

Chapter 4 Project Description

What is the Renton Nickel Improvement Project?

The Renton Nickel Improvement Project is a highway expansion project that will improve mobility and safety through Tukwila and Renton. On I-405, this project begins just east of the I-5/I-405 interchange in Tukwila and extends north past the Cedar River to the SR 169 (Maple Valley Highway) interchange. The project will build an additional lane both northbound and southbound between I-5 and SR 169. On SR 167, the project will extend the southbound high-occupancy vehicle (HOV) lane north to I-405 and add a southbound auxiliary lane from I-405 to the SW 41st Street off-ramp. These limits comprise the study area for the project.

The Renton Nickel Improvement Project was developed as part of a first step in providing a focused strategy to improve I-405 between I-5 in Tukwila and SR 169 in Renton and SR 167 southbound from I-405 to SW 41st Street as shown in Exhibit 4-1. This environmental assessment (EA) analyzes two project alternatives: the No Build Alternative and the Build Alternative.

What is the No Build Alternative?

The No Build Alternative assumes that only routine activities such as road maintenance, repair, and safety improvements would take place over the next 20 years. This alternative does not include improvements that would increase roadway capacity or reduce congestion. For these reasons, it does not

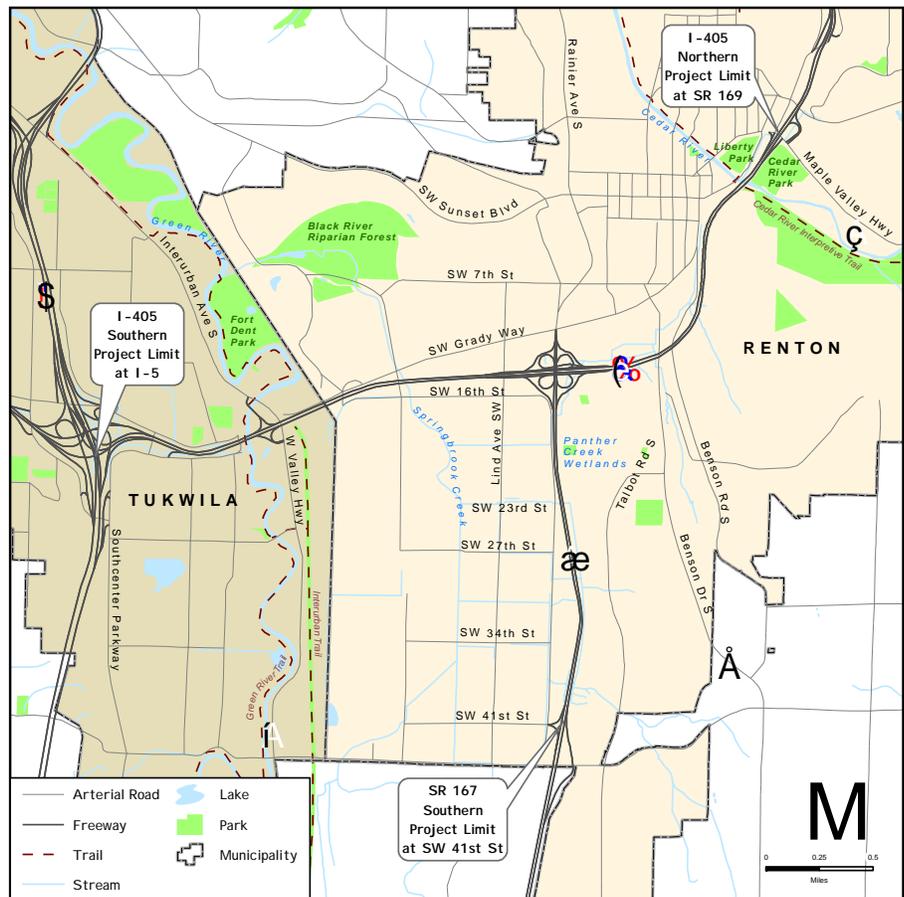


Exhibit 4-1. Project Vicinity Map

What is an auxiliary lane?

An auxiliary lane is a lane added between interchanges—from one on-ramp to the next off-ramp. It is dedicated to traffic entering and leaving the freeway and provides motorists with more time and extra room to accelerate or decelerate and merge when getting on and off the freeway.



Existing On-ramp



On-ramp with proposed auxiliary lane

Why rebuild the Benson Road Bridge on a new alignment over I-405?

By building the new bridge to the west on a new alignment, the new structure can be constructed while the existing structure remains open to traffic. Traffic can then be shifted onto the new structure while the old structure is demolished.

satisfy the project’s purpose—improve I-405 between I-5 in Tukwila and SR 169 in Renton and SR 167 southbound from I-405 to SW 41st Street.

The No Build Alternative has been evaluated in this EA to establish a baseline for comparing the effects associated with the Build Alternative.

What is the Build Alternative?

The new lanes that will be built under this project are:

- An I-405 northbound general-purpose lane from I-5 to the SR 167 off-ramp.
- An I-405 northbound auxiliary lane from the SR 167 to I-405 on-ramp to the SR 169 off-ramp.
- An I-405 southbound auxiliary lane from the SR 169 to I-405 on-ramp to the SR 167 off-ramp.
- An I-405 southbound general-purpose lane from the SR 167 to I-405 on-ramp to the I-5 off-ramp.
- A SR 167 southbound auxiliary lane from the I-405 to southbound SR 167 on-ramp to the SW 41st Street off-ramp. In addition, the existing inside HOV lane will be extended north to I-405 from its present starting point in the vicinity of SW 21st Street.

See Exhibits 4-2 through 4-9 for detailed maps of the project features. In addition to adding auxiliary and general-purpose lanes to I-405 and SR 167, this project will provide the following improvements.

Improve interchanges

Minor modifications will be made to the ramps at the SR 167 interchange:

- The one-lane ramp from northbound I-405 to SR 167 will be widened to a 2-lane off connection, which provides a dedicated lane to southbound SR 167 and a dedicated lane to northbound Rainer Avenue.
- Traffic from two consecutive single-lane on-ramps from southbound I-405 to SR 167 will be separated by a concrete barrier. This will provide a smoother transition to the mainline and reduce congestion on the on-ramps.

Improve Benson Road

The Benson Road Bridge over I-405 will be replaced and realigned to accommodate the southbound auxiliary lane on I-405 and future improvements to I-405, see Exhibit 4-8. Improvements on Benson Road include a 6-foot sidewalk on the west side and 5-foot bike lanes on both sides.

