

Chapter Three

Project Alternatives

The project alternatives include a No-Build Alternative and the Proposed Project. The No-Build Alternative consists of continuing routine maintenance of the SR 518 roadway. The Proposed Project comprises features that will improve safety and mobility on SR 518 between Sea-Tac Airport's North Airport Expressway/SR 99 interchange and the I-5/I-405 interchange. For all features of the Proposed Project, WSDOT will implement measures to avoid or minimize impacts or compensate for unavoidable effects to the environment.



**View East:
SR 518 North Airport Expressway Interchange**

1 What are the project alternatives?

This environmental document analyzes two proposed alternatives:

- The No-Build Alternative consists of WSDOT's continued routine maintenance on SR 518 (including minor roadway improvements) and does not satisfy the project's purpose and need (see Chapter Two).
- The Proposed Project will construct a new eastbound general-purpose lane between the North Airport Expressway/SR 99 interchange and the I-5/I-405

interchange. The general-purpose lane, unlike a high occupancy vehicle (HOV) lane, will have no restrictions on the number of passengers in a vehicle.

The Proposed Project was designed to improve safety and mobility on SR 518 between Sea-Tac Airport's North Airport Expressway/SR 99 interchange and the I-5/I-405 interchange. **Exhibit 3-1** shows the vicinity where the Proposed Project will be built.

Exhibit 3-1
Project Study Area



2 What benefits will the Proposed Project provide?

The Proposed Project will provide short- and long-term benefits that improve access and mobility within this section of the SR 518 freeway. In addition, the construction contract will include many provisions to protect the environment and ensure compliance with project-specific permit conditions and other project commitments.

Safety and Mobility

- Accommodating projected airport traffic and freight mobility through the year 2030;
- Shortening periods of congestion between the North Airport Expressway/SR 99 interchange and the I-5/I-405 interchange;
- Improving merging at the North Airport Expressway/SR 99 interchange;
- Improving safety on SR 518 by reducing congestion at the eastern end of the high accident corridor on SR 518 at the North Airport Expressway interchange; and
- Making safety improvements at the high accident location on the 51st Avenue South off-ramp to Klickitat Drive.

Environmental

- Reducing traffic noise in areas behind proposed noise barriers;
- Improving conditions in Gilliam Creek by providing detention facilities and stormwater treatment such as ecology embankments; and
- Improving overall water quality conditions in the project area by treating runoff from new impervious surfaces and following WSDOT's new *Highway Runoff Manual* guidelines.

3 What if the Proposed Project is not built?

If the Proposed Project is not built, traffic congestion between the Sea-Tac Airport and SR 99 interchange and the I-5 interchange will continue to occur and improvements to the environment will not occur. Merging vehicles will continue to crowd into an already congested freeway and then weave across lanes of traffic to reach their desired downstream freeway ramp. In the future, when volumes are higher, this congestion will become noticeably worse and travel times from Sea-Tac Airport to I-405 will increase between 5 minutes and 30 minutes depending on the time

of day. However, if the Proposed Project is not built, WSDOT will continue to maintain and repair the existing SR 518 roadway.

The No-Build Alternative was evaluated to establish a baseline for comparing the effects associated with the Proposed Project. The No-Build Alternative does not include improvements that will ease mobility, reduce congestion, or improve safety meaningfully.

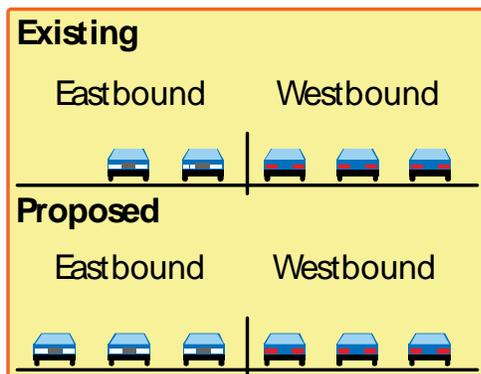
4 What are the principal features of the Proposed Project?

A third eastbound general-purpose lane will be built between the North Airport Expressway/SR 99 interchange and the I-5/I-405 interchange. A typical cross-section of the roadway is shown in **Exhibit 3-2**. The principal features of the Proposed Project are shown in **Exhibit 3-3**, Sheets 1 and 2 on the following pages.

Accompanying the new eastbound lane, the North Airport Expressway and SR 99 on-ramp connections to SR 518 will be widened to allow for more capacity and ramp metering, which will improve ramp-to-freeway operations.

