

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: Defiance County

Checklist completed by: Warren Schlatter Date: 4/13/2021

I. MAINTENANCE, REHABILITATION AND REPLACEMENT PROGRAM

A. NUMBER OF BRIDGES WITH MAINTENANCE RESPONSIBILITY

1. Greater than 20' long (NBIS length 23CFR 650c) (Metric 22) **110**
2. Bridges $\geq 10'$ and $\leq 20'$ long (Metric 22) **120**

B. PROCEDURES AND BUDGET

1. Contract repairs and replacement
 - List typical work items _____
 - List approximate annual budget \$500,000
 - Are Fed Funds used? Yes, Large Bridge deck replacements only for repairs
 - Are Credit Bridge funds used? Not for repairs, yes for medium replacements
2. In-house repairs and replacements
 - List typical work items All repairs and medium replacements
 - List approximate annual budget \$250,000
 - List staffing availability 15 maintenance employees
3. How are projects identified and selected? Maximum use of Federal funds and then use of local funds to improve bridge conditions. The majority of plans are done in house. County Engineer is bridge inspector and identifies and selects projects.

4. How are plans developed for emergency repairs? County Engineer is bridge inspector and develops plans.
5. Who does the work of emergency repairs? County Crew
6. How is repair work documented? (i.e. work record, time card) Plans and/or pictures
7. Who is empowered to order emergency road closures and how is it done? Inspector is County Engineer and would order road closure on site.

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) **110**
2. Between 10' and 20' long (including 10' & 20') (ORC 5501.47, 5543.20) (Metric 22) 120

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: Warren Schlatter, P.E., P.S.
 - Yrs. Inspection related experience: Since 1998
 - List courses attended (& approx dates) ODOT Level 2-Feb 1997, ODOT Refresher-Mar 2011, ODOT Refresher-Mar 2013, ODOT Refresher-July 2017

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

(Metric 1)

- Name: See above
 - Yrs. Inspection related experience: _____
 - List courses attended (& approx dates) _____

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

(Metric 1&3)

- Name: See above
 - Yrs. Inspection related experience: _____
 - List courses attended (& approx dates) _____
-
-

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

%TIME

<u>15</u> Bridge/Culvert inspection	<u>5</u> Surveying
<u>15</u> Bridge Design/Plan prep	_____ Other -
<u>10</u> Bridge Construction	<u>55</u> 100%
_____ Bridge Maintenance	
_____ Overload/Superload	

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

(Metric 1&3)

- Name: _____
 - Yrs. Inspection related experience: _____
 - List courses attended (& approx dates) _____
-
-

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

%TIME

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

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

(Metric 1&3)

- Name: _____

- Yrs. Inspection related experience: _____
 - List courses attended (& approx dates) _____
-
-

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

%TIME

- | | |
|---------------------------------|--------------------------|
| _____ Bridge/Culvert inspection | _____ Overload/Superload |
| _____ Bridge Design/Plan prep | _____ Surveying |
| _____ Bridge Construction | _____ Other - |
| _____ Bridge Maintenance | _____ 100% |

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

(Metric 1&3)

- Name: _____
 - Yrs. Inspection related experience: _____
 - List courses attended (& approx dates) _____
-
-

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

%TIME

- | | |
|---------------------------------|--------------------------|
| _____ Bridge/Culvert inspection | _____ Overload/Superload |
| _____ Bridge Design/Plan prep | _____ Surveying |
| _____ Bridge Construction | _____ Other - |
| _____ Bridge Maintenance | _____ 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: _____
 - Yrs. Inspection related experience: _____
 - List courses attended (& approx dates) _____
-
-

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

%TIME

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

8. **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: _____

- Yrs. Inspection related experience: _____

- List courses attended (& approx dates) _____

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

%TIME

_____ Bridge/Culvert inspection
_____ Bridge Design/Plan prep
_____ Bridge Construction
_____ Bridge Maintenance

9. **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: _____

- Yrs. Inspection related experience: _____

- List courses attended (& approx dates) _____

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

%TIME

_____ Bridge/Culvert inspection
_____ Bridge Design/Plan prep
_____ Bridge Construction
_____ Bridge Maintenance

10. **Load Rating Engineer** – Name of individual responsible for load ratings (must be PE) (Metric 4) **Warren Schlatter, P.E., P.S.**

a. List Ohio PE # 67103

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

- Name: _____

- Yrs. Inspection related experience: _____

- List courses attended (& approx dates) _____

C. INSPECTION EQUIPMENT

1. Type of vehicle used for inspections-Car or pickup truck

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

	Yes/No		
Extension Ladder	<u>_N_</u>	First Aid Kit	<u>_N_</u>
what length?	<u> </u>	Wire Brush	<u>_N_</u>
6' Folding Rule	<u>_Y_</u>	Calipers	<u>_Y_</u>
100' Fiberglass Tape	<u>_Y_</u>	Shovel	<u>_Y_</u>
Geologist Hammer	<u>_Y_</u>	Screw Driver	<u>_Y_</u>
Inspection Mirror	<u>_Y_</u>	Pliers	<u>_Y_</u>
Flashlight	<u>_Y_</u>	Wrenches	<u>_N_</u>
Thermometer	<u>_N_</u>	Sounding Chains	<u>_N_</u>
Plumb Bob	<u>_N_</u>	Hip Boots and Waders	<u>_Y_</u>
Camera	<u>_Y_</u>	Paint Stick/Crayon	<u>_N_</u>
2'-0" Level	<u>_Y_</u>	Scraper	<u>_N_</u>
Brush Hook/Axe	<u>_N_</u>	Probing Rod	<u>_Y_</u>
Boat	<u>_N_</u>	Vertical Clearance Rod	<u>_N_</u>

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) **All trusses can be accessed by minor climbing or ladder**

7. Use of equipment (Metric 16)
 - a. How many bridges need a snooper? None
 - b. How many bridges is it used on?
 - c. How often?

