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REQUEST FOR PROPOSAL

D611-133-RW- ST. LOUIS GATEWAY GUIDE ITS HARDWARE MAINTENANCE AND REPAIR SERVICES

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INTRODUCTION

This Request for Proposals (**RFP**) seeks proposals from qualified organizations (**Offeror**) to furnish the described services to the Missouri Highways and Transportation Commission (**MHTC**). Eight (8) copies of each proposal must be mailed in a sealed envelope to Teresa (Terri) Mount, Procurement Specialist, Missouri Department of Transportation, 2309 Barrett Station Rd. Ballwin, MO. 63021, or hand-delivered in a sealed envelope to the Procurement Office indicated above. Proposals must be returned to the offices of District 6 no later than 1:00 P.M. May 11, 2011-

MHTC reserves the right to reject any and all bids for any reason whatsoever. Time is of the essence for responding to the RFP within the submission deadlines.

PROPOSAL

- (1) The Offeror shall provide a fee proposal to MHTC on the **PRICE PAGE** in accordance with the terms of this RFP.

- (2) The Offeror agrees to provide the services at the fees quoted, under the terms of this RFP.

Authorized Signature of Offeror: _____

Date of Proposal: _____

Printed or Typed Name: _____

Mailing Address: _____

City: _____ **State:** _____ **Zip:** _____

Telephone: _____ **Fax:** _____

Electronic Mail Address: _____

ACCEPTANCE

This proposal is accepted by MHTC.

(Name and Title)

Date

SECTION (1):
GENERAL DESCRIPTION AND BACKGROUND

(A) **Request for Proposal:** This document constitutes a RFP from qualified organizations to provide St. Louis Gateway Guide ITS hardware maintenance and remedial maintenance or repair services to MHTC and the Missouri Department of Transportation (MoDOT).

(B) **Background:** The Missouri Department of Transportation (MoDOT) has deployed an Intelligent Transportation System (ITS) known as Gateway Guide in the St. Louis metropolitan area. This system is currently fully operational where deployed but will continue to be expanded in the area in coming years. It is the purpose of this project to ensure that all Gateway Guide system field devices that are currently deployed, as well as those that will be deployed in the future, will be properly maintained through this contract.

(C) **Fiscal Year:** The fiscal year runs from July 1-June 30.

SECTION (2):
SCOPE OF WORK

(A) **Specific Requirements:** The Offeror will provide to the District 6 Team Evaluation Unit eight copies of a program proposal which will include all work included in the contract as described throughout this RFP. The project area covered by this contract is shown on Exhibit II at the end of this RFP.

Work under this contract shall consist of performing preventative field maintenance activities and remedial maintenance or repair services on the St. Louis metropolitan area Gateway Guide ITS hardware. This work shall include:

- Equipment repair and replacement,
- Cleaning,
- Repairs of fiber optic and twisted pair cable,
- Verification of communication system integrity,
- Voltage checks,
- Underground conduit repair and replacement,
- Repair and replacement of power and communications cable,
- Re-erecting or replacing knocked down cabinets and poles.

Maintenance of equipment inside the Transportation Management Center (TMC), including communications networks, workstations, and video wall will be the responsibility of others.

(B) **Administration of Program:** The Offeror will consult MHTC's representative regarding any problems involved with the administration of the services provided pursuant to this RFP.

(C) **Qualifications:** The Commission intends to enter into a multi-year contract with a qualified technical firm for maintenance of field equipment identified in this document. The Commission requires firms that have experience in maintaining a variety of transportation related field equipment including, but not limited to: communications networks, software systems, Closed **Circuit Television (CCTV)**,

traffic monitoring devices and other traffic management field equipment. The Contractor must demonstrate qualifications and experience in all matters related to the scope defined in Section 2 for the entire duration of the contract.

The Commission is fully supportive of National Standards including but not limited to the National Transportation Communications for ITS Protocol (NTCIP) standards. The Contractor should identify their level of expertise and or experience if any in this area.

(D) RFP Schedule (Under Development): The schedule for this RFP is as follows:

Activity	Date
Request For Proposal Release	March 14, 2011
Mandatory Pre-Proposal Conference	April 14, 2011, 10:00 A.M.. Local Time
Request For Proposal Responses	May 11, 2011, 1:00 P.M. Local Time

Pre-Proposal Conference

Prospective Contractors are required to attend a mandatory pre-proposal informational meeting to be held at D6, room 209, Traffic Management Center, 14301 South Outer Forty, Chesterfield, MO. 63017. The meeting will include: an overview of requirements; a briefing on the Gateway Guide system; a walk-through of the Transportation Management Center (TMC) and selected off-site field devices; a question and answer session; and, the proposal submittal schedule. In order for adequate accommodations for this meeting, Contractors planning to attend the pre-proposal meeting and walk-through are requested to RSVP by emailing the RFP Coordinator, Teresa, (Terri) Mount, Teresa.Mount@modot.mo.gov, calling 314-301-1431 no later than April 6, 2011, 1:00 p.m. local time.

(E) Services: The Offeror shall provide the following professional services:

The Commission requires firms that have experience in maintaining a variety of transportation related field equipment including, but not limited to: communications networks, software systems, Closed Circuit Television (CCTV), traffic monitoring devices and other traffic management field equipment. The Contractor must demonstrate qualifications and experience in all matters related to the scope defined in Section 2 for the entire duration of the contract.

1.0 Special Scope Provisions

1.1 Commission Requirements

1.1.1 Office Space

The Commission will provide office space for one Contractor staff member at the Gateway Guide Transportation Management Center (TMC) at 14301 South Outer Forty Drive, Chesterfield, MO 63017. This space will include one telephone, access to a personal computer owned by the Commission, access to a fax machine, and access to a copy machine. The office space, telephone, personal computer, fax machine, and copy machine are all for project use only. Any costs for non-project related uses will be deducted from money due the Contractor.

The personal computer will be connected to the Commission network and the Contractor will be provided with a Commission e-mail address. This e-mail address shall be used for all project related communications and only for project related communications. No payment will be made to the Contractor for costs associated with these computers or related services and equipment.

1.2 Contractor Requirements

1.2.1 Staffing

The Contractor will be required to use staff as submitted with the project proposal. Key staff may only be substituted through a written request by the Contractor and written approval by the Engineer. In the event of staff turnover of key staff members, the Contractor shall replace the respective staff with an individual with substantially equivalent experience and meeting the respective qualifications described below. The Engineer will have final approval on the acceptability of all staff working on the project.

1.2.1.1 Key Staffing Minimum Requirements

The Contractor's staffing submittal shall include resumes of key staff that clearly provide supporting documentation in meeting the requirements described below and describe maintenance experience on specific projects. At a minimum, the resumes shall include:

- Educational background including any degrees and/or certifications and the institution and year for which they were received.
- A brief description of similar projects that the individual is/was involved with. The description should include: project name; agency; agency contact; contract cost; date(s) of services; and, a short narrative of the services provided.
- Availability of staff described as a percentage of working hours in a typical week.

The minimum requirements for key personnel are:

Project Manager

As required to maintain the system properly, the Contractor shall provide an on-site professional Project Manager for administration of the maintenance and remedial maintenance or repair services of the Gateway Guide ITS hardware. The Project Manager

shall provide technical expertise, direction, and strategies regarding all aspects of ITS hardware maintenance, operation, and/or improvements.

Project Manager requirements include a minimum of 5 years experience in managing similar projects. The Contractor's staffing submittal shall include a resume of the proposed Project Manager that clearly provides supporting documentation describing management experience on specific projects. At a minimum, the Project Manager's resume should include:

Educational background including any degrees and/or certifications and the institution and year for which they were received.

A brief description of similar projects that were managed by the individual. The description should include: project name; agency; agency contact; contract cost; date(s) of services; and, a short narrative of the services provided.

The Project Manager or designee shall be available to the Engineer 24 hours a day, seven days a week through phone, pager or other means.

The Project Manager or designee shall participate in bi-weekly coordination meetings with the Commission, and other contract, personnel.

Lead Field Communications Technician

The individual, or individuals, assigned to this role will provide the Commission with technical communication repair services. The minimum requirements for the Lead Communications Technician are:

- Have experience in SONET networks;
- Have experience in wireless communication network maintenance and tuning;
- Have completed a minimum of one (1) three-day course in fiber optic splicing from a major manufacturer of fiber optic cable/equipment such as Corning, AT&T, Lucent, etc, or shall be certified as a fiber optic technician by the Fiber Optic Association, Inc., Boston, MA.
- Possess the necessary equipment to properly service all above mentioned communication devices;
- Have a minimum of two (2) years experience, within the last five (5) years, in the installation of digital and analog data communication systems;
- Possess the necessary equipment to properly service all above mentioned communication devices;
- The Contractor's staffing submittal shall include a resume of the proposed Lead Communication Technician that clearly provides supporting documentation in meeting the requirements described above and describes communications experience on specific projects. At a minimum the Lead Communication Technician's resume should include:
- Educational background including any degrees and/or certifications and the institution and year for which they were received.

- A brief description of similar projects that the individual is/was involved with. The description should include: project name; agency; agency contact; contract cost; date(s) of services; and, a short narrative of the services provided.

Lead Electrician

The individual, or individuals, assigned to this role will provide the Commission with field ITS hardware electrical repair services. The Lead Electrician must be a licensed electrician in the State of Missouri.

Lead Field Hardware Technician

The individual, or individuals, assigned to this role will provide the Commission with field ITS hardware technical repair services. The minimum requirements for the Lead Field Hardware Technician are:

- Have experience in the installation and maintenance of CCTV camera assemblies and video switches, including;
 - Controller cabinets,
 - Camera housings, and
 - Camera pressurization systems.
- Have experience in DMS installation and maintenance;
- Have a minimum of two (2) years experience, within the last five (5) years, in the installation, integration, maintenance, and operations of ITS-type equipment;
- Possess the necessary equipment to properly service all above mentioned ITS devices.

1.2.1.2 As Needed Staffing Resource Requirements

The as needed staffing resource personnel will not be required to be committed to the project and work will be used only on an as needed basis as directed by the Engineer. The minimum requirements for these personnel are:

Lead Network Communications Engineer

The individual assigned to this role will provide the Commission with network integration, configuration, and troubleshooting services on an as-needed basis.

The minimum pre-qualification requirements for the Lead Communication Engineer are to:

- Have experience in configuring Layer 2 and Layer 3 networks consisting of at least 5 routers.
- Have experience in configuring Layer 3 switches.
- Have experience in configuring optical networks and Cisco 15454 and 6513 Equipment.

1.2.2 Coordination and Communications with Commission Staff

The Contractor shall coordinate with the Engineer for all activities. The Engineer may delegate some coordination activities to others. Likely coordination activities may include, but will not be limited to; traffic control and IT network interfaces. The Contractor shall notify the Engineer when any work involving coordination with other Commission offices is required and provide updates on coordination status and issues.

1.2.3. Coordination with Other Contracts and Projects

Other contracts that increase or decrease field equipment quantities, expand the communication network, and/or develop/integrate software device drivers to control additional equipment may be awarded and completed during the life of this maintenance contract. The Contractor shall be responsible for coordinating with the Engineer and other project representatives, efforts related to these other contracts to ensure that access to field devices is not the cause of construction delays or claims.

The coordination required under this section will consist primarily of ensuring that communications systems are adjusted to account for planned disruptions of existing communications infrastructure.

1.2.4. Required Equipment

The Contractor shall furnish all equipment needed to complete the work required in this contract, including equipment for field maintenance work and communications for the project. This equipment will remain the property of the Contractor throughout the project and at its conclusion. The contractor will also be responsible for all maintenance, repairs, and calibration needed to keep the equipment in proper working condition.

1.2.4.1. Communications and Coordination Equipment

Wireless Telephones

At least one member of all Contractor work crews shall be available by telephone at all times while working on the project. The phone numbers and Nextel direct connect numbers shall be furnished to the Engineer for use in project communications.

1.2.4.2. Maintenance Equipment

All compensation for equipment used for work under this contract will be through the pay items included. No additional compensation will be made for any labor, equipment, or tools except as described for work outside of Preventative Maintenance and Standard Remedial Maintenance.

Maintenance equipment anticipated to be needed for this project shall be described in the Contractor's proposal, along with maintenance and calibration schedules for pertinent technical equipment such as radar speed guns, fiber optic fusion splicers, and fiber optic power meters. The maintenance equipment proposal for this project shall also include information regarding ownership of the equipment and whether the equipment is currently owned by the Contractor, planned for purchase upon award, or planned for rental for occasionally needed equipment.

While determination of equipment to be needed for this project is to be made by the Contractor, a partial list of anticipated equipment includes:

- Fiber optic cable fusion splicers,
- Fiber optic Optical Time Domain Reflectometer,
- Fiber optic cable power meter,
- Radar speed gun (or other speed measuring device),
- Bucket truck,
- Backhoe,
- Cable pulling tension meter,
- Cable pulling pulleys,
- Pole erection crane or truck.

1.3 Preventative Maintenance

The Contractor shall provide preventative maintenance on Gateway Guide devices, cabinets, communication equipment, and any additional Gateway Guide hardware as identified in this section. Table 1 shows a list of the preventative maintenance items for Gateway Guide. The Contractor shall develop detailed preventative maintenance procedures including a checklist of the preventative maintenance tasks to be performed on each of the following components listed and a schedule detailing the dates for which each device will have its preventative maintenance performed for review and approval by the Engineer. Deviation of the proposed schedule of more than one (1) week from the proposed date will not be allowed. This procedure shall also include the materials to be used to clean each item. The Engineer reserves the right to alter the proposed schedule by directing modifications upon review of the preventative maintenance procedures described above.

Development of these procedures and checklists will be considered part of the pay items in this contract and no additional compensation will be made to the Contractor.

1.3.1 CCTV Cameras

A. **Description.** Work under this item shall include cleaning the camera dome, component inspection, lubricating connection points, inspection of pressurization system, lightning suppression, and other general maintenance of camera assemblies. This item shall also include PM of the associated cabinet with said device. Per sec. 1.3.2. of Sec C.

B. **Materials/Payment.** The Contractor shall provide all equipment and materials necessary to perform the required functions outlined in this article. This task shall be paid per each CCTV that has been completely serviced. The Contractor must service all cameras a minimum of once annually. The Commission reserves the right to order additional maintenance visits of problematic cameras as needed by increasing the quantity paid for at the contract unit price.

C. **Construction Methods.** All preventative maintenance shall be done in accordance with the manufacturer's recommended procedures. For each camera assembly in the contract, the following items of work shall be performed:

General Cleaning. The Contractor shall thoroughly clean the outside of each camera dome assembly. The Contractor shall apply a rain repellent coating to the outside of the lower dome, following the coating manufacturer's instructions. The coating must be recommended by its manufacturer for clear acrylic. Upon completion, the camera assembly shall be neat and clean in appearance.

General Inspection. The Contractor shall inspect each camera assembly for general condition, including cables and wires, connectors, cameras, pan-tilt units, power supplies, surge protectors, CCTV pole access panels and any other equipment contained within each enclosure. All bolts and screws in the cameras and the controller will be checked and tightened. Any access panel screws that are broken, stripped or missing shall be replaced or repaired by the Contractor.

The Contractor shall visually inspect the camera pole and concrete base for signs of abnormal wear such as cracks, significant rust, missing or broken anchor bolts, or other signs of weakness. In the event of a discovery of such abnormal wear on the pole or base, the Contractor shall inform the Engineer within one (1) day of discovery of these conditions in writing.

Operational Integrity Checks. The Contractor shall, at a minimum, check the following functions during each preventative maintenance inspection:

- Check all local functions such as pan, tilt, zoom, and focus,
- Check operation of auto-iris and adjust as necessary,
- Check camera dome pressure and compare to manufacturer's specifications,
- Recharge camera dome per manufacturer's recommendations, and
- Once the cameras are re-installed and prior to leaving the CCTV site, the Contractor shall contact the Commission operators in order to verify proper operation, including pan/tilt/zoom, preset functions, and CCTV description.

Verification and Modification of Communication Drawings. During each visit to these device locations, the Contractor shall verify the accuracy of the current Communication diagram for each device cabinet. If a discrepancy is found, the Contractor shall modify the electronic copy of the diagram for that site, and submit to the Commission for update to the Commission's file. Updated drawings shall be submitted electronically within 14 days of the visit to the field cabinet in which the discrepancy was found.

Documentation. All information gathered under this item shall be submitted to the Engineer as part of a Preventative Maintenance Report. This report shall document all items checked and verified and repairs made. It shall also include initial camera dome pressure and final camera dome pressure upon completion of a recharge if necessary. The make, model, and serial number of the camera assembly and other included hardware shall be noted. Reports for all camera assemblies inspected under this item shall be organized in an electronic format, sorted by camera ID in ascending order and delivered after at the completion of each execution of this task.

1.3.2. Field Cabinets

- A. **Description.** Work under this item shall include cleaning, internal cabinet configuration, and general inspection of cabinets.
- B. **Materials/Payment.** All preventative maintenance shall be done in accordance with the manufacturer's recommended procedures. The Contractor shall provide all equipment and materials necessary to perform the required functions as documented under Construction Methods of this article. This task shall be paid per each field cabinet that has been maintained.
- C. **Construction Methods.** All preventative maintenance shall be done in accordance with the manufacturer's recommended procedures. Care shall be taken to prevent damaging components or cabling within the cabinet. The Contractor shall trim grass and brush back for a five (5) foot radius around each cabinet and remove any debris from around and on top of the cabinet base. The Contractor shall, upon inspection of the field cabinet, lubricate the locking mechanism, hinges, and door locking arm mechanism in accordance with manufacturer specifications. If any lock covers are missing, the Contractor shall place tape over the keyhole. Additionally, the following maintenance items of work shall be performed:

General Cleaning. The Contractor shall thoroughly clean each cabinet, including vacuuming loose dirt or debris. All enclosures will be cleared of any dirt or debris, and conduits shall be plugged with duct seal to prevent rodents from entering. The Contractor shall wipe down all accessible equipment areas, racks, and shelves contained within the cabinet. Upon completion, the cabinet shall be free of all debris, rodents, pests, and animal waste, and shall be neat and clean in appearance.

Cabinet Filter Replacement. The Contractor shall replace cabinet filters and vacuum out dust and particles from the screens and filter holders. This includes cleaning of louvers and screens covering filter holders.

Pest Control and Damage Repair. The Contractor shall remove any old ant bait containers and install a new bait container in each field cabinet after completing the general cleaning task.

General Inspection. The Contractor shall inspect each cabinet for general condition, including condition of cables and wires, heaters, processors, power supplies, cabinet lights, fans, doors, locks, shelves, din rails, and communications panels or equipment contained within each cabinet. The Contractor shall also inspect the integrity of the cabinet identification plaque. Any broken or damaged field cabinet components shall be documented in the Preventative Maintenance Report, and repaired if the repairs are possible and not of a significant nature. If significant repairs are needed, these repairs shall be dealt with as described for out of scope work. Preventative maintenance shall include the replacement of any burned-out or broken light bulbs found during routine maintenance.

Operational Integrity Checks. The Contractor shall check and record incoming power supply voltages, and verify landings of twisted-pair communication cable (where applicable). Any detectors not functioning shall be reported to the Engineer.

Verification and Modification of Communication Drawings. During each visit to these device locations, the Contractor shall verify the accuracy of the current Communication diagram for each device cabinet. If a discrepancy is found, the Contractor shall modify the electronic copy of the diagram for that site, and submit to the Commission for update to the Commission's file. Updated drawings shall be submitted electronically within 14 days of the visit to the field cabinet in which the discrepancy was found.

