MIAMI-DADE EXPRESSWAY AUTHORITY
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MDX PROCUREMENT/CONTRACT NO.:
RFP-16-01(A)

MDX WORK PROGRAM NO.:
N/A

MDX PROJECT/SERVICE TITLE:
INSPECTION AND REPORTING SERVICES FOR MDX STRUCTURES

EXHIBIT A
SCOPE OF SERVICES

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1. PROJECT OBJECTIVE

The Consultant shall provide MDX with Inspection & Reporting Services for the MDX Structures.

An inventory of the Miami-Dade Expressway Authority (MDX) System structures and inspection due dates are provided in the **Technical Exhibit B entitled, MDX Structures Inventory List and Inspection Due Dates ("MDX Inventory")**. This exhibit includes information for the anticipated structures inspection cycle. The schedule and sequence of inspections may be changed by MDX upon thirty (30) Calendar Days advance notice to the Consultant.

Bridges not listed under the MDX Inventory will require initial inspection and application for new bridge numbers, when necessary, since prior inspections of these newly constructed or newly inventoried structures have not been performed.

All structures listed in the MDX Inventory, are to be inspected in compliance with federal and State regulations (National Bridge Inspection Standards, CFR Title 23, Part 650, Subpart C): Title XXVI, Section 335.074, Florida Statutes; Safety Inspection of Bridges; State of Florida Department of Transportation Rules Chapter 14-48.0011, F.A.C., Inspection of Bridges; and OSHA 29 CFR, Part 1926, Subpart C.

2. DEFINITIONS

Definitions and Terms used throughout the Solicitation Documents are detailed in the Request for Proposal (RFP). Failure to capitalize any defined term in the Solicitation and Contract Documents shall not change the meaning of the defined term when used in the Solicitation/Contract Documents.

3. GENERAL DESCRIPTION

The Consultant shall perform structure inspection Services as described in the Scope of Services. The type and frequency of inspection shall comply with the Florida Statutes referenced in Section **1 PROJECT OBJECTIVE** and the Manual for Bridge and other Structures Inspection and Reporting Manual (850-010-030).

During this Contract period, the Florida Department of Transportation will be converting to the ASSHTO Bridge Management (BrM) software; therefore, the current Pontis Bridge Management System (Pontis) will be phased out. The Consultant shall be responsible for ensuring that their employees attend the BrM training provided by FDOT. Once the new program is implemented, as documented in writing by MDX, all Pontis references in this Contract shall be understood to mean the BrM System. The Consultant will be responsible for producing inspection reports in the new system once it has been implemented.

4. BASIC SERVICES

For the purpose of this Agreement, a bridge structure is considered to be a bridge if it is located on public roads, having an opening measured along the center of the roadway of more than 20 feet between undercopings of abutments, or spring lines of arches, or extreme ends of openings for multiple boxes, and those bridges consisting of multiple pipes where the clear distance between openings is less than half of the smaller contiguous opening as established in the National Bridge Inspection Standards (NBIS), and Florida Statutes.

The quantities for each work item listed under the MDX Inventory are estimated quantities and are subject to change. The total quantities shown will be split between the two Consultants. **Sections 4.1** through **4.16** provide details for the Basic Services to be performed under this Contract and Section 5 describes the Optional Services**.**

4.1 Routine Bridge Inspection

Bridge structures listed in the MDX Inventory shall require Routine Structure Inspections at a maximum frequency of every two years (biennial). Structure inspection and reporting shall be in compliance with the Florida Statutes, the Bridge Management System Coding Guide, Bridge and other Structures Inspection and Reporting Manual (850-010-030), the PONTIS User's Manual or Bridge Management (BrM) User's Manual and the requirements of this Scope as set forth herein.

Bridges due to fracture critical member (non-redundant) condition or other structural component condition may require an inspection with a frequency less than 2 years at MDX's discretion.

Bridges identified for Routine Bridge Inspection that are found to be under construction for widening or major rehabilitation shall be rescheduled for Initial Bridge Inspection at a later date when the construction is more than ninety percent (90%) complete.

The Consultant shall conduct the bridge inspection and provide a tabular report of recommendations as detailed in **Section 10, INSPECTION REPORTS - GENERAL PROCEDURE**, no later than thirty (30) Calendar Days after inspection. The complete bridge inspection report, including all required bridge record file sections, shall be submitted within forty-five (45) Calendar Days of the inspection and shall comply with all requirements detailed in this Scope of Services. At its discretion, MDX may allow additional time where circumstances warrant or conditions allow.

MDX, from time to time, will redistribute the inspection schedule due dates in order to better manage the bridge system as necessary. The Consultant shall input re-inspection frequencies into PONTIS that result in a scheduled due date that adheres to the most restrictive of Federal Requirements, FDOT requirements, and the published MDX schedule.

For general specifications on Lane closure times, please see **Section 8.1, MDX Lane Closure Allowable Hours**.

4.2 Post Rehabilitation Bridge Inspection

Bridges, which will undergo "substantial" rehabilitation, as determined by MDX, shall require Post Rehabilitation Bridge Inspection. The Post Rehabilitation Inspection Report shall be prepared in the same manner and with the same requirements as an Initial Inspection. Each section of the bridge record file shall be revised in the format designated in the Bridge and other Structures Inspection and Reporting Manual (850-010-030) and in compliance with the requirements of this Scope of Services.

Additionally, the Post Rehabilitation Bridge Inspection shall satisfy all requirements detailed under **Section 4.1, Routine Bridge Inspection**.

4.3 Post Repair Bridge Inspection

Bridges which will undergo "substantial" repair as determined by MDX shall require a Post Repair Inspection. The Post Repair Inspection report shall be prepared with emphasis on the satisfactory or non-satisfactory completion of the repair work.

The Consultant shall conduct the bridge inspection and provide a preliminary report of deficiencies evaluating only those items that were included in the repair plans, with a copy of the cover sheet and the Element Detail sheets. This preliminary report should be submitted no later than seven (7) Calendar Days after notification by MDX. The complete bridge inspection report shall be submitted within thirty (30) Calendar Days of the inspection. At its discretion, MDX may allow additional time where circumstances warrant or conditions allow.

For new or rehabilitated structures that have already received Initial or Post Rehabilitation Inspection, this item shall also be utilized as payment for a follow-up "punch list" structural inspection to be performed within three (3) Business Days notice by MDX to verify construction correction of any specific deficiencies identified on the initial inspection report.

Additionally, the Post Repair Bridge Inspection shall satisfy all requirements detailed under **Section 4.1, Routine Bridge Inspection**.

4.4 Special Bridge Inspection

Bridges that warrant additional time or circumstances to perform the inspection, such as bridge length greater than one thousand (1000) feet, the bridge inspection will be performed at night to reduce traffic inconveniences; these bridges shall require a Special Bridge Inspection.

A Special Bridge Inspection shall be used in conjunction with the required bridge inspection (Routine, Initial, Post Rehabilitation, Post Repair, etc.).

Additionally, the Special Bridge Inspection shall satisfy all requirements detailed under **Section 4.1, Routine Bridge Inspection**.

4.5 Initial Bridge Inspection

Bridges not listed in Inventory, will require Initial Bridge Inspections and application for bridge numbers, when necessary. Bridges newly constructed or inventoried requiring Initial Bridge Inspection shall require that a bridge record file be established in the format designated in the Bridge and Other Structures Inspection and Reporting Manual (850-010-030), PONTIS User's Manual, Technical Manual, and BrM Manual or as revised herein and in compliance with the requirements of this Scope of Services. The Consultant shall perform initial inspections of new bridges and structures on the MDX System within seven (7) Calendar Days of notification. At its discretion, MDX may allow additional time where circumstances warrant or conditions allow. A detailed list of initial inspection findings and recommendations shall be provided within three (3) Business Days of inspection so that a construction punch list may be generated.

