

# I-405, Downtown Bellevue Vicinity Express Toll Lanes Project (MP 11.9 to 14.6)

## Attachment F: Visual Impact Assessment Discipline Report







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## SUMMARY

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### **What is the Project?**

The Washington State Department of Transportation (WSDOT) is proposing to construct the I-405, Downtown Bellevue Vicinity Express Toll Lanes Project (MP 11.9 to 14.6) (referred to in this report as “the Project”) to improve traffic operations and safety on Interstate 405 (I-405) through Bellevue. This discipline report assesses the Project’s operational and construction effects on visual quality as well as No Build conditions if the Project were not constructed.

### **What is our study approach?**

For conducting visual impact assessments, WSDOT uses the Federal Highway Administration (FHWA)’s methodology, which is described in their publication *Guidelines for the Visual Impact Assessment of Highway Projects* (FHWA-HEP-15-029; 2015).

We evaluated visual impacts for this report by reviewing project scoping documents, preliminary plans, and conceptual design studies to understand the changes proposed by the Project. We then reviewed the applicable regulations and relevant planning documents, such as the *City of Bellevue Comprehensive Plan* (Bellevue 2015) and *King County Eastside Rail Corridor Master Plan*, to understand the desires and goals of local residents and municipalities related to visual quality. We used geographic information system (GIS) technology and Google Earth to identify key viewpoints, and then conducted field visits to take photographs of these viewpoints for use in our assessment. Finally, we simulated the changes proposed by the Project to better study the visual impacts of the proposed improvements.

### **What are the existing conditions in the study area?**

The Project would extend along I-405 in Bellevue for approximately 2.7 miles from the I-90 interchange (MP 11.9) just past NE 6th Street (MP 14.6). The affected environment for this report encompasses areas that viewers can see from I-405 as well as areas from which viewers can see I-405 within the project limits.

## **What would be the Project's effects?**

The Project would enhance project coherence and increase cultural order as WSDOT replaces aging structures with new overpasses and structures that adhere to the aesthetic treatments identified in WSDOT's *I-405 Urban Design Criteria* (WSDOT 2016a)

Where the Project proposes to construct a new overpass adjacent to an existing overpass on northbound I-405, it would clear trees and vegetation and add additional roadway to a viewpoint that currently has a high degree of natural character. These changes would decrease natural harmony but would provide views of the downtown Bellevue skyline, which local stakeholders identified as desirable. The effects on visual quality due to these changes would, therefore, be neutral.

Where the Project would construct a new bridge over southbound I-405, WSDOT would restore roadsides with native vegetation to blend with the natural character of this segment of the corridor. The bridge would use the aesthetic treatments in the *I-405 Urban Design Criteria* (WSDOT 2016a), which would have a beneficial effect on project coherence.

The Project would replace the Main Street bridge with a wider, longer structure that includes the aesthetic treatments described in the *I-405 Urban Design Criteria* (WSDOT 2016a). This would have a beneficial effect on project coherence and cultural order.

Overall, the Project would have a beneficial impact on visual quality throughout the corridor. Project coherence would increase with the replacement of older structures that do not include the aesthetic treatments described in the *I-405 Urban Design Criteria* with new structures that do include these treatments. Although WSDOT would clear vegetation in select locations for construction access, these impacts would be minimal. In most cases, except where vegetation is cleared to add new express toll lanes (ETLs) or structures, WSDOT would restore areas cleared for access with native vegetation to minimize impacts on natural harmony and cultural order.



### **What measures would WSDOT use to avoid or minimize impacts?**

For the most part, the Project would minimize the amount of pavement added to the highway by restriping and reconfiguring lanes to achieve the desired operational improvements. Though new stormwater facilities would be needed, the Project would largely site these facilities in locations where stormwater facilities already exist.

The Project would preserve vegetation that currently screens neighbors from views of the highway. In areas where impacts on vegetation are unavoidable, the Project would restore roadsides with native vegetation to screen views of the highway and create cohesive roadsides that harmonize with the natural and semi-urban landscapes within the corridor.

In locations where new structures, lights, or signs are required, the Project would adhere to the Context Sensitive Solutions (CSS) guidelines in the *I-405 Urban Design Criteria*, which have been used for all new projects in the corridor since 2006. These guidelines provide a common palette of materials, colors, textures, and architectural detailing to ensure aesthetic treatments throughout the corridor are consistent.

The Project would add four tolling gantries with light-emitting diode (LED) signs to the corridor. Project designers have carefully sited these signs to prevent light from spilling over onto adjacent properties.

### **Would there be there any unavoidable impacts on visual quality?**

The Project would result in permanent changes to the visual environment for I-405 users and neighbors. For the most part, the Project would preserve existing vegetation along the I-405 corridor. In areas where the Project would add pavement to widen I-405, travelers on the highway would experience a moderate increase in the expanse of pavement and scale of the highway. In areas where the Project would restripe the existing pavement to create ETLs, there would be little impact on visual quality. New structures, such as bridges and retaining walls, would use the aesthetic treatments called for in the *I-405 Urban Design Criteria* (WSDOT 2016a), strengthening the Project coherence of this corridor and having a beneficial effect on visual quality.

### ***What would happen if the Project is not built?***

The No Build alternative consists of WSDOT's continued routine maintenance. This maintenance includes short-term, minor construction activities such as paving and striping, which are necessary for continued operations of the existing I-405 facility, and minor safety improvements such as guardrail replacement, as required within the project limits. The No Build alternative would have no impact on visual quality; therefore, this discipline report does not evaluate the No Build alternative.

## SECTION 1 INTRODUCTION

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This discipline report was prepared in support of the *I-405, Downtown Bellevue Vicinity Express Toll Lanes Project (MP 11.9 to 14.6)* (referred to in this report as “the Project”) *Environmental Assessment (EA)* to evaluate environmental effects related to proposed improvements on Interstate 405 (I-405).

The Project is part of a comprehensive strategy identified in the 2002 *I-405 Corridor Program Final Environmental Impact Statement* and subsequent Federal Highway Administration (FHWA) *Record of Decision* to reduce traffic congestion and improve mobility along the state’s second-busiest highway. The Project is needed because travelers on I-405 face one of the most congested routes in the state, particularly during peak travel times.

### ***What are the primary features of the Project?***

The Project would widen I-405 to accommodate an additional lane both northbound and southbound. The additional lane would be coupled with the existing northbound and southbound high-occupancy vehicle (HOV) lane to create a dual express toll lane (ETL) system. When combined with the existing dual ETL system north of NE 6th Street, the Project would result in a continuous ETL system from Interstate 90 (I-90) in Bellevue to I-5 in Lynnwood.

### ***What is the purpose of this report?***

A visual impact assessment evaluates the effects of the Project on views both to and from the transportation facility and categorizes these impacts as beneficial, adverse, or neutral based on viewer preferences and sensitivity.

## ***Why is visual quality an important element to consider?***

Visual quality is an important component of environmental quality on which transportation projects can have an effect. Perceived visual effects often strongly influence community acceptance of any transportation project. Because of the public nature and visual importance of transportation projects to both travelers and neighbors of the facility, changes to the visual environment must be understood and addressed during project development.

## SECTION 2 PROJECT DESCRIPTION

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### ***What improvements are proposed with the Project?***

The Project would extend along I-405 approximately 2.7 miles from just north of the I-90 interchange (MP 11.9) to north of the NE 6th Street interchange (MP 14.6). The Project proposes the following improvements by mile posts, as shown in Exhibit 2-1, sheets 1 and 2:

- **Northbound I-405, I-90 to NE 6th Street (MP 11.9 to 13.7)** – Develop approximately 1.6 miles of new lane in the northbound direction by widening or restriping I-405 from MP 11.9 to 13.5. In this same section of I-405, convert the existing HOV lane to an ETL. The new lane coupled with the existing HOV lane would create a dual ETL. Between MP 13.5 and 13.7, convert the existing HOV lane to an ETL. The ETL would connect to the existing ETLs from downtown Bellevue to Lynnwood. Westward expansion of I-405 is proposed south of SE 8th Street, and eastward expansion is proposed north of SE 8th Street.
- **Southbound I-405, I-90 to NE 6th Street (MP 11.9 to 13.7)** – From MP 11.9 to 12.5, reconfigure the existing outside HOV lane to the inner roadway and convert both of the existing HOV lanes to ETLs. From MP 12.5 to 13.5, develop a new lane by widening or restriping. This new lane coupled with the existing HOV lane would result in a dual ETL south of NE 4th Street. Between MP 13.5 and 13.7, convert the existing HOV lane to an ETL. The ETL would connect to the existing ETLs from downtown Bellevue to Lynnwood. Where new pavement is needed, eastward expansion is proposed.
- **I-405 Eastside Rail Corridor Overpass (MP 12.4)** – Build a new northbound I-405 bridge structure adjacent to the existing I-405 structure over the Eastside Rail Corridor Regional Trail. The new structure would carry the two ETLs and the GP lanes would remain on the existing structure.
- **Eastside Rail Corridor Regional Trail (MP 12.09 to 12.49)** – Construct a new bridge for nonmotorized

travel over southbound I-405 near MP 12.15. Build a section of nonmotorized trail to connect with the Eastside Rail Corridor Regional Trail.

- **SE 8th Street Interchange (MP 12.78)** – Widen the northbound I-405 overpass over SE 8th Street.
- **Main Street Overpass (MP 13.31)** – Reconstruct the Main Street bridge (photo on right) over I-405.
- **Northbound I-405 to SR 520 Ramp (MP 14.6)** – Widen the existing northbound off-ramp to SR 520 from two lanes to three lanes for approximately 600 feet beginning where the NE 10th Street on-ramp merges onto the I-405 ramp.
- **Stormwater** – Build new flow control and runoff treatment facilities.
- **Other Improvements** – Provide pavement markings, drainage improvements, permanent signing, illumination, intelligent transportation systems, barriers, and tolling gantries.
- **Context Sensitive Solutions** – Incorporate CSS to enhance mobility, safety, the natural and built environment, and aesthetics throughout the Project corridor.
- **Property Acquisitions** – Acquire portions of five commercial and public properties to accommodate the Project.
- **Minimization Measures** – Implement avoidance and minimization measures or compensate for unavoidable effects on the environment, as described in Chapter 6, Measures to Avoid or Minimize Effects.



