



# LRFR BRIDGE LOAD RATING SUMMARY

Version 1.0

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SECTION 1 - GENERAL BRIDGE DATA					
(8) Asset ID 07272		Route Type Secondary road		(27) Year Built 1979	(90) Date of Inspection 11/2018
(9) Bridge Location 5 MI NW of COLUMBIA		(7) Facility Carried S-32-273		(6) Feature Intersected/Route Crossing I-20	
(49) Length 248 ft.	(11) Milepost 0.854	(2) District 1	(3) County LEXINGTON	(22) Owner SCDOT	(418) Conditions During Rating (NBI Item 58, NBI Item 59, NBI Item 60) 6, 6, 6
(43, 44, 45, & 46) Bridge Description Simple 4 Span SS 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 LRFR	AASHTO Reference MBE 3rd Edition, w/ 2019 Interims
(58) Deck 6 Satisfactory		(59) Superstructure 6 Satisfactory	(60) Substructure 6 Satisfactory	(62) Culvert N N/A (NBI)	(113) Scour Critical N Not Over Waterway

SECTION 2 - INVENTORY AND OPERATING LOAD RATINGS					
Rating Vehicle	Rating Level	Controlling Member	Controlling Location	Controlling Limit State	Rating Factor
HL-93 Truck + Lane	Inventory	G2, G3	1.5	SERVICE-II Steel Flexure Stress	1.627
HL-93 Truck Train + Lane (90%)	Inventory	-	-	-	-
HL-93 Tandem + Lane	Inventory	G2, G3	1.5	SERVICE-II Steel Flexure Stress	1.621
HL-93 Truck + Lane	Operating	G2, G3	1.5	SERVICE-II Steel Flexure Stress	2.115
HL-93 Truck Train + Lane (90%)	Operating	-	-	-	-
HL-93 Tandem + Lane	Operating	G2, G3	1.5	SERVICE-II Steel Flexure Stress	2.107

This LRFR 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 EV3	Load Posting Required? If Yes, complete Signing/Posting Form. No	Controlling Legal Load Rating Factor 1.427

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: Michael Riccardi	Name: Colt Wise	Name:
Company/Title: HDR	Company/Title: HDR	Company/Title:
Date: 2/7/2020	Date: 4/2/2020	Date:
Remarks: 1. As-built plans 32.700 were used for the rating. 2. Traffic data was input into BrR using Direction % = 55% and Truck % = 3%. 3. Condition factor of 1.00 was used based on the Inspection report dated 11/2018 and the site assessment dated 9/25/2019. 4. Spans 1 and 4 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 both spans. 5. Controlling member G2-G3 also includes G9-G10. 6. 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 the first three girders as composite load. Assumed 20 psf of sign area for weight. 7. Sacrificial wearing surface = 0" per LRGD Section 11.2.1.1. 8. An additional 5% of self-load was applied to all steel girders to account for materials such as welds, bolts, etc. 9. Diaphragm connections plates were not modeled because plates do not meet requirements of Std. Specs Section 10.34.4.6. 10. Taper length of the cover plates were not considered. 11. Based on the 9/25/2019 site assessment, there is no measurable deterioration to warrant a		

The ADTT value listed below is to be used to establish Legal and Permit $\gamma_{LL}$ factors.							
SECTION 5A - LEGAL & PERMIT RATINGS - AASHTO Legal Trucks							
(30) ADT Year 2017	(29) ADT 15400	(109) Truck % ADT 3	ADTT (ADT x Truck % ADT) 462				
Rating Vehicle	Rating Level	Weight (Tons)	Controlling Member	Controlling Location	Controlling Limit State	Rating Factor	Rating (Tons)
Modified AASHTO SC - Type 3	Legal	25	G2, G3	1.5	SERVICE-II Steel Flexure Stress	2.491	62
Modified AASHTO SC - Type 3S2	Legal	36.6	G2, G3	1.5	SERVICE-II Steel Flexure Stress	2.810	102
AASHTO - Type 3-3	Legal	40	G2, G3	3.5	SERVICE-II Steel Flexure Stress	3.010	120
Lane Type Loading (Neg. M only)	Legal	40	-	-	-	-	N/A
Lane Type Loading (Span > 200 ft)	Legal	40	-	-	-	-	N/A
Modified AASHTO SC - Type 3	Permit	25	G2, G3	1.5	SERVICE-II Steel Flexure Stress	3.238	80
Modified AASHTO SC - Type 3S2	Permit	36.6	G2, G3	1.5	SERVICE-II Steel Flexure Stress	3.653	133
AASHTO - Type 3-3	Permit	40	G2, G3	2.5	STRENGTH-II Steel Flexure	3.745	149
Lane Type Loading (Neg. M only)	Permit	40	-	-	-	-	N/A
Lane Type Loading (Span > 200 ft)	Permit	40	-	-	-	-	N/A



