


Date: September 19, 2019

To: Gary T. Hartfield, Division Director
Small Business Development Division
Internal Services Department

From: 
Alfredo Munoz, P.E.
Chief, Capital Improvements Section
Department of Transportation and Public
Works (DTPW)

Subject: Notice of Construction Project:
Project No. MCC 7360- 20190209
FDOT Traffic Signals Preventive Maintenance

RECOMMENDATION

The Florida Department of Transportation’s (FDOT) Disadvantaged Business Enterprise (DBE) program has been updated with a 10.65% DBE participation goal. It is the policy of the FDOT Local Agency Program Agreement (Agreement) that DBEs, as defined in 49 Code of Federal Regulations (C.F.R.) Part 26, as amended, shall have the opportunity to participate in the performance of contracts financed in whole or in part with FDOT funds under this Agreement. The DBE requirements of applicable federal and state laws apply to this Agreement. The Department’s Capital Improvements staff completed the review of the subject RPQ in accordance with the applicable provisions of Implementing Order 3-22 and recommends a no measure for Small Business Enterprise - Construction (SBE-CONST) and no applicability to the Community Workforce Program (CWP).

Scope of Work:	Single Trade – Traffic Signals Preventive Maintenance
Engineer Project Base Cost Estimate:	\$2,174,639.00
Measure/Set Aside:	0.00%
Good and Services	0.00%
CWP:	N/A

Scope of Work:

Work under this Contract includes furnishing of all supervision, labor, materials, tools, equipment and performing all operations required to perform preventive maintenance work in accordance with the Contract Documents. Work includes performing of preventive maintenance, at designated Florida Department of Transportation (FDOT) traffic signals intersections, hereinafter referred to as the FDOT Traffic Signals System.

Detailed scope of work and schedule for Preventative Maintenance is provided in Section 600ME (Maintenance of Traffic Signals and Devices), attached. Work requires that traffic signal maintenance inspections be performed at a minimum of 80 signalized intersections per calendar month but not exceed 120 signalized intersections per calendar month.

Successful bidder to assume existing traffic signal conditions at the time of commencement of the work.

BACKGROUND

DTPW is responsible for the maintenance, repair, and upgrade of over 2,920 traffic signals. The subject project will perform only preventive maintenance on approximately 1,323 traffic signals that belongs to FDOT. The number of intersection may fluctuate to decrease or increase by 5% during the Contract Duration. DTPW will advertise two additional MCC 7040 contracts for the remaining of approximately 1,597 traffic signals under project numbers 20190207 and 20160208.

Should you require any additional information, please call me at (305) 375-2097, or Roxana Bayarre Chi at (305) 375-3267.

AM/rb

Attachments (2)

cc: Laurie Johnson, ISD/SBD
Jhonnatan Escalante, ISD/SBD
Roxana Bayarre Chi, P.E., DTPW
Samael Estevez, P.E., DTPW
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File

MIAMI-DADE COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
CONTRACT/PROJECT MEASURE ANALYSIS AND RECOMMENDATION

RPQ No.: 20190209
RPQ Title: FDOT Traffic Signals Preventive Maintenance

To: Gary Hartfield, Division Director
Small Business Development Division
Internal Services Department

From: Alfredo Munoz, P.E. *AM*
Chief, Capital Improvements Section
Department of Transportation and Public Works (DTPW)

Date: September 19, 2019

CONTRACT INFORMATION

Contract Type: MCC 7360: Single Trade

Request for Price Quotation (RPQ) No: 20190209

RPQ Title: FDOT Traffic Signals Preventive Maintenance

Re-submittal: No

Standard Industrial Code (SIC)/North American Industry Classification Code (NAICS): 17-Special Trade Contractors: Electrical

Estimated Base Project Cost: \$2,174,639.00

Funding Source: Florida Department of Transportation

Bonding Requirements: Bid Bond- 5% of base bid amount
Performance Bond- 100% of Contract Award Amount

Method of Award: Lump Sum

PROJECT INFORMATION

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Detailed scope of work and schedule for Preventative Maintenance is provided in Section 600ME (Maintenance of Traffic Signals and Devices), attached. Work requires that traffic signal maintenance

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Successful bidder to assume existing traffic signal conditions at the time of commencement of the work.

