

OKANOGAN COUNTY COMMISSIONERS

RESOLUTION 100 - 2021

WHEREAS, pursuant to RCW 36.81.121, the Legislative Authority of each County, with the advice and assistance of the County Road Engineer, and pursuant to one or more public hearings thereon, shall prepare and adopt a comprehensive program including proposed road, bridge, path and trail construction projects, and any other specified capital outlays for the following six-year period, and;

WHEREAS, the current Priority Programming Array and Bridge Inspection Report have been provided along with the proposed Six-Year Transportation Improvement Program to aid in its evaluation, and;

WHEREAS, the proposed program is based on a realistic assessment of available funding for the program period, and;

WHEREAS, the proposed program is consistent with the goals and objectives of the Transportation Element of the Okanogan County Comprehensive Plan and the Transportation Element is hereby updated to reflect this current adopted Six Year Transportation Improvement Program, and;

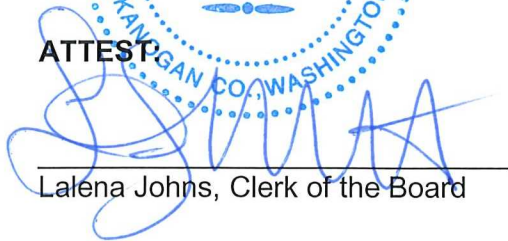
WHEREAS, a public hearing was held on August 10, 2021 at 11:15 a.m. for the purpose of gathering public input on the proposed program;

NOW, THEREFORE BE IT RESOLVED, that the attached Six-Year Transportation Improvement Program for the years 2022 to 2027 is hereby adopted by Okanogan County as required by R.C.W. 36.81.121.

DATED at Okanogan, Washington this 10th day of August, 2021.



ATTEST


Lalena Johns, Clerk of the Board

**BOARD OF COUNTY COMMISSIONERS
OKANOGAN, WASHINGTON**


Chris Branch, Chairman


Andy Hover, Vice Chairman


Jim DeTro, Member



Six Year Transportation Improvement Program From 2022 to 2027

Agency: Okanogan Co.

County: Okanogan

MPO/RTPO: OCOG RTPO

N Inside

Y Outside

Functional Class	Priority Number	A. PIN/Project No. C. Project Title D. Road Name or Number E. Begin & End Termini F. Project Description	B. STIP ID G. Structure ID	Hearing	Adopted	Amendment	Resolution No.	Improvement Type	Utility Codes	Total Length	Environmental Type	RW Required
08	1	Salmon Creek Road Drainage 9221 2.950 to 3.10 Replace existing culvert.	9221-04					06		0.150	CE	No

Funding								
Status	Phase	Phase Start Year (YYYY)	Federal Fund Code	Federal Funds	State Fund Code	State Funds	Local Funds	Total Funds
S	CN	2023		0	CRAB	695,700	77,300	773,000
Totals				0		695,700	77,300	773,000

Expenditure Schedule					
Phase	1st	2nd	3rd	4th	5th & 6th
CN	0	773,000	0	0	0
Totals	0	773,000	0	0	0



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07	2	Okanogan County Wide Pavement Preservation varies to varies Crack Seal as needed, Pre-Level as needed, Chip Seal.	STP - P2					05			CE	No

Funding								
Status	Phase	Phase Start Year (YYYY)	Federal Fund Code	Federal Funds	State Fund Code	State Funds	Local Funds	Total Funds
P	PE	2023	STP(R)	25,000		0	3,902	28,902
P	CN	2024	STP(R)	500,000		0	78,035	578,035
Totals				525,000		0	81,937	606,937

Expenditure Schedule					
Phase	1st	2nd	3rd	4th	5th & 6th
PE	0	28,902	0	0	0
CN	0	0	578,035	0	0
Totals	0	28,902	578,035	0	0



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05	3	Old 97 (Verestar to Plata Road) 9155 4.15 to 5.35 Minor Alignment Changes, rebuild, resurface to all weather road and install guardrail.	9155-20					04	P T W	1.200	CE	No

Funding								
Status	Phase	Phase Start Year (YYYY)	Federal Fund Code	Federal Funds	State Fund Code	State Funds	Local Funds	Total Funds
S	CN	2024		0	CRAB	1,674,000	186,000	1,860,000
Totals				0		1,674,000	186,000	1,860,000

Expenditure Schedule					
Phase	1st	2nd	3rd	4th	5th & 6th
CN	0	0	1,860,000	0	0
Totals	0	0	1,860,000	0	0



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07	4	Cameron Lake Road 3R 9309 3.30 to 4.50 Realigned and widen road with HMA or BST, drainage and safety improvements.	9309-13					04	P T	1.200	CE	Yes

Funding								
Status	Phase	Phase Start Year (YYYY)	Federal Fund Code	Federal Funds	State Fund Code	State Funds	Local Funds	Total Funds
S	RW	2022		0	CRAB	55,800	6,200	62,000
S	CN	2023		0	CRAB	1,269,200	141,022	1,410,222
Totals				0		1,325,000	147,222	1,472,222

Expenditure Schedule					
Phase	1st	2nd	3rd	4th	5th & 6th
RW	62,000	0	0	0	0
CN	0	1,410,222	0	0	0
Totals	62,000	1,410,222	0	0	0



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00	5	Bridge Rail Retrofit Varies Varies to Varies Retrofit Bridge Rail	BGRAIL FIT Varies					21	P T		CE	No

Funding								
Status	Phase	Phase Start Year (YYYY)	Federal Fund Code	Federal Funds	State Fund Code	State Funds	Local Funds	Total Funds
P	PE	2023	HSIP	51,900		0	8,100	60,000
P	CN	2024	HSIP	651,146		0	0	651,146
Totals				703,046		0	8,100	711,146

Expenditure Schedule					
Phase	1st	2nd	3rd	4th	5th & 6th
PE	0	60,000	0	0	0
CN	0	0	651,146	0	0
Totals	0	60,000	651,146	0	0

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08	6	Rodeo Trail (Fairgrounds Section) 3175 0.960 to 2.30 Reconstruct surface lanes and shoulder widths to limit seasonal weight restrictions.	WA-11443					04	O P T	1,340	CE	Yes

Funding								
Status	Phase	Phase Start Year (YYYY)	Federal Fund Code	Federal Funds	State Fund Code	State Funds	Local Funds	Total Funds
P	PE	2022	STP(R)	142,725		0	22,275	165,000
P	RW	2023	STP(R)	86,500		0	13,500	100,000
P	CN	2024	STP(R)	1,427,250		0	222,750	1,650,000
Totals				1,656,475		0	258,525	1,915,000

Expenditure Schedule					
Phase	1st	2nd	3rd	4th	5th & 6th
PE	165,000	0	0	0	0
RW	0	100,000	0	0	0
CN	0	0	1,650,000	0	0
Totals	165,000	100,000	1,650,000	0	0

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08	7	Mazama Intersection Lost River Rd 0.35 to 0.50 Alignment, Base Course, Top Course, HMA or BST Asphalt, Stripe and Sign.	9140-07					03	P T	0.150	CE	Yes

Funding								
Status	Phase	Phase Start Year (YYYY)	Federal Fund Code	Federal Funds	State Fund Code	State Funds	Local Funds	Total Funds
P	PE	2023	STP(R)	47,575		0	7,425	55,000
P	RW	2024	STP(R)	12,975		0	2,025	15,000
P	CN	2025	STP(R)	173,000		0	27,000	200,000
Totals				233,550		0	36,450	270,000

Expenditure Schedule					
Phase	1st	2nd	3rd	4th	5th & 6th
PE	0	55,000	0	0	0
RW	0	0	15,000	0	0
CN	0	0	0	200,000	0
Totals	0	55,000	15,000	200,000	0

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07	8	Loomis Oroville Road 9425 6.00 to 7.25 Minor realignment, widening, grading, ballast, top course, and HMA or BST.	9425-26					04	P T W	1.250	CE	Yes

