2020 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: Holmes County

Checklist completed by: Josh Galbraith Date: 7/22/2015

I. MAINTENANCE, REHABILITATION AND REPLACEMENT PROGRAM

A. NUMBER OF BRIDGES WITH MAINTENANCE RESPONSIBILITY

1. Greater than 20' long (NBIS length 23CFR 650c) **(Metric 22)**
   153

2. Bridges >= 10' and <= 20' long **(Metric 22)**
   129

B. PROCEDURES AND BUDGET

1. Contract repairs and replacement
   - List typical work items
     Replacement of bridges over force account limit through grants.
   - List approximate annual budget
     OPWC and LPA funds ($0-$400,000)
   - Are Fed Funds used?
     Yes
   - Are Credit Bridge funds used?
     Yes

2. In-house repairs and replacements
   - List typical work items
     Replacement of bridge with concrete boxes, galvanized multi-plate pipe, steel superstructure, precast concrete superstructure and concrete abutments, maintenance of structures, Rock Channel Protection

- List approximate annual budget
  $500,000
- List staffing availability
  3 man bridge crew

3. How are projects identified and selected?
   General Appraisal and Postings

4. How are plans developed for emergency repairs?
   Site Visit, Engineering Judgement, Design Build

5. Who does the work of emergency repairs?
   Bridge crew or contractor

6. How is repair work documented? (i.e. work record, time card)
   Daily entry of time, equipment and materials entered into software daily.

7. Who is empowered to order emergency road closures and how is it done?
   Chris Young, Josh Galbraith, Steve Sommers, Corey Baker, Jerry Galbraith, Merle Yoder
   One of signmen are notified and he closes it immediately, while person closing waits to make sure traffic is not endangered until signman places barricades and signs. Signman notifies proper authorities (emergency, radio, schools, etc).

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)**
   153
2. Between 10' and 20' long (including 10' & 20') (ORC 5501.47, 5543.20) **(Metric 22)**
   129

B. STAFFING

1. Name of individual who is the **Program Manager** (makes FINAL DECISION) **(Metric 1&2)**
   Christopher Young

a. List qualifications/yrs. experience (bridge inspection experience)
   PE, PS
   Climbing and hands on
   Burgess and Nipple – Bridge Inspector
   City of Columbus – Bridge Inspector

b. List courses attended (& approx dates)

Fall 1990, 1992, 1994
NHI Fracture Critical Inspection for Steel Bridges – October 2016

2. Name of individual in charge of bridge inspection unit (**Reviewer**) **(Metric 1)**

Josh Galbraith

a. List qualifications/experience (bridge inspection experience)

PE
14 years

b. List courses attended (& approx dates)

NHI Fracture Critical Inspection for Steel Bridges – October 2016
ODOT Level I and II – Summer 2009
Scour Assessment – 2008
ODOT Inventory
ODOT Load Rating
ODOT SMS

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

Josh Galbraith

a. List qualifications/yrs. experience (bridge inspection experience)

PE
14 years

b. List courses completed (& approx. dates)

NHI Fracture Critical Inspection for Steel Bridges – October 2016
ODOT Level I and II – Summer 2009
Scour Assessment – 2008
ODOT Inventory
ODOT Load Rating
ODOT SMS

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

%TIME

35 Bridge/Culvert inspection	10 Bridge Construction
20 Bridge Design/Plan prep	5 Bridge Maintenance

__20___ Overload/Superload/Load Rate _____100%
__10___ Surveying
_____ Other

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

Steve Sommers

a. List qualifications/experience (bridge inspection experience)

14 years inspection and 7 years of other bridge experience

b. List courses completed (& approx. dates)

NHI Fracture Critical Inspection for Steel Bridges – October 2016
ODOT Level I and II – Summer 2009
Scour Assessment – 2008
ODOT Inventory
ODOT Load Rating
ODOT SMS

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

%TIME

__35___ Bridge/Culvert inspection
__20___ Bridge Design/Plan prep
__10___ Bridge Construction
__5_ _ __ Bridge Maintenance
__20___ Overload/Superload/Load Rate
_____ Surveying
__10___ Other

5. **Team Leader** - individual in charge of bridge inspection team (INSPECTED BY)
(Metric 1&3)

a. List qualifications/experience (bridge inspection experience)

b. List courses completed (& approx. dates)

c. 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) **(Metric 1&3)**

a. List qualifications/experience (bridge inspection experience)

b. List courses completed (& approx. dates)

c. 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)

Cory Baker

a. List name/qualifications/experience (bridge inspection experience)

2 years bridge inspection
8 years engineering related

b. List courses completed (& approx. dates)

ODOT Bridge Inspection Level 1 – Aug 2018
ODOT Bridge Inspection Level 2 – Sept 2018

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

%TIME

__10__ Bridge/Culvert inspection
__10__ Bridge Design/Plan prep
__10__ Bridge Construction
_____ Bridge Maintenance
_____ Overload/Superload
_____ Surveying
_70__ Other -
_____100%

8. **Team Member** of bridge inspection team (Include information for each additional team member – copy and paste as needed)

a. List name/qualifications/experience (bridge inspection experience)

b. List courses completed (& approx. dates)

c. 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)

a. List name/qualifications/experience (bridge inspection experience)

b. List courses completed (& approx. dates)

c. 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)**

Josh Galbraith

a. List Ohio PE # 77844

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

N/A

a. List qualifications
b. List courses attended (provide documentation & dates

C. INSPECTION EQUIPMENT

1. Type of vehicle used for inspections
Pickup

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

If we don't have it, we go get it.

