



# LRFR BRIDGE LOAD RATING SUMMARY

SECTION 1 - GENERAL BRIDGE DATA					
(8) Asset ID 08030	Route Type Interstate	(27) Year Built 1986	(90) Date of Inspection 12/2019	(411) Date Rated 7/15/2020	
(9) Bridge Location 3 MI NW OF COLUMBIA		(7) Facility Carried I-26 WB	(6) Feature Intersected/Route Crossing I-126		
(49) Length 423 ft.	(11) Milepost 173.745	(2) District 1	(3) County RICHLAND	(22) Owner SCDOT	(418) Conditions During Rating (NBI Item 58, NBI Item 59, NBI Item 60) 6,7,7
(43, 44, 45, & 46) Bridge Description Continuous 4 Span SCS 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 7 Good	(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	G6	2.0	STRENGTH-I Steel Flexure Stress	0.663
HL-93 Truck Train + Lane (90%)	Inventory	G6	2.0	STRENGTH-I Steel Flexure Stress	0.693
HL-93 Tandem + Lane	Inventory	G6	2.0	STRENGTH-I Steel Flexure Stress	0.820
HL-93 Truck + Lane	Operating	G6	2.0	STRENGTH-I Steel Flexure Stress	0.861
HL-93 Truck Train + Lane (90%)	Operating	G6	2.0	STRENGTH-I Steel Flexure Stress	0.898
HL-93 Tandem + Lane	Operating	G6	2.0	STRENGTH-I Steel Flexure Stress	1.063

This LRFR Load Rating is based on:  Design Plans  Design Plans & Approved Shop Drawings  Other (Please explain in Remarks)  
 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
EV3	No	1.107

SECTION 4 - REMARKS & SIGN/SEAL			
Load Rating Engineer		Quality Control Engineer	
Name: Nour Alkhalouf	Name: T.Brian Query	<input checked="" type="checkbox"/> Structure is part of QA sample set. Quality Assurance Engineer	
Company/Title: STV/Engineering Specialist	Company/Title: STV/Project Manager	Name: Gerald H. Jones	
Date: 2/18/2020	Date: 7/8/2020	Company/Title: Michael Baker International/Bridge Engineer	
Remarks:			
<p>- The following documents were available to study for the load rating analysis:</p> <ul style="list-style-type: none"> <li>- As-Built Plans (File No. 3240.378.1) Dated 02/15/84.</li> <li>- SCDOT Bridge Inspection Form dated 12/2019.</li> </ul> <p>- Assumed 0" sacrificial wearing surface for the bridge, per SCDOT LRGD 11.2.1.1 (6).</p> <p>- ADTT data derived for unidirectional bridge (Directional PCT = 100% and Truck ADT = 12%).</p> <p>- Based on available SCDOT Bridge Inspection Form dated 12/2019, there is no measurable deterioration to warrant a deteriorated structure model in BrR.</p> <p>-An additional 10% was added for member self-load in continuous spans 1-4 to account for materials such as welds, stiffeners, and splices as per SCDOT LR TN01.</p> <p>- An allowance of 16 psf was included in the analysis to account for Stay-in-Place forms, as per SCDOT Bridge Design Manual (BDM) Section 13.2.2.</p>			

