CITY OF KIRKLAND
Department of Public Works
123 Fifth Avenue, Kirkland, WA 98033 425.587.3800
www.kirklandwa.gov

MEMORANDUM

To: Kurt Triplett, City Manager

From: David Snider, P.E., Capital Projects Manager
Pam Bissonnette, Interim Public Works Director

Date: July 25, 2013

Subject: Kirkland Bridges Report

RECOMMENDATION:

It is recommended City Council receive a report on the status and condition of Kirkland's various bridges, including those owned by the City, as well as those within Kirkland but under the control of and managed by the State Department of Transportation (WSDOT).

BACKGROUND DISCUSSION:

The state of Washington has a total of approximately 7,600 bridges that handle vehicular traffic on a regular basis and certified bridge inspectors believe 96 percent of those bridges are in good or fair condition[1]. Unfortunately, that leaves around 300 aging bridges state-wide that are considered to be in poor condition and could collapse under certain events. On Thursday, May 23, a catastrophic bridge event did occur on the Skagit River Bridge, along Interstate 5 near Mount Vernon, when an oversized load being hauled by a truck struck a critical member of that bridge. As a result of the impact, a large section of the bridge collapsed. The Skagit River Bridge had previously been identified by the state as a "fracture critical" truss bridge, meaning that the truss structure of the bridge was designed without structural redundancies to keep the bridge standing when a single critical structural bridge member failed.

Of the states 7,600 bridges, nearly 3,900 are locally owned and maintained and, of that number, Kirkland owns, manages and maintains an inventory of three vehicular bridge spans; all three are classified within the Federal Highway Bridge Program (HBP), which is a national program to ensure public safety through regular bridge inspection, rehabilitation and replacement. The three bridges include: the Forbes Creek Bridge on 98th Ave NE, the Central Way Bridge above the Cross Kirkland Corridor (CKC) and the 116th Street Bridge, also over the CKC (Attachment A). All three bridges are concrete structures with vehicular traffic travelling on the top-deck -- no regular truck or other vehicular traffic occurs below the bridge spans. The City's bridges are not steel truss or "fracture critical" bridges, such as the Skagit River Bridge; all City HBP bridges are reinforced concrete.

1 Washington's Local Bridge Needs – An Overview, Fall 2012

The safety of bridge structures in Washington State is ensured through a thorough and routine inspection system, incorporating both state and local agency cooperation through an established Bridge Rating System. Unfortunately, there are several bridges along Interstates 5 and 90 that are considered "fracture-critical," with others being deemed as "structurally deficient," meaning they have some kind of defect that needs attention to varying degrees. When compared with other states, Washington ranks sixth-best for having the lowest percentage of bridges needing repair; however, the states bridges are aging fast with more than one-third being at least 50 years old.

For Kirkland and the surrounding cities, none of the WSDOT bridges along I-405 are on the Washington State Structurally Deficient Bridge List (Attachment B – abbreviated King County).

Kirkland's General Purpose Bridges

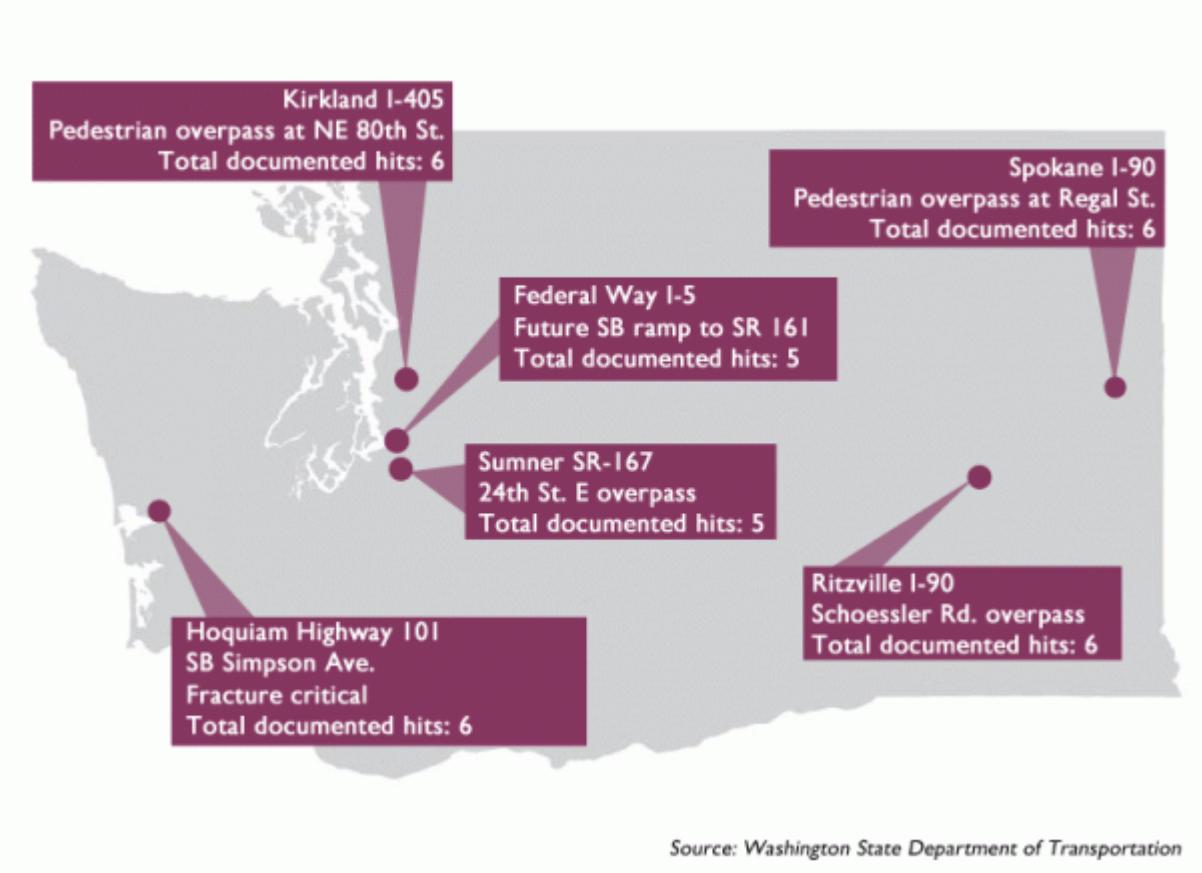
In order for all bridges in the state, including Kirkland's three general purpose bridges, to be eligible for assistance under Federal HBP guidelines, they must be inspected and reported on to the Federal Highway Administration (FHWA) every 24-months. In compliance with that requirement, Kirkland's bridge inspection services are contracted out on a biennial basis to a licensed engineer qualified by the State to perform such inspections. The City's most recent bridge inspections were completed in April of this year, including the 98th Avenue NE Forbes Creek Bridge and the Central Way Bridge (Attachment C & D). The NE 116th Street Bridge was all new in 2012/13 as a part of the WSDOT's new half-diamond interchange at I-405. As a result, the City's NE 116th Street Bridge was not required to be inspected in 2013, but will be included in the next bridge inspection year of 2015.

WSDOT General Purpose and Pedestrian Bridges

The state manages its I-405 general purpose overpass bridge structures in Kirkland that are located at NE 70th, NE 85th, NE 116th, NE 124th and NE 128th Streets. As bridges within the right-of-way of I-405, WSDOT has the responsibility for all inspections and FHWA reporting to meet the requirements of the federal HBP. In addition to these bridges, there are three pedestrian bridges that also span I-405, serving to connect Kirkland Neighborhoods; two of those bridges are located at NE 60th and 80th Streets. A third bridge, located at NE 100th Street, is a combination pedestrian and emergency vehicle access bridge. Once again, as bridges within the I-405 right-of-way, WSDOT conducts regular inspections of these three bridges. As bridges that do not carry regular vehicular traffic (NE 60th and NE 80th), and only occasional emergency vehicle traffic (NE 100th), these three pedestrian bridges are inspected

on a 4 to 5-year frequency with the most recent inspection for the NE 100th St Emergency/Pedestrian Bridge occurring in January of this year.

