Quality Assurance Review

National Bridge Inspection Standards &
Bridge Maintenance Program

Wyandot County

September 28, 2022

By: Mark Sherman, PE
CEAO Federal Bridge QA/QC Engineer

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.

Agency: Wyandot County Engineer's Office

DATE: 9/14/2022

Questionnaire Completed by: Terrence Wright

I. MAINTENANCE, REHABILITATION AND REPLACEMENT PROGRAM

A. NUMBER OF BRIDGES WITH MAINTENANCE RESPONSIBILITY

1. Greater than 20' long (NBIS length 23CFR 650c) (Metric 22) **147**
2. Bridges >= 10' and <= 20' long (Metric 22) **93**

B. PROCEDURES AND BUDGET

Contract repairs and replacement per year

Replacements (2): Culverts : Bridges: 2
Rehabilitations (1): Culverts : Bridges: 1
Replacements : Culverts : Bridges:
-List approximate annual budget: $450,000
Are Credit Bridge funds used? ☒
Are Fed Funds used? ☒

2. In-house repairs and replacements

Replacements:(2): **Culverts :** **Bridges:** **2**
Rehabilitations (2): **Culverts :** **Bridges:** **2**
Replacements : **Culverts :** **Bridges:**
List approximate annual budget: **$300,000**

3. How are projects identified and selected? Check all that apply.

- ☒ **Inspection reports.**
- ☐ **Sufficiency rating.**
- ☐ **Growth/development.**
- ☐ **Other…explain Click or tap here to enter text.**

4. How are plans developed for emergency repairs? Check all that apply.

- ☒ **In-house**
- ☐ **Consultant**
- ☐ **Contractor**
- ☐ **Other explain Click or tap here to enter text.**

5. Who does the work of emergency repairs? Check all that apply.

- ☒ **In house**
- ☒ **Contractor**
- ☐ **Other explain Click or tap here to enter text.**

6. How is repair work documented? (i.e. work record, time card, plans?)

- ☒ **Work orders**
- ☒ **Time Cards**
- ☒ **Plans**

7. Who is empowered to order emergency road closures and how is it done?

- ☒ **Engineer – Highway Superintendent, Deputy Engineer, or County Engineer determines if road closure is needed and provide barricades to do so.**
- ☐ **Sherriff?**
- ☐ **Commissioners?**

II. INSPECTION PROGRAM

A. NUMBER OF BRIDGES WITH INSPECTION RESPONSIBILITY

1. Greater than 20’ long (NBIS length, ORC 5501.47, 5543.20) (Metric 22) **147**

2. Between 10’ and 20' long (ORC 5501.47, 5543.20) (Metric 22) **93**

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: **Michael Kohl, PE/PS**

- Yrs. Inspection related experience: **25 yrs.**

- List courses attended (& approx. dates) **see attached**

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

Name: **Michael Kohl, PE/PS**

- Yrs. Inspection related experience: **25 yrs.**

- List courses attended (& approx. dates) **see attached**

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

Name: **Terrence Wright, PE/PS**

- Yrs. Inspection related experience: **19 yrs.**

- List courses attended (& approx. dates) **see attached**

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

%TIME on inspections:
10% Bridge/Culvert inspection
20% Bridge Design/Plan prep
10% Bridge Construction
10% Bridge Maintenance
1% Overload/Super loads
10% Surveying
39% Bidding, Plan Review, HR, Construction Inspection, Permits
___% 100% on Bridges only

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

a. List Ohio PE # Michael Kohl E-66933 & Terrence Wright E-68050

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

- Name: We do not have an underwater diver, if necessary, we would contract for these services.

- Yrs. Inspection related experience: Click or tap here to enter text.

- List courses attended (& approximate dates) Click or tap here to enter text.

D. INSPECTION EQUIPMENT

1. Type of vehicle used for inspections

- ☒ **Pickup truck**
- ☐ **Van**
- ☐ **SUV**
- ☐ **Custom vehicle**

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

- ☒ **Extension Ladder Length ___**
- ☒ **100' Fiberglass Tape**
- ☒ **Geologist Hammer**
- ☒ **Inspection Mirror**
- ☒ **Flashlight**
- ☐ **Thermometer**
- ☒ **6' Folding Rule**
- ☒ **Scraper**
- ☒ **Vertical Clearance Rod**
- ☒ **Probing Rod**
- ☒ **Paint Stick/Crayon**
- ☒ **Hip Boots and Waders**

☒ Plumb Bob
☒ Camera
☒ 2'-0" Level
☒ Brush Hook/Axe
☐ Boat
☒ First Aid Kit
☒ Wire Brush
☐ Sounding Chains
☒ Wrenches
☒ Pliers
☒ Screw Driver
☒ Shovel
☒ Calipers

Other equipment not listed above: Click or tap here to enter text.

