

BRIDGE INSPECTION REPORT

Status: Released

Printed On: 11/12/2021

Agency: SNOQUALMIE

CD Guid: 739ff9da-db08-41d8-ac70-79f8e1c68981

Release Date: 9/28/2021

Program Mgr: Sonia L. Lowry

Br. No. 1726A

SID 08435700

Br. Name MEADOWBROOK BR

Carrying MEADOWBROOK WAY SE

Route On 87430

Mile Post 1.28

Intersecting SNOQUALMIE RIVER

Route Under

Mile Post

DocuSigned by:

Margaret Germain

Inspector's Signature MAG

Cert # G1103

Cert Exp Date 4/15/2026

DocuSigned by:

Dustin Chan

Co-Inspector's Signature JJC

Inspections Performed:			
Freq	Hrs	Date	Rep Type
24	2.0	6/24/2021	Routine
24	6.0	6/24/2021	Fract Crit
			UW
			Special
			Interim
			UWI
			Damage
			PRM Safety
			SEC Safety
			Condition
			Short Span
			In Depth
			Geometric

4	Structural Eval (1657)	73	Operating Tons (1552)	0	No Utilities (2675)
2	Deck Geometry (1658)		Op RF (1553)	1	Bridge Rails (1684)
9	Underclearance (1659)	44	Inventory Tons (1555)	1	Transition (1685)
6	Alignment (1661)		Inv RF (1556)	1	Guardrails (1686)
7	Deck Overall (1663)	5	Operating Level (1660)	0	Terminals (1687)
4	Superstructure (1671)	A	Open/Closed (1293)	0.00	Asphalt Depth (2610)
6	Substructure (1676)	8	Waterway (1662)	8.00	Design Curb Ht (2611)
9	Culvert (1678)	5	Scour (1680)	33.0	Bridge Rail Ht (2612)
8	Chan/Protection (1677)		Soundings Flag (2693)	1921	Year Built (1332)
N	Pier/Abut/Prot (1679)	Y	Revise Rating (2688)	2005	Year Rebuilt (1336)
9	Drain Cond (7664)		Photos Flag (2691)	Y	Subj to NBIS (2614)
0	Drain Status (7665)		Measure Clrnc (2694)		
N	Deck Scaling (7666)	8	Sdwk Cond (7673)		Alpha Span Type: STrus
0	Scaling Pct (7667)	7	6 Paint Cond (7674)		Sufficiency Rating: 54.17
8	Deck Rutting (7669)	8	Approach Cond (7681)		Status: SD
8	Exposed Rebar (7670)	7	Retaining Wall (7682)		Routine Risk Category: High Risk
8	7 Curb Cond (7672)	9	Pier Prot (7683)		Underwater Risk Category: No Risk Category

BMS Elements

Element	Element Description	Total	Units	State 1	State 2	State 3	State 4
26	Concrete Deck w/Coated Bars	4904	SF	4904	0	0	0
29	Steel Deck - Concrete Filled Grid	5326	SF	5326	0	0	0
35	Concrete Deck Soffit	5326	SF	5326	0	0	0
113	Steel Stringer	880	LF	880	0	0	0
126	Steel Thru Truss	440	LF	280	0	130	30
133	Truss Gusset Plates	44	EA	28	0	10	6
152	Steel Floor Beam	240	LF	240	0	0	0
207	Concrete Pile/Column w/Steel Jacket	24	EA	24	0	0	0
212	Concrete Submerged Pier Wall	42	LF	42	0	0	0
215	Concrete Abutment	80	LF	80	0	0	0
234	Concrete Pier Cap/Crossbeam	240	LF	240	0	0	0
264	Timber Sidewalk & Supports	880	SF	880	0	0	0
311	Moveable Bearing (roller, sliding, etc)	16	EA	16	0	0	0
316	Isolation Bearing	4	EA	4	0	0	0

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Element	Element Description	Total	Units	State 1	State 2	State 3	State 4
321	Concrete Roadway Approach Slab	1910	SF	1910	0	0	0
330	Metal Bridge Railing	889	LF	889	0	0	0
340	Metal Pedestrian Railing	321	LF	321	0	0	0
361	Scour	2	EA	2	0	0	0
404	Compression Seal / Concrete Header	80	LF	80	0	0	0
705	Bridge Luminaire Pole and Base	2	EA	2	0	0	0
802	Thin Polymer Overlay	10230	SF	10230	0	0	0
903	Inorganic Zinc/Urethane Paint System	20000	SF	18500	0	1000	500

