

EXHIBIT "A"

SCOPE OF SERVICES

FOR

2023/2028

DISTRICT 4 TRAFFIC SIGNAL MAST ARM INSPECTION SERVICES

FM NO.: 432886.2.72.01

**WORK PROVISIONS AND SPECIFICATIONS
FOR DISTRICT 4 TRAFFIC SIGNAL MAST ARM
INSPECTION SERVICES
TABLE OF CONTENTS**

	PAGE
1.0 PROJECT OBJECTIVE	2
2.0 GENERAL DESCRIPTION.....	2
3.0 PERSONNEL REQUIRMENTS.....	4
4.0 WORK ITEMS.....	5
5.0 QUALITY CONTROL.....	16
6.0 MATERIALS.....	18
7.0 WORK SCHEDULE AND PROGRESS REPORTS.....	19
8.0 MISCELLANEOUS.....	20

1.0 PROJECT OBJECTIVE

- 1.1** Traffic Signal Mast Arms (TSMA) located within District 4 owned by the Florida Department of Transportation, hereinafter called the Department, excluding structures under the responsibility of the I-595 Express Concessionaire Agreement, are to be inspected in compliance with Federal and State regulations. For this scope, an inspection will be required for all steel structure types that support any traffic signal. Regulations and guidelines for the inspection of bridges will be applied to all Traffic Signal Mast Arms. Reference should be made to the following when applicable; Florida Statutes; Safety Inspection of Bridges; and State of Florida Department of Transportation Rules, Chapter 14-48, F.A.C., Bridge Inspection Standards.

2.0 GENERAL DESCRIPTION

- 2.1** The contract period shall be sixty (**60**) months and shall begin from the date of the written notice to proceed issued by the Department. Traffic Signal Mast Arms are Ancillary Structures and meet the criteria established in the AASHTO Transportation Glossary and Florida Statutes. The Traffic Signal Mast Arms to be inspected are located on State maintained roadways within the limits of District 4. The frequency of inspections shall comply with the Bridge and Other Structures Inspection and Reporting Procedure.

- 2.1.1** The consultant shall perform hands on inspection services on the foundation, vertical column, and moment connection components. For the portion of the horizontal member over traffic, binocular inspection will be allowed.

2.2 Inventory

- 2.2.1** For this contract a Bridge Management (BrM) structure number will refer to a specific location. Each location may have multiple Traffic Signal Mast Arms; payment will be per Traffic Signal Mast Arm not per location. A Traffic Signal Mast Arm inventory will be provided by the Dept., see Section 6.0. The quantity is dynamic; therefore, the totals listed below are estimated. Interim inspections will be on an as needed basis for Traffic Signal Mast Arms with low condition ratings or as deemed necessary by the Project Manager. Interim inspections will be on an as needed basis for Traffic Signal Mast Arms for accident inspections or a newly found structural defect or as deemed necessary by the Project Manager. Initial Inspections will be on an as needed basis for newly built structures which require Construction Pre-Acceptance Inspection and punch list submittals. Initial Inspections will generally require the inspection performed and construction deficiency punch list report within two weeks of notification. An Initial Inspection may also be issued to perform

an inspection of a Structure not previously inventoried.

2.2.1.1 Routine Inspections: Estimated based on Thirty-Eight hundred and Seventy-four **(3874)** TSMAs at twelve hundred thirty-five **(1235)** locations.

2.2.1.2 Initial Inspections: Four hundred **(400)**

2.2.1.3 Interim inspections: Fifty-five **(55)**

2.2.1.4 Special inspections: Fifty-five **(55)**

2.3 State and National Publications

2.3.1 All services to be performed by the Consultant shall conform to the following state and national publications covering bridge and Ancillary Highway Structures inspection standards of practice.

2.3.2 National Bridge Inspection Standard Code of Federal Regulations 23 Highways, Part 650, Subpart C

2.3.3 The Manual for Bridge Evaluation, Third Edition, with 2022 Interim Revisions American Association of State Highway & Transportation Officials (AASHTO)

2.3.4 Bridge Inspector's Reference Manual (BIRM) U.S. Department of Transportation/Federal Highway Administration

2.3.5 Manual on Uniform Traffic Control Devices (MUTCD) U.S. Department of Transportation/Federal Highway Administration

2.3.6 FDOT Design Standards

2.3.7 Utility Accommodation Manual (FDOT)

2.3.8 Bridge Management System Coding Guide (FDOT) Revised (February 2022)

2.3.9 Bridge & Other Structures Inspection & Reporting Procedures (FDOT) Revised (January 2021)

2.3.10 FDOT Bridge Inspection Field Guide, Bridge Management, and agency Defined Elements

2.3.11 Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges – Federal Highway Administration

