

Definitions for Bridge Inspection Report

Code Definitions for Structure Evaluation Ratings

Source: http://www.modot.org/business/manuals/documents/bridgesection_2.pdf

Rating	Federal Highway Administration Definition
9	Superior to present desirable criteria.
8	Equal to present desirable criteria
7	Better than present minimum criteria.
6	Equal to present minimum criteria.
5	Somewhat better than minimum adequacy to tolerate being left in place as is.
4	Meets minimum tolerable limits to be left in place as is.
3	Basically intolerable requiring high priority for corrective action.
2	Basically intolerable requiring high priority of replacement.
1	This value for rating code not used.
0	Bridge closed.

What are “general condition ratings?” According to the National Bridge Inspection Standards (NBIS), condition ratings are used to describe an existing bridge or culvert compared with its condition if it were new. The ratings are based on the materials, physical condition of the deck (riding surface), the superstructure (supports immediately beneath the driving surface) and the substructures (foundation and supporting posts and piers). General condition ratings range from 0 (failed condition) to 9 (excellent).

How is “structural deficiency” determined? The condition of different parts of a bridge is rated on a scale of 0 to 9 (with 9 being “excellent” and zero being “failed”). A structurally deficient bridge is one for which the deck (riding surface), the superstructure (supports

immediately beneath the driving surface) or the substructure (foundation and supporting posts and piers) are rated in condition 4 or less.

What is a “structurally deficient” bridge? Bridges are considered structurally deficient if they have been restricted to light vehicles, closed to traffic or require rehabilitation. Structurally deficient means there are elements of the bridge that need to be monitored and/or repaired. The fact that a bridge is "structurally deficient" does not imply that it is likely to collapse or that it is unsafe. It means the bridge must be monitored, inspected and maintained.

What makes a bridge structurally deficient, and are structurally deficient bridges unsafe?

The fact that a bridge is "structurally deficient" does not imply that it is likely to collapse or that it is unsafe. A “deficient” bridge is one with some maintenance concerns that do not pose a safety risk. A “deficient” bridge typically requires maintenance and repair and eventual rehabilitation or replacement to address deficiencies. To remain open to traffic, structurally deficient bridges are often posted with reduced weight limits that restrict the gross weight of vehicles using the bridges. If unsafe conditions are identified during a physical inspection, the structure must be closed.

What is a “functionally obsolete” bridge? A functionally obsolete bridge is one that was built to standards that are not used today. These bridges are not automatically rated as structurally deficient, nor are they inherently unsafe. Functionally obsolete bridges are those that do not have adequate lane widths, shoulder widths, or vertical clearances to serve current traffic demand, or those that may be occasionally flooded.

A functionally obsolete bridge is similar to an older house. A house built in 1950 might be perfectly acceptable to live in, but it does not meet all of today’s building codes. Yet, when it comes time to consider upgrading that house or making improvements, the owner must look at ways to bring the structure up to current standards.

What is a bridge “sufficiency rating?” Sufficiency ratings were developed by the Federal Highway Administration to serve as a prioritization tool to allocate funds. The rating varies from 0 percent (poor) to 100 percent (very good). The formula considers structural adequacy, whether the bridge is functionally obsolete and level of service provided to the public.

History of Federal Bridge Inspection Program The federal bridge inspection program regulations were developed as a result of the Federal-Aid Highway Act of 1968 following the collapse of the Silver Bridge in Point Pleasant, West Virginia. The United States Secretary of Transportation established the National Bridge Inspection Standards (NBIS) to locate and evaluate existing bridge deficiencies to ensure the safety of the traveling public. The 1968 Federal-Aid Highway Act directed the states to maintain an inventory of federal-aid highway system bridges. This was amended over time to establish criteria for NBIS bridges including:

- Defining the NBIS to bridges to those on the federal-aid highway system
- Requiring inspections of bridges longer than 20 feet on all public roads
- Expanding bridge inspection programs to include special inspection procedures for fracture critical members and underwater inspection



