Quality Assurance Review

National Bridge Inspection Standards &
Bridge Maintenance Program
Scioto County
March 29, 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: _____ **Scioto County Engineers Office**_____

Checklist completed by: _____Paul W. Sheets__ Date:_____3/14/2022___

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)** 210

2. Bridges >= 10' and <= 20' long **(Metric 22)** 288

B. PROCEDURES AND BUDGET

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

Replacements: Number: Culverts:_2_ Bridges:___1____
Rehabilitations: Number : Culverts:____ Bridges:_____
Maint.Contracts Number : Culverts:____ Bridges:_____

-List approximate annual budget: ____$100,000_____

- Are Fed Funds used? Yes_X__ No ___
- Are Credit Bridge funds used? Yes_X__ No ___

2. In-house repairs and replacements

Replacements: Number: Culverts:_69___ Bridges:___1____
Rehabilitations: Number: Culverts:____ Bridges:_____
Maint.Contracts Number: Culverts:____ Bridges:___ ____

- List approximate annual budget _____Varies_____

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

__X__ Inspection reports.
__X__ Sufficiency rating.
_____ 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
____ _Contractor
_____ Other explain_____

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

_____ Work orders
__ __ Time Cards
__X___ Plans

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

__X__ Engineer?
_____ 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)** _____210_____

2. Between 10' and 20' long (ORC 5501.47, 5543.20) **(Metric 22)** ____288_____

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: _____Darren C LeBrun_____

- Yrs. Inspection related experience: __24___

- List courses attended (& approx. dates) ODOT Level 1 2021, ODOT Level 2 2021, ODOT Refresher 2017

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

- - Name: _____Darren C LeBrun_____

- Yrs. Inspection related experience: __24___

- List courses attended (& approx. dates) ODOT Level 1 2021, ODOT Level 2 2021, ODOT Refresher 2017

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

- Name: _____Paul W. Sheets & Ethan J. Nelson_____

- Yrs. Inspection related experience: __PS 22 and EN 3___

- List courses attended (& approx. dates) PWS ODOT Level 1 1999, ODOT Level 2 2009, ODOT Refresher 2019, EJN ODOT Level 1 2019, ODOT Level 2 2019

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

%TIME on inspections:

__20__ Bridge/Culvert inspection	__20___ Surveying
__20__ Bridge Design/Plan prep	__40__ Other -
__0__ Bridge Construction	_____ 100%
__0__ Bridge Maintenance	
__0__ Overload/Super load	

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

a. List Ohio PE # 64975 b. Name Darren C. LeBrun PE, PS

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

- Name: None Required

- Yrs. Inspection related experience: _____

- List courses attended (& approx dates) _____

D. INSPECTION EQUIPMENT

1. Type of vehicle used for inspections

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

Other equipment not listed above.

_____

_____

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)** -
Ladder
Bucket Truck
Safety equipment

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)** **498**

2. Approximately how many inspections are scheduled for the current calendar year? **(Metric 6)** **498**

3. Average number of inspections per day **(Metric 6)** **15**

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

a. Beam/Girder: Simple Span: __2____hrs. Multi-span: __2___hrs.

b. Slab bridge: Simple Span: __0.5____hrs. Multi-span: __1___hrs.

c. Truss (pony): Simple Span: ___2___hrs. Multi-span: __2.5___hrs.

d. Through/deck): Simple Span: __N/A__hrs. Multi-span: __N/A___hrs.

e. Culvert: Single cell __0.5____hrs. Multiple Cells: __0.5__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 __)

Are photos posted in Assetwise? (Yes _X_ No ____) Many are, but some are not.

Are defects photos taken during inspection? (Yes _X_ No __)

Are Bridge comments recorded in Assetwise? (Yes _X_No __)

Are previous bridge comments brought to the bridge? (Yes _X__No ___)

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: _____Darren C. Lebrun and Consultant based on Condition_____
_____

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)**
Program Manager review of photographs and reports.

We have three (3) qualified bridge inspectors that rotate inspecting bridges each year. Comments reviewed by reviewer for potential action items.
.

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 _____ No ___) N/A

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 ____0.___

2. Number of bridges inspected by probing? Number ____varies as needed____.

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)**
Observed Scour Assessment for Bridges during a field review._____

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

Darren C. LeBrun Structures which cannot be inspected visually at low water by wading or probing, will require diving techniques.

_Typically the threshold is for those substructure units in water deeper than 5-ft but depending on access, tools available, visibility and safety this may need to be adjusted.

