Quality Assurance Review
National Bridge Inspection Standards &
Bridge Maintenance Program

Monroe County

April 21, 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 Reviewed:____Monroe County Engineer_____

Checklist completed by: ___Amy Zwick/Jason Popa_____Date:_3/14/2022___

I. MAINTENANCE, REHABILITATION AND REPLACEMENT PROGRAM

A. NUMBER OF BRIDGES WITH MAINTENANCE RESPONSIBILITY

1. Greater than 20' long (NBIS length 23CFR 650c) **(Metric 22)** **113**

2. Bridges >= 10' and <= 20' long **(Metric 22)** 65

B. PROCEDURES AND BUDGET

1. Contract repairs and replacement per year

- List typical work items

  Replacements: Number: Culverts:____ Bridges:__1__
  Rehabilitations: Number : Culverts:____ Bridges:__<1___
  Maint.Contracts Number : Culverts:____ Bridges:___0___

  -List approximate annual budget: ____$175,000_____

- Are Fed Funds used? Yes__X_ No ___
- Are Credit Bridge funds used? Yes___ No __X_

2. In-house repairs and replacements

Replacements: Number: Culverts:____ Bridges:__<1__
Rehabilitations: Number: Culverts:____ Bridges:__<1___
Maint.Contracts Number: Culverts:____ Bridges:__3___

- List approximate annual budget _____$50,000_____

3. How are projects identified and selected? Check all that apply.
_X__ Inspection reports.
_X_ Sufficiency rating.
_X_ Growth/development.
____ Other…explain_____

4. How are plans developed for emergency repairs? Check all that apply.
_X_ In-house
_X_ Consultant
____ Contractor
____ Other explain_____

5. Who does the work of emergency repairs? Check all that apply.
_X_ In house
_X_ Contractor
____ Other explain_____

6. How is repair work documented? (i.e. work record, time card, plans?)
_X_ Work orders
_X_ Time Cards
_X_ Plans

7. Who is empowered to order emergency road closures and how is it done?
_X_ Engineer – Notification to other empowered parties & EMA director
_X__ Sherriff– Notification to other empowered parties & EMA director
_X_ Commissioners– Notification to other empowered parties & EMA director

II. INSPECTION PROGRAM

A. NUMBER OF BRIDGES WITH INSPECTION RESPONSIBILITY

1. Greater than 20’ long (NBIS length, ORC 5501.47, 5543.20) **(Metric 22)** _____113___

2. Between 10’ and 20' long (ORC 5501.47, 5543.20) **(Metric 22)** ___65___

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: _____Amy Zwick, Monroe County Engineer _____
- Yrs. Inspection related experience: ____8__

- List courses attended (& approx. dates) _____

_____Bridge Inspection Level 1 & 2 – 2008, _Bridge Inspection Refresher Training – 6/18/2019_____

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

- Name: _____Consultant Charles Jason Popa, PE_____

- Yrs. Inspection related experience: ___30_____

- List courses attended (& approx. dates) _____see attached resume_____

_____

_____

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

- Name: _____Consultant Charles Jason Popa, PE_____

- Yrs. Inspection related experience: __30_____

- List courses attended (& approx. dates) _____see attached resume_____

_____

_____

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

%TIME on inspections:

_100_ Bridge/Culvert inspection
_____ Bridge Design/Plan prep
_____ Bridge Construction
_____ Bridge Maintenance

_____ Overload/Superload _____100%
_____ Surveying
_____ Other -

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

a. List Ohio PE # ___60606__ b. Name ____Charles Jason Popa_____

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

- Name: ___N/A_____

- Yrs. Inspection related experience: _____

- List courses attended (& approx dates) _____

_____

_____

D. INSPECTION EQUIPMENT

1. Type of vehicle used for inspections
   _X _ 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	_yes_ Length 24_	First Aid Kit	yes___
6' Folding Rule	yes_	Wire Brush	yes___
100' Fiberglass Tape	yes_	Calipers	yes___
Geologist Hammer	yes___	Shovel	yes___
Inspection Mirror	yes___	Screw Driver	yes___
Flashlight	yes___	Pliers	yes___
Thermometer	yes___	Wrenches	yes___
Plumb Bob	yes___	Sounding Chains	yes___
Camera	yes___	Hip Boots and Waders	yes___
2'-0" Level	yes___	Paint Stick/Crayon	yes___
Brush Hook/Axe	yes___	Scraper	yes___
Boat	no___	Probing Rod	yes___
		Vertical Clearance Rod	no___

Other equipment not listed above _____I use a canoe when high water dictates the use._____
_____

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

Dye penetrant; Magnetic particle; Ultrasound; Other_____

5. What equipment does your team have available for "hands on" access to FCM bridge members? **(Metric 16)**
A complete set of single rope climbing gear and an offset bracket.

