

**SR 520, I-5 (SEATTLE) TO SR 202(REDMOND VIC)
ARM 0.00 TO ARM 12.82, SR MP 0.00 TO SR MP 12.83**

CHARACTERISTICS

Segment Description:

SR 520, I-5 (Seattle) to SR 202(Redmond Vic) ARM 0.00 to 12.82, SR MP 0.00 to SR MP 12.83 .

County/Counties: King

Cities/Towns Included: There are number of cities located along the routes: Seattle, Medina, Hunts Point, Yarrow Point, Clyde Hill, Bellevue, and Redmond.

Number of lanes in the corridor: 2 to 6

Lane width: 12 to 24 feet.

Speed limit: 40 to 60 mph.

Median width: 4 to 157 feet.

Shoulder width: 3 to 24 feet.

Highway Characteristics:

SR 520 has been designated as HSS and as NHS for the entire corridor. SR 520 has been assigned the functional class Urban Principal Arterial. Also, the SR 520 corridor is designated T-2 with annual tonnage of 7,486,969.

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

There is one Transit lane on the left in the vicinity of Arm 0.97 - 1.09. There are high occupancy vehicle (HOV) lanes on the Left in the vicinity of ARM 4.18-6.90 and 7.53-10.47 and on the right in the vicinity of ARM 7.37- 9.47 and 9.78-11.17. There are Weave/Speed Change lanes located on the right in the vicinity of ARM 6.31-6.69, 7.20-7.34, 9.59-11.50 and on the left in the vicinity of ARM 7.05-7.28, 9.53-9.78. There is one Climbing lane located on the left in the vicinity of 10.62-11.65.

Access Control Type(s):

The access control is designated as Full Access Control.

Terrain Characteristics:

The terrain is considered Level in the vicinity of ARM 0.00 - 3.98, 5.87-8.89, 11.79-12.82 and Rolling in the vicinity of ARM 3.98 -8.87 and 8.89-11.79.

Natural Features:

SR 520 crosses Portage Bay, Union Bay before crossing Lake Washington on the third floating freeway to be built in the state. The Gov. Albert D. Rosellini Evergreen Point Bridge is over 1,000 feet longer than each of its predecessors: the Lacey V. Murrow Bridge completed in 1940, and the Hood Canal Bridge, which opened in 1961. The now four floating bridges in Washington State are the four longest in the world. The north end of SR 520 intersects with SR 202 in Redmond near the north end of Lake Sammamish.

Adjacent Land Description:

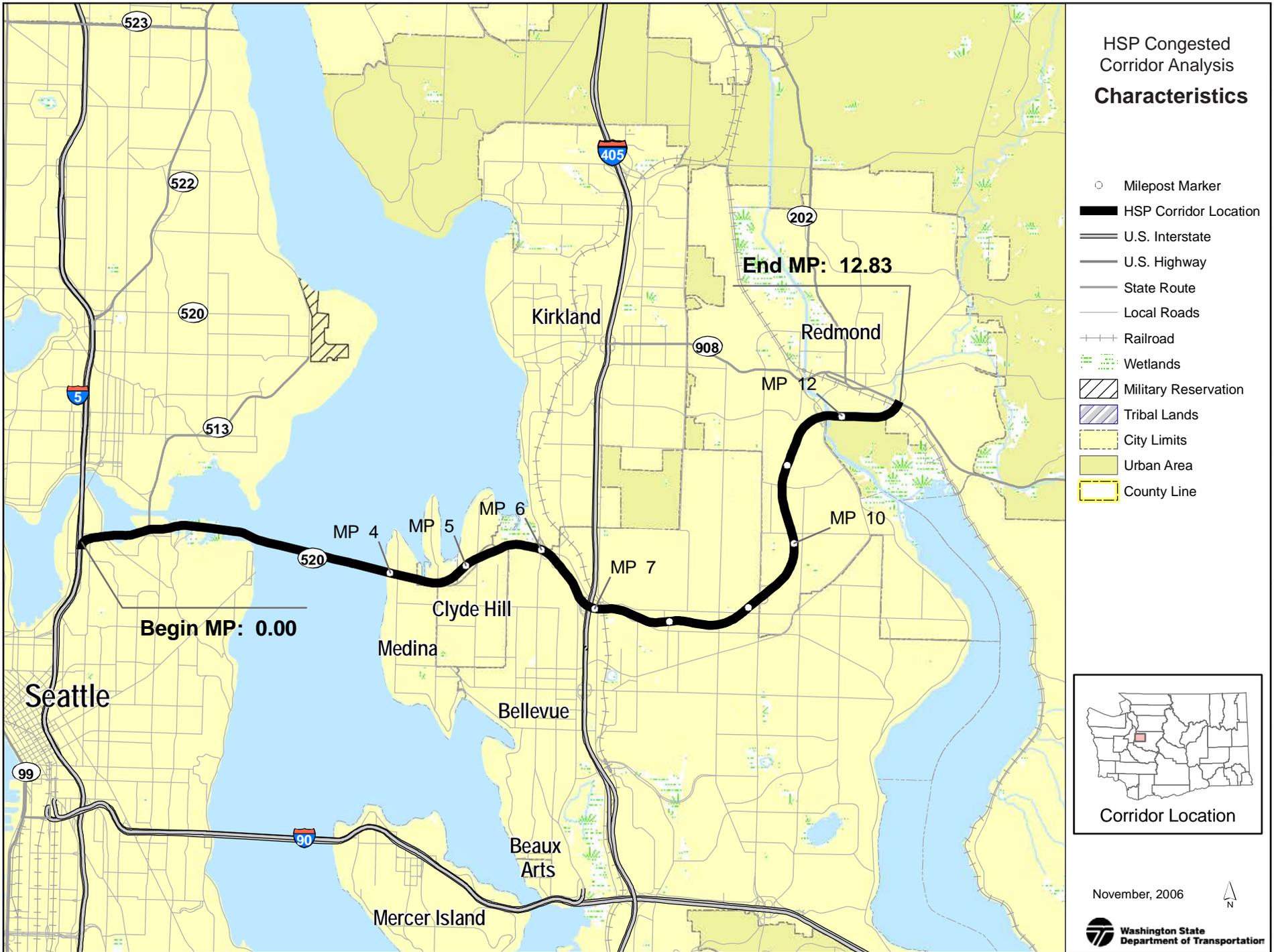
This route traverses urban and semi urban areas.

Environmental Issues:

The project team will take advantage of design opportunities on SR 520 to treat storm water runoff for the benefit of salmon and other aquatic species. Another planned improvement includes constructing noise walls to reduce the amount of noise pollution from SR 520 in surrounding neighborhoods.

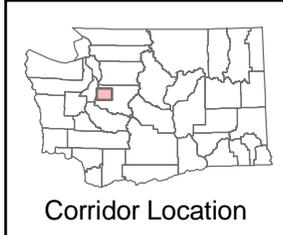
Major Economic Issues:

SR 520 links densely populated cities and some of the largest employers in the state(such as Microsoft). This corridor provides access to many recreational areas on both sides of Lake Washington and Lake Samamish.



HSP Congested Corridor Analysis Characteristics

- Milepost Marker
- █ HSP Corridor Location
- ══ U.S. Interstate
- ══ U.S. Highway
- ══ State Route
- ══ Local Roads
- +— Railroad
- ▨ Wetlands
- ▨ Military Reservation
- ▨ Tribal Lands
- ▨ City Limits
- ▨ Urban Area
- ▨ County Line



November, 2006



**SR 520, I-5 (SEATTLE) TO SR 202(REDMOND VIC)
ARM 0.00 TO ARM 12.82, SR MP 0.00 TO SR MP 12.83**

ASSETS

Pavement:

There are approximately 40 lane miles of Hot Mix Asphalt on this segment of SR 520 and approximately 2 lane miles of Portland Cement Concrete pavement.

Signal:

This corridor has 13 traffic signals located along this corridor at SR 512 ramp terminals .

