Bridge 101

2019 County Roads Conference

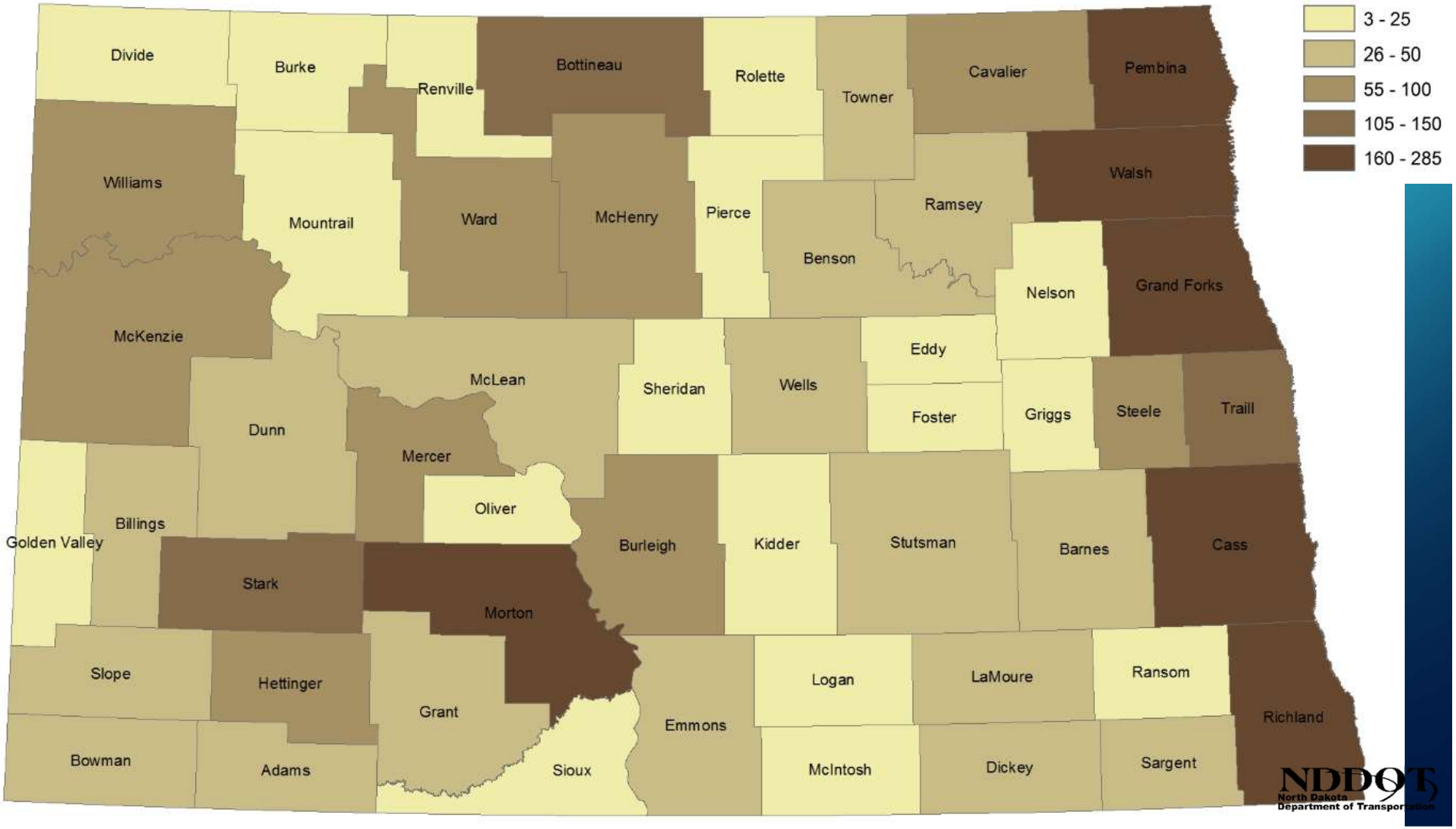
January 29-31, 2019

Bryon Fuchs, PE

Information was provided by:

Gary Doerr, PE – NDDOT & Dale Heglund, PE - NDLTAP

Bridge Personnel Change


3 - 25
26 - 50
55 - 100
105 - 150
160 - 285
Divide
Burke
Renville
Bottineau
Rolette
Towner
Cavalier
Pembina
Williams
Mountrail
Ward
McHenry
Pierce
Ramsey
Walsh
Benson
Nelson
Grand Forks
McKenzie
McLean
Sheridan
Wells
Eddy
Foster
Griggs
Steele
Traill
Dunn
Mercer
Oliver
Billings
Golden Valley
Burleigh
Kidder
Stutsman
Barnes
Cass
Stark
Morton
Slope
Hettinger
Grant
Emmons
Logan
LaMoure
Ransom
Richland
Bowman
Adams
Sioux
McIntosh
Dickey
Sargent
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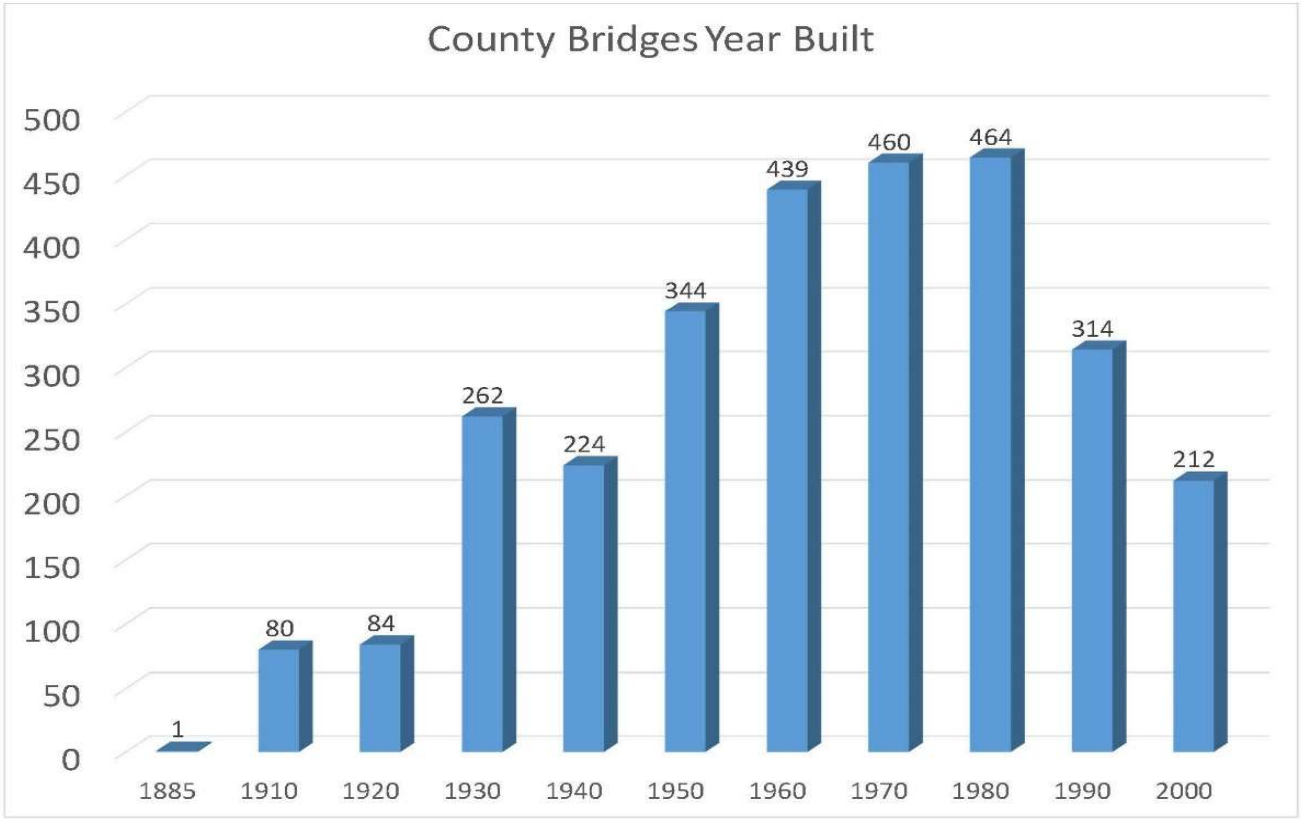
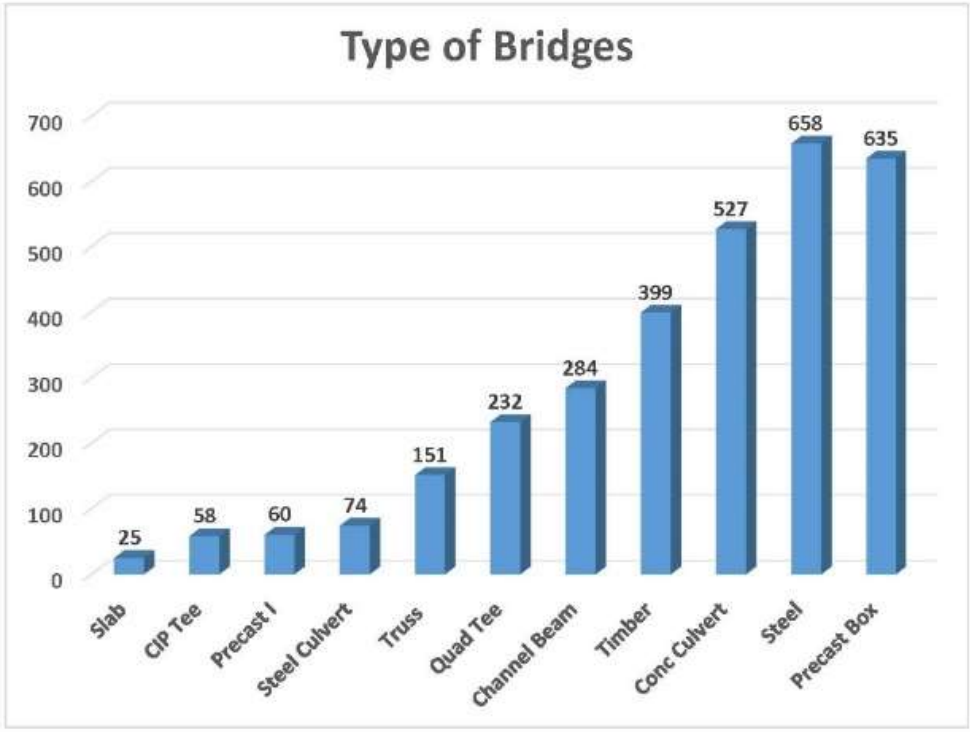

