

SR 104: US 101 TO SR 3 AND SR 3: SR 104 TO SR 305

CHARACTERISTICS

Segment Description:

This SR 104/SR 3 Corridor begins at US 101 and crosses the Hood Canal Bridge (HCB) before turning South at the SR 104/SR 3 intersection and ending in the SR 3/SR 305 Interchange Vicinity (US 101 to SR 3 to SR 305), MP 0.20 to MP 15.54 on SR 104 and MP 52.86 to MP 60.02 on SR 3, Arm 0.00 to Arm 15.34 on SR 104 and Arm 52.81 to Arm 58.81 on SR 3.

County/Counties: Jefferson/Kitsap

Cities/Towns Included: This corridor does not pass through any cities or communities, but it does cross over the Hood Canal Bridge which connects the Olympic Peninsula to Kitsap County and beyond (Seattle).

Number of lanes in the corridor: 2 to 3

Lane width: 11 to 12 feet.

Speed limit: 40 to 60 mph.

Median width: 0 to 260 feet.

Shoulder width: 6 to 10 feet.

Highway Characteristics:

SR 104 and SR 3 are Highways of Statewide Significance (HSS) and NHS with freight classification of T-2 with 4 million to 10 million tons per year. Average gross annual truck tonnage in 2005 for SR 104 was approximately 6.4 million and SR 3 was approximately 11 million from Gorst to SR 104. SR 3 tonnage actually drops below 10 million tons somewhere north of Bangor Submarine Base.

Special Use Lane Information (HOV, Bicycle, Climbing):

Special use lanes on SR 104 include 0.28 turn lane mile, 0.16 acceleration lane mile, and 2.46 through climbing lane miles. SR 3 includes 0.44 turn lane mile and 0.11 acceleration lane mile.

Access Control Type(s):

SR 104, MP 0.20 to MP 15.92, Partial Control

SR 3, MP 36.22 to MP 52.97, Full Control

SR 3, MP 52.97 to MP 59.82, Class 2

SR 3, MP 59.82 to MP 60.02, Partial Control

Terrain Characteristics:

The SR 104 corridor segment is in rolling terrain except for the Hood Canal Floating Bridge. The SR 3 corridor segment is in rolling terrain.

Natural Features:

The Hood Canal is a water feature crossed by SR 104 and SR 3 passes by Snider Park. Kitsap Memorial State Park is off SR 3 and Shine Tidelands State Park is off SR 104.

Adjacent Land Description:

