

ATTACHMENT A -- SCOPE OF WORK SERVICES **(for NBIS and <20 feet Structures – State and County/Local)**

The CONSULTANT shall:

- A. Contact governing agencies or authorities prior to the CONSULTANT's performance of the work covered in this Agreement in order to secure and provide to the STATE letters and documents approving access, inspections of Structures, and other related activities.
- B. Submit a field inspection schedule to the STATE within ten (10) working days after receipt of written direction from the STATE to proceed with this project. The schedule will include the Structure Number, Name, date of the previous inspection, recommended frequency of inspection, date of proposed field inspection and proposed submission dates for reports (with format reports indicated) for each Structure listed in Appendix 1, which is attached hereto and incorporated into this Scope of Work ("Structures"). The schedule must be updated and submitted every six months (at end of **June and December**). The maximum frequency of inspection shall be between twenty-two (22) months to twenty-four (24) months.
- C. Review any previous inspection reports provided by the STATE, County or any other governing agency.
- D. **If this is a County Minor Bridge contract, perform the services in Sub-section Z (below) if directed to do so, and verify that all structures proposed fit the current definition of a Minor Bridge. Then,** for all structures, as directed, perform a routine inspection survey of each of the Structures to determine the following:
 - 1. The condition of the Structure and the Structure site.
 - 2. The present live load capacity, or rating of the Structure, based on the current (2011) AASHTO Manual for Bridge Evaluation, 2nd Edition as interpreted and modified by the New Jersey Department of Transportation Bureau of Structural Design in Sections 43 and 44 of the of the *Bridges and Structures Design Manual* and the New Jersey Department of Transportation Bureau of Structural Evaluation and Bridge Management in the *Highway Bridge Load Rating Manual*.
- E. Within nine (9) months of the date on which the STATE deems the inspection survey detailed in Paragraph D above to have been completed, the STATE may order the CONSULTANT to expand the scope of work of this Project to include a second routine survey of any or all of the Structures. Unless otherwise agreed to by the STATE, all second routine survey work **for NBIS structures** will be performed in accordance with the provisions of this Agreement between twenty-two (22) and twenty-four (24) months after this completion date. Payment for all work associated with the second routine survey will be made in accordance with the *Extra Work* provisions set forth in this Agreement. (Note: At present, there is **no** intention to require a second regular inspection for other than NBIS bridges.)
- F. Perform interim inspections of those Structures requiring such interim inspections as follows:
 - 1. Interim inspections shall be comprised of routine inspections of only those Structure component areas identified by previous inspections.
 - 2. The interim inspection report shall be submitted to the STATE, County or governing agency within thirty (30) days of the date of the interim inspection. The interim report shall be in report Format D, and may be required to be produced online, unless indicated otherwise by the STATE Project Manager. The interim report shall include, but not be limited to, the following items:
 - a. The date of the original inspection and date of the interim inspection.
 - b. The recommended date for the next interim inspection (if applicable).
 - c. Noted changes in the condition of the Structure components identified for interim inspection.
 - d. Photographs, to depict a change in the condition of the inspected component or **of a** defect.