Funding								
Status	Phase	Phase Start Year (YYYY)	Federal Fund Code	Federal Funds	State Fund Code	State Funds	Local Funds	Total Funds
P	PE	2023		0	CRAB	126,000	14,000	140,000
P	RW	2024		0	CRAB	22,500	2,500	25,000
P	CN	2025		0	CRAB	1,651,500	183,500	1,835,000
Totals				0		1,800,000	200,000	2,000,000

Expenditure Schedule					
Phase	1st	2nd	3rd	4th	5th & 6th
PE	0	140,000	0	0	0
RW	0	0	25,000	0	0
CN	0	0	0	1,835,000	0
Totals	0	140,000	25,000	1,835,000	0



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00	9	/ 000S(542) Countywide Speed Limit and Striping various various to various Evaluate and update posted speed limits. Evaluate and update pavement marking policy and install additional pavement markings.	WA-12029					21	P T W		CE	No

Funding								
Status	Phase	Phase Start Year (YYYY)	Federal Fund Code	Federal Funds	State Fund Code	State Funds	Local Funds	Total Funds
S	CN	2022	HSIP	57,000		0	0	57,000
Totals				57,000		0	0	57,000

Expenditure Schedule					
Phase	1st	2nd	3rd	4th	5th & 6th
CN	57,000	0	0	0	0
Totals	57,000	0	0	0	0



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05	10	Loomis Oroville Road Drainage 94250 0.280 to 0.660 Replace 3 Old deteriorated culverts with approximate 10' span culverts. Guardrail modifications maybe required to accommodate the culverts.	WA-12937					04	P T W	0.380	CE	No

Funding								
Status	Phase	Phase Start Year (YYYY)	Federal Fund Code	Federal Funds	State Fund Code	State Funds	Local Funds	Total Funds
S	PE	2022		0	CRAB	45,000	5,000	50,000
S	CN	2024		0	CRAB	315,000	35,000	350,000
Totals				0		360,000	40,000	400,000

Expenditure Schedule					
Phase	1st	2nd	3rd	4th	5th & 6th
PE	50,000	0	0	0	0
CN	0	0	350,000	0	0
Totals	50,000	0	350,000	0	0



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07	11	Old 97 - 2R 5.35 - 6.85 9155 5.35 to 6.85 Minor realignment, widening, gradeing, drainage, ballast, top course and BST.	WA-12938					05	P T W	1.500	CE	No

Funding								
Status	Phase	Phase Start Year (YYYY)	Federal Fund Code	Federal Funds	State Fund Code	State Funds	Local Funds	Total Funds
P	PE	2023		0	CRAB	118,800	13,200	132,000
P	CN	2025		0	CRAB	1,107,900	123,100	1,231,000
Totals				0		1,226,700	136,300	1,363,000

Expenditure Schedule					
Phase	1st	2nd	3rd	4th	5th & 6th
PE	0	132,000	0	0	0
CN	0	0	0	1,231,000	0
Totals	0	132,000	0	1,231,000	0



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07	12	Old 97 3R 6.85 - 8.27 9155 6.85 to 8.27 Minor realignment within existing right of way, widening, grading, drainage, ballast, top course and HMA or BST. Guardrail may be necessary on short grade section.	WA-12940					04	P T W	1.420	CE	No

Funding								
Status	Phase	Phase Start Year (YYYY)	Federal Fund Code	Federal Funds	State Fund Code	State Funds	Local Funds	Total Funds
P	PE	2022		0	CRAB	168,300	18,700	187,000
P	CN	2024		0	CRAB	2,345,400	261,000	2,606,400
Totals				0		2,513,700	279,700	2,793,400

Expenditure Schedule					
Phase	1st	2nd	3rd	4th	5th & 6th
PE	187,000	0	0	0	0
CN	0	0	2,345,400	0	0
Totals	187,000	0	2,345,400	0	0

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07	13	Twisp River Road 2.82 - 4.02 9114 2.82 to 4.02 Minor realignment within existing right of way, widening, grading, drainage, ballast, top course and HMA or BST.	WA-12942					04	P T W	1.200	CE	No

Funding								
Status	Phase	Phase Start Year (YYYY)	Federal Fund Code	Federal Funds	State Fund Code	State Funds	Local Funds	Total Funds
P	PE	2023		0	CRAB	125,100	13,900	139,000
P	CN	2025		0	CRAB	1,741,500	193,500	1,935,000
Totals				0		1,866,600	207,400	2,074,000

Expenditure Schedule					
Phase	1st	2nd	3rd	4th	5th & 6th
PE	0	125,100	0	0	0
CN	0	0	0	1,935,000	0
Totals	0	125,100	0	1,935,000	0



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N Inside

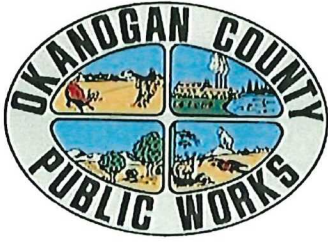
Y Outside

Functional Class	Priority Number	A. PIN/Project No. C. Project Title D. Road Name or Number E. Begin & End Termini F. Project Description	B. STIP ID G. Structure ID	Hearing	Adopted	Amendment	Resolution No.	Improvement Type	Utility Codes	Total Length	Environmental Type	RW Required
07	14	Twisp River Bridge Repair C-8 9114 1.287 to 1.307 Repair the deck which has delaminations over 10% of the surface area, and replace the failed paint system on the steel girder elements to extend the life of the structure.	WA-13595 C-8					47	P T W	0.020	CE	No

Funding								
Status	Phase	Phase Start Year (YYYY)	Federal Fund Code	Federal Funds	State Fund Code	State Funds	Local Funds	Total Funds
S	PE	2022	STP(BR)	103,800		0	14,013	117,813
S	CN	2022	STP(BR)	882,400		0	0	882,400
Totals				986,200		0	14,013	1,000,213

Expenditure Schedule					
Phase	1st	2nd	3rd	4th	5th & 6th
PE	103,800	0	0	0	0
CN	882,351	0	0	0	0
Totals	986,151	0	0	0	0

	Federal Funds	State Funds	Local Funds	Total Funds
Grand Totals for Okanogan Co.	4,161,271	11,461,700	1,672,947	17,295,918



MEMORANDUM

Date: August 5, 2021

To: Board of Okanogan County Commissioners

From: Josh Thomson P.E., Director/County Engineer

Subject: 2022-2027 Revenue and Expenditure Analysis

The attached Revenue and Expenditure Analysis is a required component of the 6-year Transportation Improvement Program, and is a good tool to assess trends and options for capital expenditures.

Revenues assume no levy shift and a 1.5% road levy increase per year. Motor Vehicle Fuel Tax and County Arterial Preservation Program funds (derived from MVFT) are based on the latest forecasts from CRAB and WSDOT, and appear to be at pre-COVID levels. Future years are projected at a 2% annual increase. Federal Forest Yield is projected to continue to decrease at 5% per year.

Revenues and expenditures for large construction projects include all of the funded projects in the TIP. This leaves both the revenues and expenditures for engineering at zero in 2024-2027, but I anticipate more projects will be funded in the next two years to bring them more in line with the 2022 figures. Project engineering revenues are typically 88% of the expenditures, so this will have little impact on the projected fund balance. Three STP-funded are likely to be awarded in the next month, and will be added to the 6-year plan at that point. These will likely include funding for chip seal in 2022, an overlay on Twisp River Rd in 2023, and a reconstruction project on Twisp River Rd in 2024. These are not included in the revenue and expenditure analysis at this point, but will have a negligible impact on the bottom line because the chip seal funds will decrease county funds used in 2022, which will offset the local match for the other two projects.

Expenditures for normal maintenance and administration activities assume a 3% annual escalation to account for labor and benefit increases, construction materials and equipment inflation, and fuel price increases. 3% may be a bit low to account for all of these factors. Chip seal costs are assumed to increase 7% per year because they are more heavily influenced by construction cost inflation, which outpaces the CPI-based inflation rate. Chip seal is estimate at 65 miles per year, which yields a 10-year average rotation on our paved roads.

