

2020 Quality Assurance Review Bridge Inspection Program

The scope of this review is to evaluate the agency's bridge inspection program based upon The Ohio Revised Code, the ODOT Manual of Bridge Inspection (MBI), and the National Bridge Inspection Standards (NBIS). This includes the following checklist, interviews with staff members responsible for the inspection program, review of files and documentation, and field inspection of bridges. Note: the inspection program includes inventory, maintenance, and load rating in addition to the field inspections.

Instructions for completing form: Please fill out checklist prior to scheduled review. Brief answers are desired; fill the items out to the best of your ability.

Agency Reviewed: Morgan County Engineer's Office

Checklist completed by: Clayton McCoy Date: 8/24/2020

I. MAINTENANCE, REHABILITATION AND REPLACEMENT PROGRAM

A. NUMBER OF BRIDGES WITH MAINTENANCE RESPONSIBILITY

1. Greater than 20' long (NBIS length 23CFR 650c) (Metric 22): **125**
2. Bridges $\geq 10'$ and $\leq 20'$ long (Metric 22): **77**

B. PROCEDURES AND BUDGET

1. Contract repairs and replacement
 - List typical work items: **Contract repairs would include painting, pile driving, specialized engineering needs, specialized concrete cutting. Contract replacement would include any project with an estimated cost greater than \$100,000.**
 - List approximate annual budget: **\$400,000 to \$500,000**
 - Are Fed Funds used? **Yes, for bridge replacement thru the CEAO Program.**
 - Are Credit Bridge funds used? **Yes, for bridge replacement or rehab projects.**
2. In-house repairs and replacements
 - List typical work items: **In-house repairs would include placement of scour protection, replacement or repairs of bridge decking or beams, guardrail repairs, replacement of the wearing surface.**
 - List approximate annual budget: **\$150,000 to \$200,000**
 - List staffing availability: **Typically a crew of 4 to 8, but anyone in the staff as needed.**

3. How are projects identified and selected? Projects are identified and selected based on the annual bridge inspections, any follow-up inspections, and by routine travelling by the entire County Highway staff.

4. How are plans developed for emergency repairs? Once a potential issue has been identified the Engineer and Inspection team develop a plan to correct the issue and then proceed with needed repairs. If the bridge needs to be closed to complete repairs that is completed first. If the repairs are beyond the abilities of the local forces, a qualified contractor is secured. This could include both an engineering contractor and/or a construction contractor.

5. Who does the work of emergency repairs? Typically, our own crews, but if beyond our abilities, a qualified contractor will be brought in. The final determination is based on the amount and type of work necessary to complete the repair work.

6. How is repair work documented? (i.e. work record, time card) The repair work is first documented on the daily work assignment sheets. The crew leader will then give the daily completed work to the field superintendent after it is entered into a computer program for cost retention. The County Engineer is then contacted at the end of the work day with the daily completed work, and it is entered into his computer for final documentation.

7. Who is empowered to order emergency road closures and how is it done? Once the bridge inspection team determines that there is a need to close a bridge/road, they have the authority to do so. They will then contact the County Engineer, who will determine how long it must be closed. Then all local authorities are notified about the details of the closure.

II. INSPECTION PROGRAM(ASSET WISE Data will be utilized)

A. NUMBER OF BRIDGES WITH INSPECTION RESPONSIBILITY

1. Greater than 20' long (NBIS length, ORC 5501.47, 5543.20) (Metric 22): 125

2. Between 10' and 20' long (including 10' & 20') (ORC 5501.47, 5543.20) (Metric 22): 77

B. STAFFING

1. Name of individual who is the **Program Manager** (makes FINAL DECISION). List qualifications/yrs. experience (bridge inspection experience)

(Metric 1&2)

- Name: [Stevan Hook, P.E. 44684](#)
- Yrs. Inspection related experience: [16 years as Morgan County Engineer](#)
- List courses attended (& approx dates): [33 years with AEP with railroad and haul road bridges.](#)

2. Name of individual in charge of bridge inspection unit (**Reviewer**). List qualifications/yrs. experience (bridge inspection experience)

(Metric 1)

