INTERSTATE 5 COLUMBIA RIVER CROSSING

Visual and Aesthetics Technical Report for the Final Environmental Impact Statement

May 2011

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Cover Sheet

Interstate 5 Columbia River Crossing

Visual and Aesthetics Technical Report for the Final Environmental Impact Statement:

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ACRONYMS

Acronym	Description
ADA	Americans with Disabilities Act
API	area of potential impact
BNSF	Burlington Northern Santa Fe Railroad
BPA	Bonneville Power Administration
CD	collector/distributor
CPTED	Crime Prevention through Environmental Design
CRC	Columbia River Crossing
C-TRAN	Clark County Public Transportation Benefit Area
DAHP	Washington Department of Archaeology and Historic Preservation
DEIS	Draft Environmental Impact Statement
DOT	U.S. Department of Transportation
ECO	Employee Commute Options (Oregon)
FEIS	Final Environmental Impact Statement
FHWA	Federal Highway Administration
FTA	Federal Transit Highway
GIS	geographic information system
I-5	Interstate 5
LPA	Locally Preferred Alternative
LRV	light rail vehicle
LU	landscape unit
MAX	Metropolitan Area Express
NAVD88	North American Vertical Datum 1988
NEPA	National Environmental Policy Act of 1969
NPS	National Parks Service
NRHP	National Register of Historic Places
ODOT	Oregon Department of Transportation
OTC	Oregon Transportation Commission
ROD	Record of Decision
RTC	Regional Transportation Commission
SPUI	single-point-urban interchange
TDM	transportation demand management
TriMet	Tri-County Metropolitan Transportation District
TSM	transportation system management

UDAG	Urban Design Advisory Group
VNHR	Vancouver National Historic Reserve
VWG	Vancouver Working Group
WSDOT	Washington Department of Transportation

1. Summary

1.1 Introduction

This report presents the evaluation of potential visual impacts that would result from the proposed Interstate 5 (I-5) Columbia River Crossing (CRC) project Locally Preferred Alternative (LPA).

This analysis is based on a conceptual design for the LPA that was selected following the public comment period for the Draft Environmental Impact Statement (DEIS). This report identifies the likely visual impacts from the project and identifies potential measures to reduce the impacts, including possible options for avoiding, minimizing or mitigating impacts.

1.2 Description of Alternatives

This technical report evaluates the CRC project's locally preferred alternative (LPA) and the No-Build Alternative. The LPA includes two design options: The preferred option, LPA Option A, which includes local vehicular access between Marine Drive and Hayden Island on an arterial bridge; and LPA Option B, which does not have arterial lanes on the light rail/multi-use path bridge, but instead provides direct access between Marine Drive and the island with collector-distributor (CD) lanes on the two new bridges that would be built adjacent to I-5. In addition to the design options, if funding availability does not allow the entire LPA to be constructed in one phase, some roadway elements of the project would be deferred to a future date. This technical report identifies several elements that could be deferred, and refers to that possible initial investment as LPA with highway phasing. The LPA with highway phasing option would build most of the LPA in the first phase, but would defer construction of specific elements of the project. The LPA and the No-Build Alternative are described in this section.

1.2.1 Adoption of a Locally Preferred Alternative

Following the publication of the Draft Environmental Impact Statement (DEIS) on May 2, 2008, the project actively solicited public and stakeholder feedback on the DEIS during a 60-day comment period. During this time, the project received over 1,600 public comments.

During and following the public comment period, the elected and appointed boards and councils of the local agencies sponsoring the CRC project held hearings and workshops to gather further public input on and discuss the DEIS alternatives as part of their efforts to determine and adopt a locally preferred alternative. The LPA represents the alternative preferred by the local and regional agencies sponsoring the CRC project. Local agency-elected boards and councils determined their preference based on the results of the evaluation in the DEIS and on the public and agency comments received both before and following its publication.

In the summer of 2008, the local agencies sponsoring the CRC project adopted the following key elements of CRC as the LPA:

- A replacement bridge as the preferred river crossing,
- Light rail as the preferred high-capacity transit mode, and
- Clark College as the preferred northern terminus for the light rail extension.

The preferences for a replacement crossing and for light rail transit were identified by all six local agencies. Only the agencies in Vancouver – the Clark County Public Transit Benefit Area Authority (C-TRAN), the City of Vancouver, and the Regional Transportation Council (RTC) – preferred the Vancouver light rail terminus. The adoption of the LPA by these local agencies does not represent a formal decision by the federal agencies leading this project – the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) – or any federal funding commitment. A formal decision by FHWA and FTA about whether and how this project should be constructed will follow the FEIS in a Record of Decision (ROD).

1.2.2 Description of the LPA

The LPA includes an array of transportation improvements, which are described below. When the LPA differs between Option A and Option B, it is described in the associated section. For a more detailed description of the LPA, including graphics, please see Chapter 2 of the FEIS.

1.2.2.1 Multimodal River Crossing

Columbia River Bridges

The parallel bridges that form the existing I-5 crossing over the Columbia River would be replaced by two new parallel bridges. The eastern structure would accommodate northbound highway traffic on the bridge deck, with a bicycle and pedestrian path underneath; the western structure would carry southbound traffic, with a two-way light rail guideway below. Whereas the existing bridges have only three lanes each with virtually no shoulders, each of the new bridges would be wide enough to accommodate three through-lanes and two add/drop lanes. Lanes and shoulders would be built to full design standards.

The new bridges would be high enough to provide approximately 95 feet of vertical clearance for river traffic beneath, but not so high as to impede the take-offs and landings by aircraft using Pearson Field or Portland International Airport to the east. The new bridge structures over the Columbia River would not include lift spans, and both of the new bridges would each be supported by six piers in the water and two piers on land.

North Portland Harbor Bridges

The existing highway structures over North Portland Harbor would not be replaced; instead, they would be retained to accommodate all mainline I-5 traffic. As discussed at the beginning of this chapter, two design options have emerged for the Hayden Island and Marine Drive interchanges. The preferred option, LPA Option A, includes local vehicular access between Marine Drive and Hayden Island on an arterial bridge. LPA Option B does not have arterial lanes on the light rail/multi-use path bridge, but instead provides direct access between Marine Drive and the island with collector-distributor lanes on the two new bridges that would be built adjacent to I-5.

LPA Option A: Four new, narrower parallel structures would be built across the waterway, three on the west side and one on the east side of the existing North Portland Harbor bridges. Three of the new structures would carry on- and off-ramps to mainline I-5. Two structures west of the existing bridges would carry traffic merging onto or exiting off of I-5 southbound. The new structure on the east side of I-5 would serve as an on-ramp for traffic merging onto I-5 northbound.

The fourth new structure would be built slightly farther west and would include a two-lane arterial bridge for local traffic to and from Hayden Island, light rail transit, and a multi-use path

for pedestrians and bicyclists. All of the new structures would have at least as much vertical clearance over the river as the existing North Portland Harbor bridges.

LPA Option B: This option would build the same number of structures over North Portland Harbor as Option A, although the locations and functions on those bridges would differ, as described below. The existing bridge over North Portland Harbor would be widened and would receive seismic upgrades.

LPA Option B does not have arterial lanes on the light rail/multi-use path bridge. Direct access between Marine Drive and the island would be provided with collector-distributor lanes. The structures adjacent to the highway bridge would carry traffic merging onto or exiting off of mainline I-5 between the Marine Drive and Hayden Island interchanges.

1.2.2.2 Interchange Improvements

The LPA includes improvements to seven interchanges along a 5-mile segment of I-5 between Victory Boulevard in Portland and SR 500 in Vancouver. These improvements include some reconfiguration of adjacent local streets to complement the new interchange designs, as well as new facilities for bicyclists and pedestrians along this corridor.

Victory Boulevard Interchange

The southern extent of the I-5 project improvements would be two ramps associated with the Victory Boulevard interchange in Portland. The Marine Drive to I-5 southbound on-ramp would be braided over the I-5 southbound to the Victory Boulevard/Denver Avenue off-ramp. The other ramp improvement would lengthen the merge distance for northbound traffic entering I-5 from Denver Avenue. The current merging ramp would be extended to become an add/drop (auxiliary) lane which would continue across the river crossing.

***Potential phased construction option*:** The aforementioned southbound ramp improvements to the Victory Boulevard interchange may not be included with the CRC project. Instead, the existing connections between I-5 southbound and Victory Boulevard could be retained. The braided ramp connection could be constructed separately in the future as funding becomes available.

Marine Drive Interchange

All movements within this interchange would be reconfigured to reduce congestion for motorists entering and exiting I-5 at this location. The interchange configuration would be a single-point urban interchange (SPUI) with a flyover ramp serving the east to north movement. With this configuration, three legs of the interchange would converge at a point on Marine Drive, over the I-5 mainline. This configuration would allow the highest volume movements to move freely without being impeded by stop signs or traffic lights.

The Marine Drive eastbound to I-5 northbound flyover ramp would provide motorists with access to I-5 northbound without stopping. Motorists from Marine Drive eastbound would access I-5 southbound without stopping. Motorists traveling on Martin Luther King Jr. Boulevard westbound to I-5 northbound would access I-5 without stopping at the intersection.

The new interchange configuration changes the westbound Marine Drive and westbound Vancouver Way connections to Martin Luther King Jr. Boulevard and to northbound I-5. These two streets would access westbound Martin Luther King Jr. Boulevard farther east. Martin Luther King Jr. Boulevard would have a new direct connection to I-5 northbound.

In the new configuration, the connections from Vancouver Way and Marine Drive would be served, improving the existing connection to Martin Luther King Jr. Boulevard east of the interchange. The improvements to this connection would allow traffic to turn right from Vancouver Way and accelerate onto Martin Luther King Jr. Boulevard. On the south side of Martin Luther King Jr. Boulevard, the existing loop connection would be replaced with a new connection farther east.

A new multi-use path would extend from the Bridgeton neighborhood to the existing Expo Center light rail station and from the station to Hayden Island along the new light rail line over North Portland Harbor.

LPA Option A: Local traffic between Martin Luther King Jr. Boulevard/Marine Drive and Hayden Island would travel via an arterial bridge over North Portland Harbor. There would be some variation in the alignment of local streets in the area of the interchange between Option A and Option B. The most prominent differences are the alignments of Vancouver Way and Union Court.

LPA Option B: With this design option, there would be no arterial traffic lanes on the light rail/multi-use path bridge over North Portland Harbor. Instead, vehicles traveling between Martin Luther King Jr. Boulevard/ Marine Drive and Hayden Island would travel on the collector-distributor bridges that would parallel each side of I-5 over North Portland Harbor. Traffic would not need to merge onto mainline I-5 to travel between the island and Martin Luther King Jr. Boulevard/Marine Drive.

***Potential phased construction option*:** The aforementioned flyover ramp could be deferred and not constructed as part of the CRC project. In this case, rather than providing a direct eastbound Marine Drive to I-5 northbound connection by a flyover ramp, the project improvements to the interchange would instead provide this connection through the signal-controlled SPUI. The flyover ramp could be constructed separately in the future as funding becomes available.

Hayden Island Interchange

All movements for this interchange would be reconfigured. The new configuration would be a split tight diamond interchange. Ramps parallel to the highway would be built, lengthening the ramps and improving merging speeds. Improvements to Jantzen Drive and Hayden Island Drive would include additional through, left-turn, and right-turn lanes. A new local road, Tomahawk Island Drive, would travel east-west through the middle of Hayden Island and under the I-5 interchange, improving connectivity across I-5 on the island. Additionally, a new multi-use path would be provided along the elevated light rail line on the west side of the Hayden Island interchange.

LPA Option A: A proposed arterial bridge with two lanes of traffic, one in each direction, would allow vehicles to travel between Martin Luther King Jr. Boulevard/ Marine Drive and Hayden Island without accessing I-5.

LPA Option B: With this design option there would be no arterial traffic lanes on the light rail/multi-use path bridge over North Portland Harbor. Instead, vehicles traveling between Martin Luther King Jr. Boulevard/Marine Drive and Hayden Island would travel on the collector-distributor bridges that parallel each side of I-5 over North Portland Harbor.

SR 14 Interchange

The function of this interchange would remain largely the same. Direct connections between I-5 and SR 14 would be rebuilt. Access to and from downtown Vancouver would be provided as it is today, but the connection points would be relocated. Downtown Vancouver I-5 access to and from the south would be at C Street rather than Washington Street, while downtown connections to and from SR 14 would be made by way of Columbia Street at 4th Street.

The multi-use bicycle and pedestrian path in the northbound (eastern) I-5 bridge would exit the structure at the SR 14 interchange, and then loop down to connect into Columbia Way.

Mill Plain Interchange

This interchange would be reconfigured into a SPUI. The existing "diamond" configuration requires two traffic signals to move vehicles through the interchange. The SPUI would use one efficient intersection and allow opposing left turns simultaneously. This would improve the capacity of the interchange by reducing delay for traffic entering or exiting the highway.

This interchange would also receive several improvements for bicyclists and pedestrians. These include bike lanes and sidewalks, clear delineation and signing, short perpendicular crossings at the ramp terminals, and ramp orientations that would make pedestrians highly visible.

Fourth Plain Interchange

The improvements to this interchange would be made to better accommodate freight mobility and access to the new park and ride at Clark College. Northbound I-5 traffic exiting to Fourth Plain would continue to use the off-ramp just north of the SR 14 interchange. The southbound I-5 exit to Fourth Plain would be braided with the SR 500 connection to I-5, which would eliminate the non-standard weave between the SR 500 connection and the off-ramp to Fourth Plain as well as the westbound SR 500 to Fourth Plain Boulevard connection.

Additionally, several improvements would be made to provide better bicycle and pedestrian mobility and accessibility, including bike lanes, neighborhood connections, and access to the park and ride.

SR 500 Interchange

Improvements would be made to the SR 500 interchange to add direct connections to and from I-5. On- and off-ramps would be built to directly connect SR 500 and I-5 to and from the north, connections that are currently made by way of 39th Street. I-5 southbound traffic would connect to SR 500 via a new tunnel underneath I-5. SR 500 eastbound traffic would connect to I-5 northbound on a new on-ramp. The 39th Street connections with I-5 to and from the north would be eliminated. Travelers would instead use the connections at Main Street to connect to and from 39th Street.

Additionally, several improvements would be made to provide better bicycle and pedestrian mobility and accessibility, including sidewalks on both sides of 39th Street, bike lanes, and neighborhood connections.

***Potential phased construction option*:** The northern half of the existing SR 500 interchange would be retained, rather than building new connections between I-5 southbound to SR 500 eastbound and from SR 500 westbound to I-5 northbound. The ramps connecting SR 500 and I-5 to and from the north could be constructed separately in the future as funding becomes available.

1.2.2.3 Transit

The primary transit element of the LPA is a 2.9-mile extension of the current Metropolitan Area Express (MAX) Yellow Line light rail from the Expo Center in North Portland, where it currently ends, to Clark College in Vancouver. The transit element would not differ between LPA and LPA with highway phasing. To accommodate and complement this major addition to the region's transit system, a variety of additional improvements are also included in the LPA:

- Three park and ride facilities in Vancouver near the new light rail stations.
- Expansion of Tri-County Metropolitan Transportation District's (TriMet's) Ruby Junction light rail maintenance base in Gresham, Oregon.
- Changes to C-TRAN local bus routes.
- Upgrades to the existing light rail crossing over the Willamette River via the Steel Bridge.

Operating Characteristics

Nineteen new light rail vehicles (LRV) would be purchased as part of the CRC project to operate this extension of the MAX Yellow Line. These vehicles would be similar to those currently used by TriMet's MAX system. With the LPA, LRVs in the new guideway and in the existing Yellow Line alignment are planned to operate with 7.5-minute headways during the "peak of the peak" (the two-hour period within the 4-hour morning and afternoon/evening peak periods where demand for transit is the highest) and 15-minute headways during off-peak periods.

Light Rail Alignment and Stations

Oregon Light Rail Alignment and Station

A two-way light rail alignment for northbound and southbound trains would be constructed to extend from the existing Expo Center MAX station over North Portland Harbor to Hayden Island. Immediately north of the Expo Center, the alignment would curve eastward toward I-5, pass beneath Marine Drive, then rise over a flood wall onto a light rail/multi-use path bridge to cross North Portland Harbor. The two-way guideway over Hayden Island would be elevated at approximately the height of the rebuilt mainline of I-5, as would a new station immediately west of I-5. The alignment would extend northward on Hayden Island along the western edge of I-5, until it transitions into the hollow support structure of the new western bridge over the Columbia River.

Downtown Vancouver Light Rail Alignment and Stations

After crossing the Columbia River, the light rail alignment would curve slightly west off of the highway bridge and onto its own smaller structure over the Burlington Northern Santa Fe (BNSF) rail line. The double-track guideway would descend on structure and touch down on Washington Street south of 5th Street, continuing north on Washington Street to 7th Street. The elevation of 5th Street would be raised to allow for an at-grade crossing of the tracks on Washington Street. Between 5th and 7th Streets, the two-way guideway would run down the center of the street. Traffic would not be allowed on Washington between 5th and 6th Streets and would be two-way between 6th and 7th Streets. There would be a station on each side of the street on Washington between 5th and 6th Streets.

At 7th Street, the light rail alignment would form a couplet. The single-track northbound guideway would turn east for two blocks, then turn north onto Broadway Street, while the single-

track southbound guideway would continue on Washington Street. Seventh Street will be converted to one-way traffic eastbound between Washington and Broadway with light rail operating on the north side of 7th Street. This couplet would extend north to 17th Street, where the two guideways would join and turn east.

The light rail guideway would run on the east side of Washington Street and the west side of Broadway Street, with one-way traffic southbound on Washington Street and one-way traffic northbound on Broadway Street. On station blocks, the station platform would be on the side of the street at the sidewalk. There would be two stations on the Washington-Broadway couplet, one pair of platforms near Evergreen Boulevard, and one pair near 15th Street.

East-west Light Rail Alignment and Terminus Station

The single-track southbound guideway would run in the center of 17th Street between Washington and Broadway Streets. At Broadway Street, the northbound and southbound alignments of the couplet would become a two-way center-running guideway traveling east-west on 17th Street. The guideway on 17th Street would run until G Street, then connect with McLoughlin Boulevard and cross under I-5. Both alignments would end at a station east of I-5 on the western boundary of Clark College.

Park and Ride Stations

Three park and ride stations would be built in Vancouver along the light rail alignment:

- Within the block surrounded by Columbia, Washington 4th and 5th Streets, with five floors above ground that include space for retail on the first floor and 570 parking stalls.
- Between Broadway and Main Streets next to the stations between 15th and 16th Streets, with space for retail on the first floor, and four floors above ground that include 420 parking stalls.
- At Clark College, just north of the terminus station, with space for retail or C-TRAN services on the first floor, and five floors that include approximately 1,910 parking stalls.

Ruby Junction Maintenance Facility Expansion

The Ruby Junction Maintenance Facility in Gresham, Oregon, would need to be expanded to accommodate the additional LRVs associated with the CRC project. Improvements include additional storage for LRVs and other maintenance material, expansion of LRV maintenance bays, and expanded parking for additional personnel. A new operations command center would also be required, and would be located at the TriMet Center Street location in Southeast Portland.

Local Bus Route Changes

As part of the CRC project, several C-TRAN bus routes would be changed in order to better complement the new light rail system. Most of these changes would re-route bus lines to downtown Vancouver where riders could transfer to light rail. Express routes, other than those listed below, are expected to continue service between Clark County and downtown Portland. The following table (Exhibit 1-1) shows anticipated future changes to C-TRAN bus routes.

Exhibit 1-1. Proposed C-TRAN Bus Routes Comparison

C-TRAN Bus Route	Route Changes
#4 - Fourth Plain	Route truncated in downtown Vancouver
#41 - Camas / Washougal Limited	Route truncated in downtown Vancouver
#44 - Fourth Plain Limited	Route truncated in downtown Vancouver
#47 - Battle Ground Limited	Route truncated in downtown Vancouver
#105 - I-5 Express	Route truncated in downtown Vancouver
#105S - I-5 Express Shortline	Route eliminated in LPA (The No-Build runs articulated buses between downtown Portland and downtown Vancouver on this route)

Steel Bridge Improvements

Currently, all light rail lines within the regional TriMet MAX system cross over the Willamette River via the Steel Bridge. By 2030, the number of LRVs that cross the Steel Bridge during the 4-hour PM peak period would increase from 152 to 176. To accommodate these additional trains, the project would retrofit the existing rails on the Steel Bridge to increase the allowed light rail speed over the bridge from 10 to 15 mph. To accomplish this, additional work along the Steel Bridge lift spans would be needed.

1.2.2.4 Tolling

Tolling cars and trucks that use the I-5 river crossing is proposed as a method to help fund the CRC project and to encourage the use of alternative modes of transportation. The authority to toll the I-5 crossing is set by federal and state laws. Federal statutes permit a toll-free bridge on an interstate highway to be converted to a tolled facility following the reconstruction or replacement of the bridge. Prior to imposing tolls on I-5, Washington and Oregon Departments of Transportation (WSDOT and ODOT) would have to enter into a toll agreement with U.S. Department of Transportation (DOT). Recently passed state legislation in Washington permits WSDOT to toll I-5 provided that the tolling of the facility is first authorized by the Washington legislature. Once authorized by the legislature, the Washington Transportation Commission (WTC) has the authority to set the toll rates. In Oregon, the Oregon Transportation Commission (OTC) has the authority to toll a facility and to set the toll rate. It is anticipated that prior to tolling I-5, ODOT and WSDOT would enter into a bi-state tolling agreement to establish a cooperative process for setting toll rates and guiding the use of toll revenues.

Tolls would be collected using an electronic toll collection system: toll collection booths would not be required. Instead, motorists could obtain a transponder that would automatically bill the vehicle owner each time the vehicle crossed the bridge, while cars without transponders would be tolled by a license-plate recognition system that would bill the address of the owner registered to that license plate.

The LPA proposes to apply a variable toll on vehicles using the I-5 crossing. Tolls would vary by time of day, with higher rates during peak travel periods and lower rates during off-peak periods. Medium and heavy trucks would be charged a higher toll than passenger vehicles. The traffic-related impact analysis in this FEIS is based on toll rates that, for passenger cars with transponders, would range from $1.00 during the off-peak to $2.00 during the peak travel times (in 2006 dollars).

1.2.2.5 Transportation System and Demand Management Measures

Many well-coordinated transportation demand management (TDM) and transportation system management (TSM) programs are already in place in the Portland-Vancouver Metropolitan region and supported by agencies and adopted plans. In most cases, the impetus for the programs is from state-mandated programs: Oregon's Employee Commute Options (ECO) rule and Washington's Commute Trip Reduction (CTR) law.

The physical and operational elements of the CRC project provide the greatest TDM opportunities by promoting other modes to fulfill more of the travel needs in the project corridor. These include:

- Major new light rail line in exclusive right-of-way, as well as express bus and feeder routes;
- Modern bicycle and pedestrian facilities that accommodate more bicyclists and pedestrians, and improve connectivity, safety, and travel time;
- Park and ride lots and garages; and
- A variable toll on the highway crossing.

In addition to these fundamental elements of the project, facilities and equipment would be implemented that could help existing or expanded TSM programs maximize capacity and efficiency of the system. These include:

- Replacement or expanded variable message signs or other traveler information systems in the CRC project area;
- Expanded incident response capabilities;
- Queue jumps or bypass lanes for transit vehicles where multi-lane approaches are provided at ramp signals for entrance ramps;
- Expanded traveler information systems with additional traffic monitoring equipment and cameras, and
- Active traffic management.

1.2.3 LPA Construction

Construction of bridges over the Columbia River is the most substantial element of the project, and this element sets the sequencing for other project components. The main river crossing and immediately adjacent highway improvement elements would account for the majority of the construction activity necessary to complete this project.

