

**CITY OF XENIA, OHIO  
RESOLUTION 2019 – X**

**APPROVING THE PRELIMINARY CONSENT LEGISLATION FOR THE ODOT BRIDGE  
INSPECTION PROGRAM, AND DECLARING AN EMERGENCY**

**WHEREAS**, the Ohio Department of Transportation (“ODOT”) performs annual bridge inspections for interested local jurisdictions, and the City of Xenia has been afforded the opportunity to participate in the annual bridge inspection program through ODOT at no cost to the City and for a period of three (3) years; and

**WHEREAS**, the City of Xenia, as a Local Public Agency (LPA), has determined the need for the following described project (“Project”):

*Bridge Inspection Program Services including, but not limited to, routine inspections, element level inspections, critical-findings reports, fracture critical member inspections, load-rating calculations and reports, weight limits posting sign recommendations, scour assessments, scour plans of action, development of fracture critical plans, and underwater dive inspection reports if needed;*

**NOW, THEREFORE, THE CITY OF XENIA HEREBY RESOLVES**, at least five (5) members of the City Council concurring, that:

**Section 1.** This Resolution is an emergency for the reason that an approved copy of this Resolution is required to be submitted to ODOT at the earliest date possible in order for the City to participate in the ODOT Bridge Inspection Program.

**Section 2.** Being in the public interest, the City, as LPA, hereby gives consent to the Director of the Ohio Department of Transportation to complete the Project.

**Section 3.** The City, as LPA, shall cooperate with the Director of Transportation in the Project as follows:

*The State shall assume and bear 100% of all the cost for Bridge Inspection Program Services requested by the City and agreed to by the State. Eligible Bridge Inspection Services are described in the Consultant’s Scope of Services Task Order Contract, attached hereto as Exhibit A.*

*The City, as LPA, agrees to pay 100% of the cost of those features that are not included in Exhibit A. Those features may include, but are not limited to, the purchasing and erecting of recommended weight limits posting signs; the implementation of critical findings reports, such as partial or total bridge closures; the implementation of the scour plans of action. When recommendations affect public safety, ODOT expects full implementation by the LPA. Starting in October 2019, the Federal Highway Administration (FHWA) requires installing weight limits posting signs within thirty (30) days from the official date of the approved recommendations. Timely implementation is essential to the success of ODOT’s Bridge Inspection Program.*


**Section 4.** The City, as LPA, agrees that all right-of-way required for the Project will be made available in accordance with current State and Federal Regulations.

**Section 5.** The City Manager is hereby authorized, on behalf of the City of Xenia, to execute any contracts or agreements with the Director of Transportation as may be necessary to complete the Project.

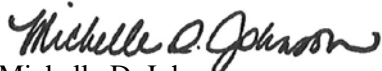
**Section 6.** It is found that all formal actions of this Council concerning and relating to the adoption of this Resolution were adopted in an open meeting of this Council, and that all deliberations of this Council that resulted in this formal action were in meetings open to the public in compliance with all legal requirements, including Section 121.22 of the Ohio Revised Code.

**Section 7.** This Resolution shall become effective immediately upon its passage, in accordance with Section 5.04 of the City Charter.

Passed: August 8, 2019

  
Michael D. Engle  
President, Xenia City Council

Attest:

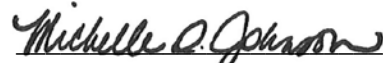
  
Michelle D. Johnson  
City Clerk

**CERTIFICATE OF COPY  
STATE OF OHIO**

City of Xenia of Greene County, Ohio  
(LPA)

I, Michelle D. Johnson, as Clerk of the City of Xenia of Greene County, Ohio, do hereby certify that the foregoing is a true and correct copy of Resolution 2019-X adopted by the legislative authority of the said City of Xenia, Ohio on the 8<sup>th</sup> day of August, 2019; that the publication of such Resolution 2019-X has been made and certified of record according to law; that no proceedings looking to a referendum upon such Resolution 2019-X have been taken; and that such Resolution 2019-X and certificate of publication thereof are on record in hard copy and/or electronic format in the Office of the City Clerk.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my official seal, if applicable, this 9<sup>th</sup> day of August, 2019.

  
\_\_\_\_\_  
Michelle D. Johnson, City Clerk

City of Xenia of Greene County, Ohio  
(LPA)

**(CITY SEAL)**

(If the LPA is designated as a City then the "City Seal" is required. If no Seal, then a letter stating "No Seal is required to accompany the executed legislation.")

