

Load Rating Summary

Structure ID: **C005501105**

Analyst: **AStubbe**

Location: **1NE Of Olive Cr State Rec**

QC By: _____

Analysis Date: December 28, 2017

Structure Identification

Feature Intersected: **Olive Branch (V 90)**

County: **Lancaster(109)**

Material Main Span: **3 Steel**

National Highway System Indicator: **0 Not on NHS**

Design for Main Span: **10 Truss-Thru**

District: **District 1**

Year Built: **1981**

Administrative Area: **901 - Unknown**

Maintainer: **02 County Hwy Agency**

Name: **Single Span Gusset Thru Truss**

Owner: **02 County Hwy Agency**

Emergency Route: **Off**

Description

100.6ft Single Span, steel, gusset thru truss, with a concrete filled corrugated metal deck.

Ratings and Loads

Deck (58): 7 Good

Superstructure (59): 5 Fair

Substructure (60): 7 Good

Culvert (62): N N/A

Design Load (031): **5 MS 18 (HS 20)**

Type of Overlay: **None**




Operating Type (063): **1 LF Load Factor**

Overlay Thickness / Fill Height (in): 0.0in

Inventory Type (065): **1 LF Load Factor**

Truck	Inventory Rating		Operating Rating		Legal		Recommended Posting (tons)	Member	Span	Control Location		Limit State
	Rating Factor	Tons	Rating Factor	Tons	Rating Factor	Tons				Location (ft)	Percent of Span	
HS-20(lane)	0.553	19.91	0.934	33.63			N/A	Gusset	1	U3(U2U3)	-	Fastener Bearing - Steel
HS-20(axle)	0.454	16.33	0.758	27.28			N/A	Gusset	1	U3(U2U3)	-	Fastener Bearing - Steel
SU4					0.957	25.84	-	Gusset	1	U3(U2U3)	-	Fastener Bearing - Steel
SU5					0.849	26.33	-	Gusset	1	U3(U2U3)	-	Fastener Bearing - Steel
SU6					0.767	26.64	-	Gusset	1	U3(U2U3)	-	Fastener Bearing - Steel
SU7					0.697	27.01	-	Gusset	1	U3(U2U3)	-	Fastener Bearing - Steel
NE Type 3					1.057	26.42	25	Gusset	1	U3(U2U3)	-	Fastener Bearing - Steel
NE Type 3S2					0.841	31.13	31	Gusset	1	U3(U2U3)	-	Fastener Bearing - Steel
NE Type 3-3					0.821	35.29	35	Gusset	1	U3(U2U3)	-	Fastener Bearing - Steel
EV2					0.846	24.33	24	S2	1	6.29	50.0	Design Flexure - Steel
EV3					0.609	26.20	26	Gusset	1	U3(U2U3)	-	Fastener Bearing - Steel
-	-	-	-	-	-	-	-	-	-	-	-	-

Weight Limit Posting Requirements

WEIGHT LIMIT	
	25
	31
	35

EMERGENCY VEHICLE AXLE WEIGHT LIMIT

SINGLE	24
TANDEM	26

Documentation

Rating Information Provided: Plans Field Measurements
 Testing No Information Exists

BrR Computations Submitted: **Yes**

Analysis Engine Version: **AASHTO BrR Version 6.8.2**

Additional Comments

See the following page for additional comments.

NE Professional Engineering Seal



12-28-17

The Rating and Posting values for this structure are based on a theoretical analysis of the structural elements involved and on a limited amount of information concerning the structural condition. These weight limits are intended only as a general guideline and may be varied accordingly by the officials responsible for this structure after an investigation of the structural condition, reaction to vehicular loads and any other items where judgment is required to establish a proper weight limit.

Load Rating Summary

Structure ID: **C005501105**

Analyst: **AStubbe**

Location: **1NE Of Olive Cr State Rec**

QC By: _____

Analysis Date: December 28, 2017

Additional Comments: (Continued)

The bridge load rating is shown on the previous page and is lower than the current posting of 25T, 35T, and 40T for Type 3, Type 3S2, and 3-3 Trucks respectively. Load posting shown on the previous page is recommended to be adjusted accordingly.

Refer to C005501105_Calcs_DEC2017.pdf for additional calculations.

