Washington State Department of Transportation

SR 520 Bridge Replacement and HOV Program

# SR 520, I-5 to Medina: Bridge Replacement and HOV Project

## Boyer to Delmar Landslide Materials Technical Memorandum

Prepared for

**Washington State Department of Transportation**


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# 1. Introduction and Background

This memorandum documents the National Environmental Policy Act (NEPA), State Environmental Policy Act (SEPA), Endangered Species Act (ESA), and Section 106 and 4(f) compliance for the SR 520, I-5 to Medina: Bridge Replacement and HOV Project associated with slope stability improvements under SR 520 structures between Boyer and Delmar Avenues. Environmental documentation for the SR 520, I-5 to Medina: Bridge Replacement and HOV Project includes the Final Environmental Impact Statement (EIS) (June 2011) and supporting discipline reports, the Record of Decision (August 2011), SEPA Addenda (October and November 2011), NEPA Environmental Reevaluations (between 2011 and August 2025), and other memoranda. The proposed changes have been compared to findings in the Final Environmental Impact Statement, Record of Decision (ROD), and other existing reports and documentation and are described below.

# 2. Slope Design Modifications

The hillside between Boyer and Delmar Avenues within WSDOT right of way and extending beyond it to the north and south is the site of historic landslides (Delmar Landslide Area, Exhibit A). Debris from previous slides extends from a few feet to a depth of approximately 30 feet across the area. The conceptual design that was developed consistent with the 2011 Final EIS included a system of retaining walls between Boyer and Delmar Avenues to stabilize the Delmar Landslide Area and protect the western abutment and on-land support piers of the future Portage Bay Bridge from further slope instability. The preliminary design retaining wall system is shown in Exhibit B, along with identification of walls proposed for elimination as part of the design modifications that are addressed in this memo. This memorandum evaluates the design refinements for the Delmar Landslide Area compared to the 2011 Final EIS.

Section 5.12 Geology and Soils in the 2011 Final EIS stated:

> WSDOT has included a number of features to reduce potential geologic hazards. Areas would be stabilized where soils are liquefiable and/or prone to settlement or landslide, including the eastern end of the Portage Bay Bridge and the Evergreen Point Bridge west approach structure. These measures could include supporting the roadway on columns, improving soils beneath bridge columns, designing bridge columns to withstand seismic motion, and/or excavating areas of vulnerable soil and replacing them with stronger material.

The general proposal is to eliminate the retaining walls identified in Exhibit B and achieve slope stability through removal of unstable materials, slope re-grading, and replacement of landslide materials with stable material. All changed work would be within previously identified areas of construction that were considered in the Final EIS and subsequent NEPA reevaluations.

The general construction sequence and methods are:

- Remove the top approximately 5 to 20 feet of the landslide materials in approximately 1-foot-deep cuts with bulldozers. Move material down the slope to a stockpile adjacent

to Boyer Ave.

- Protect cut surfaces from erosion.
- Load stockpiled materials and take offsite for disposal.
- This initial landslide debris material removal will stabilize the hillside sufficiently to support construction equipment and activity for additional removal and grading.
- After excavation achieves the planned elevation, capping materials will be provided to protect the remaining native soil.
- Competent, stable material will be imported to provide access road and work benches for the construction of the bridge abutment and piers for the new SR 520 structures between Delmar and Boyer Avenues.
- After construction of the bridge abutment and piers, additional stable material will be imported to provide the final grading.
- The final condition will provide the new SR 520 abutment and piers between Delmar and Boyer Avenues supported by competent and stable material instead of unstable landslide debris material.

This approach is consistent with the measure of excavating areas of vulnerable soil and replacing them with stronger material identified in the 2011 Final EIS.

# 3. Environmental Analysis

FHWA and WSDOT have evaluated the proposed design change, changes to the affected environment, and potential changes to the environmental effects as previously described in the Final EIS. FHWA and WSDOT have concluded that no new significant environmental impacts, beyond those described in the Final EIS and ROD, would result from the changed conditions. All changes would occur within current WSDOT right of way. Changes pertaining to specific resources that have the potential to be affected are described below.