County Bridges Year Built
500
450
400
350
300
250
200
150
100
50
0
1
80
84
262
224
344
439
460
464
314
212
1885
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000



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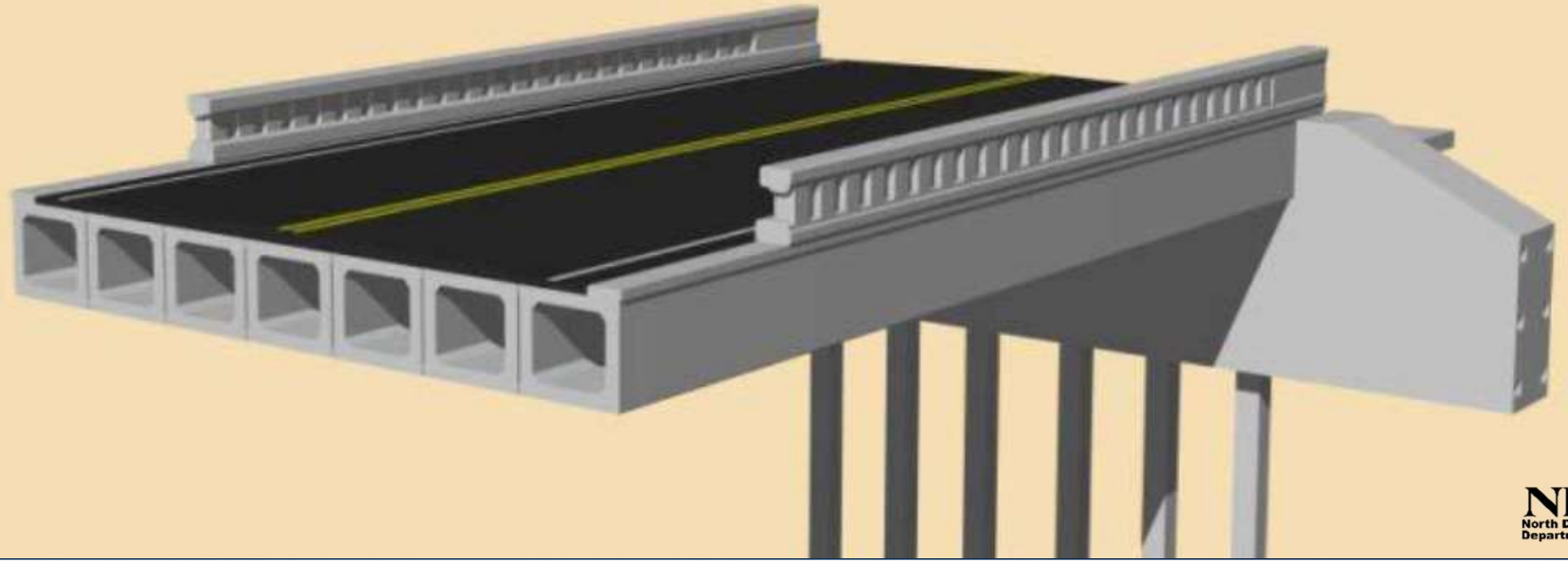
What is a Bridge?



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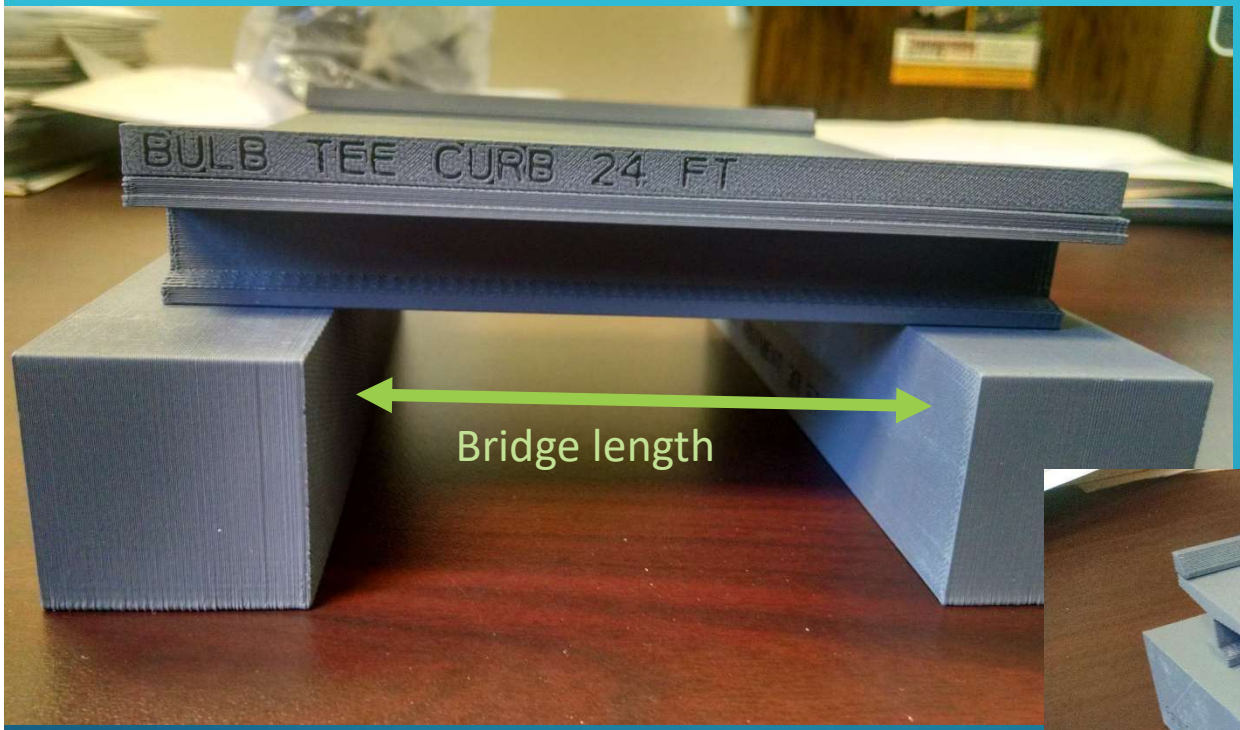
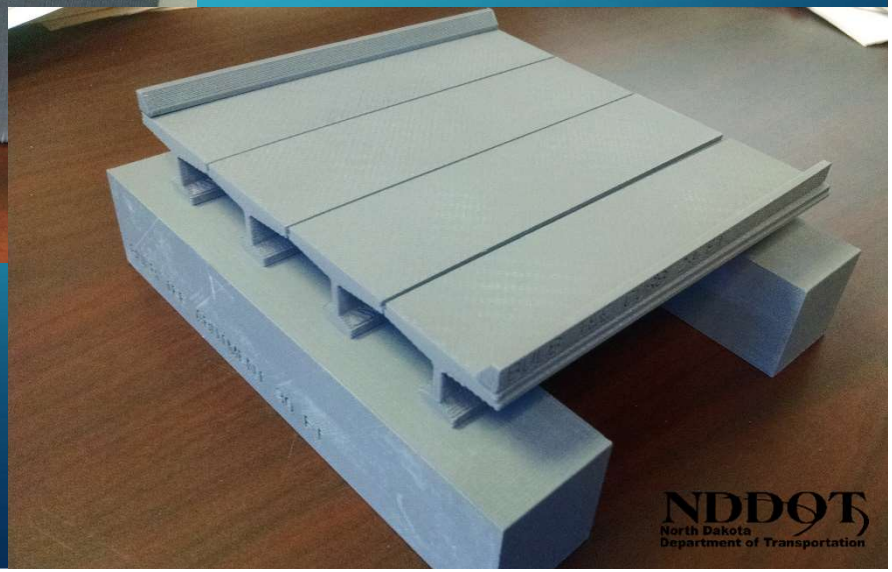

BULB TEE CURB 24 FT
Bridge length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< 1/2 dia

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Buried Bridges

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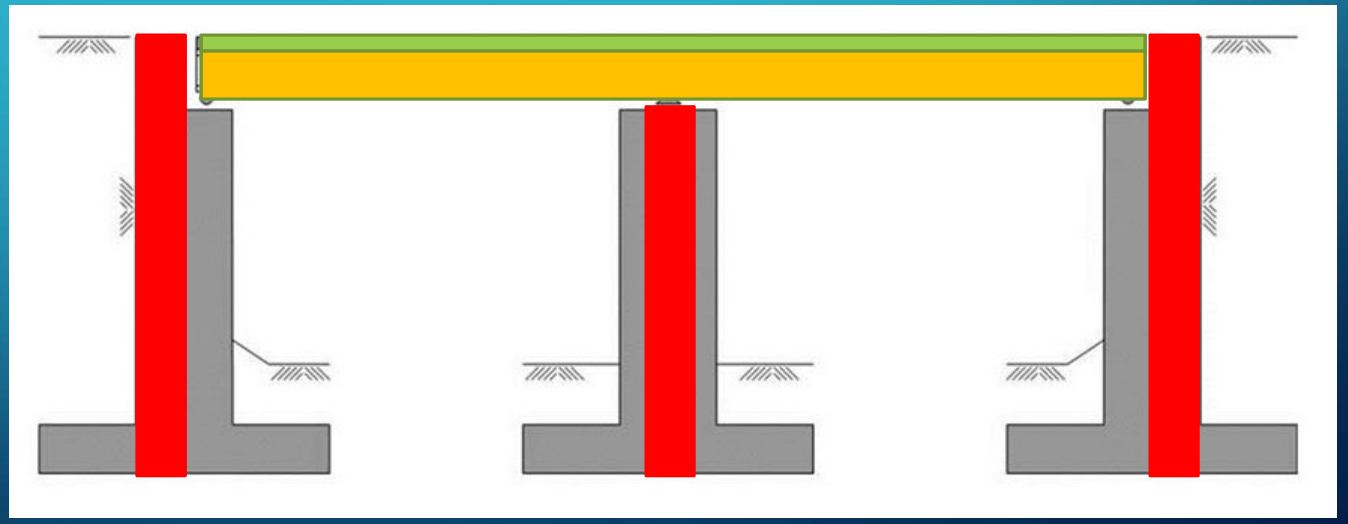
Minor Structures