1.2.3.1 Construction Activities Sequence and Duration

The following table (Exhibit 1-2) displays the expected duration and major details of each element of the project. Due to construction sequencing requirements, the timeline to complete the initial phase of the LPA with highway phasing is the same as the full LPA.

Exhibit 1-2. Construction Activities and Estimated Duration

Element	Estimated Duration	Details
Columbia River bridges	4 years	• Construction is likely to begin with the bridges. • General sequence includes initial preparation, installation of foundation piles, shaft caps, pier columns, superstructure, and deck.
Hayden Island and SR 14 interchanges	1.5 - 4 years for each interchange	• Each interchange must be partially constructed before any traffic can be transferred to the new structure. • Each interchange needs to be completed at the same time.
Marine Drive interchange	3 years	• Construction would need to be coordinated with construction of the southbound lanes coming from Vancouver.
Demolition of the existing bridges	1.5 years	• Demolition of the existing bridges can begin only after traffic is rerouted to the new bridges.
Three interchanges north of SR 14	4 years for all three	• Construction of these interchanges could be independent from each other or from the southern half of the project. • More aggressive and costly staging could shorten this timeframe.
Light rail	4 years	• The river crossing for the light rail would be built with the bridges. • Any bridge structure work would be separate from the actual light rail construction activities and must be completed first.
Total Construction Timeline	6.3 years	• Funding, as well as contractor schedules, regulatory restrictions on in-water work, weather, materials, and equipment, could all influence construction duration. • This is also the same time required to complete the smallest usable segment of roadway – Hayden Island through SR 14 interchanges.

1.2.3.2 Major Staging Sites and Casting Yards

Staging of equipment and materials would occur in many areas along the project corridor throughout construction, generally within existing or newly purchased right-of-way or on nearby vacant parcels. However, at least one large site would be required for construction offices, to stage the larger equipment such as cranes, and to store materials such as rebar and aggregate. Suitable sites must be large and open to provide for heavy machinery and material storage, must have waterfront access for barges (either a slip or a dock capable of handling heavy equipment and material) to convey material to the construction zone, and must have roadway or rail access for landside transportation of materials by truck or train.

Three sites have been identified as possible major staging areas:

1. Port of Vancouver (Parcel 1A) site in Vancouver: This 52-acre site is located along SR 501 and near the Port of Vancouver's Terminal 3 North facility.
2. Red Lion at the Quay hotel site in Vancouver: This site would be partially acquired for construction of the Columbia River crossing, which would require the demolition of the building on this site, leaving approximately 2.6 acres for possible staging.
3. Vacant Thunderbird hotel site on Hayden Island: This 5.6-acre site is much like the Red Lion hotel site in that a large portion of the parcel is already required for new right-of-way necessary for the LPA.

A casting/staging yard could be required for construction of the over-water bridges if a precast concrete segmental bridge design is used. A casting yard would require access to the river for barges, including either a slip or a dock capable of handling heavy equipment and material; a large area suitable for a concrete batch plant and associated heavy machinery and equipment; and access to a highway and/or railway for delivery of materials.

Two sites have been identified as possible casting/staging yards:

1. Port of Vancouver Alcoa/Evergreen West site: This 95-acre site was previously home to an aluminum factory and is currently undergoing environmental remediation, which should be completed before construction of the CRC project begins (2012). The western portion of this site is best suited for a casting yard.
2. Sundial site: This 50-acre site is located between Fairview and Troutdale, just north of the Troutdale Airport, and has direct access to the Columbia River. There is an existing barge slip at this location that would not have to undergo substantial improvements.

1.2.4 The No-Build Alternative

The No-Build Alternative illustrates how transportation and environmental conditions would likely change by the year 2030 if the CRC project is not built. This alternative makes the same assumptions as the build alternatives regarding population and employment growth through 2030, and also assumes that the same transportation and land use projects in the region would occur as planned. The No-Build Alternative also includes several major land use changes that are planned within the project area, such as the Riverwest development just south of Evergreen Boulevard and west of I-5, the Columbia West Renaissance project along the western waterfront in downtown Vancouver, and redevelopment of the Jantzen Beach shopping center on Hayden Island. All traffic and transit projects within or near the CRC project area that are anticipated to be built by 2030 separately from this project are included in the No-Build and build alternatives. Additionally, the No-Build Alternative assumes bridge repair and continuing maintenance costs to the existing bridge that are not anticipated with the replacement bridge option.

1.3 Long-term Effects

1.3.1 The Locally Preferred Alternative

This section summarizes findings from Chapter 4 of this report. Please refer to this later section for visual simulations and detailed analysis. The primary elements of the LPA that affect visual quality and character are new vehicle bridge structures across North Portland Harbor and the Columbia River, interchanges, and transit bridges, stations, park and ride facilities, and guideways. The visual quality of the entire length of the corridor and all landscape units would be at least slightly affected. Visual impacts would occur from:

- The greater heights and widths of the new structures across the Columbia River.
- The widened or higher ramps for reconfigured interchanges at Marine Drive, Hayden Island, SR 14, Mill Plain, and SR 500.
- The widening of the I-5 corridor due to the addition of auxiliary lanes along I-5.
- Other impacts would result from new transit stations and accompanying park and ride structures.

Impacts to Columbia River, Hayden Island, and the near shores would be mostly positive. Potential impacts would include:

- Removal of the complicated truss structures and lift towers of the existing I-5 bridges. This action would dramatically open up views from the higher deck, from under the bridges on the Vancouver waterfront, and from the river. However, this action would remove a long-standing landmark in the area's historic context (the I-5 bridges).
- From I-5, views would generally improve of the Portland and Vancouver skylines, distant shorelines, rolling hills, mountain profiles, and toward I-5 of open water and shorelines from shoreline-level and elevated viewpoints.
- Removing the lift towers would be interpreted to have a generally positive visual impact on views from downtown Vancouver.
- Modifications to interchanges would increase heights and/or roadway footprint, at the Marine Drive interchange (especially with the full build LPA), the Hayden Island interchange, and the SR 14 interchange. At Marine Drive the LPA full build includes a new ramp, higher than any existing facilities in this immediate area. Even at this interchange, the degree of change is expected to be moderate, since the area is and would continue to be a large urban interchange.
- Modifications to the Hayden Island Interchange will coordinated with a major redevelopment of the nearby shopping center and will include the construction of a light rail station with accompanying plaza and pedestrian facilities. The interchange design will improve access, but have a smaller overall footprint than the existing interchange design. The new design also includes the extension of Tomahawk drive, which will serve as a local-access thoroughfare for the urban center on the island.
- The SR 14 Interchange will have higher elements than the existing interchange. More importantly, it will now be possible to experience the interchange in new ways, walking along Main Street and driving on Main Street, south of 5th Street. For motorists currently within the interchange, there is little sensitively to views, as there are few opportunities for stopping, slowing, and enjoying scenic vistas. The area will be incorporated into the urban fabric, by extending the street grid with Main Street. This elevates the need for context sensitive design so that these new visual "users" of the facility are not adversely impacted by the high number of piers, the height of these piers, and the predominance of highway infrastructure in this immediate area.
- Removal of the existing bridge structures would visually open much of the area immediately beneath the bridges along the river along the Vancouver waterfront. This would provide for a new southern terminus of Main Street, an extension of the view corridor along the shoreline, and more light and vegetation under the bridges. These elements would all provide positive changes to the immediate area and to those adjacent to such. The addition of piers for the bridges across the North Portland Harbor would clutter views along the slough and reduce views of open water.

Impacts to Vancouver National Historic Reserve (VNHR), which includes the most sensitive viewpoints in the area of potential impact (API) would be generally moderate for the following reasons. However, certain specific views would experience a high degree of change.

- Lift towers would be removed, providing positive visual impacts.
- The new SR 14 interchange would cause significant visual impacts in the vicinity of the old Hudson's Bay Company "Kanaka" Village. The SR 14 to I-5 northbound ramp would minimally encroach on the perimeter of the Village area, but would likely be buffered by trees and landscaping. The I-5 exit ramp loop would be substantially more visually imposing than any existing feature and constitutes an adverse visual impact.
- I-5 would be much closer to the Post Hospital which would lose a portion of its context, landscaping, and pedestrian access.

Transit facilities would result in visual and aesthetic impacts. Visual impacts along the transit alignments in Vancouver are expected to be low. The transit vehicles would run in the right-of-way and the necessary guideway. Rumble strips, curbs, and advisory signage would not produce a large change nor introduce incompatible structures and furnishings into the streetscape.

Downtown Vancouver historically was served by a streetcar line, which provides a historic precedent for the re-introduction of a rail-based transit mode. This would enable the new light rail facilities and vehicles to actually contribute to the historic, visual context of downtown. Platforms and associated furnishings such as shelters, benches, paving, and signage could be designed to be compatible with the surroundings and protect existing sight-lines and views. The movement and presence of the transit vehicles would not create permanent visual conflicts or changes and are therefore not expected to create visual impacts.

The visual character of 17th Street would change noticeably by being slightly widened and altered to accommodate light rail. The necessary tracks, rumble strips and curbs, and advisory signage would result in visual changes, but would not incompatible structures and furnishings into the streetscape.

Views in the immediate vicinity of new transit stations would change because the transit vehicles must stop for short durations, adding a new dynamic quality to blocks with stations. These are temporary, but repetitive impacts. The transit vehicles would not impact most views because they would not be permanent parts of any view other than at or near maintenance facilities. Additionally, the transit stations would include new rider amenities including trash receptacles, rain protection, signage, etc.

Changes in bus routes would not produce any visual effects. Expansion or construction of maintenance facilities would have visual impacts, the positive or negative effect depending on the context of the surroundings.

The Clark Park and Ride would replace a small landscaped parking area with a multi-story parking structure. This would be visible from the sports fields just east of the proposed site, and would be inconsistent with the large-footprint, mid-rise buildings of the nearby campus. The park and ride proposed for Main Street and Mill Plain Boulevard would be inconsistent with the existing single-story surroundings, but is consistent with the projected levels of development for the downtown, as portrayed in the Vancouver City Center Vision Plan (City of Vancouver 2004a). The Columbia Park and Ride structure would be consistent with the urban fabric of the surrounding area.

Tolling would likely result in minor Visual and Aesthetic impacts. Visual impacts due to tolling would be slight for the electronic tolling appurtenances. The overhead tolling technology would be noticeable structures in views from and toward the highway, resulting in low to no impacts.

1.3.2 No-Build Alternative

There would be no visual changes to the project area if the existing I-5 bridges remain in place. The bridges would continue to be a dominant feature in views near the crossing and would remain visible from many places in Vancouver as well as from on Hayden Island and from far north Portland. As development in the area continues to modernize or replace buildings and structures, the bridges may become the sole remaining elements from the era of steel bridge construction. This could be seen as positive or negative. Increased congestion on the bridge will potentially increase glare. As long as the bridges are maintained and painted, views containing the bridge structures should not decline in quality.

1.4 Temporary Effects

During construction the visual quality of views to and from the project area would be temporarily altered. Construction-related signage and heavy equipment would be visible in the vicinity of construction sites. Vegetation may be removed from some areas to accommodate construction of the bridges, new ramps, and the light rail transit guideway. This would degrade or partially obstruct views or vistas.

Nighttime construction would be necessary to minimize disruption to daytime traffic. Temporary lighting may be necessary for nighttime construction of certain project elements. This temporary lighting would affect residential areas by exposing residents to glare from unshielded light sources or by increasing ambient nighttime light levels.

1.5 Mitigation

General, potential mitigation includes:

- Minimizing visual impacts to historic and cultural resources, public parks, and open spaces.
- Replanting vegetation, street trees, and landscaping for screening or visual quality.
- Shielding station and facility lighting from nearby residences and night sky.
- Minimizing structural bulk, such as for ramps and columns.
- Designing architectural features to blend with the surrounding community context, and to create visual continuity through the highway corridor.
- Placement of public art (to be relocated when necessary and added as part of transit stations and gateways).
- Utilizing plantings, art, and other methods to soften and make context sensitive the retaining walls on either side of the Interstate mainline.
- Lighting to be integrated with facilities in a manner that produces a positive visual and aesthetic impact, reduces night sky light pollution, reduces possible light trespass into residential units, and contributes to Crime Prevention Through Environmental Design (CPTED).
- Utilization of the Urban Design Advisory Group (UDAG) Design Guidelines, as well as those of both cities, the transit agencies, and the VNHR.

Specific mitigation strategies are highlighted in Section 6 of this report for the following areas:

- Transit Structure “Landing’ in Vancouver
- Transit stations
- Park and ride facilities

Mitigation for temporary construction-related effects would include:

- Shielding of construction site lighting to reduce spillover of light onto nearby residences and businesses,
- Locating construction equipment and stockpiling materials in less visually sensitive areas, when feasible and in areas not visible from the road or to residents and businesses in order to minimize visual obtrusiveness, and
- Cover exposed soils as soon as possible with vegetation.

2. Methods

2.1 Introduction

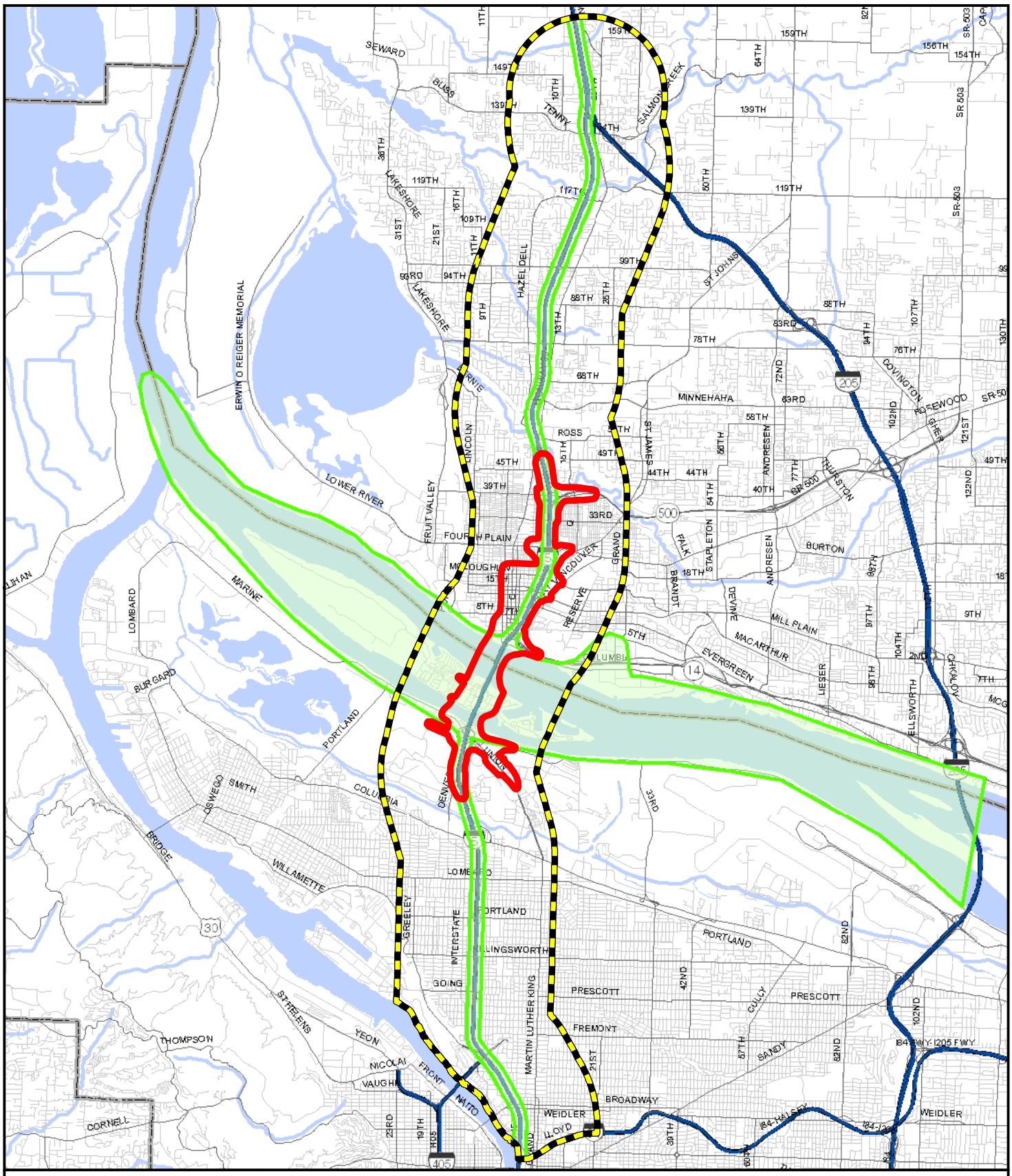
This section describes the methods that were used to collect data and evaluate potential visual quality and aesthetic impacts for the I-5 CRC project. The analysis was developed to comply with the National Environmental Policy Act of 1969 (NEPA), applicable state environmental policy legislation, and local and state policies, standards and regulations. NEPA states that federal actions should "…assure for all Americans safe, healthful, productive and aesthetically and culturally pleasing surroundings…"

2.2 Study Area

The analysis area for visual quality assessment is the "viewshed." A viewshed is the aggregate landscape that can be seen from anywhere within the project area, and that has views of the project area. The assessment for this project has considered the actual viewshed and the topographic viewshed (which includes what could be seen if the landscape had no cover of vegetation or human elements). The study area has also been divided into landscape Units, as described later in this section.

A viewshed analysis area is delimited by the surrounding topography, vegetation, and built environment, and may differ from project-defined primary and secondary API. The primary API is the area most likely to experience direct impacts from construction and operation of proposed project alternatives. Most physical project changes would occur in this area, though mitigation could still occur outside of it. The secondary API represents the area where indirect impacts (e.g., traffic and development changes) may occur from the proposed project alternatives. Exhibit 2-1 shows the LPA with the primary and secondary API and the viewshed.

Since publication of the DEIS, project staff have further assessed potential impacts of the Ruby Junction Maintenance Facility as well as to potential casting and staging areas. These area will experience temporary and permanent visual changes and are included as part of the study area. The terms used in this technical report (specifically the primary and secondary APIs) are not found in the FEIS. Rather, the primary API is referred to as the main project area. The larger SAPI, with the casting and staging areas, Ruby Junction, and the Steel Bridge are now considered the project area.



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Areas of Potential Impact

- Main Project Area
- Standard Secondary API
- Viewshed

Exhibit 2-1. Study Area
Visual and Asthetics Technical Report

Columbia River CROSSING

Analysis by J. Koloszar; Analysis Date: Dec. 8, 2010; File Name: FEIS_LndScapUnits_VIS.mxd

2.3 Effects Guidelines

The visual quality and aesthetics assessment was based on the synthesis of a set of broad criteria that include the visual experiences of the identified viewer groups, pedestrian or motorist experiences, the presence of panoramic or scenic views, overall character and quality of the area, scale and contrast between elements in the area, and other factors. The assessments include a determination of the change in visual quality for both stationary viewers along with pedestrians and motorist. There are three generally accepted impact levels, low, moderate, or high, used to assess and summarize impacts to visual resources. These are defined by the criteria shown in Exhibit 2-2, adapted from FHWA guidelines (FHWA 1989).

Exhibit 2-2. Visual Impact Levels and Criteria

Low	Moderate	High
1. No physical changes are expected to result from the proposed project.	1. Proposed construction includes new structures that have a different scale, color, location, or orientation from surrounding structures.	1. Project scale contrasts with its surroundings (e.g., contains structures bulkier than those in nearby, or introduces voids such as parking lots, into well-defined street spaces). Magnitude of impacts would be greater in areas with recognized visual characters perceived by the community as assets and encourage use of the area.
2. Any remodeling of existing structures for project includes visually blending the remodeled buildings into the surrounding area.	2. Proposed project is located within an historic district, adjacent to historic structures, or adjacent to major public buildings designed as focal points (e.g., city halls and courthouses).	2. Proposed project would disrupt important views (e.g., views of mountains, oceans, rivers, or significant manmade structures).
3. Proposed structures would be located in areas that do not exhibit a defined visual character (areas made up of different uses and scales of structures, and with no landmarks or historic structures).		
4. Proposed project is compatible with visual character of surrounding area.		

Note: Adapted from FHWA 1989.

To gauge the degree of visual impact, the project team visited the project area and documented key views of the I-5 bridges and highway with photographs, and conducted visual quality and character evaluations from selected viewpoints to determine the existing ("before") and altered ("after") rankings. The project team used worksheets derived from both Oregon Department of Transportation (ODOT) and Washington Department of Transportation (WSDOT) evaluation forms that were descriptive (visual character) and numeric threshold-based (visual quality). Evaluation views were chosen according to the criteria discussed below and with input from key stakeholders. In addition, photograph-based visualizations were used to illustrate the scale and location of selected alternatives at locations of special concern.

2.4 Data Collection Methods

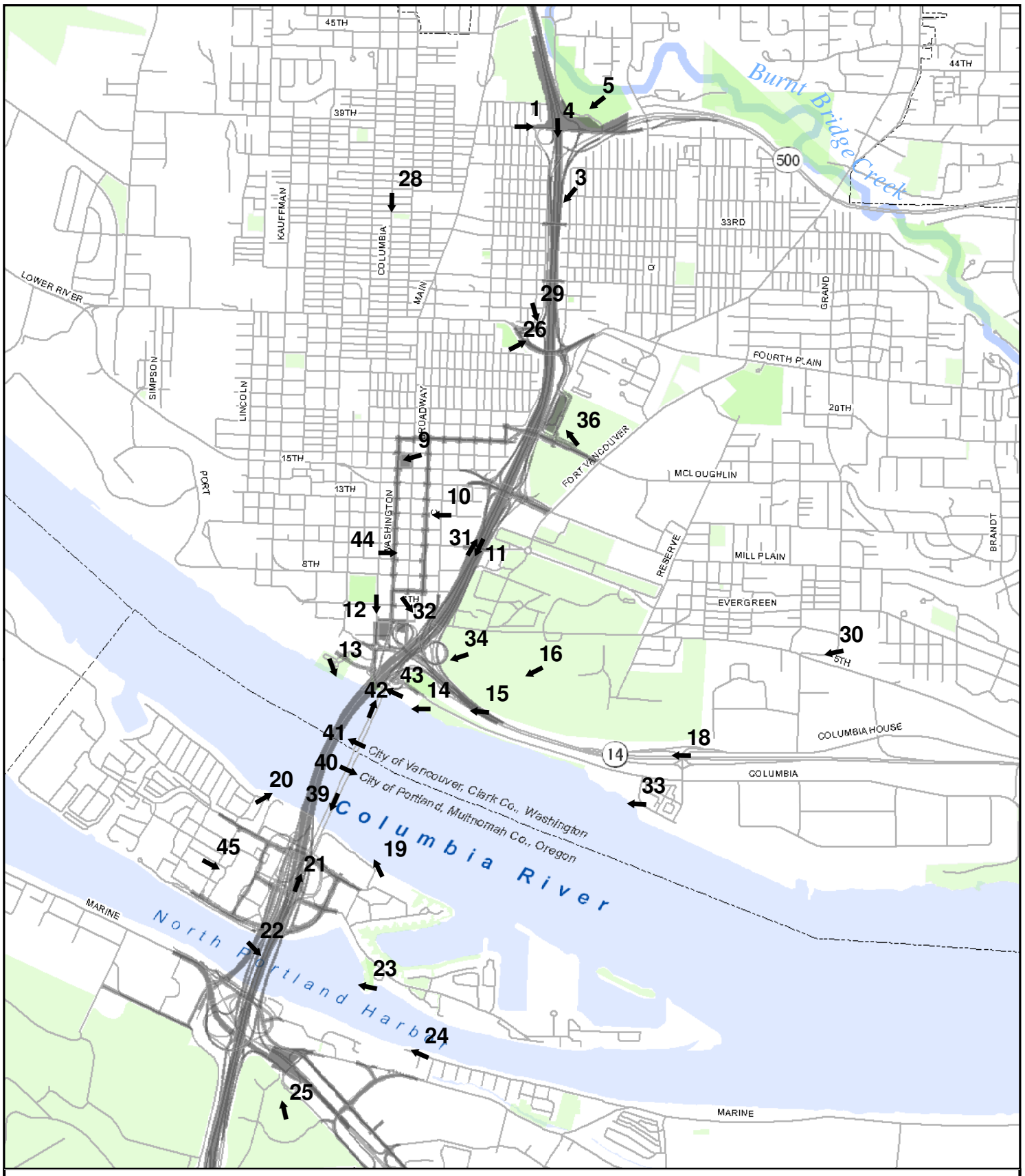
Data collection and assessment methods followed the FHWA visual quality and aesthetics assessment methodology (FHWA 1989). This methodology was developed was developed to analyze proposed transportation projects to adequately and objectively consider the potential visual impacts. The methodology uses a qualitative and quantitative approach to evaluate and

communicate expected change. The FHWA methodology has become an accepted framework for describing and analyzing a transportation project's visual effects and for developing the social and physical contexts for visual impact analyses. The evaluation sequence was as follows:

3. Establish the project's visual limits and define the inherently distinctive subareas in the project area (landscape unit) by visiting the project area and using geographic information system (GIS) maps.
4. Determine who has views of and from the project (viewers) using project maps and reviewing relevant planning documents and determine the viewer sensitivity.
5. Describe and assess the existing built and natural environments (existing conditions or affected environment).
6. Select evaluation viewpoints in the project area and assess those views as they exist before and as they are likely to be after the project is completed.
7. Select views and viewpoints to be used for graphical visualizations that illustrate likely changes due to the project.
8. Describe the likely changes in visual quality that would result from the proposed alternatives.
9. Recommend mitigating measures to protect, restore, or enhance the visual quality.

The first three steps established baseline or existing visual conditions and the extent of the project's visual context. Steps 4 and 5 were the basis for determining the level of changes in and impacts to the visual character or quality of the project area, which were then determined in Step 6. The process also helped to identify and suggest general mitigation measures.

Visualization and evaluation viewpoints (Steps 4 and 5) are places where substantial numbers of sensitive viewers have views of representative or typical features of the LPA and No-Build alternatives, or of high-quality views. Evaluating visual quality from these viewpoints is a useful way of understanding existing conditions and potential visual impacts. Photographs from many of the viewpoints are used in the affected environment section of this report. Exhibit 2-3 is a locator map for the photograph viewpoints, and Appendix A contains the raw results from the evaluation in spreadsheet format.



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Viewpoints Project Footprint

Exhibit 2-3. Viewpoints
Visual and Aesthetics Technical Report

Columbia River CROSSING

Analysis by; J. Koloszar; Plot Date: Dec. 8, 2010; File Name: Viewpoints_template_DC207.mxd

2.5 Analysis Methods

In order to objectively evaluate a largely subjective experience, the evaluators used descriptive (qualitative) and numeric (quantitative) worksheets to assess visual quality and character. Descriptive worksheets were used to identify and describe the visual character of resources and objects in the viewshed and landscape units. Numeric worksheets were used to assess the before and after conditions of selected views, using accepted, predefined numeric thresholds. The differences between the before and after numeric values indicates the degree of overall change in visual quality and character and the level of visual impact.

Visual quality assessment uses a set of parameters and an accepted vocabulary to describe visual conditions and changes in visual character or quality. These parameters and vocabulary include familiar, everyday words used as technical terms. Since this can be confusing, the key terms and parameters that are used for visual quality assessment are defined below.

Views are what can be seen from the project area and what can be seen of the project area from the surrounding areas. Views are defined by geography and built and natural features, and are described or assessed from a given vantage point, called the *viewpoint. Viewers* are the people who have views of or from the project. Viewers are discussed in terms of general categories of activities, such as residents, boaters, joggers, or motorists, and in terms of their sensitivity to views. *Viewers* see the *view* from different perspectives, based on their location in the landscape. Their *view* may be from an inferior (lower), level, or superior (higher) location. Some *views* are actual and some are topographic, meaning that the *views* are currently blocked by development, trees, etc.

Viewshed is the sum total of all views looking from and looking toward the project area. This is one of the two study areas for visual quality assessment; the other is the landscape unit. Since sight-lines can extend far beyond project bounds, a viewshed may not match project-defined areas of potential impact. A project's viewshed is determined through GIS mapping and site visits.

Landscape units are smaller areas within a viewshed that are defined by distinctive boundaries and visual characteristics. A landscape unit is a helpful tool for thoroughly understanding the project area and the organization of the assessment process. Each defined landscape unit has a distinctive landscape character, has a specific geographic location, and has some degree of clear views within the unit (Exhibit 2-4). Post DEIS refinements to the LPA have removed the potential for visual change in the most northern and the most southern landscape units. These units, therefore, are no longer assessed in this report.

This assessment described and evaluated three composite factors for each landscape unit, as described below.

Visual Character is defined by the landscape visual resources, elements, and the relationships between them. These relationships are typically described in terms of dominance, scale, diversity, and continuity. Visual resources and elements include:

- Landforms: type, gradient, and scale.
- Vegetation: type, size, maturity, continuity, and seasonal change.
- Human "built" elements including buildings.
- Water forms including lakes, rivers, streams, wetlands, shorelines, oceans.
- Historic structures and downtown skylines.

- Land uses: size, scale, and character of associated buildings and ancillary site uses.
- Transportation facilities (including light rail transit stations): type, size, scale, and directional orientation; also including bridge structures, walls, barriers, signing, lighting, and roadway pavement.
- Overhead utility structures and lighting (including light rail overhead catenaries and substations): type, size, and scale.
- Open space: type (e.g., parks, reserves, greenbelts, and undeveloped land), extent, and continuity.
- Viewpoints and views to visual resources.
- Apparent grain or texture (e.g., the size and alternation of structures and non-built properties or open spaces of the landscape).
- Apparent upkeep and maintenance.

Visual Quality is the assigned value of the visual experience. The assessment assigns a numeric value to three criteria that describe the quality of the existing conditions and likely future conditions, if the project is built. The criteria are: the memorability or distinctiveness of the landscape (vividness), the degree to which the landscape is a harmonious mix of elements (unity), and the degree to which the landscape is free of eyesores or elements that do not fit with the overall landscape (intactness).

Low vividness indicates a landscape that is mundane or non-descript. Moderate vividness indicates the presence of some features that have striking and attractive attributes such as textures, colors, shapes, or sizes. High vividness indicates the presence of a dominant feature or a collection of features that is distinctive and very memorable. Vividness from each viewpoint was assessed and assigned with the following scale:

Vividness:

7 – Very High	3 – Moderately Low
6 – High	2 – Low
5 – Moderately High	1 – Very Low
4 – Average	-- Non-existent

Low unity indicates that the manmade features of a landscape were placed and built without sensitivity to the natural setting. Moderate unity indicates that manmade features are somewhat responsive to the natural setting. High unity indicates that the natural and built components of a landscape are in balance and harmony with each other. High unity attests to the careful design of individual components and their relationship in the landscape. Unity from each viewpoint was assessed and assigned with the following scale:

Unity:

7 – Very High	3 – Moderately Low
6 – High	2 – Low
5 – Moderately High	1 – Very Low
4 – Average	-- Non-existent

Low intactness indicates that the integrity of the landscape is greatly reduced, either by the loss of large portions of the landscape from the view or the prevalence of incompatible structures. The incompatibility can be due to conflicting scales, colors, or purposes, among others. Moderate intactness indicates the presence of some features that are not compatible with the existing landscape, or a loss of part of the landscape. High intactness indicates that the landscape is still basically in one piece because it is not broken up by features that are out of place. An unbroken expanse of native prairie vegetation would have high intactness. Intactness from each viewpoint was assessed and assigned with the following scale. Unlike for vividness and unity, the level of intactness assigns values both to the intactness of the built environment (development) and from the level of encroachment into the built environment.

Development:

7 – No development

6 – Little development

5 – Some development

4 – Average level of development

3 – Moderately high development

2 – High level of development

1 – Very high level of development

Encroachment:

7 – None

6 – Few

5 – Some

4 – Average

3 – Several

2 – Many

1 – Very Many

Viewer Response is the reaction of the viewer. It is a combination of viewer exposure and sensitivity to the view. Viewer exposure considers the combined effects of the physical location of viewer groups, the number of people exposed to a view, and the duration of their view. It includes both users of the transportation facility (including transit, roadways, pedestrian and bike ways) as well as people in the surrounding area. Sensitivity is the degree to which a viewer expects a particular visual character and the extent to which that character is important to the viewer. It considers the combined effect of the activities a viewer is engaged in, the visual context, and the values, expectations, and interests of a group or person involved in a particular activity or context.

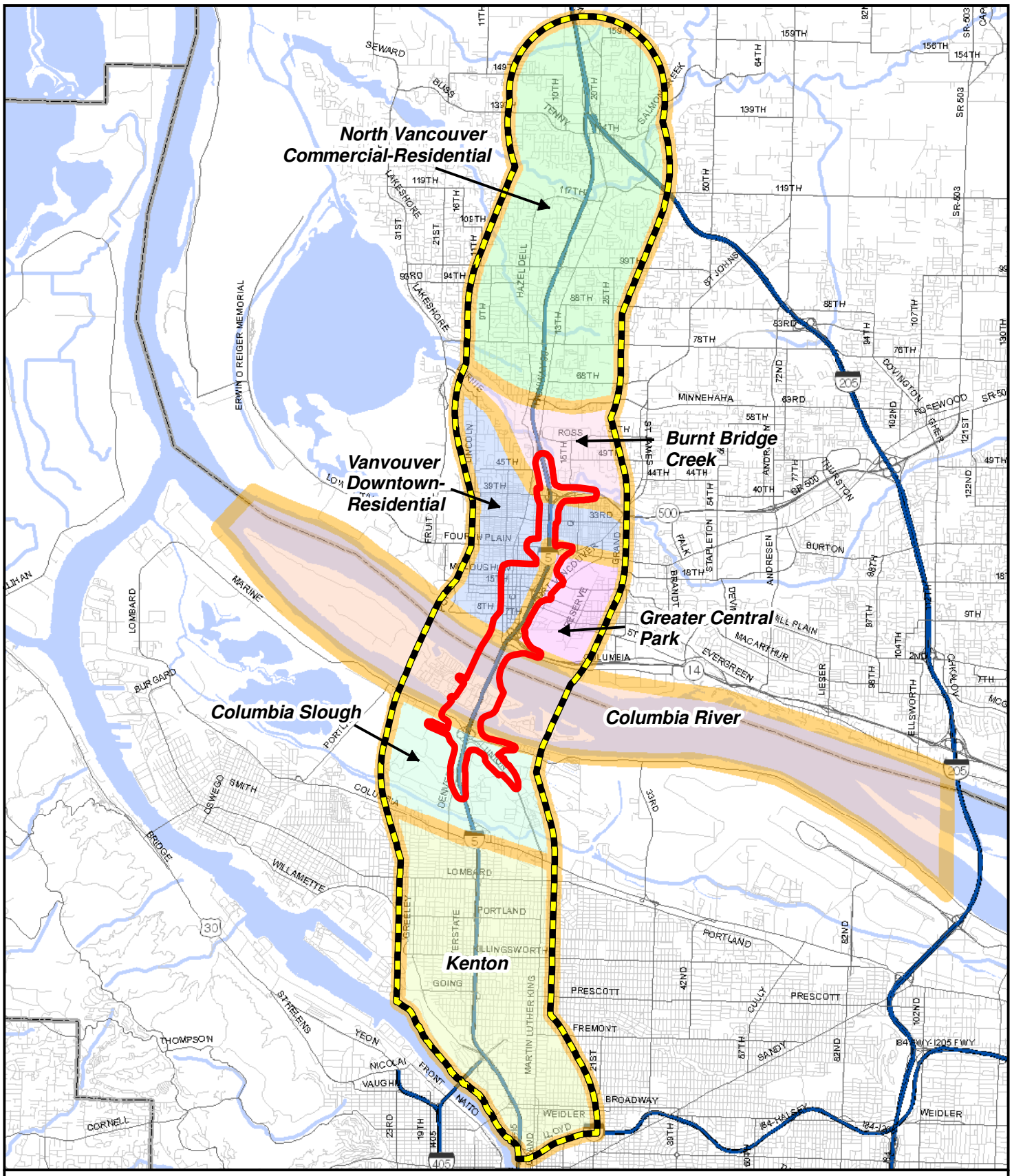

Exhibit 2-4. Landscape Units
Visual and Aesthetics Technical Report

Columbia River CROSSING

Analysis by J. Koloszar; Analysis Date: Dec. 8, 2010; File Name: FEIS_LndScapUnits_VIS.mxd

2.6 Coordination

Visual quality and aesthetic conditions are influenced by all of the factors that shape an environment. These factors include the presence of parks or historic features, flora/ fauna, and other environmental factors such as air quality. The visual quality project team met with other technical leads to coordinate the sharing of information and to identify and select the evaluation and simulation viewpoints and the key viewer groups. Other technical reports were reviewed for information pertinent to the existing and future visual quality and aesthetics of the viewshed.

Technical reports included the following:

- The Neighborhoods and Population Technical Report was reviewed to identify viewer groups and their expectations.
- The Aviation Technical Report was reviewed for any addition of or alteration of light and glare as it pertains to air travel.
- The Parks and Recreation Technical Report was reviewed for changes to parks, bike-pedestrian paths, and other recreation areas.
- The Historic Built Environment Technical Report was used heavily to assess changes to resources that are related to or caused by changes in the visual context.
- The Land Use Technical Report was used to incorporate the considerations and requirements of planning documents such as Vancouver City Center Plan.

In addition to this internal coordination, the project team sought input from the National Park Service (NPS) regarding the VNHR. Members of the project team met with the NPS to discuss the project and its implications, and also conducted site visits. Evaluation and simulation viewpoints were selected with input from the NPS as to key or sensitive locations and views.

The project also convened a Vancouver Working Group (VWG) to resolve numerous design issues related to the transit alignments in downtown Vancouver. A walking tour and two neighborhood workshops were held in January of 2009 to gather public input about light rail design in Vancouver's downtown. The workshops focused on light rail alignment, station location, and park and ride integration. Participants discussed these issues in small groups with other citizens and project staff.

Similar to the VWG, there were other groups established for issues related to the Marine Drive Interchange and Hayden Island. The design of facilities on Hayden Island also benefited from the concurrent planning work completed by the City of Portland for the Hayden Island Plan. There were workshops held to gather public input about light rail design for the Hayden Island station.

The project team has also been coordinating with the UDAG. The UDAG advises CRC on the appearance and design of bridge structures, transit, and highway improvements. Specifically, the group has addressed:

- The integration of input from the community on the appearance of bridge structures, transit, and highway designs;
- The incorporation of context sensitive design and sustainability; and
- The development of Guidelines for Visual Impact and Urban Design.

This bi-state group is led by Vancouver Mayor Royce Pollard and Portland Mayor, Sam Adams. The 14 members from Oregon and Washington contribute diverse professional and community

perspectives on a variety of topics including architecture, aesthetic design, cultural and historic resources, community connections, and sustainability.

Information developed in the UDAG meetings has been used to develop Guidelines for Visual Impact and Urban Design. These guidelines have provided minimal guidance to this analysis, but would greatly help inform the development of final design treatments. These guidelines are provided, in full, in Section 3.7. These guidelines have been used in the assessment of visual change as well as in early design exercises, It is important that the later design phases of the project utilize these guidelines in the development of roadways and ramps, transit facilities, pedestrian facilities, as well as for off-site areas near the project like those where gateways are recommended for development.

Meetings of the UDAG were be led by the CRC project team, using approaches that allowed the rapid visualization of ideas, views of bridge structures elements, intersection geometry, shape and form, and other approaches to allow participants to understand the visual impact of their suggestions.

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3. Affected Environment

3.1 Introduction

Federal and state highways are highly visible public resources that can impact the surrounding visual resources. Visual impacts to adjacent neighborhoods from new projects or alterations to existing resources are typically of great interest to those communities, and can cause resistance to a project on the part of the affected public. Existing visual resources and the context for the CRC project must be evaluated objectively in order to reasonably determine the degree of visual impact. This helps to ensure that visual impacts and the communities' reactions to the impacts are adequately addressed. This assessment process is supported and directed by NEPA.

This section presents the results of the visual quality and character assessment for conditions that currently exist. It describes the overall landscape character of the project area and identifies important views, landscapes, or landmarks that are character-defining aspects of the study area. This section also identifies groups of viewers who have views of or from the project and assesses their sensitivity to views.

3.1.1 Viewshed

The CRC viewshed includes unobstructed, long-distance views up and down the Columbia River and narrow, constrained views along the I-5 corridor. There are also unique views discussed throughout this report where the built environment and topographic features allow for longer views of the facility or from the facility. Views of the bridge structures from distant hills on Grand Boulevard are a good example of these unique reaches of the viewshed. Similarly, from the existing bridge and other planned locations on the new facilities, there are views of Mount Hood, Mount Adams and Mount St Helens. There are also narrow view corridors along a few north-south streets in Vancouver that terminate in partial views of the lift towers.

3.1.2 Landscape Units

The division of the viewshed study area into landscape units (LUs) was based on the criteria given in Section 2.5 (Exhibit 3-1). The visual attributes and resources that helped define the units were:

- Existing development including building scale and massing, development texture, and land use patterns;
- Topography (land form), vegetation, open space, and water patterns;
- Street grid patterns;
- Parks, trails, and other recreation areas;
- Areas of special visual or aesthetic character; and
- Buildings, landmarks, or development clusters that are important in defining the visual character and uses of an area.

Describing the APIs and the viewshed according to these attributes resulted in defining, originally, seven landscape units. Later refinements in the project, related to the selection of the

LPA, have removed the potential for visual change in the most northern and the most southern landscape units. These units, therefore, are no longer assessed in this report.

Exhibit 3-1. Landscape Units

Landscape Unit	Visual Character	Visual Resource
Burnt Bridge Creek	Riparian corridor and residential	Green highway corridor (driver's perspective)
Vancouver Downtown-Residential	Primarily residential with urban core	Esther Short Park, Tualatin Hills, Columbia River, Mt Hood, & portions of the Portland skyline
Greater Central Park	Open space of campus and park	Officers Row, the Fort Stockade, open space
Columbia River	Riverine, industrial, Commercial, Residential	Mt. Hood, Tualatin Hills, Columbia River and its shoreline
Columbia Slough	Mixed industrial-commercial and sports fields, marinas	Columbia Slough, Tualatin Hills, Mount St. Helens, Washington Cascades, stands of mature trees, Vanport Wetlands (west of I-5)

Visual quality was evaluated for selected views from specific viewpoints for the existing conditions assessment and the results are summarized in Exhibit 3-2. The viewpoint evaluation worksheets are provided in Appendix A and are an important part of the information that determines visual quality.

Exhibit 3-2. Summary of Visual Quality Ratings for all Landscape Units

Landscape Unit	Viewer Sensitivity	Intactness	Unity	Vividness
Columbia Slough	Low	Moderate	Moderate	Low
Columbia River	High	Low to moderate	Low to moderate	High
Vancouver Downtown-Residential	Moderate to High	High	Moderate	High
Greater Central Park	Moderate to High	High	High	Moderate to High
Burnt Bridge Creek	Low to Moderate	Moderate	Moderate	Low

3.2 Columbia Slough Landscape Unit

The Columbia Slough LU is the portion of the lower Columbia Slough watershed that lies between Marine Drive on the north and N Columbia Boulevard/NE Lombard Street on the south. It extends east and west of I-5 to the limits of the secondary API, and includes the Bridgeton and northern Kenton neighborhood of North Portland.

3.2.1 Visual Character

The visual character of this LU is defined by level open fields and recreation areas, several sloughs, and the overlay of large parking lots and large footprint buildings with diverse uses. Industrial, recreational, and transit developments are scattered throughout the area amid large tracts of open space. There are a number of destination points including the Expo Center, West Delta Park, Portland International Raceway, and the Heron Lakes Golf Course, all west of I-5. The MAX light rail line parallels I-5 on the west, with a station near the Expo Center off-ramps. Portland Meadows Race Track, Delta Dog Park, Portland Meadows Golf Course, and East Delta

Park are located east of I-5. Along NE Bridgeton Road there is some private development in the form of moderate-scale apartments and condominiums and moderate- to small-scale private marinas.

This area is heavily crisscrossed and partitioned by roads. I-5 separates the less-developed land on the east side from the developed areas on the west. Martin Luther King Jr. Boulevard roughly separates the sporting uses from the light industry. Major roads and streets in this area generally curve to follow lot boundaries. Unpaved and small roads crisscross the interiors of parks and wetlands.

The Scenic Views, Sites, and Drives Inventory (City of Portland 1988) identifies the entire Columbia Slough as a scenic drive (SD 11-03), acknowledging that it is actually several unconnected segments of slough and several secondary sloughs. The slough is valuable as wildlife habitat and for recreation. The views are primarily inward-looking, but are an important part of the recreation and aesthetic experience. It is protected under a special management plan.

Open space consists of large paved parking lots, turf, and undeveloped land. The parking lots are associated with the Expo Center, industrial operations, sports complexes, and Portland Meadows. The expanses of turf are associated with the sports fields, while the undeveloped areas are agricultural, stormwater holding ponds, or riparian lands. Development and open space both have coarse scale and texture because of the very large-footprint buildings, large parking lots, sports fields complexes, and large lot sizes.

The dominant vegetation in this LU is turf and grassy fields. Trees and shrubs are sparse and tend to be in clusters or along streets. Street trees line Martin Luther King Jr. Boulevard and occur intermittently along other roads. Delta Park has large sequoias and poplars along its west boundary. These dominate the visual foreground on the east side of I-5, and obscure views of the Expo Center. Ditches or creeks and the southern shore of the Columbia Slough are lined with nearly continuous bands of trees and shrubs.

Views within the landscape unit are for the most part unconstrained. Despite the height of the raised I-5 roadway, the highway facility is only intermittently visible from the east side (Exhibit 3-3) due to buildings, walls, and tree canopies. Views from the west side of I-5 are fairly unconstrained and do include the I-5 berm and roadway. Views outward from I-5 are dominated, obscured, or blocked by power lines, loading cranes, highway and commercial signage, and highway structures (ramps, overpasses). A motorist could see rooftops and bands of trees, see glimpses of Portland Meadows to the east, Mt Saint Helen’s, and the slough and tall stacks of shipping containers in the railroad storage yard to the west.

Exhibit 3-3. Columbia Slough – Delta Park: Northeast Toward On-Ramp – Viewpoint 25

3.2.2 Visual Quality

Viewers in this area are a diverse mix of auto travelers on I-5 and cross streets, park users, and cyclists and pedestrians on the non-motorized trails. Drivers are likely to have low sensitivity to outward views because they are focused on traffic conditions, and there are limited views outward from the highway corridor. Passengers or other travelers who can observe the surroundings would have a higher sensitivity; but the visual character of the corridor is that of an interstate highway flanked by medium to large-scale buildings, with the associated signage and structures.

People who are in the area for recreation, such as cyclists and park users, would have high sensitivity to such details and views in general because they are moving slowly and expect to see park-like, open landscapes. Because of the presence of recreation fields and marinas the viewer sensitivity in this area is higher than in many of the surrounding urban areas. Long range views of the broad Columbia River are very memorable, and are enjoyed by residents and travelers alike. There is a high level of sensitivity in views both to and from the I-5 roadway in this landscape unit.

Within this area intactness and unity are moderate because of the continuity and openness of large sports and grass fields on the east side of I-5 and wetlands on the west side. The open expanses allow extended views within the recreation areas. The large parking lot and structures of the Expo Center are out of character with the green character of the majority of the Columbia Slough landscape unit, but are contained in a well-defined area associated with the interchange, and do not sprawl into the wetlands. Vividness is low because there are no memorable or dramatic views or features visible from the landscape unit.

3.3 Columbia River Landscape Unit

The Columbia River LU includes North Portland Harbor, Hayden Island, and the Columbia River and its shoreline. The river channel is broad and flanked by short, steep bluffs and flat beaches. Hayden Island is level and flat with areas of fill, and separated from the Oregon mainland by North Portland Harbor. North Portland Harbor has been reshaped by development, including the construction of levees decades ago along the south side of the slough. These levees are character-defining elements in the slough landscape and are in the National Register of Historic Places (NRHP).

3.3.1 Visual Character

The overall character of this LU is defined by the near-continuous development along, and use of, the Columbia River, which includes the I-5 bridges and North Portland Harbor. Development is river or water-oriented with emphasis on access to and views of the river. The I-5 bridges dominate views in the APIs, and are visible from most of the viewshed. The eastern bridge carrying northbound I-5 traffic is listed in the NRHP and has been an iconic landmark in this LU for decades.

Development is continuous along the North Portland Harbor and Columbia River shorelines. It consists of:

- Moderate-scale, low-rise hotels and restaurants;
- Houseboats, apartments, manufactured homes, and condominiums; and
- Small to moderate-scale private marinas, primarily in North Portland Harbor.

Heavy and light industries are located on both sides of the river. Hayden Island contains a large commercial mall (Jantzen Beach Center) and other large-scale, low-rise retail box buildings, which are surrounded by large paved parking lots. The texture of this area is a mix of very fine (residential and marinas) and coarse (large-footprint buildings and large lot sizes) scales. Near I-5 development is coarse (large commercial buildings).

This LU contains several destination points including the Red Lion Hotel, Jantzen Beach Center and other retail centers, Lotus Isle Park in Oregon, and Waterfront Parks, Waterfront Renaissance Trail, and waterfront restaurants in Washington. Nearness to and views of the river are the primary attractions for the hotels, parks, and trails.

Residential development is found on the northwestern and eastern portions of Hayden Island. The residences in the northwestern portion are manufactured homes. In the eastern portion, there are single- and multi-family dwellings, along with houseboats on the river. There is little to no vegetation, except in the vicinity of the marinas and beaches and along the roads of a manufactured home neighborhood.

Open space consists of expanses of open water, shoreline palisades and parks, and two small parcels on both sides of I-5 between N Hayden Island and N Tomahawk Island Drives.

Views from North Portland Harbor contain many structures such as docks, marinas, and the North Portland Harbor bridges across the slough (Exhibit 3-4 and Exhibit 3-5). From the interior of Hayden Island and I-5 mainline, the river and the bridge structures are not usually visible due to the height of the low- to mid-rise buildings or the density of tall masts in the marinas. From I-5 the view is dominated by highway structures and signage, and nearer the river, by the I-5 bridges (Exhibit 3-6, Exhibit 3-7, and Exhibit 3-8).

Exhibit 3-4. North Portland Harbor: West toward I-5 Bridges – Viewpoint 24

Exhibit 3-5. North Portland Harbor: toward I-5 Bridges, looking Southeast – Viewpoint 22

Exhibit 3-6. Hayden Island: North toward the I-5 Bridges – Viewpoint 21

Exhibit 3-7. Columbia River: North toward Vancouver, Washington, Skyline – Viewpoint 42

Exhibit 3-8. Columbia River: From Bridge West toward Portland West Hills – Viewpoint 41

The Columbia River creates an open view corridor toward the east to Mount Hood (Exhibit 3-9) and west to the Tualatin Hills. The Columbia River itself is a scenic resource (City of Portland 1988), particularly to the east where vegetation lines the northern shore. The existing I-5 bridges are the dominant structure in this LU. They can be seen from most points along the river and many viewpoints with some elevation (Exhibit 3-10 through Exhibit 3-13). The industrial character of the towers and the complexity of the trusses are not in harmony with the sinuous lines of the river channel and the hill and mountain profiles on the horizon. However, the bridges and towers are an iconic landmark from many viewpoints because of their historic nature and having long been part of the view.

Exhibit 3-9. Columbia River: East Upstream along River from bridge, toward Mount Hood – Viewpoint 40

Exhibit 3-10. Vancouver Waterfront: Southeast toward I-5 Bridges and Oregon Shoreline – Viewpoint 13

Exhibit 3-11. Vancouver Waterfront Park: West at I-5 Bridges – Viewpoint 14

Exhibit 3-12. Hayden Island: Northwest looking at I-5 Bridge and Vancouver – Viewpoint 19

Exhibit 3-13. Hayden Island: Northeast toward the I-5 Bridges – Viewpoint 20

The Scenic Views, Sites, and Drives Inventory (City of Portland 1988) identified four scenic locations that lie within the Columbia River LU.

1. The Kelley Point Park Panorama (VP 01-02) in Kelley Point Park, at the confluence of the Willamette and Columbia Rivers, has unobstructed views up and down the Columbia River. Views eastward include oblique, partial views of the I-5 bridges as a small feature, but the bridges are largely obscured by Hayden Island.
2. The intersection of NE 33rd Street at Marine Drive (VB 07-02) offers a panoramic view of the Columbia River that includes the I-5 bridges. The bridges contribute to the picturesque quality of the view because the outline of the bridge structures at this distance mirrors the landform of Hayden Island and is in harmony with the shoreline moorages and river landscape. There are no protection measures for the viewpoint. Changes to the bridge would not lessen the quality of the view.
3. Marine Drive is considered to be a scenic drive (SD 12-04), but the emphasis is on views eastward to Mount Hood. There are no protection measures for the viewpoint or the scenic drive.
4. The Scenic Resources Protection Plan (City of Portland 1991) also identifies panoramic view VP 06-01, close to the position of viewpoint 19. As the view is a panorama, the bridge structure is approximately a 1/3rd part of this view.

3.3.2 Visual Quality

Viewers in this area are a diverse mix of travelers on the I-5 bridges and side streets, boaters on the river, park and trail users, and aviators and airplane passengers from Pearson Airfield and the Portland International Airport. Drivers are likely to have low sensitivity because they are focused on traffic and driving. Recreationists, air passengers, pedestrians, and vehicle passengers do have time to observe the environs and are likely to have high sensitivity to the views and visual character of the area. They are also likely to have higher expectations for a visually pleasing experience, particularly if walking across the bridges, boating, or using one of the waterfront trails or parks. There is a high level of sensitivity in views both to and from the I-5 bridges in this landscape unit. The existing bridges provide memorable views of the river, Vancouver, distant Mountain, the west hills of Portland and more. Also, views along the river's edge which includes

parks, walking paths, and other public areas, are made more vivid by the presence of the I-5 bridges.

Intactness and unity are low to moderate, and vividness is high in the Columbia River LU. Intactness and unity vary with viewpoint, but are generally low from viewpoints near the bridge structures. The uses and scales of the industrial structures along the shoreline are not harmonious with the natural and scenic character of the river. The same is true of the bridges, and especially the piers, which obscure or block, and generally degrade views of the river. From distant viewpoints, intactness and unity are moderate because the bridge and shoreline structures are small features in the greater landscape of the river channel (Exhibit 3-14). Vividness is high because of the scenic or dramatic views of the Columbia River and Mount Hood, and for views of the I-5 bridges.

Exhibit 3-14. Columbia River – Ilchee Statue: West toward I-5 Bridges – Viewpoint 33

3.4 Vancouver Downtown – Residential

The City of Vancouver and unincorporated portions of the Vancouver urban growth area occupy the plateau and plains north of the Columbia River. This landscape unit is built primarily on a south-trending slope that starts on the southern bank of Burnt Bridge Creek and ends at the northern bank of the Columbia River. I-5 is a physical and visual barrier between communities in this landscape unit.

3.4.1 Visual Character

This landscape unit contains Vancouver's older neighborhoods including Lincoln, Carter Park, Shumway, Hough, Arnada, and Esther Short on the west side of I-5, and Rose Village on the east side of I-5. The Rose Village neighborhood also includes the Fort Vancouver Historic Cemetery, immediately east of I-5. The landscape unit is bounded by the limits of the secondary API on the west, the railroad tracks on the south, and the Burnt Bridge Creek valley on the north.

The overall visual character of the LU is of finely textured urban form, which includes single- and multi-family homes, mixed use buildings, and an urban commercial and business core. Development is continuous and moderately dense throughout this LU. It consists of residential housing of all types and ages, mixed-use buildings, recreation centers, schools, and a downtown business and commercial core. There are many historic or vintage buildings and homes throughout the LU that contribute to a distinctive residential urban character. Some of the

neighborhoods have expressed concern (in their planning documents) for preserving the street trees and vegetation that are important to the visual quality of their neighborhoods.

Commercial uses have clustered along Main Street, Broadway, and portions of McLoughlin Boulevard, and in the Esther Short neighborhood downtown. The Upper Vancouver business district (Main Street between McLoughlin and Fourth Plain Boulevards) includes mixed uses and many small businesses. The downtown commercial area includes retail, office, industrial, and residential buildings.

The Esther Short neighborhood is the cultural, entertainment, office, and civic center of Vancouver and Clark County. Within this neighborhood are resources that are significant to the entire area including City Hall, the County Public Service Center, State Crime Lab, the Federal Building, and nearby similar offices that form a government campus. Community facilities include a train station, a regionally significant park (Esther Short Park), government offices, a bus transit station, and the new Convention Center. Esther Short Park is a large city park near the revitalization area of downtown Vancouver. The park is the site of many festivals, concerts, and the Vancouver Farmers Market.

Vancouver has identified buildings of concern that may have or could have historic resource status and would be sensitive to visual impacts (City of Vancouver 1995). Exhibit 3-15 presents buildings that are listed as historic or those in which the public has vested interest.

Exhibit 3-15. List of "Key Buildings" identified in City of Vancouver Heritage Overlay

Building	Location
C.C. Dept Store	101 E 8th
Pearlman Building	705 Main St.
Chronis Building	617 Main St.
605-607 Main Street	605-607 Main St.
Heritage Building	601 Main St.
Vancouver National Bank	801 Main St.
Schofield Building	600 Main St.
Donegan Building	614 Main St.
Cady Building	109 W 7th St.

In addition to the Key Buildings identified in the Vancouver municipal code, there are numerous historic structures recognized through listing on the national Register of Historic Places, the Washington State Heritage Register, and the Clark County Heritage Register. These sites are discussed in detail in the Historic Built Environment Technical Report. These sites would be assessed for visual impacts, with coordinated determinations made among urban design professional and architectural historians.

The predominant vegetation types in this landscape unit are street trees of mixed ages, residential landscaping, and ornamental landscaping associated with public parks, schools, and business and commercial areas. The City of Vancouver has a formally landscaped gateway entrance at the intersection of I-5 and E 15th Street.

The street system is a north-south and east-west oriented grid that is broken occasionally by large lots and Main Street where it runs obliquely through North Vancouver. The grid allows long views up and down the streets and contributes to the sense of overall cohesion. Streets range in

size from narrow two-lane residential to wider boulevards in downtown (Exhibit 3-16). The view shown below is one of the City of Vancouver's planned view corridors, looking west toward the historic Courthouse. These streets have overhead lights, transmission lines, signage, and traffic control structures. Because of the continuity of the street trees and the presence of mature park vegetation, the overhead appurtenances are not obvious. The residential area has a fine texture because of the generally small-scale street grid, the small- to moderate scale of building footprints, and lot sizes. The texture of downtown is medium because the grid is larger with large lots for parks, apartment and condominium complexes, and wider streets.

Exhibit 3-16. Vancouver: West along 12th Street – Viewpoint 10

The existing I-5 bridges are visible from several north-south streets and various locations throughout Vancouver. The bridges do not dominate views because many buildings, street signs, fixtures, and street trees are in the foreground and middle ground and dominate the view. The lift towers are part of the urban view looking south between downtown buildings (Exhibit 3-17) and can be seen from as far north as 33rd Street along Columbia (Exhibit 3-18). Exit and entrance ramps are somewhat visible, but are largely screened by buildings and mature trees. From the conference center and hotels along the north shoreline the bridge structures are highly visible because views are unobstructed.

Exhibit 3-17. Vancouver: South from Columbia Street and 6th at I-5 Lift Towers – Viewpoint 12

Exhibit 3-18. Vancouver: South from Columbia Street and 33rd at I-5 Lift Towers – Viewpoint 9

Along 17th Street there are many historic or vintage homes that contribute to a distinctive residential urban character (Exhibit 3-19). Commercial uses have clustered along portions of McLoughlin Boulevard. The street system is a north-south and east-west oriented grid that is broken occasionally by large lots. The grid allows long views up and down the streets and contributes to the sense of overall cohesion. The residential area has a fine texture because of the generally small-scale street grid, and the small to moderate scale of building footprints and lot sizes.

Exhibit 3-19. Vancouver: East from 17th Street and C Street

3.4.2 Visual Quality

Viewers in this landscape unit are travelers on I-5 and local streets including commuters, shoppers, visitors, tourists, and residents; and slower moving observers including recreationists and residents living adjacent to I-5. Residents and visitors to the commercial and business areas may be sensitive to view quality because they are likely to expect an attractive, familiar urban or neighborhood environment. The highway facility is not visible from most of the downtown area and neighborhoods; however, the ramps and highway noticeably decrease the quality of views that include them. Most of the drivers on I-5 are likely to have low to moderate sensitivity to views because their attention would be focused on traffic and driving. The motorist's view from I-5 is a wide highway with several overpasses and groomed roadside landscapes. The I-5 bridges are intermittently visible from the southbound lanes near E Mill Plain Boulevard, and they dominate the view south of the SR 14 interchange. Passengers or other travelers who can observe the surroundings could have a higher sensitivity; however, the roadbed is slightly below grade here, which limits lateral views.

Intactness is high for this landscape unit because the continuity and stylistic coherence of the neighborhoods and the downtown area are high. Unity is moderate because, even though there are no wide or extensive views within the LU views along streets tend to be a harmonious mix of similar scale buildings, street trees, and residential and urban activity centers. Vividness is high overall. Views include numerous historic buildings and artfully designed spaces. Additionally, many indoor views, from upper story offices and residents, include Mt Hood and the Columbia River. The exception occurs downtown, where buildings overlooking the river could have vivid views from upper floors of the river and distant landscapes. Visual resources that can be seen from taller buildings and along the river's edge include Mount Hood, Mount St Helens, the West Hills of Portland, the broad expanse of the Columbia River, and (from a few locations) the tall buildings in downtown Portland.

3.5 Greater Central Park Landscape Unit

The Greater Central Park LU is on a south-trending slope that extends from E Fourth Plain Boulevard to the railroad berm paralleling the Columbia River. The railroad berm acts as a visual and physical boundary on the south, I-5 acts as a visual and physical boundary on the west, and the secondary API edge is the eastern boundary. This landscape unit includes the VNHR and the Central Park and Hudson's Bay neighborhoods. Please also see the Historic Built Environment Technical Report and the Parks and Recreation Technical Report for additional information concerning the VNHR.

3.5.1 Visual Character

The overall visual character of this LU is park-like campus and open field. Development is recreation- and education-oriented with the previous military/commercial activities having evolved into historic landscapes for recreation activities.

East Reserve Street separates development styles in this landscape unit. To the west are VNHR; various campuses including Clark College, Washington State School for the Blind, Veterans Administration offices and hospital; parks, and expanses of open space; and to the east are hillside residential areas. North of Mill Plain Road, the scale and architecture of public buildings including Hudson's Bay High School, Clark College, Public Library, Officers Row, Luepke Center, and Marshall Community Centers, and landscapes establish the civic character of Vancouver's Central Park unit. These institutions are also important resources for the City of Vancouver.

The VNHR is a nationally recognized historic and recreation resource and draws hundreds of thousands of visitors each year. The fort site is a broad, grassy plain bounded by I-5 on the west, SR 14 on the south, and the Grandview hillside on the east. The Burlington Northern Santa Fe Railroad berm blocks views of the river from the interior of the fort. Fort Vancouver has plans to build a multicultural gathering place (The Village) in the west corner of the plain near the SR 14 and I-5 interchange (Exhibit 3-20). To the south, a pedestrian overpass (the Land Bridge) has recently been constructed over SR 14 to reconnect the Fort to the waterfront and Apple Tree Park. The Land Bridge is part of the Lewis and Clark bicentennial celebration, known as the Confluence Project. It is an important symbolic and physical connection and would provide panoramic views of the river and the I-5 bridges. The park-like campus areas have large, irregular lot sizes and building styles that range from a modern college campus to a historic fort and settlement. Streets tend to be broad thoroughfares that follow campus boundaries and are either perpendicular to I-5 or curve obliquely across lots. The residential area is structured by a small-scale north-south street grid and small-footprint dwellings. Streets vary in style and size appropriate to their settings.

Exhibit 3-20. Fort Vancouver: Southwest from the Village at I-5 Truss Arches and Lift Towers – Viewpoint 34

Vegetation and landscaping are highly diverse. Fort Vancouver's landscaping includes mature street trees, groves of trees dispersed over expanses of lawn, and cemetery and other special landscapes. In the fort some landscaping has been reconstructed to reflect original designs and uses. The parks and campuses have a wide variety of landscaping styles and vegetation, including sports fields, ornamental plantings around buildings, and street and parking plantings. The residential portion of the unit has mature street trees and yard landscaping.

The I-5 bridges are visible from Pearson Airfield, the areas within and surrounding the Fort, and from the upper floor of the bastion (Exhibit 3-21), a lookout tower that is part of the stockade. From areas north of E 8th Street the bridges are less visible due to the increased distance and the presence of tall street trees or structures. While the arches of the I-5 bridges are not visible from most locations in this LU because of topography, the lift towers are frequently visible (Exhibit 3-22 and Exhibit 3-23). The towers dominate mid to distant views from the Washington side because they are close to the Washington shoreline. Views of I-5, or sections of I-5, are part of the visual character of the major roads that intersect I-5 such as Evergreen Road (Exhibit 3-24). Except for a few locations on hillsides (Exhibit 3-25), there are few unobstructed views of visual resources (e.g., the west hills of Portland or the Columbia River).

Exhibit 3-21. Fort Vancouver: Southwest from Inside Stockade at I-5 Truss Arches and Lift Towers – Viewpoint 16

Exhibit 3-22. Landbridge looking southwest toward I-5 Bridges – Viewpoint 15

Exhibit 3-23. SR 14 Westbound: West at I-5 looking toward Lift Towers – Viewpoint 18

Exhibit 3-24. I-5 at Evergreen Road Overpass: Southwest at I-5 Bridges – Viewpoint 11

Exhibit 3-25. Grand Boulevard, Vancouver: Southwest looking toward I-5 Bridges – Viewpoint 30

3.5.2 Visual Quality

Viewers in this LU are travelers and commuters on I-5 and its crossing streets, residents living adjacent to I-5, visitors to the schools and hospital, tourists visiting the Fort, users of Pearson Airfield, and certain residents with homes on southwest-facing hills. Tourists are likely to be moderately to highly sensitive to views and visual quality because they expect to see scenic or familiar, pleasant landscapes and have the time to enjoy the views. Residents are also likely to be moderately to highly sensitive to the visual quality of views from their homes and neighborhoods. The elevated roadway and ramps are visual barriers to views between Vancouver and the Greater Central Park area.

Intactness and unity are high within this LU. Intactness is high because of the near-continuous expanses of park-like landscapes of the campuses and Fort Vancouver. There are few intrusions to disrupt the landscape, and the buildings are fit in their settings. Unity is high because of the picturesque views of this park-like character available from many viewpoints. Vividness is moderate to high, depending on the location. The interior of the landscape unit has moderate vividness because, although there are no memorable or striking features there, it is generally beautifully landscaped and maintained, and the historic nature of the Fort's reconstructed

buildings is notable. Vividness is high for views from hillside residences (e.g., near Grand Boulevard) that have views of the Fort, the river, and the bridge structures, and would be high from the pedestrian overpass now under construction.

3.6 Burnt Bridge Creek Landscape Unit

The Burnt Bridge Creek LU is a riparian valley-plain between steep-sided hills with a greenbelt of riparian vegetation, including mature trees. The unit is bounded by steep slopes, NW Overlook Road, and NE 63rd Street on the north; and the channel's steep slopes and SR 500 on the south. The channel is a broad plain on the east side of I-5 and narrows on the west side as it approaches Vancouver Lake.

3.6.1 Visual Character

Development in this landscape unit is primarily low-density, single-family residential and includes two schools. A Bonneville Power Administration (BPA) substation and office complex adjoins I-5 on the east side. The narrow band of development along the west side of I-5 consists of dispersed one- to two-story single-family homes and a few cluster developments. West of these homes is the open space of the creek floodplain. Other open space throughout the LU consists of riparian greenbelts and stands of mixed woodlands on the creek channel slopes, young to mature street trees, and residential landscaping. A wide corridor for high-power transmission lines cuts obliquely toward the southwest parallel to the riparian channel.

Streets are mostly residential and are organized in a rough grid that has been adapted to the hilly terrain. Leverich Park is within this landscape unit, though it is not easily seen from the facility, nor is the facility a dominant feature in this somewhat sunken or lower park space. There are views from the bridges over the highway, as shown in Exhibit 3-26. From this image, it is clear how the highway is lower than surrounding lands and screened with landscaping.

Exhibit 3-26. View from 39th Street overpass: Looking south over highway toward SR 500 ramps – Viewpoint 4

There are overhead power and communication lines, signage, and illumination poles. I-5 is not generally visible from the residences due to their distance from the roadway and the hilly, wooded terrain.

3.6.2 Visual Quality

Viewers in this area are travelers on I-5 and residents passing through the corridor on their way to or from home. Most of these viewers are likely to have low to moderate sensitivity to views because their attention would be focused on traffic conditions and driving. Passengers or other travelers who can observe the surroundings could have a higher sensitivity; however, the visual character of the corridor is that of a tree-lined interstate highway with the associated signage and structures. Viewers would also include small numbers of residents and employees with views of the highway facilities.

Intactness and unity are moderate in this landscape unit because development is fairly uniform in type and scale and fits into the hilly wooded landscape. Vividness is low because there are no memorable features, but views are framed by tall trees, curving roads, and the hilly topography creating a pleasant and rural quality.

4. Long-term Effects

4.1 No-Build Alternative

With the No-Build Alternative, the I-5 bridges would continue to be a dominant feature in views near the crossing, and visible from many places in Vancouver and the Fort Vancouver National Historic Site. As development in the area continues to modernize or replace buildings and structures, the bridges may be one of the sole remaining elements from the era of steel bridge construction. This could be seen as visually positive or negative. As long as the bridges are maintained and painted, views containing the bridge structures should not decline in quality, except in the event of a major earthquake.

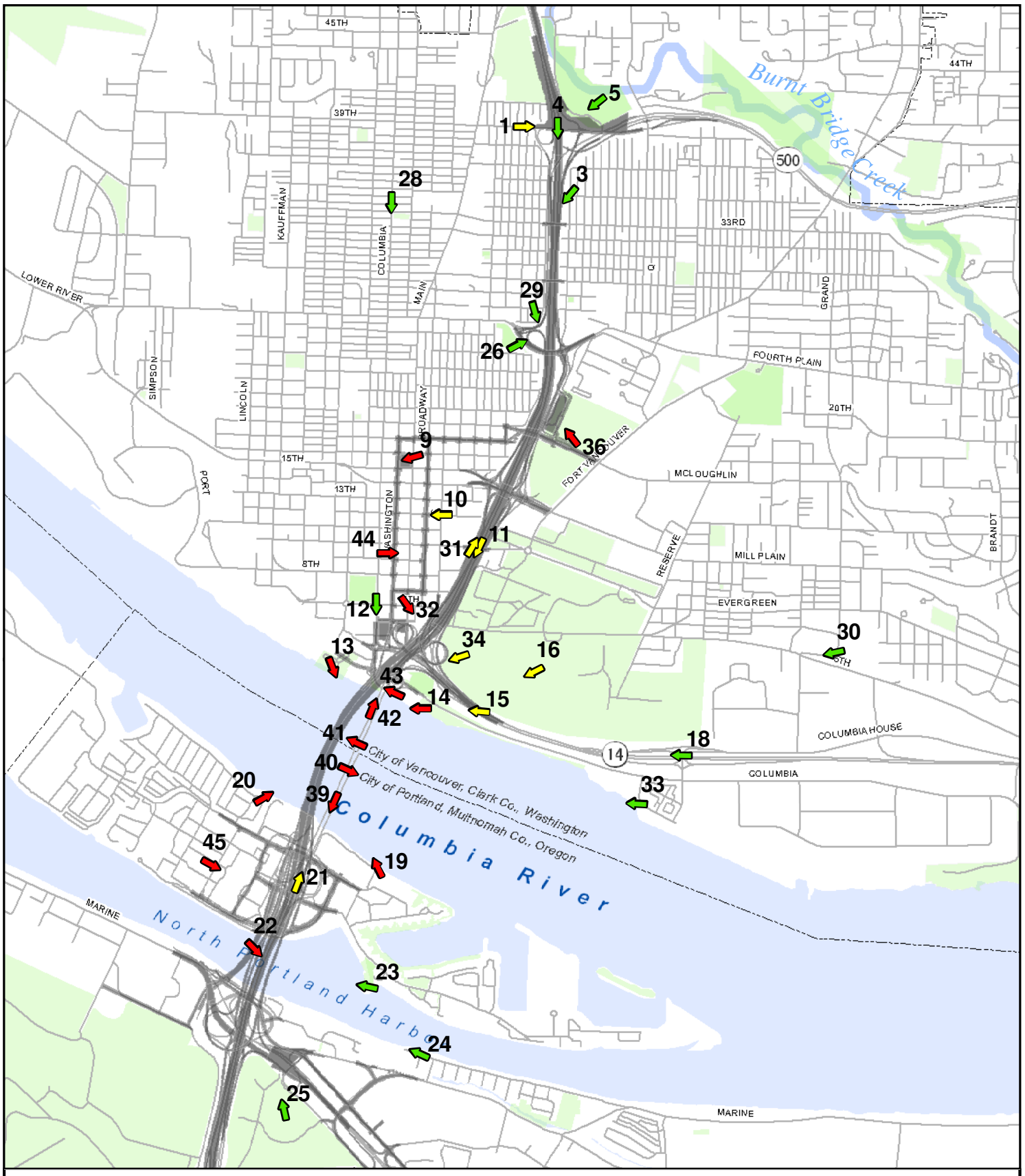
4.2 Locally Preferred Alternative

The LPA has slightly different visual impacts than any single alternative assessed for the DEIS. The LPA is very similar to alternative 3, from the DEIS, which included a replacement bridge and light rail transit. The single largest change in visual impacts relates to the determination that Clark College would serve as the terminus for the light rail line. This decision effectively eliminated all visual impacts associated with high-capacity transit in Uptown Vancouver and the Lincoln and Kiggin's Bowl Park and Ride facilities. Exhibit 4-1 and Exhibit 4-2 show the degrees of change for each of the project's key viewpoints. The far right column presents the final determinations of the degrees of change from each viewpoint. The points for which high degrees of change are expected are the most likely areas where adverse impacts may occur, and may require mitigation. The points for which high degrees of change are expected are emphasized in this analysis.

Exhibit 4-1. Degrees of Change at each Viewpoint

Viewpoint	Description	Locally Preferred Alternative
1	SR 500 at I-5 looking east	Low
2	Upper main viewpoint	Dropped from analysis. No Change
3	SR 500 merge with I-5 looking south	Moderate
4	SR 500 at I-5 looking south	Moderate
5	SR 500 at I-5 looking from park	Moderate
6	Dropped prior to DEIS	
7	Uptown viewpoint	Dropped from analysis. No Change
8	Dropped prior to DEIS	
9	**Mill Park and Ride looking west**	**High**
10	Broadway Light Rail line looking west	Moderate
11	Commuter experience on I-5 looking south	Moderate
12	On Columbia at Esther Short Park looking south	Moderate
13	**River crossing looking southeast**	**High**
14	**River crossing looking southwest**	**High**
15	Along SR 14, near project, looking west	Low
16	Inside Fort looking southwest	Low
17	Dropped prior to DEIS	
18	Along SR 14 looking west	Moderate
19	**River crossing looking northwest**	**High**

Viewpoint	Description	Locally Preferred Alternative
20	**River crossing looking northeast**	**High**
21	Commuter entering I-5 at Hayden Island, looking north	Low
22	**North Portland Harbor bridges from JBMI floating Homes**	**High**
23	North Portland Harbor bridges from park (looking west)	Moderate
24	North Portland Harbor bridges from Bridgeton trail area (looking west)	Moderate
25	Marine Drive interchange from Delta Park	Moderate
26	Fourth Plain at I-5 from Park	Moderate
27	Dropped prior to DEIS	
28	Upper Columbia, distant view of bridge	Low
29	Fourth Plain at I-5 looking south	Moderate
30	Project area from hill on Grand	Low
31	Commuter experience on I-5 looking north	Moderate
32	**SR 14 at I-5 looking south**	**High**
33	River Crossing from Ilchee Statue, looking west	Moderate
34	SR 14 Interchange from HBC/ Fort Village area	Low
35	Kiggins Park and Ride viewpoint	Dropped from analysis. No Change
36	**Clark Park and Ride from ball field**	**High**
37	Lincoln Park and Ride viewpoint	Dropped from analysis. No Change
38	Lincoln Park and Ride viewpoint	Dropped from analysis. No Change
39	**View of Commuter on I-5 looking south**	**High**
40	**View of Commuter on I-5 looking east**	**High**
41	**View of Commuter on I-5 looking west**	**High**
42	**View of Commuter on I-5 looking north**	**High**
43	**View under new facility from Vancouver waterfront looking west**	**High**
44	**9th and Washington Transit Station looking east**	**High**
45	**Hayden Island Interchange looking east**	**High**



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W E
S

0 0.25 0.5
Miles

Degree of Potential Change

- high
- moderate
- low

Project Footprint

Exhibit 4-2. Viewpoints Change Assessments

Visual and Aesthetics Technical Report

Columbia River CROSSING

Analysis by; J. Koloszar; Plot Date: Dec. 8, 2010; File Name: Viewpoints_template_DC207.mxd

4.2.1 Columbia Slough Landscape Unit

In the Columbia Slough LU there would be low level visual impacts from the project. The light rail transit impacts would be low to non-existent.

The reconfiguration of the Marine Drive interchange ramps would not substantially change the visual character of the area, nor would it noticeably change the visual quality. The new ramp from I-5 to Martin Luther King, Jr. Boulevard would be several feet higher than the existing ramp, which would make the ramp more visible from a few locations in Delta Park where there are views through the tree border. With the refinement of the LPA designs, and the associated realignment of the facility, a retaining wall will be required in the corner of the park, introducing a new visual feature. Differences in the local street network between Options A and B would result in minimal visual differences.

The ramp proposed to serve motorists entering I-5 northbound from Marine Drive westbound, would also be higher than any existing portion of the interchange. The ramps may be more noticeable from a hotel due east of the interchange. Expanding the station at the northeast corner of the Expo Center would not be a visual impact because the area is an existing transit station and because no sensitive views would be blocked. The Marine Drive interchange is shown in Exhibit 4-3 and Exhibit 4-4. The design represented in this image has changed very slightly for the LPA but is included for illustrative purposes. Additionally, the viewpoint for the simulation is aerial and not a viewpoint that would be easily experienced. The simulation is intended only to provide orientation to the overall project components in this area. Under the LPA with highway phasing the Marine Drive flyover, from Marine Drive east bound to I-5 north bound, would be deferred. This ramp is the highest of the proposed facilities at this interchange.

Exhibit 4-3. Marine Drive Interchange Area Simulation - looking Northeast
Visual and Aesthetics Technical Report

Columbia River CROSSING

Exhibit 4-4. Marine Drive Interchange Area Simulation - looking Northwest
Visual and Aesthetics Technical Report

Columbia River CROSSING

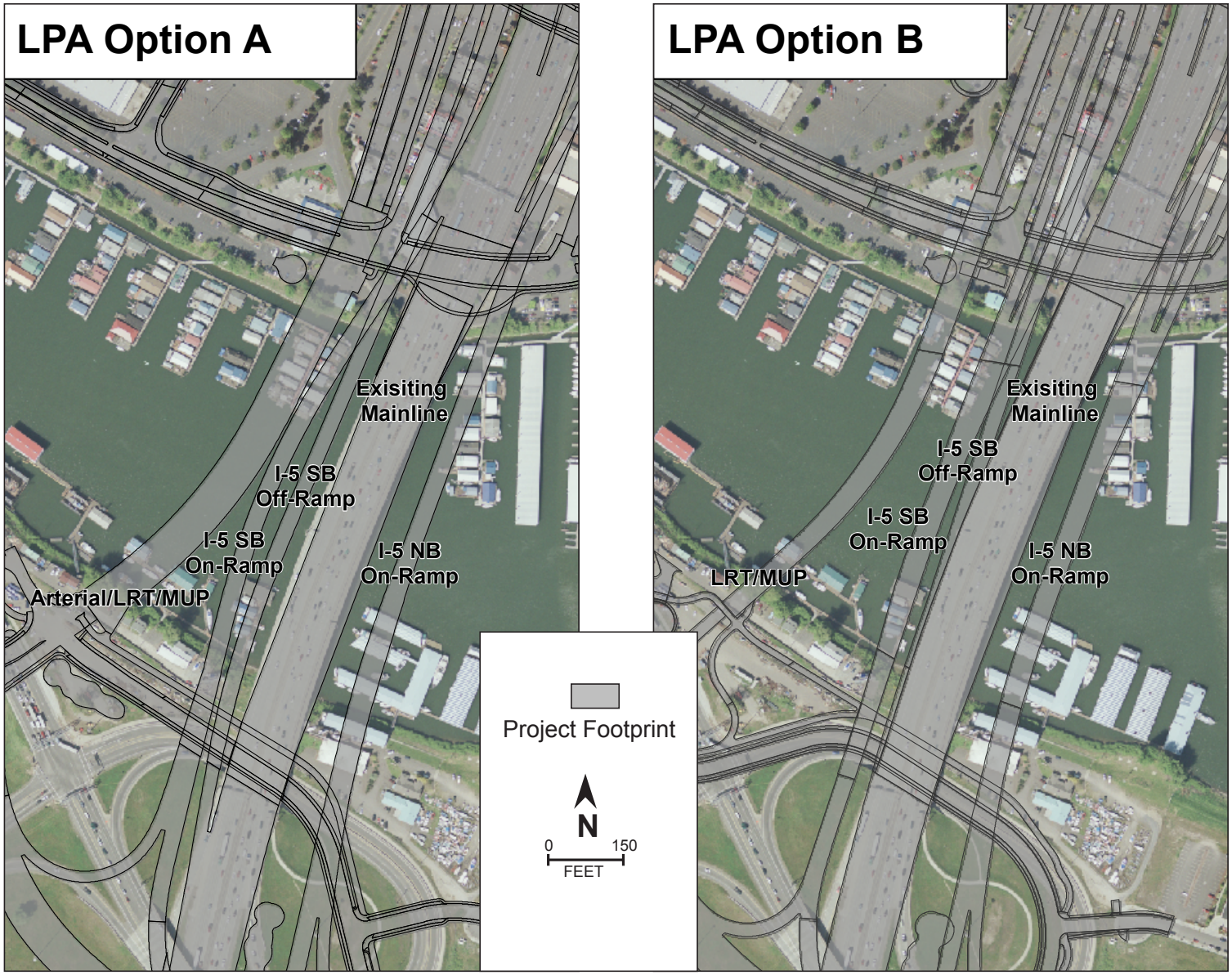
For the LPA with highway phasing, the construction of portions of the Marine Drive Interchange and Victory Boulevard ramps would be postponed. This design is discussed in Section 1.2.2.2. The differences to key views would be moderate. The highest component of the Marine Drive Interchange is the east to north movement flyover. This component would be postponed for later construction, and would thereby not result in a change to the visual conditions.

4.2.2 Columbia River Landscape Unit

The project would have high level visual impacts in this LU. The impacts could be positive though the viewers' potential appreciation for the new bridge structures design is very subjective. The new river-crossing bridge structures would be sleek and contemporary and a stark departure from the historic appearance of the existing facilities. North Portland Harbor, Hayden Island, and the Columbia River would have high level visual impacts due to the widening and reconfiguration of the I-5 bridges and the addition of a new light rail transit under the southbound bridge from the Expo Center station. Reducing the number of piers could open up views of open water from both shoreline-level and elevated viewpoints along the river.

The LPA preserves and utilizes the existing North Portland Harbor bridges. These bridges will be supplemented by collector/distributor ramps on either side as well as the structure of the light rail guideway. This design represents a change from the replacement bridge options of the DEIS, where the harbor was proposed for a new crossing. The visual differences are somewhat minimal, as the existing North Portland Harbor bridges have a somewhat similar, simple design to those that are proposed. However, with this design modification there will be increased visual encroachment as more piers will be needed in the river. The visual character and quality of the area near the bridges would undergo high level changes due to the removal of docks, floating homes, other structures, and bands of shoreline vegetation. The difference between Option A and Option B is shown in Exhibit 4-5.

Furthermore, the bridges over North Portland Harbor will span an area (east to west) that is twice as big as is currently occupied. The new collector-distributor bridges will be at a higher elevation than the existing bridges. With Option A, the light rail/multi-use path bridge constructed west of the existing bridges would also have two travel lanes providing arterial access to Hayden Island. The overall visual impact of the bridges will differ little between Options A and B. However, the visual experience for the driver would be different, with drivers under Option A able to access Hayden Island and Marine Drive without entering mainline interstate traffic. The simulations from the perspective of the JBMI floating homes (Exhibit 4-6) are based on earlier bridge designs. More recent design updates bring the facilities closer to the floating homes, and removes additional floating homes. However, even with the current simulation, it is clear that the degree of change would be high.



4-5. Differences Over North Portland Harbor
Visual and Aesthetics Technical Report

Columbia River CROSSING

Exhibit 4-6. New Bridges (earlier design) from Floating Homes on Hayden – looking Southwest, simulation above and existing below

From distant views along the river, such as Kelley Point Park Panorama or Marine Drive, the existing I-5 bridges are noticeable primarily because of the complex trussing and variable arching, but the height and box-like framework of the lift towers boost its visibility. However, the bridges are a smaller part of the overall landscape from distant views; and do not hamper views of distant mountain profiles or landscapes to the same degree as from close viewpoints. Because the new bridges will be much higher than the existing, it would be visible from most riverside locations. However, the visual impacts would tend to the positive because views through and past the bridge structures might not be hindered to the same degree as with the existing bridges. With the sleek design of the LPA blending into the landscape character, the bridges can be a vivid element in the view, especially when combined with the open views of the river and mountains in the background.

From both northbound and southbound directions on I-5, views of the Portland and Vancouver skylines would be visible, as would distant shorelines, rolling hills, and mountain profiles. Views of downtown Vancouver and the Vancouver National Historic Reserve are simulated in Exhibit 4-7.

Exhibit 4-7. River Crossing Bridges Simulation - looking Northwest
Visual and Aesthetics Technical Report

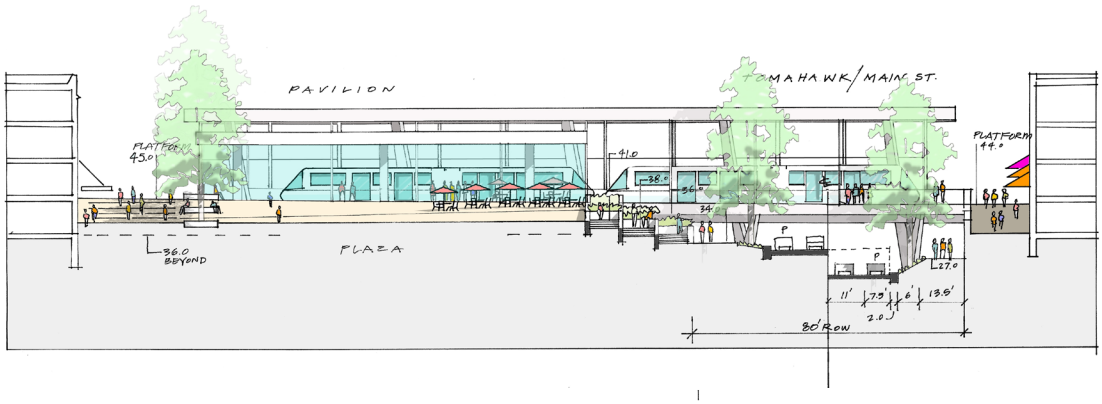
Columbia River CROSSING

4.2.2.1 Hayden Island and Views of the Bridge Structures

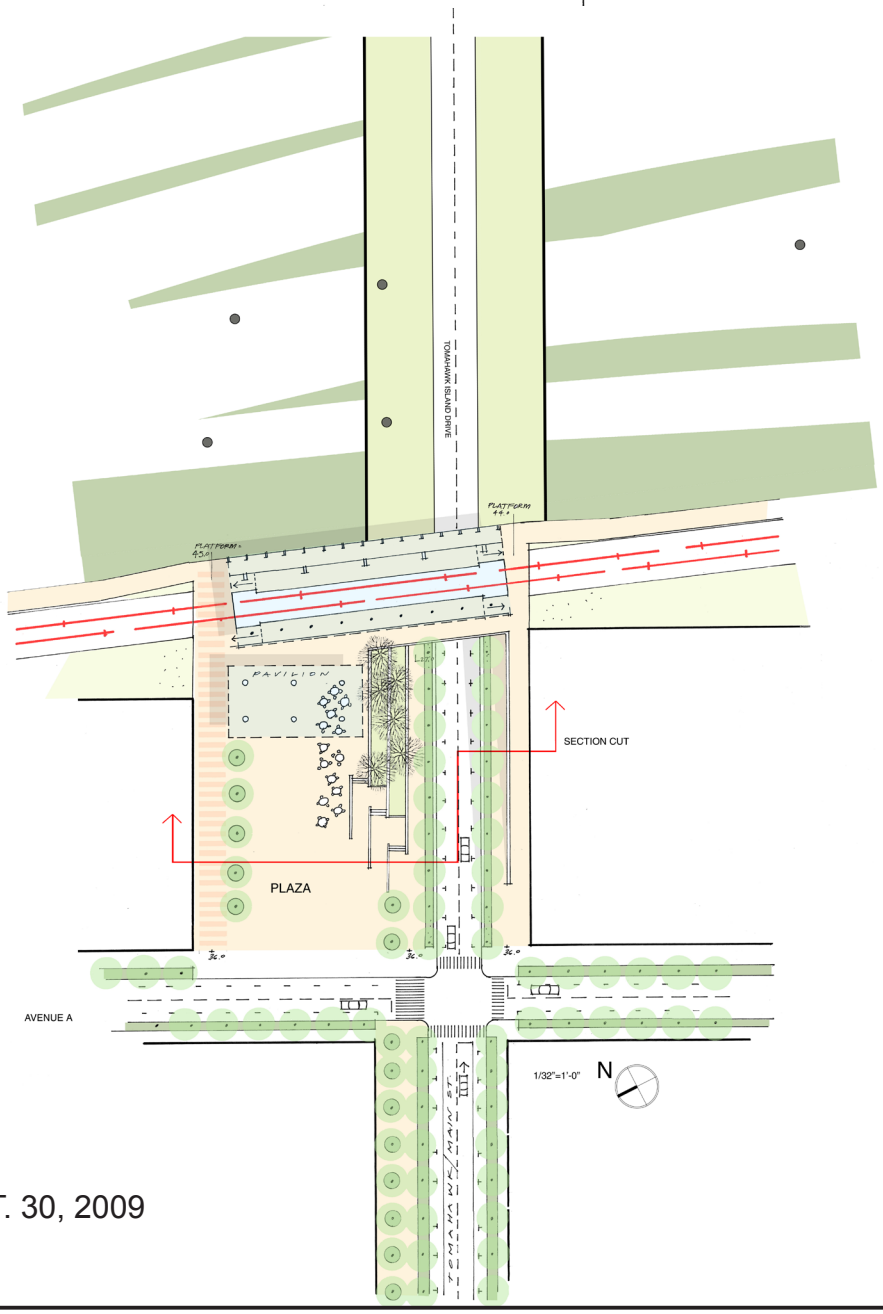
The added lanes and greater width of I-5 over Hayden Island would primarily affect commercial and industrial buildings and parking areas adjacent to the existing alignment. These areas would not be considered to be sensitive public views. However, the loss of the open space between highway ramps on either the west (downstream) or east (upstream) side of I-5 would continue the trend of urban development of the island. The new I-5 configuration on Hayden Island would likely not be visible from many distant locations, but would be very prominent from viewpoints on the central part of the Jantzen Beach shopping center. The bridge design would result in the removal of numerous small commercial buildings adjacent to the existing right of way and the now-vacant Thunderbird Hotel complex. Exhibit 4-7 shows an earlier, conceptual design for the bridges. The Composite Truss Design selected for final design and construction will be generally the same in appearance as that depicted in Exhibit 4-8, but will likely have different pier design than the "V" form shown. Exhibit 4-9 shows an earlier design for Option B, the breadth of the facilities and how they would be spaced, sized, and constructed to allow for light to pass between structures.

Exhibit 4-8. River Crossing Bridges Simulation – looking Northwest
Visual and Aesthetics Technical Report

Columbia River CROSSING



SECTION LOOKING EAST
SCALE : 1/16"=1'-0"



SEPT. 30, 2009

Not to scale.

Exhibit 4-9. Hayden Island Light Rail Transit Station Plaza Concept

Columbia River CROSSING

In addition to the highway and transit guideway structures, there would be a new light rail station constructed immediately over Hayden Island. There are not, as yet, designs for the architectural and landscaping treatments associated with this transit station. It is likely that the technical design efforts and the robust public involvement program would result in a compelling design. The transit station is expected to serve as a focal point for the immediate community and for the commercial area which surrounds sit. Exhibit 4-10 shows a preliminary design concept for the station. Note how the facilities plaza has been offset from Tomahawk Drive so that users gather to one side of the roadway, which will be lowered (as shown) to pass under the Interstate and better connect both sides of the island.

The project would have both negative and positive visual impacts for views and locations close to the bridge structures. Removing the complicated truss structures and lift towers of the existing I-5 bridges would dramatically open up views from I-5. From both northbound and southbound directions on I-5, views of the Portland and Vancouver skylines would be visible, as would distant shorelines, rolling hills, and mountain profiles. Views toward and past the new bridges could also be more open with the elimination of the trusses and towers, which now dominate or are highly visible in many views from up and downstream.

Over the Columbia River the bike and pedestrian facilities would be underneath the vehicular deck of the northbound bridge. There would be continual views to the east (toward Mount Hood) as well as a single large or a series of smaller belvedere (lookouts) providing unobstructed views to the east. The views from within the bike/pedestrian facility would be substantially improved from those of the existing facilities. Though the existing facilities provide more opportunities for broad views, they also put the viewer in uncomfortable and somewhat unsafe condition, which has few people stopping to appreciate the views. Exhibit 4-11 shows an early concept for interior treatments of the bike and pedestrian facilities in the stacked structure. The inset photograph depicts the existing bike and pedestrian facilities on the bridge. With the Composite Truss design for the river crossing bridges, the diagonal columns will likely be vertical.

Exhibit 4-10. Conceptual Model of Bike and Pedestrian Facility on the Proposed Northbound Bridge
Visual and Aesthetics Technical Report

Columbia River CROSSING

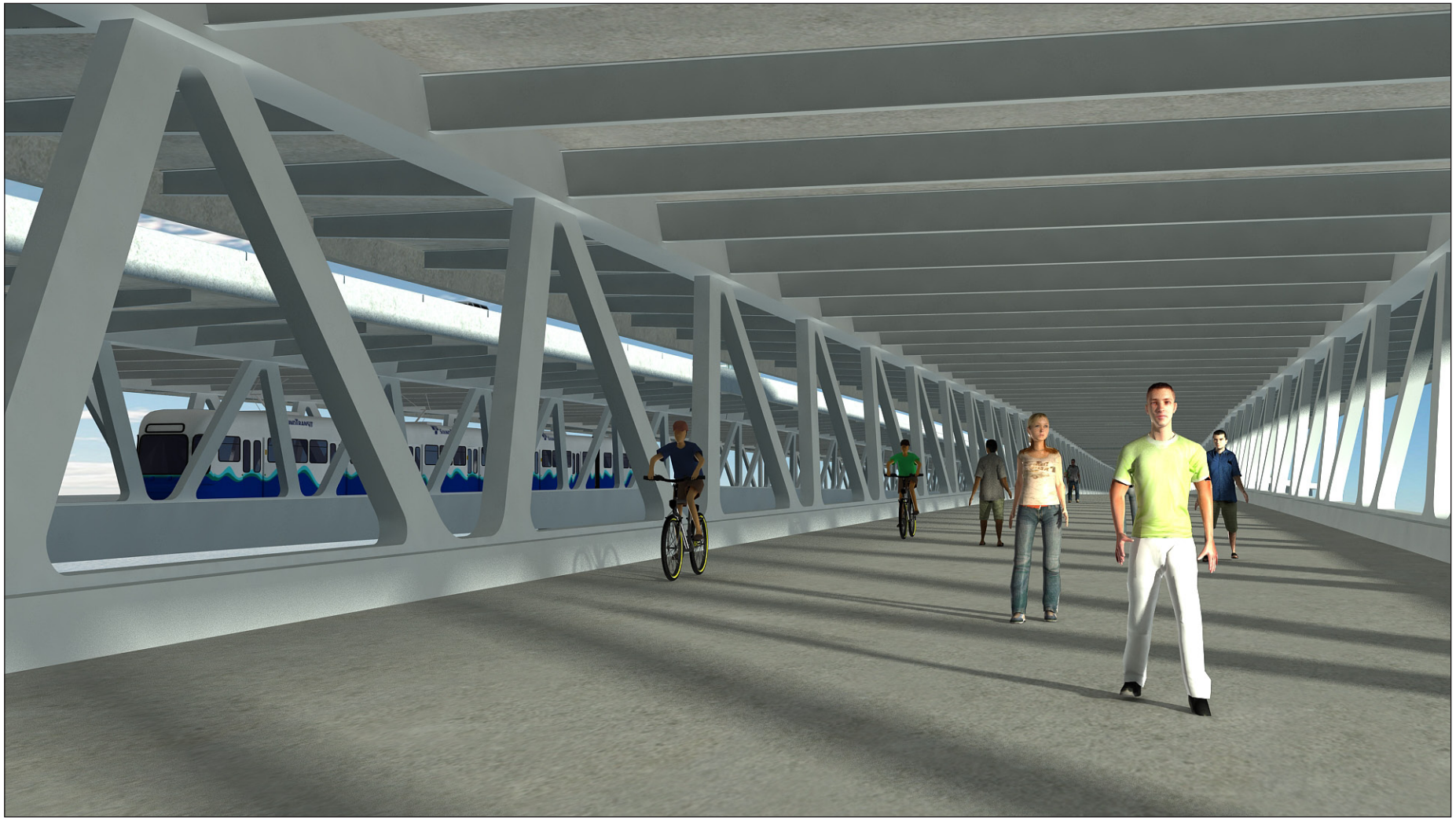


Exhibit 4-11. Conceptual Model of Bike and Pedestrian Facility on the Proposed Northbound Bridge
Visual and Aesthetics Technical Report

Columbia River CROSSING

4.2.3 Vancouver Downtown-Residential Landscape Unit

Visual impacts from the proposed bridge structures and the light rail transit alignment would be separate for this LU because the light rail transit path diverges from I-5 on the north shoreline of the Columbia River to travel through downtown Vancouver. The higher bridge deck would be as visible as the lift towers are now from cross streets along 6th Street in lower Vancouver. The simulation in 4-12 shows the elevated ramp south of 5th Street in the distance. As is clear from the simulation, a high degree of change in visual quality resulting from the design of the interchange is not expected. However, the brick arches (ornamenting the northern edge of the existing interchange) would be displaced. Also, the design has been modified to allow the extension of Main Street nearly all the way to the river. This would allow for improvements in views, and allow for the reconstruction of an important historic view (south on Main Street) which was interrupted when the SR 14 interchange was constructed.

The new SR 14 configuration would bring a higher elevated ramp closer to the downtown core of Vancouver. However, this interchange is already the dominant feature in most views in this area. The new or revised ramp system would continue the area's trend of becoming a denser, more intensely used highway corridor. Access to and from downtown would be provided as it is today, but the connection points would be relocated, there by altering important views as motorists leave and enter the downtown. Downtown Vancouver I-5 access to and from the south would be at C Street rather than Washington Street. This location is currently a gateway into the downtown leading up to the new Main Library and the House of Providence (Academy), past the City Center 12 cinemas. Downtown connections to and from SR 14 would be made by way of Columbia Street at 4th Street.

Removing the lift towers would have a generally positive visual impact on views from downtown Vancouver. While the project would bring the new bridges closer to downtown, the only views that would be moderately or highly impacted (for either alignment) are those from west- or south-facing hotel or conference center rooms. The LPA would also increase the prominence of the bridges from the currently vacant Columbia River waterfront along Vancouver's shore west of the bridges. This area is proposed for redevelopment as a mixed use, high intensity urban area. The views from this future development would experience a high degree of change. Raising many of the ramps at this interchange will increase the prominence of the facility, but also allows for the extension of Main Street to the south.

The Columbia Park and Ride would alter the visual experience in the area immediately east of the Hilton Convention Center. The pedestrian experience will be consistent with the City of Vancouver's adopted design goals. The first floor of the structure will comply with the City's requirements for active uses (likely retail), façade articulation, windows, etc. Though the structure will be a departure from the single-story structures currently occupying the site, the increased height of the park and ride is consistent with the City's goals for increased urbanization and density.

4.2.3.1 Open Vancouver Shoreline Area

The project would open areas immediately under the bridge structures, providing more broad and unobstructed views (Exhibit 4-13). It is very important to the City of Vancouver to provide connections between waterfront parks and walkways east of I-5 and the future parks and walkways west of I-5. The final design for the space under the Vancouver bridge head has not yet been completed. Planning for such is underway, and includes the public, project staff, the City of Vancouver, and Clark/ Vancouver Department of Parks and Recreation. The early concepts

provide increased public access to the waterfront, interpretive waysides, and active recreational opportunities.

4.2.3.2 Retaining Wall Designs

The SR 14 interchange revisions would result in the loss of landscaped edges along the highway between SR 14 and E McLoughlin Boulevard, which currently serve to soften the edges and help create a more open quality. The visual character would remain unchanged (a major interstate highway facility), but the overall quality could be degraded by the loss of grass slopes, trees, or shrubs, and by the construction of tall retaining or sound walls. Exhibit 4-14 shows two approaches to minimizing the adverse impacts associated with the visual changes within the corridor. The first image portrays the possible visual experience with a simple wall design. The second image shows the walls with a more ornamental design. The two images show the same perspective. Though the simulation was only completed in black and white, color variations may also help to break up the large blank surface of the wall. The last image represents one possible outcome of the LPA's design. The project would use evergreen plantings along the wall to soften the visual impacts and enhance the sustainability of the project. The simulation shows low-growing trees and shrubs, though the design would also include non-invasive ivy or other climbing, herbaceous plant varieties.

4.2.3.3 Upper Vancouver

A new ramp from SR 500 to I-5 would be slightly higher than the existing ramp; and would not result in any visual impacts. The westbound SR 500 to northbound I-5 ramp would be higher and nearer to Leverich Park. However, the ramp would be over the top of a largely unused portion of the park and would not be easily visible from the interior of the park. However, there would be moderate to high degrees of change for the roadways and driveways providing access to Leverich Park.

Modifications to the Fourth Plain and Mill Plain interchanges would not substantially increase facility heights or roadway footprint, and no visual impacts are expected.

Exhibit 4-12. SR 14 Interchange Area Aerial Simulation - looking Southeast
Visual and Aesthetics Technical Report

Columbia River CROSSING

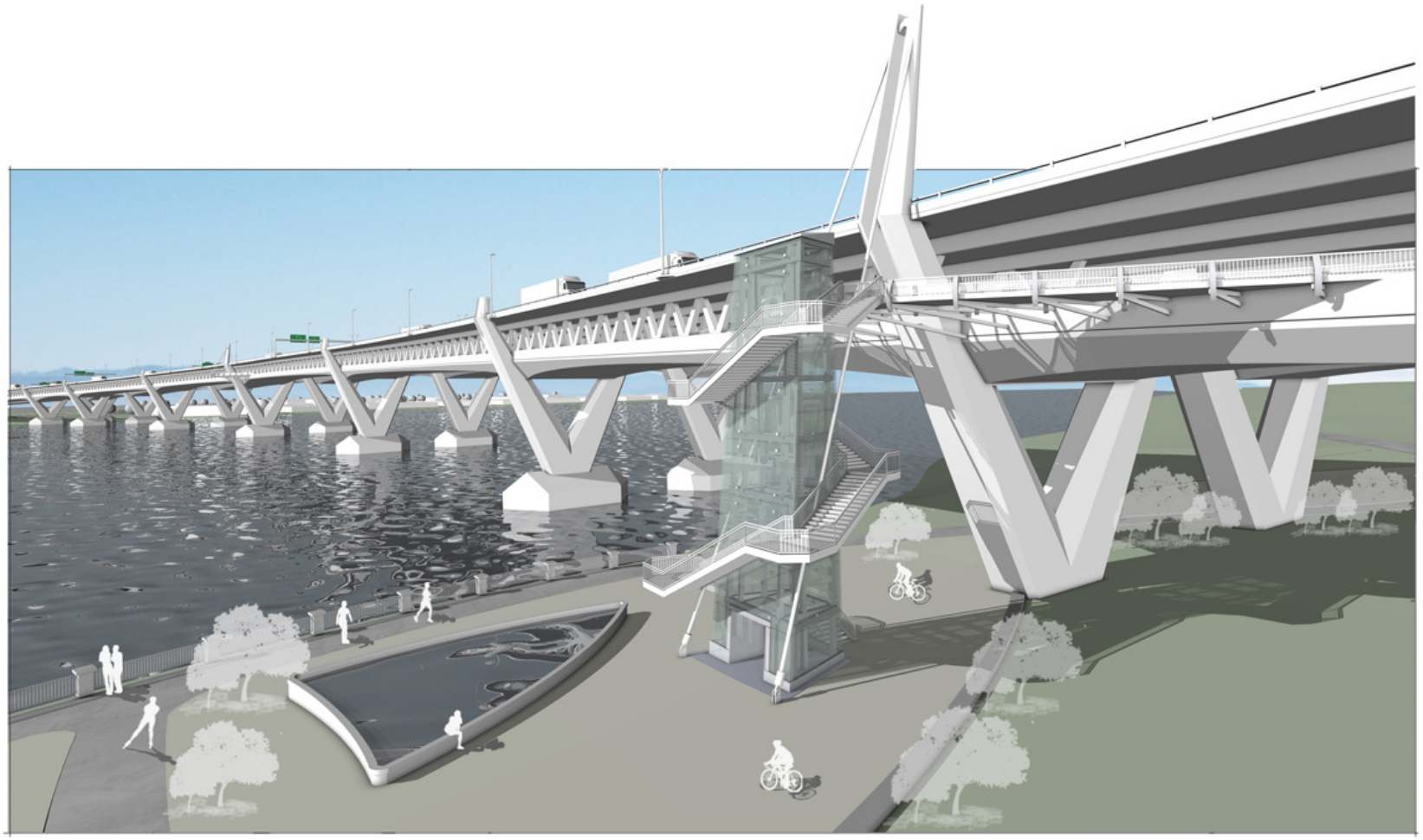
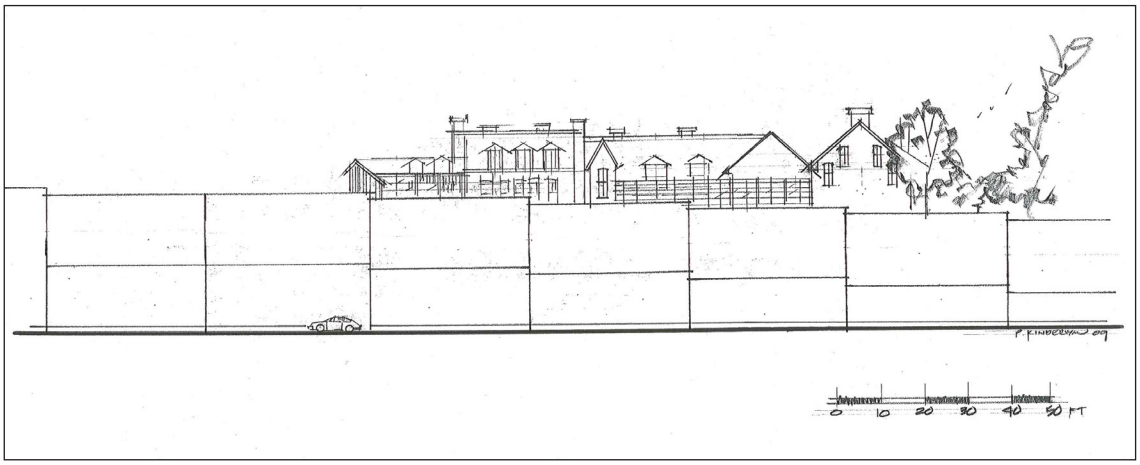
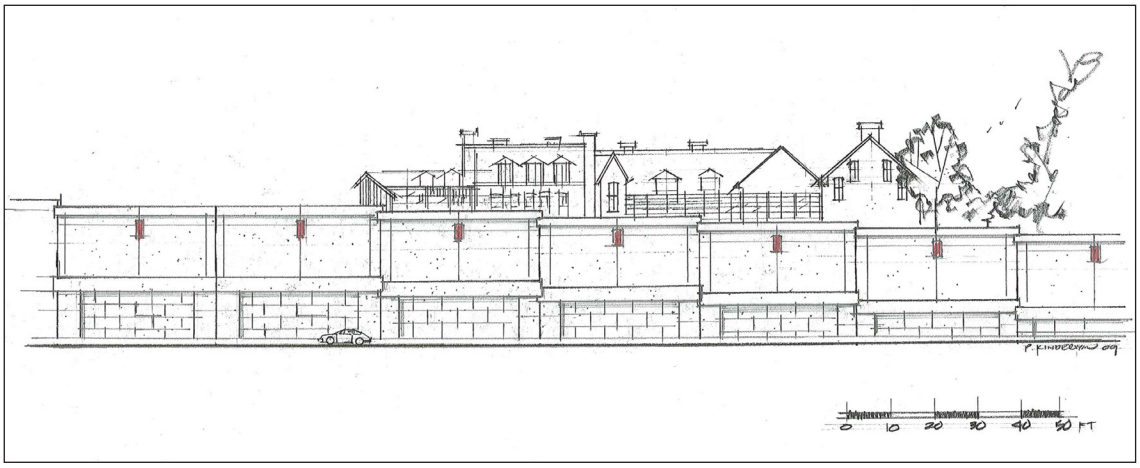


Exhibit 4-13. Proposed Bridge, SR 14 Interchange, and Transit Guideway Simulation showing open Shoreline Areas
Visual and Aesthetics Technical Report

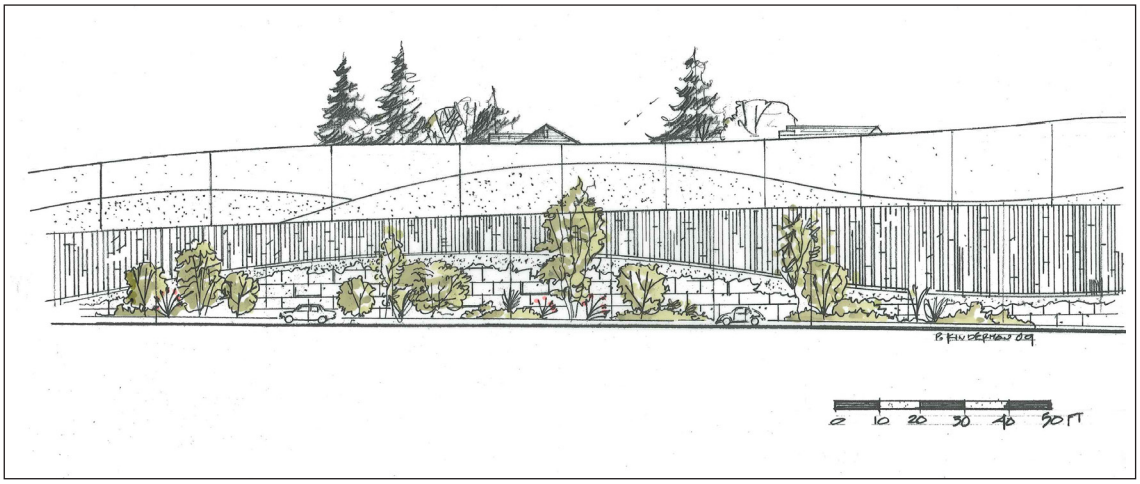
Columbia River CROSSING



Plain Retaining Wall



Ornamented Retaining Wall



Planted Retaining Wall

Exhibit 4-14. Wall Designs for the I-5 Corridor
Visual and Aesthetics Technical Report

Columbia River CROSSING

4.2.3.4 Transit Guideways and Stations

Visual impacts to Washington and Broadway Street due to the installation of transit facilities are expected to be generally moderate. The transit vehicles would run along one side of the right-of-way. The necessary striping or tracks, rumble strips or curbs, and advisory signage would not produce a large visual change nor introduce incompatible structures and furnishings into the streetscape. The downtown stations would be at-grade, and likely consist of a single platform with awning, integrated into a redesigned and reconstructed sidewalk. Exhibit 4-15 and Exhibit 4-16 contain simulations of the design concept for these stations. The simulation also includes the "build-out" of parcels that are currently vacant or differently used than shown. The platform and its associated furnishings such as shelters, benches, paving, and signage could be designed to be compatible with the surroundings and protect sight-lines and views that now exist. The design for these facilities would be very open and collaborative, but has not yet been conducted.

The context of two historic buildings, the Greeley Building at Evergreen Boulevard (formerly hosting Koplans Furniture Store) and the St. James Church (between 12th and 13th Streets), would be modestly affected by the presence of the nearby transit stations and guideways. The same is true for the recently restored Old Columbian and Ice King buildings at Broadway and Evergreen. These buildings would not be adversely impacted as the degree of change is moderate. The designs of transit facilities would be context sensitive, and light rail facilities actually serve to reconstruct a historic component of the Vancouver streetscape, harkening back to when the City was served by streetcars.

The movement and presence of the transit vehicles would not create permanent visual conflicts or changes and are therefore not expected to create visual impacts.

The 17th Street transit alignment would be within the same landscape unit (Vancouver-Downtown). There are many historic or vintage buildings and homes throughout the landscape unit (LU) that contribute to a distinctive residential urban character. Commercial uses have clustered along portions of McLoughlin Boulevard. The street system is a north-south and east-west oriented grid that is broken occasionally by large lots. The grid allows long views up and down the streets and contributes to the sense of overall cohesion.

The necessary striping or tracks, rumble strips and curbs, and advisory signage would not produce a large change or introduce incompatible structures and furnishings into the streetscape. Changes to the character and quality of 17th Street from installing transit guideways and associated appurtenances are expected to be low level. The visual character of McLoughlin Boulevard could change more noticeably, as there would be impacts to the recently redesigned streetscape, its crosswalks and diagonal parking. However, the higher intensity use (of frequent running light rail vehicles) would result in a higher degree of change from the currently quiet, underutilized, 17th Street).

Though there will not be a large visual change resulting from such, the as yet undeveloped design for poles, controller cabinets, catenary wire systems, and pole mast arms will be important for the City's image and as part of the revitalized downtown. Adopted C-Tran and City of Vancouver standards will be used to guide such design. The designs should be unobtrusive, blend with the immediate context, and be consistent with planned patterns for street furniture and other appurtenances.

4.2.3.5 Park and Ride Facilities

The station between 15th and 16th Streets would be a transit center with many bus bays for transfer connections. This larger station would replace a parking lot just west of the Carnegie Library, a historic building serving as the Clark County Historic Museum. Visual impacts would be determined by the character of the new transit center, park and ride, and the building which would encompass such. Use of compatible massing, materials, and landscaping would be imperative. In Exhibit 4-17 the basic massing of the park and ride facility on Main Street can be seen. The City, C-TRAN, and the property owner have discussed the potential for a public-private partnership leading to a larger multi-use structure. One such proposal was for a much taller building which incorporates the required number of parking stalls, with additional floors of commercial and residential uses.

The exhibits that follow represent the best information currently available regarding the proposed park and ride structures. The models were developed to measure light blockage and to better communicate the design to the public. Photographs of existing park and ride facilities (Exhibit 4-18 are included to show the types of architectural treatments discussed at this early stage of design. These images were shared at public workshops and stakeholder group meetings.

The same issues as discussed above hold true for the large Clark Park and Ride and the Columbia Park and Ride. The Clark Park and Ride has the possibility to be screened from view with large trees. This is especially true on the east side, where trees can be planted between the structure and the adjacent athletic fields (exhibits 4-19 through 4-21).