G. INVENTORY

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

Who checks? __Team Leader_____

How Often? With every inspection ___ Less often than once per year_X__

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

How Often?...With every inspection____ Less often than once per year__X__

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
__X__ 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_X__ Number__20___: If, No, Why not? _____ NA___

b. Bridges requiring underwater inspections.
Number___0__ NA__ __

c. Bridges with unique or special features (i.e., pin & hanger, draw, suspension)
Number__0___ NA_ __

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)**
In a separate document _____
_____

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

Sign Superintendent _____

I. LOAD ANALYSIS AND POSTING

1. Number of plans for existing bridges available for NBIS length bridges. ____148_____

2. Number of plans for non-NBIS bridges (>= 10' and <= 20' long) _____269_____

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

By Whom **(Metric 13)**
_____Load Rating Engineer
__X_ 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_ AAWSHTO BrR

____ Hand Calculated
____ Engineering Judgement (BR100)
____ BARS or other proprietary software program
__X__ Other Explain____ BRASS CULVERT_____

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)**
_____NA_____

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

Number of bridges posted __31__. Number of bridges with posted Signs in the field__31__.

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)** _____19_____

13. Number of NBIS bridges with Gusset Plates analyzed. **(Metric 13)** _____19_____

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

- Inspection reports, including old inspections:
___X__ On paper file in Office
_____ Electronically
_____ In Assetwise
_____ 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
  _____ 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
  _____ Electronically
  _____ In Assetwise
  __X__ All three
  _____ Other

- Repairs and maintenance history
  __X__ On paper file in Office
  __X__ Electronically
  _____ In Assetwise
  _____ All three
  _____ Other

-
- Scour evaluation:
  __X__ 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
  __X__ 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
  __X__ 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 __N/A__ Months_____

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

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

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

Describe:

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:

SCI-C0001-0375 _(7330006) Concrete Tee Beam

Item 58 Deck…….. 6 Agreed
Item 59 Superstructure……5 Agreed
Item 60 Substructure…… 6 Agreed
Item 61 Channel…… ..6 Agreed
Item 61.01 Scour…… **6** Agreed (However, there may be something going on at the center of the old portion of the original abutment. There is no undermining detected, but it looks a little deep if the footing is a spread footing.) This condition should have a closer look on the next inspection.

Item 62 Culvert……N
Item 36 Railing…….. 1(0) 0 1(0) 0 GR too low and does not meet standards off bridge.
Item 72 Approach Alignment …… 5 Agreed
Comments: Good Comments in Assetwise.
Defect Photos: Good Photo in Assetwise.
Channel Photos: Great Photos in Assetwise

SCI-C0002-0951 _(7330111) Steel Beam Continuous

Item 58 Deck…….. 8 Agreed
Item 59 Superstructure……6 Agreed
Item 60 Substructure…….6 Agreed

Item 61 Channel……..6 Agreed
Item 61.01 Scour……..7 Agreed
Item 62 Culvert……N
Item 36 Railing…….. 1 0 1 0 (0 0 0 0) Does not meet standards
Item 72 Approach Alignment …….. 4 Agreed
Comments: Good comments.
Defect Photos: Photos are good.
Channel Photos: Good Channel Photos in Assetwise

SCI-C0018-0721 _(7337590) Prestressed Box-beams Continuous

Item 58 Deck…….. 7 Agreed
Item 59 Superstructure……7 Agreed
Item 60 Substructure…….6 Agreed
Item 61 Channel……..4 Agreed No channel defect comments or photos in Assetwise! This rating may be a little low, as channel alignment is not bad, but the banks at the wingwall is eroding.

Item 61.01 Scour..6 Agreed Flow line up against abutment, but no apparent exposure or undermining detected.
Item 62 Culvert……N
Item 36 Railing…….. 1 0 1 0 (0 0 0 0) Not up to any current standards
Item 72 Approach Alignment …….. 6 Agreed Could be lower as bridge is on a curve and has object markers at the end.

Comments: Missing Channel comments.
Defect Photos: No Channel Defect Photos in Assetwise, no need for others as condition is good.
Channel Photos: Good Channel photos in Assetwise.

SCI-C0018-0646 _(7330545) Steel Pony Truss

Item 58 Deck…….. 6 Agreed
Item 59 Superstructure……4 Agreed (Significant section loss in floor beam)
Item 60 Substructure…….6 Agreed
Item 61 Channel……..**4** Not sure why channel is a 4. Yes, it is up against the abutment on one side but there is no indication of scour or the potential for scour. Rock present on stream bed.