**Existing Main Street Overpass**

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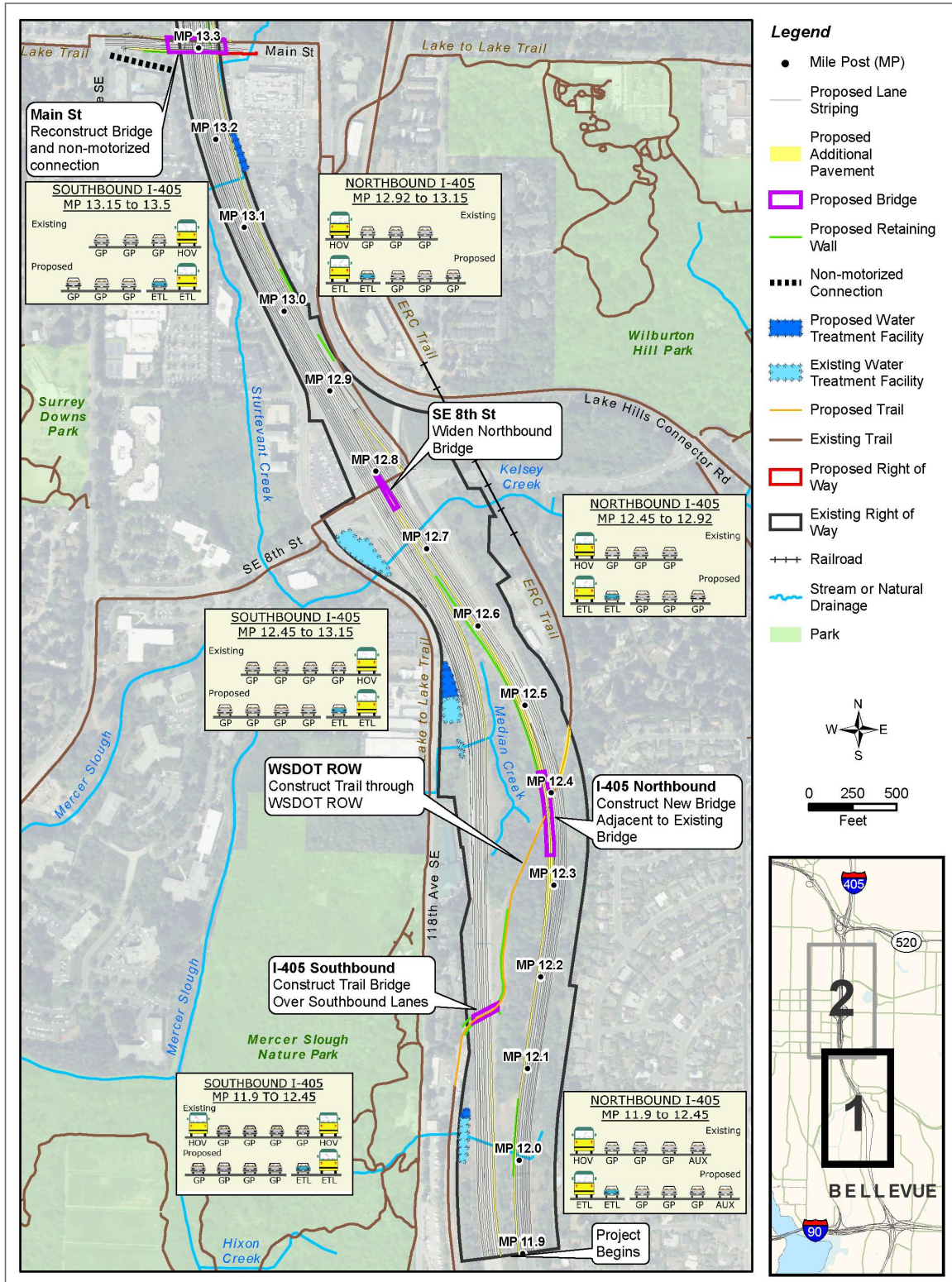
#### **What are Context Sensitive Solutions?**

The *Context Sensitive Solutions (CSS)* process is a model for transportation project development that has received much discussion and broad acceptance. Its essence is that a proposed transportation project must be planned not only for its physical aspects and road serving specific transportation objectives, but also for its effects on the aesthetic, social, economic, and natural environment, as well as the needs, constraints, and opportunities in a larger community setting.

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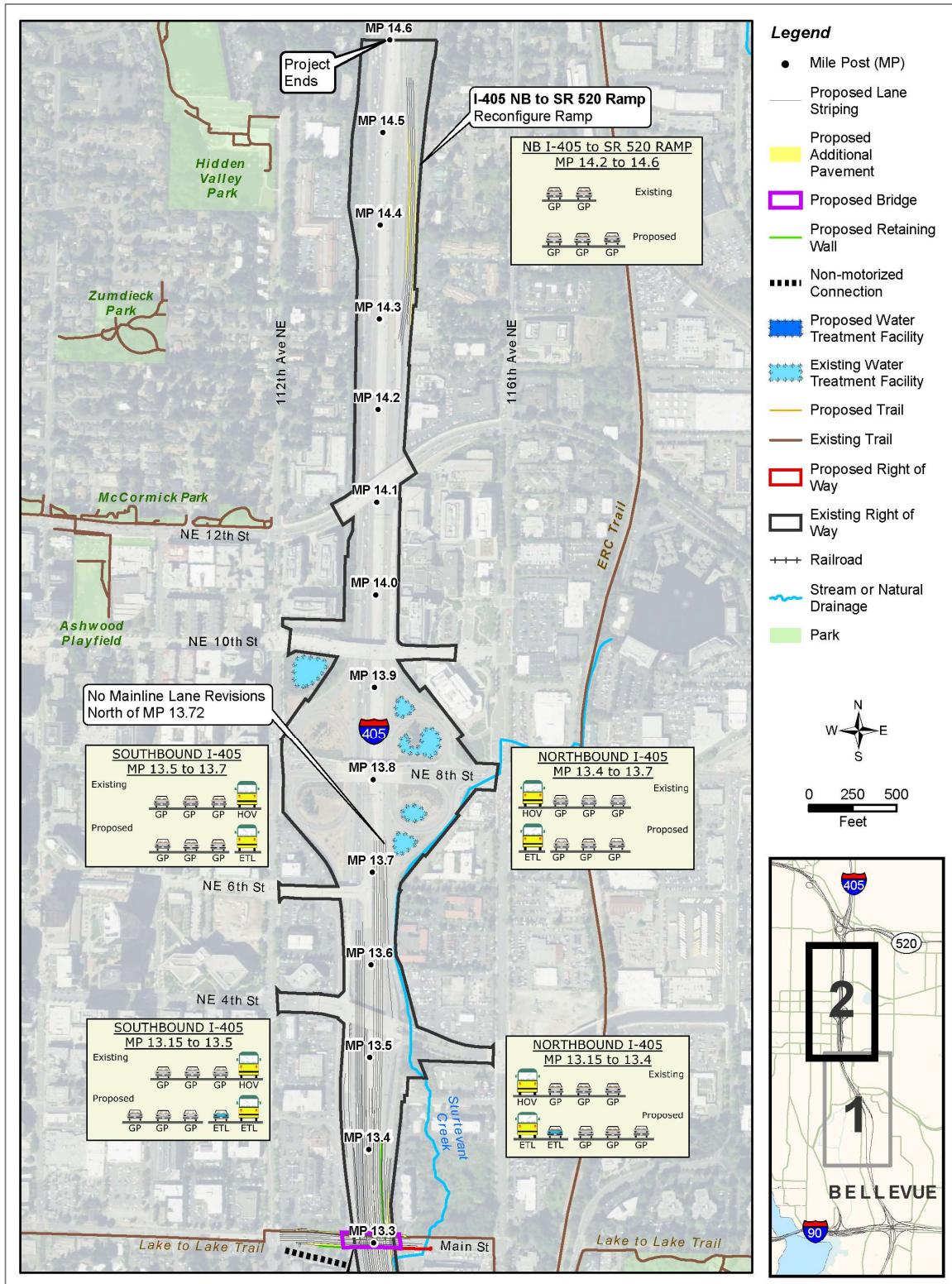
I-405, DOWNTOWN BELLEVUE VICINITY EXPRESS TOLL LANES PROJECT (MP 11.9 TO 14.6)  
 VISUAL IMPACT ASSESSMENT DISCIPLINE REPORT

Exhibit 2-1. Project Improvements, Sheet 1 of 2



I-405, DOWNTOWN BELLEVUE VICINITY EXPRESS TOLL LANES PROJECT (MP 11.9 TO 14.6)  
 VISUAL IMPACT ASSESSMENT DISCIPLINE REPORT

Exhibit 2-1. Project Improvements, Sheet 2 of 2





## How would the express toll lanes work?

At this time, the Washington State Transportation Commission (WSTC) has not established operational hours, user exemptions, occupancy requirements, and operating parameters for ETLs proposed with the Project. WSTC would set operational requirements for the ETLs prior to opening day. For this analysis, we assumed the requirements for the current I-405, Bellevue to Lynnwood ETL system would be used for the Project. These assumptions, listed below, represent the most recent operating guidance from the WSTC for ETLs:

- **Limited Access** – The system would have designated entry and exit points, with a buffer between the ETLs and the GP lanes. These access points would vary in length, depending on the location.
- **Dynamic and Destination Pricing** – The I-405 ETL system would use both dynamic and destination pricing to determine a driver’s toll at the time they enter the ETL. With *dynamic pricing*, toll rates vary based on congestion within the corridor to maintain performance. Electronic signs are used to communicate the current toll rate for drivers. Toll rates are updated every few minutes, but the driver’s price is set when they enter the system. With *destination pricing*, the toll is based on the driver’s destination. Toll signs show up to three toll rates for different toll zones, or destinations. Drivers pay the rate they see upon entering the ETLs to reach their destination, even if they see a different toll rate for their destination further down the road. When both pricing approaches are used together, it means the toll that drivers pay is based both on the congestion in the corridor and the distance they are traveling.
- **Operating Hours and Good To Go! Passes** – The ETL system is expected to operate from 5 a.m. to 7 p.m. on weekdays, with the system toll-free and open to all at other hours and on major holidays. Transit, HOVs, and motorcycles would need to have a *Good To Go!* pass to use the ETLs for free during operating hours. Eligible HOV users would

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### How does dynamic pricing work?