**Missouri Department of Transportation
Bridge Inventory and Inspection System
Non-State Structure Inspection Report**

August 17, 2017
12:09:43pm

County : ST. LOUIS CITY District : SL Class : NONSTATBR Bridge : 0400.05 Federal ID : 13487

GENERAL STRUCTURE INFORMATION

[5D] Route : 00000	[41] Structure Status : P-LOAD POSTED W/RESTRICT
[4] Place Code : 65000 ST. LOUIS CITY	[9] Location : S 18 T 45 R 7 E
[6] Features Intersected : FOREST PARK PKWY	[22] Owner : CITY
[7] Facility Carried : LINDELL-UNION	[26] Functional Classification : UMINART
[16] Latitude : 38 38 42.04 (DMS)	[21] Maintenance Responsibility : CITY
[17] Longitude : 90 16 29.64 (DMS)	[11] Milepoint : 0.00 MILES

AGE AND SERVICE - GEOMETRIC DATA - MATERIAL

[27] Year Built : 1961	[106] Year Reconstructed :
[49] Structure Length : 86 FT.	[51] Bridge Width : 123 FT. 2 IN.
[32] Approach Roadway Width : 123 FT. 2 IN.	[52] Deck Width : 338 FT. 10 IN.
[42B] Type of Service Under : HIGHWAY	[28A] Lanes On : 8
[19] Detour Length : 0.62 MILES	[28B] Lanes Under : 4

COMPONENTS	# SPANS	PRED	MATERIAL	CONSTRUCTION
MAIN SERIES	1	X	REINFORCED CONCRETE	VOIDED SLAB
[107] Deck Type :			REINCONC	CIP
[108A] Wearing Surface :			ASPHALT	BITUMSEAL
[108B] Membrane :			NOTAPPLIC	NONE
[108C] Deck Protection :			NOTAPPLIC	NONE

AADT INFORMATION

[29] AADT on Structure : 33,500	[30] Year : 2016	[109] AADT Truck : 5 %
[114] Future AADT : 45,225	[115] Year : 2036	[102] Direction of Traffic : 2-WAY TRAFFIC

STRUCTURE POSTING

FIELD POSTING Problem Code : Problem Direction Code :
 Category : S-16 TRKS OVR 16 TNS 15MPH ON BR EXCPT SNGLE UNIT TRKS WT LIMIT 30 TNS&ALL OTHR TRKS WT LIMIT 40 TNS.
 Ton 1 : 16 Ton 2 : 30 Ton 3 : 40

APPROVED POSTING
 Category : S-16 TRKS OVR 16 TNS 15MPH ON BR EXCPT SNGLE UNIT TRKS WT LIMIT 30 TNS&ALL OTHR TRKS WT LIMIT 40 TNS.
 Ton 1 : 16 Ton 2 : 30 Ton 3 : 40

COMPUTER GENERATED DEFICIENCY AND EVALUATION ITEMS

NOTE: The items listed in this section are updated whenever computer edits are ran on a structure after the inspection updates have been entered in to TMS.

<u>Rated Item</u>	<u>Rating</u>	<u>Rating Date</u>
[Item 67] Structure Evaluation Rating:	3-BASICALLY INTOL CORRECT	3/18/2015
[Item 68] Deck Geometry Rating:	9-SUPR TO PRES DESIRABLE	8/14/2008
[Item 69] Underclearance:	2-BASICALLY INTOLRBLE REQ	3/18/2015
Sufficiency Rating:	32.5 %	3/18/2015
Deficiency:	STRUCTURAL	7/27/2005
Funding Eligibility:	FULL	1/6/2017
Estimated New Structure Length:	115 FT.	1/6/2017
Estimated Structure Cost:	\$1,297,165	1/6/2017
Estimated Total Project Cost:	\$1,945,748	1/6/2017
Year of Cost Estimate:	2017	1/6/2017

NOTE: The above structure length and cost estimates are computer generated using algorithms in the TMS system. These algorithms are generalized to use NBI items to come up with a new structure length and width to calculate a new area which is taken times a representative cost per square foot. The actual structure size and cost may vary significantly from these numbers once site specific engineering is done.