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SECTION 5B - LEGAL RATINGS - SC Specialized Hauling Vehicles (SHV) - Legal on Non-Interstate Only (Permit on Interstate)							
Rating Vehicle	Rating Level	Weight (Tons)	Controlling Member	Controlling Location	Controlling Limit State	Rating Factor	Rating (Tons)
SC-SHV1A	Legal	32.5	G2, G3	1.5	SERVICE-II Steel Flexure Stress	1.712	55
SC-SHV1B	Legal	35	G2, G3	1.5	SERVICE-II Steel Flexure Stress	1.638	57
SC-SHV2A	Legal	33	G2, G3	1.5	SERVICE-II Steel Flexure Stress	1.741	57
SC-SHV2B	Legal	40	G2, G3	1.5	SERVICE-II Steel Flexure Stress	1.521	60
SC-SHV3A	Legal	42.5	G2, G3	1.5	SERVICE-II Steel Flexure Stress	2.318	98
SC-SHV3B	Legal	45	G2, G3	1.5	SERVICE-II Steel Flexure Stress	2.189	98
SECTION 5C - LEGAL RATINGS - Two Miscellaneous SHV & AASHTO SHV							
Rating Vehicle	Rating Level	Weight (Tons)	Controlling Member	Controlling Location	Controlling Limit State	Rating Factor	Rating (Tons)
SC Representative School Bus	Legal	17.525	G2, G3	1.4	SERVICE-II Steel Flexure Stress	3.787	66
SC-SU2	Legal	20	G2, G3	1.4	SERVICE-II Steel Flexure Stress	3.164	63
SU4	Legal	27	G2, G3	1.5	SERVICE-II Steel Flexure Stress	2.177	58
SU5	Legal	31	G2, G3	1.5	SERVICE-II Steel Flexure Stress	2.047	63
SU6	Legal	34.75	G2, G3	1.5	SERVICE-II Steel Flexure Stress	1.843	64
SU7	Legal	38.75	G2, G3	1.5	SERVICE-II Steel Flexure Stress	1.723	66
SECTION 5D - LEGAL RATINGS - Emergency Vehicles (EV)							
Rating Vehicle	Rating Level	Weight (Tons)	Controlling Member	Controlling Location	Controlling Limit State	Rating Factor	Rating (Tons)
EV2	Legal	28.75	G2, G3	1.4	SERVICE-II Steel Flexure Stress	2.196	63
EV3	Legal	43	G2, G3	1.5	SERVICE-II Steel Flexure Stress	1.427	61

SECTION 6 - PERMIT RATINGS - Specialized Hauling Vehicles (SHV), Standard Permit Vehicles & Typical Cranes							
Rating Vehicle	Rating Level	Weight (Tons)	Controlling Member	Controlling Location	Controlling Limit State	Rating Factor	Rating (Tons)
SC-SHV1A	Permit	32.5	G2, G3	1.5	SERVICE-II Steel Flexure Stress	2.226	72
SC-SHV1B	Permit	35	G2, G3	1.5	SERVICE-II Steel Flexure Stress	2.130	74
SC-SHV2A	Permit	33	G2, G3	1.5	SERVICE-II Steel Flexure Stress	2.264	74
SC-SHV2B	Permit	40	G2, G3	1.5	SERVICE-II Steel Flexure Stress	1.977	79
SC-SHV3A	Permit	42.5	G2, G3	1.5	SERVICE-II Steel Flexure Stress	3.014	128
SC-SHV3B	Permit	45	G2, G3	1.5	SERVICE-II Steel Flexure Stress	2.846	128
SC Representative School Bus	Permit	17.525	G2, G3	1.4	SERVICE-II Steel Flexure Stress	4.922	86
SC-SU2	Permit	20	G2, G3	1.4	SERVICE-II Steel Flexure Stress	4.113	82
SU4	Permit	27	G2, G3	1.5	SERVICE-II Steel Flexure Stress	2.830	76
SU5	Permit	31	G2, G3	1.5	SERVICE-II Steel Flexure Stress	2.662	82
SU6	Permit	34.75	G2, G3	1.5	SERVICE-II Steel Flexure Stress	2.396	83
SU7	Permit	38.75	G2, G3	1.5	SERVICE-II Steel Flexure Stress	2.240	86
SC - 100k	Permit	50	G2, G3	1.5	SERVICE-II Steel Flexure Stress	2.535	126
SC - 120k	Permit	60	G2, G3	1.5	SERVICE-II Steel Flexure Stress	2.223	133
SC - 130k	Permit	65	G2, G3	1.5	SERVICE-II Steel Flexure Stress	2.093	136
SC Crane #544726	Permit	80	G2, G3	3.5	SERVICE-II Steel Flexure Stress	1.864	149
SC Crane #527568	Permit	88.85	G2, G3	3.5	SERVICE-II Steel Flexure Stress	1.710	151

Remarks: