



SKAGIT COUNTY DEPARTMENT OF PUBLIC WORKS

2022 ANNUAL BRIDGE REPORT



“Old Highway 99 at Thomas Creek Bridge”

Part of the original state highway, constructed in 1934, scheduled for replacement.

SUBMITTED MARCH, 2023

SKAGIT COUNTY DEPARTMENT OF PUBLIC WORKS

2022 BRIDGE REPORT

Submitted: March 2023

This bridge report is prepared annually by the Transportation Programs Section of Skagit County Public Works' Engineering Division to fulfill requirements of the Washington Administrative Code (WAC) 136-20-060. The WAC requires the County Engineer's report of bridge inspections as follows:

"Each county engineer shall furnish the county legislative authority with a written resume of the findings of the bridge inspection effort. This resume shall be made available to said authority and shall be consulted during the preparation of the proposed six-year transportation program revision. The resume shall include the county engineer's recommendations as to replacement, repair, or load restriction for each deficient bridge. The resolution of adoption of the six-year transportation program shall include assurances to the effect that the county engineer's report with respect to deficient bridges was available to said authority during the preparation of the program."

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ACRONYMS

The following are a list of common acronyms widely used in the Bridge Inspection field:

ADT	Average Daily Traffic
UAS	Unmanned Aircraft System
BIRM	Bridge Inspection Reference Manual
BAC	Bridge Advisory Committee
CFR	Code of Federal Regulations
EV#	Emergency Vehicle (# refers to number of axles)
FHWA	Federal Highway Administration
FLBP	Federal Local Bridge Program
NBIS	National Bridge Inventory System
NSTM	Nonredundant Steel Tension Members
PS/PT	Pre-stressed / Post-tensioned
RCW	Revised Code of Washington
SHV	Specialized Haul Vehicle
SU#	Single Unit (# refers to number of axles)
SD	Structurally Deficient
SID	Structure Identification Number
SR	Sufficiency Rating
UBIT	Under-Bridge Inspection Truck
WAC	Washington Administrative Code
WSBIM	Washington State Bridge Inspection Manual
WSBIS	Washington State Bridge Inventory System
WSDOT	Washington State Department of Transportation
TIP	Transportation Improvement Program

EXECUTIVE SUMMARY

The 2022 Annual Bridge Report complies with WAC 136-20-060, which requires that each County Engineer furnish a written resume of the findings of the previous year's inspection effort. This report summarizes Skagit County's bridge inspection program, focusing on the Engineer's recommendations as to replacement, rehabilitation, repair, and load restrictions on the County's deficient bridges. This makes the Annual Bridge Report an important resource in the preparation of the Six Year Transportation Improvement Program and other short and long-term planning tools. Bridge replacement, rehabilitation, and repair projects are prioritized by a rating system that is based on a combination of factors including, but not limited to, structural deficiency, functional obsolescence, sufficiency rating, traffic data, safety factors, accident history, and funding availability.

To qualify as a Structurally Deficient (SD) bridge, an element of the bridge must have a condition rating of 4 (Poor Condition) or less in one of the following elements: deck, superstructure, substructure, culvert and retaining walls, or have an appraisal rating of 2 or less of the structural evaluation or waterway adequacy.

There are four goals the report strives to attain:

1. Provide inspection findings ensuring safe use by the public.
2. Present proactive maintenance recommendations for maximizing the life of County assets.
3. Identify bridges that may need to be replaced or rehabilitated.
4. Satisfy the reporting requirements set forth by other government agencies.



Dalles Bridge near Concrete (Concrete-Sauk Valley Road)

HIGHLIGHTS from this bridge inspection season include:

- ❖ 63 bridge inspections were performed in Skagit County.
 - 54 routine inspections performed on Skagit County bridges.
 - 2 Interim inspections of the temporary shoring on Old Highway 99 at Thomas Creek bridge.
 - 3 routine inspections performed for local agencies: City of Mount Vernon and City of Sedro Woolley.
 - 13 inspections performed by the Washington State Bridge Preservation Office for local agencies (9 UBIT and 4 Underwater).
- ❖ **Anacortes Ferry Dock** received three new concrete girders and was removed from our Structurally Deficient List (Table 1).
- ❖ Completed re-load rating every bridge in our inventory as required by the Federal Highway Administration (FHWA). This resulted in the discovery of needing to load restrict 2 more bridges this year, bringing the total to 14 bridges requiring weight restrictions throughout the County (Table 2).

- ❖ The Public Works Survey Department was successful in procuring a small Unmanned Aircraft System (sUAS), capable of assisting the bridge inspection team with inspections and data collection. The sUAS, named **Genesis I**, will supplement our inspections in many ways from providing a live video feed of areas where access is difficult, to the use of thermal technology for locating delaminations in the concrete.



- ❖ **South Skagit Highway at Mill Creek** was added to the Structurally Deficient List (Table 1) due to its inability to convey Mill Creek and causing frequent overtopping of the bridge deck and roadway approaches (Waterway Adequacy code of 2).

- ❖ The deployment of [Skagit County's interactive Load Restriction map](#) provides roadway users with location and details about our restricted bridges, including weight limits and height/width limits. This is to help users plan their routes ahead of time and reduce on-the-fly decisions. Overweight and oversized loads are still required to obtain a permit for operating on any County road.



- ❖ Construction began on the **Upper Finney Creek Bridge** Seismic Retrofit and Strengthening Project. The proposed work includes a seismic retrofit, making the bridge more resistant to earthquake damage, while also increasing its overall strength and load capacity. Skagit County was awarded \$3,000,000 in Federal Local Bridge Program funds for this project.
- ❖ Design is near completion on the **Bay View-Edison Joe Leary Bridge** deck rehabilitation project with construction slated for this summer. The 68-year-old superstructure with timber substructure is still in good condition so this work will prolong the life of the crossing for many more decades. Skagit County was awarded \$487,400 by the Federal Local Bridge Program.
- ❖ Skagit County was awarded funding by the Federal Local Bridge Program for all three of its grant applications:

- **Skagit River Marblemount Bridge** (right) was awarded \$18.6 Million for Rehabilitation for the replacement of some damaged/deteriorating members as well as upsizing members with the goal of increasing its load carrying capacity to handle legal loads. The money will also go towards cleaning and applying a new protective paint coating. Design is scheduled to begin by end of 2023, construction in 2026.



- **Old Highway 99 at Thomas Creek (Cover)** was awarded \$6 Million to replace the 89-year-old timber structure. The substructure of the bridge is beginning to fail and required the need for temporary shoring to keep it open to legal sized loads. The new structure will also increase conveyance as the current bridge is routinely submerged during flood events. Design is scheduled to begin later this year, construction slated for 2025-2026.

- **The Deck Repair Bundle Project** was awarded \$1.6 Million to repair and resurface the decks of three bridges: **F&S Grade Road at Samish River** (right), **Cascade River Bridge**, and **S. Skagit Highway at Pressentin Creek**. Design is scheduled to begin later this year, construction in 2025.



BRIDGE INVENTORY

Skagit County Road Bridges:

As of December 31, 2022, Skagit County has 112 bridges in the National Bridge Inventory System (NBIS).

- ❖ The current inventory consists of:
 - 5 culverts (2 corrugated metal, 3 concrete)
 - 3 predominately timber bridges
 - 12 predominately steel bridges
 - 92 predominately concrete bridges
- ❖ 11 of the 112 bridges are “High-Cost Inspections” requiring special inspection needs.
- ❖ Skagit County has 5 structurally deficient bridges (See Table 1).

TABLE 1 – Skagit County bridges considered to be Structurally Deficient

BRIDGE NUMBER	BRIDGE NAME	DEFICIENCY	FUNDING STATUS
NEW 40086	S SKAGIT HWY at MILL CREEK	Waterway Adequacy	Eligible for replacement funding, 2023 Call for Proj.
40029	BAY VIEW-EDISON at JOE LEARY	Deck	Repair Funding Awarded – Const. 2023
40013	F&S GRADE SAMISH RIVER	Deck	Repair Funding Awarded – Const. 2025
40113	OLD HWY 99 at THOMAS CK	Deck/Substructure	Replacement Funding Awarded – Const. 2025
40070	SKAGIT RIVER MARBLEMOUNT	Superstructure	Rehabilitation Funding Awarded – Const. 2026

To see a full listing of the Skagit County Bridge Inventory and their statistics, please refer to “Appendix A – Bridge Inventory”.



S Fork Bridge, UBIT inspection

High Cost and NSTM Bridges:

Skagit County currently has 11 structures that require specific access assistance, equipment, and professional services during the inspection process. We refer to these inspections as “high-cost inspections” that typically involve three types of special inspection: (1) **Under-Bridge Inspection Truck (UBIT)** is required for bridges that cannot be given an adequate visual inspection from the ground. (2) Steel bridges with **Nonredundant Steel Tension Members (NSTM)**, which has replaced the term “Fracture Critical”, may require special inspection equipment. (3) Underwater inspections involve divers for bridges with piers that extend below ordinary low-water levels.

Skagit County contracts with the State Bridge Preservation Office (BPO) to perform our high-cost type inspections. In 2022, BPO performed 13 high-cost inspections (nine UBIT and four Underwater) for Skagit County and neighboring municipalities. In 2023, the only high-cost inspection scheduled is 1 Underwater for the South Fork Bridge. For more information on our upcoming inspection schedule, please refer to “Appendix B – Routine & Special Inspection Schedule” for details on all our bridges.

Overweight Loads & Load Restricted Bridges:

The North Fork Bridge is a popular recipient of overweight loads with its location on a major freight route. Due to the bridges’ NSTM status and deficiencies, all overweight load permits are reviewed on a case-by-case basis. County staff (along with contracted consultants) review axle loading, number of axles, and spacing, and how the load is distributed among those axles to determine if the load is safe to cross all bridges located along the route.



Super-load requiring bridge loading analysis.

In 2017, WSDOT introduced new load posting requirements issued by FHWA regarding the load rating and posting of Specialized Hauling Vehicles (SHV) and Emergency Vehicles for bridges contained in the National Bridge Inventory. SHVs, also known as Single Unit Vehicles (SUV), are trucks without trailer with multi-closely spaced axles such as dump trucks, construction vehicles, and hauling trucks introduced during the last decade. There are four SHV trucks, SU4 to SU7 (Single Unit 4 axles to Single Unit 7 axles).



Specialized hauling vehicle (SU7)

FHWA determined that two emergency vehicle (EV) configurations, EV2 and EV3, produce load effects in bridges that envelop the effects resulting from typical emergency vehicles that are covered by the Fixing America’s Surface Transportation Act (FAST Act) (Pub. L. 114-94). Due to all these new vehicle configurations, FHWA mandated that all NBI bridges be load rated again to analyze these vehicle types.

Skagit County has completed re-rating all its’ bridges in the National Bridge Inventory which has revealed the need for load restriction and posting at several County bridges (Table 2). Due to the number of newly load restricted bridges, Public Works, with the assistance of the GIS Department, launched the interactive [Skagit County Bridge Restriction Map](#) (right) which shows the location and all current restrictions of that bridge. This map is intended to inform the trucking industry of possible restrictions and plan accordingly before they embark on their proposed route. Over legal truck configurations are still required to obtain a permit for travel on County roads.

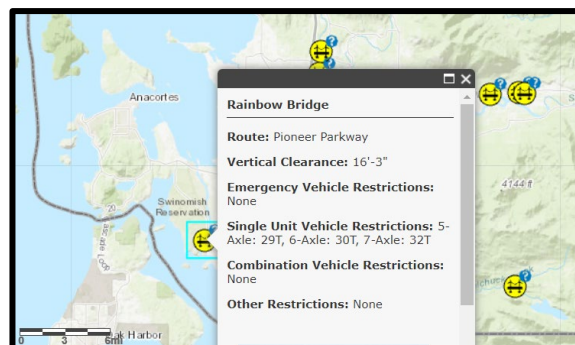


TABLE 2 – Skagit County Load Restricted Bridges

LOAD RESTRICTIONS											
Bridge #	Bridge Name	AASHTO TRUCKS - 1,2,3			SU4 27T	SU5 31T	SU6 34.7T	SU7 38.7T	EV2 28.7T	EV3 43T	POSTED Y/N
		25T	36T	40T							
40001	Lake View Blvd at Nookachamps									36.6	N
40008	South Fork Bridge							27.3	37.0		Y*
40039	Rainbow Bridge				29.4	30.5	32.5	27.3	28.0		Y
40047	Lake Cavanaugh Rd at Pilchuck Cr					32.3	33.3	22.1	31.8		Y
40063	Lyman-Hamilton Hwy at Childs Cr					33.0	34.8		30.5		Y
40070	Skagit River Marblemount	23.8	24.8	24.4	23.5	23.6	24.0	24.0	23.5	23.7	N**
40090	Dalles Bridge		30.6	38.0		29.3	30.1	33.1		35.7	Y
40099	Government Bridge	24.0			22.6	23.8	23.9	24.8	24.1	23.2	Y
40114	Samish River Bridge					29.0	32.0	34.0	26.0	27.0	Y
40115	Old Hwy 99 at Friday Cr Bridge						31.3	32.2	25.0	31.0	Y
40130	Lyman-Hamilton Hwy at Red Cabin Cr									32.7	N
40131	Lyman-Hamilton Hwy at Mannser Cr				25.1	27.0	27.4	28.3	27.6	27.1	Y
40132	Lyman-Hamilton Hwy at Jones Cr				22.1	23.9	24.3	25.5	24.1	24.1	Y
40152	Anacortes Ferry Dock									37.4	N
40153	Guemes Island Ferry Dock									37.4	N
40156	Cedardale Rd at Carpenter Cr						32.3	34.4	25.0	31.4	Y*
40157	Benson Ridge Ln at Carpenter Cr						34.0	35.2		33.1	Y
* Bridge located within 1-mile of Interstate, therefore EV posting required.											
** Bridge load restriction mitigated by change from 2-lane to 1-lane bridge.											