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

a. How many bridges need a snooper? _none_____

b. How many bridges is it used on? __none_____

c. How often? ___N/A_____

E. INSPECTION PROCEDURES

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

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

3. Average number of inspections per day 17 **(Metric 6)**

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

a. Beam/Girder: Simple Span: _0.50___hrs. Multi-span: _1.0__hrs.

b. Slab bridge: Simple Span: _0.5___hrs. Multi-span: _0.5_hrs.

c. Truss (pony): Simple Span: _1.0___hrs. Multi-span: _2.0__hrs.

d. Through/deck): Simple Span: _1.0___hrs. Multi-span: _2.0__hrs.

e. Culvert: Single cell __0.25__hrs. Multiple Cells: _0.25_hrs.

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, or Both?

Are photos available for every bridge? (Yes X No __) **(If no, you need to start.)**

Are photos posted in Assetwise? (Yes _X No ___) **(If no, you need to start, and be selective.)**

Are defects photos taken during inspection? (Yes _X No __) **(If no, you need to start.)**

Are Bridge comments recorded in Assetwise? (Yes X _No __) **(If no, you need to start.)**

Are previous bridge comments brought to the bridge? (Yes _X No ___) **(If no, why not)**

6a. Are the bridge plans carried to the bridge site for review? **(Metric 15).** (Yes __ No _X)

6b. Are bridge records available for review in the bridge office? **(Metric 15).** (Yes X No __)

7. Who determines the need for a routine inspection frequency greater than once Annually, and what criteria is used? **(Metric 6)**

Explain: ___ County Engineer per bridge inspector's recommendation. Criteria based on deterioration of load carrying members.

_____

8. Do you have bridges requiring inspection more frequently than 12 Months? (Yes __ No X__)

_0_Number due to **Damage** _____List frequency of inspection. **(Metric 11)**___

__0_ Number needing **In-depth** _____List frequency of inspection. **(Metric 11)**____

_0__ Number of **Special insp**. _____List frequency of inspection. **(Metric 11)**

9. Does your inspection team believe it has enough time to do the job? (Yes X_ No__)

10. List your quality assurance checks made during the inspection process? **(Metric 20)**
Each inspection is gone over 3 separate times, once in the field, once when the data is entered into Assetwise and once when the inspection is reviewed

_____
_____

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

Yes____ No _X__ (Assetwise check)

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

Yes____ No _X__ (Assetwise check)

13. 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 ___)

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

1. No. of bridges considered scour susceptible? (Service over Water) Number __100%___.

2. Number of bridges inspected by probing? Number __25%____.

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_X__ No_____ If no, Why? _____N/A_____

5. How many structures are coded 6 on item 113 Scour Critical? **(Metric 18)** Number __0___.

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

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

_____ County Engineer based on past history._____

_____

_____

G. INVENTORY

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

   Who checks? __Bridge Inspector_____

   How Often?...With every inspection_**X**_ Less often than once per year___

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

   How Often?...With every inspection_**X**_ Less often than once per year___

3. How is the inventory data input into Assetwise?
   _X__ 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_X___ NO ____

   Changes from new construction or rehab? YES_X___ 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? YesX_ Number 100%__: If, No, Why not? _____ NA___

   b. Bridges requiring underwater inspections.
   Number_____ NA_X__

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

Note: An examination of the files will be performed during the review.

- **Bridge Files……email a copy of a typical file or have them on hand for inspection.**
- **Scour Critical POA.. email a copy of a typical file or have them on hand for inspection.**
- **Fracture Critical Plan.. email a copy of a typical file or have them on hand for inspection.**
- **UW inspection Procedure.. email a copy of a typical file or have them on hand for inspection.**

H. 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)**

__X__Written work order.

_____Electronic Communication.

_____Oral direction.

_____Other. Explain._____

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.

