



# BRIDGE LOAD RATING SUMMARY REPORT

## OFFICE OF STRUCTURAL ENGINEERING

### OHIO DEPARTMENT OF TRANSPORTATION

SFN	BRIDGE NUMBER	DISTRICT	GPS COORDINATES	
2800756	GEA-00087-12.130	12	LATITUDE: 41.47080556	LONGITUDE: -81.16352778
ORIGINAL CONSTRUCTION YEAR	REHABILITATION YEAR	OVERALL STRUCTURE LENGTH	FEATURE INTERSECTED	
1956		67 ft	Hopsons Creek 0.96 Mi W of SR 168	

**SPECIAL ASSUMPTIONS & COMMENTS**

Three Span (20'-0"; 25'-0"; 20'-0" C/C Brgs.) Continuous concrete slab (CS-1-54 Dated 12-1-54) with capped pile abutments and piers. Slab thickness is 11.25", and a Width of 36'-0" F/F railing and O/O bridge. The wearing Surface is 1.3" Thick concrete overlay (Date of Wearing Surface: 1/1/1999). Alignment is tangent with 0-degree 0'0" Skew. Bridge Railings were installed (Assumed DBR-2-73 Dated 4/10/1973) Applied EV2 Scale Factor = 1.0 and EV3 Scale Factor = 0.8462 (LFR Factors). Assumptions: Modeling deck edge deterioration. Due to severe deterioration of the edge of the reinforced concrete slab, a reduction in the width of the slab strip in the Member definition section was applied. Additionally, the number of bars was adjusted to discount the bars exposed at the deck edge. There is no adjustment to the Typical section data or the Live load distribution factors. Exposed reinforcement bars: There are large spalls that have caused steel bars to be exposed and corroded, so creating additional bar mark definitions of a reduced diameter for loss of cross-sectional area.

PLEASE SELECT ON RIGHT, WHERE APPROPRIATE, BY USING THE DROP DOWN ARROW BUTTON	
LOAD RATING PURPOSE :	8 - Update Analysis Model and Software
GENERAL APPRAISAL (0-9) :	4
(708) LOAD RATING SOFTWARE :	3 - AASHTO BrR (VIRTIS)
SOFTWARE VERSION :	6.8.4.3002
(709) RATING SOURCE :	1 - Plan information available for load rating analysis
(63)(65) RATING METHOD :	6 - Load Factor (LF) rating reported by rating factor (RF)
(31) ORIGINAL DESIGN LOADING :	2 - H15

#### STRUCTURE RATING SUMMARY

OHIO LEGAL VEHICLES				DESIGN VEHICLE		
Loading Type	GVW (Tons)	Operating Rating RF	Legal Weight (Tons)	Loading Type	Rating by RF	
					Operating	Inventory
2F1	15	1.555	15.00	HS20 Loading	1.029	0.616
3F1	23	1.166	23.00			
4F1	27	1.116	27.00			
5C1	40	1.203	40.00			
<b>SPECIALIZED HAULING VEHICLES (SHV)</b>				Overall Legal Posting Rating 80%		
SU4	27	1.063	27.00			
SU5	31	1.038	31.00			
SU6	34.75	0.974	33.85			
SU7	38.75	0.968	37.51			
<b>EMERGENCY VEHICLES (EV)</b>				Sign Posting Recommendation:		
Check box if this is an NBI bridge <input checked="" type="checkbox"/>						
EV2	28.75	0.983	28.75			
EV3	43	0.788	33.88			

AGENCY/FIRM/OFFICE	2LMN, Inc	Report Date	12/31/2021
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	Rated By	Reviewed By
Name:	Husam Hussein	Joel Magalski
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Email:	Husam.Hussein@2lmn.com	Joel.Magalski@2lmn.com

# 2LMN, INC.

Calculated:	HHH	Date:	12/18/2021	Stage Review Submission:	FINAL
Checked:	JBM	Date:	12/22/2021	PID/Job No.:	114913
Concurred:	HHH	Date:	12/24/2021	Bridge No.:	GEA-87-12.130
Back Checked:	JBM	Date:	12/24/2021	SFN:	2800756
Released:	HHH	Date:	12/24/2021		