2.3.12 Loss Prevention Manual, State of Florida Department of Transportation

2.3.13 Bridge Work Order Handbook – Provides instructions for the processing of data

collected by Bridge Inspectors

2.3.14 State of Florida Statute 335.074, Safety Inspection of Bridges

2.3.15 Guidelines for the Installation, Inspection, Maintenance and Repair of Structural Supports for Highway Signs, Luminaries, and Traffic Signals U.S. Department of Transportation/Federal Highway Administration (USDOT / FHWA)

3.0 PERSONNEL REQUIREMENT

3.1 A qualified individual must be at the Traffic Signal Mast Arm (TSMA) site to always supervise inspection activities. To be qualified, an individual must be a Florida Registered Professional Engineer and experienced in the inspection of bridges (or similar structures) according to the National Bridge Inspection Standards or be confirmed officially by the Department as a Certified Bridge Inspector. Qualifications for certification as a bridge inspector are stated in the Rules of the Florida Department of Transportation, Chapter 14-48.07, F.A.C. The qualified individual must also have successfully completed the NHI course Inspection and Maintenance of Ancillary Highway Structures FHWA-NHI-130087.

3.2 An organizational chart shall be submitted to the Department for approval. The organization chart shall include the number and names of key personnel, team size, and which individuals are assigned to the various work tasks. Any changes from the original organization chart must be submitted to the Department's Project Manager for approval. The notification must be in writing and within seven (**7**) calendar days of the change.

3.3 Each final inspection report shall be sealed in accordance with Florida Statute 471.025 by a Florida Registered Professional Engineer, which confirms the accuracy and completeness of all the report contents. This individual must have successfully completed the NHI course Inspection and Maintenance of Ancillary Highway Structures FHWA-NHI-130087.

3.4 The Consultant's work shall be directed and performed by the key personnel identified in the Abbreviated Technical Proposal as presented by the Consultant. Due to the nature and scope of the required services, it may be desirable for the Consultant to subcontract portions of the work. The Consultant shall be authorized to subcontract these services under the provisions of this agreement.

3.5 Subcontracting firms and the work they will perform shall be identified in the Abbreviated Technical Proposal. The subcontracting firms must be approved in writing and qualified by the Department prior to initiation of any work. Any changes in the subcontracting firms or the work they will perform as indicated in the Consultant's proposal shall be subject to review and approval by the Department.

3.6 The qualified inspector performing the inspection must be experienced in Non-Destructive Testing (NDT) procedures including Dye Penetrant, Magnetic Particle, Ultrasonic testing, D-meter and Borescope. These methods must be used while performing an inspection to confirm or locate a defect. The Consultant shall also have available personnel who are certified by the American Society for Nondestructive Testing (ASNT) Level II as a minimum who may be called upon to perform non-destructive inspection methods and prepare a detailed expert evaluation of a defect that would be paid for under Optional Services.

4.0 WORK ITEMS

4.1 Field Inspections

4.1.1 Field inspections must be conducted in accordance with the publications listed in this document. The Professional Engineer or Certified Bridge Inspector on site shall be responsible for the detection of all deficiencies and the determination and recording of the structure condition which must include the personal inspections of all significant deficiencies. This individual is responsible for assuring the accuracy and completeness of all data and records compiled because of the Consultant's field activity. This individual is also responsible for ensuring that Traffic Signal Mast Arm numbers are in place and legible on each sign.

4.1.2 Every visible surface of all members of each Traffic Signal Mast Arm must be examined. Members that cannot be examined because of debris, vegetation, etc., are to be cleaned if the effort involved is not excessive. Excessive effort is that which would require more than two **(2)** hours for the inspection team to perform. The Department Project Manager is to be consulted if a member cannot be examined. Traffic Signal Mast Arm members and elements that cannot be inspected prior to report publication must be documented in the report as such, along with the reason for not inspecting.

4.1.3 Where deficiency dimensions are documented, the actual width, length and location on the member is to be recorded in English units.

4.1.4 The Consultant shall not permit any Traffic Signal Mast Arm inspector to perform consecutive routine inspections on the same Traffic Signal Mast Arm. If this occurs, the Consultant shall repeat the inspection using another inspector at no charge to the Department.

4.1.5 If by field observation, deficiencies are sufficiently critical to warrant immediate and substantial traffic restrictions, the Department Project Manager or designated representative must be immediately verbally notified. Verbal notification must be confirmed with written notification within 24 hours.

4.1.6 The BrM Field Manual for Inspectors will be the governing document for element

condition state evaluation. The method of structure location and component numbering that is suggested in the BrM Field Manual will not be followed but rather the method described in Section 4.3 and 4.4 of this scope will be followed.

