

# 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: Guernsey County Engineer

Checklist completed by: Melinda Chase & Paul Sherry Date: 7-22-20

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

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

1. Greater than 20' long (NBIS length 23CFR 650c) (Metric 22) 205
2. Bridges  $\geq 10'$  and  $\leq 20'$  long (Metric 22) 110

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

1. Contract repairs and replacement
  - List typical work items Contractors are used for full replacement
  - List approximate annual budget \$200,000 plus grant funding
  - Are Fed Funds used? yes
  - Are Credit Bridge funds used? no
2. In-house repairs and replacements
  - List typical work items: Guard rail, deck replacement, beam replacement
  - List approximate annual budget \$200,000
  - List staffing availability: foreman, 2 workers, 2 equipment operators as needed.
3. How are projects identified and selected? Based on annual inspection reports, accident reports, in-house observations, and calls from motorists.

4. How are plans developed for emergency repairs? *The Engineer and Foreman develop a plan onsite to address the emergency. Any structural changes are documented and reviewed by our consultant.*
5. Who does the work of emergency repairs? *County crews.*
6. How is repair work documented? *The work is documented by work record, and on daily work sheet. The Foreman also completes a force account report that summarizes the work done.*
7. Who is empowered to order emergency road closures and how is it done? *A notice is sent to all emergency services, local school, radio and newspaper to announce the closure. Barricades and signage are set by County crews. This can be ordered by the Foreman, Superintendent, or Engineer. In some cases, the Sherriff may require it.*

**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) 205
2. Between 10' and 20' long (including 10' & 20') (ORC 5501.47, 5543.20) (Metric 22) 110

**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: Karl J. Oprisch, P.E.

- Yrs. Inspection related experience: See attached

- List courses attended (& approx dates) See attached

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

(Metric 1)

- Name: Melinda C. Chase, P.E.

- Yrs. Inspection related experience: See attached

- List courses attended (& approx dates) See attached

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

(Metric 1&3)

- Name: Samantha D. Greene, P.E.
- Yrs. Inspection related experience: See attached
- List courses attended (& approx dates) See attached

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

%TIME

|                                     |                       |
|-------------------------------------|-----------------------|
| <u>25</u> Bridge/Culvert inspection | <u>    </u> Surveying |
| <u>15</u> Bridge Design/Plan prep   | <u>60</u> Other -     |
| <u>    </u> Bridge Construction     | <u>    </u> 100%      |
| <u>    </u> Bridge Maintenance      |                       |
| <u>    </u> 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: Jacob H. Scotese, E.I.
- Yrs. Inspection related experience: See attached
- List courses attended (& approx dates) See attached

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

%TIME

|                                     |                                |
|-------------------------------------|--------------------------------|
| <u>50</u> Bridge/Culvert inspection | <u>    </u> Overload/Superload |
| <u>50</u> Bridge Design/Plan prep   | <u>    </u> Surveying          |
| <u>    </u> Bridge Construction     | <u>    </u> Other -            |
| <u>    </u> Bridge Maintenance      | <u>    </u> 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)

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- 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: Cameron L. Gatian, E.I.
  - Yrs. Inspection related experience: See attached
  - List courses attended (& approx dates) See attached
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- Indicate the percentage of time spent on the listed duties in the previous year

%TIME

20 Bridge/Culvert inspection  
50 Bridge Design/Plan prep  
\_\_\_\_ Bridge Construction  
\_\_\_\_ Bridge Maintenance

\_\_\_\_ Overload/Superload  
\_\_\_\_ Surveying  
30 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) Melinda C. Chase, P.E.

a. List Ohio PE # 71772

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

- Name: N/A
  - Yrs. Inspection related experience: \_\_\_\_\_
  - List courses attended (& approx dates) \_\_\_\_\_
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**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    |                        |          |
|----------------------|-----------|------------------------|----------|
| Extension Ladder     | <u>Y</u>  | First Aid Kit          | <u>Y</u> |
| what length?         | <u>15</u> | Wire Brush             | <u>Y</u> |
| 6' Folding Rule      | <u>Y</u>  | Calipers               | <u>N</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>Y</u> |
| Thermometer          | <u>N</u>  | Sounding Chains        | <u>N</u> |
| Plumb Bob            | <u>Y</u>  | Hip Boots and Waders   | <u>Y</u> |
| Camera               | <u>Y</u>  | Paint Stick/Crayon     | <u>Y</u> |
| 2'-0" Level          | <u>Y</u>  | Scraper                | <u>Y</u> |
| Brush Hook/Axe       | <u>Y</u>  | Probing Rod            | <u>Y</u> |
| Boat                 | <u>N</u>  | Vertical Clearance Rod | <u>Y</u> |