- e. Action required to remedy any significant change in the condition of the inspected component or defect that is found.
 - f. Applicable changes to the Structure, Inventory and Appraisal coding.
 - g. Updated load rating calculations (if required).
- G. Perform testing and inspections utilizing all data and historical records provided by the STATE, County or governing agency. The testing and inspection shall include, but not necessarily be limited to, the following:
1. **DECK:**
 - a. Structure deck systems such as concrete slab, asphalt overlay, wood block flooring, or steel grating;
 - b. Parapets, sidewalks, safety walks, median barriers and handrails;
 - c. Expansion and deflection joints;
 - d. Drainage inlets or scuppers.
 2. **SUPERSTRUCTURE:**
 - a. Structural steel work including trusses, girders, floor beams, cantilever brackets, and stringers, including connecting and supporting members such as, diaphragms, cross frames, laterals, portals, stiffeners, and bearings;
 - b. Structural concrete work such as reinforced and prestressed stringers, girders, floor beams, box beams, "T" beams, slabs, and diaphragms;
 - c. Structural timber work such as stringers, bridging, planking, and bulkheads;
 - d. Drainage; troughs and downspouts and their supports;
 - e. Inspection walks and ladders;
 - f. Lighting standards and sign connections;
 - g. Paint or other protective systems;
 - h. Utilities and their attachments.
 3. **SUBSTRUCTURE:**
 - a. Concrete pedestals, pads, abutment bridge seats, and pier tops;
 - b. Those portions of abutments, wingwalls, and piers that are above ground or water;
 - c. Horizontal and vertical underclearances for waterway, highway, and railway crossings;
 - d. Timber pile bents, including cap beams, sills, and bracing that are above ground or water;
 - e. Any additional items such as fender systems, as well as if there is significant debris and/or materials stored near or under the bridge that could imperil the bridge.
- H. If and as indicated in the CONSULTANT's Proposal, perform Mechanical and Electrical Inspections of assigned Structures in accordance with the *Mechanical/Electrical Inspection Guidelines*.
- I. Perform underwater inspections and evaluations of the Structures over waterways in accordance with the "New Jersey Department of Transportation Underwater Inspection and Evaluation of New Jersey Bridges and Guidelines Manual", dated June 1994 with subsequent revisions. For those Structures requiring an underwater

diving inspection, as indicated in the CONSULTANT Proposal, or as requested by the STATE, the inspection shall be performed by a qualified STATE approved diver from the mud line to the high-water line, inspecting all concrete and timber Substructure for deterioration including spalls, cracks, marine borer damage, rot, necking, and any other defects of the water-crossing Structure.

For projects utilizing CombIS (by this we mean a project where some or all of the reports are entirely contained within CombIS), the underwater report will need to be a self-contained document. Therefore, prepare and submit a stand-alone Preliminary Underwater Inspection Report, according to NJDOT standards, for each bridge. This report is to be created in a totally electronic format. This preliminary report is to be converted into a PDF, with format and file naming according to the then current version of the NJDOT “SDMS Contractors Specifications for Scanning, PDFing, and Electronic Deliverables.”

Act upon all comments submitted relative to all reviews of the preliminary report. The CONSULTANT will address or include all comments in the electronic version, and re-label the report as FINAL. This FINAL report will be converted into a PDF, with format and file naming according to the then current version of the NJDOT “SDMS Contractors Specifications for Scanning, PDFing, and Electronic Deliverables,” and submitted both electronically and in hard copy.

- J. Take soundings for each bridge over a waterway to determine the elevations of the bed of the waterway along each fascia limit and longitudinal centerline, and take sufficient soundings at each pier and abutment to determine the relationship of the footing to the bed of the waterway, and plot stream bed profiles. This work shall be done in accordance with the above referenced *Underwater Inspection Guidelines Manual*. Review previous soundings where available and note any severe or significant changes in the stream bed. The sounding plot should include the elevation of the substructure foundations (if available) and the oldest streambed profile plots available to show long term changes and Plan View for the waterway channel.
- K. Inspect the geometry of bridge approaches. Check approach guide rails for their adequacy, transition to the bridge railing, and approach ends.
- L. Observe the geometric and Structural adequacy and other safety features of the Structure and the Structure’s railing. Measure minimum vertical clearances above and below the Structure and lateral underclearances to the left and right as per the requirements of the current “*Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation’s Bridges*” by the FHWA, and the current New Jersey Department of Transportation’s “*Recording and Coding Guide for the Structure Inventory and Appraisal of New Jersey’s Bridges*” and subsequent revisions. For waterway Structures, measure the width and vertical underclearance above the stream bed of the channels and the freeboard at the time of inspection.
- M. Measure, probe, or otherwise make all efforts to determine the nature or cause of any abnormal movements, detected or suspected, of Superstructures or Substructures using routine inspection procedures.
- N. If concurred by the STATE, arrange for and/or conduct work of a special nature in addition to the items described within this scope of work. Such work may include, but not necessarily be limited to, the following:
 - 1. Inspecting inaccessible areas by diving, rigging, excavating, confined space entry or removing portions of the substructure;
 - 2. Coring, sampling, or testing.

