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: Mercer County

Checklist completed by: James A. Wiechart, P.E., P.S. Date:08/14/19

I. MAINTENANCE, REHABILITATION AND REPLACEMENT PROGRAM

A. NUMBER OF BRIDGES WITH MAINTENANCE RESPONSIBILITY

1. Greater than 20' long (NBIS length 23CFR 650c) **(Metric 22)**
   259
2. Bridges >= 10' and <= 20' long **(Metric 22)**
   123

B. PROCEDURES AND BUDGET

1. Contract repairs and replacement
   - List typical work items: We typically only contract for some significant rehabs & replacements. (This year after significant flooding to supplement & with State EMA/OPWC Emergency Funds).
   - List approximate annual budget $800,000
   - Are Fed Funds used? Yes
   - Are Credit Bridge funds used? Yes

2. In-house repairs and replacements
   - List typical work items: All rehab, reconstruction, repair & maintenance
   - List approximate annual budget $1,000,000
   - List staffing availability 3 full-time employees including office support adm.

3. How are projects identified and selected? They are directly related to condition inspections and inventory attributes coupled with funding opportunities.

4. How are plans developed for emergency repairs? The County Engineer, in coordination with in-house technical staff and the bridge supervisor, formulates the needed plans.

5. Who does the work of emergency repairs? In most cases, our in-house bridge employees effect these repairs.

6. How is repair work documented? (i.e. work record, time card) We have a job/project accounting system in place whereby these records are in place.

7. Who is empowered to order emergency road closures and how is it done? Any on-call supervisor can close a road. The proper signage is obtained and Mercer County Central Dispatch is notified and the signage is placed.

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)**
   259
2. Between 10' and 20' long (including 10' & 20') (ORC 5501.47, 5543.20) **(Metric 22)**
   123

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: James (Jim) A. Wiechart, P.E., P.S.
- Yrs. Inspection related experience: Approximately 26 years
- List courses attended (& approx dates) ODOT Bridge Inspection 3/31/94, 4/11-4/13/95, 2/25-2/27/97; LTAP Bridge Inspection Refresher 7/12/17; ODOT Load Rating of bridges using AASHTOWare BrR software 12/5-12/6/18

OK

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

- Name: James A. Wiechart, P.E., P.S.
- 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: James A. Wiechart, P.E.,P.S.
- Yrs. Inspection related experience: _____
- List courses attended (& approx dates) _____

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

%TIME

23	Bridge/Culvert inspection	1	Surveying
5	Bridge Design/Plan prep	60	Other -
5	Bridge Construction		100%
5	Bridge Maintenance		
1	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: T. J. Smalley
- Yrs. Inspection related experience: 7
- List courses attended (& approx dates) Level 1 & 2 in 2012
2018 Refresher Class

- 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%

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: T.J. Smalley
- Yrs. Inspection related experience: 10

- List courses attended (& approx dates) Bridge Inspection Level I 11/12-12/14/08; Bridge Inspection Level II 4/15-4/17/09; Ohio LTAP Structure Management System (SMS) Training 1/22-1/23/13; ODOT Bridge Refresher Training 6/18/19

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

%TIME		%TIME	
10	Bridge/Culvert inspection	_____	Overload/Superload
_____	Bridge Design/Plan prep	_____	Surveying
45	Bridge Construction	25	Other -
20	Bridge Maintenance	_____	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 # 62338

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
2014 Ford Focus & 2016 Ford F350
2. What typical inspection equipment does the inspection team normally carry with them to the inspection site?

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

3. List types of NDT methods used (IE. dye penetrant, magnetic particle, ultrasound)
N/A

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)

Ladders

7. Use of equipment (Metric 16)

a. How many bridges need a snooper? 0
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)

382

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

382

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

10

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

a. Beam/Girder 45 minutes
b. Slab 45 minutes
c. Truss (pony/through/deck) 4 hours
d. Culvert 30 minutes

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: The prior year hard copy form is utilized.