Documentation. All information gathered under this item, including general inspection, operational integrity verifications, replaced filters, and replaced pest deterrents shall be submitted to the Engineer as part of a Preventative Maintenance Report. Reports for all controller cabinets inspected under this item shall be electronically submitted, sorted by location.

1.3.3. Air Conditioning Units

- A. **Description.** Work under this item shall include removing the A/C unit, opening the unit to provide access to the interior and cleaning all internal components. Currently, A/C units are only installed at Communications Nodes in the field.
- B. **Materials/Payment.** The Contractor shall provide all equipment and materials necessary to perform the required functions as documented under Construction Methods to this article.
- C. **Construction Methods.** All preventative maintenance shall be done in accordance with the manufacturer's recommended procedures. Preventative Maintenance of HVAC shall be performed between March 1 and May 15 of each Calendar year, unless otherwise directed by the engineer. For each controller cabinet with an A/C unit, the following items of work shall be performed:

General Cleaning. The Contractor shall thoroughly clean the internal components and external surface of each A/C unit, and all enclosures will be cleared of any dirt or debris. Upon completion, the A/C unit shall be free of all debris, rodents, pests, and animal waste, and shall be neat and clean in appearance.

Air Conditioning Filter Replacement. The Contractor shall replace A/C filters during each preventative maintenance visit.

General Inspection. The Contractor shall inspect each A/C unit for general condition, including condition of cables and wires, panels or components contained within each cabinet.

Operational Integrity Checks. The Contractor shall check and ensure operation of the A/C unit including a diagnostics check of the entire A/C unit. This shall include the checking for proper refrigerant levels and filling if necessary.

Documentation. All information gathered under this item, including general inspection and operational integrity verifications shall be submitted to the Commission as part of a Preventative Maintenance Report. This report shall document all items checked, verified and any repairs made, including filters replaced. Reports for all sites inspected under this item shall be electronically submitted, organized by site and updated at the completion of each execution of this task.

1.3.4. Dynamic Message Signs

- A. **Description.** Work under this item shall include cleaning, communication equipment configuration verification, internal layout configuration (wiring diagrams, etc.), and general inspection of the Dynamic Message Signs (DMS). This item shall also include PM of the associated cabinet with said device. Per sec. 1.3.2. of Sec C.
- B. **Materials/Payment.** The Contractor shall provide all equipment and materials necessary to perform the required function, including filters. The Contractor will need to provide their own bucket truck in order to access the signs. The Engineer shall provide to the Contractor the latest version of software used for controller configuration verification.
- C. **Construction Methods.** All preventative maintenance shall be done in accordance with the manufacturer's recommended procedures. Care shall be taken to prevent damaging components or cabling within the enclosure. For each DMS, the following items of work shall be performed:

General Cleaning. The Contractor shall thoroughly clean the DMS. The enclosures shall be cleared of any dirt or debris, any paint or graffiti markings on the exterior shall be cleaned off and/or removed, wiping down all accessible interior equipment areas, racks, and shelves. Upon completion, the enclosure shall be free of all debris, rodents, pests, and animal waste, and shall be neat and clean in appearance. The plexi-glass display cover shall be cleaned, inside and outside with a water repellent solution applied in accordance with manufacturer's specifications.

Filter Maintenance. On DMS for which the manufacturer recommends replacing the filters, the Contractor shall replace the filters with new filters meeting the DMS manufacturer's requirements. On DMS for which the manufacturer recommends cleaning and re-using the filters, the Contractor shall clean and reinstall the filters per the manufacturer's recommended instructions. The Contractor shall also vacuum out dust and particles from louvers and screens covering filter holders and before reinstalling cleaned filters or installing new filters.

General Inspection. The Contractor shall inspect each location for general condition, including condition of cables and wires, power supplies, connectors, and communications panels or equipment contained within each DMS enclosure. The Contractor shall also inspect operation of doors and lights.

Structural Inspection. The Contractor shall visually inspect the structure for apparent cracks or defects, including the DMS mounting hardware. Wherever readily accessible, the Contractor shall check that nuts and bolts are not loose. Repair or replace damaged grout or rodent mesh at base of sign.

Operational Integrity Checks. The Contractor shall check and record voltages on all power supplies, and verify that all equipment appears to be operating properly. Contractor shall also perform a diagnostic on sign display per manufacturer's specs. Any equipment not functioning properly shall be reported to the Engineer. All enclosures shall be checked at this time and air handling devices shall be tested.

Verification and Modification of Communication Drawings. During each visit to these device locations, the Contractor shall verify the accuracy of the current Communication diagram for each device cabinet. If a discrepancy is found, the Contractor shall modify the electronic copy of the diagram for that site, and submit to the Commission for update to the Commission's file. Updated drawings shall be submitted electronically within 14 days of the visit to the field cabinet in which the discrepancy was found.

Documentation. The Contractor shall use the location documentation including inventory and wiring diagrams to verify that all equipment is documented and the correct models and serial numbers are recorded. All information gathered under this item, including general inspection, operational integrity verifications, structural cracks or defects, and controller configurations shall be submitted to the Engineer as part of a Preventative Maintenance Report. This report shall document all items checked and verified, and repairs made. Reports for all DMS's inspected under this item shall be organized, sorted by primary controller ID in ascending order and delivered after the completion of each execution of this task. If a structural defect is noticed through this work, the documentation shall be submitted directly to the Engineer to highlight the structural issues noted. Reports for all sites inspected under this item shall be electronically submitted.

1.3.5. Wireless Communications Links

A. **Description.** Work under this item shall include testing and adjusting/calibrating wireless communications links, both licensed and unlicensed. This item shall also include PM of the associated cabinet with said device. Per sec. 1.3.2. of Sec C .

B. **Materials/Payment.** The Contractor shall provide all equipment and materials necessary to perform the required functions. The Contractor must service all complete wireless communications links, including equipment at both ends of the link, a

minimum of once per a 2-year period. The existing wireless links are in the 900 MHz range and the 4.9 GHz range.

- C. **Construction Methods.** All preventative maintenance shall be done in accordance with the manufacturer's recommended procedures. For each link, the following items of work shall be performed:

General Inspection. The Contractor shall inspect the general condition of the wireless equipment, including antenna and other external mounted equipment, paying particular attention to wiring harnesses and connectors.

Signal Testing. The Contractor shall conduct path alignment tests and check antenna alignment from ends, measure antenna gain, measure link throughput, document background signals on similar frequencies, and measure the Voltage Standing Wave Ratio. For all 4.9 gig link contractor shall report to engineer any links that don't provide 22 megabits per second. Perform site survey to determine if any foliage from trees or structure installations has encroached on the clear line of site between radio links. Perform tree trimming remediation efforts and/or document and report any structure installations that have encroached on the clear line of site between radio links.

Equipment Adjustments. The Contractor shall adjust the antenna alignment and make other necessary adjustments to maximize available throughput and maintain the strongest possible signal.

Verification and Modification of Communication Drawings. During each visit to these device locations, the Contractor shall verify the accuracy of the current Communication diagram for each device cabinet. If a discrepancy is found, the Contractor shall modify the electronic copy of the diagram for that site, and submit to the Commission for update to the Commission's file. Updated drawings shall be submitted electronically within 14 days of the visit to the field cabinet in which the discrepancy was found.

Documentation. The Contractor shall document all repairs made and this information shall be submitted to the Engineer as part of a Preventative Maintenance Report. This report shall document all items checked and verified and repairs made. The make, model, and serial numbers of the radios and other included hardware shall be noted. The field devices connected to the radios shall also be noted. Reports for all wireless links inspected under this item shall be electronically submitted. In the event that multiple devices are connected to a single radio link, a single copy of the report shall be placed in the binder for each device.

1.3.6. Lane Control Signal System

- A. **Description.** Work under this item shall include inspecting the system and associated signal heads and blank out signs, including sign structure, mounting hardware, anchor

bolts, and cable connections. It shall also include cleaning the signal heads and blank out signs, and the controller cabinet.

- B. Materials/Payment.** The Contractor shall provide all equipment and materials necessary to perform the required functions outlined in this article. This task shall be paid per each Lane Control Signal System that has been inspected and cleaned. The Commission reserves the right to order additional maintenance visits of problematic systems as needed by increasing the quantity paid for at the contract unit price. For the purposes of defining the equipment included in this pay item, all equipment connected to a specific traffic signal controller shall be defined as a system. PM shall be performed as directed by the Engineer.
- C. Construction Methods.** All preventative maintenance shall be done in accordance with the manufacturer's recommended procedures. For each Lane Control Signal System included in the contract, perform the following items of work:
- Visually inspect sign structure,
 - Visually inspect mounting hardware,
 - Visually inspect anchor bolts and nuts.
 - Verify functionality of all signal heads and blank out signs,
 - Clean signal heads and blank out signs face covers,
 - Vacuum controller cabinet,
 - Visually inspect controller cabinet seal, and
 - Replace, or clean controller cabinet air filter as recommended by manufacturer.

Verification and Modification of Communication Drawings. During each visit to these device locations, the Contractor shall verify the accuracy of the current Communication diagram for each device cabinet. If a discrepancy is found, the Contractor shall modify the electronic copy of the diagram for that site, and submit to the Commission for update to the Commission's file. Updated drawings shall be submitted electronically within 14 days of the visit to the field cabinet in which the discrepancy was found.

Documentation. All information gathered under this item shall be submitted to the Engineer as part of a Preventative Maintenance Report. This report shall document all items checked and verified and repairs made. The make, model, and serial number of controller and other included hardware shall be noted. Reports item shall be sorted by location ID in ascending order and electronically submitted after at the completion of each execution of this task.

1.3.7. Non-Intrusive Vehicle Detector Stations

- A. Description.** Work under this item shall include inspecting the device location and infrastructure, including the pole, mounting hardware, anchor bolts, and cable connections. It shall also include checking and, if necessary, re-aiming and recalibrating the detectors for speed, volume, and occupancy accuracy. This item

shall also include PM of the associated cabinet with said device. Per sec. 1.3.2. of Sec C.

- B. Materials/Payment.** The Contractor shall provide all equipment and materials necessary to perform the required functions outlined in this article. This task shall be paid per each detector station that has been completely serviced. The Commission reserves the right to order additional maintenance visits of problematic detector stations as needed by increasing the quantity paid for at the contract unit price.
- C. Construction Methods.** All preventative maintenance shall be done in accordance with the manufacturer's recommended procedures. For each detector station site included in the contract, perform the following items of work:
- Check integrity of cables and connectors,
 - Check, test, and calibrate the vehicle detectors using the testing method submitted to, and approved by, the Engineer,
 - Re-aim the detectors as needed, and
 - Visually inspect electrical path to ground.

The vehicle detector testing shall be conducted with a radar speed gun and a laptop computer connected to the remote traffic sensor unit. A five (5) minute sample of manually counted traffic volumes shall be taken for each lane and compared to the recorded volume detected by the unit. A variance exceeding five percent (5%) shall be considered a failure and require re-aiming and/or calibrating the detector and re-testing. Additionally, spot speeds shall be recorded from radar gun observations and compared to the observed speed detected by the detector and observed on the laptop. A variance exceeding ten percent (10%) shall be considered a failure and require re-aiming and/or calibrating the unit and re-testing. A detailed procedure and documentation template shall be prepared and submitted to the Engineer for approval.

The Contractor shall visually inspect the sensor pole and concrete base for signs of abnormal wear such as cracks, significant rust, missing or broken anchor bolts, and/or other signs of weakness. In the event of a discovery of such abnormal wear on the pole or base, the Contractor shall inform the Engineer within one (1) day of discovery of these conditions in writing.

Verification and Modification of Communication Drawings. During each visit to these device locations, the Contractor shall verify the accuracy of the current Communication diagram for each device cabinet. If a discrepancy is found, the Contractor shall modify the electronic copy of the diagram for that site, and submit to the Commission for update to the Commission's file. Updated drawings shall be submitted electronically within 14 days of the visit to the field cabinet in which the discrepancy was found.

Documentation. All information gathered under this item shall be submitted to the Engineer as part of a Preventative Maintenance Report. This report shall document

all items checked and verified and repairs made. The make, model, and serial number of the sensor assembly and other included hardware shall be noted. Reports for all sensor assembly sites inspected under this item shall be sorted by sensor location ID in ascending order and delivered after the completion of each execution of this task. The documentation prepared and filed for this work shall also include a tabular summary comparing observed speeds and volumes with detected speeds and volumes.

1.3.8. In Pavement Detector Stations

- A. **Description.** Work under this item shall include inspecting the device location and infrastructure, including the splice between the sensor cable and the lead in cable, cable, and cable connectors.
- B. **Materials/Payment.** The Contractor shall provide all equipment and materials necessary to perform the required functions outlined in this article. This task shall be paid per each In Pavement Detector Station that has been inspected and cleaned. The Commission reserves the right to order additional maintenance visits of problematic systems as needed by increasing the quantity paid for at the contract unit price.
- C. **Construction Methods.** All preventative maintenance shall be done in accordance with the manufacturer's recommended procedures. For each In Pavement Detector Station included in the contract, perform the following items of work:
- Visually inspect splice,
 - Visually inspect cabling,
 - Vacuum controller cabinet,
 - Visually inspect controller cabinet seal,
 - Replace, or clean controller cabinet air filter as recommended by manufacturer, and
 - Perform factory recommended calibration test.

Additionally, the Contractor shall perform calibration tests as recommended by the sensor manufacturer to verify the reporting accuracy of the sensors.

Verification and Modification of Communication Drawings. During each visit to these device locations, the Contractor shall verify the accuracy of the current Communication diagram for each device cabinet. If a discrepancy is found, the Contractor shall modify the electronic copy of the diagram for that site, and submit to the Commission for update to the Commission's file. Updated drawings shall be submitted electronically within 14 days of the visit to the field cabinet in which the discrepancy was found.

Documentation. All information gathered under this item shall be submitted to the Engineer as part of a Preventative Maintenance Report. This report shall document all items checked and verified and repairs made. It shall also include results of the initial calibration testing and adjustments made as appropriate. The make, model, and serial number of the controller and other included hardware shall be noted. Reports

for all detector stations inspected under this item shall be sorted by location ID in ascending order and delivered after at the completion of each execution of this task.

1.3.9. Weather Sensor Systems

- A. **Description.** Work under this item shall include inspecting the pavement weather sensor system, including cabling and cable connections, checking the functionality of the associated sensors, cleaning the controller cabinet.
- B. **Materials/Payment.** The Contractor shall provide all equipment and materials necessary to perform the required functions outlined in this article. This task shall be paid for per each In Pavement Weather Sensor System inspected, tested, and cleaned. The Commission reserves the right to order additional maintenance visits of problematic systems as needed by increasing the quantity paid for at the contract unit price.
- C. **Construction Methods.** All preventative maintenance shall be done in accordance with the manufacturer's recommended procedures. For each Weather Sensor System included in the contract, perform the following tasks:
- Visually inspect the condition of cabling, splices, and terminations,
 - Verify basic functionality of sensors by checking for signals at controller cabinet,
 - Verify general temperature accuracy by comparing output to that of a hand-held infrared thermometer. Note the temperature readings in the documentation,
 - Vacuum controller cabinet,
 - Visually inspect controller cabinet seal, and
 - Replace, or clean controller cabinet air filter as recommended by manufacturer.

Verification and Modification of Communication Drawings. During each visit to these device locations, the Contractor shall verify the accuracy of the current Communication diagram for each device cabinet. If a discrepancy is found, the Contractor shall modify the electronic copy of the diagram for that site, and submit to the Commission for update to the Commission's file. Updated drawings shall be submitted electronically within 14 days of the visit to the field cabinet in which the discrepancy was found.

Documentation. All information gathered under this item shall be submitted to the Engineer as part of a Preventative Maintenance Report. This report shall document all items checked and verified and repairs made. It shall also include initial readings for the sensor system and that of a handheld thermometer. The make, model, and serial number of the controller and other included hardware shall be noted. Reports for all weather sensors inspected under this item shall be organized sorted by location ID in ascending order and delivered after at the completion of each execution of this task.

1.4 Preventative and Remedial Maintenance Support

The Contractor shall provide support for preventative maintenance and remedial repairs on the Gateway Guide system by maintaining and storing an inventory of ITS spare parts, and managing and verifying repair work done by others.

1.4.1. Warehouse Spare Parts

A. **Description.** The Contractor shall store, track, maintain, and report on status, an inventory of ITS spare parts, some provided by the Commission and some provided by the Contractor and reimbursed by the Commission as described in this contract, at a location within the counties included in the project area. The spare parts storage area for this contract must be a secure location and either be in a building dedicated to the spare parts for this project, or be physically separated and secured from areas of the building used for other purposes. Equipment larger than 20-feet long and weatherproof may be stored in a secure location adjacent to the building used to store smaller equipment.

This work shall consist of storing and maintaining an inventory of ITS replacement parts, some Commission furnished and some Contractor furnished as described in this contract, at a site approved by the Commission and preparing monthly inventory tracking reports. These parts will be inventoried, audited, and may only be used in support of this contract.

B. **Materials/Payment** The Contractor shall be responsible for providing storage space, all tools, labor, transportation, and other requirements necessary to maintain the spare parts inventory and for all record keeping and reporting. There shall be no direct pay for complying with provisions of section 1.4.5.

C. **Construction Methods.** The Contractor shall support this effort by providing clerical and project management support for Gateway Guide ITS hardware and spare parts.

- Package defective or damaged component for shipping to the manufacturer for repair,
- Ship packaged components to approved repair facility for repair or replacement
- Track and report on parts in the repair cycle,
- Receive repaired or replacement parts and add them into the Gateway Guide Spare Parts Inventory,
- Test repaired parts to verify acceptable completion of the repairs,
- Negotiate repair rates or maintenance agreements with vendors or other qualified companies, and
- Meet with Commission staff in order to determine policies on the diagnosis, repair, or disposal of damaged equipment.

Expenses will only be provided for the actual costs of packaging and shipping, and for Contractor furnished spare parts as described in this contract. The Contractor shall be reimbursed the actual repair cost billed by the Maintenance Facility.

Work under this item shall consist of storing, tracking and reporting on an inventory of spare parts, quantities, model numbers and serial numbers of all equipment, and providing monthly reports of all equipment by storage location. The Contractor may also be required to track warrantee information or report on other specialized data that will be used for Gateway Guide's configuration management and asset management programs. The physical warehouse space must be secure and of a size adequate for storage of the parts and equipment necessary to complete this contract. Commission personnel may request some spare parts to be stored at the Transportation Management Center (TMC) in order to facilitate testing and repairs.

The Contractor shall be responsible for all spare parts stored and maintained at this location for this contract. The cost for any spare parts missing, or otherwise not accounted for, at the end of this contract will be reimbursed to the Commission.

Commission owned spare parts shall be neatly stored, separate from other materials, and clearly labeled as owned by the Commission.

The Contractor shall provide the Engineer, or Engineer's designee, access to the spare parts inventory within 2-hours notification.

The Contractor shall provide a monthly report to the Engineer on the inventory status of spare parts. The reports shall summarize the quantity of units ready for deployment, units under repair, units failed and waiting for parts, units failed with no action yet taken, and dates of unit status changes.

1.5. Documentation and Reporting

Throughout the project, a series of documents and reports shall be prepared by the Contractor. These are for the purpose of tracking the work that has been performed on the project, tracking the costs of maintaining the system, and ensuring that a plan is developed and followed for maintaining the Gateway Guide system as detailed in this project. All reports required in this contract shall be provided in both hardcopy (2 copies) and electronic (MS Word) formats.

