



LRFR BRIDGE LOAD RATING SUMMARY

Version 1.0

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SECTION 1 - GENERAL BRIDGE DATA					
(8) Asset ID 02823	Route Type Interstate	(27) Year Built 1958	(90) Date of Inspection 12/2019	(411) Date Rated 11/22/2021	
(9) Bridge Location 4MI NW OF COLUMBIA		(7) Facility Carried I-26 / RAMP OFF I-26	(6) Feature Intersected/Route Crossing RR CSXT		
(49) Length 175 ft.	(11) Milepost 107.914	(2) District 1	(3) County RICHLAND	(22) Owner SCDOT	(418) Conditions During Rating (NBI Item 58, NBI Item 59, NBI Item 60) 7,5,7
(43, 44, 45, & 46) Bridge Description Simple 3 Span RCT Bridge			(31) Design Load HS-20+Mod	(108) Existing Wearing Surface Type & Depth BITUMINOUS	
Rating Program & Version BrR 7.0 - AASHTO Engine		Rating Program & Version N/A		Rating Method LRFR	AASHTO Reference MBE 3rd Edition, w/ 2019 Interims
(58) Deck 7 Good	(59) Superstructure 5 Fair	(60) Substructure 7 Good	(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	G10-A	1.5	STRENGTH-I Concrete Flexure	0.998
HL-93 Truck Train + Lane (90%)	Inventory	-	-	-	-
HL-93 Tandem + Lane	Inventory	G10-A	1.5	STRENGTH-I Concrete Flexure	1.084
HL-93 Truck + Lane	Operating	G10-A	1.5	STRENGTH-I Concrete Flexure	1.294
HL-93 Truck Train + Lane (90%)	Operating	-	-	-	-
HL-93 Tandem + Lane	Operating	G10-A	1.5	STRENGTH-I Concrete Flexure	1.405

This LRFR 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 1.163

SECTION 4 - REMARKS & SIGN/SEAL			
Load Rating Engineer		Quality Control Engineer	
Name: Evan Duarte	Name: T. Brian Query, PE	<input checked="" type="checkbox"/> Structure is part of QA sample set. Quality Assurance Engineer	
Company/Title: STV Inc./Engineering Technician	Company/Title: STV Inc./ Project Manager	Name: Gerald H. Jones, P.E.	
Date: 9/29/2020	Date: 10/5/2020	Company/Title: Michael Baker International/Bridge Engineer	
Remarks:		Date: 10/19/2020	
<p>The following documents were available to study for the load rating analysis:</p> <ol style="list-style-type: none"> SCDOT Bridge Inspection Form dated 12/2019 As-Built Plans No. 3240.378.2 As-Let Plans of original structure <p>- ADTT data derived for bi-directional bridge (Directional % = 55% and Truck ADT = 12%)</p> <p>- Based on the available SCDOT Bridge Inspection Form for Asset 02823 dated 12/2019, there is no measurable deterioration to warrant a deteriorated structure model in BrR.</p> <p>- Based on the inspection report dated 12/2019, condition factor of 0.95 was used for this rating.</p> <p>- Based on the Site Assessment dated 9/25/2019 an additional load of (2) 2" galvanized metal conduits was applied to both outside parapets of the entire structure.</p> <p>- The controlling location represents the controlling point of the controlling member (i.e., for controlling location 1.X, X represents the controlling point within the controlling member).</p> <p>- The original RC Tee Beam structure, widened 3 steel girder section, and the additional 7 steel girder section were modeled in BrR as superstructures A, B, & C, respectively.</p> <p>- In concurrence with the previous comment, members were input into this form as (G# - Z), where Z is the superstructure letter type, and # is the member within that structure as in BrR.</p> <p>- Standard K-Factors from testing, as reported in SCDOT Technical Note 13, have been applied directly to the load rating of the respective RC Tee-Beams.</p>			
		<p>DocuSigned by:</p> <p>83E4535815694E9...</p>	

