INFORMATIONAL MEMORANDUM

TO: Transportation and Infrastructure Committee
FROM: Henry Hash, Public Works Director
BY: Hari Ponnekanti, City Engineer
CC: Mayor Allan Ekberg
DATE: March 15, 2019
SUBJECT: BNSF Intermodal Facility Access Project
Project No. 99510409
Schedule Update and next steps

ISSUE

Provide an update on the Burlington Northern Santa Fe (BNSF) Intermodal Access Study.

BACKGROUND

Burlington Northern Santa Fe (BNSF) owns an Intermodal facility that transports containers from trucks to railroad and vice versa. This facility is located within Tukwila city limits in the Allentown community. The intermodal facility is adjacent to I-5 and just south of King County International Airport, also known as Boeing Field. BNSF calls this facility the South Seattle Intermodal Facility.

The City of Tukwila and BNSF jointly funded an access study to determine a potential new route for truck traffic into the intermodal yard. David Evans Associates began the study in March of 2015. The BNSF access study produced a draft report in November 2016. As part of the study, open houses were held, and community input was collected. The following five alternatives were studied;

1. Airport Way S
2. South 112th Street
3. South 124th Street
4. Gateway Drive - north leg
5. 48th Ave S Bridge

The draft study indicated that the 48th Ave S Bridge was the preferred alternative. The study remains in draft form.

ANALYSIS

The findings from the draft study were provided to the City Council in December 2016 after the first round of open houses and community outreach. The alternatives were presented at the August 17, 2017 Open House, with the preferred alternative identified as 48th Ave South Bridge. The next step was planned to bring these alternatives and funding options to the City Council in the fall of 2017.

The original next steps for the BNSF Intermodal Study included these options:

- Review and finalize the Preferred Alternative and seek Council adoption
- Identify and provide funding for preliminary engineering and design of preferred alternative
- Continue public outreach and continue SEPA process

The draft access study preferred alternative has not been finalized due to new information regarding the 42nd Ave S/Allentown Bridge, which became the top priority for the neighborhood. This bridge provides one of only three access points into the Allentown neighborhood, and is the sole access point for trucks traveling to and from the BNSF Intermodal yard. In August 2017, the City received the 42nd Ave S Bridge Structural Assessment, by TranTech Engineering LLC, which determined that, "…the existing bridge is both structurally deficient and functionally obsolete." The deficiency rating has resulted in the City being forced to post speed and load restrictions in March 2018.

The City met with BNSF and informed them of these changes. A grant to replace the existing 42nd Ave S Bridge was applied for through the federal Bridge Replacement Advisory Committee (BRAC) in September 2017 but was unsuccessful. The City's adopted the 2019-2024 Capital Improvement Program, which includes funding for the 42nd Ave S Bridge Replacement Project and the City is currently applying for another BRAC grant in 2019. The 2019 CIP does not include funding for the BNSF Intermodal Facility Access Project until after six years.

BNSF informed the City that if the 42nd Ave S/Allentown Bridge failed they would have no good alternative route. BNSF also stated that their trucks cannot negotiate the 90-degree turn along the river near Fire Station 53 and that access up the bridge into Skyway and the Martin Luther King Jr Way corridor is already heavily congested. In addition, the steep grade could pose difficulties for large trucks carrying heavy loads.

Also of note, the City has been seeking funds for the Strander Blvd Extension Phase 3 for the last 15 years and those funds have still not materialized for construction. As such, seeking funding to replace an existing failing bridge took priority over the new access point, which would likely compete with the Strander Blvd Project for funds.

TIMELINE/ROADMAP

- BNSF Intermodal Facility Access Study start date – 3/20/15
- Open Houses – March & August 2016
- BNSF Intermodal Facility Access Study – Draft Alternative Screening Analysis Report 11/28/16
- Open House – Preferred Alternative Outreach – 8/17/17
- 42nd Ave South Bridge Structural Assessment, August 2017
- City implements Structural Assessment & begins six-month review of 42nd Ave S Bridge, 2017
- City receives notification that 42nd Ave S Bridge did not receive BRAC funding – Dec. 2017
- Council adopts Ordinance No. 2566 restricting speeds on 42nd Ave S Bridge – 2/20/18
- City Applies for BRAC grant funding for 42nd Ave S Bridge Replacement – March 2019
- GNCC Meeting and Tour of the BNSF South Seattle Intermodal Facility – 3/27/19

BNSF has scheduled a Greater Northern Corridor Coalition (GNCC) meeting for March 27, 2019 and will be offering tours of the BNSF South Seattle Intermodal Facility at 10:00 a.m. for the GNCC meeting attendees. BNSF explains the GNCC as:

> "The Great Northern Corridor Coalition is a regional cooperative comprised of eight states, numerous ports, BNSF Railway, and other interested stakeholders along the Corridor. The states of Illinois, Wisconsin, Minnesota, North Dakota, Montana, Idaho, Oregon, and Washington have been collaborating for several years to promote region-wide cooperation, in transportation planning and shared infrastructure investment.
>
> The Coalition's primary purpose is to promote regional cooperation, planning, and shared project implementation for programs and projects. Its objective, to improve multimodal transportation system management and operations along the corridor, exactly matches the purpose of the Multimodal Corridor Operations and Management (MCOM) Program."

Coalition members are largely made up of state transportation departments in the states listed above, as well as various Ports located within those states. The only municipal participant is the town of Connell, Washington. It is the understanding of City staff that it is BNSF's goal to have the preferred alternative, the 48th Ave S Bridge, included on the list of necessary infrastructure investments that the GNCC is developing.

Councilmembers are invited to attend the tour on March 27, 2019 and should contact Hari Ponnekanti, Tukwila's Deputy Public Works Director/City Engineer to RSVP.

FINANCIAL IMPACT

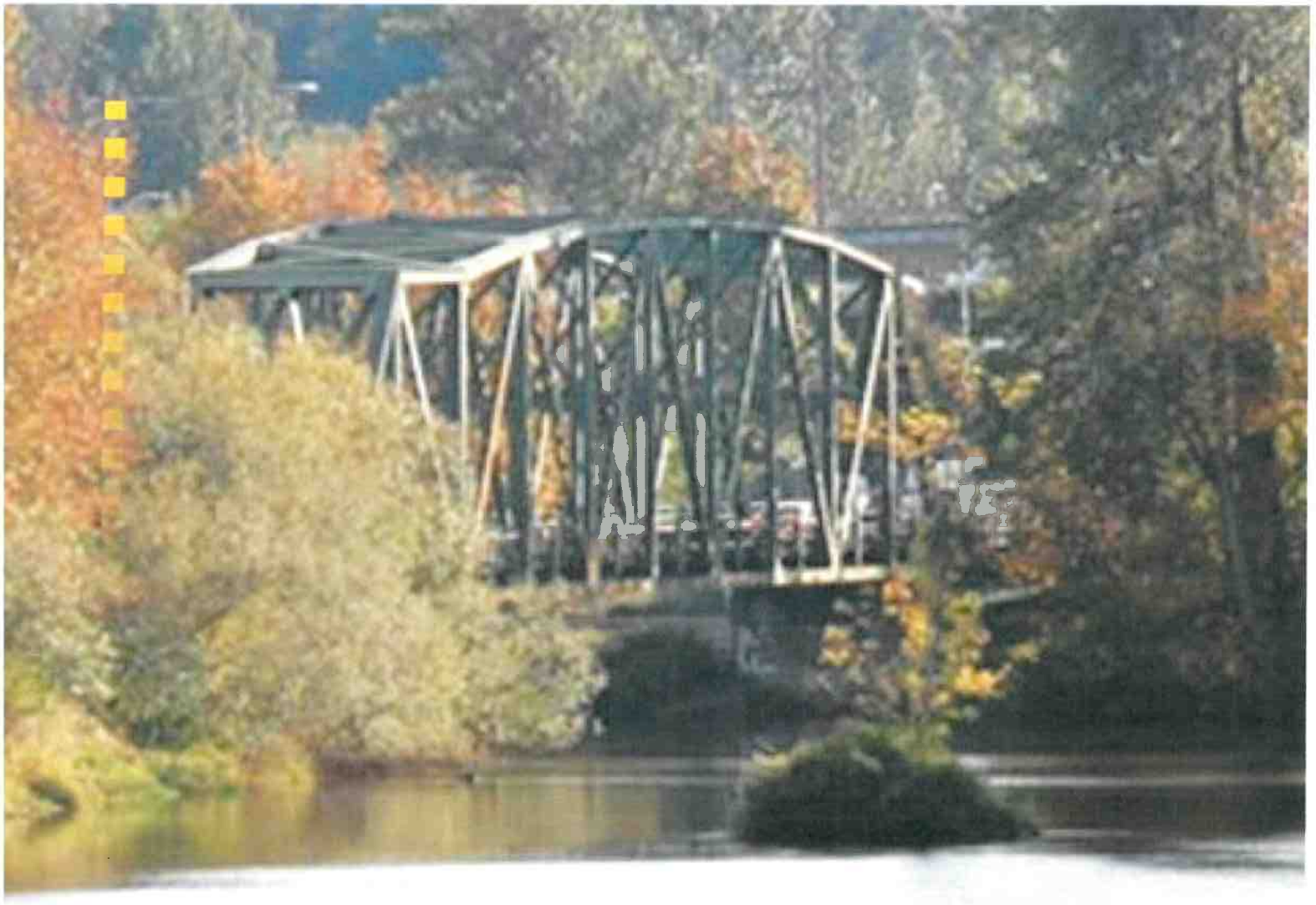
Project costs for the preferred alternative, 48th Ave S Bridge, are unknown until preliminary engineering is complete. Best available estimates developed in 2017 were approximately $20 million (adding 30% cost growth per year into 2019, the estimate would be $34 million). In general, there are not many outside funding sources (i.e. federal, state funding) for new bridges such as the potential 48th Ave S Bridge Project.

RECOMMENDATION

Information only.

ATTACHMENTS

- 42nd Ave S Bridge Structural Assessment, August 2017
- Draft BNSF Intermodal Facility Access Study – Excerpts - Draft Alternative Screening Analysis *(full draft report is available upon request)*
- Draft BNSF Intermodal Facility Access Study – Preferred Alternative Outreach Summary
  August 2017 Open House Summary
- Ordinance No. 2566 – Speed Restrictions on 42nd Ave S Bridge
- Great Northern Corridor Coalition Overview and list of partners



The City of Tukwila Public Works

August 2017

42nd Avenue South Bridge Structural Assessment

TRANTECH Engineering LLC

12011 NE 1st Street, Suite 305
Bellevue, WA 98005
(425) 453-5545

Executive Summary

The 42nd Avenue South Bridge is a 3-span 280-foot-long bridge built in 1949. The bridge is composed of a 220-foot-long fracture critical steel thru-truss main span with 30-foot-long concrete T-beam approach spans at each end. The existing bridge is both Structurally Deficient and Functionally Obsolete.

A three-tier structure assessment has revealed that there are critical structural elements within the 42nd Ave bridge structure that have deteriorated into poor conditions. The examples of these are the short plinth columns at the bridge approaches, truss gusset plates, and main span deck structure.

The bridge is currently nearing the end of its service life and requires strengthening, repainting, deck work, a seismic retrofit, and scour protection, if it were to remain in service. The cost of this work would be prohibitively expensive and would exceed the cost of a new bridge.

The proposed new structure will have the added advantages of being a redundant concrete bridge with very low life cycle maintenance costs to the Bridge Program or to the City of Tukwila.

A cost estimate for the proposed replacement bridge is presented in Appendix C.

Furthermore, it is recommended that until the bridge can be replaced, the interim inspection frequency remains at a six-month interval with special attention being paid to the critical structural elements identified in the structural analysis presented here. A monitoring plan has been developed and will be implemented by the City of Tukwila until bridge funding can be secured and the bridge can be replaced.

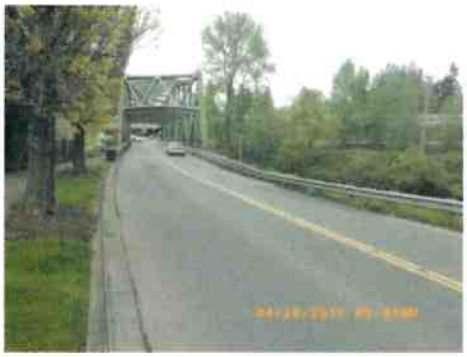
Table of Contents

1. INTRODUCTION

The 42nd Avenue South Bridge is a 3-span 280-foot-long bridge built in 1949. The bridge is composed of a 220-foot-long fracture critical steel thru-truss main span with 30-foot-long concrete T-beam approach spans at each end. The existing bridge is both Structurally Deficient and Functionally Obsolete. The plans for the existing bridge are available under the "Records/Plans" tab in the WSDOT Bridge Inspection Application.