Less than 20’ in length

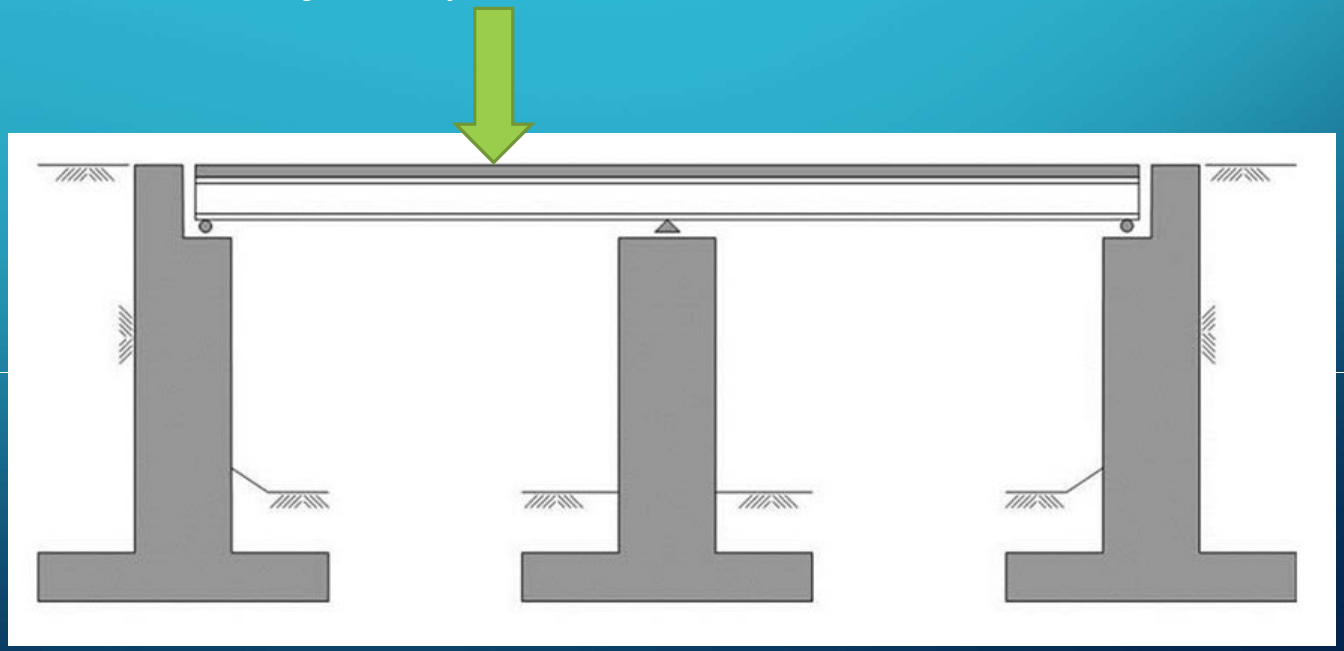
BRIDGE COMPONENTS AND TERMS

- Three Major Bridge Components
  - Deck
  - Superstructure
  - Substructure



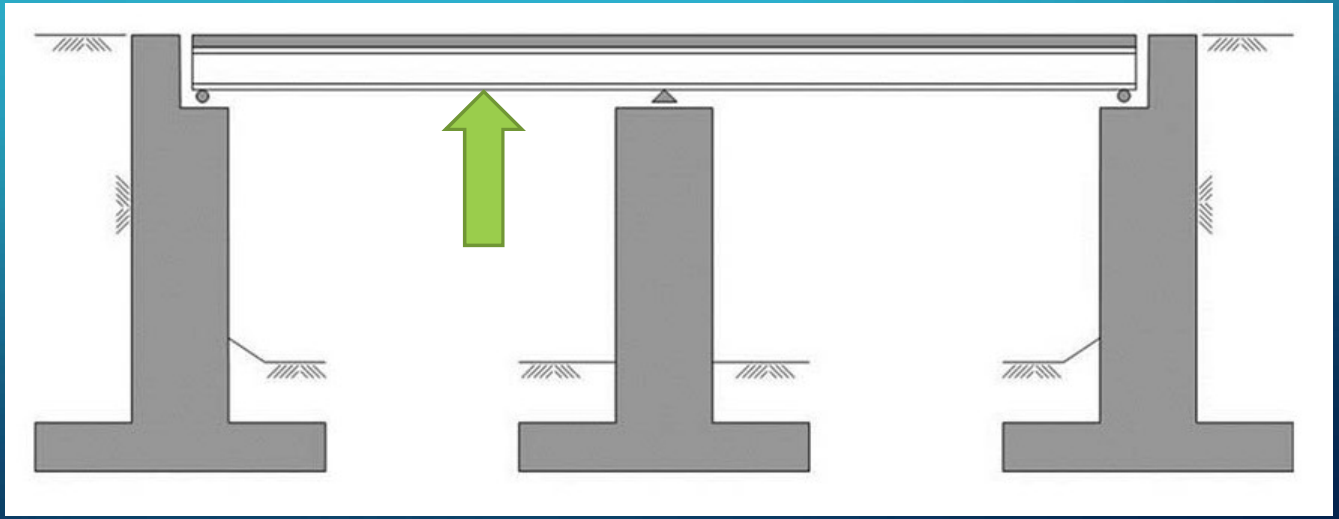
DECK

- Portion of the bridge that you drive on



SUPERSTRUCTURE

- Portion of the bridge that lies directly below and supports the deck
  - Beams, girders, truss, arch



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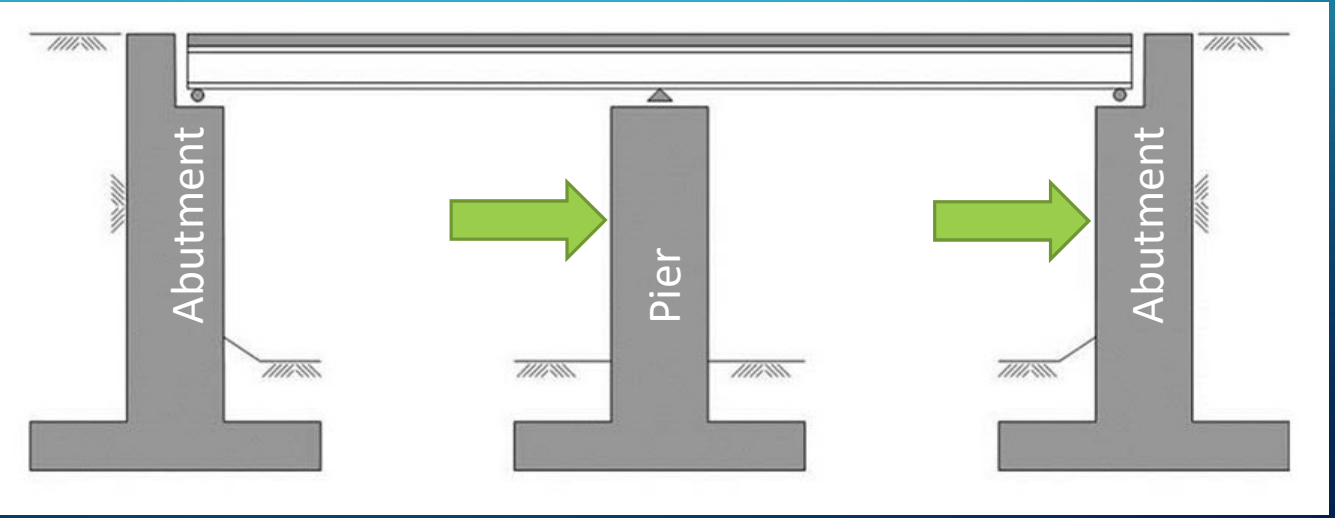
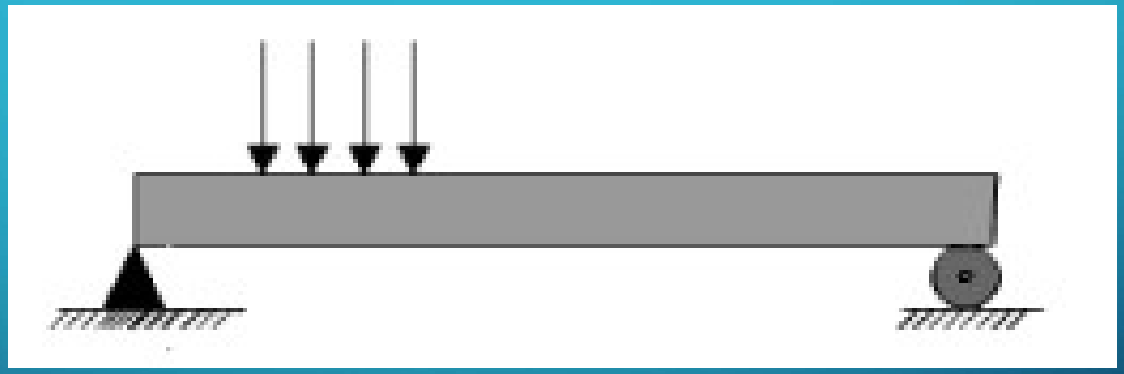
SUBSTRUCTURE

- Portion of the bridge that supports the deck and superstructure.
  - Abutments, piers



Load Rating of Bridges



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Dead Load

Gravel
Asphalt
Combination


Overburden
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Dynamic Impact Loads

What is it?

Smooth ride solution

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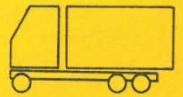
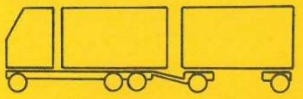
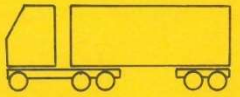


Truck

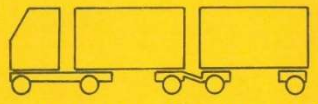


Truck pulling one trailer.

Truck pulling two trailers.



Truck-tractor pulling one semitrailer.

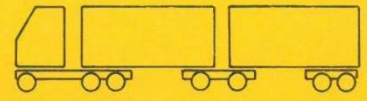


"Double Bottom"

Truck-tractor pulling one semitrailer and one trailer or semitrailer converted to a trailer with a dolly.

Truck-tractor pulling one semitrailer and two trailers or semitrailers converted to trailers with dollies.

"Triple Bottom"



"B" Train

Truck-tractor pulling two semitrailers.

NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

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Bridge Inspections

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NDDOT/FHWA Inspections

- Federally mandated
- Includes both NDDOT and City/County bridges
- Normal frequency - 2 years
  - Alert Code 3 Structures - annually
- Special frequency – 4 years (box culverts)

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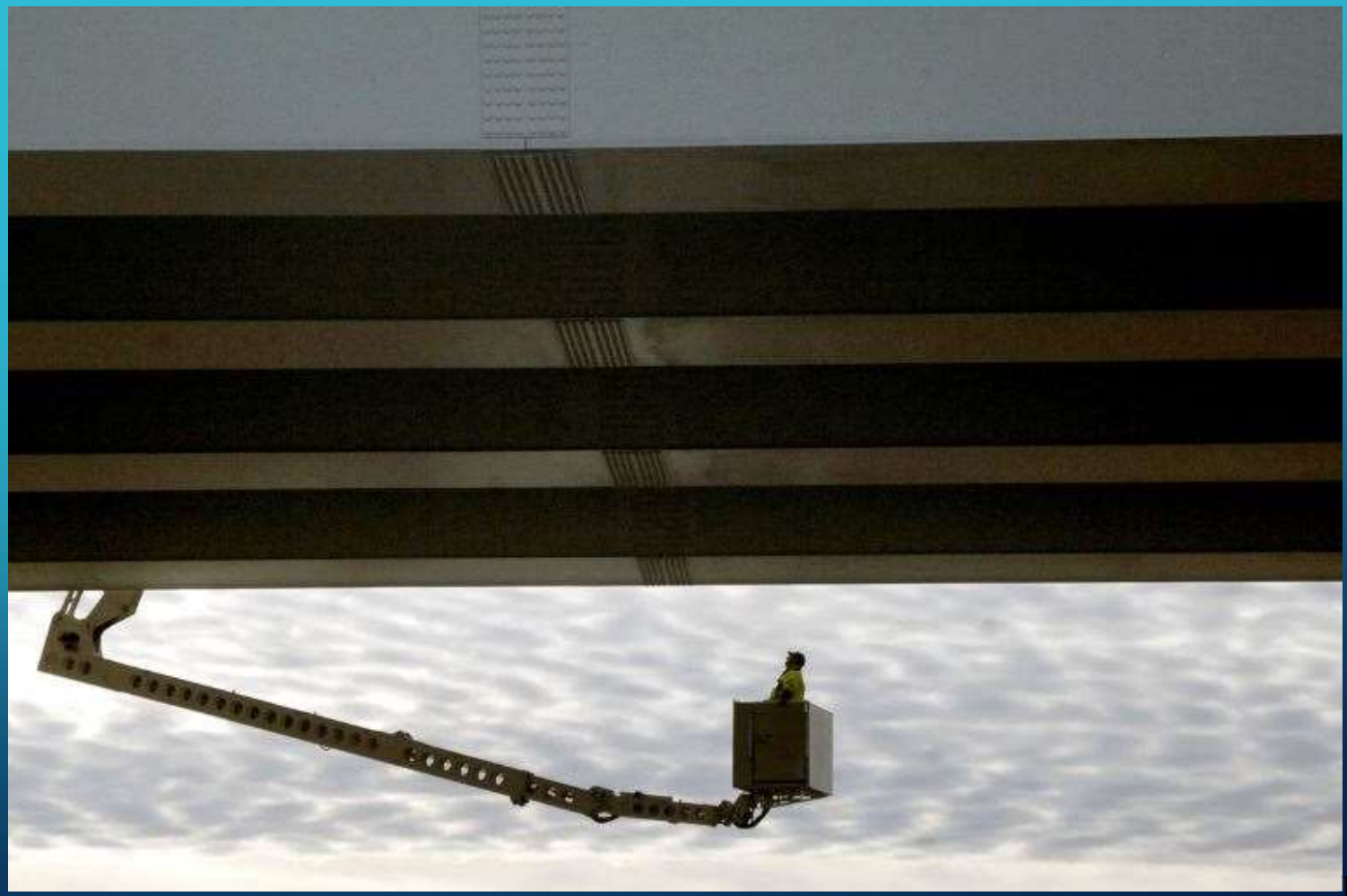

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Inspection Terms

- The **SUFFICIENCY RATING** of a bridge is a single number from 0 (low) to 100 (high) taking into account, bridge condition, geometry, traffic, and how well the waterway passes underneath the bridge. Sufficiency rating is used to determine funding eligibility. A low sufficiency rating does not necessarily mean the bridge is unsafe or in need or immediate repair.

- A **FRACTURE CRITICAL MEMBER** is a steel member in tension that does not have enough additional, structural members to sufficiently redistribute load in the bridge if one member loses capacity, thus resulting in a portion of or entire bridge collapse.

- **FATIGUE** is a material response that describes the tendency of a material to break when subjected to repeated loading.

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Inspection Terms

- Bridges are considered **STRUCTURALLY DEFICIENT** if significant load-carrying elements are found to be in poor or worse condition due to deterioration and/or damage, or the adequacy of the waterway opening provided is determined to be extremely insufficient. The fact that a bridge is structurally deficient does not immediate imply that it is likely to collapse or that it is unsafe.

- Bridges are considered **FUNCTIONALLY OBSOLETE** when the geometry of the roadway no longer meets today's minimum design standards for width or vertical clearance for that roadway classifications, or the adequacy of the waterway opening provided is determined to be insufficient. The fact that a bridge is functionally obsolete does not imply that it is unsafe.

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Structural Inventory and Appraisal Sheet

SI&A Sheet

January 13, 2016 — **North Dakota Department of Transportation**

Bridge Inventory - Structure Inventory And Appraisal Sheet — **SEC 409**

Structure Number: 18-113-28.1 — chaindate

200 System Designation	3 – County Off
201 Status	Not Deficient
202 Sufficiency Rating	62.00
Identification	
02 Highway District	Grand Forks District
03 County	Gr. Forks
04 City	GRACE TOWNSHIP
05 Inventory Route	Route On Structure
4 County Hwy 1 Mainline 00000	0 N/A (NBI)
06 Feats Intersect	CREEK
09 Location	2 SOUTH 1 WEST KEMPTON
11 Milepoint	0.000
13 LRS Inv Route, Subroute	-1 -1
16 Latitude	47d 47' 16.00"
17 Longitude	97d 38' 36.00"
GPS Coordinates XY 601621.7	5293591.9
98 Border Bridge Unknown (P)	0.00 %
99 Border Bridge Struct No.	_
Structure Type and Material	
43 Main Struct Type	Steel
Stringer	
44 Approach Struct Type	Unknown (NBI)
	Unknown (P)
45 No. Spans in Main Unit	1
46 No. Approach Spans	0
107 Deck Struct Type	8 Wood or Timber
108 Wearing Surface	7 Wood or Timber
Membrane	0 None
Dk Protect	None
208 Dk Overburden 205	Gravel/Dirt
Age and Service	
27 Yr Built 1949	106 Yr Reconstructed -1
42 Type of Service	1 Highway - On
	5 Waterway - Under
28 Lanes on Structure	2
29 ADT 30	30 Year of ADT 2013
109 Average Daily Truck Traffic	-1.00
19 Bypass, Detour Length	2 Miles
Geometric Data	
10 Min Vert Clearance	328 Ft. 1 In.
32 Approach Roadway Width	20 Feet
33 Bridge Median	0 No median
34 Skew	0.00
35 Structure Flared	0 No flare
47 Total Horizontal Clearance	25.3 Feet
48 Length of Max Span	26 Feet
49 Structure Length	29.86 Feet
50 Curb/Sidewalk Widths	0.3 Ft Rt-Side
	0.3 Ft Lt-Side
51 Bridge Rdwy Width - Curb to Curb	25.3 Feet
52 Deck Width	26.2 Feet
53 Min Vert Clear. Over Bridge	328 Ft. 1 In.
54 Min Vert Underclearance	0 Ft. 0 In.

Classification	
12 Base Highway Network	Not on Base Network
20 Toll	3 On free road
21 Maint Responsibility	02 County Hwy Agency
22 Owner	02 County Hwy Agency
26 Functional	Rural, Local
37 Historical Significance	5 Not eligible for NRHP
100 Defense Highway Designation	0 Not a STRAHNET hwy
101 Parallel Structure Designation	No || bridge exists
102 Direction of Traffic	2 2-way traffic
103 Temporary Structure Designation	Not Applicable (P)
104 Highway System of Inventory Rte	0 Not on NHS
105 Federal Lands Highways	Not applicable
110 Designated National Network	0 Not part of natl netwo
112 NBIS Bridge Length	
226 Functional Under	
Condition	
58 Deck	7 Good
59 Superstructure	6 Satisfactory
60 Substructure	5 Fair
61 Chan. & Chan. Protection	7 Minor Damage
62 Culvert and Retaining Walls	N N/A (NBI)
Load Rating and Posting	
31 Design Load	M 18 (H 20) (live load for which structure was designated)
41 Structure Open, Closed or Posted	P Posted for load
63 Operating Rating Method	2 AS Allowable Stress
64 Oper. Rating HS 14	26 Tons
65 Inventory Rating Method	2 AS Allowable Stress
66 Inv. Rating HS 9	17 Tons
70 Bridge Posting	2 20.0-29.9%below
209 Posted in "Tons"	27 Tons
Appraisal	
67 Structural Condition	4 Minimum Tolerable
68 Deck Geometry	6 Equal Min Criteria
69 Underclear. Vert & Horiz	N Not applicable (NBI)
71 Waterway Adequacy	8 Equal Desirable
72 App. Rdwy. Alignment	6 Equal Min Criteria
36 Traffic Safety Features	0 0 0 0
113 Scour Critical	U Unknown Scour
Inspections	
90 Date of Last Inspection	September 02, 2015
91 Designated Inspection Frequency	24 Months
92 Critical Feature Inspected / 93 Critical Feature Last Inpsection Dt	
Fracture Critical N	
Underwater N	
Other Special N	
218 Channel Profile Y 48	09/19/2013
Chaining Date	None
207 Transporter Erector Routes and Sites	1
212 Structure Load Rated	0
213 Federal Aid Project Number	
214 Delayed Inspection	Not Applicable

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March 09, 2017

North Dakota Department of Transportation

Bridge Inventory - Structure Inventory And Appraisal Sheet

SEC 409

Structure Number: 05-147-19.0

200 System Designation	3 – County Off
201 Status	Not Deficient
202 Sufficiency Rating	63.30

Identification

02 Highway District	Minot District
03 County	Bottineau
04 City	OAK VALLEY TOWNSHIP
05 Inventory Route	Route On Structure
4 County Hwy 1 Mainline 00000	0 N/A (NBI)
06 Feats Intersect	DRAINAGE DITCH
09 Location	2 NORTH 1 EAST OF GARDENA
11 Milepoint	0.000
13 LRS Inv Route. Subroute	-1 -1
16 Latitude	48d 44' 02.00"
17 Longitude	100d 28' 53.00"
GPS Coordinates XY 391084.1	5398918.9
98 Border Bridge	Unknown (P) 0.00 %
99 Border Bridge Struct No.	_