Additionally, the Initial Bridge Inspection shall satisfy all requirements detailed under **Section 4.1, Routine Bridge Inspection**.

4.6 Interim Bridge Inspection

Bridges with low condition or fracture critical elements may require Interim Bridge Inspection. If the overall NCR of a major component is rated at three (3) or less, interim inspections are required semiannually (every six (6) months) between the required routine biennial inspections. At the discretion of MDX, interim inspections may be required for bridges undergoing significant scour after a major storm. The inspection shall emphasize deficient elements of the structure.

This item may also include Interim Inspections for sign structures with low condition and/or appraisal ratings, substantial repairs, accident damage or as determined by MDX.

Additionally, the Interim Bridge Inspection shall satisfy all requirements detailed under **Section 4.1, Routine Bridge Inspection**.

4.7 Fracture Critical Bridge Inspection

A fracture critical bridge is a steel structure, subject to dynamic cyclical loading, which has at least one (1) tension member whose failure would be expected to result in the collapse of the bridge. Refer to **Inventory** for the list of structures considered to be fracture critical, these generally will be performed during the routine bridge inspections. However, fracture critical structures whose superstructure contains a fracture critical (non-redundant) tension component, may require in-depth Interim Bridge Inspections annually [every twelve (12) months] of the fracture critical bridge members only between the biennial Routine Bridge Inspections to comply with this FDOT requirement.

A qualified structural engineer shall identify fracture critical members. Refer to FDOT Bridge and Other Structures Inspection and Reporting Manual (850-010-030).

The Signed and Sealed Fracture Critical Report shall be attached to the Bridge Inspection Report.

Existing conditions found, may change frequency inspections at MDX's discretion.

Additionally, the Fracture Critical Bridge Inspection shall satisfy all requirements detailed under **Section 4.1, Routine Bridge Inspection**.

4.8 Emergency Bridge Inspection

Emergency Bridge Inspection shall be performed as directed by MDX. The Consultant shall respond on-site within two (2) hours of notification. A recommendation of whether to continue or restrict normal traffic flow shall be determined on site by the Consultant.
An on-site inspection shall be performed to determine the complete extent of the damage, and a damage assessment preliminary report of those items affected shall be submitted within twenty-four (24) hours of notification.

The inspector shall make every effort to remove any free or loose debris to determine the complete extent of the damage, and/or that could possibly pose a threat to the public.

The Emergency Bridge Inspection Report, including recommendation of corrective actions with alternative methods of repairs, shall be submitted within five (5) Calendar Days of notification of the Emergency by MDX. The Inspection Report shall clearly indicate if the Emergency Incident resulted in a substantial reduction to the structural capacity of the bridge, and if so, what traffic restrictions should be implemented.

If required, a load rating analysis is to be done as part of the Emergency Bridge Inspection and shall be submitted within 48 hours of notification.

Additionally, the Emergency Bridge Inspection shall satisfy all requirements detailed under **Section 4.1, Routine Bridge Inspection**.

4.9 Routine Qualifying Culvert Inspection

Qualifying culverts shall require Routine Inspections during the biennial cycle.

The Routine Qualifying Culvert Inspection shall satisfy all requirements detailed under **Section 4.1, Routine Bridge Inspection**.

This item may also include Interim Inspections for culverts with low condition and/or appraisal ratings, substantial repairs, accident damage or as determined by MDX, as described in **Section 4.6, Interim Bridge Inspection**.

4.10 Underwater Inspection

Bridges and qualifying culverts with portions of their components located in water deeper than three (3) feet at the time of the scheduled inspection and where the underwater portions cannot be adequately inspected without the use of divers, shall require Underwater Inspection or as requested by MDX.

Bridges and qualifying culverts requiring an Underwater Dive Inspection shall be conducted in accordance with applicable OSHA regulations and the FDOT Dive Manual.

Notification to MDX should be made if an Underwater Inspection is required.

Inventory, also identifies the current structures requiring underwater inspections.

If no deficiencies are found, at least one general photograph must be included in the report of divers performing the inspection.

This inspection shall be performed according to the Bridge Underwater Operations (850-010-011-d)

For Underwater Inspections performed by Subconsultants, the Signed and Sealed Underwater Inspections Report should be attached to the Bridge Inspection Report.

Additionally, the Underwater Dive inspection shall satisfy all requirements detailed under Section **4.1, Routine Bridge Inspection**.

4.11 Segmental / Post and/or Pre-Tension

The Segmental / Post and/or Pre-Tension Inspections shall satisfy all requirements detailed under **Section 4.1, Routine Bridge Inspection**.

4.12 Routine Overhead Sign/ORT Gantry Inspection

Overhead Sign/ORT Gantry Structures (Signs) listed in **Inventory** shall require a biennial Routine Inspection.

The Routine Overhead Sign/ORT Gantry Inspection shall satisfy all applicable requirements detailed under **Section 4.1, Routine Bridge Inspection**.

This item may also include Interim Inspections for Overhead Sign/ORT Gantry Structures with low condition and/or appraisal ratings, substantial repairs, accident damage or as determined by MDX, as described in **Section 4.6, Interim Bridge Inspection**.

4.13 Initial Overhead Sign / ORT Gantry Inspection

Overhead Sign / ORT Gantry structures (Sign) not listed in **Inventory** shall require on-site Initial Sign Inspections and application of sign numbers since prior inspections of these newly constructed or newly inventoried structures have not been performed. A sign record file shall be established in the same format as the bridge record file designated in the Bridge and Other Structures Inspection and Reporting Manual (excluding Inventory Section II, Topic "I" – Channel and Scour Information).

Additionally, the Initial Inspection shall satisfy all applicable requirements detailed under **Section 4.1, Routine Bridge Inspection** and **4.12, Routine Overhead Sign/ORT Gantry Inspection**

4.14 Routine Galvanized and Weathering Steel High Mast light Tower / ITS Poles Inspection

The work of this Section includes qualifying High Mast Lighting Towers and steel ITS Poles (Pole(s)) 50 ft. and greater.

Poles listed in the MDX **Inventory** shall require an inspection every sixty (60) months. A Pole record file shall be established in the same format as the bridge record file designated in the Bridge and Other Structures Inspection and Reporting Manual (excluding Inventory Section II, Topic "I" – Channel and Scour Information).

The Pole Inspection shall satisfy all applicable requirements detailed under **Section 4.1, Routine Bridge Inspection**.

This item may also include Interim Inspections for Pole Structures with low condition and/or appraisal ratings, substantial repairs, accident damage or as determined by MDX, as described in **Section 4.6, Interim Bridge Inspection**.

4.15 Initial Galvanized and Weathering Steel High Mast Light Tower / ITS Poles Inspection

Galvanized and Weathering Steel High Mast Light Tower / ITS Poles (Pole (s)) structures not listed in the MDX **Inventory** shall require on-site Initial Pole Inspections and application of Pole numbers since prior inspections of these newly constructed or newly inventoried structures have not been performed. A pole record file shall be established in the same format as the bridge record file designated in the Bridge and Other Structures Inspection and Reporting Manual (excluding Inventory Section II, Topic "I" – Channel and Scour Information).

Additionally, the Initial Pole Inspection shall satisfy all applicable requirements detailed under **Section 4.1, Routine Bridge Inspection** and **4.15, Initial Galvanized and Weathering Steel High Mast Light Tower / ITS Poles Inspection**

4.16 Load Rating Analysis

Bridges which are newly built, rehabilitated, newly inventoried, or as recommended by the Consultant due to significant deterioration, may require Load Rating Analysis as determined by MDX. The Load Rating Analysis shall be submitted with the associated signed and sealed CID section of the inspection report showing the new Bridge Load Rating values were updated in PONTIS or BrM, then it shall be submitted within seven (7) Calendar Days of the authorization. For Initial or Post Rehabilitation Load Ratings performed by others, the Consultant shall request a copy of the Load Ratings prior to submitting the reports. See **Section 11, LOAD RATING ANALYSIS**.