The superstructure, including the truss members, gusset plates, floorbeams, and stringers were load rated.

The deck and substructure were not load rated.

Refer to table for controlling elements. "T" denotes Truss. "FB" denotes Floorbeam. "S" denotes Stringer.

Defects:

- L0-L8 Both Trusses, 5% section loss applied to both horizontal angle legs due to corrosion pitting section loss. 20% section loss applied to both horizontal angle legs due to corrosion at L7-L8. Defect does not control rating.
- U2L2 Left Truss, impact damage at horizontal angle leg. Defect does not control rating.
- All vertical members, 10% section loss to outside face of angles above knee brace. Defect does not control rating.
- L0 and L8 gusset plates, torch cut at (2) bolts, assumed bolts ineffective. Defect does not control rating.

The defects at L3U4 Right Truss, L0U1 Right Truss, and welded cover plates at vertical members were not modeled because repairs have already been completed and noted in the inspection report that the repairs are functioning properly.

RECOMMENDATIONS:

Strengthen top chord splice connection at U3 & U5 gusset plates at Left and Right Truss. The top chord is transferring a large force into a small cross sectional area of the gusset plate. A bolted web splice plate should be added, as well as lengthen the top flange splice plate to include at least 2 bolts on each side of the splice.

Load Rating Summary

Structure ID: **C005501720**

Analyst: **AStubbe**

Location: **.7SW Of Sprague**

QC By: _____

Analysis Date: December 28, 2017

Structure Identification

Feature Intersected : **Salt Creek (T 177)**

County: **Lancaster(109)**

Material Main Span: **3 Steel**

National Highway System Indicator: **0 Not on NHS**

Design for Main Span: **10 Truss-Thru**

District: **District 1**

Year Built: **1977**

Administrative Area: **901 - Unknown**

Maintainer : **02 County Hwy Agency**

Name: **Single Span Gusset Thru Truss**

Owner : **02 County Hwy Agency**

Emergency Route: **Off**

Description

100.0ft Single Span, steel, gusset thru truss, with a concrete filled corrugated metal deck.

Ratings and Loads

Deck (58): 6 Satisfactory

Superstructure (59) : 5 Fair

Substructure (60) : 5 Fair

Culvert (62) : N N/A

Design Load (031): **5 MS 18 (HS 20)**

Type of Overlay : **None**

Operating Type (063): **1 LF Load Factor**

Overlay Thickness / Fill Height (in): 0.0in




Inventory Type (065): **1 LF Load Factor**

Truck	Inventory Rating		Operating Rating		Legal		Recommended Posting (tons)	Member	Control Location		Limit State	
	Rating Factor	Tons	Rating Factor	Tons	Rating Factor	Tons			Location (ft)	Percent of Span		
HS-20(lane)	0.530	19.09	0.886	31.88			N/A	S2	2	10.00	50.0	Design Flexure - Steel
HS-20(axle)	0.404	14.56	0.675	24.31			N/A	S2	2	10.00	50.0	Design Flexure - Steel
SU4					0.675	18.23	-	S2	2	10.00	50.0	Design Flexure - Steel
SU5					0.643	19.93	-	S2	2	10.00	50.0	Design Flexure - Steel
SU6					0.614	21.33	-	S2	2	10.00	50.0	Design Flexure - Steel
SU7					0.614	23.79	-	S2	2	10.00	50.0	Design Flexure - Steel
NE Type 3					0.794	19.86	18	S2	2	10.00	50.0	Design Flexure - Steel
NE Type 3S2					0.871	32.24	32	S2	2	10.00	50.0	Design Flexure - Steel
NE Type 3-3					0.965	41.48	41	S2	2	10.00	50.0	Design Flexure - Steel
EV2					0.645	18.54	18	S2	2	10.00	50.0	Design Flexure - Steel
EV3					0.436	18.73	18	S2	2	10.00	50.0	Design Flexure - Steel
-	-	-	-	-	-	-	-	-	-	-	-	-

Weight Limit

Posting

Requirements

WEIGHT LIMIT	
	18
	32
	41

EMERGENCY VEHICLE AXLE WEIGHT LIMIT

SINGLE 18

TANDEM 18

Documentation

Rating Information Provided: Plans Field Measurements
 Testing No Information Exists

BrR Computations Submitted : **Yes**

Analysis Engine Version : **AASHTO BrR Version 6.8.2**

Additional Comments

See the following page for additional comments.