Height Restricted Bridges:

Steel Truss Bridges all have sway bracing across the top which creates a vertical limitation to vehicles traveling over the bridge. Below is a list of bridges that have vertical limitations and their vertical measurement which helps when reviewing the route of an oversized load application. Skagit County crews have also posted the height restriction on two of the bridges that are near or below legal height (See Table 3).



Samish River Bridge - Vertical Clearance Signage

TABLE 3 – Vertical Clearances / Restrictions

Bridge Number	Bridge Name	Vertical Measurement	Posted Clearance
40114	SAMISH RIVER BRIDGE	14' 06"	14' 3"
40152	ANACORTES FERRY DOCK	16' 00"	
40153	GUEMES ISLAND FERRY DOCK	16' 00"	
40090	DALLES BRIDGE	16' 01"	15' 10"
40039	RAINBOW BRIDGE	16' 07"	
40070	SKAGIT RIVER MARBLEMOUNT	17' 09"	
40099	GOVERNMENT BRIDGE	18' 00"	

Local Agency Bridges:

Skagit County Public Works provides inspection services to cities and towns on a reimbursable basis. The County works with the local agencies under agreement conditions set forth in RCW Chapter 39.34, the Interlocal Cooperation Act. The County's services are provided primarily to cities that lack resources and expertise to inspect and maintain their bridge inventory. Currently, the County provides routine inspection services on 17 local municipality bridges.

No. of Local Agency Bridges Served by Skagit County:

- City of Burlington – 2
- Town of Concrete – 1
- City of Mount Vernon – 12
- City of Sedro-Woolley – 2

Short Span Bridges:

Short span bridges are defined as spans that are 20-feet or less in length and over 6-feet for timber structures and over 8-feet for steel and concrete structures. Even though inspection reports and bridge information for short span bridges are not reported to WSDOT or FHWA, Skagit County currently has three short span structures inventoried, like Campbell Lake Outlet pictured to the right, with plans to add more crossings that meet the short span definition. Once inventoried, Skagit County can schedule routine inspections and operate these crossings the same as federally reported bridges in our inventory.



Campbell Lake Outlet receiving new timber cap, 2013



Cascade Trail Bridge over Jones Creek

Parks Department Bridges:

Skagit County Parks and Recreation Department has approached Public Works and requested assistance with a growing inventory of pedestrian bridges (27 total). These have been acquired either through new trail construction or by acquisition of abandoned railroad rights-of-way. Due to staffing issues and workload, Public Works has not been able to provide inspection services at this time. Public Works will continue to work with the Parks and Recreation Department to inventory and inspect as staffing and workload allows.

INSPECTION PROGRAM, FINDINGS & RECOMMENDATIONS

Bridge inspections are performed in accordance with the National Bridge Inspection Standards (NBIS) and with 23 CFR 650.3. All bridges inspected to the NBIS in the United States are issued a structure identification number (SID). The standards mandate that all public agencies with a bridge inventory inspect and report the findings at a minimum of once every 24 months (routine inspection). The inspector uses these standards to document the current condition of each bridge element listed. The deficiencies are coded to the NBIS and show degree of deterioration in various elements. The three primary elements are the deck, superstructure, and substructure. As deterioration accelerates, the coding values will drop. Work orders for repairs may be issued. In the case where the coding factors are extremely low, recommendations are made for replacement or rehabilitation. Bridges with identified deficiencies may be inspected or monitored at more frequent intervals.

The results of our inspection program are forwarded on to the Washington State Department of Transportation (WSDOT) Local Programs Office for review. Once the report has been accepted by WSDOT, it is available for the Federal Highway Administration (FHWA) and others to use. A copy of all final inspection reports are kept on file with Skagit County Public Works and available online at www.SkagitCounty.net

There are other factors that go into determining the overall health of a bridge. Sufficiency Rating (SR) is a score calculated based on a multitude of factors that are reviewed by the inspector. The SR is a number from 0 to 100, with 100 being an entirely sufficient bridge, and 0 being an entirely insufficient or deficient bridge, as defined by FHWA. Items that go into the determination of the SR include: load bearing capacity, average daily traffic, availability and length of detour, the geometry of the bridge, and the scour action of bridges passing over a waterway. As of December 31, 2022, Skagit County has five bridges that are SD (previously mentioned in Table 1, Pg 7).

The bridge inspection program recognizes that with limited funding, it is important to identify trends that are affecting the deficiencies of our bridge structures, such as age and materials used in construction. Skagit County Public Works will continue to apply for available funds to assist with deficient bridges that are eligible for Federal Local Bridge Program funds and Surface Transportation Program funds. County bridges not eligible for Federal funds, such as short-span bridges 20-feet in length or less, will have their replacement/rehabilitation needs prioritized by Public Works staff, based on structural deficiency, resource availability, and the Board of Skagit County Commissioners' authorization to fund the project in the Annual Construction Program. Similarly, for maintenance, repair, and minor rehabilitation work, prioritization is based on County bridge maintenance funds and resource availability.

This report also documents projects that have been completed, those that are in the current Six-Year Transportation Improvement Program, and those bridges that are candidates for future replacement/rehabilitation.

REPLACEMENT & REHABILITATION

The County's current focus is to replace or rehabilitate bridges that are classified as Structurally Deficient per NBIS guidance. We have received, or are currently seeking, funding for a number of bridges that are in need of replacement, rehabilitation and/or resurfacing. The bridges identified below are Public Works current main focus.

REPLACEMENT

Old Hwy 99 at Thomas Creek Bridge #40113 (Cover)

This bridge is considered structurally deficient and has a sufficiency rating of 9.55, making it eligible for replacement funding. The bridge has a deteriorating pile that's been red tagged that would normally require a weight restriction or closure of the bridge. However, County forces were able to quickly permit and install temporary shoring to reduce the loading on the pile. Federal funding was awarded (**\$6 Million**) to replace this structure, **scheduled for 2025**.

South Skagit Highway at Mill Creek Bridge #40086



Mill Creek channel upstream of bridge.

A sufficiency rating of 80.74 is still very high for a bridge but environmental processes have rendered the Mill Creek crossing useless for its intended purpose. Mill Creek has filled in with large aggregate and decreased the structures' available conveyance, causing the creek to overtop the roadway and divert the flow to the east and west of the bridge. The bridges' Waterway Adequacy has been coded a 2 (frequent overtopping of deck or roadway approaches with severe traffic delays) and therefore eligible for replacement funding. Skagit County will be seeking replacement funds in a future Call for Projects that coincides with salmon restoration funding for a basin wide solution.

North Fork Bridge #40037

The North Fork Bridge has served the County well for 64 years, but its narrow configuration and limited load capacity have rendered it obsolete. Currently, the bridge is in Fair condition with a sufficiency rating of 56.92 so it's not eligible for Federal Local Bridge Program replacement funds. However, given the importance of the route it serves (connecting Interstate-5 with State Route 20 and serving as an alternative trucking route to the Port of Skagit, the refineries, and Port of Anacortes) we are looking for infrastructure grants that could help replace the structure. A new structure will also provide improvements to the non-motorized community, as well as create opportunity for salmon recovery habitat and flood water conveyance benefits.



REHABILITATION

Upper Finney Creek Bridge #40093

In 2012, we repaired a damaged girder, but the bridge still does not have the load carrying capability to handle today's logging industry vehicles. Skagit County has been awarded **\$3 Million** in grant funds from the Federal Local Bridge Program to perform a seismic retrofit, making the bridge more resistant to earthquake damage, while also increasing its overall strength and load capacity. Construction has begun and will be **completed in Fall of 2023**.



Upper Finney Creek Bridge

Skagit River Marblemount Bridge #40070

The 93-year-old steel truss, providing access from SR-20 to the North Cascade Forest Lands received **\$18.6 Million** in Federal Local Bridge Program funding to rehabilitate the structure and strengthen it to handle today's legal loads. **Construction of this project is scheduled to**



Marblemount Bridge – Skagit River

occur in 2026. The sufficiency rating dropped to 19.06 and would be posted for load restrictions, however, with the low average daily traffic, Public Works instead reduced the bridge to one-lane with signal controlled two-way traffic operation. With a one-lane configuration, legal trucks are still able to cross one at a time and can avoid a 20-Mile detour.

Rehabilitation of the structure will include cleaning and painting, replacement of damaged and/or deteriorating members of the truss, and upgrade of key members to increase the load carrying capacity of the truss system.

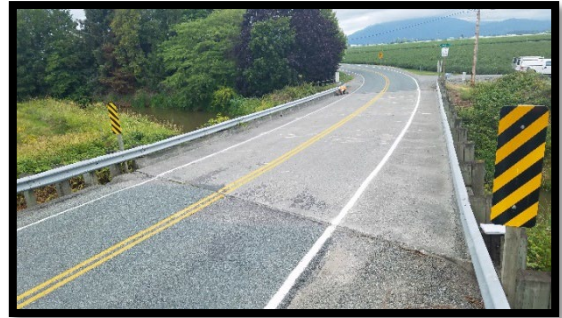
Recommended Rehabilitation Candidates:

Although **Rainbow Bridge #40039** does not meet any of the eligibility requirements for rehabilitation funding, the bridge has numerous repair needs in addition to a cleaning and fresh coat of paint. County staff will continue to look for ways to fund these items and hopefully strengthen the bridge so that the current load restrictions can be removed.

PREVENTATIVE MAINTENANCE PROJECTS

Bay View-Edison at Joe Leary #40029

The substructure and superstructure of this bridge are in very good condition (SR 84.90) but the deck is experiencing advanced deterioration and is in need of repair, currently coded a 4 (Poor). This coding of 4 makes the bridge structurally deficient and has been awarded **\$487,400** through the Federal Local Bridge Program to repair the deck, as well as the approach road fill retaining wall and existing drainage system. **Construction to begin this summer.**



Bay View-Edison at Joe Leary Slough Bridge

Bundle (Deck Repair) Project

Like the Bay View-Edison at Joe Leary Bridge, we have several other bridges that are in very good condition but with deteriorating decks. The bridges mentioned below were bundled together and received Federal Local Bridge Program Funding in the amount of **\$1.6 Million** to receive deck maintenance and restore their surface condition. **Construction is scheduled for 2025.**

- ❖ Cascade River Bridge #40071
- ❖ S Skagit Hwy at Presentin Creek #40088
- ❖ F & S Grade Rd at Samish River #40013

Recommended Deck Repair Projects:

- Cape Horn Road at Grandy Creek #40068
- Benson Ridge Lane at Carpenter Creek #40157

Paint/Protective Coating:

Steel bridge paint is not only for aesthetic purposes but it also provides a protective coating that prevents rust and corrosion of the steel. Skagit County owns several steel bridges that could use a good cleaning, Rainbow Bridge and Dalles Bridge in particular, but the **Guemes Island Ferry Dock #40153** (right) is currently the only structure in our inventory that has enough documented paint deterioration to be eligible for grant funding.



COUNTY CREW MAINTENANCE AND REPAIRS

The majority of bridge repair and maintenance work is done by County Forces. This includes cleaning, minor painting, deck repair/patching and rail repair. The major maintenance projects being worked on now include:

Bridge Maintenance Projects:

Concrete-Sauk Valley Temporary Bridge #40091

The temporary bridge was installed to keep the road open while the North Osterman Creek culvert continued to fail due to storms and massive head cutting from the unpredictable migration of the Sauk River. When 100% failure was imminent, County crews sprang into action to add two more 10' sections to the bridge, increasing the overall span length to 130'. The extra span length helped protect against future head cutting and lateral scour of the creek. The temporary structure will remain until the permanent crossing is designed and ready for construction.



Concrete-Sauk Valley at North Osterman

South Skagit Highway at Finney Creek #40089

During a routine inspection of this bridge, inspectors discovered a large spall in the abutment seat that had exposed rebar and one of the girder anchor bolts. Repair plans were quickly drawn up, supplies ordered, and our County Forces were able to get in and make the repairs before flood season where access would've become difficult. Repairs included cutting away the surrounding concrete, brushing away the weathered steel, construction of false work for the form, and pouring a high performance concrete patch into place.



Debris

Debris is an ongoing issue for many of our bridges. To improve crew efficiency and response time, Environmental Services secured programmatic HPA's for clearing debris from problem bridges. Our crews were able to remove the debris from South Skagit Hwy at Finney Creek #40089 during the November '21 flood event (*right*).



South Skagit Highway at Finney Creek

General Maintenance:

In addition to the above-mentioned repairs, Skagit County's Bridge Crew performs various minor repairs and maintenance throughout the year. These repairs and maintenance include, but are not limited to:

- Patching decks due to spalling or material loss
- Replacing the loss of armor/rock around the abutments
- Repairing bridge rail and guardrail
- Leveling approaches
- Spot painting
- Removal of vegetation encroaching or blocking access to the bridge for inspection purposes
- Replacing damaged or worn signage

Please refer to "Appendix C – Bridge Maintenance List" for a full listing of outstanding and recently completed repairs.

GLOSSARY OF BRIDGE TERMINOLOGY

Abutment—a substructure supporting the end of a single span, or the extreme end of a multi-span super-structure and, in general, retaining or supporting the approach fill.

Backwall—the top-most portion of an abutment functioning *primarily* as a retaining wall to contain approach roadway fill.

Bent—a supporting unit of the beams of a span made up of one or more column or column -like members connected at their top-most ends by a cap, strut, or other horizontal member.