Required Contractor's Certification:

Certificate of Competency Requirement:

At the time of Bid and pursuant to the requirements of Section 10-3 of the Code of Miami-Dade County, Florida and these Solicitation and Contract Documents, the Bidder must hold a valid, current, and active Certificate of Competency from the County's Construction Trades Qualifying Board as an Electrical Contractor; or

Certification, as an electrical contractor provided by the State of Florida Electrical Contractors' Licensing Board, pursuant to the provisions of Section 489.511 of the Florida Statutes (F.S.).

Additional Contractor Requirements:

In addition to the license(s) required of Contractor, all personnel engaged in installing, modifying, repairing, removing or maintaining: Traffic signalization; or any other electrical/electronic traffic control device in Miami-Dade County must:

Perform work under the direction of a Master Electrician that is present at the job site or able to respond within 2 hours of notification.

Perform all work under the direct supervision of a Journeyman Electrician. For Traffic Signalization or Control Devices the Journeyman Electrician must be certified as an International Municipal Signal Association (IMSA) certified Traffic Signal Technician (TST) Level II or Level III. All work related at or pertaining to the controller must be performed by an IMSA certified TST Level II (Field).

Experience Requirement:

The Bidder must demonstrate that it has full-time personnel with the necessary experience to perform the Project's Scope of Work. This experience shall include work in successfully completed projects performed by the identified personnel whose bulk of work performed in the Public Right-of-Way is similar in detail to the Project's Scope of Work described in these Solicitation Documents. Demonstrate the experience requirement by:

Providing a detailed description of at least three (3) projects similar in detail to the Project's Scope of Work described in these Solicitation Documents and in which the Bidder's identified personnel is currently engaged or has completed within the past five years. List and describe the aforementioned projects and state whether the work was performed for the County, other government clients, or private entities. The description must identify for each project:

- 1) The identified personnel and their assigned role and responsibilities for the listed project
- 2) The client name and address including a contact person and phone number for reference

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- 3) Description of work
- 4) Total dollar value of the contract
- 5) Contract duration
- 6) Statement or notation of whether Bidder's referenced personnel is/was employed by the prime contractor or subcontractor, and
- 7) For completed projects, provide letters of certification of final acceptance or similar project closure documentation issued by the client and available Contractor's performance evaluations; or

Pursuant to Section 255.20, F.S., the County may consider a bid from a Bidder in good standing, meeting the license requirements above, that has been prequalified and considered eligible by the Florida Department of Transportation (FDOT) under Section 337.14, F.S. and Chapter 14-2, Florida Administrative Code, to perform the work described in the Contract Documents. Contractors seeking consideration under this Paragraph shall submit along with the Bid Documents for review and consideration, current copy(ies) of their FDOT Certificate(s) of Qualification in the Traffic Signal Work Class, Certification of Work Underway, and Status of Contract(s) On Hand.

The County reserves the right to request additional information and/or contact listed persons under information pertaining bidder's experience.

RECOMMENDATION

DTPW Areas for Possible Measures: None

DTPW Areas Recommended for SBE-CONST Subcontractor Goal: None

Contract Measure Recommendation:

- No Measure
- Set-Aside:
 - Level I Level II Level III
- Trade Set-Aside(s): None
- Aggregate Set-Aside
- SBE Subcontractor Goal: Set Aside
- Community Workforce Program (CWP): Applicable
- DBE Subcontractor Goal

Reason for Recommendation:

This is a single trade project; none of the primary trade related work (Traffic Signals Preventive Maintenance) can be subcontracted. Additionally, funds for the subject project are state funds. There is no ancillary work required to complete this project. This type of work is highly specialized and requires certifications, and equipment that are typically owned by the contractor.

MIAMI-DADE COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
CONTRACT/PROJECT MEASURE ANALYSIS AND RECOMMENDATION

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Comments:

The department is charged with soliciting a project for bids in order to procure the requested services on a recurring basis. In an effort to provide an open competitive bid competition to non-SBE-CONST and SBE-CONST firms, the Department has divided the solicitation into multiple projects. Projects are solicited for bids by accessing the Miscellaneous Construction Contract (MCC) Program: MCC 7360 Plan-CICC 7360-0/08 that includes a Departmental contract measure recommendation of "No Measure." Although the contract measure recommendation of "No Measure" was applicable, SBE-CONST firms can also participate in the 7360 project. The other two projects will be advertised by accessing the MCC 7040 Plan. As such, DTPW has been successful in providing opportunities to non-SBE-CONST and SBE-CONST firms.

