

CHECKLIST TO DESIGNATE AREAS OF EVALUATION FOR REQUESTS FOR PROPOSAL (RFP)

	REQUISITION NUMBER	DUE DATE	TIME DUE
MDOT PROJECT MANAGER	JOB NUMBER (JN)	CONTROL SECTION (CS)	

DESCRIPTION

MDOT PROJECT MANAGER: Check all items to be included in RFP			CONSULTANT: Provide only checked items below in proposal.
WHITE = REQUIRED ** = OPTIONAL			
Check the appropriate Tier in the box below			
<input type="checkbox"/> TIER I (\$50,000 - \$150,000)	<input type="checkbox"/> TIER II (\$150,000-\$1,000,000)	<input type="checkbox"/> TIER III (>\$1,000,000)	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Understanding of Service **
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Innovations</i>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Organizational Chart
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Qualifications of Team
Not required as part of Official RFP	Not required as part of Official RFP	<input type="checkbox"/>	Quality Assurance/Quality Control **
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Location: The percentage of work performed in Michigan will be used for all selections unless the project is for on-site inspection or survey activities, then location should be scored using the distance from the consultant office to the on-site inspection or survey activity.
N/A	N/A	<input type="checkbox"/>	Presentation **
N/A	N/A	<input type="checkbox"/>	Technical Proposal (if Presentation is required)
3 pages (MDOT Forms not counted) Resumes will only be accepted for Best Value Selections	7 pages (MDOT Forms not counted)	14 pages (MDOT forms not counted)	Total maximum pages for RFP not including key personnel resumes. Resumes limited to 2 pages per key staff personnel.

PROPOSAL AND BID SHEET E-MAIL ADDRESS – mdot-rfp-response@michigan.gov

GENERAL INFORMATION

Any questions relative to the scope of services must be submitted by e-mail to the MDOT Project Manager. Questions must be received by the Project Manager at least five (5) working days prior to the due date and time specified above. All questions and answers will be placed on the MDOT website as soon as possible after receipt of the questions, and at least three (3) days prior to the RFP due date deadline. The names of vendors submitting questions will not be disclosed.

MDOT is an equal opportunity employer and MDOT DBE firms are encouraged to apply. The participating DBE firm, as currently certified by MDOT's Office of Equal Opportunity, shall be listed in the Proposal.

MDOT FORMS REQUIRED AS PART OF PROPOSAL SUBMISSION

5100D – Request for Proposal Cover Sheet

5100J – Consultant Data and Signature Sheet (Required for all firms performing non-prequalified services on this project.)

(These forms are not included in the proposal maximum page count.)

The Michigan Department of Transportation (MDOT) is seeking professional services for the project contained in the attached scope of services.

If your firm is interested in providing services, please indicate your interest by submitting a Proposal, Proposal/Bid Sheet or Bid Sheet as indicated below. The documents must be submitted in accordance with the latest (Consultant/Vendor Selection Guidelines for Services Contracts.”

RFP SPECIFIC INFORMATION

ENGINEERING SERVICES BUREAU OF TRANSPORTATION PLANNING OTHER

THE SERVICE WAS POSTED ON THE ANTICIPATED QUARTERLY REQUESTS FOR PROPOSALS

NO YES DATED _____ THROUGH _____

Prequalified Services – See the attached Scope of Services for required Prequalification Classifications.

Non-Prequalified Services – If selected, the vendor must make sure that current financial information, including labor rates, overhead computations, and financial statements, is on file with MDOT’s Office of Commission Audits. This information must be on file for the prime vendor and all sub vendors so that the contract will not be delayed. **Form 5100J is required with proposal for all firms performing non-prequalified services on this project.**

Qualification Based Selection - Use Consultant/Vendor Selection Guidelines.

For all Qualifications Based Selections, the selection team will review the information submitted and will select the firm considered most qualified to perform the services based on the proposals. The selected firm will be asked to prepare a priced proposal. Negotiations will be conducted with the firm selected.

For a cost plus fixed fee contract, the selected vendor must have a cost accounting system to support a cost plus fixed fee contract. This type of system has a job-order cost accounting system for the recording and accumulation of costs incurred under its contracts. Each project is assigned a job number so that costs may be segregated and accumulated in the vendor’s job-order accounting system.

Qualification Based Selection / Low Bid – Use Consultant/Vendor Selection Guidelines. See Bid Sheet instructions for additional information.

For Qualification Review/Low Bid selections, the selection team will review the proposals submitted. The vendor that has met established qualification threshold and with the lowest bid will be selected.

Best Value – Use Consultant/Vendor Selection Guidelines, See Bid Sheet Instructions below for additional information. The bid amount is a component of the total proposal score, not the determining factor of the selection.

Low Bid (no qualifications review required – no proposal required.)

BID SHEET INSTRUCTIONS

Bid Sheet(s) are located at the end of the Scope of Services. Submit bid sheet(s) with the proposal, to the email address: mdot-rfp-response@michigan.gov. Failure to comply with this procedure may result in your bid being rejected from consideration.

PARTNERSHIP CHARTER AGREEMENT

MDOT and ACEC created a Partnership Charter Agreement which establishes guidelines to assist MDOT and Consultants in successful partnering. Both the Consultant and MDOT Project Manager are reminded to review the [ACEC-MDOT Partnership Charter Agreement](#) and are asked to follow all communications, issues resolution and other procedures and guidance’s contained therein.

**NOTIFICATION
MANDATORY ELECTRONIC SUBMITTAL**

Proposals submitted for this project must be submitted electronically.

The following are changes to the Proposal Submittal Requirements:

- Eliminated the Following Requirements:
 - Safety Program
 - Communication Plan
 - Past Performance as *a separate section*
 - Separate section for DBE Statement of goals. Include information in Qualification of Team section

- Implemented the Following Changes:
 - All proposals require an Organization Chart
 - Resumes must be a maximum of two pages
 - Only Key (lead) staff resumes may be submitted
 - Tier III proposal reduced from 19 to 14 pages
 - Forms 5100D, 5100I, and 5100G combined – 5100D
 - Forms 5100B and 5100H combined – 5100B
 - RFP's will be posted on a weekly basis -- on Mondays

The following are Requirements for Electronic Submittals:

- Proposals must be prepared using the most current guidelines
- The proposal must be bookmarked to clearly identify the proposal sections (See Below)
- For any section not required per the RFP, the bookmark must be edited to include “N/A” after the bookmark title.
Example: Understanding of Service – N/A
- Proposals must be assembled and saved as a single PDF file
- PDF file must be 5 megabytes or smaller
- PDF file must be submitted via e-mail to MDOT-RFP-Response@michigan.gov
- MDOT's requisition number and company name must be included in the subject line of the e-mail. The PDF shall be named using the following format:
 - Requisition#XXX_Company Name.PDF
- MDOT will not accept multiple submittals
- Proposals must be *received* by MDOT on or before the due date and time specified in each RFP

If the submittals do not comply with the requirements, they may be determined unresponsive.