Construction of new shops at Winthrop and Tonasket planned in 2022 assumes the investment comes from the capital improvement fund. The proposed pit purchase in 2023 will likely only be possible if the Methow property is sold first.

Revenue and Expenditure Analysis

OKANOGAN County SIX-YEAR TRANSPORTATION IMPROVEMENT PROGRAM REVENUE AND EXPENDITURE ANALYSIS

Co Rd/Co Rd Construction:	2022	2023	2024	2025 - 2027
REVENUES:				
BEGINNING FUND BALANCE	5,100,000	4,995,546	4,379,329	3,676,847
REAL & PERSONAL PROPERTY TAX				
LESS CO ROAD DIVERSION	5,095,103	5,171,530	5,249,103	16,219,728
LEVY SHIFT (enter as negative)				
MOTOR VEHICLE FUEL TAX	3,596,909	3,668,800	3,742,200	11,675,700
CO ARTERIAL PRES PROGRAM	636,584	649,300	662,300	2,066,400
RURAL ARTERIAL PROGRAM	240,300	3,661,400	315,000	0
UATA				
IAC-SALMON RECOVERY FUND				
FEDERAL - HSIP	51,300	0	0	0
FEDERAL - BRIDGE REPLACEMENT	1,017,813	882,400		
FEDERAL - STP REGIONAL	0	21,625	500,000	0
FEDERAL - FOREST YIELD	620,000	589,000	559,600	1,510,900
FEDERAL - OTHER				
WSDOT PARTICIPATION				
BRIDGE REPLACEMENT PROGRAM				
HAZARD ELIMINATION PROGRAM				
OTHER INTERGOVERNMENT & STATE SHARED	36,000	36,000	36,000	108,000
CHARGES FOR SERVICES	22,000	24,000	25,000	75,000
LICENSES & PERMITS	18,000	18,000	18,000	54,000
OTHER MISCELLANEOUS REVENUES	34,000	34,000	34,000	102,000
GENERAL OBLIGATION BOND PROCEEDS				
PROCEEDS FROM SALE OF FIXED ASSETS		700,000		
SPECIAL PURPOSE PATH				
PUBLIC WORKS TRUST FUND				
CRIDS				
SEPA				
OPERATING TRANSFER	25,000	20,000	17,000	51,000
IMPACT FEES				
TOTAL REVENUES & FUND BALANCES:	\$16,493,009	\$20,471,601	\$15,537,532	\$35,539,575

Revenue and Expenditure Analysis

OKANOGAN County

SIX-YEAR TRANSPORTATION IMPROVEMENT PROGRAM REVENUE AND EXPENDITURE ANALYSIS

Co Rd/Co Rd Construction:	2022	2023	2024	2025 - 2027
EXPENDITURES:				
CONSTRUCTION PROJECT ENGINEERING	384,813	130,000	0	0
ROAD SURFACES MAINTENANCE	2,266,000	2,334,000	2,404,000	7,645,000
ROAD PREVENTATIVE MAINTENANCE (CHIP SEAL)	1,870,000	2,001,000	2,141,000	7,322,000
STORM DRAINAGE	325,000	335,000	345,000	1,097,000
STRUCTURES	50,000	52,000	54,000	172,000
TRAFFIC SAFETY DEVICES	450,000	464,000	478,000	1,520,000
STREET CLEANING	100,000	103,000	106,000	337,000
SNOW & ICE CONTROL	1,580,000	1,627,000	1,676,000	5,330,000
ROADSIDE	440,000	453,000	467,000	1,485,000
PITS & QUARRIES	205,000	211,000	217,000	690,000
PIT PURCHASES		600,000		
MAINTENANCE ADMINISTRATION	785,000	809,000	833,000	2,649,000
FACILITIES	180,000	185,000	191,000	607,000
FACILITIES CONSTRUCTION				
SUPPORT SERVICES	850,000	876,000	902,000	2,868,000
GENERAL SERVICES (331)	1,050,000	1,082,000	1,114,000	3,543,000
LONG TERM DEBT	4,650	4,650	4,650	13,950
SUBTOTAL OPERATIONS:	\$10,540,463	\$11,266,650	\$10,932,650	\$35,278,950
CONSTRUCTION:				
ROADWAY SAFETY	57,000	0	0	0
ROADWAY IMPROVEMENT (CONSTRUCTION)	900,000	4,825,622	928,035	0
SUBTOTAL CONSTRUCTION:	\$957,000	\$4,825,622	\$928,035	\$0
TOTAL EXPENDITURES	\$11,497,463	\$16,092,272	\$11,860,685	\$35,278,950
ENDING FUND BALANCE:	\$4,995,546	\$4,379,329	\$3,676,847	\$260,625
NET FOR YEAR	(\$104,454)	(\$616,217)	(\$702,482)	(\$3,416,222)



OKANOGAN COUNTY
DEPARTMENT OF PUBLIC WORKS

2020 BRIDGE CONDITION INSPECTION REPORT



A handwritten signature in blue ink, appearing to read "Josh Thomson", written over a horizontal line.

Josh Thomson, P.E.

County Engineer

Bridge Inspection Team Leader, G1614

August 5, 2021

Date

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Appendix A - Okanogan County NBIS Bridge Listing

Appendix B - Load Rating Summary Sheets

I. INTRODUCTION

The 2020 Bridge Condition Inspection Report summarizes the status of bridges owned, operated and maintained by Okanogan County, and is prepared under the direction of the County Engineer in accordance with WAC 136-20-060. This Report is for your use during preparation of the Six Year Transportation Improvement Program. This report is based upon the most current data available in our bridge files.

Contained within this report are descriptions of the ongoing bridge inspection efforts and current findings, bridge load restrictions and emergency repairs undertaken through December 31, 2020. Maintenance accomplished and recommended replacement or rehabilitation projects will be described within.

II. BRIDGE INSPECTIONS

Federal Highway Administration (FHWA) requirements mandate that public agencies inspect and report on all bridges (vehicle carrying structures with a span length of greater than twenty feet) at least once every twenty-four months. The purpose of routine inspections is to evaluate and record the current condition of the bridge, determine the degree of wear and deterioration, and recommend repairs or needed services. The inspections are also to ensure and maintain public safety and confidence and to protect the traveling public's investments.

The County Engineer, Josh Thomson, is a licensed Civil Professional Engineer and became certified as a bridge inspector/team leader in 2016.

1. Routine Bridge Inspections

Okanogan County has a total of 52 bridges subject to the National Bridge Inspection Standards (NBIS). Okanogan County also performs NBIS inspections on 8 small structure with spans less than 20 feet, and the Similkameen Trail bridge, which is not subject to NBIS inspection standards because it is a non-highway structure. Of those 61 county-owned bridges, inspections were performed on 36 bridges including six small structures during the 2020 inspection season. Inspections are also performed on nine city bridges for the towns of Okanogan, Tonasket and Conconully when scheduled; four were inspected for Conconully and one for Tonasket in 2020. Riverside's two bridges are inspected by WSDOT. Federal regulations require that NBIS bridges receive a routine safety inspection once every 24 months. Certain conditions in the NBIS standards allow less frequent inspection, but Okanogan County has elected to not exceed 24 months. Some of Okanogan County's bridges are inspected every 12 months due to deficiencies or damage that justify more frequent inspection.

2. Special Inspections

Special inspections are usually performed by WSDOT personnel under a reimbursable agreement with the WSDOT Bridge Preservation Office.

UBIT Inspection: An Under Bridge Inspection Truck (UBIT) is needed to perform inspections if the underside of the bridge is inaccessible. The UBIT inspection is required every 72 months or sooner if conditions dictate more frequent scheduling. Okanogan County has 2 bridges that have utilized UBIT inspections in the past, but currently are visually inspected without the specialized equipment.

