I-5 to Medina: Bridge Replacement and HOV Project

We will build a safer, more reliable SR 520 corridor from I-5 to Medina with the following features:

- New bridge structures over Portage Bay and Lake Washington that can withstand earthquakes and windstorms.
- A six-lane corridor with two general-purpose lanes and one transit/HOV lane in each direction.
- Community-connecting lids at 10th Avenue East and Delmar Drive East, and at Montlake Boulevard.
- Improved transit operations throughout SR 520 and on Montlake Boulevard.
- A 14-foot-wide bicycle/pedestrian path on the new floating bridge that connects to local and regional trails in Seattle.

Project schedule:

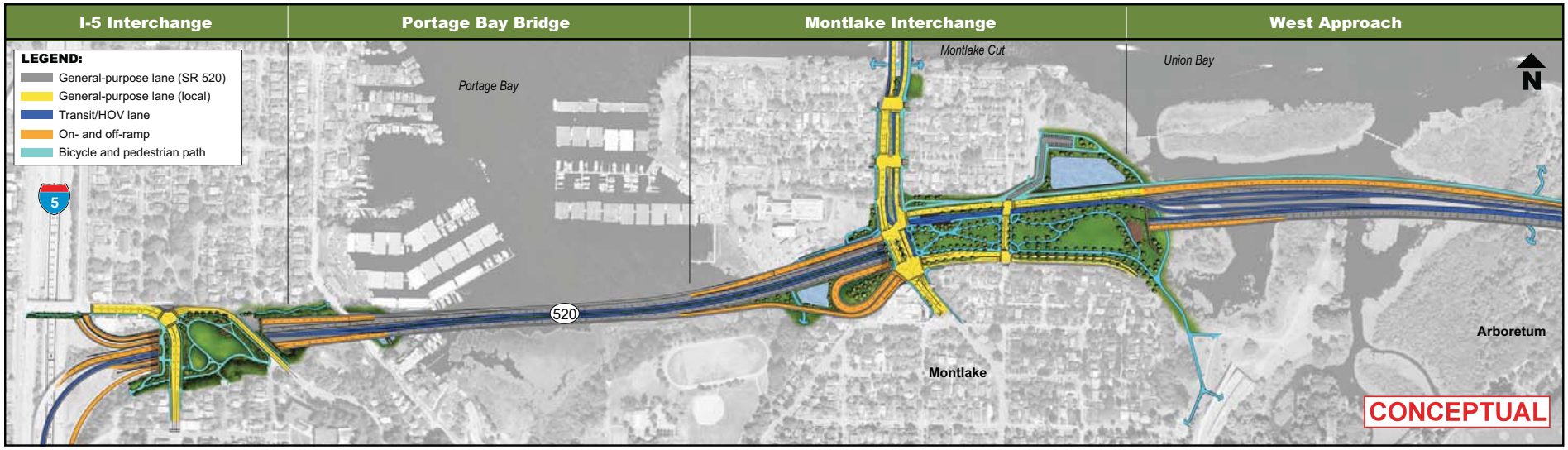
Floating bridge construction

- Construction start: Spring 2012 on Lake Washington
- Open to traffic: As soon as late 2014

I-5 to floating bridge

- Unfunded for construction

I-5 to Medina project - Preferred alternative



Key Features

Lowers floating bridge and maintains navigation access

- Lowers floating bridge to approximately 20 feet above water in the middle of the lake, compared to previously evaluated options.
- Provides 44-foot clearance at west high rise and 70-foot clearance at east high rise to maintain navigational clearance.

Ready for light rail when the region chooses to fund it in the future.

- Provides a space between west approach bridges for future light rail connection to the University Link station.
- Designs transit/HOV direct-access ramps at Montlake Boulevard that can accommodate future light rail.
- Floating bridge allows for conversion of transit/HOV lane to light rail.
- Supplemental pontoons can be added to accommodate additional weight of light rail in the future.

Restores park area and connections next to the Washington Park Arboretum

- Removes existing ramps in the Arboretum.
- Minimizes effects on Foster Island by having fewer columns compared to previously evaluated options.
- Raises profile of SR 520 over Foster Island compared to existing condition to improve pedestrian connection.
- Maintains recreational access to Union Bay.
- Replaces parkland converted to highway use.

Creates pedestrian-friendly urban interchange at Montlake Boulevard

- Provides extended lid from Montlake Boulevard east to the shoreline to reconnect the Montlake neighborhood and maximize open space and pedestrian/bicycle connections.
- Consolidates westbound off-ramps and transit/HOV direct-access ramps to north side of lid.
- Narrows on- and off-ramps compared to previously evaluated options by designing to city street standards beginning at east edge of the lid.

Provides transit connections and priority

- Provides transit/HOV direct-access ramps and transit priority from SR 520 at key intersections.
- Provides regional bus stops on Montlake lid to facilitate access from Seattle neighborhoods to the Eastside.
- Adds second Montlake Bridge, allowing for two dedicated transit/HOV lanes across the Montlake Cut.
- Connects to a pedestrian/bicycle overcrossing from the Montlake Triangle to the University Link station.
- Converts two lanes on Montlake Boulevard to transit/HOV lanes.