The Consultant's will receive an e-mail reply/notification from MDOT when the proposal is received. Please retain a copy of this e-mail as proof that the proposal was received on time. **Consultants are responsible for ensuring the MDOT receives the proposal on time.**

****Contact Contract Services Division immediately at 517-373-4680 if you do not get an auto response****

Required Bookmarking Format:

- I. Request for Proposal Cover Sheet Form 5100D
 - A. Consultant Data and Signature Sheet, Form 5100J (if applicable)
- II. Understanding of Service
 - A. Innovations
- III. Qualifications of Team
 - A. Structure of Project Team
 - 1. Role of Firms
 - 2. Role of Key Personnel
 - B. Organization Chart
 - C. Location
- IV. Quality Assurance / Quality Control Plan
- V. Resumes of Key Staff
- VI. Pricing Documents/Bid Sheet (if applicable)

2/14/12

**NOTIFICATION
E-VERIFY REQUIREMENTS**

E-Verify is an Internet based system that allows an employer, using information reported on an employee's Form I-9, Employment Eligibility Verification, to determine the eligibility of that employee to work in the United States. There is no charge to employers to use E-Verify. The E-Verify system is operated by the Department of Homeland Security (DHS) in partnership with the Social Security Administration. E-Verify is available in Spanish.

The State of Michigan is requiring, under Public Act 200 of 2012, Section 381, that as a condition of each contract or subcontract for construction, maintenance, or engineering services that the pre-qualified contractor or subcontractor agree to use the E-Verify system to verify that all persons hired during the contract term by the contractor or subcontractor are legally present and authorized to work in the United States.

Information on registration for and use of the E-Verify program can be obtained via the Internet at the DHS Web site: <http://www.dhs.gov/E-Verify>.

The documentation supporting the usage of the E-Verify system must be maintained by each consultant and be made available to MDOT upon request.

It is the responsibility of the prime consultant to include the E-Verify requirement documented in this NOTIFICATION in all tiers of subcontracts.

9/13/12

Michigan Department of Transportation

**SCOPE OF SERVICE
FOR
SPECIALTY SERVICES**

Road Weather Information Systems (RWIS) Services

CONTROL SECTION: 84900

JOB NUMBER: 116385

PROJECT LOCATION:

Various locations throughout the state of Michigan, including MDOT Bay, Grand, Metro, North, Southwest, Superior and University Regions.

PROJECT DESCRIPTION:

Work involved in this project consists of the complete Road Weather Information Systems (RWIS) services including: RWIS Central Management System and Environmental Sensor Station (ESS) infrastructure maintenance statewide. ESS infrastructure is currently installed or planned to be installed in the counties specified per each MDOT region below.

- Bay Region – N/A
- Grand Region – Ionia, Kent, Montcalm, Muskegon, Oceana, Ottawa, Mason, Wexford, Allegan, and Barry Counties
- Metro Region – N/A
- North Region – Alcona, Alpena, Antrim, Benzie, Cheboygan, Crawford, Emmet, Grand Traverse, Kalkaska, Leelanau, Manistee, Ogemaw, Osceola, Otsego, Presque Isle, and Roscommon Counties
- Southwest Region – Barrien, Van Buren, Cass, , Kalamazoo, St. Joseph, Branch, and Calhoun Counties
- Superior Region – Alger, Baraga, Chippewa, Delta, Dickinson, Gogebic, Houghton, Iron, Keweenaw, Luce, Mackinac, Marquette, Menominee, Ontonagon, and Schoolcraft Counties
- University Region – Ingham County

ESS devices to be maintained in this scope of service has been identified in **ATTACHMENT A**

As of October 1, 2016, Michigan has 76 ESS sites statewide with 41 additional sites to be added throughout the contract term. These ESS collect a variety of data that may include, but are not limited to: pavement temperature (in-pavement and non-invasive), atmospheric, frost depth, snow depth, traffic counts, camera imagery, and visibility. Transportation authorities use data from these sensors, additional weather information and forecasts to make decisions on deploying maintenance crews and determining appropriate pavement treatments. These actions are critically important to public safety, the state's economy, and the environment.

PRIMARY PREQUALIFICATION CLASSIFICATION(S): N/A

SECONDARY PREQUALIFICATION CLASSIFICATION(S): N/A

ANTICIPATED SERVICE START DATE: October 1, 2016

ANTICIPATED SERVICE COMPLETION DATE: September 30, 2018

PREFERRED QUALIFICATIONS AND CRITERIA:

The Consultant shall have 3 related projects working with state government or local municipalities over the past five years. Each of these projects should relate to central management or ESS maintenance, both of these topics should be shown at least once.

MDOT PROJECT MANAGER:

Elise Feldpausch
Michigan Department of Transportation
8885 Ricks Rd.
P.O. Box 30049
Lansing, MI, 48917
517-636-0036
Feldpausche1@michigan.gov

REQUIRED MDOT GUIDELINES AND STANDARDS:

Work shall conform to current MDOT, FHWA, and AASHTO practices, guidelines, policies, and standards.

BACKGROUND INFORMATION:

The Consultant shall have substantial experience in the areas of RWIS Central Management Systems

The Consultant shall have direct ESS infrastructure maintenance, installation, and network management experience with the following device types:

- Microwave Vehicle Detection System (MVDS)
- Environmental Sensors
 - Wind Sensors
 - Visibility Sensors
 - Sub-Surface Temperature Data Probes
 - Invasive and Non-Invasive Pavement Sensors
 - Precipitation Sensors
 - Humidity and Temperature Sensors
 - Barometric Pressure Sensors
 - Air Sensors
- Digital Video Encoder (DVE)
- Pan Tilt Zoom Cameras
- Closed-Circuit Television (CCTV) cameras
- Infrared Illuminators
- Remote Processing Unit (RPU)

The Consultant shall demonstrate an understanding of Michigan weather and climatology, as well as a thorough knowledge of winter weather patterns and the variations within the State. The Consultant shall demonstrate an understanding of MDOT's trunk line system and its winter maintenance practices. The Consultant shall demonstrate an understanding of MDOT's existing RWIS network. The Consultant shall demonstrate an understanding of sensor and device specific maintenance activities required for MDOT's existing RWIS network.

The Consultant shall furnish all services and labor necessary to conduct and complete the services described herein. The Consultant shall also furnish all materials, equipment, supplies, and incidentals necessary to perform the Services (other than those designated in writing to be furnished by the Department) and check and/or test the materials, equipment, supplies and incidentals as necessary in carrying out this work. The Services shall be performed to the satisfaction of the Department consistent with applicable professional standards.

The Consultant shall comply with all applicable Federal and State laws, rules, and regulations. The Consultant's staff shall conduct themselves with professionalism in carrying out their duties.

The Consultant shall notify the Project Manager, in writing, prior to any personnel changes from those specified in the Consultant's original approved proposal. Any personnel substitutions are subject to review and approval of the MDOT Project Manager.

At the request of the Department, the Consultant, during the progress of the Services, shall furnish information or data relating to the Services described herein. These may be required by the Department to enable it to carry out or to proceed with related phases of the Project not described herein, or which may be necessary to enable the Department to furnish information to the Consultant upon which to proceed with further Services.