Item 61.01 Scour……..7 Agreed
Item 62 Culvert……N

Item 36 Railing 0 0 0 0
Item 72 Approach Alignment ..... 5 Agreed
Comments: Good Comments!
Defect Photos: Great Defect Photos in Assetwise, compliments comments well.
Channel Photos: Good Channel Photos

SCI-C0023-0005 _(7330618) Continuous Concrete Slab

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 The water depth was too great for my hip waders to probe for scour, but there is significant rock outcrops at the abutment.

Item 62 Culvert.....N Agreed
Item 36 Railing..... 0 0 0 0 Agreed,
Item 72 Approach Alignment ..... 6 Agreed, No detected speed reduction, road pretty straight and wide. Could considered a higher rating.

Comments: Great Comments
Defect Photos: Very good defect photos in Assetwise.
Channel Photos: Good Channel Photos in Assetwise

SCI-C0002-1352 _(7338376) Steel Beams
Item 58 Deck…….. 6 Agreed
Item 59 Superstructure……5 Agreed Needed defect photo In Assetwise to compliment comments.

Item 60 Substructure…….8 Agreed
Item 61 Channel……..8 Agreed
Item 61.01 Scour……..7
Item 62 Culvert……N
Item 36 Railing…….. 1 0 1 0
Item 72 Approach Alignment …….. 8
Comments: Great Comments
Defect Photos: No Defect Photos in Assetwise.
Channel Photos: Good Channel Photos in Assetwise.

Field Review Summary:

Scioto County is doing a very good job with their bridge inspection program. I recommend taking more defect photos to complement their good description comments. Some comments are little too brief in some cases lacking the location and severity and extent and excellent in other cases where they were extremely detailed and complete.

The county tends to rate the channels on the low side and the lack of comments in the channel section is an indicator of this (there is not much to say if there is no real problem). Perhaps, if they look at the channel without considering the abutments for the channel Item rating, they would do better on the channel. When it comes to rating scour, focus a little more intensely on the flow line at the abutments using the guide tables in the manual. The County indicated in the questionnaire that there were no scour susceptible bridges, but it looks like scour may be present in some locations. Item 1. In the text box might be something much higher.

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

1. No. of bridges considered scour susceptible? (Service over Water) Number ____0.___

2. Number of bridges inspected by probing? Number ____varies as needed____.

3. Number of Scour Critical bridges (item 113 - 3, 2, 1 or 0)? **(Metric 18)** Number ___0____.

PART III Office file Review

Fracture Critical Member and Fatigue Prone Connection ID Plan.
Bridge Load Rating Report, including Gusset plate analysis.

SCI-C0018-0646 _(7330545) Steel Pony Truss Evaluated by Euthenics

Other load rating files

SCI- CR1 - 3.75 (7330006) Rated in 2020 In house Br100
SCI- CR18-7.21 (7337590) Rated in 2020 In house Br100

All files are complete with all documentation concerning load rating, channel photos and Defect photos, along with previous inspection reports.

PART IV Snapshot Summary of Program

SCIOTO County 2022

INVENTORY, APPRAISAL & INSPECTION SNAPSHOT

12/21/2022

Inventory Data - NBIS Bridges Only

	NBIS COUNT
NBIS Bridges > 20'	190
Bridges 10'-20'	243
All Bridges	433

Item 221	Inspection Responsibility	CODE	#NBIS	#ALL
Data Tab Col BV,BW	County	2	190	433

Item 21	Maintenance responsibility	CODE	#NBIS	#ALL
Data Tab	County	2	189	432
Col D	City or other local	4	1	1
	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
			190	433

Item 42A	Type service on bridge	CODE	#NBIS	#ALL
Data Tab	Other	0	0	0
Col Q	Highway	1	190	433
	Railroad	2	0	0
	Ped/Bikeway	3	0	0
	Hwy/RR	4	0	0
	Hwy/Ped	5	0	0
			190	433

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	2	2
	Ped/Bkwy	3	0	0
	Hwy w/ RR	4	0	0
	Waterway	5	188	431
	Hwy/Waterway	6	0	0
	RR/Waterway	7	0	0
	Hwy/Waterway/RR	8	0	0
	Relief (for waterways)	9	0	0
			190	433

All data in tables above are complete and all bridge accounted for correct Coding