State officials also record bridge strikes during regular inspections and/or when a collision is reported. If the strike is not witnessed or reported, the impact may not be known until an inspection. The state does not have a comprehensive way to record every bridge hit; however, from WSDOT records, the WSDOT Pedestrian Bridge in Kirkland at NE 80th Street is on a list of bridges most frequently hit between 2007 and 2012, with 6 documented hits. That bridge is a "weathered steel" structure with a clear height of 16.4 feet; however, from the inspection report for the structure (Attachment E), it is not considered "fracture critical" and has been successfully repaired after each strike.



Credit KUOW ***Figure 1:*** **Most Frequently Hit Bridges between 2007 and 2012**

Kirkland CKC Bridges

In addition to the three Kirkland vehicular bridge structures, there are two other bridge spans that the City acquired as part of the acquisition of the CKC; the concrete abutment elevated crossing at Kirkland Way and the wood and steel bridge that carries the corridor above NE 68th Street near State Street. Unlike the other City owned bridge structures, the Kirkland Way/CKC Bridge appears to have experienced numerous impacts in its 86-year history, mostly by over-height trucks at this relatively low vertical (11.5-ft) and horizontal (24-ft) clearance structure. The City's two CKC bridges do not qualify as Federal HBP bridges because they carry no vehicular load and, consequently, have not previously been included within the City's biennial bridge inspection program; however, both bridges were inspected by King County Bridge Inspectors in 2011 as the City was doing its due-diligence activities prior to purchasing the CKC. In general, both bridges were rated as satisfactory, with some deficiencies noted (see Table 1 below; Attachment F & G).

Kirkland Way CKC Bridge

NE 68th Street CKC Bridge

Bridge Report Summary

The Bridge Rating System used for general purpose vehicular bridge conditions is known as Sufficiency Rating (SR). The SR is a score calculated for each bridge using a multitude of ratings (i.e. component conditions, geometric layout, safety, traffic volume, and the length of the detour route in the event of a closure). The SR ranges from zero to 100, with zero being the worst and 100 being the best rating.

The following table is a summary of the bridge inspection results for all bridges within the City, including the three Kirkland general purpose bridges, the 2 CKC bridge structures, the 5 WSDOT general purpose vehicular bridges and the state's 3 pedestrian bridges:

Table 1: Bridges within Kirkland City Limits

Bridge Name	Owner	Year Built	Length	Last Inspected	Sufficiency Rating (SR)	Repairs and Observations	COK Action/Response
HBP -City owned							
Central Way-CKC	Kirkland	1965	149 LF	Spring 2013	79.75	Washout at Abutment. Plugged Storm Drain.	City crew maintenance
Forbes Creek	Kirkland	1974	245 LF	Spring 2013	93.15	Worn Pavement (wheel path) at abutment joints	Future Overlay
116th St CKC	Kirkland	2012	200 LF	New	NA	New Bridge construction completed in 2013	None
HBP-State Owned Structures							
NE 72nd PL over I-405	WSDOT	1970	424 LF	Summer 2012	73.71	Ramp the SE & NE sidewalk approaches. ACP has cracks.	N/A
Kollin Nielson Memorial Br (116th Street)	WSDOT	2007	132 LF	Summer 2011	91.8	Repair or replace damaged SW terminal	N/A
NE 124th St. over 120th	WSDOT	1990	36 LF	Fall 2011 / Summer 2012	97.05/81.92	Approaches have settled.	N/A
NE 128th Street over I-405	WSDOT	2006	128 LF/ 124 LF	Spring 2012	94.85/94.82	Deck at east end has some spalling	N/A
I-405 over NE 85th Street	WSDOT	1970/1971	211 LF/ 223 LF	Spring 2012	97/99	Deck has transverse cracks over abutments.	N/A
Other Kirkland Structures							
SB-1 (NE 68th Street)	Kirkland	1969	126 LF	Spring 2011	NA *	Timber in satisfactory condition w/certain deficiencies noted.	Part of Interim Trail/Master Plan
SB-2 (Kirkland Way)	Kirkland	1927	43 LF	Spring 2011	NA *	Low vertical (11'6") and Horizontal clearances (24" WB lane)	Part of Interim Trail/Master plan
WSDOT Pedestrian Bridges							
NE 60th St. Ped UC	WSDOT	1978	447 LF	Fall 2009	NA *	Pavement on West Approach needs feathering	None
NE 80th St. Ped Over I-405	WSDOT	1970	525 LF	Fall 2012	NA *	Floor beam connections need to be reassembled with new steel angles	Staff to address hits w/ WSDOT
Ped/Emergency Vehicle UC	WSDOT	2002	200 LF	Fall 2010	NA *	Barrier has protruding bolts that need to be torched off.	None

* No Federal "SR" number for bridges without general purpose vehicular traffic.

Conclusion

As noted in Table 1 above, all Federal HBP bridges within the City, both city owned and state controlled, come with SR Ratings above 70, with only minor deficiencies noted and as documented within their most recent Bridge Inspection Report. The basis for determining a bridge's sufficiency rating is a measure of evaluating a bridge's "sufficiency" to remain in service, based on a combination of several factors. The result of the formula used by the FHWA in determining the actual SR number is a percentage in which 100 percent represents an entirely sufficient bridge and zero percent represents a deficient bridge.

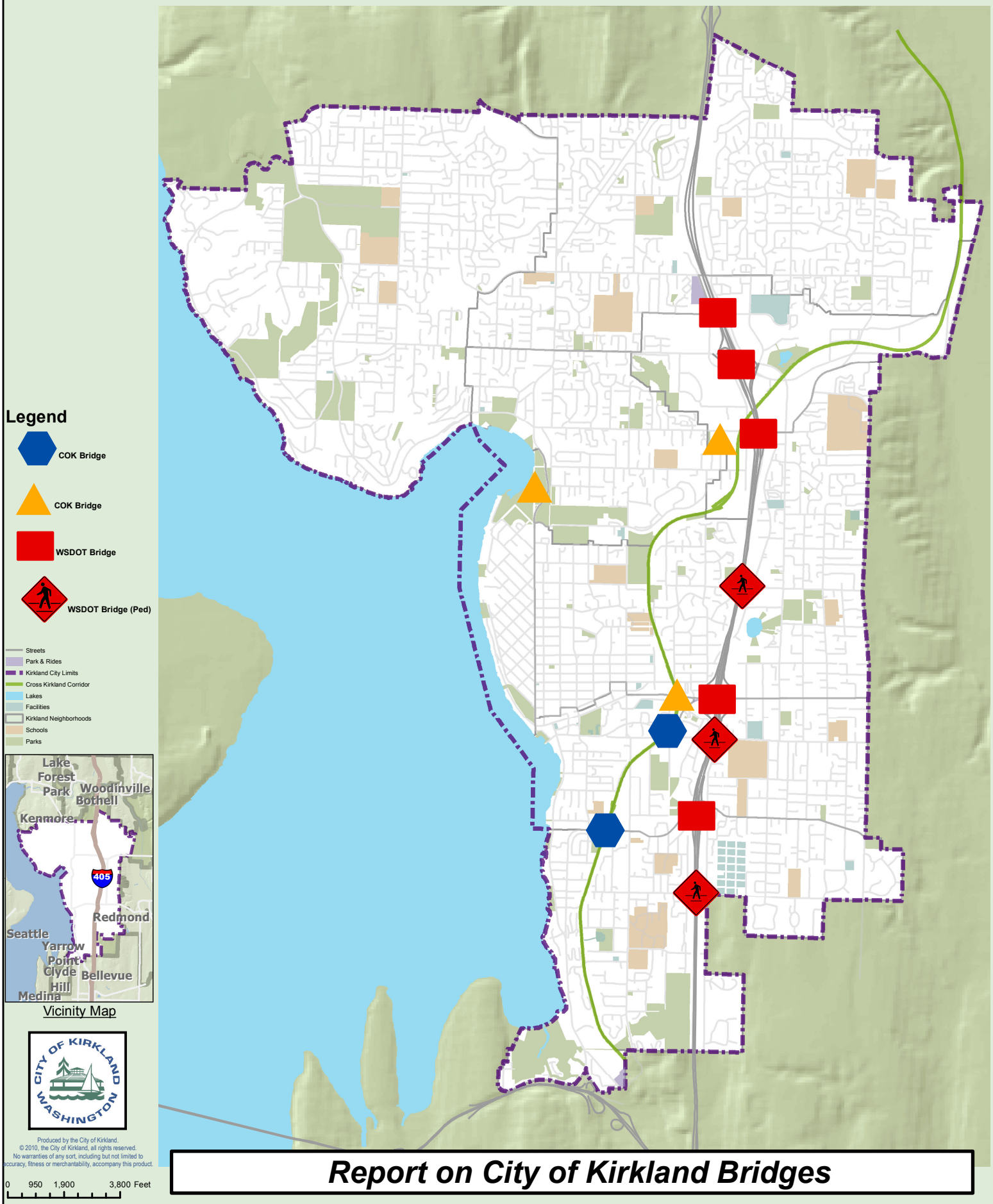
The sufficiency rating (SR) doesn't necessarily indicate a bridge's ability to carry traffic loads being based more on factors including traffic volume, roadway width, structure type, roadway alignment, and the condition of the road deck and structure. The SR Rating number helps determine which bridges may need repair or replacement. In assisting the state to keep the FHWA informed on the condition of its bridges, Kirkland submits its bridge reports on a biennial

basis that contain all of the required information for each Federal HBP eligible bridge in order to qualify for federal funding on maintenance, rehabilitation, or replacement matters.

At their meeting of June 4, 2013, City Council approved the receipt of a federally issued seismic upgrade grant for the City's 98th Ave NE – Forbes Creek Bridge, as a bridge that is in "good" condition and has a high SR score. In other words, the bridge is viewed as a bridge worth preserving and staff is in the consultant selection process for a 2014 construction phase.

Attachment A – Vicinity Map
Attachment B – WSDOT Deficient Bridge List
Attachment C – Kirkland HBP Report – Forbes Creek
Attachment D – Kirkland HBP Report – Central Way
Attachment E – WSDOT NE 80th Ped Bridge Report
Attachment F – CKC/68th Street Bridge Report
Attachment G – CKC/Kirkland Way Bridge Report

Attachment A



Report on City of Kirkland Bridges

H:\Pw\CIP group\Community Outreach\Outreach Forms\Kirkland Bridges.mxd

ATTACHMENT B

WSDOT Structurally Deficient Bridges

Washington State Department of Transportation

County	State Route	Milepost	Bridge Name	Year Built	Bridge Type	SD Problem	Status
Franklin	395	20.04	COURT ST OVER US 395	1966	Pre-Tensioned Concrete Beam	Superstructure	Contract Work in progress - 3rd party damage
Grays Harbor	12	0.08	HERON STREET BRIDGE	1949	Steel (open) Girder - Swing Span	Substructure	Prioritized for Bridge Rehabilitation
Grays Harbor	101	83.22	CHEHALIS RIVER BRIDGE	1955	Bascule Lift Span	Scour	Prioritized for Bridge Rehabilitation
Grays Harbor	101	109.00	HUMPTULIPS R	1950	Steel Thru Truss	Deck	Monitor thru Insp - Program Future Repairs
Grays Harbor	107	7.79	SLOUGH	1953	Treated Timber Trestle	Substructure	Prioritized for Bridge Replacement
Grays Harbor	109	35.17	WRECK CREEK	1957	Concrete Slab/Timber Piling	Substructure	Monitor thru Insp - Program Future Repairs
Jefferson	20	12.56	PORT TOWNSEND SLIP 1	1982	Steel Movable Lift	Superstructure	Programmed for Bridge Replacement
Jefferson	20	12.56	PORT TOWNSEND SLIP 2	1955	Steel Movable Lift	Superstructure	Monitor thru Insp - Program Future Repairs
King	5	161.28	S-W RAMP OVER LUCILE ST	1967	Concrete Box	Deck	Prioritized for Bridge Rehabilitation
King	5	162.98	NB VIADUCT STA 2064	1966	Concrete Slab	Superstructure	Monitor thru Inspection
King	5	162.98	NB I5 to WB W SEA FRWY	1967	Concrete Box	Deck	Prioritized for Bridge Rehabilitation
King	5	162.99	SPOKANE ST WB OVER I-5	1967	Concrete Box	Deck	Prioritized for Bridge Rehabilitation
King	5	163.00	SPOKANE ST EB OVER I-5	1966	Concrete Box	Superstructure	Prioritized for Bridge Rehabilitation
King	18	6.62	GREEN R (NEELEY BRIDGE)	1959	Steel Thru Truss	Deck	Prioritized for Bridge Rehabilitation
King	18	20.34	SR 18 OVER HOBART RD/CRK	1961	Concrete Box	Deck	Prioritized for Bridge Rehabilitation
King	90	4.28	HOMER M. HADLEY	1989	Concrete Floating Pontoon	Superstructure	Prioritized for Bridge Rehabilitation
King	90	4.28	LACEY V. MURROW BRIDGE	1940	Concrete Floating Pontoon	Superstructure	Prioritized for Bridge Rehabilitation
King	90	25.66	I-90 OVER SR 18	1963	Pre-Tensioned Concrete Beam	Deck	Prioritized for Bridge Rehabilitation
King	90	25.65	I-90 OVER SR 18	1975	Pre-Tensioned Concrete Beam	Superstructure	Maintenance Repair Complete
King	90	27.33	I-90 OVER WINERY RD	1976	Post-Tensioned Concrete Box	Deck	Programmed for Bridge Rehabilitation
King	99	28.61	SPOKANE ST OC	1959	Steel Beam	Timber Appr Span	Programmed for Bridge Span Replacement
King	99	29.84	ALASKAN WAY V NORTHBOUND	1952	Steel Beam	Substructure	Contract Work in progress
King	99	29.84	ALASKAN WAY V SOUTHBOUND	1952	Steel Beam	Substructure	Contract Work in progress
King	203	3.76	GRIFFIN CR	1945	Treated Timber Trestle	Substructure	Monitor thru Insp - Program Future Repairs
King	203	15.68	SLOUGH	1945	Treated Timber Trestle	Substructure	Monitor thru Insp - Program Future Repairs
King	203	17.07	SLOUGH	1945	Treated Timber Trestle	Substructure	Monitor thru Insp - Program Future Repairs
King	203	17.22	CHERRY CR	1946	Concrete T-Beam	Deck	Monitor thru Insp - Program Future Repairs
King	519	1.31	SEATTLE SLIP 3	1964	Steel Movable Lift	Superstructure	Programmed for Bridge Replacement
King	520	2.45	ALBERT D. ROSELLINI BR	1963	Concrete Floating Pontoon	Superstructure	Contract Work in Progress
King	900	21.58	SR 900 OVER I-90	1970	Steel Beam	Deck	Program Future Repairs
Kitsap	303	0.26	MANETTE BRIDGE CS1841	1930	Steel Thru-Deck Truss	Substructure	Contract Work in progress
Kittitas	10	90.10	BRISTOL FILL	1937	Steel Beam	Deck	Prioritized for Bridge Rehabilitation