If during the period of Contract, any new FDOT or MDX regulations regarding Posting and Load Rating for Bridges are added, they shall be adhered to after the required re-negotiations between the MDX and the Consultant take place.

5 OPTIONAL SERVICES

At MDX's option, the Consultant may be requested to provide Optional Services on an as needed basis. The fee for these Services shall be negotiated for a fair, competitive and reasonable cost, based on the scope and complexity of the assignment(s). Additional Services may be authorized by an approved Task Authorization issued by MDX. The additional Services may include, Structural Design, Construction Assistance, Review of Shop Drawings, update Computer Aided Design and Drafting (CADD) files for the Final "As-Built" conditions and other Services as required. Optional Services may include, but is not limited to, the following personnel classifications:

- Chief Engineer
- Project Manager
- Certified Bridge Inspector

- Engineer
- Senior Engineer

Note: The rates of these personnel shall be negotiated pursuant to their actual pay rate (capping it pursuant to the MDX Established Rate CAPS) times the negotiated multiplier (Using the Consultant's Qualification Letter and capped at 3.0).

6 STRUCTURE INSPECTION-STANDARDS OF PRACTICE

All Services performed by the Consultant shall conform to the latest edition of the following National and State publications covering bridge inspection standards of practice which are hereby incorporated by reference. Refer to section **15.2 Manuals** for the list of vendors where these references can be purchased.

The electronic version of the manual can be obtained from the following links:

FDOT published manuals can be found in the link shown below.
http://www.dot.state.fl.us/statemaintenanceoffice/Inspection.shtm

Federal published manuals can be found in the link shown below.
http://www.fhwa.dot.gov/bridge/safety.cfm

ASSHTO published manuals can be found in the link shown below.
https://bookstore.transportation.org/collection_detail.aspx?ID=129

National Bridge Inspection Standards: Code of Federal Regulation 23 –Highways, Part 650, Subpart C

State of Florida Statute 335.074, Safety Inspection of Bridges

Bridge and Other Structures Inspection and Reporting: State of Florida Department of Transportation. 850-010-030

Bridge Management System Coding Guide. State of Florida Department of Transportation.

Manual for Maintenance Inspection of Bridges: American Association of State Highway & Transportation Officials (AASHTO)

Bridge Maintenance Management Handbook: State of Florida Department of Transportation

Bridge Inspectors Reference Manual: U.S. Department of Transportation/Federal Highway Administration

Inspection of Fracture Critical Bridge Members: FHWA-IP-86-26 U.S Department of Transportation/Federal Highway Administrator

Manual for Inspecting Bridges for Fatigue Damage Conditions: FHWA-PA-89-022-85-02

Culvert Inspection Manual FHWA-IP-86-2: U.S Department of Transportation/Federal Highway Administration

Scour at Bridges: FHWA Technical Advisory TS140.23 U.S. Department of Transportation/Federal Highway Administration

Underwater Inspection of Bridges FHWA -DP-80-1: U.S. Department of Transportation/Federal Highway Administration

Bridge Underwater Operations Procedure: State of Florida Department of Transportation.

FDOT Dive Manual, Volume 5: State of Florida Department of Transportation

Manual for Bridge & Other Structures Inspection & Reporting Procedures State of Florida Department of Transportation

Manual for Condition Evaluation of Bridges current edition: American Association of State Highway and Transportation Officials (AASHTO)

AASHTO LRFD Bridge Design Specifications: American Association of State Highway and Transportation Officials (AASHTO)

Manual on Uniform Traffic Control Devices (MUTCD)-950-044-0000-4: U.S. Department of Transportation/Federal Highway Administration

User's Manual- PONTIS or BrM Latest Release: State of Florida Department of Transportation

AASHTO Standard Specifications for Highway Bridges: American Association of State Highway and Transportation Officials.

Bridge Load Rating Manual Latest Release: State of Florida Department of Transportation

Accident Prevention Procedures Manual: State of Florida Department of Transportation.

Standard Specifications for Road and Bridge Construction: State of Florida Department of Transportation

State of Florida Roadway & Traffic Design Standards: State of Florida Department of Transportation.

Roadway and Traffic Design Standards Index Nos. 600-651: State of Florida Department of Transportation.

Manual for Bridge Evaluation 2nd Edition, with 2011 and 2013 Interim Revisions, or current edition, AASHTO

Manual for Bridge Element Inspection 2nd Edition, with 2011 and 2013 Interim Revisions or current edition, AASHTO

Manual for Condition Evaluation and Load and Resistance Factor Rating (LRFR) of Highway Bridges up to latest interim.

Monitoring Follow-up Action on Critical Bridge Deficiencies. State of Florida Department of Transportation.

Structure Design Manual – latest release. State of Florida Department of Transportation.

AASHTO Guide Specifications for Horizontally Curved Steel Girder Highway Bridges with Design Samples for I-Girder and Box-Design Bridges 2003

VIRTIS (AASHTOWare's Product) Bridge Load Rating Software and Others.

Analysis and Design of Skewed Curved Steel Bridges with LRFD FHWA A-NHI-130095

7 PERSONNEL SCOPE REQUIREMENTS

The Consultant's Project Manager shall be in charge of the structure inspection unit and shall meet all the pre-qualification requirements as stated in the RFP.

The Consultant shall provide a qualified Bridge Inspection Team Leader at the bridge site to supervise inspection activities at all times. This qualified individual will be responsible for the structures' inspection, inventory, and executing reports for MDX.

Each Final Inspection Report and Load Rating Analysis Report shall be dated, signed and sealed by a Professional Engineer, in accordance with Florida Statute 471.025, who confirms the accuracy and completeness of all report contents. Lead Inspectors shall initial each Final Bridge Inspection reports.

Due to the nature and scope for the required Services, the Consultant shall be authorized to subcontract specialty Services (e.g., underwater inspections) under the provision of the Agreement.

Work performed by Subconsultants shall be the direct responsibility of the Consultant. Subconsultants and the work they will perform shall be identified in the Proposal. The Subconsultant shall be approved in writing by MDX prior to initiation of any work. The percentage of total Contract work performed by Subconsultants shall not exceed forty percent (40%). Any changes in the Subconsultant or the work they will perform as indicated in the Consultant's Proposal shall be subject to review and approval by MDX and as detailied in the Professional Service Agreement.

The Consultant shall be responsible for keeping current on all State of Florida directed bridge inspection procedures and policies. This shall also include informing all personnel working under this Contract of any changes and providing any additional training that may be required.

8 INSPECTION PREPARATION

The frequency of structure inspections shall comply with Florida Statutes, Section II of the Bridge and Other Structures Inspection and Reporting Manual (850-010-030), to avoid any structural inspection delinquency to the structures included in **Exhibit B MDX Structures Inventory List and Inspection Due Dates**, attached as an Exhibit to the RFP. The Consultant shall monitor the required inspection cycle to establish an inspection interval for each structure. The Consultant shall conduct the required inspection no later than the scheduled date but no more than two (2) weeks prior to the scheduled inspection date unless otherwise requested by MDX. Required Interim Inspections shall be scheduled and monitored by the Consultant. The Consultant shall request approval from MDX to conduct the Interim Inspection no more than two (2) weeks prior to the scheduled date of inspection.

Each required underwater inspection shall be conducted within two (2) weeks of the scheduled date of the above-water inspection.
The Consultant shall comply with the MDX lane closure policies detailed further in Section **8.1, MDX Lane Closure Allowable Hours**, as well as the policies of local agencies or municipalities. The Consultant shall be responsible for coordination with and obtaining approval from local agencies or municipalities. For lane closures on the MDX System, the request for lane closure form shall be submitted a minimum of two (2) weeks prior to the requested date of closure. The appropriate FDOT Index should be referenced, and a sketch showing the traffic control setup and site specific condition shall be attached to the form if needed. The inspection shall be conducted at a time that will cause minimal impact to the traveling public. Lane closures in the vicinity of ORT gantry locations shall be coordinated with MDX Toll Operations. The cost of Maintenance of Traffic shall be included in each of the tasks. No additional payment shall be made for Maintenance of Traffic.