It is DTPW's intent to continue soliciting for bids utilizing the aforementioned process; RPQ No. 20190209 (\$2,174,639.00), will be solicited utilizing the 7360 Program Plan, and RPQ No. 20190207 (\$1,406,300.00) and RPQ No. 20190208 (\$1,688,402.70) will be solicited utilizing the 7040 Program Plan.

SBE-CONST Prime History of similar Contracts/Projects for previous three years:

None

Scope of Work History Summary – Subcontracting Opportunities:

Areas recommended for SBE-CONTS Goal:

None.

Areas used to meet subcontractor goal (Awarded Contractor):

Not Applicable

**SECTION 600ME
MAINTENANCE OF TRAFFIC SIGNALS AND DEVICES**

PART 1 GENERAL

1.01 DESCRIPTION

- A. These Provisions are in addition to all applicable requirements of Division 01 (General Requirements) of the Department Specifications and supplement the Miami-Dade County Traffic Control Equipment Standards and Specifications and all other governing standards, requirements, and specifications.
- B. All work associated with the maintenance of traffic control devices owned, operated or maintained by Miami-Dade County must conform to the requirements of these Provisions and the current requirements of the References listed below. The Engineer of Record and the Contractor performing the work are responsible for complying with all applicable requirements.

1.02 REFERENCES

- A. Department of Transportation and Public Works (DTPW) Specifications including Division 01 (General Requirements)
- B. FDOT Approved Products List (APL)
- C. Miami-Dade County Traffic Signals and Signs Division's Qualified Products List (TSSQPL)
- D. Florida Department of Transportation Standard Specifications for Road and Bridge Construction (Divisions II & III), Special Provisions and Supplemental Specifications
- E. FHWA Manual on Uniform Traffic Control Devices (MUTCD)
- F. National Electrical Code, NFPA 70 (NEC)

1.03 DEFINITIONS

- A. "Engineer," defined in Subarticle 1.01.D of Division 01 (General Requirements) Miami-Dade County DTPW Specifications, includes the duly authorized representatives of the DTPW Traffic Signals and Signs (TSS) Division. Wherever these Provisions require either notification to or action by Engineer, it is understood to include the TSS Division authorized representative in addition to any other duly authorized DTPW representatives designated for the specific project.

1.04 REGULATORY REQUIREMENTS

- A. Permits.
 - 1. Permit(s) or written authorization from the DTPW Traffic Signals and Signs (TSS) Division are required before proceeding with any work pertaining to or that may potentially affect the Miami-Dade County Traffic Control System. Additional requirements regarding the performance and acceptance of the Work may be stipulated by the TSS Division.

B. Notification.

1. Provide written and verbal notification to the TSS Division:
 - a. Ten business days prior to commencement of any construction, modification or planned repair of any component within the Miami-Dade County traffic control system.
 - b. Five business days prior to the commencement of jobs that include overhead or underground work conducted as part of construction or maintenance projects within Miami-Dade County roadways or other roadways within the County whose traffic control devices are maintained by Miami-Dade County.
2. Provide verbal notification to the TSS Division:
 - a. On the scheduled date, prior to the commencement of scheduled work approved by the TSS Division.
3. Notification is provided at:

Department of Transportation and Public Works
Traffic Signals and Signs Division (Attn: WRITTEN NOTIFICATION/MAINTENANCE)
7100 NW 36th Street
Miami, FL 33166

Phone: 305-592-3580
4. Provide immediate verbal followed by written notification to the TSS Division upon the discovery of any damage, malfunctions, or irregularities pertaining to any Miami-Dade County Traffic Control System component.

C. Preliminary Product and Equipment Data Submittals.

1. Prior to installation, submit to Engineer for approval:
 - a. A completed "Submittal Data – Traffic Control Equipment" form listing, by FDOT APL numbers, all traffic control signals, devices, and hardware that will be used on the Project. Only current FDOT APL certified items that have also been approved and currently listed in the TSSQPL may be used.
 - b. One copy of the manufacturer's descriptive literature and technical data fully describing proposed non-structural equipment or material whose category or type does not require FDOT APL certification or TSSQPL approval.