Structures:

There are twenty structures in this corridor that consist of: five Concrete Box Girder, one Concrete Floating Pontoon Steel Truss Steel Beam Pre-Tensioned Concrete Beam, twelve Pre-Tensioned Concrete Beam, one Post-Tensioned Box Girder and one Steel Beam Pre-Tensioned Concrete Beam Concrete Slab.

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

Features Crossed:

SR 520 crosses Portage Bay, Union Bay and Lake Washington.

ITS Facilities:

SR 520 has an extensive ITS system in place, that includes Ramp Meters, variable message systems, Communication hubs, closed circuit television cameras (CCTV) , Data Stations, highway advisory radio and related conduit and fiber.

Railroad Crossings:

There are railroad crossings along SR 520 in the vicinity of ARM 7.08, 7.08 and 12.73. None are at-grade.

Asset Other:

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

HSP Congested Corridor Analysis

Assets

- Corridor Location
- Assets**
- Signalized Intersection
- At Grade Railroad Crossings
- Bridge
- Weigh Stations
- Rest Area Sites
- Park and Ride
- Ferry Terminal
- 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



November, 2006



**SR 520, I-5 (SEATTLE) TO SR 202(REDMOND VIC)
ARM 0.00 TO ARM 12.82, SR MP 0.00 TO SR MP 12.83**

USAGE

General Origin and Destination Travel Characteristics:

Users of this corridor include:

Local residents traveling to and from work and the University of Washington
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 no sections within this corridor which present a problem for normal snow/ice control.

Annual Average Daily Traffic:

Ranges from 67,455 to 129,317.

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:

The annual average daily traffic (AADT) on SR 520 is consistently around 102,000 jumping to over 129,000 where it interchanges with I-405. The AADT remains high up to the far east end where it decreases to 67,500.

Freight:

Freight Classification: T2

Yearly Tonnage: 7.5M

Truck Percentage of Annual Average Daily Traffic: 2.9%

Additional Usage Comments:

There are no additional comments.

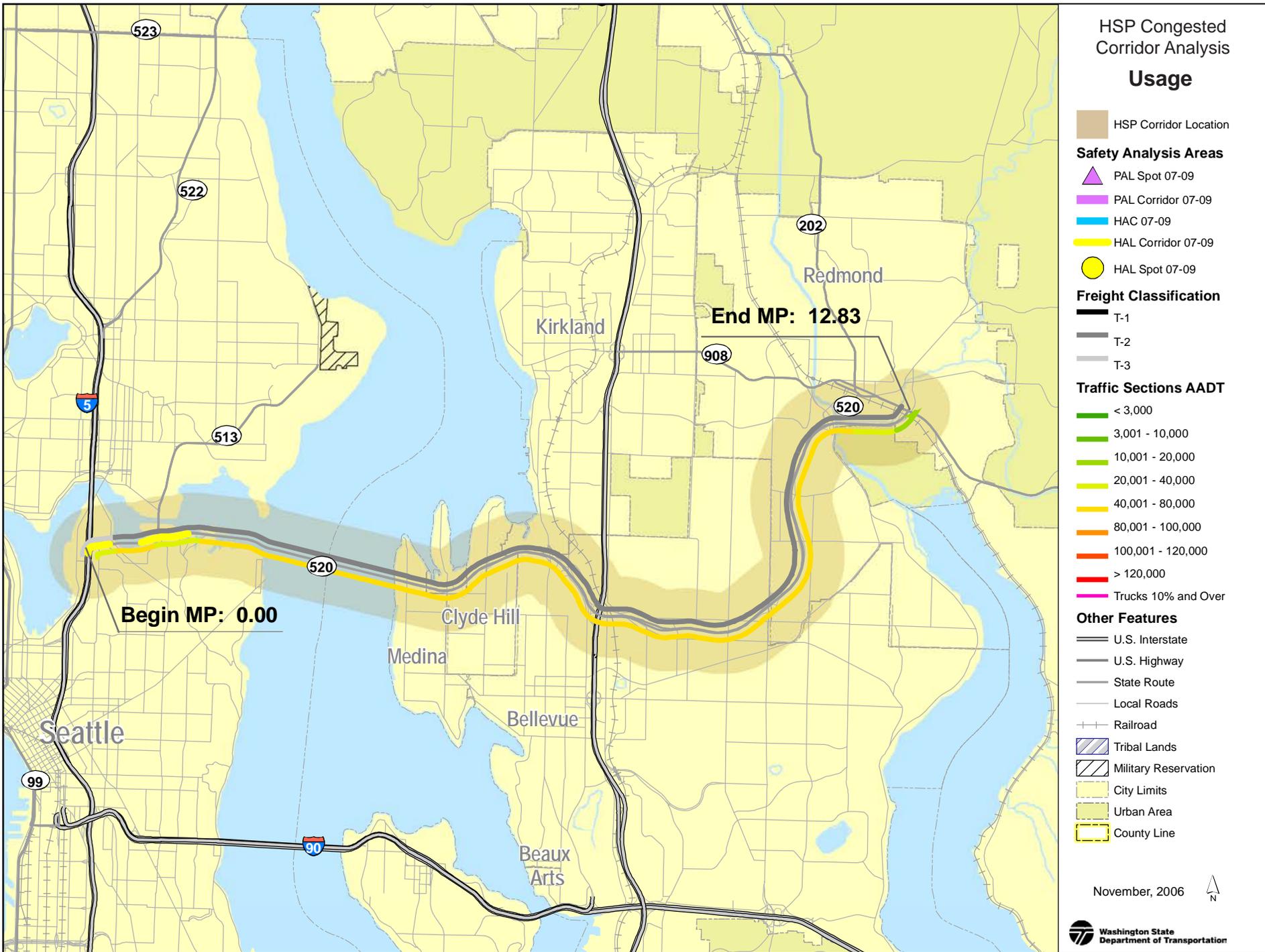
Average Annual Societal Cost of All Collisions: Approximately \$10M

Collisions:

Severe No of Collisions: 4

Less Severe No of Collisions: 1,440

List Data Years: 2002 to 2004



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 71% flexible and 29% rigid. Of the flexible pavement none 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:

This corridor has 51 structures including Lake Washington floating bridges. The bridges that need preservation work include one concrete floating pontoon bridge, five concrete box bridges, and seven pre-tensioned concrete beam bridges. One bridge of concrete box type needs replacement of existing polyester overlay, while the floating bridge needs complete replacement. 11 other bridges need seismic retrofit. A one-and-a-half-mile long transportation facility, the 42 year-old SR 520 Evergreen Point Bridge is very vulnerable to windstorms and earthquakes and needs to be replaced. (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. All 13 bridges that need preservation work are planned for work within next 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 no unstable slopes identified along this corridor. There were no weight facilities identified for this corridor. There are no weigh station improvements planned for this corridor. There are two locations along SR 520 that have been identified as a major drainage issues. These locations are located along SR 520 in the vicinity of MP 0.73 and MP 0.75.

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:

If the floating bridge were to suffer a seismic or storm failure, travel time between Seattle and Redmond would nearly double from an average of 33 minutes to 55 minutes during the evening commute.

Mobility Management Strategies:

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. Provide a dedicated high occupancy vehicle (HOV) lane to move transit and carpools (in the 6-Lane Alternative) and provide full shoulders for disabled vehicles and emergency aid. Pontoons will be built to carry future high-capacity transit.

Safety Condition and Needs:

There are two High Accident Locations, along SR 520 in the vicinity of MP 0.00 to 0.31 and 0.72 to 1.30.

**SR 520, I-5 (SEATTLE) TO SR 202(REDMOND VIC)
ARM 0.00 TO ARM 12.82, SR MP 0.00 TO SR MP 12.83**

Safety Management Strategies:

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:

Existing Environmental Condition

Stormwater - Due to the age of the highway, much of the storm water runoff from SR 520 currently drains untreated to adjacent lakes, streams, and wetlands. Habitat - SR 520 is built in or adjacent to sensitive areas, such as wetlands in the Washington Park Arboretum and Yarrow Bay, that provide habitat for ESA- listed salmon and other species. Noise - Noise levels in residential areas along much of SR 520 currently exceed federal and state criteria for noise. Neighborhoods - SR 520 cuts through a number of neighborhoods, creating a barrier to movement within the communities.