Reduces width and noise from Portage Bay Bridge

- Uses westbound shoulder between Montlake and I-5 as a managed lane during peak periods.
- Operates traffic at 45 mph.
- Designs SR 520 from Montlake to I-5 as a parkway.

Washington State Department of Transportation

City of Seattle

Partnering with the City of Seattle

In 2012, WSDOT will continue to ensure the City of Seattle maintains a meaningful role and continued involvement in the I-5 to Medina project. This partnership is outlined in a series of activities included in a Memorandum of Understanding (MOU), signed in October 2011.

Some of the activities outlined in the MOU include:

- Second Bascule Bridge Planning
- Neighborhood Traffic Management Planning
- Community Construction Management Planning
- Seattle Community Design Process

A complete list of activities and commitments can be found in the MOU online at:
www.wsdot.wa.gov/Projects/SR520Bridge/Library/technical.htm

SR 520 staff explains design opportunities at a 2011 Seattle Community Design Process meeting.

Washington State Department of Transportation

SDOT
Seattle Department of Transportation

Neighborhood Traffic Management Plan

What is it?

- SDOT and WSDOT will work with Seattle neighborhoods to develop a Neighborhood Traffic Management Plan for the SR 520 project area.

Why are you doing this now?

- Neighborhood traffic related to the SR 520 project is a topic that WSDOT and the city agreed to address through a recent agreement. Developing a plan before construction begins is good practice.

What will it do?

- Engage the communities in the process of identifying concerns and solutions through an advisory group.
- Define traffic management measures to proactively reduce SR 520 project construction effects and develop long-term traffic management strategies.
- Work in conjunction with the SR 520 project preferred alternative and existing city of Seattle traffic management practices.

What are the next steps?

1. SDOT and WSDOT are finalizing a timeline and the process for this work.
2. A technical team is beginning to collect existing information to help guide the community process.
3. SDOT and WSDOT are also working together to implement traffic calming through the Arboretum in early 2012.

How can I get involved?

- Look for information about how to get involved in the community process and other public outreach opportunities for the plan this summer.
- You can email Jennifer.Wieland@Seattle.gov to express interest.

Washington State Department of Transportation

City of Seattle

Second bascule bridge planning process

What work is under way?

- As part of a Memorandum of Understanding between the City of Seattle and WSDOT, a technical team is working to identify "triggers" that would signal a need to move forward with design and construction of a second Montlake bascule bridge.
- The technical team includes city of Seattle representatives, WSDOT, and King County Metro.
- The metrics under consideration include:
  - Transit speed and reliability
  - Bicycle and pedestrian level of service
  - SR 520 operations

What will happen with these triggers?

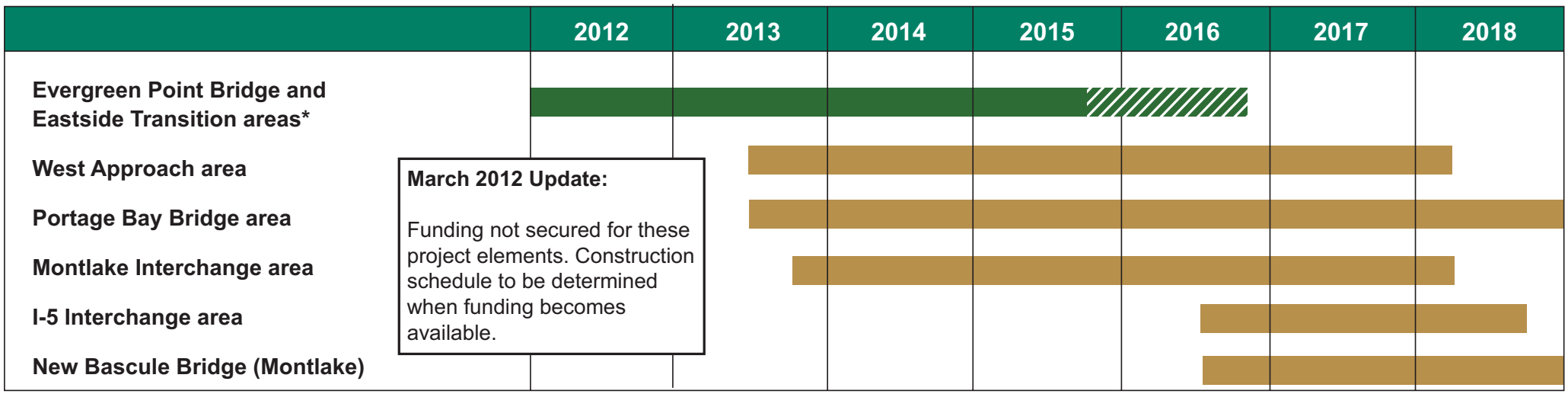
- The City of Seattle, WSDOT, and partner agencies will review the technical work and establish a joint decision-making process to determine how to move forward.