CONSULTANT RESPONSIBILITIES:

The Consultant must adhere to all applicable OSHA and MIOSHA safety standards, including the appropriate traffic signs for the activities and conditions for this job and adherence to the Personal Protective Equipment (PPE) standards.

The Consultant shall meet with the MDOT Project Manager to review project, location of data sources and contact persons, and review relevant MDOT operations. The Consultant shall review and clarify project issues, data needs and availability, and the sequence of events and team meetings that are essential to complete the design by the project plan completion date. Attention shall be given to critical target dates that may require a large lead time.

The following section outlines the mandatory requirements of the Consultant as it relates to the services supplied for RWIS Central Management System and ESS infrastructure maintenance statewide.

1. RWIS Central Management System

a. General

- i. The Consultant shall supply a system to perform the collection, processing, storing, transferring, and integration of data continuously from all associated sensors in the manner described.
- ii. The Central Management System (CMS) shall be implemented in a centralized configuration, hosted in a Consultant’s data center on Consultant’s hardware, and under its total responsibility.
- iii. The CMS shall be accessible 24/7/365 to MDOT users, their representatives, and/or partnering agencies via a secure web site, including password protective and connection encryption. Each licensed user will have a unique username and password.
- iv. The CMS site will support up to 90 simultaneous users with no reduction in system performance, this is not intended to limit the number of individual usernames and passwords.

b. Communications

- i. The CMS shall be capable of transferring data via the following service types:
 - 1. Landline dial-up modem
 - 2. High Speed Local Area Network (LAN)/Wide Area Network (WAN) (e.g. T1, Digital Subscriber Line (DSL))
 - 3. Cellular service
 - 4. Microwave radio transmission
 - 5. Fiber Optic Transmission Systems (FOTS)
- ii. The CMS shall provide a complete integrated polling system (software, hardware, modems, and installations). The system shall be capable of setting communication time-out frequencies to optimize system performance.
- iii. The CMS shall be capable of accepting xml data feed from the MDOT Advanced Traffic Management System (ATMS) server.

c. Display

- i. MDOT will supply access to the Remote Processing Unit (RPU) Internet Protocol (IP) addresses at all ESS sites.
- ii. The following parameters shall be displayed:

Parameter	Units
Pavement Temperature	°F
Bridge Deck Temperature	°F
Pavement Condition	Note ¹
Probability of frost	%
Air Temperature	°F
Dew Point Temperature	°F
Relative Humidity	%
Barometric Pressure	in Hg
Wind Direction	Cardinal pts. or degrees
Wind Speed	Mph
Wind Gust Speed	Mph

Wind Gust Direction	Cardinal pts. or degrees
Precipitation Type	Note ²
Precipitation Rate	in/hr
Last Precipitation start and end times	time
Precipitation Accumulation (at least 6 ranges from 10 min to 24 hrs.)	Inches
Traffic Speeds (at least 6 ranges from 0 mph to 100 mph)	Mph
Traffic Volumes	
Traffic Classification (at least 6 ranges from 0 to 70 ft.)	
Visibility	Miles
Depth of Frost	Inches

Note¹ – Pavement Conditions MDOT requires at a minimum include:
 DRY, WET, SNOW, ICE, SLUSH, FROST, DAMP, TRACE MOISTURE

Note² – Precipitation Type MDOT requires at a minimum include:
 RAIN, SNOW, FOG, FREEZING RAIN/SLEET, HAIL, DRIZZLE

- iii. Accuracy and resolution of all data shall be similar to that of the sensor collecting the data.
- iv. The user shall be able to view select parameters including but not limited to pavement temperature, air temperature, and surface condition, in a graphical format. Graphs shall display a 24 hour period and be selectable.
- v. Warning System activation status shall be viewable for any site when applicable as designated by the Engineer
- d. Transfer to other agencies
 - i. System shall be capable of managing data push/pull with the MDOT ATMS software or third-party Meteorological Service Providers. Data shall be transferred to ATMS via a standard data format as specified by MDOT.
 - ii. System shall be capable of transferring data to the MDOT MDSS provider, Iteris. Data shall be transferred via a standard data format as specified by MDOT.
 - iii. System shall be capable of transferring data to external agencies including but not limited to the National Oceanic and Atmospheric Administration (NOAA), which supports the Binary Universal Form for the Representation of Meteorological Data (BUFR) standard. Data shall meet applicable BUFR standards.
 - iv. System shall allow for data transfer to external agencies that do not support the BUFR standard. System shall interface via Extensible Mark-up Language (XML) or Comma-separated Values (CSV) file transfer, using appropriate National Transportation Communications for ITS Protocol (NTCIP) Management Information Base (MIB) encoding. Any mutually agreed upon transfer method may also be acceptable.
- e. Archiving of Data

- i. Historical data shall be available twelve months back. Data older than twelve months shall be archived and a hard copy of the data shall be made available upon request.
- ii. Archived data shall be easily accessible and retrievable. Display features available shall be similar to the current data view. Archive data shall have sort features that allow the user to search for specific data sets. User shall be able to create and view historical trend graphs of any reported data and save data and reports to a data file containing time-stamped information from all reporting devices in ASCII format.
- iii. Archived data shall be provided by the 15th of each month for the previous month. All archived data shall be able to be added or imported into the real-time RWIS system.
- iv. Camera images retention should follow the following standards:
 1. CCTV video/images shall not be recorded and all video/images disseminated from CCTV systems shall be transferred in real time or limited time delay.
 - a. Exceptions include:
 - i. CCTV video/images shall only be recorded in response to a specific need where a review of the video/images would contribute to improving safety and/or future traffic operations procedures or system planning and performance, including:
 1. Review of traffic operations or safety issues
 2. Review for future training use
 3. Research activities that will improve future technology or operations
 4. Post-incident review of particularly complex traffic incidents and emergency response for the purposes of improving operational procedures and response
 5. Demonstrating or testing equipment or system functions
 6. Collection of video/images for transportation planning management purposes
 2. If a recording is made, it shall be retained in a specifically designated and secure location with access restricted to supervisory-level personnel. Recorded CCTV video/images shall be retained according to MDOT's record retention schedule. The recorded video/images shall be documented and logged. The log shall be reviewed periodically to determine whether recordings shall continue to be retained or disposed of

- v. Data and archived data shall be exportable to a spreadsheet or database that is accessible by MDOT.

f. Data Collection

- i. The CMS shall provide a complete integrated polling system (software, hardware, modem, and installations). Polling shall be a completely automated process, requiring no user involvement once setup, and support manual polling at any time by a user. Polling frequency shall be user definable from 1 to 20 minutes. Depth of Frost data shall be polled at a minimum of 4 times daily (6 am, noon, 6 pm, and midnight). Auto polling software must attempt at least 3 connections to the ESS modem with sufficient time allowed between attempts to reset the modem before aborting. Polling after outage period, of either the server or field locations, shall recover data from missed periods. The connection polling time frames shall be configurable to optimize the system performance.
- ii. System shall be capable of collecting data from up to 150 ESS within the state of Michigan. These sites may be owned by MDOT or another agencies and may contain equipment from various vendors.
- iii. System shall be able to reflect any future requirements for NTCIP interface standards.
- iv. CMS shall be capable of maintaining, manipulating, and uploading/downloading complete ESS and RPU configuration data.
- v. All data and information derived from that data generated by the RWIS system shall be the sole property of the State of Michigan to use and distribute. Any secondary distribution of the data and information shall be at the sole discretion of the Department.

g. Cameras

- i. Each location shall be capable of displaying a minimum of eight images. Provide one summary page that shall display all cameras within one MDOT Region.
- ii. At each site, the user shall have the option to view each camera image independently or view all images simultaneously.
- iii. Each independent camera image shall have the capability to be viewed through a continuous loop through the past 1 ½ hours.
- iv. All camera images shall be the sole property of the State of Michigan to use and distribute. Any secondary distribution of the data and information shall be at the sole discretion of the Department.