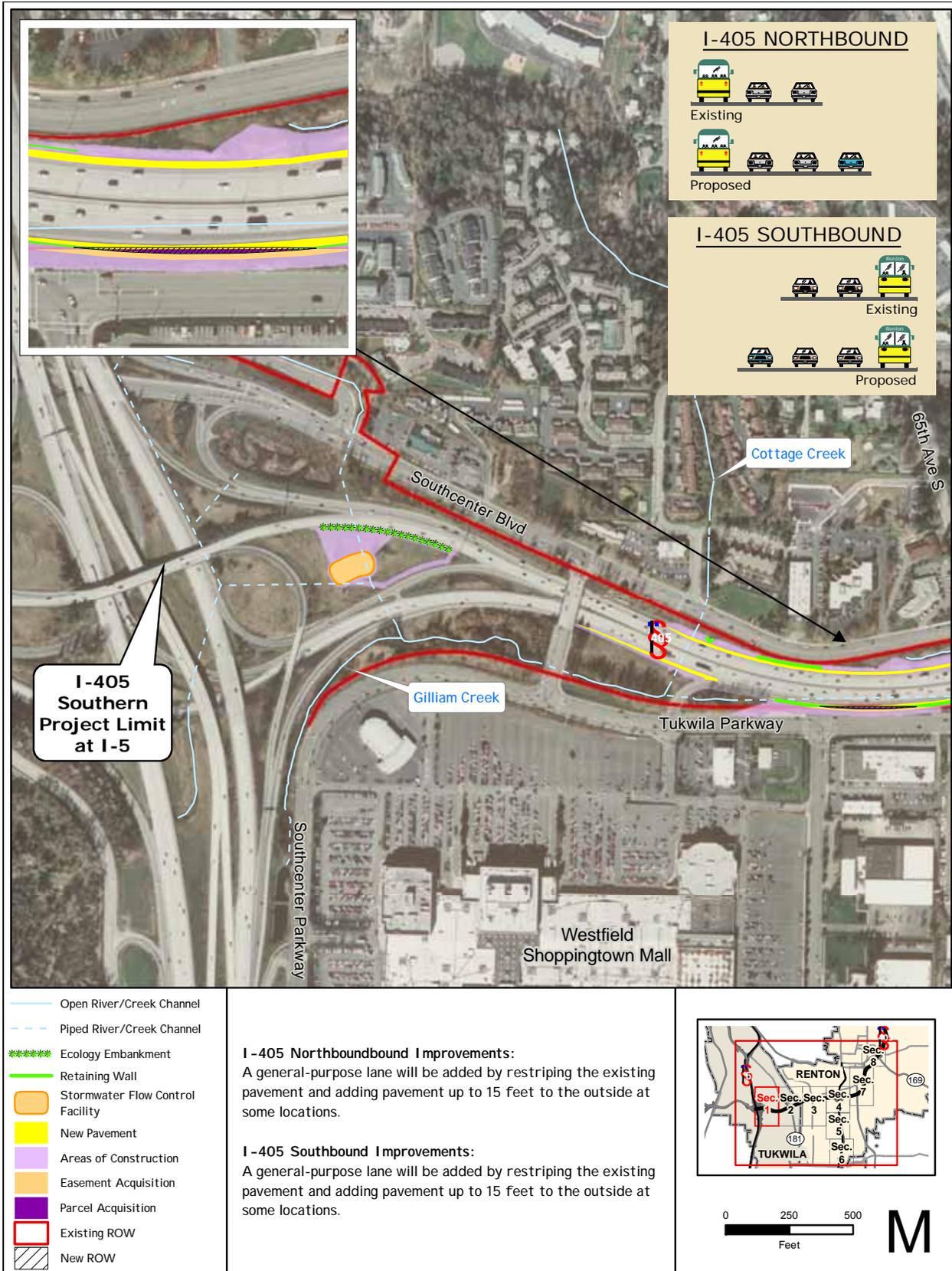


Exhibit 4-2. Project Overview Section 1

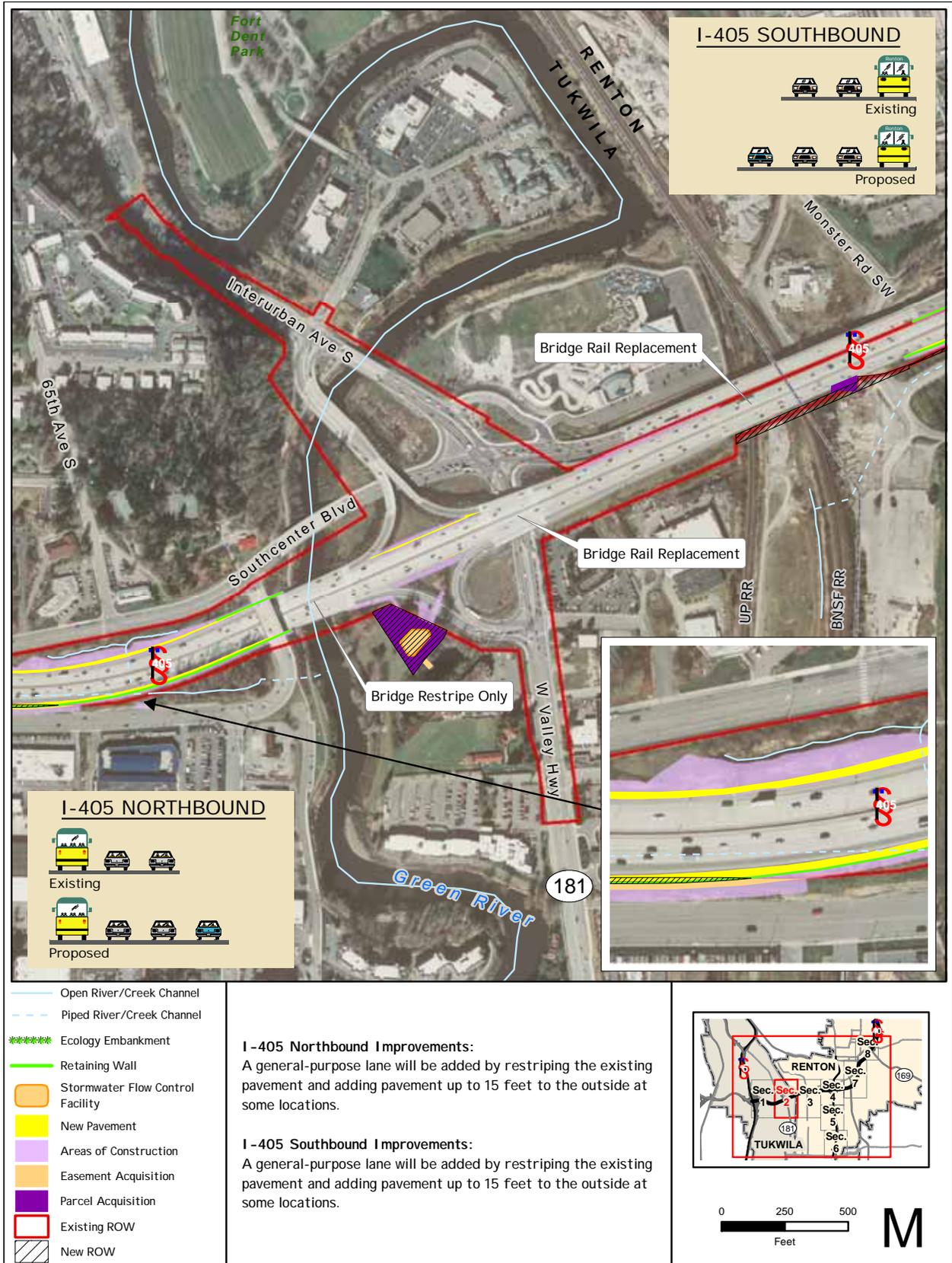


Exhibit 4-3. Project Overview Section 2

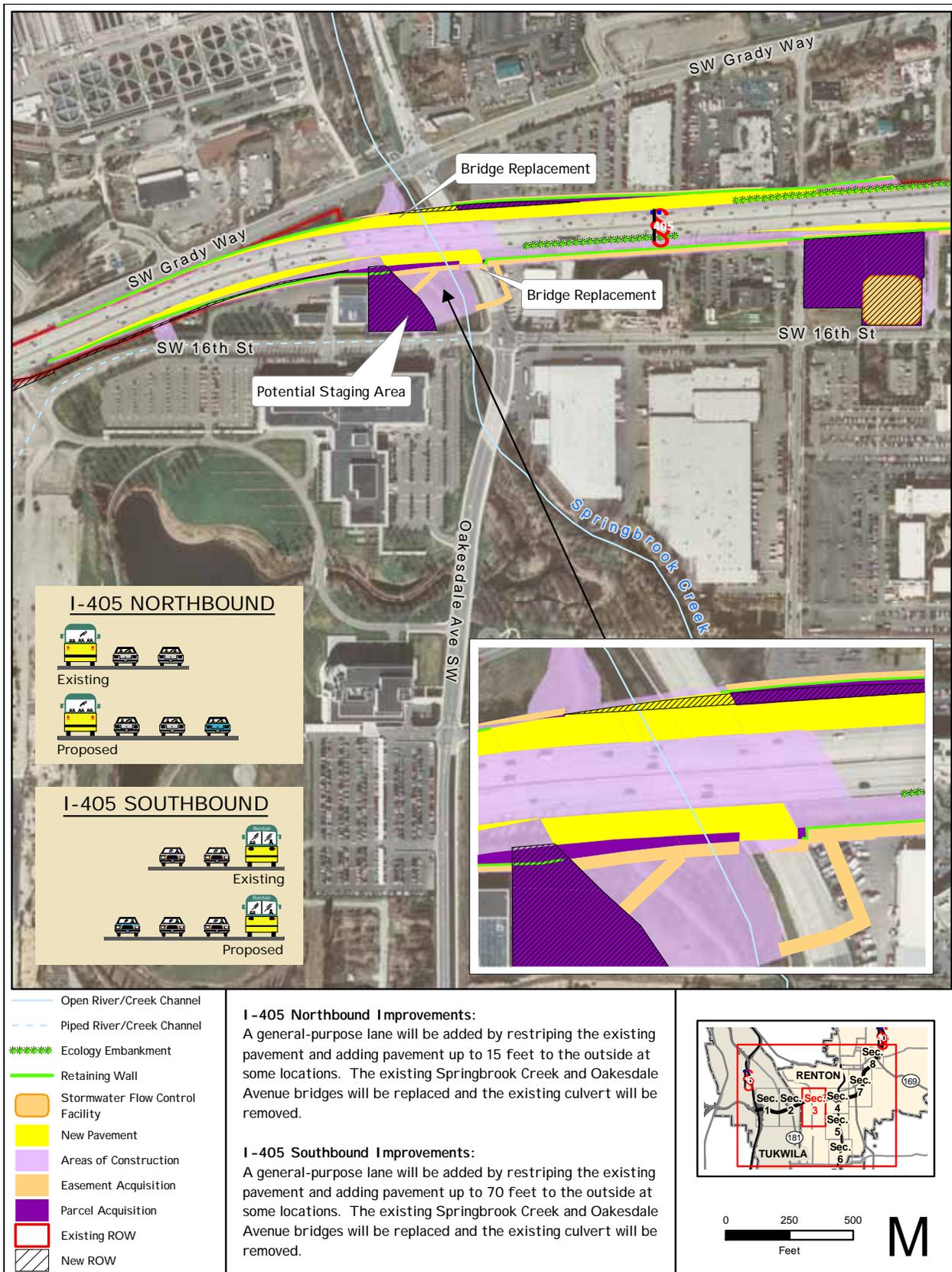


Exhibit 4-4. Project Overview Section 3

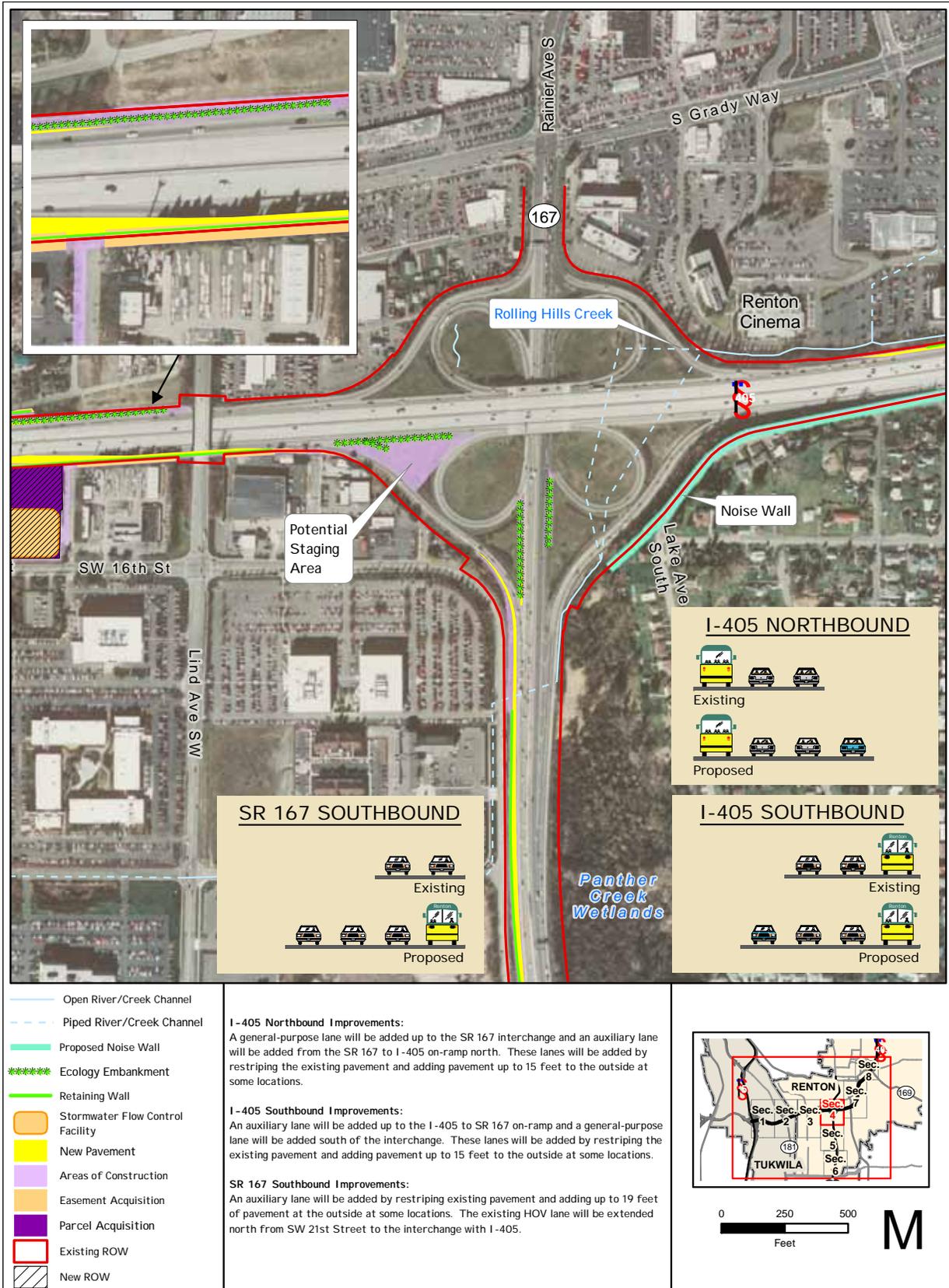


Exhibit 4-5. Project Overview Section 4

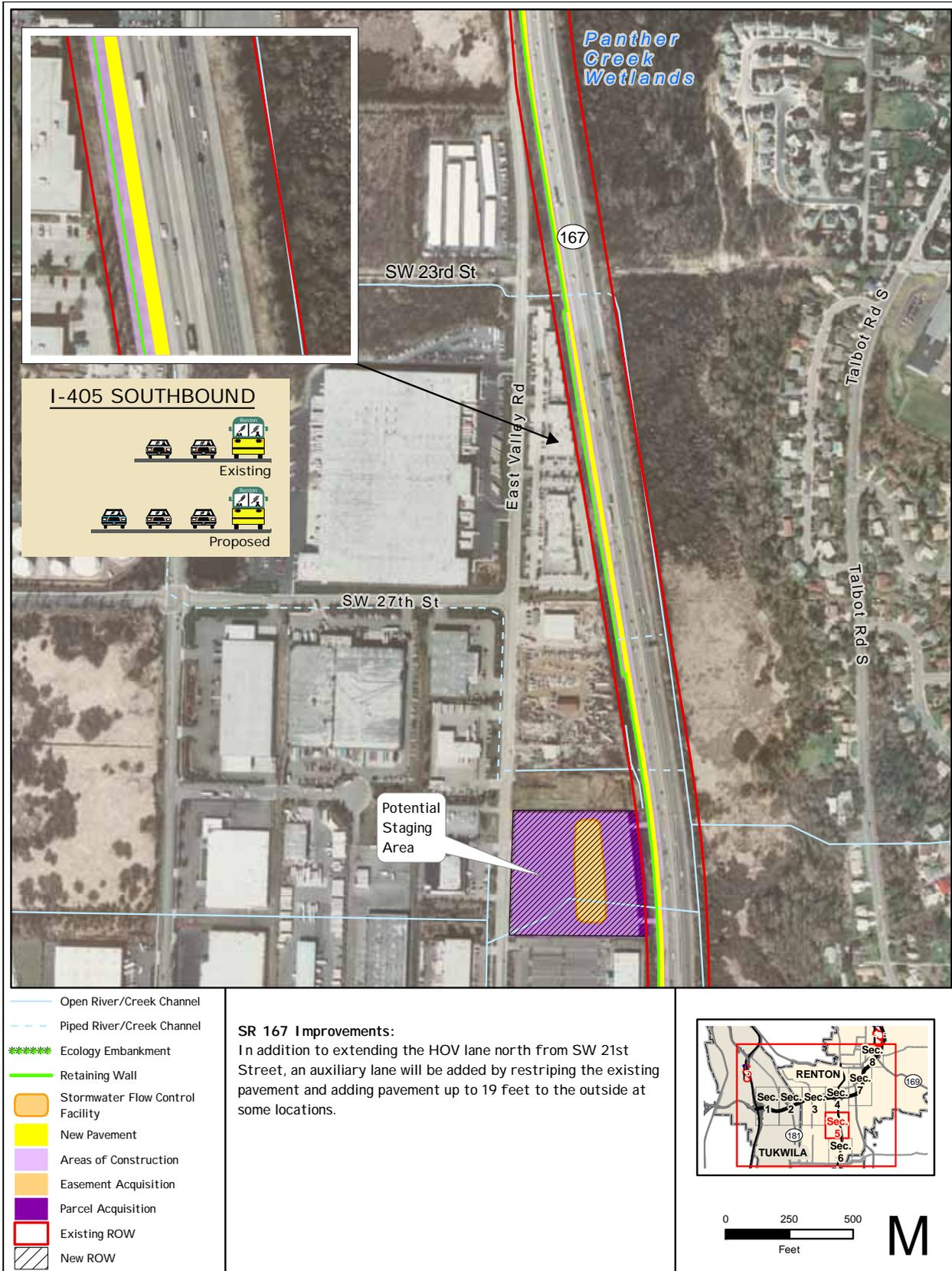


Exhibit 4-6. Project Overview Section 5

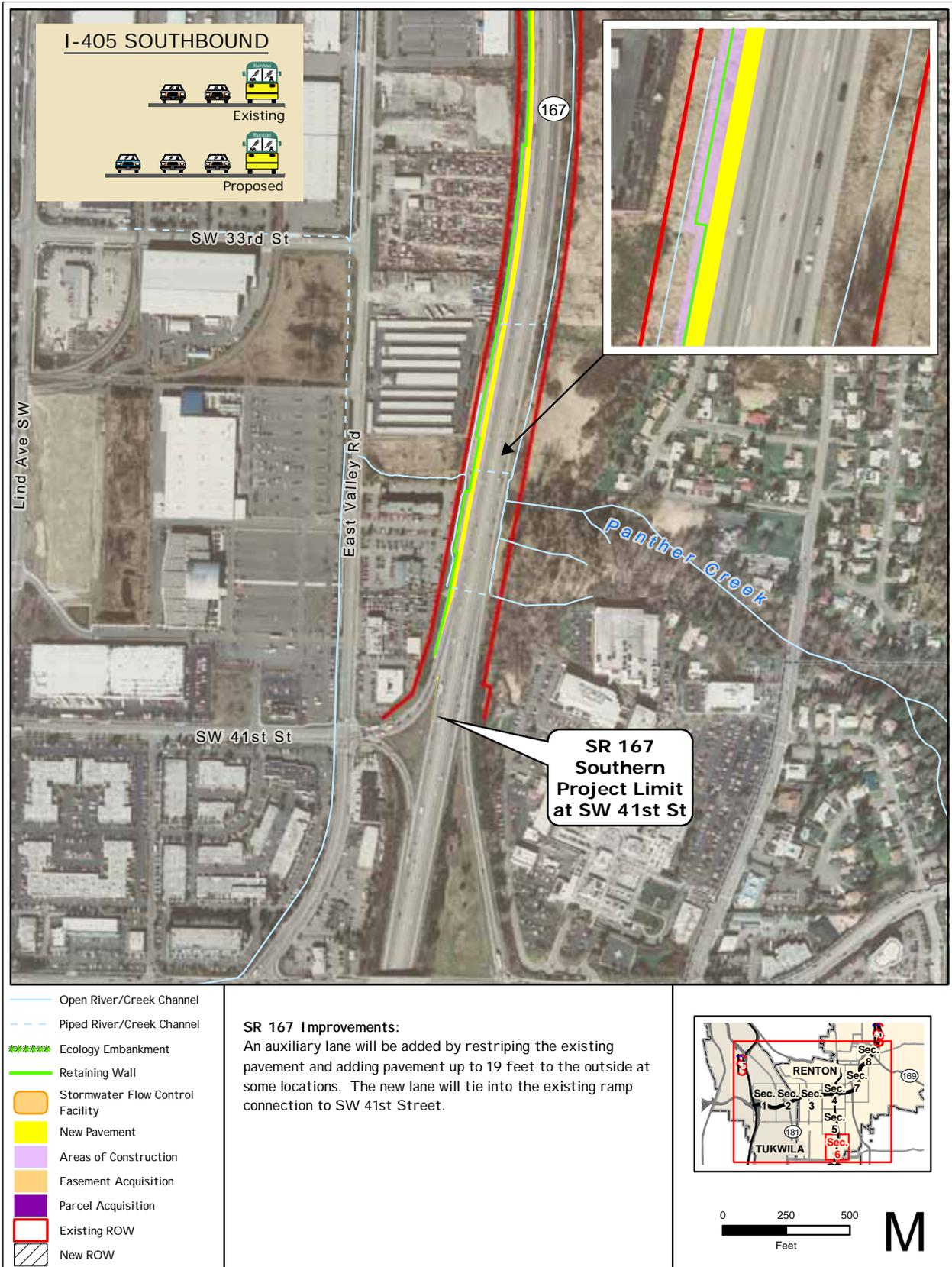


Exhibit 4-7. Project Overview Section 6

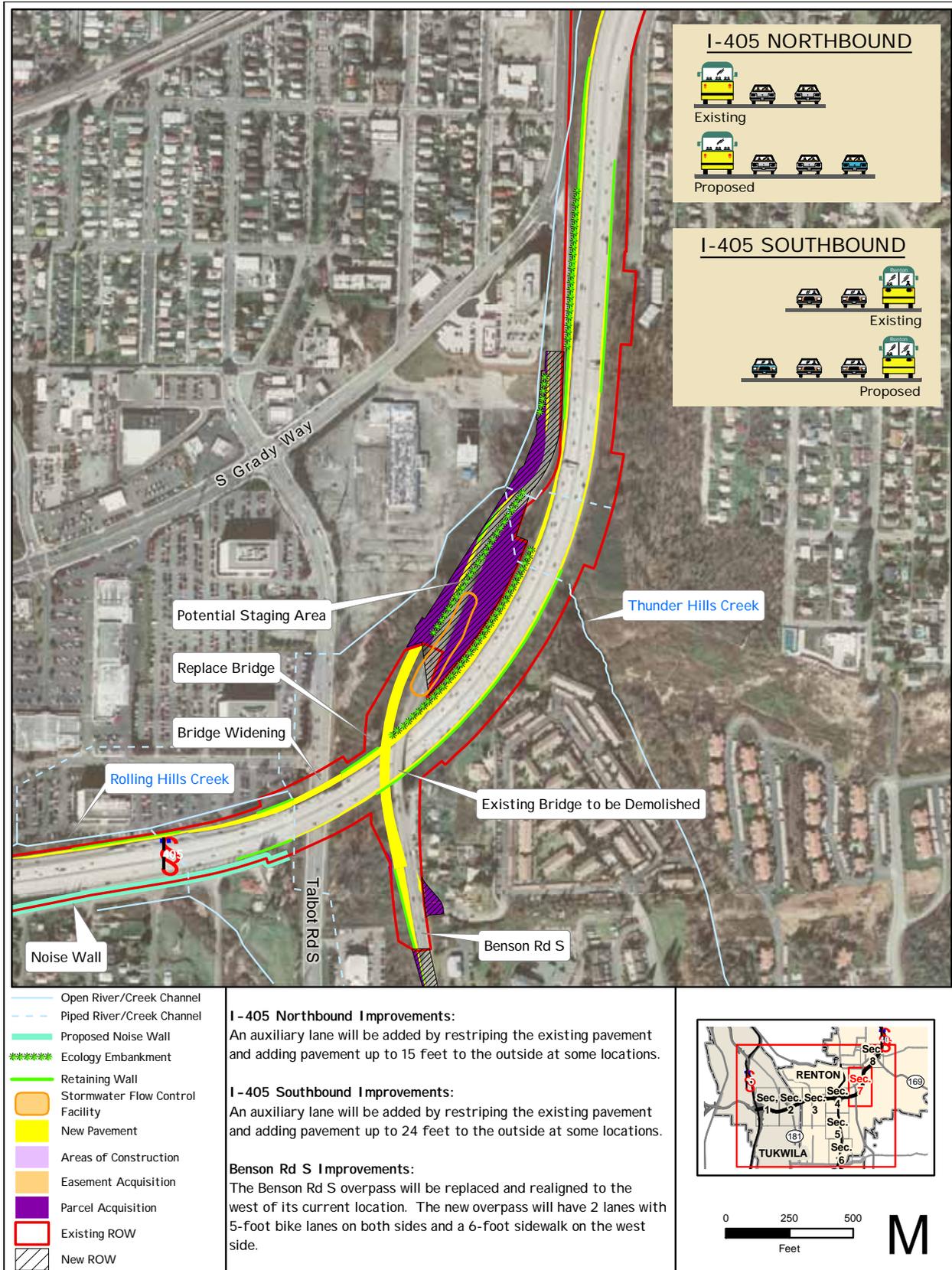


Exhibit 4-8. Project Overview Section 7



Exhibit 4-9. Project Overview Section 8

Widen or replace bridges

Several bridges within the study area will be widened or replaced based on present location, cost, and existing soil conditions.

To construct the new lanes, the project will:

- Replace the bridge rail on the I-405 bridges over SR 181 and the Union Pacific and Burlington Northern Santa Fe railroads.
- Replace the I-405 bridges over Springbrook Creek Side Channel and Oakesdale Avenue with a single northbound and a single southbound structure, and remove the Springbrook Creek box culvert. See Exhibit 4-4.
- Widen the I-405 bridge over Talbot Road on both the northbound and the southbound sides. See Exhibit 4-8.

The project will not affect the I-405 bridges over the Green River, Lind Avenue, or the Cedar River. The project will also not affect the Cedar Avenue or Renton Avenue bridges over I-405. The roadway will be restriped in these areas to accommodate the new lanes.

Use retaining walls

Widening I-405 and SR 167 will require retaining walls to minimize the construction footprint and right-of-way acquisition. Retaining walls will also help avoid and minimize effects to wetlands and other sensitive areas.

Improve culverts

WSDOT anticipates that construction will affect some existing stormwater cross culverts and one stream culvert. Associated culvert improvements include extending the existing structures due to widening the roadway and stabilizing culvert ends with rock or retaining walls. The I-405 Project Team will conduct a hydraulic analysis of the culverts to ensure that the modifications will have no effect on the base flood elevations. See the Fisheries and Aquatic Resources Discipline Report in Appendix L for detailed discussion on fish passage.

Build a noise wall

One noise wall will be built on the south side of the freeway as shown on Exhibits 4-5 and 4-8. The wall will begin at the intersection of South 14th Street and South 15th Street and follow South 14th Street east to Talbot Road. This wall will be approximately 2,150 feet long and 18 feet tall.

What does a “bridge rail” replacement involve?

Typically, a bridge rail replacement project consists of making minor adjustments to the width of the bridge deck and replacing the guard rail or barrier. This type of project does not include adding new bridge columns or footings.

What are the guidelines for stormwater management facilities?

Water quality treatment will be provided for an area equal to the new impervious surfaces created on the project. Impervious surfaces, such as pavement, are those that do not allow water to penetrate into the ground. Stormwater from new impervious surfaces or an equal area will be controlled in detention facilities. This process allows water to be held (detained) and thus released at rates that are equal to existing conditions.



Existing spill control pond at the I-405/SR 169 interchange. A pond liner is included to protect the City of Renton aquifer.

How will stormwater from the project be managed?

Stormwater from the project will be managed for both quality and peak flows using currently accepted best management practices (BMPs). The I-405 Project Team has designed the stormwater management facilities to comply with the following guidelines and procedures:

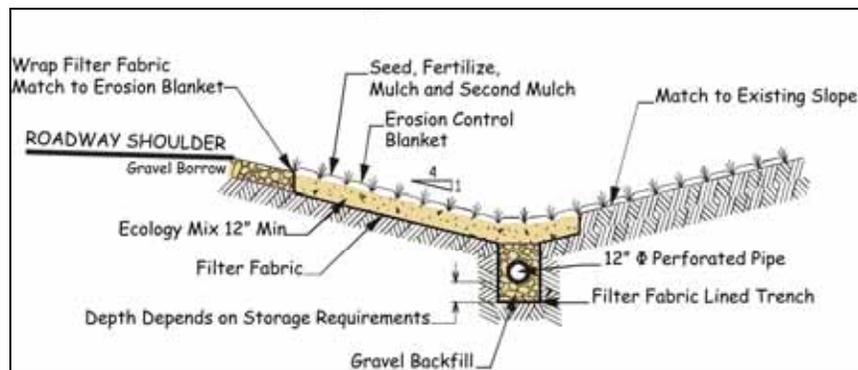
- WSDOT Highway Runoff Manual (HRM) M 31-16
- WSDOT Hydraulics Manual M 23-03

Stormwater treatment facilities

The project will add new impervious surface within the study area, most of which will be within the Springbrook Creek basin. This project will treat runoff for an area equal to 100 percent of these new surfaces.

The project will use BMPs that the HRM lists as enhanced treatment facilities. The I-405 Project Team has proposed that stormwater be treated using a combination of these facilities. In most of the study area, ecology embankments will be used to capture runoff from the edge of the pavement and provide water quality treatment. Ecology embankments also serve to convey treated runoff to receiving waters or to flow control facilities as required. The project also includes a combined stormwater quality wetland and detention facility that addresses water quality and flow control in one facility. Exhibits 4-2 through 4-9 show where stormwater facilities will be built for this project.

Ecology Embankment Cross-Section



Drainage collection and conveyance

Some changes to existing drainage will be necessary to provide flow control and water quality treatment to address the new impervious area added by the project. However, existing storm drainage systems will be kept to the greatest extent possible and existing flow patterns will be maintained. Where roadway widening affects drainage ditches that convey water from adjacent private properties, the project design will assure that existing conveyance capacities are maintained.

What environmental issues influenced the project design and what was done to avoid and minimize project effects?

Throughout the development of the Renton Nickel Improvement Project design, environmental elements were reviewed and design features were modified to avoid or minimize negative effects to the environment. Influence on the project design came from:

- Soil Conditions: the soils in the project area are highly prone to accentuate earthquake shaking, which influences how bridges can be widened or replaced.
- Noise: highway noise in the project area already exceeds acceptable levels, which means that including noise walls as part of the project had to be considered.
- Wetland Locations: many wetlands are located along the edges of the highway, which influence whether the widened sections will use retaining walls or fill slopes.
- Historic Sites: some historic sites and Section 4(f) properties exist within the study area, so the project design was coordinated to avoid these properties.

