

**National Bridge Inspection Standards &
Bridge Maintenance Program Review
Fayette County
Oct 29, 2020**

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

IN ATTENDANCE:

Steve Luebbe
Mark Stockman, CEAO Federal Bridge QA/QC Engineer

SCOPE OF REVIEW:

The review consisted of interviews with Fayette County personnel, reviews of inspection and inventory data, and reviews of Fayette County bridge records. The office evaluation assessed Fayette County's organization, procedures, resources, and documentation regarding the inspection, inventory, and maintenance operations for bridges. In addition, field reviews of six 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 Fayette County to represent a variety of structure types and conditions. The bridges checked during the field review were:

Asset Name	TYPE	County Rating	Suggested NBIS Rating
FAY-T0119-0165UN_(2432684)	Steel Beam	5A	4A
FAY-C0033-0135_(2430592)	Conc slab	5A	SAME
FAY-C0074-0335_(2432099)	Steel Stringer	5A	6A
FAY-C0085-0305_(2431343)	Prestressd Box Bm	5A	SAME
FAY-C0089-0095_(2431386)	Conc Slab	5A	SAME
FAY-C0023-0145_(2430371)	Prestressd Box Bm	5A	SAME

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.

Fayette County has inspection responsibilities for 221 bridges, 129 of which are longer than 20 feet in length and 92 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

Fayette County uses their own staff to do the inspections. Previous inspection reports are available at site for review. The previous year's inspection reports (paper) are brought out and changes are made on that form. The changes are then made to the inspection reports online and submitted for review through AssetWise. Bridge comments are recorded in the inspection notebook and some are input to AssetWise at the office. Bridge plans are available at the Bridge Office, but not at the Bridge site. Photos are not available for every bridge; however, photos are taken of defects during inspection.

The County indicated that an average of 10 inspections per day were completed in 2020. It takes about 30 minutes for Truss (pony/through/deck). It takes 20 minutes for Beam/Girders. For a slab, it takes about 15 minutes. For a Culvert, it takes about 10 minutes.

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

A Team Leader is present at all inspections.

Frequency of Inspections

Ohio State Transportation Laws require all State and local bridges to be inspected annually. Fayette County had 202 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 Team Leader or Engineer determines the need for a routine inspection frequency greater than once a year, based on inspections and history.

There are not any bridges that require inspections more frequently than one year.

Qualification and Duties of Personnel

Mr. Steve Luebbe is the County Engineer and Program Manager. He is a PE and has 30 years of bridge inspection experience. He took ODOT Level 2 bridge training in 2009 and has a Legacy Grandfather Clause checklist to document his experience prior to 2006. He took a Refresher in 2018. The Refresher and Legacy clause are approved and uploaded to AssetWise. He is qualified to be the Program Manager.

Mr. Jason Little is a Team Leader and a PE. He has 13 years of inspection related experience. He has the comprehensive classes (ODOT Level 1 in 2015 and Level 2 in 2009, and a Refresher in 2018. They are all approved and uploaded to AssetWise. He is qualified to be a Team Leader

Inspection Reports

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 six 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

FAY-C0089-0095 (2431386)

Creamer Rd

Deck = 8

Superstructure = 7

Substructure = 5

Channel = 7

Scour = 7

Culvert = N

Photos = Abutment Photos = GOOD -

Channel Photos = Channel photo NG – need to be taken looking at bridge

Comments= SUB Comments need to be complete with LES – upload comments to AssetWise

FAY-C0023-0145 (2430371)

Reid Rd

Deck =7
Superstructure =5 –
Substructure =7 – should be 6 – based on saturation of concrete
Channel =7
Scour =7
Culvert =N
Photos =Good
Channel Photos =NG – Upstream photo is wrong angle
Comments=NG – need description of defects that cause the rating and LES

FAY-C0033-0135 (2430592)

White Oak Rd

Deck =7
Superstructure =7
Substructure =5 – could be 6, your comments say a “good” 5
Channel =6
Scour =7
Culvert =N
Photos =NG doesn’t show abutment problem
Channel Photos =None in AssetWise
Comments=LES of hole in stones in Rear abutment?

FAY-T0119-0165UN (2432684)

Matthews Rd

Deck =5
Superstructure =6
Substructure =5 – might be 4 due to holes in steel in bottom flange and web of pile cap
Channel =8
Scour =7
Culvert =N
Photos =need photos showing holes in steel

Channel Photos = None in AssetWise

Comments= Need better LES in comments – you have size of hole, no location

FAY-C0085-0305 (2431343)

Creamer Rd

Deck = 7

Superstructure = 7 - might be a 6, need to know # of strands to figure % to see correct rating

Substructure = 5

Channel = 6

Scour = 7

Culvert = N

Photos = Need pictures of SUB defects

Channel Photos = None in AssetWise

Comments= SUB comments OK,

FAY-C0074-0335 (2432099)

Harmony Rd

Deck = 7

Superstructure = 5 – could be 6 – based on overall, not worse condition

Substructure = 8

Channel = 8

Scour = 7

Culvert = N

Photos = GOOD

Channel Photos = None in AssetWise

Comments= Need estimate of section loss - LES

Inventory Items

Review of the bridge data showed some bridges had comments with LES in AssetWise when the rating was 5 or lower. Some did not. This requirement became effective Nov of 2020. The county was reminded that all items (Deck, Channel, Superstructure, Substructure, Culvert) with a rating of 5 or lower need complete detailed comments (Location Extent Severity, LES)

Files

Fayette County keeps files as follows:

An administrative file is kept on each bridge in the file room. Construction files for larger projects are kept in its construction file and stored in a different room. So it depends on what you want as to where it might be located. (from 2015 report - All bridge files kept in file room in file cabinets. Load ratings in boxes and summary in binder in Steve's office.)

Load Rating

The inventory shows 129 (100.00%) of the County bridges have been Load Rated or Load Rating was not applicable. There were 34 NBIS bridges evaluated by documented engineering judgement.

Load Ratings were checked for SFNs 2431890, 2430460, 2430595 and 2431735. 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.

Load Posting

Fayette County has 1 NBIS bridge that is load posted. There are 0 bridges closed for condition ratings. Posting is based on Operating Rating. Gross Tonnage and SHV 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

The FC bridge inspection frequency is 24 months..

SFN FC plans for 2433192 and SFN 2432862 were reviewed. They both had FCM's identified. Also, Fatigue Prone details were complete and the FC Inspection Procedure was complete and did contain Risk Factors.

Gusset Plate calculations were satisfactory for 5332575 and SFN 5332842.

Underwater Inspections and Scour

Fayette county does not have any bridges that require dive inspections.

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. The county rotates inspections every few years between inspectors.

Critical Findings

The county does have a Critical Findings Procedure in place (using the ODOT inspection manual). If a bridge requires emergency repairs, it is noted by the county engineer who does the inspections.

Bridge Maintenance

The County does contract bridge work as funding allows. The work is for replacement projects. The approximate annual budget is \$250,000 local funds. Fed Funds are used for bridge replacement through the CEAO LBR Program and Credit Bridge Funds are used for bridge replacement projects.

The county does force account bridge work and uses an in-house crew of 4-5 workers. Typical work items include concrete repair, joints, guardrail, scour protection, box culverts, some beam and deck replacements. The approximate budget is \$100,000 local funds.

The chart on the following page is a review of the 23 Metrics used to measure NBIS compliance and the chart represents 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

Metric	Action Needed
12	Complete detailed comments are needed when the rating <=5