The foregoing is accepted as a basis for proceeding with the Project described therein.

For the City of Xenia of Greene County, Ohio:  
(LPA)

Attested: \_\_\_\_\_

\_\_\_\_\_  
Brent W Merriman, Date  
City Manager  
(Contractual Agent)

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For the State of Ohio:

Attested: \_\_\_\_\_

\_\_\_\_\_  
Jack Marchbanks, Ph.D., Date  
Director  
Ohio Department of Transportation  
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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. Tasks 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 1C – Scour Analysis

### Task 2 - Load Rating Tasks

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

### Task 3 – SMS Structure Inventory and Review

### 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 SMS 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, Second Edition 2013 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 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 SMS. 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 SMS data as of March 2019.

**Project: SP01 - District (1, 2, &3), Total Structures = 435\***

Type	L <= 20'	20' < L <= 60'	60' < L <= 200'	L > 200'	Total
<b>Single Span</b>	170	158	24	0	<b>352</b>
<b>Multi-Span</b>	21	18	29	15	<b>83</b>
<b>Culvert</b>	156	45	0	0	<b>201</b>
<b>Truss</b>	0	0	2	0	<b>2</b>
<b>Underwater Inspection</b>	0	0	0	0	<b>0</b>
<b>Fracture Critical Inspection</b>	0	4	0	0	<b>4</b>
<b>Load Rating**</b>	149	75	16	10	<b>250</b>

\* Level 1 bridge inspection structures

\*\* Tasked as budget allows w/priority for NBI bridges

General Engineering Services Scope of Services  
Central Office, Office of Structural Engineering  
PID No. 109334

**Project: SP02 - District (4, 11, &12), Total Structures = 270\***

Type	L ≤ 20'	20' < L ≤ 60'	60' < L ≤ 200'	L > 200'	Total
Single Span	86	86	25	0	197
Multi-Span	16	14	27	16	73
Culvert	82	36	0	0	118
Truss	1	1	5	0	7
Underwater Inspection	0	0	0	1	1
Fracture Critical Inspection	0	1	5	0	6
Load Rating**	67	35	16	5	123

\* Level 1 Bridge Inspection structures

\*\* Tasked as budget allows w/priority for NBI bridges

**Project: SP03 - District (5, 6, &10), Total Structures = 355\***

Type	L ≤ 20'	20' < L ≤ 60'	60' < L ≤ 200'	L > 200'	Total
Single Span	132	126	29	0	287
Multi-Span	7	8	35	18	68
Culvert	108	62	4	0	174
Truss	0	0	8	0	8
Underwater Inspection	0	0	1	1	2
Fracture Critical Inspection	0	0	8	1	9
Load Rating**	141	73	20	8	242

\* Level 1 bridge inspection structures

\*\* Tasked as budget allows w/priority for NBI bridges

**Project: SP04 - District (7, 8 &9), Total Structures = 426\***

Type	L ≤ 20'	20' < L ≤ 60'	60' < L ≤ 200'	L > 200'	Total
Single Span	150	125	29	0	304
Multi-Span	27	42	41	12	122
Culvert	135	93	30		231
Truss	0	1	5	1	7
Underwater Inspection	0	0	1	1	2
Fracture Critical Inspection	0	2	4	1	7
Load Rating	180	81	27	2	290

\* Level 1 bridge inspection structures

\*\* Tasked as budget allows w/priority for NBI bridges

Please note that the total number of structure types is estimated based on current SMS data query, and it may be adjusted when tasks are assigned in the future.

### **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 SMS 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 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 SMS.

**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.

**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, 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 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 SMS 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 – SMS STRUCTURE INVENTORY AND REVIEW**

The scope of this task includes a limited review of the structure inventory data in the ODOT SMS. 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 SMS structure file information needs changing. If no changes are necessary, then no SMS 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 SMS. The CONSULTANT shall refer to the ODOT Office of Structural Engineering Inventory and Coding Guide of SMS for inventory coding details.

### **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 Appendix F of the inspection manual. The diving team shall fill out or update the new form and upload it on SMS prior to performing the actual dives. Please contact OSE for a copy of a blank form if not uploaded on SMS at the time.

## **TASK 5 – BRIDGE INSPECTION**

**Task 5A – Routine Bridge Inspection (SMS 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.

**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 SMS. 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.