8.1 MDX Lane Closure Allowable Hours

The Consultant shall follow all lane closure procedures shown in the "MDX Lane Closure Requirements and Procedures" file listed on the MDX website at the following location.
http://www.mdxway.com/doing_business/procurement/

At a minimum, the following restrictions should be anticipated.

Lane Closures shall not be permitted on the specified roadways during the following times:

For SR 878, SR874, SR924, SR112, and SR 836 west of Florida's Turnpike single lane closures shall not be anticipated during the following periods:

Between 5:30 AM and 9:00 AM - weekdays
Between 3:30 PM and 9:00 PM - Monday through Thursday
Between 3:30 PM on Friday and 5:00 AM - Saturdays
Between 9:00 PM on Saturday and 5:00 AM – Sundays

For SR 836 East of Florida's Turnpike single lane closures shall not be anticipated during the following periods:

Between 5:30 AM and 9:00 PM - Monday through Thursday.
Between 5:30 AM and 11:00 PM - Fridays
Between 10:00 AM and 11:00 PM - Saturdays
Between 10:00 AM and 9:00 PM - Sundays

In no case shall full ramp closures, full road closures, or multiple lane closures be anticipated between 5:30 AM and 11:00 PM

Hours may be further restricted as determined by MDX.

8.2 Batch Number Requests

When preparing for and scheduling the structural inspections, the Consultant shall divide the inventory into small groups of structures to be inspected and whose reports will be submitted together to MDX for review. These groups of structures will be called "Batches" and MDX will assign a unique batch number to identify and track the structures included in each of these groups. Batch size should be between 4 to 6 structures.

Once the Consultant requests a batch number, MDX will provide a spreadsheet in tabular format for this batch listing all known deficiencies for each of the structures that are part of that particular batch. Please see **MDX Quality Control and Assurance Plan for Bridges Manual and Work Recommendation Spreadsheet**, attached as an Exhibit.

8.3 Spreadsheet

In order for MDX to keep an updated database of the MDX structures repair history, a tabular format has been developed. All fields listed in this tabular format, should be updated based on the findings from the inspections performed. These will be the inspector recommendations listed in the inspection reports generated from Pontis or BrM softwares. Please see the **Exhibit entitled Work Recommendation Spreadsheet (sample only)**.

Reporting details can be found in **the Exhibit entitled MDX Quality Control and Assurance Plan for Bridges Manual**.

9 FIELD INSPECTION

Field inspections must be conducted in accordance with the publications listed in **Section 6**, **STRUCTURE INSPECTION-STANDARDS OF PRACTICE,** of 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's condition, which shall include the personal inspections and documentation of all significant deficiencies. This individual is responsible for assuring the accuracy and completeness of all data and records compiled as a result of the Consultant's field activity.

Every visible surface of all members of each structure must be examined. The Consultant's Inspector shall perform all cleaning necessary, including the removal of debris, vegetation, etc., in order to thoroughly examine the structural elements. If the cleaning is excessive, that is, it will require more than two (2) hours for the inspection team to perform, MDX should be consulted prior to any major cleaning operation. Structure members and elements that cannot be inspected prior to report publication shall be documented in the report as such, along with the reason for not inspecting.

The Consultant shall not allow without prior approval from MDX, an inspector to perform consecutive inspections of the same structure. If this occurs, the Consultant shall re-inspect the structure using another inspector at no charge to MDX.

The Consultant shall be responsible for painting the bridge numbers, when illegible, per Index No. 422 of the Design Standards, latest edition on all MDX-owned bridges and on the substructures of overpassing roadway bridges. Overhead sign structures, ORT gantry structures, and high mast light towers shall have legible structure numbers painted on the sign column, gantry structure uprights (columns), or on the high mast light towers, and clearly visible from an approaching vehicle. Each qualifying culvert shall have a number painted on both end headwalls. The painted structure number shall match the structure numbering system in PONTIS or BrM. A photo of the structure number shall be included in the structure inventory report.

Any loose bolts on bridges, overhead signs, gantry structures, or high mast light towers, identified by the Inspector shall be snug tightened by the Inspector, if possible. Identify loose or missing bolts with sufficient detail (i.e., type, material, size, and thread) such that the fastener can be replaced or tightened as required. The Consultant shall immediately notify MDX verbally and in writing within one (1) day.

As a part of each inspection of any bridge over water, the Consultant shall take channel bottom soundings at mid-span and supports (bent and pier), on both sides of the bridge, where accessible.

All bridges shall be reviewed for proper height restriction, weight restriction, and narrow bridge signing in conformance with FDOT Standards.

Elevation View photos in the inventory report, shall be updated if older than 6 years or after structure rehabilitation.

A photograph of culvert end walls shall be included in the structure inventory report for each culvert (bridge or qualifying culvert) inspected, and labeled to indicate the appropriate end.

A photograph of all upstream and downstream views of all water crossings shall be included in the Structure Inventory Report.

All PONTIS or BrM data fields shall be reviewed by the Consultant as a part of the bridge inspection, verified for accuracy, and updated, if required. All data items shall be field verified unless the item is not visible. Items which cannot be field-verified should be coded using As-Built plans or proven documentation. The latitude and longitude of each structure shall be measured at the mid-point of the bridge using a Global Positioning System (GPS) accurate to within thirty-three (33) feet. MDX

will be making periodic reviews and field checks of PONTIS data fields in accordance with the BMS Coding guide.

Where deficiency dimensions are documented, the actual size or dimension (width, length, and depth) of the deficiency and location on the member shall be recorded. Where dimensioning every deficiency is impractical, the standard FDOT Table of Deficiency Dimensioning Classes shall be used in lieu of general terms such as narrow, fine, or similar terminology.

If by field observation, deficiencies are sufficiently critical to warrant immediate and substantial traffic restrictions or closing of the bridge, the MDX Project Manager or designated representative must be immediately notified verbally. Verbal notification must be confirmed in writing within twenty-four (24) hours.

It is important that the Inspector communicate the findings in a timely manner. Some flaws, such as a visible crack in a tension flange of a two-girder bridge, should be reported immediately. The Inspector should go to a phone and call the supervisor. The Consultant shall have a procedure for immediate notification to the MDX Project Manager in such a situation. Other, less serious, flaws may be reported when the Inspector returns to the office. If there is a question about the significance of a finding, an engineer should be contacted as soon as possible. It is better for the Inspector to err on the side of safety.

When problems are identified, it is a good idea to go back and look at similar details throughout the bridges. Often inspectors have found cracks at other locations that had already been inspected after finding the first. This demonstrates that it helps to know exactly where to look and what to look for on the other details. After a flaw or crack has been identified, it may be helpful to do additional evaluation with non-destructive testing such as dye penetrate, magnetic particles, or ultrasonic or radiograph procedure. The MDX shall be consulted prior to beginning expensive non-destructive testing.

If one or more posting signs are missing from a structure that requires load carrying restrictions, the Consultant will immediately notify MDX verbally as well as in writing.

Traffic control procedures and MOT must be provided by the Consultant and shall be in accordance with the FHWA/USDOT Manual on Uniform Traffic Control Devices (MUTCD), the Florida Department of Transportation Roadway and Traffic Design Standard, latest edition. All lane closure requests shall be submitted for approval, a minimum of fourteen (14) Calendar Days prior to the date of the closure. Refer to see **Section 8.1, MDX Lane Closure Allowable Hours** for specific details.