Bracing—a system of tension or compression members, or a combination of these, connected to the parts to be supported or strengthened by a *truss* or frame. It transfers wind, dynamic, impact, and vibratory stresses to the substructure and gives rigidity throughout the complete assemblage. Can also refer to diagonal members that tie two or more columns of a bent together.

Cap—the horizontally-oriented, top-most piece or member of a bent sewing to distribute the beam loads upon the columns and to hold the beams in their proper relative positions.

Chord—in a truss, the upper-most and the lower-most longitudinal members, extending the full length of the truss.

Compression—a type of stress involving pressing together; tends to shorten a member; opposite of tension.

Culvert—a pipe or small structure used for drainage under a road, railroad or other embankment. A culvert with a span length greater than 20-feet is included in the National Bridge Inventory and receives a rating using the NBI scale.

Deck—portion of a bridge that provides direct support for vehicular and pedestrian traffic.

Elastomeric pads—rectangular pads made of neoprene, found between the substructures and superstructure, that bears the entire weight of the superstructure. Elastomeric pads can deform to allow for thermal movements of the superstructure.

Endwall—the wall located directly under each end of a bridge that holds back approach roadway fill. The endwall is part of the abutment.

Fracture critical member—a member in tension or with a tension element whose failure would probably cause a portion of or the entire bridge to collapse.

Pier—a structure comprised of stone, concrete, brick, steel, or wood that supports the ends of the spans of a multi-span superstructure at an intermediate location between abutments. A pier is usually a solid structure as opposed to a bent, which is usually made up of columns.

Pile—a rod or shaft-like linear member of timber, steel, concrete, or composite materials driven into the earth to carry structure loads into the soil.

Pinpile—a series of two-inch-diameter pipes driven in a line into the ground to support the timber planks of a small retaining wall, typically used to prevent erosion under a bridge abutment.

Post or column—a member resisting compressive stresses, in a vertical or near vertical position.

Scour—erosive action of removing streambed material around bridge substructure due to water flow. Scour is of particular concern during high-water events.

Short span bridge—these bridges span 20 feet or less, have a single span and are typically supported by timber piles or shallow concrete footings.

Soffit—the underside of the bridge deck or sidewalk.

Spall—a concrete deficiency wherein a portion of the concrete surface is popped off from the main structure due to the expansive forces of corroding steel rebar underneath. This is especially common on older concrete bridges.

Stringer—a longitudinal beam (less than 30' long) supporting the bridge deck, and in large bridges, framed into or upon the floor beams.

Sufficiency rating—the sufficiency rating is a numeric value from 100 (a bridge in new condition) to 0 (a bridge incapable of carrying traffic). The formula considers the structural adequacy, functional obsolescence, level of service and essentiality for public use.

Substructure—the abutment, piers, grillage, or other structure built to support the span or spans of a bridge superstructure, and distributes all bridge loads to the ground surface. Includes abutments, piers, bents, and bearings

Superstructure—the entire portion of a bridge structure which primarily receives and supports traffic loads and in turn transfers the reactions to the bridge substructure; usually consists of the deck and beams or, in the case of a truss bridge, the entire truss.

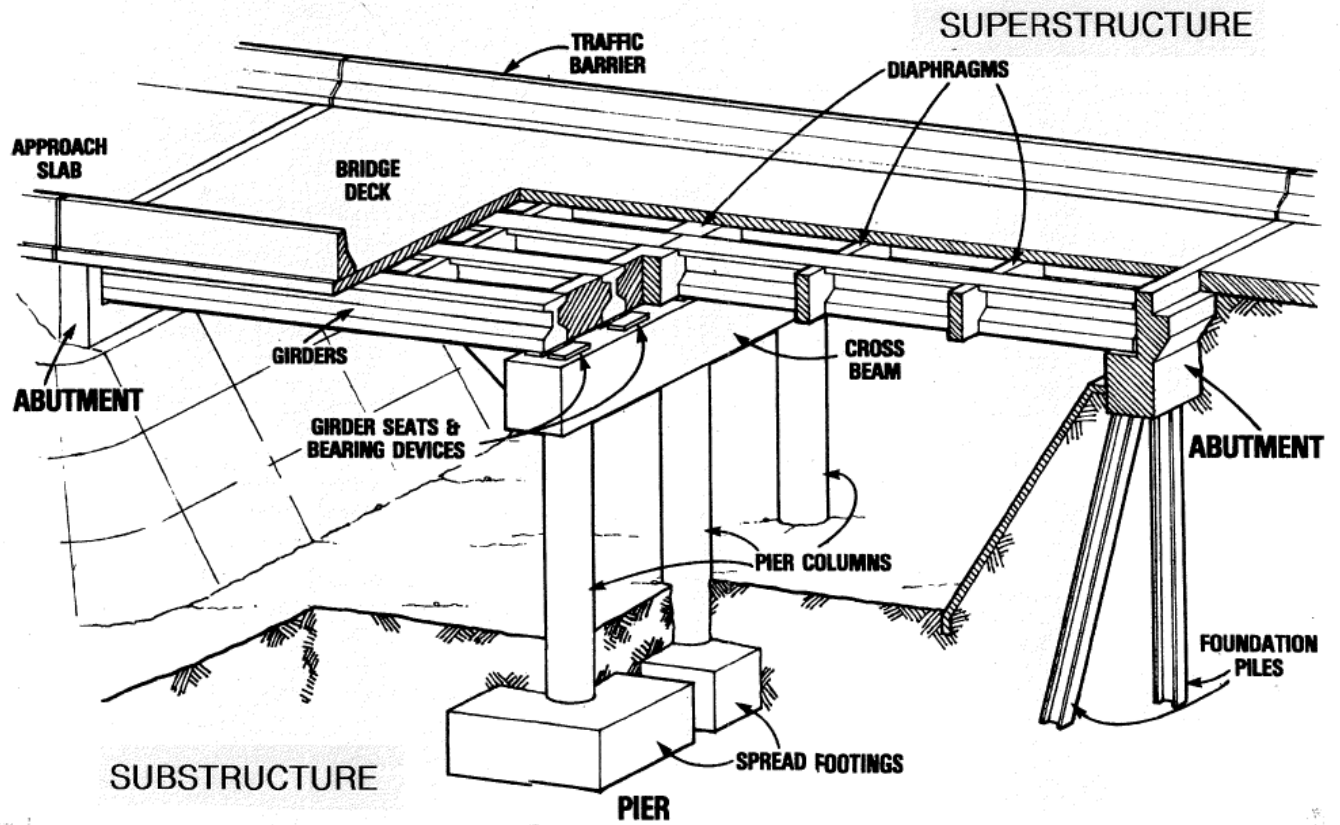
Tension—type of stress involving an action which pulls apart.

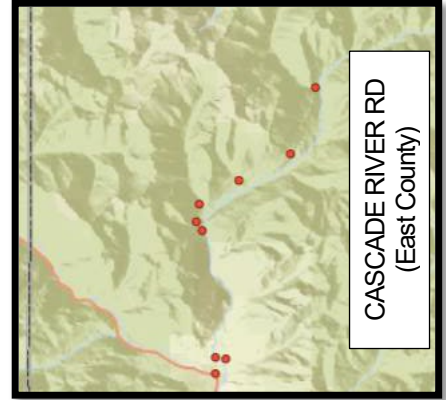
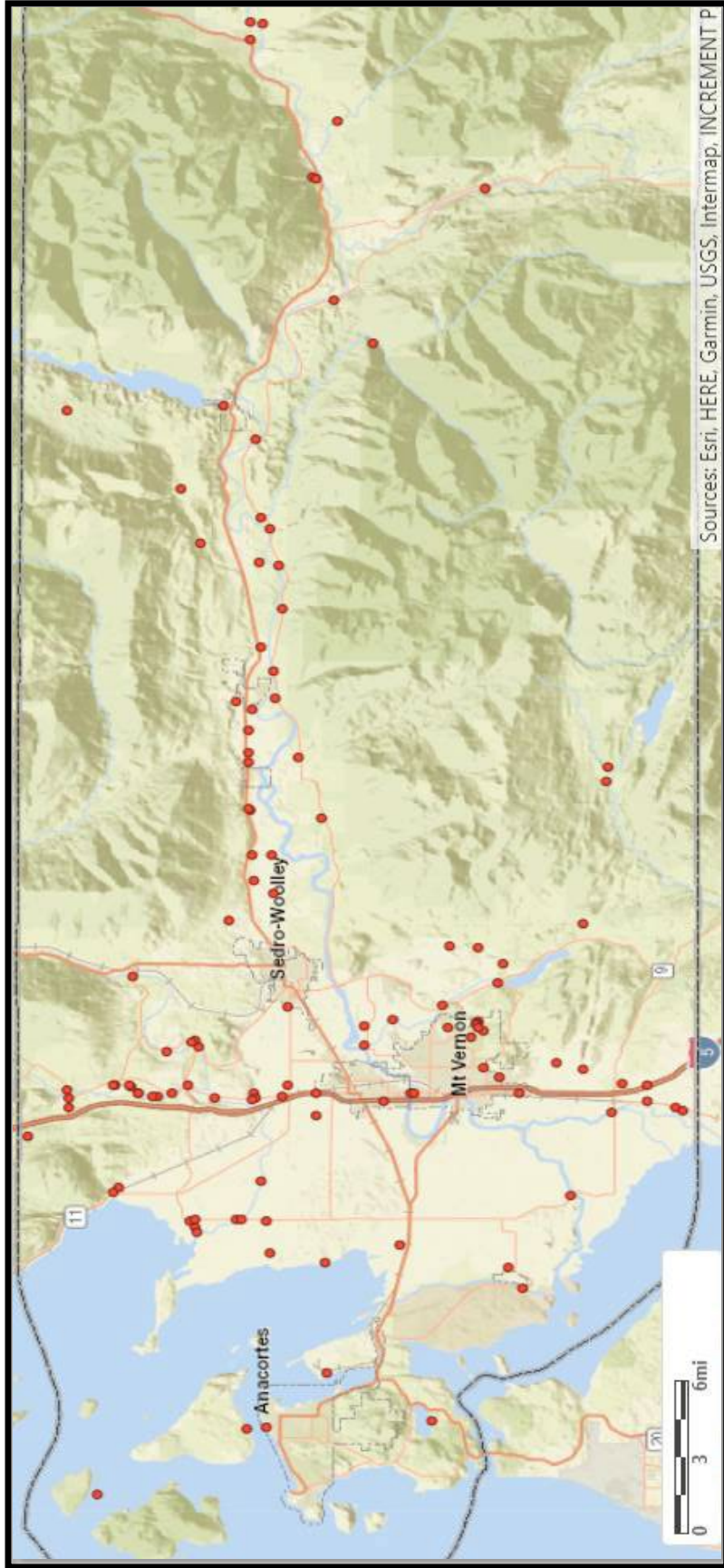
Trestle—a bridge structure consisting of beam spans supported upon bents. Trestles are usually made of timber and have numerous diagonal braces, both within each bent and from bent to bent.

Wingwall—walls that slant outward from the corners of the overall bridge that support roadway fill of the approach.