1.5.1. Annual Maintenance Report

The Contractor shall be responsible for the development and submission of an annual maintenance report. This shall include simple summaries of all maintenance activities for every field element, including the communications system, in the contract. These summaries may be in table format and shall include, at a minimum, the following information:

- Number of preventative maintenance visits to each site,
- Scheduled date of preventative maintenance visits to each site and actual date of preventative maintenance visits to each site,

- Number of problem call visits to each site,
- Average duration of each problem call visit for each site (actual time on site),
- Average time to resolve problems for each site (time from notification to resolution),
- Cost of spare parts used at each site,
- Total spare parts cost for the system for the year,
- Total compensation from the Commission to the Contractor for this contract with Out-of-Scope Remedial Maintenance and component repairs broken out separately.

In addition to this minimum information, the Contractor shall use the annual maintenance report to make recommendations regarding potential maintenance cost savings efforts and equipment upgrades.

1.5.2. Documentation and As-Built Revisions

The Contractor shall keep the system documentation up to date or create additional documentation as changes are made through this contract or new ITS devices and/or functions are added. This may involve revising as-builts, and/or providing additional documentation such as manufacturer cut-sheets and recommended maintenance procedures as requested by the Commission. All documentation revisions, including as-builts, shall be submitted to the Commission within 30 days of adding devices and/or making changes. If a discrepancy is found by the Contractor when comparing current Communication Drawings to actual field conditions within Field Terminal Cabinets, Communication Drawings shall be modified electronically by the Contractor, and submitted to the Commission. The Commission will make all current electronic copies of existing Communications Drawings available to the Contractor throughout the term of the contract.

Under a separate cover, additional program documentation to be compiled by the Contractor shall include:

- Personnel certifications, licenses, and renewals,
- Equipment recalibration and certification,
- Task generated documentation,
- Memos
- Monthly or weekly reports, and
- Meeting minutes, handouts, etc., shall be compiled by the Contractor, distributed to the program managers, the task managers, and the Commission Program Manager and included with Monthly Progress Reports.

1.5.3. Monthly Progress Report

The Contractor shall provide the Commission with a monthly status report for all Gateway Guide maintenance activities. This report will be clear and concise with only relevant information. The monthly status report shall include, at minimum, completed items for payment with standard pay items and Out of Scope remedial maintenance broken out separately, project work status, cost-to-date, and estimated cost for completion. The report shall also include any outstanding action and/or risk items,

updated schedule, and a recovery plan if needed. This report will be reviewed and used by the Engineer in determining payment due to the Contractor for the previous month.

1.5.4. Daily Technician Log

Each technician assigned to the project shall maintain a bound daily log with name clearly indicated. The daily logs of all staff working on the project shall be delivered to the Engineer upon request. The information in the log shall include the minimum information as follows:

- Date,
- Weather conditions,
- Problem reported,
- Cause of problem discovered,
- Work performed using traffic control and description of traffic control,
- Motorized equipment utilized and duration,
- Any traffic accidents within or adjacent to maintenance zone, and
- Any worker accidents or injuries.

1.5.5 Schedule

The Contractor shall develop and maintain a schedule of all maintenance activities. These include preventative maintenance and on-going repairs. The schedule shall be updated daily. The first schedule shall be submitted within 30 days from Notice-To-Proceed.

1.5.6. Maintenance Plan

The Contractor shall create a document to describe in detail how all requirements in this project will be achieved and how repairs will be handled from notification to resolution.

It shall contain a process for efficiently expediting maintenance activities described within this proposal. The maintenance plan shall include, as a minimum;

- Date,
- Preventative maintenance schedule for all field elements in the contract,
- Description of the process that will be put in place to incorporate and expedite the resolution of unplanned field element service outages while maintaining the prescribed preventative maintenance schedule, and
- Process for ensuring consistent compliance with the required response times described in this contract.

Contact procedure for initial first contact for Emergency field element outages. The Project Manager, or designee, shall be available to the Engineer 24 hours per day, 7 days per week, and every day of the year.

The plan page limitations and guidelines consist of between twenty (20) and (forty) 40 black and white pages and a combination of 8 ½" X 11" sheets and 11" X 17" sheets.

An initial Maintenance Plan shall be submitted with the response to this RFP. A revised Maintenance Plan based on comments from the Engineer shall be submitted within 30 days of award of the contract and updated annually.

1.6. Contractor Remedial Maintenance

The Contractor shall perform all emergency repair activities to keep the system equipment operational on a twenty four (24) hours per day, seven (7) days per week, three hundred sixty five (365) days per year schedule. The Contractor shall establish a 24/7 central telephone support number to be used to report emergency hardware problems. When a problem is detected with a component or device, Commission staff shall create a trouble ticket. Calls for Emergency repairs will be placed immediately while trouble tickets for Non-Critical repairs will be created for pick up by the Contractor the next business day. The Contractor shall respond in a timeframe according to the response level applicable to that device as listed on the trouble ticket.

Remedial maintenance work shall be authorized through the issuance of a trouble report ticket or a telephone call. The Contractor shall respond by visiting the field site, TMC, and/or Commission Office site to determine the nature, cause, and severity of the problem.

This work will be compensated for at the contract unit prices for standard repair items, plus the Emergency Response Repair Mobilization contract unit prices when appropriate. Work that is outside the normal scope of this contract will be compensated for based on negotiated costs based on estimates of hours provided by the Contractor and labor rates provided as part of this contract.

1.7. Procurement of Spare Parts

During the duration of this contract, the Contractor shall provide all labor, tools, equipment, and minor materials to maintain the system as described in this RFP. These materials shall be provided by the Contractor, will be considered as part of the related pay items in this contract, and no additional payment will be made for them. Contractor provided materials shall include, but not be limited to the following:

- DMS Enclosure Filters,
- Jumper Wires and Connectors,
- Field Cabinet Air Filters,
- Any wiring that is within a single cabinet, or between two cabinets on the same concrete base,
- Cleaning Solutions and Chemicals,
- Lubricating Solutions, Lubricants, Oils, or Greases, and,
- Light Bulbs (Incandescent and fluorescent)
- CCTV camera cable

The Commission will procure, and manage an inventory of spare parts to be furnished to the Contractor for use with this project. The spare parts inventoried by the Commission for this project will include but not be limited to the following:

- CCTV Cameras
- Vehicle Detectors
 - Non intrusive Wireless
 - Intrusive wireless
- Electronic Communications Hardware
 - Ethernet Switches
 - Video Encoders / Decoders
 - Fiber Optic Data Modems
 - Device Servers

In addition to the Contractor furnished items included in other pay items, and Commission furnished materials as described above, the Contractor shall procure additional materials of more significant nature. These materials shall be procured by the Contractor, reimbursed to the Contractor by the Commission for actual costs incurred for the materials. These materials include, but are not limited to:

- CCTV Camera Poles
- Vehicle Detector Poles
- Lane Control Signals and Enclosures
- Pull Boxes

Upon award of this contract, the Contractor shall within thirty (30) days review the Commission managed spare parts inventory and prepare a list of additional spare parts, or additional quantities of spare parts, that the Contractor recommends that the Commission procure to expedite on-going maintenance of the system. This shall include spare parts to be procured by the Contractor and reimbursed by the Commission on actual cost basis.

Upon request or recommendation of the Contractor to procure additional spare parts not furnished by the Commission, as described above, the Engineer will inform the Contractor as to agreement to procure the respective parts and equipment. The Contractor will then investigate pricing for parts and equipment materially similar to that already existing in the Gateway Guide system and provide the Engineer with a price quote. If that price is agreeable to the Engineer, the Contractor shall arrange for procurement at that price and store the parts as spare parts or use immediately upon receipt of the parts within timeframes described elsewhere in this contract. If the price is not agreeable, the Engineer will advise as such and request the Contractor to find a minimum of three (3) price quotes for the Engineer, from which the Engineer will either approve ordering, or deny the request or recommendation to procure parts at that time.

1.8. Standard Field Remedial Maintenance

The Contractor shall facilitate the repair of field components that have been damaged by storms, vehicle collisions, construction activities or other unanticipated events. These repairs represent the most common isolated damage that occurs to the Gateway Guide system. Major relocations and system upgrades represent a different scope of work and will be included in a separate task.

A specific level of service is included for each repair item and the Contractor shall submit one unit price for all work associated with each item of this work. Device components and parts will come out of the Gateway Guide Spare Maintenance Parts inventory. Short pieces of cable or wiring contained within a single cabinet, such as a network communications patch cable, or other inexpensive and easy to procure parts, such as in-line fuses, shall be included in each of the pay item prices. Each individual pay item in this section specifically states whether or not the material is Commission furnished. If a certain part is not readily available, but is to be Contractor furnished, it is the Contractor's responsibility to keep that part in stock during the length of this contract. The Contractor also has the option to recommend that additional parts be added to the Gateway Guide spare parts inventory.

A lump sum mobilization cost will be paid for Emergency responses. The Contractor will be reimbursed this lump sum amount when they are ordered by trouble ticket to respond within the Emergency time period. Consequently, in these instances, the Contractor will be paid for one mobilization and all of the applicable unit prices needed to complete the work designated on the trouble ticket. The repair process shall begin by Commission personnel contacting the Contractor's emergency contact phone number and a trouble ticket being created. The Contractor will be required to respond onsite according to the Emergency timeframe described in this contract.

A pay item will be included for the initial diagnosis of a field problem and a simple repair or device re-setting. In the event of more complex repairs requiring out of scope repairs or the use of a standard repair item, this lump sum pay item for initial diagnosis will be paid for in addition to the compensation for the repair.

Common and isolated field repairs include but are not limited to:

- Replacement of a field cabinet, conduit, power cables and communication cables,
- Repair isolated fiber optic cable breaks including fiber splices, pulling of new cables and laying or splicing of new conduit,
- Repair lightning protection,
- Repair or replace surge protection,
- Repair or replace power supplies,
- Repair downed vehicle detectors or CCTV, including poles, mounting structures, conduit, power cables and communication cables,
- Repair power cable breaks including splices, pulling of new cables and laying or splicing of new conduit,
- Installation of tracer wire in existing conduit where magnetic locate tape is no longer functioning properly,
- Repair or replace pull-box aprons,
- Furnish and install ITS Pull-Boxes,
- Repair or replace ITS Pull-Boxes, and
- Remove pull-boxes.

Costs for the repairs identified in this task shall be billed for each repair performed as identified in Table 3.

1.8.1 Initial Response and Mobilization

- A. **Description.** Work under this item shall consist of responding to a trouble ticket issued by Commission staff, conducting an initial diagnosis, reporting the diagnosis and resolution to the Engineer, and implementing an appropriate repair.
- B. **Materials/Payment.** Materials involved in this item will be existing, come out of the Gateway Guide Spare Parts inventory, or be furnished by the Contractor. Materials included in this item may include lightning arrestors, in-line fuses, communications patch cables, and electrical circuit breakers.

Materials costs for materials not supplied through the spare parts inventory and greater than one hundred dollars (\$100.00) for each instance will be compensated to the Contractor on an actual cost basis upon delivery of invoice or receipt with cost to the Contractor detailed.

Payment for this item shall be made on an each basis for each trouble ticket issued and properly reported on by the Contractor, diagnosed, and where appropriate fixed. This pay item may be used a maximum of once per every twenty eight (28) days per field device or site. More frequent occurrences shall be responded to at the Contractor's expense with no additional compensation. If the reasons for this frequency are pre-existing or of a nature beyond the Contractor's control, the Contractor shall document the reasons and make a recommendation for site modification to resolve the situation.

In instances where the necessary repair is of a significant nature, compensation will be made by the use of other pay items in this contract, or by the process outlined for out of scope work.

- C. **Construction Methods.** Upon receipt of a trouble ticket from Commission staff, the Contractor shall report to either the Gateway Guide TMC, the field location, or a communications node as appropriate based on the reported malfunction. The Contractor shall then commence diagnosing and troubleshooting the malfunction and report the Engineer upon completion of diagnosis. In the event that the malfunction is repairable by a simple resolution such as re-setting or re-booting a device, re-setting a tripped electrical breaker, or replacing a surge arrestor, that work shall be immediately completed with no additional compensation due the Contractor.

In the event that the malfunction requires a more significant resolution, the Contractor shall advise the Engineer of the necessary resolution and associated cost, and upon authorization from the Engineer complete the work. Compensation for this additional work shall be paid for using other pay items in this contract or through the process described for out of scope work.

1.8.2. Remove Camera Assembly

- A. **Description.** Work under this item shall consist of removing an existing camera assembly from an existing pole.
- B. **Materials/Payment.** Cameras, camera dome and pan/tilt units will be existing. The Contractor shall be responsible for the condition of all equipment, including connectors, terminators, communication/power cables, cable management and equipment associated with the camera. Place equipment removed in the Gateway Guide Spare Parts inventory, reinstall the equipment, or dispose of the equipment as directed by the Engineer. This task shall be paid as each per removal of a CCTV camera assembly.
- C. **Construction Methods.** The Contractor may request a field meeting with the Engineer or designee of the Engineer at the site to inspect the equipment to be removed. Once removal has begun, the Contractor will be responsible for the condition of all equipment. Compensation for equipment damaged will be reduced from money due to the Contractor.

Remove the existing camera, camera dome, pan/tilt unit, device server, and all cables and connectors from the pole. The existing camera controller assembly in the cabinet shall be disconnected from the camera communication/power cables and the cables shall be removed from the cabinet. Remove the camera controller or CODEC from the cabinet if directed by the Engineer. The camera, pan-tilt unit, camera dome and its cables, and camera controller if directed, shall be removed from the field location by the Contractor and put into storage for use as maintenance spare parts, reinstalled, or disposed of as directed by the Engineer.

1.8.3. Install Camera Assembly

- A. **Description.** Work under this item shall consist of installing a new or salvaged CCTV camera, camera dome, pan/tilt unit, and camera controller or CODEC.
- B. **Materials/Payment.** CCTV cameras, camera dome, and pan/tilt units will be new or previously salvaged. This task shall be paid as each per installation of a CCTV camera assembly.
- C. **Construction Methods.** As the Contractor is responsible for maintaining the Spare Parts inventory, both new and removed and salvaged equipment, the Contractor is also responsible for the condition of the equipment. The Contractor shall remedy any defect or inoperability of the associated equipment through this article and others in this contract.

Install the camera, camera dome, pan/tilt unit, camera controller or CODEC in a pole mounted or adjacent base mounted cabinet, and all cables and connectors on a new or existing pole, installation of pole to be paid for separately as appropriate, as directed by the Engineer.

Connect the camera controller assembly or CODEC in the cabinet to the camera communication/power cables.

Configure the CCTV camera and CODEC, including appropriate IP addresses, as directed by the Engineer to function properly within the existing communications scheme.

1.8.4. Remove Camera Pole

- A. **Description.** Work under this item shall consist of removing an existing camera pole.
- B. **Materials/Payment.** Camera poles will be existing. The poles may be mounted and bolted to a concrete foundation or previously damaged to an extent that it has been knocked over and is laying adjacent to the foundation. This task shall be paid as each camera pole is removed.
- C. **Construction Methods.** In lieu of a field meeting to determine the condition of the pole prior to the Contractor beginning work, the Contractor may photograph the pole to document pre-existing damage prior to beginning work. Any damage not so documented will be assumed to have been caused by the Contractor and the Contractor will be held responsible.

The existing camera, camera dome, pan tilt unit, and all cables and connectors shall be removed from the pole. Removal of this equipment shall be paid for separately with other pay items in this contract. The pole shall be unbolted from the foundation and lowered if not already down. The camera pole shall be delivered to a location directed by the Engineer for storage, reinstallation, or disposal. The Contractor shall dispose of all communication/power cable and other materials.

1.8.5 Install Camera Pole

- A. **Description.** Work under this item shall consist of installing a new or salvaged CCTV camera pole on an existing or new concrete foundation.
- B. **Materials/Payment.** Camera poles will be supplied through the Gateway Guide Spare Parts inventory and will be new or salvaged, or will have been removed and will be reinstalled. This task shall be paid as each per camera pole installed.

Installation or repair of a concrete foundation will be considered out of scope work and will be compensated for through methods described in other articles of this contract.

- C. **Construction Method.** As the Contractor is responsible for maintaining the spare parts inventory, both new and removed and salvaged equipment, the Contractor is also responsible for the condition of the equipment. The Contractor shall remedy any defect or inoperability of the associated equipment through this article and others in this contract.

Install the camera pole on a new or existing foundation as directed by the Engineer.

Check the plumb of the pole and adjust as necessary.

Tighten the anchor bolts to the torque specified by the manufacturer of the pole.

1.8.6 Remove Field Cabinet

- A. **Description.** Work under this item shall consist of removing a controller cabinet and cleaning up the site location if necessary. The cabinet may include single and dual size cabinets used for detector stations, DMS, CCTV control and communications, and communication nodes.
- B. **Materials/Payment.** All Controller cabinets and internal component assemblies will be existing. Payment for this task shall be by each cabinet type (Single or Double) removed, including removal, clean-up, and delivery to spare parts inventory storage or disposal as directed by the Engineer.
- C. **Construction Methods.** The Contractor shall clear old equipment and evaluate components to determine what may be salvaged for immediate reuse or placement into the spare parts inventory. This evaluation may include functional testing of the equipment. Whenever possible, the original cabinet and communications equipment will be salvaged for reuse at the location or for placement into the spare parts inventory.

1.8.7 Install Field Cabinet

- A. **Description.** Work under this item shall consist of installing a controller cabinet on a new or existing foundation, or on a new or existing pole. The cabinet may include single and double sized cabinets used for detector stations, DMS, CCTV control and communications, and communication nodes.
- B. **Materials/Payment.** Controller cabinets will be supplied through the Gateway Guide Spare Parts inventory and will be new or previously salvaged for reinstallation. The Contractor shall be responsible for all connectors and terminators, communication/power cables, cable management, equipment necessary to move the populated field cabinet, bolts and washers. All connectors, wire, terminators, bolts and washers shall be new. Payment for this task shall be by each cabinet type (Single or Double) installed, including connecting internal component assemblies and power connections, and integrating the assemblies into the existing communications system.

Installation or repair of a concrete foundation will be considered out of scope work and will be compensated for through methods described in other articles of this contract.

Furnishing and installing cable outside the cabinet shall be compensated for using other pay items in this contract, or will be considered out of scope work and will be compensated for through methods described in other articles in this contract.

- C. **Construction Methods.** Install a new or salvaged cabinet on a new, existing, or modified concrete foundation. Installation shall include making all power connections between the cabinet and local utility connection and furnishing, installing, and connecting all cables between devices within the cabinet.

The Contractor shall make all power connections to the cabinet in accordance with requirements of the local power utility and any applicable state codes.

The Contractor shall make all detector cable and communications cable connections in the cabinet to provide the required operation. Wiring diagrams will be provided to the Contractor by the Engineer. The Contractor shall make all traffic signal cable connections and electrical wire connections to the processor assembly cabinet.

All signal current carrying neutral conductors shall terminate on a neutral strip mounted in the cabinet. The neutral bus shall be isolated from the cabinet and equipment ground. It shall terminate at the neutral lug ultimately attached in the meter pedestal.

The equipment grounding strip shall be isolated from the cabinet and current carrying neutral. The cabinet current carrying neutral shall terminate at the current carrying neutral ground lug in the meter pedestal or breaker pedestal.