1.05 LICENSES AND QUALIFICATIONS

A. Qualifications

1. Contractor license requirement.
 - a. Contractor must hold either a Miami-Dade County Electrical Contractor License or a State of Florida Certified Electrical Contractor License, or both.
2. Minimum qualifications for personnel supervising or performing work involving electrical Traffic Control Devices and related components or appurtenances.
 - a. All work must be performed under the direction of an employee of the Contractor who is a licensed Miami-Dade County Master Electrician, is present at the job site or able to respond within 2 hours of notification, and holds a current International

Municipal Signal Association (IMSA) Traffic Signal Field Technician Level II certification or higher. The Master electrician is required to attest to the quality and accuracy of the Work and its compliance with all applicable codes, standards and specifications; and when required by Miami-Dade County, perform a final verification inspection of the Work.

b. Minimum qualification requirements for maintenance personnel at the job site:

Maintenance Work Performed	Maintenance Personnel Qualification Requirements
All controller cabinet work including back panel wiring terminations; programming; testing; turn on; and troubleshooting.	1. Work must be performed by an employee of the Contractor that is a licensed Miami-Dade County Journeyman Electrician and that holds a current IMSA Traffic Signal Field Technician Level II certification or higher.
Electrical traffic control device work including cable and wire installation and splices; signal head installation; power service installation; ground rod testing; cable and wire testing; and field wiring terminations.	1. Work must be performed by or in the presence of and under the responsible charge of an employee of the Contractor that is a licensed Miami-Dade County Journeyman Electrician and that holds a current IMSA Traffic Signal Field Technician Level II certification or higher.

3. Training and Certifications for Temporary Traffic Control

a. The following certifications from FDOT approved providers are required:

- 1) Contractor's designated Worksite Traffic Supervisor must have a current FDOT MOT Advanced certification. Contractor's IMSA Traffic Signal Construction Technicians and Traffic Signal Field Technicians described in Paragraph "A.2" above, including the licensed Journeyman and Master electricians, must have a current FDOT MOT Intermediate certification or higher.
- 2) Contractor's designated Flaggers must have a current FDOT MOT Basic certification.

4. Provide to the TSS Division for review and approval an updated list of names of all personnel assigned to perform the work along with current copies of their required licenses and certification cards, before starting any work. In addition, ensure that these personnel have copies of their licenses and certifications available at the work site and ready to make them available to Department personnel if requested.

B. Qualified Technical Representative of the Control Equipment Manufacturer.

1. A qualified technical representative of the control equipment manufacturer is required to be present at the work site to assist in checking out the operation of the controller whenever:
 - a. A Contractor-furnished traffic signal controller is turned on; or
 - b. An existing Signal is revised requiring Contractor furnished control equipment.

1.06 TRAFFIC SIGNAL MAINTENANCE SERVICES

A. General.

1. Provide preventive maintenance for the traffic signal system as identified in the Contract Documents. Preventive maintenance inspection shall include verification that all detection is working, the traffic signal is cycling properly, the ventilation system is functioning and replacing filters. Basic traffic cabinet maintenance shall also verify power feed voltages, verify that the vehicle and pedestrian indications are functioning properly, test the effective functioning of pedestrian push buttons, and check hinges and door locks.
 2. Maintain a copy of the Preventive Maintenance Checklist Form approved by the Department at each traffic signal. The PM Checklist Form will be completely filled out during each maintenance inspection and during any time repairs are made to the traffic signal controller or any related equipment in the controller cabinet or the signal equipment at the intersection (detector loops, pedestrian heads, signal heads, lenses, lamps and signal poles, etc.).
- B. Records and Reports.
1. Intersection Records:
 - a. Inventory List: Maintain an inventory list of the intersection equipment including components in the controller cabinet at each location. The inventory list shall include the model, manufacture, serial number and quantity of each piece of equipment and installation date if available. The inventory list shall be continually updated and a copy shall be furnished to the County every three months.
 - b. Preventive Maintenance (PM) Checklist Form: Maintain a copy of the Preventive Maintenance Checklist Form approved by the TSS Division at each intersection. The PM checklist form shall be completely filled out during each routine maintenance inspection and during any time repairs are made to the controller or any related equipment in the controller cabinet or the signal equipment at the intersection (detector loops, pedestrian heads, signal heads, lenses, lamps and signal poles, etc.).
 2. Monthly Reports:
 - a. Provide a monthly activity report to the TSS Division by the fifth day of each month for the previous month in a format approved by the TSS Division. The report shall be provided both as a hardcopy and as an electronic file transmitted by e-mail or on a media storage unit (CD or USB Flash Drive) and must include the following:
 - 1) Activity Report.
 - a) Time and date the PM work was performed including the time arrived at the intersection, the number of hours spent for each repair, materials used, and a special listing of intersections with three or more calls in one month.
 - b) A complete record of all work that was performed on the traffic signal equipment during the previous month including the make, model, and serial number of any major components or other equipment that was newly installed at each intersection.
 3. Pending Repair List:
 - a. Provide a report of all pending repair work needed at each intersection.
- C. Routine Maintenance (Bi-annually).
1. Controller Cabinet.

