

**National Bridge Inspection Standards &  
Bridge Maintenance Program Review  
Hancock County  
December 11, 2020**

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**IN ATTENDANCE:**

Eric Barnes  
Mark Stockman, CEAO Federal Bridge QA/QC Engineer

**SCOPE OF REVIEW:**

The review consisted of interviews with Hancock County personnel, reviews of inspection and inventory data, and reviews of Hancock County bridge records. The office evaluation assessed Hancock 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 Hancock County to represent a variety of structure types and conditions. The bridges checked during the field review were:

<b>Asset Name</b>	<b>TYPE</b>	<b>County Rating</b>	<b>Suggested NBIS Rating</b>
HAN-T0137-0101 _(3232875)	Steel Beam	4A	SAME
HAN-C0216-0288 _(3234002)	Prestr Box Beam	4A	SAME
HAN-M0601-0000 _(3261336)	Conc Tee Beam	5P	4P
HAN-C0007-0376 _(3230015)	Conc Slab	5P	4P
HAN-M0520-0000 _(3260569)	Prestr Box Beam	4A	SAME
HAN-C0095-0535 _(3236889)	Conc Frame	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.

Hancock County has inspection responsibilities for 374 bridges, 231 of which are longer than 20 feet in length and 143 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**

Hancock 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 ratings 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 site using a laptop. Photos are available for every bridge, and photos are taken of defects during inspection.

The County indicated that an average of 7 inspections per day were completed in 2020. It takes about 60 minutes for Truss (pony/through/deck). It takes 60 minutes for Beam/Girders. For a slab, it takes about 60 minutes. For a Culvert, it takes about 15 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. Hancock 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 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. Doug Cade is the County Engineer and Program Manager. He is a PE and has 9 years of bridge inspection experience. He took ODOT Level 2 bridge training in 2011 and has a Legacy Grandfather Clause checklist to document his experience beginning in 2011. He took a Refresher in 2015 and 2020. The Refresher and Legacy clause are approved and uploaded to AssetWise. He is qualified to be the Program Manager.

Mr. Eric Barnes is a Team Leader and an EIT. He has 3 years of inspection related experience. He has the comprehensive classes (ODOT Level 1 and Level 2) 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**

#### **HAN-T0137-0101 (3232875)**

Deck = ..... 7  
Superstructure = ..... 7  
Substructure = ..... 4  
Channel = ..... 6  
Scour = ..... 7  
Culvert = ..... N  
Photos = ..... Abutment Photos = GOOD -  
Channel Photos = ..... GOOD  
Comments= ..... Good

#### **HAN-C0216-0288 (3234002)**

Deck = ..... 4  
Superstructure = ..... 4

Substructure = .....7  
Channel = .....6  
Scour = .....7  
Culvert = .....N  
Photos = .....Good  
Channel Photos = .....Good  
Comments= .....GOOD

**HAN-M0601-0000 (3261336) Conc Tee Beam**

Deck = .....5 should be 4 based on 50% deck is wet - saturated  
Superstructure = .....5 should be 4 based on 50% deck is wet - saturated  
Substructure = .....5  
Channel = .....6  
Scour = .....7  
Culvert = .....N  
Photos = .....GOOD  
Channel Photos = .....GOOD  
Comments= .....GOOD

**HAN-C0095-0535 (3236889) Conc Frame**

Deck = .....5  
Superstructure = .....5  
Substructure = .....7  
Channel = .....6  
Scour = .....7  
Culvert = .....N  
Photos = .....GOOD  
Channel Photos = .....GOOD  
Comments= .....GOOD

**HAN-C0007-0376 (3230015)**

Deck = .....5 – should be 4 due to 40% spalling  
Superstructure = .....5 – should be 4 due to 40% spalling  
Substructure = .....5  
Channel = .....4

Scour = .....7  
 Culvert = .....N  
 Photos = .....GOOD  
 Channel Photos = .....GOOD  
 Comments= .....GOOD

**HAN-M0520-0000 (3260569)                      Prestr Box Beam**

Deck = .....5  
 Superstructure = .....5  
 Substructure = .....4  
 Channel = .....8  
 Scour = .....7  
 Culvert = .....N  
 Photos = .....GOOD  
 Channel Photos = .....GOOD  
 Comments= .....GOOD

**Inventory Items**

Review of the bridge data showed all bridges had comments when the rating was <=5, and review of the 6 bridges in the field showed all comments had sufficient detail with LES described in AssetWise when the rating was 5 or lower. This requirement became effective Nov of 2020.

**Files**

Hancock County keeps files as follows:

- Inspection reports, including old inspections Server/ Vault/ AssetWise
- Design Calculations Server
- Plans Server/ Vault
- Load analysis calculations Server/ Vault
- Inventory forms Server/ Vault/ AssetWise
- Photos and sketches Server/ Vault
- Repairs and maintenance history Server
- Scour evaluation Server
- Scour POA N/A
- Fracture Critical File Server/ AssetWise
- Load Posting/Closing Server/ AssetWise
- Underwater inspections N/A
- Special inspection eqpt. or procedures Server/ AssetWise
- Flood data, waterway adequacy, channel cross sections Server

## **Load Rating**

The inventory shows 231 (100.00%) of the County NBIS bridges have been Load Rated or Load Rating was not applicable. There were 0 NBIS bridges evaluated by documented engineering judgement.

Load Ratings were checked for SFNs 3261336, 3232131, 3230015 and 3236153. 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, but 3261336 had a coding error in the Method of Rating or Plan info. The county will investigate and make corrections.

## **Load Posting**

Hancock County has 12 NBIS bridges that are load posted. There are 0 bridges closed for condition ratings. Posting is based on Operating Rating. 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 12 months, done with routine annual inspections.

FC plans for SFN 3233189 and SFN 3233863 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 SFN 3233189 and SFN 3233863.

## **Underwater Inspections and Scour**

Hancock 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.

## **Critical Findings**

The county does have a Critical Findings Procedure in place (using the ODOT inspection manual). The County Engineer handles emergency road closure. There is a meeting with the Roadway Superintendent, then closure information is phoned into Emergency Services, newspaper, radio, media, etc. If a bridge requires emergency repairs, it is done by contract or in-house crews, depending on the nature of the work.

## **Bridge Maintenance**

The County does contract bridge work. The work is for replacement projects over 30' span. The approximate annual budget is approximately \$1,000,000. 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 highway maintenance crews as needed. Typical work items include guardrail repairs, patching of beams and concrete structures, and minor paving repairs. The approximate budget is \$100,000 - \$200,000.

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