The CONSULTANT will be compensated for special nature work approved by the STATE as Additional Work, unless the STATE, in its sole discretion, determines that the work is *Extra Work*, in which case the CONSULTANT will be compensated in accordance with the terms of the Agreement.

- O. Sufficiently check “as built” plans in the field to ensure that the plans are truly representative of the Structure before they are used in stress calculations. Where plans are not available or where the available plans are incomplete, drawings of Structures are to be made using a 22” x 36” format and based on field measurements. Said drawings are to include a plan, elevation, and typical cross section at a scale of 3/16” = 1’-0”. The dimensioning shall include, but not be limited to, span lengths, railings, and overall widths, the spacing and sizes of non-encased beams and girders, and the available dimensions of encased beams and girders.

Provide either CAD or Microsoft Visio drawings, as directed by the State Project Manager, showing Structure elevation views with channel bed soundings and Plan View for Structures over waterways and Structure plan views with vertical and horizontal clearances for highways over highways and/or railroads. CAD drawings are to be either 8-1/2" x 11" or 11" x 17" depending on the complexity of the drawing.

- P. Render a professional evaluation for each Structure in the form of a *Bridge Survey Report*, prepared in either in CombIS, or prepared in accordance with the current format of the STATE on the inspection of Structures as stated in Sections 43 and 44 of the current edition of the *New Jersey Department of Transportation Bridges and Structures Design Manual*, or as otherwise directed by the STATE.

Each of these *Bridge Survey Reports* shall include, but not be limited to, the following for each Structure:

1. Perform load rating calculations in accordance with the Current (2018 including 2019 interims) AASHTO Manual for Bridge Evaluation, 2nd Edition as modified by the STATE for each of the three (3) New Jersey legal vehicles, the required specialized hauling vehicles (SHVs), Emergency Vehicles (EV2 and EV3) plus any additional rating vehicles, as required by the STATE, for either:
 - a. Update any existing structural analysis and ratings to determine the load-carrying capacity of the Structure in its present condition by the Load Factor/Working Stress methods and the Load and Resistance Factor method;
 - b. Prepare inventory and operating ratings by the Load Factor/Working Stress methods and the Load and Resistance Factor method of all superstructure components, timber pile bents (Timber Caps) and box beam caps (Steel Box Beams and Steel Caps), and steel trestles as required for all Structures that have incomplete or no rating calculations and have plans available, or have been identified as requiring complete revised rating calculations by the NJDOT.

Additionally, if required, submit a complete LARS model for the bridge, complying with any additional guidance provided by the NJDOT.

2. Recommendations with estimated costs for replacement, widening or major repairs to the Structure (for Structurally Deficient or Functionally Obsolete bridges); or any action required to assure safe uninterrupted traffic flow (Emergency or Priority Repairs) without estimated costs;
 3. Comments on the Structural and geometric adequacy (based on current AASHTO and NJDOT Standards) of the Structure bridge railing (i.e., snag potential) and the attachment and transition to the Structure of the approach guide rail;
 4. Findings from observations performed for the routine inspection of the Structures;
 5. Drawings of Structures made in accordance with Paragraph O, above, which shall be reduced in size and included in the report;
 6. Stream bed profiles, in accordance with the "*New Jersey Department of Transportation Underwater Inspection and Evaluation of New Jersey Bridges Guidelines Manual*", dated June 1994 and subsequent revisions, and comments on any severe scouring or significant changes in the stream bed as well as comments on the hydraulic capacity of the Structure;
 7. Updated and complete SI&A and Bridge Element (NBE) data, converting and/or refining the Bridge Element data to correspond to the 2013 National Bridge Element standards with any updates (unless otherwise directed), in accordance with the current FHWA, "*Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges*" and subsequent revisions. Said revisions are to reflect actual field conditions and physical features. The final *Bridge Survey Report* shall include a copy of the computer data printout.
- Q. Provide immediate notification to the STATE, County or any other governing agency, in writing, of any adverse conditions found during the routine inspection surveys that would jeopardize the load carrying capacity of any of the Structures. Also, any decrease in the live load carrying capacity of any of the Structures that would require posting or a change in the existing posting should be brought, in writing, to the immediate attention of the STATE, County or any other governing agency.