- Name: [John Wackerly, P.E. 55488](#)
- Yrs. Inspection related experience: [30 years \(bridge inspections\)](#)
- List courses attended (& approx dates): [Teaches FHWA-NHI Course No. 130055](#)

3. **Team Leader** - individual in charge of bridge inspection team (INSPECTED BY). List qualifications/yrs. experience (bridge inspection experience)

(Metric 1&3)

- Name: [John Wackerly, P.E. 55488](#)
- Yrs. Inspection related experience: [30 years \(bridge inspections\)](#)
- List courses attended (& approx dates): [Teaches FHWA-NHI Course No. 130055](#)

- Indicate the percentage of time spent on the listed duties in the previous year

%TIME

<u> 100 </u> Bridge/Culvert inspection	<u> </u> Overload/Superload
<u> </u> Bridge Design/Plan prep	<u> </u> Surveying
<u> </u> Bridge Construction	<u> </u> Other -
<u> </u> Bridge Maintenance	<u> </u> 100%

7. **Team Member** of bridge inspection team (Include information for each additional team member – copy and paste as needed). List qualifications/yrs. experience (bridge inspection experience)

- Name: Clayton McCoy, P.E. 76882
- Yrs. Inspection related experience: 6 years
- List courses attended (& approx dates): Level 1 & Level 2 ODOT Bridge Inspection Training (Sept.-Oct.) 2017

- Indicate the percentage of time spent on the listed duties in the previous year

%TIME

<u>20</u> Bridge/Culvert inspection	_____ Overload/Superload
<u>5</u> Bridge Design/Plan prep	_____ Surveying
<u>5</u> Bridge Construction	<u>55</u> Other -
<u>5</u> Bridge Maintenance	_____ 100%

10. **Load Rating Engineer** – Name of individual responsible for load ratings (must be PE) (Metric 4)

- a. List Ohio PE # : Stevan Hook, Morgan County Engineer, P.E. 44684

11. **Underwater Bridge Inspection Diver** – Name person doing dive inspections (Metric 5)

- Name: Jim Bir
- Yrs. Inspection related experience: 20 years of underwater inspection experience for USACE, Commercial Divers, NBIS certified.
- List courses attended (& approx dates): NBIS Certified

C. INSPECTION EQUIPMENT

1. Type of vehicle used for inspections: Pick-up Truck

2. What typical inspection equipment does the inspection team normally carry with them to the inspection site?

	Yes/No	Thermometer	_____
Extension Ladder	<u>X</u>	Plumb Bob	_____
what length?	<u>16'</u>	Camera	<u>X</u>
6' Folding Rule	<u>X</u>	2'-0" Level	<u>X</u>
100' Fiberglass Tape	_____	Brush Hook/Axe	_____
Geologist Hammer	<u>X</u>	Boat	<u>X</u>
Inspection Mirror	_____		
Flashlight	<u>X</u>	First Aid Kit	<u>X</u>

Wire Brush	___	Sounding Chains	___
Calipers	___	Hip Boots and Waders	<u>X</u>
Shovel	___	Paint Stick/Crayon	<u>X</u>
Screw Driver	___	Scraper	___
Pliers	___	Probing Rod	<u>X</u>
Wrenches	___	Vertical Clearance Rod	___

3. List types of NDT methods used (IE. dye penetrant, magnetic particle, ultrasound):
None.

4. How is usage determined?

5. List additional items

6. What equipment does your team have available for "hands on" access to FCM bridge members? (Metric 16): Climbing Harnesses as needed.

7. Use of equipment (Metric 16)

- a. How many bridges need a snooper? 11
- b. How many bridges is it used on? None have been used.
- c. How often? Every other year

D. INSPECTION PROCEDURES

1. Approximately how many inspections were made during last calendar year? (Metric 6): 202

2. Approximately how many inspections are scheduled for the current calendar year?
(Metric 6): 202

3. Average number of inspections per day (Metric 6): 8 to 10

4. Approximately how long (hours) does it take to inspect average sized structures

- a. Beam/Girder-45 min
- b. Slab-30 min
- c. Truss (pony/through/deck)- 1 hour
- d. Culvert-30 min

5. Are previous inspection reports available at site for review? (Yes X No ___)
(Metric 15)

Are bridge inspections recorded in field on paper or electronically? Please describe: The previous year's inspection reports (paper) are brought out and

changes are made as needed. The changes are then made to the inspection reports online and submitted for review through SMS/Assetwise.

