

NEBRASKA

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DEPARTMENT OF TRANSPORTATION



Jim Pillen, Governor

February 14, 2023

RE: Bridge Inspection Program Quality Assurance Review - 2022

Nebraska Bridge Inspection Program Participants

The National Bridge Inspection Standards (NBIS) mandate that states inspect and maintain inventory records of all bridges exceeding 20 feet on publicly maintained roads. The Nebraska Department of Transportation (NDOT) manages the state's Bridge Inspection Program (BIP), with the cooperation of bridge owners and inspectors. The BIP includes a Quality Assurance (QA) component that conducts independent evaluations of bridge inspections and data reported by certified inspectors in the online Bridge Management (BrM) system.

National Bridge Inventory (NBI) data is used to identify and prioritize bridges for inspections, repairs and replacement, ensuring the state's bridges are safe and well-maintained. Federal regulations, set forth in the NBIS, require states to maintain an inventory of all bridges on public roads and conduct regular inspections. The Federal Highway Administration (FHWA), under the U.S. Department of Transportation, administers these regulations and requires states to report the results of bridge inspections to the NBI, a national database of bridge condition and performance information.

The QA review process covers numerous items within the NBI system, ensuring that the data entered is accurate and reliable. Specifically, the review assesses data entered into BrM between April 1, 2021, and March 31, 2022, encompassing critical aspects of the NBI such as: Inspection Frequency or Timeliness, Bridge Inspection Data Accuracy, Load Posting Status, and Bridge Owner Record Compliance. Inspection timeliness measures the efficiency of inspections and identifies any potential delays in inspections. Bridge Inspection Data Accuracy verifies the accuracy of inspection data entered into the BrM system, ensuring that the data is reliable and up to date. Load Posting Status checks that the correct weight limits are posted on bridges with weight restrictions, ensuring safe use of the bridges. Finally, Bridge Owner Record Compliance ensures that bridge owners maintain accurate inventory records, ensuring proper maintenance and repair of the bridges. The QA review process plays a crucial role in ensuring the integrity of the NBI data.

Vicki Kramer, Director

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Inspection Frequency

The assessment of inspection performance timeliness for all sampled bridges in this QA review was conducted.

A Quality Assurance (QA) review was conducted on 259 bridges, selected based on their inspection frequency and report submittal timeliness. The review comprised 221 Routine Inspections and 38 Special Inspections.

The tables below provide a summary of inspection timeliness for Routine Inspections, which are conducted every 24 months, and Special Inspections (if required), which are conducted in alternate years between Routine Inspections to provide an effective 12-month inspection interval.

ROUTINE INSPECTION INTERVAL			SPECIAL INSPECTION INTERVAL		
Inspections Within 24 Months	95.9%	212 / 221	Inspections Within 12 Months	88.9%	8 / 9
Inspections Within 25 Months	97.7%	216 / 221	Inspections Within 13 Months	88.9%	8 / 9
Inspections Within 26 Months	99.1%	219 / 221	Inspections Within 14 Months	100.0%	9 / 9

Bridge Inspections

For the 2022-2022 inspection cycle, QA inspections were performed on 8,693 bridges, assessing 30 NBI items and 54 Nebraska-defined items in each inspection. From these inspections, the sample-size was narrowed to only include Poor¹ condition bridges (On and Off-System) and supplemented with Good and Fair Off-System bridges. This resulted in a final sample of 1,815 bridges, which were inspected by 97 different Team Leaders.

Each field QA inspection looked at 30 NBI items and 54 Nebraska (agency defined) items.

- ◆ Item 32 – Approach width on gravel roads should be reminded that width is measured from edge to edge of normally maintained gravel roads.
 - This is often hard to discern and is dependent upon when maintenance was last performed
- ◆ Item 61 – Channel varied this inspection due to flooding in 2019 followed by Special Inspection in 2019/2020. Some received repairs following 2020 inspections causing differences in QA site conditions.
- ◆ Item 72 – Approach Alignment – Although significant improvement was seen from previous years, there are still some discrepancies
 - Future BIP Manual releases will work to provide some examples to ensure consistency.

Load Posting

The review of load posting was limited to the field QA visits verifying the coded NBI Item 41 in the BrM accurately represents the bridge status found in the field. Of the 259 sites visited, 7 were found with a status different than coded in the BrM.

- ◆ Bridge Owners should update BrM as they update their bridge physical postings as well as ask their bridge designers to provide a LRSS for new bridges that can be used to update the BrM.

¹ Major Bridge Components - bridge deck, superstructure, substructure. Good - major bridge components are all in good condition or better (7, 8 or 9). Poor - one or more major bridge components are in poor condition or worse (4). Fair – all other bridges.

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- ◆ Bridge owners should submit photos of the posting signs when installed.

Bridge Owner File Review

In accordance with BIP manual policy, 20 bridge owners were randomly selected from a pool of 138 bridge owners for a QA review of bridge files. The QA review evaluated a total of 226 bridge files.

259 unique bridge owners consisting of 90 counties and 126 cities were randomly reduced to 138 bridge owners for the purpose of records review. The review showed an improvement in performance from the 2021 bridge owner records review and more in line with that improvement found in 2020.

Bridge Review								
Complete	32%	30%	56%	43%	35%	60%	54%	66%
Substantially Complete	28%	36%	21%	28%	35%	29%	25%	18%
Not Complete	40%	34%	23%	29%	30%	11%	21%	16%
Year	2015	2016	2017	2018	2019	2020	2021	2022

- ◆ There was a consistent lack of documentation of maintenance and repairs with associated photos and/or invoices for completed work.
- ◆ It appears that some Municipal local bridge owners who have agreements with local County officials to provide inspections were unaware of bridge file retention requirements.
- ◆ Generally, files included records that were in both paper and digital formats with limited cohesive organization around a single bridge record. Storage of data was a common issue.

Nebraska Department of Transportation and Federal Highway Administration appreciate your cooperation in meeting the requirements of the National Bridge Inspection Standards. This memorandum is being sent to all local Bridge Owners and is intended to provide an update on the Nebraska Bridge Inspection Program (BIP). Electronic copies of this and previous BIP memos, as well as other BIP information, can be found on the NDOT Bridge Division website at the following link: <http://dot.nebraska.gov/business-center/bridge/inspection/>

Sincerely,



Ross Barron, P.E.
State Bridge Engineer

cc: Babrak Niazi, NDOT NBIS Program Manager