Environmental Management Strategies:

Environmental Improvement Management Strategies:

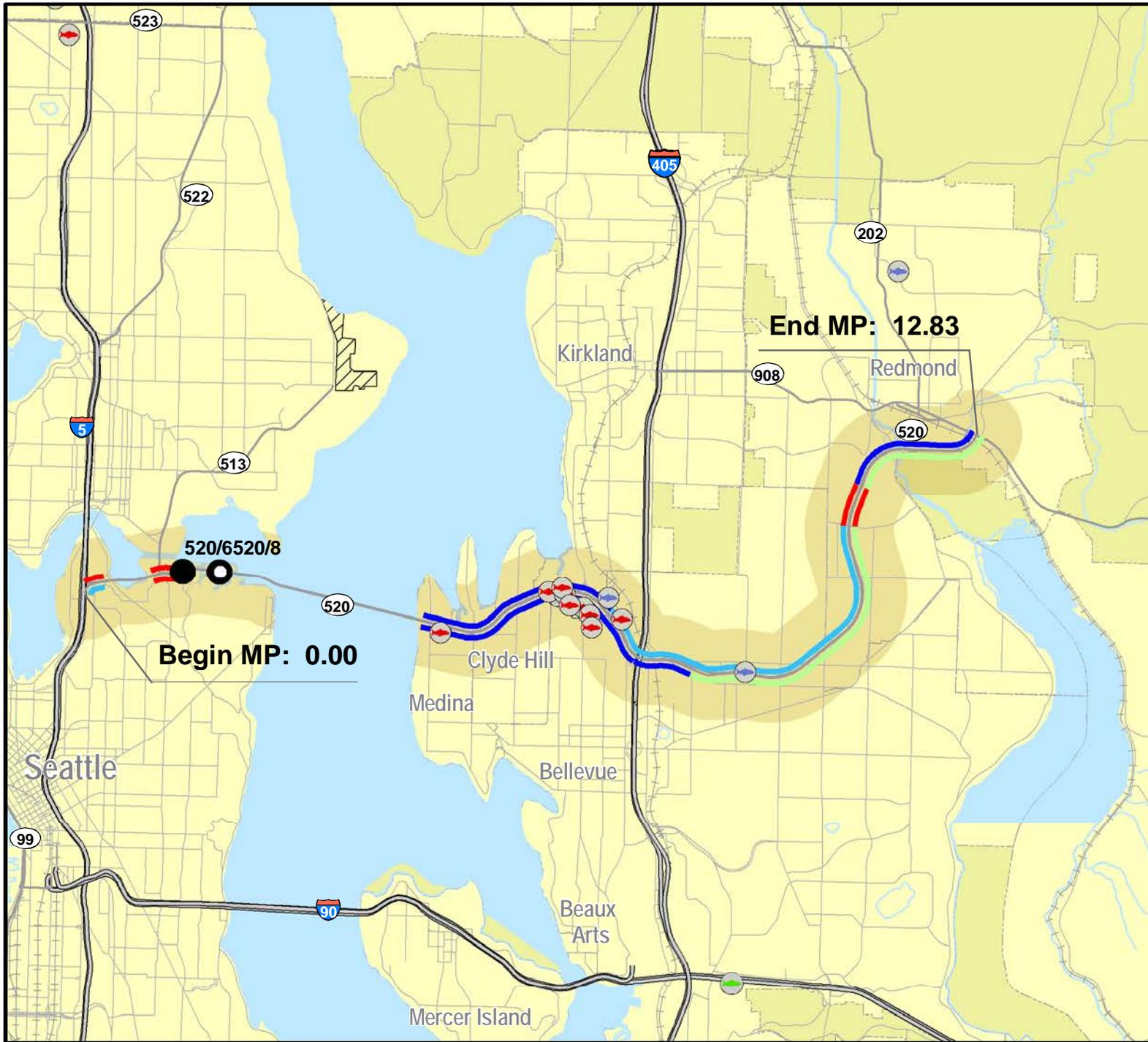
Stormwater - Stormwater will be treated for both existing and new highway pavement and will meet the new stringent regulations. Habitat - WSDOT is working with all of the agencies that regulate aquatic resources to minimize the effects of the project on wetlands, streams, and Lake Washington. The new bridge will have fewer piers, the unused ramps near the Arboretum will be removed, and habitat for salmon will be enhanced. Noise - Sound walls will be built as part of the project, reducing noise levels substantially from current levels. Neighborhoods - Bike and pedestrian trails will connect from Montlake to Bellevue. The 6-lane plan includes lids to provide enhanced connectivity for the Roanoke, Portage Bay, North Capitol Hill, Montlake, Medina, Clyde Hill, Hunts Point and Yarrow Point neighborhoods.