The ADTT value listed below is to be used to establish Legal and Permit γ_{LL} factors.							
SECTION 5A - LEGAL & PERMIT RATINGS - AASHTO Legal Trucks							
(30) ADT Year 2017	(29) ADT 124800	(109) Truck % ADT 12	ADTT (ADT x Truck % ADT) 14976				
Rating Vehicle	Rating Level	Weight (Tons)	Controlling Member	Controlling Location	Controlling Limit State	Rating Factor	Rating (Tons)
Modified AASHTO SC - Type 3	Legal	25	G10-A	1.5	STRENGTH-I Concrete Flexure	1.981	49
Modified AASHTO SC - Type 3S2	Legal	36.6	G10-A	1.4	STRENGTH-I Concrete Flexure	2.107	77
AASHTO - Type 3-3	Legal	40	G10-A	1.5	STRENGTH-I Concrete Flexure	2.252	90
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	G10-A	1.5	STRENGTH-II Concrete Flexure	2.154	53
Modified AASHTO SC - Type 3S2	Permit	36.6	G2-A	1.8	STRENGTH-II Concrete Shear	2.173	79
AASHTO - Type 3-3	Permit	40	G10-A	1.5	STRENGTH-II Concrete Flexure	2.362	94
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	G10-A	1.5	STRENGTH-I Concrete Flexure	1.407	45
SC-SHV1B	Legal	35	G10-A	1.5	STRENGTH-I Concrete Flexure	1.335	46
SC-SHV2A	Legal	33	G10-A	1.5	STRENGTH-I Concrete Flexure	1.418	46
SC-SHV2B	Legal	40	G10-A	1.5	STRENGTH-I Concrete Flexure	1.218	48
SC-SHV3A	Legal	42.5	G1-B	2.5	SERVICE-II Steel Flexure Stress	1.772	75
SC-SHV3B	Legal	45	G1-B	2.5	SERVICE-II Steel Flexure Stress	1.675	75

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	G10-A	1.5	STRENGTH-I Concrete Flexure	3.010	52
SC-SU2	Legal	20	G10-A	1.5	STRENGTH-I Concrete Flexure	2.529	50
SU4	Legal	27	G10-A	1.5	STRENGTH-I Concrete Flexure	1.761	47
SU5	Legal	31	G10-A	1.5	STRENGTH-I Concrete Flexure	1.618	50
SU6	Legal	34.75	G10-A	1.5	STRENGTH-I Concrete Flexure	1.453	50
SU7	Legal	38.75	G10-A	1.5	STRENGTH-I Concrete Flexure	1.341	51

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	G1-B	2.5	SERVICE-II Steel Flexure Stress	1.775	51
EV3	Legal	43	G1-B	2.5	SERVICE-II Steel Flexure Stress	1.163	50

SECTION 6 - PERMIT RATINGS - Specialized Hauling Vehicles (SHV), Standard Permit Vehicles & Typical Cranes

Section 3 - Lifting Devices - Specialized Lifting Vehicles (G17), Concrete Pump Vehicles & Typical Trucks							
Rating Vehicle	Rating Level	Weight (Tons)	Controlling Member	Controlling Location	Controlling Limit State	Rating Factor	Rating (Tons)
SC-SHV1A	Permit	32.5	G10-A	1.5	STRENGTH-II Concrete Flexure	1.589	51
SC-SHV1B	Permit	35	G10-A	1.5	STRENGTH-II Concrete Flexure	1.507	52
SC-SHV2A	Permit	33	G10-A	1.5	STRENGTH-II Concrete Flexure	1.601	52
SC-SHV2B	Permit	40	G10-A	1.5	STRENGTH-II Concrete Flexure	1.375	55
SC-SHV3A	Permit	42.5	G10-A	1.4	STRENGTH-II Concrete Flexure	1.930	82
SC-SHV3B	Permit	45	G10-A	1.5	STRENGTH-II Concrete Flexure	1.825	82
SC Representative School Bus	Permit	17.525	G10-A	1.5	STRENGTH-II Concrete Flexure	3.156	55
SC-SU2	Permit	20	G10-A	1.5	STRENGTH-II Concrete Flexure	2.750	55
SU4	Permit	27	G10-A	1.5	STRENGTH-II Concrete Flexure	1.988	53
SU5	Permit	31	G10-A	1.5	STRENGTH-II Concrete Flexure	1.760	54
SU6	Permit	34.75	G10-A	1.5	STRENGTH-II Concrete Flexure	1.580	54
SU7	Permit	38.75	G10-A	1.5	STRENGTH-II Concrete Flexure	1.458	56
SC - 100k	Permit	50	G10-A	1.5	STRENGTH-II Concrete Flexure	1.761	88
SC - 120k	Permit	60	G2-A	1.8	STRENGTH-II Concrete Shear	1.410	84
SC - 130k	Permit	65	G2-A	1.8	STRENGTH-II Concrete Shear	1.399	90
SC Crane #544726	Permit	80	G10-A	1.5	STRENGTH-II Concrete Flexure	1.241	99
SC Crane #527568	Permit	88.85	G10-A	1.5	STRENGTH-II Concrete Flexure	1.124	99