4.1.7 Color photographs and or sketches will be used to illustrate at least one typical example of a severe or common deficiency. When deficiencies are recommended for repair, one photograph illustrating a typical example must be taken. When a photograph is taken, an object that provides a sense of scale such as a ruler should always be included in the photograph. The essential features of a deficiency shall be emphasized, by marking arrows or dimensions directly on the photograph. The date the photograph was taken and the overhead sign number shall always be marked on the front. Each copy of the report will have color photographs. Sketches or photos should be used to indicate the location of deficiencies. All deficiency photos will be included in BrM report format. All other photo's not relating to deficiencies will remain in the addendum

4.2 Scheduling

4.2.1 The contract service period shall be sixty-four (**64**) months and shall begin from the date of the written notice to proceed issued by the Department. The cycle of inspections will be for those structures requiring inspection over a sixty (**60**) months period plus four (**4**) months for processing of outstanding inspection reports and closeout of the contract.

4.2.2 All inspection locations will be identified by roadway section number. The direction of inventory of all sections is either south to north or west to east. South to north sections will take precedence, at an intersection of two state roads. This procedure will alleviate any confusion relating to structure identification, numbering, and hierarchy of inventory route.

4.2.3 Each new location will be assigned a unique identification number (Structure Number). It is the consultant inspector's responsibility to identify each new structure location as the inspections proceed through a given roadway section. If new Traffic Signal Mast Arms are identified as the inspections proceed along a roadway section, that is; they were not identified in the original inspection cycle, they will be added to the inventory by assigning to that location the next sequential number and it will be inspected immediately.

4.3 Identifying the Inspection Starting Point (Control Vertical)

4.3.1 Most Traffic Signal Mast Arms will be at intersections (locations) where more than one Traffic Signal Mast Arm will be present. To achieve consistency at all locations, the following method of identifying each Traffic Signal Mast Arm within a location will be followed.

Each location will be assigned a unique identification number (Structure Number). Therefore, each Structure Number could include one or more Traffic Signal Mast Arms. If there is more than one Traffic Signal Mast Arm at a given location, one of the Traffic Signal Mast Arms will be designated as the Control Vertical (CV). Locating the CV is discussed in section 4.3.2. The Structure Number will be painted on this CV Traffic Signal Mast Arm and all other Traffic Signal Mast Arms at that location will be identified by their clockwise proximity to the CV.

- 4.3.2** Each location that contains more than one Traffic Signal Mast Arm will have a Control Corner (CC) which is used to locate the CV. Establishing the CC at each structure location is determined by section hierarchy. South to North roadway sections have hierarchy over West to East roadway sections. Inspections are to be performed following the direction of inventory on all roadway sections. The first intersection corner on the right side that is arrived at is the CC. If there is a Traffic Signal Mast Arm located at the CC, it will be designated as the Control Vertical (CV) or Vertical One (V1) for that location (structure number). Additional Traffic Signal Mast Arms at that location will be designated as they appear following a clockwise rotation around the location (V2, V3, V4, etc.). For instance: in the typical structure location with four mast arms, each on a corner of the intersection the CV (V1) in the South to North roadway section will always be located at the SE corner. V2 will be at the SW corner. V3 and V4 will be located at the NW and NE corners respectively. In the typical structure location (4 mast arms) in a West to East roadway section, the CV will always be located at the SW corner and the other verticals will be designated in the same manner. In either case if there are no mast arms at the SE or SW corners the inspection mast arm identification process still begins at those locations and proceeds in a clockwise direction until a mast arm is encountered. The first pole encountered will be the CV (V1). There are exceptions to this rule. The 1-95 on/off ramps will be inspected based on direction of ramp inventory. There are also atypical mast arm arrangements, but all are inspected using the Control Corner - Clockwise method to establish the CV. Once the CV has been identified the inspection(s) can begin and will proceed in a clockwise direction.

4.4 Structure and Component Numbering

- 4.4.1** A structure number represents a location. The location may have one individual Traffic Signal Mast Arm or multiple Traffic Signal Mast Arms.
- 4.4.2** The control vertical (CV) will have the six-digit structure number painted in a location that can be viewed from the controlling roadway in both directions. The location of the numbers will be approximately five **(5)** feet above the base plate in white legibly stenciled numbers on black or green verticals and

in black paint on galvanized verticals. Surface preparation and paint selection should be of sufficient quality that the numbers remain legible for one inspection cycle **(5 years)** and only the CV will be painted. Global Positioning System (GPS) coordinates will be required only at the CV of each structure number location. GPS coordinates are to be verified at each initial and routine re-inspection.

4.4.3 Anchor numbering will be in accordance with the BrM Inspector's Field Manual Anchor Bolt Numbering System. District 4 will deviate from the manual concerning the numbering of the Horizontals (arms) in the case of double mast arms. Horizontals will be numbered from left to right and will only be identified as H1 and H2. Left and right are established by standing at the Vertical and facing the intersection. The Horizontal on the left is H1. The Horizontal on the right is H2. This system is repeated around the intersection.