Project:	VAR-STW-BLR
Subject:	Railing DL - DBR
Railing DL - DBR	

Railing Type = Railing Type 1

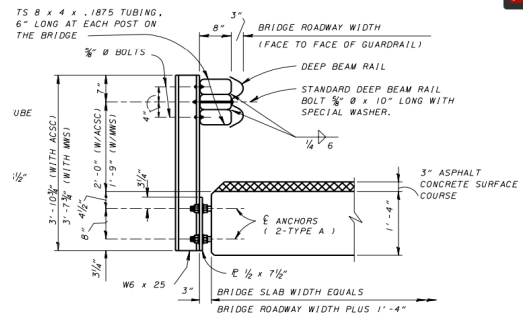
Post Spacing	6.25	ft
Guardrail Weight (Type W)	7.68	lb/ft
Total Weight	48.00	lb
TS 8 x 4 x 0.1875 Tubing	14.53	lb/ft
Number Tubes at Each Post	2.00	ea
Length of Tubes at Each Post	0.50	ft
Full Length Tube	6.25	ft
Total Weight	105.34	lb
Post Weight (6 WF 25)	25.00	lb/ft
Post Height	4.25	ft
Total Weight	106.25	lb

ADD SNIPPET FROM EXISTING RAILING



## Railing Type 1

PL 1/2 x 7 x 13 =	12.902	lbs
Total Weight	12.9	lb
Additional Miscellaneous	2	%
Weight per Foot	55.0	lb/ft
Weight per Foot	0.055	kips/ft



**2LMN, INC.**

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Back Checked:	JBM	Date:	12/24/2021	SFN:	2800756
Released:	HHH	Date:	12/24/2021		
Project:	VAR-STW-BLR				
Subject:	Rebar Input				

latitude

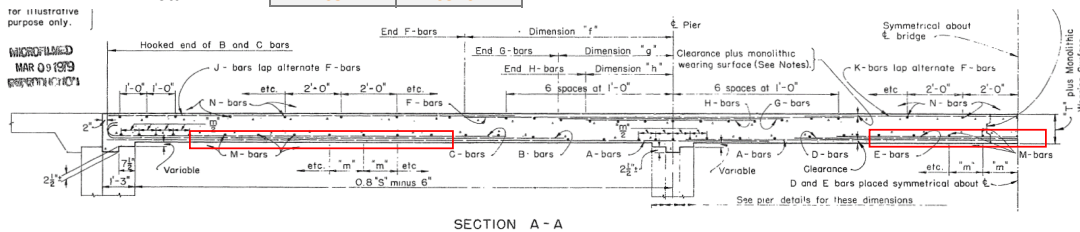
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41	28	14.9	41.47080556

longitude

degree	min	second	decimal
81	9	48.7	-81.16352778

Span1		0'-0"	Abutment face to CL pier
Span2		0'-0"	CL to CL pier
Span3		0'-0"	Abutment face to CL pier
Total	0	0'-0"	
Bridge limit	66.500	66'-6"	CL to CL of bearing

Span1	20	20'-0"	CL of bearing to CL of pier
Span2	25	25'-0"	CL to CL pier
Span3	20	20'-0"	CL of bearing to CL of pier
Total	65	65'-0"	



Name-BrR	Name	Size	BrR Type	Length	Dim A	Dim B	Spacing	
A822	A	8	St	23.75 ft	66.00		15.00 in	
B822	B	8	Type 1	18.08 ft		17.00 ft	30.00 in	Hook at start
B822*	B*	8	Type 1	18.08 ft		17.00 ft	30.00 in	Hook at end
C822	C	8	Type 1	15.83 ft		14.75 ft	30.00 in	Hook at start
C822*	C*	8	Type 1	15.83 ft		14.75 ft	30.00 in	Hook at end
D822	D	8	St	17.83 ft	17.83 ft		30.00 in	
E822	E	8	St	13.33 ft	13.33 ft		30.00 in	
F822	F	8	St	17.08 ft	17.08 ft		12.50 in	
G822	G	8	St	8.50 ft	8.50 ft		25.00 in	
H822	H	8	St	7.50 ft	7.50 ft		25.00 in	
J601	J	6	St	13.08 ft	13.08 ft		25.00 in	
K601	K	6	St	13.50 ft	13.50 ft		25.00 in	

A822 reduced	A	4
B822 reduced	B	4
B822* reduced	B*	4
C822 reduced	C	4
C822* reduced	C*	4
D822 reduced	D	4
E822 reduced	E	4

Top clear =	1.50 in
Bottom clear =	1.25 in
side clear =	2.00 in
End clear =	3.00 in
End of the bridge to CL Bearing =	9.00 in