How can I learn more?

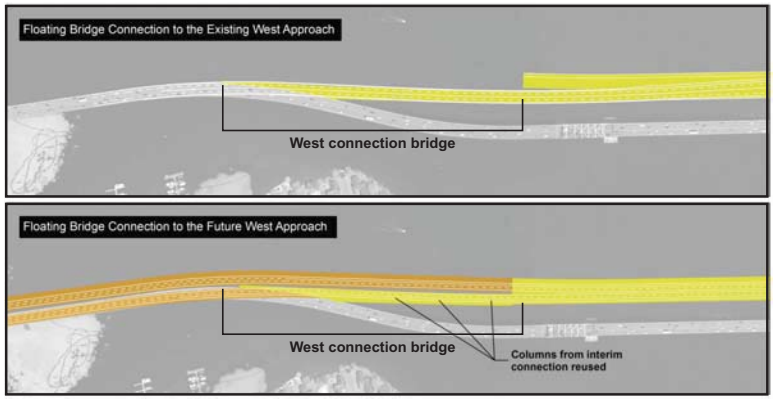
- When the preliminary technical work is complete, there will be public conversations with the Seattle City Council and interested stakeholders to discuss results and recommendations.
- Look for more information in summer 2012.

View of the existing Montlake bridge.

I-5 to Medina project construction sequencing



Source: *I-5 to Medina project Final Environmental Impact Statement, Exhibit 1-5 - "Preferred Alternative Construction Durations and Stages"*
Note: ** Bridge opening as early as 2014; construction would be finalized in 2015. Final completion in 2016.*

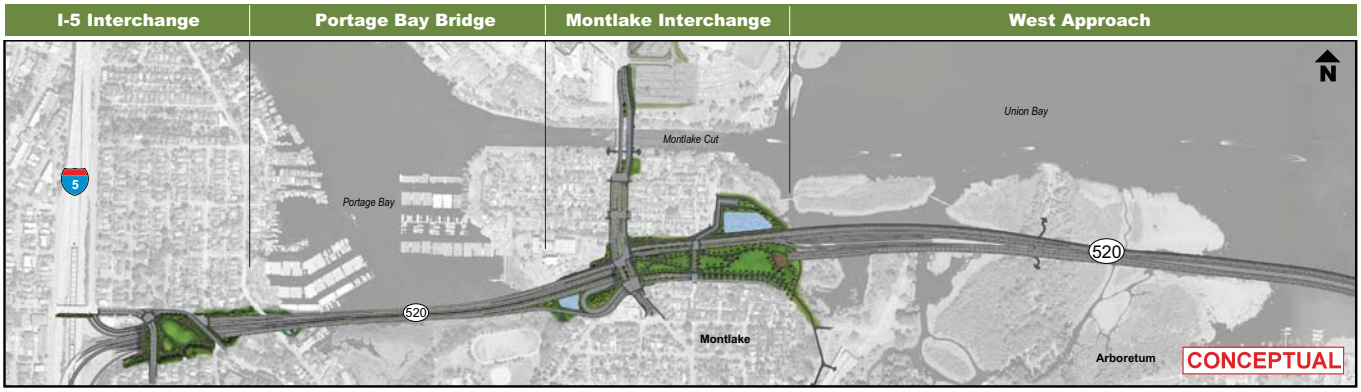


- We are committed to completing the SR 520 corridor from I-5 to Redmond, with funding needed for I-5 to the floating bridge. We are actively pursuing federal funding for the next phase of construction.
- As shown in the I-5 to Medina project final environmental impact statement, the next phase of construction would likely be a new West Approach Bridge. Given that the new floating bridge includes a west connection bridge (interim) to the old structure, WSDOT plans to replace the vulnerable West Approach with a new structure as soon as possible.

Floating bridge and west connection bridge
West approach bridge

How will we fund I-5 to the floating bridge?

Preferred Alternative



Earlier this year, WSDOT received direction from the Legislature to analyze how I-90 tolling could manage traffic and provide funding for SR 520 projects from I-5 to the floating bridge. By passing ESHB 2190, the Legislature has provided $1.5 million in funding to begin the environmental process and community outreach to study I-90 tolling.

Additionally, we have also applied for a federal Transportation Infrastructure Finance and Innovation Act (TIFIA) loan, which would provide funding to construct the north half of the West Approach bridge.

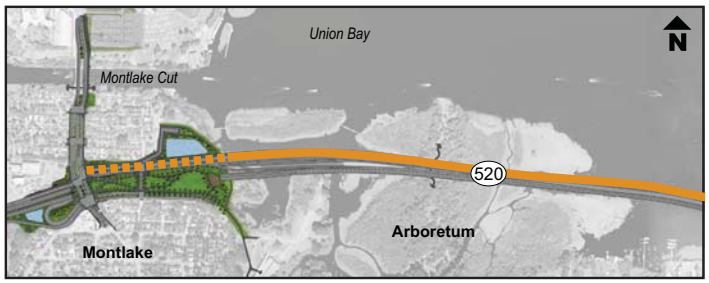
We will continue to work with the Legislature to seek additional funding for construction west of the SR 520 floating bridge. WSDOT is committed to implementing the full corridor shown above in the I-5 to Medina project preferred alternative.