4.4.4 All references to Horizontal deficiencies will include the Vertical identification (example: V2-H2 would represent the right arm on Vertical #2). Vertical-Horizontal connection plate fasteners will be numbered in two separate left and right groups. Left and right are established based on the front or arm side of the plate. The individual groups of fasteners will be numbered from the top down.

4.4.5 For structures or elements that have been replaced since the last inspection, follow the numbering procedure outlined below:

4.4.5.1 If all the structures at an intersection are replaced assign a new structure number.

4.4.5.2 If some structures are replaced and some remain keep the structure number and the year built will be that of the oldest structure. Include a structure note to document the year built and project number that replaced the structure or element (foundation, vertical and/or horizontal). Any elements that were replaced will have "A" added to the element number. For example, if only V2 is replaced the new vertical will be V2A and the other elements of that structure will remain F2 and H2. If all the elements of V2 including the foundation are replaced they will be F2A, V2A and H2A.

4.5 Inspection Procedures

4.5.1 A hands-on inspection of the foundation and structure base plate (lower connection) will include the tightness and condition of all anchors; hold down nuts, leveling nuts, (see 4.5.11) base plate to vertical weld and condition and functionality of the grout pad. This effort will include the removal of all anchor bolt covers and reinstallation of covers by the consultant. Grout pads will be sounded by the inspector with a hammer to determine if the grout is solid or

only a grout ring is installed and report the findings. Grout pads that break up during the inspection process shall be removed to the extent practical to allow inspection of the foundation bolts and nuts. All existing drainage ports (weepholes) must be cleared. If there is standing water inside the pole and corrosion staining on the grout pad, the Consultant will provide the department Project Manager with a recommendation request to remove the grout pad. Traffic Signal Mast Arms equipped with vermin guards will require the vermin guard to be removed so leveling nuts can be checked for tightness. Vermin guards will be reinstalled by the consultant. Hand hole covers will be removed by the inspection personnel for a visual inspection to look for obvious safety concerns.

- 4.5.2** As a safety precaution the Department recommends that all inspection personnel utilize a personal non-contact AC voltage detector to check for the presence of errant current in Traffic Signal Mast Arms during inspections.
- 4.5.3** A hands-on inspection of the entire length of the Vertical (surface area and welds) is required. A hands-on inspection of the upper connection(s) will include all welds, plates, and fasteners and that portion of the horizontal arm(s) that can be reached without extending over traffic lanes. The inspection of the remainder of the Horizontal (arm/arms) will be performed with vision enhancing equipment (binoculars) of sufficient quality, resolution, and magnification to detect small deficiencies in the mast arm sections. Special attention will be given to the slip joint (if present) for any indication of stress, cracking, or deterioration (missing fasteners, corrosion staining, movement, etc.). Deficient paint systems will also be reported. If significant deficiencies of any kind are suspected or detected, a hands-on inspection will be required.
- 4.5.4** During the inspection of the horizontal member a "cursory" look at the signal attachment devices will be performed. If any irregularities are detected the consultant will notify the maintaining agency and the Department immediately. This provision will apply to any additional attachments to the structure not specifically noted, examples being but not limited to solar panels, cameras, sensors, and street name signs.
- 4.5.5** Where deficiency dimensions are documented, the actual width, length and location on the member should be recorded in English units.
- 4.5.6** The Consultant shall not permit any inspector to perform consecutive routine inspections on the same structure. If this occurs, the Consultant shall repeat the inspection using another inspector at no charge to the Department.
- 4.5.7** Color photographs and sketches should be used to illustrate one typical

example of a severe and/or common deficiency. When deficiencies are severe enough to warrant immediate repair, one photograph illustrating a typical example must be taken. When a photograph is taken, an object that provides a sense of scale such as a ruler should always be included in the photograph. The essential features of a deficiency shall be emphasized, by marking arrows or dimensions directly on the photograph. The date the photograph was taken, and the Traffic Signal Mast Arm location number shall always be marked on the front. Each copy of the report will have color photographs. Sketches should be used to indicate the location of deficiencies.

