

**NOTICE TO CONSULTANT ENGINEERS  
REGARDING A REQUEST FOR PROPOSALS**

**January 27, 2023  
(Traffic Operations Division)**

The Tennessee Department of Transportation (TDOT), an Equal Opportunity/Affirmative Action Employer, seeks to retain the services of a **professional engineering consulting firm** to provide expertise in ***Integrated Corridor Management (ICM) services*** for the I-24 SMART Corridor. The method of payment shall be cost plus percentage fixed fee. The fixed fee shall be determined in accordance with the formula described in TDOT's Policy 301-01, Standard Procurement, Management, and Administration of Engineering and Design Related Services.

**PROJECT DESCRIPTION:**

The selected CONSULTANT will perform professional engineering and technical services related to the operations of the I-24 ICM SMART Corridor. The I-24 SMART Corridor project will integrate freeway and arterial roadway elements, along with physical, technological, and operational improvements, to provide drivers with accurate, real-time information and actively manage traffic. Phase 1 is complete, and included interstate emergency pull-offs, traffic signal improvements, Connected Vehicle technology, and foundational ITS communications improvements. Phase 2 will be operational in the Spring of 2023 and will include Integrated Corridor Management between I-24 and the parallel arterial of SR 1/ US 41 / Murfreesboro Road, as well as Variable Speed Limits (VSL) and overhead Dynamic Lane Control signage (LCS) located on 67 gantries along I-24. These are all firsts for the State of Tennessee. The corridor between Murfreesboro and Nashville includes approximately 30 miles of interstate, 30 miles of arterial, and 30 miles of connecting roadways traversing the four municipalities of Nashville, LaVergne, Smyrna, and Murfreesboro in Davidson and Rutherford Counties. Field devices will include Dynamic Message Signs (DMS), 122 traffic signals / controllers, Dedicated Short Range Communication (DSRC) Roadside Units, Miovision Cameras, Wavetronix Detectors, and BlueToad detection devices. Phase 3 will include Ramp Metering, ramp widening, and arterial CCTVs and DMS. Phase 3 is funded for design, but not yet for construction.

**SCOPE OF WORK**

The initial I-24 ICM SMART Corridor scheduled hours are listed below. ICM staff shall also be available for special events, inclement weather events, and large-scale incidents that occur during off-peak times, including weekends, as directed by TDOT.

- AM Weekday Peak: 6:00 AM – 10:00 AM.
- PM Weekday Peak: 3:00 PM – 7:00 PM.

The CONSULTANT will provide the following services during scheduled hours:

**A. Lane Control Signals Operation**

The CONSULTANT will operate the Lane Control Signals (LCS) located on gantries along I-24 from within the Region 3 Traffic Management Center (TMC). The LCS will be activated when the TMC is alerted to incidents or lane blockages on the interstate. The

CONSULTANT will verify the closure/blockage and update the signs over the roadway lanes to indicate which lanes are open and which lanes are closed. The CONSULTANT will display incident information on the Dynamic Message Signs along the interstate. These signs will provide real time traffic conditions including travel time comparisons so drivers can make informed decisions concerning remaining on the interstate or diverting via local routes during major traffic incidents.

**B. Variable Speed Limit Operation**

The CONSULTANT will operate the Variable Speed Limit (VSL) signs located on gantries along I-24 from within the Region 3 TMC. The CONSULTANT will operate the VSL to react to the current driving conditions. When the Interstate is congested and moving slower, the speed limits will be reduced. The goal of the reduced speed limits is to reduce rear end collisions that occur when drivers are not aware that the traffic ahead is stopped or moving considerably slower and improve traffic operations by mitigating stop-and-go traffic.

**C. Diversion Timing Plan Operation**

The CONSULTANT will operate traffic signal diversion timing plans from within the Region 3 TMC. The diversion plans will be initiated by the CONSULTANT when an incident occurs within the I-24 SMART Corridor that negatively impacts traffic operations within the project area. The signals are connected to the Centrac's Signal Control Central Software.

**D. Local Agency Coordination**

The CONSULTANT will schedule and lead coordination meetings with the traffic engineering offices of the four (4) municipalities located along the corridor. Regular communications and coordination between TDOT and the municipalities will be necessary to streamline signal timing operations, equipment operability, maintenance needs, and lessons learned from diversion operations. This will be especially critical in the initial deployment stages of the I-24 SMART Corridor project.

**E. First Responder Coordination**

The CONSULTANT will schedule, and lead, Traffic Incident Management (TIM) coordination related to the I-24 SMART Corridor Project, following the applicable Interagency Dispatch Communication Protocols (currently under development for the corridor).