- R. Within 30 days of the date of inspection, input ALL basic data and field collected information into CombIS.

Within 90 days of the date of inspection, complete updating all of the SI&A and National Bridge Element (NBE) data. However, for inspections occurring near the end of the year, less than 90 days will be available as we are requiring that all data be input by JANUARY 31st.

- S. Submit, within thirty (30) days of the date of completion of the routine inspection of the Structures, a list of any additional Structures that may require interim inspections. The list will include a description of the Structural component area requiring the interim inspection, Structure number, name and recommended inspection interval. All Structures contained on the list must satisfy the following conditions:
1. The Structure must have a condition rating of three (3) or less for either Item 59 (Superstructure), Item 60 (Substructure) or Item 62 (Culvert) of the *Structure Inventory and Appraisal Guide*; or,
 2. The Structure must be posted or be required to be posted for load restriction due to an Item 70 (Bridge Posting) of the *Structure Inventory and Appraisal Guide* code of four (4) or less. For Structures with Item 70 (Bridge Posting) coded 4 or less, but which show no extensive physical deterioration, interim inspections shall be performed at twelve (12) month intervals;
 3. The list should also include any other Structure whose condition warrants an inspection at less than the regular interval for the structure type.
- T. After review and approval by the STATE of the submitted list, perform interim inspections in accordance with the STATE guidelines set forth in Subparagraph F.2 above. Interim inspections shall be comprised of routine inspections of only those Structural component areas previously identified in the approved list.
- U. Perform only those interim inspections which can be accomplished within the time period for completion of work established by this Agreement and any Consultant Contract Modification hereto. Costs incurred in performing the interim inspections of Structures not previously identified shall be paid as *Extra Work* by Consultant Contract Modification.
- V. All reports submitted are to be Final, with the Consultant performing all quality checks necessary to ensure a complete and accurate report. Following procedures established by the STATE, submit to the STATE, County or any other governing agency with jurisdiction over the Structure the electronic report (if required) and the required number of copies of the signed and sealed *Bridge Survey Report* for each Structure at least two (2) months from the end of the duration of the Agreement as specified in Section III—Time, unless otherwise specified in Consultant Contract Modifications. In the event any such reports are not in compliance with the current format as referenced in Paragraph P as determined by the STATE, County or any other governing agency, the CONSULTANT shall rectify them and resubmit the *Bridge Survey Reports*.

AND/OR

Finalize all aspects of the report in CombIS (if just SI&A and NBE data is required to be in CombIS then the appropriate data is considered to be the sum total of the report in CombIS), including any drawings and calculations, and submit via CombIS to the CORRECT bridge owner, at least two (2) months prior to the end of the duration of the Agreement as specified in “Section III—Time,” unless otherwise specified in Consultant Contract Modifications. However, for structures that will require an Interim inspection, the report must be submitted to the bridge owner no later than one half the number of months until the interim inspection will be due (typically six months for an interim inspection due in one year), and the report must be finalized prior to the date of interim inspection. In the event any such report is not in compliance with the current formats for data and presentation as referenced in Paragraph P. as determined by the STATE, County or any other governing agency, the CONSULTANT shall rectify them and resubmit the *Bridge Survey Report*. In addition, submit hard copies of all reports to Municipalities not yet online, as required by the requirements for the specific project.

For any project utilizing CombIS, upload ALL working files into CombIS PRIOR to report submission to the Bridge Owner.

- W. Act upon all comments submitted relative to all reviews of the *Bridge Survey Reports*. If comments have been made, the CONSULTANT will address or include all comments and update the *Bridge Survey Reports* (according to project requirements) within one (1) month from the receipt of any comments on the report. Revise all Structure Inventory and Appraisal data as and when directed by the STATE. Submit signed and sealed hard copies of the *Bridge Survey Reports* as required by the requirements for the specific project.
- X. Acceptance, when satisfactory, of each *Bridge Survey Report* will be provided to the CONSULTANT (typically within CombIS if a CombIS report).