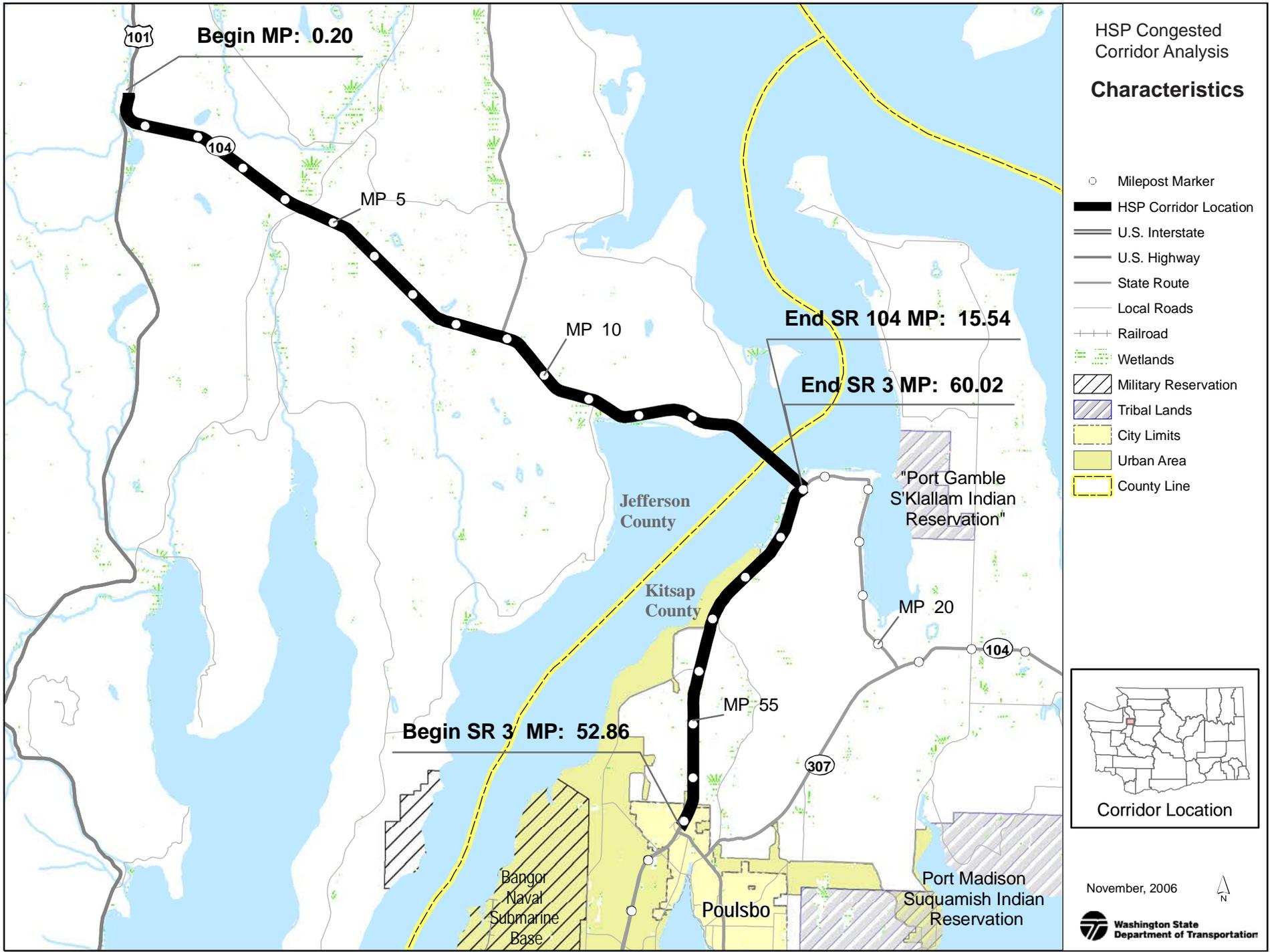
SR 104 and SR 3 travel through the traditional areas of interest (usual and accustomed areas) for the Suquamish Tribe and Skokomish Tribe. A portion of SR 104 is in the Lower Elwha Tribe area. Temination Point Boat Launch (west side of HCB) and Salsbury Point Park Boat Launch (east side of HCB)

Environmental Issues:

There are approximately 17 fish barriers of which approximately 8 require work, approximately 3 unstable slopes, 1 leaking underground storage tank, and approximately 22 storm water outfalls along SR 3. This area is also known for Bald Eagles.

Major Economic Issues:

The Peninsula's regional economy is heavily dependent on the logging and tourism industries. Olympic College is located near the SR 3/SR 305 Interchange with other large retail development (Olhava).



101

Begin MP: 0.20

104

MP 5

MP 10

End SR 104 MP: 15.54

End SR 3 MP: 60.02

Jefferson County

Kitsap County

"Port Gamble S'Klallam Indian Reservation"

MP 20

104

Begin SR 3 MP: 52.86

MP 55

307

Bangor Naval Submarine Base

Poulsbo

Port Madison Suquamish Indian Reservation

SR 104: US 101 TO SR 3 AND SR 3: SR 104 TO SR 305

ASSETS

Pavement:

There are approximately 27.75 lane miles of Hot Mix Asphalt on this segment of SR 104 and 2.98 miles of concrete. There are approximately 14.30 miles of Hot Mix Asphalt on SR 3.

Signal:

There is one signalized intersection at SR 104 MP 15.54, SR 104/SR 3 Intersection, LOS B in October 2003. The Hood Canal Bridge has more than 4 flashing signal systems that are used when the bridge is closed to traffic and open to marine vessels, LOS Not Applicable

Structures:

There are four structures in this corridor that consist of: one Concrete Slab, Pre-Tensioned Concrete Beam and two Concrete Floating Pontoon Steel Beam Steel Truss.

(Ramps, and locally owned structures (if any exist) are not identified in this section and may not be reflected on maps.)

Features Crossed:

SR 104 crosses the Hood Canal. When the Hood Canal Bridge opens for marine vessels our prior analyses indicate that approximately 15% of openings occurred between 3 PM and 6 PM from 1997 to 2002 with approximately 30 openings per month. The new structure will take longer than the approximately 19 minute average to open and close.

