Quality Assurance Review

National Bridge Inspection Standards &
Bridge Maintenance Program

Clermont County

April 12, 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: Clermont County Engineers Office

Checklist completed by: Doug Royer, Jon Carpenter Date: March 8, 2022

PART I: Records and Staffing

I. MAINTENANCE, REHABILITATION AND REPLACEMENT PROGRAM

A. NUMBER OF BRIDGES WITH MAINTENANCE RESPONSIBILITY

1. Greater than 20' long (NBIS length 23CFR 650c) **(Metric 22**
   189 that the County Maintains, 2 Railroad, 1 Private = **192 over 20' long**
2. Bridges >= 10' and <= 20' long **(Metric 22)**
   228 that the County Maintains, 1 Railroad = **229 over 20' long**

B. PROCEDURES AND BUDGET

1. Contract repairs and replacement per year
- List typical work items

  Replacements: Number: Culverts:_0 __ Bridges:__2____
  Rehabilitations: Number : Culverts:_0__ Bridges:__0____
  Maint.Contracts Number : Culverts:_0__ Bridges:__0____

  -List approximate annual budget: __$1,000,000_____

- Are Fed Funds used? Yes_x_ No ___
- Are Credit Bridge funds used? Yes_x__ No ___

2. In-house repairs and replacements

Replacements: Number: Culverts:_7___ Bridges:__0_____
Rehabilitations: Number: Culverts:__0__ Bridges:__2_____
Maint.Contracts Number: Culverts:__0__ Bridges:__0_____

- List approximate annual budget _____$750,000_____

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

_X__ Inspection reports.
_____ Sufficiency rating.
_____ Growth/development.
_ X _ Other…explain Condition Rating, ADT & Paving Schedule

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
_____ Time Cards
_____ Plans

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

_ X __ Engineer?
_____ Sherriff?
_ X __ 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)** 192

2. Between 10’ and 20' long (ORC 5501.47, 5543.20) **(Metric 22)** 229

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: Douglas E. Royer, PE

- Yrs. Inspection related experience: 24

- List courses attended (& approx. dates) ODOT L2 training 2021, Refresher 2021

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

- Name: Douglas E. Royer, PE

- Yrs. Inspection related experience: See above
- List courses attended (& approx. dates) See above

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

- Name: Jon Carpenter

- Yrs. Inspection related experience: 24

- List courses attended (& approx. dates)
  Inspector 1- Dec.1998
  Inspector 2- June, 1999
  Refresher- Dec. 2011

Bridge Maintenance- June,2015
Load Rating- April, 2009
Stream Restoration- March, 2009
Culvert Inspection- August, 2011

Asset Management- Nov. 2012
Fema- May, 2006
Refresher 2018

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

%TIME on inspections:

60% Bridge/Culvert inspection
20% Bridge Design/Plan prep
10% Bridge Construction
10% Bridge Maintenance
_____ Overload/Superload
_____ Surveying
_____ Other -
_____100%

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

a. List Ohio PE # 59399 b. Name Douglas E. Royer, PE

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

Name: Consultant

- Yrs. Inspection related experience: _____

- List courses attended (& approx dates) _____

_____

_____

D. INSPECTION EQUIPMENT

1. Type of vehicle used for inspections

____ Pickup truck
____ Van
X___ 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 ___		Wire Brush	X
6' Folding Rule	X	Calipers	X
100' Fiberglass Tape	X	Shovel	X
Geologist Hammer	X	Screw Driver	X
Inspection Mirror		Pliers	X
Flashlight	X	Wrenches	X
Thermometer	X	Sounding Chains	X
Plumb Bob	X	Hip Boots and Waders	X
Camera	X	Paint Stick/Crayon	X
2'-0" Level		Scraper	X
Brush Hook/Axe		Probing Rod	X
Boat		Vertical Clearance Rod	X
First Aid Kit			

Other equipment not listed above Ultrasound device, Gas sniffer, Machete, String line, Selfie stick, brush saw, spud bar, water sample bottle.