For projects NOT utilizing CombIS, prepare and submit any electronic deliverables as required by the contract, following the methods specified at the time. These can include, but are not limited to, CD-ROMs and/or online storage (as directed) of PDF files and index files, working files, database files, complete LARS bridge models, etc.

- Y. The work pursuant to this Agreement shall be complete upon acceptance of each of the final *Bridge Survey Reports* and submission of all deliverables. In no event shall the services required by this Agreement be deemed complete until the STATE has advised the CONSULTANT, pursuant to the terms of Paragraph E. of this Attachment A, whether the CONSULTANT must perform second routine survey work.
- Z. **If this is a County Minor Bridge contract, perform the following if directed to do so, prior to performing the work described in Section D. (above):**

Part I. Minor Bridge (Culvert) Identification

This effort will consist of the following typical tasks:

- A Determine the level of effort required to develop a complete list of culverts in the assigned Townships, then identify and locate all culverts.
 - 1. **[Level 1 effort]** Complete location information is available and all Municipal culverts are included. (Note: With the written permission of the State Project Manager, the Part 1 and Part 2 efforts may be allowed to be combined into one effort. This will only be approved if the Consultant can produce a truly final scope of effort covering both Parts.)
 - a. Obtain existing data from the County, perform any necessary field work, and enter all required data into CombIS, within required time frames.
 - 2. **[Level 2 effort]** Partial location information is available and/or not all Municipal culverts are included.
 - a. Obtain existing data from the County. Determine culvert locations for these structures (if not already provided) and collect basic office data.
 - b. Contact each assigned Municipality for which data may be incomplete and determine if additional culverts need to be added to the list. Document these contacts (and provide this information to the State).
 - c. Obtain any new structure numbers needed and provide basic asset data to CombIS Administration so the assets can be added to the system.
 - d. Perform any necessary field work, and enter all inventory data into CombIS, within required time frames.
 - 3. **[Level 3 effort]** Little or no information is available on existing County and Local culverts.
 - a. Obtain existing data from the County and/or STATE. Determine culvert locations and collect basic office data.
 - b. Contact each assigned Municipality and determine if they have any information on the culverts located within their borders. Document these contacts (and provide this information to the State). Collect available information.
 - c. Develop a plan for locating as yet unidentified culverts. After STATE approval, execute the plan.
 - d. Obtain any new structure numbers needed and provide basic asset data to CombIS Administration so the assets can be added to the system.

- e. Perform any necessary field work, and enter all inventory data into CombIS.
- B. Visit each site to collect basic information and perform a partial visual evaluation.
1. Survey all identified County culverts (from 5 to 20 feet in length) and collect basic information on each.
 - a. Verify each culvert is eligible for inclusion (including CombIS vs. non-CombIS status), and determine whether each CombIS culvert will require a Regular Full or a Regular Visual inspection.
 - b. All information, including required photos (in JPEG format) is to be collected by the Consultant and input into CombIS.
 - c. Within thirty (30) days of the date of inspection, input ALL basic data and field collected information into CombIS (see the document “CombIS Guidance for Inventory Level Data Collection” for guidance on what fields are required to be entered during the inventory period).
 - d. Within ninety (90) days of the date of inspection, all field collected information shall have been thoroughly reviewed (QA/QC) by the Project Manager or QA/QC Engineer.
 2. Based on standard Priority Repair procedures, provide immediate notification to the County and bridge owner via CombIS (and also in writing for some Municipalities), and by phone if required, of any adverse conditions found during the visual survey that would clearly jeopardize the load carrying capacity of any of the Structures.
 3. As part of this effort, identify all work that would be required for an initial (or regular) inspection (including, but not limited to, the need for traffic control, underwater inspection, specific confined space requirements, etc.).
- C. Submit required data in CombIS. Also, for Municipalities not yet online, provide a hard copy.

Part II. Minor Bridge (Culvert) Inspection

Within nine (9) months of the date on which the STATE deems the identification survey detailed in “Part I.” above to have been completed, the STATE may order the CONSULTANT to expand the scope of work of this Project to include a routine survey of any or all of the Structures. If so, perform an inspection of all culverts identified, as defined in Section D. (above).