The bridge is located within the City of Tukwila on a sharp bend of the Duwamish River that produces turbulent high velocity flows at the truss abutments. These frequent flows have caused scour damage at the bridge abutments and at the north approach roadway. Because the bridge foundation depths are unknown and there is active scour, the City has implemented a scour Plan of Action (POA) for high flow events. Additionally, existing riprap at Pier 2 is either washing away or is falling into a scour hole developing on the river side of the pier. The bridge is the only access for the BNSF intermodal yard located at the end of South 124th Street as other routes into the yard prohibit trucks. As a result, the bridge has been subjected to an unusually high percentage of truck traffic constantly crossing the bridge around the clock.

The City of Tukwila has struggled for years to maintain the bridge. Maintenance projects includ a major paint project in the mid-1990's and a significant project to rebuild the north bridge approach after erosion, caused by scour, threatened the existing roadway. This problem is currently resurfacing even after the City installed a sheet pile wall to protect the approach. A dramatic illustration is the sinking of the north approach guardrail posts with a section of the rail currently at almost ground level. There is also the ongoing problem of keeping the bridge clean enough to perform valid inspections. Cleaning the bridge adds significant cost to the already expensive fracture critical inspections as well as adding equipment scheduling complications.



In addition to the substructure problems, the deck and floor system are in distress as evidenced by significant loud floor system creaking and deck panel banging under traffic. These problems have been reported by bridge inspectors and Tukwila

Maintenance for years. These noises cannot be associated with specific damage at this point but are worrisome in a fracture critical bridge subjected to extreme fatigue stresses by the heavy truck traffic.

The bridge is currently nearing the end of its service life and would require strengthening, repainting, deck work, a seismic retrofit, and scour protection, if it were to remain in service. The cost of this work would be prohibitively expensive and would exceed the cost of a new bridge. The proposed new structure will have the added advantage of being a redundant concrete bridge with very low life cycle maintenance costs to the Bridge Program and to the City of Tukwila.

2. STRUCTURAL ASSESSMENT

The structural assessment activities performed as part of this study have a three-tier approach that is described in detail in the following sections:

2.1 Tier 1 - Bridge Inspections

The 42nd Avenue South Bridge has been inspected on an increased frequency (a reduced frequency duration) since 2014. The frequency change started at 12 months and is now set at a six-month interval for Interim Inspections. These inspections focused on monitoring the damaged short concrete plinth columns supporting the approach span girder bearings at piers 2 and 3 and bridge gusset plates.

Since 2014, the bridge has also undergone several in-depth and routine bridge inspections with the most recent being in spring of 2017. The observations and data obtained from these inspections has been utilized in a new comprehensive load rating per WSDOT and AASHTO recommended Load Factor Rating requirements that includes gusset plate and Emergency Vehicle (EV) ratings. The new load rating is described in further detail in the following sections. The in-depth and interim inspections, some of which were performed with UBIT special access and after bridge cleaning to ensure a valid inspection, indicate that approximately one third of the truss structure is now in BMS Condition State 3 and that the Substructure Overall Condition rating is at a 4-code because of critical damage to the concrete plinth columns at Piers 2 and 3. Please see Appendix A for the latest Inspection Report.

The resulting Sufficiency Rating has dropped in steps as the inspection and analysis has progressed, reaching its current level of 7.56 SD. The new load rating indicates that posting of the bridge for legal loads, single hauling vehicles, and emergency vehicles is necessary. The City is currently implementing the NBIS load posting requirements.

2.2 Tier 2 - Structural Assessment – Piers 2 and 3 Column Damages

The City of Tukwila has initiated a structural evaluation of the short concrete approach span, girder support columns at Piers 2 and 3. The deterioration of these columns was listed as one of the main reasons for the reduction of the Substructure Overall Code to 4 (i.e., Poor Condition) as reported in the 2015 bridge inspection report. This engineering analysis is supporting information to justify the request for bridge replacement funding from the WSDOT administered Local Bridge Program. The results of the structural analyses are summarized below.

Eight short plinth columns support the concrete T-beams of approach Spans 1 and 3. The girders sit on a rocker bearing installed on top of each plinth. These bearings are completely frozen by pack rust and deterioration. In addition, the rocker bearings for the truss span at Pier 2 appear have been frozen or locked in the expansion direction for years.

Each column has six number seven vertical shear friction bars at their interface with the pier wall.

First, the plinth columns were analyzed for temperature and vehicular breaking force induced stresses. These results showed that the demand forces are not large enough to create the observed damage.

Next, seismic forces were analyzed and were shown to be large enough to yield the interface of the short columns and the piers wall as the forces are transferred through the semi rigid link caused by the frozen bearings. This condition is accentuated at the obtuse corner (i.e. Column Plinth 3A at northwest corner of the Pier 3).

The existing bridge design, which includes an extreme skew of 38°, puts these columns at additional risk from seismic events as well as from normal temperature and traffic forces as torque forces are developed and added to the high shear forces.

The interface cracking has been documented since 2001 (upper photo) and the cracks are currently opening and starting to spall. In addition, there has been documented evidence for many years of the deterioration of the reinforcing steel as evidenced by rusty leaching. These problems may have been initiated during the April 29, 1965 South Sound Earthquake and were likely compounded by the February 28, 2001 Nisqually earthquake. However, the damage is aggravated daily by the constant truck traffic and seasonally due to normal temperature

forces. This constant cyclical bombardment of Column 3A make it a failure risk for Span 3.

Since the rocker bearings located on the plinths are all completely frozen, there is a semi-rigid link allowing these high magnitude forces to be transmitted through Span 3 to the North Abutment, Pier 4. Again, due to the bridge's large skew, a concentration of force is toward the northwest side of the abutment as illustrated by the damage at this location. This concentration of force may play a role in the continued settlement issues of the north bridge approach roadway at the steel sheet pile wall repair mentioned above.

2.3 Tier 3 - Updated Load Rating Analysis

A gusset plate load rating update was performed in November 2014 that did not consider the coding changes made during the condition assessments performed in the Spring of 2015. A new comprehensive Load Rating Report was completed in August 2017 as part of the funding analysis as well as to evaluate the bridge for emergency vehicles. The new load rating indicates that the deck and gusset plates have ratings that are below 1.0 with respect to the legal trucks and that the gusset plates control. TranTech has ranked the gusset plates by their criticality and has identified the failure mechanism of each plate. This information will be used to focus the gusset plate inspection during future interim and routine bridge inspections. The rating outcome has further reduced the bridge's capacity and the resulting Sufficiency Rating. A copy of the Summary Sheet from the new load rating is attached in Appendix B.

3. CONCLUDING REMARKS

A three-tier structure assessment has revealed that there are critical structural elements of the 42nd Ave bridge structure that have deteriorated to poor conditions. Examples are the short columns at the bridge approaches, truss gusset plates, and main span deck structure. Rehabilitation of this structure would be prohibitively expensive and a bridge replacement is recommended. A cost estimate for this bridge replacement is presented in Appendix C.

Furthermore, it is recommended that until the bridge can be replaced, the interim inspection frequency remains at a six-month interval with special attention being paid to the critical structural elements identified in the structural analysis. A monitoring plan has been developed and will be implemented by the City of Tukwila until bridge funding can be secured and the bridge can be replaced.

APPENDIX A | Current Inspection Report

BRIDGE INSPECTION REPORT

Status: Released | Printed On: 8/17/2017 | Agency: TUKWILA

CD Guid: 4305b7a6-8599-4765-87ce-c492bac836bd | CD Date: 7/27/2017 | Program Mgr: Roman G. Peralta

Br. No. TUKWILA-14 **SID** 08109700 **Br. Name** 42ND AVENUE SOUTH BR

Carrying 42ND AVE SO **Route On** 01037 **Mile Post** 1.04

Intersecting DUWAMISH RIVER **Route Under** **Mile Post**

Inspector's Signature GDG Cert # G0014 Cert Exp Date 5/12/2021 Co-Inspector's Signature

2		Structural Eval	(1657)	27	23	Operating Tons	(1552)	2		No Utilities	(2675)
2		Deck Geometry	(1658)	0.77	0.65	Op RF	(1553)	1		Bridge Rails	(1684)
9		Underclearance	(1659)	16	14	Inventory Tons	(1555)	0		Transition	(1685)
8		Alignment	(1661)	0.46	0.39	Inv RF	(1556)	0		Guardrails	(1686)
6	5	Deck Overall	(1663)	5	3	Operating Level	(1660)	0		Terminals	(1687)
5		Superstructure	(1671)	A		Open/Closed	(1293)	0.00		Asphalt Depth	(2610)
4		Substructure	(1676)	8		Waterway	(1662)	6.00		Design Curb Ht	(2611)
9		Culvert	(1678)	U		Scour	(1680)	40.0		Bridge Rail Ht	(2612)
5		Chan/Protection	(1677)			Soundings Flag	(2693)	1949		Year Built	(1332)
N		Pier/Abut/Prot	(1679)	N		Revise Rating	(2688)	0		Year Rebuilt	(1336)
4		Drain Cond	(7664)			Photos Flag	(2691)	Y		Subj to NBIS	(2614)
1		Drain Status	(7665)			Measure Clrnc	(2694)				
M		Deck Scaling	(7666)	6		Sdwk Cond	(7673)				
10		Scaling Pct	(7667)	5		Paint Cond	(7674)				
7		Deck Rutting	(7669)	6		Approach Cond	(7681)				
7		Exposed Rebar	(7670)	7		Retaining Wall	(7682)				
6		Curb Cond	(7672)	9		Pier Prot	(7683)				

Alpha Span Type:

STrus

Sufficiency Rating 7.56 SD

High Risk

Inspections Performed:

Freq	Hrs	Date	Rep Type
12	6.0	4/26/2017	Routine
24	6.0	4/26/2017	Fract Crit
			UW
			Special
24	1.0	2/26/2016	Interim
			UWI
			Damage
			Safety
			Short Span
			In Depth
			Geometric

BMS Elements

Element	Element Description	Total	Units	State 1	State 2	State 3	State 4
12	Concrete Deck	6,816	SF	6,811	0	5	0
35	Concrete Deck Soffit	6,816	SF	6,812	0	4	0
110	Concrete Girder	256	LF	256	0	0	0
113	Steel Stringer	1,100	LF	1,050	0	50	0
126	Steel Thru Truss	440	LF	286	0	154	0
133	Truss Gusset Plates	40	EA	20	0	20	0
152	Steel Floor Beam	332	LF	282	50	0	0
205	Concrete Pile/Column	18	EA	10	0	8	0
212	Concrete Submerged Pier Wall	74	LF	71	3	0	0
215	Concrete Abutment	76	LF	66	0	10	0
234	Concrete Pier Cap/Crossbeam	149	LF	149	0	0	0
266	Concrete Sidewalk & Supports	1,100	SF	1,100	0	0	0
311	Moveable Bearing (roller, sliding, etc)	10	EA	2	0	0	8
313	Fixed Bearing	2	EA	2	0	0	0

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BMS Elements (Continued)

Element	Element Description	Total	Units	State 1	State 2	State 3	State 4
330	Metal Bridge Railing	568	LF	456	100	12	0
340	Metal Pedestrian Railing	284	LF	284	0	0	0
357	Pack Rust	50	EA	46	4	0	0
361	Scour	4	EA	2	2	0	0
362	(Discontinued) Impact Damage	1	EA	1	0	0	0
402	Open Concrete Joint	216	LF	0	0	216	0
408	Steel Sliding Plate	48	LF	0	0	48	0
901	Red Lead Alkyd Paint System	17,000	SF	11,800	4,000	1,000	200

Notes

0	ORIENTATION Beginning of bridge at south abutment (nearest traffic signal at Interurban Ave).
1	FRACTURE CRITICAL INSPECTION This includes visual inspection of truss tension members, bottom chords, floor beams, diagonal and vertical members. See Fracture Critical Report in Files Tab.
3	UBIT 60 UBIT can deploy through both sides of truss. However, the bridge deck is narrow with low portals and sways. Suggest closing the bridge for next UBIT inspection due to the bouncing motion of the UBIT caused by the high volume of truck traffic on the bridge. Also added congestion to main arterial Interurban Ave S from the in inadequate approach distance on 42nd Ave S to south portal of the bridge. TRANSIENTS Activity under Span 3. Garbage accumulated, litter and needles on top of cap 3.
11	EV2 RF = 0.62 EV3 RF = 0.42 LOAD RATING Gusset Plate at L2U1-East controls. A new load rating has been performed (August 2017) and the bridge requires load posting for AASHTO 2 and 3, SHV 5,6,&7, and EV 2 and 3. The City is in the process of implementing the posting requirements.
12	CONCRETE DECK (SURFACE) Open joints at floorbeam. Exposed aggregate in wheel lines and slight rutting. Moderate scaling, pop-outs and mudball voids scattered throughout surface. Longitudinal cracks concentrated near ends of bridge, some porosity. North bound lane: 4"-6" pavement spall. South bound lane: 6" loose pavement near double yellow line.
35	CONCRETE DECK SOFFIT Diagonal hairline leaching cracks near steel stringers. Deck fillets are spalled in several locations along top flanges of floorbeams. Many short exposed rebar in edge overhangs due to lack of cover and poor consolidation of concrete. Scattered hairline transverse rusty leaching cracks in soffit. Moderate sized pockets of poor consolidation - spans 2-4 thru 2-7.
110	CONCRETE GIRDER Four lines of CIP concrete T-beams in Spans 1 and 3. Webs have hairline vertical and diagonal cracks. 1A - Vertical crack near Pier 2 End diaphragm @ Pier 3 - hairline vertical leaching cracks Span 3 griders are coverd with soot
113	STEEL STRINGER Five lines of stringers (5x220=1100 LF). Square cope at connection to floorbeams, no cracks observed. Rusty top flanges. Mud staining on outside stringers. Rust blisters on a few copes.

