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:___Muskingum County_____

Checklist completed by: Barbara Matheny/Bob Wilson_____Date:_____

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 >= 10' and <= 20' long **(Metric 22)**
202

B. PROCEDURES AND BUDGET

1. Contract repairs and replacement
    - List typical work items Large projects that are most likely to be funded and large enough to be worth being funded.
    - List approximate annual budget
    __$500,000_____
    - Are Fed Funds used? __yes_____
    - Are Credit Bridge funds used? _yes_____

2. In-house repairs and replacements
    - List typical work items plate weld beam ends, new guardrail, new bridge markers, rip rap, abmt repair, patch deck. Full replacements in-house and superstructure in-house
    - List approximate annual budget
    ___$500,000_____
    - List staffing availability 4 full time bridge crew, 2 full time concrete bridge fabricators/bridge crew, 4 In-house staff to design bridges and repairs (not

dedicated to bridges only they have other responsibilities), 1 full time surveyor (not dedicated to bridges only he has other responsibilities),.
3. How are projects identified and selected? Projects for repairs and replacement are identified on inspection spreadsheet. all bridges in need of repair or replacement are rated 1-4 on urgency. Most repairs are In-house by county bridge crew. Sub-contracted projects most likely to be funded and large enough to be worth being funded.

4. How are plans developed for emergency repairs?
In-house and in the field

5. Who does the work of emergency repairs?
Mostly In-house bridge crew.
6. How is repair work documented? (i.e. work record, time card)
Daily diaries, force account documentation
7. Who is empowered to order emergency road closures and how is it done?
Muskingum County Engineer

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)**
202

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: Mark Eicher
- Yrs. Inspection related experience: 10
- List courses attended (& approx dates) Inspection 1&2, Element Level, Refresher 2020

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

- Name:
- Yrs. Inspection related experience: _____

- List courses attended (& approx dates) _____
_____
_____

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

- Name: Robert Wilson
- Yrs. Inspection related experience: __16_____
- List courses attended (& approx dates)
Inspection 1&2, Element Level, Refresher 2020
- Indicate the percentage of time spent on the listed duties in the previous year

%TIME

__50___ Bridge/Culvert inspection
_____ Bridge Design/Plan prep
__30___ Bridge Construction
___5__ Bridge Maintenance
_____ Overload/Superload
_____ 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: Barbara Matheny
- Yrs. Inspection related experience: 8
- List courses attended (& approx dates) Inspection 1&2, Element Level, Refresher 2020
- Indicate the percentage of time spent on the listed duties in the previous year

%TIME

30 Bridge/Culvert inspection
35 Bridge Design/Plan prep
5 Bridge Construction
20 Bridge Maintenance
_____ Overload/Superload
_____ Surveying
10 Other -
_____100%

5. **Team Member**
Gary Williams
Experience 0
Professional Engineer

6. **Team Member**
Tim Paul
Experience 0

10. **Load Rating Engineer** – Name of individual responsible for load ratings (must be PE) **(Metric 4)**

a. List Ohio PE # 65010 Mark Eicher

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

- Name: _____
- Yrs. Inspection related experience: _____
- List courses attended (& approx dates) _____
_____
_____

C. INSPECTION EQUIPMENT
1. Type of vehicle used for inspections
Pick up truck, SUV

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

	Yes/No		
Extension Ladder	yes___	First Aid Kit	___
what length?	_14'__	Wire Brush	___
6' Folding Rule	___	Calipers	___
100' Fiberglass Tape	yes_ __	Shovel	yes___
Geologist Hammer	yes	Screw Driver	___
Inspection Mirror	___	Pliers	___
Flashlight	yes	Wrenches	___
Thermometer	___	Sounding Chains	___
Plumb Bob	___	Hip Boots and Waders	yes
Camera	yes	Paint Stick/Crayon	yes
2'-0" Level	yes_ __	Scraper	___
Brush Hook/Axe	___	Probing Rod	yes
Boat	___	Vertical Clearance Rod	___

3. List types of NDT methods used (IE. dye penetrant, magnetic particle, ultrasound)
ultrasound
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)**
14' extension ladder, inspection cadge