__X_ County Engineer

____County bridge Engineer

____Bridge Superintendent

____Sherriff

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

Explain if different than procedure in Assetwise _____

_____

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, End of inspection cycle maintenance report**_____
_____
5. Who checks proper placement of signs (load posting, clearance, speed restriction, narrow bridge etc.)? **(Metric 15)**

_____**Bridge Inspector**_____

_____

I. LOAD ANALYSIS AND POSTING

1. Number of plans for existing bridges available for NBIS length bridges. ____75%_____

2. Number of plans for non-NBIS bridges (>= 10' and <= 20' long) ____50%_____

3. Number of bridges analyzed using the *AASHTO Manual for Bridge Evaluation* **(Metric 13)**

By Whom **(Metric 13)**
_X__Load Rating Engineer
____County Engineer
____Bridge Engineer
____Consultant

5. When are bridges load rated, after initial rating. Check all that apply
____Every 5 years regardless.
_X__When there is a significant change in condition rating.
____When wearing surface thickness increases more than 1-1/2 inches
_X__ When permit load is requested
____ other

6. Methods used **(Metric 13)**
_X_ AASHTO BrR
___ Hand Calculated
_X_ Engineering Judgement (BR100)
___ BARS or other proprietary software program
___ Other Explain_____

7. Number of NBIS length bridges not load rated **(Metric 13)** Number _0___
Why? _____

8. List the NBIS length bridges considered "not ratable" including reason for being considered "not ratable" **(Metric 13)**
_____N/A_____

9. Number of NBIS length bridges load posted **(Metric 14)** (Assetwise Check)

Number of bridges posted _34__. Number of bridges with posted Signs in the field_34__.

10. List bridges closed due to condition rating (rough check) ____1_____

11. List bridges rated less than 100% Ohio legal load and not physically load posted, and resolution. (Assetwise Check)

_____0_____

12. Number of NBIS bridges with Gusset Plates **(Metric 13)** _____

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

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

- Inspection reports, including old inspections:
  ____ On paper file in Office
  ____ Electronically
  ____ In Assetwise
  _X__ All three
  ____ Other

- Design Calculations:
  __X_ On paper file in Office
  __X_ Electronically
  ____ In Assetwise
  ____ All three
  ____ Other

- Plans:
  _X__ On paper file in Office
  _X__ Electronically
  ____ In Assetwise
  ____ All three
  ____ Other

- Load analysis calculations:
  __X_ On paper file in Office
  _X__ Electronically
  ____ In Assetwise
  ____ All three
  ____ Other
- Inventory forms:
  __X_ On paper file in Office
  ____ Electronically
  __X_ In Assetwise
  ____ All three
  ____ Other

- Photos and sketches:
  ____ On paper file in Office
  _X__ Electronically
  __X_ In Assetwise
  ____ All three
  ____ Other

- Repairs and maintenance history

_X__ On paper file in Office
_X__ 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:
  __X_ On paper file in Office
  __X_ Electronically
  ____ In Assetwise
  ____ All three
  ____ Other

- Load Posting/Closing:
  ___ On paper file in Office
  ____ Electronically
  ____ In Assetwise
  _X__ 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.

15. What is the FC bridge inspection frequency? **(Metric 16)** Every __24_ Months

16. Is the FC Plan completed for all FC bridges? **(Metric 16)** (Yes _X_ No ___)

17. Are the FCM Identified in the FC Plan? **(Metric 16)** (Yes _X_ No ___)

18. What is the underwater inspection frequency? **(Metric 17)** ____Every ____ Months_____

19. Are the underwater elements identified and located? **(Metric 17)** (Yes X__ No ___)

20. List any complex bridges: **(Metric 19)**

N/A

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

Describe:

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:

MOE-T0307-0228 _(5634806) Steel girder

Item 58 Deck……7 Agreed
Item 59 Superstructure……5 Agreed
Item 60 Substructure……5 Agreed
Item 61 Channel……6 Agreed
Item 61.01 Scour……7 Agreed
Item 62 Culvert……N
Item 36 Railing…… 0 0 0 0
Item 72 Approach Alignment ……3 Agreed
Comments: Great Comments
Defect Photos: Great Defect Photos
Channel Photos: Good Channel Photos

