

**SR 9, SR 522 TO SR 530 (ARLINGTON VIC)
ARM 4.03 TO ARM 29.46, SR MP 4.03 TO SR MP 29.46**

CHARACTERISTICS

Segment Description:

SR 9, SR 522 to SR 530 (Arlington Vic) Arm 0.00 to Arm 29.46, SR MP 4.03 to SR MP 29.46.

County/Counties: Snohomish

Cities/Towns Included: Along its route, the corridor serves Clearview, Snohomish and Arlington.

Number of lanes in the corridor: 2 to 4

Lane width: 10.5 to 12.5 feet.

Speed limit: 40 to 55 mph.

Median width: 0 to 0 feet.

Shoulder width: 4 to 17 feet.

Highway Characteristics:

SR 9 has been assigned the functional class Urban Other Principal Arterial In the vicinity of Arm 4.03-6.97 and Urban Principal Arterial in the vicinity of Arm 6.97-29.46. Also, the SR 9 corridor is designated T-2 with annual tonnage of 5,927,825. It is also an HSS route from SR 522 to SR 530.

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

There is one Transit lane on the right in the vicinity of Arm 16.48-16.51. There are two-way-left-turn lanes in the vicinity of ARM 3.65-3.94, 4.70-4.95. There is one Climbing lane located on the left in the vicinity of 3.92-6.97.

Access Control Type(s):

There is Partial Access control in the vicinity of ARM 7.40 - 29.46. There is Managed Class 3 control in the vicinity of ARM 0.00-7.40.

Terrain Characteristics:

The terrain is rolling throughout the entire corridor segment.

Natural Features:

This corridor provides direct and indirect access to Historic and the many lake and river recreation attractions in Snohomish County such as the Snohomish National Historic District, the Lake Stevens Historic Museum, and Lake Stevens and the Snohomish River.

Adjacent Land Description:

The route traverses semiurban, rural and forested areas.

Environmental Issues:

As needed, upgrade culverts and ditches to help minimize erosion during large storms. Also, build storm water treatment facilities.

Major Economic Issues:

This corridor serves as a key connection between the Puget Sound and Canada.

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ASSETS

Pavement:

There are 47 lane miles of Hot Mix Asphalt on this segment of SR 9, there is approximately 1 lane mile of Bituminous Surface Treatment.

Signal:

There are 20 traffic signals located along this corridor as SR 9 intersects cross roads at 176th St. NE, Cathcart Way, SR 96/Lowell Rd/131st SE, Marsh Rd/Airport Way, 56th St. SE, SR 2 EB off/on ramps, SR 2 WB on ramp/New Bunk Foss Road, Hewitt Ave E/20th St. S, Market Place/Meridian St., SR 204, Lundeen Parkway, 28th St. NE/Soper Hill Road, SR 92, SR 528, Getchell Road/84th St. NE, SR 531/NE 172nd St., Eaglefield Dr/Crown Ridge Blvd, 204th St. NE, Highland Drive, and SR 530.

Structures:

There are nine structures in this corridor that consist of: one Concrete Box Girder, three Concrete Slab, three Pre-Tensioned Concrete Beam, one Steel Truss Concrete Box Girder Concrete T-Beam and one Post-Tensioned Box Girder.

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

Features Crossed:

SR 9 crosses the Snohomish River.

ITS Facilities:

There are no intelligent Transportation systems on this corridor.

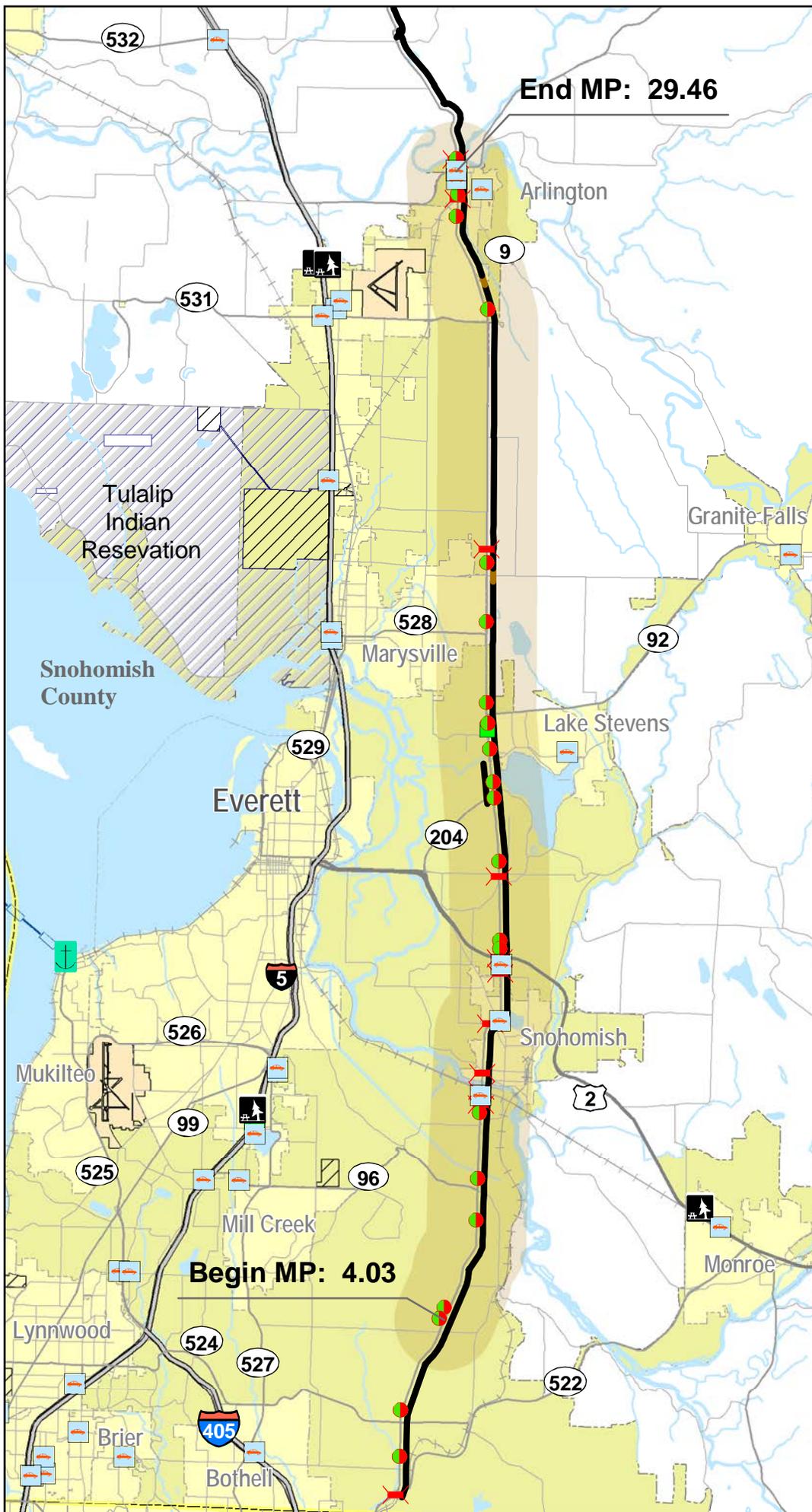
Railroad Crossings:

There are nine at-grade rail road crossings along this corridor.

Asset Other:

There are rail, transit, park and ride facilities in the general vicinity of this corridor.

HSP Congested Corridor Analysis
Assets



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

General Origin and Destination Travel Characteristics:

Users of this corridor include:

- Local residents traveling to work and school.
- Long-distance commuters traveling between Seattle and the outer suburbs.
- Customers of businesses along the route.
- People traveling to recreational facilities

Snow/ice Issues:

There are minor snow and ice issues in this location due to curbing, driveways and intersections.

Annual Average Daily Traffic:

Ranges from 10,000 to 34,600.

Significant Seasonal Average Annual Daily Traffic Changes:

This corridor is one of many corridors in the Puget Sound region that experience consistent high use throughout the year.

General Description of Major Average Annual Daily Traffic Locations:

On SR 9, the annual average daily traffic (AADT) in the vicinity of SR 204 is 33,200 and decreases to 24,100 In the vicinity of SR 92 and further decreases to 13,600 in the vicinity of SR 528.