NE Professional Engineering Seal



12-28-17

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Load Rating Summary

Structure ID: **C005501720**

Location: **.7SW Of Sprague**

Analyst: **AStubbe**

QC By: _____

Analysis Date: December 28, 2017

Additional Comments: (Continued)

The bridge load rating is shown on the previous page and is lower than the current posting of 23T, 36T, and 43T for Type 3, Type 3S2, and 3-3 Trucks respectively. Load posting shown on the previous page is recommended to be adjusted accordingly.

Refer to C005501720_Calcs_DEC2017.pdf for additional calculations.

The superstructure, including the truss members, gusset plates, floorbeams, and stringers were load rated.

The deck and substructure were not load rated.

Defects: U2L3 Left and Right Truss, impact damage to angles. Defect does not control rating.

Refer to table for controlling elements. "T" denotes Truss. "FB" denotes Floorbeam. "S" denotes Stringer.

Load Rating Summary

Structure ID: **C005504910**

Analyst: **AStubbe**

Location: **2S N2 Otoe CL**

QC By: _____

Analysis Date: December 28, 2017

Structure Identification

Feature Intersected : **Little Nemaha Riv (R 15)**

County: **Lancaster(109)**

Material Main Span: **3 Steel**

National Highway System Indicator: **0 Not on NHS**

Design for Main Span: **10 Truss-Thru**

District: **District 1**

Year Built: **1978**

Administrative Area: **901 - Unknown**

Maintainer : **02 County Hwy Agency**

Name: **Single Span Gusset Thru Truss Bridge w/ (2) multi-girder approach spans**

Owner : **02 County Hwy Agency**

Emergency Route: **Off**

Description

80.0ft Single Span, steel, gusset thru truss, with a concrete filled corrugated metal deck. There is also (1) 15.5ft multi-girder approach span with a concrete filled corrugated metal deck, on each end of the bridge.

Ratings and Loads

Deck (58): 7 Good

Superstructure (59) : 5 Fair

Substructure (60) : 7 Good

Culvert (62) : N N/A

Design Load (031): **5 MS 18 (HS 20)**

Type of Overlay : **Gravel**




Operating Type (063): **1 LF Load Factor**

Overlay Thickness / Fill Height (in): 0.5in

Inventory Type (065): **1 LF Load Factor**

Truck	Inventory Rating		Operating Rating		Legal		Recommended Posting (tons)	Member	Span	Control Location		Limit State
	Rating Factor	Tons	Rating Factor	Tons	Rating Factor	Tons				Location (ft)	Percent of Span	
HS-20 (lane)	0.327	11.76	0.546	19.64			N/A	Gusset	1	L0(L0U1)	-	Compression - Steel
HS-20 (axle)	0.274	9.87	0.458	16.48			N/A	Gusset	1	L0(L0U1)	-	Compression - Steel
SU4					0.580	15.65	-	Gusset	1	L0(L0U1)	-	Compression - Steel
SU5					0.518	16.07	-	Gusset	1	L0(L0U1)	-	Compression - Steel
SU6					0.469	16.31	-	Gusset	1	L0(L0U1)	-	Compression - Steel
SU7					0.439	17.01	-	Gusset	1	L0(L0U1)	-	Compression - Steel
NE Type 3					0.637	15.93	15	Gusset	1	L0(L0U1)	-	Compression - Steel
NE Type 3S2					0.544	20.11	20	Gusset	1	L0(L0U1)	-	Compression - Steel
NE Type 3-3					0.541	23.25	23	Gusset	1	L0(L0U1)	-	Compression - Steel
EV2					0.543	15.60	15	Gusset	1	L0(L0U1)	-	Compression - Steel
EV3					0.366	15.73	15	Gusset	1	L0(L0U1)	-	Compression - Steel
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

Weight Limit Posting Requirements

WEIGHT LIMIT	
	15
	20
	23

EMERGENCY VEHICLE AXLE WEIGHT LIMIT

SINGLE 15

TANDEM 15

Documentation

Rating Information Provided: Plans Field Measurements
 Testing No Information Exists

BrR Computations Submitted : **Yes**

Analysis Engine Version : **AASHTO BrR Version 6.8.2**

Additional Comments

See the following page for additional comments.

