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: Madison County Engineer

Checklist completed by: Jeff Coleman Date: 9/23/19

I. MAINTENANCE, REHABILITATION AND REPLACEMENT PROGRAM

A. NUMBER OF BRIDGES WITH MAINTENANCE RESPONSIBILITY

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

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

B. PROCEDURES AND BUDGET

1. Contract repairs and replacement
   - List typical work items deck replacements, new structures
   - List approximate annual budget $150,000
   - Are Fed Funds used? yes
   - Are Credit Bridge funds used? yes

2. In-house repairs and replacements
   - List typical work items Patching Steel Beams and concrete decks
   - List approximate annual budget $350,000
   - List staffing availability 4 employees

3. How are projects identified and selected?
   inspection reports and field visits
4. How are plans developed for emergency repairs?
   They are discussed by in house engineers

5. Who does the work of emergency repairs?
OUR bridge Crew
6. How is repair work documented? (i.e. work record, time card)
daily work sheets and photos
7. Who is empowered to order emergency road closures and how is it done?
County Engineer - calls traffic superintendent

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)**
102
2. Between 10' and 20' long (including 10' & 20') (ORC 5501.47, 5543.20) **(Metric 22)**
80

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: Bryan Dhume
- Yrs. Inspection related experience: 14
- List courses attended (& approx dates) Br. Inspection Level 1 - 2006, Br. Inspection Level 2 - 2007, Br. Insp. Refresher Training - 2018 (most recent) ✓

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

- Name: Bryan Dhume
- Yrs. Inspection related experience: 14
- List courses attended (& approx dates) See above

3. **Team Leader** - individual in charge of bridge inspection team (INSPECTED BY). List qualifications/yrs. experience (bridge inspection experience)
(Metric 1&3)

- Name: Jeff Coleman

- Yrs. Inspection related experience: 1.5
- List courses attended (& approx dates)
Bridge Inspection Part 1 - 8/30/18
Bridge Inspection Part 2 - 9/27/18

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

%TIME

20 Bridge/Culvert inspection
15 Bridge Design/Plan prep
10 Bridge Construction
5 Bridge Maintenance
_____ Overload/Superload
50 Surveying
_____ Other -
_____ 100%

4. **Team Leader** - individual in charge of bridge inspection team (INSPECTED BY). List qualifications/yrs. experience (bridge inspection experience)
(Metric 1&3)

- Name: Ken Koppes
- Yrs. Inspection related experience: 4 yrs
- List courses attended (& approx dates)
Bridge INSPECTION PART 1 4/21/15
Bridge inspection part 2 5/12/15

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

%TIME

20 Bridge/Culvert inspection
5 Bridge Design/Plan prep
5 Bridge Construction
_____ Bridge Maintenance
_____ Overload/Superload
30 Surveying
40 Other -
_____ 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

_____ 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: Nathan ERNST
- Yrs. Inspection related experience: 0
- List courses attended (& approx dates)
Bridge Inspection Level 1 - 9/28/17
Bridge Inspection Level 2 - 10/19/17

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

%TIME
0 Bridge/Culvert inspection
0 Bridge Design/Plan prep
0 Bridge Construction
0 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 # 82389 Jeff Coleman

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

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

C. INSPECTION EQUIPMENT

1. Type of vehicle used for inspections

Pickup truck

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

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

3. List types of NDT methods used (IE. dye penetrant, magnetic particle, ultrasound)

Sounding with hammer

4. How is usage determined?

visual determination

5. List additional items

6. What equipment does your team have available for "hands on" access to FCM bridge members? (Metric 16) ladders

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? 0

All FCM can be inspected from ladders

D. INSPECTION PROCEDURES

1. Approximately how many inspections were made during last calendar year? (Metric 6)
182

2. Approximately how many inspections are scheduled for the current calendar year? (Metric 6)
182

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 2
   b. Slab 1
   c. Truss (pony/through/deck) 2.5
   d. Culvert 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: on paper