Structure Type and Material

Classification

12 Base Highway Network	Not on Base Network
20 Toll	3 On free road
21 Maint Responsibility	02 County Hwy Agency
22 Owner	02 County Hwy Agency
26 Functional	Rural, Local
37 Historical Significance	3 Possibly eligible for
100 Defense Highway Designation	0 Not a STRAHNET hwy
101 Parallel Structure Designation	No || bridge exists
102 Direction of Traffic	2 2-way traffic
103 Temporary Structure Designation	Not Applicable (P)
104 Highway System of Inventory Rte	0 Not on NHS
105 Federal Lands Highways	Not applicable
110 Designated National Network	0 Not part of natl netwo
112 NBIS Bridge Length	Yes

Condition

58 Deck	7 Good
59 Superstructure	6 Satisfactory
60 Substructure	6 Satisfactory

Structure Type and Material

43 Main Struct Type	Wood or Timber
Stringer	
44 Approach Struct Type	Unknown (NBI)
	Unknown (P)
45 No. Spans in Main Unit	2
46 No. Approach Spans	0
107 Deck Struct Type	8 Wood or Timber
108 Wearing Surface	8 Gravel
Membrane	0 None
Dk Protect	None
208 Dk Overburden 205	Gravel/Dirt

Age and Service

27 Yr Built 1935	106 Yr Reconstructed -1
42 Type of Service	1 Highway - On
	5 Waterway - Under
28 Lanes on Structure	2
29 ADT 25	30 Year of ADT 2016
109 Average Daily Truck Traffic	-1.00
19 Bypass, Detour Length	2 Miles

60 Substructure	6 Satisfactory
61 Chan. & Chan. Protection	7 Minor Damage
62 Culvert and Retaining Walls	N N/A (NBI)

Load Rating and Posting

31 Design Load	
	Unknown
41 Structure Open, Closed or Posted	P Posted for load
63 Operating Rating Method	2 AS Allowable Stress
64 Oper. Rating HS 11	19 Tons
65 Inventory Rating Method	2 AS Allowable Stress
66 Inv. Rating HS 7	13 Tons
70 Bridge Posting	0 >39.9% below
209 Posted in "Tons"	10 Tons

Appraisal

67 Structural Condition	4 Minimum Tolerable
68 Deck Geometry	5 Above Tolerable
69 Underclear. Vert & Horiz	N Not applicable (NBI)
71 Waterway Adequacy	6 Equal Minimum
72 App. Rdwy. Alignment	7 Above Min Criteria
36 Traffic Safety Features	0 0 0 0

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Geometric Data

10 Min Vert Clearance	99 Ft. 12 In.
32 Approach Roadway Width	16 Ft.
33 Bridge Median	0 No median
34 Skew	0.00
35 Structure Flared	0 No flare
47 Total Horizontal Clearance	23.0 Ft.
48 Length of Max Span	13 Ft.
49 Structure Length	29.86 Ft.
50 Curb/Sidewalk Widths	0.7 Ft Rt-Side
	0.7 Ft Lt-Side
51 Bridge Rdwy Width - Curb to Curb	23.0 Ft.
52 Deck Width	24.3 Ft.
53 Min Vert Clear. Over Bridge	99 Ft. 12 In.
54 Min Vert Underclearance	0 Ft. 0 In.
	N Feature not hwy or RR
55 Min Lateral UnderClear. - Rt	99.9 Ft.
	N Feature not hwy or RR
56 Min Lateral UnderClear. - Lt	0.0 Ft.
210 Culvert / 211 Description	

113 Scour Critical	U Unknown Scour

Inspections

90 Date of Last Inspection			October 11, 2016
91 Designated Inspection Frequency			24 Months
92 Critical Feature Inspected / 93 Critical Feature Last Inpsection Dt			
Fracture Critical	N		
Underwater	N		
Other Special	N		
218 Channel Profile	Y	48	08/16/2013
Chaining Date			None
207 Transporter Erector Routes and Sites			-1
212 Structure Load Rated			01/01/1901
213 Federal Aid Project Number			
214 Delayed Inspection			Not Applicable
216 Inspector			Olson, Lawson

Navigation Data

38 Navigation Control	Permit Not Required
39 Navigation Vertical Clearance	0 Ft.
40 Navigation Horizontal Clearance	0 Ft.
111 Pier or Abutment Protection	Unknown (NBI)
116 Minimum Navigation Vertical Clearance	-1 Ft.

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March 09, 2017

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Bridge Inventory - Structure Inventory And Appraisal Sheet

SEC 409

Structure Number: 05-147-19.0

Element / Env. / Description	Units	Total Qty	1 %	1-Qty St	2 %	2-Qty St	3 %	3-Qty St	4 %	4-Qty St
111/1:Timber Open Girder	ft	689	0	0	98	676	2	13	0	0
1150/1:Check/Shake	each	676	0	0	100	676	0	0	0	0
1160/1:Crack (Timber)	each	13	0	0	0	0	100	13	0	0
206/1:Timber Column	each	18	0	0	100	18	0	0	0	0
1150/1:Check/Shake	each	18	0	0	100	18	0	0	0	0
216/1:Timber Abutment	ft	49	0	0	100	49	0	0	0	0
1150/1:Check/Shake	each	49	0	0	100	49	0	0	0	0
235/1:Timber Pier Cap	ft	72	0	0	100	72	0	0	0	0
1150/1:Check/Shake	each	72	0	0	100	72	0	0	0	0
31/1:Timber Deck	sq.ft	689	0	0	100	689	0	0	0	0
332/1:Timb Bridge Railing	ft	59	0	0	49	29	0	0	51	30

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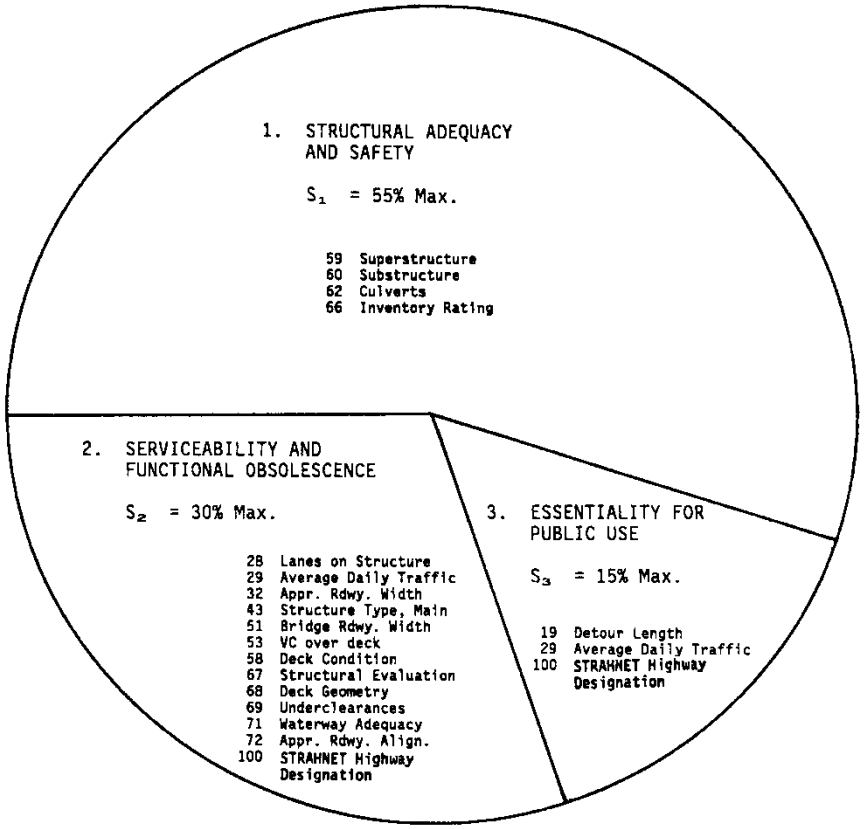
31/1:Timber Deck	sq.ft	689	0	0	100	689	0	0	0	(
332/1:Timb Bridge Railing	ft	59	0	0	49	29	0	0	51	3(
1150/1:Check/Shake	each	29	0	0	100	29	0	0	0	(
7000/1:Damage	each	30	0	0	0	0	0	0	100	3(
8401/1:Wings	each	4	75	3	25	1	0	0	0	(

Remarks: TIMBER CURBS HAVE MINOR TO MODERATE DAMAGE. TOPS OF WINGS HAVE MINOR SNOW PLOW DAMAGE. PLANK AT GIRDER ENDS HAS SLIPPED DOWN, ALLOWING SOIL TO BUILD UP ON ABUTMENT CAPS. ALL STRUCTURAL MEMBERS ARE WEATHER CHECKED. SILT BAR BUILDING UP IN WEST SPAN. GIRDER 17 FROM NORTH HAS LONGITUDINAL CRACK. GIRDER 13 HAS DEEP WEATHER CHECK. EAST ABUTMENT CAP HAS DEEP WEATHER CHECK ON ITS VERTICAL FACE. Pier 2 has minor damage at both ends from debris. West abutment bottom horizontal plank is cracked 3'-4', north end. Small void behind west abutment south end where ties to wing. NO END MARKERS.

Alert Code 1: Small sink holes at west end of bridge behind abutment in wheel paths.

Sufficiency Rating



4. SPECIAL REDUCTIONS

S_4 = 13% Max.

19 Detour Length
36 Traffic Safety Features
43 Structure Type, Main

SUFFICIENCY RATING = $S_1 + S_2 + S_3 - S_4$

Sufficiency Rating shall not be less than 0% nor greater than 100%

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Inspections Part #2
The Important Paperwork

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Paperwork

- Load Posting Requirement
- Alert Code 3 notification
- Scour & Channel Profiles Due
- Bridge Location Maps

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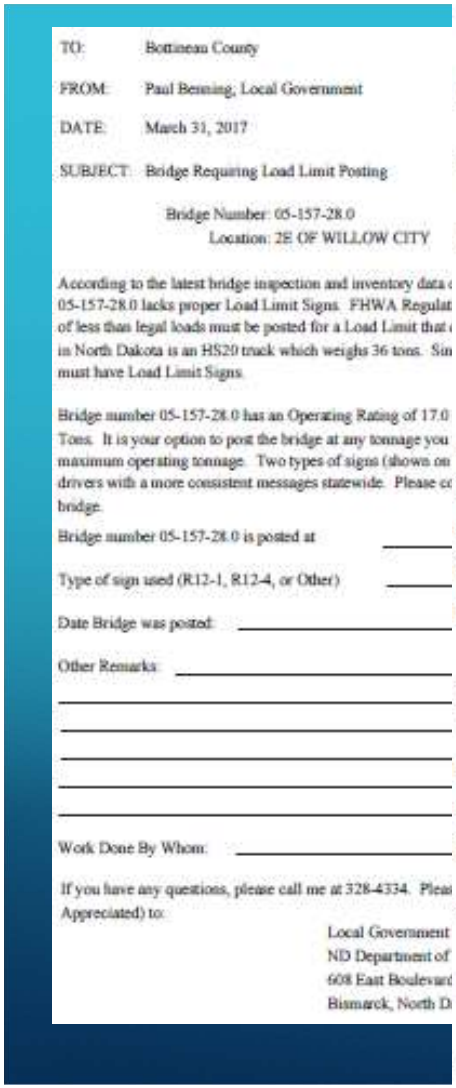

TO: Bottineau County

FROM: Paul Benning, Local Government

DATE: March 31, 2017

SUBJECT: Bridge Requiring Load Limit Posting

Bridge Number: 05-157-28.0
Location: 2E OF WILLOW CITY

According to the latest bridge inspection and inventory data on record with the Bridge Division, bridge number 05-157-28.0 lacks proper Load Limit Signs. FHWA Regulations require that any bridge with an operating rating of less than legal loads must be posted for a Load Limit that does not exceed the Operating Rating. The legal load in North Dakota is an HS20 truck which weighs 36 tons. Since bridge number 05-157-28.0 is less than 36 tons, it must have Load Limit Signs.