The North Airport Expressway on-ramp will be widened to two lanes that narrow to a single lane after connecting with SR 518. The inside lane will merge with SR 518, and the outside lane will become the third eastbound lane on SR 518 and continue east, exiting at the southbound I-5 off-ramp. The SR 99 on-ramp will also be widened to two lanes (one HOV and one general-purpose), but narrow to a single lane before merging with SR 518. During periods of congestion, the right-hand shoulder of the SR 99 on-ramp will operate as an additional general-purpose lane and the ramp will be metered. Traffic on the SR 99 on-ramp and SR 518 will merge about 1,000 feet east of where the North Airport Expressway on-ramp merges with SR 518.

Exhibit 3-2
Typical Cross-Section of the Proposed Project



**Exhibit 3-3
Proposed Project Roadway Features (Sheet 1)**

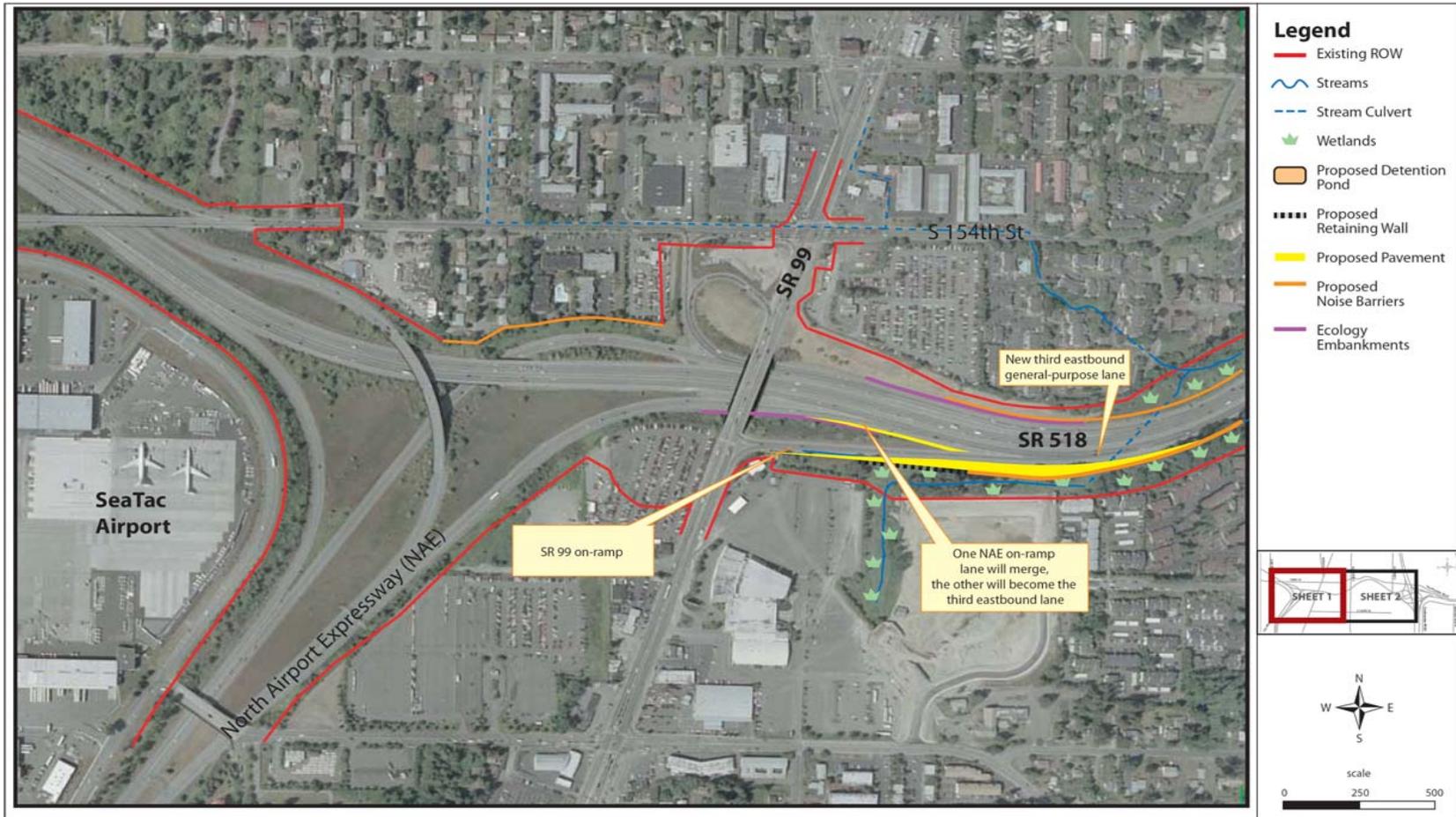
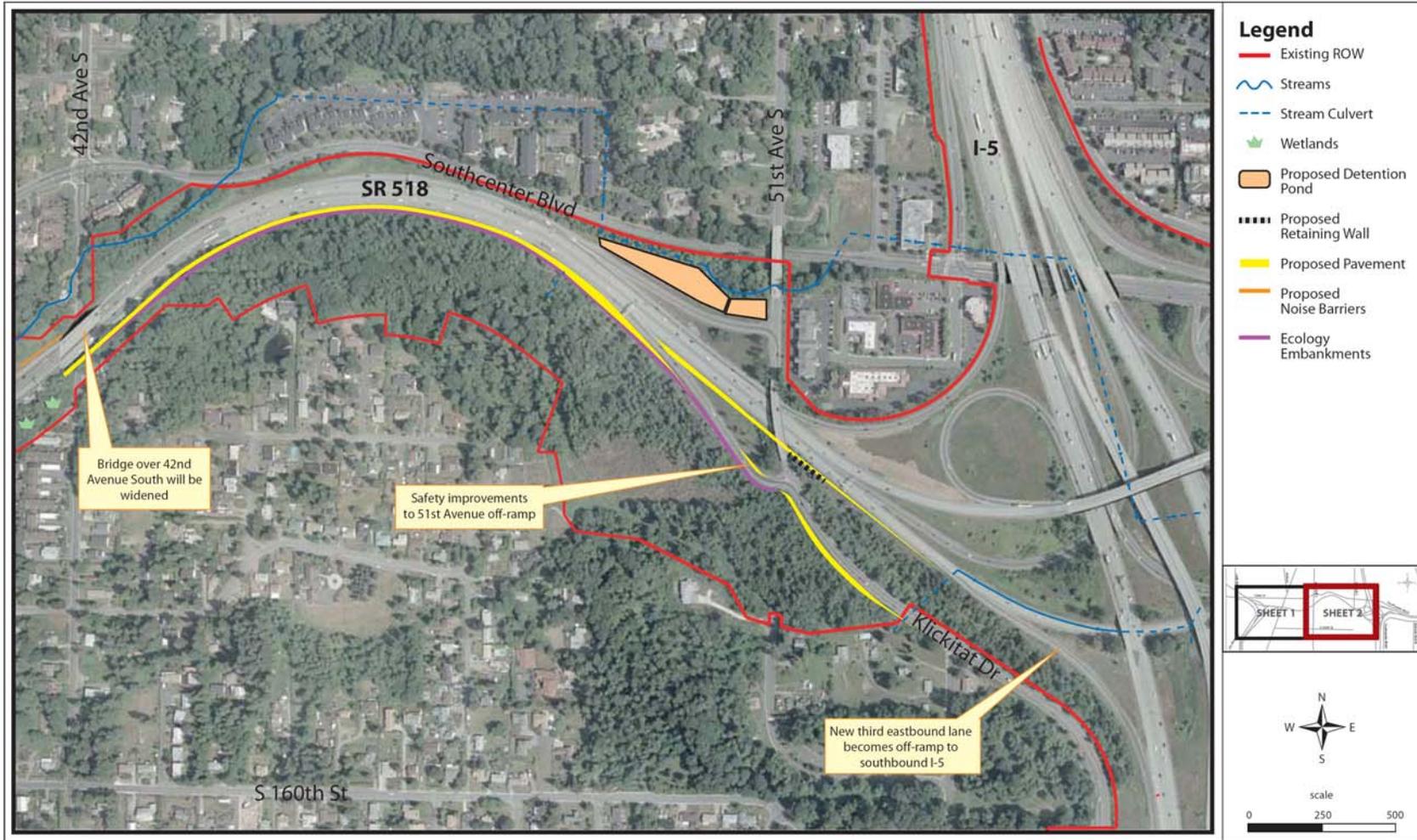


Exhibit 3-3
Proposed Project Roadway Features (sheet 2)



The Port of Seattle is planning a new Airport rental car facility north of South 160th Street and east of the North Airport Expressway. Although not part of the Proposed Project, a widened North Airport Expressway on-ramp will accommodate an access ramp from South 160th Street, near the future rental car facility. This feature is evaluated in Chapter Four.