North half of the West Approach bridge

Why would WSDOT move forward with the West Approach bridge next?

The two remaining vulnerable, unfunded structures in the SR 520 Bridge Replacement and HOV Program are the West Approach and the Portage Bay bridges in Seattle.

Moving forward with the north half of the West Approach bridge would continue to build the corridor westward, replacing a portion of the vulnerable West Approach Bridge and maximizing available funding to begin closing the program's $2 billion funding gap.



North half of West Approach bridge would be funded by TIFIA loan.

Construction of the south half of the west approach and Montlake lid would be built with additional future funding.

CONCEPTUAL

What additional work would be funded with West Approach bridge construction?

If the north half of the West Approach bridge were funded, construction would also begin on the following mitigation projects:

- Public park at Bryant Building site
- Union Bay Natural Area restoration
- WSDOT Peninsula wetland restoration and ownership transfer
- Washington Park Arboretum improvements
- West Approach Community Construction Management Plan

How will the public be involved in the West Approach bridge?

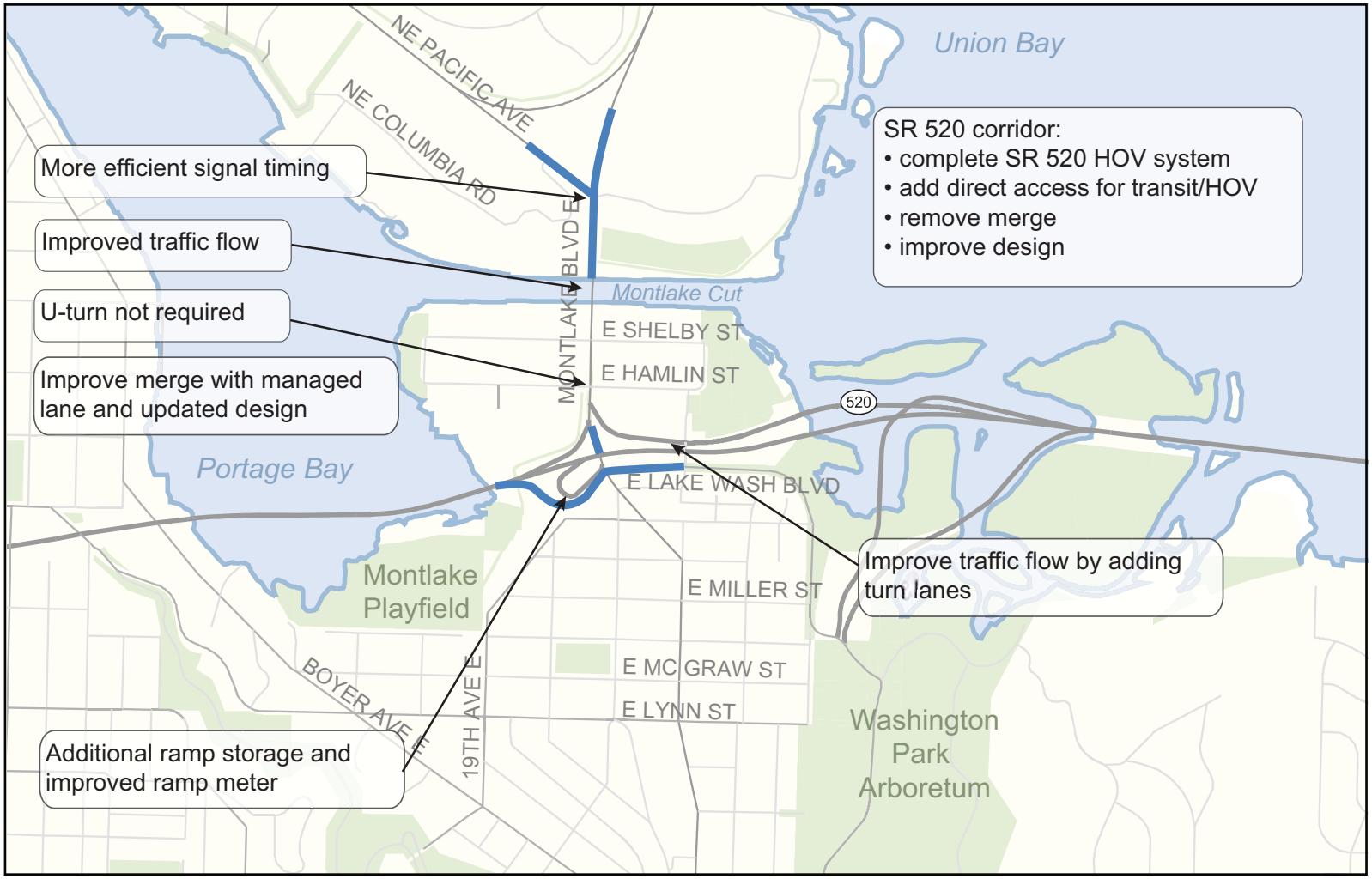
More work will be done through the Seattle Community Design Process and through the City of Seattle Memorandum of Understanding to determine other design features that could be included in the West Approach bridge.