Underwater Inspection: Inspection of the underwater elements of a bridge is required by the NBIS at least once every 60 months or sooner if conditions dictate. WSDOT personnel performed underwater inspections on three Okanogan County structures in 2020.

Fracture Critical Inspections: Okanogan County does not have any fracture critical bridges.

III. INSPECTION FINDINGS

When new damage or conditions are found during inspections that warrant repairs, maintenance is scheduled to be performed by county personnel or specialty contractors.

The Sufficiency Rating (SR) of each bridge is an indication of the overall health of the structure. The SR is a score calculated for each bridge based on the condition of the various elements of each bridge. It is a numeric value that ranges from 0 to 100 and is generated in the bridge management software. The value is a summation of four calculated values: Structural Adequacy and Safety, Serviceability and Functional Obsolescence, Essentiality for Public Use, and Special Reductions. The lower the SR is, the higher the priority for rehabilitation or replacement. To qualify for replacement funding, a bridge must have a sufficiency rating of less than 50. The SR for each bridge is included in Appendix A.

IV. SCOUR EVALUATIONS

A scour evaluation is required for all bridges over water. The purpose of a scour evaluation is to determine susceptibility of the bridge's foundation to the erosive actions of flowing water removing material from the bridge's foundation. A bridge is considered scour critical if its foundation is determined to be unstable for observed or calculated scour conditions.

When a bridge inspector identifies an actual or potential problem, the bridge must be further evaluated to determine whether or not it should be considered scour critical.

All of Okanogan County's bridges have been evaluated and only bridge, C-5, West Fork Buttermilk Creek Road over Twisp River, is determined to be scour critical at this time. This bridge appears to be stable, but was constructed on a footing from a previous bridge. The depth of the footing is unknown, hence the designation. This bridge is inspected every 12 months, and is monitored after high water to identify any issues.

V. BRIDGE RESTRICTIONS

A load rating is performed for each bridge in the NBIS inventory by a professional structural engineer in accordance with federal and state regulations. A bridge load rating is the measure of the bridge's load carrying capacity. There are two capacity levels that bracket this ability, the Inventory Rating and the Operating Rating. The Inventory Rating is the load that a bridge can carry for an indefinite number of load cycles without detriment to the bridge. The Operating Rating is the maximum load that can be carried on an infrequent basis without detriment to the bridge.

The NBIS requires the posting of load limits or restrictions on a bridge when the load rating factor for the legal load is less than 1. Load ratings have historically been calculated using six standard truck configurations to check the capacity levels. Three of the truck configurations represent common legal loads, the fourth is a national standard truck and the fifth and sixth represent overload vehicles.

Recently the Federal Highway Administration has added truck configurations that must be calculated for bridge load ratings. "Group 1" bridges were required to be load rated for Special Hauling Vehicles (SHVs) by the end of 2017, and "Group 2" bridges must be load rated by the end of 2022. Okanogan County has 14 group 1 bridges that were load rated in 2017, Okanogan has 3, and Tonasket has one. Conconully has three group 1 bridges that were load rated in 2019. SHVs are closely spaced multi-axle single unit trucks introduced by the trucking industry in the last decade, and are designated as SU4, SU5, SU6, and SU7 corresponding to the number of axles on the truck. Examples include dump trucks, construction vehicles, solid waste trucks and other hauling trucks with more than two drive axles and/or multiple drop axles not represented in the original six configurations.

Six bridges in Okanogan County and two in the City of Okanogan were posted with load restrictions in 2017 due to the load ratings required by FHWA. You will note in Appendix A that the Keystone bridge has a sufficiency rating of 58.75, Gate Creek is at 65.68 and the rest are 75 or higher. The reduced load ratings are not necessarily an indication of poor condition, but of loads imposed that the structures were not designed for. Significant deterioration was found in B-4 in 2020, and it was posted with a 4-ton weight limit. Deck deflection on B-4 is checked weekly to ensure it is safe to keep open for passenger vehicles. The load rating cover sheets for bridges requiring load restrictions are included as Appendix B for reference.

Bridge No.	Bridge Name	Status	Legal Load Restricted for:
B-4	N. Star Park City Upper	Posted	4 tons, all vehicles
B-14	Keystone	Posted	Type 3, 3-S2, SU4-SU7
C-6	Gold Creek Lower	Posted	SU4-SU7
C-11	Balky Hill	Posted	SU5-SU7
C-18	Gate Creek	Posted	SU5-SU7
E-5	Sinlahekin Cr	Posted	SU4-SU7
F-8	Nine Mile Cr	Posted	SU5-SU7
Okanogan2	Salmon Cr – 1 st Ave	Posted	SU4-SU7
Okanogan3	Salmon Cr – 5 th Ave	Posted	SU4-SU7

The AASHTO Type 3 truck is a standard 3-axle single unit truck, a type 3-S2 is a standard 3-axle tractor with a 2-axle semi-trailer, and a type 3-3 is a 3-axle truck with a 3-axle trailer.

Legal loads are as follows:

Configuration	Tonnage
AASHTO Type 3	25 Tons
AASHTO Type 3-S2	36 Tons
AASHTO Type 3-3	40 Tons
SU4	27 Tons
SU5	31 Tons
SU6	34.7 Tons
SU7	38.7 Tons

VI. EMERGENCY REPAIRS

No emergency repairs beyond ordinary maintenance were required on NBIS reportable structures in 2020.

VII. MAINTENANCE ACTIVITIES

Proper maintenance and repairs are necessary to prevent further deterioration of structures, to extend their useful life, and to prevent or reduce major repair costs in the future. During inspections, maintenance needs are documented. Repairs are scheduled for completion by county crews or contract. Typical annual maintenance includes guardrail repairs, deck and drain cleaning, signing and brush cutting.

We started a deck sealing program in 2020 to extend the life of our structures. A Methacrylate polymer product was selected based on research and observation of the Grant County program. Five structures (C-4, C-5, C-15, E-11 and F-2) were sealed by county forces in 2020, covering almost 24,000 square feet of concrete deck at a cost of approximately \$38,700. This program was quite successful, and will be continued annually.

VIII. COMPLETED PROJECTS

Construction of a 68' span structure on Salmon Creek Rd at milepost 2.24 over Salmon Creek began in September 2019, and was completed in June 2020.

IX. CURRENT PROJECTS

RAP funding was secured in 2019 to replace an undersized box culvert on Salmon Creek Rd at milepost 3.05. Design work began in late 2019, and construction will ideally occur in 2022, but might be delayed by the funding agency. The current structure is a concrete box culvert with approximate 11' span and 6' height. The planned structure will span 30' and will reduce the occurrence of roadway flooding.

B-4 on Park City Loop Rd was determined to be severely compromised and was posted with a 4-ton weight limit in May 2020. Funding from the federal bridge replacement program was secured through WSDOT Local Programs, and design of a replacement began by fall. Construction of a new structure should begin in the late summer or early fall of 2021.

X. RECOMMENDED PROJECTS

Inspection in 2020 located deck delamination on the Twisp River Rd bridge over the Twisp River. Repair is necessary to extend the life of the bridge. Repainting the steel girders is also recommended as part of this rehabilitation.

Three temporary culverts were placed under Hosheit Rd in 2017 to reopen the road after Tunk Creek washed out the previous culvert. This temporary situation needs to be remedied with a larger structure which will likely exceed 20' span. This project is likely to cost \$600,000 to \$800,000 based on current WDFW requirements, though there is a possibility a structure costing half that could be permitted.