- a. Controller Cabinet Mounting: Check the snugness of the nuts on the traffic signal cabinet anchor bolts, tighten, if necessary, being sure not to distort the cabinet door opening by over tightening.
 - b. Controller Cabinet Foundation Seal: If standing water or evidence of water is present inside the bottom of the cabinet, check the seal between the bottom of the foundation for deterioration, and report the need to reseal the cabinet foundation as necessary.
 - c. Door Gaskets: Check all door gaskets on the controller cabinet, service cabinet and any other enclosures of evidence of moisture or deterioration. Report the need to completely replace any gaskets showing signs of leaking or deterioration.
 - d. Cabinet Vents: Check the vents in both the cabinet door and above the door, or at the top of the cabinet to ensure that they are free of any foreign material. Replace air filter.
 - e. Cabinet Fan: Verify that cabinet fans(s) operate properly with a minimum of noise. Verify that the cabinet fan thermostat is set at 96 degrees.
 - f. Interior Light: Verify the proper operation of the cabinet's interior light.
 - g. Door Panel Harnesses: Check the harnesses leading from the main panel and auxiliary panels on the cabinet door to ensure they are not being pinched and do not bind against the cabinet door. Adjust, if necessary.
 - h. Hinges and Locks: Check the free movement of all doors, latching assemblies and locks on the controller cabinet, service cabinet and any other enclosures. Use a minimum of oil or spray lubricant and remove any excess.
 - i. Vacuum Cabinet: Blow or brush off shelves, terminal blocks and components and thoroughly vacuum the interior of the cabinet.
 - j. Insect or Rodent Infestation: Check for signs of ants, wasps or other insects or rodents within the cabinet. Use appropriate insect traps or powders if any positive findings are discovered. More serious problems shall be reported to the County.
 - k. Cabinet Grounding: Using appropriate equipment, check the resistance between AC and ground.
 - l. Service Connections: Verify the neutral, ground and power connections are secure in the controller and service cabinets.
 - m. Plug-In Components: Check that each plug-in component (rack mount detectors, relays, load switches, etc.) fits tightly and securely.
 - n. Ground Fault Receptacle: Verify the proper operation of the "Test" and "Reset" buttons on GFCI type outlets.
 - o. Intersection Records: Ensure that all intersection cabinet wiring diagrams are present and up to date.
 - p. Equipment Displays and Indicators: Verify that all LED and LCD displays and indications on all cabinet equipment are working properly.
 - q. Pre-Emption Devices: Test any pre-emption devices for proper operation.
 - r. System Telemetry: Check the operation of telemetry on controller display and network switch, if equipped, located in the cabinet. Report any malfunction immediately.
2. Traffic Signal Controller.
- a. Controller Operation: Manually place vehicle and pedestrian calls on each phase through the cabinet test switches or the controller keypad, to verify controller servicing of each active phase. Check controller logs for any faults that have occurred and make note for the file. Verify signal timing is current with timing sheet in cabinet. Confirm controller time and dates are correct. (Especially after day light savings time change).