Are photos available for every bridge? (Yes No)

Are photographs taken of defects during inspection? (Yes No)

Are Bridge comments recorded? (Yes No) Where? **Comments are recorded on the previous year's inspection report and then converted to electronic format at the office.**

Are bridge comments brought to the bridge? (Yes No)

6. Are the bridge plans carried to the bridge site for review if necessary or are they readily available for review in the bridge office? (Metric 15)

a. Bridge site (Yes No)

b. Bridge office (Yes No)

7. Who determines the need for a routine inspection frequency greater than once Annually, and what criteria is used? (Metric 6): **Program Manager and Team Leader.**

8. List bridges requiring inspection more frequently than one year intervals (DAMAGE, IN-DEPTH, SPECIAL INSPECTIONS). List frequency of inspection. (Metric 11)

9. Does the inspection team believe it has enough time to do the job? (Yes No)

10. What kinds of quality assurance checks are made of the inspection process? (Metric 20)
None, other than spot checks performed by the County Engineer.

11. Do any bridges have underwater inspections done in less than 60 month intervals? (Metric 8)
No

12. Have all bridges requiring underwater inspections been inspected in 60 month intervals? (Metric 8)
Yes

13. Do any bridges have fracture critical inspections done in less than 24 month intervals? (Metric 10)
No

14. Have all bridges requiring fracture critical inspections been inspected in 24 month intervals? (Metric 10): **Yes**

15. Is a Team Leader at the bridge at all times during the following inspections? (Metric 12)

Initial Inspection? (Yes No)

Routine Annual Inspections? (Yes No)

Special Inspections? (Yes No)

Underwater Inspections? (Yes No)

Fracture Critical Inspections? (Yes No)

E. SCOUR CRITICAL BRIDGES (Guidance in ODOT Manual of Bridge Inspection)

1. How many bridges are considered scour susceptible? (Type of Service over Water) [201](#)

2. How many bridges are inspected by probing? [200](#)

3. How many structures are Scour Critical (item 113 - 3, 2, 1 or 0)? (Metric 18): [2](#)
[SFN: 5832071 \(having rock channel protection placed this week\), SFN: 5836387](#)

4. Are Plans of Action (POA) complete and implemented for all bridges coded "Scour Critical"? (Metric 18): [Yes, a plan has been completed, but has not been implemented.](#)

5. How many structures are coded 6 on item 113 Scour Critical? (Metric 18): [None.](#)

6. How are scour evaluations performed? (Metric 18): [Visually and by probing.](#)

7. Who determines the need for diving inspections and by what criteria? [Program Manger and Team Leader- only 1 bridge requires a diving inspection.](#)

F. INVENTORY

1. What kinds of inventory quality assurance checks are performed? (Metric 22) : [When errors are found or when maintenance or rehab is performed the inventory is updated.](#)

2. How often is the inventory checked for needed updates? (Metric 22) [Whenever maintenance or rehab is performed on a structure, or if the County Engineer feels it is warranted.](#)

3. How is the inventory data input into the system? [Directly into SMS now Assetwise.](#)

4. When is the updated inventory data forwarded to ODOT? (Metric 23): It is updated as it is put into the SMS/Assetwise database. This includes changes discovered during inspections and/or changes from new construction or rehab.

Changes discovered during inspection?

Changes from new construction or rehab?

5. NBIS requires that the inspecting organization maintain master lists of the following: (Provide a list of these bridges) (Metric 16,17,11)

a. Bridges that contain fracture critical members, including the location and description of such members on the bridge and the inspection procedures of such members (Each individual FCM member on each FCM bridge must be clearly identified in the bridge file) (Where a FCM Identification Plan exists then look for remaining fatigue life)

b. Bridges requiring underwater inspections

c. Bridges with unique or special features (i.e., pin & hanger, draw, suspension):
Deerfield Township # 284-Has a steel pin connector at the top of the wooden arch.

