for IFB 21023-JS as fully and completely as if the same were fully set forth therein:

Q1: For the ECMS, the plans (sheets 2AE and 2AF) show the maximum height of each ECMS to be 12". However, the specifications state the ECMS shall be capable of displaying 18" characters. This is not possible with a 12" high sign. Please advise what character height is requested.

A1: The statement in the specifications should have read "the ECMS shall be capable of displaying 8" characters." See Attachment.

Attachment – Revised Special Provision for Dedicated Dynamic Message Sign (5 pages)

Contract Officer:


Jay Smigielski, Purchasing Agent

All other specifications, provisions, terms and conditions of the IFB are unchanged.

Acknowledgement of this addendum is required in the bid.

If you have any questions regarding this Addendum, please contact Jay Smigielski, Purchasing Agent at jsmigielski@suffolkva.us

SPECIAL PROVISION FOR
DEDICATED DYNAMIC MESSAGE SIGN

I. Description:

This work shall consist of furnishing, installing, integration testing, and acceptance testing a dedicated dynamic message sign (DDMS) at locations shown in the Plans and meeting the requirements defined herein.

A DDMS shall include the following:

- Static Sign Panel
- Electronic Changeable Message Sign
- Sign Structure and Mounting Hardware
- Cabling
- DDMS TOC integration testing
- Acceptance Testing
- Documentation
- Training
- Support

The DDMS shall be used as a component of the City's travel time system to display estimated travel times to the traveling public. The DDMS shall display travel times from the Wi-Fi detection system's central server, as calibrated specifically for the subject corridor.

II. Materials:

All components of the DDMS shall be fully compatible and operational with the City of Suffolk's Traffic Operations Center (TOC) central system software.

All materials furnished shall be new products. Reconditioned equipment or system components shall not be used. The materials, equipment, and components shall be commercial off-the shelf products.

The DDMS shall consist of static signage with an incorporated electronic changeable message sign (ECMS) as shown in the Plans or as approved by the Engineer. The Contractor shall furnish and install with appropriate mounting mechanisms; cable for the transmission and receipt of travel time data and communications between the field detector and the communication system hardware in the ITS field controller cabinet; and all required power and data cables.

The Contractor shall refer to the respective VDOT Specifications for Intelligent Transportation Systems (ITS) where associated elements such as ITS field controller cabinets, poles, conduit, and UPS/power are required. All equipment supplied shall be identical at each field installation location and shall be completely interchangeable within the project.

(a) ECMS

The DDMS shall use an ECMS to display varying lengths of travel time, in minutes, as dictated by the Wi-Fi travel time detection system. The ECMS shall be installed integral to a portion or portions of the sign panel, as shown on the Plans.

Materials for the ECMS shall meet the requirements of Section 804.02.

(b) Sign Panel

The DDMS shall display static information such as route names on a sign panel, as specified in the Plans.

Sign panel materials shall meet the requirements of Section 701.02.

(c) Sign Structure

The DDMS shall be mounted to a ground mounted or overhead sign structure, as indicated in the Plans.

Sign structure materials shall meet the requirements of Section 700.02.

III. Equipment:

ECMS Equipment shall be provided as follows:

(a) General

Each sign shall be provided with the mounting hardware necessary to attach the sign assembly to the DMS support structure. All structural components of the DMS, support structure attachment hardware, and foundation shall be designed, signed, and sealed by a Professional Engineer holding a valid license to practice engineering in the Commonwealth of Virginia.

The DMS communications protocol shall be the National Transportation Communication for ITS Protocol (NTCIP) Version 02.35 (1203 v02.35). The protocol shall be downward compatible with the City's NTCIP V1 protocol currently in use at the Suffolk Transportation Operations Centers (TOC).

The DMS shall meet all applicable electrical, structural, and environmental requirements of the Commonwealth of Virginia including but not limited to the Specifications, the MUTCD, the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, the National Electrical Code, and any Commonwealth of Virginia addendums and supplements to these standards. The ECMS shall be designed to comply with minimum NEMA TS-4 2005 standards.