Freight:

Freight Classification: T2

Yearly Tonnage: 6M

Truck Percentage of Annual Average Daily Traffic: 7.5% to 14.9%

Additional Usage Comments:

There are no additional comments.

Average Annual Societal Cost of All Collisions: Approximately \$16M

Collisions:

Severe No of Collisions: 26

Less Severe No of Collisions: 898

List Data Years: 2002 to 2004

HSP Congested Corridor Analysis

Usage

HSP Corridor Location

Safety Analysis Areas

- PAL Spot 07-09
- PAL Corridor 07-09
- HAC 07-09
- HAL Corridor 07-09
- HAL Spot 07-09

Freight Classification

- T-1
- T-2
- T-3

Traffic Sections AADT

- < 3,000
- 3,001 - 10,000
- 10,001 - 20,000
- 20,001 - 40,000
- 40,001 - 80,000
- 80,001 - 100,000
- 100,001 - 120,000
- > 120,000
- Trucks 10% and Over

Other Features

- U.S. Interstate
- U.S. Highway
- State Route
- Local Roads
- Railroad
- Tribal Lands
- Military Reservation
- City Limits
- Urban Area



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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:

The pavement in the corridor is 100% flexible. Of the flexible pavement 4% is composite. It would seem that for future paving hot-mix asphalt (HMA) will be the pavement of choice.

Pavements will be programmed targeting the lowest life cycle cost per the Washington State Pavement Management System "due" date.

Structures Condition and Needs:

There are 11 bridges within the limit of this corridor. Seven bridges that need preservation work include one steel beam bridge, one concrete box bridge, three steel thru truss bridges, and two pre stressed concrete girder bridges. There are 12 bridges within the limit of this corridor. Of these, one bridge needs scour repair, two bridges need painting, and five bridges need seismic retrofit. (This may include ramps and locally owned structures if any exist.)

Structures Management Strategies:

Preserve transportation infrastructure to achieve the lowest life cycle cost and prevent failure. Painting of two bridges are planned to be done in 20 years. Of those bridges that need seismic retrofit, one has been scheduled for retrofit in 2009. All other bridges are planned for preservation work after 20 years.

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. There are 4 unstable slopes identified along this corridor. Of the 4 unstable slopes all are active and being monitored. There is one weigh station identified for this corridor. There are no weigh station improvements planned for this corridor. There are two locations along SR 9 that have been identified as a major drainage issues. These locations are located along SR 9 in the vicinity of MP 21.75 and MP 28.30.

Additional Management Strategies:

Replace or rehabilitate electrical, electronic, and mechanical systems when they reach the end of their service life. Replace or rehabilitate drainage features that have structurally failed or fails to protect the roadway prism event of 10 years or less. Refurbish deficient safety rest area buildings, utilities and sites. Upgrade existing traffic control and monitoring systems as technology changes to avoid obsolescence and capture the benefits of new technology. Stabilize 100% of unstable slopes.

Improvement

Mobility Condition and Needs:

Snohomish County has grown by more than 37 percent since 1990. This influx of people has greatly increased congestion.

Mobility Management Strategies:

Providing additional through lanes and adding turn lanes to key intersections will relieve congestion and improve traffic flow on this heavily traveled route. Determine the most cost-effective improvements for this corridor. Near term strategies include investments that address system chokepoints. A combination of added general purpose lanes, high occupancy vehicle lanes, managed lanes, added Bus service will be developed and refined over the next 20 to 50 years improvement management strategies. This will be a 4/5 lane arterial with signalized intersections. Consideration should be given to improving the major intersections as a first order of work.

Safety Condition and Needs:

There are six High Accident Locations, along SR 9 in the vicinity of MP 14.03 to 14.15, 15.32 to 15.50, 15.66 to 15.86, 16.31 to 16.48, 21.88 to 22.02, and 28.09 to 28.21. There are two High Accident Corridors in the vicinity of MP 4.00 to 5.49 and 16.45 to 17.44.

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Safety Management Strategies:

Providing additional through lanes and adding turn lanes to key intersections will relieve congestion and improve safety on this heavily traveled route.

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).