ELEMENTS OF A BRIDGE

BASIC BRIDGE PARTS





SKAGIT COUNTY BRIDGE MAP

Appendix A - Bridge Inventory

BRIDGE NUMBER	BRIDGE NAME	YEAR BUILT	LENGTH (Feet)	WIDTH (Feet)	AVG DAILY TRAFFIC	TRUCK %	MAIN MATERIAL	SUFFICIENCY RATING
40113	OLD HWY 99 at THOMAS CREEK	1934	52	30.0	4372	10	Timber	9.55 SD
40070	SKAGIT RIVER MARBLEMOUNT	1930	662	14.0	608	11	Steel	19.06 SD
40039	RAINBOW BRIDGE	1957	797	24.0	3101	7	Steel	45.81 FO
40114	SAMISH RIVER BRIDGE	1934	385	24.0	3113	11	Steel	46.23 FO
40093	UPPER FINNEY CREEK BRIDGE	1952	217	14.9	41	10	Concrete	48.40 FO
40099	GOVERNMENT BRIDGE	1953	304	14.0	158	11	Steel	49.06 FO
40047	LK CAVANAUGH at PILCHUCK	1970	56	28.0	578	10	PS/PT	49.42
40152	ANACORTES FERRY DOCK	1976	205	15.0	500	7	Steel	50.18 FO
40153	GUEMES ISLAND FERRY DOCK	1981	165	15.0	500	7	Steel	50.18 FO
40008	SOUTH FORK BRIDGE	1972	908	28.0	4719	12	Steel	55.17
40037	NORTH FORK BRIDGE	1959	726	24.0	3693	10	Steel	56.92 FO
40090	DALLES BRIDGE	1952	506	26.0	2562	6	Steel	57.49 FO
40001	LAKE VIEW BLVD/NOOKACHAMPS	1954	77	25.5	821	8	Concrete	57.67
40091	CONCRETE-SAUK VALLEY TEMPORARY BR	2021	131	13.7	158	11	Steel	58.16 FO
40156	CEDARDALE RD at CARPENTER CREEK	1934	83	36.0	613	14	Timber	58.72
40031	PULVER ROAD at JOE LEARY	1955	39	24.0	832	13	Concrete	60.44
40115	OLD HWY 99 at FRIDAY CREEK	1956	122	26.0	2682	8	Concrete	60.93 FO
40038	LACONNER WHITNEY at SL	1962	68	26.0	4982	6	PS/PT	61.84 FO
40081	S SKAGIT HWY at DAY CREEK	1961	160	24.0	825	11	PS/PT	64.67
40063	LYMAN HAMILTON HWY at CHILDS CK	1948	32	24.0	525	8	Concrete	64.73
40132	LYMAN HAMILTON HWY at JONES CK	1955	52	26.0	253	6	Concrete	67.82
40131	LYMAN HAMILTON HWY at MANNSEY CK	1954	52	26.0	260	6	Concrete	68.2
40043	CONWAY HILL @ CARPENTER	1980	58	14.0	95	8	PS/PT	70.76 FO
40075	CASCADE RIVER RD at SIBLEY CK	1997	23	28.0	188	4	Concrete	72.49
40083	S SKAGIT HWY at CUMBERLAND CK	1961	50	24.0	635	12	PS/PT	73.9
40101	BAKER LAKE RD at BEAR CREEK	1966	85	26.0	714	23	PS/PT	74.32
40109	LAKE SAMISH RD at FRIDAY CREEK	1965	53	26.0	5124	6	PS/PT	74.51 FO
40141	BAY VIEW STATE PARK	1969	62	26.0	751	10	PS/PT	75.02 FO
40004	FRANCIS RD at SLOUGH	1958	50	24.0	4694	4	Concrete	75.79 FO
40072	CASCADE RIVER RD at MONOGRAM	1979	22	26.0	188	4	Concrete	75.85
40003	FRANCIS at NOOKACHAMPS	1979	130	28.0	4694	4	Concrete	76.47
40028	BAY VIEW-EDISON at SAMISH R	1965	223	26.0	1026	4	Concrete	77.55
40130	LYMAN HAMILTON HWY at RED CABIN CK	1954	22	26.0	253	6	Concrete	77.59
40046	LK CAVANAUGH RD at BEAR	1967	51	28.5	578	10	PS/PT	77.61
40017	PRAIRIE RD FRIDAY CK	1975	78	28.0	2757	9	PS/PT	77.9
40151	NICHOLSON at CHILDS CREEK	1979	29	15.0	40	5	PS/PT	77.99 FO
40089	S SKAGIT HWY at FINNEY CREEK	1954	120	26.0	635	12	Steel	78.07
40116	OLD HWY 99 at SILVER CREEK	1934	38	25.0	1687	9	Concrete	78.08
40027	BAY VIEW-EDISON at SAMISH SL	1965	38	26.8	1026	4	PS/PT	78.22
40082	S SKAGIT HWY at LORETTA CREEK	1961	85	24.0	825	11	PS/PT	78.81
40034	FARM-TO-MARKET SAMISH R	1963	158	26.0	1187	8	Concrete	79.27
40142	CAMPBELL LAKE OUTLET	1962	19	20.0	57	4	Concrete	79.38
40002	SWAN ROAD at NOOKACHAMPS	1976	126	28.0	1100	8	Concrete	79.59
40020	FRIDAY CREEK 3RD BRIDGE	1961	61	20.0	165	8	PS/PT	79.94
40021	FRIDAY CREEK 4TH BRIDGE	1961	61	20.0	144	9	PS/PT	79.95
40140	BAKER LAKE RD at E GRANDY CREEK	1968	41	28.0	725	18	PS/PT	79.98
40018	FRIDAY CREEK 1ST BRIDGE	1962	61	20.0	165	8	PS/PT	80.44
40055	PRAIRIE RD E at SAMISH R	1956	75	24.4	894	10	Concrete	80.73
40086	S SKAGIT HWY at MILL CREEK	1969	41	28.0	635	12	PS/PT	80.74 SD
40077	CASCADE RIVER RD at MINERAL PARK	1986	71	18.0	84	4	PS/PT	81.61
40052	TAYLOR RD at WALKER CK	1985	42	16.0	40	15	PS/PT	82.07 FO
40126	MARCHS POINT PIPELINE	1960	44	28.0	996	25	Concrete	82.14

Appendix A - Bridge Inventory

BRIDGE NUMBER	BRIDGE NAME	YEAR BUILT	LENGTH (Feet)	WIDTH (Feet)	AVG DAILY TRAFFIC	TRUCK %	MAIN MATERIAL	SUFFICIENCY RATING
40106	LAKE SAMISH RD at BEAR CREEK	1959	50	24.0	491	6	Concrete	82.52
40026	FARM-TO-MARKET N DITCH	1951	32	26.0	1554	8	Concrete	83.13
40061	MINKLER RD at WISEMAN CREEK	1967	40	28.0	1024	7	Concrete	84.18
40036	FARM-TO-MARKET JOE LEARY	1950	72	26.0	1905	7	Concrete	84.48
40042	MILLTOWN at BIG DITCH	1957	50	24.2	413	8	Concrete	84.77
40084	S SKAGIT HWY at O'TOOLE CREEK	1959	66	24.0	635	12	PS/PT	84.9
40076	CASCADE RIVER RD at HARD CREEK	2016	46	17.7	84	4	PS/PT	85.12 FO
40071	CASCADE RIVER BRIDGE	1967	180	26.0	336	7	Concrete	85.2
40157	BENSON RIDGE LN at CARPENTER CK	1983	52	30.0	46	4	Timber	85.32
40088	S SKAGIT HWY at PRESENTIN CK	1966	85	27.0	635	12	PS/PT	85.73
40066	HAMILTON CEMETERY RD at MUDDY CK	1965	50	26.0	171	10	PS/PT	86.15
40032	FARM-TO-MARKET S DITCH	1950	21	26.0	1331	6	Concrete	86.16
40033	FARM-TO-MARKET at NEUMAN	1950	60	26.0	1187	8	Concrete	86.22
40065	CONRAD RD at SUTTER CREEK	2011	73	15.7	91	3	PS/PT	86.23
40060	BURMASTER RD at COAL CREEK	1958	26	24.0	353	9	Concrete	86.89
40073	CASCADE RIVER ROAD AT LOOKOUT CK	1981	191	28.0	188	4	Steel	87.29
40012	COOK RD at BRICKYARD CK	2000	54	44.0	14215	10	PS/PT	87.31
40015	PRAIRIE RD S at SAMISH R	1974	83	28.0	1583	9	PS/PT	88.33
40009	COOK RD at DD14 DITCH	2000	38	40.0	13903	9	PS/PT	88.48
40062	UTOPIA RD at BLACK SLOUGH	1984	141	26.0	110	7	PS/PT	88.91 FO
40120	BAKER LAKE RD at W FORK GRANDY CK	1968	62	28.0	725	18	PS/PT	89.86
40074	CASCADE RIVER RD at MARBLE CK	1982	120	26.0	188	4	PS/PT	90.23
40016	PRAIRIE RD W at SAMISH R	1975	104	28.0	1539	11	PS/PT	90.38
40094A	ROCKPORT CASCADE at ILLABOT CK	1970	93	28.0	262	15	Concrete	91.33
40023	FRIDAY CREEK 6TH BRIDGE	1963	61	24.0	144	9	PS/PT	91.46
40024	FRIDAY CREEK 7TH BRIDGE	1964	61	24.0	144	9	PS/PT	91.46
40041	E PETER JOHNSON RD	1981	54	24.0	63	14	PS/PT	92.41
40045	PIONEER HWY at FISHER SL	1987	114	37.2	9516	12	PS/PT	92.43
40005	NOOKACHAMP HILLS CULVERT	2008	30	0.0	250	4	Metal	92.67
40161	FLINN ROAD at MCELROY SLOUGH	2006	48	19.5	20	0	PS/PT	92.81
40051	BEAVER LAKE RD at NOOKACHAMPS	1977	73	28.6	186	13	PS/PT	93.03
40044	PIONEER HWY at BIG DITCH	1987	81	37.0	9442	9	PS/PT	93.37
40068	CAPE HORN RD at GRANDY CREEK	1967	51	28.0	391	6	PS/PT	93.9
40080	S SKAGIT HWY at PARKER CREEK	1996	26	0.0	1437	17	Concrete	94.29
40112	NEFFS CROSSING	2006	108	41.0	4372	10	PS/PT	94.35
40029	BAY VIEW-EDISON JOE LEARY	1955	101	30.0	588	8	Concrete	94.71 SD
40067	CAPE HORN RD at ALDER CREEK	1972	41	28.0	227	5	PS/PT	94.92
40013	F&S GRADE SAMISH RIVER	1974	102	28.0	630	10	PS/PT	95.41 SD
40159	MINKLER RD at COAL CREEK	1984	29	36.0	1136	8	Concrete	95.73
40011	GREEN RD at THOMAS CK	1958	51	24.0	54	7	Concrete	95.99
40030	THOMAS RD at SAMISH R	1973	91	28.0	216	23	PS/PT	96.94
40117	ALGER CAIN LAKE RD at SILVER CK	1992	102	34.2	4286	5	PS/PT	96.97
40094B	RYAN CROSSING at ILLABOT CREEK	2018	106	27.4	262	15	PS/PT	97.06
40094C	HOLLOW CEDAR at ILLABOT CREEK	2018	106	27.4	262	15	PS/PT	97.06
40129	LYMAN HAMILTON HWY at MUDDY CK	1997	65	30.0	198	4	PS/PT	97.32
40085	S SKAGIT HWY at DAVIS SLOUGH	2014	63	34.9	594	9	PS/PT	97.45
40054	KNAPP RD at NOOKACHAMPS	1977	73	28.0	382	10	PS/PT	97.91
40025	FRIDAY CREEK 8TH BRIDGE	1977	59	28.0	144	9	PS/PT	98.01
40014	GRIPP RD at SAMISH R	1976	84	28.0	679	12	PS/PT	98.42
40110	BURLINGTON NORTHERN OVERPASS	2018	395	38.0	4674	12	PS/PT	98.56
40164	S LAVENTURE RD at MADDOX CREEK	2013	80	50.0	8284	5	PS/PT	98.84
40048	LK CAVANAUGH RD CULVERT	1998	21	0.0	604	16	Metal	98.85

Appendix A - Bridge Inventory

BRIDGE NUMBER	BRIDGE NAME	YEAR BUILT	LENGTH (Feet)	WIDTH (Feet)	AVG DAILY TRAFFIC	TRUCK %	MAIN MATERIAL	SUFFICIENCY RATING
40019	FRIDAY CREEK 2ND BRIDGE	1979	74	28.0	165	8	PS/PT	98.91
40022	FRIDAY CREEK 5TH BRIDGE	1977	69	28.0	144	9	PS/PT	98.93
40069	CONRAD RD at SWIFT CREEK	1981	38	24.0	23	1	PS/PT	98.99
40095	ROCKPORT CASCADE RD at JORDAN CK	1969	56	28.0	304	7	Concrete	99.11
40092	CONCRETE-SAUK VALLEY at MILLER CK	1999	27	0.0	158	16	Concrete	99.45
40035	BAY VIEW-EDISON / BIG INDIAN	1992	71	34.1	1176	8	PS/PT	99.56
40163	HELMICK RD at RED CREEK	2007	150	36.0	642	8	PS/PT	99.94
40162	BLANCHARD RD at MCELROY SLOUGH	2007	28	26.0	40	1	Concrete	99.99

LOCAL AGENCY BRIDGES								
BRIDGE NUMBER	BRIDGE NAME	YEAR BUILT	LENGTH (Feet)	WIDTH (Feet)	AVG DAILY TRAFFIC	TRUCK %	MAIN MATERIAL	SUFFICIENCY RATING
CITY OF BURLINGTON								
BURLINN-2	NORTH BURLINGTON BLVD	1997	26	34.0	4635	12	PS/PT	95.90
BURLINN-3	GOLDENROD BRIDGE	2005	116	40.0	2679	9	PS/PT	99.25
TOWN OF CONCRETE								
CONCRETE1	BAKER RIVER	1916	269	18.0	137	11	Concrete	21.91 FO
CITY OF MOUNT VERNON								
MV-1	RIVERSIDE BRIDGE	2004	850	60.0	21640	10	PS/PT	91.81
MV-2	HOAG STEWARD OVERPASS	2003	60	65.0	24455	5	PS/PT	88.91 FO
MV-3	ELEANOR LANE A	2006	32	30.0	440	7	Concrete	90.90
MV-4	SKAGIT HIGHLANDS PARKWAY	2003	37	0.0	800	5	Concrete	99.89
MV-5	LANDMARK DRIVE	1994	52	28.0	500	5	PS/PT	98.95
MV-6	EAGLEMONT DRIVE	1995	20	0.0	800	5	Metal	99.93
MV-7	J OFF BEAVER POND DR S	2006	26	19.0	50	1	Metal	92.52
MV-8	BEAVER POND DR SOUTH	2004	29	28.0	200	5	PS/PT	99.98
MV-9	BEAVER POND DR NORTH B	2002	54	28.0	300	5	PS/PT	99.97
MV-10	OLYMPIC LANE	2004	67	22.0	50	5	Concrete	99.00
MV-11	BEAVER POND DR NORTH A	2001	42	28.0	400	5	PS/PT	99.96
MV-12	LAVENTURE RD CULVERT	2010	29	44.0	8735	4	Concrete	99.18

