

## **Statewide Overhead Sign Structure Inspection and Inventory**

### **Background:**

The purpose of the Statewide Overhead Sign Structure (OSS) Inventory and Inspection program is to inventory and inspect the physical characteristics, element conditions, and document any/all critical condition findings of any/all OSS. The data and information collected is utilized for the purpose of managing, maintaining, repairing, and replacing OSS.

### **Scope of Work/Specifications**

The South Carolina Department of Transportation (SCDOT) is seeking a Consultant to perform inventory and inspections on OSS located statewide. The work shall be performed following the guidelines set forth by the Federal Highway Administration (FHWA) Publication No. FHWA NHI 05-036, *Guidelines for the Installation, Inspection, Maintenance, and Repair of Structural Support for Highway Signs, Luminaires, and Traffic Signals* [www.fhwa.dot.gov/bridge/signinspection.pdf](http://www.fhwa.dot.gov/bridge/signinspection.pdf) as well as the SCDOT Overhead Sign Structures Inspection and Inventory Manual.

The scope of work shall consist of providing safety inspections for various types of support structures for traffic control devices including but not limited to: overhead sign bridge structures, cantilever sign structures, butterfly structures, bridge mounted sign structures, high mast light structures, sign mast arm structures, butterfly structures, and miscellaneous structures such as span wire, closed circuit TV or IT structures as determined by SCDOT. These traffic control devices are located along the interstate, crossing routes, and controlled access facilities and immediate crossing routes such as: US-501 (Horry County), SC-22 (Horry County), SC-31 (Horry County), SC-277 (Richland County), Grissom Parkway (US-17 Alternate, Horry County), US-378 (Sumter County), US-501 (Marion Bypass), US-25 (Greenville County), US-17 (Horry County), and US-52 and US-78 (Charleston County). The Consultant shall meet and/or exceed the specifications below:

### **Database/Database Management:**

SCDOT will provide access to the existing database (SQL Server) which reflects data collected in 2012/2013. This database and associated custom application provides access to the GPS locations of all structures inspected under the previous contract. The Consultant shall be responsible for locating any new structures erected as a part of construction projects completed since the last inspection cycle. The Consultant shall also be responsible for identifying any structure that has been eliminated or removed since the last inspection cycle.

The Consultant shall develop and maintain and a comprehensive tracking system for performing field inspections of each overhead sign structure and incorporate this into a cloud-based secure web application to document relevant data for each sign structure including such information as; GIS map location, year constructed, date of inspection(s), inspection form(s), photographs, and other information SCDOT would like included. The collected data should be maintained in a structured database with linked unstructured data such as photos, drawings, sketches, etc. Ultimately, this data will be migrated to the SCDOT Enterprise Asset Management System (EAMS), but this new system will not be fully available for approximately five (5) years. In

preparation for this EAMS solution, all asset structures will need to be renumbered so they are unique to all assets maintained within EAMS. Assets will be given a three (3)-character prefix to identify the asset type, a dash, and then a sequential number. For example, an asset in the current database with a structure number of 32020 should be renumbered to OSS-32020.

The Consultant shall provide an interim solution for the data related to the inventory and inspection of these assets and provide a vendor-hosted, cloud-based, secure web application where this data will be stored and maintained. The proposed solution shall meet SCDOT's Information Technology (IT) requirements and shall integrate with other SCDOT solutions for data or services. SCDOT IT will need to approve the proposed solution including its database structure, supported browsers, mobile access, security configuration, and the ability to link to that data and export the data for integration with other SCDOT data resources.

The proposed solution should have a mapping interface to enable the easy locating of structures. The base map in the web mapping component can use commercially available map services, or utilize SCDOT's published web map services. The vendor should specify the locational accuracy of the assets to be inventoried. SCDOT desires a +/- 1 foot accuracy for these types of structures.

The solution should be hosted in the cloud in a secure platform with a service level agreement that provides for 99.9% availability and as-needed technical support throughout the duration of the contract. The proposed solution should be hosted by the vendor for a period of five (5) years. At the conclusion of the hosting agreement, the Consultant shall assist in the migration of the data into the SCDOT EAMS application. The migration will be performed by SCDOT and the EAMS contractor. The migration will require documentation of the database structure, technical support during data migration activities, and support for a period of at least 90 days after migration is complete.

Upon completion of the project, all information shall be delivered to SCDOT. The Consultant shall revise and update the SCDOT Overhead Sign Structures Inspection and Inventory Manual, Section 5 – Sign Structures Database Application to reflect the database and applications used to access information.

The following minimum qualifications apply to this project:

- Firm Qualifications (The submitting firm must demonstrate recent experience in the performance of sign structure inspection programs of similar scope and magnitude. Additionally, the firm should have recent experience in the analysis of sign structures and in developing repair plans as may be required during the course of the project. The submitting firm should also have recent experience in NDT and weld inspection of signs and ancillary highway structures.)