Safety improvements that will be strategically considered include: Eliminate high accident locations on state highways through hazard mitigation. Eliminate Pedestrian Accident Locations on state highway through hazard mitigation. Eliminate high accident corridors using standards based highway safety solutions. Construct and improve intersection channelization and/or signals in compliance with federal guidelines to improve safety. Improve the geometrics of the Interstate system per Federal Highways Administration (FHWA)/WSDOT stewardship agreement. Eliminate major at-grade intersections on multi-lane, divided highways with speeds of 45 MPH or greater. Improve roadways where geometrics, traffic volumes, and speed limits indicated a high accident potential by instituting standards based highway safety solutions. Proactively address pedestrian safety along state highway segments that exhibit high pedestrian use and the potential for future accidents. Address highway safety through statewide low-cost, high benefit and short-term projects.

Environmental Condition and Needs:

Reduce impacts by addressing noise reduction, air quality, storm water, wetland mitigation, chronic environmental deficiencies, and fish barriers.

Environmental Management Strategies:

Environmental improvements that will be strategically considered include: Strategically prioritize and retrofit existing state transportation facilities for noise reduction. Implement all transportation control measures as identified by the Washington State Implementation Plan for Air Quality. Strategically prioritize repair, replace, and retrofit existing state transportation facilities for storm water runoff quality and quantity to reduce environmental impacts. Strategically prioritize and re-mediate wetland mitigation sites during the later stages of the monitoring phase to ensure they function as conditioned by the issuance of permits. Develop criteria, strategically prioritize and repair existing chronic environmental deficiencies of transportation facilities. Strategically prioritize, repair, replace and retrofit existing barriers to fish passage on the state highway system within 20 years as appropriate to reduce existing barriers to fish passage statewide.

Restrictions:

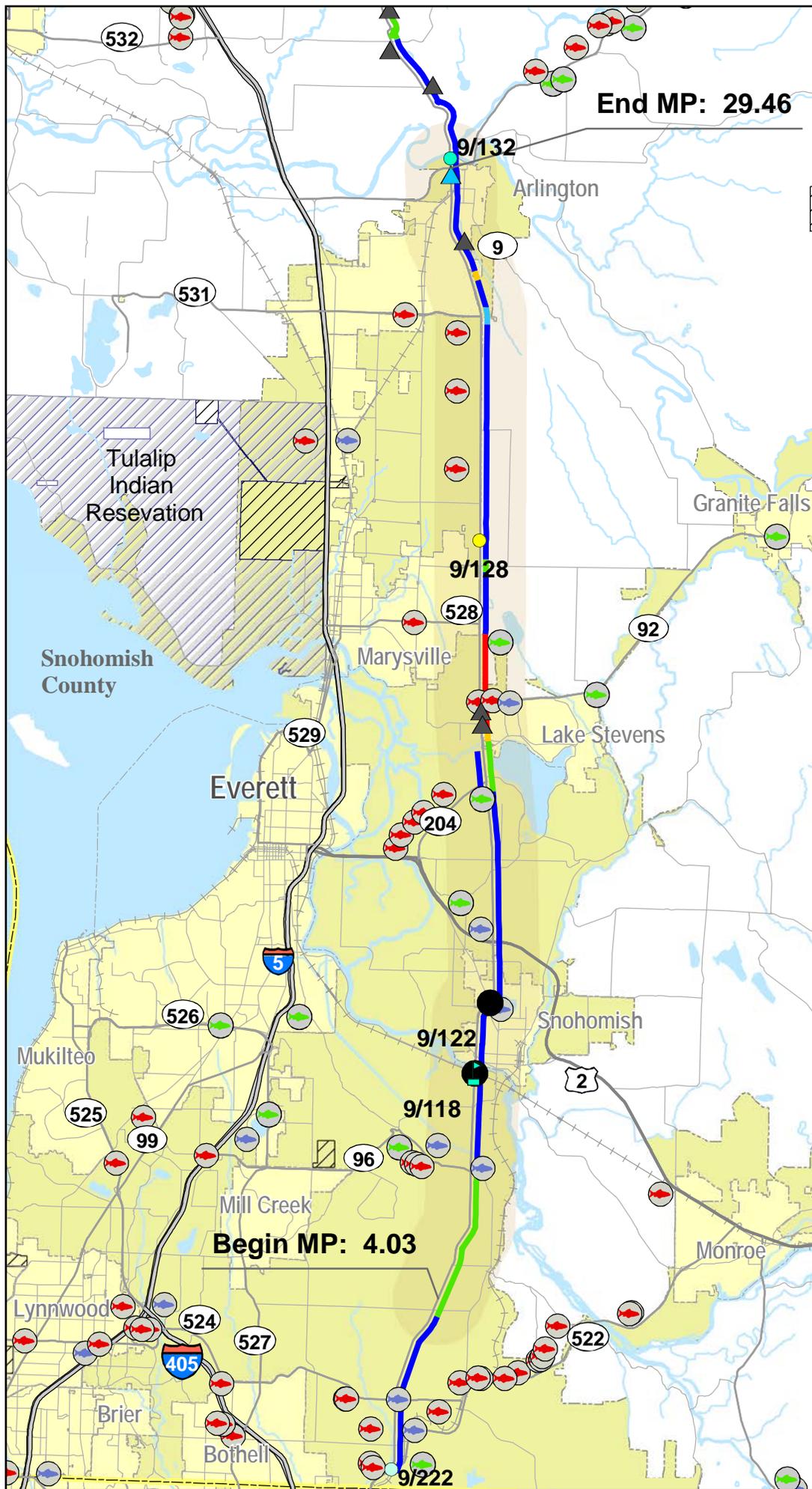
There are weight restrictions on SR 9 at mileposts 9.17 to 9.38 and 10.87.