Because the I-405 Project Team planned for these environmental considerations, several design features have the benefit of avoiding or minimizing potential effects due to the project. These design features are described from south to north below.

I-405, I-5 to SR 167

WSDOT will construct a retaining wall from west of the 68th Avenue structure over I-405 at Tukwila Parkway to the Green River. This wall avoids the need to construct a fill slope that would extend into Gilliam Creek. See Exhibit 4-2.

What are stormwater flow control facilities?

These facilities control stormwater runoff so that it can be released at a controlled rate. Two types are commonly used:

- Ponds.
 - Vaults. Similar to a pond, but with a hard-sided construction and often completely underground. These concrete structures function the same as ponds in providing detention storage.
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The proposed design modifications allow the additional lanes to be added over the Green River by restriping instead of bridge widening. This avoids effects on the river, stream habitat, floodplain, and Interurban Trail.

WSDOT will provide a narrower outside shoulder on northbound I-405 at the Green River Bridge. The shoulder will vary from 10 to just over 3 feet at the west abutment of the existing bridge. Narrowing the shoulder avoids modifications to the existing bridge. As a result, the design also avoids effects to the river, the 100-year floodplain, the ordinary high water level, and adjacent riparian zones.

At the SR 181 interchange, the bridge and ramp will be restriped to provide the new general-purpose lane and ramp improvements. This approach minimizes the need to widen the existing SR 181 Bridge, reconstruct the SR 181 interchange, or modify the Southcenter Boulevard crossing of the Green River. This in turn avoids relocating or diverting the Interurban Trail, which goes under the bridge. See Exhibit 4-3.

Near the Westfield Shoppingtown Mall, a large Seattle Public Utilities water transmission line parallels I-405. WSDOT will line this pipe so that it can support the loads from the new roadway embankment. This approach allows the line to stay in its present location.

WSDOT will remove the existing I-405 bridges over the Springbrook Creek side channel and Oakesdale Avenue and replace them with a single northbound and a single southbound bridge. This approach will allow for the removal of the Springbrook Creek box culvert. Construction of the new bridges will be phased with the southbound bridge built slightly to the north of the existing roadway. This phasing minimizes the need to construct temporary roadway to maintain traffic operations. WSDOT also evaluated the location of the new bridge piers and selected locations that will minimize the effect on the existing stream, stream buffer, and trail that crosses under the bridge.

WSDOT will construct a narrower exit gore from I-405 to the northbound ramp at the SR 167 interchange shown in Exhibit 4-5. By building a narrower exit gore, the project can be constructed within the existing right-of-way. This has the benefit of avoiding right-of-way acquisition, avoiding effects to the wetland outside the right-of-way, and avoiding effects to the existing Lind Avenue Bridge.

SR 167, southbound from I-405 to SW 41st Street

WSDOT will build a retaining wall along a large portion of the west edge of SR 167 southbound instead of an earth fill slope. See Exhibits 4-6 and 4-7. The retaining wall minimizes effects on three wetlands. The retaining wall has the added benefit of minimizing right-of-way needs and reduces the effect on existing utility crossings, in particular, the City of Seattle's 60-

What is an exit gore?

An exit gore is a roadway feature that separates an exiting lane from the main lanes. An exit gore can be defined by using paint stripes, raised buttons, physical barriers, or a combination of these.



Retaining walls will help to avoid and minimize effects on the Panther Creek wetlands along SR 167

inch water line and Olympic Petroleum's two high pressure pipelines, which all cross under SR 167.

I-405, SR 167 to SR 169

WSDOT will add a lane by restriping I-405 northbound next to the Talbot Hill retaining wall immediately east of the SR 167 interchange. Restriping instead of widening avoids the need to reconstruct the existing Talbot Hill retaining wall and avoids effects on properties south of I-405 in this area. Between Talbot Road and the "S-Curves", northbound I-405 will be widened to achieve standard lane and shoulder widths. Most of this length will be supported by retaining walls to minimize effects to Thunder Hills Creek, adjacent properties, and the existing cut slope south of I-405.

To support the fill required to widen the roadway on the north side of I-405 next to the outfall for the original Rolling Hills Creek culvert, the design uses a retaining wall. By using the retaining wall, the project improvements at this location can be constructed without affecting the existing culvert.

WSDOT will use a non-standard design for the I-405 to SR 167 exit ramp. The changes from the design standards include not providing a recovery lane, narrowing the distance between the through lane and ramp, and providing narrower shoulders. While these changes deviate from WSDOT design standards they are an improvement over existing conditions. These features will avoid effects to the existing Rolling Hills Creek/Thunder Hills Creek channel located between I-405 and the Renton Cinema complex as shown in Exhibit 4-5. Using retaining walls along the west side of Benson Road avoids effects to Rolling Hills Creek and the wetlands east of Talbot Road.

WSDOT shifted a proposed stormwater facility to avoid effects to the existing Renton Coal Mine Hoist Foundation site south of Benson Road. This site is on the Washington Historic Register.

WSDOT also plans to replace the existing Benson Road Bridge over I-405 on a new alignment. The new bridge will be located slightly to the west of the existing bridge. This will allow traffic to continue to use the existing bridge until the new bridge is completed. This will minimize disruption for local traffic and to emergency response vehicles.

Where northbound and southbound I-405 passes under the Renton Avenue and Cedar Avenue bridges over I-405, WSDOT will add lanes by restriping. This design avoids replacing the two bridges; however, the available area does not allow the standard shoulder and lane widths.

What is a recovery lane?

A recovery lane is a paved area adjacent to an off-ramp. This area gives drivers, who find themselves exiting the freeway unintentionally, room to maneuver back onto the freeway.



Renton Coal Mine Hoist Foundation

WSDOT will use retaining walls to support widening southbound I-405 south of the Cedar Avenue bridge over I-405. Using retaining walls versus a fill slope, avoids encroaching on Cedar Avenue and Main Avenue in Renton.

What is planned for wetland and stream mitigation?

WSDOT will compensate for unavoidable effects to wetlands with credits from the Springbrook Creek Wetland and Habitat Mitigation Bank. Mitigation is needed for 1.66 acres of wetlands.

The Springbrook Creek Wetland and Habitat Mitigation Bank is being developed as a joint effort between WSDOT and the City of Renton. This ‘bank’ will construct a new high quality wetland complex that will serve to replace other wetlands that are filled in by projects such as the Renton Nickel Improvement Project. The location of the bank is shown in Exhibit 4-10. In addition to wetland mitigation, the site will also provide flood storage mitigation. The Springbrook Creek Wetland and Habitat Mitigation Bank will be one of the first urban mitigation banks to be certified in Washington.