NE Professional Engineering Seal



12-28-17

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Load Rating Summary

Structure ID: **C005504910**

Location: **2S N2 Otoe CL**

Analyst: **AStubbe**

QC By: _____

Analysis Date: December 28, 2017

Additional Comments: (Continued)

The bridge load rating is shown on the previous page and is lower than the current posting of 21T, 31T, and 38T for Type 3, 3S2, and 3-3 Trucks respectively. Load posting shown on the previous page is recommended to be adjusted accordingly.

Refer to C005504910_Calcs_DEC2017.pdf for additional calculations.

The superstructure, including the truss members, gusset plates, floorbeams, and stringers were load rated.

The exterior stringers are braced at midspan by a steel plate diaphragm for both the truss span and approach spans.

The deck and substructure were not load rated.

Defects:

- Previous inspection reports note moderate to heavy pack rust at L0, L2, L3, and L5 gusset plates. The gusset plates are noted to have up to 40% section loss at connection points between chord and gusset plates. Actual gusset plate thicknesses at areas of section loss are not provided in inspection reports. Assumed an effective section loss of 10% applied to the overall gusset plate thickness. Recommend future inspection report to include gusset plate thickness at locations of pack rust.

- Flame cut at L4U4 Left Truss, vertical angle of built-up member. Defect does not control rating.

Refer to table for controlling elements. "T" denotes Truss. "FB" denotes Floorbeam. "S" denotes Stringer.

Load Rating Summary

Structure ID: **C005531130**

Analyst: **AStubbe**

Location: **.5N Of Agnew**

QC By: _____

Analysis Date: December 28, 2017

Structure Identification

Feature Intersected : **North Oak Creek (D 41)**

County: **Lancaster(109)**

Material Main Span: **3 Steel**

National Highway System Indicator: **0 Not on NHS**

Design for Main Span: **10 Truss-Thru**

District: **District 1**

Year Built: **1949**

Administrative Area: **901 - Unknown**

Maintainer : **02 County Hwy Agency**

Name: **Single Span Gusset Thru Truss**

Owner : **02 County Hwy Agency**

Emergency Route: **Off**

Description

90.0ft Single Span, steel, gusset thru truss, with a concrete deck.

Ratings and Loads

Deck (58): 6 Satisfactory

Superstructure (59) : 5 Fair

Substructure (60) : 5 Fair

Culvert (62) : N N/A

Design Load (031): **5 MS 18 (HS 20)**

Type of Overlay : **None**




Operating Type (063): **1 LF Load Factor**

Overlay Thickness / Fill Height (in): 0.0in

Inventory Type (065): **1 LF Load Factor**

Truck	Inventory Rating		Operating Rating		Legal		Recommended Posting (tons)	Member	Span	Control Location		Limit State
	Rating Factor	Tons	Rating Factor	Tons	Rating Factor	Tons				Location (ft)	Percent of Span	
HS-20 (lane)	0.563	20.28	0.941	33.86			N/A	Gusset	1	U1(U1U2)	-	Compression - Steel
HS-20 (axle)	0.435	15.66	0.727	26.15			N/A	Gusset	1	U1(U1U2)	-	Compression - Steel
SU4					0.909	24.55	-	Gusset	1	U1(U1U2)	-	Compression - Steel
SU5					0.810	25.12	-	Gusset	1	U1(U1U2)	-	Compression - Steel
SU6					0.731	25.40	-	Gusset	1	U1(U1U2)	-	Compression - Steel
SU7					0.668	25.87	-	Gusset	1	U1(U1U2)	-	Compression - Steel
NE Type 3					1.008	25.20	24	Gusset	1	U1(U1U2)	-	Compression - Steel
NE Type 3S2					0.823	30.44	30	Gusset	1	U1(U1U2)	-	Compression - Steel
NE Type 3-3					0.821	35.31	35	Gusset	1	U1(U1U2)	-	Compression - Steel
EV2					0.866	24.90	24	Gusset	1	U1(U1U2)	-	Compression - Steel
EV3					0.580	24.94	24	Gusset	1	U1(U1U2)	-	Compression - Steel
-	-	-	-	-	-	-	-	-	-	-	-	-