50-Year Configuration:

The corridor will be progressively expanded to a five lane highway. The corridor needs will continue to be refined as future studies are accomplished.

HSP Congested Corridor Analysis Needs

- HSP Corridor Location
- Bridge Priorities**
 - Replacement
 - Special
 - Seismic
 - Scour
 - Painting
 - Miscellaneous
 - Bridge Deck
- Other Bridge Issues**
 - ◆ 2 Lane BW Narrow Bridge
 - Restricted Bridge
 - Posted Bridge
 - ▲ Vert. Clearance < 15.5'
- Unstable Slope**
 - ▲ Debris Flow
 - ▲ Erosion
 - ▲ Landslide
 - ▲ Rockfall
 - ▲ Settlement
- Fish Passage Barriers**
 - Require Repair
 - Little Gain
 - Undetermined
- Paving Due**
 - Past Due
 - 2005 - 2007
 - 2008 - 2009
 - 2010 - 2011
 - 2012 - 2026
- Other Features**
 - U.S. Interstate
 - U.S. Highway
 - State Route
 - Local Roads
 - Railroad
 - Military Reservation
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TIERED PROPOSED SOLUTIONS

Minimum Fix

Description:

SR 009 (BARM 4.03 to EARM 6.97): Widen to 4 lanes from 176th St. SE to SR 96 (\$17M - \$23M) (10-30% Collision Reduction + 85-90% Reduction in Daily Vehicle hours of Delay = \$90M Benefit).

- SR 009 (BARM 4.03 to EARM 29.57): ITS Improvements between 176th St. SE and SR 530 (\$15M - \$20M) (Cost - \$17M)(10-20 % Collision Reduction + 2-10% Reduction in Daily Vehicle hours of Delay = \$40M Benefit).

Delay Reduction: 85 to 90%

Collision Reduction: 10 to 30%

Deficient Concrete Lane Miles: None identified.

Total Estimate Cost: \$32 M to \$43 M

Cost Estimate Explanation:

The estimated Cost is the total of the costs for the solutions described for minimum fix.

Minimum Fix Benefits:

The preliminary analysis results indicate the proposed solutions will provide reductions in collisions and travel delay.

Moderate Fix

Description:

SR 9 (BARM 8.42 to EARM 12.14): Widen to 4 lanes from Marsh Rd. to SR 2 (\$71M to \$95M) (10 to 30% Collision Reduction + 85 to 90% Reduction in Daily Vehicle hours of Delay = \$126M Benefit).