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Intersecting DUWAMISH RIVER **Route Under** **Mile Post**

Notes (Continued)

126	STEEL THRU TRUSS GENERAL: See 2017 FCR for detail on fracture critical members. Lower panel points were dry cleaned prior to inspection. Upper panel points and those connecting members are covered in guano droppings, active nests in upper chords and owls nest at L4E. Debris building up in bottom chord. See note #133 Gusset Plates PACK RUST: Pack rust is starting to develop in all built-up members but hasn't reached the point of popping rivet heads. - Up to 1/8" pack rust in seams of tension and compression diagonals. - Pack rust between bottom lateral gusset plates and bottom chord has caused bulging up to 3/8" at most chord joints. - Pack rust between interior cover plates and bottom chord channel has caused warping of cover plate up to 1/4". - Bottom laterals have seam rust and pack rust up to 3/8" along tops of members. - Bottom chords two channel beams from L2 to L8 E&W addition plates riveted to webs, pack rust forming between channel webs and plates distorting up to 1/8" between rivets. - Upper chords seam rust along channel/plate seams throughout. PORTALS & SWAYS: SOUTH PORTAL, U1W-U2E: High load traffic damage to south portal and sway frame. North flange of south portal is bent north 3" over 2 ft length. Bottom flange of sway is pushed up 2" over 8" length. Top flange of sway has a sine-wave shaped crimp, 1" over 7" length. Center of sway is bent 1'-0" to north. -SWAY M1W-M2E: Impact damage to sway, pushed 5" to north with flanges buckled. SWAY M2W-M3E: Minor impact damage. U5W: Paint blister and minor pack rust along edge of top chord. L7W: 2 rusty rivet heads on bottom plate. L7-U7E: Paint failure at SW. L7-L8W: Pack rust on lower chord. L8W: Pack rust 1/8" on bottom plate. L9W-U9W: Pitting up to 1/8" near top of bottom gusset plate. L9W: Gusset plate 7/16" thick. Pack rust 1/8" on bottom plate and 1/4" V.P.
133	STEEL GUSSET PLATES 20 gusset plates per truss line. High bird activity. Bottom lateral gusset plates at bottom chord have pack rust causing bulging up to 3/8" at most chord joints. Interior cover plates at bottom chord channel have pack rust causing warping of cover plate up to 1/4". Interior rivet heads have blistered paint or lack paint, many are heavily rusted. 5LE bottom plate has two deformed rivet heads.
152	STEEL FLOOR BEAM Two skewed end floorbeams and ten transverse floorbeams (2x33.6+10x26.5=332 LF). Dirt and mud at connections to truss. Laminar rust along top flange with minor section loss (<2%).
205	CONCRETE PILE Five concrete piles each at Piers 1 and 4, with cap and backwall. Rough concrete and a few hairline cracks at cap interface. 1C: 10" spall with exposed rebar. 4A, 4B, 4C: Hairline horizontal cracks at about 1 ft. spacing. CONCRETE COLUMNS: 28" tall concrete columns support the sliding plate bearings at Piers 2 & 3. 2A: Horizontal crack at cap interface, exposed rusty rebar, corners are spalled off, NW corner of bearing is unsupported. 2B: Horizontal crack at cap interface, exposed rusty rebar, large spalls in NW corner of bearing is unsupported. 2C: Horizontal crack at cap interface, exposed 4" section of rusty rebar 2D: Hairline crack at cap interface, SE corner is spalled off (18" high by 4" deep) 3A: Horizontal cracks at cap interface 3B: Horizontal cracks at cap interface 3C: 12" of horizontal rebar exposed on south side 3D: Hairline crack at cap interface
212	CONCRETE SUBMERGED PIER WALL Hairline vertical cracks in pier walls. Many 1-1/2" shallow form tie holes in both walls. Pier 2: water abrasion along north face. Pier 3: Three 12" x 12" x 1" deep areas of abrasion in south face.
215	CONCRETE ABUTMENT Both backwalls have a few hairline vertical cracks throughout. Graffiti at face of abutment. Pier 4: gap under backwall from pile 4A through 4D, minor erosion/sloughing. NW wingwall: open diagonal crack above top of cap to ground line (1.75" gap at top) with 2 ft x 8" x 6" deep spall with 5" exposed rebar. NE wingwall: 8" x 6" x 3" deep spall. Two steel plates attached on the east side of north abutment wall at the NE corner bridge rail. MONITOR NOTES 2/25/2016 Pier 2 concrete columns - no change noted. Pier 3 concrete columns - Heavy graffiti on north face of column of all columns and pier cap. Change noted in column 3A; north face - cracks at base along interface with pier cap, full width. Cracks are narrow to open, some new chips and small spalls along crack line. Column is tilted to the north 1.5 degrees. Abutment 4 - west corner at wingwall interface. 2016: Gap is 1.75" at top horizontal face. Concrete piles with transverse cracks - no change

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Notes (Continued)

234 CONCRETE PIER CAP
Hairline vertical cracks in perimeter, tops are covered with mud, moss and transient debris.
Pier 2 - spall with exposed rebar NW, north & SE face.
Pier-3. Caps have open form tie holes.
Pier 4 : 4A, 4B & 4C top of beam cap spall across width of stringer.

266 CONCRETE SIDEWALK & SUPPORTS Surface: Transverse cracks at panel points, open up to 1/8", small spalls starting to form. ACP at south approach to sidewalk is steep (Repair #12316). Vegetation growing along edge next to east truss line. Soffit: Many hairline transverse cracks leaching on underside. Form anchors still in place on soffit along channel web. Supports: Steel knee braces support sidewalk in Span 2. Top clips at truss are separating due to pack rust.

311 MOVEABLE BEARING
Rocker Bearings- Truss: Both bearings 2-1A & 2-1B are tipped 5° expanded, temperature was 44° F.
Rocker Bearings - approach spans. Eight skewed steel bearings, each bearing has two hing bars.
Bearings are mounted on concrete plinths at Piers 2 and 3. Pack rust between sole plates and hing bars on all bearings. Hing bars at 2A, 2D, 3-1A and 3-1D, are bulging up to 1/8" from pack rust, all eight bearings are frozen.
SEE NOTE 1676 SUBSTRUCTURE - for details on the concrete plinths.

313 FIXED BEARING Two pinned shoe bearings at Pier 3, minor rust on edges.

330 METAL BRIDGE RAILING Retrofitted thrie beam has minor traffic scrapes throughout. Rail has loose connection at U5L5 in east truss and rattles under traffic. Curbs cracked open 1/8" over truss floorbeams. Tack welds broken on west rail, widespread.

340 METAL PEDESTRIAN RAILING Rail panel section loose at bottom tube connection to post, east sidewalk north of centerline of the river, between L4 & L5.

357 PACK RUST Seam rust and pack rust - most 1/4" or less on built-up members throughout truss.

361 SCOUR, FIELD
Pier 2 is located on the outside of a sharp meander bend in the Duwamish River.
Riprap along Pier 2 has a scour scallop, about 8 to 10 feet in diameter at the center of pier, two relic piles are exposed in the scalloped area. During inspection flow increased velocity with the changing tide. The main thalweg flow is near the left bank at Pier 2; back eddies were noted along the center and downstream face of Pier 2. Riprap is scattered and missing along the downstream face of Pier 3. Gravel bar visible upstream of pier 3, right bank to mid channel. Riprap has scatted areas upstream and downstream along both banks. 2015 soundings show 2.5' deepening near Pier 2. Little change to gravel bar forming near Pier 3.
SOUNDINGS: are taken from upstream rail at truss panel points:

Year	L0	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
2015	18.5	30.5	41.5	44.5	40.5	36.0	29.7	28.5	26.5	23.5	16.0
2014	19.0	30.5	39.0	42.0	39.5	34.0	28.5	28.0	26.5	23.5	15.0
2013	18.8	30.2	41.0	42.0	42.0	35.0	30.0	27.5	26.0	23.8	16.0
2007	18.5	30.5	40.0	43.5	43.0	37.5	31.0	28.5	27.0	25.5	15.0

Update soundings every two years or more often if lateral migration is suspected. Monitor riprap at low tide and low flow periods.

362 IMPACT DAMAGE Traffic impact damage to truss south portal and sway members.

402 JOINT FILLER Open joints over floorbeams; most of fabric fill is worn away, allowing mud and water to pump through onto floorbeam top flanges (Repair #12306).

Status: Released | Printed On: 8/17/2017 | Agency: TUKWILA

CD Guid: 4305b7a6-8599-4765-87ce-c492bac836bd | CD Date: 7/27/2017 | Program Mgr: Roman G. Peralta

Br. No. TUKWILA-14 **SID** 08109700 **Br. Name** 42ND AVENUE SOUTH BR

Carrying 42ND AVE SO **Route On** 01037 **Mile Post** 1.04

Intersecting DUWAMISH RIVER **Route Under** **Mile Post**

Notes (Continued)

408 STEEL SLIDING PLATE
Joints are full of dirt. D-spalls and delaminations along edges of both joints. Water leaks through joint onto truss main piers.
MEASUREMENTS: are taken at center line of each joint.

YEAR	TEMP	TIME	PIER 2 (WEST)	PIER 3 (EAST)
2016	62°	09:00	1-0"	1-1/2"
2015	48°	09:20	7/8"	1-1/2"
2013	48°	11:00	15/16"	1-3/8"
2011	50°	15:30	15/16"	1-3/8"
2009	65°	10:00	1-0"	1-5/8"
2007	50°	08:00	1-1/2"	1-5/8"
2005	65°	10:00	1-0"	1-3/8"

901 RED LEAD ALKYD PAINT SYSTEM Top coat of paint on top chord has flaked off in many areas. There are a few rust spots where failed paint has exposed bare metal. Seam rust is bleeding through along edges of built-up members. Moss growth on some diagonal/vertical members.

1663 The Deck Overall code was downgraded based on deck and floor system deterioration. The deck panels are non-composite and are loose and banging on the floor system under traffic. In addition, the floor system is creaking and groaning under load. These problems are not revealing themselves in recordable damage but the loose deck panels and lack of continuity was taken into account in a new load rating update.

1676 SUBSTRUCTURE
Code reduced to 4 due to condition of concrete plinths under rocker bearings at piers 2 and 3.
Pier 2 plinth 2A, and 2B have open cracks at interface with pier cap. All plinths have large spalls with exposed rebar along edges, several are spalled under bearing plates.
Pier 3 plinth 3A and 3B have open cracks at interface with pier cap. Several plinths have spalls with exposed rebar.

Unknown pile tip elevation of piles supporting Piers 2 & 3.
Channel thalweg is near pier 2, riprap is scattered.

1680 SCOUR , OFFICE Scour analysis done in 2014. Since pile tip elevations are not available, the scour code = "U". The channel is centered under L3-East and is slightly aggradating at piers 1, 2 and 3. Calculated contraction scour is 0.6 feet, local pier scour ranges between 6 feet and 13 feet depending on angle of attack. Plans indicate bottom of footing at -7.0, top of rail is estimated per plans at 28.0.

1685 TRANSITION Bridge rail transition at Pier 1 west side is missing approach guard rail.

1686 GUARDRAILS SE Traffic impact damage to approach rail flex beam. NW Approach rail is below standard height at settlement area, 18in to top of rail.

1687 TERMINAL Terminals not slotted. Attenuator is located at NE corner.

2675 NO. OF UTILITIES Two utilities are suspended from east edge under sidewalk: One 12" diameter steel waterline with mechanically restrained joints. One 6" diameter gas pipe.

2694 CLEARANCE Vertical clearance at portals and sway braces 3" from curb: East truss: E-M0 - W-M0 = 15'-3 1/8" E-M2 - W-M1 = 15'-0 1/4" E-M3 - W-M2 = 15'-0" E-M4 - W-M3 = 15'-0" E-M5 - W-M4 = 15'-0 7/16" E-M6 - W-M5 = 15'-0 3/8" E-M7 - W-M6 = 15'-1 3/8" E-M8 - W-M7 = 15'-0 1/8" E-M9 - W-M8 = 15'-0 1/8"

7664 DRAINS Drains are plugged throughout.

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Br. No. TUKWILA-14 **SID** 08109700 **Br. Name** 42ND AVENUE SOUTH BR

Carrying 42ND AVE SO **Route On** 01037 **Mile Post** 1.04

Intersecting DUWAMISH RIVER **Route Under** **Mile Post**

Notes (Continued)

7681 APPROACH ROADWAY
Longitudinal and transverse cracking in ACP in both approaches.
South approach - slight settlement.
North approach - settlement at sheet pile wall and in southbound lane for 50 ft north of approach, longitudinal cracks and fault cracks around settled area, approximately 1" settlement.

7682 RETAINING WALL Sheet pile wall to retain NW approach fill, no defects noted.

Repairs

Repair No	Pr	R	Repair Descriptions	Noted	Maint	Verified
12306	1	B	JOINTS SPAN 2: (MAH Revised 4/10/2015) Open Joints: Clean out open joints over floor beams thoroughly and fill with a flexible sealant, priority 1 due to corrosion at top flanges of floorbeams from leaking joints.	3/25/1998		
12316	1	B	SIDEWALK: North approach - rework the sliding plate expansion joint so it is smooth with sidewalk. Deck - patch spalls near panel points, seal open cracks.	4/12/2007		
13469	1	B	RAIL: SW transition is missing approach guard rail and terminal. SE guardrail is bent and deformed. NW guardrail has sunk down below acceptable standards. REPAIR - replace missing guard rail and terminal at SW corner, replace damaged rail at SE corner, reset NW rail and posts to bring rail up to standard height.	4/8/2013		
13471	1	B	PAINT: Paint has failed in many locations on top of top chords of truss. Pack rust is forming in seams of all built-up members. Moist dirt and pigeon guano are trapped in truss panel points and will cause premature paint failure. Algae growing on many members. REPAIR - Thoroughly pressure wash clean truss of all dirt/algae/guano, prepare surface, paint bridge to encapsulate pack rust and protect truss members. Add bird deterrent at all panel points, upper and lower chords.	4/8/2013		
13473	1	B	EXPANSION JOINT: Steel sliding plate expansion joints allows water and dirt to fall onto top of caps at Piers 2 and 3. The edges around the joints are chipped and spalled. REPAIR - Replace steel sliding plate expansion joints with either a strip seal with steel header or modular joint.	4/8/2013		
13474	S	S	SCOUR: Current scour code is coded "5" which means that foundation is stable for calculated scour depths. Need copy of pile tip elevations from city for bridge file.	4/16/2013		

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Carrying 42ND AVE SO **Route On** 01037 **Mile Post** 1.04

Intersecting DUWAMISH RIVER **Route Under** **Mile Post**

Repairs (Continued)

Repair No	Pr	R	Repair Descriptions	Noted	Maint	Verified
13475	2	B	STRUCTURAL SUBSTRUCTURE: (RPH Revised 4/8/13) Concrete columns supporting sliding bearings at Piers 2 and 3 have horizontal cracks at cap interface, exposed rusty rebar, spalls and delaminations. Pier 2 - Cap has spall, with rusted rebar and open cracks up to .05mm. Pier 3 - heavily abraded at waterline. Pier 4 - columns 4A-C have horizontal cracks. Abutment backwall is undermining along west half. West wing wall has large open crack and spalls. REPAIRS: P2 and P3 bearing columns - recommend design seismic retrofit steel collar and construct around bearing columns, anchored to cap, then fill tight with epoxy. Pier 2 - cap clean exposed rebar and patch spalls, epoxy inject cracks. Pier 3 - clean and patch abraded areas of pier wall Pier 4 - FRP wrap columns 4 A-C. Reinforce west wingwall. Add quarryspall along abutment 4 and under span 3 to retain fill and discourage transient activity.	4/16/2013		
13476	2	B	SCOUR: (RPH Revised 7/22/2014) Small scour scallops in left bank armor in front of Pier 2. Riprap is sparse and scattered through mudbar in front of Pier 3. Monitor the downstream inside face of Pier 3 at low water. REPAIR - Replace missing riprap along banks and in front of piers.	4/17/2013		
13478	1	B	SWAY BRACES: Heat straighten south portal and sway E-M3/W-M2. Sway bracing measures 15'-0" three inches from curb. Vertical clearance signs are required for measured clearances less than or equal to 15'-3" Install warning signs at both portals with posted height 3" less than lowest measured clearance. Recommend raising portals and sways due to the high volume of truck traffic and existing damage to sway members.	4/10/2015		
13479	2	B	BEARINGS: Main span rocker bearings at pier 2 are frozen in expanded position, fixed bearing at pier 3 are offset. Clean and reset main span bearings. Approach span bearings - slide bearing at pier 2 and 3 are corroded - possibly frozen. Replace sliding plates with elastomeric dynamic isolation bearings.	4/10/2015		
13480	2	B	DECK SOFFIT - widespread honeycombed areas, spalls with exposed rebar east side of soffit. SURFACE - worn to aggregate, spalling along joints. Patches of light scaling. REPAIR: Chip any delamintaed concrete from exposed rebar, clean and seal exposed bar and patch spalls. Sack honeycombed areas throughout soffit. Shotblast deck surface, patch spalled areas and apply epoxy overlay.	4/10/2015		

Inspections Performed and Resources Required

Report Type	Date	Freq	Hrs	Insp	CertNo	Coinsp	Note
Routine	4/26/2017	12	6.0	ZZ	G1414	TTT	
Fracture Critical	4/26/2017	24	6.0	ZZ	G1414	TTT	

Resources	Hours	Min	Pref	Max	Freq Date	Need Date	Override	Notes
UBIT	6.00							SDOT UBIT 60 USED

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Br. No. TUKWILA-14 **SID** 08109700 **Br. Name** 42ND AVENUE SOUTH BR

Carrying 42ND AVE SO **Route On** 01037 **Mile Post** 1.04

Intersecting DUWAMISH RIVER **Route Under** **Mile Post**

Inspections Performed and Resources Required (Continued)

Report Type		Date	Freq	Hrs	Insp	CertNo	Coinsp	Note
Flagging	6.00							LOCAL AGENCY Flagging provided by City of Tukwila - contact Steve Carstens at 206-431-2446
Interim		2/26/2016	24	1.0	MAH	G1103	BLR	Inspect short concrete columns supporting bearings at piers 2 and 3. See Monitor Note 695 for details

Resources	Hours	Min	Pref	Max	Freq Date	Need Date	Override	Notes
Special Equipment								Bring ladder to reach columns and bearings.

Equipment		4/26/2017	24	6.0	ZZ	G1414	TTT	

Resources	Hours	Min	Pref	Max	Freq Date	Need Date	Override	Notes
UBIT	4.00							SDOT UBIT-60 USED
Flagging	4.00							Flagging provided by City of Tukwila - contact Steve Carstens 206-431-2446.

Informational		7/27/2017			GDG	G0014		Updated load rating information with 2017 rating results. Downgraded Deck Overall to account for loose deck panels and floor system noise under traffic. These issues have were noted in inspections since 2014 were not noted. This change was made with the concurrance of the previous bridge inspector.

Washington State Department of Transportation

WSBIS Local Agency Inventory Report

Bridge ID

1001 Structure ID	2009 Bridge Number	2132 Bridge Name	1019 Owner	1286 Cust	1021 County	2023 City	1156 Location	2181 Section	2183 Twnship	2185 Range	1188 Latitude	1196 Longitude
08109700	TUKWILA-14	42ND AVENUE SOUTH BR	04	4	17	1320	.03 MI N OF INTERURBAN AV	10	23	04E	47° 29' 23.10"	122° 16' 49.00"

Facilities

1232 Feature Intersected	1256 Facilities Carried	1274 Region	7281 Leg1	7283 Leg2	1276 FIPS	1285 Toll	1288 Para	1289 Temp	1293 OPC	1292 NRHP	2295 HAER	7296 LRHP
DUWAMISH RIVER	42ND AVE SO	NW	11	0	72625	3	N		A	4		

Printed Date
8/17/2017

Sufficiency Rating:
7.56 SD
High Risk

Item 2710 SR
Item 2711 SD/FO

Layout

1332 Year Built	1336 Year Rebuilt	1340 Bridge Length	2346 NBIS Length	1348 Maximum Span Length	1352 Lanes On	1356 Curb to Curb Deck Width	1360 Out to Out Deck Width	1364 Sidewalk Left	1367 Sidewalk Right	1310 Skew	1312 Flared	1370 Min Vert Over Deck	1374 Min Vert Under	1378 Vert Code	1379 Min Lat Under Right	1382 Lat Code	1383 Min Lat Under Left	1386 Nav Ctl Code	1387 Nav Vert Clear	1390 Nav Horiz Clear	1394 Nav Vert Lift Clear	1291 Median	1397 Appr Rdwy
1949	0	284		220	2	24.0	30.0	0.0	3.5	38	N	15' 00"	00' 00"	N	0.0	N	0.0	0	0	0		0	36

Crossing

1432 On Under	1433 Hwy Class	1434 Service Level	1435 Route Number	2440 Milepost	1445 ADT	1451 Truck %	1453 Year of ADT	1457 Future ADT	1463 Future ADT Year	1467 Linear Referencing System	1477 LRS Sub	1469 LRS Milepost	2410 NBI Bridge	7479 Fed Aid Route #	1483 NHS	1484 BHS	1485 STRAH	1486 FLH	1487 Funct. Class	1489 NTN	1490 Lane Use Direction	1354 Lanes Under	1491 Horizontal Clearance Route Dir	1495 Horizontal Clearance Reverse Dir	1499 Max Vert Clearance Route	1413 Detour	2441 Speed Limit
1	5	1	01037	1.04	10000	20	2014	11000	2034	01037			Y	1037	0	0	0	0	17	N	2	0	24' 00"		*15' 00"*	2	25

Design

1532 Main Span Material	1533 Main Span Design	1535 Appr Span Material	1536 Appr Span Design	1538 Number Main Spans	1541 Number Appr Spans	1544 Service On	1545 Service Under	1546 Deck Type	1547 Wearing Surface	1548 Membrane	1549 Deck Protect	1550 Design Load Code	1551 Oper Rating Method	1552 Oper Rating Tons	1553 Oper Rating Factor	1554 Inv Rating Method	1555 Inv Rating Tons	1556 Inv Rating Factor	1585 Border State Cd	1588 Border Pct	1590 Border Structure ID	7565 Fed Aid Project No	7557 Design Exemption
3	10	1	04	1	2	5	5	1	1	0	0	4	6	27	0.77	6	16	0.46					
														23	0.65		14	0.39					

Load Rating

2587 Type 3	2588 Type 3S2	2589 Type 3-3	2590 NRL	2591 SHV 4	2592 SHV 5	2593 SHV 6	2594 SHV 7	2595 OL 1	2596 OL 2
1.21	0.90	0.84	0.73	1.11	0.98	0.88	0.81	0.65	0.34

Waterway/ Prop Imp

7832 Water Type	7833 Flood Pln Intr	7834 Flood Control	7835 Flood Hist	7836 Scour	7837 Strmbd Matrl	7838 Substr Stablty	7839 Wtrwy Obstr	7840 Strmbd Stablty	7841 Strmbd Anabrn	1844 Piers In Watr	1846 Type Work	1847 Work Meth	2853 Stru Imp Length	2860 Roadway Width	1867 Cost Per SF	1873 Struct Cost	2870 Rdwy Cost	1861 Engr Cost	1879 Total Cost	2883 Estmt Year	Prop Imp Cost Calc
B	A	N	H	2	3	N	A	N	2	31	1	294	38	800	4469	894	3575	8938	2014	Y

Inspection Report Types

2920 Inspection	1990 Date	2646 Inspector	2649 Cert No	2654 Co-Inspector
Routine				
Fracture Critical				
Special Feature				
Underwater				

Inspection	Date	Inspector	Cert No	Co-Inspector
UW Interim				
Interim				
In Depth				
Damage				

Inspection	Date	Inspector	Cert No	Co-Inspector
Safety				
Short Span				
Geometric				
Info	7/27/2017	GDG	G0014	
Inventory				

Control Data Guid: 4305b7a6-8599-4765-87ce-c492bac836bd Control Data Date: 7/27/2017

APPENDIX B | Current Load Rating Summary

BRIDGE RATING SUMMARY

Bridge Name:	42ND AVENUE SOUTH BR
Bridge Number:	TUKWILA-14
Span Types:	Steel Through Truss Bridge & Approach Slabs
Bridge Length:	280' (220' Truss + 2x30' Approach Slab)
Design Load:	HS20-44
Rated By:	VP
Checked By:	KN
Date:	8/1/2017

Inspection Report Date	4/26/2017	Substructure Condition	4
Rating Method	LFR	Deck Condition	6
Overlay Thickness	0"/Truss & 2"/Approach	Superstructure Condition	5

Truck	RF (INV)	RF (OPR)	Controlling Point
AASHTO-1	0.72	1.21	Yielding in member L2U1
AASHTO-2	0.54	0.90	Yielding in member L2U1
AASHTO-3	0.50	0.84	Yielding in member L2U1
NRL	0.44	0.73	Yielding in member L2U1
OL-1	0.39	0.65	Yielding in member L2U1
OL-2	0.20	0.34	Yielding in member L2U1

NBI Rating	RF		Controlling Point
Inventory (HS-20)	0.39		Yielding in member L2U1
Operating (HS-20)	0.65		Yielding in member L2U1

Remarks: Bridge requires posting. The single unit and FAST Act vehicles rating factors are:

Operating Rating	RF	Ton	Controlling Point
SU4 (GVW = 54 K)	1.11	29.97	Yielding in member L2U1
SU5 (GVW = 62 K)	0.98	30.38	Yielding in member L2U1
SU6 (GVW = 69.5 K)	0.88	30.58	Yielding in member L2U1
SU7 (GVW = 77.5 K)	0.81	31.39	Yielding in member L2U1
EV2 (GVW = 57.5 K)	0.62	17.83	Yielding in member L2U1
EV3 (GVW = 86.0 K)	0.42	18.06	Yielding in member L2U1

APPENDIX C | Bridge Replacement Estimate

TRANTECH Engineering LLC

City of Tukwila-Tukwila 14-42nd Avenue Bridge Replacement Cost Estimate August 1, 2017

285 foot simple span with angled bearings.