Weight Limit Posting Requirements

WEIGHT LIMIT	
	24
	30
	35

EMERGENCY VEHICLE AXLE WEIGHT LIMIT

SINGLE 24

TANDEM 24

Documentation

Rating Information Provided: Plans Field Measurements
 Testing No Information Exists

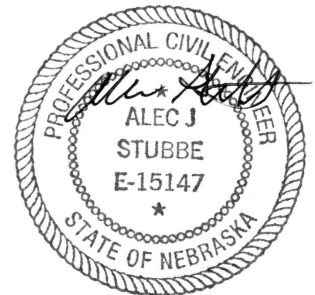
BrR Computations Submitted : **Yes**

Analysis Engine Version : **AASHTO BrR Version 6.8.2**

Additional Comments

See the following page for additional comments.

NE Professional Engineering Seal



12-28-17

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Load Rating Summary

Structure ID: **C005531130**

Location: **.5N Of Agnew**

Analyst: **AStubbe**

QC By: _____

Analysis Date: December 28, 2017

Additional Comments: (Continued)

The bridge load rating is shown on the previous page and is lower than the current posting of 23T, 34T, and 43T for Type 3, 3S2, and 3-3 Trucks respectively. Load posting shown on the previous page is recommended to be adjusted accordingly.

Refer to C005531130_Calcs_DEC2017.pdf for additional calculations.

The superstructure, including the truss members, gusset plates, floorbeams, and stringers were load rated.

Stringer top flanges are embedded in concrete deck as per inspection reports, assume stringers continuously braced.

The deck and substructure were not load rated.

Defects:

- U2L3 Right Truss is dented and bent from collision impact. Damage to angles in diagonal member modeled in BrR. Defect does not control rating.

Refer to table for controlling elements. "T" denotes Truss. "FB" denotes Floorbeam. "S" denotes Stringer.

Load Rating Summary

Structure ID: **C005560315**

Analyst: **AStubbe**

Location: **.5N 2W Of Emerald**

QC By: _____

Analysis Date: December 28, 2017

Structure Identification

Feature Intersected : **S Br Middle Cr (M 178)**

County: **Lancaster(109)**

Material Main Span: **3 Steel**

National Highway System Indicator: **0 Not on NHS**

Design for Main Span: **10 Truss-Thru**

District: **District 1**

Year Built: **1978**

Administrative Area: **901 - Unknown**

Maintainer : **02 County Hwy Agency**

Name: **Single Span Gusset Thru Truss**

Owner : **02 County Hwy Agency**

Emergency Route: **Off**

Description

80.0ft Single Span, steel, gusset thru truss, with a concrete filled corrugated metal deck.

Ratings and Loads

Deck (58): 7 Good

Superstructure (59) : 5 Fair

Substructure (60) : 7 Good

Culvert (62) : N N/A

Design Load (031): **5 MS 18 (HS 20)**

Type of Overlay : **None**




Operating Type (063): **1 LF Load Factor**

Overlay Thickness / Fill Height (in): 0.0in

Inventory Type (065): **1 LF Load Factor**

Truck	Inventory Rating		Operating Rating		Legal		Recommended Posting (tons)	Member	Span	Control Location		Limit State
	Rating Factor	Tons	Rating Factor	Tons	Rating Factor	Tons				Location (ft)	Percent of Span	
HS-20 (lane)	0.395	14.23	0.660	23.76			N/A	Gusset	1	L0(L0U1)	-	Compression - Steel
HS-20 (axle)	0.332	11.94	0.554	19.94			N/A	Gusset	1	L0(L0U1)	-	Compression - Steel
SU4					0.701	18.93	-	Gusset	1	L0(L0U1)	-	Compression - Steel
SU5					0.627	19.44	-	Gusset	1	L0(L0U1)	-	Compression - Steel
SU6					0.568	19.73	-	Gusset	1	L0(L0U1)	-	Compression - Steel
SU7					0.522	20.22	-	Gusset	1	U1(U1U2)	-	Compression - Steel
NE Type 3					0.771	19.27	18	Gusset	1	L0(L0U1)	-	Compression - Steel
NE Type 3S2					0.658	24.33	24	Gusset	1	L0(L0U1)	-	Compression - Steel
NE Type 3-3					0.654	28.13	28	Gusset	1	L0(L0U1)	-	Compression - Steel
EV2					0.656	18.87	18	Gusset	1	L0(L0U1)	-	Compression - Steel
EV3					0.443	19.03	19	Gusset	1	L0(L0U1)	-	Compression - Steel
-	-	-	-	-	-	-	-	-	-	-	-	-