To address operations at the high accident location on the 51st Avenue South off-ramp, the Proposed Project includes the following improvements:

- Improving visibility for drivers as they enter the off-ramp from SR 518;
- Adding a larger arrow sign and flashing beacons to alert drivers of the sharp left-turn at the end of the off-ramp;
- Slightly realigning the ramp and providing additional lighting to improve visibility along the right side of the ramp; and
- Adding an acceleration lane on Klickitat Drive.

Exhibit 3-4 compares the existing configuration of SR 518 (No-Build Alternative) and the new configuration under the Proposed Project.

In addition to these roadway characteristics, other improvements will be made along the roadway. The following discussion provides an overview of these features.

**Exhibit 3-4
General Comparison of the No-Build Alternative and the Proposed Project**

SR 518 and On-Ramps Roadway Characteristic	Alternative	
	No-Build Alternative	Proposed Project
Eastbound SR 518 Roadway (Number of Lanes):		
Western end of study area to North Airport Expressway ramp	2	2
SR 518 - North Airport Expressway ramp to SR 99 ramp	3 merge to 2	4 merges to 3
SR 99 ramp to 42 nd Avenue South	2	3
42 nd Avenue South to 51 st Avenue South	2	3
51 st Avenue South to SB I-5 ramp	2	3
SB I-5 ramp to I-405 NB	2 merges to 1	2 merges to 1
On-Ramps (Number of Lanes):		
North Airport Expressway	2, merges to 1 before entering freeway	2 at freeway, 1 lane merges, 1 lane becomes auxiliary lane
SR 99	1	2-3*
Structures:		
SR 518 Bridge over 42 nd Avenue South	No change	Widened to accommodate freeway lane addition
51 st Avenue South Bridge over SR 518	No change	No change

**One lane will be general purpose, the other HOV. During peak periods, the shoulder will be used as a general-purpose lane, resulting in two general-purpose lanes and one HOV lane.*

Cut Slope Embankment

WSDOT has identified wet slopes along the south side of SR 518. To prevent deterioration of the hillside face, the following features will be constructed:

- Horizontal drains installed into the hillside;
- Ditches along the freeway to convey stormwater runoff to detention sites; and

- Rock fill placed along the hillside face to stabilize selected areas.

Retaining Walls

Retaining walls will be used to limit areas of extensive cuts and fills and reduce the project footprint, consequently reducing impacts on adjacent property and environmentally sensitive areas. WSDOT will construct a retaining wall just east of the 51st Avenue South bridge over SR 518 to replace the existing wall. The new wall will be approximately 180 feet in length and will vary from two to twenty-five feet in height. WSDOT will also construct a retaining wall along the south shoulder of the SR 99 on-ramp. The new wall will merge with the noise barrier that is proposed farther east. The locations of retaining walls are illustrated in Exhibit 3-3.

Noise Barriers

WSDOT will construct noise barriers at three locations provided that adjacent residents are in agreement. Information about the specific location and height of the noise barriers is found in Chapter Four, Noise. The locations of the noise barriers are also illustrated in **Exhibit 3-3**.

Stormwater Management

Stormwater management facilities will be built to provide water quality treatment, detention, and conveyance system upgrades. These facilities include ecology embankments, as well as catch basins and manhole structures that will be connected to treatment and detention facilities. For all project features, WSDOT will implement measures to avoid or minimize impacts or compensate for unavoidable effects to the environment.

Existing drainage culverts may be extended in areas where additional pavement is needed for the new highway improvements. Extensions could be added to the upstream ends of these culverts.

A culvert is a pipe, concrete box, or similar structure that allows water from open channels, swales, or ditches to flow under a roadway. WSDOT maintenance personnel will check each impacted culvert to evaluate the proposed improvements and address any maintenance concerns. Options to improve culverts include lengthening the culvert, connecting it to new drainage structures, or stabilizing the culvert's ends with rock or retaining walls.

5 How will stormwater from the Proposed Project be managed?

Stormwater will be managed through water quality treatment, detention, and conveyance system upgrades.

Stormwater Design Standards

WSDOT has specific guidelines that must be followed to ensure that stormwater runoff is managed in an environmentally friendly manner. These guidelines include the following:

- WSDOT's *Highway Runoff Manual M 31-16*, March 2004, including pending revisions as posted on WSDOT's website; and
- WSDOT's *Hydraulics Manual M 23-03*, March 2004.