ITS Facilities:

There is a variable message sign (VMS) at MP 12.17 on SR 104 (increasing) and a highway advisory radio (HAR) at MP 13.12 on SR 104 (increasing). On SR 3 there is a highway advisory radio at MP 56.58 (increasing).

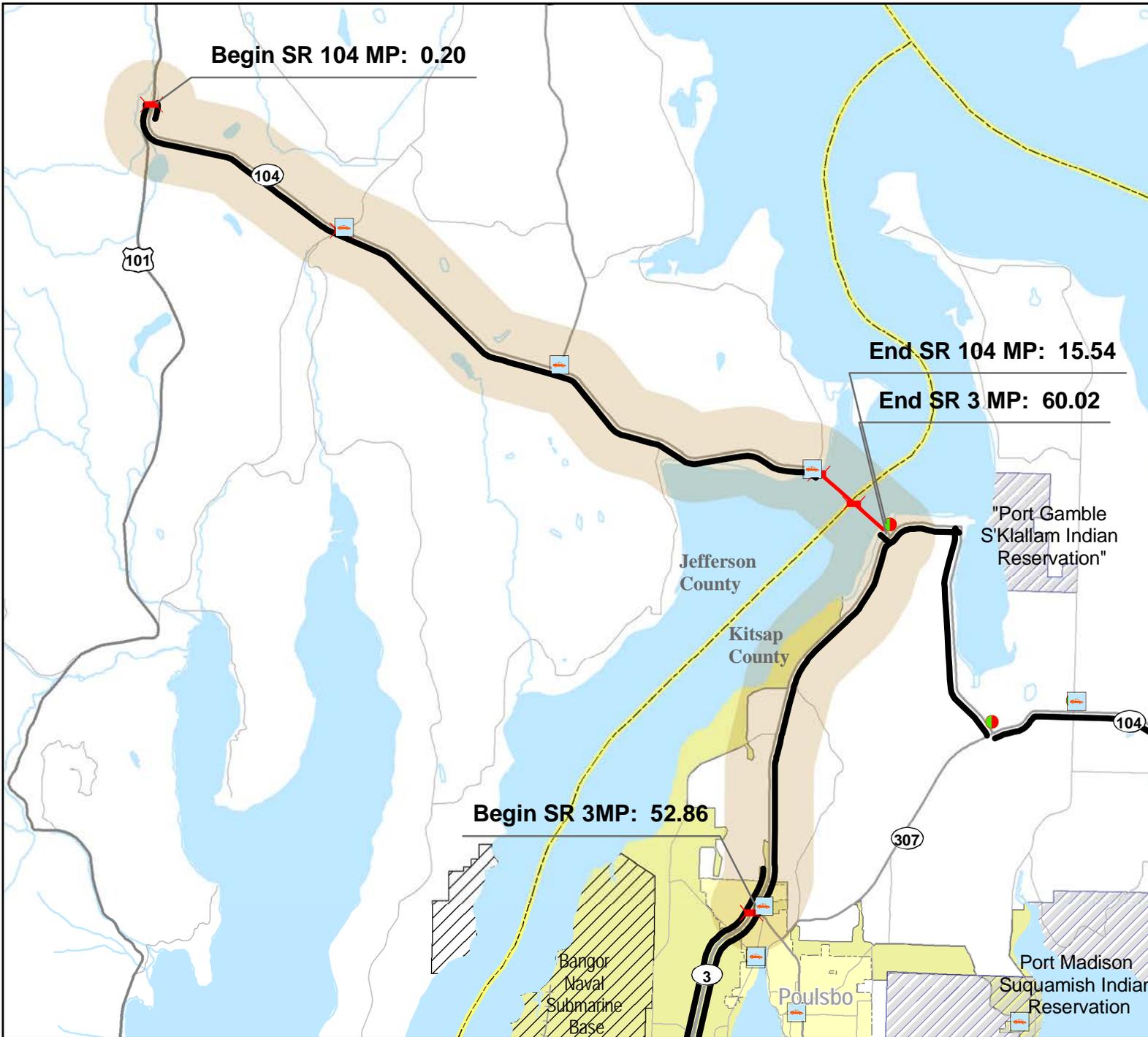
Railroad Crossings:

No at-grade railroad crossings.