Note: An examination of the files will be performed during the review.

- Bridge Files
- Scour Critical POA
- Fracture Critical Plan
- UW inspection Procedure

G. PROCEDURES

1. Are new maintenance problems identified during bridge inspection?
(Yes_X_No___) (Metric 15)

2. How do the inspectors inform maintenance personnel of routine bridge maintenance problems (written, oral, other)? (Metric 15): The inspector(s) relay the information directly to the field superintendent and the county engineer. This is done both through written and oral communication.

3. Who do the inspectors notify when emergency repairs or critical findings are necessary (action required within 1 week)? (Metric 21)

How is this emergency action documented? [The inspector\(s\) relay the information directly to the field superintendent and the county engineer. This is done through both written and oral communication.](#)

4. If a bridge requires emergency repairs, is this noted as part of the inspection report or as a separate document? (Metric 21): [Separate document.](#)

5. Who checks proper placement of signs (load posting, clearance, speed restriction, narrow bridge etc.)? (Metric 15): [Program manager, team leader. The field superintendent also regularly checks for missing signage on daily road inspections.](#)

H. LOAD ANALYSIS AND POSTING

1. Number of plans for existing bridges available for NBIS length bridges

2. Number of plans for non-NBIS bridges ($\geq 10'$ and $\leq 20'$ long)

3. Number of bridges analyzed in accordance with the *AASHTO Manual for Bridge Evaluation* (Metric 13)

4. By Whom (Metric 13): [Morgan County Engineer, Stevan Hook & Richland Engineering Limited of Mansfield, Ohio.](#)

5. When: [Over the last 16 years and as new bridges are designed and built.](#)

6. Methods used (Metric 13): [ODOT spreadsheet programs and consultant in-house programs.](#)

7. When are bridges rerated and how do load raters keep up with overlays and other changes? (Metric 13): [Whenever there is a significant change in the bridge conditions. This will include pavement overlays if not milled prior to resurfacing.](#)

8. Number of NBIS length bridges not load rated (Metric 13)

9. List the NBIS length bridges considered “not ratable” including reason for being considered “not ratable” (Metric 13)

10. Number of NBIS length bridges load posted (Metric 14)

11. How determined (engineering judgment, analysis, mix)

12. List bridges closed due to condition rating (rough check)

13. List bridges rated less than 100% Ohio legal load and not physically load posted, and resolution

14. Number of NBIS bridges with Gusset Plates (Metric 13)

15. Number of NBIS bridges with Gusset Plates analyzed. (Metric 13)

16. Describe filing system (where files are kept): (Metric 15): All bridge files (SFN) are kept in the engineer's office (paper and electronic). Files and photos are housed on the server as well as paper copies of files in a filing cabinet in the office.

- Inspection reports, including old inspections
- Design Calculations
- Plans
- Load analysis calculations-in the individual bridge files
- Inventory forms
- Photos and sketches
- Repairs and maintenance history
- Scour evaluation
- Scour POA
- Fracture Critical File
- Load Posting/Closing
- Underwater inspections
- Special inspection eqpt. or procedures
- Flood data, waterway adequacy, channel cross sections

Note the NBIS Retention period: BR-86 report 10 years, All records 3 years after bridge removed, Load rating calculations 3 years after a new rating is done.

17. What is the FC bridge inspection frequency? (Metric 16) : NBIS=24 months

18. Is the FC Plan completed for all FC bridges? (Metric 16) (Yes ___ No X)

19. Are the FCM Identified in the FC Plan? (Metric 16) (Yes X No ___), for the bridges with the FCM load rating completed.

20. What is the underwater inspection frequency? (Metric 17)
60 months

21. Are the underwater elements identified and located? (Metric 17) (Yes X No ___)

22. List any complex bridges: (Metric 19)
Morgan # 5885712 in its original design.

23. Do the complex bridges require specialized inspection procedures and additional inspector training? (Metric 19) (Yes ___ No X)

Describe:

I. RECOMMENDED PRACTICES

This area of the report should list any innovative ideas that provide valuable support and process improvement for offices across the State. For example: It creates a safer work environment, deploys resources efficiently, maximizes available resources, is measurable etc.