3. List types of NDT methods used? Circle all that apply.

☐ **Dye penetrant;** ☐ **Magnetic particle;** ☐ **Ultrasound;**

Other Click or tap here to enter text.

5. What equipment does your team have available for "hands on" access to FCM bridge members? (Metric 16)

Ladders, Access to ODOT Snooper

6. Use of equipment (Metric 16)
a. How many bridges need a snooper? 6

b. How many bridges is it used on? 6

c. How often? When needed

E. INSPECTION PROCEDURES

1. Approximately how many inspections were made during last calendar year? (Metric 6)

240

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

240

3. Average number of inspections per day (Metric 6) 10 depending on complexity

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

a. Beam/Girder: Simple Span: .5-1hrs. Multi-span: 1hrs.

b. Slab bridge: Simple Span: .5-1hrs. Multi-span: 1hrs.

c. Truss (pony): Simple Span: 1-2hrs. Multi-span: 1-2hrs.

d. Through/deck): Simple Span: 1-2hrs. Multi-span: 1-2hrs.

e. Culvert: Single cell .5hrs. Multiple Cells: .5hrs.

5. Are previous inspection reports available at site for review? (Metric 15) Yes ☒ No ☐

6. Are bridge inspections recorded in field on ☐ Paper ☒ Electronically

7. Are photos available for every bridge? Yes ☒ No ☐ (If no, you need to start.)

8. Are photos posted in Assetwise? Yes ☒ No ☐ (If no, you need to start, and be selective.)

9. Are defects photos taken during inspection? Yes ☒ No ☐ (If no, you need to start.)

10. Are Bridge comments recorded in Assetwise? Yes ☒ No ☐ (If no, you need to start.)

11. Are previous bridge comments brought to the bridge? Yes ☒ No ☐ (If no, why not)

12. Are the bridge plans carried to the bridge site for review? (Metric 15). Yes ☐ No ☒

13. Are bridge records available for review in the bridge office? (Metric 15) Yes ☒ No ☐

7. Who determines the need for a routine inspection frequency greater than once Annually, and what criteria is used? (Metric 6)
Explain: The County Engineer and Deputy Engineer can increase inspection frequency if its determined that is necessary.

8. Do you have bridges requiring insp. more frequently than 12 MO Yes ☐ No ☒

___ Number due to Damage Choose an item. List frequency of inspection. (Metric 11)____

___ Number needing In-depth Choose an item. List frequency of inspection. (Metric 11)_____

___ Number of Special insp Choose an item. List frequency of inspection. (Metric 11)

9. Does your inspection team believe it has enough time to do the job?

Yes ☒ No ☐

10. List your quality assurance checks made during the inspection process? (Metric 20)

QAR Review, Updates from CEAO Bridge Engineer through emails and newsletter, bridge conferences

11. Do you have any bridges that need underwater inspections in less than 60-month intervals? (Metric 8)

Yes ☐ No ☒ (Assetwise check)

12. Do any bridges have fracture critical inspections performed more frequently than 24-month intervals? (Metric 10)

Yes ☒ No ☐ (Assetwise check)

13. Is a Team Leader at the bridge at all times during the following inspections? (Metric 12)

Initial Inspection? Yes ☒ No ☐

Routine Annual Inspections? Yes ☒ No ☐

Special Inspections? Yes ☒ No ☐

Underwater Inspections? Yes ☒ No ☐

Fracture Critical Inspections? Yes ☒ No ☐

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

1. No. of bridges considered scour susceptible? (Service over Water) Number 240

–

2. Number of bridges inspected by probing? Number 240.

3. Number of Scour Critical bridges (item 113 - 3, 2, 1 or 0)? (Metric 18) Number 0

4. Are Plans of Action (POA) complete and implemented for all bridges coded "Scour Critical"? (Metric 18) Yes ☒ No ☐ If no, Why? Click or tap here to enter text.

5. How many structures are coded 6 on item 113 Scour Critical? (Metric 18) 42 , 4-5.

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

Visually during annual inspections and technically with the aid of construction plans and FHWA Technical Advisory T5140.23.

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

Engineer based on field observations, inspections, and design details.

G. INVENTORY

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

Who checks? QAR review and annually during inspections, spreadsheets received by CEAO Engineer

How Often?... ☒ With every inspection ☐ Less often than once per year

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

How Often?... ☒ With every inspection ☐ Less often than once per year

3. How is the inventory data input into Assetwise?

- **☒ Electronically, Direct into Assetwise from collector App. as bridge is inspected**
- **☐ All at once at the end of the year from a paper copy into Assetwise**
- **☐ As each inspection is complete from paper to computer to Assetwise.**

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

Changes discovered during inspection? Yes ☒ No ☐
Changes from new construction or rehab? Yes ☒ No ☐

5. NBIS requires that the inspecting organization maintain master lists of the following:

(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 List?