Existing wiring to the existing, modified, or new concrete control cabinet base shall be reused if possible unless directed otherwise by the Engineer. Wiring includes bonding wire, conductors and detector lead-in cable.

The Contractor shall make all connections between the Field Cabinet, the devices within, and among the devices.

The Contractor shall demonstrate the functionality and accuracy of the vehicle detectors connected to each location.

The Contractor shall demonstrate the functionality and accuracy of the wireless communication equipment connected to each location.

The Contractor shall demonstrate functionality of CCTV and DMS's by coordinating with the Gateway Guide operators to test CCTV pan-tilt, iris, and video functionality and DMS display functionality capabilities through the Advanced Transportation Management System (ATMS) Software.

1.8.8. Remove Wireless Communication Equipment

A. **Description.** Work under this item shall consist of removing wireless communication equipment, including radio, antenna cable, antenna, and any mounting hardware dedicated to the wireless communication system. The wireless communication equipment may consist of 900 MHz unlicensed spread spectrum radios or 4.9 GHz licensed Ethernet bridges.

Materials/Payment. Materials will be existing and will consist of 900 MHz and 4.9 GHz radios, cable, antenna, and hardware. Payment for removing wireless communication equipment shall be by each radio, antenna, and cable removed. Removal of both halves ends of a wireless communication link shall be paid for with two (2) units of payment.

B. **Construction Methods.** Carefully remove and salvage the transmitter / receiver from the controller cabinet, remove the antenna cable and antennae for pick up by the department. Prior to removing each assembly, the contractor may request that it be tested for functionality and that it be inspected to determine condition. Once removal has started, the contractor shall be responsible for any damage to any equipment included in this pay item, or adjacent equipment damaged during the removal process.

Salvage the radios, cables, and antenna for re-use and re-installation, place the equipment into the spare parts inventory, arrange for repairs to the equipment as described in this RFP, or dispose of the equipment properly as directed by the Engineer.

1.8.9. Install Spread Spectrum Wireless Communication Equipment

A. **Description.** Work under this item shall consist of installing new or salvaged Commission-furnished 900 MHz spread spectrum radios in new and existing roadside cabinets, including existing traffic signal cabinets.

B. **Materials/Payment.** Spread spectrum radios and antennas will be provided by the Commission, including power supplies and cables.

Provide communication cables (Category 5E patch cords, coax patch cords, and short serial cables) as required. Provide outdoor cabling to the pole or structure-mounted radios.

Provide coaxial antenna cable up to one hundred (100) feet in length.

Provide stainless steel bands to affix the radio mounting bracket to the pole. The banding shall be 1-inch wide, 0.044-inch thick, stainless steel.

Provide surge protection for all copper communication cables entering from other cabinets (excluding cabinets on the same foundation as the one in which the surge protector would be installed). The protector shall be UL certified as Category 5 and UL 497B listed.

Provide proper grounding for the shields of the cables coming from other cabinets.

Payment for installing wireless spread spectrum wireless communication equipment shall include the radio, antenna, and cable installed, including up to one hundred (100) feet of communications or antenna cable. Installation of both halves ends of a wireless communication link shall be paid for with two (2) units of payment.

- C. **Construction Methods.** Install Commission-furnished spread spectrum radios on structures as directed by the Engineer. Connect to power, communication, and ground. Test the completed installation and report any problems to the Engineer.

1.8.10. Install Wireless Ethernet Bridge Communication Equipment

- A. **Description.** Work under this item shall consist of installing new or salvaged Commission-furnished wireless Ethernet bridge communication equipment in new and existing roadside cabinets, including existing traffic signal cabinets.
- B. **Materials/Payment.** Wireless Ethernet bridges and power injectors will be provided by the Commission. These will include power cables.

Provide communication cables (Category 5E patch cords, coax patch cords, and short serial cables) as required. Provide outdoor cabling to the pole or structure-mounted radios.

Provide stainless steel bands to affix the radio mounting bracket to the pole. The banding shall be 1-inch wide, 0.044-inch thick, stainless steel.

Provide surge protection for all copper Ethernet cables entering from other cabinets (excluding cabinets on the same foundation as the one in which the surge protector would be installed). The protector shall be UL certified as Category 5 and UL 497B listed.

Provide proper grounding for the shields of the cables coming from other cabinets.

Payment for installing wireless Ethernet bridge communication equipment shall include the radio, antenna, and cable installed, including up to one hundred (100) feet of communications or antenna cable. Installation of both halves ends of a wireless communication link shall be paid for with two (2) units of payment.

- C. **Construction Methods.** Install Commission-furnished wireless Ethernet bridges on structures as directed by the Engineer. Connect to power, communication, and ground. Test the completed installation and report any problems to the Engineer. Trouble-shoot to the point of identifying the particular device that is causing the communication problem.

Any work to acquire or modify a license for operation of the wireless Ethernet bridge will be considered out of scope and will be done by others or will be done by the Contractor through the process described for out of scope work.

1.8.11. Install Cable in Conduit

- A. **Description.** Work under this item shall consist of removing old cables and installing and connecting new cables in an existing conduit network. The Contractor shall replace the cables with similar cables or otherwise specified by the Engineer.
- B. **Materials/Payment.** All necessary cable shall be supplied by the Contractor. The Contractor shall be responsible for providing all other equipment, connectors, pulling devices and/or cords necessary to complete this item of work. Payment for installed cable shall be by each linear foot and by cable size/type installed. Installation of new pull rope for the purpose of installing new cables in conduit shall be at no additional cost to the Commission.
- C. **Construction Methods.** Splicing is permitted underground only in pull-boxes and only in proper and approved enclosures at locations approved by the Engineer. Wire and/or cable ends shall not be left uncovered or submerged in water. Any such condition observed shall constitute grounds for rejection of an entire length of cable and/or wire. All electrical connections and splices shall be made with approved pressure or compression type fittings.

Tape shall be covered with a liberal coating of an electrical varnish or sealant providing flexible protection from oil, moisture and corrosion. This electrical coating shall be approved by the Engineer.

The Contractor shall verify the number of conductors required in the cable runs and shall submit the cable arrangements to the Engineer for approval. Conductor totals shall be verified by the Engineer.

An extra loop approximately six (6) feet in length shall be provided for all cables entering each pull box. This loop of cable shall be in addition to the amount needed to reach from the entrance conduit raceway end to the opening in the exiting conduit raceway.

All Cables shall be installed per current MoDOT specifications. All conductors shall be terminated or capped. Old cables and material removed by the Contractor shall be disposed of by the Contractor. All electrical work shall be performed by a journey-worker electrician or by an electrical apprentice under the onsite supervision of a journey-worker electrician. Status as journey-workers and apprentice electricians shall be documented to the Engineer prior to performance, by the electricians of electrical work.

Proof of qualification to do electrical journey-worker level work shall be the "Completion of Apprenticeship" certification card issued by an approved state

agency, or a resume showing sufficient electrical education and a minimum of five (5) years of varied electrical work experience. All apprentices shall be indentured by an approved state agency.

1.8.12. Conduit

- A. **Description.** Work under this item shall consist of installing conduit, either as a replacement for a damaged section of conduit, as a new installation, or for re-routing the conduit. The same size and type conduit shall be replaced or repaired as currently deployed.
- B. **Materials/Payment.** Materials and equipment for this item shall be Contractor supplied. Materials used in the work shall meet the requirements for the class of material named and as hereinafter provided.

All electrical conduit shall have a U.L. label on each length being delivered and/or used at the project construction site. Payment for replaced conduit shall be measured and paid for by the linear foot according to the unit price for each size of conduit, including all excavation, materials, conduit splices, disposal of waste excavation material, backfilling and restoration.

Nonmetallic Conduit. Nonmetallic conduit and fittings shall be HDPE SDR11 electrical conduit conforming to the requirements of the Underwriters' Laboratories Standard for Rigid Nonmetallic Conduit, UL 651, for Schedule 40 heavy wall type or Schedule 80 extra-heavy wall type.

All nonmetallic conduits, which will be installed in an exposed location when in place and completed, shall be Schedule 80 conduit.

- C. **Construction Methods.** The conduit shall match the size and type of conduit being repaired or replaced. Conduit repairs or replacement shall be performed in such a way as to avoid interruption to operation of the Gateway Guide system. This may mean rerouting data or video temporarily or repairing conduit with a "split duct" to avoid the need to remove an existing live cable.

Each run of conduit shall be of one size for its entire length from access point to access point (pull box to pull box, junction box to junction box or pull box to junction box). When so approved by the Engineer, the Contractor may substitute a larger size of conduit than that designated for the run. However, any additional costs shall be at the Contractor's expense and no adjustment in compensation will be allowed.

Standard electrical conduit fittings shall be used.

All nonmetallic conduit shall be capped or plugged immediately after installation and shall remain capped or plugged until installation of wire or cable.

End bells shall be installed on all nonmetallic conduit raceway access points before installation of wire and/or cable. Non-metallic conduits shall be reamed to eliminate internal sharp edges before installation of end bells.

1.8.12.1. Underground Installation of Conduit, Trenched

Conduit shall be installed in accordance with Missouri Standard Specifications for Highway Construction, 2004, Section 902.16.3.

1.8.12.2. Underground Installation of Conduit, Pushed

Conduit shall be installed in accordance with Missouri Standard Specifications for Highway Construction, 2004, Section 902.16.4.

1.8.13. Twisted Pair Splice

- A. **Description.** The Contractor shall perform mechanical splices as directed by the Engineer at locations as directed by the Engineer. Twisted-Pair Splice shall consist of splicing together 25-pair cable, 12-pair cable, 6-pair cable, 3-pair cable, or 2-pair data communication cable end-to-end.
- B. **Materials/Payment.** The Contractor shall provide all equipment and materials necessary to perform data communication cable splices. Twisted-pair splice enclosures shall be 3M Epoxy Splice Kits. Payment for twisted pair splices shall be paid for by each twisted pair of wires spliced. Splices shall be made only at approved locations, such as new or existing underground pull-boxes, as directed by the Engineer.
- C. **Construction Methods.** Prior to performing the twisted-pair splice, the Contractor shall test the twisted-pair cable from break point to the nearest cabinets upstream and downstream from the break point. This test shall be conducted to ensure that no damage to the cable exists as a result of the break. Should the test identify damage to the cable, the Contractor shall notify the Engineer prior to performing the splice.

The Contractor shall obtain adequate cable necessary to perform the splice from nearby manholes. Upon completion of the splice, the cable slack required to perform the splice shall be pulled back to the nearby manholes.

End-to-end splicing shall be performed as per manufacturer instructions for the supplied twisted-pair splice enclosure units. The Contractor shall splice together the applicable size twisted pair cables pair for pair between the two cables. The connection shall be soldered. Solder shall be electrical multi-flux core. The solder connections shall be half loop taped with an approved rubber high voltage tape. Each connection shall then be half loop taped with an approved vinyl electrical tape and insulated from each other before placement in the splice kit. Each connection shall then be coated with an approved electrical varnish approved by the Engineer and allowed to dry. After drying, the splice kit shall be installed in accordance with the manufacturer's instructions.

The Contractor shall conduct tests on the spliced cables. The test results shall be documented and provided to the Engineer for approval. The Contractor shall furnish all equipment, appliances, and labor necessary to test the spliced communications cable between the processor assembly cabinets. The following tests shall be successfully performed following terminations:

- The continuity of each pair shall be measured. Each pair shall show a resistance of not more than 8 ohms per 1,000 feet of conductor. The resistance shall be measured with a meter having a minimum input resistance of 20,000 ohms per volt.
- The insulation resistance between conductors, and between each conductor; ground and shielding shall be measured using a megger. The resistance shall be "infinity".

Should any cable fail to meet the test parameters, or should any testing reveal defects in the splice, the cable shall be re-spliced at the Contractor's expense. The new cable shall then be re-tested as specified above.

The Contractor shall also submit documentation to the Engineer indicating location of the splice, type of repair performed, and footages to determine field location to the nearest manhole/communication vault or other landmark as approved by the Engineer.

1.8.14. Fiber Optic Fusion Splice

- A. **Description.** The Contractor shall perform fiber optic fusion splices as directed by the Engineer. Fiber Optic Fusion Splice shall consist of breaking out the required buffer tube(s) from fiber optic communication cable, and completing end-to-end fusion splices for individual fibers. Mechanical fiber optic splices will not be allowed on this project.
- B. **Materials/Payment.** Fiber optic splice enclosures shall be furnished, installed and paid for under other pay items in this contract or shall be from the Spare Parts inventory. The Contractor shall provide a fiber optic fusion splicer and the necessary materials to perform fiber fusion splices as required to be submitted for approval by the Engineer under other articles in this contract. Payment for this item shall be paid by each fiber optic strand spliced that receives the approval of the Engineer.
- C. **Construction Methods.** End-to-end splicing shall be performed as described below by an approved fiber optic technician. The number and color code of the fiber(s) to be fusion spliced shall be as directed by the Engineer.
- The Contractor shall obtain adequate cable necessary to perform the fiber optic splice from nearby pull boxes or manholes. Upon completion of the splice, the cable slack required to perform the splice shall be pulled back to the nearby manholes.

- Splicing shall be performed as per Siecor Recommended Procedure SRP-004-013, Mid-span access of Fiber Optic Cable (Cable slack present), or appropriate manufacturer instructions after the Contractor has submitted for review the alternate instructions by the Engineer. All mid-span splices shall be contained within fiber optic splice enclosure units. Each individual fiber optic fusion splice shall not show an increase in attenuation in excess of 0.05 dB/fiber.
- Upon completion of the fiber optic splice, the Contractor shall test the splice for attenuation loss. The Contractor shall submit test documentation certifying that each fiber optic splice performed does not exceed 0.05 dB/fiber attenuation. The test documentation shall also include a tape readout showing this splice attenuation.
- The Contractor shall also submit documentation to the Engineer indicating location of the splice, type of repair performed, and footages to determine field location to the nearest manhole/communication vault or other landmark as approved by the Engineer.

1.8.15. Pull-Boxes

- A. **Description.** The Contractor shall furnish and install a new Pull Box at locations as directed by the Engineer and as shown on the attached detail.
- B. **Materials/Payment.** Pull Boxes shall include excavation, materials, construction, backfill, and sod or seeding for restoration. All materials shall meet the requirements of the pertinent articles of the standard specifications and attached detail. The Contractor shall submit materials and shop drawings for the Pull Box for approval prior to beginning work. Payment for this item shall be paid for by each installation of a pull-box.
- C. **Construction Methods.** The Pull Boxes shall be installed according to the requirements of the standard provisions.

1.8.15.1. Pull Box, Type 1

Pull boxes shall be furnished and installed in accordance with Missouri Standard Specifications for Highway Construction, 2004, Section 1062.

1.8.15.2. Pull Box, Type 2

Pull boxes shall be furnished and installed in accordance with Missouri Standard Specifications for Highway Construction, 2004, Section 1062.

1.8.15.3. Pull Box, Type 3

Pull boxes shall be furnished and installed in accordance with Missouri Standard Specifications for Highway Construction, 2004, Section 1062.

1.8.15.4. Pull Box, Type 5

Pull boxes shall be furnished and installed in accordance with Missouri Standard Specifications for Highway Construction, 2004, Section 1062.

1.8.15.5. ITS Pull Box, With Apron

Pull boxes shall be furnished and installed in accordance with Engineers recommendations.

1.8.16. Fiber Optic Splice Enclosure

- A. **Description.** The Contractor shall furnish a Fiber Splice Enclosure as required to be used in for fiber optic splices for both mainline end-to-end fiber optic splices and drop splices, as directed by the Engineer.
- B. **Materials/Payment.** Fiber Splice Enclosures (FSE) will be supplied through the Contractor Gateway Guide Spare Parts. The Contractor shall provide the equipment necessary to install the new Splice Enclosure. Payment for this item shall be paid for by each installation of a splice enclosure.
- C. **Construction Methods.** The Contractor shall protect each splice in a protective sleeve and secure in the splice tray within the FSE. Bare fibers shall be protected with a heat-shrink coating before placement in a sleeve or housing. The heat-shrink coating shall be installed to protect the fiber from scoring, dirt, accumulation, moisture intrusion, and micro bending.

1.8.17. Fiber Optic Terminations

- A. **Description.** Work under this item shall consist of performing fiber optic cable terminations in a cabinet.
- B. **Materials/Payment.** Fiber optic terminations shall be performed at existing termination panels or in new panels supplied through the Gateway Guide Spare Parts inventory. The Contractor shall provide all of the necessary equipment and materials necessary to make a fiber optic termination. Payment for this task shall be by each individual fiber strand terminated.
- C. **Methods of Construction.** The Contractor shall make fiber optic terminations as directed by the Engineer. All fibers entering the cabinet shall be terminated on the rear of the connector panel, with appropriate connectors. Jumpers of sufficient length shall be provided and installed to connect the front side of the connector panel to the fiber equipment contained within the cabinet.

1.8.18. Install Rack Mounted Interconnect Center

- A. **Description.** An interconnect center is a splice enclosure that has a patch panel built into one of its walls. Within the interconnect center, fibers in cables are spliced to pigtails and the pigtails are plugged into the patch panel from the inside. This allows jumper cables (not part of the interconnect center) to plug into the patch panel from the outside, connecting the fibers to equipment in the cabinet or to other fibers on the

patch panel. Within an interconnect center, some fibers may be spliced to the corresponding fiber in a mating cable, rather than to a pigtail. Still other fibers may be coiled un-terminated.

- B. Materials/Payment.** The enclosure shall have brackets and all other hardware required for rack mounting in an EIA standard 19-in. equipment rack. It shall take up no more than three (3) rack units (1¾ inch each) in the cabinet. It shall have front and rear doors. It shall be made of powder-coated aluminum. The enclosure shall include four (4) splice trays. Provide enough trays for all splices made in the interconnect center. The enclosure's patch panel shall have at least 24 positions. It shall have provisions for cable strain relief and for connector labeling.

Splice trays shall be 11.7" long, 3.9" wide, and 0.2" tall. They shall be aluminum with clear plastic covers, designed for outdoor use. Each shall accommodate 24 fusion splices. The trays shall have a black powder coat finish. The trays shall have both perforations for cable ties and crimpable metal tabs for buffer tube strain relief.

Payment shall be by each individual interconnect center installed. Payment for terminating the fiber optic strands entering the interconnect center will be paid for separately.

- C. Methods of Construction.** The Contractor shall install the interconnect center in a new or existing cabinet as directed by the Engineer.

1.8.19. Remove Non-Intrusive Vehicle Detector Pole

- A. Description.** Work under this item shall consist of removing an existing non-intrusive traffic sensor pole from an existing foundation, and removal of the foundation to grade level if the sensor pole is not to be replaced.

- B. Materials/Payment.** Remote traffic sensor units and poles will be existing. The Contractor shall be responsible for the condition of all connectors, terminators, communication/power cables, cable management and equipment necessary to erect the unit and pole. This task shall be paid per each Remote Traffic Sensor Pole removed.

Removal of the remote traffic sensor, connectors, terminators, and all cables shall be paid for under separate pay items in this Contract.

- C. Construction Method.** Prior to beginning any work on this item, the Contractor shall verify with the Engineer that cutting the existing cable or removing the existing connectors will not adversely impact the functionality of other devices in the system. In the event that this work will disconnect other devices from the system, the Engineer will advise as to how to proceed. Mitigation efforts may include splicing the cable in an adjacent pull-box prior to beginning the work or requiring the work be done on an expedited schedule to minimize the impacts. Splicing or other mitigation efforts will be compensated for using other pay items in this contract.