Appendix A

Okanogan County NBIS Bridge Listing

Appendix A
2020 Bridge Condition Report

Bridge Number	Bridge Name	Status	NBI Reportable	Sufficiency Rating	Deficiency Status	Year Built	Year Rebuilt	Structure Length	Traffic ADT	Last Inspection Date	Inspection Freq. (Mo)	Notes
A-2	SALMON CR. STATLER BRIDGE	open	Yes	99.96		2020		68	292	07-Oct-20	24	
A-3	SALMON CR. RANDO MANOR	open	Yes	69.05		1949	1976	23	497	07-Oct-20	12	
A-4	SALMON CREEK HAPPY HILL	open	Yes	90.89		1969		22	61	07-Oct-20	24	
A-5	SALMON CREEK RUBY-LOWER	open	Yes	91.07		1969		26	20	07-Oct-20	24	
A-6	SALMON CREEK RUBY-UPPER	open	Yes	92.34		1969		24	20	08-Oct-20	24	
A-7	CONCONULLY SOUTHEND	open	Yes	76.66		1949		60	983	29-Oct-20	24	
A-8	SALMON CREEK WEST FORK	open	Yes	85.22		1949	1979	70	72	07-Oct-20	24	
A-9	MAIN ST CONCONULLY	open	Yes	66		1976		38	235	12-Oct-20	24	Conconully
A-10	LAKE ST CONCONULLY	open	Yes	68.78		1973		24	260	16-Oct-20	24	Conconully
A-11	BROADWAY ST CONCONULLY	open	Yes	87.92		1982		26	50	16-Oct-20	24	Conconully
A-12	SILVER ST CONCONULLY	open	Yes	91.77		1997		28	50	16-Oct-20	24	Conconully
B-1	LITTLE NESPELEM RIVER	open	Yes	94.32		2014		63	134	14-Oct-19	24	
B-3	NO.STAR PARK CITY LOWER	open	Yes	99.95		2017		70	51	05-Oct-20	24	
B-4	NO.STAR PARK CITY UPPER	POSTED	Yes	35.8	SD	1958		51	51	05-Oct-20	12	4 ton limit, replace fall 2021
B-5	PARK CITY MILL CREEK	open	Yes	80.68		1958		26	72	14-Oct-19	24	
B-6	PARK CITY SMITH CREEK	open	Yes	71.12		1958		26	39	05-Oct-20	12	
B-10	OMAK-RIVERSIDE EAST SIDE	open	Yes	81.99	FO	1968		50	2176	10-Oct-19	24	
B-11	BROOKS TRACT	open	Yes	84.45		1973		50	473	10-Oct-19	24	
B-12	OMAK CREEK	open	Yes	99.75		2006		31	290	09-Oct-19	24	
B-13	RIVERSIDE	open	Yes	79.32		1969		330	650	08-Oct-19	24	Riverside, inspected by WSDOT
B-14	KEYSTONE	POSTED	Yes	58.75	FO	1973		32	82	10-Oct-19	24	
B-15	MOSES ROAD	open	Yes	99.93		2017		68	42	05-Oct-20	24	
B-17	FIGLENSKI	open	Yes	99		1976		25	15	10-Oct-19	24	
B-18	MORGAN	open	Yes	89.14		1976		30	45	10-Oct-19	24	
B-20	JOHNSON CREEK RIVERSIDE	open	Yes	72.63		1976		26	521	07-Oct-19	24	Riverside, inspected by WSDOT
C-2	LITTLE BRIDGE CREEK	open	Yes	99.6		2008		41	237	23-Oct-19	24	
C-4	BUTTERMILK CREEK	open	Yes	84.9		1960	2007	66	74	21-Oct-20	24	
C-5	TWISP RIVER AT BUTTERMILK CR RD	open	Yes	70.92		1959		102	53	21-Oct-20	12	
C-6	GOLD CREEK-LOWER	POSTED	Yes	80.75		1972		30	111	15-Oct-19	24	
C-8	TWISP RIVER WEST	open	Yes	69.45	SD	1949		108	585	23-Oct-19	24	
C-9	POORMAN CREEK	open	Yes	80.01		1974		78	31	23-Oct-19	24	
C-10	COAL BANKS-TWISP RIVER	open	Yes	76.09		1960		120	80	23-Oct-19	24	
C-11	BALKY HILL	POSTED	Yes	88.2		1972		30	122	23-Oct-19	24	
C-12	BEAVER CREEK-SOUTH	open	Yes	70.91		1957		24	54	23-Oct-19	24	
C-13	BEAVER CREEK-MIDDLE	open	Yes	81.89		1962		72	57	23-Oct-19	24	
C-14	WOLF CREEK	open	Yes	71.37	FO	1963		30	476	21-Oct-20	24	

Appendix A
2020 Bridge Condition Report

Bridge Number	Bridge Name	Status	NBI Reportable	Sufficiency Rating	Deficiency Status	Year Built	Year Rebuilt	Structure Length	Traffic ADT	Last Inspection Date	Inspection Freq. (Mo)	Notes
C-15	CHEWUCH	open	Yes	94.81		1953		120	173	21-Oct-20	24	
C-16	GOAT CREEK	open	Yes	82.37		1971		30	195	21-Oct-20	24	
C-18	GATE CREEK	POSTED	Yes	65.68		1971		32	488	21-Oct-20	12	
C-19	LOST RIVER U.S.F.S.	open	Yes	90.1		1950		93	95	21-Oct-20	24	
C-20	MAZAMA	open	Yes	84.24		1972		214	1057	21-Oct-20	24	
D-2	EFFIE BR.	open	Yes	99.98		1990		212	27	21-Oct-20	24	
D-3	MONSE	open	Yes	91.19		1967		560	479	22-Oct-20	24	
D-4	LOUP LOUP CREEK	open	Yes	99.65		2014		52	20	22-Oct-20	24	
D-5	CHILIWIST CREEK	open	Yes	97.51		1944		22	1352	22-Oct-20	24	
D-6	MALOTT OLD 97	open	No	93.86		2011		22	1352	22-Oct-20	24	Small structure (under 20')
D-7	BURDETT STREET	open	No	99		2012		22	20	22-Oct-20	24	Small structure (under 20')
E-1	TONASKET	open	Yes	97.62		1999		316	2816	15-Oct-20	24	
E-2	BONAPARTE CREEK-TONASKET	open	Yes	82.06		1972		24	100	15-Oct-20	24	Tonasket
E-4	BLUE LAKE CULVERT	open	Yes	99.46		2018		21	36	28-Oct-20	24	
E-5	SINLAHEKIN CREEK	POSTED	Yes	88.03		1973		30	56	28-Oct-20	24	
E-6	CECIL CREEK RD	open	Yes	82.86		1975		35	20	28-Oct-20	24	
E-7	TOATS COULEE BERNARD	open	Yes	79.77	FO	1966		62	114	28-Oct-20	24	
E-8	CHOPAKA	open	Yes	91.59		1980		79	33	28-Oct-20	24	
E-11	ELLISFORDE	open	Yes	84.68		1961		339	848	28-Oct-20	24	
E-14	LOST CREEK	open	Yes	80.79		1958		42	52	15-Oct-20	24	
F-2	SIMILKAMEEN AT OROVILLE	open	Yes	75.19		1950		366	1282	28-Oct-19	24	
F-3	OROVILLE,EASTSIDE	open	Yes	92.75		1971		180	2420	28-Oct-19	24	
F-4	SIMILKAMEEN TRAIL	open	No			1952	2009	366	2			Non-highway structure
F-7	NIGHTHAWK	open	Yes	96.24		1973		306	121	28-Oct-19	24	
F-8	NINE MILE CREEK	POSTED	Yes	85.03		1980		28	504	28-Oct-19	24	
F-9	THORNDIKE LOOP	open	Yes	96		1980		24	21	28-Oct-19	24	
OKANOGAN1	OKANOGAN RIVER-OAK ST	open	Yes	98.42		2003		340	4100	03-Oct-19	24	City of Okanogan
OKANOGAN2	SALMON CR-FIRST AVE	POSTED	Yes	83.77		1970		38	260	03-Oct-19	24	City of Okanogan
OKANOGAN3	SALMON CR-FIFTH AVE.	POSTED	Yes	75.44		1970		38	260	03-Oct-19	24	City of Okanogan
OKANOGAN4	SALMON CR-MILL STREET	open	Yes	89.45		2006		50	450	03-Oct-19	24	City of Okanogan

