



ASR/LFR BRIDGE LOAD RATING SUMMARY

Version 1.0

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SECTION 1 - GENERAL BRIDGE DATA						
(8) Asset ID 03022		Route Type Interstate		(27) Year Built 1959	(90) Date of Inspection 11/2019	(411) Date Rated 5/15/2020
(9) Bridge Location 4 MI W OF COLUMBIA			(7) Facility Carried I-26		(6) Feature Intersected/Route Crossing SALUDA RIVER	
(49) Length 702 ft.	(11) Milepost 108.259	(2) District 1	(3) County LEXINGTON	(22) Owner SCDOT	(418) Conditions During Rating (NBI Item 58, NBI Item 59, NBI Item 60) 7, 6, 7	
(43, 44, 45, & 46) Bridge Description Simple 10 Span PSG Bridge				(31) Design Load HS-20+Mod	(108) Existing Wearing Surface Type & Depth MONOLITHIC CONCRETE	
Rating Program & Version BrR 6.8.4 - AASHTO Engine		Rating Program & Version N/A		Rating Method LFR	AASHTO Reference MBE 3rd Edition, w/ 2019 Interims	
(58) Deck 7 Good		(59) Superstructure 6 Satisfactory		(60) Substructure 7 Good	(62) Culvert N N/A (NBI)	(113) Scour Critical 5 Stable, w/in Footing

SECTION 2A - INVENTORY RATINGS - Design Vehicles and AASHTO Legal Trucks							
Rating Vehicle	Controlling Configuration	Weight (Tons)	Controlling Member	Controlling Location	Controlling Limit State	Rating Factor	Rating (Tons)
H-20	Truck	20	G2	1.96	Design Shear - Concrete	1.614	32
H-20 Lane	Lane	20	G2	1.96	Design Shear - Concrete	1.312	26
HS-20	Truck	36	G2	1.96	Design Shear - Concrete	1.000	36
HS-20 Lane	Lane	36	G2	1.96	Design Shear - Concrete	1.312	47
Alternate Military Loading	Truck	24	G5-G8	1.50	PS Tensile Stress - Concrete	1.327	31
Modified AASHTO SC - Type 3	Truck	25	G5-G8	1.60	Design Shear - Concrete	1.146	28
Modified AASHTO SC - Type 3S2	Truck	36.6	G5-G8	1.30	Design Shear - Concrete	1.103	40
AASHTO - Type 3-3	Truck	40	G2	1.96	Design Shear - Concrete	1.211	48

SECTION 2B - INVENTORY RATINGS - Specialized Hauling Vehicles (SHV)							
Rating Vehicle	Controlling Configuration	Weight (Tons)	Controlling Member	Controlling Location	Controlling Limit State	Rating Factor	Rating (Tons)
SC-SHV1A	Truck	32.5	G2	1.60	Design Shear - Concrete	0.821	26
SC-SHV1B	Truck	35	G2	1.60	Design Shear - Concrete	0.797	27
SC-SHV2A	Truck	33	G2	1.60	Design Shear - Concrete	0.905	29
SC-SHV2B	Truck	40	G5-G8	1.60	Design Shear - Concrete	0.814	32
SC-SHV3A	Truck	42.5	G2	1.60	Design Shear - Concrete	0.975	41
SC-SHV3B	Truck	45	G2	1.60	Design Shear - Concrete	0.924	41
SC Representative School Bus	Truck	17.525	G2	1.96	Design Shear - Concrete	1.978	34
SC-SU2	Truck	20	G2	1.96	Design Shear - Concrete	1.709	34
SU4	Truck	27	G5-G8	1.60	Design Shear - Concrete	1.094	29
SU5	Truck	31	G5-G8	1.60	Design Shear - Concrete	1.028	31
SU6	Truck	34.75	G2	1.60	Design Shear - Concrete	0.925	32
SU7	Truck	38.75	G5-G8	1.50	PS Tensile Stress - Concrete	0.967	37

This ASR/LFR Load Rating is based on:		<input checked="" type="checkbox"/> Design Plans	<input type="checkbox"/> Design Plans & Approved Shop Drawings	<input type="checkbox"/> Other (Please explain in Remarks)
		<input checked="" type="checkbox"/> As-Built Plans		
SECTION 3 - BRIDGE LOAD RATING SUMMARY				
Controlling Legal Truck EV3	Load Posting Required? If Yes, complete Signing/Posting Form. No		Controlling Legal Load Rating Factor (at Operating level) 1.097	

SECTION 4 - REMARKS & SIGN/SEAL			
Load Rating Engineer		Quality Control Engineer	
Name: Nitesh Sangam	Name: William Johnson	<input type="checkbox"/> Structure is part of QA sample set. Quality Assurance Engineer	
Company/Title: HDR/Bridge Engineer	Company/Title: HDR	Name:	
Date: 4/8/2020	Date: 5/13/2020	Company/Title:	
Remarks: 1. As-built plans 3240.253, widening As-built plans 3240.378.3, & bridge rehab plans 3240.378.10 were used for the rating. 2. Traffic data was input into BrR using Directional % = 55% and Truck % = 12%. 3. Condition factor of 1.00 was used based on the Inspection Report dated 11/2019. 4. Spans 1-10 are linked together under one superstructure definition in BrR. Results shown on the LRSF for Span 1 (i.e. Controlling Location 1.X) apply to all ten spans. 5. A load of 0.016-ksf was applied to account for the weight of SIP forms and the extra concrete in all bays except bay 10 per the site assessment dated 08/26/2019. 6. Site assessment dated 08/26/2019, identified two 3" galvanized metal pipes running along eastbound side of the bridge, and six 6" PVC between girders 9 & 10. Assumed weight of 3-in metal pipe is 9-plf per pipe. Assumed weight of 6-in PVC is 18-plf based on PVC pipe weight, filled with water. 7. The original and widening structures were assumed to act as a unit because the decks are connected by reinforcing bars.			