Electronic monitors along the roadway measure real-time information on speed, congestion, and number of vehicles in the *express toll lanes (ETLs)*. This information is used to determine whether tolls go up or down to optimize lane use.

As the ETLs become congested, toll rates increase, and as congestion decreases, toll rates decrease. The use of dynamic pricing allows the lanes to operate with high volumes, but avoid becoming congested.

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### When would tolls be charged to use the ETLs?

It is assumed the ETLs would operate from 5 a.m. to 7 p.m. on weekdays. At all other times and major holidays, the lanes would be free and open to all without a *Good To Go!* pass.

During operating hours:

- **SOVs** would pay a toll to use the lanes.
- **Transit, HOV 3+, and Motorcycles** would travel for free with a *Good To Go!* pass.
- **HOV 2+** would travel for free from 9 a.m. to 3 p.m. with a *Good To Go!* pass. From 5 a.m. to 9 a.m. and 3 p.m. to 7 p.m. HOV2+ would pay a toll to use the ETLs with or without a *Good To Go!* pass.
- **Large vehicles** over 10,000 pounds gross vehicle weight would not be able to use the ETLs at any time.

be required to set the *Good To Go!* pass to the HOV mode to avoid charges. SOVs could choose to pay a toll to use the ETLs during operating hours with or without a *Good To Go!* pass.

- **Occupancy Requirements** – During the peak periods (weekdays from 5 a.m. to 9 a.m. and 3 p.m. to 7 p.m.), transit vehicles and carpools with three or more persons (HOV 3+) would be able to use the lanes for free with a *Good To Go!* pass. From 9 a.m. to 3 p.m., the system would be open toll-free to those with two or more passengers with a *Good To Go!* pass. Motorcycles ride toll-free in the ETLs with a *Good To Go!* pass.
- **Vehicle Weight** – Vehicles over 10,000 pounds gross vehicle weight will be prohibited, which is consistent with HOV lane restrictions throughout Washington.
- **Electronic Tolling** – Payments will be made via electronic tolling with a *Good To Go!* pass. For drivers who choose not to use a *Good To Go!* Pass, WSDOT offers optional photo billing (pay by mail) for an extra fee.

	MONDAY TO FRIDAY	WEEKENDS/ HOLIDAYS
Midnight	Open to all without toll or pass	
5 a.m.	Tolling hours of operation 3+ HOV free with <i>Good To Go!</i> Flex Pass* 2+ HOV free with <i>Good To Go!</i> Flex Pass*	Open to all without toll or pass
9 a.m.		
3 p.m.		
7 p.m.		
Midnight	Open to all without toll or pass	

\*Motorcycles free with *Good To Go!* motorcycle pass

### How would tolling revenue be used?

Federal law and state law provide specific requirements on how toll revenues can be used. Federal law regarding the use of toll revenues is contained in 23 United States Code (USC) Section 129 (a)(3). This law states that all toll revenues received from operation of the toll facility are used for such things as debt service, a reasonable return on investment for any private financiers of the Project, operations and maintenance costs, and payments associated with any public-private partnership agreements.

In addition to these federal requirements, the Revised Code of Washington (RCW) 47.56.820 requires that all revenue from an eligible toll facility must be used only to construct, improve, preserve, maintain, manage, or operate the eligible toll facility on or in which the revenue is collected. Similar to the federal law, expenditures of toll revenues must be approved by the

Legislature and must be used only to cover operations and maintenance costs; to repay debt, interest and other financing costs; and to make improvements to the eligible toll facilities.

As required by state law, all toll revenue generated from the Project ETLs would be used to construct, improve, preserve, maintain, manage, or operate the I-405 corridor.

***What is the Project construction schedule?***

Construction of the Project is expected to last up to 5 years beginning in 2019 and ending in 2024.



## SECTION 3 STUDY APPROACH

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### ***What is the study area and how was it determined?***

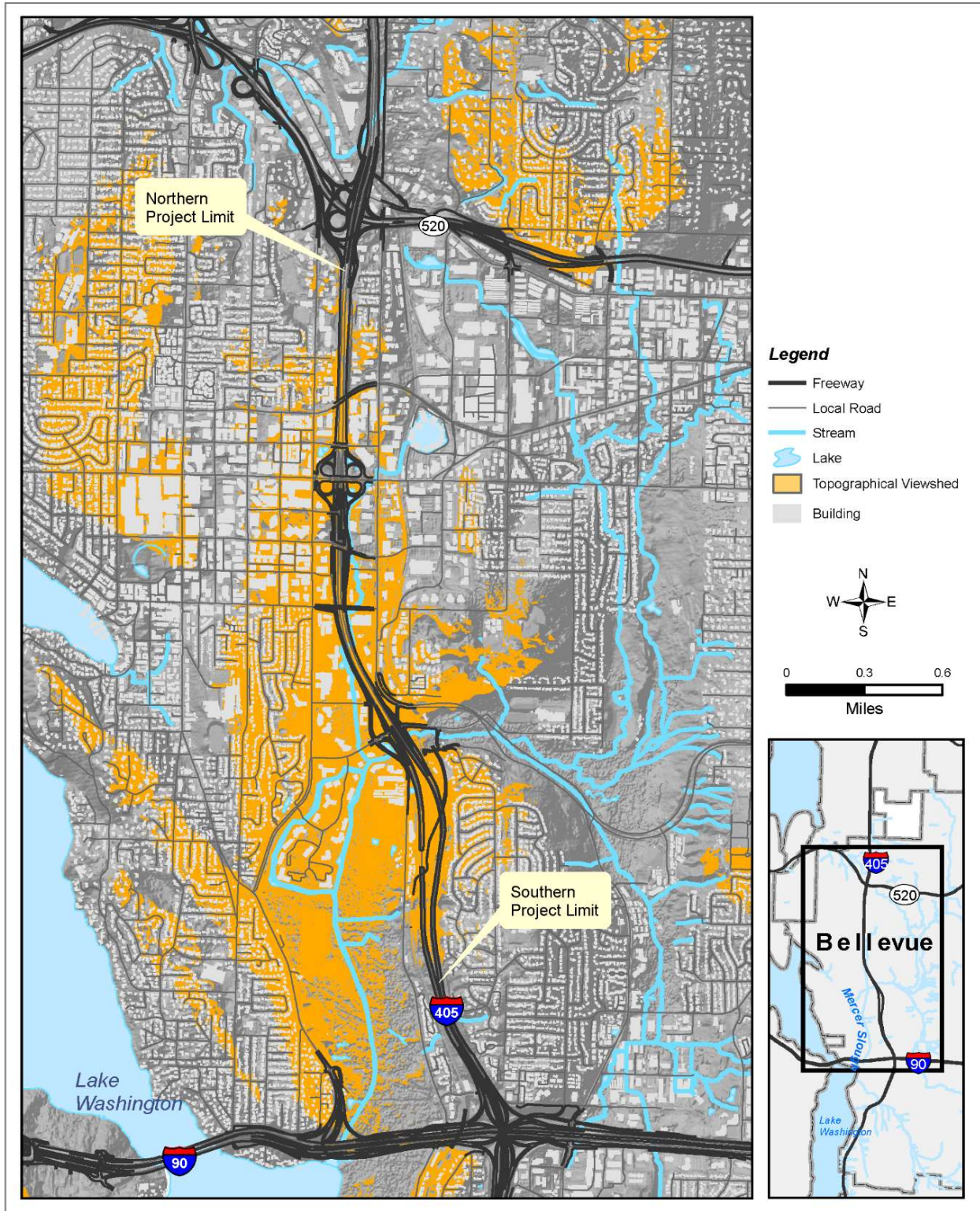
The study area of a visual impact assessment is known as the Area of Visual Effect (AVE). The AVE includes those areas that have views to or from the Project based on landform, land cover, and the physiological limits of human sight.

The Project would extend along I-405 in Bellevue for approximately 2.7 miles from the I-90 interchange (MP 11.9) just past NE 6th Street (MP 14.6). The AVE for this report encompasses areas that viewers can see from I-405, as well as areas from which viewers can see I-405 within the project limits.

To determine the AVE, we first identified areas that have views of the Project based on topography alone (Exhibit 3-1). We then conducted field visits to identify land cover constraints, such as vegetation and structures, to determine which areas are most likely to provide views to and from the Project both during and after construction.

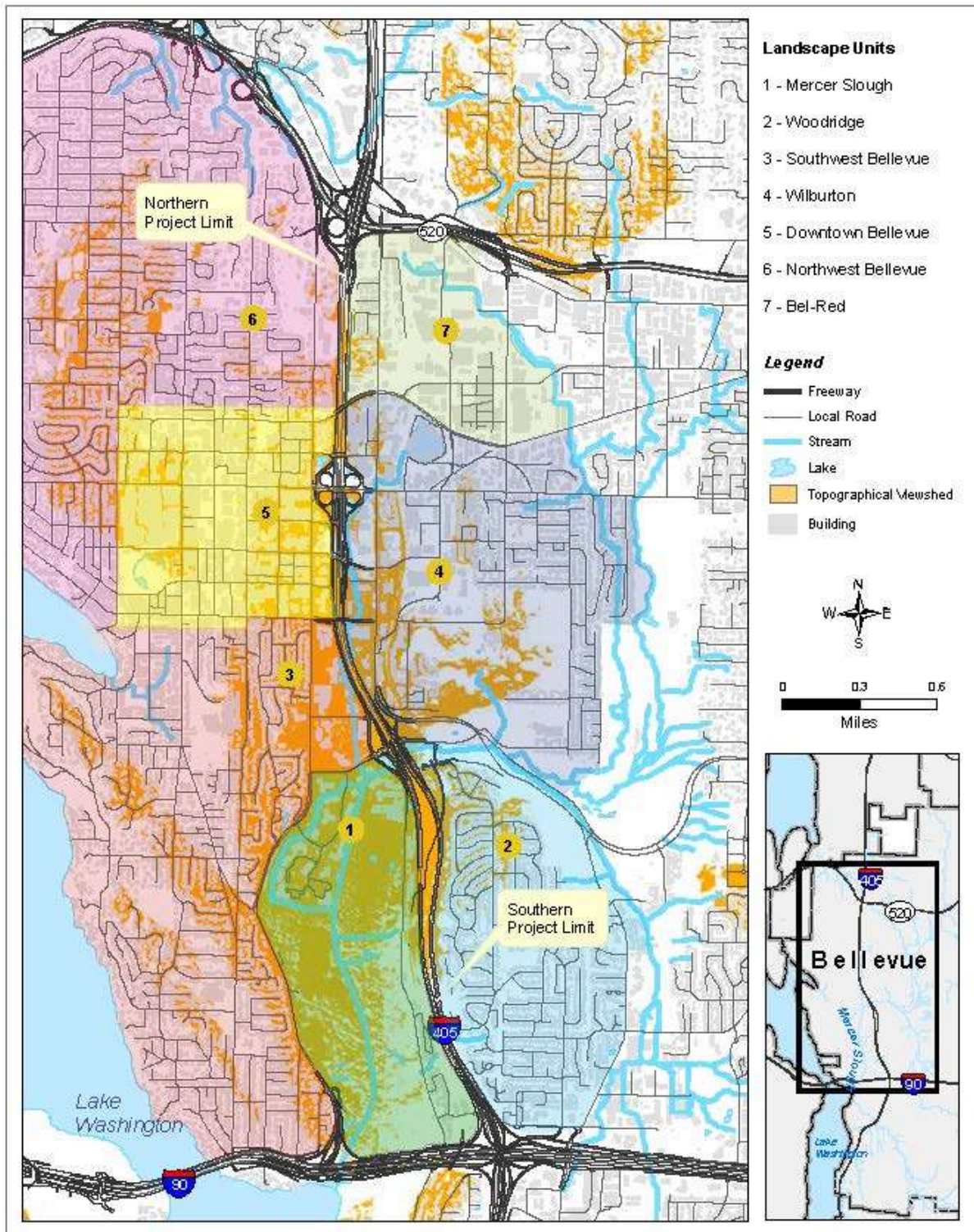
Based on these field visits, we then categorized the AVE into landscape units; each of these has its own visual character and set of viewers (Exhibit 3-2).