Yes ☒ Number 26: If, No, Why not? _____ NA ☐

b. Bridges requiring underwater inspections.
Number_____ NA ☒

c. Bridges with unique or special features (i.e., pin & hanger, draw, suspension)
Number: 2 covered bridges NA ☐

Note: An examination of the files will be performed during the review.
Options: For the files listed below you can email a copy of a typical file or have them on hand for inspection.

- Bridge Files
- Scour Critical POA.
- Fracture Critical Plan.
- UW inspection Procedure

H. PROCEDURES

1. Are new maintenance problems identified during bridge inspection? (Metric 15)
Yes ☒ No ☐

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

- **☒ Written work order.**
- **☐ Electronic Communication.**
- **☒ Oral direction.**
- **☒ Other. Explain List of all maintenance Bridges**

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

Check all that apply.

- ☒ County Engineer
- ☐ Bridge Superintendent
- ☐ County bridge Engineer
- ☐ Sherriff

How is this emergency action documented? (Must be entered and tracked in Assetwise)

Explain if different than procedure in Assetwise: Click or tap here to enter text.

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

Separate Document

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

Inspectors during Annual Inspection / Sign person quarterly sign inspections

I. LOAD ANALYSIS AND POSTING

1. Number of plans for existing bridges available for NBIS length bridges. Approx 120

2. Number of plans for non-NBIS bridges (>= 10' and <= 20' long) Approx 60

3. Number of bridges analyzed using the AASHTO Bridge Evaluation (Metric 13) 240

By Whom (Metric 13)

- ☒ Load Rating Engineer
- ☒ County Engineer
- ☐ Bridge Engineer
- ☒ Consultant

4. When are bridges load rated, after initial rating. Check all that apply

- ☐ Every 5 years regardless.
- ☒ When there is a significant change in condition rating.
- ☒ When wearing surface thickness increases more than 1-1/2 inches
- ☒ When permit load is requested
- ☐ other

5. Methods used (Metric 13)

- ☒ AAWSHTO BrR
- ☐ Hand Calculated
- ☒ Engineering Judgement (BR100)
- ☐ BARS or other proprietary software program
- ☒ Other Spread Sheets

6. Number of NBIS length bridges "not ratable" at all due to lack of data and may have to be field tested. (Metric 13) (These are bridges that have a coding of 5, not 0 in the method of analysis Item.)
Number: none Plan of action for load rating these? Click or tap here to enter text.

7. Number of NBIS length bridges load posted (Metric 14) (Assetwise Check)
Number of bridges posted 16. Number of bridges with posted Signs in the field 16.

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

9. List bridges rated less than 100% Ohio legal load and not physically load posted, and resolution. (Assetwise Check)
None

10. Number of NBIS bridges with Gusset Plates (Metric 13) 26

11. Number of NBIS bridges with Gusset Plates analyzed. (Metric 13) 26

12. Describe filing system (where files are kept): (Metric 15)
Inspection reports, including old inspections:

- ☐ On paper file in Office
- ☐ Electronically
- ☐ In Assetwise
- ☒ All three
- ☐ Other

Design Calculations:

- ☒ On paper file in Office
- ☒ Electronically
- ☐ In Assetwise
- ☐ All three
- ☐ Other

Plans:

- ☒ **On paper file in Office**
- ☒ **Electronically**
- ☐ **In Assetwise**
- ☐ **All three**
- ☐ **Other**

Load analysis calculations:

- ☒ **On paper file in Office**
- ☒ **Electronically**
- ☐ **In Assetwise**
- ☐ **All three**
- ☐ **Other**

Inventory forms:

- ☐ **On paper file in Office**
- ☐ **Electronically**
- ☒ **In Assetwise**
- ☐ **All three**
- ☐ **Other**

Photos and sketches:

- ☐ **On paper file in Office**
- ☒ **Electronically**
- ☒ **In Assetwise**
- ☐ **All three**
- ☐ **Other**

Repairs and maintenance history

- ☐ **On paper file in Office**
- ☒ **Electronically**
- ☐ **In Assetwise**
- ☐ **All three**
- ☐ **Other**

Scour evaluation:

- ☐ **On paper file in Office**
- ☐ **Electronically**
- ☒ **In Assetwise**
- ☐ **All three**

☐ Other

Scour POA:

☒ On paper file in Office
☐ Electronically
☐ In Assetwise
☐ All three
☐ Other

Fracture Critical File:

☒ On paper file in Office
☒ Electronically
☐ In Assetwise
☐ All three
☐ Other

Load Posting/Closing:

☐ On paper file in Office
☐ Electronically
☐ In Assetwise
☒ All three
☐ Other

Underwater inspections:

☐ On paper file in Office
☐ Electronically
☐ In Assetwise
☐ All three
☐ Other

Special inspection eqpt. or procedures:

☐ On paper file in Office
☐ Electronically
☐ In Assetwise
☐ All three
☐ Other

Flood data, waterway adequacy, channel cross sections:

- ☒ **On paper file in Office**
- ☒ **Electronically**
- ☐ **In Assetwise**
- ☐ **All three**
- ☐ **Other**

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.