Bridge number 05-157-28.0 has an Operating Rating of 17.0 Gross Tons and an Inventory Rating of 10.0 Gross Tons. It is your option to post the bridge at any tonnage you want as long as it is equal to or less than the maximum operating tonnage. Two types of signs (shown on attachment) are recommended in order to provide drivers with a more consistent messages statewide. Please complete the following after you have posted this bridge.

Bridge number 05-157-28.0 is posted at _____ Tons

Type of sign used (R12-1, R12-4, or Other) _____

Date Bridge was posted: _____

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INSTRUCTIONS FOR POSTING WEIGHT LIMITS ON COUNTY BRIDGES

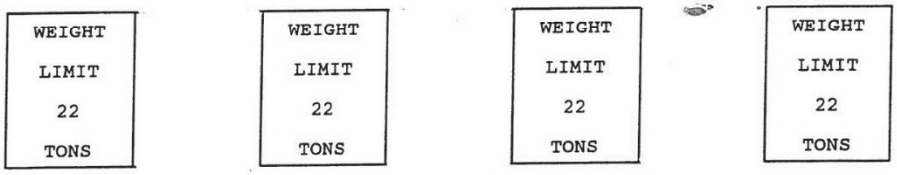
Priority I — Post all unposted bridges as soon as possible (data from last inventory provided).

Priority II — Update signs as conditions or re-rating change present weight limits.

NOTE: All bridges should be posted using one of the following sign types. Either the inventory ton or the operating ton is the maximum posting to be used. The choice of which one is left up to your discretion at each bridge site.

A. The new rating is in the HS format (e.g. the first digit is a 2). If the last two digits are less than 36 and more than 21, then post by using sign R12-1.

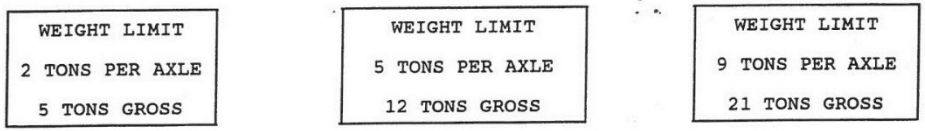
Examples: Where range is above 21 or less than 36



(all are R12-1 24"x30")

B. The new rating is in the HS format (e.g. the first digit is a 2). If the last two digits are 21 or less, then post by using sign R21-4.

Examples: Where range is 21 or less



[O.444X5=2 (max/axle)] [0.444X12=5 (max/axle)] [0.444x21=9 (max/axle)]

(All are R12-4 36"x24")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Alert Codes

FHWA requires that there is a follow-up procedure for bridges that have been identified with the alert code 3 status (immediate attention required). To comply with the FHWA requirement, NDDOT is requesting each owner of a bridge with an alert code 3 to use this report format to identify action taken to address the alert code 3 condition. This should be done by July 15, 2017. The following is the alert code remarks section from the Structure Inventory and Appraisal sheet for the subject bridge that requires attention:

TO: Dickey County

FROM: Paul Benning, Local Government

DATE: March 31, 2017

SUBJECT: Follow-up on Bridges with Alert Code 3 - IMMEDIATE ATTENTION

Bridge Number: 11-123-08.0
Location: 3 EAST 1 NORTH MONANGO

FHWA requires that there is a follow-up procedure for bridges that have been identified with the alert code 3 status (immediate attention required). To comply with the FHWA requirement, NDDOT is requesting each owner of a bridge with an alert code 3 to use this report format to identify action taken to address the alert code 3 condition. This should be done by July 15, 2017. The following is the alert code remarks section from the Structure Inventory and Appraisal sheet for the subject bridge that requires attention:

Remarks: NBI Remarks: Spalling thru-out structure. Exposed steel on east curb. West railing bent. Poor stream alignment. Road posted for 30 mph. Exposed rebar throughout structure exposed rebar west curb north end. .

Alert Code 3: 1/2016 - South diaphragm has a longitudinal crack.

Below describes what work or (repairs or other action) was done by the county to alleviate the cause of the alert code 3. Also describe any other work that you've done on this bridge that would affect the condition ratings or the load ratings.

_____

_____

_____

_____

_____

_____

Work Done By Whom: _____ On Date: _____

If you have any questions, please call me at 328-4334. Please return this form by July 15, 2017 (Earlier Response Appreciated) to:

Local Government Division
ND Department of Transportation
608 East Boulevard Ave.
Bismarck, North Dakota 58505-0700

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Scour Surveys

Turned over to the
Counties in 1995

Required every 4 years

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Structure Number	Location	Feature Intersected	Channel Profile Last Inspected	Channel Profile Frequency	Year Built	Structure Type
05-101-14.0	12 NORTH 4 WEST LANSFORD	WEST CUT BANK CREEK	08/23/2013	48	1945	Wood or Timber - Stringer
05-101-15.0	11 NORTH 5 WEST LANSFORD	CREEK	08/26/2013	48	1955	Concrete - Channel Bm
05-102-14.0	2 EAST 3 NORTH OF MOHALL	WEST CUT BANK CREEK	08/23/2013	48	1970	Concrete - Channel Bm
05-103-12.0	8 SOUTH 6 WEST ANTLER	CUT BANK CREEK	08/23/2013	48	1969	Prestressed conc - Adjacent Box Bm
05-103-15.0	3 EAST 2 NORTH OF MOHALL	CUT BANK CREEK	08/23/2013	48	1965	Concrete - Channel Bm
05-104-12.0	14 NORTH 1 WEST LANSFORD	CUT BANK CREEK	08/26/2013	48	1948	Wood or Timber - Stringer
05-105-14.0	12 NORTH 1 WEST LANSFORD	CUT BANK CREEK	08/23/2013	48	1970	Concrete - Channel Bm
05-107-09.0	6 SOUTH 3 WEST OF ANTLER	CREEK	08/23/2013	48	1935	Wood or Timber - Stringer
05-108-20.0	6 NORTH 3 EAST LANSFORD	CUT BANK CREEK	06/23/2014	48	1949	Wood or Timber - Stringer
05-108-21.0	8 WEST OF MAXBASS	CUT BANK CREEK	08/20/2013	48	1948	Wood or Timber - Stringer
05-109-01.0	2 NORTH 1 WEST OF ANTLER	ANTLER CREEK	08/23/2013	48	1939	Wood or Timber - Stringer
05-109-12.0	9 SOUTH OF ANTLER	CREEK BED	08/23/2013	48	1950	Wood or Timber - Stringer

Structure Number	Location	Feature Intersected	Channel Profile Last Inspected	Channel Profile Frequency	Year Built	Structure Type
11-145-03.0	7 N 1 E OF OAKES	CREEK	06/12/2013		1976	Prestressed conc - Tee Bm