- 4.5.8** As part of the inspection procedures all loose anchor bolt hold down nuts, lock nuts and leveling nuts (when accessible) will be tightened in accordance with Department standards, documented in the inspection report and Traffic Signal Mast Arm survey.
- 4.5.9** Arm to Pole Connection Plate Fit: The inspector will utilize feeler gauges to determine the extent of contact between the connection plates and provide a sketch. If the connection plate does not have the minimum faying surface area per AASHTO then the inspector must include a work order recommendation to correct the deficiency.
- 4.5.10** When potential failure conditions exist that could endanger persons or property, the structure should be considered as critical. In this situation, the Department Project Manager must be notified immediately so that appropriate action can be taken.
- 4.5.11** The Certified Bridge Inspector will be responsible for performing the following activities as part of the inspection process:
 - 4.5.11.1** Where it is required to remove the coating from the vertical or horizontal members for inspection purposes the inspector will include a work order recommendation for spot painting.
 - 4.5.11.2** If the Foundation anchor bolts and nuts exhibit active corrosion the inspector shall clean to determine the amount of section loss and then coat the bolts and nuts with cold galvanizing.
 - 4.5.11.3** Any loose leveling nuts, anchor nuts or jam nuts discovered during inspection shall be reasonably tightened. The inspector will include a work order recommendation for proper torquing loose bolting and replacement of missing hardware.
 - 4.5.11.4** Loose high strength bolts (at the moment connection, box section connectors, and primary element connections) will be tightened to the

extent possible by the inspector but will not be tightened to a specified torque value. High Strength hardware found to be loose will be identified for replacement as a work order recommendation. The size and grade of the hardware must be documented in the report.

- 4.5.11.5 The inspectors will not replace missing high strength bolts and nuts. Missing High Strength hardware will be identified as a work order recommendation to install new hardware. The size and grade of the hardware must be documented in the report.

4.6 Inspection Reports

- 4.6.1 The Consultant will develop a signed and sealed inspection report and enter it into the Electronic Document Management System (EDMS) following the District IV Structures Management Document Guidelines (EDMS). Each report will be presented in the BrM format and contain all documentation specified by this agreement and must meet the requirements of the Bridge & Other Structures Inspection & Reporting Procedures Procedure.

- 4.6.2 Each signed and sealed report must be electronically submitted to the Department in EDMS for review no later than forty-five **(45)** calendar days after completion of the field inspection. Send an email notification to the FDOT Project Manager on the day the reports are ready for review including a list of the EDMS document numbers. The Department will send an email notification within seven **(7)** calendar days of records that do not conform to the specifications of this agreement or that are in error. The corrected signed and sealed reports must be uploaded into EDMS within seven **(7)** calendar days. The original EDMS document must be requested for deletion. The final report will be signed and sealed and must be received by the Department within sixty **(60)** calendar days after completion of the field inspection. The PDF inspection report, the PDF of the photo inventory, a PDF of the plans (if applicable) and any other inspection documents and relevant correspondence must be entered into EDMS. After final acceptance of the inspection report the Consultant will follow the Department's procedures for QC and Publish all documents in EDMS. Where applicable, the Consultant will transmit hard copies of the inspection reports, work orders and FARC sheets to the local maintaining agency along with a submittal letter approved by the Department Project Manager. The documents may be delivered electronically if requested by the maintaining agency.

- 4.6.3 A Traffic Signal Mast Arm inspection report must provide a comprehensive description of all traffic signal mast arm deficiencies and state probable causes of the deficiencies, specify required corrective action, and contain

an evaluation of corrective action performed since the last inspection.

4.6.4 A minimum of four **(4)** inventory photos are required for each structure number. In almost all cases the inventory photos will highlight the Traffic Signal Mast Arm designated as V1. Exceptions to this rule will be locations containing Traffic Signal Mast Arms of different design due to replacement or functionality. Each different design, at the location, will require two additional standard photos.

- The standard inventory photos for a location with a common Traffic Signal Mast Arm design are as follows: One overall photo, taken at sufficient range, will show the entire intersection. This photo will be referred to as the "Structure Inventory Photo". The photo will be taken from the controlling roadway (direction of inventory) and will typically have the mast arm designated as V1 in the foreground.
- The second photo will be of the mast arm identified as V1 (CV). The photo will be taken from the approach face and at a range that will include the entire structure. This photo will be captioned "V1 - Approach View".
- The third photo will be taken from the backside of V1 clearly showing the attachment types of all signals and signs.
- The fourth photo will be taken of the foundation showing anchor connections, (dust caps off) grout pads and related details. Additional photos may be taken at the consultant's discretion. All inventory photos will be uploaded to BrM Media - Structure Level.

4.6.5 In addition to the information required by BrM, all reports shall contain additional inventory data in the media section of BrM that includes Traffic Signal Mast Arms data and sketches.

4.6.6 Under the structure notes section of the report include the basis for the assumed year built. The year built will be based on date of post construction inspection if known. If that is unknown use final acceptance date. If that is also unknown add one year to the year on the design plans. If the year built can't be determined enter 1900 as the year built with a note that year built is unknown and that plans aren't available. If plans are available include a note that it is available at the District 4 Structures Maintenance office and the FIN/Project number. If there is a known FDOT financial project number associated with constructing the structure enter it into the drop down for "Related FINPROJ Number". For initial inspections include a note that this is the initial inspection in the

inspection notes section. If a project ID tag is on the structure, then include the tag information in the structure notes.