STD. ITEM	ITEM DESCRIPTION	MEAS. UNIT	QUANTITY	UNIT PRICE	COST
130	REMOVING ASPHALT CONCRETE SIDEWALK	SY	10	$ 150	$ 1,500
170	REMOVING GUARDRAIL	LF	40	$ 25	$ 1,000
1085	QUARRY SPALLS	CY	500	$ 40	$ 20,000
4006	STRUCTURE EXCAVATION CLASS A INCL. HAUL	CY	200	$ 150	$ 30,000
4010	SPECIAL EXCAVATION	CY	100	$ 200	$ 20,000
4013	SHORING OR EXTRA EXCAVATION CLASS A - SHAFT	LS	1	$ 25,000	$ 25,000
4007	SOIL EXCAVATION FOR SHAFT INCL HAUL	CY	450	$ 450	$ 202,500
4008	FURNISH AND PLACE TEMP CASING FOR 60" DIAM SHAFT	LF	600	$ 200	$ 120,000
	FURNISH PERM CASING FOR 60" DIAM SHAFT	LF	600	$ 450	$ 270,000
	PLACING PERM CASING FOR 60" DIAM SHAFT	EA	6	$ 3,000	$ 18,000
	CONC CL 4000P FOR SHAFT	CY	450	$ 300	$ 135,000
	ST REINF BAR FOR SHAFT	LBS	540,000	$ 1.70	$ 918,000
	CSL ACCESS TUBES	LF	600	$ 15	$ 9,000
	REMOVING SHAFT OBSTRUCTIONS	LS	1	$ 100,000	$ 100,000
	REMOVING EXISTING BRIDGE SUPERSTRUCTURE	LS	1	$ 300,000	$ 300,000
	REMOVING EXISTING BRIDGE FOUNDATION	LS	1	$ 300,000	$ 300,000
	REMOVING EXISTING BRIDGE APPROACHES	LS	1	$ 100,000	$ 100,000
	TEMPORARY DETOUR BRIDGE	LS	1	$ 1,250,000	$ 1,250,000
	PRESTRESSED CONCRETE GIRDERS, WATER XING WITH PILING	LF	1,750	$ 300	$ 525,000
	BRIDGE APPROACH SLAB	SY	280	$ 250	$ 70,000
	REINFORCED CONC RETAINING WALL	SF	2,000	$ 90	$ 180,000
	CONC CL 4000 FOR BRIDGE	CY	550	$ 575	$ 316,250
	STRUCTURAL SURVEYING	LS	1	$ 30,000	$ 30,000
4438	EXPANSION JOINT SYSTEM COMPRESSION SEAL - SUPERSTRUCT.	LF	160	100	$ 16,000
4339	EXPANSION JOINT SYSTEM STRIP SEAL	LF	160	800	$ 128,000
4410	BRIDGE RAILING	LF	600	120	$ 72,000
6403	ESA LEAD	DAYS	280	120	$ 33,600
6416	SEEDING, FERTILIZING, AND MULCHING	LS	1	3,000	$ 3,000
6455	BIODEGRADABLE EROSION CONTROL BLANKET	SY	250	4	$ 1,000
6470	STREET CLEANING	HR	120	200	$ 24,000
6471	INLET PROTECTION	EA	6	100	$ 600
6488	EROSION CONTROL AND WATER POLLUTION PREVENTION	LS	1	2,000	$ 2,000
6630	HIGH VISIBILITY FENCE	LF	300	4	$ 1,200
6806	PAINT LINE	LF	-	5	$ -
6869	PEDESTRIAN TRAFFIC CONTROL	LS	1	10,000	$ 10,000
6899	BRIDGE MOUNTED SIGN	EA	2	1,000	$ 2,000
6903	TEMPORARY ILLUMINATION SYSTEM	LS	1	10,000	$ 10,000
6913	PORTABLE TEMPORARY TRAFFIC CONTROL SIGNAL	LS	1	30,000	$ 30,000
6971	PROJECT TEMPORARY TRAFFIC CONTROL	LS	1	100,000	$ 100,000
6974	TRAFFIC CONTROL SUPERVISOR	LS	1	10,000	$ 10,000
6982	CONSTRUCTION SIGNS CLASS A	SF	200	20	$ 4,000
7003	TYPE B PROGRESS SCHEDULE	LS	1	5,000	$ 5,000
7052	BRIDGE END SIDEWALK RAMP	EA	2	1,000	$ 2,000
7400	TRAINING	HR	500	20	$ 10,000
7480	ROADSIDE CLEANUP	EST	1	10,000	$ 10,000
7500	FIELD OFFICE BUILDING	LS	1	20,000	$ 20,000
7570	HEALTH AND SAFETY PLAN	LS	1	10,000	$ 10,000
7736	SPCC PLAN	LS	1	2,000	$ 2,000
	APPROACH @15% OF BRIDGE COST	LS	1	817,148	$ 817,148
	WILDLIFE MANAGEMENT	LS	1	5,000	$ 5,000
	SUBTOTAL				$ 6,269,798
	CONTINGENCY (15%)				$ 940,470
	MOBILIZATION			$ 626,980	$ 626,980
	RIGHT OF WAY COSTS				$ 500,000
	PRELIMINARY ENGINEERING (25% CONSTRUCTION COST)				$ 1,567,449
	CONSTRUCTION MANAGEMENT (18% CONSTRUCTION COST)				$ 1,128,564
	INFLATION FACTOR (5%/YEAR BASED ON PROJECTED AD DATE)				$ 1,351,181
	TOTAL				$ 12,384,440

PE Costs (approximately 25% of Total)	
(Soils, Environmental, Desig Docuemnts, Plan Preparation, etc.)	$ 1,567,449
Right of Way Costs	
(Purchases, Reoloation and Construction Easement)	$ 500,000
Construction Costs	
(Environmental mitigation, approach costs (15%), structure costs, etc)	$ 6,269,798
Construction engineering (18%)	$ 1,128,564
contingency (15%)	$ 940,470
Mobilization (10%)	$ 626,980
Inflation Factor (5% per year based on project Ad Date below)	$ 1,351,181
Total Rehabilitation/Replacement/Preventative Maitnenance Project Costs	$ 12,384,440

BNSF RAILWAY INTERMODAL FACILITY ACCESS STUDY

ALTERNATIVE SCREENING ANALYSIS REPORT

Prepared for:

City of Tukwila
Public Works Department
6300 Southcenter Boulevard
Tukwila, WA 98005

Prepared by:

David Evans and Associates, Inc.
14432 SE Eastgate Way
Bellevue, WA 98007

November 28, 2016

EXECUTIVE SUMMARY

This Alternative Screening Analysis Report for the City of Tukwila was prepared by David Evans and Associates, Inc. to evaluate alternative access to the Burlington Northern Santa Fe (BNSF) Railway intermodal facility in Tukwila, Washington. This facility is also known as South Seattle Yard. BNSF Railway also sponsored this study.

The existing access to the intermodal facility uses 42nd Avenue S and S 124th Street. S 124th Street is also a residential collector street serving the community of Allentown. Several residential homes with driveways are located on S 124th Street, as is the Tukwila Community Center which houses an aquatic center, meeting rooms, classes and activities for all ages, and playground and ball fields.

This study did not create new alternatives but used alternatives that were developed by previous studies. A total of five alternatives were studied: Airport Way S, S 112th Street, S 124th Street, Gateway Drive – North Leg, and 48th Avenue S.

Several desktop researches were performed as part of this study. These researches included critical and sensitive areas, fish and wildlife, water resources, hazardous materials, geological and soils, and cultural and historical resources.

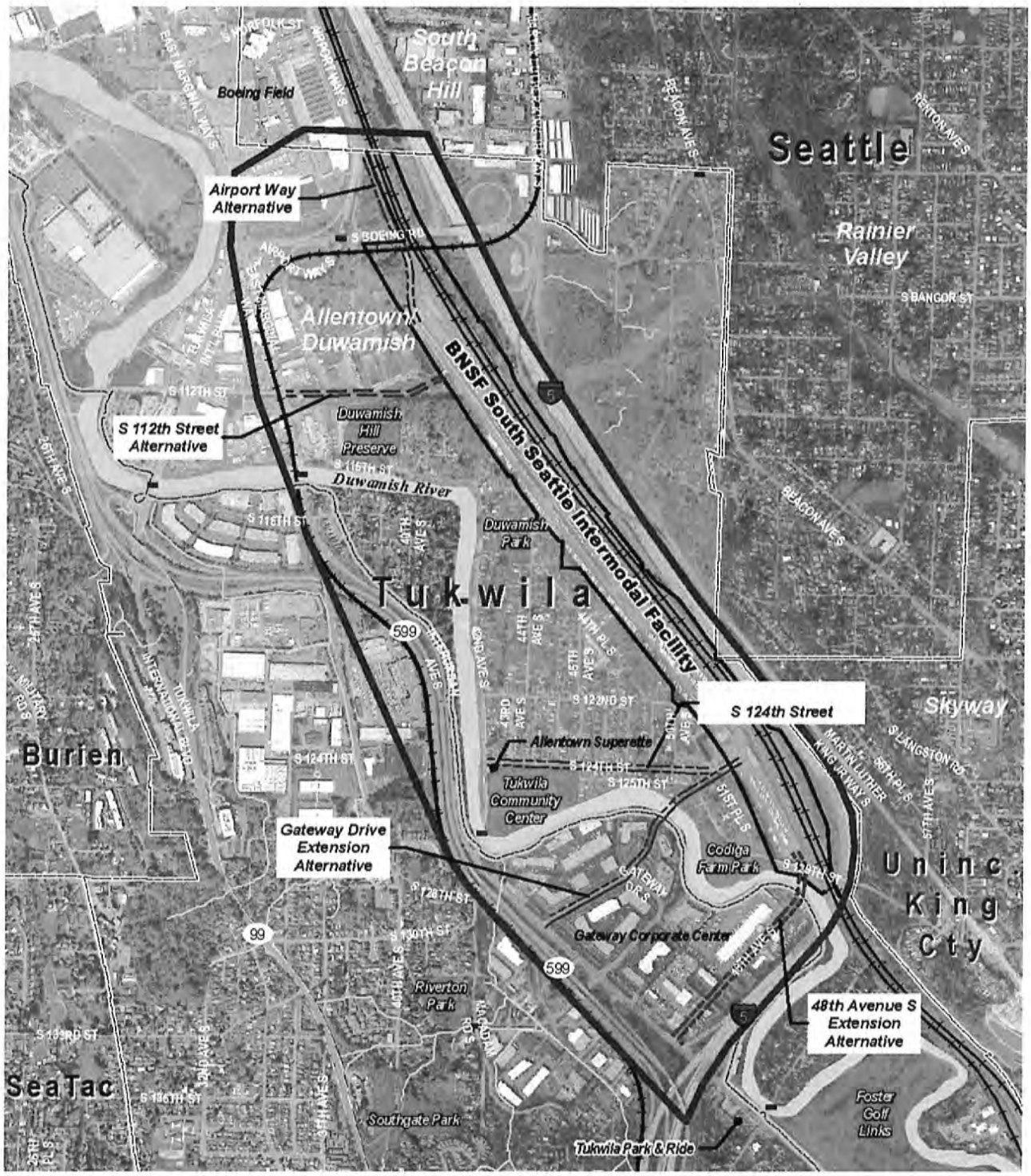
A scored screening matrix was developed collaboratively between the City of Tukwila, BNSF Railway, and David Evans and Associates, Inc. The matrix was presented to Tukwila City Council as well as to the public for their feedback on the screening matrix criteria. The public was allowed to provide feedback via an on-line open house and an in-person open house.