- b. Conflict Monitor Unit: Verify time and dates are correct in any CMU with an internal clock.
- 3. Detector Operation.
 - a. Inductive loops:
 - 1) Verify the detection zones for each detector by observing the turn-on of the appropriate detection indicator as a vehicle passes over the detector loop(s). Check also that a call is placed on the correct controller phase.
 - 2) Retune loop detector amplifier at the cabinet as necessary.
 - 3) Check all detector loops for sealant deterioration, exposed wire, etc. and reseal the saw cut trench if necessary.
 - b. Video detection:
 - 1) Verify camera operation by monitoring the vehicle call on the video controller unit. Also, verify the calls going to the detector call page in the controller.
 - 2) Verify operation/activation of each area/lane of detection. Redraw detection zone as necessary and note any processor issues in cabinet.
 - 3) Check video camera positioning with monitor. Make note if alignment needed.
 - 4) Clean video detection camera lens as needed.
 - 5) Verify camera cables are secure and labeled for identification of phase/direction in cabinet.
- 4. Battery Backup System.
 - a. Check battery backup display for AC IN, UPS Output, and inverter indications. All should be on when utility power is supplied to the cabinet.
 - b. Check battery level and load level displays.
 - c. Test batteries. Make note if either is out of range.
 - d. Keep records of events recorded and total battery run time between maintenance checks to help indicate problem intersections.
 - e. Check all battery connections to ensure they are clean and secure.
- 5. Vehicular Signal Heads.
 - a. Perform ground level inspection of signal head alignment and MUTCD compliance.
 - b. Perform ground level inspection of all signal related signing. Note deficiencies for sign shop.
 - c. Review visors, lenses and lamps (all approaches).
 - d. Clean and inspect all visors and replace those that are cracked or broken. Tighten all screws securing visors to the signal head.
 - e. Clean and inspect all lenses and replace those that are damaged.
 - f. Inspect traffic signal housing for cracks or damage.
 - g. Check terminal block connections.
 - h. Check gaskets and mounting hardware and retighten as necessary.
 - i. Check under clearances for span wire mounted signals. Adjust height as necessary.
 - j. Check bushing on cable outlet and universal hangers and replace as necessary.
 - k. Clean back plates and check for cracks and/or missing screws.

- l. Call in aerial crew to fix critical deficiencies as soon as detected. Note non-critical deficiencies for aerial crew.
 - m. Check signals obscured by foliage and report it
6. Pedestrian Signal Heads.
- a. Clean and inspect all visors and lenses.
 - b. Inspect pedestrian housing for cracks or damage.
 - c. Check terminal block connections as applicable.
 - d. Check gaskets and mounting hardware and retighten as necessary.
 - e. Check pedestrian heads relative to the crosswalks they serve.
 - f. Visually inspect brightness of head and relamp as necessary.
 - g. Visually inspect for proper alignment and adjust as necessary.
7. Pedestrian Pushbuttons.
- a. Check housing for damage or signs of vandalism. Replace or tighten as necessary.
 - b. Verify operation is calling to correct phase in controller for all buttons.
 - c. Verify countdown operation for each head as applicable.
 - d. Check accompanying sign and repair or replace as needed. Make note if assigned to sign shop.
8. Signal Poles and Mast Arms.
- a. Check that each pole is electrically bonded.
 - b. Retighten bolt covers/caps.
 - c. Note and replace missing pole base access doors.
 - d. Clear drainage holes in pole bases if present.
 - e. Verify terminal strip connections are tight and labeled.
 - f. Check for missing pole caps and mast arm end caps. Note deficiencies and replace as required.
 - g. Check integrity of the grout between pole base and foundation. Note deficiencies and replace as required.
 - h. Inspect horizontal and vertical angles of arms
 - i. Handhole: Check integrity of splices in signal cable, check ground rod, clamp and ground wire connection
 - j. Handhole Covers: Adequately secure
 - k. Signal Cable: Check for wear at entrance of poles, brackets, signal heads and where it is to span wire.
9. Conduit System and Junction Boxes.
- a. Inspect junction box covers for cracks or misalignment. Note deficiencies and replace lid or box as necessary.
 - b. Clear debris and overgrowth around junction boxes. Check proper seating of junction and splice box covers. Remove debris as necessary. Replace or tighten cover bolts as necessary.
 - c. Check grounding and secure all straps and rod connections.
 - d. Check above ground conduit or junction boxes for damage. Replace damaged and/or missing conduit, weatherheads, or straps.
 - e. Check junction boxes or proper grade. Note any deficiencies for further action.
10. Traffic Signal Cable.