- 4.6.7** The structure dimensions of each pole must be recorded in the structure notes. The inspector must measure and record the height of the vertical element from the top of the pole to the top of the base plate. Also, estimate and report the approximate length of the horizontal arms.
- 4.6.8** Thickness measurements are to be taken in any areas with corrosion causing section loss and amount of section loss recorded in the report element notes.
- 4.6.9** Maintain the computer file referred to as the Comprehensive Inventory Database (CID) file, which contains data items pertaining to a structure's identity, condition, and description. The CID data shall be accurate and complete. Data that is changed in the CID must be highlighted or circled in the report.
- 4.6.10** The inspector will determine if the structure is following DME MEMORANDUM No. 15-03 (Installation of Grout Pads on Ancillary Structures with Excessive Bolt Standoff Distance) and record the details of the findings in the Structure Notes.
- 4.6.11** The Structure Notes must identify the reason an NBI rating is 5 or below.
- 4.6.12** The Structure Notes must identify whether the structure is or is not included in a Maintenance Agreement, the Agency represented in the agreement, the date of the agreement and contact information (contact person, phone, address, and email address).
- 4.7** **Traffic Signal Mast Arm Survey (TSMAS) and Traffic Signal Mast Arm Database (TSMAD)**
- 4.7.1** The Department will provide the consultant with a Traffic Signal Mast Arm information/characteristic field survey which will be completed for each individual Traffic Signal Mast Arm. The consultant will be responsible for entering all field collected data into an Excel spreadsheet that will be provided by the Department. An updated spreadsheet will be electronically sent to the Department at the beginning of each month.
- 4.8** **Maintenance of Traffic**
- 4.8.1** The safety and mobility of the motoring public is always at the forefront of our planning. Because of the nature of this work, maintenance of traffic (MOT) is a major issue. An effort should be made to minimize

lane closures while still providing a safe work environment. However, we realize that in many locations lane closures will be necessary. In these cases, traffic control must be in accordance with the USDOT/FHWA Manual on Uniform Traffic Control Devices, and the Department's Roadway and Traffic Design Standards.

4.8.2 A request for authorization to close a traffic lane for a non-emergency lane closure must be made using following the district lane closure request process and must be requested **(14)** working days prior to the closure date.

4.8.3 The Consultant firm will provide an MOT plan for this project. The plan should include:

- The general MOT philosophy for the project,
- Listing of MOT providers (if necessary),
- Innovative plans to minimize the need for lane closures and still provide a safe work environment (the use of drones is not approved on this project),
- The specific MOT scheme(s) that will be utilized (taken from the FDOT Standard Specifications),
- The estimated number of setups that will be required for each scheme.

4.8.4 Payment for MOT will be incidental to unit cost of Traffic Signal Mast Arms inspections.

4.9 Recommended Mast Arm Deficiency Reporting Techniques

4.9.1 Always keep in mind that others must determine if and by what means work should be performed based on the information that the inspector provides in the report. Pay close attention to detail and take enough pictures to convey a realistic depiction of a deficiency.

4.9.2 Always include an overview picture of the Traffic Signal Mast Arm structure with an arrow indicating the location of the deficiency. (Inventory photos can be used for this purpose).

4.9.3 When reporting missing, loose, or corroded nuts and bolts always provide the deficient quantity and the total quantity (Example: 2 of 8 loose nuts.)

4.9.4 Always indicate if a deficiency is new or previously reported. If previously reported, indicate when it was reported for the first time, if possible and provide an assessment of the current condition.

4.9.5 Be specific when documenting section loss, providing the percent of remaining sections and giving actual measurements whenever possible.

- 4.9.6** Mark area of deficiency with paint or ribbon. (Limit use of paint in highly visible areas.)
- 4.9.7** Indicate if a deficiency is over traffic lanes and include an estimate of maintenance of traffic (MOT) needs. The inventory photo(s) may give an indication if MOT will be required.
- 4.9.8** If there is a structural bolt deficiency, provide bolt diameter, grip, and bolt length.
- 4.9.9** If column cap is missing, provide column outside diameter and wall thickness at the top if there is a taper.
- 4.10** **Identified Optional Services**
- 4.10.1** These services are optional and will not be performed unless needed. If these services are determined to be necessary by the Department, a letter of authorization will be provided to the Consultant. Optional Services to be included in this contract include the following activities:
- 4.10.1.1** Any deficiencies observed by the Consultant will be analyzed according to best practices and sound engineering judgment to determine the extent of the deficiency. Using updated structural analysis software, the Professional Engineer will analyze the effect of the deficiency on the overall integrity of the structure. If the Consultant determines the deficiencies to be sufficiently critical to warrant immediate and substantial traffic restrictions, or present an imminent hazard to the public, appropriate actions must be taken. The Department's Project Manager or designated representative must be verbally notified immediately of the deficiency and the action taken to protect public safety. Verbal notification must be confirmed with written notification within **(24)** hours. The Department's Project Manager will be responsible for notifying the owner responsible for maintenance and submitting a signed and sealed engineering analysis with corrective action recommendations.
- 4.10.1.2** The Consultant shall have available personnel who are certified by the American Society for Nondestructive Testing (ASNT) Level II as a minimum who may be called upon to perform non-destructive inspection methods and prepare a detailed expert evaluation of a defect that would be paid for under Optional Services.
- 4.10.1.3** Other inspection or assessment services not identified in another contract activity as deemed necessary by the Project Manager.
- 4.10.2** Fees for each letter of authorization will be negotiated either as a lump sum amount, or as a limiting amount, or as a combination lump sum and limiting amount. Where limiting amount fees are established, compensation will be in accordance with the rates established in the contract agreement.