The Consultant shall provide a Team of key personnel consisting of the following defined individuals:

- Project Manager (must be a structural engineer with a current South Carolina Professional Engineer (PE) license and a minimum of five (5) years of recent experience managing overhead sign structure and high mast light pole inspection projects. Project Manager must have taken and passed the National Highway Institute (NHI) ***Inspection and Maintenance of Ancillary Highway Structures Course*** – Course Number : FHWA-NHI-130087)
- Quality Control Engineer (must be a Registered PE in SC with five (5) years minimum experience working on similar comprehensive sign structure projects and be proficient in the inspection and analysis of sign structures. Quality Control Engineer must also have taken and passed the NHI ***Inspection and Maintenance of Ancillary Highway Structures Course*** – Course Number : FHWA-NHI-130087)
- Team Leaders (Team Leaders must have a minimum of ten (10) years of inspection experience on similar sign and ancillary highway structure inspection projects. Team Leaders must also have taken and passed the NHI ***Inspection and Maintenance of Ancillary Highway Structures Course*** – Course Number : FHWA-NHI-130087)
- Assistant Team Leaders (Assistant Team Leaders must have taken and passed the NHI ***Inspection and Maintenance of Ancillary Highway Structures Course*** – Course Number : FHWA-NHI-130087)
- Traffic Control Team Leader

In the execution of this work, the following shall be expected of the selected Consultant

- The Consultant must follow the FHWA "Guidelines for the Installation, Inspection, Maintenance, and Repair of Structural Supports for Highway Signs, Luminaries, and Traffic Signals." and the SCDOT OH Inspection Manual while performing this work.
- The Consultant shall furnish all access equipment, test equipment and traffic control required to perform these necessary inspections.
- The consultant is required to maintain one or more strategically located in-state bases of operations for the staff assigned to this contract.
- The Consultant shall inventory all existing overhead sign structures and perform all necessary inspections/testing of each structure within SCDOT rights-of-way in accordance with the FHWA "Guidelines for the Installation, Inspection, Maintenance, and Repair of Structural Supports for Highway Signs, Luminaries, and Traffic Signals." and the SCDOT OH Inspection Manual.
- The Consultant shall evaluate the condition of each structure and assign a numerical condition rating to the various elements of each structure in accordance with the guidelines established in the SCDOT OH Inspection Manual.
- The Consultant shall develop a comprehensive schedule for updating the sign inspection manual, performing inspection services, and creating the database.
- The Consultant will be responsible for preparing traffic control plans in accordance with the latest version of the MUTCD. The Consultant shall coordinate with SCDOT

Headquarters and District staff all traffic control measures that require lane closures and/or temporary detours.

- The SCDOT will provide the Consultant with a copy of latest Overhead Sign Structure inventory data sheet and necessary plans and past reports for each structure, as previously noted.
- The Consultant shall make repairs to any minor deficiencies that are found.
- The selected Consultant shall revise and update Section 5 of the SCDOT OH Inspection Manual to reflect the database and applications used to access information.
- The selected Consultant shall update the entire SCDOT Inspection Manual to reflect the latest testing procedures and publication references.
- Upon completion of the project, all information shall be delivered to the Department.

The project covered by the agreement consists of four (4) basic and interrelated items, all pertaining to Statewide Inspection of Overhead Sign and High Mast Light Structures.

### **Item Description**

1. **Structure Inspections:** A detailed inspection of each Overhead Sign or High Mast Light Structure shall be performed in accordance with the guidelines established in the SCDOT OH Inspection Manual and the FHWA "Guidelines for the Installation, Inspection, Maintenance, and Repair of Structural Supports for Highway Signs, Luminaries, and Traffic Signals." This will include all primary structural members and connections, exposed portions of foundations, secondary structural members and connections (i.e. sign hangers, light hangers, walkways, handrails, and etc.). Also included are the inspection of lighting, electrical boxes, conduits, and exposed wiring.
2. **Database:** All information relative to the inspections shall be entered into a cloud-based, secure web application that is approved and tested by the SCDOT for access through its existing computer network and approved software. Ultimately, this data will be migrated to the SCDOT Enterprise Asset Management System (EAMS), which not be fully available for approximately 5 years. This will include all information relative to location, type, dimensions, and condition of Overhead Sign or High Mast Light Structures inspected. Locations shall be obtained using GPS equipment and the coordinates included in the database.
3. **Reporting:** All deficiencies shall be documented. Those deficiencies which compromise the integrity of the sign or high mast light structures or the safety of the motoring public shall be verbally reported immediately to the SCDOT. All deficiencies shall be reported to the SCDOT on a weekly basis.

4. **Repairs:** All deficiencies requiring repairs shall be categorized as minor or major. The Consultant will be responsible for repairing all minor deficiencies identified during the inspection. The Consultant shall properly document all repairs on the sign inspection report for each structure location. Minor repairs will consist of tightening loose anchor bolts, structure upright, or truss bolts. Also included in minor repairs are replacing any missing bolts, spot galvanizing, etc.

Major repairs will be handled by SCDOT using a separate on-call contract.