Upon being given clearance by the Engineer to begin work, the existing remote traffic sensor, mounting bracket, and all cables and connectors shall be removed from the pole. The pole shall be unbolted from the foundation and lowered if necessary. The existing remote traffic sensor power and communication cables shall be disconnected and removed. The pole shall be delivered to a location directed by the Engineer for storage or disposal. The Contractor shall dispose of all cable and other materials as directed by the Engineer.

1.8.20. Install Non-Intrusive Vehicle Detector Pole

- A. **Description.** Work under this item shall consist of installing a new or salvaged remote traffic sensor pole on a new or existing foundation.

- B. **Materials/Payment.** Remote traffic sensor units and poles will be supplied through the Gateway Guide Spare Parts inventory and will be new or will have been salvaged for reinstallation. The Contractor shall be responsible for anchor nuts and washers. This task shall be paid per each Remote Traffic Sensor Pole installed.

- C. **Construction Method.** Before installation, the Contractor shall clean the pole free of oil and foreign matter. The Contractor shall install the pole vertically and check it using a plumb or other instrument. The anchor nuts shall be tightened to a torque as specified by the pole manufacturer.

1.8.21. Remove Non-Intrusive Vehicle Detector Assembly

- A. **Description.** Work under this item shall consist of removing a non-intrusive vehicle detector assembly from an existing pole.

- B. **Materials/Payment.** Non-intrusive vehicle detector assemblies will be existing and on existing poles. The existing poles may be erect and in use, fallen, or knocked over. The Contractor shall be responsible for the condition of all connectors, terminators, communication/power cables, cable management and equipment necessary to erect the unit and pole, including nuts and washers. This task shall be paid per each remote traffic sensor assembly removed and salvaged for use as spare parts or disposed of as directed by the Engineer.

- C. **Construction Method.** The Contractor may request that the functionality of the detector assembly be verified by the Engineer or Commission staff prior to beginning work, if applicable depending on circumstances dictating the removal. Upon initiation of work, the Contractor shall be responsible for the condition of the sensor assembly and cables, terminators, and connectors. The sensor, mounting bracket, and all cables and connectors shall be removed from the pole and disconnected. The sensor assemblies shall be removed from the field location by the Contractor and put into storage for use as maintenance spare parts or disposed of as directed by the Engineer. The Contractor shall dispose of all cable and other materials as directed by the Engineer.

1.8.22. Install Non-Intrusive Vehicle Detector Assembly

- A. **Description.** Work under this item shall consist of installing a non-intrusive vehicle detector assembly on a new or existing pole. The detector assembly will be furnished by the Commission or will have been removed and salvaged for reinstallation. A new sensor mounting bracket shall be furnished by the Contractor for each detector assembly installed.
- B. **Materials/Payment.** Non-intrusive vehicle detector assembly units will be provided by the Commission or will have been removed and salvaged for reinstallation. The Contractor shall be responsible for all connectors, terminators, mounting brackets, communication/power cables, cable management and equipment necessary to erect the remote traffic sensor unit and pole, including bolts and washers. All wires, connectors, mounting brackets, bolts and washers shall be new and recommended by the remote traffic sensor manufacturer. This task shall be paid per each detector assembly installed, connected and tested.
- C. **Construction Method.** The Contractor shall erect a new or salvaged non-intrusive vehicle detector assembly and mounting bracket, and run new power conductor cables and a communication cable pigtail. The Contractor shall lubricate the new mounting bracket per manufacturer recommendation with a manufacturer recommended lubricant to prevent the bracket from seizing up and preventing future aiming adjustments. The Contractor shall connect the communication cable to a test laptop and calibrate the detector assembly unit using the manufacturer's calibration software provided by the Commission. Once the unit is calibrated and accurately reading all lanes of traffic for which it is installed to monitor, the Contractor shall disconnect the test laptop from the cable and connect the cable to the mainline communications line or terminate it at a field terminal cabinet as appropriate and directed by the Engineer. The Contractor shall verify operation of the remote traffic sensor with the Gateway Guide Operators in the TMC prior to leaving the field site.

1.8.23. Remove In-Pavement Wireless Sensors

- A. **Description.** Work under this item shall consist of removing an in-pavement wireless sensor from the pavement.
- B. **Materials/Payment.** In-pavement wireless sensors will be existing and within the existing pavement. The existing sensors may need to be removed for relocation or should it be defective in some manner needing to be replaced. Removal of wireless sensors shall include removing the sensor with minimal damage to the pavement and repairing the pavement surface. For concrete surfaces the hole shall be completely filled with an approved rapid set concrete patching material. The rapid set concrete patching material shall be from the qualified listing available from Construction and Materials, MoDOT's web site, or as approved by the engineer. For asphalt surfaces the hole shall be patched with an approved commercial mix in accordance with Sec 401.5.3 or the contractor may request approval from the engineer to use a high performance cold asphalt patching material with evidence of satisfactory performance

in patching similar roadways. This task shall be paid per each in-pavement wireless sensor removed and salvaged per direction of the Engineer.

C. Construction Method. The Contractor shall remove each in-pavement wireless sensor to the manufacturer's specifications.

1.8.24. Install In-Pavement Wireless Sensors

A. Description. Work under this item shall consist of installing an in-pavement wireless sensor into the pavement. The wireless sensor will be furnished by the Commission or will have been removed and installed in a new location.

B. Materials/Payment. In-pavement wireless sensors will be furnished by the Commission or will have been removed and installed in a new location. This task shall be paid per each in-pavement wireless sensor installed.

C. Construction Method. The Contractor shall install each in-pavement wireless sensor to the manufacturer's specifications.

1.8.25. Remove Non-Intrusive Wireless Access Point or Repeater

A. Description. Work under this item shall consist of removing a non-intrusive wireless access point or repeater and all parts included which keep it securely mounted on a signal mast arm or pole. May also include removal of communication cable and sealing any cable access holes as directed by the Engineer.

B. Materials/Payment. Non-intrusive wireless access points or repeaters will be existing and on signal mast arms or poles. This task shall be paid per each non-intrusive wireless access point or repeater removed and salvaged per direction of the Engineer.

C. Construction Method. The Contractor shall remove each non-intrusive wireless access point or repeater to the manufacturer's specifications.

1.8.26. Install Non-Intrusive Wireless Access Point or Repeater

A. Description. Work under this item shall consist of installing a non-intrusive wireless access point or repeater and all parts included which keep it securely mounted on a signal mast arm or pole. May also include installation of communication cable to switch or cabinet and/or drilling of cable access hole as directed by the Engineer.

B. Materials/Payment. Non-intrusive wireless access points or repeaters will be furnished by the Commission or will have been removed and installed in a new location. This task shall be paid per each non-intrusive wireless access point or repeater installed.

C. Construction Method. The Contractor shall install each non-intrusive wireless access point or repeater to the manufacturer's specifications.

1.8.27. Install Tracer Wire

A. Description. This work item shall consist of installing tracer wire inside existing conduits that may either be empty spares or include other cables. The tracer wire

allows for an alternate method of locating facilities where magnetic locate tape has been destroyed or broken.

- B. **Materials/Payment.** The Contractor shall provide a No. 12 AWG, XLP insulated, stranded copper, 600 VAC, blue tracer wire. All tracer wire will be paid for by the linear foot. Installation of new pull rope for the purpose of installing new cables in conduit shall be at no additional cost to the Commission.
- C. **Construction Method.** A No. 12 AWG, XLP insulated, stranded copper, 600 VAC, blue tracer wire shall be installed in each run of conduit run of the conduit. Separate runs of tracer wire shall be connected, in an approved manner, at each pull box, so the locator can energize the wire at one point and locate all connected wires.

1.8.28. Emergency Response Repair Mobilization

- A. **Description.** Work under this item shall consist of responding to a trouble ticket requiring Emergency Response issued, and indicated as such, by Commission staff, conducting an initial diagnosis, reporting the diagnosis and resolution to the Engineer or Engineer's designee, and implementing an appropriate repair.
- B. **Materials/Payment.** Materials involved in this item will be existing, come out of the Gateway Guide Spare Parts inventory, or be furnished by the Contractor. Materials included in this pay item may include lightning arrestors, in-line fuses, communications patch cables, and electrical circuit breakers.

Materials costs for materials not supplied through the spare parts inventory and greater than one hundred dollars (\$100.00) for each instance will be compensated to the Contractor on an actual cost basis upon delivery of invoice or receipt with cost to the Contractor detailed.

Payment for this item shall be made on an each basis for each trouble ticket issued and properly reported on by the Contractor, diagnosed, and where appropriate fixed.

In instances where the necessary repair is of a significant nature, compensation will be made by the use of other pay items in this contract, or by the process outlined for out of scope work.

- C. **Construction Method.** Upon receipt of a trouble ticket flagged as Emergency or the corresponding direct phone call from Commission staff, the Contractor shall report within a timeframe consistent with emergency response requirements as described in this contract to either the Gateway Guide TMC, the field location, or a communications node as appropriate based on the reported malfunction. The Contractor shall then commence diagnosing and troubleshooting the malfunction and report to the Engineer upon completion of diagnosis. In the event that the malfunction is repairable by a simple resolution such as re-setting or re-booting a device, re-setting a tripped electrical breaker, or replacing a surge arrestor, that work shall be immediately completed with no additional compensation due the Contractor.

In the event that the malfunction requires a more significant resolution, the Contractor shall advise the Engineer of the necessary resolution and associated cost, and upon authorization from the Engineer complete the work. Compensation for this additional work shall be paid for using other pay items in this contract or through the process described for out of scope work and shall be completed in the respective time described in this contract, beginning at completion of the response timeframe.

1.8.29 Short Term Single Lane Closure

- A. **Description.** Work under this item shall consist of deploying a single lane (right lane or left lane) traffic control closure to create a safe work zone for preventative or remedial maintenance activities.
- B. **Materials/Payment.** Materials involved in this item shall meet all requirements of the current Missouri Specifications for Highway Construction. The traffic control equipment deployed for this item shall be deployed in accordance with the current Missouri Engineering Policy Guide section pertaining to traffic control.

Payment for this item shall be made on an each basis for each single lane closure deployed and removed and shall include the use of all traffic control devices deployed, deployment of the devices, and removal of the devices. The materials used for this item shall remain the property of the Contractor upon completion of the work and removal of the devices. In the event of multiple deployments at the same site on consecutive days, the Contractor shall be paid per each deployment / removal cycle.

- C. **Construction Method.** The Contractor shall place traffic control devices in a manner and location prescribed by the current Missouri Engineering Policy Guide and approved by the Engineer. Time of day restrictions on traffic closures are described elsewhere in this contract. The time for completion shall be that the closure shall be removed in compliance with time of day restrictions in this contract or within 30 minutes of completion of the associated work, whichever is earlier.

1.8.30. Short Term On-Ramp Closure

- A. **Description.** Work under this item shall consist of deploying a short-term on-ramp traffic control closure to create a safe work zone for preventative or remedial maintenance activities.

Materials/Payment. Materials involved in this item shall meet all requirements of the current Missouri Specifications for Highway Construction. The traffic control equipment deployed for this item shall be deployed in accordance with the current Missouri Engineering Policy Guide section pertaining to traffic control.

- B. **Payment for this** item shall be made on an each basis for each on-ramp closure deployed and removed and shall include the use of all traffic control devices deployed, deployment of the devices, and removal of the devices. The materials used for this item shall remain the property of the Contractor upon completion of the work

and removal of the devices. In the event of multiple deployments at the same site on consecutive days, the Contractor shall be paid per each deployment / removal cycle.

- C. **Construction Method.** The Contractor shall place traffic control devices in a manner and location prescribed by the current Missouri Engineering Policy Guide and approved by the Engineer. Time of day restrictions on traffic closures are described elsewhere in this contract. The time for completion shall be that the closure shall be removed in compliance with time of day restrictions in this contract or within 30 minutes of completion of the associated work, whichever is earlier.

1.8.31. Short Term Off-Ramp Closure

- A. **Description.** Work under this item shall consist of deploying a short-term off-ramp traffic control closure to create a safe work zone for preventative or remedial maintenance activities.

Materials/Payment. Materials involved in this item shall meet all requirements of the current Missouri Specifications for Highway Construction. The traffic control equipment deployed for this item shall be deployed in accordance with the current Missouri Engineering Policy Guide section pertaining to traffic control.

- B. **Payment for this** item shall be made on an each basis for each off-ramp closure deployed and removed and shall include the use of all traffic control devices deployed, deployment of the devices, and removal of the devices. The materials used for this item shall remain the property of the Contractor upon completion of the work and removal of the devices. In the event of multiple deployments at the same site on consecutive days, the Contractor shall be paid per each deployment / removal cycle.

- C. **Construction Method.** The Contractor shall place traffic control devices in a manner and location prescribed by the current Missouri Engineering Policy Guide. Time of day restrictions on traffic closures are described elsewhere in this contract. The time for completion shall be that the closure shall be removed in compliance with time of day restrictions in this contract or within 30 minutes of completion of the associated work, whichever is earlier.

1.9 Out of Scope Work and Repairs

1.9.1. Non-Standard Field Remedial Maintenance

- A. **Description.** Work under this item shall consist of additional work or repairs required outside of the scope of routine maintenance or common emergency repairs otherwise identified specifically in this Scope of Services. This may include such work as emergency relocations to avoid construction conflicts, catastrophic damage to major devices such as Dynamic Message Signs, or essential upgrades to other ITS or network devices.

When notified by the Engineer or designee of the Engineer, the Contractor shall respond to the appropriate location as directed. The appropriate location may be the field location of the necessary repair or relocation, the Gateway Guide TMC, a construction field office, or other location within the general vicinity of the project

area. Upon arrival, the Contractor will estimate the amount of work to complete the necessary repairs or modifications and contact the Engineer or designee of the Engineer with this estimate. The estimate shall be termed in number of hours at each required labor category and number of hours at each required piece of equipment. The Engineer or designee of the Engineer will either agree with this estimate and approve the commencement of work, or take other appropriate action, which may include requesting a modified estimate or instructing the Contractor to cease work on the repair.

- B. **Materials/Payment.** This work will be paid at the price agreed upon by the Engineer for each instance based on the estimate supplied by the Contractor through processes described in this contract. The agreed upon price will be treated as an each unit price and paid monthly through invoice by the Contractor.

- C. **Construction Methods.** As directed by the Engineer or designee of the Engineer, the Contractor shall proceed with repairs upon agreement on an estimate for the work as described in the previously identified approval process. The estimate shall be submitted in terms of numbers of hours at each of the submitted labor categories and rates as shown in Table 2 and parts materials costs. Labor costs and parts and materials costs are to be broken out separately. Whenever possible, the Contractor will use state supplied equipment from the spare equipment inventory. The goal is to repair or upgrade devices as soon as possible while maintaining Gateway Guide operations with minimal interruptions.

1.9.2. Technical Support and Network Communications Support

- A. **Description.** Work under this item shall consist of providing technical support to the Commission on an as required basis in the areas of non-intrusive vehicle detector operations; CCTV configuration setup; Dynamic Message Sign configuration and maintenance; and Wireless Radio operations. The Contractor, at the request of the Engineer, shall attend meetings; develop recommendations; review plans and specifications; troubleshoot field and TMC problems; perform system upgrades to TMC and field equipment; and provide technical feedback to the Engineer.

- B. **Materials/Payment.** This task will be billed as hourly rates, invoiced monthly, based on labor categories and rates identified in Table 2, for services provided.

- C. **Technical Requirements.** The Contractor shall submit detailed information on the personnel that they propose to utilize for this task and include relevant work experience and technical qualifications.

2.0 GENERAL CONTRACT PROVISIONS

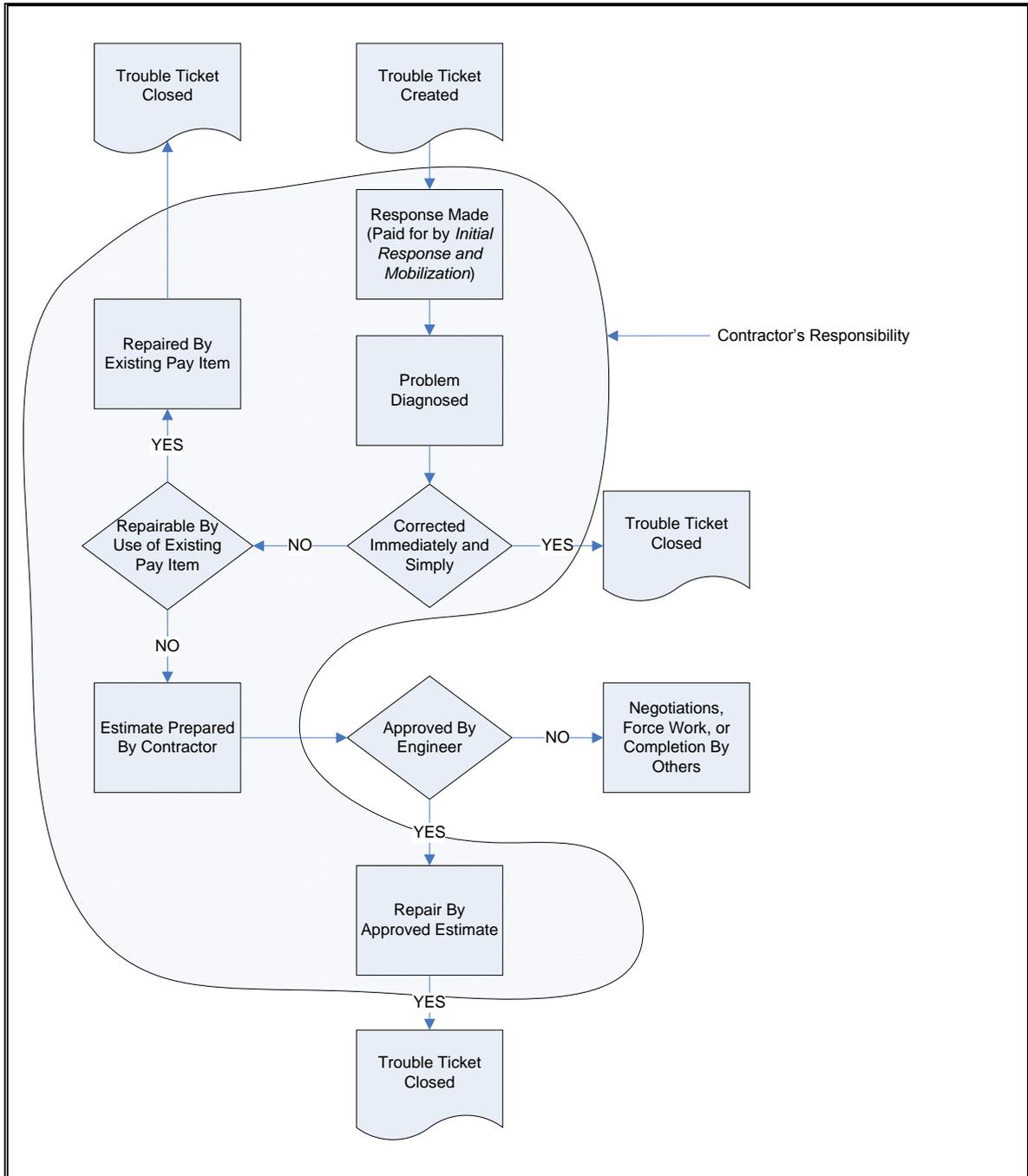
2.1. Method of Payment

This project includes a combination of Each, Linear Foot, and Hourly methods of payment for work in the project, as well as provisions for additional work to be done on a negotiated price basis based on hourly rates supplied with the response to this proposal and included in this contract.