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?
On a Word file we maintain
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)

Jim Wiechart & T.J. Smalley – severity of issue & whether or not the issue could create any harm to the public

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)
TJ & I try to alternate townships so I look at some of his bridges from last year and he looks at some of my bridge from last year.

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

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 ~~X~~)

In-Depth Inspections? (Yes X No ~~X~~)

Underwater Inspections ? (Yes ___ No ___) N/A

Fracture Critical Inspections? (Yes Y No ~~X~~)

E. SCOUR CRITICAL BRIDGES (Guidance in ODOT Manual of Bridge Inspection)

1. How many bridges are considered scour susceptible? (Type of Service over Water)
   382
2. How many bridges are inspected by probing?
   259
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)
   Visual inspection & physical probe inspection
7. Who determines the need for diving inspections and by what criteria?
   James A. Wiechart, P.E., P.S. – Can you get a visual or can you physically feel the inspected area?

F. INVENTORY

1. What kinds of inventory quality assurance checks are performed? (Metric 22)
   The County Engineer reviews/checks data
2. How often is the inventory checked for needed updates? (Metric 22)
   As requested
3. How is the inventory data input into the system?
   Data entry by Office Assistant under direction of the County Engineer
4. When is the updated inventory data forwarded to ODOT? (Metric 23) ≤180 days

   Changes discovered during inspection? Within several months

   Changes from new construction or rehab? Within several months

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 on the bridge inspection form?
(Y___N_X__) On another form? (Yes _X__ No ___) **(Metric 15)**

They are put on a work order form whereby a copy is made and put in applicable bridge file.

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

3. Who do the inspectors notify when emergency repairs or critical findings are necessary (action required within 1 week)? **(Metric 21)**
The bridge supervisor
How is this emergency action documented? A work order is written.

use SMS C.F. Report

4. If a bridge requires emergency repairs, is this noted as part of the inspection report or as a separate document? **(Metric 21)**
A work order is prepared.
5. Who checks proper placement of signs (load posting, clearance, speed restriction, narrow bridge etc.)? **(Metric 15)**
Kirk Borns, Sign Manager and the applicable bridge inspector

H. LOAD ANALYSIS AND POSTING

1. Number of plans for existing bridges available for NBIS length bridges
Approximately 259
2. Number of plans for non-NBIS bridges (>= 10' and <= 20' long)
Approximately 123
3. Number of bridges analyzed in accordance with the *AASHTO Manual for Bridge Evaluation* **(Metric 13)**
382
4. By Whom **(Metric 13)**
James A. Wiechart, P.E., P.S.
5. When
Over the last decade
6. Methods used **(Metric 13)**

Various BrR/spreadsheet/hard calculations

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

   When conditions change & as required

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

   N/A

9. List the NBIS length bridges considered "not ratable" including reason for being considered "not ratable" (Metric 13)

   MER C125B-02.47 SFN 5454697 (Road is low volume and deterioration of stringers is occurring rapidly. Opted to place more restrictive load limit than calculated load rating.)

Appendix L

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

    2

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

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 N/A

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

    3

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

    3

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

• Inspection reports, including old inspections	bridge file cabinet
• Design Calculations	bridge file cabinet
• Plans	scanner drive
• Load analysis calculations	bridge file cabinet
• Inventory forms	bridge file cabinet
• Photos and sketches	bridge file cabinet
• Repairs and maintenance history	bridge file cabinet
• Scour evaluation	bridge file cabinet
• Scour POA	bridge file cabinet
• Fracture Critical File	bridge file cabinet
• Load Posting/Closing	bridge file cabinet
• Underwater inspections	bridge file cabinet
• Special inspection eqpt. or procedures	bridge file cabinet
• Flood data, waterway adequacy, channel cross sections	bridge file cabinet

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)

One time every 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 ___) N/A

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.