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****STRUCTURE GENERAL INSPECTION****

[90] Inspection Type: GENERAL
 Inspection Date: 4/12/2017

[91] Designated Frequency: 12
 ** Calculated Frequency: 12

Inspection Responsibility:
 Element Inspection Required: NO

** If designated interval is exceeded, then a comment providing justification must be added. Exceeding the interval by more than one month requires Bridge Division approval.

General Inspection Comments

Inspector
 MATTHEW L MCLEESE
 RYAN SEMAR
 KEVIN TRAPP

Team Leader
 X

Organization
 ST LOUIS CITY
 MODOT
 ST LOUIS CITY

**** INSPECTION****

Inspection Category:

Inspection Responsibility:

Inspection Date:

**Calculated Frequency:

NBI:

** If designated interval is exceeded, then a comment providing justification must be added. Exceeding the interval by more than one month requires Bridge Division approval.

Inspector

Team Leader

Organization

****OTHER SPECIAL INSPECTIONS****

Category	Frequency	Calculated Frequency**	Date	Inspection Responsibility	NBI
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****GENERAL COMMENTS AND CONDITION RATINGS****

General Comments :

(CAMPBL1, 10/22/2014)--SOUTH MEDIAN ON UNION IS SETTLING IN APPROACH TO BRIDGE.
 (KOENID, 02/19/2015)--2015 UPDATED FUNCTION CLASS TO URBAN MINOR ARTERIAL NON NHS.
 (CAMPBL1, 03/16/2015)--BRIDGE TYPE IS A SINGLE SPAN RIGID FRAME WITH CONCRETE FRAME WALLS AND RIGID ARCHED DECK SLAB (CIP).
 (CAMPBL1, 04/22/2016)--GENERAL INSPECTION CHANGED TO 12 MOS TO MONITOR OVERHEAD HAZARDS.
 (SEMARR1, 04/28/2017)--VERTICAL CLEARANCE MEASURED 3/16/15; EB - 14'-04", WB - 15'-08" (ACTUAL). POSTED 14'-2" EBL FOREST PARK PKWY. POSTED 15'-4" WBL.

Item 58]--Deck Condition Rating: 3-SERIOUS CONDITION **Rating Date:** 03/16/2015

Deck Rating Comments

(CAMPBL1, 03/16/2015)--TOP: WEAR SURFACE- ASPHALT OVERLAY ON APPROACHES AND DECK. MINOR WHEEL RUTTING IN OVERLAY. LARGE REFLECTIVE CRACKS ARE IN OVERLAY, & SOME MINOR POTHOLES.
 (CAMPBL1, 03/16/2015)--CORRELATED DECK RATING W/ SUPERSTRUCTURE.
 (CAMPBL1, 04/22/2016)--BOTTOM: MODERATE SATURATION (APPROX. 50%) WITH CRACKS AND EFFLORESCENCE THROUGHOUT.

Item 59]--Superstructure Condition Rating: 3-SERIOUS CONDITION **Rating Date:** 03/16/2015

Superstructure Rating Comments

(CAMPBL1, 04/22/2016)--SOME OVERHEAD HAZARDS; LARGE DELAMS & EXCESSIVE CRACKING.
 (SEMARR1, 04/28/2017)--BOTTOM OF SLAB, MAP CRACKING WITH EFFLORESCENCE ALONG CONSTRUCTION JOINTS AND THE EAST AND WEST EDGES.
 BOTTOM OF SLAB, SPALLS WITH EXPOSED REINFORCEMENT WITH MINOR TO MODERATE SECTION LOSS.
 BOTTOM OF SLAB, SPALLS WITH EXPOSED REINFORCEMENT WITH MODERATE SECTION LOSS ALONG WEST MOST CONSTRUCTION JOINT.
 WEST EDGE/FACE, SPALLED WITH EXPOSED REINFORCEMENT. SOME SECTION OF REINFORCEMENT HAVE BEEN REMOVED. EAST EDGE THE SAME.
 (SEMARR1, 04/28/2017)--FACE: HEAVY EDGE EFFLORESCENCE. E-DECK SLAB EDGE HAVE OPEN CRACKS AND VOIDS WITH RUST STAINS AND EFFLORESCENCE. W-DECK SLAB EDGE HEAVY EFFLORESCENCE.
 (SEMARR1, 04/28/2017)--BOTTOM: SPALLS & EXPOSED REBAR (CLEANED, APPROX. 5 FT). RANDOM T-CRACKS ACROSS ENTIRE STRUCTURE (CLEANED, 54 FT). MODERATE SATURATION WITH HEAVY EFFLORESCENCE (50%). MODERATE LONGITUDINAL CRACKS WITH EFFL THROUGHOUT.