D. INSPECTION PROCEDURES

1. Approximately how many inspections were made during last calendar year? (Metric 6) **230**

2. Approximately how many inspections are scheduled for the current calendar year? (Metric 6) **230**

3. Average number of inspections per day (Metric 6) **15**

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

- a. Beam/Girder 0.25
- b. Slab 0.2
- c. Truss (pony/through/deck) 0.5
- d. Culvert 0.1

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: Paper

Are photos available for every bridge? (Yes X No ___)

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

Are Bridge comments recorded? (Yes X No ___) Where?

Are bridge comments brought to the bridge? (Yes X 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 X)

b. Bridge office (Yes X No ___)

7. Who determines the need for a routine inspection frequency greater than once Annually, and what criteria is used? (Metric 6) **County Engineer, for rapid deterioration**

8. List bridges requiring inspection more frequently than one year intervals (DAMAGE, IN-DEPTH, SPECIAL INSPECTIONS). List frequency of inspection. (Metric 11)
None Currently

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)
CEAO QA\QC reviews

11. Do any bridges have underwater inspections done in less than 60 month intervals? (Metric 8)
NA

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

13. Do any bridges have fracture critical inspections done in less than 24 month intervals? (Metric 10)
We choose to do annually

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) NA

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)
All

2. How many bridges are inspected by probing? All

3. How many structures are Scour Critical (item 113 - 3, 2, 1 or 0)? (Metric 18) 0

4. Are Plans of Action (POA) complete and implemented for all bridges coded "Scour Critical"? (Metric 18) NA

5. How many structures are coded 6 on item 113 Scour Critical? (Metric 18) **1**

6. How are scour evaluations performed? (Metric 18)

7. Who determines the need for diving inspections and by what criteria?

F. INVENTORY

1. What kinds of inventory quality assurance checks are performed? (Metric 22) **CEAO QA\QC**

2. How often is the inventory checked for needed updates? (Metric 22) **Annually**

3. How is the inventory data input into the system? **By County Engineer**

4. When is the updated inventory data forwarded to ODOT? (Metric 23)

Changes discovered during inspection? **Entered with inspection**

Changes from new construction or rehab? **Entered after construction**

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)
2038404, 2040107, 2042355

b. Bridges requiring underwater inspections **NA**

c. Bridges with unique or special features (i.e., pin & hanger, draw, suspension) **NA**

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?

(Y_X_N___) (Metric 15)

2. How do the inspectors inform maintenance personnel of routine bridge maintenance problems (written, oral, other)? (Metric 15) **Both written and oral, depending on urgency**

3. Who do the inspectors notify when emergency repairs or critical findings are necessary (action required within 1 week)? (Metric 21) **County Engineer does inspections, notified from bridge site. No current examples**

How is this emergency action documented?

4. If a bridge requires emergency repairs, is this noted as part of the inspection report or as a separate document? (Metric 21) **would be in separate document**

5. Who checks proper placement of signs (load posting, clearance, speed restriction, narrow bridge etc.)? (Metric 15) **Sign technician, very few situations**

H. LOAD ANALYSIS AND POSTING

1. Number of plans for existing bridges available for NBIS length bridges ~95%

2. Number of plans for non-NBIS bridges ($\geq 10'$ and $\leq 20'$ long) ~90%

3. Number of bridges analyzed in accordance with the *AASHTO Manual for Bridge Evaluation* (Metric 13) **110**

4. By Whom (Metric 13) **Warren Schlatter, County Engineer**

5. When - All done now, modified when needed

6. Methods used (Metric 13) **ODOT spreadsheets and AASHTO Brr**

7. When are bridges rerated and how do load raters keep up with overlays and other changes? (Metric 13) **When loading or condition changes**

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

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) **3, including one just replaced**

11. How determined (engineering judgment, analysis, mix) Mostly analysis, some engineering judgement

12. List bridges closed due to condition rating (rough check) None

13. List bridges rated less than 100% Ohio legal load and not physically load posted, and resolution None

14. Number of NBIS bridges with Gusset Plates (Metric 13) **4, including one just replaced**

15. Number of NBIS bridges with Gusset Plates analyzed. (Metric 13) **4, including one just replaced**

16. Describe filing system (where files are kept): (Metric 15)

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

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) **By choice annually**

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

19. Are the FCM Identified in the FC Plan? (Metric 16) (Yes No)

20. What is the underwater inspection frequency? (Metric 17) **NA**

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

22. List any complex bridges: (Metric 19) **NA**

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.