Representatives from Tukwila, BNSF Railway, and David Evans and Associates, Inc. met to score each alternative using a numerical scoring system from 1 to 9. The score for each criteria was added, and the lowest score is the preferred alternative.

Based on the scoring result, the 48th Avenue S alternative is the preferred alternative.

Figure 1 shows the project study area. The following provides a description for each alternative.

Figure 1 – Project Study Area



Preferred Alternative Outreach Summary

BNSF Access Study

DRAFT – September 5, 2017

Background

In 2016, the Tukwila community provided input on the screening criteria that was used to develop the BNSF Access Study report. The City identified a preferred alternative route and shared it with the community at an open house on August 17, 2017.

Summary

The City of Tukwila hosted an in-person open house at the Tukwila Community Center on August 17, 2017. The in-person house accompanied an online open house, which included the same information as the in-person open house and was available from August 15 - 28, 2017.

Notifications

The project team advertised the in-person and online open houses in early August 2017. Notifications included the following:

- Postcard sent to the Allentown and Duwamish neighborhoods
- Emails to the City's project listserv
    - Listserv includes community members, business and property owners, other interested parties
- Flier emailed as attachment to Allentown and Duwamish neighborhood listservs by neighborhood leaders
- Facebook and Twitter posts on the City's social media accounts

Attendance and visitor statistics

- In-person open house attendance: 42
- In-person comment forms completed: 20
- Online open house visitors: 32
- Online surveys completed: 12
- Overall number of participants: 74

Engagement Methods

In-Person Open House

The City gathered shared information about the preferred alternative and other considered alternatives during an open house at the Tukwila Community Center on August 17, 2017, from 5:30 p.m. to 7:30 p.m. Participants viewed informational boards that described the project purpose, schedule, alternative and preferred routes, screening criteria and environmental process. Project staff were on hand to answer questions. Participants contributed comments via comment cards. Comments received at the open house are shown in Appendix 1 and summarized below.

In-person open house participants give feedback on comment cards.

Online Open House

In order to reach Tukwila businesses and residents who were unable to attend the in-person open house, the City advertised an online open house, available 24 hours a day, seven days a week, starting August 15 and ending August 28. The online open house included the same information as at the in-person open house and a survey that gathered specific feedback in a similar fashion to the comment boxes at the in-person open house. Comments received through the online open house are shown in Appendices 2 and summarized below.

Feedback Overview

Several themes emerged from the input received through 32 comments and surveys:

- Those who supported the preferred alternative (15) stated a number of reasons for their support, including **moving the truck route to a commercial street and away from residences**, **access/proximity to I-5 and current residential impacts on 124th**.
- **All residents who said they live along or near the current access route** who participated (4) **supported moving the truck access route** to another street.
- Those who opposed the preferred alternative (4) stated **increased traffic**, **business impacts** and **residential impacts** as reasons for their opposition.
- Several participants urged the City to **study or investigate cost** (4) **and traffic** (3). Several participants also expressed interest in **potential environmental impacts** (3).

Next Steps

All feedback presented here is being provided to the project team for consideration. The study and proposed route will be presented to City Council in the fall of 2017.

One participant requested specific follow up regarding business impacts on 48th Ave S: Quinn Closson, 360-607-8178, qclosson@pape.com.

Appendices

1. Comments gathered at in-person open house
2. Online comments
3. Notifications

Appendix 1: Comments Gathered at In-person Open House

Note: comments are verbatim as written. Commenters were asked if they live, work or visit Tukwila.

Live	Work	Visit	Name	Email	Comment (verbatim)
x			Phillip Camball	Phillameball@hotmail.com	Anything except 48th Ave S. Minimum public $, maximum private funding.
x			Angela Steel	angelasb13@hotmail.com	I prefer the 48th Ave S option as the least impactful to residential properties in Allentown and Duwamish. This option keeps semis on existing truck routes w/out creating new roads through environmentally critical areas or private property. *Also need noise wall along edge of railyard.
			[unknown]	[unknown]	My first choice BNSF move out completely. Second choice I prefer 48th Ave S. Build wall to control noise and shaking control.
x			Mary Fertakis	[unknown]	Thanks for all the work that has been done on this. The grid was particularly helpful - very concrete information and easy to understand. The original study in 1990 shows that the 48th st option was the least expensive and made the most sense. It is the same in 2017. Seems pretty clear that this is still the direction to go.
x	x		David Shumate	David@propeldesigns.com	The 48th Ave and Bridge looks like the best one!
x	x		Sean Albert	seanalbert2001@hotmail.com	I think the preferred 48th ave south route is by far the best alternative!!

x			Patty Cokus	pcokus@hotmail.com	I agree wholeheartedly with the preffered study route where it impacts all identified impact criteria the least and is the least expensive. Thank you for working on this and advocating for community input and gathering feedback. The preferred route makes the most sense for all.
x			[Illegible]	[unknown]	I think the preferred option makes the most sense of those presented. It takes the traffic completely off residential streets and on to a commercial street that already accomodates semi-truck traffic.
x			Lucia Nilo	ltannilo@hotmail.com	I hope this project gets look at seriously as I really enjoy my home at 124th - but the vibration of the trucks in and out 24-7 is really bad and nuisance. It shakes our house especially when sleeping - the NO-Build option: S 124th should not be an option.
x			Wilfredo Nilo	wznilo@gmail.com	We live by 124th ave which is active for semi-trucker. Since we moved here from september 2016 we felt a massive vibration everytime those truckets pass by. We live in a brand new home and it created major cracks in aour garage. We worried whats gonna happen next.
x			Oscar Uceda	o.uceda@yahoo.com	We would like to support the prefer alternative for the trucks route coming in and out of the BNSF Railroad Yard facility in Allentown.

x	x	Becky [Illegible]	becarosep@aim.com	Concern the increase in traffic from now and 20 years down the road on the 48th ave purposal. What effects it will have on the businesses on 48th (widening roads etc) Residents being impacted by not being able to get access to the businesses they already go to.
	x	Morgan Llewellyn	mllewellyn@ccim.net	I'm wonderng how the project will be funded particularly in light of the right away acquisitions required by the preferred route. It appears the northern route would have the least impact on residential AND commercial businesses.
	x	Todd Jones	rain1916@comcast.net	I stronly oppose Gateway Drive option and 124th st options. I do like the 48th st option or others to the north.
x		Hanice Ludington	shofarJCL@gmail.com	My preference is Airport Way s
x		[Illegible]	[Illegible]	The road should go out the north end. I live on 51st (across the street from the flat bed trucks, and am concerned about where the railroad will put the road inside this yard. Will trucks have to be removed and trailers [illegible]? And if so, where will they go? It is close to our homes, your moving one road to another.
	x	Linda McLeod	sam.linda.mcleod@gmail.com	No on Gateway Dr. Divides BECU campuses, has many employees + customers
	x	[unknown]	[unknown]	Airport SO. (BEST) [*sic*]

x	Edna Derr[illegible]	edna0801@gmail.com	I live in 122nd st. I hope the 124th s st. would be closed as enterence of BNSF or trucks facility. The impact to our home and neighborhood is terrible, the house vibrates each time; lots of noise; and traffic gets crowded. 48th st is great alternative for the BNSB enterence.
	Steven	steve@xmrine.com	We'd like to see a traffic impact study done on inerurban and exit 156 off I-5. Please go to fife and see the issues they have and avoid that happening to us.

Appendix 2: Comments from Online Open House

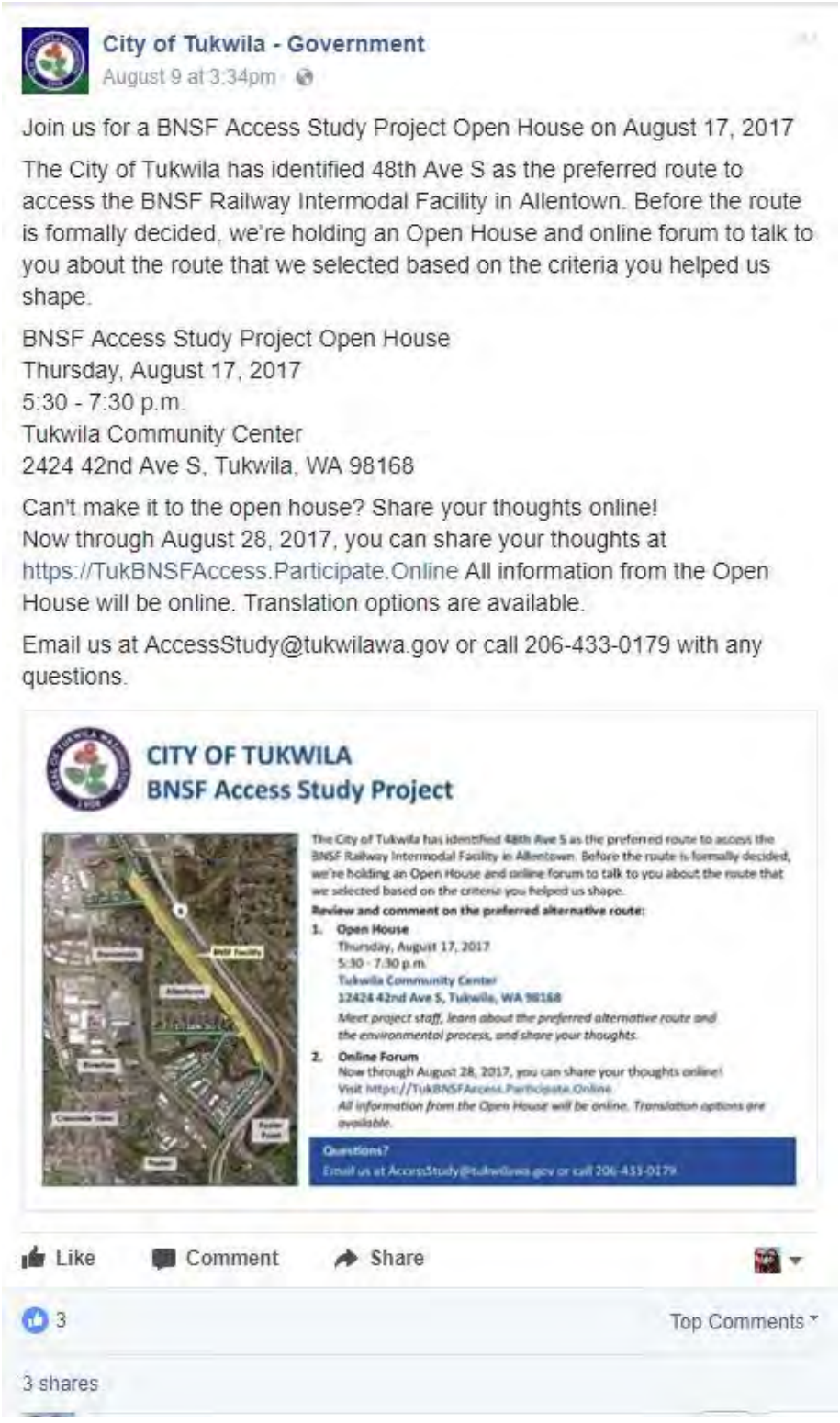
Note: comments are verbatim as written.