13. What is the FC bridge inspection frequency? (Metric 16) **Every 24 Months**

14. Is the FC Plan completed for all FC bridges? (Metric 16) **Yes ☒ No ☐**

15. Are the FCM Identified in the FC Plan? (Metric 16) **Yes ☒ No ☐**

16. What is the underwater inspection frequency? (Metric 17) **N/A**

17. Are the underwater elements identified and located? (Metric 17) **N/A**

18. List any complex bridges: (Metric 19) **None**

19. Do the complex bridges require specialized inspection procedures and additional inspector training? (Metric 19)
Yes ☐ No ☒

Describe:

Other equipment not listed above: Click or tap here to enter text.

Part II: Field Review

Inspection Reports (metric 12)

As part of this review, seven bridges were field reviewed to compare conditions with the most recent inspection report. The individual condition ratings for all of the field sampled bridges properly reflected the field conditions within the tolerance of 1 rating value when compared to the Manual.
Summary ratings correspond with the NBIS inspection items.

Field Review:

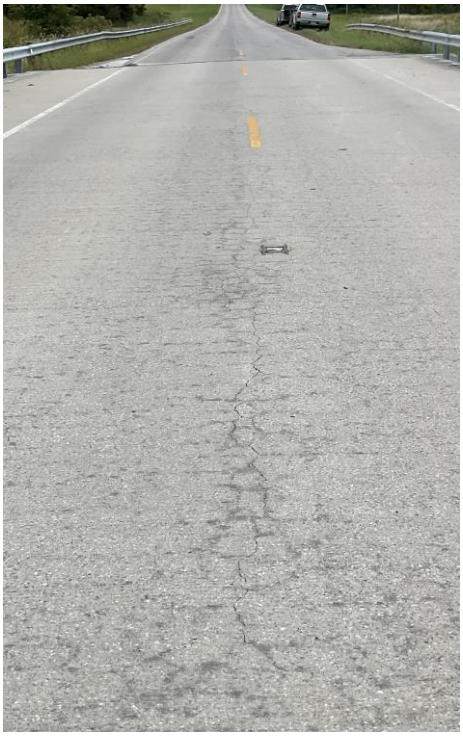
WYA-C0062-0311 _(8837325) Prestressed Concrete Box (Cont.)

Item 58 Deck…… 7 Needs to be same as superstructure (6) No separate deck.
Item 59 Superstructure…… 6 Agreed
Item 60 Substructure…… 7 Agreed
Item 61 Channel……..8 Agreed
Item 61.01 Scour……..7 Agreed
Item 62 Culvert…….. N
Item 67.01 GA ……..6 Agreed
Item 36 Railing…….. 0 0 0 0 Agreed
Item 72 Approach Alignment ……..9 West approach not easily visible from east due to vertical curve, especially in a lower profile vehicle. (7)

Comments: None required, but there is a note about the strands.
Defect Photos: Good defect photos
Channel Photos: Great Channel photos
(Note: posted at 100% legal. Has more than 6 inches of asphalt on beams. Could possibly improve load rating by thinning out the asphalt.)

WYA-C0182-0684 _(8849013) Concrete Slab (Continuous)

Item 58 Deck…….. 8
Item 59 Superstructure……8 Given cracking in deck and minor exposed rebar underneath; I would give this a 7. (The one-point rule makes the 8 acceptable at this time)



Item 60 Substructure……..6 Agreed
Item 61 Channel……7 Agreed
Item 61.01 Scour……7 Agreed
Item 62 Culvert……..N
Item 67.01 GA ……..6 Agreed
Item 36 Railing …….. 1 0 0 0 Agreed
Item 72 Approach Alignment ……..8 Agreed
Comments: None required
Defect Photos: NA
Channel Photos: Very Good Channel Photos in Assetwise

WYA-T0148-0367 _(8848912) Pipe Culvert (3-cell Concrete)
Item 58 Deck……..N Agreed
Item 59 Superstructure……N Agreed

Item 60 Substructure… …..N Agreed
Item 61 Channel……..7. Agreed
Item 61.01 Scour……..7 Agreed
Item 62 Culvert…… 6 Agreed
Item 67.01 GA ……..6 Agreed
Item 36 Railing…… N N N N Agreed
Item 72 Approach Alignment ……..8 Agreed
Comments: None: The pipes are in good condition, but the headwalls are deteriorating.