Restrictions:

There are weight restrictions on SR 520 from MP 1.63 to 3.98.

50-Year Configuration:

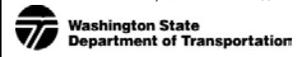
The corridor will be progressively expanded to provide for high occupancy vehicle (HOV) and transit with new SR 520 to I-5 express lane connections and to provide for future High Capacity Transit across Lake Washington.



HSP Congested Corridor Analysis Needs

- HSP Corridor Location
- Bridge Replacement Priority**
 - Replacement
 - Seismic
 - Special
 - Scour
 - Painting
 - Miscellaneous
 - Bridge Deck
- Other Bridge Issues**
 - 2 Lane BW Narrow Bridge
 - Restricted Bridge
 - Posted Bridge
 - Vert. Clearance 15.5' Or Less
- Fish Barriers**
 - Require Repair
 - Little Gain
 - Undetermined
- Unstable Slope**
 - Debris Flow
 - Erosion
 - Landslide
 - Rockfall
 - Settlement
- Paving Due**
 - Past Due
 - 2005 - 2007
 - 2008 - 2009
 - 2010 - 2011
 - 2012 - 2026
- Other Infrastructure**
 - U.S. Interstate
 - U.S. Highway
 - State Route
 - Local Roads
 - Railroad
 - Military Reservation
 - Tribal Lands
 - City Limits
 - Urban Area
 - County Line

November, 2006



**SR 520, I-5 (SEATTLE) TO SR 202(REDMOND VIC)
ARM 0.00 TO ARM 12.82, SR MP 0.00 TO SR MP 12.83**

TIERED PROPOSED SOLUTIONS

Minimum Fix

Description:

SR 520 (BARM 1.05 to EARM 4.59): Construct new six lane bridge and approaches from Montlake Blvd. on the west side of the lake to 84th Ave. NE on the east side.(\$1.5 Billion -\$1.9 Billion) (10-30 % Collision Reduction + 50-60% Reduction in Daily Vehicle hours of Delay = \$114M Benefit).

SR 520 (BARM 10.73 to EARM 11.79): 51st to West Lake Samamish Parkway - Add eastbound Auxiliary Lane.(\$3M-\$4M) (10-30 % Collision Reduction + 45-50% Reduction in Daily Vehicle hours of Delay = \$7M Benefit).

Delay Reduction: 45 to 60%

Collision Reduction: 10 to 30%

Deficient Concrete Lane Miles: None identified.

Total Estimate Cost: \$1.5 Billion to \$1.9 Billion

Cost Estimate Explanation:

The estimated cost range for the project between Montlake Blvd. and 84th Ave northeast is Year of expenditure (YOE) from Cost Estimate Validation Process (CEVP). The estimated cost for the other project is in 2005\$.