Appendix B - Inspection Schedule

BRIDGE NUMBER	BRIDGE NAME	LOCATION	LAST INSPECTION	INSP. FREQ.	NEXT INSP.	INSP. HRS	INSP. TYPE
2023 INSPECTIONS			↓				
40113	OLD HWY 99 at THOMAS CREEK	1.4 N JCT COOK RD.	24-Aug-22	6	Feb-23	1	INTM
40018	FRIDAY CREEK 1ST BRIDGE	0.45 N JCT OLD HWY 99 N	05-May-21	24	May-23	1	RTN
40019	FRIDAY CREEK 2ND BRIDGE	0.59 N JCT OLD 99	05-May-21	24	May-23	1	RTN
40020	FRIDAY CREEK 3RD BRIDGE	0.3 N. of JCT w/ Old 99	05-May-21	24	May-23	1	RTN
40021	FRIDAY CREEK 4TH BRIDGE	0.4 N JCT OLD 99	05-May-21	24	May-23	1	RTN
40022	FRIDAY CREEK 5TH BRIDGE	1.55 N JCT Old 99	24-May-21	24	May-23	1	RTN
40023	FRIDAY CREEK 6TH BRIDGE	0.6 N JCT OLD 99 N	24-May-21	24	May-23	1	RTN
40024	FRIDAY CREEK 7TH BRIDGE	2.16 N JCT OLD 99 N	24-May-21	24	May-23	1	RTN
40025	FRIDAY CREEK 8TH BRIDGE	2.24 N JCT OLD 99 N	24-May-21	24	May-23	1	RTN
40115	OLD HWY 99 at FRIDAY CREEK	4.3 N JCT COOK RD.	24-May-21	24	May-23	1	RTN
40116	OLD HWY 99 at SILVER CREEK	0.4 SE JCT LAKE SAMISH RD	24-May-21	24	May-23	1	RTN
40106	LAKE SAMISH RD at BEAR CREEK	2.0 NW JCT I-5	26-May-21	24	May-23	1	RTN
40109	LAKE SAMISH RD at FRIDAY CREEK	0.25 E JCT INTERSTATE 5	26-May-21	24	May-23	1	RTN
40117	ALGER CAIN LAKE RD at SILVER CREEK	0.34 E JCT OLD HWY 99	26-May-21	24	May-23	1	RTN
40091	CONCRETE-SAUK VALLEY TEMPORARY BR	13.2 MI SE OF SR 20	02-Jun-21	24	Jun-23	2.5	RTN
40026	FARM-TO-MARKET N DITCH	7.7 N JCT SR 20	16-Jun-21	24	Jun-23	1	RTN
40161	FLINN ROAD at MCELROY SLOUGH	300 Ft E Blanchard Rd	16-Jun-21	24	Jun-23	1	RTN
40162	BLANCHARD RD at MCELROY SLOUGH	0.05 N JCT LEGG ROAD	16-Jun-21	24	Jun-23	1	RTN
40036	FARM-TO-MARKET JOE LEARY	5.0 N JCT SR 20	23-Jun-21	24	Jun-23	1	RTN
40032	FARM-TO-MARKET S DITCH	7.5 N JCT SR 20	26-Jun-19	48	Jun-23	1	RTN
40030	THOMAS RD at SAMISH R	0.3 N JCT ALLEN WEST RD	30-Jun-21	24	Jun-23	1	RTN
40033	FARM-TO-MARKET at NEUMAN	6.1 N JCT SR20	30-Jun-21	24	Jun-23	1	RTN
40034	FARM-TO-MARKET SAMISH R	5.9 N JCT SR 20	30-Jun-21	24	Jun-23	1	RTN
40065	CONRAD RD at SUTTER CREEK	0.59 E JCT SR20	30-Jun-21	24	Jun-23	1	RTN
40071	CASCADE RIVER BRIDGE	0.04 S JCT CASCADE RD	30-Jun-21	24	Jun-23	2	RTN
40085	S SKAGIT HWY at DAVIS SLOUGH	13.9 E JCT SR-9	30-Jun-21	24	Jun-23	1	RTN
40029	BAY VIEW-EDISON JOE LEARY	5.8 N JCT SR-20	15-Jul-21	24	Jul-23	2	RTN
40031	PULVER ROAD at JOE LEARY	.6 S JCT SR 11	15-Jul-21	24	Jul-23	1	RTN
40035	BAY VIEW-EDISON / BIG INDIAN	0.4 N JCT SR20	15-Jul-21	24	Jul-23	1	RTN
40141	BAY VIEW STATE PARK	3.5 N JCT SR 20	15-Jul-21	24	Jul-23	1	RTN
40062	UTOPIA RD at BLACK SLOUGH	0.5 E JCT Hoehn Road	22-Jul-21	24	Jul-23	1.5	RTN
40163	HELMICK RD at RED CREEK	1.1 N JCT SR 20	22-Jul-21	24	Jul-23	1.5	RTN
40110	BURLINGTON NORTHERN OVERPASS	0.25 N JCT COOK ROAD	29-Jul-21	24	Jul-23	10	RTN
40001	LAKE VIEW BLVD/NOOKACHAMPS	0.25 S JCT SR9	18-Aug-21	24	Aug-23	1	RTN
40005	NOOKACHAMP HILLS CULVERT	0.75 E JCT SR 9	18-Aug-21	24	Aug-23	1	RTN
40054	KNAPP RD at NOOKACHAMPS	0.1 E JCT SR 9	18-Aug-21	24	Aug-23	1	RTN
40009	COOK RD at DD14 DITCH	0.5 E JCT INTERSTATE 5	25-Aug-21	24	Aug-23	1	RTN
40012	COOK RD at BRICKYARD CK	MP 5.38 COOK RD	25-Aug-21	24	Aug-23	1	RTN
40112	NEFFS CROSSING	1.0 N JCT COOK RD.	25-Aug-21	24	Aug-23	1	RTN
CONCRETE1	BAKER RIVER	0.1 N MAIN ST	30-Aug-21	24	Aug-23	3	RTN
MV-1	RIVERSIDE BRIDGE	0.7 N JCT SR 538	31-Aug-21	24	Aug-23	3	RTN
40041	E PETER JOHNSON RD	1.0 E JCT CEDARDALE ROAD	15-Sep-21	24	Sep-23	1	RTN
BURLINN-2	NORTH BURLINGTON BLVD	1.02 MI SO OF COOK RD	15-Sep-21	24	Sep-23	1	RTN
BURLINN-3	GOLDENROD BRIDGE	.3 N. of W. MCCORQUEDALE	15-Sep-21	24	Sep-23	1	RTN
40038	LACONNER WHITNEY at SL	3.83 S JCT SR 20	22-Sep-21	24	Sep-23	1	RTN
40126	MARCHS POINT PIPELINE	1.6 N JCT SR 20	22-Sep-21	24	Sep-23	1	RTN
40013	F&S GRADE SAMISH RIVER	0.14 S JCT PRAIRIE RD	24-Sep-21	24	Sep-23	1	RTN
40014	GRIPP RD at SAMISH R	0.1 E JCT PRAIRIE ROAD	24-Sep-21	24	Sep-23	1	RTN
40017	PRAIRIE RD FRIDAY CK	0.17 Mi E of OLD HWY 99	24-Sep-21	24	Sep-23	1	RTN
40055	PRAIRIE RD E at SAMISH R	0.5 W JCT SR 9	24-Sep-21	24	Sep-23	1	RTN
40008	SOUTH FORK BRIDGE	1.0 W JCT INTERSTATE 5	25-Sep-18	60	Sep-23	2.5	UW
40015	PRAIRIE RD S at SAMISH R	2.21 E JCT OLD HWY 99	29-Sep-21	24	Sep-23	1	RTN
40016	PRAIRIE RD W at SAMISH R	3.8 E JCT OLD HWY 99	29-Sep-21	24	Sep-23	1	RTN
MV-5	LANDMARK DRIVE	EAST OF JCT S WAUGH RD	20-Oct-21	24	Oct-23	1	RTN

Appendix B - Inspection Schedule

BRIDGE NUMBER	BRIDGE NAME	LOCATION	LAST INSPECTION	INSP. FREQ.	NEXT INSP.	INSP. HRS	INSP. TYPE
MV-7	J OFF BEAVER POND DR S	0.07 SE JCT PARKVEIW LN	20-Oct-21	24	Oct-23	0.5	RTN
MV-8	BEAVER POND DR SOUTH	0.5 N JCT EAGLEMONT DR	20-Oct-21	24	Oct-23	1	RTN
MV-9	BEAVER POND DR NORTH B	AT JCT PARKVEIW LN	20-Oct-21	24	Oct-23	1	RTN
MV-10	OLYMPIC LANE	0.02 JCT BEAVER POND DR N	20-Oct-21	24	Oct-23	1	RTN
MV-11	BEAVER POND DR NORTH A	0.2 N JCT EAGLEMONT DR	20-Oct-21	24	Oct-23	1	RTN
MV-2	HOAG STEWARD OVERPASS	RIVERSIDE DR JCT HOAG ST	27-Oct-21	24	Oct-23	1.5	RTN
MV-3	ELEANOR LANE A	0.1 E JCT OLD HIGHWAY 99	27-Oct-21	24	Oct-23	1	RTN
MV-4	SKAGIT HIGHLANDS PARKWAY	0.4 N JCT E DIVISION ST	27-Oct-21	24	Oct-23	0.5	RTN
40164	S LAVENTURE RD at MADDOX CREEK	0.5 E JCT I-5	27-Oct-21	24	Oct-23	1.5	RTN
2024 INSPECTIONS							
40099	GOVERNMENT BRIDGE	0.14 NW JCT SR 530	15-Apr-22	24	Mar-24	6	FC
40073	CASCADE RIVER ROAD AT LOOKOUT CK	7 MI E JCT SR 20	18-Mar-20	48	Mar-24	3	EQP
40070	SKAGIT RIVER MARBLEMOUNT	0.03 E JCT SR 20	22-Mar-22	24	Mar-24	12	FC
40008	SOUTH FORK BRIDGE	1.0 W JCT INTERSTATE 5	28-Mar-22	24	Mar-24	3	RTN
40114	SAMISH RIVER BRIDGE	2.6 N JCT COOK RD.	28-Mar-22	24	Mar-24	4	FC
40090	DALLES BRIDGE	1.5 S JCT SR 20	29-Mar-22	24	Mar-24	7	FC
40037	NORTH FORK BRIDGE	5.5 W JCT INTERSTATE 5	30-Mar-22	24	Mar-24	5	FC
40093	UPPER FINNEY CREEK BRIDGE	4.6 W CONC SAUK VALLEY RD	02-Apr-18	72	Apr-24	4	EQP
40039	RAINBOW BRIDGE	0.95 JCT MORRIS ON MAPLE	28-Apr-22	24	Apr-24	8	FC
40060	BURMASTER RD at COAL CREEK	1.2 E JCT MINKLER	13-May-22	24	May-24	1	RTN
40061	MINKLER RD at WISEMAN CREEK	0.5 W JCT SR 20	13-May-22	24	May-24	1	RTN
40063	LYMAN HAMILTON HWY at CHILDS CK	0.8 E JCT SR 20	13-May-22	24	May-24	1	RTN
40151	NICHOLSON at CHILDS CREEK	0.1 S JCT SR 20	13-May-22	24	May-24	0.5	RTN
40159	MINKLER RD at COAL CREEK	0.1 E JCT SIMS ROAD	13-May-22	24	May-24	0.5	RTN
40129	LYMAN HAMILTON HWY at MUDDY CK	0.3 M W HAMILTON	25-May-22	24	May-24	1	RTN
40130	LYMAN HAMILTON HWY at RED CABIN CK	0.18 E JCT HEALY RD	25-May-22	24	May-24	1	RTN
40131	LYMAN HAMILTON HWY at MANNSEY CK	0.17 W JCT HAMIL CEM RD	25-May-22	24	May-24	1	RTN
40132	LYMAN HAMILTON HWY at JONES CK	0.28 E JCT PIPELINE ROAD	25-May-22	24	May-24	1	RTN
40066	HAMILTON CEMETERY RD at MUDDY CK	0.5 W JCT SR 20	26-May-22	24	May-24	1	RTN
40067	CAPE HORN RD at ALDER CREEK	0.75 E JCT SR 20	26-May-22	24	May-24	1	RTN
40068	CAPE HORN RD at GRANDY CREEK	2.25 W JCT SR 20	26-May-22	24	May-24	1	RTN
40028	BAY VIEW-EDISON at SAMISH R	0.5 W JCT SR 537	08-Jun-22	24	Jun-24	2	RTN
40069	CONRAD RD at SWIFT CREEK	0.2 E JCT SR 20	15-Jun-22	24	Jun-24	1	RTN
40092	CONCRETE-SAUK VALLEY at MILLER CK	9 MI SE OF SR20	15-Jun-22	24	Jun-24	1	RTN
40094A	ROCKPORT CASCADE at ILLABOT CREEK	4.2 E JCT SR 530	15-Jun-22	24	Jun-24	1	RTN
40095	ROCKPORT CASCADE RD at JORDAN CK	0.71 SW JCT N CASCADE HW	15-Jun-22	24	Jun-24	1	RTN
40072	CASCADE RIVER RD at MONOGRAM	7.37 E JCT SR 20	22-Jun-22	24	Jun-24	0.5	RTN
40074	CASCADE RIVER RD at MARBLE CREEK	8.3 E JCT SR 20	22-Jun-22	24	Jun-24	1	RTN
40075	CASCADE RIVER RD at SIBLEY CREEK	10 E JCT SR 20	22-Jun-22	24	Jun-24	1	RTN
40076	CASCADE RIVER RD at HARD CREEK	12.7 E JCT SR 20	22-Jun-22	24	Jun-24	1	RTN
40077	CASCADE RIVER RD at MINERAL PARK	16.02 E JCT SR 20	22-Jun-22	24	Jun-24	1	RTN
40027	BAY VIEW-EDISON at SAMISH SL	0.4 W JCT FARM TO MARKET	29-Jun-22	24	Jun-24	1	RTN
40088	S SKAGIT HWY at PRESENTIN CREEK	18.5 E JCT SR9	08-Jul-22	24	Jul-24	1	RTN
40089	S SKAGIT HWY at FINNEY CREEK	19.0 E JCT SR 9	08-Jul-22	24	Jul-24	1	RTN
40101	BAKER LAKE RD at BEAR CREEK	9.5 NE JCT SR 20	08-Jul-22	24	Jul-24	1	RTN
40120	BAKER LAKE RD at W FORK GRANDY CK	2. NE JCT SR 20	08-Jul-22	24	Jul-24	1	RTN
40140	BAKER LAKE RD at E GRANDY CREEK	4.0 NE JCT SR 20	08-Jul-22	24	Jul-24	1	RTN
40080	S SKAGIT HWY at PARKER CREEK	7.25 E JCT SR-9	13-Jul-22	24	Jul-24	1	RTN
40081	S SKAGIT HWY at DAY CREEK	9.0 E JCT SR 9	13-Jul-22	24	Jul-24	1	RTN
40082	S SKAGIT HWY at LORETTA CREEK	11 MI E JCT SR9	13-Jul-22	24	Jul-24	1	RTN
40083	S SKAGIT HWY at CUMBERLAND CREEK	11.5 E JCT SR 9	13-Jul-22	24	Jul-24	1	RTN
40084	S SKAGIT HWY at O'TOOLE CREEK	15.0 E JCT SR 9	13-Jul-22	24	Jul-24	1	RTN
40086	S SKAGIT HWY at MILL CREEK	17.0 E JCT SR9	13-Jul-22	24	Jul-24	1	RTN
40046	LK CAVANAUGH RD at BEAR	8.0 E JCT SR 9	20-Jul-22	24	Jul-24	1	RTN
40047	LK CAVANAUGH at PILCHUCK	8.7 E JCT SR 9	20-Jul-22	24	Jul-24	1	RTN
40048	LK CAVANAUGH RD CULVERT	1.1 SE JCT SR 9	20-Jul-22	24	Jul-24	1	RTN

