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:___Ashland County Engineer_____

Checklist completed by: ___Guy Keener_____Date:8/19/2020_____

I. MAINTENANCE, REHABILITATION AND REPLACEMENT PROGRAM

A. NUMBER OF BRIDGES WITH MAINTENANCE RESPONSIBILITY

1. Greater than 20' long (NBIS length 23CFR 650c) **(Metric 22)**
   141
2. Bridges >= 10' and <= 20' long **(Metric 22)**
   81

B. PROCEDURES AND BUDGET

1. Contract repairs and replacement
   - List typical work items; *Complete bridge replacement, major rehab.*
   - List approximate annual budget _____*$300,000.00*_____
   - Are Fed Funds used? _____*Yes*_____
   - Are Credit Bridge funds used? _____*Yes*_____

2. In-house repairs and replacements
   - List typical work items; *Steel beam repair, steel structure rehab, concrete beam replacement.*
   - List approximate annual budget _*$200,000.00*_____
   - List staffing availability ___*2 to 4, as needed for job.*_____

3. How are projects identified and selected? *Inspections and load rating.*

4. How are plans developed for emergency repairs? *Inspector or road superintendent identify problems and close road if required. Engineer is notified to determine severity if needed. Engineer determines most effective repair or replacement plan.*

5. Who does the work of emergency repairs? *County forces for most repairs, contractor if needed.*

6. How is repair work documented? (i.e. work record, time card) *Time sheets, work order forms*

7. Who is empowered to order emergency road closures and how is it done? *Inspector, road superintendent, Engineer. Person who finds problem waits at site to stop traffic from crossing until county crews can bring barricades to close road.*

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)**
   141
2. Between 10' and 20' long (including 10' & 20') (ORC 5501.47, 5543.20) **(Metric 22)**
   81

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: __Edward Meixner, PE.PS._____
- Yrs. Inspection related experience: _*20*_____
- List courses attended (& approx dates) __*ODOT Bridge Inspector levels 1 & 2.*_____

_____

_____

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

- Name: ___*Ryan Athy*_____
- Yrs. Inspection related experience: __*9*_____
- List courses attended (& approx dates) _*ODOT Bridge Inspector levels 1 & 2, 2011*__
_*ODOT Dot Refresher 2017*_____

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

(Metric 1&3)

- Name: __*Guy Keener*_____
- Yrs. Inspection related experience: __*14 years bridge construction, 18 years bridge inspection.*
- List courses attended (& approx dates) _*ODOT Bridge Inspector levels 1 & 2, 2008, ODOT Dot Refresher, 2017*_____

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

%TIME

_*15*____ Bridge/Culvert inspection
__*5*__ Bridge Design/Plan prep
_*10*____ Bridge Construction
_*10*___ Bridge Maintenance
__*0*___ Overload/Superload
_*1*____ Surveying
__*59*___ 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: _____
- 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%

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: _____
- 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%

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 # __*81248*_____

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

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

	Yes/No		
Extension Ladder	_*X*__	First Aid Kit	_*X*__
what length?	_*18*__	Wire Brush	___
6' Folding Rule	___	Calipers	___
100' Fiberglass Tape	_*X*__	Shovel	_*X*__
Geologist Hammer	_*X*__	Screw Driver	_*X*__
Inspection Mirror	___	Pliers	___
Flashlight	_*X*__	Wrenches	___
Thermometer	___	Sounding Chains	_*X*__
Plumb Bob	___	Hip Boots and Waders	_*X*__
Camera	___	Paint Stick/Crayon	___
2'-0" Level	_*X*__	Scraper	___
Brush Hook/Axe	___	Probing Rod	_*X*__
Boat	___	Vertical Clearance Rod	___

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)**

Ladder where required.

7. Use of equipment **(Metric 16)**
    a. How many bridges need a snooper? *None*
    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)**
233 (11 border bridges)
2. Approximately how many inspections are scheduled for the current calendar year?
(Metric 6) *233 (11 border bridges)*

3. Average number of inspections per day **(Metric 6)**
15
4. Approximately how long (hours) does it take to inspect average sized structures

    a. Beam/Girder *0.33*
    b. Slab *0.25*
    c. Truss (pony/through/deck) *0.66*
    d. Culvert *0.16*

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: *Copies of last year's inspections are taken to the field and marked up with new ratings and comments. Then taken back to office.*

    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?