Appendix B

Load Rating Summary Sheets

BRIDGE RATING SUMMARY

BRIDGE NUMBER: B-4, OKANOGAN COUNTY
BRIDGE NAME: NO. STAR PARK CITY UPPER
STRUCTURE ID: 08341000
TYPE: CONCRETE GIRDERS ON TIMBER SUBSTRUCTURE
LENGTH: 51'-0" LONG BRIDGE, 0° SKEW
SPANS: (2) 24'-4" SPANS
DESIGNED BY: BUREAU OF INDIAN AFFAIRS, 1956
DESIGN LOAD: H15-S12

RATING BY: NICHOLLS KOVICH ENGINEERING, PLLC
 SUSAN M. KOVICH
 WASHINGTON LICENSE 39869
DATE: MAY 2020



RESULTS OF RATING

Truck Configuration	Rating Factor	γ_L	Allowable Load	Controlling Point
HS-20 Inventory	0.05	1.00	2 Tons	Horizontal Shear
HS-20 Operating	0.19	1.00	7 Tons	Horizontal Shear

REMARKS:

BRIDGE SHOULD BE POSTED.
RECOMMEND A 4 TON WEIGHT LIMIT SIGN.

RATING METHOD:

Working (or Allowable Stress) Method

BRIDGE INFO:

Rating based on serious deterioration of timber cap at intermediate pier – assumed 60% section loss.

WSBIS CODING

WB75-50	Design Load	3
WB75-51	Opr. Method	W
WB75-52	Opr. Tons	7
WB75-54	Inv. Method	W
WB75-55	Inv. Tons	2
WB76-60	Safe Load	0

BRIDGE RATING SUMMARY

Bridge Name: Keystone
Bridge Number: B-14
Agency: Okanogan County
Structure ID: 08018700
Bridge Type: Prestressed Concrete Rib Deck Girders
Length: 32'-0" Long Bridge
Skew: 0 Degree Skew
No. Spans: (1) 31'-6"
Designed By: Central Pre-Mix Prestress Co., 1973
Design Load: HS-20-44

Ref. Inspection: 10/05/2015
Rating Date: 08/29/2017
Rating Method: LRFR
Rated By: Susan M. Kovich, WA License 39869
 NICHOLLS KOVICH ENGINEERING, PLLC



RESULTS OF RATING

NBI RATING	Rating Factor	γ_L	Controlling Point
HL-93 Inventory	0.50	0.80	Service III - Moment
HL-93 Operating	1.09	1.35	Strength I - Moment

LEGAL LOADS	Rating Factor	γ_L	Allowable Load	Controlling Point
TYPE 3	0.80	1.00	20 Tons	Service III - Moment
TYPE 3-S2	0.83	1.00	30 Tons	Service III - Moment
TYPE 3-3	1.00	1.00	40 Tons	Service III - Moment
Notional Rating Load (NRL)	0.53	1.00	21 Tons	Service III - Moment
Single Unit SHV (SU4)	0.67	1.00	18 Tons	Service III - Moment
Single Unit SHV (SU5)	0.63	1.00	20 Tons	Service III - Moment
Single Unit SHV (SU6)	0.57	1.00	20 Tons	Service III - Moment
Single Unit SHV (SU7)	0.55	1.00	21 Tons	Service III - Moment

PERMIT LOADS				
WSDOT Overload 1	0.55	1.00	26 Tons	Service III - Moment
WSDOT Overload 2	0.47	1.00	49 Tons	Service III - Moment

REMARKS: BRIDGE SHOULD BE POSTED FOR TYPE 3, 3-S2, SU4, SU5, SU6 & SU7
 RESTRICT BRIDGE FOR OL1 & OL2 DUE TO POSTING
 Rating based on 10% impact and 0.6" of BST overlay.

NBI CODING				CURRENT REFERENCE			
[70]	Operating Level	(1660)	0	[29]	Avg. Daily Traffic	(1445)	82
[63]	Oper. Rating Method	(1551)	8	[109]	Truck Percent	(1451)	13
[64]	Oper. Rating Tons	(1552)		[58]	Deck Overall	(1663)	7
[64]	Oper. Rating Factor	(1553)	1.09	[59]	Superstructure	(1671)	8
[65]	Inv. Rating Method	(1554)	8	[60]	Substructure	(1676)	7
[66]	Inv. Rating Tons	(1555)			Approach Roadway	(7681)	8
[66]	Inv. Rating Factor	(1556)	0.50				

BRIDGE RATING SUMMARY

Bridge Name: Gold Creek-Lower
Bridge Number: C-6
Agency: Okanogan County
Structure ID: 08201800
Bridge Type: Prestressed Concrete Rib Deck Girders
Length: 30'-0" Long Bridge
Skew: 0° Skew
No. Spans: (1) 29'-5" Span
Designed By: Central Pre-Mix Prestress Co., 1972
Design Load: HS-20-44

Ref. Inspection: 10/07/2015
Rating Date: 10/30/2017
Rating Method: LRFR
Rated By: Susan M. Kovich, WA License 39869
 NICHOLLS KOVICH ENGINEERING, PLLC



RESULTS OF RATING

NBI RATING	Rating Factor	γ_L	Controlling Point
HL-93 Inventory	0.73	0.80	Service III - Moment
HL-93 Operating	0.97	1.35	Strength I - Moment

LEGAL LOADS	Rating Factor	γ_L	Allowable Load	Controlling Point
TYPE 3	1.20	1.00	30 Tons	Service III - Moment
TYPE 3-S2	1.21	1.00	44 Tons	Service III - Moment
TYPE 3-3	1.46	1.00	59 Tons	Service III - Moment
Notional Rating Load (NRL)	0.78	1.00	31 Tons	Service III - Moment
Single Unit SHV (SU4)	0.99	1.00	27 Tons	Service III - Moment
Single Unit SHV (SU5)	0.92	1.00	28 Tons	Service III - Moment
Single Unit SHV (SU6)	0.84	1.00	29 Tons	Service III - Moment
Single Unit SHV (SU7)	0.80	1.00	31 Tons	Service III - Moment

PERMIT LOADS				
WSDOT Overload 1	0.83	1.00	40 Tons	Service I - Moment
WSDOT Overload 2	0.70	1.00	72 Tons	Service I - Moment

REMARKS: BRIDGE SHOULD BE POSTED FOR SU4, SU5, SU6 & SU7
 RESTRICT BRIDGE FOR OVERLOAD 1 & OVERLOAD 2
 Rating based on 10% impact and 1/2" asphalt overlay.

NBI CODING				CURRENT REFERENCE			
[70]	Operating Level	(1660)	3	[29]	Avg. Daily Traffic	(1445)	111
[63]	Oper. Rating Method	(1551)	8	[109]	Truck Percent	(1451)	14
[64]	Oper. Rating Tons	(1552)		[58]	Deck Overall	(1663)	8
[64]	Oper. Rating Factor	(1553)	0.97	[59]	Superstructure	(1671)	8
[65]	Inv. Rating Method	(1554)	8	[60]	Substructure	(1676)	8
[66]	Inv. Rating Tons	(1555)			Approach Roadway	(7681)	8
[66]	Inv. Rating Factor	(1556)	0.73				

BRIDGE RATING SUMMARY

Bridge Name: Balky Hill
Bridge Number: C-11
Agency: Okanogan County
Structure ID: 08023500
Bridge Type: Prestressed Concrete Rib Deck Girders
Length: 30'-0" Long Bridge
Skew: 0° Skew
No. Spans: (1) 29'-5" Span
Designed By: Central Pre-Mix Prestress Co., 1972
Design Load: HS-20-44

Ref. Inspection: 10/26/2015
Rating Date: 10/30/2017
Rating Method: LRFR
Rated By: Susan M. Kovich, WA License 39869
 NICHOLLS KOVICH ENGINEERING, PLLC