Notes

- 0 ORIENTATION:
Bridge is oriented south to north. Abutment 1 is south. Abutment 10 is north.
Truss is Span 4 on Piers 4 and Piers 5.
Snoqualmie River flows east to west.
- 1 FRACTURE CRITICAL NOTE:
SEE FC SUMMARY SHEET FOR THE DETAILED FRACTURE CRITICAL CONDITION.
NOTES 126 STEEL THROUGH TRUSS AND 133 GUSSET PLATES CONTAIN GENERAL REMARKS.
- 3 GENERAL NOTE:
Single lane bridge with traffic signal traffic control.
- UBIT:
A UB-60 is required to inspect under the truss and is able to deploy through the center lateral bracing.
Deploy from west side of truss, sidewalk on east side interferes with UBIT deployment.
- 2005 Rehab included:
New concrete approaches, ground stone column densification, installation of isolation bearings, truss repair, lead paint removal and painting with moisture cure paint, exodermic deck with light weight concrete, sidewalk replacement with Trex hard deck planks, and installation of 4 post tensioning rods in each pier under the truss (1-3/4" dia, 42" deep).
- 11 LOAD RATING:
Controlling Point: L5-U6 east truss (Bracing).
- 26 CONCRETE DECK WITH COATED BARS:
Approach spans only.
Longitudinal cracks with some areas of pattern cracks; aggregate voids scattered throughout wheel lines. Very light tinting.
Stop bars at traffic lights are worn away.
- 29 STEEL DECK CONCRETE FILLED METAL GRID:
In truss span only.
SURFACE: Sporadic aggregate voids in wheel lines.
SOFFIT: Steel grid bottom: No defects noted.
- 35 CONCRETE DECK SOFFIT:
Approach spans only.
Spans 2, 6, 7, 8, and 9 have multiple full length longitudinal hairline leaching cracks with stalactites.
- 113 STEEL STRINGER:
Four lines of steel stringers in Span 4.
No defects noted.

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Notes (Continued)

126 STEEL THROUGH TRUSS:

Located at Span 4.

SEE FC SUMMARY SHEET FOR DETAILED GUSSET PLATE CONDITIONS. THE FOLLOWING ARE GENERAL REMARKS.
L0 - L11 and U1 - U10.

LOWER CHORD:

The lower chord between L4 and L7 are comprised of four angles that form an I-beam oriented on its weak axis. Holes have been drilled in angles to allow water to drain, some have become clogged with dirt and debris.

Outside chords have spaces between the angles for drainage, with spacer plates connecting them at regular intervals.

Many bottom chord rivet heads have section loss, most common near panel point connections.

Heavy pack rust is forming between the angles at drain holes locations and connections. The pack rust is more prevalent on the outside face of the east truss.

Heavy section loss on the corners and underside of the back to back angles with L6-L7 exhibiting the worst loss.

Mild to moderate pitting was noted throughout the bottom chord.

The middle of the underside of the splice plates at gusset plate locations typically exhibit moderate section loss.

The east bottom chord exhibits impact deformations in several areas.

UPPER CHORD:

Upper chord connections interior and exterior were inspected with the UBIT.

Moss growth at north portal at WU9-U10, U10, U11.

VERTICAL AND DIAGONALS:

Some of the diagonal members are buckled. See FC summary.

STRUTS AND SWAY BRACING:

Many of the upper middle transverse bracing are sagging.

DIAGONAL LATERAL BRACING:

South end cross bracing are very tight while the north end bracing are loose and can be shaken.

133 GUSSET PLATES:

SEE FC SUMMARY SHEET FOR DETAILED GUSSET PLATE CONDITIONS. THE FOLLOWING ARE GENERAL REMARKS.

Lower chord gusset plates L3-L8 typically exhibit minor to moderate (1/16"-1/8") painted over pitting on the exterior faces and minor to severe (1/8" - holed through) pitting on the interior faces above the clip angles.

The most severe condition exists at L3 on the west truss; 100% section loss, 9" long x 1/2" high in the west face of the interior gusset plate between the vertical clip angles and the lower chord angles.

152 STEEL FLOOR BEAM:

Twelve I-24x80 floor beams numbered FB0-FB11.

Floor beams have abandoned welds from previous stringer connections.

FB3 rust forming on bottom flange.

207 CONCRETE COLUMN WITH STEEL JACKET:

Quantities do not include the 8 columns (not visible for inspection) under Abutments 1 and 10.

Column 2B is out of plumb.

212 CONCRETE SUBMERGED PIER WALL ON TIMBER PILES:

Piers 4 and 5.

Both piers - moderate abrasion below high water mark, leaching at horizontal construction joints, moss and algae growth on pedestals.

P4 - wall is outside of waterline at time of inspection. Footing is not exposed. Seismic retrofit cap has vertical crack full height at bearing 4-2C. Tree growing out of north face.

P5 - spall with rebar at column/wall interface at north side near top. Crack at bottom of column north side.

South face in channel at time of inspection. Footing is exposed full length, see note 361 for details.

215 CONCRETE ABUTMENT:

Abutment 1 - Embankment sloughing under cap at both ends. West void is 6"H x 7'L x 4'D, east void is 6"H x 8'L x 46"D.

Two piles visible under abutment cap. Vertical hairline cracks scattered throughout abutment cap, small spall near midspan.

Abutment 10 - Embankment sloughing at west end, void measuring 20"W x 3"H x 24"D.

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234 CONCRETE PILE CAP:

P3 Cap - leaching hairline crack on bottom face of cap, near centerline.

P7 Cap - hairline vertical crack near Column 7C north face.

P8 Cap - hairline vertical crack at Columns 8B/C both faces. Delam underside of cap near Column 8A.

P9 Cap - hairline vertical crack at column 9B, south face.

264 TIMBER SIDEWALK AND SUPPORTS:

Sidewalk on east side only with varying width, is narrowest at 40".

TREX sidewalk on three lines of timber stringers.

Outside timber stringer is weather checked.

311 ELASTOMERIC BEARINGS:

Transition bearings located at Piers 4 and 5.

No defects noted.

316 ISOLATION BEARINGS:

Truss bearings on Piers 4 and 5.

4A - 1/8" deep pitting on inside face of bearing assembly.

4B - 1/8" deep pitting on the west face of the interior clip angles.

5A - Pack rust between the interior gusset plate and the bearing clip angle.

5B - Pack rust present inside the bearing assembly and bearing clip angle.

321 CONCRETE APPROACH SLAB:

Longitudinal hairline cracks in approach slabs.

330 METAL BRIDGE RAILING:

Scrapes at several locations both rails.

340 METAL PEDESTRIAN RAIL:

Rail is deflected inwards for 20" length near midspan.

Metal chain link fencing and support rails are sagging between posts at several locations.

361 SCOUR - FIELD:

Piers 4 and 5 are at edge of channel. Footings are founded on timber piles.

Pier 4 - Timber bolted beam in channel, possible top of formwork for footing. Footing is not exposed.

Pier 5 - Footing exposed upstream (east) 1.2', at mid-point 2.2' at downstream corner (west) 1.5', length of exposed area is 30'.

Relic piles around footing at downstream side; some protrude above water surface approximately 30".

Soundings taken at upstream side from sidewalk top of rail. Distance from top of rail to deck is 4.5 feet. Measurements taken at each panel point starting at south Pier 4.

Year	PP0	PP1- E/W	PP2	PP3	PP4	PP5	PP6	PP7	PP8	PP9	PP10 E/W	PP11
2021	30.0	38.6	48.3	47.0	46.2	46.3	44.4	44.9	44.2	44.5	42.5	36.3
2019	28.2	38.2	47.8	48.0	47.6	46.2	46.2	45.5	44.0	43.6	41.3	29.5
2015	31.0'	37.5	48.2	48.4	48.4	47.2	47.0	46.5	45.2	45.5	42.1	38.0

404 COMPRESSION SEALS:

North roadway/approach slab seal and approach slab/deck seal has settled 1/2" from top of header.

All approach seals are full of sandy debris.

Minor D-spalls beginning to developing along edges of north seals.

705 TRAFFIC SIGNAL POLE AND BASE:

One traffic control light per approach, inspected with UBIT.

No defects noted.