MOE-T0307-0075 _(5634768) Steel beams

Item 58 Deck…… **4** Agreed
Item 59 Superstructure….. **4** Agreed
Item 60 Substructure……**3** Agreed
Item 61 Channel……**5** Agreed
Item 61.01 Scour……**7** Agreed
Item 62 Culvert……**N** Agreed
Item 36 Railing……0 N N N Agreed
Item 72 Approach Alignment ……**8** Agreed
Comments: Great Comments
Defect Photos: Great Defect Photos
Channel Photos: Good Channel Photos

MOE-C0015-0710 _(5632854) Steel Truss

Item 58 Deck…… **6** Agreed .
Item 59 Superstructure……**5** Agreed
Item 60 Substructure……**5** Agreed
Item 61 Channel……**7** Agreed
Item 61.01 Scour…… **7** Agreed
Item 62 Culvert…… **N**
Item 36 Railing …… 0 0 0 0 Agreed
Item 72 Approach Alignment ……8 Agreed
Comments: Great Comments
Defect Photos: Great Defect Photos
Channel Photos: Good Channel Photos

MOE-C0029-0854 _(5631106) Steel Beams

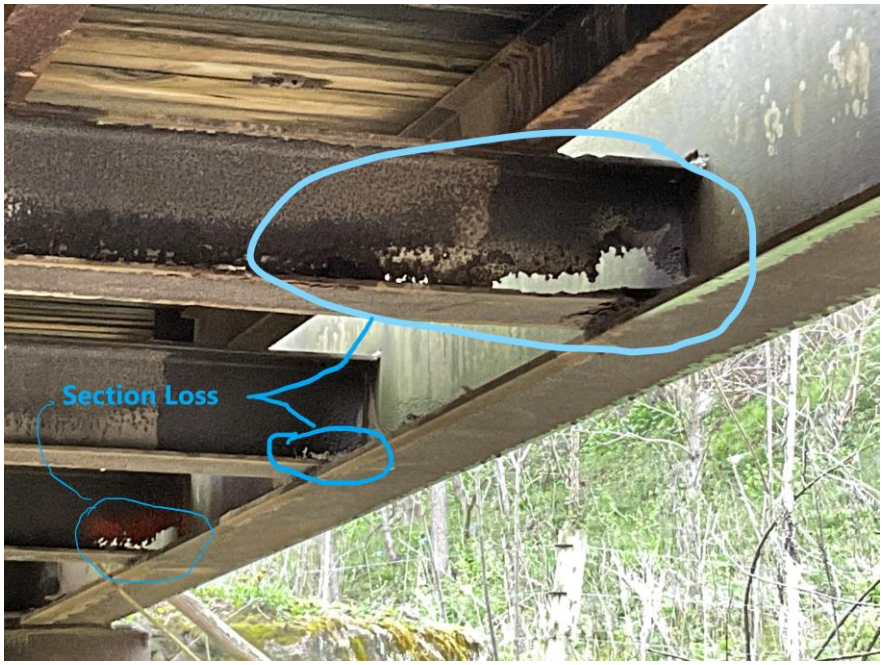
Item 58 Deck……..7 Agreed
Item 59 Superstructure……6 Agreed
Item 60 Substructure…….**5** Agreed
Item 61 Channel……..6 Agreed
Item 61.01 Scour……7 Agreed
Item 62 Culvert……N Agreed
Item 36 Railing…… 0 0 0 0 Agreed
Item 72 Approach Alignment ……..6 Agreed
Comments: Great Comments
Defect Photos: Great Defect Photos
Channel Photos: Good Channel Photos

MOE-C0029-0879 _(5631173) Prestressed Concrete Beams

Item 58 Deck…….. 8 Agreed
Item 59 Superstructure……8 Agreed
Item 60 Substructure……..5 Agreed
Item 61 Channel…….. 6 Agreed
Item 61.01 Scour…….. 7 Agreed
Item 62 Culvert…….. N Agreed
Item 36 Railing…….. 0 0 0 0
Item 72 Approach Alignment ……..8 Agreed
Comments: Excellent Comments
Defect Photos: Great Defect Photos
Channel Photos: Channel Photos

MOE-T0183-0013 _(5634504) Steel Girder

Item 58 Deck……..4 Agreed
Item 59 Superstructure……4/3 There are two adjacent floor beams that have severe section loss causing excessive live load deflections, with one end of one floor beam beginning to crush and the flooring to fall apart at the high stress point. While I do not view this as a critical finding at this time, it is surely on its way. I recommend re-evaluating the floor beams and repost the bridge to a much lower percentage as the analysis dictates.