Exhibit 4-15. Conceptual Design
Transit Stations at Street Level Simulation
Visual and Aesthetics Technical Report

Columbia River CROSSING

Exhibit 4-16. Conceptual Design
Transit Stations Aerial Simulation
Visual and Aesthetics Technical Report

Columbia River CROSSING

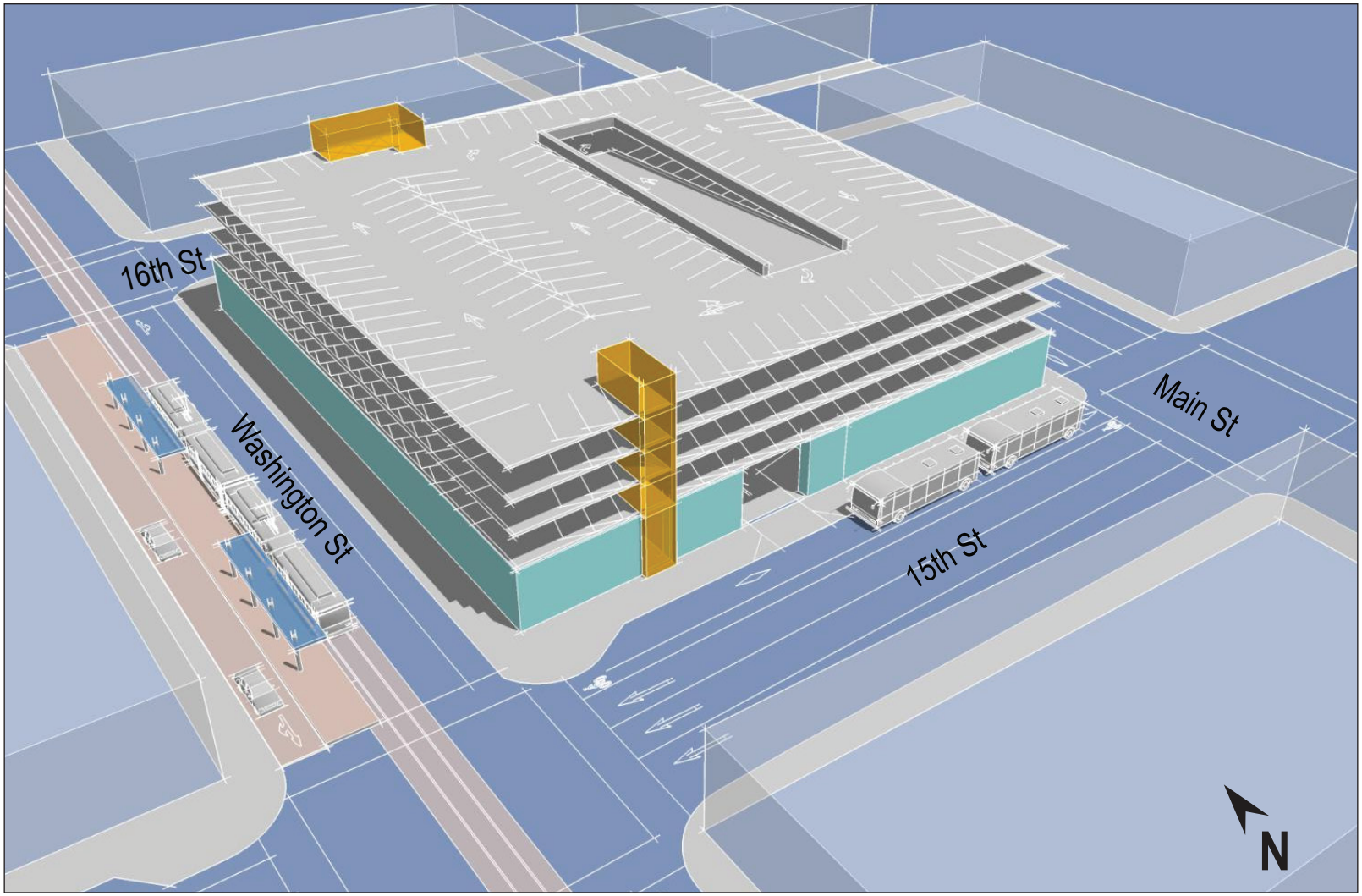
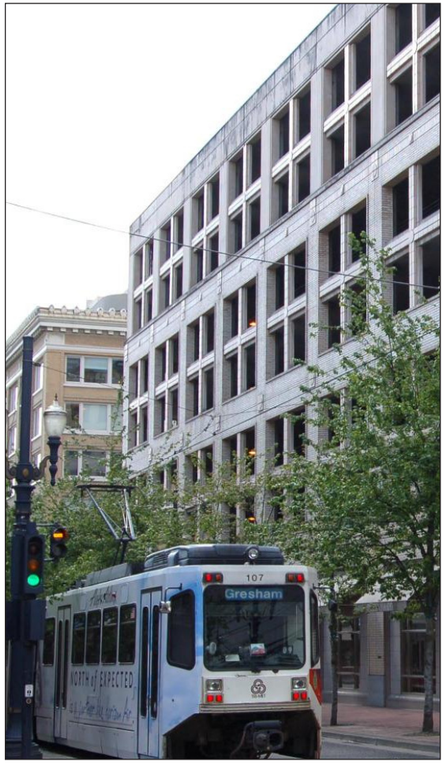


Exhibit 4-17. Model for Mill Park and Ride Structure
Visual and Aesthetics Technical Report

Columbia River CROSSING

Transit, Amtrak, Sound Transit, Greyhound Station, Everett, Washington

Mockingbird Station, Dallas, Texas



Pioneer Place Garage, Portland, Oregon

Legacy Hospital Parking Garage, Portland, Oregon

Hotel deLuxe Garage, Portland, Oregon

Exhibit 4-18. Comparable Park and Ride Architecture used in Design Workshops

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Exhibit 4-19. Model for
Clark Park and Ride Structure
Visual and Aesthetics Technical Report

Columbia River CROSSING

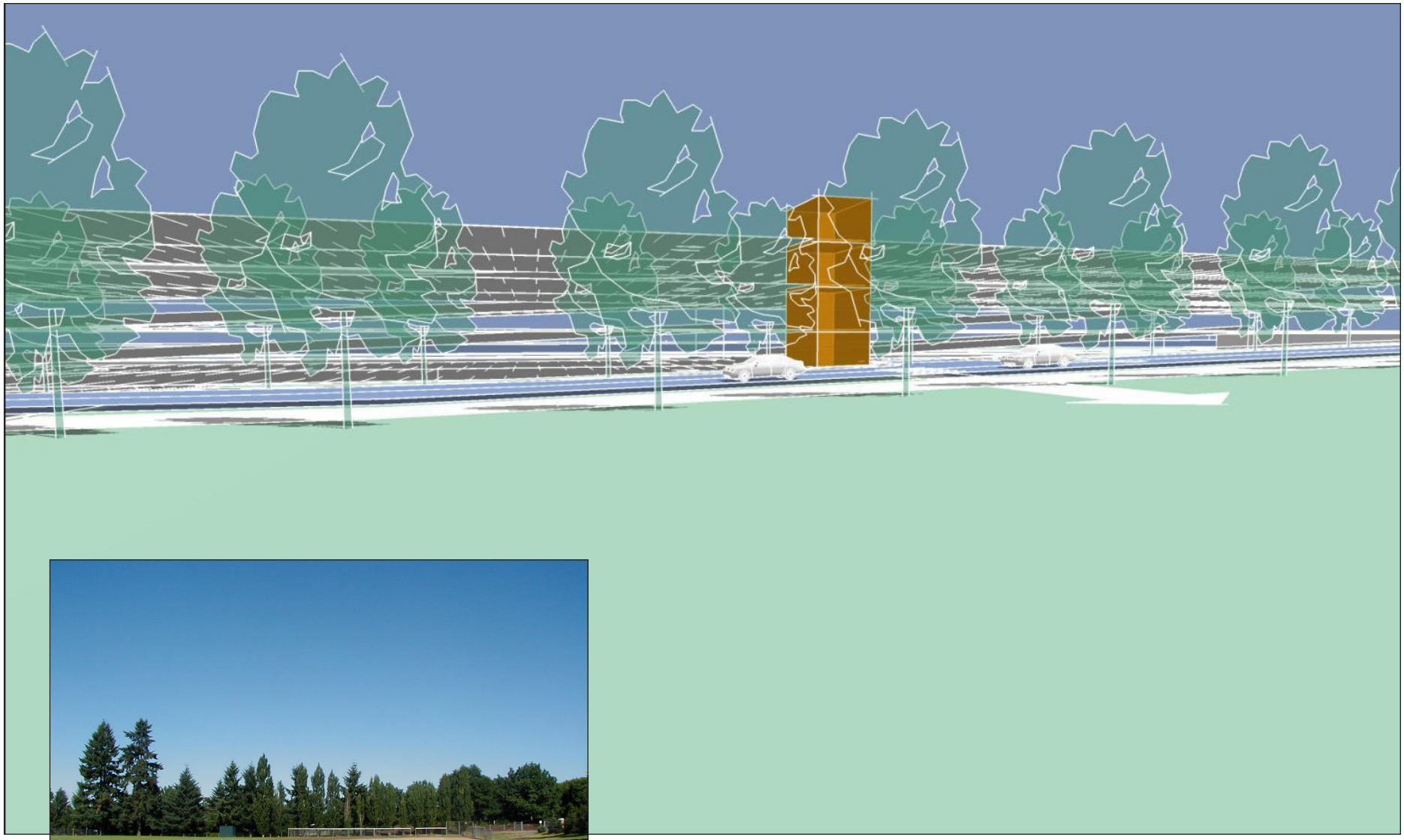


Exhibit 4-20. Model for Clark Park and Ride Structure – looking West from Athletic Field
Visual and Aesthetics Technical Report

Columbia River CROSSING

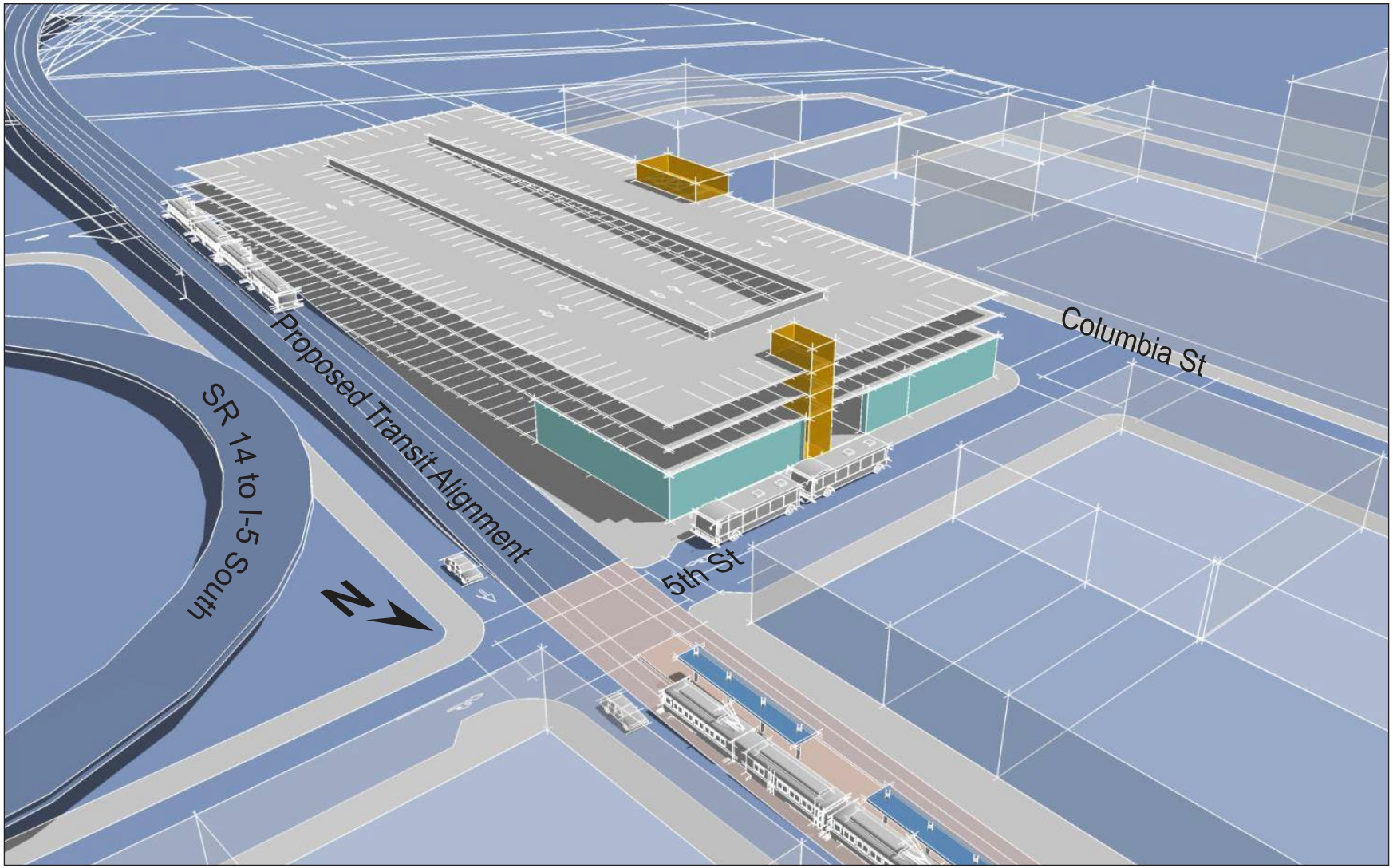


Exhibit 4-21. Model for Columbia Park and Ride Structure
Visual and Aesthetics Technical Report

Columbia River CROSSING

4.2.4 Greater Central Park Landscape Unit

Visual impacts in most of the Greater Central Park LU would be low, and there would be little impact from the light rail transit, other than those impacts associated with the park and ride facility adjacent to Clark College The new bridge structures would be as tall as the top of the existing bridge's tallest arches, but there likely would not be the same degree of visual clutter since the new bridges would not be of steel through-truss construction. In addition, there would be fewer piers in the river. The project could still block views of the profile of the distant hills to the southwest from ground-level viewpoints, but would not interfere with views from distant spots, such as Grand Boulevard to the east.

In the southwest corner of the Fort near the Village and the Fort Stockade, visual impacts would occur at a higher line-of-sight because of the new ramps for the reconfigured SR 14 interchange. The relocated westbound SR 14 to northbound I-5 ramp would encroach on the perimeter of the Village area. The westbound SR 14 ramp leading to northbound I-5 is more prominent than existing ramps due to its height and proximity. More importantly, the SR 14 interchange loop will be roughly 20 feet higher than the aforementioned ramp, and will introduce a particularly noticeable and incompatible element to the Village area. Taller than this loop, and also very prominent, the background will include the mainline Interstate bridges as they rises off the mainland and crosses the river.

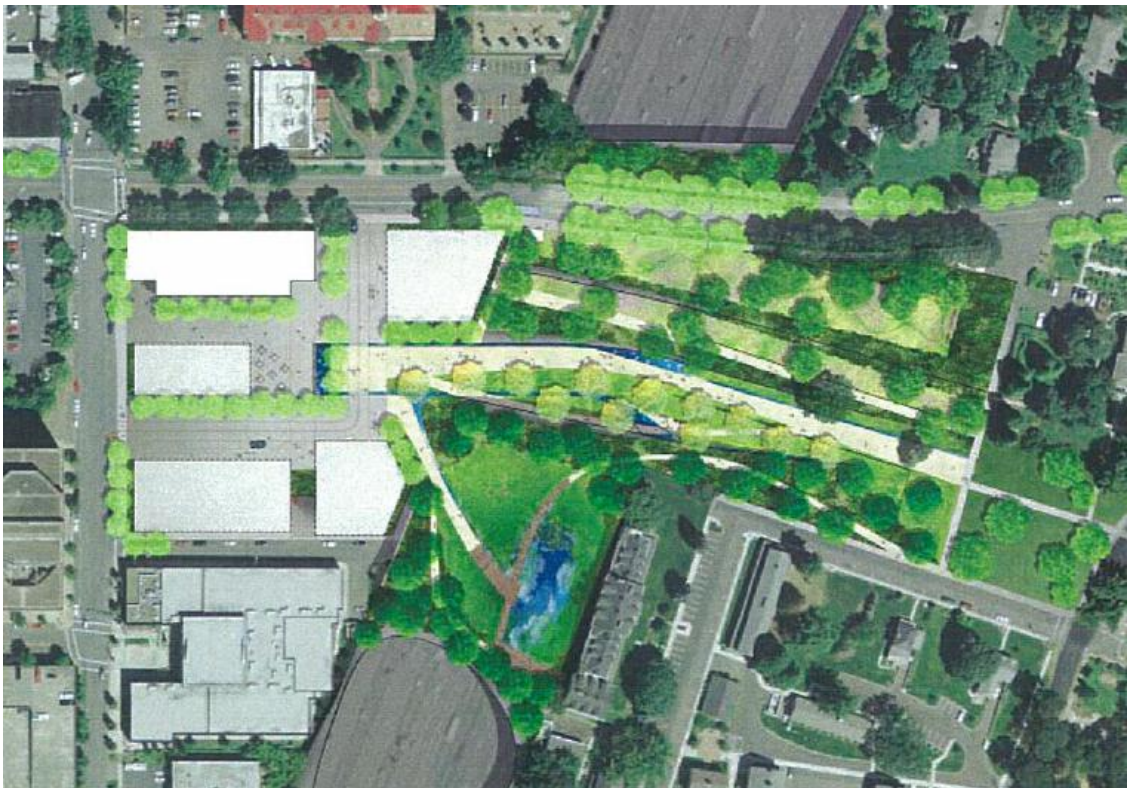
The LPA's design for the SR 14 interchange will result in a significantly different view from those within the Village area, and to a lesser extent, for those views further east in the Reserve. Though landscaping and screening will be considered in the final design phases of the project, it will not be possible to block the views of the new facility from the Reserve.

From southbound I-5 at the Evergreen Street overpass the visual experience would change noticeably due to the removal of the towers, the addition of the new bridge structures, and widening of I-5 to accommodate the SR 14 interchange. The new river crossing and SR 14 ramps would be visible because they would be higher than the existing mainline and ramps, and could fill the immediate view with the rising north approach of the roadway. There is now no view of the opposite shore or horizons, or indication that the Columbia River is ahead, other than the new I-5 bridges. The LPA would likely maintain or worsen the quality of this scene, and maintain the existing visual character.

The current alignment of I-5 is within many feet of the historic Post Hospital. A wider I-5 corridor (accommodating the revised SR 14 and Mill Plain interchanges) would bring I-5 closer to the hospital. While this is somewhat consistent with the current conditions and the trend of urbanization along a primary transportation corridor, the impact on views from and the experience of being inside the hospital (currently vacant) would be negative.

The Community Connector Design Competition was initiated by the City of Vancouver in order to develop a design for a LID across the Interstate facility immediately south of the Evergreen Boulevard crossing. The result was a compelling design for a pedestrian crossing at Evergreen. An exhibit showing the winning design is provided (Exhibit 4-22). Regardless of the artistic nature of the design, the change is substantial from the existing views. The change would be generally positive. The design for the Community Connector will be further refined in preparation for the publication of the CRC Final Environment Impact Statement. The design has already been modified based on adopted engineering standards, and with the intent of avoiding the impacts related to the ventilation of tunnels.

Exhibit 4-22. Community Connector Design Competition Submittals



Bands of roadside vegetation, which now soften roadway edges and help create a more open visual quality, would be removed and the new approach and roadway could be hard-edged with retaining or noise walls. Views of the surroundings could be lost in this event. The visual character of the Evergreen Street to the SR 14 corridor could receive moderate to high impacts because the changes are substantial, although consistent with the existing visual character of a high volume highway.

4.2.5 Burnt Bridge Creek Landscape Unit

There would be moderate visual impacts from the LPA in the Burnt Bridge Creek LU. Landscaped edges along the highway that now soften the edges and help create a more open quality would be replaced with retaining or sound walls. This could change the visual character from that of a green suburban highway facility to an urban, walled facility. There are very few residences adjacent to I-5 through this LU, therefore visual impacts to sensitive viewers are expected to be low.

The visibility of SR 500 westbound (WB) to I-5 5 northbound (NB) ramp will be greater than that of the existing roadway facilities that border Leverich Park. The new ramp will be elevated a minimum of 16.5 feet over the park entrance and transitioning onto a fill wall approximately 20 feet high and decreasing in height as it wraps around the park and heads north. While the elevated structure over the park access will be similar in height and volume to the existing SR 500 to I-5 southbound (SB) and I-5 NB to SR 500 ramps located to the south, the ramp as it wraps around the park will be newly visible to park users at the start of the disc golf course. Under the LPA with highway phasing, the northern half of the improvements at this interchange would be deferred, including the SR 500 WB to I-5 NB ramp.

4.3 Impacts to Public Art

Only within this landscape unit is there a potential for existing public art to be impacted by the project. There are two installations which would be displaced by the LPA. The brick arches (Exhibit 4-23) are located at the northern edge of the SR 14 interchange, and the Boat of Discovery (Exhibit 4-24) is located on Columbia Boulevard very near the north end of the existing bridges. The brick arches were installed in 1984 to create a landmark for downtown Vancouver. The Boat of Discovery is a metal, concrete, granite and brick piece created by artist, Jay Rood. Installed in 1992, the creation and dedication coincided with the bicentennial celebration of the exploration and naming of the Columbia River in 1792.

Exhibit 4-23. Brick Arches

Exhibit 4-24. Boat of Discovery

The City of Vancouver has the following policy on public art. This approach would be used in the relocation of these pieces. Recommendations would be developed for relocation based on public input, input from the City of Vancouver, and project team specialists.

> *1. RELOCATION OF PUBLIC ART*
>
> *I. As noted in Section 1. GUIDELINES: ACCEPTANCE, SITING AND MAINTENANCE, I., if a work needs to be relocated, recommendations for the relocation would be made by a Committee appointed by the Cultural Commission and convened by Cultural Commission staff or their designee. If there are potential sites to be reviewed, representatives from the impacted neighborhoods should be represented. If there are no proposed sites, there should be general neighborhood representation. The Commission may also request information and Committee attendance as professional staff support from individuals including but not limited to: the artist who created the art, City Cultural Division, maintenance and other impacted staff.*
>
> *II. The Committee would work with staff in an effort to find a suitable location.*
>
> *III. Relocation of a work would be based on but not limited to the following: artistic merit, cultural significance, inventory appropriateness, a suitable site can be found, maintenance and moving costs are provided for, the new location for the work does not represent a public safety hazard, the subject matter is appropriate to the site and is relevant to the community and the site. The work contributes to a diverse public art collection in which each piece contributes to the whole.*

IV. The Cultural Commission would review the recommendations of the Committee. The Commission would make final recommendations regarding approval of the relocation to the City Council and provide appropriate maintenance and acceptance agreements. The City Council has final approval of the relocation and terms of the relocation agreements.

4.4 Impacts from Other Project Elements

4.4.1 Light Rail Maintenance Base Options

TriMet plans to expand the Ruby Junction Maintenance Facility to better serve current demand as well as the expected increased maintenance required by both the proposed Milwaukie and CRC light rail extensions. Expanding the existing Ruby Junction maintenance base would be consistent with the surroundings. There are a number of small single-family homes nearby surrounded by a mix of undeveloped tracts and industrial two-story box buildings with parking lots. The existing maintenance facility has the character of a rail yard with large maintenance garages and little landscaping. Visual impacts resulting from an expansion are expected to be low because the added structures and uses are consistent with existing character and uses.

4.4.2 Tolling Options Comparisons

The tolling appurtenances are designed with very minimal visual presence. There is no appreciable difference in impacts on visual resources between tolling alternatives. The major difference is between the no toll and tolling options, because the tolling option would add overhead sign bridges with advisory information and electronic tracking equipment.

4.4.3 Signage

Changes in signs can result in impacts to the visual and aesthetic character and quality of an area. The final design decisions on signage would not be made for one to two years. However, a preliminary sign plan was assessed for this report. The project team compared existing signage with proposed signage. The analysis below highlights where there are proposed changes. The proposed sign plan only included transportation signage as needed for safe operations of the proposed facility. There are not yet determinations made for the types and locations of signs intended to welcome travelers to either state or City. Exhibit 4-25 outlines the proposed, preliminary signage plan and includes notes as well as determination of the degree of change.

Exhibit 4-25. Summary of Visual Impacts Associated with Proposed Signage

Location	Direction	Degree of Change	Degree of Change	Notes
North of SR 500	NB	One new sign	Low	"Exit 3 NE Hwy 99 Hazel Dell Exit Only"
SR 500 at I-5	EB	Lose one sign from over ramp	Low	
Between SR 500 and Fourth Plain Blvd		No change in number of signs	Low	
Just North of Fourth Plain Blvd Exit	SB	One small new sign	Low	"City of Vancouver, Port of Vancouver Exit 1B" and (at this time) showing loss of signage for Fort Vancouver Historic Site, Pearson Air Museum, Convention Center, and Clark College.[a]

Location	Direction	Degree of Change	Degree of Change	Notes
Between Fourth Plain and Mill Plain Boulevards		Same number of signs, one moves northward from current location	Low	
At Evergreen Boulevard Overpass		Same number of signs	Low	Once the outcomes of the Community Connector Design competition are final, the signage plan would be revised so as to protect views integrated with the new design.
Between Evergreen Boulevard and SR 14 Interchange	SB	One sign moves further south	Low	Overhead sign "Exit 1A. 14 East Camas, Exit Only.
At SR 14 Interchange		Most signs move, one moves north of interchange, one small sign lost	Low	Loss of Directional Signage.[b]
Over Columbia River		Loss of Directional Signage	Low	Loss of Directional Signage.[b]
Over Hayden Island		Reduction in signage (3 overall lost)	Moderate (positive)	Signs may be reconfigured following final designs for roadway, lighting, electronic toll collection systems, etc.
Over North Portland Harbor		Same number of signs	Low	
Marine Drive	EB Marine Drive	Same number of signs. One sign moves approx. 250 feet to west	Low	
South of Marine Drive		Same number of signs	Low	
Overall			Low	No Adverse Impacts (blocked views, glare, etc.) arising from preliminary sign plan.