In many cases work will be accomplished through multiple pay items. The typical process for responding to and repairing problems identified by a Trouble Ticket created by Commission staff is included below.

Payment for preventative maintenance work is paid for by the use of the preventative maintenance pay items included in Table 1.

Figure 1: Trouble Ticket and Pay Item Process for Remedial Repairs



2.2. Control of Materials

Equipment Lists, Catalog Submittals, and Drawings. Approval by the Engineer is required before any material to be used on the project, or placed into Spare Parts inventory, is procured and installed by the Contractor. The Contractor shall furnish to the Engineer an electronic copy of proposed materials prior to procuring. Materials to be procured and used immediately and throughout this contract shall be submitted to the Engineer for review and approval within thirty (30) days of contract execution. This submittal shall include names and addresses of manufacturers, catalog tear sheets showing catalog numbers and specifications for each item, and unit price quotes for materials to be reimbursed by the Commission. Materials to be procured for out of scope work or other reasons making procurement a non-recurring occurrence shall be submitted to the Engineer for approval with the price quote, or as soon after as possible. An electronic document of approved materials, and if applicable as described above prices, shall be maintained and updated by the Contractor and kept by the Engineer.

It shall be the Contractor's responsibility to submit material for review, which meet the Commission Standard Specifications, the Commission Supplemental Standard Specifications, these Special Provisions, and that will integrate into the existing devices and system. The equipment must be functionally equivalent to parts being replaced. This list of materials shall be provided to the Engineer and materials approved prior to ordering any of the equipment or materials as provided under this contract.

There shall be no changes or substitutions for any of the materials on the list without written approval of the Engineer. Request for changes to the approved materials list shall be submitted in writing to the Engineer, along with all pertinent data required to prove just cause for the change and "equal" status with the original item(s).

The Contractor has the responsibility to check availability, price, and delivery dates prior to making submittal of equipment or material. Requests for changes or substitutions will not be granted if the Contractor fails to check availability, price, or delivery dates.

Source of Supply and Quality - All materials shall be of first-run high quality and shall be incorporated into the work in a manner to produce a complete construction acceptable in every detail.

The Engineer may require the Contractor to re-submit alternate sources of supply after materials have been previously approved. In this case, pricing adjustments will be allowed upon submittal of documentation justifying such adjustments.

Fabricated materials obtained by the Contractor for the work shall be subject, at the Engineer's discretion, to the Engineer's approval before delivery of the material to the job site. The Contractor may be required to obtain material from another approved source if it is determined the product of a manufacturer or supplier is not of satisfactory uniformity or consistent quality.

In the case of material obtained or produced from natural deposits, either commercially or by the Contractor, the Contractor may request or the Engineer may require preliminary approval of the material. The Contractor shall furnish samples when required, representative of the material proposed for the work, in sufficient time to permit testing. Such samples shall be obtained under the observation of, and with methods approved by, the Engineer. Tests will be made on these preliminary samples and reports rendered, but it is to be understood that such test are for information only and that any preliminary approval based thereon shall not be construed as a guaranty of acceptance of any material which may be delivered later for incorporation in the work.

Samples and Tests - To ascertain if materials comply with contract requirements, at the discretion of the Engineer samples shall be taken at the source or at the job destination as often as the Engineer deems it advisable or necessary. The taking of samples shall be in accordance with the standard practices of the Commission, except where methods and procedures for sampling a material are otherwise set forth in the specifications.

The Contractor shall furnish without charge all samples required by the Engineer and shall provide facilities and staff required for collecting and forwarding them.

The Contractor shall furnish, when requested by the Engineer, a written statement giving the origin, composition or process of manufacture of a material.

In the case of manufactured products or assemblies, the Engineer may accept the manufacturer Certified Report of Test or Analysis or Certificate of Compliance in lieu of performing test on samples. The kind of document, and when it will be required, will be as directed by the Engineer or designated elsewhere in the standard specifications for the specific material involved. The number of copies of each document will be specified by the Engineer

The Contractor shall create and maintain a file of manufacturer's Certificates of Compliance for the contract, such that the Contractor can provide these certifications to the Engineer within seven (7) calendar days, if requested during the contracts period of performance.

Samples of the certified products or assemblies may be taken by the Engineer for certification verification testing. If the certifications cannot be provided as required above, do not meet contract requirements, or the certification verification test results indicate the products or assemblies do not meet the contract requirements, the products or assemblies shall be considered unacceptable materials.

The samples for the test or analyses reported on, in the Certified Report of Test or Analysis may be those normally obtained in a formal product quality control program, or obtained to represent the specific lot of material furnished when no formal control program is in effect, or those required to be obtained by the specifications.

Unless otherwise provided in the contract, the standard specifications intend that conformity of materials to the specified requirements shall be at the time, or just prior to the time, they are incorporated in the work.

All tests will be made in accordance with the methods described and designated herein or in the contract. References to ASTM specifications shall mean the Standards or Tentative Standards of the American Society for Testing and Materials. Reference to the American Association of State Highway and Transportation Officials (AASHTO) specifications shall mean the Standard or Interim Specifications for Transportation Materials and Methods of Sampling and Testing of the American Association of State Highway and Transportation Officials. Unless otherwise designated, references to various standard specifications and test methods shall mean the specification or test method current on the date of the initial advertisement for proposals.

The Commission reserves the right to deduct from monies, which are due or may become due the Contractor any costs incurred in the sampling and testing of materials not used under the contract.

Storage of Materials - Materials shall be so stored as to ensure the preservation of their quality and suitability for the work. Stored materials, even though approved before storage, shall be subject to inspection prior to use in the work and shall meet requirements of the contract at the time they are used. Stored material shall be located at a Contractor facility in the eight (8) county St. Louis Metro Area to facilitate inspection.

Unacceptable Materials - All materials not in conformity with the requirements of the specifications shall be unacceptable and will be rejected, except as provided hereinafter for materials incorporated in the work. Rejected materials shall be removed from the site of the work unless otherwise permitted by the Engineer. Any unacceptable materials which have been subsequently corrected shall not be used or accepted until re-evaluated and approved by the Engineer.

2.3. Legal Relations and Responsibility to the Public

Laws to be Observed - The Contractor shall at all times observe and comply with all applicable Federal and State laws and administrative rules, local laws, ordinances and regulations which in any manner affected the conduct of the work, and applicable order or decrees of bodies or tribunals having jurisdiction or authority over the work. No plea of misunderstanding or ignorance thereof will be considered. The Contractor shall indemnify and save harmless the State and all of its officers, agents, employees and servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order or decree, whether by the Contractor or the Contractor's employees, Subcontractors or agents.

The movement of vehicles or equipment over any highway to the project, necessary for the prosecution of the work, shall be regulated in accordance with the provisions of the Missouri Statues.

Permits and Licensing - The Contractor shall procure all permits and licenses, pay all charges and fees, and give all notices necessary and incident to the due and lawful prosecution of the work. The Contractor shall comply with all permit requirements whether the permit is issued to the Contractor, the State or the maintaining authority.

Patented Devices, Materials, and Processes - It is mutually understood and agreed that without exception contract prices are to include all royalties and costs arising for patents, trademarks and copyrights in any way involved in the work. Whenever the Contractor is required or desires to use any design, device, material or process covered by letter, patent or copyright, the right for such use shall be provided for by suitable legal agreement with the patentee or owners. A copy of this agreement shall be filed with the Engineer; however, whether or not such agreement is made or filed as noted, the Contractor and the Contractor's surety in all cases shall indemnify and save of the use of any such patented design, device, material or process to be involved under the contract. The Contractor shall indemnify the State and the Commission for any costs, expenses and damages which it may be obliged to pay, by reason of any such infringement, at any time during the prosecution or after the completion of the work.

Safety, Health, and Sanitation - The Contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation, and shall provide all necessary safeguards, safety devices, and protective equipment, and take any other needed actions, on the Contractor's own responsibility, reasonably necessary to protect the life and health of employees on the job and the safety of the public, and to protect property in connection with the performance of the work covered by the contract.

All Contractor employees required to enter into confined or enclosed spaces shall be instructed as to the nature of the hazards involved, the necessary precautions to be taken, and in the use of protective and emergency equipment required. The Contractor shall comply with any OSHA-specific regulations that apply to work in dangerous or potentially dangerous areas.

- "Confined or enclosed space," means any space having a limited means of egress, which is subject to the accumulation of toxic or flammable contaminants or has an oxygen deficient atmosphere. Confined or enclosed spaces include, but are not limited to, electronic sign enclosures, underground utility vaults, sewers, tunnels pipelines, and open top spaces more than 4 feet in depth such as pits, tubs, vaults, and vessels.

Work Restrictions - The Contractor shall comply with all local ordinances that apply to his operations, including those pertaining to working during nighttime work hours. Any variance issued by the municipality or required permits shall be furnished to the Engineer, in writing, before performing such work. The Contractor is to obtain the necessary variances in a timely manner prior to commencement of said work.

The Contractor will not work during nighttime working hours (8:00 PM to 6:00 AM each day) within project areas that are within 500 feet of residential zones that are adjacent to the project right-of-way unless directed by the Engineer.

Where appropriate, pedestrian access shall be maintained at all times.

Rust, corrosion, and anti-seize protection shall be provided at all thread assemblies of metallic parts by coating (non-spray) the mating surfaces with an approved compound manufactured by Never-Seez (Marine Grade), LPS 100, Lubriplate or approved equal. Failure to use non-spray Never-Seez, LPS 100, Lubriplate or approved equal will result in no payment for the items to which coating was to have been applied.

Two (2) weeks prior to the termination or end of the contract, the Contractor shall return Commission supplied inventory in its entirety to a location to be specified by the Engineer. All equipment must be in good working order prior to termination or end of the contract. The equipment will be tested by the Engineer. During this two (2) week period, the Contractor will be able to sign out equipment, with approval of the Engineer, for the purpose of repairing the equipment or maintaining the system.

Work By Others - To insure the operational integrity of the Gateway Guide system, the Commission reserves the right to employ other forces (including Contractors and contract engineers, manufacturers, vendors, etc.) or Commission forces at any time to accomplish work.

2.4 Work Zone Management Plan

Work zone traffic management shall be in accordance with applicable portions of Division 100 and Division 600 of the Standard Specifications, and current Missouri Engineering Policy Guide and specifically as follows.

2.4.1. Traffic Management Schedule

Traffic management schedules shall be submitted to the engineer for review prior to the start of work and prior to any revisions to the traffic management schedule. The traffic management schedule shall include the proposed traffic control measures, hours traffic control will be in place, and work hours.

The Contractor shall notify the engineer 48 hours prior to lane closures, ramp closures, or shoulder closures or shifting traffic onto detours.

The Engineer shall be notified as soon as practical of any postponement due to weather, material or other circumstances.

In order to ensure minimal traffic interference, the Contractor shall schedule lane closures for the absolute minimum amount of time required to complete the work. Lanes shall not be closed until material is available for continuous construction and the Contractor is prepared to diligently pursue the work until the closed lane is opened to traffic.

2.4.2. Traffic Operations

The Contractor shall be responsible for maintaining the existing traffic flow through the job site during construction. If disruption of the traffic flow occurs and traffic is backed up in queues of 10 minute delays or longer, then the Contractor shall review the construction operations which contributed directly to disruption of the traffic flow and make adjustments to the operations to prevent the queues from occurring again.

2.4.3. Basis of Payment

No direct payment will be made to the Contractor to recover the cost of equipment, labor, materials or time required to fulfill the above provisions, unless specified elsewhere in the contract document.

On-ramp, off-ramp, and single lane closures for preventative or remedial maintenance activities will be compensated for under pay items included in this contract. Shoulder closures for preventative or remedial maintenance activities will be considered to be included in the compensation for the activities associated with them and no additional compensation will be made for shoulder closures. Traffic control other than on-ramp, off-ramp, single lane closures, and shoulder closures will be considered out of scope work and will be compensated for through processes described in this contract.

2.5 Work Restrictions.

There are six major holidays throughout the calendar year: New Years Day, Memorial Day, Independence Day, Labor Day, Thanksgiving and Christmas. To minimize any impacts work may have on traffic these holidays, all lanes shall be scheduled to be open to traffic during these holiday periods, from 12:00 noon on the last working day preceding the holiday until 9:00 a.m. on the first working day subsequent to the holiday.

2.5.1. Hauling

The Contractor shall not perform any construction operation on the roadway, including the hauling of material within the project limits, during restricted periods, holiday periods or other special events specified in the contract documents.

2.5.2. Lane Closures

No more than two (2) adjacent freeway lanes shall be closed at any time as approved by the Engineer.

2.5.3. Ramp Closures

Ramp closures between the hours of the 10 AM – 2 PM shall be based on the type of work and per acceptance of the Engineer.

2.5.4. Peak Period Restrictions

No lane closures shall be allowed during 6 AM – 9 AM and 3 PM - 7 PM Monday through Friday. Any shoulder or off roadway work hours shall be approved by the Engineer.

2.6 Liquidated Damages

Maintenance of the Gateway Guide system is critical to the operations, safety, and security of motorists using the project area roadways and related facilities. Any delay by the Contractor in responding to calls and completing repairs represents a loss of system benefits, a hazard to the public, increases the liability of the Commission and constitutes real and measurable damages. These damages shall be liquidated and borne by the Contractor.

2.6.1. Response Time

Failure of the Contractor to respond within the time limits specified in this contract shall result in the assessment of liquidated damages.

For each trouble ticket that is not responded to within the time period allowed in this contract, for the required response time as identified on the trouble ticket, the amount of **\$200.00** will be deducted from money due the Contractor, not as a penalty, but as liquidated damages, per each four (4) hour period starting immediately after the initial required response time identified in this contract. Said amount shall apply separately to each specific identified trouble ticket item with the exception that communications outages, or large scale service outages causing multiple field elements to operate improperly, or not at all, shall be considered a single occurrence. These damages shall be cumulative.

2.6.2. Repair Time

Failure of the Contractor to complete repairs within the time limits specified shall result in the assessment of liquidated damages.

For each trouble ticket that is resolved through the use of scoped pay items in this contract, but that that resolution is not completed within the specified time period for that pay item, the amount of **\$600.00** will be deducted from money due the Contractor, not as a penalty, but as liquidated damages, per each twenty-four (24) hour period starting immediately after the initial required completion time identified in this contract.

2.6.3. Exceptions to Liquidated Damages

Exceptions to these damages include repairs requiring Commission furnished spare parts that are not available at the time of repair. In this case, the required completion time will begin upon the Engineer notifying the Contractor that the required spare parts are in stock and available for completion of the work. The liquidated damages will then begin to accrue if the work is not completed in the time required starting after notification.

Additionally, exceptions will be made for completion of work being delayed by severe weather conditions, or for conditions requiring access to work areas that are not available to the Contractor, such as for construction activities or an inability to perform necessary traffic control due to special traffic conditions or traffic accidents.

In all cases of exceptions to liquidated damages, the Contractor must document the reasons for the exception in a request for exception to the Engineer prior to an extension

or exception being granted. The Engineer will determine whether an extension or exception will be granted at the time of request and will be the final authority over such authorizations.

2.7 Contract Processes

2.7.1. New Installations

The attached Table 1 includes initial quantities of devices to be included. However, during the course of this contract there will be various construction projects underway to install additional devices along the roadway system. Upon completion of construction, these locations will become the responsibility of the maintenance Contractor. The Contractor will be compensated for maintaining these locations by increasing the contracted quantity for the respective items and paying for this revised quantity at the price included in this proposal. The Contractor will have the opportunity to inspect the new sites with the Engineer or designee of the Engineer prior to accepting responsibility for them.

2.7.2. Trouble Ticket Creation System

Upon discovery of an equipment failure, Commission staff will create and e-mail to the Contractor for notification that the ticket has been submitted. Prior to submitting a new trouble ticket, Commission staff will check for an open ticket regarding the same issue and will not add a new trouble ticket for the identical problem.

During daily equipment checks, the Contractor shall check for new trouble tickets and resolve appropriately.

2.7.3. Trouble Ticket Closing System

The trouble tickets described above will have spaces for two (2) signatures, one Contractor representative and one Commission staff representative. The Contractor representative will sign when the repair has been completed and return the Trouble Ticket to the Commission. The Commission staff representative will verify that the trouble has been corrected and sign in the designated place. A trouble ticket will not be considered closed until both signatures are received, at which time the open ticket copy of the trouble ticket may be removed and filed. If the Commission representative does not concur that the problem has been resolved, the trouble ticket will be so noted and returned to the Contractor. Upon receiving both signatures, copies shall be filed and copies maintained in appropriate records and log books.

2.7.4. Records and Log Books

Maintenance tickets, location histories, and inventory information shall be maintained in both electronic and hardcopy format by the Contractor. These records and logs shall be provided to the Commission at the request of the Engineer.

2.7.5. Contractor Response Times

The following levels of service are utilized throughout this RFP to describe the Contractor's required response time:

- Emergency – Responds within 4 hours including weekends and holidays.
- Non-critical – Responds within 24 hours

Unit prices are used in this proposal for work within the scope of the project. One of these unit prices is mobilization for work defined at the time as Emergency as defined on the trouble ticket prepared by Commission personnel. This item will be paid for in addition to the necessary repair work and will include any work or efforts associated with responding to a trouble ticket within the Emergency response timeframes.

Response timeframes require that the Contractor be onsite with the appropriate crew, equipment, and material; make the site safe; perform an initial diagnosis, and complete simple repairs. More complex repairs or repairs requiring parts not on hand, may require additional repair time, and must be completed within the timeframes described throughout this document in addition to the timeframe for the initial response.

A central phone number that is monitored 24 hours a day, 7 days a week, 365 days a year by the Contractor shall be established so Commission staff can notify the Contractor immediately of necessary emergency repairs. Emergency repair calls will be logged by Commission staff with the time noted. Response times begin from the moment when the Contractor receives a call from the Commission staff, or receives a trouble ticket via e-mail from the Commission. The Contractor is required to immediately reply to Commission phone calls or e-mails to verify receipt of notification.

2.7.6. Contractor Repair Times

In addition to the response times described above, each piece of work included in this contract has a Maximum Allowable Time For Completion described in Table 3. This time for completion shall begin upon satisfactory completion of the initial response for the trouble ticket and verbal confirmation with Commission staff.

SECTION (3): AGREEMENT REQUIREMENTS

This RFP shall be governed by the following contract provisions. The award of this RFP is subject to a post-award negotiated contract. These same contract provisions will appear in the post-award negotiated contract. If the parties are unable to agree to terms in the post-award contract, MHTC shall reserve the right to cancel the award of the RFP and contract and select a different offeror.

(A) MHTC's Representative: MoDOT's District 6 Engineer is designated as MHTC's representative for the purpose of administering the provisions of the Agreement as defined in Paragraph (E) of this section. MHTC's representative may designate by written notice other persons having the authority to act on behalf of MHTC in furtherance of the performance of the Agreement. The Offeror

shall fully coordinate its activities for MHTC with those of the so designated personnel __. As the work of the Offeror progresses, advice and information on matters covered by the Agreement shall be made available by the Offeror to the designated personnel throughout the effective period of the Agreement.

(B) Release to Public: No material or reports prepared by the Offeror shall be released to the public without the prior consent of MHTC's representative.

(C) Assignment: The Offeror shall not assign or delegate any interest, and shall not transfer any interest in the services to be provided (whether by assignment, delegation, or novation) without the prior written consent of MHTC's representative.

