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:_____Tuscarawas Co._____

Checklist completed by: __Joe Bachman_____Date:_12/23/2020_____

I. MAINTENANCE, REHABILITATION AND REPLACEMENT PROGRAM

A. NUMBER OF BRIDGES WITH MAINTENANCE RESPONSIBILITY

1. Greater than 20' long (NBIS length 23CFR 650c) **(Metric 22)** **172**

2. Bridges >= 10' and <= 20' long **(Metric 22)** 96

B. PROCEDURES AND BUDGET

1. Contract repairs and replacement
   - List typical work items Complete replacement, waterproofing, repaving, painting_____
   - List approximate annual budget $250,000 (varies widely) _____
   - Are Fed Funds used? __yes_____
   - Are Credit Bridge funds used? _yes_____

2. In-house repairs and replacements
   - List typical work items complete replacement, rail repair,various repairs as needed_____
   - List approximate annual budget $200,000_____
   - List staffing availability _3 people on bridge crew for 2 to 4 months per year_____

3. How are projects identified and selected? Based on annual inspections

4. How are plans developed for emergency repairs? Varies with type of emergency

5. Who does the work of emergency repairs? Typically in-house crew

6. How is repair work documented? (i.e. work record, time card) time sheets, separate accounting for significant projects

7. Who is empowered to order emergency road closures and how is it done? All on-duty supervisory personnel

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) 172**

2. Between 10' and 20' long (including 10' & 20') (ORC 5501.47, 5543.20) **(Metric 22)** 96

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: Joe Bachman_____
- Yrs. Inspection related experience: __33_____
- List courses attended (& approx dates) _Most recent refresher course was in 2017_____

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

- Name: __Joe Bachman_____
- Yrs. Inspection related experience: _____33_____
- List courses attended (& approx dates) __Most recent refresher course was in 2017_____

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

- Name:Chris Arthurs_____
- Yrs. Inspection related experience: 25_____
- List courses attended (& approx dates) __Various ODOT training – level 1 and level 2; refresher course in 2017_____

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

%TIME

__35_ Bridge/Culvert inspection
__40_ Bridge Design/Plan prep
_____ Bridge Construction
_____ Bridge Maintenance
_____ Overload/Superload
__10_ Surveying
_15__ 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: _John Wackerly, P.E._____
- Yrs. Inspection related experience: __30+_____
- List courses attended (& approx dates) _Mr. Wackerly formerly taught ODOT bridge inspection courses and inspects bridges for several counties. Mr. Wackerly inspects half our bridges each year on a rotating basis._____

- 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)Joe Bachman**

a. List Ohio PE # ___44188_____

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

- Name: _Previously was World International Testing. Currently evaluating diving inspection consultants_____
- Yrs. Inspection related experience: _____
- List courses attended (& approx dates) _____
_____
_____

C. INSPECTION EQUIPMENT

1. Type of vehicle used for inspections ½ ton pick-up

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?	_20__	Wire Brush	_x__
6’ Folding Rule	_x__	Calipers	_x__
100' Fiberglass Tape	_x__	Shovel	_x__
Geologist Hammer	_x__	Screw Driver	_x__
Inspection Mirror	___	Pliers	_x__
Flashlight	_x__	Wrenches	_x__
Thermometer	_x__	Sounding Chains	_x__
Plumb Bob	___	Hip Boots and Waders	_x_
Camera	_x__	Paint Stick/Crayon	_x__
2'-0" Level	_x__	Scraper	_x__
Brush Hook/Axe	_x__	Probing Rod	_x__
Boat	___	Vertical Clearance Rod	_x__

3. List types of NDT methods used (IE. dye penetrant, magnetic particle, ultrasound)
None to date

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)**

7. Use of equipment **(Metric 16)**

a. How many bridges need a snooper?20
b. How many bridges is it used on?20
c. How often? Goal is every 3 years; varies with bridge condition

D. INSPECTION PROCEDURES

1. Approximately how many inspections were made during last calendar year? **(Metric 6)** 268
2. Approximately how many inspections are scheduled for the current calendar year? **(Metric 6) 268**

3. Average number of inspections per day **(Metric 6) 7-10**

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

a. Beam/Girder 1hr
b. Slab 1hr
c. Truss (pony/through/deck) 4 hr
d. Culvert ½ hr

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 is on 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?

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 – based on bridge conditions noted**

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)**
½ of bridges are inspected annually by in-house inspector and ½ by consultant with switch off every year.

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)** Yes

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 ___)

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)

2. How many bridges are inspected by probing? All that can be accessed

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)**

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

6. How are scour evaluations performed? **(Metric 18)**
Direct probing if possible; diving if necessary.

7. Who determines the need for diving inspections and by what criteria? Engineer determines need for diving inspection – generally those bridges that are not accessible for direct probing.

F. INVENTORY

1. What kinds of inventory quality assurance checks are performed? **(Metric 22)** Engineer checks any issues brought to light during inspection

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

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

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

Changes discovered during inspection? As completed

Changes from new construction or rehab? As completed

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

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

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 and oral via the Engineer

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

How is this emergency action documented? Time sheets and project-specific acounting

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)** Bridge inspector

H. LOAD ANALYSIS AND POSTING

1. Number of plans for existing bridges available for NBIS length bridges 114

2. Number of plans for non-NBIS bridges (>= 10’ and <= 20' long) approximately 70

3. Number of bridges analyzed in accordance with the *AASHTO Manual for Bridge Evaluation Approximately 100 – AASHTO analysis is ongoing.*

4. By whom Engineer staff and consultants

5. When Past 3-5 years

6. Methods used AASTHO Software

7. When are bridges rerated and how do load raters keep up with overlays and other changes?Bridges are rerated with changes in conditions

8. Number of NBIS length bridges not load rated **(Metric 13) 1**

9. List the NBIS length bridges considered “not ratable” including reason for being considered “not ratable” **(Metric 13)1**

10. Number of NBIS length bridges load posted **(Metric 14) 5**

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) 6**

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

16. Describe filing system (where files are kept):All bridge files kept in a digital file with backup.

- 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) 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) 5 yrs**

21. Are the underwater elements identified and located? **(Metric 17)** (Yes _x__ 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.