

**National Bridge Inspection Standards &
Bridge Maintenance Program Review
Auglaize County**

July 16, 2021

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

IN ATTENDANCE:

Doug Reinhart, County Engineer
Mark Sherman, CEAO Federal Bridge QA/QC Engineer
Andrew Baumer, Auglaize County
Marshal Miller, Auglaize County
Alexis Bogen, FHWA
Mike Brokaw, ODOT

SCOPE OF REVIEW:

The review consisted of interviews with Auglaize County personnel, reviews of inspection and inventory data, and reviews of Auglaize County bridge records. The office evaluation assessed Auglaize County's organization, procedures, resources, and documentation regarding the inspection, inventory, and maintenance operations for bridges. In addition, field reviews of 6 bridges were conducted to determine if ratings were consistent with the ODOT Coding Manual and FHWA Recording and Coding Guide and to determine if inventory items were coded correctly. The bridges were selected by Auglaize County to represent a variety of structure types and conditions. The bridges checked during the field review were:

Asset Name	Bridge Type	County Rating	NBIS Rating
AUG-T0161-1445_(0630632)	Steel Culvert Twin pipes	6	Agreed
AUG-C033A-1176_(0633526)	Concrete continuous slab	6	Agreed
AUG-C158A-1085_(0634018)	Prestressed Box Beams	4	Agreed
AUG-T0101-1347_(0638463)	Prestressed Box Beams	5	Agreed
AUG-T0067-1309_(0636215)	Steel Pony Truss	6	Agreed
AUG-C0061-0881_(0635693)	Steel Beam	6	Agreed

FINDINGS AND COMMENTS:

General:

Ohio State statutes establish requirements governing the safety inspection of all bridges within the State borders. ODOT with participation of FHWA has developed the ODOT publication Bridge Inspection Manual, hereafter referred to as the Manual, which establishes guidance and requirements regarding bridge inspections within the State. FHWA has determined that ODOT guidance meets or exceeds the FHWA NBIS requirements.

The federal regulations for administering the NBIS are located in the Code of Federal Regulations 23 Highways – Part 650 Subpart C - National Bridge Inspection Standards. The regulations can be found at the following web site:

<http://wwwcf.fhwa.dot.gov/legsregs/directives/fapg/cfr0650c.htm>

Ohio currently rates bridge element conditions with a 1-4 scale. Summary items conform to the definitions and rating scales established by the NBIS. The NBIS do not require element level condition rating for County bridges unless they are on the expanded National Highway System (NHS) beginning October 1, 2014.

Auglaize County has inspection responsibilities for **348** bridges, **225** of which are longer than 20 feet in length and **123** which are 10 feet to 20 feet long. The NBIS inspection and load rating requirements only pertain to highway bridges in excess of 20' long on public roads. Review of the inventory span lengths showed that all bridges had the NBIS designation Y/N coded correctly.

The office review and the field review demonstrated that County personnel were inspecting and coding bridges in accordance with ODOT's Bridge Inspection Manual ("Manual").

Inspection Procedures:

Auglaize County uses their own staff to do the inspections. Previous inspection reports are available at site for review. The previous year's inspection reports are on paper and transferred to AssetWise in the office. Bridge comments are recorded in the inspection form.

Bridge plans are available in the office. Photos are available for every bridge, and photos are taken (if needed) of defects during inspection and posted in Assetwise.

The County has **0** bridges that require a snooper inspection.

A Team Leader is present at routine inspections.

Frequency of Inspections (metric 6 & 7)

Ohio State Transportation Laws require all State and local bridges to be inspected annually.

Auglaize County had **368** bridges inspected in 2020. The NBIS maximum inspection frequency of two years is met. All Bridges over 10 feet in length are inspected annually. The Engineer determines the need for a routine inspection frequency greater than once a year, based on inspections and history.

There are no bridges that require inspection more frequently than one year.

Auglaize County had **0** bridges overdue for Fracture Critical inspection at the time of this field review.

