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: Harrison County

Checklist completed by: Doug Bachman Date: 5/22/2019

I. MAINTENANCE, REHABILITATION AND REPLACEMENT PROGRAM

A. NUMBER OF BRIDGES WITH MAINTENANCE RESPONSIBILITY

1. Greater than 20' long (NBIS length 23CFR 650c) **(Metric 22)** 79

2. Bridges >= 10' and <= 20' long **(Metric 22)** 66

B. PROCEDURES AND BUDGET

1. Contract repairs and replacement
   - List typical work items Reconstruction
   - List approximate annual budget 2018 ~ $350,000
   - Are Fed Funds used? Yes
   - Are Credit Bridge funds used? Yes

2. In-house repairs and replacements
   - List typical work items Redecking and abutment and headwall repairs
   - List approximate annual budget 2018 ~ $130,000
   - List staffing availability As needed

3. How are projects identified and selected? Based on general appraisals and issues noted during inspections
4. How are plans developed for emergency repairs? Plans are generally developed in-house, sometimes after consultation with ODOT District 11 personnel

5. Who does the work of emergency repairs? If possible, emergency repairs are completed by county forces, but contractors are hired if needed.
6. How is repair work documented? (i.e. work record, time card) Repair work done in-house is documented with daily timesheets
7. Who is empowered to order emergency road closures and how is it done? The team leader and Program Manager (i.e., County Engineer) are able to order road closures. After making such a decision, the sheriff and highway superintendent are notified of the need to close a road

II. INSPECTION PROGRAM (SMS 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)** 79

2. Between 10' and 20' long (including 10' & 20') (ORC 5501.47, 5543.20) **(Metric 22)** 66

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: Doug Bachman
- Yrs. Inspection related experience: 34
- List courses attended (& approx dates) Introduction to Safety Inspection of In-Service Bridges (3/2017), ODOT Bridge Inspection Level 1 (9/2017), ODOT Bridge Inspection Level 2 (10/2017)

2. Name of individual in charge of bridge inspection unit (**Reviewer**). List qualifications/yrs. experience (bridge inspection experience)
(Metric 1)

- Name: See Program Manager
- 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: Joe Ledger

- Yrs. Inspection related experience: 23
- List courses attended (& approx dates) ODOT Bridge Inspection Level 1 (8/2018), ODOT Bridge Inspection Level 2 (9/2018)

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

%TIME

50 Bridge/Culvert inspection	50 Surveying
_____ Bridge Design/Plan prep	_____ Other -
_____ Bridge Construction	_____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
_____ Bridge Design/Plan prep
_____ Bridge Construction
_____ Bridge Maintenance
_____ Overload/Superload
_____ Surveying
_____ Other -
_____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
_____ Bridge Design/Plan prep
_____ Bridge Construction
_____ Bridge Maintenance
_____ Overload/Superload
_____ Surveying
_____ Other -
_____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: Greg Tullis
- Yrs. Inspection related experience: 8
- List courses attended (& approx dates) _____
_____
_____

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

%TIME
50 Bridge/Culvert inspection
_____ Bridge Design/Plan prep
_____ Bridge Construction
_____ Bridge Maintenance
_____ Overload/Superload
50 Surveying

_____ Other - _____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)**

a. List Ohio PE # 74718

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

- Name: No Underwater Inspections are Currently Required
- Yrs. Inspection related experience: _____
- List courses attended (& approx dates) _____

C. INSPECTION EQUIPMENT

1. Type of vehicle used for inspections 2011 Ford Explorer

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

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

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) FC Inspections are typically performed by consultants

7. Use of equipment (Metric 16)
   a. How many bridges need a snooper? 0
   b. How many bridges is it used on? 0
   c. How often? N/A

D. INSPECTION PROCEDURES

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

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

3. Average number of inspections per day **(Metric 6)** 7

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

   a. Beam/Girder 1
   b. Slab 1
   c. Truss (pony/through/deck) Performed by Consultant
   d. Culvert 0.5-1

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: Recorded on paper copy of previous year's inspection report

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

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

   Are Bridge comments recorded? (Yes _x_ No ___) Where? Inspection report from previous year

   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)** Program Manager makes determination based on issues found during annual inspections.

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

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

10. What kinds of quality assurance checks are made of the inspection process? (Metric 20)
Program Manager periodically accompanies inspection staff in field for inspections.

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

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

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 x No ___)

Routine Annual Inspections? (Yes x No ___)

In-Depth Inspections? (Yes x No ___)

Underwater Inspections ? (Yes ___ No ___) N/A

Fracture Critical Inspections? (Yes x 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) 141

2. How many bridges are inspected by probing? Exact number is unknown, but all structures that are not culverts are subject to probing.

3. How many structures are Scour Critical (item 74 - 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) N/A

5. How many structures are coded 6 on item 74 Scour Critical? (Metric 18)

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

7. Who determines the need for diving inspections and by what criteria? Program Manager and Team Leader determine the need. Diving inspection is needed if components of bridge cannot be properly assessed during low water or by other means (i.e., probing).

F. INVENTORY

1. What kinds of inventory quality assurance checks are performed? (Metric 22) County is currently in the process of surveying structures to ensure an accurate inventory.
2. How often is the inventory checked for needed updates? (Metric 22) Any work done to bridges is noted during annual inspections
3. How is the inventory data input into the system? After field verification, data is input into SMS by Team Leader or Program Manager.
4. When is the updated inventory data forwarded to ODOT? (Metric 23)

   Changes discovered during inspection? Within 180 days

   Changes from new construction or rehab? Within 180 days

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) 3431398

   b. Bridges requiring underwater inspections N/A

   c. Bridges with unique or special features (i.e., pin & hanger, draw, suspension) N/A

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 on the bridge inspection form?
(Y___N_X_) On another form? (Yes _X_ No ___) (Metric 15) Maintenance problems are documented on previous year's inspection report
2. How do the inspectors inform maintenance personnel of routine bridge maintenance problems (written, oral, other)? (Metric 15) Inspector makes written notes of maintenance issues. Notes are provided to maintenance personnel or communicated verbally.

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

How is this emergency action documented? No documented procedure

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) Team Leader and Sign Supervisor

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 (>= 10' and <= 20' long)

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

4. By Whom (Metric 13)

5. When

6. Methods used (Metric 13)

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

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) 0

15. Number of NBIS bridges with Gusset Plates analyzed. (Metric 13) 0

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

- Inspection reports, including old inspections
- Design Calculations
- Plans
- Load analysis calculations
- 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) 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 ___ No X)

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

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

22. List any complex bridges: (Metric 19) N/A

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

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.