**Exhibit 3-1. I-405, Downtown Bellevue Vicinity Express Toll Lanes Project (MP 11.9 to 14.6) Viewshed Analysis**



**Exhibit 3-2. I-405, Downtown Bellevue Vicinity Express Toll Lanes Project (MP 11.9 to 14.6) Landscape Units**

Source: WSDOT, HNTB, 2018 | W66636\Analysis\Reports\Visual Impact Assessment\ent Discipline Report\Graphics for Report | Last updated: 5 February 2018



## **What policies or regulations relate to impacts on visual quality?**

Both WSDOT and FHWA (2015) mandate that highway projects complete evaluations of visual effects (including aesthetics, light and glare) during the early phases of project development.

WSDOT policies for visual quality assessments are contained in Section 459 of the WSDOT *Environmental Manual* (M31-11; 2017). Applicable state regulations include Washington's Highway Beautification Act (RCW 47.40.010) and the Open Space Land Preservation Act (RCW 84.34).

Federal regulations for visual quality protection in association with highway systems and other transportation facilities are contained in several programs, including the Highway Beautification Act of 1965; National Historic Preservation Act of 1966; U. S. Department of Transportation Act, Section 4(f); Wild and Scenic Rivers Act; and National Trail System Act of 1968.

In addition, the National Environmental Policy Act (NEPA) requires due consideration for environmental issues, including aesthetics and visual quality, in evaluating applicable projects. The Washington State Environmental Policy Act (SEPA) requires a similar process for applicable state and local actions.

## **How did we collect information for this report?**

We evaluated visual impacts for this report by reviewing project scoping documents, preliminary plans, and conceptual design studies to understand the changes proposed by the Project. We then reviewed the applicable regulations and relevant planning documents, such as the *City of Bellevue Comprehensive Plan* (2015) and *King County's Eastside Rail Corridor Master Plan*, to understand the desires and goals of local residents and municipalities related to visual quality. We used GIS and Google Earth to identify key viewpoints, and then conducted field visits to take photographs of these viewpoints for use in our assessment. Finally, we simulated the changes proposed by the Project to better study the visual impacts of the proposed improvements.



## ***How did we evaluate visual impacts?***

For conducting visual impact assessments, WSDOT uses FHWA's methodology, which is described in their publication *Guidelines for the Visual Impact Assessment of Highway Projects* (FHWA-HEP-15-029; 2015).

The Visual Impact Assessment process consists of four phases: Establishment, Inventory, Analysis, and Mitigation. In each of the four phases, the methodology considers the relationship between the affected environment (visual resources) and the affected population (viewers). This type of analysis stems from the idea of transactional perception in which perception (visual quality) is the result of the interaction between viewers and the environment, rather than the intrinsic characteristics of each taken in isolation. Exhibit 3-3 illustrates the process for evaluating visual impacts, which is described below.

During the Establishment phase, we defined the AVE by considering the topography, vegetation, and limits of human sight that constrain the visual environment of the Project.

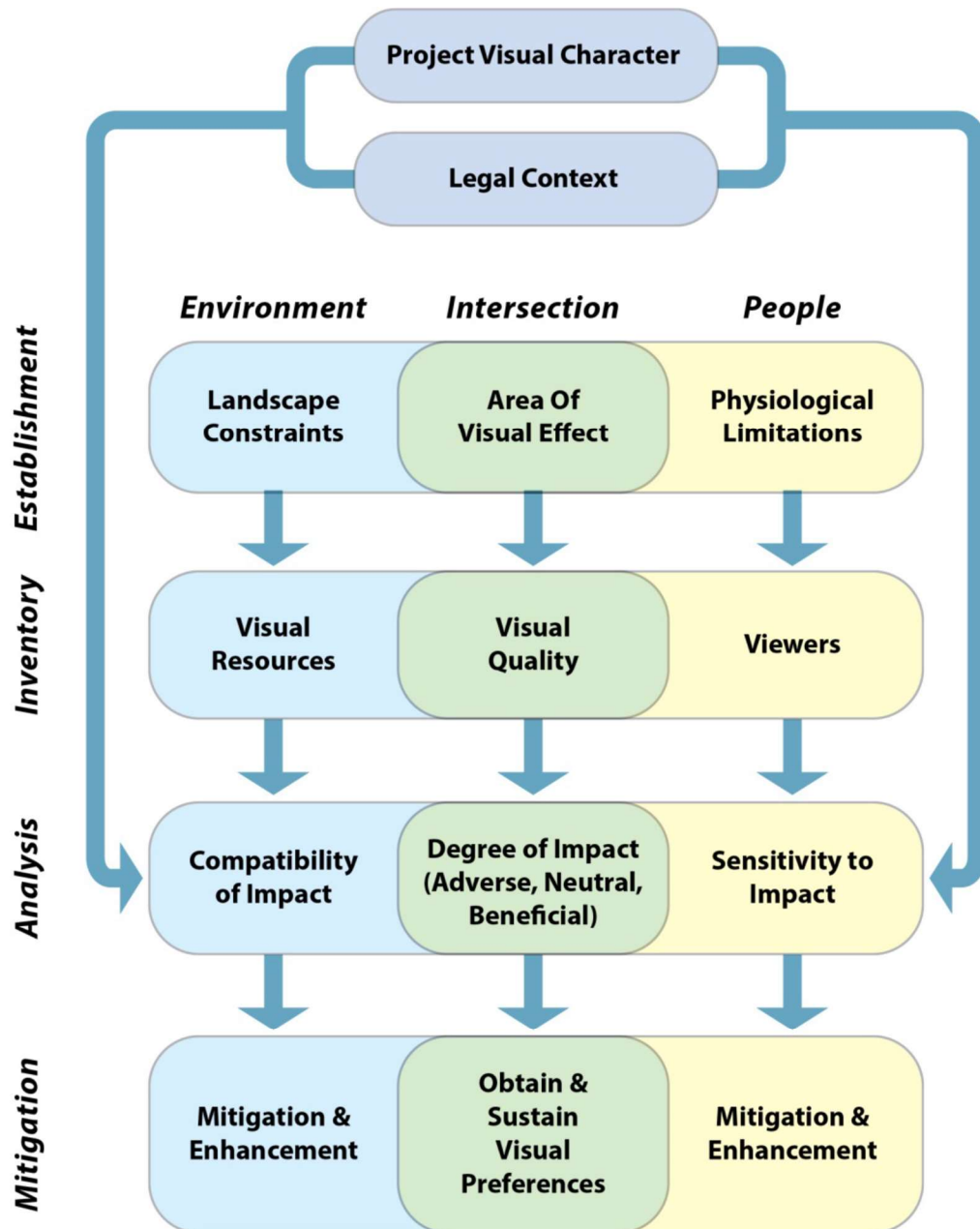
As part of the Inventory phase, we categorized the AVE into distinct landscape units and identified viewer types. We then selected representative viewpoints and described the existing visual quality for each based on each viewpoint's natural harmony, cultural order, and project coherence.

During the Analysis phase, we evaluated the Project effects from each viewpoint by analyzing the changes to natural harmony, cultural order, and project coherence that we identified during the Inventory phase. We then categorized these impacts as beneficial, adverse, or neutral.

Finally, as part of the mitigation phase, we identified ways to avoid, minimize, or mitigate for adverse impacts and described how the Project might lessen or eliminate any undesirable visual effects.

Exhibit 3-3. Visual Impact Assessment Process Diagram

## Visual Impact Assessment Process



## SECTION 4 EXISTING CONDITIONS

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### ***What is the existing visual character of the Area of Visual Effect?***

From the point where the Project begins heading north to SE 8th Street, I-405 carves into the west-facing hillside above Lake Washington, running in a roughly north–south direction through the study area. This portion of the highway passes through two different landscape units: Woodridge landscape unit on the east and Mercer Slough landscape unit on the west.

The land cover in this section is mixed deciduous-conifer forest; however, the scale of the highway dominates views. Although residential neighborhoods flank the highway to the east and west, these neighborhoods are either higher or lower in elevation than the highway and buffered from it by vegetation. The only structures to intrude in the view are those related to the highway itself or the glass towers of the Bellevue skyline in the background (Exhibit 4-1).

***Exhibit 4-1. Views from Northbound I-405 South of SE 23rd Street***



As the Project approaches Bellevue's urban core, the highway passes through the Southwest Bellevue, Wilburton, and Downtown Bellevue landscape units. The view of the skyline becomes more noticeable and the highway is increasingly framed by retaining walls, rather than native vegetation (Exhibit 4-2). The visual character of this portion of the Project is distinctly urban, but it has a high degree of cultural order and project cohesiveness that make the framed views appealing.