Asset Other:

There is a dirt park and ride lot at Center Road on SR 104 (MP 4.34 Vicinity). A visitor center is located at the intersection of SR 19 and SR 104. Jefferson County has a \$278,000 grant to study replacement of the existing center which could be in the same vicinity or further east on SR 104 near Teal Lake Rd.

HSP Congested Corridor Analysis Assets



- Corridor Location
- Assets**
- Signalized Intersection
- At Grade Railroad Crossings
- Bridge
- Weigh Stations
- Rest Area Sites
- Ferry Terminal
- Park and Ride
- Corridor Pavement Type**
- HMA
- BST
- PCCP
- Other Features**
- U.S. Interstate
- U.S. Highway
- State Route
- Local Roads
- Ferry Route
- Railroad
- Military Reservation
- Tribal Lands
- City Limits
- Urban Area
- Airports
- County Line

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USAGE

General Origin and Destination Travel Characteristics:

A September, 1998 Hood Canal Bridge O/D study showed 61% of the weekend traffic was for leisure travel. Over half of the trips were generated in South Kitsap County & the greater Seattle urban area. One third of weekday trips are work related. 22% of the total weekday trips carry people to work in South Kitsap & greater Seattle urban area.

Snow/ice Issues:

There are no sections within this corridor which present a problem for normal snow/ice control. During inclement weather, the Hood Canal Bridge draw span is retracted (closing the bridge to vehicle traffic) when winds of 40 miles per hour or more are sustained for 15 minutes.

Annual Average Daily Traffic:

Ranges from 6,700 to 22,000.

Significant Seasonal Average Annual Daily Traffic Changes:

The Hood Canal Bridge (HCB) is the gateway for freight and recreational traffic into and out of the Olympic Peninsula. The average annual daily traffic (AADT) on the HCB was approximately 17,000 in 2004 with average weekday traffic at approximately 16,000. This difference between daily and weekday traffic means approximately 20,000 vehicles cross on weekend days. This significant difference indicates high recreational use on weekends.

General Description of Major Average Annual Daily Traffic Locations:

SR 3 from SR 305 to SR 104 with 15,000 to 22,000 annual average daily traffic (AADT) in 2004. SR 104 from SR 19 to SR 3 with 14,000 to 17,000 AADT.

Freight:

Freight Classification: T2

Yearly Tonnage: 4M to 10M

Truck Percentage of Annual Average Daily Traffic: 9.66% to 13.89%

Additional Usage Comments:

When the HCB opens for marine vessels in a peak period, vehicle traffic queues on SR 3 Northbound were calculated to be 1.36 miles long with 2004 traffic volumes. Traffic queues from a ~20 minute opening of the HCB in 2004 would clear in 1-hour during a PM peak period.

