

**General Engineering Services Scope of Services  
Central Office, Office of Structural Engineering  
PID No. 117554**

Scope of Services Meeting Date: \*\*/\*\*/\*\*  
Approved Final Scope of Services Minutes Date: \*\*/\*\*/\*\*

**GENERAL ENGINEERING SERVICES  
Central Office, Office of Structural Engineering  
Scope of Services**

The CONSULTANT may be required to perform the following services on a task order type basis for bridges designated by regulation or by agreement as City or Village inspection responsibility. Consultants must be prequalified for Level 1 Bridge Inspection services, which may include but are not limited to the following:

**Task 1 - Scour Tasks**

- Task 1A - Scour Critical Assessment
- Task 1B - Scour Plan-of-Action

**Task 2 - Load Rating Tasks**

- Task 2A - Field Measurements for Load Rating
- Task 2B - Load Rating Calculations

**Task 3 – AssetWise Structure Inventory and Review, Including New SNBI Fields**

**Task 4 – Inspection Procedures**

- Task 4A - Fracture Critical Plan
- Task 4B – Underwater Inspection Procedures

**Task 5 - Bridge Inspection**

- Task 5A – Routine Bridge Inspection
- Task 5B – Fracture Critical Inspection
- Task 5C – Underwater Dive Inspection

Services shall be conducted in accordance with the following:

- ODOT Manual of Bridge Inspection, Latest Version
- ODOT Bridge and Inventory Coding Guide, Latest Version
- ODOT Bridge Design Manual, Section 900), Latest Version
- Hydraulic Engineering Circulars 18, 20 and 23
- The Manual for Bridge Evaluation, Third Edition 2019 interim with revisions, AASHTO

Publication

- Bridge Inspector's Reference Manual, FHWA NHI Publication Number: 12-049,  
Publication Year: 2012
- Underwater Bridge Inspection, FHWA Publication Number: FHWA NHI-10-027,  
Publication Year: 2010

The CONSULTANT shall maintain a project cost accounting system that will segregate costs for individual task orders. The invoicing progress reports shall be detailed enough to show the breakdown of each assigned structure indicating the status of all subtasks. Completion of the individual subtasks is necessary for reimbursement credits.

The duration of the agreement will be twelve (12) months from the authorization date of the agreement.

The Department will be performing an annual Quality Assurance Review (QAR) for each selected consultant in accordance with Manual of Bridge Inspection to ensure accuracy and consistency of the inspection and documentation in AssetWise. This typically includes an office and field review.

The project will be divided into four (4) sub-projects (SP). A CONSULTANT will be selected for each sub-project. Municipalities opted into the previous inspection program will have the option to renew their legislation. Municipalities with population greater than 50,000 people are excluded from the program. The sub-projects have the following general geographic areas, category characteristics, and maximum contract values for the municipalities with municipal inspection responsibility obtained from AssetWise data as of July 2022.

**Project: SP01 - District (1, 2, &3), Total Structures = 485\***

Type	L ≤ 20'	20' < L ≤ 60'	60' < L ≤ 200'	L > 200'	Total
<b>Single Span</b>	192	178	26	0	<b>396</b>
<b>Multi-Span</b>	24	20	31	14	<b>89</b>
<b>Culvert</b>	119	29	1	0	<b>149</b>
<b>Truss</b>	0	1	3	0	<b>4</b>
<b>Fracture Critical Inspection</b>	0	0	2	0	<b>2</b>
<b>Underwater Inspection</b>	0	0	0	0	<b>0</b>
<b>Load Rating**</b>	108	99	29	7	<b>243</b>

\* Level 1 Bridge Inspection structures

\*\* Tasked as budget allows w/priority for NBI bridges with many BrR updates

**Project: SP02 - District (4, 11, &12), Total Structures = 392\***

Type	L ≤ 20'	20' < L ≤ 60'	60' < L ≤ 200'	L > 200'	Total
Single Span	127	126	35	0	288
Multi-Span	22	25	37	20	104
Culvert	84	40	1	0	125
Truss	1	2	6	0	9
Fracture Critical Inspection	0	0	3	0	3
Underwater Inspection	0	0	0	0	0
Load Rating**	75	76	36	10	197

\* Level 1 Bridge Inspection structures

\*\* Tasked as budget allows w/priority for NBI bridges with many BrR updates

**Project: SP03 - District (5, 6, &10), Total Structures = 515\***

Type	L ≤ 20'	20' < L ≤ 60'	60' < L ≤ 200'	L > 200'	Total
Single Span	189	206	40	0	435
Multi-Span	11	11	37	21	80
Culvert	111	87	4	0	202
Truss	0	0	7	0	7
Fracture Critical Inspection	0	0	7	1	8
Underwater Inspection	0	0	0	0	0
Load Rating**	80	87	31	8	259

\* Level 1 bridge inspection structures

\*\* Tasked as budget allows w/priority for NBI bridges with many BrR updates

**Project: SP04 - District (7, 8 &9), Total Structures = 508\***

Type	L ≤ 20'	20' < L ≤ 60'	60' < L ≤ 200'	L > 200'	Total
Single Span	177	157	36	1	371
Multi-Span	29	45	49	14	137
Culvert	126	85	3	0	214
Truss	0	0	7	1	8
Fracture Critical Inspection	0	1	4	1	6
Underwater Inspection	0	0	0	0	0
Load Rating	103	101	43	8	255