Future design discussions will help determine how or whether we:

- Integrate the stormwater pond with a park
- Create usable space under the bridge structure
- Improve the buffer between homes and highway
- Separate the historic Lake Washington Boulevard from arterial traffic
- Evaluate traffic operations at the Montlake Interchange
- Connect bicycles, pedestrians and transit to SR 520

How is traffic affected now and in future?

PREFERRED ALTERNATIVE TRAFFIC



PM Peak Period

DRAFT
November 2011

CONCEPTUAL
DRAFT - THIS SKETCH ONLY DEPICTS THE IDEA. ENGINEERING, OPERATIONS AND ENVIRONMENTAL ANALYSIS REQUIRED.

Washington State Department of Transportation

STATE ROUTE 520

How is traffic affected now and in future?

EXISTING TRAFFIC CONGESTION

PM Peak Period

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November 2011

CONCEPTUAL
DRAFT - THIS SKETCH ONLY DEPICTS THE IDEA. ENGINEERING, OPERATIONS AND ENVIRONMENTAL ANALYSIS REQUIRED.

Washington State Department of Transportation

STATE ROUTE 520

SR 520 Sustainability+Urban Design Strategies and Outcomes for Westside Design and Construction

The SR 520 Bridge Replacement and HOV Program is the first program in the U.S. working to implement measurable sustainability criteria across the design, construction, and operational phases of the project as well as across an entire corridor. These criteria seek to improve the environmental, social, and economic welfare of communities affected by construction and operation of the corridor.

The Westside project is the final segment of the SR 520 Program and represents nearly 50% of the cost of the entire program. The project is a unique opportunity to fully integrate urban design and sustainability principles into design and construction. Strategies to accomplish this are identified for the following areas and lead to three primary outcomes.

CONNECTIVITY

- Increase transit and HOV access.
- Complete regional bicycle and walking facilities.
- Connect communities situated north and south of the corridor.
- Help complete the Olmstedian vision of connected parks and greenways.
- Improve public access to Lake Washington and Portage Bay shorelines.

ECOLOGY

- Restore natural habitat.
- Collect, treat, and return water run-off to the natural environment.
- Reduce noise and pollution during construction and for the life of the corridor.
- Reduce the accumulation of greenhouse gases (GHG) from construction materials, traffic delays during construction, and on-going operation of the corridor.

MATERIALS

- Reduce use of new materials through use of recycled materials and product innovation.
- Obtain 'locally sourced' materials to help the regional economy and reduce transportation-generated GHG.
- Reduce the use of carbon-intensive materials.
- Select materials and systems on a life-cycle cost basis.

OUTCOMES

- Improved transit, cycling, and walking options can lead to more economically robust and 'livable' communities.
- Increased modal options, decreased congestion due to construction, improved long-term operations of the highway, and use of lower carbon intensive materials can lead to improved short-term and long-term air quality.
- Life cycle material and systems selection leads to better long-term value.