BRIDGE INSPECTION REPORT

ATTACHMENT C

	WO	CC	WE	PD
BAM				

Status: Released

Ver Date 4/15/2013
Printed on: 4/22/2013

Agency: KIRKLAND
Program Mgr: Grant D. Griffin

Bridge No. 00001123A
Bridge Name FORBES CREEK
Structure ID 08556100

Route 00625
MilePost 100.00

Structure Type CS
Intersecting FORBES CREEK
Location 1.5 MI N CENTRAL W

Inspector's Signature DRS IDent# A1099 Co-Inspector's Signature DRS

7		Structural Adqcy	(657)	N		Pier/Abut/Protect	(679)	1974		Year Built	(332)	**IT**	**NT**	**HRS**	**Date**	**Rep Type**
7		Deck Geometry	(658)	8		Scour	(680)	0		Year Rebuilt	(336)	**Y**	**24**	**1.2**	**3/30/2013**	**Routine**
9		Underclearance	(659)	8		Approach Rdwy	(681)	L 49		Oper Rating	(551)					Fract Crit
5		Operating Level	(660)	9		Retaining Walls	(682)	L 36		Inv Rating	(554)					Underwater
8		Alignment Adqcy	(661)	9		Pier Protection	(683)	A		Open Close	(293)					Special
8		WaterwayAdqcy	(662)	1		Bridge Rails	(684)	9999		Vert Over Deck	(360)					Interim
7		Deck Overall	(663)	0		Transition	(685)	0000		Vert Under	(374)					Equipment
6		Drains Condition	(664)	0		Guardrails	(686)	N		Vert Und Code	(378)					Damage
7		Superstructure	(671)	0		Terminals	(687)	0.00		Asphalt Depth						Safety
0		Number Utilities	(675)	N		Revise Rating	(688)			Speed Limit						Short Span
7		Substructure	(676)	D		Photos Flag	(691)					Total: 1.2				
8		Chan/Protection	(677)			Soundings Flag	(693)									
9		Culvert	(678)			Measure Clearance	(694)					Suff Rating: 93.15				93.15

Inspections Performed:

BMS Elements 12 to 800

Element	Element Description	Total	Units	State 1	State 2	State 3	State 4
12	Concrete Deck	13,104	SF	13,104	0	0	0
105	Concrete Box Girder	245	LF	245	0	0	0
215	Concrete Abutment	129	LF	129	0	0	0
227	Concrete Submerged Pile/Column	6	EA	6	0	0	0
310	Elastomeric Bearing	14	EA	12	2	0	0
331	Concrete Bridge Railing	504	LF	504	0	0	0
340	Metal Pedestrian Railing	504	LF	494	0	10	0
800	Asphaltic Concrete (AC) Overlay	13,104	SF	13,104	0	0	0

BRIDGE INSPECTION REPORT

	WO	CC	WE	PD
BAM				

Status: Released

Ver Date 4/15/2013
Printed on: 4/22/2013

Agency: KIRKLAND
Program Mgr: Grant D. Griffin

Bridge No.	00001123A			**Structure Type**	CS
Bridge Name	FORBES CREEK	**Route**	00625	**Intersecting**	FORBES CREEK
Structure ID	08556100	**MilePost**	100.00	**Location**	1.5 MI N CENTRAL W

Notes 0 to 800

0	Need waders to inspect. Piers are numbered South to North. Pier 1 is closest to fire station.
12	Edges of deck slab have vertical cracks. Some of these cracks are leaking.
105	This superstructure appears to be a CBOX. Bottom of box in span 1 has several transverse leaching cracks and longitudinal leaching cracks, some are rust stained and others are starting to form stalactites. Span 1 has 2 diagonal leaching cracks approximately 10' long that run to pier 2A and are forming stalactites. Spans 2 and 3 have several transverse leaching and rusty cracks. At pier 3 east side a vertical crack in sloping web of C-Box has a stalactite 8" in length. Span 4 transverse leaching cracks and longitudinal leaching cracks . Repetitive transverse cracks at 2' centers in bottom of box in spans 1 and 2.
215	A few vertical hairline cracks in abutment .
227	A few horizontal leaching cracks in a couple of the columns .
310	A few are bulging and out of plane bending (deforming) at pier 5.
331	Several spalls at concrete rail joints with exposed longitudinal rebar.
340	Pedestrian rail on east side of the bridge has traffic impact damage at north abutment. Photo taken today.
664	Partially plugged with dirt and debris .
673	A few transverse cracks in the top of sidewalks. 1" toe tripper at Southeast & Southwest sidewalk approach.
681	ACP strip patch 12" - 16" wide with tarred edges at both abutments. Patch is ravelingfull roadway width.
692	Bridge would be better inspected at low water in summer season.
800	2" ACP worn in wheel lines . ACP patched at both abutment joints the full width of the road.

BRIDGE INSPECTION REPORT

	WO	CC	WE	PD			
BAM					Status: Released	Ver Date 4/15/2013 Printed on: 4/22/2013	Agency: KIRKLAND Program Mgr: Grant D. Griffin

Bridge No.	00001123A			**Structure Type**	CS
Bridge Name	FORBES CREEK	**Route**	00625	**Intersecting**	FORBES CREEK
Structure ID	08556100	**MilePost**	100.00	**Location**	1.5 MI N CENTRAL W

Repairs 14504 to 17529

Repair No	Pr	R	Repair Description	Date Noted	Verified
14504	2	B	On the WSBIS Inventory Report Coding Form provide the following data: Load rating method used and ADT data that is less than 4 years old.	12/2/1999	
17519	2	B	On the WSBIS Inventory Report Coding Form provide the following data: Load rating method used and ADT data that is less than 4 years old.	12/2/1999	
17525	2	B	North Asphalt expansion joint extensive cracking over 90% of length should be replaced	3/30/2011	
17526	2	B	Repair metal pedestrian rail N.E. Corner	4/11/2013	
17527	2	B	Barrier Cover plate N.W. corner missing @ transition pt.	4/11/2013	
14503	3	B	Repair metal pedestrian rail on east side of the bridge at north abutment.	12/2/1999	
17518	3	B	Repair metal pedestrian rail on east side of the bridge at north abutment.	12/2/1999	
17520	3	B	Repair metal pedestrian rail n.e. corner of bridge	1/29/2007	
17521	3	B	Cover plate missing on East side barrier expansion joint	1/29/2007	
17522	3	J	Reset west barrier	4/10/2009	
17523	3	J	Un plug drains west side	4/10/2009	
17524	3	B	Repair metal pedestrian rail NE corner of bridge	3/30/2011	
17528	3	B	Un plug west side drains	4/11/2013	
17529	3	B	Move NW barrier back to positio to set cover plate	4/11/2013	

Inspections Performed and Resources Required

Report Type	Date	IT	Frq	Hrs	Insp	CertNo	Coinsp	Note
Routine	3/30/2013	Y	24	1.2	DRS	A1099	DRS	

Sticky Notes

Creator	Created	Table Reference	Notes
Shearer Design Consultants/ ShearerD	4/10/2009	Photos	Ped rail NE corner damaged since mid 1990's

BRIDGE INSPECTION REPORT

WO	CC	WE	PD
BAM			

Status: Released

Ver Date: 4/15/2013
Printed on: 4/22/2013

Agency: KIRKLAND
Program Mgr: Grant D. Griffin

Bridge No. 00001123A

Structure Type CS

Bridge Name FORBES CREEK

Route 00625

Intersecting FORBES CREEK

Structure ID 08556100

MilePost 100.00

Location 1.5 MI N CENTRAL W

SI-23
2013
Photo Type: R - Repair
Orientation:
Dates: 3/30/2013
Repairs:
Missing barrier cover plate

SI-24
2013
Photo Type: R - Repair
Orientation:
Dates: 3/30/2013
Repairs:
Damaged ped rail

BRIDGE INSPECTION REPORT

WO	CC	WE	PD			
BAM				Status: Released	Ver Date: 4/15/2013 Printed on: 4/22/2013	Agency: KIRKLAND Program Mgr: Grant D. Griffin

Bridge No.	00001123A	Page 13 of 16		**Structure Type**	CS
Bridge Name	FORBES CREEK	**Route**	00625	**Intersecting**	FORBES CREEK
Structure ID	08556100	**MilePost**	100.00	**Location**	1.5 MI N CENTRAL W

SI-25
2013
Photo Type: E - Elevation
Orientation:
Dates: 3/30/2013
Repairs:
Facing East

SI-26
2013
Photo Type: R - Repair
Orientation:
Dates: 3/30/2013
Repairs:
Asphalt joint failure NE corner

BRIDGE INSPECTION REPORT

WO	CC	WE	PD
BAM			

Status: Released

Ver Date: 4/15/2013
Printed on: 4/22/2013

Agency: KIRKLAND
Program Mgr: Grant D. Griffin

Bridge No. 00001123A

Structure Type CS

Bridge Name FORBES CREEK

Route 00625

Intersecting FORBES CREEK

Structure ID 08556100

MilePost 100.00

Location 1.5 MI N CENTRAL W

SI-27
2013
Photo Type: G - General
Orientation: W
Dates: 3/30/2013
Repairs: 17529
Barrier Transition

SI-28
2013
Photo Type: G - General
Orientation: S
Dates: 3/30/2013
Repairs:
Roadway

BRIDGE INSPECTION REPORT

WO	CC	WE	PD			
BAM				Status: Released	Ver Date: 4/15/2013 Printed on: 4/22/2013	Agency: KIRKLAND Program Mgr: Grant D. Griffin

Bridge No.	00001123A			**Structure Type**	CS
Bridge Name	FORBES CREEK	**Route**	00625	**Intersecting**	FORBES CREEK
Structure ID	08556100	**MilePost**	100.00	**Location**	1.5 MI N CENTRAL W

SI-29
2013
Photo Type: G - General
Orientation: N
Dates: 3/30/2013
Repairs:

BRIDGE INSPECTION REPORT

	WO	CC	WE	PD
BAM				

Status: Released

Ver Date 4/15/2013
Printed on: 4/22/2013

ATTACHMENT D

Agency: KIRKLAND
Program Mgr: Grant D. Griffin

Bridge No. 90863

Structure Type PCB

Bridge Name CENTRAL WAY-BNRR OC (NP)

Route 00625

Intersecting NP RY

Structure ID 0007548A

MilePost 3.25

Location 3.3 N JCT SR 520

Inspector's Signature DRS IDent# A1099 Co-Inspector's Signature DRS

6		Structural Adqcy	(657)	N		Pier/Abut/Protect	(679)	1965		Year Built	(332)	**IT**	**NT**	**HRS**	**Date**	**Rep Type**
4		Deck Geometry	(658)	N		Scour	(680)	0		Year Rebuilt	(336)	**Y**	**24**	**1.0**	**3/30/2013**	**Routine**
9		Underclearance	(659)	8		Approach Rdw y	(681)	L 52		Oper Rating	(551)					Fract Crit
5		Operating Level	(660)	9		Retaining Walls	(682)	L 36		Inv Rating	(554)					Underw ater
8		Alignment Adqcy	(661)	9		Pier Protection	(683)	A		Open Close	(293)					Special
9		Waterw ayAdqcy	(662)	1		Bridge Rails	(684)	9999		Vert Over Deck	(360)					Interim
7		Deck Overall	(663)	1		Transition	(685)	2404		Vert Under	(374)					Equipment
9		Drains Condition	(664)	1		Guardrails	(686)	R		Vert Und Code	(378)					Damage
7		Superstructure	(671)	1		Terminals	(687)	0.00		Asphalt Depth						Safety
0		Number Utilities	(675)	N		Revise Rating	(688)	30		Speed Limit						Short Span
6		Substructure	(676)	P		Photos Flag	(691)					Total: 1.0				
9		Chan/Protection	(677)			Soundings Flag	(693)									
9		Culvert	(678)			Measure Clearance	(694)					Suff Rating: 79.75				79.75

BMS Elements 12 to 803

Element	Element Description	Total	Units	State 1	State 2	State 3	State 4
12	Concrete Deck	7,644	SF	7,644	0	0	0
115	Prestressed Concrete Girder	1,490	LF	1,490	0	0	0
210	Concrete Pier Wall	110	LF	110	0	0	0
215	Concrete Abutment	134	LF	134	0	0	0
217	Other Abutment		LF				
217	Other Abutment	0	LF	0	0	0	0
234	Concrete Pier Cap / Crossbeam	112	LF	112	0	0	0
310	Elastomeric Bearing	60	EA	52	8	0	0
310	Elastomeric Bearing	0	EA	0	0	0	0
331	Concrete Bridge Railing	298	LF	298	0	0	0
340	Metal Pedestrian Railing	289	LF	289	0	0	0
358	Deck Cracking	1	EA	1	0	0	0
370	Seismic - Longitudinal Restrainer	16	EA	16	0	0	0
404	Compression Seal / Concrete Header	212	LF	212	0	0	0
803	Modified Concrete Overlay	7,644	SF	7,644	0	0	0

BRIDGE INSPECTION REPORT

WO	CC	WE	PD			
BAM				Status: Released	Ver Date 4/15/2013 Printed on: 4/22/2013	Agency: KIRKLAND Program Mgr: Grant D. Griffin

Bridge No.	90863			**Structure Type**	PCB
Bridge Name	CENTRAL WAY-BNRR OC (NP)	**Route**	00625	**Intersecting**	NP RY
Structure ID	0007548A	**MilePost**	3.25	**Location**	3.3 N JCT SR 520

Notes 12 to 803

12	Rock pocket and patched area in bottom of deck between stringers 3F and 3G.
115	Girder end diaphragms have leaching cracks. A few girders have top flange leaching cracks. Several square pop outs on the bottom of bottom flange of girders.
210	(234) Vertical leaching cracks in pier walls and caps at piers 2 and 3. Swiss cheesy pattern cracking in span 3 WB. Caps are wet.
217	Washout under abut 4 appears stable but should be filled in
217	Washout under bridge rock slope protection needs repair
310	Bearing 1J has not moved .
310	10% of bearings showing bulging. Bearing 1J overhangs grout pad 1 3/8". Bearings impacted with dirt and debris. Bearing 2A overhanging girder edge
340	Metal bridge rail missing end cap S.W. corner
404	Seals have been repaired between 2009 & 2011
672	Bridge has curbs and they are in good condition.
681	Both approaches are rutting in wheel lines and have longitudinal cracking.
684	NE rail not attached to bridge rail.
803	LMC worn to aggregate in wheel lines. A few longitudinal cracks in top of deck, typically 4" long and open 1/32". Pattern cracking in westbound lanes in span 3.