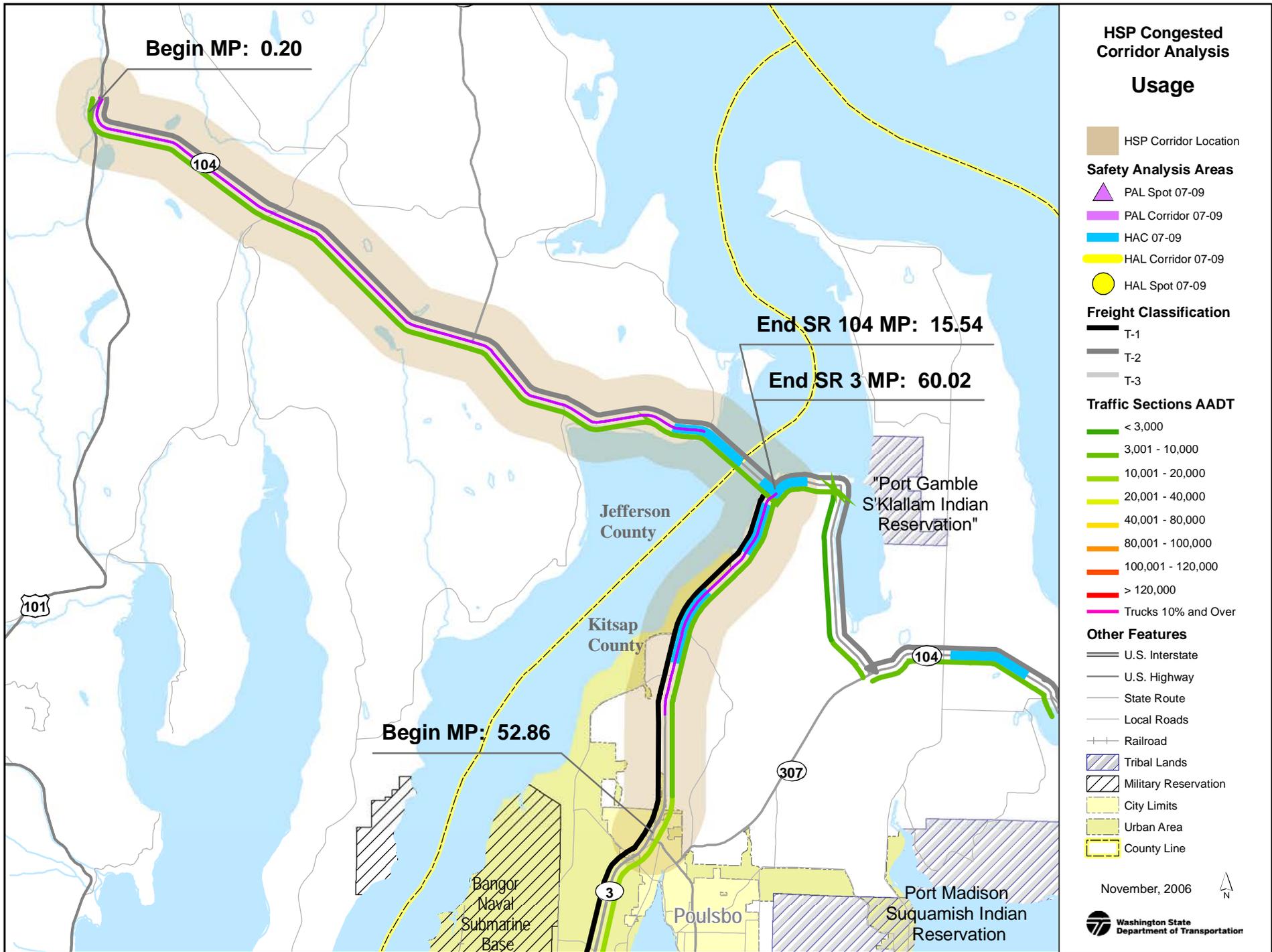
Average Annual Societal Cost of All Collisions: Approximately \$6.32M

Collisions:

Severe No of Collisions: 12

Less Severe No of Collisions: 261

List Data Years: 2003 to 2005



Begin MP: 0.20

End SR 104 MP: 15.54

End SR 3 MP: 60.02

Begin MP: 52.86

3

104

307

Jefferson County

Kitsap County

"Port Gamble S'Klallam Indian Reservation"

Bangor Naval Submarine Base

Poulsbo

Port Madison Suquamish Indian Reservation

101

NEEDS AND STRATEGIES

Preservation

Pavement Condition and Needs:

Preserve transportation infrastructure to achieve the lowest life cycle cost and prevent failure. Pavements should be programmed targeting the lowest life cycle cost per the Washington State Pavement Management System "due" date. This is the point in a pavement's life cycle where optimum pavement life has been achieved and the least cost to resurface is obtained. Pavements that have past this point typically incur more costs to rehabilitate. Existing safety features shall be restored to provide basic design level standards.

Pavement Management Strategies:

Reduce the backlog of pavement preservation needs that have gone beyond the point of economical resurfacing (lowest lifecycle cost). Existing hot mix asphalt (HMA or ACP) has an average life of 16.5 years in Western Washington. When the last pavement cycle approaches the due date or exceeds the average life cycle, paving with bituminous surface treatment (BST) to extend the life or surfacing with HMA will be necessary.

Structures Condition and Needs:

Preserve transportation infrastructure to achieve the lowest life cycle cost and prevent failure. (This may include ramps and locally owned structures if any exist.)

Structures Management Strategies:

Bridge's 20-year plan includes replacement of the Hood Canal Floating Bridge (Hood Canal -W.A. Bugge Bridge 104/005.2 as a 2-lane facility) and this work is under construction with most of the work planned in 2006. However, the concrete floating pontoons are anticipated to be installed in May or June of 2009

Additional Condition and Needs:

Preserve transportation infrastructure such as electronic/mechanical systems, major drainage, safety rest area refurbishment, traffic control systems, unstable slopes, weight facilities.