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)**

N/A

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

a. How many bridges need a snooper? 0

b. How many bridges is it used on? 0

c. How often? N/A

E. INSPECTION PROCEDURES

1. Approximately how many inspections were made during last calendar year? **(Metric 6)** **370**

2. Approximately how many inspections are scheduled for the current calendar year? **(Metric 6)** 298

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

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

   a. Beam/Girder: Simple Span: __1____hrs. Multi-span: __1___hrs.

   b. Slab bridge: Simple Span: __1____hrs. Multi-span: __1___hrs.

   c. Truss (pony): Simple Span: __3____hrs. Multi-span: _____hrs.

   d. Through/deck): Simple Span: _____hrs. Multi-span: _____hrs.

   e. Culvert: Single cell __1_____hrs. Multiple Cells: _1___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: **Doug Royer, based on condition rating and field visit.**

_____

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

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

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

____ 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)**
Any repairs or maintenance done the previous year are reviewed to ensure assetwise is up to date.

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 ___ 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 413

2. Number of bridges inspected by probing? Number 413

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? ___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)
Annual inspections which include visual inspection, probing, evaluating channel x-sections and photos.

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

Discussion between program manager and team leader based on specific site conditions and whether or not the footers/substructure can be evaluated without diving.

G. INVENTORY

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

Who checks? CEAO Bridge QA/QC engineer, Program manager and Team leader

How Often? QA/QC engineer notifies the County at random times with various reports. The Program manager and Team leader perform various reviews throughout the year along with our annual inspections...With every inspection Y
Less often than once per year N

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

How Often? With every inspection_y__ Less often than once per year_n__

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?
Yes___ Number_____: If, No, Why not? _____ NA_X__

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)**

_____Written work order.

__X___Electronic Communication.

_____Oral direction.

__X___Other. Explain **Work order database**

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

_X___County bridge Engineer

_X___Bridge Superintendent

____Sherriff

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

Explain if different than procedure in Assetwise **Critical Findings through Assestwise**

_____

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

As a part of the inspection report if that is when the repair is found or through work orders.

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

Team Leader and County Sign Foreman

I. LOAD ANALYSIS AND POSTING

1. Number of plans for existing bridges available for NBIS length bridges. **93**

2. Number of plans for non-NBIS bridges (>= 10' and <= 20' long) **100**

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

313 By Whom **(Metric 13)**

__X__Load Rating Engineer

____County Engineer

__X__Bridge Engineer

__X__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.
_X___When wearing surface thickness increases more than 1-1/2 inches
_____ When permit load is requested
_____ other

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

X AAWSHTO BrR
___ Hand Calculated
X Engineering Judgement (BR100)
___ BARS or other proprietary software program
X Other Explain ODOT worksheets

7. Number of NBIS length bridges not load rated **(Metric 13)** Number _5____

Why? __2 are RR bridges, 3 are currently closed to traffic_____

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

_____0_____

_____

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

Number of bridges posted _18__. Number of bridges with posted Signs in the field_18___.

10. List bridges closed due to condition rating (rough check) _0_____

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)** ___0_____

13. Number of NBIS bridges with Gusset Plates analyzed. **(Metric 13)** __0_____

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

- Inspection reports, including old inspections:
  _____ On paper file in Office
  __x__ Electronically

__x__ In Assetwise
_____ All three
_____ Other

- Design Calculations:
  _____ On paper file in Office
  __x__ Electronically
  _____ In Assetwise
  _____ All three
  _____ Other

- Plans:
  _____ On paper file in Office
  __x__ Electronically
  _____ In Assetwise
  _____ All three
  _____ Other

- Load analysis calculations:
  _____ On paper file in Office
  __x__ Electronically
  _____ In Assetwise
  _____ All three
  _____ Other
- Inventory forms:
  _____ On paper file in Office
  __x__ 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
  _____ On paper file in Office
  __x__ Electronically
  __x__ In Assetwise
  _____ All three
  _____ Other

- Scour evaluation:
  _____ On paper file in Office
  __x__ Electronically

___x_ 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
  __x__ Electronically
  __x__ 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
  __x__ Electronically
  __x__ 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 _____ Months
N/A

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

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

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

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

Part II: Field Review

Inspection Reports (metric 12)

As part of this review, six 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:

CLE-T0280-0003 _(1331779) Concrete box beams
Item 58 Deck…….. 5 Agreed

Item 59 Superstructure……5 Agreed
Item 60 Substructure……6 Agreed
Item 61 Channel……6 Agreed
Item 61.01 Scour……6 Agreed
Item 62 Culvert……N
Item 36 Railing…….. 0 0 0 0 Agreed
Item 72 Approach Alignment …….. 6

See manual descriptor below for guidance as the table is inadequate in my opinion.
You are probably at about a 5, or lower with this one.