As a minimum, a photograph shall be included for each deficiency recommended by the Consultant for corrective action. When a photograph is taken of a specific deficiency, an object that provides a sense of relative dimensional scale such as a ruler shall be placed by the element 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 structure number shall be marked on the front.

Photographs shall be taken digitally and printed in color. The digital camera should have the following minimum specifications:

Mega Pixels.
Minimum resolution: 1984 x 1488 pixels.
.JPEG, .TIFF and .PNG Format

The probable cause of deficiencies should be identified. This serves two primary purposes; first, the most effective repair can only be determined if the source of the deficiency has been identified; second, when the same cause for a specific deficiency is documented repeatedly, a body of evidence becomes available to justify its elimination through a change in design.

Deficiencies described in previous bridge inspection reports must be addressed again in the Element Notes of the current report confirming if the structural recommendation has been addressed or if it remains active. A bridge inspection report must provide a comprehensive description of all deficiencies and state probable causes of the deficiencies, specify required corrective action, and contain an evaluation and picture of any previous corrective action noted if any.

Deficiency descriptions shall be in enough detail to allow rates of change to be monitored over consecutive inspections. This requires liberal use of size and location dimensions, sketches, and photographs. A sketch should illustrate only the essential features of a deficiency without distracting details. Sketches should be used only when a photograph is not practical or do not describe properly the deficiency. Photographs shall always be taken, showing the deficiency as well as its context to the structure, reported and archived in color.

The Consultant shall not allow any bridge inspection team member to be a Team Leader on consecutive routine inspections on the same bridge. If this occurs, the Consultant shall re-inspect the bridge using another Team Leader at no charge to MDX.

The Consultant is responsible to coordinate with the bridge owner when permit access is required.

10 INSPECTION REPORTS - GENERAL PROCEDURE

The Consultant shall develop, publish and distribute inspection reports for any type of inspection performed. Each report will contain all documentation specified by this Agreement and must meet the requirements of the Bridge and Other Structures Inspection and Reporting Manual (850-010-030). All inspection reports shall be submitted to MDX in the format of DVD/CD or through the use of a file transfer webpage containing an electronic (pdf) version set of all reports utilizing a naming convention to be provided by MDX. The Consultant shall utilize software capable of obtaining maximum compression of pdf files.

The Consultant shall develop structure reports utilizing the most current version of the PONTIS software. PONTIS shall be accessed via internet; the web address is https://dotaccess.state.fl.us Refer to PONTIS Manual for minimum hardware requirements to run PONTIS. MDX shall assist the

Consultant in obtaining the required authorizations for access from FDOT District 6. The Consultants is responsible for procuring and paying for training in PONTIS for its employees.

During this Contract period, the Florida Department of Transportation will be converting to the ASSHTO Bridge Management (BrM) software; therefore, the current Pontis Bridge Management System (Pontis) will be phased out. The Consultant shall be responsible for ensuring that their employees attend the BrM training provided by FDOT. Once the new program is implemented, as documented in writing by MDX, all Pontis references in this Contract shall be the BrM System. The Consultant will be responsible for producing inspection reports in the new system after it has been implemented. It is required that at least one inspection per month is input into the BrM system alongside Pontis to ensure the inspection team is prepared for any changes in Bridge Management systems.

Repair recommendations shall be provided to MDX in a Spreadsheet tabular format determined by MDX within thirty (30) Calendar Days of inspection. Recommendations shall include reference to associated element finding and photo number. MDX shall within seven (7) Calendar Days, assign a permanent Maintenance Key for each recommendation. The Consultant shall include the Maintenance Key in the official PONTIS or BrM report as detailed here-in prior to coding in both the work recommendation text string and the associated photo text string. When the MDX bridge maintenance database becomes available, the Consultant shall enter data directly into the database and maintenance keys shall be generated automatically.

Each repair recommendation from prior reports shall be verified as "COMPLETED", "UNCHANGED", or shall have status change clearly quantified referencing the existing MDX provided unique identifier "maintenance key" number. All recommendations shall be categorized and prioritized in the format detailed in the MDX Quality Control and Assurance Plan for Bridges Manual

Each inspection report must be submitted to MDX for review no later than forty five (45) Calendar Days after completion of the field inspection. MDX will return reports within one (1) month that do not conform to the specifications of this agreement or that are in error. These reports shall be corrected and resubmitted to MDX within seven (7) Calendar Days after being returned to the Consultant.

Each bridge inspection report and addendums shall be prepared in letter size paper (8 ½ in by 11 in). Addendums and sections of inspection performed by Subconsultants must be attached at the end of each report with proper signatures and seals. All bridge inspections shall be top punched with two holes and submitted in manila file folders through the use of 2-inch prong fastener bases.
A cover page should be included in the inspection reports showing the structure number, inspection date and the location. Refer to see **Exhibit E, Sample of Inspection Reports inclusive of addendums**, attached as an Exhibit to the RFP.

Inventory Photo Report shall follow the cover page. Photos shall accurately describe the condition of the structure and must meet the requirements of the Bridge and Other Structures Inspection and Reporting Manual (850-010-030).

Deficiencies described in previous structure inspection reports shall be addressed again in the current report either under the element corrective action taken if they were addressed or current

element inspection notes if they remain active. Structure inspection reports shall provide a comprehensive description of bridge deficiencies and state probable causes of the deficiencies, specify recommended corrective action, and contain an evaluation of previous corrective action as well as the MDX provided Maintenance Key for all previously reported deficiencies. Deficiencies noted in the report that were also in previous reports shall be clearly indicated as increased in severity, decreased in severity, or not changed. Visual documentation of repair quantities is required. Any deficiencies noted by the Consultant in the report that were not in the previous inspection report shall be clearly indicated as not having been previously noted. If a previously noted deficiency no longer exists, and there was no work order issued to correct it, the report shall clearly indicate this under the corrective action taken of the structure element. If a deficiency does not require corrective action, it should be noted as such in the report. Terminology not commonly understood by non-inspection personnel shall be minimized and undefined values or ratings shall not be used. The Consultant shall use the same terminology in all reports.

In addition to the Pontis or BrM entry of deficiencies, the same said set of deficiencies must be entered into the MDX Bridge Maintenance System which is independent of the FDOT system using forms or methodologies determined by MDX. Through this system and updates the Bridge Inspector will be provided with Maintenance Keys and new items assigned new keys by MDX. Each deficiency/work recommendation will be classified as "Emergency, Urgent, Routine or Informational." Rules and Guidance for these classifications are defined in **Section 8.3, Spreadsheet**.

The Consultant shall classify and number all element inspection notes (EIN) per condition state by listing them under each of the condition numbers. Deficiencies requiring corrective action, shall reference the photo number showing the particular condition being described at the end of the EIN caption.

Any recommendations regarding upgrading the structure elements to the current standards should be stated in the elements notes.

The Consultant's report shall identify missing bolts, or those requiring tightening or replacement, to include ASTM makings, size (diameter and length) and location in the Inspectors Recommendation Comments Module of PONTIS.

The Consultant shall submit a PONTIS Summary Inspection Report for all deficiencies included in the PONTIS Work Order Module. PONTIS Summary Inspection Report for each structure shall be submitted with the structure inspection report attached. Each recommendation in the PONTIS Summary Inspection will be assigned a priority in accordance with MDX Guidelines as described in the **Exhibit D, MDX Quality Control and Assurance Plan for Bridges Manual**, attached as an Exhibit to the RFP. Severity will be classified into four (4) Categories, Emergency, Urgent, Routine and Informational. MDX will hold periodic meetings to review all the inspection reports submitted since the previous meeting and to discuss maintenance recommendations.

Each of the Inspector Recommendations shall reference the MK number assigned by MDX, EIN number from the element and Photo number showing the condition.

Photos showing conditions that require correction, shall reference the MK number assigned by MDX. This MK number should match with the description under EINs and Inspector Recommendations.