**F. Performance Monitoring**

The CONSULTANT will be responsible for the retrieval, analysis, and documentation of data for the Operational Program Measures of Effectiveness (MOE) related to both freeway and arterial operations for the I-24 SMART Corridor. These MOEs are critical to assess the effectiveness of the ICM operations. Speed, travel time, and travel time reliability measures should primarily be based on data obtained from the BlueTOAD Bluetooth-based roadside units through the BlueARGUS reporting system. Signal Timing Performance Measures will be important along the arterials when Signal Timing Diversion plans are implemented, and data are available through the Centrac's system. Local jurisdictions have control over these signals, but with the ICM project, TDOT will

have the ability to change traffic patterns/timing as necessary for the successful operation of the ICM. Automated Traffic Signal Performance Measures (ATSPMs) through Centracos consist of high-resolution data-logging capability added to existing traffic signal infrastructure and data analysis techniques. The CONSULTANT will proactively identify and correct deficiencies.

The CONSULTANT will collect Safety and Incident data using the Smart Way Central Software (SWCS). It is important to distinguish crashes separately to compare metrics against established goals to demonstrate progress being made in improving safety. After a major incident impacts the ICM, the CONSULTANT will develop a summary report to document the incident, the traffic management response, implementation of operational countermeasures, opportunities for improvement, and other additional supporting materials.

The CONSULTANT will monitor TMC Systems and ITS Devices Upkeep associated with the I-24 SMART Corridor. Key Performance Indicators may include Freeway ITS Field & TMC Equipment Uptime Availability, ITS Communication Infrastructure and Network Uptime Availability, and Arterial ITS Field Equipment Uptime Availability.

## **PERFORMANCE BASED REQUIREMENTS**

To the extent practicable, Performance-Based Requirements will be incorporated into the Scope of Work of the contract, including without limitation provisions to assure compliance with the following performance requirements:

- a) ICM TMC Technicians shall be on duty 100% of required hours.
- b) ICM TMC Technicians shall verify incidents and initiate VSL, LCS, and/or signal diversion plans within a prescribed amount of time to be mutually agreed-upon in the contract scope of services.
- c) ICM Field Signal and ITS Maintenance Technicians shall be dispatched and on the site within a mutually agreed-upon time to be determined in the contract scope of services. A tiered approach may be developed with highest priority responses for gantry knockdowns, signal knockdowns, signals/ variable message signs (VMS) operating in flash mode, fallen or hanging signals / VMS or pedestrian heads, twisted heads over 30 degrees, dark signals / VMS, stuck signals / VMS, exposed wiring, lack of signal / VMS indication, and signals / VMS showing conflicting movements. The CONSULTANT shall schedule and coordinate with the On-Call Maintenance Contractor in a timely manner. The On-Call Maintenance Contractor will dispatch personnel and equipment for major repair.
- d) The I-24 SMART Corridor ICM Coordinator shall be on-call at all times. If the ICM Coordinator is not in the Region 3 TMC, the ICM Coordinator shall respond within a mutually agreed-upon time based on a priority tier to be determined in the scope of services.
- e) Performance Monitoring Reports shall be submitted monthly. Ratings will be important as TDOT establishes a wide network with overlapping performance measures and MOEs with other jurisdictions. The performance monitoring requirements shall be established with reporting schedule and included in the scope of services.

## **SCHEDULE**

The work term of the contract is expected to be three (3) years, with an option by TDOT to extend a maximum of two (2) additional years. The contract is anticipated to begin in April of 2023, coincident with the I-24 SMART Corridor Phase 2 becoming operational.

## **DELIVERABLES**

All documentation associated with the strategy development, program implementation, and program management support services for the project shall be submitted to TDOT as needed.

## **TECHNICAL REQUIREMENTS**

Technical requirements in applicable standards, specifications, and policies must be satisfied in the performance of ICM services. These include, but are not limited to:

- Manual on Uniform Traffic Control Devices (MUTCD)
- TDOT ITS Project Development Guidelines
- TDOT Traffic Design Manual
- TDOT Standard Traffic Operations Drawings
- TDOT Standard Roadway Design Drawings
- TDOT TSMO Program Plan
- AASHTO TSMO Web-Based Publication Guidance
- Future AASHTO Transportation Operations Manual (anticipated Spring 2023)
- I-24SMART Corridor KPI Guide
- Performance Evaluation Report, "Evaluation of ATCMTD Project for the TDOT Artificial Intelligence-Based Decision Support System (AI-DSS)" (currently in draft form)

## **SELECTION PROCESS**

Firms may request consideration by submitting a Statement of Qualifications consisting of the following: one electronic copy of Form DT-0330 Part II. Section E (Resumes of Key Personnel Proposed for this Contract) shall be no more than 10 pages. Section F (Example Projects) shall include no more than 10 projects. These may be submitted by email to:

**Mr. Lee Smith, P.E.**  
**Traffic Operations Division**  
**Interim Director**  
**Suite 1800, James K. Polk Building**  
**505 Deaderick Street**  
**Nashville, Tennessee 37243-0236**  
[TDOT.TrafficOps@tn.gov](mailto:TDOT.TrafficOps@tn.gov)

All Part II of the DT-0330 forms shall be submitted electronically and received on or before **4:00 p.m. (Central Time) February 24, 2023**. For additional details regarding this project, please contact Mr. Jon Storey at (615) 741-8676 or by email at [Jon.Storey@tn.gov](mailto:Jon.Storey@tn.gov).

