



ASR/LFR BRIDGE LOAD RATING SUMMARY

Version 1.0

Page 1 of 2

| SECTION 1 - GENERAL BRIDGE DATA | | | | | | |
|---|------------------------|-------------------------------|---------------------------------|-------------------------------|---|---|
| (8) Asset ID 07937 | | Route Type Secondary road | | (27) Year Built 1985 | (90) Date of Inspection 02/2019 | (411) Date Rated 7/15/2020 |
| (9) Bridge Location 4 MI NW OF COLUMBIA | | | (7) Facility Carried S-40-31 | | (6) Feature Intersected/Route Crossing I-26 | |
| (49) Length 638 ft. | (11) Milepost 0.214 | (2) District 1 | (3) County RICHLAND | (22) Owner SCDOT | (418) Conditions During Rating (NBI Item 58, NBI Item 59, NBI Item 60) 6, 6, 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 LFR | 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 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 | G9 | 2.37 | Design Flexure - Steel | 1.473 | 29 |
| H-20 Lane | Lane | 20 | G8 | 2.36 | Design Flexure - Steel | 0.896 | 17 |
| HS-20 | Truck | 36 | G9 | 2.37 | Design Flexure - Steel | 0.897 | 32 |
| HS-20 Lane | Lane | 36 | G8 | 2.36 | Design Flexure - Steel | 0.896 | 32 |
| Alternate Military Loading | Truck | 24 | G9 | 2.37 | Design Flexure - Steel | 1.214 | 29 |
| Modified AASHTO SC - Type 3 | Truck | 25 | G9 | 2.37 | Design Flexure - Steel | 1.251 | 31 |
| Modified AASHTO SC - Type 3S2 | Truck | 36.6 | G8 | 2.36 | Design Flexure - Steel | 0.981 | 35 |
| AASHTO - Type 3-3 | Truck | 40 | G8 | 2.36 | Design Flexure - Steel | 0.969 | 38 |

| 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 | G9 | 2.37 | Design Flexure - Steel | 0.937 | 30 |
| SC-SHV1B | Truck | 35 | G9 | 2.37 | Design Flexure - Steel | 0.876 | 30 |
| SC-SHV2A | Truck | 33 | G9 | 2.37 | Design Flexure - Steel | 0.928 | 30 |
| SC-SHV2B | Truck | 40 | G9 | 2.37 | Design Flexure - Steel | 0.776 | 31 |
| SC-SHV3A | Truck | 42.5 | G9 | 2.37 | Design Flexure - Steel | 0.836 | 35 |
| SC-SHV3B | Truck | 45 | G9 | 2.37 | Design Flexure - Steel | 0.790 | 35 |
| SC Representative School Bus | Truck | 17.525 | G9 | 2.37 | Design Flexure - Steel | 1.797 | 31 |
| SC-SU2 | Truck | 20 | G9 | 2.37 | Design Flexure - Steel | 1.557 | 31 |
| SU4 | Truck | 27 | G9 | 2.37 | Design Flexure - Steel | 1.141 | 30 |
| SU5 | Truck | 31 | G9 | 2.37 | Design Flexure - Steel | 1.011 | 31 |
| SU6 | Truck | 34.75 | G9 | 2.37 | Design Flexure - Steel | 0.910 | 31 |
| SU7 | Truck | 38.75 | G9 | 2.37 | Design Flexure - Steel | 0.827 | 32 |

| 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 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 | | | 1.211 | |

| SECTION 4 - REMARKS & SIGN/SEAL | | | | | |
|--|---------------------|--------------------------|-----------------------|---|---|
| Load Rating Engineer | | Quality Control Engineer | | <input checked="" type="checkbox"/> Structure is part of QA sample set. Quality Assurance Engineer | |
| Name: | Katherine Wisdom | Name: | William Johnson | Name: | Gerald H. Jones, P.E. |
| Company/Title: | HDR/Bridge Engineer | Company/Title: | HDR / Bridge Engineer | Company/Title: | Michael Baker International/Bridge Engineer |
| Date: | 6/24/2020 | Date: | 7/9/2020 | Date: | 7/28/2020 |
| Remarks: 1. As-let plans 3240.378.6 were used for the rating. 2. Traffic data was input into BrR using Directional % = 55% and Truck % = 3%. 3. 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.). 4. A load of 0.016 ksf was applied to account for the weight of SIP forms and the extra concrete in bays 1-4 and 6-9.. 5. Appurtenance dead loads were distributed to the 3 adjacent girders, except for the median. The median was distributed to the 4 adjacent girders. 6. Overhead sign dimensions not shown in plans. Dimensions based on Site Assessment dated 09/25/2019. 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. 7. The average overhang was used since the variation in this width is not significant. 8. Sacrificial wearing surface = 0" per LRGD section 11.2.1.1. 9. An additional 10% of self-load was applied to all steel girders to account for splice plates and transverse intermediate stiffeners as well as welds, bolts, etc. | | | | | |