*Ecosystems*

The proposed design refinements would be limited to upland areas already identified in the Final EIS for disturbance. Therefore, the impacts described in Sections 5.11 and 6.11 of the Final EIS would not change. A WSDOT biologist has reviewed and concurred with this analysis.

*Visual Resources*

The final grade under the Portage Bay Bridge and west of Boyer Avenue would change in some areas, but final landscape restoration would not change. No substantial impacts to visual resources would occur from the proposed design refinements. The impacts described in Sections 5.5 and 6.5 of the 2011 Final EIS would not change.

*Cultural Resources*

No impacts to cultural resources are anticipated. The work area is within the existing APE

established for the Project. A portion of the work area is located within an archeological monitoring commitment area identified in the Portage Bay Bridge and Roanoke Lid contract documents. Ground disturbing work in that area will be monitored under the same commitment that would apply to construction of the retaining wall system. Because the proposed work would not include impact pile driving, it would not add a new source of construction vibration nor reduce ground stability at nearby historic properties. A WSDOT Cultural Resources Specialist has reviewed the proposed plan and determined that no additional Section 106 consultation is required. The impacts described in Sections 5.6 and 6.6 of the 2011 Final EIS would not change.

*Noise and Vibration*

Topographic changes would be limited to areas below the SR 520 roadway; therefore, they would not change noise shielding of the roadway. No impacts from noise and vibration outside of those described in the 2011 Final EIS and the 2021 *Portage Bay Bridge to I-5 Design Refinements* reevaluation would occur from the proposed design refinements. The impacts described in Sections 5.7 and 6.7 of the 2011 Final EIS and the 2021 reevaluation would not change.

*Air Quality*

The proposed design refinements would not affect air quality. Dust control measures would be applied as required in project mitigation commitments. The impacts described in Sections 5.8 and 6.8 of the Final EIS would not change.

*Water Quality*

Water quality effects during operation would not change, as the proposed design refinements would not change collection or treatment of stormwater. During construction, activities would be completed in compliance with the approved temporary erosion and sediment control (TESC) plan. Any groundwater encountered would be detained onsite and treated per NPDES and Administrative Order requirements. Therefore, the impacts described in Sections 5.10 and 6.10 of the Final EIS would not change.

*Geology and Soils*

The Final EIS identified the western end of the Portage Bay Bridge as being prone to settlement or landslide and identified excavating areas of vulnerable soil and replacing them with stronger material as one potential means to stabilize the soils. The Final EIS stated that by stabilizing the areas and building to design standards, negative effects to geology and soils and to structural safety during operation would be avoided. Slope stability calculations indicate that removing landslide material would provide a factor of safety greater than one against slope failure during construction. Erosion control measures, as noted in Section 2 of this memorandum, would be employed on disturbed ground. Therefore, the impacts described in Sections 5.12 and 6.12 of the Final EIS would not change.

*Hazardous Materials*

No impacts associated with hazardous materials are anticipated. If contaminated soils are encountered, they would be handled and disposed of per the Project's approved Soil and Groundwater Management Plan. The impacts described in Sections 5.13 and 6.13 of the Final EIS would not change.

Other disciplines identified in the previous NEPA documents have been reviewed and are not

anticipated to have changed effects.

# 4. Conclusion

The changes described above will not result in additional effects beyond those described in the Final EIS, ROD, and subsequent Environmental Reevaluations. Therefore, the project remains compliant with current federal, state, local, and departmental regulations and directives with regard to NEPA/SEPA processes, Section 106 and 4(f), and the Endangered Species Act.