***Exhibit 4-2. View of Bellevue Skyline from Northbound I-405***



### **Woodridge Landscape Unit**

The Woodridge landscape unit has a suburban visual character (Exhibit 4-3). Native vegetation is sparse, and green lawns with smaller trees predominate so as not to obstruct the views of Lake Washington and downtown Bellevue in the distance. The roadways in this residential neighborhood follow the topographic contours of the hill, with one-story, midcentury homes on either side.

Though some homes in this landscape unit are within the Project's topographical viewshed, these homes are separated from the highway by mixed conifer-deciduous forest.

***Exhibit 4-3. Visual Character in the Woodridge Landscape Unit***



### **Southwest Bellevue Landscape Unit**

Southwest Bellevue also has a residential, suburban visual character; however, the homes tend to be tucked into trees and the neighborhood has a more wooded feel. The commercial portions of this landscape unit have a transitional visual character (Exhibit 4-4). Many of the commercial or hotel properties are surrounded by treed parking lots, but those closest to I-405 have views of the I-405 retaining walls or of the freeway traffic itself.

***Exhibit 4-4. Visual Character in the Southwest Bellevue Landscape Unit***



Though many homes in this landscape unit fall within the Project's topographical viewshed, viewers in these residences do not have views of the I-405 corridor due to the presence of vegetation in their neighborhoods and the screening effects of the larger buildings closer to the highway.

### **Mercer Slough Landscape Unit**

The Mercer Slough landscape unit has a high degree of natural harmony in the park, which preserves a native forested wetland area (Exhibit 4-5). Closer to the freeway, the visual character has a moderate degree of natural harmony, but has pockets of suburban cultural order due to the presence of a few commercial developments that have cleared the native vegetation and landscaped their lots with more ornamental plants.

Though many areas in this landscape unit fall within the topographical viewshed for the Project, the area is heavily forested, which limits visibility of the Project to just those properties that abut the freeway.

*Exhibit 4-5. Visual Character in the Mercer Slough Landscape Unit*



### **Wilburton Landscape Unit**

Perched on a hill above downtown Bellevue, the Wilburton landscape unit includes panoramic views of I-405 and the city below (Exhibit 4-6). Within the topographical viewshed, trees and multistory buildings block views of I-405 for most viewers

in this landscape unit, so the primary views to and from the I-405 corridor are from the larger roads closer to the highway.

***Exhibit 4-6. Visual Character in the Wilburton Landscape Unit***



**Downtown Bellevue Landscape Unit**

The Downtown Bellevue landscape unit consists of newer skyscrapers and older office buildings and hotels on a hill above Lake Washington (Exhibit 4-7). Residential neighborhoods with ample tree cover surround the downtown core, while the downtown core has much larger-scale buildings and roadways interspersed with attractive parks and green spaces.

***Exhibit 4-7. Visual Character in the Downtown Bellevue Landscape Unit***



Due to the height of the office building and apartments in the downtown core, the topographic viewshed does not account for all viewers in this landscape unit. Viewers include office

workers and residents in buildings tall enough to provide elevated views of the I-405 corridor. In addition, viewers include pedestrians and bicyclists on downtown streets and travelers on I-405.

### **Northwest Bellevue Landscape Unit**

The Northwest Bellevue landscape unit, north of the NE 12th Street Overpass along I-405, is noticeably less urban in character than the Downtown Bellevue landscape unit. It is dominated by mature evergreen trees that frame both sides of the I-405 corridor and screen surrounding commercial and residential development. Further north, near the I-405/SR 520 interchange, the view is dominated by the eastbound SR 520 to northbound I-405 flyover.

### **Bel-Red Landscape Unit**

In the Bel-Red landscape unit there is a mix of low- to midrise commercial, mostly multifamily residential, and public facility uses. Development along SR 520 east of I-405 is diverse and continuous, including moderate- to large-footprint, low-rise industrial and commercial buildings; dense mixed single-family and multifamily neighborhoods; and small- to moderate-sized retail centers along arterial streets. Most of the commercial and retail establishments have their own parking lots. East of I-405, views from SR 520 extend south over the commercial district to the horizon. SR 520 is not generally visible from the commercial district south of the corridor because the district is below the grade of the roadway, and buildings and street trees block views.

### ***Whose views would the Project affect?***

Viewer groups for this assessment include travelers on I-405, trail users on the Eastside Rail Corridor Regional Trail, and people in properties adjacent to these two facilities.

I-405 is a heavily used commuter corridor that connects Renton to Everett. Travelers on I-405 are primarily commuters with lower sensitivity to visual quality. The Project would be most visible to viewers traveling on the I-405 corridor itself.

In the Woodridge and Southwest Bellevue landscape units, neighbors are primarily residential viewers with a high sensitivity to visual quality. Viewers in the Woodridge landscape unit are much higher in elevation than I-405 and separated from the highway by thick vegetation, so the visual



changes proposed by the Project would not be visible to these viewers. Similarly, residential viewers in the Southwest Bellevue landscape unit are much lower in elevation than I-405 and separated from the highway by Mercer Slough Park.

The Southwest Bellevue landscape unit also includes hotels and commercial developments that abut the highway. Some of these properties are lower in elevation than the highway, with open views of the retaining walls that support the southbound lanes of I-405. Other developments, such as the Red Lion Hotel just south of Main Street, are at the same elevation as I-405, but the buildings are surrounded by parking lots with screening vegetation that shifts the viewers' focus away from the highway and towards the cluster of buildings.

In the Mercer Slough landscape unit, viewers are primarily recreational (recreational users in Mercer Slough Nature Park) or commercial/industrial (the businesses abutting the highway right-of-way). Although recreational viewers have high sensitivity to visual changes, the viewers within Mercer Slough Nature Park are surrounded by forested vegetation and are much lower in elevation than I-405, so the changes proposed by the Project would not be noticeable to them. The commercial/industrial businesses adjacent to I-405 in this landscape unit face away from I-405 and are lower in elevation than the highway, so their views of the Project would again be very limited.

In the Wilburton, Downtown Bellevue, Northwest Bellevue and Bel-Red landscape units, viewers are primarily commercial viewers and travelers with lower sensitivity to visual changes; however, the landscape units also include office workers and residents in downtown buildings and tourists staying at local hotels. Tourists and residents tend to have higher sensitivity to visual quality than do office workers or commercial viewers, whose focus is on activities internal to their site.

### ***What do people like and dislike about the existing visual character of the Area of Visual Effect?***

During the I-405 CSS process, user groups in the study area identified key community issues and concerns related to visual quality. The *I-405 Context Sensitive Solutions Master Plan*

(WSDOT 2006) documented this process. The paragraphs below summarize the input WSDOT received during the CSS process as it relates to the changes proposed by the Project.

A major concern of the user groups who participated in the CSS process was their desire to maintain both local and regional views of Lake Washington, downtown skylines, and mountains. The views of northbound travelers approaching downtown Bellevue from the south were particularly important to preserve or enhance as a way of establishing a visual gateway to Bellevue's urban center.

User groups expressed their desire to enhance the "green" aspect of the corridor and use standard urban design elements to establish a cohesive identity for all structures in the corridor using simple geometric forms, colors, and textures. WSDOT has implemented the guidelines established in the *I-405 Context Sensitive Solutions Master Plan* (WSDOT 2006) for bridges crossing I-405 north of the Project.

The user groups also identified the need to preserve or enhance the existing natural context and landscape of the study area, while minimizing impacts on the existing natural environment to the greatest extent possible.

This report assesses visual quality changes based on the desire of user groups to enhance key views of the downtown skyline and preserve views of the natural environment. The report also considers the Project's effect on the integrity of the urban design elements (simple geometric forms, colors, and textures) preferred by user groups and used elsewhere in the study area.

## SECTION 5 PROJECT EFFECTS

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### ***What is the visual character of the Project?***

In terms of its visual character, we divided the Project into two segments: the segment south of SE 8th Street and the segment north of SE 8th Street. The unique visual attributes of each segment are described below.

#### **South of SE 8th Street**

In this project segment, the southbound lanes are lower in elevation than the northbound lanes. A wide forested slope, which gives this segment a somewhat natural character, separates the southbound and northbound lanes.

#### *Northbound Lanes*

In the northbound lanes, there are currently four GP lanes and one HOV lane. The Project would widen the pavement on the west side of the northbound lanes to make room for two ETLs and four GP lanes. The Project would also construct a new bridge at MP 12.4 to accommodate the two ETLs. The existing bridge would remain and carry the GP lanes.

In accordance with the WSDOT *I-405 Urban Design Criteria* (2015), the new bridge would use WSDOT's typical concrete barrier along the roadway and the Ashlar wall pattern on any walls that are visible to future trail users below the bridge.

The Project would preserve roadside vegetation on the east side of the northbound lanes. However, the Project would remove vegetation on the west side of the northbound lanes during construction of the new overpass. The vegetation would be restored in areas outside the footprint of the new overpass.

#### *Southbound Lanes*

The existing southbound lanes consist of four GP lanes and two HOV lanes, one on each side of the GP lanes. The Project would restripe the freeway and shift the HOV lanes to the east side of the GP lanes; these HOV lanes would then become the two new ETLs.

The Project would also construct a new bridge over the southbound lanes at the location where the Wilburton Tunnel

used to be.<sup>1</sup> The southbound lanes angle east from SE 8th Street and then curve to the south, where they proceed in a largely straight line to the southern limit of the Project. For this reason, the bridge would be very visible to travelers in the southbound lanes. This report discusses the view of the bridge from southbound I-405 in detail later in this section.

### **North of SE 8th Street**

At the northern limit of the Project (between NE 6th Street and SE 8th Street), the southbound and northbound lanes are side by side, flanked by freeway ramps, frontage roads, and retaining walls, all of which give this portion of the Project a more urban feel and increase the visual complexity for travelers.