   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? on inspection report

   Are bridge comments brought to the bridge? (Yes ___ No X) Should be

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 based on inspection reports

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

4930207 - middle Pike - monthly
4930649 - Rosedale milFord center - monthly

3 visual - no record of monthly inspection

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)
County Engineer reviews all reports in office

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) N/A

13. Do any bridges have fracture critical inspections done in less than 24 month intervals? (Metric 10) yes, all FCM are inspected on 12 month schedule JMS code 24

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 X) 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)
65

2. How many bridges are inspected by probing?
any bridge that looks to have a scour possible

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) N/A

5. How many structures are coded 6 on item 113 Scour Critical? (Metric 18)
0

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

7. Who determines the need for diving inspections and by what criteria?
Program Manager by reviewing inspection reports

F. INVENTORY

1. What kinds of inventory quality assurance checks are performed? (Metric 22)
Reviewed at inspection report approval
2. How often is the inventory checked for needed updates? (Metric 22)
Upon notification from Mark
3. How is the inventory data input into the system?
Via SMS
4. When is the updated inventory data forwarded to ODOT? (Metric 23)

Changes discovered during inspection? < 180 days
entered into SMS
Changes from new construction or rehab?
Upon completion it is entered into SMS

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
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 X N___) On another form? (Yes X No ___) (Metric 15)
Repair list
2. How do the inspectors inform maintenance personnel of routine bridge maintenance problems (written, oral, other)? (Metric 15)

Repair list completed after inspections

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

County Engineer

How is this emergency action documented?

Daily work reports

4. If a bridge requires emergency repairs, is this noted as part of the inspection report or as a separate document? (Metric 21) inspection report & oral to county Engineer

5. Who checks proper placement of signs (load posting, clearance, speed restriction, narrow bridge etc.)? (Metric 15) Deputy Engineer

SMS C.F. Report

H. LOAD ANALYSIS AND POSTING

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

76

2. Number of plans for non-NBIS bridges (>= 10' and <= 20' long)

33

3. Number of bridges analyzed in accordance with the *AASHTO Manual for Bridge Evaluation* (Metric 13) 74

4. By Whom (Metric 13)

Consultants, in House engineers

5. When

6. Methods used (Metric 13)

Spreadsheets, BRR

7. When are bridges rerated and how do load raters keep up with overlays and other changes? (Metric 13) rerated as time allows, any maintenance is a trigger to rerate

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

29

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)

6

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

hand calcs, BRR,

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

none at this time

13. List bridges rated less than 100% Ohio legal load and not physically load posted, and resolution 0

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

6

15. Number of NBIS bridges with Gusset Plates analyzed. (Metric 13) 6

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

All kept in paper files in cabinet & SERVER

- 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)

12 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)

} Need to do

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

60 months

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

N/A

22. List any complex bridges: (Metric 19)

~~only "complex" are trusses~~

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

Describe: FC PLAN would help identify prone areas quickly

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.

Fracture Critical Inspections

Bridge Number	NBI	Location	Features Intersected	Structure Type Main	County	Date
MAD-00151-0020 _(4932870)	4932870	.20 MI. N. OF SHEPHERD RD	TURTLE RUN	3 4	49 - Madison	09/18/2018
MAD-00073-0215 _(4932838)	4932838	2.15 MI E. OF CO.RD. 8	TURTLE RUN	3 4	49 - Madison	09/18/2018
MAD-00026-0280 _(4931491)	4931491	2.80 MI.N. OF C.R.25	LITTLE DARBY	3 4	49 - Madison	10/26/2018
MAD-00131-0030 _(4930975)	4930975	.3 MI E OF COUNTY RD 5	LITTLE DARBY	3 4	49 - Madison	10/31/2018
MAD-00066-0235 _(4931416)	4931416	2.35 MI E OF COUNTY RD 9	BRADFORD CREEK	3 4	49 - Madison	10/31/2018
MAD-00112-0021 _(4931742)	4931742	0.21 MI N OF ARBUCKLE RD	DEER CREEK	3 4	49 - Madison	10/31/2018