Exhibits

A. Extent of Delmar Landslide Area and Debris Removal relative to Future Portage Bay Bridge
B. Final EIS Preliminary Design and Retaining Walls Evaluated for Elimination

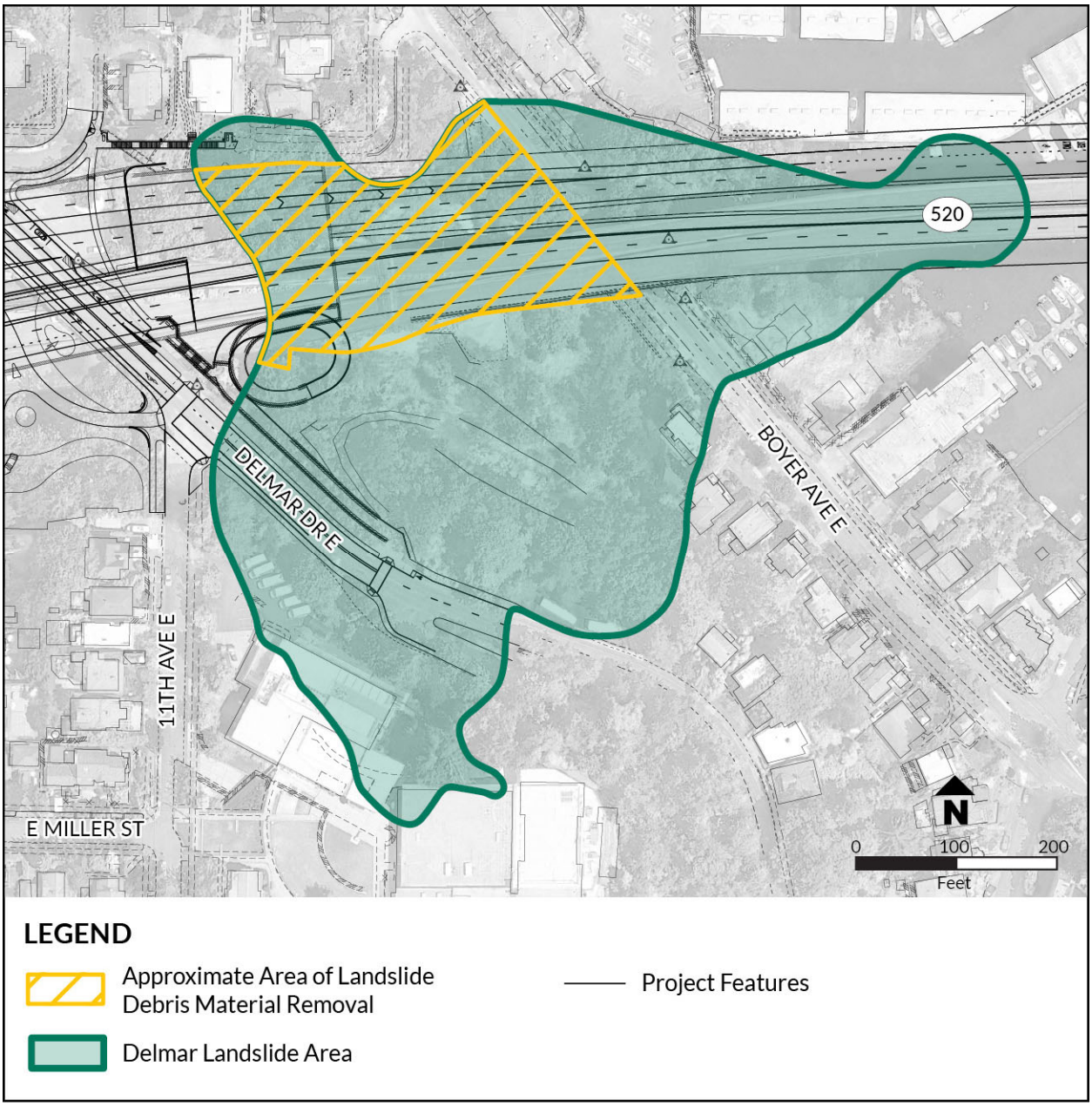


Exhibit A: Extent of Delmar Landslide Area and Debris Removal relative to Future Portage Bay Bridge