All units shall be reported in English format unless directed otherwise by MDX.

Load Ratings performed as part of the inspection shall use the software VIRTIS by AASHTO or other software as FDOT specifies and shall require the load rating summary sheet to be attached to the inspection report. Refer to **Section 11, LOAD RATING ANALYSIS**.

The Consultant shall notify MDX of any modifications to the Comprehensive Inventory database (CIDR) records and include it in all inspection reports being submitted.

Each bridge inspection report shall be a stand-alone document and must include the inspection of any underwater members and a copy of the load rating summary sheet. Legal size paper shall not be used for structure reports. The Portable Document File version shall be a facsimile or scanned version of the stand-alone document using maximum compression. File naming scheme will be provided by MDX.

Reports must have a closed numbering system, with the total number of pages in the report shown on each page, for example, Page 10 of 17. The Addendums shall also have a closed numbering system independent of the main PONTIS report, for example A-2 of 10.

PONTIS - Bridge Inspection Report Addendum: The PONTIS format was selected for use as a management tool. It has the capacity to maintain records for each individual structure as well as combining records for all structures in the inventory. This enables management to obtain information on a single structure and on the inventory as a whole.

Each final structure inspection report, load rating summary sheet and analysis, structure inventory and appraisal report shall be signed, dated, and sealed in accordance with Section 471.025, F.S., by the Consultant's Professional Engineer in charge, registered in the State of Florida, which confirms accuracy and completeness.

The Consultant shall attend Feasibility Action Review Committee (FARC) meetings no more than twice per month but no less than once per month where structure inspection reports are reviewed to identify work needs.

The following items shall be included in an addendum section placed at the end of the PONTIS report if there are any critical deficiencies or traffic restrictions found during the inspection.

Pontis Critical Deficiency Statement: If deficiencies serious enough to cause a current or imminent traffic safety hazard are found during the inspection, the procedure noted in **Section 4.8, Emergency Bridge Inspection** of this scope must be followed, the box entitled "THIS BRIDGE REPORT IDENTIFIES DEFICIENCIES WHICH REQUIRE PROMPT CORRECTIVE ACTION", located on the first page of the PONTIS Report, will be checked, and an explanation will be written on the cover

page of the addendum and in the Structures Notes Section of the Pontis report, under the heading of "CRITICAL DEFICIENCY". The following items are considered critical deficiencies:

- Cracks or fatigue related deficiencies in fracture critical structure members.
- Scour or hydraulic deficiencies that require corrective action to protect the structural integrity of the bridge.
- An overall NCR of 3 or less for any of the major components listed on page 1 of the PONTIS Report.
- Deficiencies that require immediate attention and are deemed critical by the registered professional engineer who signs the bridge inspection report.

Traffic Restrictions Statement: The Pontis Report should contain, in the Structures Notes Section, under the heading "TRAFFIC RESTRICTIONS", recommendations for weight restrictions posting or closing the bridge prior to repair must be noted. This section will be included in all reports' addendums, if only to note that no traffic restrictions are required. This statement must address all posting requirements such as posting signs, conformance with weight restriction standards, and recommendations for posting restrictions, based on the latest load rating analysis.

10.1 Bridge Report Addendum Format

10.1.1 Cover Sheet

The first page of the report addendum shall include the following information:

- Bridge identification number
- Bridge inspection date
- Road name and/or number
- Road or waterway traversed
- Bridge owner
- Location Map

10.1.2 Photographic Inventory, Topic A

Inventory photos included in the report addendum shall accurately describe the condition of the structure and must meet the requirements of the Bridge and Other Structures Inspection and Reporting Manual (850-010-030). The addendum shall be included in all inspection reports.

10.1.3 Element Notes

The Element Notes of the PONTIS Report should contain a brief but comprehensive description of significant deficiencies, underwater deficiencies, including photos of such. If Element notes are more than two thousand (2,000) characters, they shall be placed in the report addendum.

The probable cause of deficiencies should be identified. This serves two primary purposes: first, the most effective repair can only be determined if the source of the deficiency has been identified; second, when the same cause for a specific deficiency is documented repeatedly, a body of evidence becomes available to justify its elimination through a change in design.

Deficiencies described in previous structure inspection reports must be addressed again in the Element Notes of the current report. All previous deficiencies that result in a work recommendation shall have the provided MDX maintenance key number indicated in the text string of the entry. All new deficiencies must be assigned or updated with the current maintenance key number and that number included in the text string. Additionally the number of the associated photo included in the report shall be included in the text string of the deficiency. Terminology, not commonly understood by non-inspection personnel, should be minimized and undefined values or ratings shall not be used. A structure inspection report must provide a comprehensive description of all deficiencies and state probable causes of the deficiencies, specify required corrective action, and contain an evaluation of any previous corrective action, if any.

Where deficiency dimensions are documented, the actual size or dimension (width, length, and depth) of the deficiency and location on the member shall be recorded. Where dimensioning every deficiency is impractical, the standard Department Table of Deficiency Dimension Classes shall be used in lieu of general terms such as narrow, fine, or similar terminology.

Deficiency description shall be in enough detail to allow rates of change to be monitored over consecutive inspections. This requires liberal use of size and location dimensions, sketches, and photographs. As a minimum, a photograph shall be included for each deficiency recommended by the Consultant for corrective action. Each photograph shall be uniquely numbered and reported additionally to the MDX Bridge Maintenance system. The element/ environment, deficiency note number and maintenance key number shall be included in the legend of the photo.

When a photograph is taken of a specific deficiency, an object that provides a sense of scale, such as a ruler, should always be placed next to the element photographed. 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 structure number shall always be marked on the front.

10.1.4 Recommended Repairs

PONTIS allows the inspectors to recommend repair of deficiencies. This is done in the main PONTIS report under RECOMMENDED FEASIBLE ACTION. The scanned choices in the program are brief and sometimes do not adequately describe what is being said to an unfamiliar reader. So, in addition to entering recommended feasible action in the main PONTIS report the Consultant will enter a more descriptive version of what is recommended for repair under the page heading of "RECOMMENDED REPAIRS" and the sub-heading of the name of the Element Category to which it refers. Additionally the Consultant will include the MDX Bridge Maintenance Key for all repair recommendations. All work recommendations shall have the MDX maintenance key number indicated in the text string of the entry. Additionally the number of the associated photo included in the report shall be included in the text string of the entry.

10.1.5 Photo Section

When photographs or sketches cannot be included in the PONTIS Report, they will be included in the addendum under the heading of "PHOTO SECTION" and the sub-heading of the name of the Element Category to which they refer, as is done with the Element Notes described above. For bridges with restrained load carrying capacities (posted); photographs of the load posting signs located at each approach shall appear first. Photos and sketches pertaining to deficiencies that are referenced in the Element Notes of the main PONTIS report shall follow in the same order that they were referenced. Deficiency photographs and sketches may be used at the discretion of the Inspector. However, photos/sketches of deficiencies that have been recommended for repairs must be provided as well as photos showing the deficiency location with respect to the overall structure. A photograph of the bridge number shall be included in the report. If the bridge number is not legible, the Consultant must repaint the number using the same size numbers and color paint.

10.1.6 Comprehensive Inventory database (CID)

CID Report shall be included in all inspection reports and the Consultant shall inform MDX of any modifications made to any of the fields included in the addendum.

10.1.7 Inspection Field Preparation

Field Preparation requirements shall be included in the addendum of all reports under the heading of "FIELD PREPARATION" for above water inspections and "SECTION F" for underwater inspections. Preparation requirements for the field phase of an inspection vary greatly from bridge to bridge. By documenting unique field preparation requirements and equipment actually used, oversights which can result in needless re-inspection can be reduced.

Those areas may include tools and equipment, scheduling, site conditions, traffic control requirements, underwater inspection requirements, special access requirements.