    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) *Engineer*

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

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)
Reviewed by Mark Stockman during the 4 year QAR.

11. Do any bridges have underwater inspections done in less than 60 month intervals? (Metric 8)
None

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

13. Do any bridges have fracture critical inspections done in less than 24 month intervals? (Metric 10)
Fracture critical inspection is done along with the routine inspection annually.

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 ___)

Special 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)
222
2. How many bridges are inspected by probing? *30*

3. How many structures are Scour Critical (item 113 - 3, 2, 1 or 0)? (Metric 18)

None

4. Are Plans of Action (POA) complete and implemented for all bridges coded "Scour Critical"? (Metric 18)
None required

5. How many structures are coded 6 on item 113 Scour Critical? (Metric 18)
None

6. How are scour evaluations performed? (Metric 18)
By designer of bridge.

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

F. INVENTORY

1. What kinds of inventory quality assurance checks are performed? (Metric 22)
Inventory is updated as changes are made in bridge status or as they are found.

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

3. How is the inventory data input into the system?
Inventory is updated through Asset Wise
4. When is the updated inventory data forwarded to ODOT? (Metric 23)
Inventory is input into ODOT Asset Wise system.
Changes discovered during inspection?
When new inspection is being input.
Changes from new construction or rehab?
When work is complete and bridge is ready to open.

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) *Attahced*

b. Bridges requiring underwater inspections
None
c. Bridges with unique or special features (i.e., pin & hanger, draw, suspension)
None

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)**
In house work order forms.

3. Who do the inspectors notify when emergency repairs or critical findings are necessary (action required within 1 week)? **(Metric 21)**
Engineer, road superintendent.
How is this emergency action documented?
In house work order form and inspection form.

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

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

H. LOAD ANALYSIS AND POSTING

1. Number of plans for existing bridges available for NBIS length bridges *126*

2. Number of plans for non-NBIS bridges (>= 10' and <= 20' long) *50*

3. Number of bridges analyzed in accordance with the *AASHTO Manual for Bridge Evaluation* **(Metric 13)**
222
4. By Whom **(Metric 13)**
Ashland County Engineer's Office staff and consultants.
5. When
As needed, a new wearing surface is added, when general appraisal drops to 5 or below.

6. Methods used (Metric 13)
BrR, Odot spreadsheets, consultants.

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

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) *None*

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

12. List bridges closed due to condition rating (rough check)
None

13. List bridges rated less than 100% Ohio legal load and not physically load posted, and resolution *None*

14. Number of NBIS bridges with Gusset Plates (Metric 13)
8

15. Number of NBIS bridges with Gusset Plates analyzed. (Metric 13)
8

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

- Inspection reports, including old inspections *Binder in office and stored in basement.*
- Design Calculations *In bridge file in Office*
- Plans *In bridge file in Office, electronically, basement storage.*
- Load analysis calculations *In bridge file in Office*
- Inventory forms
- Photos and sketches *On computer server.*
- Repairs and maintenance history In files stored with work orders and electronically.
- Scour evaluation *With bridge file*
- Scour POA
- Fracture Critical File *With the bridge file*
- Load Posting/Closing *With the bridge file*
- 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)
Annually

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 ___)

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.

Fracture Critical Bridges

The following bridges have fracture critical components that need special attention when inspecting.

The locations of fracture critical members have been highlighted on the following drawing or drawings.

Riveted Trusses- 1550-50 — Inspect all lower chord and vertical connections and the floor beam connections for cracking and excess corrosion.

Welded Trusses- 658-1340, 1265-2260, 175-1960, 1600-505, 801-915, 1175-880, 852-725 — Inspect all welded connections in the truss and floor beam areas for cracking around the welds. Close attention should be given to the lower chord and verticals in tension.

Two Girders with one to three floor beams- Inspect the areas around the floor beam connections on both sides of girder for cracking and section loss. The following is a list of this type of bridges.

620-1200	1975-180	391-91
956-1140	2175-1870	655-1840
1243-910		855-2010
1451-650	1600-720	2175-2020
2175-830	704-1020	1353-1560
2654-800	984-1025	
3275-1050		
281-110	1181-160	

Three Girders with floor beams- Inspect the areas around the floor beam connections on both sides of girder for cracking and section loss. The following is a list of this type of bridges

580-60

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