2. ESS Infrastructure Maintenance

The Consultant shall be responsible for all maintenance of all ESS Infrastructure for the State of Michigan as referenced in Attachment A.

a. General

- i. Monitor system daily in order to identify malfunctions.
- ii. Provide on-site or remote service interruption analysis at those sites identified as malfunctioning, dependent on the necessary action to remedy malfunction.

- iii. Replace or repair non-functioning equipment. The Consultant shall include the cost for equipment/sensor replacement in the cost proposal. Equipment/sensors requiring replacement during the term of the contract will not be paid for individually. Rather, the overall contract amount bid shall include the estimated cost of equipment/sensor replacement. Proposers may include labor costs for such sensor replacements in their proposals.
- iv. Consultant shall provide a minimum of one Service Technician within reasonable distance for the proper servicing of the RWIS within the noted response time frames.
- v. Response Time: The Consultant shall respond on site to service non-functioning equipment within 48 hours of the reporting of non-functioning during the period from October 1 – March 31 and within five days during the period from April 1 - September 30.
- vi. All replacement parts supplied by the Consultant shall be new or reconditioned such that their performance is equal to that of the equivalent new part. Consultant will maintain an inventory of spare parts. All spare parts will be new, complete and fully serviceable and carry a full two year warranty. Along with spares, the inventory will include any special tools or test equipment that may be required for repair and maintenance of the spare parts. These spare parts will be utilized by the Consultant during the warranty and extended maintenance period as needed. Consultant shall replenish the inventory of spare parts as they are used, and will turn a complete inventory of spare parts, special tools and equipment over to MDOT at the end of this contract period. Consultant is fully responsible for these spares. MDOT has the right to audit the inventory at any reasonable time by providing the Consultant with five days' notice. The cost of storing and maintaining the inventory of spare parts and equipment should be included in the lump sum cost of the maintenance period. A 15% markup is allowed on the purchase of replacement spares. Replacement spare shipping, insurance and purchase costs should be paid by the Consultant and billed to MDOT. Spare parts inventory shall be sufficient to cover 10% of the quantity of field devices or at a minimum:
 - (2) Remote Processing Units (RPU)
 - (6) Cellular Modems
 - (2) Visibility Sensors
 - (2) Air Temperature/Humidity Sensors
 - (2) Ultrasonic Wind Sensors
 - (2) Barometric Pressure Sensors
 - (2) Precipitation Sensors
 - (2) Infrared Illuminators
 - (2) Internet Protocol Surveillance System,
 - (8) Pavement Condition Sensor, Invasive
 - (1) Pavement Condition Sensor, Non-Invasive
 - (1) Pavement Temperature Sensor, Invasive
 - (3) Subsurface Temperature Probe

- (2) Microwave Vehicle Detection Systems
- (1) Power Distribution Unit (PDU)
- (1) Tower

- b. Principal Period of Maintenance
 - i. Any service as described in this proposal shall be performed during daylight hours only, Monday through Friday, excluding legal holidays. MDOT must approve service provided outside the Principal Period of Maintenance (PPM) in advance. If service is provided outside the PPM without MDOT's prior approval, MDOT will not approve any charges billed to it for this service. Service provided outside the PPM shall be billed at a mutually agreed rate as stated in the service agreement.
- c. Software Maintenance
 - i. The Consultant shall provide software support necessary to maintain and operate the ESS.
- d. Preventive Maintenance
 - i. The Consultant shall perform annual preventive maintenance on all equipment. Preventive maintenance shall be performed outside the winter maintenance plan, during the PPM, between April 1 and September 30, and shall coincide with on-site hardware maintenance when possible.
 - ii. The Consultant shall develop and submit a preventative maintenance plan. The preventative maintenance plan must be comprehensive and address all items in sufficient detail, including time durations. Consideration must be giving to the overall contract length as it pertains to and affects device preventative maintenance. The Consultant shall adhere to all submitted and approved preventative maintenance activities and schedules
- e. Pre-Service Contract Meeting
 - i. Upon issuance of the service contract, the Consultant shall schedule a pre-servicing contract meeting with MDOT to review the terms and conditions of the contract, scheduling of work, and the exchange of contact names and telephone numbers required by both the Consultant and MDOT.
- f. System Monitoring
 - i. The Consultant shall monitor the system daily or more frequently if necessary from its central office or the service technician's office to provide information for System Status Report.
- g. Warranties
 - i. The Consultant must ensure that all warranties remain valid. To achieve this, the Consultant shall perform all the preventive work specified by the manufacturer within the periods specified by the manufacturer for all equipment. During the warranty period the Consultant will replace all defective equipment covered by the warranty at no expense to MDOT.
 - ii. Equipment provided under the contract will include the manufacturer standard warranties. All warranties will be assigned to

MDOT. The Consultant will track the equipment to the warranties. The warranty information shall be updated continuously in the Asset Management Database (AMD). When warranties apply, the Consultant shall coordinate with the manufacturer on all replacements. At the completion of the contract, the Consultant will provide a list of all remaining equipment warranties.

h. Asset Management Database

- i. The Consultant will be required to work with the ITS AMD as specified by the Engineer and input all work performed on any field elements, including notes on adjustments or parts replaced during maintenance and conditions discovered through inspection. In addition, required repairs will be transmitted to the Consultant through work orders issued through the AMD and the repair will not be considered complete until properly documented in the database. Maintenance of the MDOT ITS field elements inventory in the AMD will be completed by the Consultant, including the addition of field elements as they become operational, as well as element removal. All newly added field elements will conform to the current MDOT naming conventions for ITS infrastructure. The Engineer or his/her designee has the authority to inspect all work performed by the Consultant and review and reject work orders; any rejected work order shall be documented by the Engineer with notification to the Consultant within two business days. It will be the responsibility of the Consultant as part of the preventative maintenance actions for each device to ensure the information in the AMD is accurate including but not limited to: serial number, accessibility, firmware version, make, and model.

i. Utility Staking

- i. This work shall consist of coordinating with MDOT staff and other MDOT Consultants and Consultants to protect the ITS systems from damage by others. This effort will be provided whenever the Consultant is notified by other Parties, or by MDOT, of construction planned near one of the ITS equipment sites.
- ii. This work shall include the physical identification of buried ITS infrastructure and shall be completed within 72 hours of receipt of the staking request and subsequent notification of the requesting Consultant. This effort will be provided at both single sites and for system buried along the right-of-way and not associated with a specific site.
- iii. MDOT shall be notified when staking is complete.

j. Miscellaneous Services

- i. Upon authorization by MDOT, the Consultant shall notify and coordinate with any utility contacts required to correct interruptions in electrical power service or communication service to the RPU's. MDOT will provide a list of the appropriate contact names and telephone numbers for each location.