10.1.8 Underwater Inspection Report

All bridges requiring underwater inspections shall be included in the addendum. Underwater bridge elements shall be identified under the structure notes in the bridge inspection report and in the addendum. Structure Number, inspection date, Element Notes, recommendations, photos, both bridge Profiles graphs and data shall be included in this report. The addendum shall be signed and sealed by the Professional Engineer responsible for the content.

10.1.9 Fracture Critical Report

All bridges having fracture critical elements or components shall be included in the addendum. Structure Number, inspection date, Contents, fracture critical data, fatigue categories and sketches of the fracture critical / fatigue sensitive elements shall be included in the report. The addendum shall be signed and sealed by the Professional Engineer responsible for the content.

10.1.10 Load Rating Analysis Summary Sheet

A copy of the most recent Load Rating Summary Sheet shall be included in every report.

10.1.11 Scour Evaluation

The scour evaluation shall be performed by the Consultant. Each required underwater inspection shall be conducted within two (2) weeks of the scheduled date of the above-water inspection.

In addition to the evaluation of the structure's present condition, a record should be made of any known significant changes that have taken place in the channel. Attributable either to natural or artificial causes. Ground line or channel bottom measurement should be taken along both sides of the bridge. Measurement should be taken at identifiable locations such as from the top of the handrail at measured intervals. The report will contain a plot of the original bridge channel cross section (from construction plans or closest post construction survey) and a plot of successive channel bottom soundings will be shown on an elevation view of the bridge. Channel profiles may be used to identify progressive or significant changes.

Occurrences of scour shall be reported in the PONTIS main report, by the use of a SCOUR SMART FLAG. However, the Element Notes, regardless of the number of characters will be placed in the addendum under the heading of "SCOUR EVALUATION". In addition to this, all report addendums of bridges over water will contain the following:

Channel cross section obtained during the field inspection along both sides of the bridge, should be taken at identifiable locations such as from the top of the handrail at measured intervals or at each abutment, intermediate bent and mid-spans, which ever best describes the geometry of the waterway and can be duplicated in the next inspection. Similar measurements corresponding to the same locations along the cross section will be recorded, that is, cross sections every one hundred (100) feet up and downstream from bridge location. Those measurements must be presented in a spreadsheet format and compared, by the Inspector, to the cross sections taken during the previous inspection.

The addendum will also contain a plot of the original bridge channel cross section (from construction plans or closest post construction survey) and a plot of successive channel bottom soundings shown on an elevation view of the bridge. Channel profiles may be used to identify progressive or significant changes.

Existing bank, shore, and bridge protection devices should be checked to observe if they are sound and functioning properly. See that the waterway is not obstructed but that it affords free flow of water. Watch for sand, debris, and gravel bars deposited in the channel, which may direct stream flow in such a manner as to cause harmful scour at piers and abutments.

Investigate the footing for evidence of significant scour or undercutting. Particular attention should be given to foundations on spread footings where scour or erosion can be much more critical than a foundation on piles. Any suspected movement or settlement should be checked with an engineer's level and compared with previous records.

When significant changes have occurred, the probable or potential effects on the bridge should be noted. Events which tend to produce local scour, channel degradation, or bank erosion, are of primary importance. Streambed degradation and scour seriously endanger bridges whose foundations are located in erodible riverbed deposits and where the foundation does not extend to a depth below that of anticipated scour.

The minimum distance the inspector needs to be from each surface shall meet the requirements of the FDOT Bridge and Other Structures Inspection and Reporting Manual (850-010-030).

Along with communicating the existing condition, the inspection report should provide an ongoing record of the condition of the bridge and the verification of the thoroughness of the inspection activities.

11 LOAD RATING ANALYSIS

Inventory and operating load ratings for the HS-20 / HL-93 design vehicle and operating load ratings for each of the Florida legal vehicles and permit truck FL 120 must be determined for every bridge as specified in the AASHTO Manual for Maintenance Inspection of Bridges and the FDOT's Bridge Load Rating Procedure (850-010-035) load rating flow chart and the must current version of the MBE "The Manual For Bridge Evaluation". Load Rating programs accepted by FDOT and MDX are VIRTIS, BRUFEM, SmartBridge, CONSPAN and SALOD. Load rating analyses will be performed using the load factor method or LRFD method.

Load rating should be based on the superstructure. The substructure will not be routinely load rated unless it routinely displays damage, deterioration or other conditions that may significantly affect its load carrying capacity and merits an analysis. Reinforced concrete bridges will not normally be load rated unless damage, deterioration or other reasons merit this analysis.

Inventory and operating ratings must be assigned based on the lowest rating of the structure, superstructure, or deck Operating ratings for bridges with reinforced concrete decks on redundant multi-girder bridges should be assigned based on the lowest rating of the substructure or superstructure unless the structural analysis of the deck is based on deteriorated materials, in which case the deck rating may be used as the governing operating rating.

The inventory and operating ratings must be reported as equivalent AASHTO HS truck loadings. The standard FDOT maximum legal load cases and rating summary forms must be used for determining and documenting legal vehicle operating ratings for the evaluation of traffic load restrictions.

The inventory and operating ratings must be used to code their respective Comprehensive Inventory Data Report (CID) items and must be reported as equivalent AASHTO HS-20 / HL-93 truck loading. The standard Department maximum legal load cases overload truck FL 120 and rating summary forms must be used for determining and documenting legal vehicle operating ratings for the evaluation of traffic load restrictions.

When plans are not available for concrete bridges that do not display significant deficiencies, an area of reinforcing steel and a load rating based on the AASHTO design specification of the era in

which the bridge was constructed may be assumed or non-destructive field testing may be performed to determine the bridge's load carrying capacity. Either the field-testing or the load rating assumption must be pre-approved by the MDX Project Manager.

The load rating documentation the Consultant shall submit must include all final hand calculations, computer printouts, FDOT Load Rating Summary Sheet and its tables as well as the CID printout reflecting the updated load rating values. All documentation shall be signed and sealed in accordance with Florida Statute 471.025 by the Professional Engineer, which confirms the accuracy and completeness of the load rating.

Traffic restriction recommendations must appear in the addendum of the bridge inspection report. The Consultant shall not recommend traffic restrictions based on the MDX's policy of posting by operating ratings. If load restrictions are required, the Consultant should recommend posting the bridge between the operating and inventory rating. However, MDX may elect to post the bridge at any level not exceeding the operating level.

12 MDX FILES AT CONSULTANT OFFICE

The Consultant shall maintain, at its office, a structure file folder in the format as described in the Bridge and Other Structures Inspection and Reporting Manual (850-010-030), for transmittal to MDX at the end of the Project, or at any other time, if so directed by MDX.

The Consultant shall retain all materials transmitted by MDX in the appropriate section of the bridge file folder including: full set of the structure plans, shop drawings, calculations, load rating analysis output, correspondence, and final work order.

The Consultant shall maintain a file folder for overhead sign structure, high mast light towers, ORT gantry structures, and large non-qualifying culverts in a format developed by the Consultant and approved by MDX.

13 ELECTRONIC DOCUMENT MANAGEMENT SYSTEM (EDMS) - HUMMINGBIRD

All new inspection reports produced as part of this Contract shall be scanned into the Electronic Documentation Management System (EDMS) Hummingbird by the Consultant by following FDOT's Electronic Document Management System (EDMS) Requirements procedure no. 325-080-003. The purpose is to ensure that all records produce from this Contract are legible, complete and retrievable once they are archived. All official documents will be stored as a PDF file in the format (e.g.<YYY>.PDF).

The Consultant shall provide personnel proficient in the use of computers and scanner operation to input Inspection Documents into EDMS; this will require familiarity with the Structures Management Documents guidelines for EDMS posted on the Infonet. All documents that are scanned into Hummingbird will be attributed and archived in a fashion outlined by the EDMS QA/QC Process.