ITEMS 43A,B,C Structure Type	Data (Col M,N,O)	CODE	#NBIS	#ALL
Concrete Slab		101	5	46
Concrete Tee Beam		104	60	122
Concrete Frame		107	7	48
Concrete Culvert (incl frame culverts)		119	2	83
Concrete Continuous Slab		201	3	3
Steel Beam or Girder		302	21	28
Steel Girder w/ Floor System		303	1	1
Steel Thru Truss (inlcudes Pony)		310	18	18
Steel Culvert (incl frame culverts)		319	4	13
Steel Continuous Beam or Girder		402	10	10
Prestressed Concrete Thru Arch		502	3	3
Prestr. Conc. Cont. Box Beam/Girder Multiple		505	54	55
Prestr. Conc. Cont. Box Beam/Girder Multiple		605	1	1
Timber Thru Truss (inlcudes Pony)		710	1	1
Aluminum or Iron Culvert (incl frame culverts)		919	0	1
			190	433

Item 92A Fracture Critical		CODE	#NBIS	#ALL
Data Tab	Requires FC Inspection	Y	**20**	n/a
Col U,V,Y	Requires FC Inspection	N	**170**	n/a
			190	n/a
	FC Switch Y/N is Blank		0	n/a

Item 113 Scour			#NBIS	#ALL
Data Tab	Bridge not over waterway	N	**2**	2
Col AA	unknown foundation	U	**0**	0
	over tidal waters	T	**0**	0
	foundations on dry land	9	**10**	20
	stable above footing	8	**92**	219
	countermeasures installed	7	**3**	11
	no scour evaluation made	6	**0**	0
	stable within footer limits	5	**79**	173
	stable action needed	4	**4**	8
	scour critical - unstable	3	**0**	0
	scour critical - scour present	2	**0**	0
	scour critical - failure imminen	1	**0**	0
	scour critical - bridge failed	0	**0**	0
			190	433

All data in tables above are complete and all bridge accounted for correct Coding

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	190	n/a
Col W,X,Z	requires dive inspection	Y	0	n/a
			190	

Item 709	Plan Information	CODE	#NBIS	#ALL
Data Tab	plans not avail	0	0	9
Col. AW	plan avail	1	132	359
	field measured	2	58	65
	Field Testing	3	0	0
	not applicable	N	0	0
			190	433

Item 63	Method of Analysis	CODE	#NBIS	#ALL
Data Tab	Field Eval & Doc. Engr Judgmen	0	1	11
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	121
	LFR	6	139	188
	AS	7	13	28
	LRFR	8	37	83
	Assigned LFR HS20	D	0	0
	Assigned LRFR HL93	F	0	2
	not appl (RR, etc)	X	0	0
			190	433

REMINDER:

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

LRFR required for bridges built after 2010

All data in tables above are complete and all bridge accounted for correct Coding

Inspection Condition Data - NBIS Bridges Only

Item 41	Operating Status	CODE	# NBIS	# ALL
Data Tab	Open, No restriction	A	159	400
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	31	33
	Posted for other than load	R	0	0
	Closed for other than load	X	0	0
			190	433

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	0
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

SCI-TR310-0107 _(7334702) See Load Rating TAB columns S & T do not correlate.

SCI-TR165-0046 _(7335520)

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	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	3	98.4%	(SC)
Col. AB	All	Routine insp.	5		
	BIM -	18 months	0	100.0%	(C)

See DATA TAB Column CA

All Qualifications are up to date.

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	2	20	98.9%	(SC)

SCI-TR238-0005 _(7337620) SCI-TR341-0080 _(7339127)

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	26	210	87.6%	(SC)
	Adequacy comments **	0	30	100.0%	(C)
		Error	Total Scour	% PASS	
Comment:	Rating should be = Scour	0	208	100.0%	within tolerance +/- 1
Tab	Noncompliant Scour Rating Err	0	208	100.0%	(C)

This flag is misleading, as 90% of the missing comments are only for Channel and not the structure. Many of the bridges I sampled should have a higher rating and did not need comments, while a few others were just missing comments, or were included in the scour or substructure comments. There were just a few that were missing comments for deck or some other element.

METRIC 14 - Posting	Load rating data tab			
From Files review	# errors	#sampled	% PASS	COMPLIANCE
Op RF < 3 tons but not closed	0	190	100.0%	(C)
Op RF = 0 but not closed	0	190	100.0%	(C)
% Legal < 100 but not posted	0	190	100.0%	(C)
Item 41 = B	0	190	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)

Information in this section is complete and in compliance.

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

Action recommendations: The county has just a few items in their load rating to clean up. There are only minor coding errors that need corrected.

The inspection comments that are lacking need attention, but as indicated in my review comments, they are mostly channel comments that might not be warranted. These need to be address with the next inspection and not of immediate concern.