Defect Photos: None
Channel Photos: Good Channel Photos

WYA-C0016-1099 _(8831823) Steel Beams (cont.)

Item 58 Deck……5 Agreed
Item 59 Superstructure……5 Agreed
Item 60 Substructure…… 5 Agreed The hole in the pile protective collar is not a problem in itself, but if there is section loss on the piling inside, then the rating could be affected.

Item 61 Channel……4. Agreed
Item 61.01 Scour……4 Agreed

Item 62 Culvert……N Agreed
Item 67.01 GA ……..5 Agreed
Item 36 Railing…….. 0 0 0 0 Agreed
Item 72 Approach Alignment …..8 Agreed
Comments: Good Comments! I like that dates of observation were entered.
Defect Photos: Good photos.
Channel Photos: Very Good Channel Photos

WYA-C0037-0560 _(8833982) Prestressed Box beams

Item 58 Deck……..7 Agreed
Item 59 Superstructure……7 Agreed
Item 60 Substructure…….6 Agreed
Item 61 Channel……..6. Agreed
Item 61.01 Scour……..6 Agreed
Item 62 Culvert…… N Agreed
Item 67.01 GA ……..6 Agreed
Item 36 Railing…… 0 0 0 0 Agreed
Item 72 Approach Alignment ……..9 Agreed
Comments: Good comments even though none are required.
Defect Photos: Good photos
Channel Photos: Great channel photos

WYA-C0016-0604 _(8831688) Steel Truss (A588)

Item 58 Deck……6 Agreed
Item 59 Superstructure……6 Agreed
Item 60 Substructure…….7 This is an interesting case to follow the load paths. The truss bearings are planted on the cap ends that are supported by sheet piling and filled with concrete and the joist support beam is deep enough to distribute the load across the entire abutment. So, I don't necessarily disagree with this rating. The one thing that is cause for concern if the loss of material from behind the sheet piling. This should be addressed in order to prevent the condition rating to go to a 6 or lower.

Item 61 Channel……7 Agreed
Item 61.01 Scour……7 Agreed
Item 62 Culvert……N
Item 67.01 GA ……6 Agreed
Item 36 Railing…….. 1 1 1 1 These should all be 0s. the railing is not up to code.
Item 72 Approach Alignment …. 6 Agreed
Comments: none required, but I would comment on the abutment material loss mentioned above.
Defect Photos: None needed, although I would take a shot of the one abutment to begin monitoring it, or as a reminder to perform some mitigation.
Channel Photos: Good channel photos

WYA-C0004-0814 _(8830444) Prestressed Concrete

Item 58 Deck……8 Remember the deck and the beams are one, so the deck rating has to match the superstructure rating.
Item 59 Superstructure……6 This seems low to me. With the exception of the two strands broken at the drip groove, the rest of the beams look great and there is minimal leaking if any.

Item 60 Substructure……..7 Agreed

Item 61 Channel……7 Agreed

Item 61.01 Scour……7 Agreed

Item 62 Culvert…… N Agreed

Item 67.01 GA ……..6

Item 36 Railing…….. 0 0 0 0 Agreed

Item 72 Approach Alignment …..9 This is more like a 5 with the curve at the end of the bridge. See the description table below the photo for guidance.

NBI #72 – Approach Roadway Alignment

Code the rating based on the adequacy of the approach roadway alignment. This item identifies those bridges which do not function properly or adequately due to the alignment of the approaches. It is not intended that the approach roadway alignment be compared to current standards but rather to the existing highway alignment. This concept differs from other appraisal evaluations. The establishment of set criteria to be used at all bridge sites is not appropriate for this item. The basic criteria is how the alignment of the roadway approaches to the bridge relate to the general highway alignment for the section of highway the bridge is on.

The individual structure shall be rated in accordance with the general appraisal rating guide described on page 453 in lieu of specific design values. The approach roadway alignment will be rated intolerable (a code of 3 or less) only if the horizontal or vertical curvature requires a substantial reduction in the vehicle operating speed from that on the highway section. A very minor speed reduction will be rated a 6, and when a speed reduction is not required, the appraisal code will be an 8. Additional codes may be selected between these general values.

For example, if the highway section requires a substantial speed reduction due to vertical or horizontal alignment, and the roadway approach to the bridge requires only a very minor additional speed reduction at the bridge, the appropriate code would be a 6. This concept shall be used at each bridge site.

Speed reductions necessary because of structure width and not alignment shall not be considered in evaluating this item.

Record the appropriate code from the table below about the condition of the approach alignment.

For example, if the highway section requires substantial speed reduction due to vertical or horizontal alignment, and roadway approach to the bridge requires only a very minor additional speed reduction at the bridge, the appropriate code would be 6. This concept shall be used at each bridge site.

Speed reductions necessary because of structure width and not alignment shall not be considered in evaluating this item.

