



# ASR/LFR BRIDGE LOAD RATING SUMMARY

Version 1.0

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SECTION 1 - GENERAL BRIDGE DATA					
(8) Asset ID 07586	Route Type Secondary road	(27) Year Built 1982	(90) Date of Inspection 11/2018	(411) Date Rated 5/15/2020	
(9) Bridge Location 6 MI NW OF COLUMBIA		(7) Facility Carried S-32-36		(6) Feature Intersected/Route Crossing I-26	
(49) Length 354 ft.	(11) Milepost 0.098	(2) District 1	(3) County LEXINGTON	(22) Owner SCDOT	(418) Conditions During Rating (NBI Item 58, NBI Item 59, NBI Item 60) 6, 7, 6
(43, 44, 45, & 46) Bridge Description Simple 4 Span SS Bridge			(31) Design Load H-20	(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, 2018
(58) Deck 6 Satisfactory	(59) Superstructure 7 Good	(60) Substructure 6 Satisfactory		(62) Culvert N N/A (NBI)	(113) Scour Critical N Not Over Waterway

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	G12	1.50	Design Flexure - Steel	1.559	31
H-20 Lane	Lane	20	G12	1.50	Design Flexure - Steel	1.649	32
HS-20	Truck	36	G12	1.50	Design Flexure - Steel	1.130	40
HS-20 Lane	Lane	36	G12	1.50	Design Flexure - Steel	1.649	59
Alternate Military Loading	Truck	24	G12	1.50	Design Flexure - Steel	1.253	30
Modified AASHTO SC - Type 3	Truck	25	G12	1.50	Design Flexure - Steel	1.456	36
Modified AASHTO SC - Type 3S2	Truck	36.6	G1	1.60	Design Flexure - Steel	1.602	58
AASHTO - Type 3-3	Truck	40	G6	2.22	Design Shear - Steel	1.645	65

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	G12	1.50	Design Flexure - Steel	1.021	33
SC-SHV1B	Truck	35	G12	1.50	Design Flexure - Steel	0.972	34
SC-SHV2A	Truck	33	G12	1.50	Design Flexure - Steel	1.033	34
SC-SHV2B	Truck	40	G12	1.50	Design Flexure - Steel	0.893	35
SC-SHV3A	Truck	42.5	G1	1.60	Design Flexure - Steel	1.381	58
SC-SHV3B	Truck	45	G12	1.50	Design Flexure - Steel	1.306	58
SC Representative School Bus	Truck	17.525	G1	1.60	Design Flexure - Steel	2.228	39
SC-SU2	Truck	20	G12	1.50	Design Flexure - Steel	1.866	37
SU4	Truck	27	G12	1.50	Design Flexure - Steel	1.285	34
SU5	Truck	31	G12	1.50	Design Flexure - Steel	1.192	36
SU6	Truck	34.75	G12	1.50	Design Flexure - Steel	1.071	37
SU7	Truck	38.75	G12	1.50	Design Flexure - Steel	0.994	38

This ASR/LFR Load Rating is based on:			<input 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	Load Posting Required? If Yes, complete Signing/Posting Form.			Controlling Legal Load Rating Factor (at Operating level)	
EV3	No			1.396	

SECTION 4 - REMARKS & SIGN/SEAL					
Load Rating Engineer		Quality Control Engineer		<input type="checkbox"/> Structure is part of QA sample set. Quality Assurance Engineer	
Name:	Karl Hartline	Name:	Colt Wise	Name:	
Company/Title:	HDR	Company/Title:	HDR	Company/Title:	
Date:	2/5/2020	Date:	4/3/2020	Date:	
Remarks: 1. As-Built plans 32.704.1 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 11/2018. 4. Spans 1 & 4 are linked together under one superstructure definition in BrR. Results shown on the LRSF for Span (i.e. controlling location 1.X) apply to both spans. 5. Spans 2 & 3 are linked together under one superstructure definition in BrR. Results shown on the LRSF for Span 2 (i.e. controlling location 2.X) apply to both spans. 6. The controlling location represents the span number and controlling point (i.e. controlling location 1.x for Span 1, 2.x for Span 2, etc.). 7. Based on September 25, 2019 site assessment report, there is no measureable deterioration to warrant a deteriorated structure model in BrR. 8. Additional 5% (Span 1 and 4) and 10% (Span 2 and 3) of self-load was applied to all steel girders to account for welds, bolts, etc. 9. A load of 0.016 ksf was applied to account for the weight of SIP forms and the extra concrete.					



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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	G12	1.50	Design Flexure - Steel	2.604	52
H-20 Lane	Lane	20	G12	1.50	Design Flexure - Steel	2.754	55
HS-20	Truck	36	G12	1.50	Design Flexure - Steel	1.887	67
HS-20 Lane	Lane	36	G12	1.50	Design Flexure - Steel	2.754	99
Alternate Military Loading	Truck	24	G12	1.50	Design Flexure - Steel	2.092	50
Modified AASHTO SC - Type 3	Truck	25	G12	1.50	Design Flexure - Steel	2.431	60
Modified AASHTO SC - Type 3S2	Truck	36.6	G1	1.60	Design Flexure - Steel	2.676	97
AASHTO - Type 3-3	Truck	40	G6	2.22	Design Shear - Steel	2.747	109

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	G12	1.50	Design Flexure - Steel	1.705	55
SC-SHV1B	Truck	35	G12	1.50	Design Flexure - Steel	1.623	56
SC-SHV2A	Truck	33	G12	1.50	Design Flexure - Steel	1.724	56
SC-SHV2B	Truck	40	G12	1.50	Design Flexure - Steel	1.491	59
SC-SHV3A	Truck	42.5	G1	1.60	Design Flexure - Steel	2.306	98
SC-SHV3B	Truck	45	G12	1.50	Design Flexure - Steel	2.181	98

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	G1	1.60	Design Flexure - Steel	3.721	65
SC-SU2	Truck	20	G12	1.50	Design Flexure - Steel	3.116	62
SU4	Truck	27	G12	1.50	Design Flexure - Steel	2.147	57
SU5	Truck	31	G12	1.50	Design Flexure - Steel	1.991	61
SU6	Truck	34.75	G12	1.50	Design Flexure - Steel	1.789	62
SU7	Truck	38.75	G12	1.50	Design Flexure - Steel	1.659	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	G12	1.50	Design Flexure - Steel	1.954	97
SC - 120k	Truck	60	G6	2.22	Design Shear - Steel	1.721	103
SC - 130k	Truck	65	G12	1.50	Design Flexure - Steel	1.600	104
SC Crane #544726	Truck	80	G6	2.50	Design Flexure - Steel	1.347	107
SC Crane #527568	Truck	88.85	G6	2.50	Design Flexure - Steel	1.223	108

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	G12	1.50	Design Flexure - Steel	2.163	62
EV3	Truck	43	G12	1.50	Design Flexure - Steel	1.396	60

### Remarks:

- Overhead sign not shown in plans. Dimensions and location based on Site Assessment dated 9/25/2019. Load input into BrR as a point load and applied to first three girders as composite load. Assumed 20 psf of sign area for weight.
- Sacrificial wearing surface = 0" per LRGD section 11.2.1.1
- Transverse geometry is considered symmetric about the centerline of bridge. Since longitudinal deck joint does not transfer shear, left side is modeled as a separate unit from the right side. G1 - G6 represent the left side (westbound), and G7 - G12 represent the right side (eastbound).
- Exterior girders of end spans have a tapered web section at the interior bents. As a result, this girder was modeled as a plate girder.
- Steel bearing stiffeners in Spans 1 & 4 were assumed to be 5.5" wide.