To mitigate project effects on streams, WSDOT will remove the existing Springbrook Creek box culvert. With the new I-405 southbound and northbound bridges that will span both Springbrook Creek and Oakesdale Avenue, the box culvert is no longer needed. After the new bridges are in place, the box culvert will be removed and the streambed in that area will be restored. This will improve fish habitat within Springbrook Creek. Any additional stream mitigation required to offset project effects will be accommodated within the project vicinity.

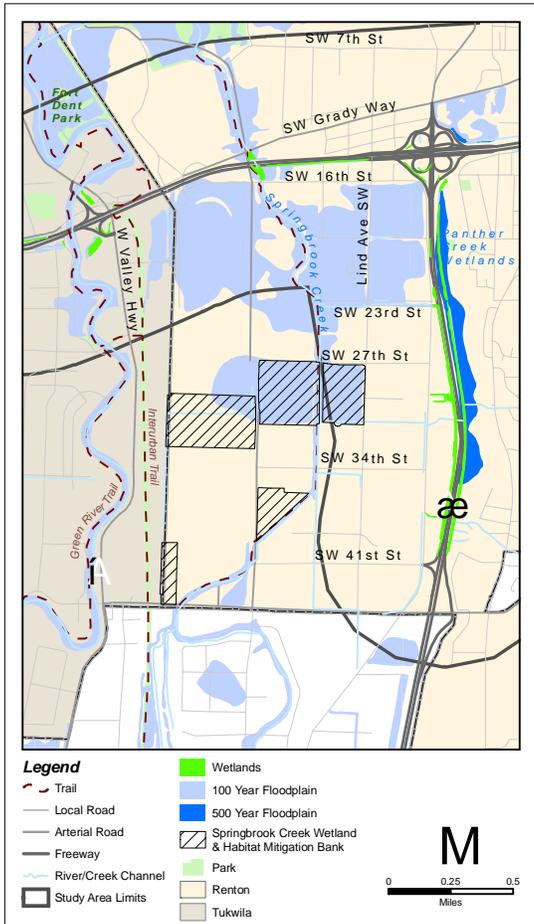


Exhibit 4-10. Location of Springbrook Creek Wetland and Habitat Mitigation Bank

What benefits will the project provide?

The Build Alternative will benefit the area by reducing congestion at chokepoints, reducing the duration of congestion during peak commuter travel hours, and improving freight movement.

This section of I-405, from the I-5 interchange to SR 169, is congested due to large traffic volumes and merging and diverging traffic. The new lanes will help relieve congestion by adding roadway capacity. This in turn will improve safety by providing drivers with more time and extra room to accelerate or decelerate and move into and out of the stream of traffic when getting on and off the freeway. This provides a smoother transition for motorists as they get on

and off I-405 in Tukwila and Renton and helps decrease rear-end and sideswipe collisions.

The project reduces congestion approaching the SR 167 interchange, and it complements the completed southbound I-405 to southbound SR 167 flyover ramp.

This project will construct one noise wall along the right-of-way for northbound I-405 from the intersection of South 14th Street and South 15th Street east to Talbot Road. This wall will benefit residents in that area by lowering the overall noise levels.

Another benefit of this project is that it continues the application of the Context Sensitive Solutions (CSS) design choices made by the communities within the I-405 corridor. The Benson Road realignment will reflect the most comprehensive application of these design choices as explained further in the next section.

How will the project incorporate community design preferences?

The Renton Nickel Improvement Project is being planned, developed, and designed according to CSS guidelines. These guidelines establish the community design preferences used to design the project features. Working within the framework for the overall I-405 corridor, the Urban Design Guidelines will be adapted to incorporate the communities' design preferences. These preferences will be included in the contract documents prepared for the Renton Nickel Improvement Project. The selected I-405 theme of "Culture, Nature, and Progress," with nature being the dominant theme, will be carried into corridor-wide and local I-405 designs.

The new Benson Road Bridge over I-405 is the main project feature that will receive CSS treatment. The new I-405 southbound and northbound bridges over Springbrook Creek and Oakesdale Avenue will also receive CSS treatments. The rest of the project elements will be designed to match in color and vegetation type only, as many of these elements will be affected by construction of future Master Plan projects. During future Master Plan phases for the overall I-405 corridor, the approved CSS guidelines will be applied throughout.

How will the project be constructed?

Construction of the entire Renton Nickel Improvement Project is expected to take two years, beginning in early 2008 and being completed in late 2010. However, construction activity will not be constant for the entire study area throughout this time, and in some locations, the work



This rendering shows the new Benson Road Bridge over I-405 with the CSS guidelines applied

will take substantially less time than two years. Construction will pose some minor inconveniences because of localized travel delays due to temporary lane closures and narrowed lanes and shoulders.

At-grade construction



At-grade construction for this project will likely be staged similar to what is shown above. Here, the southbound lanes of I-5 were shifted toward the median and a concrete barrier closed off the shoulder to provide crews a safe work area.

At-grade construction, which occurs on the same elevation as the existing lanes, will be staged to minimize traffic delays and detours. Typically, lanes are shifted toward the median. WSDOT then places a concrete barrier to close off the shoulder. Staging allows construction to occur safely without closing lanes for the duration of construction. Access to construction areas will occur from the roadway side to minimize property effects.

Bridge construction

Construction of the I-405 bridges will occur in multiple stages to minimize traffic delays and detours. The following describes typical staging for bridge construction. In the first stage, traffic is shifted toward the I-405 median and the existing lanes and shoulders are narrowed slightly to allow widening of the existing structure or construction of the new bridge depending on the design. In the next stage, traffic is shifted onto the new bridge area. If the bridge is being replaced rather than simply widened, the old structure is demolished after traffic is shifted to the new bridge.

The new Benson Road Bridge over I-405 will also be staged. The new structure will be built to the west, while the existing bridge will remain in service. After traffic has been shifted onto the new bridge, the existing structure will be demolished.

Staging areas

Construction staging areas along I-405 and SR 167 will be within the WSDOT right-of-way. Potential staging areas have been identified as shown on Exhibits 4-2 through 4-9.

Traffic control

Detour agreements with the local agencies will be obtained after WSDOT awards the contract. A traffic control plan will be approved by WSDOT prior to starting construction. The plan's primary objectives will be to provide a safe facility, to streamline the construction schedule, and to minimize reductions to existing traffic capacity. To lessen effects on traffic, the duration of activities will be minimized and reductions in capacity will be limited and will be targeted to a period when they will have the least effect.