Stormwater Treatment

In most cases, stormwater facilities are required to treat runoff for 100 percent of new impervious surfaces and detention of runoff from half of the two-year to fifty-year storm events. Additional design references and guidelines have been used as applicable for local jurisdictional requirements.

Overall, the project will add about 2.6 acres of new impervious pavement. In addition to providing enhanced treatment for new pavement areas, about 1.3 acres of currently untreated impervious surface will be retrofitted for enhanced water quality treatment. In total, the project will treat runoff from approximately 4.0 acres of impervious surface. In total, the project will treat at least

100 percent of the runoff from new impervious surfaces that the project will create.

These improvements will be provided in accordance with WSDOT's *Highway Runoff Manual* in the form of combined treatment systems and ecology embankments. Ecology embankments are the preferred method of water quality treatment because of their enhanced treatment capabilities and flexibility in construction.

Stormwater Flow Control

Stormwater flow control facilities are required as part of project design, according to WSDOT and city of Tukwila requirements. These flow control facilities, described further in the *Water Resources Discipline Report*, will maintain the existing flow patterns and help decrease stormwater runoff volumes and flow rates associated with the added impervious surface area. With proposed stormwater flow control (i.e., stormwater detention and ecology embankments), no increase in peak flow rates is expected in any part of Gilliam Creek.

Stormwater Conveyance and Collection

Existing drainage structures and systems will be retained in locations where they will not be disturbed by new construction. Where space and access to structures allow, ecology embankments will be constructed to provide enhanced treatment of runoff.

The proposed collection and conveyance systems will also include standard WSDOT catch basin and manhole structures connected to the treatment and detention facilities. Detention facilities may include ponds and vaults.

6 How will the Proposed Project be constructed?

The Proposed Project will be built in stages using various types of construction techniques. These techniques will include at-grade construction, bridge and wall structures, staging areas, and traffic maintenance.

At-Grade Construction

The at-grade construction work will include removing existing asphalt and concrete surfaces, clearing and grading adjacent areas, laying the aggregate roadway foundation, placing asphalt and Portland cement concrete pavement surfaces, and installing stormwater management facilities. Construction equipment such as backhoes, excavators, front loaders, pavement grinders, jackhammers, and trucks will be used along with grading and paving equipment.

Approximately 10.7 acres of clearing and grading will be required. Project earthwork will require the cut and removal of approximately 40,000 cubic yards of earth material and placement of approximately 22,000 cubic yards of fill.

Bridge and Wall Structures

Construction equipment to widen the existing SR 518 bridge over 42nd Avenue South will include cranes, pile drivers, drilling rigs and augers, backhoes and excavators, jackhammers, concrete pumping equipment, and slurry processing equipment.

Construction Staging Areas

Staging areas in unused right-of-way will likely provide room for employee parking, large equipment storage, and material stockpiles. Construction staging will occur within areas of existing right-of-way adjacent to the highway, but could also occur elsewhere. The contractor will likely find additional locations for storage and staging. WSDOT will allow staging areas in already disturbed parts of the right-of-way without trees. Staging for construction will not occur in environmentally sensitive areas, as defined by the King County Sensitive Areas Ordinance and local jurisdictions, which include wetlands, streams or alongside streams, or on steep slopes.

Traffic Maintenance

WSDOT will develop a Conceptual Traffic Maintenance Plan to illustrate how construction can occur with minimal

disruptions to traffic and capacity on SR 518, adjacent interchanges at the North Airport Expressway/SR 99 and I-5/I-405, and local roadways. This plan's primary objectives will be to maintain traffic and streamline the construction schedule. The contractor will likely prepare a more detailed plan for WSDOT approval.

WSDOT will obtain detour agreements with the cities of SeaTac and Tukwila if needed.

7 What is the Proposed Project's construction schedule?

Construction is expected to take place in stages, with the entire construction phase lasting up to two years, beginning as early as 2007 and ending in 2009. Components of the Proposed Project's construction include the following:

- Widening the SR 518 bridge over 42nd Avenue South;
- Constructing a stormwater detention pond;
- Constructing retaining walls and noise barriers;
- Constructing new pavement;
- Creating new wetlands off site;
- Restriping pavement; and
- Installing new signs, lighting, and Intelligent Transportation System equipment.

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