	Yes/No	what length?	
Extension Ladder	_Y__		4'-15' (32' available)

6’ Folding Rule	Y	Screw Driver	N
100' Fiberglass Tape	Y	Pliers	N
Geologist Hammer	Y	Wrenches	N
Inspection Mirror	N	Sounding Chains	N
Flashlight	Y	Hip Boots and Waders	Y
Thermometer	N	Paint Stick/Crayon	Y
Plumb Bob	Y	Scraper	Y
Camera	Y	Probing Rod	Y
2'-0" Level	N	Vertical Clearance Rod	Y
Brush Hook/Axe	Y		
Boat	N		
First Aid Kit	Y		
Wire Brush	N		
Calipers	Y		
Shovel	Y		

3. List types of NDT methods used (IE. dye penetrant, magnetic particle, ultrasound)
   Typically none – trained in all and borrow from ODOT is needed.

4. How is usage determined?

5. List additional items
   If we need something, we go get it.

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

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

D. INSPECTION PROCEDURES

1. Approximately how many inspections were made during last calendar year? **(Metric 6)**
   282 (County), 21 (Park District)

2. Approximately how many inspections are scheduled for the current calendar year? **(Metric 6)**
   282 (County), 21 (Park District)

3. Average number of inspections per day **(Metric 6)**
   10 per day (occasionally more but work 10 hour day and bridges are very close).

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

a. Beam/Girder ½ - 1½ Hour
b. Slab ½ - 1½ Hour
c. Truss (pony/through/deck) 1-2 Hours
d. Culvert ½ Hour

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:
In field using SMS on laptop

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?
Notes in SMS or sheets in each bridge folder.

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 _X_ No ___)
Except for full size/big plans. Can remotely connect if needed (some large plans are scanned)

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 or Team Leader

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

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)**

Alternate team leader annually
2-3 member inspection team

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)

282

2. How many bridges are inspected by probing?

We take the probe to every bridge.

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)**

Not required

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

0

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

History, Type of construction, engineering judgement, probe.

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

Team Leader per MBI criteria (>5' deep).

F. INVENTORY

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

Inventory items are look over for problems when filling out inspection in SMS.

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

Annual inspection or any email notifications.

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

SMS

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

Changes discovered during inspection?

Immediately during inspection.

Changes from new construction or rehab?

As soon as project is complete.

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)

Master file of all Fracture Critical bridges as well in each individual bridge file

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 – N/A**

G. PROCEDURES

1. Are new maintenance problems identified on the bridge inspection form?
(Y___N__X_) On another form? (Yes _X__ No ___) **(Metric 15)**

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

Oral

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

Bridge crew and/or sign department is notified, by bridge inspector and crews are mobilized typically within 1 hour. Entered into SMS.

How is this emergency action documented?

Any emergency is handled immediately, noted on maintenance forms and entered into SMS. See flow chart.

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

Both

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

Inspectors verify correct limits are on signs at bridges. Sign technician takes care of everything else.

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)**

153

4. By Whom **(Metric 13)**

See spreadsheet

5. When

2009-2020

6. Methods used **(Metric 13)**

BrR and Excel

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

Drops from 5 to 4.
New overlay.
Load rating field notes are checked during inspection and the structure is reload rated if there is additional deterioration.

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)**

1 (Concrete with no plans)

10. Number of NBIS length bridges load posted **(Metric 14)**

NBIS 20
Non NBIS 13

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

Analysis and engineering judgement

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

0

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)**

10

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

10

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

- Inspection reports, including old inspections - Bridge files, scanned on server, and SMS
- Design Calculations – Bridge folder
- Plans – Bridge folder, office (full size plans), and server (usually backup of printed files).

- Load analysis calculations – Field notes and summary in bridge folder. Data and summary on server.
- Inventory forms - SMS
- Photos and sketches – Bridge folder and server
- Repairs and maintenance history – Bridge folder
- Scour evaluation – Bridge folder if calculations available.
- Scour POA
- Fracture Critical File – Mater file and bridge folder
- Load Posting/Closing – Excel on server
- Underwater inspections – N/A
- Special inspection eqpt. or procedures – Bridge Folder
- Flood data, waterway adequacy, channel cross sections – Bridge folder/plans

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 _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 ___)
    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 ___)

    Describe: 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.