Minimum Fix Benefits:

These Project Benefits generally apply to the Minimum, Moderate, and Maximum solutions. Reduces seismic and storm damage risks to the Evergreen Point and Portage Bay bridges • Improves safety and reliability by adding full shoulders • Adds highway capacity and serves 25% more people in 3% more vehicles during the evening peak travel time as compared to the No Build alternative • Improves travel time and reliability for high occupancy vehicle (HOV) and transit by adding high occupancy vehicle (HOV) lanes and completing the high occupancy vehicle (HOV) system between Seattle and Redmond • Provides high occupancy vehicle (HOV) and transit benefit with new SR 520 to I-5 express lanes connection during morning and evenings • Enhances community connections with freeway lids • Improves environmental quality by removing “ramps to nowhere” in Arboretum area, improving water quality by treating storm water, and reducing noise in communities by adding sound walls • Creates new path for bicycles and pedestrians • Accommodates future High Capacity Transit across Lake Washington.

Moderate Fix

Description:

SR 520 (BARM 0.00 to EARM 1.05): Construct new six lane connection between I-5 and Montlake Blvd. This includes reconstruction of the Portage Bay Bridge.(\$545M-\$655M) (10-30 % Collision Reduction + 50-60% Reduction in Daily Vehicle hours of Delay = \$35M Benefit).

Delay Reduction: 50 to 60%

Collisions Reduction: 10 to 30%

Deficient Concrete Lane Miles: None identified.

Total Estimate Cost: \$545 M to \$655 M

Cost Estimate Explanation:

The estimated cost range for moderate fix is YOE\$ from Cost Estimate Validation Process (CEVP).

Moderate Fix Benefits:

See description.

Maximum Fix

Description:

SR 520 (BARM 4.59 to EARM 6.94): Add high occupancy vehicle (HOV) lanes between 84th Ave. NE and I-405.(\$255M-\$310M)(10-30 % Collision Reduction + 2-10% Reduction in Daily Vehicle hours of Delay = \$20M Benefit).

Delays Reduction: 2 to 10%

Collisions Reduction: 10 to 30%

Deficient Concrete Lane Miles: None identified.

Total Estimate Cost: \$255 M to \$310 M

**SR 520, I-5 (SEATTLE) TO SR 202(REDMOND VIC)
ARM 0.00 TO ARM 12.82, SR MP 0.00 TO SR MP 12.83**

Cost Estimate Explanation:

The estimated cost range for maximum fix is YOES\$ from Cost Estimate Validation Process (CEVP).

Maximum Fix Benefits:

See description.

Off-System Solutions:

None identified.

Special Studies/Reports:

Trans-Lake Washington Study - Technical Report.

Required Studies

SR 520 Congestion Study - I-405 to SR 202

Start/Completion Date of Study:

None identified.

ExpectedResults

Develop Minimum, Moderate and Maximum fix congestion solutions.

Funded Projects within Corridor Limits

Project No	Title
852000T	SR 520 Bridge Replacement and high occupancy vehicle (HOV) Project -Partially funded ONLY
152001E	SR 520/10th Ave to Montlake I/C
152001F	SR 520/Montlake to Midspan Evergreen Point Bridge
152002D	SR 513 - Portage Bay Vicinity
152002E	SR 520/SR 513 Interchange Ramp - Paving
152005P	SR 520/Montlake Interchange Flyer Stop
152012L	SR 520/Evergreen Point Bridge - Seismic
152020B	SR 520/104th Ave NE to 124th Ave NE I/C
152028P	SR 520/108th Avenue NE to W Lake Sammamish Parkway Interchange Paving
152031A	SR 520/124th Ave NE Interchange to W Lake Sammamish Pkwy - high occupancy vehicle (HOV) Lanes
152031D	SR 520/Bike Path - Bellevue to Redmond
152033B	SR 520/westbound (WB) Off-Ramp to NE 51st St.
152032D	SR 520/NE 40th St. Undercrossing
152040A	SR 520/W Lake Sammamish Pkwy. to SR 202 - high occupancy vehicle (HOV) and Interchange Stage 3
152039D	SR 520/SR 202 Interchange

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
- Other Features**
- U.S. Interstate
- U.S. Highway
- State Route
- Milepost Marker
- Local Roads
- Railroad
- Tribal Lands
- Military Reservation
- City Limits
- Urban Area
- COUNTY

November, 2006