With respect to the approach alignment ratings, there seems to be a common issue with almost every county trying to follow the manual rating table. This rating improves greatly when only the text description is adhered to, concerning traffic behavior. I recommend using the descriptive text as a guide. As shown in the excerpt below, highlighted in yellow.

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

Comments: Excellent Comments in Assetwise.
Defect Photos: Excellent defect Photos in Assetwise.
Channel Photos: Textbook examples of Channel Photos in Assetwise

5554 Hutchinson Road Concrete Slab

Item 58 Deck…… 5 Agreed
Item 59 Superstructure……6 Agreed
Item 60 Substructure…….5 Agreed
Item 61 Channel……..6 Agreed
Item 61.01 Scour……..5 Agreed
Item 62 Culvert……N
Item 36 Railing…….. 0 0 0 0 Agreed
Item 72 Approach Alignment …….. 5 Agreed
Comments: Excellent comments.
Defect Photos: Good Defect photos and descriptions
Channel Photos: Good Channel Photos in Assetwise

CLE-C0010-0269 _(1331906) Prestressed Box-beams Continuous

Item 58 Deck…….. 5 Agreed
Item 59 Superstructure……5 Agreed
Item 60 Substructure…….6 Agreed
Item 61 Channel……..7 Agreed
Item 61.01 Scour……..6 Agreed
Item 62 Culvert……N
Item 36 Railing…….. 1 0 1 0 Railing in good shape, but low for current standards and no tubular backup.
Item 72 Approach Alignment …….. 6 Agreed
Comments: Extremely detailed comments.
Defect Photos: Great defect photos in Assetwise
Channel Photos: Good Channel photos in Assetwise.

CLE-T0961-0008 _(1332899) Twin Corrugated pipe culverts

Item 58 Deck…….. N
Item 59 Superstructure……N
Item 60 Substructure…….N
Item 61 Channel……..5 Agreed
Item 61.01 Scour……..7 Agreed
Item 62 Culvert……**5** Normally you discount the repair and rate the structure as if the repairs were not there. I this case the repairs are more substantial and superior to the original pipe material. I would not argue if this were rated a 6 or 7 for that reason.

Item 36 Railing …….. 0 0 0 0
Item 72 Approach Alignment …….. 8
Comments: Again, great Comments!
Defect Photos: Defect photos in Assetwise, but repairs made since last inspection
Channel Photos: Good Channel Photos

CLE-T0194-0130 _(1330624) Steel Beams

Item 58 Deck……..4 Agreed Deck edge deterioration and GR anchorage supports a 4 rating.
Item 59 Superstructure……4 Agreed Vehicular impact dislodging the fascia beam supports the 4 rating.
Item 60 Substructure…….5 Agreed
Item 61 Channel……..6 Agreed
Item 61.01 Scour……6 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: No Defect Photos in Assetwise, they have good photos on file in the office
Channel Photos: Great Channel Photos in Assetwise

CLE-C0098-0066 _(1331574) Prestressed Box beams

Item 58 Deck…….. 4 Agreed Same as Superstructure
Item 59 Superstructure……4 Agreed. This is a tough call, because only one beam is really affected and it is the outside beam and it is bad.

Normally this is not given serious consideration in the overall Superstructure rating that might score as high as a 6. However, that beam is at the end of a relatively sharp curve at 55 mph and poses a higher risk of impact that normally taken into account. (See alignment photo below). The condition of the beam tops is unknown. I recommend coring the tops of several beams to gage their condition. If they are good, then replace the fascial beam, if poor, replace the superstructure, salvaging the good beams for repurposing.