- a. Check all above ground signal cable splices. Resplice as necessary using waterproof connectors or splice kits.
 - b. Visually inspect the condition of the above ground traffic signal cable for dry rot, nicks, cuts, or other damage to the outer jacket insulation. Ensure cable is not rubbing against cable outlets or sharp edges. Note and repair any deficiencies.
 - c. Check all connections are tight and terminated correctly.
11. Span Wire Signals.
- a. Check guy wire, anchors, guard, span sag, cable lashing, supporting brackets and hardware. Also check for bonding
 - b. Check condition of strain vises, if applicable.
 - c. Visually inspect each upper and lower tether span wire for damage or deterioration and for excess sag. Adjust as necessary.
 - d. Inspect all connecting span wire hardware. Tighten or replace as necessary.
 - e. Inspect guy anchors for proper attachment and/or damage.
12. Internally Illuminated Street Name Signs (IISNS).
- a. Check operation of LED and/or bulbs for internally illuminated signs.
 - b. Check mounting hardware and tighten as necessary.
 - c. Institute a routine night time check of illuminated street name signs at all signalized intersections month and submit a report and an estimate for any repairs necessary to the County for approval or to create a work order.
 - d. Verify that the IISNS is adequately connected to frame, clamp and brackets, and no panel is broken or missing.
 - e. Establish a process for checking that all regular and internally illuminated street name signs (IISNS) are adequately connected to frame, clamp and brackets and properly tightened and secured to the signal mast arm. An inspection and maintenance program shall be established to avoid the frequency of signs being blown free of their connection to the signal mast arm during high winds, resulting in calls for unscheduled/emergency work.
13. Safety Lighting (Night Check).
- a. Institute a routine night time check of safety lights and illuminated street name signs at all signalized intersections every other month and submit a report and an estimate for any repairs necessary to the TSS Division.
14. Intersection Walk-Around (included as a part of Routine Maintenance).
- a. Remove any easily removable, unauthorized signs, stickers and posters and note any graffiti existing on signal poles, cabinets, or equipment. Notify TSS Division of any graffiti observed on traffic signal equipment.
 - b. Report significant areas of rust on cabinet exterior and signal poles to TSS Division staff.
 - c. Signal Heads: Verify that all vehicle and pedestrian heads properly display all indications and the signals are not damaged. Verify the alignment of all heads to the intended direction. Verify that all back plates, visors and doors are visibly secure. Report any landscaping that restricts the view of signal heads to the City (Signal heads should be visible from 250 feet).
 - d. Check all pedestrian push buttons (and bicycle push buttons where provided) and signals by hand to ensure that they are securely mounted and operating properly. Replace damaged or malfunctioning buttons with larger size ADA type buttons as necessary.

- e. Internally illuminated street name signs (IISNS): Verify that the IISNS is adequately connected to frame, clamp and brackets, and no panel is broken or missing.
- f. Check all detector loops for sealant deterioration, exposed wire, etc.

D. Bi-Annual Maintenance.

- 1. Video Detection System:
 - a. Insure proper operation.
 - b. Check video camera mounting hardware.
 - c. Inspect camera head for damage.
 - d. Clean camera lens.
- 2. Signal Lenses and Signs: Clean and polish all signal lenses and reflectors, align all signal heads and adjust all mast arm mounted street name signs.
- 3. Terminal Connections: Test, semi-annually or following any wiring repair, each terminal screw by backing off slightly then retightening to confirm that it is secure.
- 4. Pull Boxes: All pull boxes for structural defects, insect or rodent infestations, and properly secured lids.
- 5. Meter/Service Disconnect: Check physical condition of meter/service disconnect
- 6. Verify timing charts to controllers. If they are not correct contact TSS Division staff to verify differences.

1.07 MANUFACTURERS' WARRANTY PROVISIONS

A. General.

- 1. Manufacturer and Contractor costs associated with transferring, providing, and delivering equipment warranties, requirements, terms, and conditions are part of the Work and are included in the overall cost of the Work or where available, in the pay item for the equipment or construction feature utilizing the equipment.
- 2. Secure all warranties provided by the equipment manufacturer for the specific equipment included in the Contract. Ensure that all warranties are fully transferable from the Contractor to the owner of the equipment within the project limits. Ensure that warranties cover defects for at least the duration specified in the Contract Documents from the date of Final Acceptance in accordance with the applicable Contract Provisions.
- 3. Transfer warranties upon Final Acceptance. Document all warranties and warranty transfers and provide a copy to Engineer.
- 4. Contractor's responsibility for warranty repairs, warranty replacement, troubleshooting, or other costs associated with repair or replacement of traffic control signals and devices within the Contract's project limits will terminate 90 days after Final Acceptance.

B. Terms and Conditions.

- 1. Ensure that the terms and conditions of warranties are documented by the manufacturer for equipment submittals on construction projects. Include terms for a specified service performance with provisions for repair parts and labor, or for replacement.