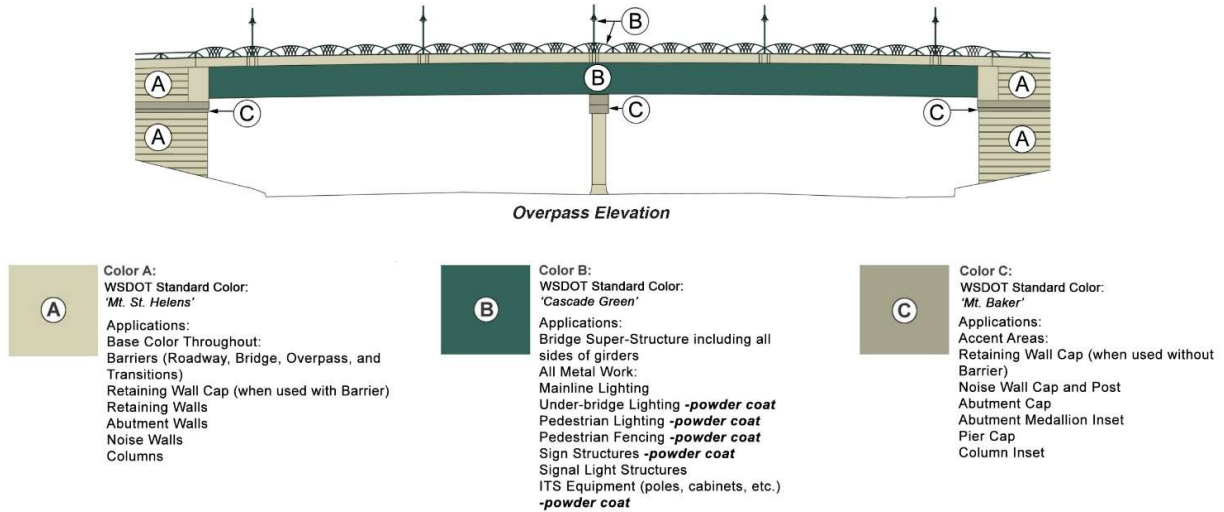
In this segment, the Project would widen the SE 8th Street bridge on the northbound side and replace the Main Street bridge with a new structure that is both longer and wider than the current bridge. The new Main Street bridge would include a 14-foot-wide trail with a 2-foot-wide buffer on the south side, two vehicle lanes in each direction, and a 5-foot-wide bike lane and 8-foot-wide sidewalk on the bridge's north side. The wall textures, colors, and railings of the new bridge would adhere to the *I-405 Urban Design Criteria* (WSDOT 2016a) to match other bridges in the urban segment of the corridor (Exhibit 5-1).

The Project would restripe the southbound and northbound lanes to allow for a new ETL in each direction while also maintaining the three GP lanes in each direction. The Project would also convert the current HOV lanes (one in each direction) to ETLs. By restriping pavement and converting existing HOV lanes to ETLs, the Project would reconfigure the existing pavement to provide two ETLs in each direction.

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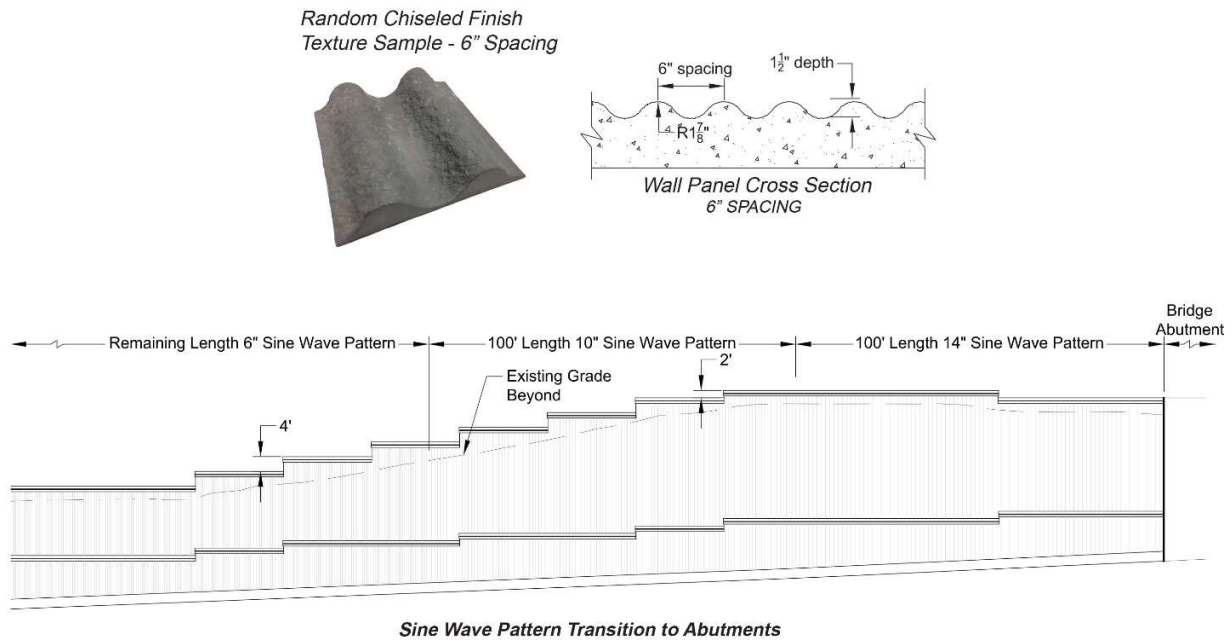
<sup>1</sup> The Wilburton Tunnel was demolished in 2009 as part of the I-405, 112th Ave SE to SE 8th Street Project.

**Exhibit 5-1. Aesthetic Treatments for New Main Street Bridge**



On the east side of the northbound lanes, the Project would add a few retaining walls to allow for a narrow band of additional pavement to be added in locations where the current highway is not wide enough to accommodate the new lanes. The retaining walls would use the Sine Wave wall texture shown in the *I-405 Urban Design Criteria* (WSDOT 2016a) to match other walls in the corridor (Exhibit 5-2).

**Exhibit 5-2. Sine Wave Wall Texture for New Retaining Walls**



**How would the Project affect visual quality during construction?**

The Project would create visual impacts for I-405 users and neighbors during construction.

Construction would temporarily reduce visual quality throughout the study area by the presence of construction equipment and workers, materials, debris, construction signage, and staging areas. Many construction activities would occur at night, so neighbors and travelers would experience light and glare from construction work lights outside of normal commuting hours. Detours and lane shifts from construction would demand greater traveler attention, and construction activities would distract travelers from views seen from the corridor.

A combination of landform and vegetation currently screen the residential areas on either side of I-405. During the construction of the Eastside Rail Corridor bridge, WSDOT would clear vegetation on both sides of I-405 to provide for construction access. This vegetation clearing could expose a few properties to views of the highway. The visual impacts on residential neighbors would likely be minor, as the future bridge location is farther away from residential neighborhoods

and not very visible to these neighbors because the surrounding landform has a screening effect.

Commercial and civic viewers in the Wilburton, Southwest Bellevue, and Downtown Bellevue landscape units would experience the greatest amount of disruption to their views during construction of the Main Street overpass. Travelers headed northbound into Bellevue would have views of the downtown skyline cluttered with construction equipment, signs, fences, work lights, and materials. Travelers on Main Street heading east or west over I-405 would be similarly affected.

### ***How would the Project affect visual quality during operation?***

The Project would result in permanent changes to the visual environment for I-405 users and neighbors in downtown Bellevue.

In areas where the Project would add pavement to widen I-405, travelers on the highway would experience a moderate increase in the expanse of pavement and scale of the highway. In areas where the Project would restripe the existing pavement to create ETLs, there would be little impact on visual quality.

New structures, such as bridges and retaining walls, would use the aesthetic treatments called for in the *I-405 Urban Design Criteria* (WSDOT 2016a), strengthening the Project coherence of this corridor and having a beneficial effect on visual quality.

For the most part, the Project would preserve existing vegetation along the I-405 corridor. Areas with the greatest impacts on vegetation are discussed in the representative views section below.

### ***What representative views were evaluated?***

In addition to analyzing the general effects of the Project during operation, we also analyzed the visual impacts at four representative viewpoints. For each viewpoint, we inventory the existing visual character, summarize the changes proposed by the Project, and analyze the impact of the changes on each view's visual quality. We also include photos of existing conditions at each viewpoint and a simulation from each viewpoint of the changes proposed by the Project.

The following views were analyzed for this report:

- **View A.** Wilburton Gap – This view is located on southbound I-405 just north of the old Wilburton Tunnel where the Project proposes to construct a new bridge over the southbound lanes of I-405. At View A, the viewer is traveling in a vehicle heading south on I-405 toward the proposed bridge, which would be approximately 21 feet above the roadway.
- **View B.** Northbound I-405 at MP 12.4 – This view is located on northbound I-405 at MP 12.4 just south of the location where the Project would construct a new overpass to carry two ETLs over the Eastside Rail Corridor Regional Trail. The viewer is a traveler on the highway heading northbound toward the new and existing overpasses.
- **View C.** Main Street Bridge – This view is located on northbound I-405 just south of the Main Street bridge, which the Project proposes to replace with a new, wider-span bridge over I-405. The viewer is heading north in a vehicle toward downtown Bellevue and is in an inferior position relative to the bridge.
- **View D** – Main Street – This view is located on Main Street in downtown Bellevue just west of the Main Street Bridge over I-405. This view represents the experiences of pedestrians and travelers using the Main Street bridge to cross over I-405 as they head east from downtown Bellevue to the businesses and neighborhoods on the east side of I-405, as well as a future connection to the Eastside Rail Corridor Regional Trail.

These viewpoints represent the views of travelers, pedestrians, and neighbors in areas where visual changes due to the Project would be most noticeable and where viewer sensitivity is relatively high. Exhibit 5-3 shows the specific locations of these representative views.



Exhibit 5-3. I-405, Downtown Bellevue Vicinity Express Toll Lanes Project (MP 11.9 to 14.6), Key Viewpoints



## ***What would be the visual impacts of the Project at each representative viewpoint?***

The visual impacts of the Project at each of the representative viewpoints is discussed below.

### **View A—Wilburton Gap**

The Wilburton Gap is located at the site of the former Wilburton Railway Tunnel. In 2009, the I-405, 112th Ave SE to SE 8th Street project demolished the railway tunnel and restored the slopes next to the freeway with native vegetation (Exhibit 5-4).

#### ***Exhibit 5-4. View A, Wilburton Gap Existing Conditions***



Due to this recent disturbance, vegetation closer to the highway at this location is sparse or recently planted; however, the slopes and forested vegetation farther from the roadway give this viewpoint a sense of enclosure and a moderate level of natural harmony. The only visible structures are the highway pavement, low concrete barriers, and the occasional noise wall tucked behind the roadside vegetation.