802 DECK OVERLAY:

Epoxy overlay added to north approach deck in August 2009. Overlay is wearing in wheel lines.

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Notes (Continued)

- 903 PAINT:
Peeling paint common on rivet heads. Light rust staining bottom side of upper sway braces at connections. Active pack rust between gusset plates and upper chord flange.
Encapsulation was not achieved in lower chord, active pack rust between angles.
EU3 - EU2 peeling and blistered paint bottom side of top flange near EU3.
Many areas on the interior faces of the gusset plates below the bottom chord have active rusting with areas of paint failure.
Exterior members, typically west side, paint is dulling with some areas of chalky oxidation.
- 1661 ALIGNMENT:
Sharp horizontal curve at north end.
- 1671 SUPERSTRUCTURE:
Heavy section loss on the inside faces of lower chord gusset plates above clip angles. One fracture critical gusset plate is rusted through. See notes in element 133.
- 1677 CHANNEL:
River banks are well vegetated with trees and native shrubs, channel is well defined silty banks, scattered riprap with some woody debris. Water velocity is seasonally slow to moderate, channel bottom is relatively flat. Winter months high flow events with flooding can occur.
- 1680 SCOUR - OFFICE:
Per 1921 Plan for Piers 4 and 5.
Top of pier cap to top of footing measures 39'-6".
Footing measures 6'-0" deep, founded on 40 timber piles at each pier.
See Repair 10016 for Scour.
- 1687 TERMINALS:
Terminal ends are covered with yellow visibility wrap.
- 2688 REVISE LOAD RATING:
New load rating needed based on updated lower chord and gusset plate conditions.
Load Rating requires updated NRL rating by December 31, 2022 per FHWA Memorandum.
- 7672 CURBS:
Severe delaminations of three patched areas in west curb at bridge light locations (3W, 6W, 9W).
Delamination also occurring at north approach west side, revealing electrical box.

Repairs

Repair No	Pr	R	Repair Descriptions	Noted	Maint	Verified
10001	M	B	MONITOR UPDATED 2021: Pack rust build up between lower chord angles, gusset plates, and floor beam seats.	6/27/2011		
10010	2	B	RAIL: Paint is wearing and has been scraped off in areas on rail. 1. Repaint section of rail that has scraping with exposed steel to prevent corrosion.	9/3/2009		
10011	1	B	LOW CHORD MAINTENANCE: Low chord members are rusting. Rivet heads are experiencing section loss and pack rust has formed between angle connections. 1. Seal sides of built-up members of the upstream lower cord to prevent further rusting. 2. Replace rusted rivets. 3. Clean out drain holes on the low chords.	9/3/2009		
10012	2	B	STEEL TRUSS: Truss has collected dust and debris and is accumulating moss growth. 1. Pressure wash bridge to preserve the paint.	6/25/2019		
10013	2	B	STRIPING: Stop bars at each approach have faded away. 1. Restripe stop bars at traffic signal on both approaches	6/25/2019		

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Repair No	Pr	R	Repair Descriptions	Noted	Maint	Verified
10014	2	B	CURBS: Severe delaminations of three patched areas in west curb at bridge light locations. Delamination also occurring at north approach west side, revealing electrical box. 1. Repair failed grout around electrical boxes.	6/25/2019		
10015	2	B	TREE REMOVAL: Sapling growing out of Pier 4 north face. 1. Remove sapling.	6/24/2021		
10016	1	S	SCOUR: Pier 5 footing is exposed is exposed full length, up to 2' at mid point. Implement scour protection such as riprap or other design to protect the pier from further scour.	6/24/2021		

Inspections Performed and Resources Required									
Report Type	Date	Freq	Hrs	Insp	CertNo	Coinsp	Note		
Routine	6/24/2021	24	2.0	MAG	G1103	JJC			
Fracture Critical	6/24/2021	24	6.0	MAG	G1103	BLR			
Equipment	6/24/2021	24	6.0	MAG	G1103	BLR	Schedule full bridge closure for UBIT inspection. Schedule during summer break for local schools.		
Resources	Hours	Min	Pref	Max	Freq	Date	Need Date	Override	Notes
UBIT	6.00	62	60	ANY		6/24/2021			SDOT UB 62 with bridge closure.
Scheduling Restrictions									Schedule inspection during summer months when school is out of session.