1. MDOT Region Office Contacts. The Consultant shall be responsible for notifying the region office contact person when the service technician is beginning work in that region and when work is completed.
 2. The Consultant shall schedule an annual review meeting with MDOT during the first four months of each year to review the highway improvement program for that year and schedule reinstallation of sensors affected by improvement projects.
- ii. When performing any work on MDOT right-of-way, the Consultant's work vehicle shall be properly identified and equipped with a flashing yellow light per MDOT requirements. See section regarding Traffic Control and MDOT Permits for additional requirements.
 - iii. When two or more sites are reporting malfunctions, the Consultant shall coordinate the repair schedule and prioritization with MDOT's Project Manager. In general, the following prioritization will apply:
 1. CMS malfunction, including but not limited to, user interface and central polling system
 2. Communication failure at an RPU
 3. Surveillance system failure
 4. Surface sensor failure
 5. Precipitation sensor failure
 6. Temperature/relative humidity sensor failure
 7. Wind sensor failure
 8. Subsurface sensor failure
- k. System Status Report
- i. The Consultant shall provide a system status report by e-mail to each region office and a statewide report to MDOT each Tuesday (or another day mutually agreed upon by MDOT and the Consultant) from October 1 through April 30 and once per month during the last full work week of the month from May 1 through September 30. Contacts will be specified by the MDOT upon contract award. Status reports shall include the status of each RPU and each sensor, reasons for non-functioning sensors, and repair schedule.
- l. Performance Reporting
- i. The Consultant shall report weekly the in-commission rates for all sensor types, including, but not limited to:
 - Surface sensors
 - Subsurface sensors
 - Precipitation sensors
 - Communications effectiveness
 - Temperature/humidity sensors
 - Wind sensors
 - Traffic sensors
 - Cameras

m. Liquidated Damages

- i. MDOT reserves the right to deduct liquidated damages under the following circumstances.
 1. If, during the period from October 1 through March 31, the Consultant does not respond to a reported malfunction within 48 hours of receiving notification from MDOT of said malfunction, MDOT may, at its discretion collect \$100 in liquidated damages per day for each malfunction not responded to within 48 hours.
 2. If, during the period from April 1 through September 30, the Consultant does not respond to a reported malfunction within five working days of receiving notification from MDOT of said malfunction, MDOT may, at its discretion collect \$100 in liquidated damages per day for each malfunction not responded to within five working days.
 3. If, during the period from October 1 through March 31, a system status report is not delivered within two business days after the day of the week for which it is required, MDOT, may, at its discretion, collect \$100 in liquidated damages for every week in which the report was not delivered within two business days of the day it was required.

n. Return of Service Requests

- i. The Consultant shall return any service request ticket submitted by MDOT with the time of initial response to the request annotated on the request form. This shall be accomplished via e-mail. The request form shall be returned no more than seven days after the Consultant responds to the outage. If no form is returned, MDOT will assume, for the purposes of liquidated damage deduction that no response occurred.

4. Training

- a. Consultant may be requested provide training for any other software necessary to meet the requirements of this Proposal. All training will meet or exceed the requirements listed below.
 - i. Course materials shall be approved by MDOT at least 10 calendar days prior to the training.
 - ii. Training shall be conducted by classroom style or webinar, as agreed upon by MDOT.
 - iii. Training shall be provided to both MDOT staff and other agencies as deemed appropriate by MDOT.
 - iv. Training shall cover the use of all computer software and web-based applications.

MDOT RESPONSIBILITIES:

1. Schedule and/or conduct the following:
 - a. Project related meetings
 - b. Stakeholder engagement meetings

2. Make decisions or provide input for the following items:
 - a. Resolve issues related to funding
 - b. Review and approve all budget and schedule aspects

TRAFFIC CONTROL AND MDOT PERMITS

The Consultant shall be responsible for all traffic control required to perform the tasks as outlined in this Project Scope of Design Services. Traffic control shall conform to the most recent version of the MDOT Maintenance Work Zone Traffic Control Guidelines. The use of PPE as prescribed by all applicable Michigan Occupational Safety and Health Administration (MIOSHA) Standards, rules, etc., and good safety practices shall be adhered to.

PROJECT MANAGEMENT:

1. This project will require close interaction and good communication between the Consultant and multiple MDOT staff.
2. If there are any major deviations from the original scope of this assignment, these changes must be documented and jointly approved by the Consultant and MDOT.
3. The selected Consultant shall provide all necessary project management services, including monthly and quarterly progress reports, and providing invoices in a timely manner.
4. Consultants should provide a description of their management team for this project and list all key personnel responsible for the deliveries of this RFP.

STATUS REPORTS/ MEETINGS:

1. There shall be periodic, regular meetings between MDOT representatives and the selected Consultant to review work product and to communicate progress, issues, ideas, and expectations.
2. The Consultant will be responsible for scheduling, agenda creation, meeting minutes etc.
3. The Consultant shall provide copies of all project reports, correspondence, meeting announcements, and meeting minutes from all meeting attended, which shall be delivered by email to the MDOT Manager. These shall be distributed by email to the MDOT Project Manager.

PROJECT DOCUMENTATION:

All documentation and reports shall be delivered in the current version of Microsoft Word or Adobe Acrobat (whichever applies) being used by MDOT. All documentation delivered shall be clear, concise, complete, and in compliance with standards required by the MDOT Project Manager.

CONSULTANT PAYMENT – Unit Price:

Compensation for this project shall be on a **unit price** basis. This basis of payment typically includes a maximum quantity of units and a maximum reimbursable cost per unit.

All billings for services must be directed to the Department and follow the current guidelines. Payment may be delayed or decreased if the instructions are not followed.

Payment to the Consultant for services rendered shall not exceed the maximum amount unless an increase is approved in accordance with the contract with the Consultant. Typically, billings must be submitted within 60 days after the completion of services for the current billing. The final billing must be received within 60 days of the completion of services. Refer to your contract for your specific contract terms.

CONSULTANT PAYMENT – Lump Sum:

Compensation for this project shall be on a **lump sum** basis. One lump sum payment will be made once the deliverable is received and approved by the MDOT Project Manager. The MDOT Project Manager may authorize partial payment if the project is delayed due to circumstances beyond the Consultant’s control.

All billings for services must be directed to the Department and follow the current guidelines. Payment may be delayed or decreased if the instructions are not followed.