(D) Status as Independent Contractor: The Offeror represents itself to be an independent contractor offering such services to the general public and shall not represent itself or its employees to be an employee of MHTC or MoDOT. Therefore, the Offeror shall assume all legal and financial responsibility for taxes, FICA, employee fringe benefits, workers' compensation, employee insurance, minimum wage requirements, overtime, or other such benefits or obligations.

(E) Components of Agreement: The Agreement between MHTC and the Offeror shall consist of: the RFP and any written amendments thereto, the proposal submitted by the Offeror in the response to the RFP and the post-award contract agreement signed between the parties. However, MHTC reserves the right to clarify any relationship in writing and such written clarification shall govern in case of conflict with the applicable requirements stated in the RFP or the Offeror's proposal. The Offeror is cautioned that its proposal shall be subject to acceptance by MHTC without further clarification.

(F) Amendments: Any change in the Agreement, whether by modification or supplementation, must be accompanied by a formal contract amendment signed and approved by the duly authorized representative of the Offeror and MHTC.

(G) MBE/WBE Participation Encouraged:

1. Offerors are encouraged to submit copies of their existing affirmative action programs, if any. Offerors are also encouraged to directly hire minorities and women as direct employees of the Offerors.
2. Offerors are encouraged to obtain minority business enterprise (MBE) and women business enterprise (WBE) participation in this work through the use of subcontractors, suppliers, joint ventures, or other arrangements that afford meaningful participation for M/WBEs. Offerors are encouraged to obtain 10% MBE and 5% WBE participation.
3. Regardless of which persons or firms, if any, that the Offeror may use as subcontractors or suppliers of goods or services for the services to be provided, the

Offeror ultimately remains responsible and liable to MHTC for the complete, accurate and professional quality/performance of these services.

(H) Nondiscrimination: The Offeror shall comply with all state and federal statutes applicable to the Offeror relating to nondiscrimination, including, but not limited to, Chapter 213, RSMo; Title VI and Title VII of Civil Rights Act of 1964 as amended (42 U.S.C. Sections 2000d and 2000e, *et seq.*); and with any provision of the “Americans with Disabilities Act” (42 U.S.C. Section 12101, *et seq.*).

(I) Executive Order: The Offeror shall comply with all the provisions of Executive Order 07-13, issued by the Honorable Matt Blunt, Governor of Missouri, on the sixth (6th) day of March, 2007. This Executive Order, which promulgates the State of Missouri’s position to not tolerate persons who contract with the state engaging in or supporting illegal activities of employing individuals who are not eligible to work in the United States, is incorporated herein by reference and made a part of this Agreement.

1. By signing this Agreement, the Offeror hereby certifies that any employee of the Offeror assigned to perform services under the contract is eligible and authorized to work in the United States in compliance with federal law.
2. In the event the Offeror fails to comply with the provisions of the Executive Order 07-13, or in the event the Commission has reasonable cause to believe that the Offeror has knowingly employed individuals who are not eligible to work in the United States in violation of federal law, the Commission reserves the right to impose such contract sanctions as it may determine to be appropriate, including but not limited to contract cancellation, termination or suspension in whole or in part or both.

(J) Incorporation of Provisions: The Offeror shall include the provisions of Section (3), paragraph I of this Agreement in every subcontract. The Offeror shall take such action with respect to any subcontract as the Commission may direct as a means of enforcing such provisions, including sanctions for noncompliance.

(K) Non-employment of Unauthorized Aliens: Pursuant to Section 285.530, RSMo., no business entity or employer shall knowingly employ, hire for employment, or continue to employ an unauthorized alien to perform work within the State of Missouri. As a condition for the award of any contract or grant in excess of five thousand dollars by the State or by any political subdivision of the State to a business entity, or for any business entity receiving a state-administered or subsidized tax credit, tax abatement, or loan from the state, the business entity shall:

1. By sworn affidavit and provision of documentation, affirm its enrollment and participation in a federal work authorization program with respect to the employees working in connection with the contracted services. E-Verify is an example of a federal work authorization program. The business entity must affirm its enrollment and participation in the E-Verify federal work authorization program with respect to the employees proposed to work in connection with the services requested herein by providing acceptable enrollment and participation documentation consisting of **completed** copy of the E-Verify Memorandum of Understanding (MOU). For business entities that are not already enrolled and

participating in a federal work authorization program, E-Verify is available at http://www.dhs.gov/xprevprot/programs/gc_1185221678150.shtm.

2. By sworn affidavit, affirm that it does not knowingly employ any person who is an unauthorized alien in connection with the contracted services. A copy of the affidavit referenced herein is provided within this document, attached as Exhibit _____.

- (L) **Proof of Lawful Presence For Sole Proprietorships and Partnerships:** If the business entity is a sole proprietorship or partnership, pursuant to Section 208.009, RSMo., each sole proprietor and each general partner shall provide affirmative proof of lawful presence in the United States. Such sole proprietorship or partnership is eligible for temporary public benefits upon submission by each sole proprietor and general partner of a sworn affidavit of his/her lawful presence on the United States until such lawful presence is affirmatively determined, or as otherwise provided by Section 208.009, RSMo. A copy of the affidavit reference herein is provided within this document, attached as Exhibit III.
- (M) **Bankruptcy:** Upon filing for any bankruptcy or insolvency proceeding by or against the Offeror, whether voluntarily, or upon the appointment of a receiver, Offeror, or assignee, for the benefit of creditors, MHTC reserves the right and sole discretion to either cancel the Agreement or affirm the Agreement and hold the Offeror responsible for damages.
- (N) **Law of Missouri to Govern:** The Agreement shall be construed according to the laws of the state of Missouri. The Offeror shall comply with all local, state and federal laws and regulations relating to the performance of the Agreement.
- (O) **Cancellation:** MHTC may cancel this Agreement at any time for a material breach of contractual obligations or for convenience by providing the Offeror with written notice of cancellation. Should MHTC exercise its right to cancel the contract for such reasons, cancellation will become effective upon the date specified in the notice of cancellation sent to the Offeror.
- (P) **Venue:** No action may be brought by either party concerning any matter, thing or dispute arising out of or relating to the terms, performance, nonperformance or otherwise of the Agreement except in the Circuit Court of Cole County, Missouri. The parties agree that the Agreement is entered into at Jefferson City, Missouri, and substantial elements of its performance will take place at or be delivered to Jefferson City, Missouri, by reason of which the Offeror consents to venue of any action against it in Cole County, Missouri.
- (Q) **Ownership of Reports:** All documents, reports, exhibits, etc. produced by the Offeror at the direction of MHTC's representative and information supplied by MHTC's representative shall remain the property of MHTC.

- (R) **Confidentiality:** The Offeror shall not disclose to third parties confidential factual matters provided by MHTC's representative except as may be required by statute, ordinance, or order of court, or as authorized by MHTC's representative. The Offeror shall notify MHTC immediately of any request for such information.
- (S) **Nonsolicitation:** The Offeror warrants that it has not employed or retained any company or person, other than a bona fide employee working for the Offeror, to solicit or secure the Agreement, and that it has not paid or agreed to pay any percentage, brokerage fee, gift, or any other consideration, contingent upon or resulting from the award or making of the Agreement. For breach or violation of this warranty, MHTC shall have the right to annul the Agreement without liability, or in its discretion, to deduct from the Agreement price or consideration, or otherwise recover the full amount of such fee, commission, percentage, brokerage fee, gift or contingent fee.
- (T) **Conflict of Interest:** The Offeror covenants that it presently has no actual conflict of interest or appearance of conflict of interest and shall not acquire any interest, directly or indirectly, which would conflict in any manner or degree with the performance of the services under this Agreement. The Offeror further covenants that no person having any such known interest shall be employed or conveyed an interest, directly or indirectly, in this Agreement.
- (U) **Maintain Papers:** The Offeror must maintain all working papers and records relating to the Agreement. These records must be made available at all reasonable times at no charge to MHTC and/or the Missouri State Auditor during the term of the Agreement and any extension thereof, and for three (3) years from the date of final payment made under the Agreement.
1. MHTC's representative shall have the right to reproduce and/or use any products derived from the Offeror's work without payment of any royalties, fees, etc.
 2. MHTC's representative shall at all times have the right to audit any and all records pertaining to the services.
- (V) **Indemnification:** The Offeror shall defend, indemnify and hold harmless the Commission, including its members and department employees, from any claim or liability whether based on a claim for damages to real or personal property or to a person for any matter relating to or arising out of the Offeror's performance of its obligations under this Agreement.
- (W) **Insurance:**
- (1) Prior to contract signing, the Offeror may be asked about its ability to provide certificates of insurance which meet, or approach, the following coverages:
 - a. General Liability Not less than \$500,000 for any one person in a single accident or occurrence, and not less

than \$3,000,000 for all claims arising out of a single occurrence;

b. Automobile Liability

Not less than \$500,000 for any one person in a single accident or occurrence, and not less than \$3,000,000 for all claims arising out of a single occurrence;

c. Missouri State Workmen's Compensation policy or equivalent in accordance with state law.

**SECTION (4):
PROPOSAL SUBMISSION INFORMATION**

(A) Submission of Proposals

- 1. Pricing and Signature:** Proposals should be priced, signed and returned (with necessary attachments) to Teresa (Terri) Mount, Procurement Specialist, as provided in this RFP. Specifically, any form containing a signature line in this RFP and any amendments, pricing pages, etc., must be manually signed and returned as part of the proposal.
- 2. Submission of All Data Required:** The Offeror must respond to this RFP by submitting all data required in paragraph (B) below for its proposal to be evaluated and considered for award. Failure to submit such data shall be deemed sufficient cause for disqualification of a proposal from further consideration.. The response to this RFP shall be on 8-1/2 X 11 inch paper and not exceed a total of one hundred (100) single sided pages in length. All font sizes used in the RFP response shall by 10-point or larger.
- 3. Public Inspection:** The Offeror is hereby advised that all proposals and the information contained in or related thereto shall be open to public inspection and that MHTC does not guarantee nor assume any responsibility whatsoever in the event that such information is used or copied by individual person(s) or organization. Therefore, the Offeror must submit its proposal based on such conditions without reservations.
- 4. Clarification of Requirements**

Any and all questions regarding specifications, requirements, competitive procurement process, or other questions must be directed in writing to Teresa (Terri) Mount, Procurement Specialist, Missouri Department of Transportation, 2309 Barrett Station Rd., Ballwin, MO. 63021 (314) 301-1431, Teresa.Mount@modot.mo.gov no later than June 8, 2007.

5. Proposal/Bid Guaranty/Contract Bond

- a. Each proposal shall be accompanied by a Bid Bond, Certified Check, Cashier's Check or Bank Money Order payable to the Director of Revenue – Credit State Road Fund for an amount equal to Five Percent (5%) of the amount of the BID submitted. This is to act as a guarantee that the bidder, if awarded the contract, will furnish an acceptable performance and payment bond (Contract Bond) or a cashier's check, a bank money order or a certified check made payable to "Director of Revenue--Credit State Road Fund" in an amount equal to One Hundred (100%) of the contract price.
- b. If a BID BOND is used (in lieu of a certified check, cashier's check, or bank money order), it must be in the form provided and executed by the bidder as principal and by a surety company authorized to do business in the State of Missouri as surety. The agent executing the same on behalf of the surety company must attach a current Power of Attorney setting forth his authority to execute the bond involved.
- c. Certified Checks, Cashier's Checks or Bank Money Orders of unsuccessful bidders will be returned as soon as the award is made. The checks or bank money orders of the successful bidder(s) will be retained until the contract is executed and a satisfactory Performance and Payment (Contract Bond) is furnished. Bid Bonds will not be returned except on specific request of the bidder.

(B) Required Elements of Proposal

1.0 RFP SUBMISSION INFORMATION

1.1 RFP Response

1.1.1. Experience

The proposal must clearly identify the Offeror's experience in the services requested in this RFP during the past three (3) years. The description should include a list of the agencies which your institution has served or currently serves.

1.1.2. Personnel

Please indicate the name, location, telephone number, fax number and email address of the primary contact person for the Offeror. Information presented in this section should highlight the previous Offeror experience, as well as any work with other state agencies or local governments in Missouri. Offeror must furnish a complete listing of each sub-consultant, if any, and complete contact information for that sub-consultant. The Contractor shall describe in detail, by each task identified in the scope of services, their approach to fulfilling the requirements of the services requested.

The Contractor shall submit resumes of Key Staff, as identified in this RFP, and other technical specialists to be assigned to the maintenance functions. Additionally, the Contractor shall submit the names of staff and their respective time planned to be dedicated to the project, should the Contractor be selected, expressed as a percentage of full time work. The names of the company each person works for shall be included.

Provide a list of personnel that would be available to support this contract. Include a brief description of their experience related to ITS hardware maintenance. Include the number of years each person have been doing the kind of work identified in the scope of services. (No more than twenty (20) pages.)

The Contractor shall submit this information in a manner formatted to demonstrate compliance with the requirements of Key Staff and As Needed Staff, as identified in this RFP, and to demonstrate the ability to perform all work required in this contract.

1.1.3. References

Proposals should indicate the name, title and telephone number of at least three officials of clients within the past three years.

1.1.4. Proposed Preventative Maintenance Procedures

The Contractor shall submit detailed documentation, including sample checklists that demonstrate how they will support Preventative Maintenance, as described in the Scope of Services section. Eight separate work items are included in this section, and preventative maintenance procedures, including materials and suggested equipment, should be described in detail.

1.1.5 Local Presence

The Contractor shall submit the locations of pre-existing company facilities or office-space.

1.1.6. Cost, Fees, and Expenses

The unit prices and hourly rates (labor and equipment) that are submitted by completing the tables in Exhibit I and summarizing on the Price Page in Section 5 (all to completed and submitted with the proposal) by the Contractor will be reviewed along with the proposed expenses. Although still critical, the Contractor's ITS experience and preventative maintenance expertise rank higher in importance than straight cost.

1.1.7. Overall Clarity and Quality of Proposal

The Contractor shall assemble and submit the information required of this proposal as described and detailed throughout this RFP in a clear and concise document.

1.1.8. Submission Expenses

The Commission will not be responsible for any expenses related to responses or documentation that may result from this RFP.

(C) EVALUATION CRITERIA

1.0 ULTIMATE EVALUATION/AWARD

1.1 Evaluation Method and Criteria

Any agreement for services resulting from this RFP shall be awarded to the Offeror providing the best proposal to MHTC. After determining responsiveness, proposals will be evaluated in accordance with the following criteria:¹

- A. Experience, expertise and reliability-40 points
- B. Proposed Method of Performance; -25 points
- C. Cost, Fees, and Expenses; -25 points
- D. Local presence of Contractor; -5 points
- E. Overall clarity and quality of proposal; -5 points.

1.2 Cost, Fees, and Expenses

The Fee Schedule submitted by all Offerors will be compared to Offeror with the lowest estimated cost being awarded full credit for the Cost, Fees, and Expenses criterion and other Offerors being awarded partial points on a proportional basis.

2.0 Historic Information

MHTC reserves the right to consider historic information and facts, whether gained from the Offeror's proposal, question and answer conferences, references, or other sources, in the evaluation process.

3.0 Responsibility to Submit Information

The Offeror is cautioned that it is the Offeror's sole responsibility to submit information related to the evaluation categories and that MHTC's representative is under no obligation to solicit such information if it is not included with the Offeror's proposal. Failure of the Offeror to submit such information may cause an adverse impact on the evaluation of the Offeror's proposal.

(D) Pricing

The Offeror must submit a proposed fee for all services defined in the Scope of Work. This fee must be shown on Section 5, Price Page(s), of this proposal which must be completed, signed and returned with the Offeror's proposal.

(E) Renewal Option

If a hardware maintenance contract is awarded, it is the Commission's intent that the initial contract period will be for a term of two (2) years with up to three (3) optional one-

year annual extensions at the agreement of both parties, for an available contract period of five (5) years. The contract shall not bind, nor purport to bind, the state for any contractual commitment in excess of the original contract period. The Commission shall have the right, at its sole option, to renew the contract for three (3) additional one-year periods, or any portion thereof, as long as funding remains available. In the event the Commission exercises such right, all terms and conditions, requirements and specifications of the contract shall remain the same and apply during the renewal period, pursuant to applicable option clauses of this document.

In the event the Commission exercises its options to renew the contract for each of three (3) additional one year periods, pursuant to the applicable provisions outlined in this document, the Bidder shall provide below, the maximum percentage of increase or minimum percentages of decrease for each renewal period. The Bidder is cautioned that the percentages shall be computed against **the ORIGINAL contract prices during renewal periods. Furthermore, the Bidder is advised that the Commission does not automatically grant increases at the time of the renewal contract period, and that if an increase is requested, documentation of need must be provided at the time of renewal.**

If agreement with the Contractor is not reached six (6) months prior to the renewal period, all negotiations shall cease and the Commission will pursue award of the contract through a new Request for Proposal Process.

Option granted for one additional year at a price increase not to exceed _____%.
(YES or NO)

Option granted for second additional year at a price increase not to exceed _____%.
(YES or NO)

It is agreed that if any renewal option granted herein is exercised, the Missouri Highway Transportation Commission will notify the contractor prior to the expiration date. **Escalating factors in options will not be automatically granted. Any request for an increase in price must be substantiated by corresponding increase in vendor costs, and submitted, in writing to the Missouri Highway Transportation Commission buyer or record.** No increase will be granted without prior approval of the Missouri Highway Transportation Commission or its assigned representative.

Company Name

Signature

Title

Date

**SECTION (5):
PRICE PAGE**

(A) Fee Schedule: The Offeror shall indicate below all fees for providing services in accordance with the provisions and requirements stated herein for each series of bonds to be issued:

Any applicable cap on out-of-pocket expense also should be noted.

A. Table 1: Preventative Maintenance \$ _____
Annual Cost

B. Table 2: Labor Categories and Rates \$ _____

C. Table 3: Repair Item pay Items
\$ _____
\$ _____

(B) Expenses: No additional compensation will be made for expenses outside of the pay items included in the contract, with the exception of as described under the processes for work not covered by the included pay items and as described in the individual pay items in the contract.