Comment
1. Will all trucks no longer use 124th st ? 2. Will there be entry and exit capability from 50th PL S/129th street? we must have the capability to enter and exit from 50th PL S/129th street. Please make sure this option available. Thanks for your consideration
How much will this cost? What about an option to improve the 42nd st. bridge by the community center and do some mitigation on the streets that the trucks drive down, such as widening the shoulders of the street, side walks and maybe even some sort of sound barrier? How is this project prioritized compared to needs in other neighborhoods such as sidewalks and road repair?
I am an employee of BECU and believe that the 48th Ave So. preferred option is by far the best choice. Not only from a cost perspective but also from a life safety, employee/member environment and the disruption of multiple businesses/residential and land/building value standpoint. The 48th Ave So. option already houses a street with truck yard access and would be a much easier way to execute on this initiative. While I know this still impacts some, it is the reasonable choice and should be adopted.
I am not only a Tukwila resident but also a Tukwila business owner that would be greatly affected by the "preferred" route of 48th AVE S. The overall impact on the businesses along this route would be devastating. People are already frustrated with the current amount of big trucks coming along 48th. We are already lacking suitable gas stations in Tukwila. Please don't make them impossible to get to. Tukwila is a growing city and the north side (Airport way) of it is already industrial. Interurban Ave is an incredibly popular thoroughfare for many people going south/north and the 2 gas stations on 48th Ave services more than half of those people. Please reconsider 112th or Airport way as the better alternative that will impact our growing city the least amount. Thank you.
I am very happy that the city is analyzing other options for the truck route into the BNSF yard. The current route is not sustainable. My family prefers the 48th Av S option since it uses an existing commercial street and is least impactful to residential communities and the environment. I would like you to heavily factor in the environmental impacts the other two northerly options would have on wetlands and existing greenspaces.Will the Airport Way option impede future Light rail/Sounder station location planning efforts? How will the different entrance options impact yard operations? Currently, the BNSF yard is very noisy 24/7 with back up beepers. Will these operations shift or diminish with the varying options? Can the city proceed with pursuing the noise wall installation along the railyard boundary? I think this will make a significant improvement to the quality of life in Duwamish and Allentown. thank you
I represent The Pape' Group, Inc. who owns the Ditch Witch dealership on 48th Ave, South. I understand there will be significant traffic impact during construction. I don't think we're overly concerned about that. However, I'd like a little more information on the traffic study or estimates on additional traffic impact on 48th Ave. South after completion of the project. Also, will there be any improvements done to the 48th Ave road itself? Finally, is there something I'm missing that you think we should be concerned about as a business right on 48th Ave? Thanks, Quinn Closson 360-607-8178 qclosson@pape.com

I wish that this 124th St. access be change to a different access ASAP because we moved here in a new home development last year 2016 of Sept. which we are not aware about this 124th St. right beside our house is the major access for truckers. We encountered 24-7 of a massive vibration like an earthquake multiple times everyday and we felt scary that our house may collapse one of this day. So far we had a multiple long cracks in our garage and hopefully will not affect the foundation. We live right by the stop sign where those truckers heading out from BNSF gate and also for coming in. That really distract us everyday. There's a time when some of the truck driver lost their focus on the stop sign especially in the evening and they made an emergency brakes and it shakes the ground so bad and it vibrates our house also. I Believe that 48th Ave S is the best alternatives route for the truckers.
I work at BECU. The Gateway alternative would have a negative impact on our members who come into our Tukwila Financial Center to conduct their personal business (primarily retail banking, trust services, and investment services). We are about to engage on a Gateway campus upgrade and a truck route cutting through the middle of it would have a negative impact on our employee experience and may have a negative impact on our ability to recruit and retain employees. Given the existing land use abutting most of your preferred alternative (gas stations, commercial, etc.). I can see the potential noise downside for a hotel (but it's already next To I-5 and a busy off ramp so marginal impact seems moderate).
I would like to avoid having another bridge over the river and prefer this option: S 112th Street Thank you.
Thank you for considering all options and explaining the reasoning. What timeframe are you looking at for construction of the new bridge and roadway. What impact will there be on the existing Interurban Bike/Walking Trail both during construction and upon completion. Will traffic studies be done to work on minimalizing impact at the intersection for traffic on Interurban and from the off ramp on I5?
This route makes the most sense as it is a quick, direct route off of I-5, drives through a commercial area only and does not affect the public's experience of their greenspace, except for a small segment of the bike trail. I fully support this preferred route.
What are the costs? How it will be funded?

Appendix 3: Notifications

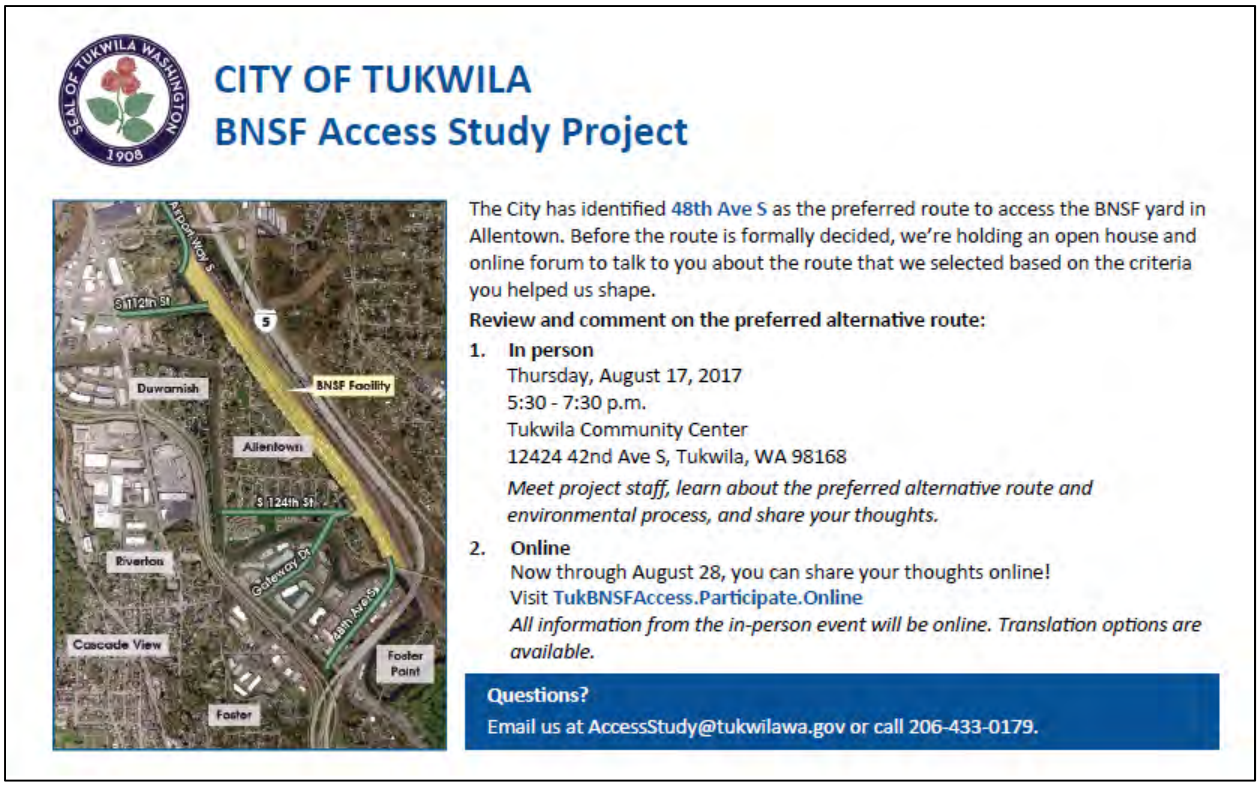
Social media



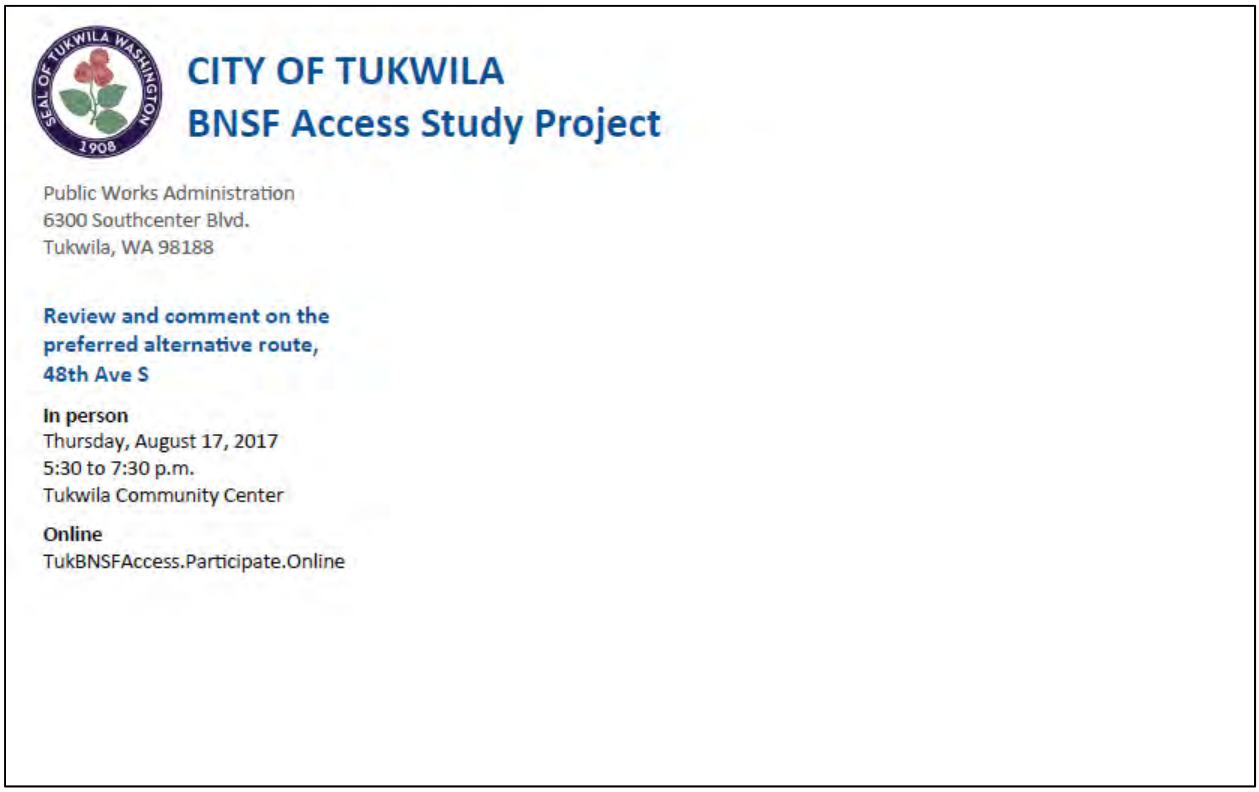
Facebook post published August 9, 2017.

Tweet published August 9, 2017.

Postcard



One side of a postcard sent to the Allentown and Duwamish neighborhoods.



Reverse of a postcard sent to the Allentown and Duwamish neighborhoods.

Emails

City of Tukwila

Washington

Ordinance No. 2566

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF TUKWILA, WASHINGTON, ESTABLISHING NEW REGULATIONS TO ACCURATELY DEFINE THE PORTION OF 42ND AVENUE SOUTH BETWEEN 124TH STREET SOUTH AND INTERURBAN AVENUE SOUTH WHERE THE SPEED LIMIT IS TO BE REDUCED FROM 25 MPH TO 15 MPH FOR AASHTO TYPE 1, 2, AND 3 TRUCKS ONLY; REPEALING ORDINANCE NO. 1801, AS CODIFIED AT TUKWILA MUNICIPAL CODE SECTION 9.16.060; PROVIDING FOR SEVERABILITY; AND ESTABLISHING AN EFFECTIVE DATE.

WHEREAS, American Association of State Highway Officials (AASHTO) defines a Type 1 truck as a three-axle truck limited to 25 tons; and

WHEREAS, AASHTO defines a Type 2 truck as a three-axle truck with a two-axle single trailer limited to 36 tons; and

WHEREAS, AASHTO defines a Type 3 truck as a three-axle truck with two, double-axle trailers limited to 40 tons; and

WHEREAS, Title 23 Code of Federal Regulations (CFR) subpart c, *National Bridge Inspection Standards (NBIS) Section 650.313 (c)* states: "Post or restrict the bridge in accordance with the AASHTO Manual or in accordance with State law, when the maximum unrestricted legal loads or State routine permit loads exceed that allowed under the operating rating or equivalent rating factor"; and

WHEREAS, *AASHTO Manual for Bridge Evaluation 2nd Edition 2011 – with 2016 Interim Revisions*, Section 6A.8.1 and Section 6B.7.2**,** states, "When the maximum legal load under state law exceeds the safe load capacity of a bridge, restrictive posting shall be required"; and

WHEREAS, the bridge crossing the Duwamish River on 42nd Avenue South, also known as Tukwila-14, structure ID 08109700, has been determined to require a restriction to the legal truck loads for AASHTO truck Type 3, which includes a reduction to the speed limit from 25 MPH to 15 MPH for all AASHTO truck types; and

WHEREAS, RCW 46.61.415 authorizes the City to alter speed limits on the basis of engineering and traffic investigations; and

WHEREAS, an engineering investigation was conducted in the form of a load rating analysis of 42nd Avenue South between South 124th Street and Interurban Avenue South; and

WHEREAS, based upon the load rating analysis, the City has determined that 15 miles per hour is a reasonable and safe maximum limit for AASHTO Type 1, 2, and 3 trucks traveling on 42nd Avenue South between South 124th Street and Interurban Avenue South;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF TUKWILA, WASHINGTON, HEREBY ORDAINS AS FOLLOWS:

Section 1. Repealer. Ordinance No. 1801, as codified at TMC Section 9.16.060, "South 124th Street, 42nd Avenue South, and 50th Place South," is hereby repealed.