Item 60]--Substructure Condition Rating: 5-FAIR CONDITION **Rating Date:** 07/21/2005

Compass Direction:

Substructure Rating Comments

(SEMARR1, 04/28/2017)--MODERATE V-CRACKS IN NORTH & SOUTH WALLS WITH LEACHING AND EXPOSED REBAR. CRACKS IN SUBSTRUCTURE UNDER JOINTS AND RANDOM CRACKS IN SLAB WITH MINOR EFFLORESCENCE. HEAVY LEACHING WITH EFFLORESCENCE AT NW CORNER WITH DETERIORATED CONCRETE.
 (SEMARR1, 04/28/2017)--LARGE SPALLS THROUGHOUT WITH REBAR EXPOSED (W/ MODERATE SECTION LOSS AT THE SE QUAD).
 (SEMARR1, 04/28/2017)--NORTH WALL, EAST MOST CONSTRUCTION JOINT, LARGE SPALL WITH EXPOSED REINFORCEMENT WITH MODERATE SECTION LOSS. SAME AT WEST MOST JOINT.
 NORTH AND SOUTH WALLS, OPEN VERTICAL CRACKS WITH MODERATE EFFLORESCENCE.

Item 61]--Channel Condition Rating: N-NOT APPLIC NO WATRWAY **Rating Date:** 03/01/2002

Rating Comments

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Item 62]—Culvert Condition Rating:

N-NOT APPLICABLE

Rating Date: 03/01/2002

Rating Comments

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****APPRAISAL RATINGS****

[Item 36A]--Bridge Railing Appraisal:	NOT PROVIDED-0	Rating Date: 03/01/2002
<u>Rating Comments</u> (CAMPBL1, 10/22/2014)--NW CONCRETE BARRIER OF LIMESTONE DELAMING IN CENTER OF BRIDGE.		
[Item 36B]--Transition Railing Appraisal:	NOT PROVIDED-0	Rating Date: 03/01/2002
<u>Rating Comments</u>		
[Item 36C]--Approach Railing Appraisal:	NOT PROVIDED-0	Rating Date: 03/01/2002
<u>Rating Comments</u>		
[Item 36D]--Rail End Treatment Appraisal:	NOT PROVIDED-0	Rating Date: 03/01/2002
<u>Rating Comments</u>		
[Item 71]--Waterway Adequacy:	NOT APPLICABLE	Rating Date: 03/01/2002
<u>Rating Comments</u>		
[Item 72]--Approach Roadway Alignment:	8-VERYGOOD	Rating Date: 03/01/2002
<u>Rating Comments</u> (BACHMR1, 05/23/2003)--NO REDUCTION IN SPEED REQUIRED (CAMPBL1, 05/26/2011)--MINOR CRACKING AND PATCHING.		
[Item 113]--Scour Assessment:	N-NOT APPLIC NOT WATERW	Rating Date: 3/1/2002
Type of Scour Evaluation: <u>Rating Comments</u>		
Work Comments : (CAMPBL1, 03/16/2015)--CHANGE VERTICAL CLEARANCE POSTING FOR EBL FROM 14'-05" TO 14'-02". (CAMPBL1, 05/02/2016)--KNOCK DOWN LOOSE CONCRETE OVERHEAD UNDER NORTH & SOUTH END OF BOTH WBL & EBL.		

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