The Project would construct a bridge over the southbound lanes of I-405 at MP 12.15 (Exhibit 5-5). The bridge would be approximately 21 feet above the southbound lanes and 35 feet wide.

**Exhibit 5-5. View A, Wilburton Gap After Construction**



The bridge abutment walls would have a horizontal rustification to match other walls in the corridor, and the exterior of the bridge barrier would have a shingle texture and a curvilinear railing on top, as shown in Exhibit 5-1. The Project would apply Mt. St. Helens-pigmented sealer to all exposed concrete surfaces of the bridge except for the retaining walls caps, which would use the darker Mt. Baker sealer color instead. The curvilinear railing on the bridge barrier would be Cascade Green, as would the bridge's superstructure.

Construction of the bridge at this location would have both temporary and permanent adverse effects on the natural harmony experienced by travelers at this viewpoint. The Project would remove existing vegetation for construction; however, it would also restore the roadsides with native vegetation after the bridge is complete.

By adhering to the style, colors, and textures in the *I-405 Urban Design Criteria* (WSDOT 2016a), the new bridge would match other bridges in the corridor, which would have a beneficial effect on project coherence.

Due to the absence of other structures in this portion of the corridor, the bridge cannot help but be an intrusion on the

otherwise natural landscape, thus, having an adverse effect on natural harmony. However, the architectural resonance of the bridge to other structures in the corridor would have beneficial effects on project coherence. Overall, the changes proposed by the Project would have a neutral effect on visual quality at this viewpoint.

#### **View B—Northbound I-405 at MP 12.4**

Travelers headed northbound on I-405 at MP 12.4 are barely aware of the overpass just ahead of them spanning a cut where BNSF Railway trains used to run. The overpass itself is barely detectable; only the change from asphalt to concrete pavement gives its presence away.

An uphill slope with native vegetation on the right and a downhill slope with treetops on the left frame views of the sky and the gently curving arc of the highway up ahead, giving this viewpoint a moderate degree of natural harmony (Exhibit 5-6). The only structures are the highway pavement, low concrete barriers on either side of the highway, and a noise wall on the east slope that is barely visible behind the native vegetation.

At the overpass, the noise wall comes closer to the highway and runs on top of the concrete barrier. However, the noise wall is only somewhat noticeable from this viewpoint, which is approximately 800 feet south of the overpass, and the color and texture of the wall help it to blend with the existing vegetation around it.

**Exhibit 5-6. View B, Northbound I-405 at MP 12.4, Existing Conditions**



At this viewpoint, the Project would construct a second overpass on the west side of the current overpass to support two new ETLs on northbound I-405 (Exhibit 5-7). To accommodate the new lanes and second overpass, the Project would widen the highway by approximately 60 feet at the overpass location. While the Project would minimize clearing of existing vegetation, it would be necessary to clear trees and other vegetation on the west side of the highway to allow for construction of retaining walls to support the new ETLs on the west side of northbound I-405. With some of the treetops removed, travelers would be able to see views of downtown Bellevue in the distance.

**Exhibit 5-7. View B, Northbound I-405 at MP 12.4, After Construction**



The new overpass would include the aesthetic treatments described in the *I-405 Urban Design Criteria* (WSDOT 2016a). From this viewpoint, only the barriers on either side of the overpass would be visible. These concrete barriers would be 54 inches high and would have the Mt. St. Helens-pigmented sealer color applied. The barriers on the old overpass would remain as 42-inch-tall precast barriers without pigmented sealer. This lack of consistency would have a slightly adverse effect on project coherence at this viewpoint.

While clearing vegetation and widening the highway would have an adverse effect on natural order, opening views to downtown Bellevue would have a beneficial effect on cultural order. Local stakeholders found the views of the downtown skyline as desirable as views of the natural character of the corridor, so the changes proposed by the Project at this viewpoint would shift its character from natural to more urban. Therefore, these changes would have a neutral impact on visual quality.

### **View C—Main Street Bridge**

The Main Street Bridge, as seen from I-405, marks a transition from the suburban neighborhoods to the urban character of downtown Bellevue.

At this viewpoint, viewers traveling on northbound I-405 can see views of the downtown skyline just beyond the bridge and behind a row of high-voltage power lines on the west side of the highway (Exhibit 5-8). North of the bridge, the highway splays out in a series of on- and off-ramps that connect to Bellevue’s urban neighborhoods. The bridge thus forms an important gateway, both visually and functionally, to Bellevue from the south.

***Exhibit 5-8. View C, Main Street Bridge Existing Conditions***



The bridge itself is a relic of 1960s highway architecture, with unadorned abutment walls and simple, round columns supporting the midspan. The bridge barrier has a shingle texture on the outside topped by gray tubular railing, and the entire bridge structure is the same uniform gray concrete as the barriers on I-405.

Light poles along I-405 are also gray, and a chain-link fence tops the precast barrier dividing the northbound and

southbound lanes. These elements further reinforce the functional aesthetic of the highway architecture at this viewpoint.

A mixture of native trees and shrubs and invasive plants cover the slopes north and south of the abutment. This vegetation provides a buffer between I-405 and buildings immediately adjacent to the highway.

The Project proposes to replace the current bridge with a wider, longer bridge over I-405 (Exhibit 5-9). The bridge span would increase by about 20 feet to the east to make room for the ETLs on northbound I-405. The Project would replace the paired rows of columns on either side of mainline I-405 with a single row of columns between the northbound and southbound lanes.

***Exhibit 5-9. View C, Main Street Bridge After Construction***





The new bridge would include the architectural treatments in the *I-405 Urban Design Criteria* (WSDOT 2016a) (Exhibit 5-1). These treatments were developed based on public input and have been used on other new bridges on I-405, such as the NE 10th Street bridge just 0.64 mile north of the proposed Main Street bridge. By using the common palette of materials, textures, and colors shown in the *I-405 Urban Design Criteria*, the new bridge would have a beneficial impact on project coherence. This impact would be particularly strong at this viewpoint due to the proximity of other structures that follow these guidelines.

The Project would clear vegetation on both sides of I-405 during construction of the new bridge; however, it would also install new plants at both ends of the new bridge to soften the structure and blend with adjacent streetscapes and parking lot landscapes nearby. The visual impact on cultural order would be neutral, since there would be no substantive change in the character of the vegetation in this urban setting. Overall, the Project would have a beneficial impact on visual quality at this viewpoint.

### **View D—Main Street**

Main Street runs through the heart of old town Bellevue and connects Lake Washington Boulevard on the west with newer portions of downtown Bellevue farther east. After crossing I-405, Main Street dead-ends at the proposed Eastside Rail Corridor Regional Trail. The Project would replace the Main Street overpass with a wider structure that would accommodate pedestrians and bicyclists traveling over I-405 from the new Eastside Rail Corridor Regional Trail.

The overpass dominates the view for travelers heading east on Main Street over I-405 today (Exhibit 5-10). Although there are sidewalks on either side of the roadway, they are narrow and begin immediately at the back of curb, making the roadway seem wider than it is. The simple, tubular railing mounted above a low concrete bridge barrier recedes and is barely visible from this viewpoint. Vegetation on either side of the roadway softens and frames the roadway section, as the roadway profile undulates over I-405.

**Exhibit 5-10. View D, Main Street Existing Conditions**



The Project would construct a wider Main Street bridge with an 8-foot-wide sidewalk and 5-foot-wide bike lane on the north side of the overpass and a 16-foot-wide shared use path on the south side (Exhibit 5-11). The overpass would continue to provide four lanes for vehicles—two in each direction—just as it does today. The total width of the new overpass would be 77.5 feet, approximately 20 feet wider than the existing bridge.

The overpass would adhere to the *I-405 Urban Design Criteria* (WSDOT 2016a). The overpass would include curvilinear pedestrian railings and pedestrian lighting in Cascade Green mounted above smooth-faced barrier with Mt. St. Helens pigmented sealer applied. The sidewalk and the shared use path would have alternating panels of concrete paving with either an integral color or a textured finish.

The increased width of the overpass would be noticeable from this viewpoint. While the portion of roadway occupied by the vehicle lanes would decrease, the overall width of the structure would increase, pushing vegetation farther away on either side of the structure. Since this viewpoint already has an

urban character, these changes would have little impact on natural harmony.

**Exhibit 5-11. View D, Main Street After Construction**



The use of aesthetic treatments identified in the *I-405 Urban Design Criteria* would increase project coherence and provide a greater sense of cultural order. The overall impact of these changes on visual quality at this viewpoint would be beneficial.



## **SECTION 6 MEASURES TO AVOID OR MINIMIZE EFFECTS**

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### ***What measures will WSDOT take to mitigate visual quality impacts during construction?***

WSDOT will use the following measures to mitigate for temporary adverse impacts associated with construction.

#### **Minimize fugitive light from portable sources used during construction**

WSDOT will minimize project-related light and glare to the maximum extent possible by using color-corrected halide lights, operating lights, and LED signs at the lowest wattage possible; directing work lights away from neighboring properties; and using screens to prevent light from spilling outside of the work area.

#### **Restore staging areas once decommissioned**

WSDOT will restore all staging and access areas to preconstruction conditions or better by restoring natural contours, rehabilitating soils, and planting native vegetation in accordance with WSDOT's *Roadside Manual* (2016b).

#### **Minimize the removal of trees and shrubs and pruning needed during construction**

WSDOT will work in concert with an International Society of Arboriculture-certified arborist to trim or remove trees as needed during construction of retaining walls. We will carefully perform pruning to avoid harming trees and hindering future growth. In accordance with the WSDOT *Roadside Policy Manual* (WSDOT 2015) we will locate staging and laydown areas where there is no vegetation, undesirable vegetation (such as Himalayan blackberries), or vegetation, such as grassed road shoulders, that is easy to restore.

### ***What measures will WSDOT take to mitigate visual quality impacts during project operation?***

WSDOT will develop the Project with community input to ensure that community concerns relating to visual impacts will be met early in the Project. WSDOT will use the following measures to mitigate for or minimize adverse impacts associated with the Project.

### **Apply Context Sensitive Solution treatments to visible structures**

WSDOT will apply CSS treatments to all new structures, light poles, sign bridges, retaining walls, noise walls, and landscape areas according to the *I-405 Urban Design Criteria* (WSDOT 2016a).

### **Use best practices for low-impact project lighting**

WSDOT will limit artificial outdoor lighting to achieve safety and security requirements while limiting the amount of light spill onto adjacent properties or open spaces. Highway and pedestrian lights will be of the type and color shown in the *I-405 Urban Design Criteria* (WSDOT 2016a).