Community connections

Collect and treat run-off

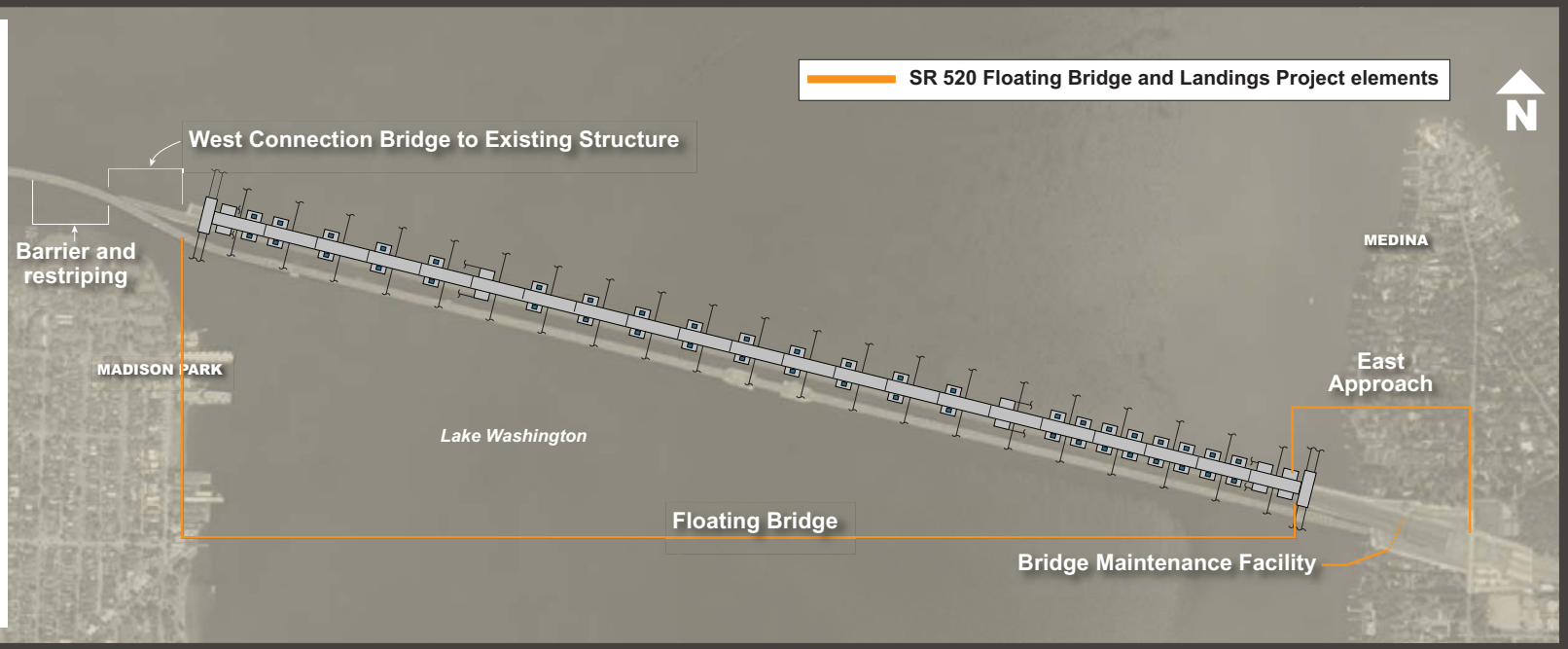
Locally sourced materials

Multi-modal options

SR 520 Floating Bridge and Landings Project overview

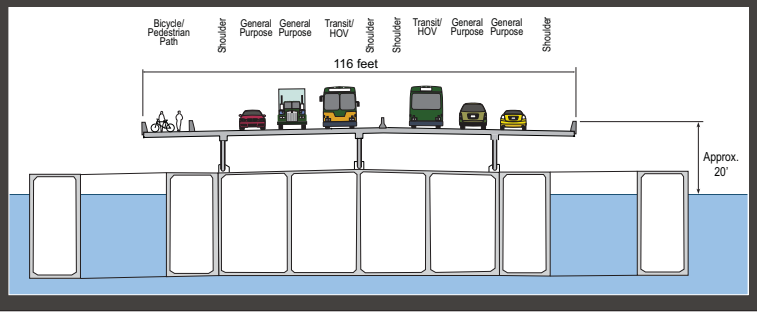
Project elements include:

- Design and construction of new six-lane superstructure and roadway, including HOV lanes and a bicycle/pedestrian path.
- Design and construction of supplemental stability pontoons.
- Design and construction of anchors and anchor cables.
- Towing pontoons to Lake Washington.
- Assembly of the new floating bridge.
- Design and construction of permanent East approach with bicycle/pedestrian connection.
- Design and construction of final connection to Evergreen Point Road vicinity.
- Design and construction of transition structures between East and West Approaches and floating bridge.
- Design and construction of new maintenance facility, dock and access.
- Decommission the existing floating bridge.



Construction of a new floating bridge

Floating bridge typical cross section



Towing pontoons

SR 520 floating bridge construction around the state

Construction activities are planned at multiple locations in Washington state. Pontoons and other bridge components will be towed to Lake Washington for assembly.