Appendix B - Inspection Schedule

BRIDGE NUMBER	BRIDGE NAME	LOCATION	LAST INSPECTION	INSP. FREQ.	NEXT INSP.	INSP. HRS	INSP. TYPE
40042	MILLTOWN at BIG DITCH	0.02 E JCT SR 530	21-Jul-22	24	Jul-24	0.5	RTN
40043	CONWAY HILL @ CARPENTER	0.5 E JCT INTERSTATE 5	21-Jul-22	24	Jul-24	0.5	RTN
40044	PIONEER HWY at BIG DITCH	0.23 E JCT MILLTOWN ROAD	21-Jul-22	24	Jul-24	1	RTN
40045	PIONEER HWY at FISHER SL	1.5 SW JCT INTERSTATE 5	21-Jul-22	24	Jul-24	1	RTN
40002	SWAN ROAD at NOOKACHAMPS	0.37W JCT BABCOCK/MUDLAKE	03-Aug-22	24	Aug-24	1	RTN
40003	FRANCIS at NOOKACHAMPS	2.8 W JCT SR9	03-Aug-22	24	Aug-24	1	RTN
40004	FRANCIS RD at SLOUGH	2.0 W JCT SR9	03-Aug-22	24	Aug-24	1	RTN
40051	BEAVER LAKE RD at NOOKACHAMPS	3.0 SE JCT SR 9	24-Aug-22	24	Aug-24	1	RTN
40052	TAYLOR RD at WALKER CK	4.3 E JCT SR 9	24-Aug-22	24	Aug-24	1	RTN
40113	OLD HWY 99 at THOMAS CREEK	1.4 N JCT COOK RD.	24-Aug-22	24	Aug-24	1	RTN
40156	CEDARDALE RD at CARPENTER CREEK	0.75 S JCT SR 534	24-Aug-22	24	Aug-24	1	RTN
40094B	RYAN CROSSING at ILLABOT CREEK	4.2 E JCT SR 530	14-Sep-22	24	Sep-24	1	RTN
40094C	HOLLOW CEDAR at ILLABOT CREEK	4.2 E JCT SR 530	14-Sep-22	24	Sep-24	1	RTN
40011	GREEN RD at THOMAS CK	0.01 S KELLEHER RD	27-Sep-22	24	Sep-24	1	RTN
40157	BENSON RIDGE LN at CARPENTER CK	1.2 E I-5 JCT STACKPOLE	27-Sep-22	24	Sep-24	1	RTN
MV-12	LAVENTURE RD CULVERT	NORTH OF BLACKBURN	27-Sep-22	24	Sep-24	1	RTN
SW-1	KLINGER STREET BRIDGE	0.2 MI N of COOK ROAD	27-Sep-22	24	Sep-24	1	RTN
SW-2	NORTH REED STREET BRIDGE	0.4 MI N of SR20	27-Sep-22	24	Sep-24	1	RTN
40152	ANACORTES FERRY DOCK	0.41 N JCT SR 20	05-Oct-22	24	Oct-24	2	FC
40153	GUEMES ISLAND FERRY DOCK	GUEMES ISLAND	05-Oct-22	24	Oct-24	2	FC
40142	CAMPBELL LAKE OUTLET	0.39 W JCT SR 20	22-Sep-21	48	Sep-25	1	RTN
MV-6	EAGLEMONT DRIVE	0.1 S JCT BEAVER POND N	20-Oct-21	48	Oct-25	0.5	RTN
40153	GUEMES ISLAND FERRY DOCK	GUEMES ISLAND	24-May-22	60	May-27	3	UW
40152	ANACORTES FERRY DOCK	0.41 N JCT SR 20	25-May-22	60	May-27	4	UW
MV-1	RIVERSIDE BRIDGE	0.7 N JCT SR 538	28-Sep-22	60	Sep-27	2.5	UW
40037	NORTH FORK BRIDGE	5.5 W JCT INTERSTATE 5	28-Sep-22	60	Sep-27	2	UW

Appendix C - Bridge Repairs

BRIDGE NUMBER	BRIDGE NAME	PRI-ORITY	REPAIR DESCRIPTION	CLOSED OUT
40001	LAKE VIEW BLVD/ NOOKACHAMPS	1	Brush exposed rebar and patch spalls in the soffit and girders.	
		2	Sidewalk: Repair sidewalk approach where rebar is exposed (north end).	
		3	Upgrade rails to meet current standards.	
		M	Bank protection: armor missing upstream end on the right bank.	
40002	SWAN ROAD at NOOKACHAMPS	1	Raise approach rail to minimum height.	
		1	Numerous blockouts are split or rotten along southern bridge rail near midspan.	
		2	Approach Rail - Post #8 NE quadrant needs replaced, suffering from termites	
		3	Missing nut on bridge rail post, NW corner.	
		3	Paint steel diaphragm / cross bracing.	
		M	Depression in deck over upstream pile. Monitor for settlement	
40003	FRANCIS at NOOKACHAMPS	1	Level approaches at both ends of bridge.	
		3	Remove sand and rat droppings from abutments and pier caps	
		3	Remove BST overspray	
40004	FRANCIS RD at SLOUGH	2	Shoulder/pavement edge drops off between edge of road and guardrail. - needs to be brought up to grade -currently full of earthen material.	
		3	Paint rail posts	
		3	Rotten spacer block - 13th post from bridge, NW quadrant. Replace 1st post at NW Quad - Updated 2020	
40008	SOUTH FORK BRIDGE	1	Bridge needs posting for EV2 = 27T and EV3 = 37T loads in advance of bridge at west approach, heading eastbound. Similar to signage at east approach (follow MUTCD guidelines for signs). (3/2/2020 - Repair rewritten. TKK/WAW)	
		1	Remove timber debris from Pier 3 (and Pier 2 if any is visible at time of repair).	
		2	Clean bird guano from lateral gusset plates and girder bottom flanges in steel Spans 1, 2 and 3.	
		2	Replace the following bolts and tighten to the proper torque: Girder 1C, first diaphragm west of Pier 2. Girder 2B, south side at the first lateral bracing east of Pier 2.	
		2	Remove loose concrete from girder ends, clean exposed reinforcement/strands and coat with a rust inhibitor and epoxy sealant at the following locations: Girder 4B and 4C at Pier 4	
			(3/2/2020 - Updated photos in 2020. No defect for Girder 8A noted at Pier	
40009	COOK RD at DD14 DITCH	1	Crack seal transverse cracks at both ends of bridge	
		3	Patch spall with grout in G2 near east abutment	
		3	Grout open crack in NE corner of concrete rail	
		3	SE guardrail is not fastened to 7th and 8th posts	
40011	GREEN RD at THOMAS CK	1	Guardrail: Post 1, downstream end missing bolt and nut. Currently hanging on one bolt.	
		2	Wood piles holding guardrail and fill on abutments has failed and will need to be replaced	
40012	COOK RD at BRICKYARD CK	1	Crack seal transverse cracking over each bridge joint. and longitudinal cracking in pavement (updated 2021)	
		1	Patch exposed rebar in deck, apprx 4 linear feet	
		2	A/C level roadway / shoulder approaches	
40013	F&S GRADE SAMISH RIVER	3	Rehabilitate bridge deck - seek grant funding.	
40014	GRIPP RD at SAMISH R	2	A/C level east approach	
		3	Repair: patch spall in the wingwall.	
		M	MONITOR: Bridge is bypassable, right upstream channel protection is starting to slump into river and needs to be monitored after high water events.	
		M	Timber rail posts show many checks.	
40015	PRAIRIE RD S at SAMISH R	1	Missing armoring on south abutment which experiences higher velocities.	
		2	Tighten cable on NW ET guardrail.	
		3	Add additional fill and armoring to north bank, piles exposed.	
		3	Brush and patch exposed rebars in top flange of girders.	
40016	PRAIRIE RD W at SAMISH R	1	Impact damage to NW section of guardrail.	02-Aug-21
		2	Impact damage to NW section of guardrail.	
		M	Scour protection damaged during high water event - Monitor stability	29-Sep-21

Appendix C - Bridge Repairs

BRIDGE NUMBER	BRIDGE NAME	PRI-ORITY	REPAIR DESCRIPTION	CLOSED OUT
40017	PRAIRIE RD FRIDAY CK	2	Spalls on upstream curb.	
		M	Continue to monitor channel migration to the east.	
40018	FRIDAY CREEK 1ST BRIDGE	1	Patch sink hole in south approach at Centerline.	07-May-21
		2	Patch exposed rebar in girders #1 #2 #3 & #4 and Soffits.	
		2	Replace scoured armoring on abutment #2 (south)	
		3	Remove flaking protective coating on rail posts and reapply or upgrade bridge rails to current standards.	
		3	Remove moss from deck curbing - revised 2021	
40019	FRIDAY CREEK 2ND BRIDGE	1	NW section of guardrail, 1st post needs replacing.	05-May-21
		3	Patch spalls in girders with exposed rebar	
40020	FRIDAY CREEK 3RD BRIDGE	2	Drain: repair drain downspout on upstream side - it has broken off.	
		3	Brush and paint guardrail posts or upgrade to standard	
		3	Pressure wash moss off curbing and girders	
		M	Monitor armor loss and scour hole under Abut#1	
40021	FRIDAY CREEK 4TH BRIDGE	2	Exposed rebar: wire brush and patch exposed rusty rebar on girders 1, 2, and 4	
		3	Upgrade guardrail to standard.	
		3	SE drain pipe needs repairs	
		M	bank erosion 30' upstream	
40022	FRIDAY CREEK 5TH BRIDGE	2	Abutments: backfill material and repair armoring along abutment #1	
		2	G4 - remove spalled concrete, wire brush 8' of exposed rusty rebar, cover with grout or epoxy.	
40023	FRIDAY CREEK 6TH BRIDGE	1	Patch south approach - sink hole	24-May-21
		2	Brush and patch rusty exposed rebar in the girders.	
		3	Remove ivy from abutment wall.	24-May-21
		3	Bridge curbing, girders and soffits need pressure washed.	
		3	Replace missing down spout on drain	
		M	Monitor deformation in bearing pads.	
40024	FRIDAY CREEK 7TH BRIDGE	2	Wire brush and patch areas of rusty exposed rebar in girders	
		3	Remove failed protective coating on rail posts and reapply.	
		3	Pressure wash curbs and girders	
		M	Armor sloughing under abutment	
40025	FRIDAY CREEK 8TH BRIDGE	3	Wire brush and grout exposed rusty rebar in girders.	
		M	Monitor exposed abutment #2 cap.	
40026	FARM-TO-MARKET N DITCH	3	Patch spall on outside of rail at connection (8th post from North)	
40027	BAY VIEW-EDISON at SAMISH SL	2	Brush and patch spalls with exposed rebar in the girders.	
40028	BAY VIEW-EDISON at SAMISH R	3	Paint guardrail posts	
		M	Monitor undermining of gabion baskets at Pier 1 and impacts on approach roadway fill.	
40029	BAY VIEW-EDISON JOE LEARY	1	Deck needs rehab - suggest a modified polymer overlay	30-Jun-21
		1	Backfill material loss under slumping SW gabion	
		1	Recently repaired drainage in SW corner could use additional patching/material (much worse 2021)	
		1	Patch newly exposed rebar in the deck	
		2	Guardrail - 1st post on NE quadrant and SE quadrant are broken and rotten and need replaced.	
		3	Guardrail - block out missing in southwest leg.	
40030	THOMAS RD at SAMISH R	2	Replace missing bolts and nuts (3) on bridge rails. Updated 2021	
		2	Brush and patch spalls in the girders	
		3	Remove barb wire fence from under bridge. Restricting access.	30-Jun-21
40031	PULVER ROAD at JOE LEARY	1	Seal deck with a membrane, to prevent further spalling and corrosion of the rebar.	
		1	Paint bridge rails and posts. See photo.	
		2	Brush and patch spalls in the girders.	
		3	Repair Bridge Rail on southeast corner of bridge, it appears to have been struck.	
		M	Monitor the south abutment soil migration, there is a gap between the abutment cap and the ground. Piles are showing.	
40033	FARM-TO-MARKET at NEUMAN	3	Patch unraveling chipseal.	30-Jun-21
		M	Settlement in North approach.	