SR 9 (BARM 12.14 to EARM 13.88): Widen to 4/5 lanes from SR 2 to Lake Stevens Road, and improve SR 2/SR 9 interchange (\$16M - \$21M) (10-30% Collision Reduction + 85 to 90% Reduction in Daily Vehicle hours of Delay = \$51M Benefit).

SR 9 (BARM 14.25 to EARM 16.48): Provide 4 thru lanes from 20th Street SE Vicinity to Lundeen Parkway (\$9M to \$11M) (10 to 30% Collision Reduction + 85-90% Reduction in Daily Vehicle hours of Delay = \$66M Benefit).

- SR 009 (BARM 15.42 to EARM 15.99): Construct new interchange between SR 9 and SR 204 at Frontier Village (\$27M to \$36M) (45-60% Collision Reduction + 85-90% Reduction in Daily Vehicle hours of Delay = \$51M Benefit).

Delay Reduction: 85 to 90%

Collisions Reduction: 10 to 60%

Deficient Concrete Lane Miles: None identified.

Total Estimate Cost: \$123 M to \$163 M

Cost Estimate Explanation:

The estimated Cost is the total of the costs for the solutions described for moderate fix.

Moderate Fix Benefits:

The preliminary analysis results indicate the proposed solutions will provide reductions in collisions and travel delay.

Maximum Fix

Description:

SR 9 (BARM 17.49 to EARM 19.26): Widen to 4 lanes from SR 92 to SR 528 (\$11M to \$14M) (10 to 30% Collision Reduction + 75 to 80% Reduction in Daily Vehicle hours of Delay = \$16M Benefit).

SR 9 (BARM 19.26 to EARM 26.05): Widen to 4 lanes from SR 528 to SR 531 (\$42M to \$56M) (10 to 30% Collision Reduction + 75 to 80% Reduction in Daily Vehicle hours of Delay = \$24M Benefit).

Delays Reduction: 75 to 80%

Collisions Reduction: 10 to 30%

Deficient Concrete Lane Miles: None identified.

Total Estimate Cost: \$53 M to \$70 M

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Cost Estimate Explanation:

The estimated Cost is the total of the costs for the solutions described for maximum fix.

Maximum Fix Benefits:

When this work is done, each intersection will be able to handle traffic more efficiently. Drivers turning left will no longer block traffic going through the intersection, and drivers turning right will no longer get stuck behind cars waiting to go straight. Also, the additional lanes through each intersection will allow more cars to pass through during green lights.

Off-System Solutions:

None identified.

Special Studies/Reports:

None identified.

Required Studies

Study with the city of Arlington the proper treatment of SR 9 within city limits.

Start/Completion Date of Study:

None identified.

Expected Results

The study would develop a strategy that would identify incremental phases of construction that would progressively build toward the 50 Year corridor vision.

Funded Projects within Corridor Limits

Project No	Title
100900V	SR 9/212th St. SE Vic. to SR 96 - Safety
100900F	SR 9/212th St. SE to 176th St. SE-Widen to Five Lanes, Stg 3
100914G	SR 9 Corridor Improvements
100910D	SR 9/SR 96 Vic to US 2 Vic - Paving
100912G	SR 9/Marsh Road Intersection Improvements
100915D	SR 9/56th St. SE and 42nd St. NE
100913D	SR 9/US 2 Interchange - I/C Modification
100913E	SR 9/New Bunk Foss Rd Vic to SR 204
100916B	SR 9/SR 204 Vic. to 60th St. NE - Paving
100917W	SR 9/Lake Stevens Weigh Station
100920I	SR 9/SR 528 Intersection - Signal
100923C	SR 9/Getchell Road Bridge - Seismic
100924A	SR 9/108th Street NE (Lauck Road)
100929C	SR 9/204th St. NE Vic. to SR 530
100929E	SR 9/204th Street NE Vic. - New culvert
100929S	SR 9/Junction Highland Drive - Signal