Payment to the Consultant for services rendered shall not exceed the maximum amount unless an increase is approved in accordance with the contract with the Consultant. Typically, billings must be submitted within 60 days after the completion of services. Refer to your contract for your specific contract terms.

SCORING (130 Points)

Proposed Selection Criteria and Total Possible Points

Understanding of Service – 30 Points

Describe your understanding of the service to be provided.

Qualifications of Team – 40 Points

Describe your team and the roles of key personnel. Provide resumes for key personnel.

Past Performance – 20 Points

Provide references and examples of similar work performed for other agencies.

Price – 35 Points

CSRT approved formula: Low Bid/Bid * points assigned

Completed bid sheet required.

(Price must be at least 25% of overall points assigned)

Location – 5 Points

Indicate the percentage of work that will be performed in Michigan. Proposed Selection

BID SHEET
Consultant Services for Statewide RWIS Services
MDOT STATEWIDE
PAYMENT ITEMS
(All entries made on this page shall be handwritten in ink.)

	ITEMS OF WORK	UNIT	QUANTITY	PRICE/UNIT	TOTAL PRICE
1	RWIS Central Management	Month	24		
2	Maintain ESS Site	Month	2343		
3	Non-routine Maintenance and Repairs	Dollar	240,000*	1.0	
4	Maintain Spare Parts Inventory	Month	24		
5	Spare Parts Direct Cost	Dollar	300,000**	1.0	
6	Utility Staking and Protection, One Person	Hour	100		
7	Traffic Control	Lump Sum	1		
8	Mobilization, Max.	Lump Sum	1		

CHECK UNIT PRICE COLUMN FOR OMISSIONS BEFORE ENTERING BID TOTAL

*Not to exceed amounts. Payment to be made based on actual cost

**Not to exceed amounts. Payment to be made based on actual cost.

Bid Price for the above listed items and quantities: \$ _____

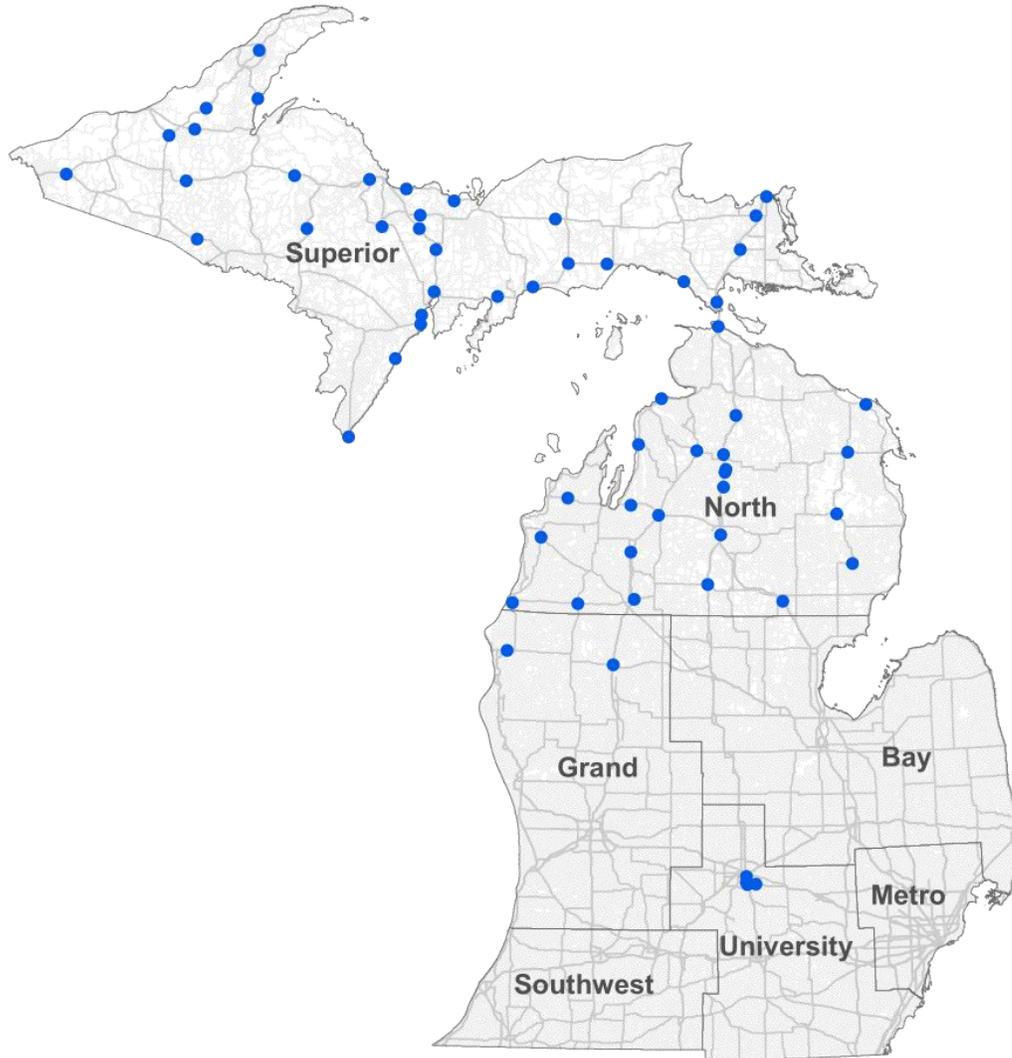
CONSULTANT'S NAME: _____

CONSULTANT'S SIGNATURE: _____

DATE: _____

ATTACHMENT A: CURRENT SYSTEM DESCRIPTION

Provided in the following section are detailed descriptions by MDOT region of the currently installed ESS field infrastructure, as well as descriptions of planned systems. The possibility of installing additional ESS and/or sensors within the contract timeframe exists, although unless identified it is not planned at this time.



Bay Region

The MDOT Bay Region does not currently have any ESS devices installed in the field or planned for completion during the life of this contract.

Grand Region

The MDOT Grand Region currently has 2 ESS devices installed in the field. A project is in the process of being designed to install 11 ESS throughout the region with acceptance anticipated in May 2018.

Metro Region

The MDOT Metro Region does not currently have any ESS devices installed in the field or planned for completion during the life of this contract.

North Region

The MDOT North Region currently has 25 ESS in 19 counties that will be operational for the start of this contract, including a bridge deck warning system (BDWS) installation in Otsego County. A project is in the process of installing adding 1 Active Warning System (non-invasive pavement sensor, RPU, cell modems, flashing LED signs), 1 combination AWS/BDWS (partial ESS, flashing LED signs), 6 ESS (both full and partial), 2 stand-alone ESS cameras and 5 ESS Cameras at traffic signals with acceptance anticipated September 2017.

Southwest Region

The MDOT Southwest Region does not currently have any ESS devices installed in the field; however, a project is in the process of installing 14 ESS throughout the region with acceptance anticipated December 2016.

Superior Region

The MDOT Superior Region currently has 45 ESS that will be operational for the start of this contract. In addition a project is in the process of being designed a BDWS installation in Delta County with acceptance anticipated September 2018.

