

# 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: Jefferson County

Checklist completed by: Kara Bernhart Date: 9/13/2019

## ***I. MAINTENANCE, REHABILITATION AND REPLACEMENT PROGRAM***

### **A. NUMBER OF BRIDGES WITH MAINTENANCE RESPONSIBILITY**

1. Greater than 20' long (NBIS length 23CFR 650c) (Metric 22) 121
2. Bridges  $\geq 10'$  and  $\leq 20'$  long (Metric 22) 88

### **B. PROCEDURES AND BUDGET**

1. Contract repairs and replacement
  - List typical work items: replacements and steel repairs
  - List approximate annual budget \$1,000,000
  - Are Fed Funds used? Yes
  - Are Credit Bridge funds used? Yes
2. In-house repairs and replacements
  - List typical work items: small span (box culverts/pipe arches) replacements and minor maintenance
  - List approximate annual budget: \$100,000
  - List staffing availability: highway workers used - coordinated with roadway work
3. How are projects identified and selected? After the annual inspections are completed our maintenance list is updated. Projects are selected based on need/severity.
4. How are plans developed for emergency repairs? In-house, priority given

5. Who does the work of emergency repairs? Depending on the project: In-house or contractor

6. How is repair work documented? (i.e. work record, time card) work record

7. Who is empowered to order emergency road closures and how is it done? Management contacts 911, school district, and media is informed

## **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) 121

2. Between 10' and 20' long (including 10' & 20') (ORC 5501.47, 5543.20) (Metric 22) 88

### **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: Kara Bernhart, PE

- Yrs. Inspection related experience: 11

- List courses attended (& approx dates) Scour Assessment, Bridge Inspection Level 1 and 2 – 2008, Element Level Bridge Inspection – 2016 ✓

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

(Metric 1)

- Name: Kara Bernhart, PE

- Yrs. Inspection related experience: 11

- List courses attended (& approx dates) Scour Assessment, Bridge Inspection Level 1 and 2 – 2008, Element Level Bridge Inspection – 2016 ✓

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

(Metric 1&3)

- Name: Kara Bernhart, PE
- Yrs. Inspection related experience: 11
- List courses attended (& approx dates) Scour Assessment, Bridge Inspection Level 1 and 2 – 2008, Element Level Bridge Inspection – 2016 ✓

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

**%TIME**

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

4. **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: Shannan Gosbin, EI
- Yrs. Inspection related experience: 5
- List courses attended (& approx dates) Bridge Inspection Level 1 and 2 – 2014, Element Level Bridge Inspection – 2016
- Indicate the percentage of time spent on the listed duties in the previous year ✓

**%TIME**

20%	Bridge/Culvert inspection	_____	Overload/Superload
20%	Bridge Design/Plan prep	_____	Surveying
20%	Bridge Construction	25%	Other – Permitting, SMS
15%	Bridge Maintenance	_____	100%

**C. INSPECTION EQUIPMENT**

1. Type of vehicle used for inspections Jeep Cherokee

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

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

Screw Driver	___	Paint Stick/Crayon	Y
Pliers	___	Scraper	___
Wrenches	___	Probing Rod	Y
Sounding Chains	___	Vertical Clearance Rod	___
Hip Boots and Waders	Y		

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

4. How is usage determined?

5. List additional items UT Gauge

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

7. Use of equipment (Metric 16)

- a. How many bridges need a snooper? 0
- 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) 225

2. Approximately how many inspections are scheduled for the current calendar year? (Metric 6) 225

3. Average number of inspections per day (Metric 6) 10-15

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

- a. Beam/Girder 30 min
- b. Slab 15min
- c. Truss (pony/through/deck) 30 min
- d. Culvert 15 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: 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? On inspection sheet then transferred to needs spreadsheet

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 \_\_\_ ) If we have them

7. Who determines the need for a routine inspection frequency greater than once Annually, and what criteria is used? (Metric 6) Kara Bernhart, if the bridge is a 4 or less

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

Bridges rated 4 or less:

4130243

4130219

4130332

4130715

4131126

4131398

4131789

4131827

4131886

4131924

4132300

4132475

4132548

4133048

4133102

4133293

4133579

*as needed following  
large storm events.  
Normally don't file new  
insp report unless they  
find something new*

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)  
Previous year inspections and notes are brought to the inspection.

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)  
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 \_\_\_ )

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) 3 structures not over waterway

2. How many bridges are inspected by probing? Approx.... 50

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) 0

6. How are scour evaluations performed? (Metric 18) *Photos & Global Statement*

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

*update photos every 5 yrs.*

### F. INVENTORY

1. What kinds of inventory quality assurance checks are performed? (Metric 22)

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

3. How is the inventory data input into the system? manually

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

*< 180 days*

Changes discovered during inspection? As soon as it is inputted

Changes from new construction or rehab? As soon as it is inputted

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)

- a. 4130847
- b. 4132300
- c. 4130243
- d. 4130332
- e. 4131509
- f. 4130790
- g. 4131495
- h. 4131886
- i. 4131045
- j. 4131827
- k. 4131126
- l. 4130960
- m. 4132106
- n. 4132475

b. Bridges requiring underwater inspections

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

a. ~~4131126~~ ?

*pin connected truss OK*

**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 \_\_\_ No \_\_\_ ) (Metric 15)
2. How do the inspectors inform maintenance personnel of routine bridge maintenance problems ( written, oral, other)? (Metric 15) written and oral
3. Who do the inspectors notify when emergency repairs or critical findings are necessary (action required within 1 week)? (Metric 21) Clay Merrin, Chief Deputy Engineer or Allan Hammer, General Superintendant  

Use  
SMS Critical  
Findings  
Report

How is this emergency action documented? Written and oral
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
5. Who checks proper placement of signs (load posting, clearance, speed restriction, narrow bridge etc.)? (Metric 15) Inspection Team and Scott Fabian, highway safety director

## H. LOAD ANALYSIS AND POSTING

1. Number of plans for existing bridges available for NBIS length bridges 26
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) 119
4. By Whom (Metric 13) Kara Bernhart, Jim Branagan, consultants
5. When as needed
6. Methods used (Metric 13) Engineering Judgement, Load Factor, Working Stress, LRF, LRFR
7. When are bridges rerated and how do load raters keep up with overlays and other changes? (Metric 13) Bridges are rerated when rehabilitation has been done
8. Number of NBIS length bridges not load rated (Metric 13) 2 Railroad structures
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) 16
11. How determined (engineering judgment, analysis, mix) mix
12. List bridges closed due to condition rating (rough check) 1
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) 14
15. Number of NBIS bridges with Gusset Plates analyzed. (Metric 13) 14
16. Describe filing system (where files are kept): (Metric 15) Filing cabinet in the production room. Older projects kept in loft above the garage

- 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) 12-24 months

OK ✓

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

19. Are the FCM Identified in the FC Plan? (Metric 16) (Yes X 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)

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

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.