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SECTION 5 - OPERATING RATINGS - Design Vehicles & AASHTO Legal Trucks							
Rating Vehicle	Controlling Configuration	Weight (Tons)	Controlling Member	Controlling Location	Controlling Limit State	Rating Factor	Rating (Tons)
H-20	Truck	20	G2	1.96	Design Shear - Concrete	2.695	53
H-20 Lane	Lane	20	G2	1.96	Design Shear - Concrete	2.191	43
HS-20	Truck	36	G2	1.96	Design Shear - Concrete	1.670	60
HS-20 Lane	Lane	36	G2	1.96	Design Shear - Concrete	2.191	78
Alternate Military Loading	Truck	24	G2	1.96	Design Shear - Concrete	2.218	53
Modified AASHTO SC - Type 3	Truck	25	G5-G8	1.40	Design Shear - Concrete	1.899	47
Modified AASHTO SC - Type 3S2	Truck	36.6	G5-G8	1.40	Design Shear - Concrete	1.831	67
AASHTO - Type 3-3	Truck	40	G2	1.96	Design Shear - Concrete	2.023	80

SECTION 6A - OPERATING RATINGS - SC Specialized Hauling Vehicles (SHV) - Legal on Non-Interstate and Permit on Interstate							
Rating Vehicle	Controlling Configuration	Weight (Tons)	Controlling Member	Controlling Location	Controlling Limit State	Rating Factor	Rating (Tons)
SC-SHV1A	Truck	32.5	G5-G8	1.60	Design Shear - Concrete	1.366	44
SC-SHV1B	Truck	35	G5-G8	1.60	Design Shear - Concrete	1.323	46
SC-SHV2A	Truck	33	G5-G8	1.40	Design Shear - Concrete	1.493	49
SC-SHV2B	Truck	40	G5-G8	1.40	Design Shear - Concrete	1.341	53
SC-SHV3A	Truck	42.5	G5-G8	1.60	Design Shear - Concrete	1.620	68
SC-SHV3B	Truck	45	G5-G8	1.60	Design Shear - Concrete	1.536	69

SECTION 6B - OPERATING RATINGS - Two Miscellaneous SHV & AASHTO SHV - Legal on all roads							
Rating Vehicle	Controlling Configuration	Weight (Tons)	Controlling Member	Controlling Location	Controlling Limit State	Rating Factor	Rating (Tons)
SC Representative School Bus	Truck	17.525	G2	1.96	Design Shear - Concrete	3.304	57
SC-SU2	Truck	20	G2	1.96	Design Shear - Concrete	2.853	57
SU4	Truck	27	G5-G8	1.40	Design Shear - Concrete	1.805	48
SU5	Truck	31	G5-G8	1.40	Design Shear - Concrete	1.693	52
SU6	Truck	34.75	G5-G8	1.60	Design Shear - Concrete	1.534	53
SU7	Truck	38.75	G2	1.96	Design Shear - Concrete	1.658	64

SECTION 6C - OPERATING RATINGS - Standard Permit Vehicles & Typical Cranes							
Rating Vehicle	Controlling Configuration	Weight (Tons)	Controlling Member	Controlling Location	Controlling Limit State	Rating Factor	Rating (Tons)
SC - 100k	Truck	50	G2	1.60	Design Shear - Concrete	1.446	72
SC - 120k	Truck	60	G2	1.60	Design Shear - Concrete	1.137	68
SC - 130k	Truck	65	G2	1.60	Design Shear - Concrete	1.141	74
SC Crane #544726	Truck	80	G2	1.96	Design Shear - Concrete	1.021	81
SC Crane #527568	Truck	88.85	G2	1.96	Design Shear - Concrete	0.992	88

SECTION 6D - OPERATING RATINGS - Emergency Vehicles (EV)							
Rating Vehicle	Controlling Configuration	Weight (Tons)	Controlling Member	Controlling Location	Controlling Limit State	Rating Factor	Rating (Tons)
EV2	Truck	28.75	G2	1.96	Design Shear - Concrete	1.984	57
EV3	Truck	43	G2	1.60	Design Shear - Concrete	1.097	47

Remarks:

- One BrR model with both the original and widening girders are modeled in the same span configuration. Bearing to bearing length of original girders is 68.5833-ft and for widening girders is 67.52083. Beam projection for original girders is 5-inches and for widening girders is 10.9375-inches. For simplicity, the widening girders bearing to bearing length is considered 68.5833-ft and the beam projection is changed to 4.5625-inches.
- Based on the 11/2019 inspection report & 08/26/2019 site assessment, there is no measurable deterioration to warrant a deteriorated structure model in BrR.
- A 0.5" haunch depth was assumed at midspan.
- Sacrificial wearing surface = 0" per LRGD section 10.2.
- Dimensions of the rehab parapet and median barrier were assumed to be same as the details from widening plans.
- Concrete strength on the rehab plans are assumed to be same as widening plans.