Qualification and Duties of Personnel (metric 1 & 2)

Program Manager: & Reviewer:

Name: [Andrew J. Baumer](#)

- Yrs. Inspection related experience:

[BSCE from Ohio Northern May 2012, E.I., S.I.,](#)

[Assisted in bridge inspections under Dan. Bennett, P.E., P.S., from 2010-2014,](#)

[Team Leader on county and city bridge inspections since 2014,](#)

[P.E. License Dec. 2016.](#)

- List courses attended (& approx. dates)
- Bridge Inspection Level 1 – Sept. 18-20, 2012,
- Culvert Inventory and Inspection – Oct 3, 2012,
- Bridge Inspection Level 2 – Oct. 17-19, 2012,
- SMS Training Jan 22-23, 2013,
- Element Level Bridge Inspection Training – Mar. 8, 2016,
- Bridge Inspection Refresher Training, March 2021

Team Leader:

- Name: Marshall T. Miller
- Yrs. Inspection related experience:
- B.S. Agricultural and Construction Systems Management from The Ohio State University 2003,
- Bridge crew worker at Hancock County Engineer’s Office 2004-2007,
- Hancock County Bridge Inspector 2008-2019,
- Auglaize County Bridge Inspector 2019-Present

- List courses attended (& approx. dates):
- Bridge Inspection Level 1 – March 25-27, 2008,
- Bridge Inspection Level 2 – April 2-4, 2008, Load Rating Hand Calculations – February 24-25 2009,
- Bridge Inspection Refresher – August 22, 2012,
- Introduction to Element Level Bridge Inspection – April 15, 2014,
- Element Level Bridge Inspection – April 30, 2015,
- Bridge Inspection Refresher Training – June 18, 2019

Load rating Engineer: List Ohio PE #
Andrew J. Baumer PE 81726

Underwater Bridge inspector: NA

Inspection Reports (metric 12)

As part of this review, eight 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:

<p>AUG-T0161-1445_(0630632)</p> <p>Item 58 Deck..... N</p> <p>Item 59 Superstructure.....N</p> <p>Item 60 Substructure.....N</p> <p>Item 61 Channel.....N</p> <p>Item 61.01 Scour.....N</p>	<p>Twin Steel pipe Culverts</p>
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Item 62 Culvert.....6 Agreed
Item 36 Railing..... 0 0 0 0 (not up to current Standards)
Item 72 Approach Alignment 7 acceptable, (road geometry and driver behavior would indicate an 8 or better)
Comments: Great Comments
Defect Photos: Adequate, but some close ups would help.
Channel Photos: Photos and Measurements in Assetwise! Fantastic!

AUG-C033A-1176_(0633526) Concrete continuous slab

Item 58 Deck..... 6 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..... 0 0 0 0
Item 72 Approach Alignment 8 Agreed
Comments: Excellent Comments (good example for others to follow)
Defect Photos: Great Defect Photos
Channel Photos: Good Channel photos

AUG-C158A-1085_(0634018) Prestressed Box Beams

Item 58 Deck..... 6 (4 should be the same as the box beams if there is not a separate deck poured.)
Item 59 Superstructure.....4 Agreed
Item 60 Substructure.....7 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 8 Agreed
Comments: Excellent Comments
Defect Photos: Excellent Defect Photos
Channel Photos: Photos and Measurements in Assetwise! Fantastic!

AUG-T0101-1347_(0638463) Prestressed Box Beams

Item 58 Deck..... 6 (5 should be the same as the box beams if there is not a separate deck poured.)
Item 59 Superstructure.....5 Agreed
Item 60 Substructure.....7 Agreed
Item 61 Channel.....7 Agreed
Item 61.01 Scour.....7 Agreed
Item 62 Culvert.....N
Item 36 Railing..... 0 0 0 0
Item 72 Approach Alignment 8 Agreed
Comments: Excellent Comments
Defect Photos: Great defect photos
Channel Photos: See previous remarks

AUG-T0067-1309_(0636215) Steel Pony Truss

Item 58 Deck.....7 Agreed
Item 59 Superstructure.....6 Agreed

Item 60 Substructure.....7 Agreed
 Item 61 Channel.....6 Agreed
 Item 61.01 Scour.....7
 Item 62 Culvert.....N Agreed
 Item 36 Railing..... 0 0 0 0
 Item 72 Approach Alignment 7 Agreed
 Comments: [Excellent Comments](#)
 Defect Photos: [Great Defect Photos](#) and should include one showing the stringer retrofit channels photos.
 Channel Photos: [See above comment](#)

[AUG-C0061-0881_\(0635693\)](#) [Steel Beams](#)

Item 58 Deck..... 6 Agreed
 Item 59 Superstructure.....6 Agreed
 Item 60 Substructure.....7 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 7 Agreed
 Comments: [Great Comments](#)
 Defect Photos: [See remarks previously made](#)
 Channel Photos: [See previous remarks](#)

Inventory Items

Review of the bridge data showed **0** out of **225** bridges were missing comments in items where the rating was ≤ 5 , including the item 61.01 scour. The review of the **6** bridges in the field showed **consistently excellent comments, Defect photos and Channel photos**. This requirement became effective Nov of 2020.