Additional Management Strategies:

Constructing bottleneck and chokepoint solutions and highway system plan conceptual solutions address unstable slopes by assuming retaining wall costs in the vicinity of the unstable slope (10 ft high for the length of the deficiency)

Improvement

Mobility Condition and Needs:

There are long traffic queues (> one mile) when the Hood Canal Bridge opens for marine vessels or other reasons (storms, maintenance, etc.). The traffic queues may interfere with emergency service on the Kitsap County side of the bridge during road closures. There are also access issues with vehicles not able to enter/exit driveway intersections along SR 3.

Mobility Management Strategies:

Near term strategies are to provide a Northbound holding lane on SR 3 from Kinman-Big Valley intersection to SR 104 with a "jughandle" intersection at SR 3/SR 104. This lane would "store" approximately 3 miles of vehicle queuing by year 2030 and allow the inside lane to be used for through vehicles (local residents and emergency) on the Kitsap County side of the bridge. A Southbound climbing lane on SR 3 could also be a near or medium term solution. Long term strategy is to construct a 4-lane divided facility on both corridors because of traffic congestion. SR 104 will be congested between SR 19 and SR 3 by 2030 and the SR 3 corridor is already congested.

Safety Condition and Needs:

Reduce and prevent deaths and the frequency and severity of disabling injuries, and reduce the societal costs of accidents (Focus on the rate of severity and frequency). The SR 104 and SR 3 corridor experiences 28% rear ends, 29% single vehicle run off the road, 16% T-Bone, 5% mainline opposite direction, and 22% other. Under 23 United States Code-Section 409, this data cannot be used in discovery or as evidence at trial in any action for damages against the WSDOT or the State of Washington. This disclaimer is for all accident data mentioned in this report.

Safety Management Strategies:

Constructing bottleneck and chokepoint solutions and highway system plan conceptual solutions should reduce these kind of

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accidents. A 30% reduction in all accidents was assumed as a placeholder in the bottleneck and chokepoint solutions.

Environmental Condition and Needs:

Reduce impacts by addressing noise reduction, air quality, stormwater, wetland mitigation, chronic environmental deficiencies, and fish barriers. The SR 104/SR 3 corridor has fish barriers, leaking underground storage tanks (LUST), stormwater outfalls, and may cover an area with threatened and endangered species.

Environmental Management Strategies:

Fish passage barriers: Culverts that have been identified as fish passage barriers that will be impacted by the construction of highway projects within this corridor will be corrected.

LUST: Suspected contaminated sites will be subject to initial site assessments, preliminary site investigation and/or detailed site investigations as appropriate during project development. Stormwater: All projects in this corridor will provide adequate stormwater treatment as outlined in WSDOT's Highway Runoff Manual to achieve compliance with federal and state water quality regulations.

Threatened and Endangered Species: Biological Assessments will be performed on projects in this corridor to determine the effects on plants and wildlife. Mitigating measures will be suggested where appropriate.