Comments: Good comments
Defect Photos: Good photos
Channel Photos: Great channel photos

Field Review Summary:

Overall, the county is doing a very good job with their bridge inspection program. Their records are complete and organized. I found the vast majority of their condition ratings to be within the parameters set by the inspection manual. The only problem is the structure type coding needs to be checked for accuracy. The comments could use a little more elaboration at times, with corresponding photos to show the Location, Extent and Severity of the defects. Otherwise, the comments and photos are good.

PART III Office file Review

Fracture critical bridges. **26**

Fracture Critical Member and Fatigue Prone Connection ID Plan.

WYA-C0016-0604 _(8831688) truss
WYA-C0113-0374_(8844713) truss

Bridge Load Rating Report, including Gusset plate analysis.

WYA-C0062-0311 _(8837325)
WYA-C0016-0604 _(8831688) truss
WYA-C0113-0374_(8844713) truss

Underwater inspections None

POA for Scour All scour repairs undertaken as they are discovered, eliminating the need for a POA.

Scour susceptible bridges Everything over a stream with shallow foundations

Critical findings 0

All reviewed files are complete with all documentation concerning load rating, channel photos and defect photos, along with previous inspection reports. Their files are complete and comprehensive, documenting the bridge history through reports, plans and photographs.

PART IV Snapshot DATA Summary of Program

WYANDOT County 2022

INVENTORY, APPRAISAL & INSPECTION SNAPSHOT

12/20/2022

Inventory Data - NBIS Bridges Only

	NBIS COUNT
NBIS Bridges > 20'	145
Bridges 10'-20'	92
All Bridges	237

Item 221 Inspection Responsibility		CODE	#NBIS	#ALL
Data Tab Col BV,BW	County	2	145	237

Item 21 Maintenance responsibility		CODE	#NBIS	#ALL
Data Tab	County	2	145	237
Col D	City or other local	4	0	0
	Railroad	27	0	0
	Private (tohter than RR)	26	0	0
	State Park	11	0	0
	Local Park	23	0	0
	State Agency	1	0	0
	Township	3	0	0
			145	237

Item 42A Type service on bridge		CODE	#NBIS	#ALL
Data Tab	Other	0	0	0
Col Q	Highway	1	145	237
	Railroad	2	0	0
	Ped/Bikeway	3	0	0
	Hwy/RR	4	0	0
	Hwy/Ped	5	0	0
			145	237

Item 42B Type service under bridge		CODE	#NBIS	#ALL
Data Tab	Other	0	0	0
Col R	Hwy w/ or w/o Ped	1	0	0
	Railroad	2	0	0
	Ped/Bkwy	3	0	0
	Hwy w/ RR	4	0	0
	Waterway	5	145	237
	Hwy/Waterway	6	0	0
	RR/Waterway	7	0	0
	Hwy/Waterway/RR	8	0	0
	Relief (for waterways)	9	0	0
			145	237

All data is complete and correct in this section.

ITEMS 43A,B,C Structure Type	Data (Col M,N,O)	CODE	#NBIS	#ALL
Other Culvert (incl frame culverts)		019	1	1
Concrete Slab		101	0	5
Concrete Beams		102	1	2
Concrete Tee Beam		104	0	1
Concrete Frame		107	0	1
Concrete Culvert (incl frame culverts)		119	11	73
Concrete Continuous Slab		201	7	7
Steel Beam or Girder		302	39	42
Steel Thru Truss (inlcudes Pony)		310	25	25
Steel Culvert (incl frame culverts)		319	0	12
Steel Continuous Beam or Girder		402	8	8
Prestressed Concrete Thru Arch		502	1	1
Prestr. Conc. Cont. Box Beam/Girder Multiple		505	44	46
Prestr. Conc. Cont. Box Beam/Girder Spread		506	3	3
Prestr. Conc. Cont. Box Beam/Girder Multiple		605	3	3
Timber Thru Truss (inlcudes Pony)		710	2	2
Aluminum or Iron Culvert (incl frame culverts)		919	0	5
			145	237

Item 92A Fracture Critical		CODE	#NBIS	#ALL
Data Tab	Requires FC Inspection	Y	**25**	n/a
Col U,V,Y	Requires FC Inspection	N	**120**	n/a
			145	n/a
	FC Switch Y/N is Blank		0	n/a

Item 113 Scour			#NBIS	#ALL
Data Tab	Bridge not over waterway	N	**0**	0
Col AA	unknown foundation	U	**0**	0
	over tidal waters	T	**0**	0
	foundations on dry land	9	**12**	12
	stable above footing	8	**122**	212
	countermeasures installed	7	**2**	3
	no scour evaluation made	6	**0**	1
	stable within footer limits	5	**6**	6
	stable action needed	4	**3**	3
	scour critical - unstable	3	**0**	0
	scour critical - scour present	2	**0**	0
	scour critical - failure imminent	1	**0**	0
	scour critical - bridge failed	0	**0**	0
			145	237

WYA-T0058-0333 _(8836809) WYA-C0053-0657 _(8836272) WYA-T0011-0818 _(8831319)

The bridges above have a scour rating that requires corrective measures.
Once the measures are implemented the scour rating should move to a 7.