\* Level 1 bridge inspection structures

\*\* Tasked as budget allows w/priority for NBI bridges with many BrR updates

Please note that the total number of structure types is estimated based on current AssetWise data queries, and it may be adjusted when tasks are assigned in the future which may include newly found orphan bridges. The estimated annual contract price value for each sub-project is as follows:

SP01 \$560,000  
SP02 \$530,000  
SP03 \$570,000  
SP04 \$590,000

**DBE Participation:**

<b>Project</b>	<b>Goal</b>
SP01	10%
SP02	0%
SP03	0%
SP04	0%

CONSULTANT shall clearly designate in the letter of intent the SP(s) they wish to be considered for.

Three (3) copies of the letter of intent shall be submitted. The letter of intent shall demonstrate that the CONSULTANT has a clear understanding of the scope of services.

**Price Proposal Due Date: \*\*/\*\*/\*\***

**UNDERSTANDING**

1. Inspections shall be completed by firm's full-time staff prequalified with ODOT for Level 1 bridge inspection according to the Manual of Bridge Inspection.
2. Task order are intended for maintaining compliance with the FHWA 23-Mertics, Ohio Revised Code, and ODOT policy manuals. Deadlines set by the task orders shall be respected.
3. All reports and records compiled under this agreement shall become the property of the City or Village and shall be housed in the City or Village. ODOT shall receive an electronic copy of plans, analysis files, reports and other items mentioned below.
  - a) CONSULTANT shall perform all applicable updates to ASSETWISE with new or revised information for structure inventory and appraisal data, inspections, scour, fracture critical members, and load ratings.
  - b) CONSULTANT shall submit copies of all reports and calculations electronically, or in hard copies when requested, to the City or Village for inclusion in their bridge records.
  - c) This includes, as applicable, a printed copy of the inspection report, Scour Plan-of-Action, Fracture Critical Plan, load rating report, gusset plate analysis, inspection procedures, and field measurement notes, digital pictures as well as a reproducible digital data file (.pdf, .doc, .xml, and .xls formats).
4. Copies of all transmittal letters and emails related to this Task Order shall be submitted to Central Office, Office of Structural Engineering.
  - a) When required, CONSULTANTS shall locate the original construction plans, as-built, and shop drawings from archive locations specified by the municipality and upload them onto ASSETWISE.

**Services to be furnished by CONSULTANT may include:**

**TASK 1 - SCOUR TASKS**

**Task 1A – Scour Critical Susceptibility NBIS Item 113)** - The CONSULTANT shall refer to the most recent ODOT Manual of Bridge Inspection. Deliverables include field notes, a completed Scour Critical Assessment Checklist as per Appendix I of the 2014 Manual of Bridge Inspection, and any other reference material needed for the bridge owner to properly maintain their bridge files. Channel photos or cross sections maybe tasked under this item if assigned. Please use the latest scour assessment form.

**Task 1B - Scour Plan-of-Action** - The CONSULTANT shall refer to the most recent ODOT Manual of Bridge Inspection Appendix H for the scope of this task. Deliverables include a completed Scour Plan-of-Action, field notes, calculations, and any other reference material needed by bridge owner to maintain bridge files.

## **TASK 2 – LOAD RATING TASKS**

**Task 2A - Field Measurements for Load Rating** - Should no plans exist or if additional information is required, each main member shall be field measured for load rating. The condition of the member should be noted on the field documentation. All measurements shall be included in the load rating report.

**Task 2B - Load Rating Calculations** – A bridge carrying vehicular traffic shall be rated to determine the safe load carrying capacity. The CONSULTANT shall review existing bridge plans and inspection reports and other inspection information such as photographs and estimates of section loss for bridge members and connections. The analysis for existing structures shall be performed for AASHTO HS20-44 [MS 18] (truck, lane, & military) loading for both inventory and operating levels, and for the four Ohio Legal Loads including the special hauling vehicles (2F1, 3F1, 4F1, and 5C1, SU4, SU5, SU6, SU7, Type 3, Type 3S2, Type 3-3, NRL, EV2, and EV3) at operating level. The CONSULTANT shall try to complete the load rating analysis utilizing BrR (Virtis) at first. Hand-calculations or Spreadsheets if BrR is not applicable. The BrR analysis file, other load rating files, and the latest BR100 shall be included with the submittal to OSE.

The inventory and operating ratings shall be coded as per the most recent version of the ODOT Bridge Inventory Coding Guide. Update ASSETWISE Inventory with the load rating results and upload BR100 pdf file.

The electronic deliverable shall include if applicable an Excel spreadsheet or other files used for analysis for each bridge which shall include the member areas, member capacities both with and without section loss, influence lines (can be the ordinates or graph of the lines), dead loads and dead load stresses in members, live loads and live load stresses in members for all truck loadings and the load ratings of the members. Truck loadings to be used for the ratings are specified in BDM Section 900.