Slab thickness =	0.94 ft	0'-11 1/4"	11.25 in
Length =	65.00 ft		
n =	7.96		

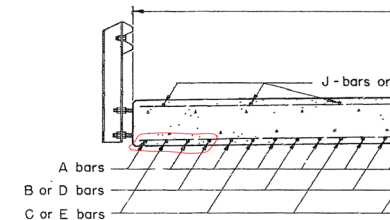
<b>2LMN, INC.</b>			
Calculated:	HHH	Date: 12/18/2021	Stage Review Submission: FINAL
Checked:	JBM	Date: 12/22/2021	PID/Job No.: 114913
Concurred:	HHH	Date: 12/24/2021	Bridge No.: GEA-87-12.130
Back Checked:	JBM	Date: 12/24/2021	SFN: 2800756
Released:	HHH	Date: 12/24/2021	
Project:	VAR-STW-BLR		
Subject:	Rebar Input		

Strip

Bar Mark	Bar Mark	Measured From	Clear Cover (in)	Number	Modified Number	Start Bar Spacing (in)	Support Number	Direction	Start Distance (ft)
J601	J	T	1.5	18		25	1	Left	0.5
F822	F	T	1.5	35		12.5	1	Right	11.458
G822	G	T	1.5	18		25	1	Right	15.750
H822	H	T	1.5	18		25	1	Right	16.250
K601	K	T	1.5	18		25	1	Right	25.750
F822	F	T	1.5	35		12.5	1	Right	36.458
G822	G	T	1.5	18		25	1	Right	40.750
H822	H	T	1.5	18		25	1	Right	41.250
J601	J	T	1.5	18		25	1	Right	52.417
A822	A	B	1.25	29	21	15	1	Left	0.500
B822	B	B	1.25	15	11	30	1	Left	0.500
C822	C	B	1.25	15	11	30	1	Left	0.500
D822	D	B	1.25	15	11	30	1	Right	23.583
E822	E	B	1.25	15	11	30	1	Right	25.833
B822*	B*	B	1.25	15	11	30	1	Right	48.500
C822*	C*	B	1.25	15	11	30	1	Right	50.750
A822 reduced	A	B	1.25		4	15	1	Left	0.5
B822 reduced	B	B	1.25		2	30	1	Left	0.5
C822 reduced	C	B	1.25		2	30	1	Left	0.5
D822 reduced	D	B	1.25		2	30	1	Right	23.58333
E822 reduced	E	B	1.25		2	30	1	Right	25.83333
B822* reduced	B*	B	1.25		2	30	1	Right	48.5
C822* reduced	C*	B	1.25		2	30	1	Right	50.75

Modeling deck edge deterioration

Width of slab	36.00 ft	36'-0"	432.00 in	
Assumed width of edge deterioration =	2.00 ft	2'-0"	24.00 in	based on pictures below
Number of sides =	2			based on pictures below
Final width = Width of slab - two edges	32.00 ft	32'-0"	384.00 in	

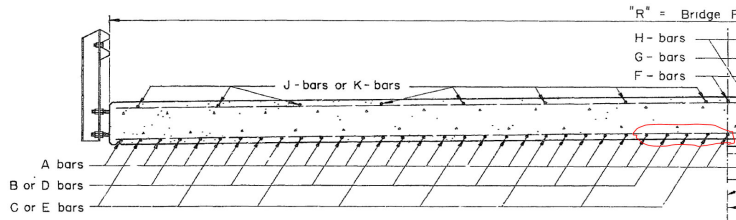


	Number
Remove A bars from each side	2
Remove B or D bars from each side	1
Remove C or E bars from each side	1

Modeling deck edge deterioration

In cases of severe deterioration of the edge of the reinforced concrete slab it might be desirable to reduce the width of the slab strip in the Member definition section. Additionally, the number of bars may need to be adjusted to discount the bars exposed at the deck edge. **Do not adjust the Typical section data or the Live load distribution factors.**

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Project:	VAR-STW-BLR				
Subject:	Rebar Input				
<b>Exposed reinforcement bars</b>					



	Number
Reduce A bars to 4 number bar size	4
Reduce B or D bars to 4 number bar size	2
Reduce C or E bars to 4 number bar size	2



• **Exposed reinforcement bars**

If there are large spalls that have caused steel bars to be exposed and corroded, the engineer will need to use his personal judgement to determine how the exposure affects the bars. Possible ways to model these conditions are:

- Creating additional bar mark definitions of shorter length to replace full length bars with localized damage
- Creating additional bar mark definitions of a reduced diameter for loss of cross sectional area.
- Reducing the number of bars when it is deemed that the bar is no longer effective