Project designers have sited the LED signs that announce the current toll rate to minimize the spillover of light onto adjacent properties. Noise walls, existing vegetation, and elevation change will prevent residential neighbors from seeing the illuminated signs at night. LED signs in the commercial areas of Bellevue will blend with other light sources in the area.

### **Locate project improvements away from adjacent properties**

WSDOT will widen the highway and site new bridges away from the right-of-way line, wherever possible, to minimize visual impacts on neighbors during construction and operation of the facility. Where the Project removes structures or pavement, we will restore areas to match the surrounding context as shown in the *I-405 Urban Design Criteria* (WSDOT 2016a).

## SECTION 7 UNAVOIDABLE EFFECTS

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### ***Would the Project have any effects that could not be avoided?***

The Project would result in permanent changes to the visual environment for I-405 users and neighbors. For the most part, the Project would preserve existing vegetation along the I-405 corridor. In areas where the Project would add pavement to widen I-405, travelers on the highway would experience a moderate increase in the expanse of pavement and scale of the highway.

In areas where the Project would restripe the existing pavement to create ETLs, there would be little impact on visual quality. New structures, such as bridges and retaining walls, would use the aesthetic treatments called for in the *I-405 Urban Design Criteria* (WSDOT 2016a), strengthening the Project coherence of this corridor and having a beneficial effect on visual quality.





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## APPENDIX A ACRONYMS AND ABBREVIATIONS

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<b>Acronym</b>	<b>Meaning</b>
ADA	Americans with Disabilities Act
AVE	Area of Visual Effect
CSS	Context Sensitive Solutions
EA	Environmental Assessment
ETL	express toll lane
FHWA	Federal Highway Administration
GIS	geographic information system
GP	general purpose
HOV	high-occupancy vehicle
I-405	Interstate 405
I-90	Interstate 90
LED	light-emitting diode
MP	milepost
NEPA	National Environmental Policy Act
RCW	Revised Code of Washington
SEPA	State Environmental Policy Act
SR 520	State Route 520
USC	United States Code
WSDOT	Washington State Department of Transportation
WSTC	Washington State Transportation Commission



## APPENDIX B GLOSSARY

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Term	Meaning
Affected Environment	As defined by NEPA, this is the “environment of the area(s) to be affected or created by the alternatives under consideration”.
Area of Visual Effect (AVE)	The area in which views of the Project would be visible as influenced by the presence or absence of intervening topography, vegetation, and structures.
Background	The zone that extends from 3–5 miles to infinity miles away from the viewer.
Baseline Conditions	Existing conditions of the affected environment, affected population, and existing visual quality.
Color	The light reflecting off an object at a particular wavelength that creates hue (green, indigo, purple, red, etc.) and value (light to dark hues).
Cumulative Impacts	Impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.
Direct Impacts	Impacts caused by the action and occur at the same time and place.
Distance Zones	<p>Distance zones are based on the position of the viewer in relationship to the landscape. They are measured from one static point, such as the location of a key view. There are three defined distance zones:</p> <p><i>Foreground:</i> 0.25–0.5 mile from the viewer</p> <p><i>Middleground:</i> Extends from the foreground zone to 3–5 miles from the viewer</p> <p><i>Background:</i> Extends from the middleground zone to infinity (Litton 1968).</p>
Express Toll Lanes	A limited-access freeway lane that is actively managed through a variable toll system to regulate its use and thereby maintain express travel speeds and reliability. Toll prices rise or fall in real time as the lane approaches capacity or becomes less used. This ensures that traffic in the express toll lane remains flowing at express travel speeds of 45 to 60 miles per hour. Transit and carpools do not pay a toll.

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Foreground	The zone that extends from the viewer to 0.25–0.5 mile away from the viewer.
Form	The unified mass or shape of an object that often has an edge or outline and can be defined by surrounding space. For example, a high-rise building would have a highly regular, rectangular form whereas a hill would have an organic, mounded form.
Impact	<p>An impact is a change that can be made to the physical environment (measured by the compatibility of the impact) or to viewers (measured by sensitivity to the impacts). Together, the compatibility of the impact and the sensitivity of the impact yield the value of the impact to visual quality.</p> <p><i>Compatibility of the Impact:</i> Defined as the ability of environment to visually absorb the proposed project because of the Project and the environment having compatible visual characters. The proposed project can be considered compatible or incompatible. By itself, compatibility of the impact should not be confused or conflated with the value of the impact.</p> <p><i>Sensitivity to the Impact:</i> Defined by the ability of viewers to see and care about a project’s impacts. The sensitivity to impact is based on viewer sensitivity to changes in the visual character of visual resources. Viewers are either sensitive or insensitive to impacts. By itself, the sensitivity of the impact should not be confused or conflated with the value of the impact.</p> <p><i>Value of the Impact:</i> Defined as either a beneficial, adverse, or neutral change to visual quality. A proposed project may benefit visual quality either by enhancing visual resources or by creating better views of those resources and improving the experience of visual quality by viewers. Similarly, it may adversely affect visual quality by degrading visual resources or obstructing or altering desired views.</p>
Indirect Impacts	Impacts caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect impacts may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.
Key View	A location from which a viewer (traveler or neighbor) can see either iconic or representative landscapes, with or without the highway, of the study area. Usually there is at least one key view for each landscape unit. Used for visual simulations.

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Landscape Units	Defined areas within the AVE that have similar visual features and homogeneous visual character and frequently, a single viewshed. An “outdoor room.” Typically, the spatial unit used for assessing visual impacts.
Line	Perceived when there is a change in form, color, or texture and where the eye generally follows this pathway because of the visual contrast. For example, a city’s high-rises can be seen silhouetted against the blue sky and be seen as a skyline, a river can have a curvilinear line as it passes through a landscape, or a hedgerow can create a line where it is seen rising up against a flat agricultural field.
Middleground	The zone that extends from 0.25–0.5 mile to 3–5 miles away from the viewer.
Permanent Impacts	Impacts resulting from construction activities lasting for two or more years, the built project, or the operations and maintenance associated with the built project.
Project Region	The 30-mile radius surrounding a study area.
Project Vicinity	The 0.5-mile offset surrounding a study area.
Protected Visual Resources	Components of the natural, cultural, or project environments that are capable of being seen and that are protected under local, state, or federal plans or policies. There are instances where there is an overwhelming community interest in the preservation of the aesthetic qualities of visual resources. Although they are not officially protected by local, state, or federal plans or policies, such resources still warrant protection.
Temporary Impacts	Impacts resulting from construction or short-term activities that fall within a period of 2 years or less.
Threshold of Impact	The limits or bounds used to assess impacts. Impacts can be adverse or beneficial.
Simulations	Two- or three-dimensional depictions of the visual character of a future state. Simulations range from artistic renderings to computer animations.
Texture	The perceived coarseness of a surface that is created by the light and shadow relationship over the surface of an object. For example, a rough surface texture (e.g., a rocky mountainside) would have many facets resulting in a number of areas in light and shadow and, often, with distinct separations between areas of light and shadow. Conversely, a smooth surface texture (e.g., a beach)

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	would have fewer facets, larger surface areas in light or shadow, and gradual gradations between light and shadow.
Viewers	<p>Neighbors who can see the proposed project and travelers who would use it.</p> <p><i>Neighbors:</i> Viewers who occupy or would occupy land adjacent or visible to the proposed project. For a complex or controversial project, neighbors can be defined by land-use, including residential, retail, commercial, industrial, agricultural, recreational, and civic neighbors.</p> <p><i>Travelers:</i> Viewers who use the existing or would use the proposed transportation project. For complex or controversial projects, travelers can be defined by the purpose of traveling, including commuting, hauling, touring, or exercising travelers; or by their mode of travel as motorists, bicyclists, or pedestrians.</p>
Viewer Sensitivity	<p>The degree to which viewers are sensitive to changes in the visual character of visual resources. It is the consequence of two factors, viewer exposure and viewer awareness.</p> <p><i>Viewer Exposure:</i> Viewer exposure is a measure of proximity (the distance between viewer and the visual resource being viewed), extent (the number of viewers viewing), and duration (how long of a time visual resources are viewed). The greater the exposure, the more viewers would be concerned about visual impacts.</p> <p><i>Viewer Awareness:</i> Viewer awareness is a measure of attention (level of observation based on routine and familiarity), focus (level of concentration), and protection (legal and social constraints on the use of visual resources). The greater the attention, the more viewers would be concerned about visual impacts.</p>
Viewshed	All of the surface area visible from a particular location (e.g., an overlook) or sequence of locations (e.g., a roadway or trail).
Visual Character	The description of the visible attributes of a scene or object typically using artistic terms such as form, line, color, and texture.
Visual Impacts	Changes to visual resources, viewers, or visual quality.
Visual Quality	What viewers like and dislike about visual resources that compose the visual character of a particular scene. Different viewers may evaluate specific visual resources differently based on their interests in natural harmony, cultural order, and project coherence. Neighbors and travelers may, in particular, have different opinions on what they like and dislike about a scene.

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*Natural Harmony:* What viewer likes and dislikes about the natural environment. The viewer labels the visual resources of the natural environment as being either harmonious or inharmonious. Harmony is considered desirable; disharmony is undesirable.

*Cultural Order:* What a viewer likes and dislikes about the cultural environment. The viewer labels the visual resources of the cultural environment as being either orderly or disorderly. Orderly is considered desirable; disorderly is undesirable.

*Project Coherence:* What the viewer likes and dislikes about the Project environment. The viewer labels the visual resources of the Project environment as being either coherent or incoherent. Coherent is considered desirable; incoherent is undesirable.

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Visual Resources

Components of the natural, cultural, or project environments that are capable of being seen.

*Natural Visual Resources:* The land, water, vegetation, and animals that compose the natural environment. Although natural resources may have been altered or imported by people, resources that are primarily geological or biological in origin are considered natural. A grassy pasture with rolling terrain, scattered trees, and grazing cows, for example, is considered to be composed of natural visual resources, even though it is a landscape created by people.

*Cultural Visual Resources:* The buildings, structures, and artifacts that compose the cultural environment. People constructed these resources.

*Project Visual Resources:* For highway transportation projects, the geometrics, structures, and fixtures which compose the Project environment. These are the constructed resources that were or would be placed in the environment as part of the proposed project.

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