The Consultant must obtain and maintain an active VPN connection at their own expense which will be used to manage electronic documents in FDOT's EDMS.

The Consultant must obtain and/or maintain the Enterprise EDMS software approved by FDOT. The EDMS software is HUMMINGBIRD DM current version. FDOT may provide a brief training of the software to the Consultant's representative as requested.

The Consultant shall provide and have available the hardware and software required by MDX as follows:

Windows 2007
Pentium 600 or higher
256 MB of RAM or higher
Sun Java Virtual Machine 1.4.6 or higher (only required with Windows XP)
Hummingbird DM Imaging
Hummingbird DM Viewer

The Consultant must be able to scan color photos and black and white documents with a scanner with at least 300 dpi resolution that is compatible with Hummingbird. MDX shall provide instructions on the use of the attributing documents.

The Consultant doing business with MDX shall require a single named user license for each vendor site (physical location) rather than tracking individual names for Consultant staff within a site. The Consultant is responsible for the purchase and cost of the licenses directly from Hummingbird or a State approved vendor. The purchased license is valid only for use with FDOT Applications.

Read and follow the steps outlined in the Consultant Access Request Instructions located on the Florida DOT website prior to filling out the Computer Security Access Request from:
http://www.dot.state.fl.us/computersecurity/AccesstoFDOT/AccessRequestForms.shtm
Submit a completed Computer Security Access Request form (325-060-05). Both the EDMS and VPN addendums on this form must be completed.
Obtain VPN Connection to the DOT Network.
Complete the FDOT Hummingbird Order Form to purchase a license for Hummingbird.

14 QUALITY CONTROL AND QUALITY ASSURANCE PROGRAM

14.1 Quality Control Plan

The Consultant shall submit a Quality Control Plan to MDX at the kick-off meeting for review and approval.

As part of the Quality Control Plan, the Consultant shall conduct field and office quality reviews to ensure that the organization is in compliance with the requirements cited in the Scope of Service of this Contract.

MDX may perform additional quality assurance by inspecting structures that have been previously inspected by the Consultant and reviewing the inspection records for conformity with the findings.

The Quality Control Program shall have a second peer review level. The peer review can be conducted internally by the Consultant or it may be subcontracted to another Consultant firm.

All subcontracted work shall be the direct responsibility of the prime Consultant.

14.2 Quality Assurance Plan

The Consultant shall include a Quality Assurance Plan in the Proposal. The Quality Assurance Plan should detail the procedure, evaluation criteria, and instructions to his organization to assure conformance with the Contract. Significant changes to the work requirements may require the Consultant to revise the Quality Assurance Plan to keep it current with the Scope of Services. The plan shall include the following items:

14.2.1 Organization

The Consultant's Quality Assurance Plan shall include a description of the Consultant's Quality Control organization and its functional relationship with the organization performing the work under this 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.

14.2.2 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 Quality Assurance Plan.

14.2.3 Quality Records

The types of records which will be generated and maintained by the Consultant during the execution of his Quality Assurance Program shall be outlined in the Quality Assurance Plan. 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 MDX for audit review during the Contract Term.

14.2.4 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.

14.2.5 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 bridge inspection reports, load ratings, etc., have been prepared and checked in accordance with the FDOT Specifications.

14.3 Quality Review by MDX

MDX may conduct Quality Reviews to make certain that the Consultant is in compliance with 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.
Quality Reviews shall evaluate the adequacy of materials, documentation process, procedures, training, guidance and staffing included in the execution of this Contract.

Any Subcontractor or vendor may be included as part of the Quality Review.

15 REFERENCE MATERIALS

15.1 General

Prior Inspection Reports (provided by MDX)

State of Florida Department of Transportation Urban Area Functional Classification Map for each urban area

Bridge plans, when available (provided by MDX)

Load Rating Summary Forms

Bridge Analysis and Rating System Coding Forms

15.2 Manuals

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

15.2.1 FDOT Manuals

Florida Department of Transportation/Maps & Publications Sales, MS 12
Hayden Burns Bldg.
605 Suwannee Street
Tallahassee, Fl 32428
(904)990-0830

15.2.2 AASHTO Publications

American Association of State Highway. & Transportation Officials
444 N. Capitol Street, NW, Suite 225
Washington, DC 20001

15.2.3 FHWA Manuals

U.S. Government Printing Office
Washington, DC 20402

15.3 PONTIS Access / BrM

The Consultant shall provide access to PONTIS including all hardware and software required for PONTIS entry. MDX shall assist the Consultant in obtaining the required authorizations for access from FDOT District 6.

16 WORK SCHEDULE & PROGRESS REPORTS

16.1 Kick-Off Meeting

MDX shall conduct a kick-off meeting before the Consultant starts working on their first assignment. This meeting will include but will not be limited to the following personnel.

MDX's Project Manager
Consultant's Project Manager

MDX 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 MDX.

The Consultant shall provide MDX with a written quality control /quality assurance procedure, a proposed work schedule, and organization chart. The proposed work schedule, quality control procedure, organization chart, and a list of major equipment the Consultant will use during the 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.

16.2 Work Schedule

A proposed work schedule shall be submitted to the MDX for approval. This schedule shall comply with the inspection sequence listed in **Inventory**, and shall show how the Consultant anticipates the work will progress from month-to-month to completion of the Agreement. The work schedule shall be established in a manner that will insure that the structure inspections will not be delinquent. Structures in this Contract will be inspected in general conformance with the schedule. Refer to **Exhibit B, MDX Structures Inventory List and Inspection Due Dates**, attached as an Exhibit to the RFP for MDX structure inspection sequence and due dates.

At the MDX'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 MDX's Project Manager.

Work that falls behind schedule must be reported to MDX Project Manager on a monthly basis. The report shall contain a detailed explanation why the specific task was not performed according to schedule and how the Consultant intends to get back on schedule.

16.3 Progress Reports

The Consultant shall submit monthly progress reports that show work completed as measured against the Work Schedule. Monthly progress reports shall describe the work performed on each task and shall include a list of work performed on each structure by structure number. Accumulated project cost shall also be reported and compared to the proposed project cost. Progress reports should be delivered to MDX concurrently with the monthly invoice.

The Consultant shall submit the updated weekly inspection schedule to MDX on a monthly basis unless otherwise directed by the MDX Project Manager.

The MDX Project Manager will compare the actual work accomplished against the approved proposed work schedule to determine if work is progressing at an acceptable rate.

The Consultant's Project Manager shall meet with an MDX representative on a monthly basis at the MDX Office.

17 PRE-ACTIVITY MEETING

MDX shall conduct a pre-activity meeting after the Consultant has received the Notice to Proceed letter from MDX. Attendance to this meeting shall include but will not be limited to the following personnel:

MDX Project Manager
MDX Professional Services Administrator
Consultant Project Manager

MDX 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 MDX.

The Consultant shall provide, where requested by MDX, a written Quality Control Plan, a proposed work schedule, and a proposed cost flow graph.

18 MISCELLANEOUS

18.1 Legal Proceedings

The Consultant shall serve as an expert witness in any legal proceedings, if required by MDX. The fee for these Services shall be established, if and when, they are needed.

18.2 Errors and/or Omissions

The Consultant shall be responsible for the professional quality, technical accuracy and the coordination of all reports, analysis, 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 the Consultant's substandard performance of the Services described in this Contract.

18.3 Liquidated Damages

Damages arising from non-performance of Services cannot be calculated with any degree of certainty and accordingly, it is hereby agreed that the Consultant shall pay to MDX, as liquidated damages and not as a penalty, one hundred dollars ($100.00) per day for late submittal of signed and sealed original and electronic copy of written inspection reports as required herein. In addition, it is hereby agreed that the Consultant shall pay to MDX, as liquidated damages and not as a penalty five hundred dollars ($500.00) per day per structure for late completion of PONTIS reports as required herein.