Section 2. TMC Section 9.16.060 Reenacted. Tukwila Municipal Code Section 9.16.060 is hereby reenacted to read as follows:

9.16.060 South 124th Street, 42nd Avenue South, and 50th Place South

A 25 MPH speed limit is established on certain collector arterials as follows:

1 South 124th Street from 42nd Avenue South to 50th Place South.

2. 42nd Avenue South from Interurban Avenue to South 115th Street; except that Type 1, Type 2, and Type 3 trucks, as defined by the American Association of State Highway Officials (AASHTO), shall be restricted to a maximum speed of 15 MPH.

3. 50th Place South from South 124th Street to the east City limit.

Section 3. Signs to be Posted. The Public Works Department is hereby directed to post appropriate speed limit signs reflecting the speed limits established in Section 2 of this ordinance.

Section 4. Corrections by City Clerk or Code Reviser. Upon approval of the City Attorney, the City Clerk and the code reviser are authorized to make necessary corrections to this ordinance, including the correction of clerical errors; references to other local, state or federal laws, codes, rules, or regulations; or ordinance numbering and section/subsection numbering.

Section 5. Severability. If any section, subsection, paragraph, sentence, clause or phrase of this ordinance or its application to any person or situation should be held to be invalid or unconstitutional for any reason by a court of competent jurisdiction, such invalidity or unconstitutionality shall not affect the validity or constitutionality of the remaining portions of this ordinance or its application to any other person or situation.

Section 6. Effective Date. This ordinance or a summary thereof shall be published in the official newspaper of the City, and shall take effect and be in full force five days after passage and publication as provided by law.

PASSED BY THE CITY COUNCIL OF THE CITY OF TUKWILA, WASHINGTON, at a Regular Meeting thereof this 20TH day of February, 2018.

ATTEST/AUTHENTICATED:

Christy O'Flaherty, MMC, City Clerk

Verna Seal, Mayor Pro Tempore

APPROVED AS TO FORM BY:

Rachel B. Turpin, City Attorney

Filed with the City Clerk: 2-14-18
Passed by the City Council: 2-20-18
Published: 2-26-18
Effective Date: 3-3-18
Ordinance Number: 2566

City of Tukwila Public Notice of Ordinance Adoption for Ordinance 2566.

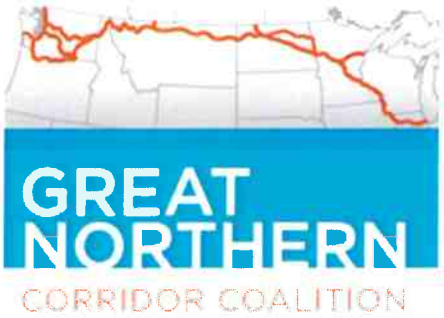
On February 20, 2018 the City Council of the City of Tukwila, Washington, adopted the following ordinance, the main points of which are summarized by title as follows:

Ordinance 2566: AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF TUKWILA, WASHINGTON, ESTABLISHING NEW REGULATIONS TO ACCURATELY DEFINE THE PORTION OF 42ND AVENUE SOUTH BETWEEN 124TH STREET SOUTH AND INTERURBAN AVENUE SOUTH WHERE THE SPEED LIMIT IS TO BE REDUCED FROM 25 MPH TO 15 MPH FOR AASHTO TYPE 1, 2, AND 3 TRUCKS ONLY; REPEALING ORDINANCE NO. 1801, AS CODIFIED AT TUKWILA MUNICIPAL CODE SECTION 9.16.060; PROVIDING FOR SEVERABILITY; AND ESTABLISHING AN EFFECTIVE DATE.

The full text of this ordinance will be provided upon request.

Christy O'Flaherty, MMC, City Clerk

Published Seattle Times: February 26, 2018

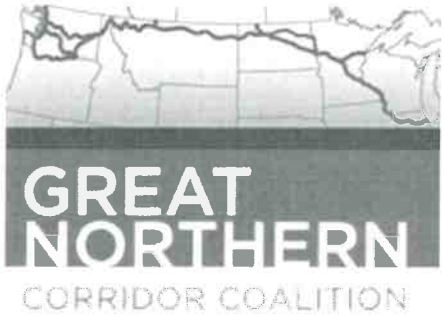


THE CORRIDOR

Overview

Stretching from Chicago to ports on the Pacific Northwest, the Great Northern Corridor is an east-west artery of commerce that supports the economic vitality of more than 38 million Americans across eight North Central and Pacific Northwestern states. Thousands of manufacturers, ranchers, farmers, miners, timber and lumber businesses and energy producers rely on the Corridor's multimodal transportation options.

The unifying thread and primary focus of this Corridor is the rail network stretching from the Great Lakes to the Pacific Northwest, and other logistics infrastructure such as highways, ports, and terminals. Every day, Americans across this system work together to produce and deliver vital products for their neighbors and the world, such as factory workers in Illinois making tractors for farmers in Montana to grow wheat that longshoremen in Washington load onto ships for ultimate delivery to dinner tables in Japan.



THE CORRIDOR

History

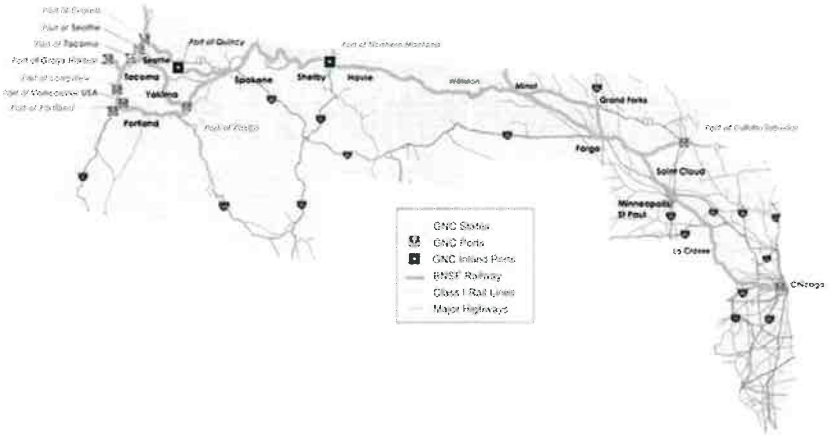
In the late 1800s when railroad magnate James Hill created the Great Northern Railway Company, the northern United States from the Great Lakes to the Pacific Ocean was untapped territory, holding the promise of entrepreneurial dreams unfulfilled. As an example of that entrepreneurial spirit, the Great Northern Railway was constructed and was the only transcontinental railroad built without using federal dollars or donations of federally owned land. It has maintained that spirit for over 100 years because its history and operations are rooted in solid economic principles and performance. The Great Northern merged with other railroads, and, over time, became a key element of the BNSF Railway Company as we know it today.

GREAT NORTHERN
CORRIDOR COALITION

THE CORRIDOR

Location & Map

The Great Northern Corridor is a strategic link in the supply chain spanning the northern United States, from the Pacific Northwest to the Midwest, and reaching key southern points in Canada. The Corridor includes 3,331 rail route miles traversing eight states providing consumers, manufacturers, industries and farmers with critical access to the nation's vast rail and highway network, vital multimodal connections and the global marketplace.



Download print-friendly map

GREAT NORTHERN
CORRIDOR COALITION

THE CORRIDOR

Facts

The Great Northern Corridor is an integral part of BNSF Railway's rail network connecting the Corridor to the national rail system, North American markets and the Global marketplace.

Vital Connections

- Links eight States and three Canadian Provinces to the global marketplace
- Serves an area where more than 38 million people live and work
- Supports regional businesses and approximately 12.5 million jobs
- Intersects or parallels 20 major cross continent Interstate and US Highways
- Connects the Northern Tier to the nation's extensive rail network and economic centers throughout North America
- Links 37 short line railroads and their customers to the national rail network and the global marketplace

Connects to eleven ocean, river and lake ports, and two inland ports

The Great Northern Corridor is the foundation of the supply chain for raw materials and finished goods that support major U.S. industries and consumer markets.

On the Move

Carried 278 million tons of freight in 2014

Supported 51 million tons of agricultural exports

Moved 964,000 units of consumer goods from ships to logistics parks and distribution centers throughout the country

Moved 91 million tons of construction materials, building products, manufactured goods, and energy related products to construction sites, consumers, factories, and refineries

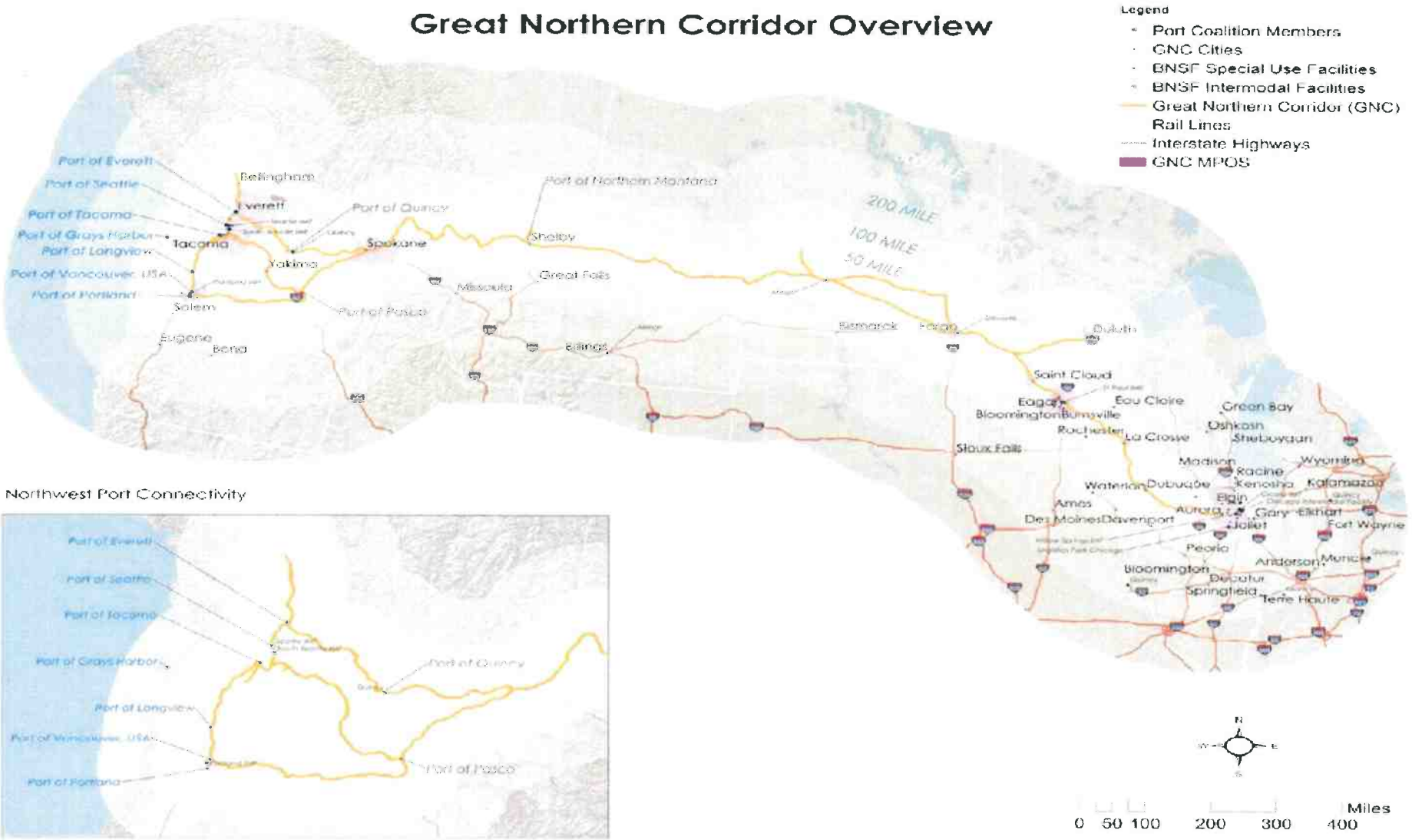
Removed over 10 million long-haul trucks from the nation's highways

Supports an area with wind energy generation potential of over two million megawatts

With the recent boom in wind energy projects along the Corridor, growing agricultural exports and consumer product demands, and Bakken Shale crude oil drilling and distribution activities in the region, transportation needs are anticipated to increase significantly over the foreseeable future.

Corridor Description:

GREAT NORTHERN CORRIDOR COALITION



Northwest Port Connectivity

Corridor Coalition Background:

GREAT NORTHERN CORRIDOR COALITION

- MCOM 1 Grant Award $299,910
- MCOM 2 Grant Award $419,200
  - 22.5% Public/Private Partnership Match
- Participating Members:

1. Idaho DOT
2. MN DOT
3. MT DOT
4. ND DOT
5. OR DOT
6. WA DOT
7. WI DOT
8. FHWA
9. BNSF
10. Port of Everett
11. Port of Seattle
12. Port of Tacoma
13. Port of Grays Harbor
14. Port of Longview
15. Port of Vancouver USA
16. Port of Portland, OR
17. Port of Pasco
18. Port of Quincy
19. WA Public Ports Association
20. Port of Northern Montana