10/30/2017

RESULTS OF RATING

NBI RATING	Rating Factor	γ_L	Controlling Point
HL-93 Inventory	0.74	0.80	Service III - Moment
HL-93 Operating	0.97	1.35	Strength I - Moment

LEGAL LOADS	Rating Factor	γ_L	Allowable Load	Controlling Point
TYPE 3	1.21	1.00	30 Tons	Service III - Moment
TYPE 3-S2	1.23	1.00	44 Tons	Service III - Moment
TYPE 3-3	1.48	1.00	59 Tons	Service III - Moment
Notional Rating Load (NRL)	0.79	1.00	32 Tons	Service III - Moment
Single Unit SHV (SU4)	1.00	1.00	27 Tons	Service III - Moment
Single Unit SHV (SU5)	0.93	1.00	29 Tons	Service III - Moment
Single Unit SHV (SU6)	0.85	1.00	29 Tons	Service III - Moment
Single Unit SHV (SU7)	0.81	1.00	32 Tons	Service III - Moment

PERMIT LOADS				
WSDOT Overload 1	0.84	1.00	40 Tons	Service I - Moment
WSDOT Overload 2	0.71	1.00	73 Tons	Service I - Moment

REMARKS: BRIDGE SHOULD BE POSTED FOR SU5, SU6 & SU7
 RESTRICT BRIDGE FOR OVERLOAD 1 & OVERLOAD 2

Rating based on 10% impact and no asphalt overlay.

NBI CODING				CURRENT REFERENCE			
[70]	Operating Level	(1660)	3	[29]	Avg. Daily Traffic	(1445)	115
[63]	Oper. Rating Method	(1551)	8	[109]	Truck Percent	(1451)	5
[64]	Oper. Rating Tons	(1552)		[58]	Deck Overall	(1663)	8
[64]	Oper. Rating Factor	(1553)	0.97	[59]	Superstructure	(1671)	8
[65]	Inv. Rating Method	(1554)	8	[60]	Substructure	(1676)	8
[66]	Inv. Rating Tons	(1555)			Approach Roadway	(7681)	8
[66]	Inv. Rating Factor	(1556)	0.74				

BRIDGE RATING SUMMARY

Bridge Name: Gate Creek
Bridge Number: C-18
Agency: Okanogan County
Structure ID: 08115000
Bridge Type: Prestressed Concrete Rib Deck Girders
Length: 32'-0" Long Bridge
Skew: 0 Degree Skew
No. Spans: (1) 31'-2"
Designed By: Central Pre-Mix Concrete Co. Prestress Div., 1971
Design Load: HS-20

Ref. Inspection: 10/05/2016
Rating Date: 08/29/2017
Rating Method: LRFR
Rated By: Susan M. Kovich, WA License 39869
 NICHOLLS KOVICH ENGINEERING, PLLC



RESULTS OF RATING

NBI RATING	Rating Factor	γ_L	Controlling Point
HL-93 Inventory	0.76	0.80	Service III - Moment
HL-93 Operating	1.32	1.35	Strength I - Moment

LEGAL LOADS	Rating Factor	γ_L	Allowable Load	Controlling Point
TYPE 3	1.22	1.00	31 Tons	Service III - Moment
TYPE 3-S2	1.26	1.00	45 Tons	Service III - Moment
TYPE 3-3	1.52	1.00	61 Tons	Service III - Moment
Notional Rating Load (NRL)	0.80	1.00	32 Tons	Service III - Moment
Single Unit SHV (SU4)	1.02	1.00	27 Tons	Service III - Moment
Single Unit SHV (SU5)	0.96	1.00	30 Tons	Service III - Moment
Single Unit SHV (SU6)	0.87	1.00	30 Tons	Service III - Moment
Single Unit SHV (SU7)	0.83	1.00	32 Tons	Service III - Moment

PERMIT LOADS				
WSDOT Overload 1	0.84	1.00	40 Tons	Service III - Moment
WSDOT Overload 2	0.72	1.00	75 Tons	Service III - Moment

REMARKS: BRIDGE SHOULD BE POSTED FOR SU5, SU6 & SU7
 RESTRICT OL1 & OL2 DUE TO POSTING
 Rating based on 10% impact and 0.60" BST overlay.

NBI CODING				CURRENT REFERENCE			
[70]	Operating Level	(1660)	3	[29]	Avg. Daily Traffic	(1445)	200
[63]	Oper. Rating Method	(1551)	8	[109]	Truck Percent	(1451)	3
[64]	Oper. Rating Tons	(1552)		[58]	Deck Overall	(1663)	8
[64]	Oper. Rating Factor	(1553)	1.32	[59]	Superstructure	(1671)	6
[65]	Inv. Rating Method	(1554)	8	[60]	Substructure	(1676)	8
[66]	Inv. Rating Tons	(1555)			Approach Roadway	(7681)	8
[66]	Inv. Rating Factor	(1556)	0.76				

BRIDGE RATING SUMMARY

Bridge Name: Sinlahekin Creek
Bridge Number: E-5
Agency: Okanogan County
Structure ID: 08180900
Bridge Type: Prestressed Concrete Rib Deck Girders
Length: 30'-0" Long Bridge
Skew: 0° Skew
No. Spans: (1) 29'-5" Span
Designed By: Central Pre-Mix Prestress Co., 1972
Design Load: HS-20-44

Ref. Inspection: 10/25/2016
Rating Date: 10/30/2017
Rating Method: LRFR
Rated By: Susan M. Kovich, WA License 39869
 NICHOLLS KOVICH ENGINEERING, PLLC



10/30/2017

RESULTS OF RATING

NBI RATING	Rating Factor	γ_L	Controlling Point
HL-93 Inventory	0.74	0.80	Service III - Moment
HL-93 Operating	0.97	1.35	Strength I - Moment

LEGAL LOADS	Rating Factor	γ_L	Allowable Load	Controlling Point
TYPE 3	1.21	1.00	30 Tons	Service III - Moment
TYPE 3-S2	1.22	1.00	44 Tons	Service III - Moment
TYPE 3-3	1.48	1.00	59 Tons	Service III - Moment
Notional Rating Load (NRL)	0.79	1.00	32 Tons	Service III - Moment
Single Unit SHV (SU4)	0.99	1.00	27 Tons	Service III - Moment
Single Unit SHV (SU5)	0.93	1.00	29 Tons	Service III - Moment
Single Unit SHV (SU6)	0.85	1.00	29 Tons	Service III - Moment
Single Unit SHV (SU7)	0.81	1.00	31 Tons	Service III - Moment

PERMIT LOADS				
WSDOT Overload 1	0.84	1.00	40 Tons	Service I - Moment
WSDOT Overload 2	0.71	1.00	73 Tons	Service I - Moment

REMARKS: BRIDGE SHOULD BE POSTED FOR SU4, SU5, SU6 & SU7
 RESTRICT BRIDGE FOR OVERLOAD 1 & OVERLOAD 2

Rating based on 10% impact and no asphalt overlay.