Each DMS shall consist of the following minimum components and general requirements:

- Light Emitting Diode (LED), Full Matrix Display technology.
- Structural support to DMS sign case mounting brackets, I-beams, Z bars, bolts, nuts, washers and other hardware required for the installation to the DMS support structure.
- Roadside Control Cabinet mounted DMS Controller Unit, DMS Controller Unit Software, DMS maintenance Software and documentation, Fiber Optic Cable (or approved manufacturer's cable) for connection between the sign case control and the Roadside Control Cabinet Control. 804.03 929
- All materials shall be new and free of defects and blemishes. Materials shall be handled so that no stress is introduced during the fabrication, assembly, or storage processes that reduces the strength or durability of the material from the material vendor's specifications. Protective coatings shall be applied in conformance with the manufacturer's recommendations to achieve maximum coating life.
- All hardware and fasteners shall be stainless steel.
- All electronic components shall be rated for NEMA TS-4 environmental conditions. Electrical / electronic component power, signal, data, board to board, board to connector and grounding connections shall be non-corrosive, low loss, vibration resistant points that pass the minimum and maximum current levels without loss levels that reduce the performance of the inter-mating assemblies when subjected to NEMA TS-4 environmental conditions.

(b) Display Specifications

The ECMS shall be capable of displaying two or three characters per line, as indicated in the plans to display travel times up to 999 minutes. Display character height shall be 48" with a standard 5x7 font array. The display shall use amber LED pixels with a pixel pitch of 35mm or less. Posted

times shall be visible within a minimum 30 degree cone of vision centered around the optical axis of each pixel.

The display shall be visible 24 hours per day and shall not be adversely affected by sunlight. A photocell shall be used to automatically adjust the output of the display in low lighting conditions.

(c) Electrical Specifications

The ECMS display units shall use 120VAC power sources. A surge protection device (SPD) shall be installed at each ECMS power source to protect the equipment from surge voltages.

(d) Environmental Specifications

The ECMS display units shall be hardened for full-time exposure to the elements. ECMS controller equipment shall be hardened for field cabinet conditions and require minimal maintenance. The units shall not be adversely affected by varied weather conditions, such as rain, fog, heat, or wind. All ECMS equipment shall have a minimum operating temperature range of -30 degrees F to 165 degrees F and humidity range of 0 percent to 95 percent.

(e) Controller Specifications

The ECMS controller shall be placed within a cabinet where designated by the Plans or directed by the Engineer. Each controller shall be able to support a minimum of two displays.

(f) Communications Standards

The ECMS controller shall support native Ethernet communications. The controller shall feature two Ethernet ports capable of 10/100 speeds, at a minimum.

(g) Cable and Connectors

Connectors shall be provided and installed that are compatible with the communications equipment interface. Cables/adapters shall be supplied for connecting the ECMS display unit to the controller electronics and the local network switch. Furnish cable that contains shielding to prevent interference and crosstalk.

(h) Management Capability

The ECMS shall be managed locally and remotely with the City's existing Travel Time System Software.

An operator using a locally connected laptop computer shall be able to conduct system setup, calibration, and diagnosis operations.

The laptop computer and the Wi-Fi travel time reporting system shall have the capacity to communicate when connected directly via the Ethernet port or remotely from the TOC. The laptop computer and Wi-Fi travel time reporting system shall be able to communicate across the ITS system's communication network.

IV. Procedures:

The contractor shall install, configure, integrate and demonstrate a fully functional DDMS to the Engineer. Furnish all equipment with the appropriate power and communication cables. Install the power and communication lead-in cables according to the manufacturer's recommendation. Neatly install and organize all cabinet accessories, connectors, surge suppression and communications connections for the DDMS controller assembly in the closest controller cabinet, where identified in the Plans. The layout and design of all connections and accessories mounted on the shelf shall be approved by the Engineer. Connect all field hardware and TOC components to the existing communication network, and provide all materials specified in the Contract Documents. Install all equipment according to the manufacturer's recommendations or as directed by the Engineer.

Furnish and install all necessary power and communications cabling and terminations in the controller cabinet for a fully functional system including operability at the cabinet and between the cabinet and any upstream and downstream cabinets. This shall include any fiber jumpers, Cat5e/6 jumpers, etc. that may be required for complete functionality of the project.

(a) System Installation

The Contractor shall use existing cabinets, communication and power wherever possible.

1. DDMS Display:

The Contractor shall mount all DDMS displays to the static signage as recommended by the manufacturer or as directed by the Engineer. Integrate DDMS display assembly with the appropriate controller as indicated in the Plans or directed by the Engineer.