A. Grays Harbor
(March 2011 – 2014)
- Pontoon construction
- Pontoon moorage

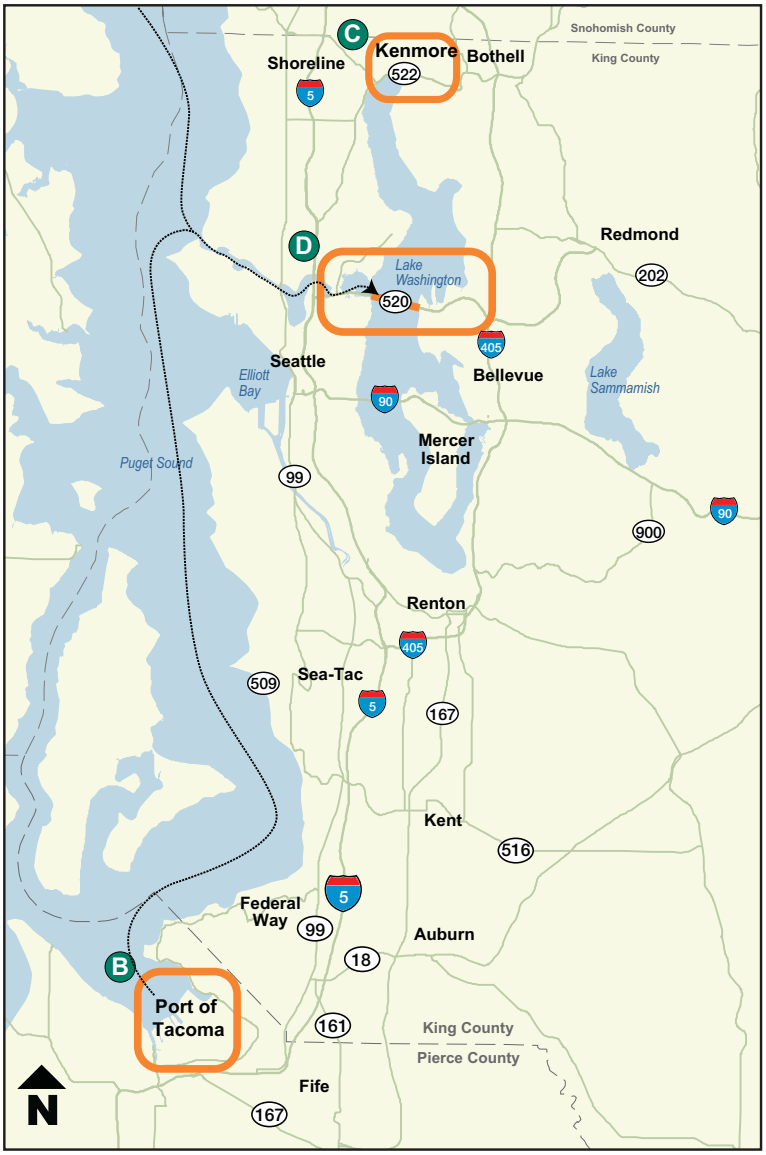
B. Port of Tacoma
(Nov. 2011 – mid 2014)
- Pontoon construction
- Pre-cast concrete elements
- Pontoon moorage and outfitting

C. Kenmore
(Feb. 2012 – early 2014)
- Anchors
- Deck sections

D. Lake Washington
(spring 2012 – 2016)
- Pontoon outfitting
- Eastside staging area
- Bridge assembly
- East Approach construction
- Bridge Maintenance Facility
- East and West Approach connections
- Decommission existing bridge

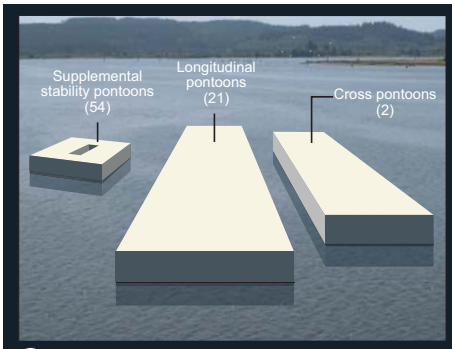
Crews on site in Kenmore.

Pontoon progress in Tacoma.

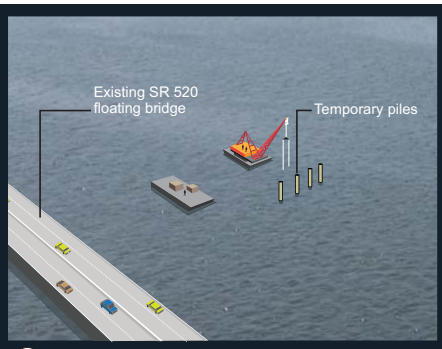


All towing will occur in designated shipping lanes.

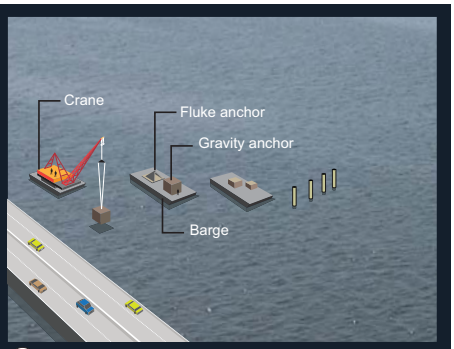
How will WSDOT build the new SR 520 floating bridge?



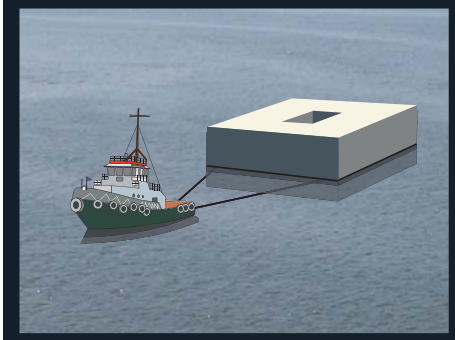
1 Build the necessary pontoons, anchors and roadway sections in Aberdeen, Tacoma and Kenmore.



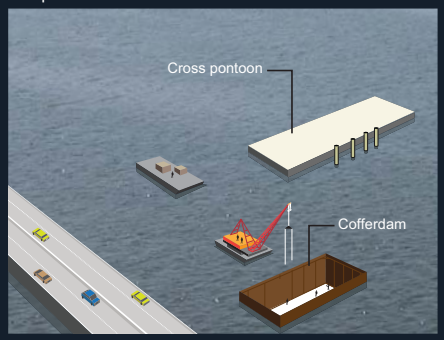
2 Begin constructing staging area near Medina with construction barges and cranes. Drive temporary piles.