COMPANY: _____ **SIGNATURE:** _____

DATE; _____

Exhibit I: Cost Tables

Table 1: Gateway Guide Preventative Maintenance Items

Cost Line Number	Item	No. of units (Est.)	Annual Frequency	Annual Quantity (Est.)	Unit Price	Total Annual Costs
1.1	CCTV Cameras	295	Once	295		
1.2	Remote Traffic Microwave Sensor (RTMS) Detector Stations	240	Once	240		
1.3	Communication Node Field Cabinets	28	Once	28		
1.4	Air Conditioning Units	28	Once	28		
1.5	Dynamic Message Signs	125	Once	125		
1.6	Wireless Communication Links	150	Once	75		
1.7	Lane Control Signal System	8	As Directed by the Engineer	1		
1.8	In Pavement Detector Stations	4 1	As Directed by the Engineer	1		
1.9	Weather Sensor Systems	2	Once	2		
Estimated Annual Costs						

Table 2: Labor Categories and Rates

Labor Category	Annual Hours (Est.)	Hourly Rate	Initial Cost
Project Manager	200		
Lead Field Communications Technician	200		
Lead Field Hardware Technician	400		
Lead Electrician	100		
Field Hardware Technician	350		
Laborer	1,000		
Clerical	150		
Lead Network Communications Engineer	600		
Estimated Annual Costs			

Table 3: Repair Item Pay Items and Unit Prices

Remedial Maintenance Line Item	Repair Item	Unit	Max. Time To Complete	Max. Unit per Completion Time Period	Est. Annual Qty.	Unit Price	Total Annual Costs
3.1	Initial Response and Mobilization	1 ea	24 Hours	5	300		
3.2	Remove Camera Assembly	1 ea	4 Hours	1	25		
3.3	Install Camera Assembly	1 ea	4 Hours	1	25		
3.4	Remove Camera Pole	1 ea	4 Hours	1	1		
3.5	Install Camera Pole	1 ea	4 Hours	1	1		
3.6a	Remove Communication Node Field Cabinet (Single Cabinet)	1 ea	48 Hours	1	1		
3.6b	Remove Communication Node Field Cabinet (Dual Cabinet)	1 ea	48 Hours	1	1		
3.7a	Install Field Cabinet (Single Cabinet)	1 ea	48 Hours	1	1		
3.7b	Install Field Cabinet (Dual Cabinet)	1 ea	48 Hours	1	1		
3.8	Remove Wireless Communication Equipment	1 ea	4 Hours	2	2		
3.9	Install Spread Spectrum Wireless Communication Equipment	1 ea	24 Hours	2	2		
3.10	Install Wireless Ethernet Bridge Communication Equipment	1 ea	24 Hours	2	2		
3.11a	Install Cable in Conduit #8 wire	Lin ft	24 Hours	1000	1000		
3.11b	Install Cable in Conduit #6 wire	Lin ft	24 Hours	500	500		
3.11c	Install Cable in Conduit #4 wire	Lin ft	24 Hours	100	100		
3.11d	Install Cable in Conduit #2 wire	Lin ft	24 Hours	100	100		
3.11e	Install Cable in Conduit #1/0 wire	Lin ft	24 Hours	500	500		
3.11f	Install Cable in Conduit #2/0 wire	Lin ft	24 Hours	100	100		
3.11g	Install Cable in Conduit #14 wire	Lin ft	24 Hours	250	250		
3.11h	Install Cable in Conduit Video Coaxial Cable	Lin ft	24 Hours	250	250		
3.11i	Install Cable in Conduit 24-Count Single Mode Fiber Optic Cable	Lin ft	24 Hours	1000	2500		

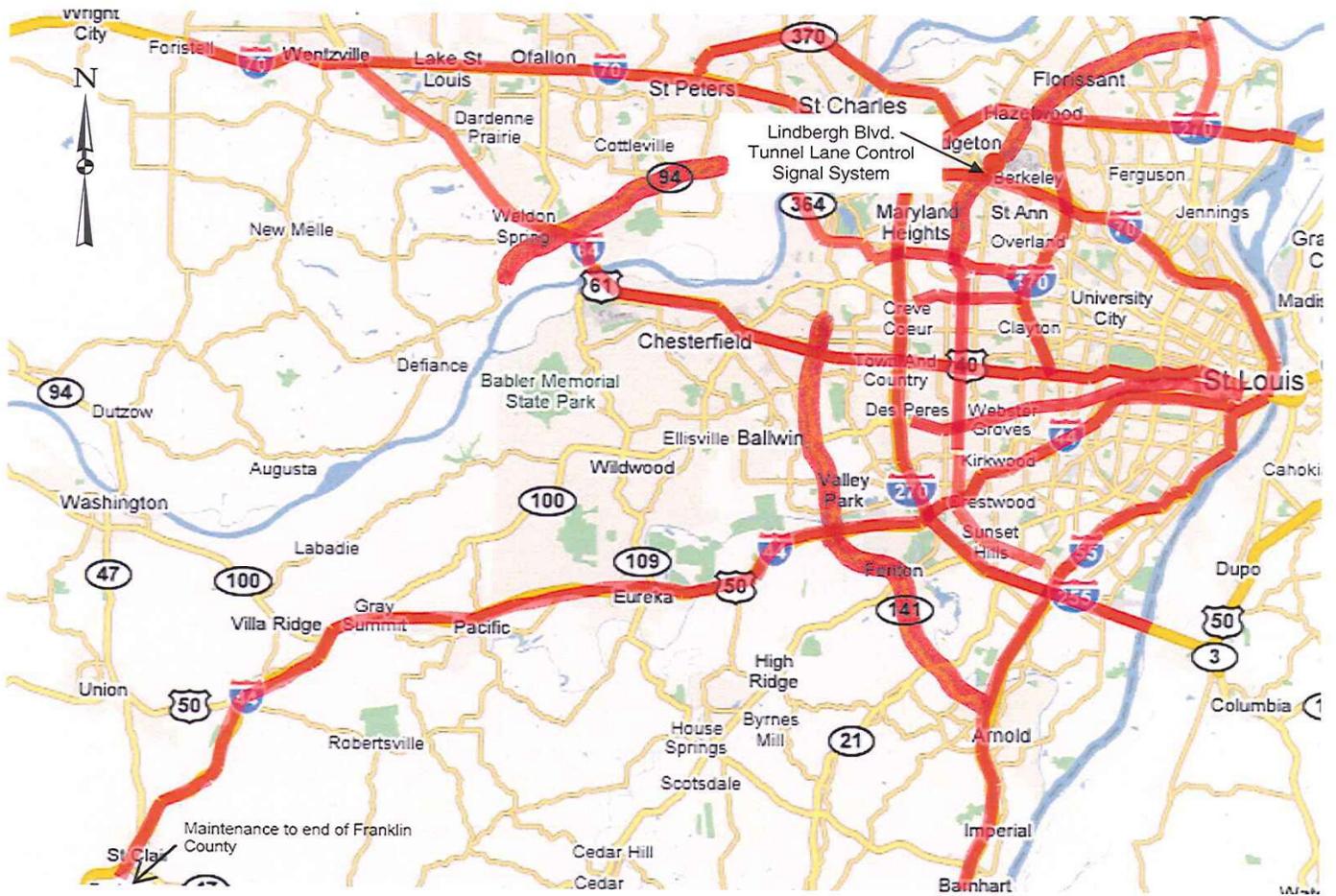
Table 3: Repair Item Pay Items and Unit Prices (Continued)

Remedial Maintenance Line Item	Repair Item	Unit	Max. Time To Complete	Max. Unit per Incident	Initial. Annual Qty.	Unit Price	Total Annual Costs
3.11j	Install Cable in Conduit 72-Count Single Mode Fiber Optic Cable	Lin ft	24 Hours	1000	1000		
3.11k	Install Cable in Conduit 6-Count Multi Mode Fiber Optic Cable	Lin ft	24 Hours	250	250		
3.11l	Install Cable in Conduit 18SM/6MM Hybrid Fiber Optic Cable	Lin ft	24 Hours	500	1000		
3.11m	Install Cable in Conduit Cat5e Outdoor Rated Cable	Lin ft	24 Hours	200	500		
3.12	Install Conduit 1",trenched	Lin ft	24 Hours	50	50		
3.12b	Install Conduit 2", trenched	Lin ft	24 Hours	500	500		
3.12c	Install Conduit 3",trenched	Lin ft	24 Hours	100	100		
3.12d	Install Conduit 4", trenched	Lin ft	24 Hours	100	100		
3.12e	Install Conduit 1", Pushed	Lin ft	14 Days	50	50		
3.12f	Install Conduit 2", Pushed	Lin ft	14 Days	1000	1000		
3.12g	Install Conduit 3", Pushed	Lin ft	14 Days	50	50		
3.12h	Install Conduit 4", Pushed	Lin ft	14 Days	50	50		
3.13	Twisted-Pair Splice	1 ea	24 Hours	50	50		
3.14a	Fiber Optic Fusion Splice, Single Mode	1 ea	24 Hours	96	1500		
3.14b	Fiber Optic Fusion Splice, Multi Mode	1 ea	24 Hours	18	108		
3.15a	Pull Box, Type 1	1 ea	24 Hours	1	1		
3.15b	Pull Box, Type 2	1 ea	24 Hours	1	1		
3.15c	Pull Box, Type 3	1 ea	24 Hours	1	1		
3.15d	Pull Box, Type 5	1 ea	24 Hours	2	2		
3.15e	Pull Box, ITS Type 2 with concrete apron	1 ea	24 Hours	1	1		
3.15f	Pull Box, ITS Type 5 with concrete apron	1 ea	24 Hours	2	2		
3.16	Fiber Optic Splice Enclosure	1 ea	24 Hours	2	6		
3.17	Fiber Optic Terminations	1 ea	24 Hours	96	240		
3.18	Install Rack Mounted Interconnect Center	1 ea	24 Hours	1	5		
3.19	Remove Non-Intrusive Vehicle Detector Pole	1 ea	24 Hours	1	10		
3.20	Install Non-Intrusive Vehicle Detector Pole	1 ea	5 Days	1	10		
3.21a	Remove Non-Intrusive Vehicle Detector Assembly	1 ea	4 Hours	1	30		

Table 3: Repair Item Pay Items and Unit Prices (Continued)

Remedial Maintenance Line Item	Repair Item	Unit	Max. Time To Complete	Max. Unit per Incident	Initial. Annual Qty.	Unit Price	Total Annual Costs
3.21b	Remove Intrusive Wireless in-pavement Detector Assembly	1 ea	4 Hours	5	20		
3.22a	Install Non-Intrusive Vehicle Detector Assembly	1 ea	5 Days	1	30		
3.22b	Install Intrusive Wireless in-pavement Detector Assembly	1 ea	4 Hours	5	40		
3.23	Install Trace Wire	Lin ft	5 Days	1000	2000		
3.24	Emergency Response Repair Mobilization	1 ea	4 Hours	1	25		
3.25	Short Term Single Lane Closure	1 ea	N / A	1	10		
3.26	Short Term On-Ramp Closure	1 ea	N / A	1	1		
3.27	Short Term Off-Ramp Closure	1 ea	N / A	1	1		
Estimated Annual Costs							

Exhibit II: Project Area



Legend:

- Roadways with Deployed ITS Infrastructure

Page 76 of 86
Accepted:
Updated:

BID BOND
D611-133-RW ITS MAINTENANCE DISTRICT 6

KNOW ALL MEN BY THESE PRESENTS, that we _____

_____,
as Principal and _____, as Surety are held and firmly bound
unto the **STATE OF MISSOURI** (acting by and through the **Missouri Highways and Transportation Commission**) in the penal sum of:

_____ **Dollars**
(\$ _____) to be paid to the **State of Missouri or to the Missouri Highways and Transportation Commission**, to be credited to the State Road Fund, the Principal and Surety binding themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

Sealed with our seals and dated this _____

THE CONDITION OF THIS OBLIGATION is such that:

WHEREAS, the Principal is submitting herewith a bid to the Missouri Highways and Transportation Commission for furnishing **ITS Maintenance** as set out in the proposal to which this bond is attached.

NOW THEREFORE, if the Missouri Highways and Transportation Commission shall accept the bid of the Principal and if said Principal shall properly execute and deliver to the Missouri Highways and Transportation Commission the contract and contract bond in compliance with the requirements of the proposal, the specifications and the provisions of law, to the satisfaction of the Highways and Transportation Commission, then this obligation shall be void and of no effect, otherwise to remain in full force and effect.

In the event the said Principal shall, in the judgment of the Missouri Highways and Transportation Commission, fail to comply with any requirement as set forth in the preceding paragraph, then the State of Missouri acting through the Missouri Highways and Transportation Commission shall immediately and forthwith be entitled to recover the full penal sum above set out, together with court costs, attorney's fees and any other expense of recovery.

(SEAL)

Principal

By

Signature

(SEAL)

Surety

By

Attorney-in-Fact

NOTE: This bond must be executed by the **PRINCIPAL** and by a **CORPORATE SURETY** authorized to conduct surety business in the State of Missouri.

PREFERENCE IN PURCHASING PRODUCTS

DATE: _____

The bidder’s attention is directed to Section 34.076 RSMo. 1986 which gives preference to Missouri corporations, firms, and individuals when letting contracts or purchasing products.

Bids received will be evaluated on the basis of this legislation.

All bidders must furnish the information requested below.

FOR CORPORATIONS:

State in which incorporated _____

FOR OTHERS:

State of domicile _____

FOR ALL BIDDERS:

List address of Missouri offices or places of business

(MUST BE COMPLETED AND SIGNED)

FIRM NAME:

ADDRESS:

CITY:

STATE:

ZIP:

BY:

NOTE: For bid to be considered, the attachment entitled “Preference in Purchasing Products” must be on file in this office and must be dated in the current calendar year.

MISSOURI DOMESTIC PRODUCTS PROCUREMENT ACT

The bidder’s attention is directed to the Missouri Domestic Products Procurement Act, Sections 34.350 to 34/359, RsMO, which requires all manufactured goods or commodities used or supplied in the performance of this contract or any subcontract to be manufactured or produced in the United States.

Section 34.355, RsMO, requires the vendor or contractor to certify his compliance with Section 34.353 and, if applicable, Section 34.359, RsMO, at the time of bidding **and** prior to payment. Failure to comply with Section 34.353, RsMO, during the performance of the contract **and** to provide certification of compliance prior to payment will result in nonpayment for those goods or commodities.

Section 34.353.2, RsMO, specifies that it does not apply where the total contract is less than Twenty-Five Thousand Dollars (\$25,000.00). If your total bid is Twenty-Five Thousand Dollars (\$25,000.00) or more, you **must** complete this form as directed below.

Failure to complete and return this document with this bid will cause the State to presume the manufactured goods or products listed in the bid are not manufactured or produced in the United States, and the bid will be evaluated on that basis. Please read the certification appearing below on this form.

If all the goods or products specified in the attached bid which the bidder proposes to supply to the State shall be manufactured or produced in the “United States” as defined in Section 34.350, RsMO, check the box at left.

If only one item of any particular goods or products specified in the attached bid is manufactured or produced in the “United States” as defined in Section 34.350, RsMO, check the box at left and list the items (or item number) here:

If any or all of the goods or products specified in the attached bid which the bidder proposes to supply to the State are **not** manufactured or produced in the “United States” as defined in Section 34.350, RsMO, then: (a) check the box at left; (b) list below, by item (or item number), the country other than the United States where each good or product is manufactured or produced; and (c) check the boxes to the left of the paragraphs below if applicable and list the corresponding items (or item numbers) in the spaces provided.

Item (or item number)	Location Where Item Manufactured or Produced

(attach an additional sheet if necessary)

The following specified goods or products cannot be manufactured or produced in the United States in sufficient quantities or in time to meet the contract specifications. Items (or item numbers):

EXHIBIT III

[] The following specified goods or products must be treated as manufactured or produced in the United States, in accordance with an existing treaty, law, agreement, or regulation of the United States, including a treaty between the United States and any foreign country regarding export-import restrictions or international trade. Items (or item numbers):

CERTIFICATION

By submitting this document, completed as directed above, with a bid, the bidder certifies under penalty of making false declaration (Section 575.060, RsMO) that the information contained in this document is true, correct and complete, and may be relied upon by the State in determining the bidders qualifications under and in compliance with the Missouri Domestic Products Procurement Act.

The bidder's failure to complete and return this document with the bid as directed above will cause the State to presume the manufactured goods or products listed in the bid are not manufactured or produced in the United States, and the bid will be evaluated on that basis pursuant to Section 34.353.3(2), RsMO.

EXHIBIT III

APPLICANT AFFIDAVIT FOR SOLE-PROPRIETORSHIP OR PARTNERSHIP

(a separate affidavit is required for each owner and general partner) *(if applicable)*

STATE OF _____)
) ss
COUNTY OF _____)

On this _____ day of _____, 20____, before me appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instruments, who being by me duly sworn, deposed as follows:

My name is _____, and I am of sound mind, capable of making this affidavit, and personally certify the facts herein stated, as required by Section 208.009, RSMo, for failure to provide affirmative proof of lawful presence in the United States of America:

I am the _____ of _____, which is owner or partner applying for a public benefit (grant, contract, and/or loan) administered/provided by the Missouri Highways and Transportation Commission (MHTC), acting by and through the Missouri Department of Transportation (MoDOT). I am classified by the United States of America as: (check the applicable box) a United States citizen. an alien lawfully admitted for permanent residence.

I am aware that Missouri law provides that any person who obtains any public benefit by means of a willfully false statement or representation, or by willful concealment or failure to report any fact or event required to be reported, or by other fraudulent device, shall be guilty of the crime of stealing pursuant to Section 570.030, RSMo, which is a Class C felony for stolen public benefits valued between \$500 and \$25,000 (punishable by a term of imprisonment not to exceed 7 years and/or a fine not more than \$5,000 – Sections 558.011 and 560.011, RSMo), and is a Class B felony for stolen public benefits valued at \$25,000 or more (punishable by a term of imprisonment not less than 5 years and not to exceed 15 years – Section 558.011, RSMo).

I recognize that, upon proper submission of this sworn affidavit, I will only be eligible for temporary public benefits until such time as my lawful presence in the United States is determined, or as otherwise provided by Section 208.009, RSMo.

I understand that Missouri law requires MHTC/MoDOT to provide assistance in obtaining appropriate documentation to prove citizenship or lawful presence in the United States, and I agree to submit any requests for such assistance to MHTC/MoDOT in writing.

I acknowledge that I am signing this affidavit as a free act and deed and not under duress.

Affiant Signature

Affiant's Social Security Number or
Applicable Federal Identification Number

Subscribed and sworn to before me this _____ day of _____, 20_____.

Notary Public My commission expires:

EXHIBIT III

MISSOURI SERVICE-DISABLED VETERAN BUSINESS PREFERENCE

By virtue of statutory authority, RSMo 34.074, a preference will be given all contracts for the performance of any job or service to service-disabled veteran business either doing business as Missouri firms, corporations, or individuals; or which maintain Missouri offices or places of business, when the quality of performance promised is equal or better and the price quoted is the same or less or whenever competing bids, in their entirety, are comparable.

Definitions:

Service-Disabled Veteran is defined as any individual who is disabled as certified by the appropriate federal agency responsible for the administration of veterans' affairs.

Service-Disabled Veteran Business is defined as a business concern:

- a. Not less than fifty-one (51) percent of which is owned by one or more service-disabled veterans or, in the case of any publicly owned business, not less than fifty-one (51) percent of the stock of which is owned by one or more service-disabled veterans; and
- b. The management and daily business operations of which are controlled by one or more service-disabled veterans.

If a bidder meets the definitions of a service-disabled veteran and a service-disabled veteran business as defined in 34.074 RSMo and is either doing business as a Missouri firm, corporation, or individual; or maintains a Missouri office or place of business, the bidder **must** provide the following with the bid in order to receive the Missouri service-disabled veteran business preference over a non-Missouri service-disabled veteran business when the quality of performance promised is equal or better and the price quoted is the same or less or whenever competing bids, in their entirety, are comparable:

- a. A copy of a letter from the Department of Veterans Affairs (VA), or a copy of the bidder's discharge paper (DD Form 214, Certificate of Release or Discharge from Active Duty) from the branch of service the bidder was in, stating that the bidder has a service-connected disability rating ranging from 0 to 100% disability; and
- b. A completed copy of this exhibit

(NOTE: For ease of evaluation, please attach copy of the above-referenced letter from the VA or a copy of the bidder's discharge paper to this Exhibit.)

By signing below, I certify that I meet the definitions of a service-disabled veteran and a service-disabled veteran business as defined in 34.074 RSMo and that I am either doing business as a Missouri firm, corporation, or individual; or maintain Missouri offices or places of business at the location(s) listed below.

<u>Veteran Information</u>	<u>Business Information</u>
Service-Disabled Veteran's Name, (Please Print)	Service-Disabled Veteran Business Name
<i>Service-Disabled Veteran's Signature</i>	Missouri Address of Service-Disabled Veteran Business