Item 60 Substructure…….5 Agreed

Item 61 Channel……..5 Agreed

Item 61.01 Scour…….. 6 Agreed

Item 62 Culvert……N Agreed

Item 36 Railing…… 0 0 0 0 Agreed

Item 72 Approach Alignment ……..4 Agreed

Comments: Excellent Comments

Defect Photos: Great Defect Photos

Channel Photos: Great Channel Photos

MOE-T0183-0050 _(5634512) Cont. Concrete Slab

Item 58 Deck……5 Agreed
Item 59 Superstructure……6 Deck and slab are the same. Both 5s
Item 60 Substructure…….4 Agreed
Item 61 Channel……5 Agreed
Item 61.01 Scour……7 Agreed
Item 62 Culvert……N
Item 36 Railing…….. N N N N Agreed
Item 72 Approach Alignment …. 4 Agreed
Comments: Excellent Comments
Defect Photos: Great Defect Photos
Channel Photos: Good Channel Photos

Field Review Summary:

Monroe County is doing a very good with your bridge inspection program. We were in Agreement with nearly every rating, with only the steel girder bridge being called into question. MOE-T0183-0013 _(5634504) Steel Girder, due to loss of section on adjacent floor beams. Ratings and comments were good and in conformance with the inspection manual. Channel and Defect photos were very good.

PART III Office file Review

Fracture critical bridges: 35 bridges in the list

Fracture Critical Member and Fatigue Prone Connection ID Plan:.
MOE CR29A 0005 000 (5631017) Richland Engineering
MOE-T0152-036 (5634202)
MOE-CO29A-0005 (5631017)

Bridge Load Rating Report, including Gusset plate analysis:.
MOE CR29A 0005 000 (5631017) Richland Engineering
MOE-CO29A-0005 (5631017)

Underwater inspections: None

POA for Scour : Standard Form on file.

Scour susceptible bridges: 100% with 25% checked by probe.

Critical findings: None to date.

All 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 history of every bridge through reports, plans and photographs.

PART IV Snapshot DATA Summary of Program

MONROE County 2022

INVENTORY, APPRAISAL & INSPECTION SNAPSHOT

12/19/2022

Inventory Data - NBIS Bridges Only

	NBIS COUNT
NBIS Bridges > 20'	113
Bridges 10'-20'	66
All Bridges	179

Item 221	Inspection Responsibility	CODE	#NBIS	#ALL
Data Tab Col BV,BW	County	2	113	179

Item 21	Maintenance responsibility	CODE	#NBIS	#ALL
Data Tab	County	2	113	179
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
			113	179

Item 42A	Type service on bridge	CODE	#NBIS	#ALL
Data Tab	Other	0	0	0
Col Q	Highway	1	113	179
	Railroad	2	0	0
	Ped/Bikeway	3	0	0
	Hwy/RR	4	0	0
	Hwy/Ped	5	0	0
			113	179

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	113	179
	Hwy/Waterway	6	0	0
	RR/Waterway	7	0	0
	Hwy/Waterway/RR	8	0	0
	Relief (for waterways)	9	0	0
			113	179

All data is complete and correct in this section.

ITEMS 43A,B,C Structure Type	Data (Col M,N,O)	CODE	#NBIS	#ALL
Concrete Slab		101	3	15
Concrete Box Beam/Girder Multiple		105	7	8
Concrete Frame		107	0	3
Concrete Deck Arch		111	2	2
Concrete Thru Arch		112	1	1
Concrete Culvert (incl frame culverts)		119	1	2
Concrete Continuous Slab		201	3	3
Concrete Continuous Frame		207	1	1
Steel Beam or Girder		302	46	86
Steel Girder w/ Floor System		303	18	18
Steel Thru Truss (inlcudes Pony)		310	17	17
Steel Culvert (incl frame culverts)		319	2	9
Steel Continuous Beam or Girder		402	4	4
Prestr. Conc. Cont. Box Beam/Girder Multiple		505	6	6
Timber Thru Truss (inlcudes Pony)		710	1	1
Timber Deck Arch		811	1	2
Aluminum or Iron Culvert (incl frame culverts)		919	0	1
			113	179

Item 92A Fracture Critical		CODE	#NBIS	#ALL
Data Tab	Requires FC Inspection	Y	35	n/a
Col U,V,Y	Requires FC Inspection	N	78	n/a
			113	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	5	5
	stable above footing	8	93	151
	countermeasures installed	7	3	4
	no scour evaluation made	6	0	0
	stable within footer limits	5	8	12
	stable action needed	4	4	7
	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
			113	179

.