Appendix C - Bridge Repairs

BRIDGE NUMBER	BRIDGE NAME	PRI-ORITY	REPAIR DESCRIPTION	CLOSED OUT
40034	FARM-TO-MARKET SAMISH R	1	Some woody debris still needs removed at bent# 5	30-Jun-21
		2	Guardrail has come detached from post - NE transition	30-Jun-21
		2	Rails: Upgrade transition rails to meet current stds.	
		3	Repair object marker post - NE corner.	30-Jun-21
40035	BAY VIEW-EDISON / BIG INDIAN	2	SE guardrail missing 4 nuts and 1 bolt.	
		3	Brush and patch exposed rebar in girders.	
40036	FARM-TO-MARKET JOE LEARY	2	Sweep deck/unplug drains.	
		3	Brush and patch spalls in slab	
		M	Repetitive issue of approach settlement. Long term repair may require dig out and install of a backwall support (gabion baskets), and backfill with suitable material.	
40037	NORTH FORK BRIDGE	1	Remove heavy timber debris from Piers 4 and 5.	30-Mar-22
		1	Extend Pier 6 and 8 bearing base plates with steel plates, similar to the Pier 7 retrofit. Up to 40% of the bearing area has been lost. 3/30/2022 JPP/DWH: Re-wrote repair and added Pier 6 to the repair.	
		1	Repair channel markers to restore them to a functional state.	
		2	Patch the potholes in Span 8. Scale loose concrete around spalls, clean rusty bars, epoxy coat exposed bars, patch spalls.	
		2	Repair or replace both east and west abutment slope drains to prevent further erosion. (3/3/2020 - Added west abutment drain to repair. TKK/WAW)	
		2	Repair or replace both east and west abutment slope drains to prevent further erosion. (3/3/2020 - Added west abutment drain to repair. TKK/WAW)	
40038	LACONNER WHITNEY at SL	1	Remove vegetation from the bridge ends.	22-Sep-21
		2	Scuppers need cleaning out.	22-Sep-21
		2	Paint the bridge rail posts, are peeling and rusty.	
40039	RAINBOW BRIDGE	1	Clear trees/shrubs away from bridge at Pier 4 to make room for UBIT access. (Minor trimming was completed in 2020 - JAC/MA)	28-Apr-22
		1	Remove loose and delaminated concrete from spalled areas in the deck. Clean and paint exposed reinforcement, and patch with an epoxy based compound or other approved material. Do not use asphalt. Spalled areas are located in: Span 4, Panel 2 southbound	28-Apr-22
		1	Remove debris from around the bearings at Piers 4 and 5 and at Span 4, Panel Points 4 and 17. Clean and remove laminar and pack rust down to solid steel and paint with a rust inhibitor.	
		1	Clean all the open panel joints over the floor beams and re-seal them with poured rubber or other flexible joint compound. (Repair re-written, 4/21/14, GAS/PFK)	
		1	Reposition the bronze bearing plates at Bearing 4-17C and Stringer Bearing 5A that extend beyond the bearing base plates. Add a keeper bar to the bearing plates to prevent the bronze plate from "walking out" after repositioning.	
		1	Remove loose and delaminated concrete from spalled areas in the deck. Clean and paint exposed reinforcement, and patch with an epoxy based compound or other approved material. Do not use asphalt. Spalled areas are located in: Span 4, Panel 2, SB and NB	
		1	Remove loose and delaminated concrete from deteriorating patching and spalled areas in the open concrete joints. Clean and paint exposed reinforcement, and patch with an epoxy based compound or other approved material. Do not use asphalt. Spalled areas	
		1	At the following locations, drill out the broken or missing rivets and replace with a an A325 bolt: West arch south face of the Panel Point 3 strut connection. (Two rivets) West arch U10 to U11 west face splice. (Three rivets) (Quantity correction, 4/4/	
		1	At the top rib of the east arch, between U6 and U7, locate the end of the crack that is extending into the rib with dye penetrant. Stop drill a 13/16" diameter hole centered at the end of the crack. Provide a 3/4" A325 bolt.	
		2	Post bridge for weight restrictions	28-Apr-22
		2	Replace the missing bird screens at the following locations: All hangers EXCEPT: U7W, U10W, U12W, and U14E. Verify locations prior to completing repair. (Updated 7/21/2020 - JAC/MA)	

Appendix C - Bridge Repairs

BRIDGE NUMBER	BRIDGE NAME	PRI-ORITY	REPAIR DESCRIPTION	CLOSED OUT
		2	Remove material accumulated on bridge. Where corrosion is found, clean to bare steel and paint. See following locations: Box beam at PP 17, Arch bracing near Pier 5, Pier 4 and 5 footings. (Re-written in 2016, ABK)	
40041	E PETER JOHNSON RD	2	Clean out deposited sediment on top of pier cap.	
		3	Steel diaphragms need paint treatment.	
40042	MILLTOWN at BIG DITCH	3	Clean girders and pier caps of bird guano	
40043	CONWAY HILL @ CARPENTER	1	Crack seal longitudinal cracking in east approach road.	21-Jul-22
		3	Guardrail posts need replaced - 2nd from east bank, downstream side. 4th post from west bank, upstream side.	
		M	Minor settling in west approach roadway.	21-Jul-22
40044	PIONEER HWY at BIG DITCH	1	Replace rotten guardrail posts. NE Quad - Post 1 & 2, SE Quad - Posts 1, 2, & 3, SW Quad - Posts 1 & 2	
		3	Crack seal transverse cracks at each approach and at midspan - Updated 2020	21-Jul-22
40045	PIONEER HWY at FISHER SL	2	Seal transverse cracks in deck.	21-Jul-22
		3	Fill and compact material around catch basin in northeast corner of bridge.	
		3	Guardrail - Post 1 in SE and SW quads needs replaced.	
		M	Scour hole from road runoff between Abut #2 and tidegate structure	
40046	LK CAVANAUGH RD at BEAR	1	Patch both bridge/road joints, >1" of settlement.	20-Jul-22
		1	Add gabion baskets to both abutments to prevent loss of approach road fill.	
		3	Brush and patch rust exposed rebar in girders.	
40047	LK CAVANAUGH at PILCHUCK	1	Exposed rebar in deck needs patched. Deck rehab needed soon.	
		2	Install gabion baskets at both bridge abutments to retain road approach fill material.	
		3	Remove trees at NE and NW corners. Hindering inspections.	
		3	Upgrade Bridge Rails	
40048	LK CAVANAUGH RD CULVERT	2	Remove vegetation to create a path for inspection.	22-Jul-22
		2	Clear log jam at downstream end. Debris beginning to build up into culvert.	22-Jul-22
		M	Debris accumulating at inlet. MONITOR	
40051	BEAVER LAKE RD at NOOKACHAMPS	3	Brush and paint rusting "connection braces" at the girder/abutment joint.	
		M	Losing material behind Abut #2	
		M	Channel migrating to the east upstream of bridge.	
40054	KNAPP RD at NOOKACHAMPS	1	Brush and patch failing patches over pick points	
		2	Repair west approach 2" settlement, and east approach, 1" settlement.	
		M	Erosion in the NW corner under abutment.	
40055	PRAIRIE RD E at SAMISH R	1	Clear debris from intermediate piers	29-Sep-21
		M	Monitor eastern channel migration upstream of bridge during high flows.	
40060	BURMASTER RD at COAL CREEK	3	Repair spalls in concrete curbing, approx. 2'.	
		3	Cover or cut away exposed rebar of damaged curbing at abutment #1.	
		3	Paint rail posts	
		M	Void in armoring along Abut #2, 3' deep - MONITOR	
40061	MINKLER RD at WISEMAN CREEK	1	Remove woody debris under the bridge.	
		2	Remove Fence from downstream headwalls	13-May-22
		2	Clean and patch spall in Girder #5.	
		3	NW End Treatment has minor damage but appears to be still functioning properly	13-May-22
		M	2 failed gabion baskets along Abut#2, quarry spalls dumped out.	
40062	UTOPIA RD at BLACK SLOUGH	2	Clear vegetation growing through guardrail out into roadway.	
		2	Patch spalling occurring at the outside girder joints over middle pier	
		3	Remove barb wired fencing from bridge.	
		3	Replace rotten blockout along guardrail in NW quadrant	
40063	LYMAN HAMILTON HWY at CHILDS CREEK	2	Brush rebar and patch spall at NW abutment/girder joint.	
		3	Pressure wash balluster rails and sides.	
		3	Missing nut on guardrail post: 2nd post from the west end, downstream side. Guardrail post rotten: 3rd post from southwest end.	
		M	Channel migrating west in the NW corner of bridge - MONITOR	13-May-22
		M	Spacer blocks on bridge rail retrofit are showing signs of rot.	
40066	HAMILTON CEMETERY RD at MUDDY CREEK	1	A/C level west approach - 2" of settlement.	
		3	Pressure wash curbs.	
40067	CAPE HORN RD at	1	Patch potholes in asphalt deck.	26-May-22

Appendix C - Bridge Repairs

BRIDGE NUMBER	BRIDGE NAME	PRI-ORITY	REPAIR DESCRIPTION	CLOSED OUT
	ALDER CREEK	2	Repair or replace damaged gabion basket	
		2	Brush and patch exposed rebar in girders (60 linear feet)	
		3	Pressure wash moss off of bridge	
		M	Upstream channel migration to the west. Stream approaching bridge at angle now with higher velocities at Abutment #2	
40068	CAPE HORN RD at GRANDY CREEK	2	Patch previous patch fail in the deck, near centerline.	
		M	Monitor the bank protection, check after high water.	
40069	CONRAD RD at SWIFT CREEK	1	Replace lost grout in deck at girder pick points.	
		2	Brush and patch exposed rebar in girder channels.	
40070	SKAGIT RIVER MARBLEMOUNT	0	Replace split spacer block at northeast corner.	22-Mar-22
		1	Repair or replace the 20 ft. length of damaged guardrail at the northwest corner.	
		1	Remove debris from upstream face of Pier 4. (This is a recurrent problem, consider the installation of a shark or debris deflector).	
		1	Trim vegetation below Span 2 before next scheduled UBIT inspection in 3/2024 (vegetation inhibits UBIT access).	
		1	Remove loose or spalled concrete from the spalled deck surface over Span 1. Clean and paint any exposed rebar and patch with an approved material.	
		1	Bottom chords of both north and south trusses have a few areas of debris that inhibits inspection (areas are primarily over land at ends of truss spans). Clean debris from bottom chords prior to each UBIT inspection (majority of debris can be seen and ma	
		1	Remove loose ACP and patch pothole at east abument joint in the eastbound lane.	
		1	Install signage for Load Restrictions. Per Washington State Bridge Inspection Manual M 36-64.12; WSBIS Item 1293 Code "R" = "Posted for other load-capacity restriction (speed, number of vehicles on structure, etc.). Requires a physical posted sign at th	
		2	Remove rust, apply rust inhibitor and touch-up paint the stringers at the following locations: Stringer 10G top flange (at Floorbeam 9). Stringer 11G top flange (at Floorbeam 10). Stringer 13G bottom flange (at Floorbeam 13) at erection angle seat. Strin	
		2	Replace missing nut at Truss span Bearing 2A at the southwest corner for the masonry plate and tighten loose nut at the southeast corner.	
40071	CASCADE RIVER BRIDGE	1	Repair thrie beam transition at nw corner. Damaged from fallen tree.	
		1	Patch spalls in deck (8 SF)	
		2	Clean drains - plugged with debris	
		M	River mainstem appears to be shifting South, upstream of bridge - MONITOR	
40072	CASCADE RIVER RD at MONOGRAM	3	Patch approach roadway at bridge joint.	22-Jun-22
		3	Concrete repair: patch left and right wingwalls; and abutment #2.	
		M	Waterway: monitor bridge at high water, stream overtops the bridge and bypasses on the left end.	
40073	CASCADE RIVER ROAD AT LOOKOUT CREEK	1	Remove unstable boulder at the NW corner before it rolls down the slope and impacts Pier 2.	
		M	Drain flow path has eroded bank and become very steep. Currently stable. MONITOR SMT/TRM 2020- No significant changes.	
40074	CASCADE RIVER RD at MARBLE CREEK	2	SE Wrap around end treatment is damaged	
		2	NE End treatment isn't up to standard	
		2	Repair: fourth rail post from right D corner is bent from impact, base plate is still in place.	
		3	Improve drainage at SE corner, routing water away from wingwall.	
40075	CASCADE RIVER RD at SIBLEY CREEK	2	Panel 16 has loose bolt - 1 1/8" socket	22-Jun-22
		2	Pressure wash deck and remove material between panels	
40076	CASCADE RIVER RD at	M	Monitor Southwest retaining wall - slightly out of plum	