County Structures Due for Channel Profile: 1

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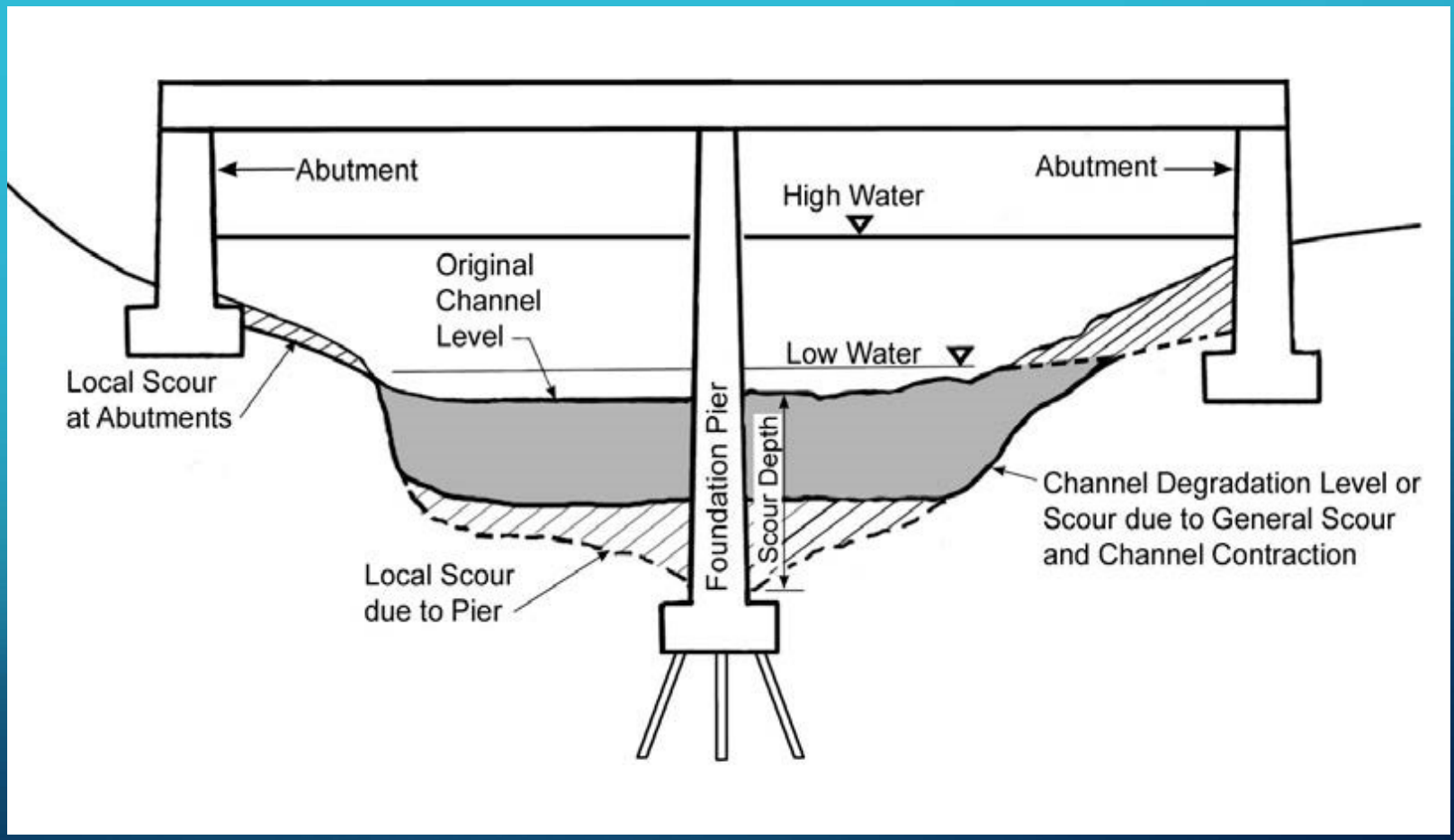
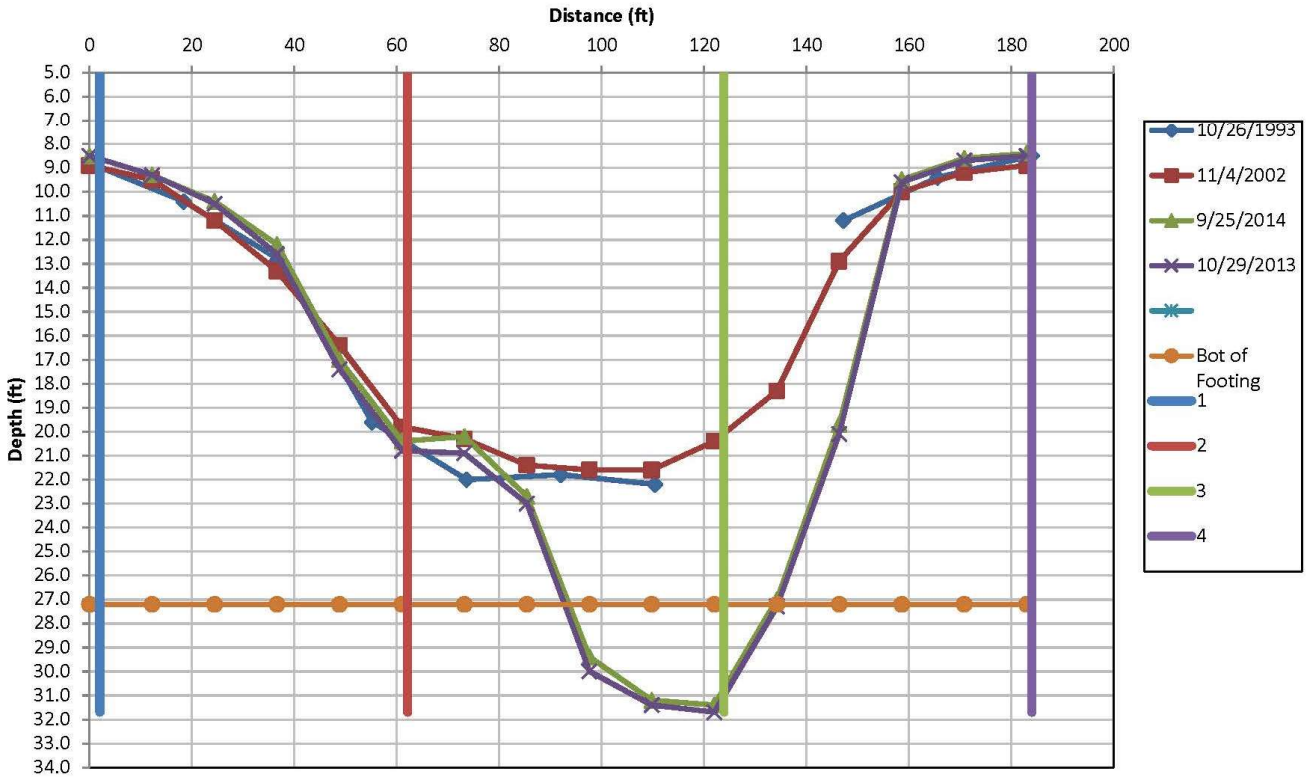

Abutment
Abutment
High Water
Original
Channel
Level
Low Water
Local Scour
at Abutments
Foundation Pier
Scour Depth
Channel Degradation Level or
Scour due to General Scour
and Channel Contraction
Local Scour
due to Pier

Scour and Channel Profile

2-187.740 R

North SIDE



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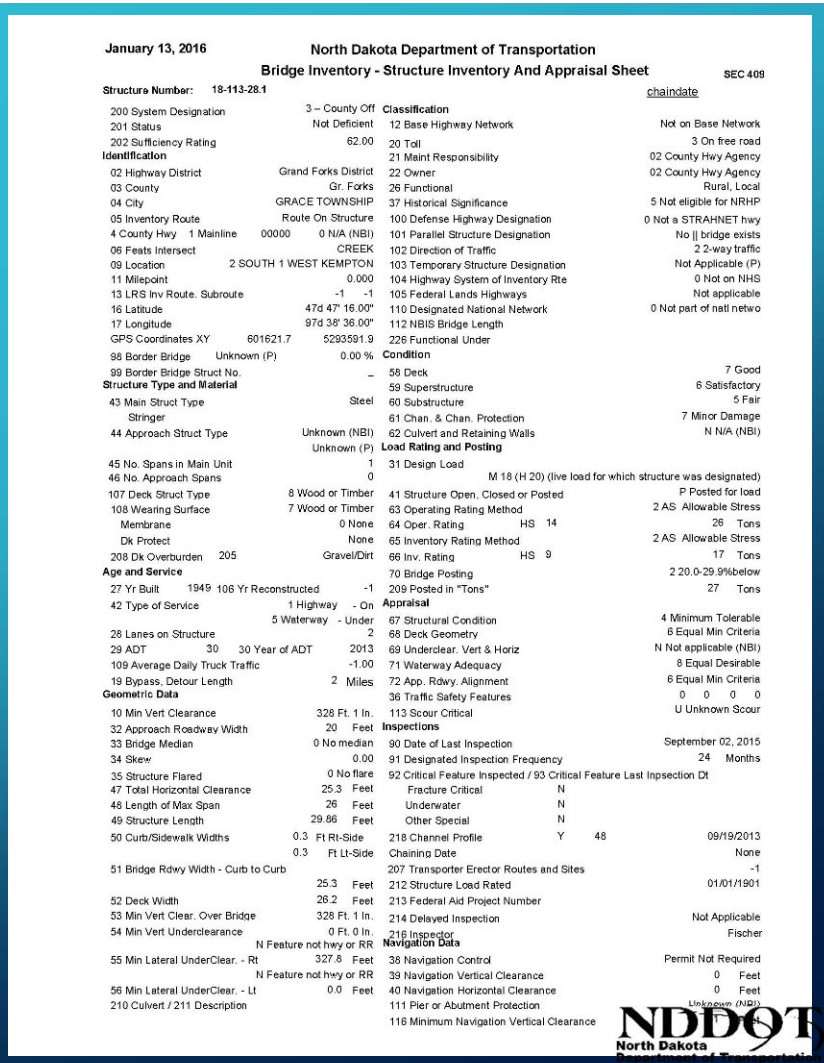
Bridge Inspection

County pays 19.07% match for NDDOT inspection = $45.20/structure

Box Culvert Inspection Cycle



January 13, 2016

North Dakota Department of Transportation

Bridge Inventory - Structure Inventory And Appraisal Sheet SEC 409

Structure Number: 18-113-28.1

200 System Designation			3 – County Off
201 Status			Not Deficient
202 Sufficiency Rating			62.00
Identification			
02 Highway District			Grand Forks District
03 County			Gr. Forks
04 City			GRACE TOWNSHIP
05 Inventory Route			Route On Structure
4 County Hwy	1 Mainline	00000	0 N/A (NBI)
06 Feats Intersect			CREEK
09 Location			2 SOUTH 1 WEST KEMPTON
11 Milepoint			0.000
13 LRS Inv Route. Subroute			-1 -1
16 Latitude			47d 47' 16.00"
17 Longitude			97d 38' 36.00"
GPS Coordinates XY		601621.7	5293591.9
98 Border Bridge		Unknown (P)	0.00 %
99 Border Bridge Struct No.			_
Structure Type and Material			
43 Main Struct Type			Steel
Stringer			
44 Approach Struct Type			Unknown (NBI)
			Unknown (P)
45 No. Spans in Main Unit			1
46 No. Approach Spans			0
107 Deck Struct Type			8 Wood or Timber
108 Wearing Surface			7 Wood or Timber
Membrane			0 None
Dk Protect			None
208 Dk Overburden	205		Gravel/Dirt
Age and Service			
27 Yr Built	1949	106 Yr Reconstructed	-1
42 Type of Service			1 Highway - On
			5 Waterway - Under
28 Lanes on Structure			2
29 ADT	30	30 Year of ADT	2013
109 Average Daily Truck Traffic			-1.00
19 Bypass, Detour Length			2 Miles
Geometric Data			
10 Min Vert Clearance			328 Ft. 1 In.
32 Approach Roadway Width			20 Feet
33 Bridge Median			0 No median
34 Skew			0.00
35 Structure Flared			0 No flare
47 Total Horizontal Clearance			25.3 Feet
48 Length of Max Span			26 Feet
49 Structure Length			29.86 Feet
50 Curb/Sidewalk Widths			0.3 Ft Rt-Side
			0.3 Ft Lt-Side
51 Bridge Rdwy Width - Curb to Curb			25.3 Feet
52 Deck Width			26.2 Feet
53 Min Vert Clear. Over Bridge			328 Ft. 1 In.
54 Min Vert Underclearance			0 Ft. 0 In.
			N Feature not hwy or RR
55 Min Lateral UnderClear. - Rt			327.8 Feet
			N Feature not hwy or RR
56 Min Lateral UnderClear. - Lt			0.0 Feet
210 Culvert / 211 Description			