University Region

The MDOT University Region currently has 4 ESS in Ingham County that will be operational for the start of this contract.

Statewide

Any supporting documentation that is needed by the Consultant to verify device locations, type, characteristics, etc. can be supplied by the Engineer at the Consultant's request. Throughout the duration of the contract, multiple ESS deployments will be installed and documentation will be provided as it becomes available. Multiple systems are currently in the design phase and documentation will be supplied as developed and approved.

ESS and/or sensors that are installed in the future will be included in the maintenance contract quantities upon verification of operation.

ATTACHMENT B: Miscellaneous Line Item Descriptions

All work shall be completed in accordance with the description of pay items and other contract items listed below.

For all line items listed below note the expectation that the associated communications network will be maintained as part of that line item. This work shall consist of the preventative maintenance, diagnosis of problems, and repairs to all components of the communications system, including, but not limited to, microwave radio links, cabling, fiber optic and SONET end equipment, microwave antennas, and cellular and RS-232/422 modems. The communication maintenance shall include all equipment, in the field or at the applicable TMC, required for communications to the field including, but not limited to, fiber optic distribution and trunk cabling, fiber optic end equipment, microwave radios, and modems.

This includes, but is not limited to the following equipment:

- Add/Drop Fiber Optic Multiplexers (Also called a Fiber Optic Network Interface),
- Video Equalization Amplifiers,
- Video Switcher Matrix,
- Ethernet Multiplexers,
- RS-422 Splitters,
- RS-232 to RS-422 Converters,
- 11 GHz Radio System,
- All Microwave Radio Antennas and Antenna Cables,
- Node Shelters,
- All Cables and Wiring Contained within a Cabinet, Node, or Hub Node
- Fiber Optic Distribution and Trunk Cabling

The preventative maintenance of the associated network components will include the following minimum preventative maintenance tasks:

- Inspect field antennas.
- Conduct path alignment tests on wireless communication links and check antenna alignment from receive and transmit end.
- Measure antenna gain.
- Measure the Voltage Standing Wave Ratio.
- Inspect fiber optic connections.

Make all adjustments, corrections, repairs, and replacements necessary to optimize the efficiency, stability, and reliability of the communications network.

PAY ITEMS

MAINTAIN ESS SITE

a. Description. This work shall consist of the preventative maintenance and repairs to environmental sensor stations, including but not limited to; precipitation, wind speed, surface, subsurface, humidity sensors, CCTV camera, and all communications equipment dedicated to the individual ESS sites. As the environmental sensor station systems may be a hybrid of multiple communications media as well as environmental sensors, the equipment for each site varies depending on the system used at the sites.

b. Materials. Furnish all equipment and materials necessary to perform the required functions as documented under Construction Methods of this article. Minor materials including, but not limited to, fuses, fasteners, jumper cables, cable connectors, and any wiring completely contained within the ESS housing, pole/tower or cabinet shall be included in this work. More significant materials will be provided through the spare parts inventory as described in this contract.

c. Construction Methods. For each ESS site identified under Attachment A, as well as for potential new ESS sites to be added in the future perform the following items of work at the Field site and at the TMC end of the communications per the approved Preventative Maintenance Plan.

Repairs and Notification

Upon notification of improper operation or failure of an ESS Site, commence with the necessary steps to repair the site back to proper operation. Notification may be made by MDOT or their designee. Upon discovery of abnormal wear to the pole / tower and / or concrete base, report the condition by e-mail to the Engineer within one (1) business day of discovery.

d. Measurement and Payment. The completed work as measured at each site where this work applies shall be paid for at the contract unit price for each applicable site for each calendar day for which the site operates above the following minimum threshold.

The minimum threshold is defined as a site with none of the following unresolved reported problems:

- Loss of data from any ESS device
- Loss of communications to an ESS site.
- Degradation of ESS device to less than 75% of optimal operation.

For this purpose, a day of not operating properly shall be defined as a day starting with the day immediately following the day the problem is reported to the Consultant. If the problem has been identified and resolved satisfactorily within the reported day, the

Consultant shall be paid for that day. If the site continues to operate at or below the minimum threshold beyond the reported day, than the Consultant shall not be paid for any days after the reported day for that site until the day after a) the site is returned to above the minimum threshold and b) the work order is closed.

Contract Item	Pay Unit
Maintain ESS Site	Month

Maintain ESS Site Monthly Payment for **Maintain ESS Site** includes all tools, labor, equipment, transportation, materials as mentioned above and other requirements necessary to maintain, diagnose, troubleshoot, and repair the ESS sites as detailed above.

MAINTAIN SPARE PARTS INVENTORY & SPARE PARTS DIRECT COST

a. Description. This work shall consist of procuring, storing, and maintaining an inventory of ITS replacement parts at a site(s) as approved by MDOT and preparing monthly inventory tracking reports. These parts will be inventoried, audited, and may only be used in support of the contract.

b. Materials. Materials will be procured by the Consultant and compensated by MDOT on an actual cost basis.

c. Construction Methods. The Consultant shall procure and maintain an inventory of ITS replacement parts at an approved “warehouse” site. These parts will be inventoried, audited, and only utilized in support of the contract.

The Consultant shall be responsible for all aspects of the warehouse. The Consultant will be compensated for all direct costs for the spare parts material.

Upon termination of the contract, the Consultant shall be responsible for packaging, transporting, delivery, and un-packing all remaining spare parts inventory at a site as determined and directed by the Engineer. The Consultant will be responsible for any and all damages to the remaining spare parts inventory occurring during delivery.

This work shall be done by the following requirements:

1) Minimum Hardware Required

Along with the Maintenance Plan to be submitted by the Consultant as described in this proposal, the Consultant shall submit a list of equipment recommended for purchase. This list shall consist of complete units with mid to high failure rates as determined by a review of the AMD or other MDOT approved asset management and work authorization tracking system. This quantity will not exceed 10-percent of the existing hardware. The Consultant will also submit a reasonable quantity of individual components needed to repair failed units.

The Consultant shall guarantee a percentage of operational hardware that will always be available in the warehouse as identified in the approved Maintenance

Plan. The Consultant will be required to maintain this percentage of equipment for the duration of the contract, but shall never fall below 25 % of the recommended inventory.

2) Tracking of Spare Parts Inventory

The Consultant is responsible for all spare parts. Any lost or stolen items shall be replaced at the Consultant's expense. The Consultant shall track all inventory by description, serial number, location, current status, and date of status change. As existing units and parts are swapped into the inventory, these units shall also be tracked. The Consultant shall be required to track the inventory in the MDOT AMD or other MDOT approved asset management and work authorization tracking system.

In the monthly status report to MDOT, the Consultant shall submit the inventory and status of all spare parts. The reports shall summarize the units ready for deployment, units under repair, units failed and waiting for parts, and units failed but no action. The Consultant shall also provide dates when a unit status changes.