NBI CODING				CURRENT REFERENCE			
[70]	Operating Level	(1660)	3	[29]	Avg. Daily Traffic	(1445)	36
[63]	Oper. Rating Method	(1551)	8	[109]	Truck Percent	(1451)	8
[64]	Oper. Rating Tons	(1552)		[58]	Deck Overall	(1663)	7
[64]	Oper. Rating Factor	(1553)	0.97	[59]	Superstructure	(1671)	8
[65]	Inv. Rating Method	(1554)	8	[60]	Substructure	(1676)	8
[66]	Inv. Rating Tons	(1555)			Approach Roadway	(7681)	8
[66]	Inv. Rating Factor	(1556)	0.74				

BRIDGE RATING SUMMARY

Bridge Name: Nine Mile Creek
Bridge Number: F-8
Agency: Okanogan County
Structure ID: 08188400
Bridge Type: Reinforced Concrete Rib Deck Girders
Length: 28'-0" Long Bridge
Skew: 0 Degree Skew
No. Spans: (1) 27'-4"
Designed By: Central Pre-Mix Prestress Co., 1979
Design Load: HS20-44 + 25 psf Future Asphalt

Ref. Inspection: 10/06/2015
Rating Date: 10/30/2017
Rating Method: LRFR
Rated By: Susan M. Kovich, WA License 39869
 NICHOLLS KOVICH ENGINEERING, PLLC



10/30/2017

RESULTS OF RATING

NBI RATING	Rating Factor	γ_L	Controlling Point
HL-93 Inventory	0.77	0.80	Service III Moment
HL-93 Operating	1.44	1.35	Strength I Shear

LEGAL LOADS	Rating Factor	γ_L	Allowable Load	Controlling Point
TYPE 3	1.26	1.00	32 Tons	Service III Moment
TYPE 3-S2	1.30	1.00	47 Tons	Service III Moment
TYPE 3-3	1.54	1.00	61 Tons	Service III Moment
Notional Rating Load (NRL)	0.85	1.00	34 Tons	Service III Moment
Single Unit SHV (SU4)	1.06	1.00	29 Tons	Service III Moment
Single Unit SHV (SU5)	0.97	1.00	30 Tons	Service III Moment
Single Unit SHV (SU6)	0.89	1.00	31 Tons	Service III Moment
Single Unit SHV (SU7)	0.87	1.00	34 Tons	Service III Moment

PERMIT LOADS				
WSDOT Overload 1	0.92	1.00	44 Tons	Service III Moment
WSDOT Overload 2	0.75	1.00	78 Tons	Service III Moment

REMARKS: BRIDGE SHOULD BE POSTED FOR SU5, SU6 & SU7
 RESTRICT BRIDGE FOR OVERLOAD 1 & OVERLOAD 2
 Rating based on 10% impact and no asphalt overlay.

NBI CODING				CURRENT REFERENCE			
[70]	Operating Level	(1660)	3	[29]	Avg. Daily Traffic	(1445)	504
[63]	Oper. Rating Method	(1551)	8	[109]	Truck Percent	(1451)	2
[64]	Oper. Rating Tons	(1552)		[58]	Deck Overall	(1663)	8
[64]	Oper. Rating Factor	(1553)	1.44	[59]	Superstructure	(1671)	8
[65]	Inv. Rating Method	(1554)	8	[60]	Substructure	(1676)	8
[66]	Inv. Rating Tons	(1555)			Approach Roadway	(7681)	8
[66]	Inv. Rating Factor	(1556)	0.77				

BRIDGE RATING SUMMARY

Bridge Name: Salmon Cr-First Ave
Bridge Number: Okanogan2
Agency: City of Okanogan
Structure ID: 08526000
Bridge Type: Prestressed Concrete Rib Deck Girders
Length: 38'-0" Long Bridge
Skew: 0° Skew
No. Spans: (1) 37'-4" Span
Designed By: Central Pre-Mix Prestress Co., 1973
Design Load: HS-20-44

Ref. Inspection: 10/15/2015
Rating Date: 10/30/2017
Rating Method: LRFR
Rated By: Susan M. Kovich, WA License 39869
 NICHOLLS KOVICH ENGINEERING, PLLC



10/30/2017

RESULTS OF RATING

NBI RATING	Rating Factor	γ_L	Controlling Point
HL-93 Inventory	0.73	0.80	Service III - Moment
HL-93 Operating	1.23	1.35	Strength I - Moment

LEGAL LOADS	Rating Factor	γ_L	Allowable Load	Controlling Point
TYPE 3	1.02	1.00	26 Tons	Service III - Moment
TYPE 3-S2	1.09	1.00	39 Tons	Service III - Moment
TYPE 3-3	1.24	1.00	50 Tons	Service III - Moment
Notional Rating Load (NRL)	0.67	1.00	27 Tons	Service III - Moment
Single Unit SHV (SU4)	0.87	1.00	23 Tons	Service III - Moment
Single Unit SHV (SU5)	0.82	1.00	25 Tons	Service III - Moment
Single Unit SHV (SU6)	0.75	1.00	26 Tons	Service III - Moment
Single Unit SHV (SU7)	0.71	1.00	27 Tons	Service III - Moment

PERMIT LOADS				
WSDOT Overload 1	0.66	1.00	32 Tons	Service I - Moment
WSDOT Overload 2	0.61	1.00	64 Tons	Service I - Moment

REMARKS: BRIDGE SHOULD BE POSTED FOR SU4, SU5, SU6 & SU7
 RESTRICT BRIDGE FOR OVERLOAD 1 & OVERLOAD 2

Rating based on 20% impact and 2" asphalt overlay.

NBI CODING				CURRENT REFERENCE			
[70]	Operating Level	(1660)	2	[29]	Avg. Daily Traffic	(1445)	260
[63]	Oper. Rating Method	(1551)	8	[109]	Truck Percent	(1451)	5
[64]	Oper. Rating Tons	(1552)		[58]	Deck Overall	(1663)	7
[64]	Oper. Rating Factor	(1553)	1.23	[59]	Superstructure	(1671)	7
[65]	Inv. Rating Method	(1554)	8	[60]	Substructure	(1676)	7
[66]	Inv. Rating Tons	(1555)			Approach Roadway	(7681)	6
[66]	Inv. Rating Factor	(1556)	0.73				

BRIDGE RATING SUMMARY

Bridge Name: Salmon Cr-Fifth Ave
Bridge Number: Okanogan3
Agency: City of Okanogan
Structure ID: 08526500
Bridge Type: Prestressed Concrete Rib Deck Girders
Length: 38'-0" Long Bridge
Skew: 0° Skew
No. Spans: (1) 37'-0" Span
Designed By: Unknown, 1971
Design Load: HS-20

Ref. Inspection: 10/15/2015
Rating Date: 10/30/2017
Rating Method: LRFR
Rated By: Susan M. Kovich, WA License 39869
 NICHOLLS KOVICH ENGINEERING, PLLC



RESULTS OF RATING

NBI RATING	Rating Factor	γ_L	Controlling Point
HL-93 Inventory	0.79	0.80	Service III - Moment
HL-93 Operating	1.30	1.35	Strength I - Moment

LEGAL LOADS	Rating Factor	γ_L	Allowable Load	Controlling Point
TYPE 3	1.11	1.00	28 Tons	Service III - Moment
TYPE 3-S2	1.18	1.00	42 Tons	Service III - Moment
TYPE 3-3	1.35	1.00	54 Tons	Service III - Moment
Notional Rating Load (NRL)	0.72	1.00	29 Tons	Service III - Moment
Single Unit SHV (SU4)	0.94	1.00	25 Tons	Service III - Moment
Single Unit SHV (SU5)	0.89	1.00	28 Tons	Service III - Moment
Single Unit SHV (SU6)	0.81	1.00	28 Tons	Service III - Moment
Single Unit SHV (SU7)	0.77	1.00	30 Tons	Service III - Moment

PERMIT LOADS				
WSDOT Overload 1	0.71	1.00	34 Tons	Service I - Moment
WSDOT Overload 2	0.66	1.00	69 Tons	Service I - Moment

REMARKS: BRIDGE SHOULD BE POSTED FOR SU4, SU5, SU6 & SU7
 RESTRICT BRIDGE FOR OVERLOAD 1 & OVERLOAD 2
Rating based on 20% impact and no asphalt overlay.

NBI CODING				CURRENT REFERENCE			
[70]	Operating Level	(1660)	2	[29]	Avg. Daily Traffic	(1445)	260
[63]	Oper. Rating Method	(1551)	8	[109]	Truck Percent	(1451)	5
[64]	Oper. Rating Tons	(1552)		[58]	Deck Overall	(1663)	7
[64]	Oper. Rating Factor	(1553)	1.30	[59]	Superstructure	(1671)	7
[65]	Inv. Rating Method	(1554)	8	[60]	Substructure	(1676)	5
[66]	Inv. Rating Tons	(1555)			Approach Roadway	(7681)	6
[66]	Inv. Rating Factor	(1556)	0.79				