All firms must be pre-qualified or have a completed prequalification form filed with the Department by the deadline for the **Statement of Qualifications**. Additional information, including an example

proposal (DT-0330, Part II (Contract Specific Qualifications)) can be found at: <https://www.tn.gov/tdot/business-redirect/consultantinfo/design-contract-qualifications.html>. Interested firms without internet access may obtain this information by calling Ms. Christine Smotherman at (615) 741-4460 or [Christine.Smotherman@tn.gov](mailto:Christine.Smotherman@tn.gov). Any sub-consultant shall be one that is prequalified by TDOT to perform the specific tasks required. A pending prequalification status will be acceptable. Please note: New or updated prequalification forms must be received before the deadline for proposals. **Please include a valid email address and phone number for the point-of-contact.**

## EVALUATION CRITERIA

### ROLES AND DESIRED QUALIFICATIONS

The CONSULTANT should have demonstrable experience serving in the following, or similar, roles to deliver the scope of services of this project. For firms submitting proposals (Part II of the DT-0330 form), Team work experience should be described Sections D, E, and G of Part II of the DT-0330 form.

Role	Desired Qualifications
<p><b>ICM Coordinator</b> assists TDOT Traffic Management Center (TMC) staff in implementing ICM, Freeway Management System (FMS) operations, and Active Arterial Management (AAM) operations.</p>	<p>Desired minimum qualifications include a Bachelors' degree in a related field from an accredited four-year college or university, with Professional Engineer registration in the state of Tennessee, plus a minimum of five (5) years of Active Traffic Management System (ATMS) experience, or in lieu of the five (5) year ATMS systems management experience, a minimum of ten (10) years of experience in traffic signal operations.</p>
<p><b>ICM Field Signal and ITS Maintenance Technician</b> maintains the efficient and effective operation of the ICM.</p>	<p>Desired minimum qualifications include completion of two (2) years of college in computer technology, programming, electronics or electrical engineering or closely related field; experience in traffic signal installation, operation, troubleshooting and repair techniques; and possession of a current IMSA Traffic Signal Field Level II Certification.</p>

Role	Desired Qualifications
<p><b>ICM TMC Technicians</b> manage the ICM freeway operations LCS, VSL, diversion timing plans, future Ramp Meters, etc. The technicians will enter incident information for the ICM into TDOT SmartWay Central Software and follow standard operating procedures to dispatch, monitor, and document roadway incidents. The ICM TMC Technicians will continually check the accuracy and validity of the messages displayed on all DMSs and communicated in TDOT’s 511 system.</p>	<p>Desired minimum qualifications include a high school diploma; experience in the fields of traffic operations and / or first responder dispatch; and familiarity with operations of the ICM devices.</p>

**FIRM CAPABILITIES**

The CONSULTANT should have demonstrable experience and expertise managing ICM services for interstate and arterial networks. Capabilities to support the delivery of the scope of services of this project are provided in the following table. For firms submitting proposals (Part II of the DT-0330 form), the following Firm Capabilities should be described in Section I of Part II of the DT-0330 form. When applicable, the descriptions should reference the projects listed in Sections F and G.

Criteria	Description
<p><b>Smart Way Central Software</b></p>	<p>The CONSULTANT should have functional knowledge of the Smart Way Central Software (SWCS), or similar systems, and its reporting capabilities. SWCS is TDOT’s state traffic management software that controls intelligent transportation system (ITS) devices such as signs and cameras, and it compiles data from roadside units. SWCS was developed by the Southwest Research Institute.</p>
<p><b>TEAMS Asset Management Software</b></p>	<p>The CONSULTANT should have a functional knowledge of TDOT’s TEAMS Asset Management Software, or similar systems. This platform is used to track maintenance, device failures and ticketing.</p>