7. Use of equipment **(Metric 16)**
   a. How many bridges need a snooper? 14
   b. How many bridges is it used on? 8
   c. How often? Every 24 months

D. INSPECTION PROCEDURES

1. Approximately how many inspections were made during last calendar year? **(Metric 6)**
407
2. Approximately how many inspections are scheduled for the current calendar year? **(Metric 6) 407**

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 .5
   b. Slab .5
   c. Truss (pony/through/deck) small truss 1
   d. Culvert .5

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: offline Inspectech

   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? Excel spreedsheet

   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)** Inspectors, usually condition of bridge, sometimes water levels

8. List bridges requiring inspection more frequently than one year intervals (DAMAGE, IN-DEPTH, SPECIAL INSPECTIONS). List frequency of inspection. **(Metric 11)**
6033121 6 month
6031307 3 month
6034330 3 month
6042147 6 month
6030564 6 month
6046282 6 month
6037240 6 month
6037674 6 month
6049192 after cleaned
6050212 When dry
6044239 When dry

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)**

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? yes **(Metric 10**

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 ___ 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)
404
2. How many bridges are inspected by probing? allMark

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)**
We have no scour critical bridges at this time.

5. How many structures are coded 6 on item 113 Scour Critical? **(Metric 18)**
0
6. How are scour evaluations performed? **(Metric 18)**
Visual
7. Who determines the need for diving inspections and by what criteria?
Mark Eicher. When water is to deep at normal flow and probing cannot determine scour issues.

F. INVENTORY

1. What kinds of inventory quality assurance checks are performed? **(Metric 22)**
By CEAO
2. How often is the inventory checked for needed updates? **(Metric 22)**
When we receive an email from CEAO
3. How is the inventory data input into the system?
Through Assetwise
4. When is the updated inventory data forwarded to ODOT? **(Metric 23)**
    It’s entered directly into their system.
    Changes discovered during inspection?
    It’s entered directly into their system.
    Changes from new construction or rehab?
    As soon as work is 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?
(YX N___) **(Metric 15)**

2. How do the inspectors inform maintenance personnel of routine bridge maintenance problems (written, oral, other)? **(Metric 15)**
spreadsheet
3. Who do the inspectors notify when emergency repairs or critical findings are necessary (action required within 1 week)? **(Metric 21)**
Mark Eicher, Bridge Crew
How is this emergency action documented? In the POA file

4. If a bridge requires emergency repairs, is this noted as part of the inspection report or as a separate document? **(Metric 21)**
Depends on if was discovered by inspectors during inspections or by a complaint phoned in or damage caused by an event.
5. Who checks proper placement of signs (load posting, clearance, speed restriction, narrow bridge etc.)? **(Metric 15)**
sign installation staff

H. LOAD ANALYSIS AND POSTING

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

2. Number of plans for non-NBIS bridges (>= 10’ and <= 20' long)
Unknown
3. Number of bridges analyzed in accordance with the *AASHTO Manual for Bridge Evaluation* **(Metric 13)**
Unknown
4. By Whom **(Metric 13)**

5. When

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

7. When are bridges rerated and how do load raters keep up with overlays and other changes? **(Metric 13)**
When inspector notices section loss and makes note of needing rerated.
8. Number of NBIS length bridges not load rated **(Metric 13)**
Unknown
9. List the NBIS length bridges considered “not ratable” including reason for being considered “not ratable” **(Metric 13)**
Unknown
10. Number of NBIS length bridges load posted **(Metric 14)**
57
11. How determined (engineering judgment, analysis, mix)
mix
12. List bridges closed due to condition rating (rough check)
n/a
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)**
33
15. Number of NBIS bridges with Gusset Plates analyzed. **(Metric 13)**
unknown
16. Describe filing system (where files are kept): **(Metric 15)**

Digital bridge files on local server, hard copy files in bridge files and inspector’s files, and digital on ODOT Assetwise.

- 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)**
    24 months

18. Is the FC Plan completed for all FC bridges? **(Metric 16)** (Yes

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

20. What is the underwater inspection frequency? **(Metric 17)**
    60 months

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

22. List any complex bridges: **(Metric 19) 6031307 North st. Gaysport**

23. Do the complex bridges require specialized inspection procedures and additional inspector training? **(Metric 19)** (Yes

    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.