Weight Limit Posting Requirements

WEIGHT LIMIT	
	18
	24
	28

EMERGENCY VEHICLE AXLE WEIGHT LIMIT

SINGLE	18
TANDEM	19

Documentation

Rating Information Provided: Plans Field Measurements
 Testing No Information Exists

BrR Computations Submitted : **Yes**

Analysis Engine Version : **AASHTO BrR Version 6.8.2**

Additional Comments

See the following page for additional comments.

NE Professional Engineering Seal



12-28-17

The Rating and Posting values for this structure are based on a theoretical analysis of the structural elements involved and on a limited amount of information concerning the structural condition. These weight limits are intended only as a general guideline and may be varied accordingly by the officials responsible for this structure after an investigation of the structural condition, reaction to vehicular loads and any other items where judgment is required to establish a proper weight limit.

Load Rating Summary

Structure ID: **C005560315**

Location: **.5N 2W Of Emerald**

Analyst: **AStubbe**

QC By: _____

Analysis Date: December 28, 2017

Additional Comments: (Continued)

The bridge load rating is shown on the previous page and is lower than the current posting of 19T, 26T, and 33T for Type 3, 3S2, and 3-3 Trucks respectively. Load posting shown on the previous page is recommended to be adjusted accordingly.

Refer to C005560315_Calcs_DEC2017.pdf for additional calculations.

The superstructure, including the truss members, gusset plates, floorbeams, and stringers were load rated.

The deck and substructure were not load rated.

Refer to table for controlling elements. "T" denotes Truss. "FB" denotes Floorbeam. "S" denotes Stringer.

Defects:

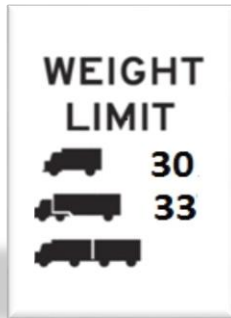
- U1L1 Left Truss impact damage to angle of truss member was modeled in BrR. Defect does not control rating.
- U4L4 Left Truss impact damage to angle of truss member was modeled in BrR. Defect does not control rating.

Recommendation: Replace missing rivets on truss with structural bolts. Refer to 2015 inspection report for locations.

How to Read Bridge Posting Signs

Nebraska is required to follow the Manual for Uniform Traffic Control Devices (MUTCD) to determine what signs and silhouettes are allowed for bridge posting purposes.

The symbols shown below are the only vehicle silhouettes allowed on a posting sign.



Because every possible vehicle configuration cannot be represented on a sign, typical configurations are used to show easily recognizable vehicles. Special Hauling Vehicles (SHVs) fall under the top silhouette showing a straight Single Unit truck. The SHVs have 4 to 7 axles, which make interpretation of the sign essential for truck drivers and law enforcement.

The sign above represents that Single Unit Trucks (SUT), top truck at 30 Ton are only restricted for SU5, SU6 and SU7; NE Type 3S2, middle truck is restricted at 33 Ton; NE Type 3-3, bottom truck is not restricted. However, by law, all bridges are restricted at Nebraska legal load limits whether posted or not. See Nebraska Statute 60-6,294 for more information.

Signs apply to the gross vehicle weight irrelevant of how short the bridge may be.

To the right are examples of vehicles governed by a given silhouette and their legal max. load limits.



NE Type SUT (Single Unit Truck) – 25 to 38.75 Ton



NE Type 3 – 25 Ton



SU4 – 27 Ton



SU5 – 31 Ton



SU6 – 34.75 Ton



SU7 – 38.75 Ton



NE Type 3S2 – 37 Ton



NE Type 3-3 – 43 Ton