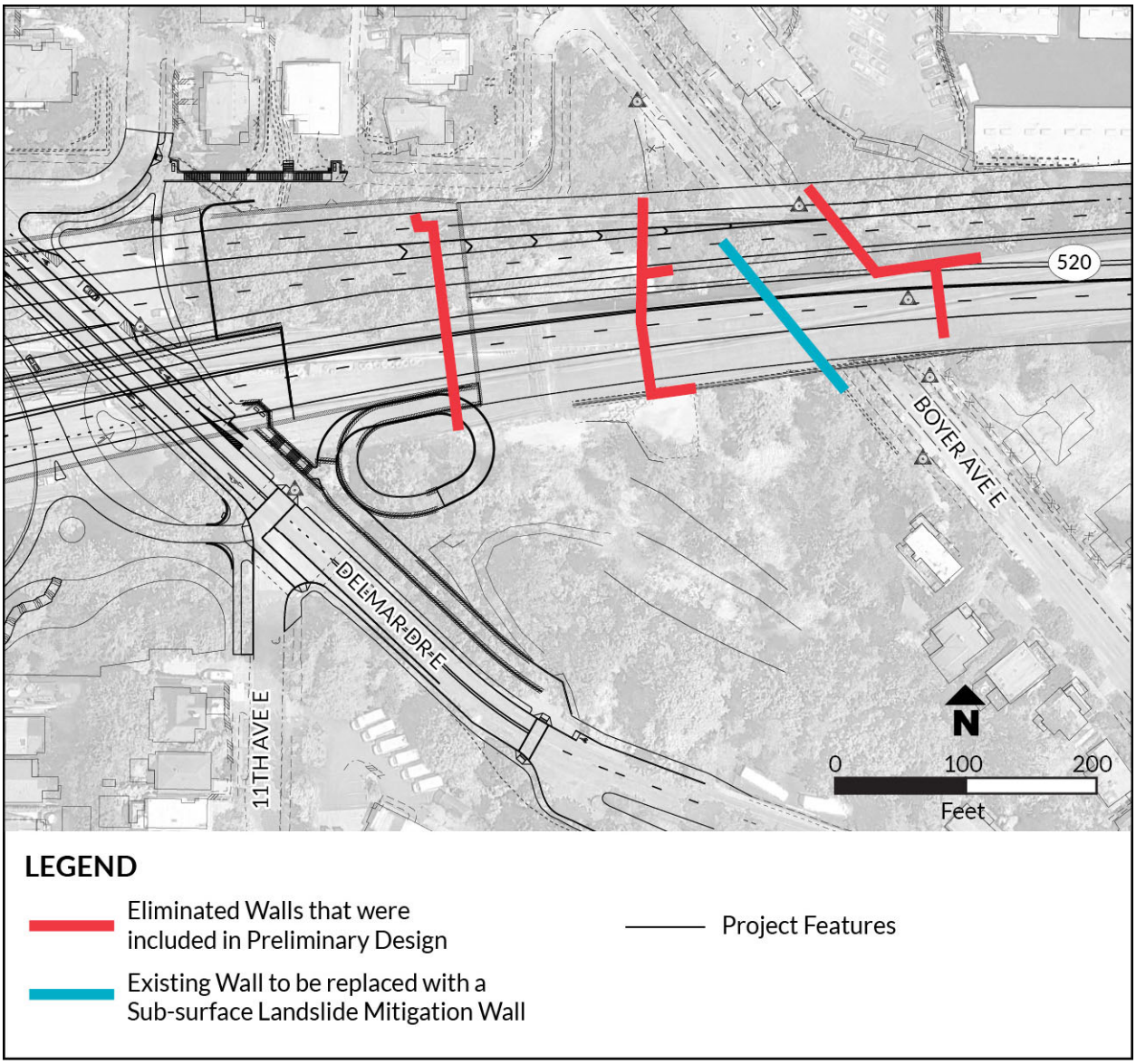


Exhibit B: Final EIS Preliminary Design and Retaining Walls Evaluated for Elimination