2. Ensure that warranties and guarantees are consistent with those provided as customary trade practices; or as otherwise specified in the Plans, Standard Specifications, Supplemental Specifications or Special Provisions.
3. When a warranty is available, ensure that a written warranty accompanies the manufacturer's billing invoice. Ensure warranties require the manufacturer to furnish replacements for any part or equipment found to be defective during the manufacturer's warranty period at no cost to the owner of the equipment within the project limits.
4. Ensure that manufacturer's and supplier's warranties and guarantees are transferable to the agency or user that is responsible for traffic signal maintenance, are continuous throughout their duration and state that they are subject to such transfer.
5. Ensure the manufacturer will repair any faulty equipment during this period at no charge to the Department for parts, labor or shipping to and from the factory.

1.08 MEASUREMENT AND PAYMENT

A. SUBMITTALS

1. Contractor must submit a detailed schedule of values along with a work progress schedule listing all work to be performed every calendar month through May 31, 2018.
2. Submit a monthly progress report the 5th of every month followed by an invoice

B. BASIS OF PAYMENT

1. Payment will be prorated by the number of actual, approved, intersection traffic signal maintenance inspection performed for the month and using 1,323 as the denominator. The final invoice would be for the remaining of the lump sum minus any liquidated damages. All payments are subject to retainage.
2. Contractor to bid the entire project as a lump sum under Pay Item 600-1-M, Traffic Signal Preventive Maintenance.

PART 2 PRODUCTS

2.01 EQUIPMENT AND MATERIALS.

A. General.

1. Ensure that the traffic signal equipment, materials, and work meet the requirements of the Plans and Specifications. All equipment furnished must be new and meet the requirements of the following:
 - a. Underwriter's Laboratory Incorporated (UL)
 - b. Electronic Industries Association (EIA)
 - c. National Electric Code (NEC)
 - d. American Society of Testing and Materials (ASTM)
 - e. American National Standards Institute (ANSI)
 - f. International Municipal Signal Association (IMSA)
 - g. National Electrical Manufacturers Association (NEMA)

2. Use only compatible units of any one item of equipment, such as signal heads, detectors, controllers, cabinets, poles, signal system or interconnection equipment, etc.
 3. Use only new equipment and material.
 4. Provide a complete operable signal installation as specified regardless of any failure of the Department to discover or note any unsatisfactory material.
 5. Traffic control signals and devices must be currently approved and listed on the FDOT APL and the DTPW TSSQPL. Contractor may seek acceptance and inclusion of new traffic control signals and devices in the TSSQPL however; doing so will not exempt Contractor from meeting all requirements of the Contract Documents including timely prosecution of the Work.
- B. Hardware and Fittings Used for Installation.
1. Ensure that all assembly hardware, including nuts, bolts, external screws and locking washers less than 5/8 inch in diameter, are Type 304 or 316 passivated stainless steel. Use stainless steel bolts, screws and studs meeting the requirements of ASTM F593. Use nuts meeting the requirements of ASTM F594. Ensure all assembly hardware greater than or equal to 5/8 inch in diameter is galvanized. Use bolts, studs, and threaded rod meeting the requirements of ASTM A307. Use structural bolts meeting the requirements of ASTM A325.
 2. Use high-strength steel anchor bolts and U-bolts, having a minimum yield strength of 55,000 psi and a minimum ultimate strength of 90,000 psi.
- C. Galvanizing: Meet the requirements of FDOT Section 962 when galvanizing for fittings and appurtenances for all structural steel (including steel poles).
- D. Environmental Specifications: Ensure system electronics intended for installation outdoors or within a roadside cabinet perform all required functions during and after being subjected to the environmental testing described in National Electrical Manufacturers Association (NEMA) TS2, 2.2.7, 2.2.8, and 2.2.9.

2.02 DEPARTMENT-FURNISHED EQUIPMENT INSTALLED BY CONTRACTOR.

- A. Where the Contract Documents require installation of Department-furnished equipment, the Department will turn over such equipment to Contractor when the construction progress allows or as designated in the Contract Documents.
- B. The Department will test and certify the equipment to be in proper condition and ready to use and will bear the costs of correcting any defects in the equipment prior to pick-up by Contractor. Engineer will coordinate the pick-up and installation of the equipment.
- C. Maintain the equipment in proper operational condition after pick-up at no cost to the Department, until either Final Acceptance or the equipment is returned to the Department.

PART 3 EXECUTION (NOT USED)

END OF SECTION 600ME