All data is complete and correct in this section.

Item 63	Documented Engineering Judgment		#NBIS	#ALL
	Field Eval & Doc EJ		11	n/a
		BR_100 for these bridges?		

Item 92B	Underwater	CODE	#NBIS	#ALL
Data Tab	requires dive inspection	N	145	n/a
Col W,X,Z	requires dive inspection	Y	0	n/a
			145	

Item 709	Plan Information	CODE	#NBIS	#ALL
Data Tab	plans not avail	0	15	76
Col. AW	plan avail	1	129	158
	field measured	2	0	0
	Field Testing	3	0	0
	not applicable	N	1	3
			145	237

Item 63	Method of Analysis	CODE	#NBIS	#ALL
Data Tab	Field Eval & Doc. Engr Judgment	0	11	67
Col. AV	Work Stress	1	0	0
	LFR	2	0	0
	LRFR	3	0	0
	load test	4	0	0
	No rating done	5	0	6
	LFR	6	70	82
	AS	7	39	40
	LRFR	8	25	42
	Assigned LFR HS20	D	0	0
	Assigned LRFR HL93	F	0	0
	not appl (RR, etc)	X	0	0
			145	237
REMINDER:				
	Load Factor required for bridges built after 1993		(exceptions: timber, etc,)	
	LRFR required for bridges built after 2010			

Given the changes coming in 2023 and the now required shear analysis,
please make sure your load rating documentations are complete and include a BR100 with complete statements of assumptions, measurements and methodologies for anything using engineering judgement.

All data is complete and correct in this section.

Inspection Condition Data - NBIS Bridges Only

Item 41	Operating Status	CODE	# NBIS	# ALL
Data Tab	Open, No restriction	A	130	222
Col AM	Open, posting recommended	B	0	0
	Open, Half width constr.	C	0	0
	Open because of temp. fix	D	0	0
	Open using temp. structure	E	0	0
	New struture not yet open	G	0	0
	closed for load cap. reason	K	0	0
	Posted for load capacity	P	15	15
	Posted for other than load	R	0	0
	Closed for other than load	X	0	0
			145	237

Metric 13	Load Rating Data	
Load Rating Tab		# OF ERRORS
Col. AN	Op RF greater than Inv RF?	0
Col. AO	Posting and % Legal OK?	0
Col. AP	"0" used instead of blank	0
Col. AT	% legal <> lowest RF	3
Col.A V	Item 70 correct?	0
Col. AW	Method of Rating Alike?	0
Col. AX	Op & Inv RF in Tons as req'd?	0
Col. AY	Item 575 correct?	0
Col. AZ	Depth of fill completed?	0

WYA-C0004-0814 _(8830444) WYA-C0053-0789 _(8836329) WYA-C0330-0904_(8849498)

All three bridges are controlled by the EV3 vehicle and need coded as such

All other data is complete and correct in this section.

KEY METRICS

(C)	Compliant	(CC)	Conditionally Compliant
(SC)	Substantially Compliant	(NC)	Non- Compliant
		(NC)	(SC) If corrected within 6/12 months
			Refresher=6 mo, Comprehensive=12 mo

METRIC 2 - Program Manager Qualificati (from files examination)

From Files review	Missing	#sampled	% PASS	COMPLIANCE
PE /Experience	0	1	100.0%	(C)
Comprehensive	0	1	100.0%	(C)
Refresher	0	1	100.0%	(C)

METRIC 3 - Team Leader Qualification (from files examination)

From Files review	Missing	#sampled	% PASS	COMPLIANCE
Degree /Experience	0	2	100.0%	(C)
Comprehensive	0	2	100.0%	(C)
Refresher	0	2	100.0%	(C)

METRIC 6 Insp. Frequency Routine

Bridge Inspections Overdue			# OVERDUE		% PASS	COMPLIANCE
Data Tab	NBIS -	24 months	0		100.0%	(C)
Col. AB	ORC -	Calendar Year	0		100.0%	(C)
Col. AB	All	Routine insp.	0			
	BIM -	18 months	0		100.0%	(C)

METRIC 8 - Insp. Frequency Underwater

Dive Inspections Overdue		# OVERDUE	# UW	% PASS	COMPLIANCE
Data Tab Col. Z	60 months	0	0	100.0%	(C)

METRIC 10 - Insp. Frequency FC Member

FC Inspections Overdue		# OVERDUE	# FC	% PASS	COMPLIANCE
Data Tab Col. Y	24 months	0	25	100.0%	(C)