chaindate

Classification			
12 Base Highway Network			Not on Base Network
20 Toll			3 On free road
21 Maint Responsibility			02 County Hwy Agency
22 Owner			02 County Hwy Agency
26 Functional			Rural, Local
37 Historical Significance			5 Not eligible for NRHP
100 Defense Highway Designation			0 Not a STRAHNET hwy
101 Parallel Structure Designation			No || bridge exists
102 Direction of Traffic			2 2-way traffic
103 Temporary Structure Designation			Not Applicable (P)
104 Highway System of Inventory Rte			0 Not on NHS
105 Federal Lands Highways			Not applicable
110 Designated National Network			0 Not part of natl netwo
112 NBIS Bridge Length			
226 Functional Under			
Condition			
58 Deck			7 Good
59 Superstructure			6 Satisfactory
60 Substructure			5 Fair
61 Chan. & Chan. Protection			7 Minor Damage
62 Culvert and Retaining Walls			N N/A (NBI)
Load Rating and Posting			
31 Design Load			M 18 (H 20) (live load for which structure was designated)
41 Structure Open, Closed or Posted			P Posted for load
63 Operating Rating Method			2 AS Allowable Stress
64 Oper. Rating	HS	14	26 Tons
65 Inventory Rating Method			2 AS Allowable Stress
66 Inv. Rating	HS	9	17 Tons
70 Bridge Posting			2 20.0-29.9%below
209 Posted in "Tons"			27 Tons
Appraisal			
67 Structural Condition			4 Minimum Tolerable
68 Deck Geometry			6 Equal Min Criteria
69 Underclear. Vert & Horiz			N Not applicable (NBI)
71 Waterway Adequacy			8 Equal Desirable
72 App. Rdwy. Alignment			6 Equal Min Criteria
36 Traffic Safety Features			0 0 0 0
113 Scour Critical			U Unknown Scour
Inspections			
90 Date of Last Inspection			September 02, 2015
91 Designated Inspection Frequency			24 Months
92 Critical Feature Inspected / 93 Critical Feature Last Inpsection Dt			
Fracture Critical	N		
Underwater	N		
Other Special	N		
218 Channel Profile	Y	48	09/19/2013
Chaining Date			None
207 Transporter Erector Routes and Sites			-1
212 Structure Load Rated			01/01/1901
213 Federal Aid Project Number			
214 Delayed Inspection			Not Applicable
216 Inspector			Fischer
Navigation Data			
38 Navigation Control			Permit Not Required
39 Navigation Vertical Clearance			0 Feet
40 Navigation Horizontal Clearance			0 Feet
111 Pier or Abutment Protection			Unknown (NBI)
116 Minimum Navigation Vertical Clearance			

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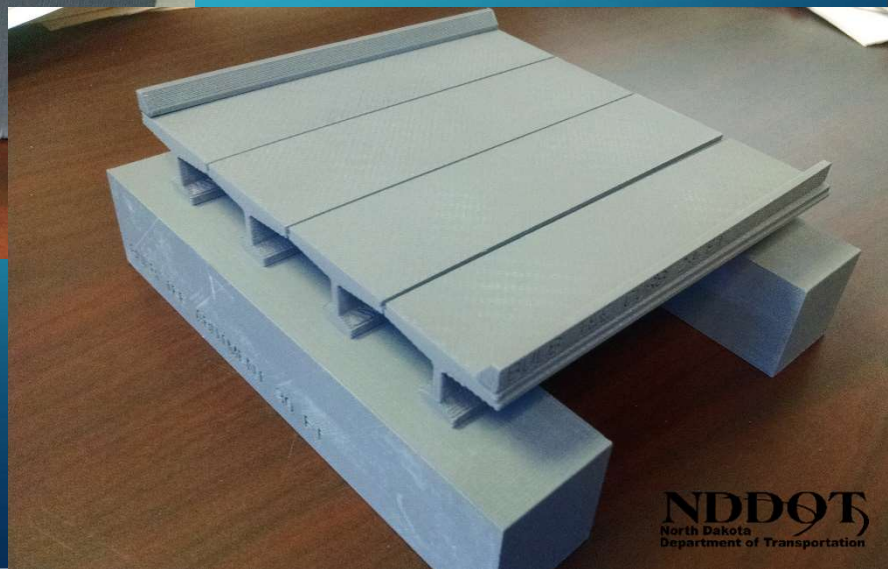
New Bridge Process

Bridge Removal Process



Structure Inspection Notification

County	
Structure Number	
Location	
Reason for inspection (new/rehabilitation/repair)	

Who performed the work?			
Was Structure previously closed? (y/n)		**If so, when?**	
Date work was completed		**Curently posted for Load? (y/n)**	

Location of Work Performed

Work performed on the following areas of the Structure			
Deck (y/n)		Pier(s) (y/n)	
Beam/Girder (y/n)		Abutment(s) (y/n)	
Pier/Abutment Caps (y/n)		Channel (riprap) (y/n)	
Other			

Was the work completed due to an Alert Code on the SI&A sheet (y/N)	
If yes, what Alert Code was repaired	

What work was completed on this Structure

Materials used (provide a description of the material properties, size, etc.)

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The Bismarck Tribune

Bismarck Tribune SPORT SHOW 46th Annual

Look inside for information on the Sport Show!

Rewriting legislation

Senate Bill 2344 would change language of Measure 5 DAKOTA, B1

SUNNY 15 • 6 FORECAST, B6 | FRIDAY, FEBRUARY 3, 2017 | bismarckt

TOM STROMME PHOTOS, TRIBUNE

Truck with an oversize load struck the underside of a bridge over Interstate 94 near mile marker 179 on Wednesday, leaving extensive damage to the derside of the overpass near McKenzie. The bridge, closed indefinitely until repairs can be made, carried local traffic on 275th Street Northeast in rural rleigh County.

Truck crashes into bridge

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INFORUM

Bridge in rural N.D. collapses under weight of truck

By Forum News Service Today at 6:28 a.m.

64

FOREST RIVER, N.D. - A semi driver is lucky to be safe after a bridge caved while crossing it.

A woman who lives nearby the crash site, Holly Beaton, says it happened around 10 a.m. Thursday, Oct. 19 near Forest River.

The truck appears to have been hauling grain when the bridge gave out, causing the cab of the truck to be caught in the air.

Beaton says the driver made it out safely, and the sheriff's office told her the truck will be stuck in the bridge for a few days while they

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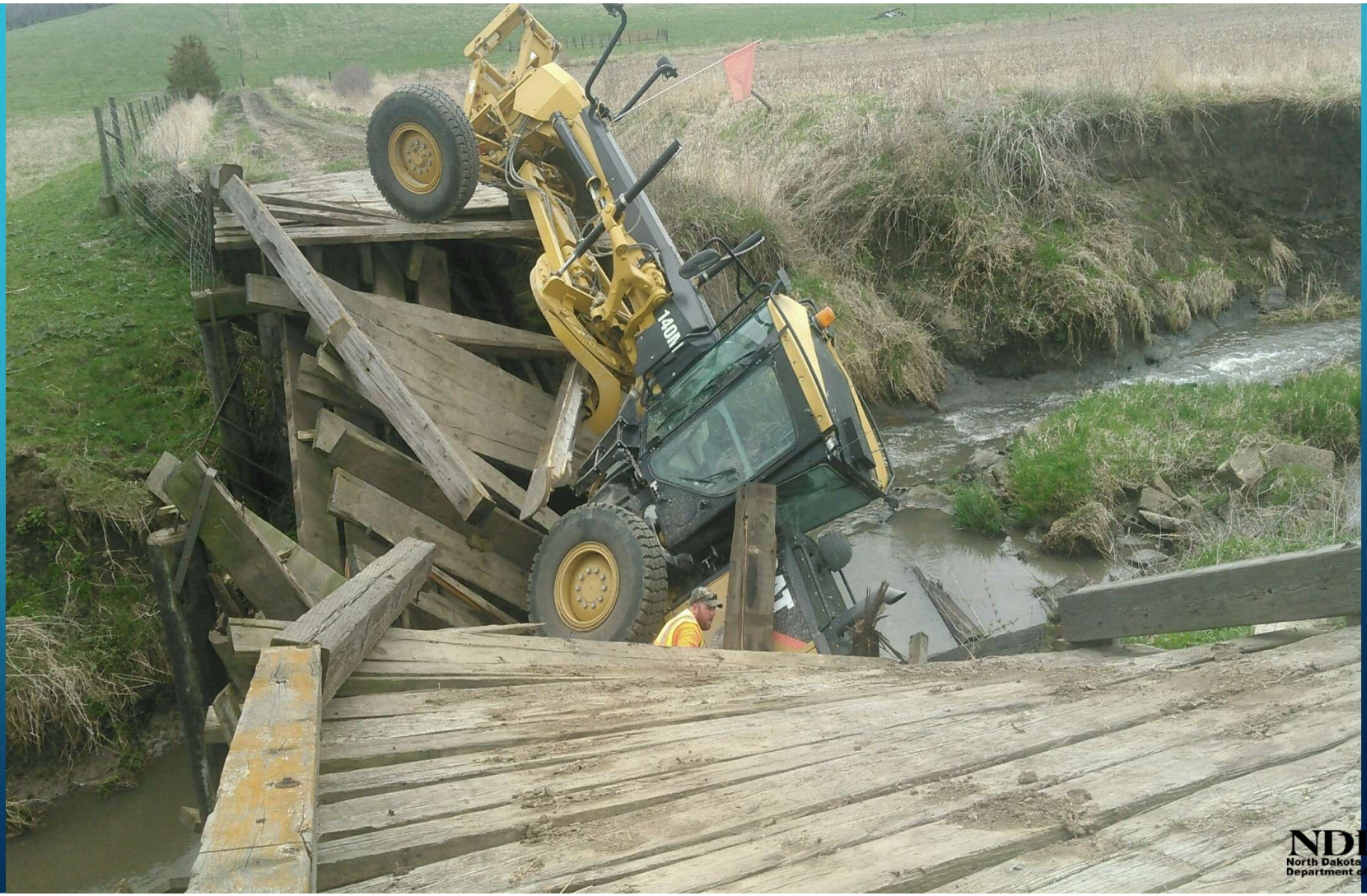
140H
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Barnes County – Timber Box Culvert

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Stark County Bridge Replacement

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Structure #: 34-112-03.0
Pier Unevenly Loaded with
Embankment and Riprap
Causing Horizontal Cracking
in Pier
Face South
Date 11/13/2006
Bridge # 32-119-35.0
Direction: North
Sediment and Tree Debris
Built Up Against West Side of
Pier. Note Farmers Fence Across
Channel Span
02/25/05
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Structure # 50-153-22.0
Another View
Face NE
Date: 09/18/2007
11.13.2006
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Questions?

Thank you!!

Bryon Fuchs, PE

701-328-2516

blfuchs@nd.gov

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