Item 60 Substructure…….4 Agreed The abutments are good but the Hammerhead portion of the pier is poor.

Consider the rehabilitation potential of the hammerhead before deciding about the superstructure.

Item 61 Channel……..7 Agreed

Item 61.01 Scour……..6

Item 62 Culvert……N

Item 36 Railing…….. 1 0 0 0 Agreed

Item 72 Approach Alignment …….. 8 See comment and discussion from first bridge about alignment. This is a 5 at best.

Comments: Great Comments

Defect Photos: Great defect Photos

Channel Photos: Great Channel Photos in Assetwise.

Field Review Summary:

Overall, the county is doing a great job with their bridge inspection program. Their records are complete and organized. I found their rating to be well within that of the manual. The only variation concerns the approach alignments. The comments are very complete and detailed for every bridge. In my opinion, the attention to the details and good documentation over time is the hallmark of a good inspection program and Clermont County could serve as a model agency for others.

PART III Office file Review

Fracture Critical Member and Fatigue Prone Connection ID Plan.

Clermont County has no Fracture Critical bridges

Bridge Load Rating Report, including Gusset plate analysis.

Clermont County has only one truss that is pin connected, no Gusset plates.

Fracture Critical Member and Fatigue Prone Connection ID Plan.

Clermont County has none

Bridge Load Rating Report, including Gusset plate analysis.

See comment above

Scour Action Plan

Clermont County has a documented Scour POA form completed

Below is the listing of office filed reviewed:

C10-2.69, Belfast-Owensville Road	CLE-C10-2.69 (1331906)
C93-0.79, Newtonsville-Hutchinson Rd	CLE-C93-0.79 (1358111)
C98-0.66, O'Bannonville Road	CLE-C98-0.66 (1331574)
T194-1.30, Gibson Road	CLE-T194-1.03 (1330624)
T280-0.03, Davis Road, (GLANCY)	CLE-T280-0.03 (1331779)

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

CLERMONT County 2022

INVENTORY, APPRAISAL & INSPECTION SNAPSHOT

4/11/2022

Inventory Data - NBIS Bridges Only

	NBIS COUNT
NBIS Bridges > 20'	191
Bridges 10'-20'	230
All Bridges	421

Item 221	Inspection Responsibility	CODE	#NBIS	#ALL
Data Tab Col BV,BW	County	2	191	421

Item 21	Maintenance responsibility	CODE	#NBIS	#ALL
Data Tab	County	2	188	417
Col D	City or other local	4	0	0
	Railroad	27	2	3
	Private (tohter than RR)	26	1	1
	State Park	11	0	0
	Local Park	23	0	0
	State Agency	1	0	0
	Township	3	0	0
			191	421

Item 42A	Type service on bridge	CODE	#NBIS	#ALL
Data Tab	Other	0	0	0
Col Q	Highway	1	189	413
	Railroad	2	2	3
	Ped/Bikeway	3	0	0
	Hwy/RR	4	0	0
	Hwy/Ped	5	0	5
			191	421

Item 42B	Type service under bridge	CODE	#NBIS	#ALL
Data Tab	Other	0	0	1
Col R	Hwy w/ or w/o Ped	1	0	1
	Railroad	2	2	2
	Ped/Bkwy	3	0	1
	Hwy w/ RR	4	0	0
	Waterway	5	186	413
	Hwy/Waterway	6	3	3
	RR/Waterway	7	0	0
	Hwy/Waterway/RR	8	0	0
	Relief (for waterways)	9	0	0
			191	421

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	26
Concrete Beams		102	1	1
Concrete Tee Beam		104	1	1
Concrete Box Beam/Girder Multiple		105	14	43
Concrete Frame		107	6	30
Concrete Deck Arch		111	1	1
Concrete Culvert (incl frame culverts)		119	15	88
Concrete Continuous Slab		201	1	1
Steel Beam or Girder		302	16	29
Steel Girder w/ Floor System		303	2	2
Steel Thru Truss (inlcudes Pony)		310	1	1
Steel Culvert (incl frame culverts)		319	5	39
Steel Continuous Beam or Girder		402	1	1
Prestressed Concrete Slab		501	0	1
Prestressed Concrete Thru Arch		502	1	1
Prestr. Conc. Cont. Box Beam/Girder Multiple		505	120	128
Timber Thru Truss (inlcudes Pony)		710	1	1
Aluminum or Iron Culvert (incl frame culverts)		919	2	27
			191	421