METRIC 12 - Routine Inspection (** from field review)

Field Ratings		# > +/-1	# Ratings	% PASS	COMPLIANCE
	field ratings**	0	24	100.0%	(C)
Comments		Missing	# < 6	% PASS	
Tab	Comments when Rating < 6	2	145	98.6%	(C)
	Adequacy comments **	0	30	100.0%	(C)
		Error	Total Scour	% PASS	
Comment	Rating should be = Scour	0	145	100.0%	within tolerance +/- 1
Tab	Noncompliant Scour Rating Er	0	145	100.0%	(C)

WYA-C0053-0789 _(8836329) WYA-C0062-0311 _(8837325) Missing Deck comments

All data is complete and correct in this section.

KEY METRICS

(C)	Compliant	(CC)	Conditionally Compliant
(SC)	Substantially Compliant	(NC)	Non- Compliant
		(NC)	(SC) If corrected within 6/12 months
			Refresher=6 mo, Comprehensive=12 mo

METRIC 2 - Program Manager Qualificati (from files examination)

From Files review	Missing	#sampled	% PASS	COMPLIANCE
PE /Experience	0	1	100.0%	(C)
Comprehensive	0	1	100.0%	(C)
Refresher	0	1	100.0%	(C)

METRIC 3 - Team Leader Qualification (from files examination)

From Files review	Missing	#sampled	% PASS	COMPLIANCE
Degree /Experience	0	2	100.0%	(C)
Comprehensive	0	2	100.0%	(C)
Refresher	0	2	100.0%	(C)

METRIC 6 Insp. Frequency Routine

Bridge Inspections Overdue			# OVERDUE		% PASS	COMPLIANCE
Data Tab	NBIS -	24 months	0		100.0%	(C)
Col. AB	ORC -	Calendar Year	0		100.0%	(C)
Col. AB	All	Routine insp.	0			
	BIM -	18 months	0		100.0%	(C)

METRIC 8 - Insp. Frequency Underwater

Dive Inspections Overdue		# OVERDUE	# UW	% PASS	COMPLIANCE
Data Tab Col. Z	60 months	0	0	100.0%	(C)

METRIC 10 - Insp. Frequency FC Member

FC Inspections Overdue		# OVERDUE	# FC	% PASS	COMPLIANCE
Data Tab Col. Y	24 months	0	25	100.0%	(C)

All data is complete and correct in this section.

METRIC 14 - Posting	Load rating data tab			
From Files review	# errors	#sampled	% PASS	COMPLIANCE
Op RF < 3 tons but not closed	0	145	100.0%	(C)
Op RF = 0 but not closed	0	145	100.0%	(C)
% Legal < 100 but not posted	0	145	100.0%	(C)
Item 41 = B	0	145	100.0%	(C)

METRIC 16 - Fracture Critical Inspection	(from files examination)			
From Files review	Missing	# FC	% PASS	COMPLIANCE
Fract Critical Member ID	0	2	100.0%	(C)
Fatigue Prone Detail	0	2	100.0%	(C)
Gusset Plate Calculations	0	2	100.0%	(C)
FC Inspection Procedure	0	2	100.0%	(C)

METRIC 17 - Underwater Inspection	(from files examination)			
From Files review	Missing	# UW	% PASS	COMPLIANCE
UW Inspection Procedure	0	1	100.0%	(C)
Location of UW elements	0	1	100.0%	(C)
UW frequency identified	0	1	100.0%	(C)

All data is complete and correct in this section.

PRELIMINARY FHWA 23 Metric Matrix

23 metrics used by FHWA to measure NBIS compliance

Compliance Codes for the following Metrics:

(C)	Compliant
(SC)	Substantially Compliant
(CC)	Conditionally Compliant (Adhering to approved PCA)
(NC)	Not Compliant

Metric	Description	(C)	(SC)	(CC)	(NC)
1	State Bridge Inspection Organization				
2	Program Manager Qualification				
3	Team Leader Qualification				
4	Load Rating Engineer Qualification				
5	UW Bridge Inspection Diver Qualification				
6	Routine Inspection Frequency - Low Risk				
7	Routine Inspection Frequency - High Risk				
8	UW Inspection Frequency - Low Risk				
9	UW Inspection Frequency - High Risk				
10	FC Inspection Frequency				
11	Frequency Criteria				
12	Inspection Quality **				
13	Load Rating				
14	Posted or Restricted Bridges				
15	Bridge Files				
16	FC Bridges				
17	UW inspection procedures				
18	Scour Critical Bridges				
19	Complex Bridges				
20	QC/QA				
21	Critical Findings				
22	Inventory **				
23	Updating of Data				

** based on results of Field Review

Metric	Action Needed