Repairs 17234 to 17237

Repair No	Pr	R	Repair Description	Date Noted	Verified
17234	1	B	Unplug storm drain N.E. corner approach road.	1/29/2007	
14266	2	B	Direct roadway runoff from East end of bridge away from bridge. Repair erosion gullies in embankments.	12/2/1999	
14267	2	B	On the WSBIS Inventory Report Coding Form provide the following data: Load rating method used and ADT data that is less than 4 years old.	12/1/1999	
17232	2	B	Direct roadway runoff from East end of bridge away from bridge. Repair erosion gullies in embankments.	12/2/1999	
17233	2	B	On the WSBIS Inventory Report Coding Form provide the following data: Load rating method used and ADT data that is less than 4 years old.	12/1/1999	
17235	2	J	Washout under Abut 4 , plugged storm drain NE corner	3/31/2009	
17236	2	J	Washout under Abut 4 , plugged storm drain still a problem	3/30/2011	
17237	2	J	Washout under Abut 4, getting worse. storm drain on N.E. road corner still plugged	4/11/2013	

Inspections Performed and Resources Required

Report Type	Date	IT	Frq	Hrs	Insp	CertNo	Coinsp	Note
Routine	3/30/2013	Y	24	1.0	DRS	A1099	DRS	

BRIDGE INSPECTION REPORT

	WO	CC	WE	PD			
BAM					Status: Released	Ver Date 4/15/2013 Printed on: 4/22/2013	Agency: KIRKLAND Program Mgr: Grant D. Griffin

Bridge No.	90863			**Structure Type**	PCB
Bridge Name	CENTRAL WAY-BNRR OC (NP)	**Route**	00625	**Intersecting**	NP RY
Structure ID	0007548A	**MilePost**	3.25	**Location**	3.3 N JCT SR 520

Sticky Notes

Creator	Created	Table Reference	Notes

BRIDGE INSPECTION REPORT

WO	CC	WE	PD			
BAM					Status: Released	

Ver Date: 4/15/2013
Printed on: 4/22/2013

Agency: KIRKLAND
Program Mgr: Grant D. Griffin

Bridge No. 90863
Bridge Name CENTRAL WAY-BNRR OC (NP)
Structure ID 0007548A

Route 00625
MilePost 3.25

Structure Type PCB
Intersecting NP RY
Location 3.3 N JCT SR 520

Central Way
2013
Photo Type: R - Repair
Orientation:
Dates: 3/30/2013
Repairs:
Abut 4 Erosion

SI-10
2013
Photo Type: (none)
Orientation:
Dates:
Repairs:

BRIDGE INSPECTION REPORT

WO	CC	WE	PD			
BAM				Status: Released	Ver Date: 4/15/2013 Printed on: 4/22/2013	Agency: KIRKLAND Program Mgr: Grant D. Griffin

Bridge No.	90863			**Structure Type**	PCB
Bridge Name	CENTRAL WAY-BNRR OC (NP)	**Route**	00625	**Intersecting**	NP RY
Structure ID	0007548A	**MilePost**	3.25	**Location**	3.3 N JCT SR 520

SI-11
2013
Photo Type: (none)
Orientation:
Dates:
Repairs:
Pier 3 Grafitti

SI-Central Way
2013
Photo Type: E - Elevation
Orientation:
Dates: 3/30/2013
Repairs:
Facing South

BRIDGE INSPECTION REPORT

ATTACHMENT E

	WO	CC	WE	PD
BAM	0	0	0	0

Status: Released

Ver Date 10/26/2012
Printed on: 10/29/2012

Agency: Washington State
Program Mgr: Harvey L. Coffman

Bridge No. 405/51P

Structure Type SA CS

Bridge Name NE 80TH PED OVER I-405

Route 00405

Location 3.0 N JCT SR 520

Structure ID 0008674C

MilePost 17.84

Intersecting I-405

Inspector's Signature WDS IDent# G0910

Co-Inspector's Signature PFK

		Structural Adqcy	(657)	N		Pier/Abut/Protect	(679)	1970		Year Built	(332)	IT	NT	HRS	Date	Rep Type
9		Deck Geometry	(658)	N		Scour	(680)	0		Year Rebuilt	(336)					Routine
2	3	Underclearance	(659)	9		Retaining Walls	(682)	0		Oper Rating	(551)					Fract Crit
5		Operating Level	(660)	9		Pier Protection	(683)	0		Inv Rating	(554)					Underwater
9		Alignment Adqcy	(661)	N		Bridge Rails	(684)	A		Open Close	(293)					Special
9		WaterwayAdqcy	(662)	N		Transition	(685)	9999		Vert Over Deck	(370)					Interim
7		Deck Overall	(663)	N		Guardrails	(686)	1500		Vert Under	(374)					Equipment
8		Drains Condition	(664)	N		Terminals	(687)	H		Vert Und Code	(378)	N				**Damage**
4	6	Superstructure	(671)	N		Revise Rating	(688)	0.00		Asphalt Depth		Y	24	2.0	8/15/2012	**Safety**
0		Number Utilities	(675)			Photos Flag	(691)			Design Curb Height						Short Span
7		Substructure	(676)			Soundings Flag	(693)	60		Speed Limit		Total:2.0				
9		Chan/Protection	(677)			Measure Clearance	(694)									
9		Culvert	(678)									Suff Rating:				

Inspections Performed:

BMS Elements

Element	Element Description	Total	Units	State 1	State 2	State 3	State 4
12	Concrete Deck	2,840	SF	2,840	0	0	0
35	Concrete Deck Soffit	2,840	SF	2,840	0	0	0
38	Concrete Slab	1,622	SF	1,622	0	0	0
141	Steel Arch	650	LF	650	0	0	0
152	Steel Floor Beam	273	LF	273	0	0	0
202	Steel Pile/Column	4	EA	4	0	0	0
205	Concrete Pile/Column	5	EA	5	0	0	0
215	Concrete Abutment	20	LF	20	0	0	0
311	Moveable Bearing (roller, sliding, etc)	4	EA	4	0	0	0
313	Fixed Bearing	4	EA	4	0	0	0
340	Metal Pedestrian Railing	930	LF	930	0	0	0
362	Impact Damage	4	EA	1	3	0	0
403	Poured Rubber and Bulb-T	20	LF	20	0	0	0
705	Bridge Luminaire Pole and Base	1	EA	1	0	0	0
910	Weathering Steel Patina	11,880	SF	11,870	0	10	0

BRIDGE INSPECTION REPORT

	WO	CC	WE	PD
BAM	0	0	0	0

Status: Released

Ver Date 10/26/2012
Printed on: 10/29/2012

Agency: Washington State
Program Mgr: Harvey L. Coffman

Bridge No.	405/51P			**Structure Type**	SA CS
Bridge Name	NE 80TH PED OVER I-405	**Route**	00405	**Location**	3.0 N JCT SR 520
Structure ID	0008674C	**MilePost**	17.84	**Intersecting**	I-405

Notes

0 Bridge is oriented west to east over I-405. For layout, see photo #30.
Best access is from northbound I-405 right shoulder.

1 Bridge is not fracture critical since the loss of a single hanger would not result in the loss of the main span.
However, kids in 1970 were able to get bridge swaying and matched it's natural frequency. The 'X' bracing rods were added between verticals but they were not sufficient to dampen dynamic motion. Pedestrian rail was added with double row of 'K' bracing down each side. The 'K' bracing was successful in dampening bridge motion. This rail is galvanized pipe with field fillet welds. For the full length of arch, all rail post anchor bolts to the deck were re-torqued and nuts welded. In addition, all rail expansion joints were fully welded. These live load dampening systems are secondary members and not considered 'Fracture Critical'. However, any weld cracks noted or connection defects should be repaired and maintained. `See attached files for arch dampening details.

12 Concrete Deck is in Span 7.

38 Concrete Slabs are in the approach spans.

141 Steel Arch, in Span 7, has 16 ft. long panel sections extending from Points R0 and T0 at Pier 7 to Points R18 and T18 at Pier 8. The arch and bottom tie beams intersect and are concurrent at Points R2/T2 and R16/T16. However, Points T2 and T16 aren't actually labeled on the plan elevations.
Previous problems with excessive deflection, bounce and sway were addressed by the installation of the additional pedestrian rail and diagonal bracing to act as an arch dampening system.

Primary and secondary truss members have areas of corrosion throughout with surface rust and shallow pitting, but no significant section loss.
Diagonal brace attachment gussets in the west portion of bridge have rough welds, see photo #28. REPAIR #13108.