The Load Rating Report shall be prepared by a registered or non-registered engineer, and it shall be checked, signed, sealed and dated by an Ohio Registered Professional Engineer.

The Load Rating Report shall explain the method used to calculate the load rating of each bridge.

AASHTO Load Factor Rating (LFR) shall be utilized for all bridges not designed by Load and Resistance Factor Design. AASHTO Load and Resistance Factor Rating (LRFR) shall be utilized for all structures designed for HL93 loading starting October 2010.

Load Rating Report Submittal to the City or Village shall include:

- a. Two (2) printed copies and one electronic pdf copy of the Load Rating Report for each bridge.
- b. Final summary of inventory and operating ratings for each member and the overall ratings of the structure shall be presented for each live load truck. An acceptable format is ODOT form BR-100.
- c. Analysis program input files. Both input and output files shall be submitted when programs other than BrR or spreadsheets are used.
- d. All calculations related to the load rating.
- e. If applicable, the weight limits posting recommendations including a copy of the standard posting sign; such as R12-1 (24" x 30"), R12-H5 (30" x 48"), and R12-H7 (30" x 30").

### **TASK 3 – ASSETWISE STRUCTURE INVENTORY AND REVIEW**

The scope of this task includes a limited review of the structure inventory data in the ODOT ASSETWISE. In general, the CONSULTANT shall review specific existing ODOT bridge inventory records (as provided by the City and approved by ODOT) of the designated bridge. The CONSULTANT may download the inventory report, which contains inventory data for each bridge on file with ODOT from the ODOT website. The CONSULTANT shall verify this data and determine if the ODOT ASSETWISE structure file information needs to be updated on the system. If no changes are necessary, then no ASSETWISE inventory needs to be filled out. If changes are necessary, the scope of this task shall also include completing and filing inventory updates (and supplements, as needed) in ASSETWISE. The CONSULTANT shall refer to the ODOT Office of Structural Engineering Inventory and Coding Guide of ASSETWISE for inventory coding details. In 2023, ODOT will start the transition toward SNBI, the consultants shall fill out all empty fields for this purposes as communicated by OSE.

### **TASK 4 – INSPECTION PROCEDURES**

**Task 4A – Fracture Critical Plan** – A Fracture Critical Member Plan and inspection procedure shall be developed and updated. For more details, refer to Chapter 4: Inspection Types in the Manual of Bridge Inspection. It shall include:

1. Sketches of the superstructure with locations of all fatigue and fracture prone details identified.
  - a. Use framing plan or schematic with detail locations labeled and a legend explaining each labeled item on the scheme.
  - b. Use an elevation view for trusses.

- c. Classify similar fatigue/fracture prone details as types (e.g. end of partial cover plate).
2. A table or location of important structural details indicating:
  - a. Type of detail (e.g. end of partial cover plate, short web gap, etc.)
  - b. Location of each occurrence of detail
  - c. AASHTO Fatigue Category of detail
  - d. Identify retrofits previously installed
3. Risk Factors Influencing the inspector access.

Photos and sketches shall be properly referenced. The CONSULTANT shall refer to the most recent ODOT Manual of Bridge Inspection for additional details on the scope of this task.

**Task 4B – Underwater Inspection Procedures** – An underwater inspection procedure shall be developed. For more details, refer to Chapter 4: Underwater Inspections in the Manual of Bridge Inspection. Please note that ODOT has recently revised the format of the procedures file. The diving team shall fill out or update the latest form and upload it on ASSETWISE prior to performing the actual dives. Please contact OSE for a copy of a blank form if not uploaded on ASSETWISE at the time.

## **TASK 5 – BRIDGE INSPECTION**

**Task 5A – Routine Bridge Inspection (ASSETWISE Input)** - Perform a routine field inspection of the structure to determine the general condition. The CONSULTANT shall refer to the most recent ODOT Manual of Bridge Inspection for additional details on the scope of this task. Section 1111 of the Moving Ahead for Progress in the 21<sup>st</sup> Century Act (MAP-21) modified 23 U.S.C.144, requires Ohio to report bridge element level data for NBIS bridges on the National Highway System (NHS) to FHWA. A condition rating or element level inspection will be assigned. This task includes Condition Rating Inspection for non-NBI structures, Condition Rating Inspection for NBI structures, and Element Level Inspection for NBI classified as NHS. The consultant shall probe the channel around the footing in water to determine depth of scour and report the date in AssetWise.

**Task 5B – Fracture Critical Inspection** - Perform a fracture critical field inspection of fracture critical items. The CONSULTANT shall update the FCM inspection procedure with current photos and descriptions. The CONSULTANT shall refer to the most recent ODOT Manual of Bridge Inspection for additional details on the scope of this task.

**Task 5C – Underwater Dive Inspection** – Perform Underwater/ In-Water inspection of substructure units according to the cycle shown in ASSETWISE. Emergency underwater inspection may arise for specific structures over the duration of the contract period. Work shall be done in accordance with the reference manuals and inspection procedure. Scour risk shall be evaluated after field and data collection.