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	(29) ADT	(109) Truck % ADT	ADTT (ADT x Truck % ADT)				
2017	124800	12	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	G6	2.0	STRENGTH-I Steel Flexure Stress	1.710	42
Modified AASHTO SC - Type 3S2	Legal	36.6	G6	2.0	STRENGTH-I Steel Flexure Stress	1.259	46
AASHTO - Type 3-3	Legal	40	G6	2.0	STRENGTH-I Steel Flexure Stress	1.237	49
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	G6	2.0	STRENGTH-II Steel Flexure Stress	1.836	45
Modified AASHTO SC - Type 3S2	Permit	36.6	G6	2.0	STRENGTH-II Steel Flexure Stress	1.304	47
AASHTO - Type 3-3	Permit	40	G6	2.0	STRENGTH-II Steel Flexure Stress	1.282	51
Lane Type Loading (Neg. M only)	Permit	40	G6	2.0	STRENGTH-II Steel Flexure Stress	1.302	52
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	G6	2.0	STRENGTH-I Steel Flexure Stress	1.299	42
SC-SHV1B	Legal	35	G6	2.0	STRENGTH-I Steel Flexure Stress	1.208	42
SC-SHV2A	Legal	33	G6	2.0	STRENGTH-I Steel Flexure Stress	1.283	42
SC-SHV2B	Legal	40	G6	2.0	STRENGTH-I Steel Flexure Stress	1.061	42
SC-SHV3A	Legal	42.5	G6	2.0	STRENGTH-I Steel Flexure Stress	1.084	46
SC-SHV3B	Legal	45	G6	2.0	STRENGTH-I Steel Flexure Stress	1.025	46

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	G6	2.0	STRENGTH-I Steel Flexure Stress	2.470	43
SC-SU2	Legal	20	G6	2.0	STRENGTH-I Steel Flexure Stress	2.121	42
SU4	Legal	27	G6	2.0	STRENGTH-I Steel Flexure Stress	1.572	42
SU5	Legal	31	G6	2.0	STRENGTH-I Steel Flexure Stress	1.376	42
SU6	Legal	34.75	G6	2.0	STRENGTH-I Steel Flexure Stress	1.231	42
SU7	Legal	38.75	G6	2.0	STRENGTH-I Steel Flexure Stress	1.111	43

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	G6	2.0	STRENGTH-I Steel Flexure Stress	1.652	47
EV3	Legal	43	G6	2.0	STRENGTH-I Steel Flexure Stress	1.107	47

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	G6	2.0	STRENGTH-II Steel Flexure Stress	1.449	47
SC-SHV1B	Permit	35	G6	2.0	STRENGTH-II Steel Flexure Stress	1.348	47
SC-SHV2A	Permit	33	G6	2.0	STRENGTH-II Steel Flexure Stress	1.431	47
SC-SHV2B	Permit	40	G6	2.0	STRENGTH-II Steel Flexure Stress	1.183	47
SC-SHV3A	Permit	42.5	G6	2.0	STRENGTH-II Steel Flexure Stress	1.164	49
SC-SHV3B	Permit	45	G6	2.0	STRENGTH-II Steel Flexure Stress	1.101	49
SC Representative School Bus	Permit	17.525	G6	2.0	STRENGTH-II Steel Flexure Stress	2.558	44
SC-SU2	Permit	20	G6	2.0	STRENGTH-II Steel Flexure Stress	2.279	45
SU4	Permit	27	G6	2.0	STRENGTH-II Steel Flexure Stress	1.754	47
SU5	Permit	31	G6	2.0	STRENGTH-II Steel Flexure Stress	1.478	45
SU6	Permit	34.75	G6	2.0	STRENGTH-II Steel Flexure Stress	1.323	45
SU7	Permit	38.75	G6	2.0	STRENGTH-II Steel Flexure Stress	1.194	46
SC - 100k	Permit	50	G6	2.0	STRENGTH-II Steel Flexure Stress	1.016	50
SC - 120k	Permit	60	G6	2.0	STRENGTH-II Steel Flexure Stress	0.835	50
SC - 130k	Permit	65	G6	2.0	STRENGTH-II Steel Flexure Stress	0.783	50
SC Crane #544726	Permit	80	G6	2.0	STRENGTH-II Steel Flexure Stress	0.675	54
SC Crane #527568	Permit	88.85	G6	2.0	STRENGTH-II Steel Flexure Stress	0.619	54

Remarks:
- 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.).
- Integral piers were accounted for in this analysis.
- Based on SCDOT Bridge Inspection Form dated 12/19, a condition factor of 1.0 was used.
- The rating is controlled by G6 in Span 2.