ASR/LFR BRIDGE LOAD RATING SUMMARY

Version 1.0

Page 2 of 2

| SECTION 1 (PAGE 2) - GENERAL BRIDGE DATA | | | | | | |
|---|------------------------|-------------------------------|---------------------------------|-------------------------------|---|---|
| (8) Asset ID 07937 | | Route Type Secondary road | | (27) Year Built 1985 | (90) Date of Inspection 02/2019 | (411) Date Rated 7/15/2020 |
| (9) Bridge Location 4 MI NW OF COLUMBIA | | | (7) Facility Carried S-40-31 | | (6) Feature Intersected/Route Crossing I-26 | |
| (49) Length 638 ft. | (11) Milepost 0.214 | (2) District 1 | (3) County RICHLAND | (22) Owner SCDOT | (418) Conditions During Rating (NBI Item 58, NBI Item 59, NBI Item 60) 6, 6, 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 LFR | 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 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 | G9 | 2.37 | Design Flexure - Steel | 2.460 | 49 |
| H-20 Lane | Lane | 20 | G8 | 2.36 | Design Flexure - Steel | 1.496 | 29 |
| HS-20 | Truck | 36 | G9 | 2.37 | Design Flexure - Steel | 1.497 | 53 |
| HS-20 Lane | Lane | 36 | G8 | 2.36 | Design Flexure - Steel | 1.496 | 53 |
| Alternate Military Loading | Truck | 24 | G9 | 2.37 | Design Flexure - Steel | 2.028 | 48 |
| Modified AASHTO SC - Type 3 | Truck | 25 | G9 | 2.37 | Design Flexure - Steel | 2.090 | 52 |
| Modified AASHTO SC - Type 3S2 | Truck | 36.6 | G8 | 2.36 | Design Flexure - Steel | 1.637 | 59 |
| AASHTO - Type 3-3 | Truck | 40 | G8 | 2.36 | Design Flexure - Steel | 1.618 | 64 |

| 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 | G9 | 2.37 | Design Flexure - Steel | 1.565 | 50 |
| SC-SHV1B | Truck | 35 | G9 | 2.37 | Design Flexure - Steel | 1.463 | 51 |
| SC-SHV2A | Truck | 33 | G9 | 2.37 | Design Flexure - Steel | 1.550 | 51 |
| SC-SHV2B | Truck | 40 | G9 | 2.37 | Design Flexure - Steel | 1.295 | 51 |
| SC-SHV3A | Truck | 42.5 | G9 | 2.37 | Design Flexure - Steel | 1.396 | 59 |
| SC-SHV3B | Truck | 45 | G9 | 2.37 | Design Flexure - Steel | 1.320 | 59 |

| 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 | G9 | 2.37 | Design Flexure - Steel | 3.000 | 52 |
| SC-SU2 | Truck | 20 | G9 | 2.37 | Design Flexure - Steel | 2.600 | 52 |
| SU4 | Truck | 27 | G9 | 2.37 | Design Flexure - Steel | 1.906 | 51 |
| SU5 | Truck | 31 | G9 | 2.37 | Design Flexure - Steel | 1.689 | 52 |
| SU6 | Truck | 34.75 | G9 | 2.37 | Design Flexure - Steel | 1.520 | 52 |
| SU7 | Truck | 38.75 | G9 | 2.37 | Design Flexure - Steel | 1.381 | 53 |

| 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 | G9 | 2.37 | Design Flexure - Steel | 1.216 | 60 |
| SC - 120k | Truck | 60 | G8 | 2.36 | Design Flexure - Steel | 1.017 | 61 |
| SC - 130k | Truck | 65 | G8 | 2.36 | Design Flexure - Steel | 0.949 | 61 |
| SC Crane #544726 | Truck | 80 | G9 | 2.37 | Design Flexure - Steel | 0.793 | 63 |
| SC Crane #527568 | Truck | 88.85 | G8 | 2.36 | Design Flexure - Steel | 0.720 | 63 |

| 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 | G9 | 2.37 | Design Flexure - Steel | 1.807 | 51 |
| EV3 | Truck | 43 | G9 | 2.37 | Design Flexure - Steel | 1.211 | 52 |

Remarks:

- Utilities on left girder Span 3 and right girder Spans 1, 3-5 were estimated to be 1" diameter std. wt. steel pipe. Utility on left girder Span 4 was estimated to be 2" diameter std. wt. steel pipe.
- A572 flange plates 1.5" and smaller assumed to be Grade 45. A572 flange plates larger than 1.5" assumed to be Grade 42.
- Based on the 09/25/2019 site assessment, there is no measurable deterioration to warrant a deteriorated structure model in BrR.