Appendix C - Bridge Repairs

BRIDGE NUMBER	BRIDGE NAME	PRI-ORITY	REPAIR DESCRIPTION	CLOSED OUT
	HARD CREEK	M	Scour hole located under shotcrete Abut#2 side. MONITOR	
40077	CASCADE RIVER RD at MINERAL PARK	1	Fill potholes in bridge approach.	
		2	Sweep deck, lots of gravel tracked onto it.	
		2	Mitigate loss of approach road fill with gabion baskets and back filling.	
		3	Fallen tree damage to Guardrail, NE quadrant.	
40080	S SKAGIT HWY at PARKER CREEK	M	Small scour hole forming - MONITOR	
40081	S SKAGIT HWY at DAY CREEK	2	Wire brush and patch exposed rusty rebar in the girders	
		2	Brush and patch spall with exposed rebar on outside pier restrainer.	
		3	Settlement reoccurring in both approach roadways. Last repaired in 2014	13-Jul-22
		M	Monitor for debris and localized scour.	
40082	S SKAGIT HWY at LORETTA CREEK	1	Guardrail - replace 1st transition post in SE Quad	13-Jul-22
		1	2.5" deep pothole on eastbound approach	
		2	Wire brush and patch or paint rusty rebar on girders.	
		2	Patch deck areas with exposed rebar, 20' from west end.	
		3	Guardrail - 2nd transition post in NE Quad is beginning to rot.	13-Jul-22
		3	Paint rail posts	
40083	S SKAGIT HWY at CUMBERLAND CREEK	2	Paint rail posts	
		3	Replace guardrail post: NW Quad, 5th post.	
		M	Channel has been rerouted downstream of bridge - MONITOR	
40084	S SKAGIT HWY at O'TOOLE CREEK	2	Rail posts need cleaning and paint. - Updated 2022	
		M	Loss of armoring is causing sloughing behind Abut #2. May be causing material loss and dips at the approaches. Updated 2020	
		M	Monitor right bank repair upstream of bridge. Large rootwad cabled to riprap was installed in 9/2003.	
40086	S SKAGIT HWY at MILL CREEK	1	Replace damaged wood guardrail posts on upstream side.	13-Jul-22
		2	Patch exposed rebar in the girders.	
		2	Replace failed patch in westbound lane.	
		2	Replace damaged wood guardrail posts on downstream side.	
40088	S SKAGIT HWY at PRESENTIN CREEK	1	Resurface / rehabilitate bridge deck	
		3	Replace missing creek name sign.	08-Jul-22
		3	Paint steel rail posts.	
		M	LWD in channel causing localized scour	08-Jul-22
		M	Upstream channel migrated into east channel, west is filling with sediment - MONITOR	
40089	S SKAGIT HWY at FINNEY CREEK	1	Patch spall with exposed rebar on abut #2 under G1	
		1	Clear debris from Piers 2 & 3	
40090	DALLES BRIDGE	1	Post bridge for weight restrictions	29-Mar-22
		1	Truss members at both ends of the bridge have heavy moss growth that is blocking drainage, including the transverse member / restrainer block over Piers 3 and 4, (L3 and L15). Clean affected members and open drilled holes for drainage to prolong paint li	
		2	Update Load Rating Information based on most recent Load Rating Data.	30-Mar-21
40091	CSV TEMPORARY BR	M	Monitor North bank and migration towards abutment. Armoring may be necessary. Updated 12/7/21	
40093	UPPER FINNEY CREEK BRIDGE	1	Splice weld damaged rebar and patch spalls in soffit (4)	
		2	Clear moss and debris from rails and deck.	
		2	Remove fallen boulders from behind Pier 3	
		3	Patch spall in North rail.	
		M	Monitor cracks in pier 4 column near top end around weak point.	
40094A	ROCKPORT CASCADE at ILLABOT CREEK	3	Replace rubber joints	
40094B	RYAN CROSSING at ILLABOT CREEK	2	Crack seal transverse cracking in pavement over bridge joints.	
40094C	HOLLOW CEDAR at ILLABOT CREEK	1	Settlement in west bound approach with alligator cracking in asphalt.	
		2	Crack seal asphalt at bridge joints.	
40095	ROCKPORT CASCADE RD at JORDAN CREEK	1	Patch potholes in west approach.	15-Jun-22
		3	Previous scour repair on east bank could use some additional rip-rap.	
40099	GOVERNMENT BRIDGE	1	Post bridge for weight restrictions	30-Jun-21

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BRIDGE NUMBER	BRIDGE NAME	PRI-ORITY	REPAIR DESCRIPTION	CLOSED OUT
		1	Replace steel sleeper channel in Span 3 (21st sleeper channel from the west end). Defect monitoring history: 2014: 12" and 4" tears. No changes. 2016: Horizontal web tears measure 12" and 7-3/4". Length increased by 3-3/4". 2018: Horizontal web tears mea	
		1	Secure or remove section of broken steel grid deck in Span 2, Panel 3. Revised 2018 (SRD/TRM).	
		2	Repair or replace the blocking and support for the north side metal bridge railing, in Span 2 between Panel Points L1 and L2.	
		M	Monitor the steel deck and sleeper channels in areas of cracked welds and laminar tears. Noted defects are in Span 1, Span 2 curb and grate to channel connections primarily within Panels 1 and 9, Span 3 sleeper channels. 2022 - DAM/CMW - No change.	
40101	BAKER LAKE RD at BEAR CREEK	1	Additional potholes and failing patches in deck and at road/bridge joints	
		1	Sweep shoulders and clear scuppers	
		3	Brush and patch exposed rusty rebar in girders and abutment.	
		M	Losing approach road fill material behind abutments.	
40106	LAKE SAMISH RD at BEAR CREEK	2	Seal the deck with polymer overlay	
		3	Paint bridge rail posts	
		3	Add material to shoulders at deck joint, 2" to 6" on both sides.	
40109	LAKE SAMISH RD at FRIDAY CREEK	2	Brush and patch exposed rebar in girders.	
		2	Repair: Bridge rail posts need painting	
		2	Repair loose Type III sign southwest corner.	
		M	Armoring sloughing along Abut #1 - Monitor	
40110	BURLINGTON NORTHERN OVERPASS	2	Seal cracks on deck over pier caps with epoxy resin	
		3	Clear debris from expansion joints on deck joint.	
		3	Tighten screws on multiple electrical panels located on concrete rails.	
		M	Monitor cracking occurring on bottom flange of girders, marked and dated.	
40113	OLD HWY 99 at THOMAS CREEK	1	Install temporary shoring around red tagged pile.	24-Sep-21
		1	Patches in driving surface are failing	
		2	Replace or reinforce rotted timber abutment planks along bottom of both abutments.	
		3	Replace rotten timber girders on each end of span 3	
40114	SAMISH RIVER BRIDGE	1	Remove joints at Pier 3 and Pier 4 and re-engineer and install new joint systems.	28-Mar-22
		1	Clean sand and debris from bottom chord. North half of bridge can probably be reached from below with a ladder. 2018 - Sand and debris is accumulating in the bottom chord, but did not impact inspection. (SRD/TRM)	
		1	Restore riprap around Pier 3. 2022 - Updated photo (JPP/DWH)	
		1	Repair cope cracks at the following locations: Stringer 3A at FB 3: 1/2" crack. See "Cope Crack Repair Detail" in the Files tab for repair procedure and other details.	
		2	At west truss, vertical L2-U2, tighten the bolt at the upper sway to the proper torque.	
40115	OLD HWY 99 at FRIDAY CREEK	1	Vactor out clogged drains (2)	
		1	Replace damaged rail (~40') SE quad - Revised 2021	
		2	Replace Post 1, NW rail - rotten	
		3	Replace multiple rotten spacer blocks (2 east rail, 6 west rail)	
40116	OLD HWY 99 at SILVER CREEK	M	scour under abutment #2, downstream end.	26-May-21
40120	BAKER LAKE RD at W FORK GRANDY CREEK	1	Replace failed armoring below west abutment.	08-Jul-22
		2	Repair scoured shoulder and improve drainage.	
		3	Remove debris and vegetation along curbs.	
40126	MARCHS POINT PIPELINE	2	Wire brush and patch spalls in underside of span 2 & 3 slab.	
		3	Patch or replace curb - cracked and spalling at north/west corner.	
40129	LYMAN HAMILTON HWY at MUDDY CK	1	Clear debris hung up on Girder 1	
40130	LYMAN HAMILTON	2	Pothole at SE approach	

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BRIDGE NUMBER	BRIDGE NAME	PRI-ORITY	REPAIR DESCRIPTION	CLOSED OUT
	HWY at RED CABIN CK	3	Backfill sloughing shoulder, NW corner.	
		3	Westbound guardrail end treatment damaged (NE quadrant)	
		3	Concrete baluster rail needs pressure washed.	
		M	Scour hole at downstream end of Abut #2 - Monitor (2020 Update - filled back in)	25-May-22
40131	LYMAN HAMILTON HWY at MANNSEK CK	2	Upgrade Guardrails	
40132	LYMAN HAMILTON HWY at JONES CREEK	3	Pressure wash concrete bridge rails	
		M	Woody debris hung up on pier 3 causing local scour.	
40140	BAKER LAKE RD at E GRANDY CREEK	1	Replace upstream top rail - section loss and corrosion.	
		1	Wire brush and patch exposed rusty rebar and failed patches.	
		2	Remove debris and vegetation along curbing	
		3	The SW rail and end treatment need to be raised. Currently top of rail is at 17"	
		M	Slight settlement in east approach from loss of road approach material behind abutments.	08-Jul-22
40141	BAY VIEW STATE PARK	2	Paint bridge rails and posts.	
		3	Rails: upgrade to meet current standards.	
		3	Clean out debris along joints.	
40142	CAMPBELL LAKE OUTLET	2	Wire brush and patch spalled out pick points.	
		M	S.S. screen upstream of bridge	22-Sep-21
		M	Watch for insect damage to piles and caps.	
40151	NICHOLSON at CHILDS CREEK	2	Patch potholes at southern approach at the joint.	13-May-22
		2	Clear vegetation and debris from expansion joints.	
		3	Rotten block out posts #'s 1 2 & 5 on downstream side, 6 & 7 on upstream side.	
40152	ANACORTES FERRY DOCK	1	Girders 1H, 1I and 1J have cracks and delaminations and spalls in the bottom chord on most of the shore side half.	
		1	Two options: Continue with the bulb T replacement of the three easternmost girders. Possible pre-coating the strands and reinforcement, or u	15-Apr-22
		1	Repair cracked locations in the apron: The right two longitudinal supports for the apron are cracked at hinge beam. Left tip of apron beam/curb is cracked.	
		1	Girder 3A is gouged on the bottom flange. Grind and polish smooth. Touch-up protective coating on Girder 3A.	
		1	Repair the crack in the bridge seat joint header, right wheel line when looking offshore. Crack in steel plate is approximately 2 ft. long and may be repaired by cleaning and welding.	
		1	Clean exposed steel and coat with a rust inhibitor. Patch section loss with exposed rebar in Girder 2A along top flange and underneath steel header located at Pier 3.	
		2	Seal vertical crack located at Pier 2 diaphragm.	
		2	Repair or replace breakwater connection plate at 8th pile.	
		2	Transfer span framing has scattered rust blooms in the girders, floorbeams, stringer clip angles, and bottom diagonals. Steel headframe has bolt heads and nuts with rust blooms. Clean to bright steel, prime, and spot paint.	
		2	Repair the crack in the connection of the grid deck to Stringer 4D at Floorbeam 3, near the centerline of the deck.	
		2	Left wingwall has portion of missing rub face material. Replace damaged area.	
		3	Many of the PVC utility supports have slipped out of place from the utility hanger. Secure them in place at the utility hanger.	
		3	Reset dislodged spacer blocks.	
40153	GUEMES ISLAND FERRY DOCK	1	Clean and spot paint all steel areas which have corrosion.	
		1	Hinge beam is cracked on the outer and bottom face near the middle of the beam. Beam is 6" x 12" HSS. Repair location. County was notified during inspection of defect.	
		1	The apron has several areas of cracking. Repair the following locations: Right longitudinal strut is cracked at the connection to the hinge beam. Left tip of apron beam/curb is cracked.	

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BRIDGE NUMBER	BRIDGE NAME	PRI-ORITY	REPAIR DESCRIPTION	CLOSED OUT
		2	Rail base/curb is spalled at Pier 1. Remove loose material, coat any exposed rebar and patch with concrete.	
		2	Replace upper clevis pin on right hoist platform. This pin has insufficient grip length causing threads in bearing.	
		2	Transfer span has several welded on attachments that have rusted off. Re weld or clamp attachments in place.	
40156	CEDARDALE RD at CARPENTER CREEK	1	Brush and patch exposed rebar in deck (7 LF)	
		1	Repair cable rail, sw quadrant.	
		2	Replace all block outs with 6" blocks on rails. Updated 2020	
		2	Upgrade bridge rails / transition / guardrail / end treatments	
40157	BENSON RIDGE LN at CARPENTER CREEK	1	Deck board (15' x 10") SW End needs to be replaced.	
		2	Impact Damage to NW Corner of Guardrail,	
		2	Tighten cleats. Last performed in 2010	
		3	Top rail on West side of bridge showing deterioration, replace beam	
		3	Section loss in deck. Replace 2' of failed board.	
40159	MINKLER RD at COAL CREEK	1	Coal Creek in need of sediment management project and remove debris from underneath bridge. Updated 2020	
		1	Replace all rail posts that are damaged (6 upstream side, 2 downstream side)	
		1	Install missing guardrail posts SE quadrant.	
		2	Repair spalls upstream side of bridge (12)	
40161	FLINN ROAD at MCELROY SLOUGH	3	Sweep deck	
		3	Clear weeds and patch spalls in deck at joint of Abut #2	
40162	BLANCHARD RD at MCELROY SLOUGH	2	Re-weld fence post to base plate located on SE wingwall.	
		2	Replace broken guardrail post on the NE end treatment.	
		3	Replace grout in wingwall joints and around culverts.	
40163	HELMICK RD at RED CREEK	3	Sweep and patch low spot in shoulder along southbound lane	
		M	Creek eroding both banks and nearing abutment piles.	
40164	S LAVENTURE RD at MADDOX CREEK	1	Replace damaged guardrail in NW quad (2 sections)	
		M	Maddox Creek migrating towards west abutment wall - Monitor	