MOE-C0077-0400 _(5631645) MOE-T0041-0238 _(5633826) MOE-T0102-0088 _(5631726)
MOE-T0152-0236 _(5634202) MOE-T0156-0263 _(5634156) MOE-T0263-0263 _(5633850)
MOE-T0834-0107 _(5633559)

The bridges above have a non-critical finding scour rating of 4, that requires corrective measures. Once the measures are implemented the scour rating should move to a 7. See Column AA in Data TAB of the Snapshot for olive highlights.
Note: (If these measures were taken, then the rating needs changed. If not, then you need a plan for corrective measures. A code of 4 or less should not be in the system for more than a year.)

All data is complete and correct in this section.

Item 63	Documented Engineering Judgment		#NBIS	#ALL
	Field Eval & Doc EJ		12	n/a
		BR_100 for these bridges?		

Item 92B	Underwater	CODE	#NBIS	#ALL
Data Tab	requires dive inspection	N	113	n/a
Col W,X,Z	requires dive inspection	Y	0	n/a
			113	

Item 709	Plan Information	CODE	#NBIS	#ALL
Data Tab	plans not avail	0	8	21
Col. AW	plan avail	1	49	65
	field measured	2	56	93
	Field Testing	3	0	0
	not applicable	N	0	0
			113	179

Item 63	Method of Analysis	CODE	#NBIS	#ALL
Data Tab	Field Eval & Doc. Engr Judgment	0	12	27
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	2
	LFR	6	55	75
	AS	7	15	30
	LRFR	8	30	44
	Assigned LFR HS20	D	0	0
	Assigned LRFR HL93	F	1	1
	not appl (RR, etc)	X	0	0
			113	179

REMINDER:

Load Factor required for bridges built after 1993 **(exceptions: timber, etc,)**

LRFR required for bridges built after 2010

Note: 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	**83**	142
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	**1**	2
	Posted for load capacity	P	**29**	35
	Posted for other than load	R	**0**	0
	Closed for other than load	X	**0**	0
			113	179

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?	1
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?	1
Col. AY	Item 575 correct?	0
Col. AZ	Depth of fill completed?	0

Check Load Rating TAB for details below

MOE-T0570-0120 _(5635000) See Load Rating TAB Column AT (Columns AR and AS need to be the same)
Method of Rating in Columns X & Y (0, 0) means the OPER and INV rates in columns E & F have to be in TONS.
Data check formular In Column BB thinks the OPER and INV ratings are in TONS, but they are not.

MOE-T0570-0120 _(5635000) MOE-T0472-0003 _(5634318) MOE-C0029-0240 _(5630959)
All Three bridges above have the EV3 as the lowest Factor controlling the % legal

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 Qualificatio (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	3	100.0%	(C)
Comprehensive	0	3	100.0%	(C)
Refresher	0	3	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	35	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	1	113	99.1%	(SC)
Op RF = 0 but not closed	0	113	100.0%	(C)
% Legal < 100 but not posted	0	113	100.0%	(C)
Item 41 = B	0	113	100.0%	(C)

MOE-T0570-0120 _(5635000) Same problem as metric 13 in the load rating data.

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	112	98.2%		(C)
	Adequacy comments **	0	30	100.0%		(C)
		Error	Total Scour	% PASS		
Comments	Rating should be = Scour	1	109	99.1%	within tolerance +/- 1	
Tab	Noncompliant Scour Rating Err	0	109	100.0%		(C)

MOE-T2001-0013 _(5630290)
MOE-T2706-0001 _(5634997)
Both bridges above are missing Channel comments. I see there are comments concerning the channel and scour in the Substructure item. It those comments cover the channel too, then just put a short note in the channel comments, “see substructure” and leave it at that.

MOE-C0039-0002 _(5630797) Scour controls

METRIC 16 – Fracture Critical Ins	(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 Inspecti	(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

Overall, Monroe County is doing a very good job with its bridge program, with very minor data corrections needed. Metric 14 just needs the Operating and Inventory put into Tons of the change the method of analysis. Address the comments and substructure ratings on three bridge and you will be in full 100% compliance with all 23 FHWA Metrics.