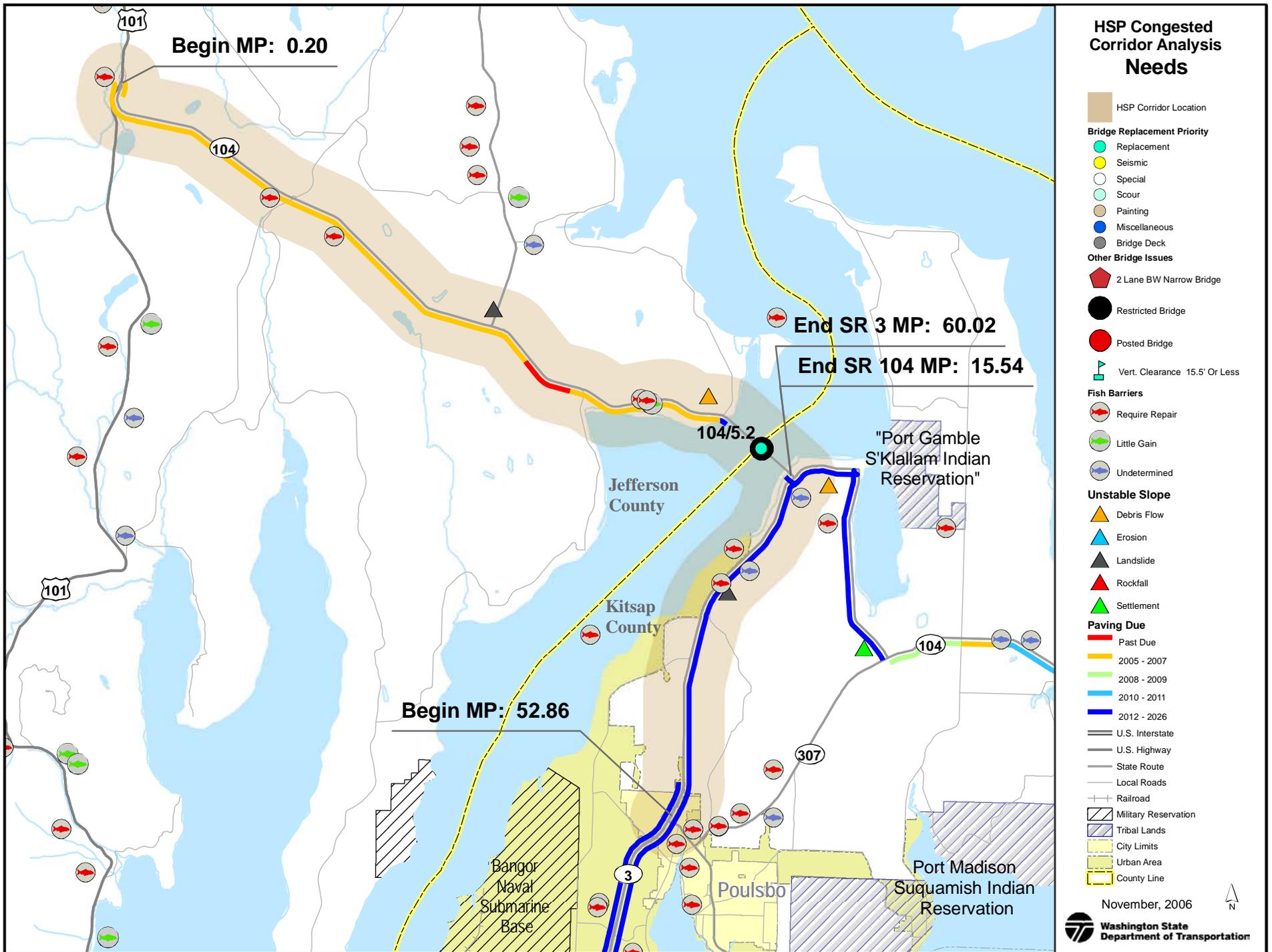
Restrictions:

There are none identified.

50-Year Configuration:

SR 104 is likely to be a 4-lane divided facility with a new interchange at SR 19 (MP 8.85). New park and ride lot at South Point Road and at the existing viewpoint at the west end of the Hood Canal Bridge (HCB) expanded to also serve as a Park and Ride Lot. Interim continuous 3-lane widening could be considered prior to the HCB being widened to 4-lanes. A two-lane Port Gamble South Bypass could begin on SR 3 approximately one mile south of the Hood Canal Bridge. From there it would turn east and south climbing over the ridge to rejoin the existing SR 104 near its junction with Port Gamble Road.

SR 3 between Poulsbo (SR 305) and SR 104 would become a divided 4-lane facility with 3 signals.



TIERED PROPOSED SOLUTIONS

Minimum Fix

Description:

2003 Bottleneck and Chokepoint Conceptual Solutions (3 individual solutions):

Flyover Interchange at SR 3/SR 104 and holding lot per value engineering report (\$14.2 million) This solution must occur prior to constructing the proposed approximately 3-mile long NB GP lane.

Southbound truck climbing/passing lane on SR 3 between Pioneer Way and Kinman-Big Valley Roads (\$6.121 million with B/C of 0.79)

A approximately 3-mile long Northbound General Purpose lane on SR 3 from Kinman-Big Valley Road to SR 104 (\$23.347 million with B/C of 1.12). This solution may need to become a passing lane or other short-term solution.

Delay Reduction: None identified.

Collision Reduction: 30%

Deficient Concrete Lane Miles: None identified.

Total Estimate Cost: \$43.67 million total for all 3 projects.