### **Personnel**

1. The Consultant shall provide all professional services necessary to conduct detailed structural inspections of all Overhead Sign and High Mast Light Structures as shown in the provided database, as well as any new structures identified during the inventory process, in accordance with the requirements of the SCDOT Overhead Sign Inspection Manual.

### **Equipment**

1. The Consultant shall supply all equipment necessary to perform the inspections and repairs.

### **Inspection**

1. The Consultant shall supply all equipment necessary to perform the inspections.
2. Structural components shall be inspected for corrosion, deformation, non-attachment, and damage from wind or collision.
3. Bolted connections shall be inspected for tightness and other deficiencies that may exist.
4. Welded connections shall be inspected and tested using dye penetrant methods for possible cracks and etc. Other methods may be used as necessary with the approval of the SCDOT.
5. Exposed portions of foundations shall be inspected for cracking, spalling, rotation, and etc. of the concrete in the areas of the anchor bolts and/or top of footing.
6. Anchor bolts shall be tested ultrasonically for cracks and other deficiencies and shall be inspected for tightness of both the leveling and top nuts.
7. Paint systems such as the galvanized coating of metal shall be inspected.
8. Lighting, electrical boxes, conduits, and exposed wiring shall be inspected.

## **Photographic Documentation**

1. A minimum of one (1) frontal photograph shall be taken of each structure with a 35mm or digital camera with individual photographs taken of the areas needing repair as necessary. Photographs shall be included in the database and provided as separate electronic files in a jpeg or compatible format with a naming convention that allows that file to be readily related to the asset.

## **Special Measurements**

1. For structure types other than high mast lighting and those mounted on a highway bridge structure, measurements shall be taken of the length of the span of the structure from the centerline of the column supports. Plumbness of the column supports shall be checked to measure any movement, if existing. Offset distances from the edge of the travel way (i.e. center of white or yellow edge line) to the centerline of the column supports shall be measured.
2. Minimum vertical clearances over the travel way including paved shoulders shall be determined on all overhead sign structures. SCDOT desires +/- 1 inch accuracy.
3. Location of all overhead sign structures and high mast light structures will be collected using global positioning (GPS) technology with an accuracy of +/- 1 foot. The right-most pole of the structure in the direction of travel shall be used as the locate point.

## **Reports**

1. All information relative to the Overhead Sign and High Mast Light Structure Inspections shall be entered into a hosted, cloud-based web application that meets SCDOT's hosting IT requirements. The application will need to be able to integrate with other SCDOT solutions for data or services. Ultimately, this data will be migrated to the SCDOT Enterprise Asset Management System (EAMS). This will include all information relative to location, type, dimensions, and condition of the Overhead Sign and High Mast Light Structures inspected. Form and reports shall be developed for use with the database as necessary and as approved by the SCDOT.
2. All deficiencies shall be documented. Those deficiencies which compromise the integrity of the sign or high mast light structure or the safety of the motoring public shall be verbally reported immediately to the SCDOT. All deficiencies shall reported to the SCDOT on a weekly basis.
3. Based upon the results of the visual inspection, SCDOT may request that non-destructive testing of certain components to determine the severity of any deficiencies. Non-destructive

testing includes one or more of the following: Liquid Penetrant Examination, Magnetic-Particle Testing, Ultrasonic Examination and /or Radiographic Examination. All testing shall be performed by an experienced technician and in accordance with current ASTM, AASHTO and AWS methods, as applicable.

4. All reports shall be signed and sealed by a licensed Professional Engineer.

## **Services by the Department**

The SCDOT will provide access to any current database, forms, reports, procedures used.

## **Evaluation of Interested Firms**

Interested firms shall respond to the solicitation (SE-210) advertised in the South Carolina Business Opportunities (SCBO) by submitting the information noted in the four items delineated on the SE-210. Evaluation criteria “ix” noted in SC Code § 11-35-3220(5)(a) shall be evaluated as follows.

## **Special Qualifications**

### Qualifications (40 Percent)

1. Demonstrate recent and successful team experience on similar projects, Include a list of states where the members of the team have completed similar projects.
2. Demonstrate expertise in specialized areas required for this project to include Overhead Sign Inspection and Inventory program management and strategy implementation.
3. Submit references with the proposal.

### Technical Approach (35 Percent)

1. Demonstrate a clear understanding of the effort, products, equipment and experience required.
2. Demonstrate explicit consideration of the features listed in the Scope of Work.
3. Include innovations or efficiencies with descriptions of how they add value to the project.
4. Demonstrate an understanding of how various Overhead Sign Structure Inventory and Inspection strategies will improve the long term functionality of the state’s sign structures.
5. Ensure the quality, clarity, and thoroughness in addressing the required tasks and submission guidelines.
6. Ensure the proposal adheres to the document organization and content requested in the scope of work.
7. Ensure content is free of distracting spelling, punctuation, and grammatical errors.

### Project Management (25 Percent)

1. Demonstrate an ability to perform the needed tasks as described in the scope of work.
2. Include the availability of personnel and any resources need to successfully complete the project.
3. Include a staffing plan demonstrates the ability, particularly the Project Manager, to successfully complete the project. Include a listing of each key team members’ current and projected workload.