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

4. How is usage determined? Field determination by team leader based on noted deterioration

5. List additional items

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

Ladder, climbing gear, scaffolding

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)  
315

2. Approximately how many inspections are scheduled for the current calendar year?  
(Metric 6)  
315

3. Average number of inspections per day (Metric 6)  
20

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

- a. Beam/Girder 0.5
- b. Slab 0.5
- c. Truss (pony/through/deck) 1.0
- d. Culvert 0.25

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: Inspections are recorded in the AssetWise collector app, paper forms are available on site for back up in case of technology failure

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? AssetWise

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 and County Engineer based on deterioration and loading conditions

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)  
Hammontree & Associates, Limited has several internal Quality Assurance checks. All inspections are reviewed by professional engineers. An effort is made to ensure that a different engineer is inspecting the structure each year. Inspection data is entered into AssetWise as inspections are completed. It is reviewed as soon as possible so any questions/clarifications can be made in the field. Guernsey County has adopted a QA procedure to independently review inspections each year. A copy of this procedure is attached.

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)  
Yes, all fracture critical bridges receive FC inspection every year

14. Have all bridges requiring fracture critical inspections been inspected in 24 month intervals?  
(Metric 10) All fracture critical bridges receive FC inspection every year

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 \_\_\_ )

Special Inspections? (Yes X No \_\_\_ )

Underwater Inspections? (Yes X 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)  
314

2. How many bridges are inspected by probing?  
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)  
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)  
Evaluations made by field inspection personnel

7. Who determines the need for diving inspections and by what criteria?  
Program Manager and County Engineer based on field conditions

## F. INVENTORY

1. What kinds of inventory quality assurance checks are performed? (Metric 22)  
The bridge inventory is reviewed regularly in the office for completeness and correctness. Changes to inventory items are noted at time of inspection. AssetWise is updated as soon as internet connection is available.

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

3. How is the inventory data input into the system?  
Directly through AssetWise website

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

Changes discovered during inspection? As soon as internet connection is available

Changes from new construction or rehab? Entered as soon as data is available from County

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)

See county inspection binder and bridge files

b. Bridges requiring underwater inspections

See county inspection binder

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

See county inspection binder and bridge files

**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) Written in inspection reports

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

How is this emergency action documented? County is notified immediately via telephone. Critical Findings are also documented in AssetWise, via e-mail, and in the inspection binder. Please see attached Critical Findings Procedure.

4. If a bridge requires emergency repairs, is this noted as part of the inspection report or as a separate document? (Metric 21) Documented in AssetWise, then also recorded in the inspection binder.

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

## H. LOAD ANALYSIS AND POSTING

1. Number of plans for existing bridges available for NBIS length bridges 125
2. Number of plans for non-NBIS bridges ( $\geq 10'$  and  $\leq 20'$  long) 40
3. Number of bridges analyzed in accordance with the *AASHTO Manual for Bridge Evaluation* (Metric 13) 315
4. By Whom (Metric 13) Melinda C. Chase, P.E., Delmar E. George, P.E., P.S. Various others
5. When 2009-2020
6. Methods used (Metric 13) ODOT Spreadsheets, BARS, Brass Culvert, BrR
7. When are bridges rerated and how do load raters keep up with overlays and other changes? (Metric 13) Bridges are re-rated when the dead load changes (repaved, new guardrail, new deck, etc.), when the rating is lowered from a 5 to a 4, or extreme deterioration is noted. Raters are notified by the field inspectors and also county personnel of changes.
8. Number of NBIS length bridges not load rated (Metric 13) 0
9. List the NBIS length bridges considered "not ratable" including reason for being considered "not ratable" (Metric 13) 0
10. Number of NBIS length bridges load posted (Metric 14)
11. How determined (engineering judgment, analysis, mix) 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  
N/A
14. Number of NBIS bridges with Gusset Plates (Metric 13) 12
15. Number of NBIS bridges with Gusset Plates analyzed. (Metric 13) 12
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.

All files are kept in a cabinet in the road superintendent's office. This includes individual files for each bridge as well as inspection books with required lists and bridge photos.

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 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) N/A

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

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

## **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.

See attached