Cost Estimate Explanation:

The total estimated cost is a roll up of three bottleneck/chokepoint solutions. Because of accident reductions a 3 mile NB general purpose lane had benefits greater than a 1 mile long NB general purpose lane. Costs were based upon an Access cost estimating tool developed and maintained by Murshed Delwar, WSDOT. Benefits were based upon WSDOT Mobility Project Prioritization Process, Benefit/Cost Software User's Guide, May 2000. Prepared by Dowling Associates, Inc. in conjunction with Kittelson & Associates.

Minimum Fix Benefits:

These projects will increase peak hour speeds above 70% of the posted speed based upon year 2003 traffic volumes. The Northbound Holding lane configuration will also allow traffic northbound on SR 3 to continue to Port Gamble in the left lane during bridge openings while SR 104 Westbound destination traffic queues in the right lane.

Moderate Fix

Description:

Unconstrained 20-Year Washington State Highway System Plan (HSP) Conceptual Solutions:

SR 104 will be constrained to a 3-lane facility (passing lanes) between US 101 and the Hood Canal Bridge(HCB) until bridge is widened to 4-lanes.

An interim solution mentioned in the HSP was a Westbound Passing/Truck lane immediately west of the SR 19 Intersection. Improve the existing dirt park and ride lot at Center Valley Interchange.

SR 3 widened to a 4-lane divided multilane facility with 3 signalized intersections at Pioneer Hill, Pioneer Way, and Kinman-Big Valley Intersections.

Delay Reduction: None identified.

Collisions Reduction: None identified.

Deficient Concrete Lane Miles: None identified.

Total Estimate Cost: None identified.

Cost Estimate Explanation:

The highway system plan conceptual solutions and proposed solutions in our SR 3 Route Development Plan, SR 3 from SR 305 to SR 104, dated April 2005, have not yet been through our benefit/cost process.

Moderate Fix Benefits:

These improvements reduce congestion delay and accidents in areas that have a Congestion Index (CI) ratio exceeding 10 urban and 6 rural over a 20-year period in the HSP. CI is annual average daily traffic volumes divided by one hour peak capacity volumes. A CI of 10 is roughly LOS D/E and CI of 6 is roughly LOS C/D. This corridor's threshold in CI 6 or LOS C/D.

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Maximum Fix

Description:

Widen SR 104 from a 2/3 lane facility to a 4 lane divided facility from US 101 to SR 3 (includes a 4-lane HCB). Grade separated interchanges at other major intersections (e.g. SR 3/SR 19 Intersection).

Delays Reduction: None identified.

Collisions Reduction: None identified.

Deficient Concrete Lane Miles: None identified.

Total Estimate Cost: None identified.

Cost Estimate Explanation:

The conceptual solutions proposed for a maximum fix have not yet been through our benefit/cost process.

Maximum Fix Benefits:

None identified.

Off-System Solutions:

Improvements to Big Valley Road (runs roughly parallel to SR 3) or a Port Gamble Bypass could be off-system improvements that would divert traffic away from SR 3 (Between SR 305 I/C and Big Valley Road Intersection).

Special Studies/Reports:

SR 104 EIS: US 101 to Kingston Preliminary Draft EIS, May 2003.

Required Studies

None identified.

Start/Completion Date of Study:

None identified.

Expected Results

None identified.

Funded Projects within Corridor Limits

Project No	Title
310434A	SR 104/US 101 to Hood Canal Bridge - Paving
310429A	SR 104/Jct. SR 19 Intersection Safety
310433A	SR 104/1.2 Mile West of Hood Canal Br. - Fish Barrier
310407B	SR 104/Hood Canal Bridge East Half
300367A	SR 3/Kitsap Way to SR 305 - Median Crossover (cable)
300353A	SR 3/Thompson Rd. to SR 104 - Paving
300370A	SR 3/Hood Canal Bridge Holding Lanes (Design Only)

Additional Comments:

The 8-week closure of the Hood Canal Bridge in Summer 2009 to float in pontoons for the East Half Replacement Structure will cause unavoidable traffic impacts. An interim passenger-only ferry between Southpoint and Port Gamble is one of the proposed temporary solutions to be funded.

Data Sources and Contacts used:

Washington State Highway System Plan: 2003-2022, dated February 2002

GIS Environmental and Transportation Workbench

Capital Improvement and Preservation Program

Studies from WSDOT Olympic Region Planning Library (internal)

Measures, Markers and Mileposts, Basic Pavement Types and Ratings Summary (The Gray Notebook)