4.11.1 Electronic Document Management System (EDMS)

4.11.1.1 The consultant shall provide personnel proficient in the use of computers and scanners operation to input Traffic Signal Mast Arm Inspection Documents into the Department's Electronic Document Management System (EDMS). This will require adherence to the D4 Structures Management Documents guidelines for EDMS. Duties will include scanning, attributing, publishing, and retrieving documents that are to be archived electronically in the Department's document management system. This effort is included in the unit cost of Traffic Signal Mast Arm inspections and payment for the inspection will not occur until all associated record keeping is completed.

4.11.1.2 The consultant is required to input Traffic Signal Mast Arm Record document types that are relevant to this contract inspection cycle as directed by the Project Manager including correspondence, drawings, checklists, reports, inventory photos, maps, tests, work orders & Action Review Committee notes. All EDMS documents must receive a QC review and be Published in EDMS by the Consultant within fifteen **(15)** calendar days of the report acceptance. The consultant is not required to input documents from past inspection cycles.

5.0 QUALITY CONTROL

5.0.1 The consultant shall institute quality assurance procedures, which shall be provided in written form to the Department for review and approval before the notice to proceed is executed. Quality assurance procedures are an integral part of this contract and are not a separate pay item. The Department may perform additional quality assurance by inspecting Traffic Signal Mast Arms that have been previously inspected by the Consultant and reviewing the inspection records for conformity with the Department's findings.

5.1 Quality Reviews

5.1.1 The Consultant shall conduct quality reviews to make certain the firm follows the requirements cited in the scope of services. Quality reviews shall evaluate the adequacy of materials, documentation, processes, procedures, training, guidance, and staffing included in the execution of this contract.

5.1.2 The Firm's Quality Assurance Program should also have a second peer review level. The peer review can be conducted internally by the consultant's organization or by subcontracting the review to another consulting firm.

5.2 Quality Records

5.2.1 The Consultant shall maintain adequate records of the quality assurance actions performed by his organization (including subcontractors and vendors) in providing

services and products under this contract. All records shall indicate the nature and number of observations made, the number and type of deficiencies found, and the corrective action taken. These records shall be kept at the primary office site and shall be available to the Department for audit review during the contract term.

5.3 Quality Assurance (QA) Plan

5.3.1 The Consultant shall include a quality assurance plan in the proposal. The quality assurance plan should detail the procedures, evaluation criteria, and instructions to his organization to assure conformance with the contract. Unless specifically waived, no payment shall be made until the Department approves the Consultant's quality assurance plan. Significant changes to the work requirements may require the Consultant to revise his quality assurance plan to keep it current with the work requirements. The plan shall include, but not be limited to the following areas:

5.3.1.1 Organization - A description of the Consultant's quality control organization and its functional relationship to the organization performing the work under the contract. The authority, autonomy and responsibilities of the quality assurance organization shall be detailed as well as the names and qualifications of the personnel in the quality control organization.

5.3.1.2 Quality Reviews - The Consultant's quality assurance methods used to monitor and assure compliance of his organization with the contract requirements for services and products shall be detailed in the QA Plan.

5.3.1.3 Quality Records - The types of records generated and maintained by the Consultant during the execution of his quality assurance program shall be outlined in the Quality Assurance Plan.

5.3.1.4 Quality of Subcontractors and Vendors - The methods used by the Consultant to control the quality of his subcontractors and vendors shall be detailed in the Quality Assurance Plan.

5.3.1.5 Quality Assurance Certification - An officer of the Consultant firm will be required to sign and seal a certification that will accompany each submittal stating that the reports have been prepared and checked in accordance with the Department's specifications for this contract.

5.3.2 The Department may hold short (2 day) training sessions for all inspection personnel biannually, informing them of changes that have been made in inspection and/or reporting procedures. The consultant's inspectors are required to attend.