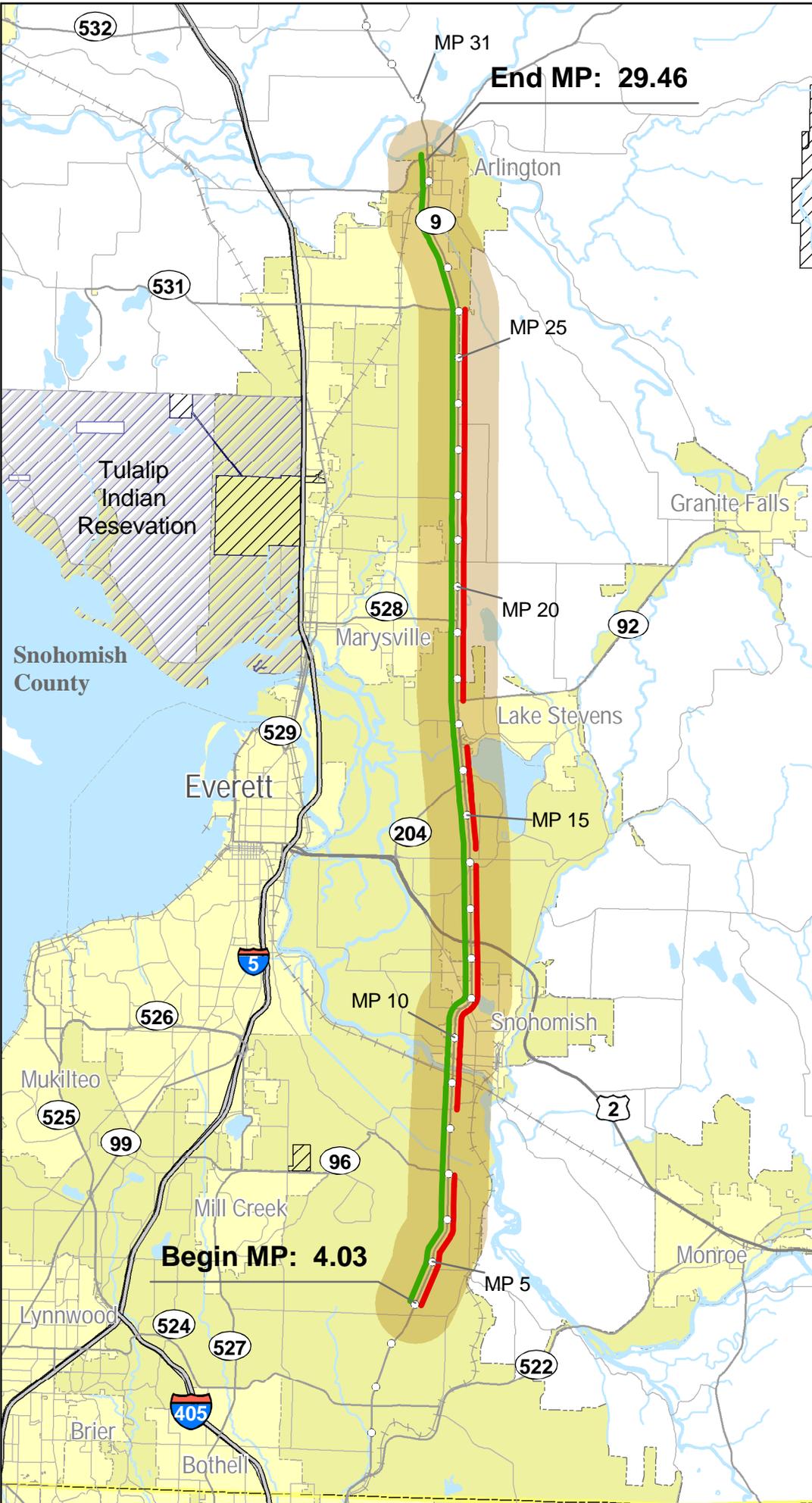
Additional Comments:

None identified.

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 NW Region Planning Library (internal)
Bridge Structures and Preservation Data - WSDOT Bridge
Transportation Data Office

HSP Congested Corridor Analysis Solutions



- HSP Corridor Location
- Solutions**
- Tier 1
- Tier 2
- Tier 3
- U.S. Interstate
- U.S. Highway
- State Route
- Milepost Marker
- Local Roads
- Railroad
- Military Reservation
- Tribal Lands
- City Limits
- Urban Area
- County Line

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