2. DDMS Controller:

The Contractor shall mount all DDMS controllers as recommended by the manufacturer or as directed by the Engineer. Integrate DDMS controller assembly with the appropriate controller cabinet as indicated in the Plans or directed by the Engineer.

(b) Testing

The equipment covered by these specifications shall be subjected to three types of tests: field acceptance tests (FATs), TOC Integration testing, and 30-Day system acceptance testing (SAT). The Contractor shall submit a test plan to the Engineer for review.

Each device must satisfy all parts of the approved test plan. If a device fails any one portion of the test plan, that device shall be retested for compliance with the test plan. If the same device fails any one test (FATs, SAT, or TOC Integration testing) three times, the device shall be replaced with a new device and the testing shall begin at the start of the test. If a device fails five or more times across the entire test plan, the device shall be replaced with a new device and the testing shall begin at the start of the test plan.

(c) Training

Upon completion of the work and at a time approved by the Engineer, the Contractor shall provide training by a qualified instructor to City personnel in the proper operation and maintenance of the equipment. City personnel shall receive training comparable to the equipment manufacturer's factory training for operation of the DDMS display and controller. The minimum training shall be one 2-hour session for instruction of device operation and maintenance.

(d) Documentation

Three Operations and Maintenance (O&M) Manuals shall be supplied for each type of component. A reproducible form of each manual shall also be provided. The manuals supplied for the off-the-shelf items shall be those supplied by the equipment manufacturer. The Contractor shall also provide the Engineer with a CD or approved electronic delivery method that contains the manuals developed for the Contractor. The manuals shall contain as a minimum the following operational and maintenance information:

- Installation and set-up procedures
- Functional descriptions
- Step-by-step system operating instructions
- Theory of system operation
- Recovery procedures to be followed in case of malfunction
- Procedures for updating all data base elements
- Electrical wiring diagrams
- Pictorial of components layout on chassis or circuit boards with parts identification

- Complete performance specifications on each unit

(e) Warranty/Guaranty Provisions

The Wi-Fi detectors, antennas, antenna cables and associated equipment and materials furnished, assembled, and installed shall have a manufacturer’s warranty covering defects in assembly, fabrication and materials for a minimum of three years from the date of final acceptance by the Engineer of all work to be performed under the Contract. If the manufacturers’ warranties for the components are for longer periods, then those longer period warranties shall apply.

The manufacturer’s warranties on ECMS displays, controllers, and communication cables shall be fully transferable from the Contractor to the City. These warranties shall require the manufacturer to furnish replacements for any part or equipment found to be defective during the warranty period at no cost to the City within 10 calendar days of notification by the City.

Warranty periods shall begin on the date of final acceptance of the Project or Task Order by the City.

Contractor and ECMS Display and Controller Vendor shall provide onsite service and support on an as needed basis for warranty related issues. The vendor shall provide in-person service and support within one week of a warranty service request for issues requiring vendor personnel to be onsite. The equipment and software vendor shall provide the City with access to a service/support phone number for troubleshooting purposes at no additional charge for a one (1) year period. A vendor support representative shall respond to the City within twelve (12) hours upon service request through the toll-free number. The vendor shall provide software and firmware updates to the City for a term of three (3) years at no additional charge to include any technical support necessary for such upgrades. The system shall continually monitor field devices and notify designated personnel via email, text or phone call should any equipment go off-line or become unresponsive for more than 5 minutes.

V. Measurement and Payment:

Dedicated Dynamic Message Sign will be measured in units of each and will be paid for at the contract unit price per each. The price shall include all static signage, sign structure, ECMS display and controller hardware, testing, setup, integration, mounting hardware, adapters, power supplies, and integration of detector with the software. Fifty percent of the unit price bid for this item will be paid upon delivery of the DDMS static sign, structure, and ECMS unit and all equipment for each individual location to the Contractor’s staging area. Thirty percent of the unit price bid for this item will be paid upon successful completion of the Field Acceptance Test. Twenty Percent of the unit price bid for this item will be paid upon successful completion of the TOC Integration Test Plan.

Payment will be made under:

Pay Item	Pay Unit
Dedicated Dynamic Message Sign Assembly	Each