Item 92A Fracture Critical		CODE	#NBIS	#ALL
Data Tab	Requires FC Inspection	Y	**0**	n/a
Col U,V,Y	Requires FC Inspection	N	**191**	n/a
			191	n/a
	FC Switch Y/N is Blank		0	n/a

Item 113 Scour			#NBIS	#ALL
Data Tab	Bridge not over waterway	N	**2**	5
Col AA	unknown foundation	U	**0**	0
	over tidal waters	T	**0**	0
	foundations on dry land	9	**10**	14
	stable above footing	8	**82**	202
	countermeasures installed	7	**82**	175
	no scour evaluation made	6	**0**	0
	stable within footer limits	5	**15**	25
	stable action needed	4	**0**	0
	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
			191	421

All data is complete and correct in this section.

Item 63	Documented Engineering Judgment			#NBIS	#ALL
	Field Eval & Doc EJ			1	n/a
		BR_100 for these bridges?			

Item 928	Underwater	CODE	#NBIS	#ALL
Data Tab	requires dive inspection	N	191	n/a
Col W,X,Z	requires dive inspection	Y	0	n/a
			191	

Item 709	Plan Information	CODE	#NBIS	#ALL
Data Tab	plans not avail	0	35	58
Col. AW	plan avail	1	138	336
	field measured	2	15	17
	Field Testing	3	0	0
	not applicable	N	3	9
			191	420

Item 63	Method of Analysis	CODE	#NBIS	#ALL
Data Tab	Field Eval & Doc. Engr Judgment	0	1	13
Col. AV	Work Stress	1	0	0
	LFR	2	0	0
	LRFR	3	0	1
	load test	4	0	0
	No rating done	5	5	111
	LFR	6	169	194
	AS	7	2	3
	LRFR	8	12	95
	Assigned LFR HS20	D	1	1
	Assigned LRFR HL93	F	1	3
	not appl (RR, etc)	X	0	0
			191	421

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	171	384
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	2
	closed for load cap. reason	K	3	3
	Posted for load capacity	P	14	29
	Posted for other than load	R	3	3
	Closed for other than load	X	0	0
			191	421

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	2
Col.A V	Item 70 correct?	1
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

See Load Rating TAB in the check columns at the far right.
The errors are highlighted in colors and explained at the top.

CLE-C0093-0079 _(1358111) CLE-C0075-0142 _(1359428)
CLE-C0093-0079 _(1358111) Normally you don't post using Inventory rating.

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 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	1	100.0%	(C)
Comprehensive	0	1	100.0%	(C)
Refresher	0	1	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	0	100.0%	(C)

All data is complete and correct in this section.

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	187	98.9%	(C)
	Adequacy comments **	0	30	100.0%	(C)
		Error	Total Scour	% PASS	
Comment:	Rating should be = Scour	2	183	98.9%	within tolerance +/- 1
Tab	Noncompliant Scour Rating Err	1	183	99.5%	(C)

CLE-T0164-0025 _(1332414) Missing Substructure comment
CLE-C0093-0079 _(1358111) Missing Deck Comment

CLE-C0010-0089 _(1333631) CLE-C0031-0041 _(1358677) Scour Controls Substructure

METRIC 14 - Posting	Load rating data tab			
From Files review	# errors	#sampled	% PASS	COMPLIANCE
Op RF < 3 tons but not closed	0	191	100.0%	(C)
Op RF = 0 but not closed	0	191	100.0%	(C)
% Legal < 100 but not posted	0	191	100.0%	(C)
Item 41 = B	0	191	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)

There were no errors found with respect to bridge postings.

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

Clermont County is in Compliance with all metrics with the exception of a few overdue inspections and some minor data cleanup.