Bridge Files: (metric 15)

Auglaize County keeps files listed below as follows:

- Inspection reports, including old inspections [Assetwise, File Cabinet](#)
- Design Calculations [Bridge File](#)
- Plans [Scanned in computer file, otherwise in bridge file or filing cabinet](#)
- Load analysis calculations [In three ring binders](#)
- Inventory forms [On computer](#)
- Photos and sketches [On computer or in bridge file](#)
- Repairs and maintenance history [On computer or in bridge file](#)
- Scour evaluation [In bridge file](#)
- Scour POA [N/A](#)
- Fracture Critical File [On computer with design calculations, copy in bridge file](#)
- Load Posting/Closing [On computer or in bridge file](#)
- Underwater inspections [N/A](#)
- Special inspection eqpt. or procedures [N/A](#)
- Flood data, waterway adequacy, channel cross sections [On computer or in bridge file](#)

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.

Load Rating (metric 13)

The inventory shows **225 (100.00%)** of the County NBIS bridges have been Load Rated or Load Rating was not applicable. There are **0** NBIS bridges evaluated by documented engineering judgement using the BR100 form.

Load Ratings were checked for **SFNs 063902 ; 0630748 ; 0634824** . The load posting at the bridge matched the load rating on all bridges. P.E. name and stamp were on all of the bridges. Documentation was on all of the bridges. BR100 form is available for all engineering judgment bridges. **Zero** NBIS bridges have not load rated.

Load Posting (metric 14)

Auglaize County has **3** NBIS bridges that are load posted. There are **0** bridges closed for condition ratings. Posting is based on Operating Rating. **R12-H5** signs are the type of sign used for load posting.

Special Features

There are 0 bridges with unique or special features.

Fracture Critical Bridges (metric 16)

The FC bridge inspection frequency is 12 months, done with routine annual inspections. FC plans for **SFN 0634727; 0636215** were reviewed and the FCM's identified. Gusset Plate calculations were satisfactory for both **SFNs 0634727; 0636215**.

Underwater Inspections and Scour: NA

QA/QC

The QA/QC section of the 2014 Bridge Inspection Manual meets the FHWA requirement. The Inventory items are checked and updated during annual inspections.

Critical Findings (metric 21)

The county currently does not have any critical findings, but does have a Critical Findings Procedure in place (using the ODOT inspection manual). The county engineer is the bridge inspector and develops the plans for emergency work.

Bridge Maintenance (From questionnaire)

The County does contract bridge work. The typical work is for large bridges, replacements and repairs. Fed Funds are sometimes used for bridge deck replacement and Credit Bridge Funds are used for bridge replacements. The annual budget varies from year to year but averages **\$500,000.00 to \$2M** for Contract work.

The county does force account bridge work and uses highway maintenance crews as needed.

Typical work items include all repairs and medium replacements. The annual budget for force account work is approximately **\$700,000.00 to \$800,000.00**.

The chart below is a review of the 23 Metrics used to measure NBIS compliance and the chart represent a preliminary, tentative assessment of the county's level of compliance. Action steps for compliance are listed at the bottom. The actual assessments of NBIS compliance are made by FHWA, based on documentation, and any final determinations of compliance may differ from this preliminary assessment. The Metric 12 & 22 result on the following page is based on the field review of the six bridges visited during the QAR using the NBIP Field Review Checklist - PY 2013, Minimum Level Review Items.

PRELIMINARY FHWA 23 Metric Matrix

23 metrics used by FHWA to measure NBIS compliance. Actual "score" by FHWA may differ.

Compliance Codes for the following Metrics:

- (C) Compliant
- (SC) Substantially Compliant
- (CC) Conditionally Compliant
- (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