5.4 Quality Reviews by the Department

5.4.1 The Department may conduct quality reviews to make certain that the Consultant is

following the requirements cited in the scope of services. These quality reviews shall be performed at different periods during the contract. The Consultant shall be notified prior to any of these quality reviews and shall be required to present all records and certifications upon request.

5.4.2 Quality reviews shall evaluate the adequacy of materials, documentation process, procedures, training, guidance, and staffing included in the execution of this contract.

5.4.3 Any subcontractors or vendors may be included as part of the quality review.

6.0 MATERIALS

6.1 General – Materials furnished by the Department

6.1.1 Bridge Management BrM software.

6.1.2 Traffic Signal Mast Arm Inventory List.

6.1.3 Example of Traffic Signal Mast Arm Intersection sketch.

6.1.4 Example of Traffic Signal Mast Arm Horizontal Arm / Fastener sketch.

6.1.5 Example of element notes construction.

6.1.6 D4 Structures Management Documents guidelines for EDMS

6.1.7 D4 Inspection and Report Processing Guidelines

6.2 Manuals

Manuals listed in this document may be purchased from the vendors listed:

6.2.1 FDOT Manuals

Florida Department of Transportation
Maps and Publication Sales
605 Suwannee Street
Tallahassee, Florida 32399
850-414-4050
E-mail us at amelia.ponds@dot.state.fl.us
<http://www.fdot.gov/publications/>

6.2.2 AASHTO Publications
AASHTO Publications Order Department
P.O. 933538
Atlanta, GA 31193-3538
Phone: 1-800-231-3475(U.S. and Canada only)
Fax: 1-877-275-9284(U.S. and Canada only)
770-238-0452(international)
E-mail us at aashto@pbd.com.
<https://bookstore.transportation.org/>

6.2.3 FHWA Manuals

<https://www.fhwa.dot.gov/research/publications/technical/>

7.0 WORK SCHEDULE AND PROGRESS REPORTS

7.1 Notice to Proceed Meeting.

7.1.1 The Department shall conduct a notice to proceed meeting after the Consultant has received the Notice to Proceed letter from the Department.

7.1.2 The Department will explain the financial and administrative details of the contract, establish any ground rules upon which the work will be conducted, and transfer materials to be furnished by the Department.

7.1.3 The Consultant will provide the Department with a written quality control procedure, a proposed work schedule, an organization chart, and a proposed cost flow graph.

7.2 Work Schedule

7.2.1 Using the last Inspection date recorded in BrM a proposed work schedule shall be submitted to the Department for approval. This schedule shall show how the Consultant anticipates the work will progress from month to month to completion of the agreement. All inspections will be performed within the same calendar month that they are due. The work schedule shall be established in a manner that will ensure that Traffic Signal Mast Arm inspections will not be delinquent. A request to move an inspection date out of the month of the previous inspection must be reviewed and approved by the District Structures Maintenance Engineer in writing before a scheduled inspection can be moved.

7.2.2 At the Department's option, a cost flow graph shall be submitted that will show anticipated cost flow by monthly increments. The work schedule and cost flow graph shall be in a format acceptable to the Department's Project Manager.

7.2.3 Work that falls behind schedule must be reported to the Department's Project Manager daily. The report shall contain a detailed explanation why the specific task

was not performed according to schedule.

- 7.2.4** The proposed work schedule, cost flow graph, quality control procedure, organization chart, and a list of major equipment the Consultant will use during the Traffic Signal Mast Arm inspections shall be included with the Consultant's proposal. The list of major equipment shall indicate if the Consultant owns the equipment, and if not, his plans for obtaining the equipment.

7.3 Progress Reports.

- 7.3.1** The Consultant shall submit on each Monday morning, by e-mail, weekly progress reports that show; 1. Work completed for the previous week as measured against the proposed schedule; and the proposed work schedule for the upcoming week. Weekly progress reports shall describe the work performed on each task. Monthly progress reports should also be prepared and delivered to the Department concurrently with the monthly invoice.

8.0 MISCELLANEOUS

8.1 Legal Proceedings

- 8.1.1** The Consultant shall serve as an expert witness in any legal proceedings if required by the Department. The fee for these services shall be established if, and when, they are needed.

8.2 Errors and/or Omissions

- 8.2.1** The Consultant shall be responsible for the professional quality, technical accuracy and the coordination of all designs, drawings, specifications, and other services furnished by the Consultant under this contract. The Consultant shall, without additional compensation, correct or revise any errors and /or omissions and (approved corrections of same) that result from said firm's substandard performance of the services described in this contract.

8.3 Contradictions

- 8.3.1** In the event of a contradiction between the provisions of Exhibit "A" and the Consultant's technical proposal, the provisions of Exhibit "A" shall apply.