3) Security of Hardware

The Consultant shall provide the necessary security precautions for all hardware and tools purchased under the contract. The equipment is considered MDOT property loaned to the Consultant. Even though the Consultant is responsible for replacement costs, the time to replace can have an impact on overall ATMS/ATIS operations. This shall include any necessary insurance coverage.

The Consultant shall provide MDOT audit staff access to the inventory within 2-hours notification by the Engineer.

4) Warranty

Equipment provided under the contract will include the manufacturer standard warranties. All warranties will be assigned to MDOT. The Consultant will track the equipment to the warranties. The warranty information shall be updated continuously in the asset inventory database. When warranties apply, the Consultant shall coordinate with the manufacturer on all replacements. At the completion of the contract, the Consultant will provide a list of all remaining equipment warranties.

5) Purchasing Requirements

The Consultant shall obtain three bids for all parts or equipment procured, including vendor repairs, on any individual purchase exceeding \$2,500.00. The Consultant may be required to obtain three bids for any parts or equipment on any individual purchase as requested by MDOT. In the event that three bids are not able to be obtained, the Consultant shall notify MDOT in writing prior to purchasing said item. The Consultant shall maintain all bid information and furnish upon request to MDOT.

For materials approved by the Engineer for purchase as spare parts, the Consultant will be compensated for the cost of materials delivered, including tax and transportation charges.

d. Measurement and Payment. The completed work as measured for Maintain Spare Parts Inventory will be paid for at the contract unit price for each calendar day during the contract.

Contract Item	Pay Unit
Maintain Spare Parts Inventory	Month
Spare Parts Direct Cost	Dollar

Payment for **Maintain Spare Parts Inventory** includes all tools, labor, equipment, transportation, and other requirements necessary to maintain the spare parts inventory and for all record keeping, ordering replacement parts, and coordination with suppliers as detailed above.

Payment of **Spare Parts Direct Cost** is made on a direct reimbursement basis with no Consultant mark up for delivered materials upon receipt of supporting documentation.

NON-ROUTINE MAINTENANCE AND REPAIRS

a. Description. The Consultant is responsible for the routine maintenance and emergency repairs as described within the contract. Through the duration of the contract, non-routine maintenance and repairs due to Third Party Damages, Acts-of-God, and required system modifications or improvements are likely to occur that exceed the intent and scope of the contract. Third Party Damage is defined as damage caused by vehicle collision, explosions or terrorism, caused by any person or company that is not related to the prime Consultant, vendor or any subConsultants involved in the contract. Acts-of-God include, but are not limited to, damages that occur resulting from winds above the equipment design speed, floods, facility fire, and lightning/electrical storms. Required system modifications or improvements will be defined as any system upgrade or modification requested by MDOT and may be requested to modernize the system technology or otherwise modify or upgrade the system.

Troubleshooting, diagnosing, and repairs that are normally considered part of the pay items included in the contract will not be paid for separately regardless of whether the problems were caused by Third Party Damage & Acts-of-God.

When requested by MDOT to provide services relating to required system modifications or improvements that exceed the intent and scope of the pay items of the contract, the Consultant shall be required to develop a separate scope-of-work, define labor requirements, submit subConsultants, create separate schedule and submit separate cost estimates for negotiation and/or approval. This work shall also include all associated traffic control in accordance with Sections 812 and 922 of the MDOT 2012 Standard Specifications for Construction. Under this step in the process, the Consultant will not be required to submit proprietary information. In the event the parties are unable to reach agreement on lump sum prices for extra work, the extra work shall be done through the

process described under Force Account in the MDOT 2012 Standard Specifications for Construction.

The submission of the scope and estimate described above does not guarantee Consultant selection for the described work. The MDOT reserves the right to use this scope and estimate to obtain competitive bids for the described work. If the Consultant is selected, the Consultant may be required to submit additional information that could normally be considered proprietary information by the Consultant.

b. Authorization. If the Consultant’s submission is selected as the “best value” scope and estimate, the Consultant shall not start work until a Notice-to-Proceed is executed by MDOT. The MDOT reserves the right to award the work under the contract or award the work under a different contract.

c. Disputes. The Engineer is the final authority to declare that work falls under Third Party Damage or Acts-of-God, or is out of the normal scope of the contract.

d. Compensation. Compensation for work that is deemed to be out of the normal scope of the contract, including as caused by Third Party Damage & Acts-of-God, will be developed through processes described in the MDOT Standard Specifications for Construction.

e. Measurement and Payment. The completed work as measured will be paid for in accordance with Section 109.05 (Force Account Work) of the MDOT 2012 Standard Specifications for Construction.

Contract Budget

Non-Routine Maintenance and Repairs

Pay Unit

Dollar

UTILITY STAKING AND PROTECTION, ONE PERSON

a. Description. This work shall consist of coordinating with MDOT staff and other MDOT consultants and Consultants to protect the ATMS/ATIS systems from damage by others. This effort will be provided whenever the Consultant is notified by other Parties, or by MDOT, of construction planned near one of the ITS equipment sites.

b. Materials. Furnish all equipment and tools necessary for clearly and properly locating and marking the ATMS/ATIS underground equipment, including conduit, direct bury cable, underground manholes and vaults, and other MDOT ATMS/ATIS equipment.

c. Construction Methods. Physically identify the location of buried ITS infrastructure. Complete the task within 72 hours of receipt of the staking request and notify the requesting Consultant and MDOT when staking is complete. This effort will be provided at both single sites, and for system buried along the right of way and not associated with a specific site. All fielded ATMS/ATIS equipment and communication infrastructure is included in this task, including infrastructure that may be added over the term of the contract.

Enter and update work order information in AMD, including hours, record of contact with requesting party, and notes as applicable for all staking requests. Field notes shall be maintained by the Consultant and provided to MDOT upon request. Mark up and modify as-built plans to indicate changes identified during staking.

d. Measurement and Payment. The completed work as measured will be paid for at the contract unit price for the number of person hours required to coordinate and mark the required underground field elements.

Contract Item	Pay Unit
Utility Staking and Protection, One Person	Hour

Payment for **Utility Staking and Protection, One Person** includes all tools, labor, equipment, transportation, and other requirements necessary to coordinate and mark the underground facilities.

MOBILIZATION, MAX

Mobilization will be paid for in accordance with Section 150 of the MDOT 2012 Standard Specifications for Construction.

TRAFFIC CONTROL

a. Description. Any temporary traffic control required to perform the contract work shall be approved by the Engineer before use. All temporary traffic control items will be in accordance with Sections 812 and 922 of the MDOT 2012 Standard Specifications for Construction. All traffic control devices and their usage shall conform to the current edition of the Michigan Manual of Uniform Traffic Control Devices. The Consultant shall notify the Engineer prior to implementing any roadway, lane, or ramp closures, so that proper notification can be given to the public.

b. Measurement and Payment. The completed work as measured will be paid for at the contract lump sum price for the number of person hours required to coordinate and mark the required underground field elements.

Contract Item	Pay Unit
Traffic Control	Lump Sum

Payment for **Traffic Control** includes all tools, labor, equipment, transportation, and other requirements necessary to perform temporary traffic control for maintenance work associated with Maintain ESS line item.