The north and south tie-beams T2 through T8 have been replaced (impact damage):
South T3-T4, see photos #17, #45 and #77. REPAIR #13112 verified 8/15/2012.
South T4-T6, see photos #59, #60, #61, #62, #63, #70, #71, #72, and #77. REPAIR #13115 verified 8/15/2012.
South T6-T7, see photo #75. REPAIR #13116 verified on 8/15/2012. See photo #77.
North T4-T5, see photos #36, #37, #38, #53, #54, #67, #68, #69, and #77. REPAIRS #13114 verified 8/15/2012.
North T5-T6, see photos #67, #68, #69, and #77. REPAIR #13115 verified 8/15/2012.
At R6, the diagonal bracing lock nut and turnbuckle tensioner has been tightened, see photos #27 and #76. REPAIR #12653 verified 8/15/2012.

South tie-beam T15-R16 has the bottom flange bent north 2" over 16 ft., approximately 4 ft. east of T15.

152 Steel Floor beams have areas of surface rust and shallow pitting throughout.
At T5, both end connections have been repaired, see photos #55, #64, #65, #73, and #77. REPAIR #13110 verified 8/15/2012.
At T6, the south connection has been repaired, see photos #74 and #77. REPAIR #13117 verified 8/15/2012.

205 Concrete Columns are at Piers 2 through 6. See photo #29.
Column at Pier 6, on the north side, has 4" long delamination where floorbeam rests.

311 Moveable bearings are at Piers 6 and 9.

313 Fixed Bearings for the arch, at the Piers 7 and 8 thrust blocks, have retrofitted covers. When these covers were lifted, there was typical laminar rust and some minor debris build up. See photo #47. REPAIR #12660.

340 Metal Pedestrian Railing and chain link fence spans the full length of the bridge, but in Span 7 is considered part of the bridge damping system. There are many areas of surface rust throughout and areas where the double wrapped lashing is missing or broken. See photo #23. REPAIR #12652.

362 See element notes 141 and 152 for impact damage and repairs.

403 Poured Rubber Joint at the west end is pulled away from header in two places, for a total of 2 ft.

671 Superstructure Overall is coded "6"after replacement of members damaged from traffic impact.

694 Bridge is posted at 14' 9" for controlling minimum clearance over west curb line of ramp lane, measured to be 15' 0".

Added vertical clearance card to correspondence tab.

910 Weathering Steel has been painted with an epoxy sealer. There are areas of surface rust and surface pitting throughout with laminar rust at the arch bearings.

BRIDGE INSPECTION REPORT

	WO	CC	WE	PD
BAM	0	0	0	0

Status: Released

Ver Date 10/26/2012
Printed on: 10/29/2012

Agency: Washington State
Program Mgr: Harvey L. Coffman

Bridge No. 405/51P

Structure Type SA CS

Bridge Name NE 80TH PED OVER I-405

Route 00405

Location 3.0 N JCT SR 520

Structure ID 0008674C

MilePost 17.84

Intersecting I-405

Repairs

Repair No	Pr	R	Repair Description	Noted	Maint	Verified
12652	2	B	Replace missing or damaged triple wrapped lashing of chain link fence which is part of bridge damping system.	11/17/2004		
12653	2	B	Tighten nuts and turnbuckles of cross bracing rods which are part of bridge damping system.	11/17/2004		8/15/2012
12660	2	B	Arch bearings at thrust blocks need to be coated to prevent further corrosion	11/19/2008		
13108	1	B	Grind out all unsatisfactory field welds. Re-fabricate components as necessary. Properly grind and prepare surfaces for welding by certified welder in accordance with AWS standards.	10/17/2010		
13110	1	B	Floor beam connections at T5 south and north need to be disassembled and reassembled with new steel angles on each side. Heat straighten the vertical gusset plates prior to assembly and reinstall all bolts. Report any unseen distress or damage to the bridge preservation supervisor at 360-570-2557.	12/3/2011		8/15/2012
13112	1	B	Heat straighten the south tie beam section between T3 and T4 south.	12/3/2011		8/15/2012
13114	1	B	Replace the damaged section of tie beam at the north side of structure between T4 through T6, and replace welded connection plate at the north side of the tie beam at T5. Replace the diagonal brace gusset plate welded to south face of the tie beam between T5 and T6 and both diagonal braces extending across to the floor beam connections. (Repair replaces Repair #12655)	1/12/2012		8/15/2012
13115	1	B	Replace the damaged section of tie beam at the south side of structure between T4 through T6, with the tie plate at T6. Replace the diagonal brace gusset plate welded to north face of the tie beam between T5 and T6 and both diagonal braces extending across to the floor beam connections. (Repair replaces Repair #13111)	1/12/2012		8/15/2012
13116	1	B	Heat straighten the south tie beam section between T6 and T7 south.	1/12/2012		8/15/2012
13117	1	B	Floor beam connections at T6 south and north need to be disassembled and reassembled with new steel angles used on the south side. Heat straighten the vertical gusset plates prior to assembly and reinstall all bolts. Report any unseen distress or damage to the bridge preservation supervisor at 360-570-2557.	1/12/2012		8/15/2012

Inspections Performed and Resources Required

Report Type	Date	IT	Frq	Hrs	Insp	CertNo	Coinsp	Note
Safety	8/15/2012		24	2.0	WDS	G0910	PFK	

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
NBI STRUCTURE INVENTORY AND APPRAISAL REPORT (ENGLISH UNITS)

DATE 10/29/2012

IDENTIFICATION

(1)	STATE NAME - WASHINGTON	530
(8)	STRUCTURE NUMBER	# 0008674C0000000
(5)	INVENTORY ROUTE (ON/UNDER) - Under	2 1 1 00405
(2)	HIGHWAY AGENCY DISTRICT -	
(3)	COUNTY CODE 33 - King County	(4) PLACE CODE 63000
(6)	FEATURES INTERSECTED	I-405
(7)	FACILITY CARRIED	NE 80TH ST PED
(9)	LOCATION	3.0 N JCT SR 520
(11)	MILEPOINT	17.84
(12)	BASE HIGHWAY NETWORK - Part of network	1
(13)	LRS INV ROUTE AND SUB ROUTE	000000040500
(16)	LATITUDE	47 Deg 40 Min 30.00 Sec
(17)	LONGITUDE	122 Deg 11 Min 6.00 Sec
(98)	BORDER BRIDGE STATE CODE - Not a border bridge	
(99)	BORDER BRIDGE STRUCTURE NO. - Not a border bridge	

STRUCTURE TYPE AND MATERIAL

(43)	STRUCTURE TYPE MAIN: MATERIAL - Steel	
	DESIGN - Arch - Thru	312
(44)	STRUCTURE TYPE APPR: MATERIAL -	
	DESIGN -	
(45)	NO. OF SPANS IN MAIN UNIT	
(46)	NO. OF APPROACH SPANS	
(107)	DECK STRUCT TYPE -	
(108)	WEARING SURFACE / PROTECTIVE SYSTEM:	
(A)	TYPE OF WEARING SURFACE -	
(B)	TYPE OF MEMBRANE -	
(C)	TYPE OF DECK PROTECTION -	

AGE AND SERVICE

(27)	YEAR BUILT	1970
(106)	YEAR RECONSTRUCTED	0000
(42)	TYPE OF SERVICE ON - Pedestrian & bicycle	3
	UNDER - Highway w/wo pedestrian	1
(28)	LANES: ON STRUCTURE 0	UNDER STRUCTURE 10
(29)	AVERAGE DAILY TRAFFIC	161875
(30)	YEAR OF ADT 2010	(109) TRUCK ADT 7%
(19)	BYPASS, DETOUR LENGTH	1.0 mi