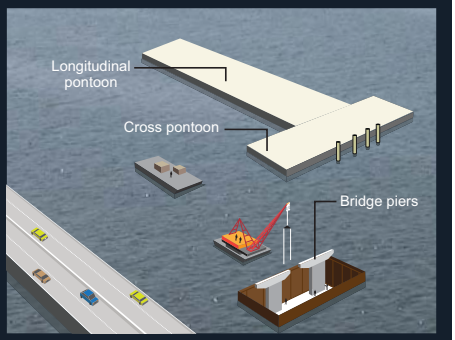
3 Install anchors for the floating bridge.



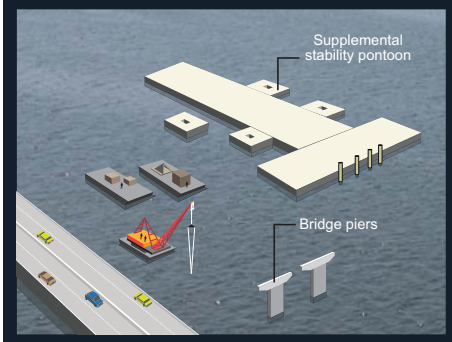
4 Tow pontoons to Lake Washington.



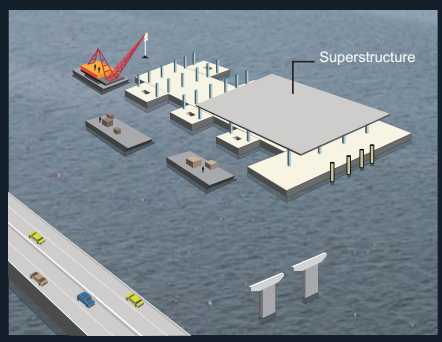
5 Install cofferdams to build bridge piers for East Approach structure. Move cross pontoon into staging area.



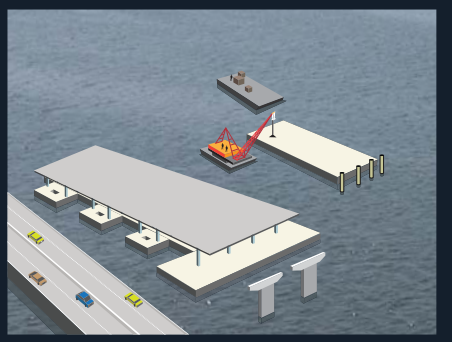
6 Build bridge piers in cofferdams and begin pontoon assembly in staging area.



7 Join supplemental pontoons to longitudinal pontoons at staging area.



8 Begin installation of superstructure on pontoons at staging area.



9 Move completed pontoons into position on Lake Washington. Continue assembling pontoons in staging area.

10 Move completed pontoons into position on Lake Washington and complete roadway superstructure.

11 Connect new floating bridge to completed East Approach and west transition span.

12 Shift traffic to new floating bridge. Decommission the existing bridge and remove from Lake Washington.

Note: Images for illustration purpose and are not to scale

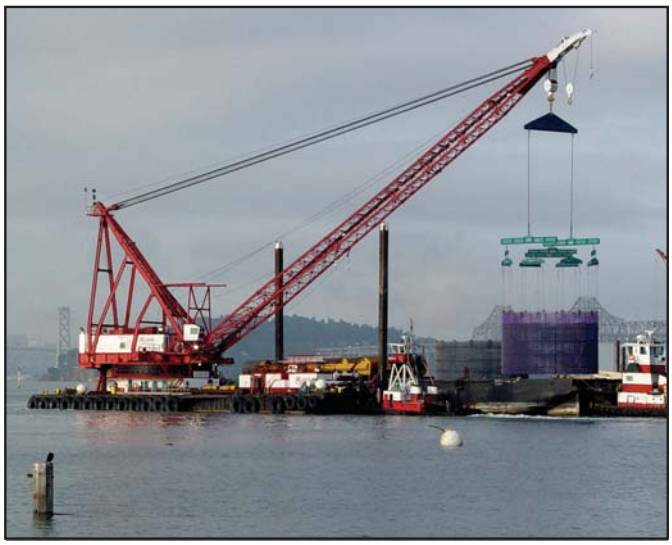
Upcoming SR 520 floating bridge construction activities

Planned construction activities for April through June 2012

Lake Washington	Tacoma	Kenmore
• Tree clearing at the site of the bridge maintenance facility • Installation of shaft anchors for eastern cross-pontoon • Cofferdam construction • Installation of the infrastructure for the in-water staging area • Installation of anchors for eastern longitudinal pontoons • Site prep in the cofferdam • Begin construction of pier footings at East Approach in Medina • Planned towing of pontoons from Aberdeen and Tacoma	• Continue pontoon construction • First float-out of cycle 1 pontoons • Prepare cycle 1 pontoons for towing • Begin second cycle of pontoon construction	• Continue gravity anchor construction • Begin fluke anchor construction • Begin construction of casting area for roadway deck sections

Construction equipment

Example of a cofferdam.



Example of a crane on a construction barge.