<b>Criteria</b>	<b>Description</b>
<b>Software Defined Wide Area Network (SDWAN)</b>	The CONSULTANT should have a functional knowledge of SDWANs. The CONSULTANT, working with TDOT IT, will confirm the SDWAN network connection from each local agency to TDOT functions correctly. These network connections are critical to the project because without them TDOT cannot implement diversion signal timing plans or access the arterial devices.
<b>Centracs Software</b>	The CONSULTANT should have a functional knowledge of the Econolite Centracs software, or similar system. Automated Traffic Signal Performance Measures (ATSPMs) will be extracted from Centracs. The CONSULTANT will coordinate with TDOT’s vendor to confirm the Centracs servers are configured correctly to allow for communication between the TDOT and Local Agency Centracs servers. These communication links are critical to the project because without them TDOT cannot implement diversion signal timing plans.
<b>RITIS / Blue Toad Software</b>	The CONSULTANT should have a functional knowledge of the RITIS and Blue Toad software packages, or similar systems, and how to utilize the tools to develop performance measures for the I-24 SMART Corridor. RITIS is a situational awareness, data archiving, and analytics platform used by TDOT. RITIS fuses data from multiple sources, enabling effective decision making for incident response and planning. Within RITIS are a broad portfolio of analytical tools and features. Blue Toad software provides data analytics for the field deployed devices along the corridor.

Criteria	Description
<b>DSRC Roadside Units</b>	The CONSULTANT should have a functional knowledge of Dedicated Short-Range Communications (DSRC) and C-V2X Roadside Units. The I-24 SMART Corridor will include 140 DSRC units, 122 along surface streets and 18 along I-24. These devices allow for connected vehicle (CV) technologies. They will eventually be replaced with C-V2X communications once that technology is matured. The CONSULTANT may be a resource for the development and implementation of use-cases for CV technology along the corridor, as well as trouble shooting devices.
<b>Ramp Metering</b>	The CONSULTANT should have a functional knowledge of Ramp Metering and its associated devices and operations. Phase 3 of the I-24 SMART Corridor Project will include Ramp Metering. The CONSULTANT may be a resource for ramp metering guidance/ design and eventually will be responsible for the operations of the ramp meter signals.

**PHASE I EVALUATION**

- i. Phase I, Letter of Interest, is omitted.



## **PHASE II EVALUATION**

All files for Phase II proposals shall be submitted and sent electronically. For firms submitting proposals (Part II of the DT-0330 form) during Phase II evaluation, the criteria that will be considered are:

<b>Criteria and Relative Weights</b>	
i. Team work experience (Sections C, F, and G of Part II of the DT-0330 form).	30 %
ii. Staff qualification and availability (Sections D, E, and G of Part II of the DT-0330 form). (See Note 1 below table.)	35 %
iii. Past performance evaluations for TDOT and other clients (Section I of Part II of the DT-0330 form). (See Note 2 below table.)	5 %
iv. Technical approach for the project. Describe the firm's capabilities, proposed approach, unique skills, technical experience, and/or other differentiators for this project in Section I of Part II of the DT-0330 form. Do not exceed 10 pages at 10-point font (minimum).	30 %

Notes:

- 1) Provide documentation to supplement information in Sections D (Organizational Chart) and E (Resumes) of Part II of the DT-0330 (Proposed Team) that details the workload and availability of each member of the proposed team to work on this contract. This can be presented as percent of time allotted for this contract and other work. Attach documentation to Section I of Part II of the DT-0330 (Additional Information).
- 2) For past project performance documentation, provide at minimum one (1) TDOT project final evaluation letter and two (2) other client project final evaluation letters. If no TDOT project final evaluation letters for related services are available, a third other client project final evaluation letter may be submitted instead.

Following Phase II evaluation, a minimum of three (3)\* firms deemed most qualified by the Consultant Evaluation Committee (CEC) will be recommended to the Commissioner in alphabetical order for Phase III evaluation.

\* In instances where two (2) or fewer qualified consultants respond with proposals, the Department may proceed with evaluation and selection if it is determined that the solicitation did not contain conditions or requirements that arbitrarily limited competition.

## **PHASE III EVALUATION**

From the list of firms determined by the CEC to be the most highly qualified firms to perform the solicited services, the Commissioner will rank the firms in order of preference.

## **POST SELECTION**

TDOT's Traffic Operations Division will negotiate with the firm deemed to be most highly qualified in rank order in Phase III. One (1) contract will be awarded. Before the invitation of a cost proposal is made, a mutual understanding of the scope of work and all technical and administrative requirements of the proposed undertaking will be established with the prospective consultant. This

may be done by conference, phone, or correspondence as determined by the Engineering Bureau. Instructions will be given regarding the method of compensation and the documentation needed to justify the proposed compensation.

Evaluation proceedings will be conducted within the established guidelines regarding equal employment opportunity and nondiscriminatory action based upon the grounds of race, color, religion, national origin, sex, creed, age, and disability. Interested certified Disadvantaged Business Enterprise (DBE) firms as well as other minority- and/or women-owned firms are encouraged to respond to all advertisements by TDOT. For more information on DBE certification, please contact the Civil Rights Office Small Business Development Program at (615) 741-3681. Details and instructions for DBE certification can be found at the following website: <https://www.tn.gov/tdot/civil-rights/small-business-development-program.html>.

Butch Eley  
Commissioner

BE/WR/BP/LJS