GEOMETRIC DATA

(48)	LENGTH OF MAXIMUM SPAN	325 ft
(49)	STRUCTURE LENGTH	525 ft
(50)	CURB OR SIDEWALK: LEFT	RIGHT
(51)	BRIDGE ROADWAY WIDTH CURB TO CURB	
(52)	DECK WIDTH OUT TO OUT	
(32)	APPROACH ROADWAY WIDTH (W/SHOULDERS)	
(33)	BRIDGE MEDIAN -	
(34)	SKEW Deg	(35) STRUCTURE FLARED
(10)	INVENTORY ROUTE MIN VERT CLEAR	18 ft 00 in
(47)	INVENTORY ROUTE TOTAL HORIZ CLEAR	99 ft 12 in
(53)	MIN VERT CLEAR OVER BRIDGE RDW	
(54)	MIN VERT UNDERCLEAR	
(55)	MIN LAT UNDERCLEAR RT	
(56)	MIN LAT UNDERCLEAR LT	

NAVIGATION DATA

(38)	NAVIGATION CONTROL -
(111)	PIER PROTECTION - Not Applicable
(39)	NAVIGATION VERTICAL CLEARANCE
(116)	VERT-LIFT BRIDGE NAV MIN VERT CLR
(40)	NAVIGATION HORIZONTAL CLR

WSBIS DATA

BRIDGE NUMBER	405/51P
BRIDGE NAME	NE 80TH PED OVER I-405
CUSTODIAN	Washington State
CROSSING DESC	I-405 UNDER NE 80TH ST PED
CROSSING KEY	00405 00 01784 00 M Y
SUFFICIENCY RATING	

CLASSIFICATION

(112)	NBIS BRIDGE LENGTH	
(104)	HIGHWAY SYSTEM - On the NHS	1
(26)	FUNCTIONAL CLASS - Principal Arterial - I/S	11
(100)	DEFENSE HIGHWAY - Is an Interstate STRAHNET route	1
(101)	PARALLEL STRUCTURE - Not a parallel bridge	N
(102)	DIRECTION OF TRAFFIC - 2-way traffic	2
(103)	TEMPORARY STRUCTURE - Not Applicable	
(105)	FEDERAL LANDS HIGHWAY -	
(110)	DESIGNATED NATIONAL NETWORK - Part of network	1
(20)	TOLL - Non-toll structure	3
(21)	MAINTAIN -	
(22)	OWNER -	
(37)	HISTORICAL SIGNIFICANCE -	

CONDITION

(58)	DECK
(59)	SUPERSTRUCTURE
(60)	SUBSTRUCTURE
(61)	CHANNEL AND CHANNEL PROTECTION
(62)	CULVERTS

LOAD RATING AND POSTING

(31)	DESIGN LOAD -
(63)	OPERATING RATING METHOD -
(64)	OPERATING RATING
(65)	INVENTORY RATING METHOD -
(66)	INVENTORY RATING
(70)	BRIDGE POSTING -
(41)	STRUCT OPEN, POSTED, CLOSED -

APPRAISAL

(67)	STRUCTURAL EVALUATION
(68)	DECK GEOMETRY
(69)	UNDERCLEARANCES, VERTICAL & HORIZONTAL
(71)	WATERWAY ADEQUACY
(72)	APPROACH ROADWAY ALIGNMENT
(36)	TRAFFIC SAFETY FEATURES
(113)	SCOUR CRITICAL BRIDGE

PROPOSED IMPROVEMENTS

(75)	TYPE OF WORK -
(76)	LENGTH OF STRUCTURE IMPROVEMENT
(94)	BRIDGE IMPROVEMENT COST
(95)	ROADWAY IMPROVEMENT COST
(96)	TOTAL PROJECT COST
(97)	YEAR OF IMPROVEMENT COST ESTIMATE
(114)	FUTURE ADT
(115)	YEAR OF FUTURE ADT

INSPECTIONS

(90)	INSPECTION DATE		(91) FREQUENCY MO
(92)	CRITICAL FEATURE INSPECTION:		(93) CFI DATE
	(A) FRACTURE CRIT DETAIL - NO -	Month	(A) __/__
	(B) UNDERWATER INSP - NO -	Month	(B) __/__
	(C) OTHER SPECIAL INSP - NO -	Month	(C) __/__

ATTACHMENT F

King County Park Bridges BNSF East Side Corridor:
Bridge Name: SB-1 NE 68th Street

Report on Bridge Safety Inspection: by King County Bridges and Structures Unit
Staff: Tim Lane, Richard Hovde, Margaret Holwegner
Date: March 31, 2011
Inspection Time: 1 hour
Year Built: **1969**

Location: Accessed from NE 68th St. 0.25 mi. east of 104th Ave NE, Kirkland. Thomas Brothers Pg 536D5
Orientation: South abutment = bent 1; north abutment = bent 6
Length:, Steel 56', timber trestle 70'. 126' overall. Spans NE 68th Street
Limits to Inspection: Timber stringers sounded on sides where accessible through deck ties. All piles sounded from ground line up to 7'. Timber caps sounded from ground, caps 2 and 5 ground and where accessible through deck ties. Concrete pier walls and steel stringer visually inspected from ground line.

Structure Type: Timber trestle with steel girder main span:
Timber trestle – 4 timber bents:
Six timber piles at bent 2 and 5, diameter 12" x 14" each, labeled A-F (A is west)
Five timber piles at abutment 1 and 6
Timber caps double caps measure 8" x 17" each
8 timber stringers 10" x 17 ½" labeled A – H (A is west). Four lines under each rail track.
Main Span – 4 lines weathering steel girders on concrete pier walls, 8 bearing.
Horizontal clearance in eastbound lane of NE 68th street is 7'-6"

Deck Type: Timber decking over steel main span, approach spans no deck, ties sit on timber stringers. Train rails still in place on timber ties. Timber plank walkway on west side of deck.

Pedestrian Rail Type: Steel angles with two lines 1" diameter pipe, 42" high on west side of deck.

Structure Condition: Timber piles caps and stringers have been treated with preservatives by Osmose, last treatment indicated was 1997. Timber overall in satisfactory condition.
In span 4 many of the stringers have top rot. Several piles have rot and splits.

Abutment Condition: Soldier piles in place at wingwalls, all are rotten. Only cap is exposed at abutment 1, piles are buried.

NOTED DEFICIENCIES –

- Top rot in timber stringers; 2G, 4B, 4D, 4E and 4H.
- Moderate rot in pile 6C, advanced rot in 6E.
- Piles with splits; 2D, 5F and 6E.
- Gouge in east face of pile 5F.

ATTACHMENT G

King County Park Bridges BNSF East Side Corridor: North
Bridge Name: SB-2 Kirkland Way

Report on Bridge Safety Inspection: by King County Bridges and Structures Unit
Staff: Richard Hovde, Margaret Holwegner
Date: April 1, 2011
Inspection Time: .5 hours
Year Built: **1927**

Location: Accessed from Kirkland way 0.5 mi. south of NE 85th St, Kirkland. Thomas Brothers Page 536-E3
Orientation: South abutment = bent 1; north abutment = bent 2
Length: Concrete and steel 43'.
Limits to Inspection: Visual inspection from deck and ground line of abutments, girders and deck.

Structure Type: Cast in place concrete deck, abutments and two outside girders. Five lines of steel girders labeled B – F. Concrete girders are A (west) and G (east).
Bridge is skewed to traffic.

Deck Type: Concrete deck, steel train rails, timber ties and ballast still in place on deck. No curb along concrete deck to contain ballast.

Pedestrian Rail Type: Steel angles with two lines of 1" diameter tubing. Rail is 42" high on east and west side of deck.

Structure Condition: Overall fair condition.

Deck Condition: The deck is in good condition.

Abutment Condition: Concrete cast in place, numerous scrapes from traffic impact.

MAJOR DEFICIENCIES –

- Low vertical and horizontal clearance for under traffic on Kirkland Way. Vertical clearance is 11'-6" westbound, 11'-7" eastbound. Horizontal clearance westbound right is 24".
- Damage to concrete girders A and G from high load impact. Large spalled areas on both girders with exposed rebar, spalled area on girder G is over half the length of the girder.
- Traffic impact to steel girders, scrapes and slight bends in lower flanges of all girders.