Notes:

a These signs are not included in the DOT sign plan. However, it is presumed that new direction signage would be installed directing travelers to these key cultural and tourist destinations.

b Similar to foot note A, there are directional and welcoming sings not yet shown in the sign plan, though it is very likely these will be replaced following construction

4.4.4 Lighting (Light and Glare)

Light and glare can have aesthetic as well as comfort and safety impacts on viewers. For the CRC project, a large number of these viewers are traveling through an area of fixed (street lights) and moving (cars and transit vehicles) light sources. As light and glare impacts can be highly directional, the fact that so many of the viewers are moving through a linear project area makes it difficult to generalize the light and glare impacts they would experience throughout the entire project area.

The proposed CRC project's light and glare impacts on viewers can be best understood at the component level – the I-5 bridges, light rail transit stations and guideway, and the highway itself – as each of these components has an identified purpose, footprint, and elevation. The aesthetic aspects of the project would be decided after publication of the FEIS. Lighting and signing elements would be unified throughout the project using similar lines, colors and styles, though each light rail station may have unique lighting elements to match its unique design theme.

During the final design, materials would be minimized and/or mitigated for light and glare. The design would evolve based on programmatic, functional, and economic constraints.

4.4.4.1 I-5 Bridges

As is true of overall visual impacts, light and glare impacts are more likely to be produced from new bridge structures across North Portland Harbor and the Columbia River. The existing I-5 bridges are the dominant features in views near the crossing, and views from some distance up and downriver. The dominance of the I-5 bridges for both near and far views would be even greater when lit at night, as its river location provides a dark backdrop. Increased light and glare from vehicles traveling across the I-5 bridges could result by virtue of the fact that vehicles are distributed over a greater surface area. The new bridges would be a two-deck superstructure, and both bridge decks would be visible from a greater distance. Views of the new bridges include views from beneath by boaters, houseboat residents, park users, and from Hayden Island, as well as views from areas in Vancouver.

The new bridge structures design process would continue beyond the publication of the FEIS. However, any new sources of glare, such as smooth or mirror-like surfaces such as signs, would be mitigated with anti-glare coatings. Aesthetic and functional lighting, including those used for the upper deck roadway, the lower deck for bicyclists and pedestrians, and for the bridge piers, would either be indirect lighting to minimize glare and light spillage affects to those traveling across or under the new bridges. Increased indirect and/or shielded bridge lighting is expected to have positive impacts on land based views, as the aesthetics of the new bridge structures would be superior to the aesthetics of the utilitarian existing bridges and existing bridge lighting.

4.4.4.2 Transit Stations

One light rail station is planned for Hayden Island, and three stations are planned in downtown Vancouver, as well as a terminus station adjacent to Clark College. Transit stations would have a combination of customized, artistic lighting poles and fixtures, as well as standard utilitarian lights for general lighting of the platforms, ticket machines, and signs. Station area lighting would be bright enough to allow light rail drivers to see that the platform is clear, while mitigating light and glare entering nearby residential areas through the use of anti-glare materials, indirect lighting and/or shielding. Lighting in transit stations would also be consistent with CPTED principles, the practice of designing the built environment in a manner that discourages criminal activity. Outcomes of CPTED that could impact the amount of light and glare experienced by viewers include transit stations that are brightly lit with unobscured visibility from nearby streets and/or public areas. Final decisions on lighting at transit stations would also take local context into consideration, as well as artistic and cultural themes of the immediate neighborhoods.

4.4.4.3 Transit Guideway

In Portland, the CRC project includes dedicated light rail guideways along the west side of I-5 on Hayden Island, with the guideways angling further west to connect with the existing Expo Center transit station in North Portland. Under Option A, the light rail and pedestrian bridge would cross the North Portland Harbor along with two lanes for vehicular travel. In Vancouver, light rail would travel along the west side of I-5 until approximately the SR 14/City Center Interchange, where it would travel on city streets until its terminus near Clark College. Where light rail abuts I-5, it essentially widens the highway facility, introducing new fixed (track lighting) and mobile (light rail) light sources along its entire route. In Oregon, these new light sources would have minimal effects on viewers from commercial and industrial properties, and would likely have greater affects to residents of floating and traditional homes along North Portland Harbor. Those

driving along I-5 could potentially be affected by the oncoming lights of light rail vehicles. However, in all cases, stationary light sources would be shielded to minimize light and glare to abutting properties and those traveling along I-5 and adjacent roadways. In addition, the use of glare screens would minimize light and glare affects to oncoming traffic. The guideways along the local streets in Vancouver would experience marginal increases in light levels outside of the station areas, as the existing roadways are largely well-lit today with a combination of street light styles.

4.4.4.4 Highway

As a full managed access roadway, I-5 and its signage are currently lit by the Oregon and Washington DOTs. These agencies have adopted manuals which dictate the light levels and light design standards applicable to the highway and highway interchanges. Where existing lighting is removed because of the CRC project, it would be replaced as a part of the new construction. The existing I-5 facility is generally well-lit, and would continue to be well-lit after project construction. Light and glare impacts from fixed light sources are expected to be lessened over the no-build scenario, as replacement lights and signs would be designed with modern materials that limit light and glare. Vehicles using I-5 produce a significant amount of light in the no-build and LPA alternatives, however, the existing sound walls and berms along I-5 on Hayden Island and in Vancouver provide a significant degree of screening from these mobile light sources as well as the street lights. The CRC project includes new and higher sound walls, which would better screen homes and adjacent roadways from I-5 light and glare. Glare screens would continue to be provided to minimize the impact to drivers from vehicle headlights.

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5. Temporary Effects

5.1 Introduction

Temporary effects on visual quality and aesthetics would result from construction-related activities and would be common to the LPA options to varying degrees.

During construction, views both of and from the project area may be altered. Construction-related signage and heavy equipment would be visible at and in the vicinity of construction sites. Vegetation may be removed from some areas to accommodate construction of the new bridge structures, new ramps, and transit guideway. This would degrade or partially obstruct view or vistas temporarily and could result in long-term changes if the vegetation is not replaced. Short-term changes to the visual character of areas adjacent to the alignment could result from:

- Construction vehicles and equipment.
- Clearing and grading activities resulting in exposed soils until replanting or repaving occurs.
- Erosion control devices such as silt fences, plastic ground cover, and straw bales.
- Dust, exhaust, and airborne debris in areas of active construction.
- Stockpiles of excavated material.
- Staging areas used for storage of equipment and materials.
- Disruption to the navigation corridor.
- Overhead gantries and scaffolding to support elevated structures such as stanchions or ramps.

Impacts would be greatest in areas where new structures are being built.

Night time construction activities related to the bridges, light rail stations and guideways, and the highway would require the use of temporary lighting. Temporary lighting could result in increased light and glare to all viewers of these facilities be they mobile or stationary viewers. ODOT, WSDOT, C-TRAN, and TriMet would oversee the use of temporary construction lighting to ensure that, to the extent practicable, light and glare impacts are minimized. This temporary lighting could affect residential areas by exposing residents to glare from unshielded light sources or by increasing ambient nighttime light levels.

Visual impacts would arise from floating barges and equipment in the Columbia River that serve as work platforms. Watercraft would deliver materials and workers to work sites. These activities would have a negative impact on the quality of views of the river and shoreline.

5.2 Casting and Staging Yards

Construction activities would require at least one large site to stage equipment and materials, and may also require a large site for use as a casting yard for fabricating segments of the bridges.

Staging of equipment and materials would occur in many areas along the project corridor throughout construction, generally within existing or newly purchased right-of-way or on nearby vacant parcels. However, at least one large site would be required for construction offices, and to

stage the larger equipment such as cranes, and materials such as rebar and aggregate. Such a site would be as close as possible to the construction zone, but would likely not be possible within public right-of-way and thus require temporary use of a nearby parcel. Suitable site characteristics include:

- A large open site suitable for heavy machinery, material storage;
- Waterfront property with access for barges (either a slip or a dock capable of handling heavy equipment and material) to convey material to the construction zone; and
- Roadway or rail access for landside transportation of materials by truck or train.

Three sites have been identified as possible major staging areas as shown in Exhibit 5-1.

1. Port of Vancouver site: This 52 acre site is along SR 501 and near the Port of Vancouver's Terminal 3 North facility. Activities could consist of material storage, material fabrication, equipment storage and repair, and temporary buildings. This site is currently used as a staging area for windmill components, and has heavy industrial zoning. Use of this area would result in a low degree of visual change, as the area is already used for storage, light industrial activity, and transportation.

2. Red Lion hotel site: This 2.6 acre site would be partially acquired as a result of this project, requiring the demolition of most of the buildings on this site. As such, it could make an ideal staging area, used for staging materials and equipment, and some small fabrication. Temporary buildings such as trailers or other mobile units could be used as construction offices. This location has City Center (mixed use-downtown) zoning. Use of this area would result in a moderate degree of visual change. The area would be greatly disturbed for construction, and the visual difference between a staging/contractors area and a construction area are minimal. The change would be high from the use and buildings that are currently at the site.

3. Old Thunderbird hotel site: This 5.6 acre site is much like the Red Lion hotel site in that a large portion of the parcel is required for new right-of-way necessary for the LPA. The same types of activities could occur on this site as on the Red Lion hotel site. The area would be greatly disturbed for construction, and the visual difference between a staging area and a construction area are minimal. The change would be high from the use and buildings that are currently at the site.

A casting/staging yard could be required for construction of the over-water bridges if a precast concrete segmental bridge design is used. A casting yard would require similar characteristics as the major staging areas, specifically access to the river for barges, a large area suitable for a concrete batch plant and associated heavy machinery and equipment, and access to a highway and/or railway for delivery of materials.

Two sites have been identified as possible major areas for casting large concrete sections of the proposed bridges. Given that these sites are used and planned for industrial activity, there would be no impact from the industrial activities associated with staging and casting.

1. Port of Vancouver Alcoa/Evergreen West site: This 95 acre site was previously home to an aluminum factory and is currently undergoing environmental remediation, which should be completed before construction of the CRC project (2012) begins. The western portion of this site, which is best suited for a casting yard. Long-term plans call for acquisition of nearby land to relocate two large settling ponds that are on the property. A barge slip would need to be constructed into the existing bank for loading of precast

sections. In addition, the property would require grading, drainage and surfacing work to support the materials and equipment needed for a casting yard.

2. Sundial site: This 50 acre site is between Fairview and Troutdale, just north of the Troutdale Airport, and has direct access to the Columbia River. Recently, it has been used by Gresham Sand and Gravel as an aggregate quarry.

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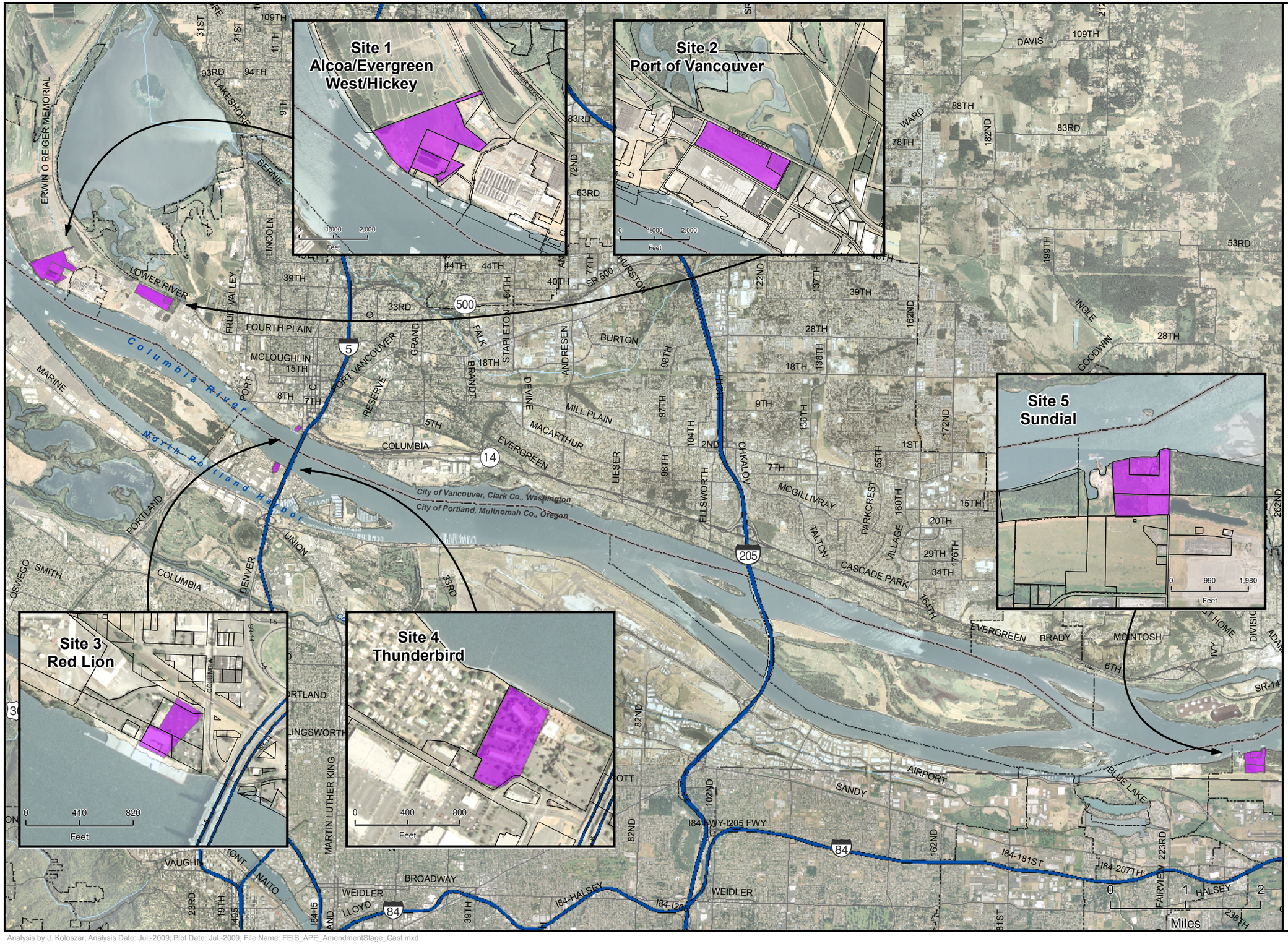

Exhibit 5-1. Proposed Staging and Casting Areas
Visual and Aesthetics Technical Report

Parcel Boundaries

Proposed Staging and Casting Areas

N
W E
S

Columbia River CROSSING

Analysis by J. Koloszar; Analysis Date: Jul.-2009; Plot Date: Jul.-2009; File Name: FEIS_APE_AmendmentStage_Cast.mxd

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6. Proposed Mitigation for Adverse Effects

6.1 Introduction

Excellent design and high quality construction are important mitigation tools for visual quality and aesthetics. The I-5 bridges are significant and prominent features in the Columbia River landscape. Oregon and Washington have an equal stake in the visual quality of this very important gateway. For areas away from the bridge crossing, civic planning and architectural/landscape design are important mitigation tools for blending new facilities into the context of the surrounding community.

Preliminary mitigation concepts presented here address potential impacts arising from construction and operation of the CRC project. These mitigation concepts were developed through the analysis conducted for the DEIS and by integrating information among the DEIS disciplines.

Potential mitigation includes:

- Minimizing visual impacts to historic and cultural resources, public parks, and open spaces;
- Replanting vegetation, street trees, and landscaping for screening or visual quality;
- Shielding station and facility lighting from nearby residences and night sky;
- Minimizing structural bulk, such as for ramps and columns;
- Designing architectural features to blend with the surrounding community context and to unite views through the transportation corridor;
- Creating pedestrian connectivity to reduce the visual/ perceived barrier of the highway;
- Public art (to be relocated when necessary and added as part of transit stations and gateways); and
- Lighting (to be integrated with facilities in a manner that produces a positive visual and aesthetic impact, reduces night sky light pollution, reduces possible light trespass into residential units, and contributes to CPTED).

The States of Oregon and Washington and the cities of Portland and Vancouver will continue to discuss with other stakeholders the aesthetic attributes of the new bridge structures, so as to best mitigate potential impacts and to create noteworthy visual features. To this end, design guidelines have been developed by coordinating with existing design goals to reflect and respect these assets. These Design Guidelines (as amended by the UDAG) should be used during final design phases of the project to guide decisions which impact visual character and quality.

The design of the I-5 bridges is perhaps the single greatest visual mitigation opportunity for the project. The proposed design would present less visual clutter for skyline or horizon views while maintaining the drama (vividness) that large-span bridges add to views. A lighting scheme would add additional interest. The proposed conceptual scheme utilizes indirect light, in numerous colors. The lighting would be designed so as to illuminate the bridge structures, resulting in bridges with “glowing” architecture. Not only with such lighting contribute to vividness in the corridor, it would help to minimize light trespass.

Equally important is the experience of being able to walk, bicycle, or boat under the bridge structures. There is great mitigation and community enhancement potential to be derived from designing this space, with the community, to be a unique and impressive public amenity.

Roadside restoration, for the interchanges in Washington, must be done in accordance to the WSDOT Roadside Classification Plan and the Roadside Manual. Interchange design should visually transition the highway corridor to the community and provide a sense of gateway. Native plants should be used primarily. The design should focus on sustainability and consider long term maintenance requirements. Highway interchanges may be landscaped as "Community Enhancement Areas" (WSDOT 2004b), which are more formal than typical roadway revegetation or screening areas, to serve as thresholds and statements of community character.

Community thresholds are usually associated with interchanges and can be landscaped as "gateways". Gateways should be designed with input from the affected communities and should reference any community aesthetic guidelines. The Central Park Plan, adopted by the Vancouver City, provides guidance on streetscape treatments and gateways, and should be followed for the design of mitigations in that neighborhood. The UDAG Guidelines provide additional information on Gateways and should be employed in collaboration with The City of Vancouver, the VNHR partners, and the Vancouver Downtown Association. Designs for landscaping, wall treatments, and other project elements, should be considered as part of a gateway at the following locations: the Mill Plain and Forth Plain interchanges, the Evergreen and McLoughlin crossings, and (to a lesser extent) for the crossings at 39th, 33rd, and 29th Streets.

6.2 Transit Structure "Landing" in Vancouver

Mitigation will be necessary where the light rail transit bridge touches ground in Vancouver. The landing would require a very large solid footing that would occupy a large area on Washington Street. Mitigation would include landscaping, public art, or other façade treatments for the walls of the structure.

6.3 Transit Stops and Stations

Each transit station should be designed with consistent design treatments that tie these different facilities together. The cities of Vancouver and Portland, Tri-Met and C-TRAN have standards for street furniture and for facilities of this type. These standards would be met and exceeded when appropriate. Signal poles and cabinets, transit catenary poles and wire systems should be designed for pole color, location and style in accordance with cities' lighting district standards. During the final design phases of the project, public charrettes should be utilized to refine the plans for each station area. The public and technical process should come to agreement on street furniture, lighting, and public art.

6.4 Park and Ride Facilities

Each park and ride should be the subject of an intense design process incorporating UDAG guidelines, design guidelines from both cities and the VNHR, both C-TRAN, Central Park, downtown stakeholders, and the general public.

During the final design phases of the project, public charrettes would be utilized to refine the plans for each park and ride. The public and technical process should come to agreement on façade treatments, landscaping, lighting, and the mix of uses. At the least, these final designs should:

- Be sympathetic to nearby historic properties.
    - For example, the old Carnegie Library, currently Clark County Historical Museum, provides architectural elements that should be reflected in the Mill Park and Ride. The park and ride structure should also have materials and massing which would be compatible to the Historical Museum.
- Buffer the park and rides from adjacent uses, mainly with landscaping but potentially with public art, fencing, or other elements.
    - For example, tall landscape screening (including fast growing trees) should buffer the Clark Park and Ride from the adjacent ball fields. The landscaping buffer between the Clark Park and Ride and the adjacent athletic fields is critically important to mitigating the introduction of such a large and visually inconsistent facility. The plantings should be mature at installation, and plant species with rapid growth potential should be used.
- Be consistent with City Design Standards and be reviewed by the Vancouver Design Review Committee.
- Eliminate all potential glare from the project components.
- Be consistent with the UDAG Guidelines.
- Incorporate public art reflective of the unique context at each site.

6.5 Community Connector

A lid over the interstate (the Community Connector) has been conceptually developed to serve as mitigation for a number of different adverse impacts. A Community Connector Design Competition was initiated by the City of Vancouver in order to develop a design for a LID immediately south of the Evergreen Boulevard crossing. The design, as proposed, is unlikely to be constructed in its entirety. However, the principal components of the design (connections, design, landscaping, etc.) will be maintained. With the lid, the change in visual character and quality would be substantially different from the existing views. The change would be positive, especially for the sensitive viewers visiting the Vancouver National Historic Reserve. The experience for I-5 motorists will also be very much different. The Connector will introduce a short tunnel experience for motorists, though this is meant to be a positive experience with opaque materials allowing light to pass through, and vivid features designed for highway users which will mark the entrance into the short tunnel.

The design competition was managed by Donald Stastny, FAIA FAICP, of StastnyBrun Architects, Inc. The design competition jury included the following members:

- Roger Boothe, Director of Urban Design, City of Cambridge, Massachusetts
- Hank Florence, NPS Historic Architect and Manager of External Cultural Programs for the Pacific West Region
- Richard Haag, Dean Emeritus, Dept. of Landscape Architecture, University of Washington
- Daniel Hunter, Co-director, Access to Design Professions
- Pat Jollota, Mayor Pro Tem, City of Vancouver, and published historian
- Michael Pride, Associate Professor, University of Cincinnati School of Architecture and Interior Design

- Don Wagner, Southwest Regional Administrator, Washington Dept. of Transportation
- Matt Ransom, Transportation Project Manager, City of Vancouver, Ex Officio
- Elson Strahan, President & CEO, Fort Vancouver National Trust, Ex-Officio

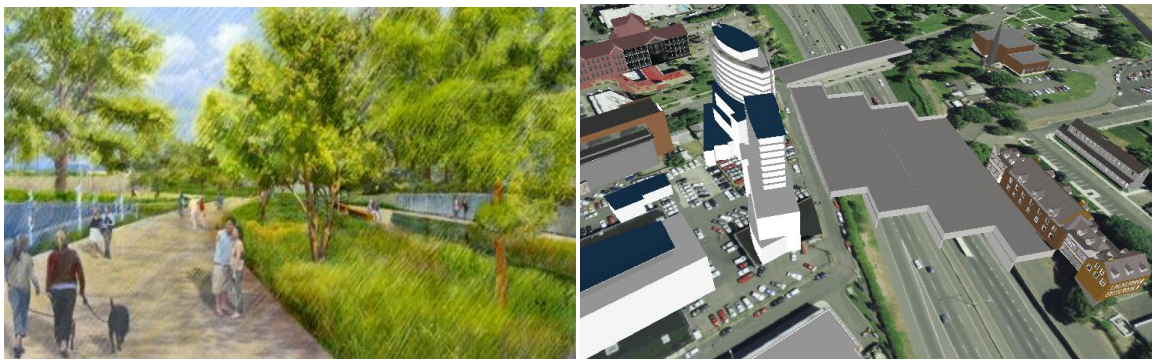
The winning design (from the Gustafson, Guthrie, Nichols and Allied works design team) extended approximately from Eighth Street and the southern edge of the Fort Vancouver Hospital up to just a few feet north of Evergreen Boulevard. The structure was proposed to be roughly 790 feet long by 250 feet wide, made up from four spans.

The following descriptive text was developed by the winning design team:

> *"From below, the impression of the Connector is of moving through the earth while capturing glimpses of light and landscape, each defined by the formation of structural plates..... Passing underneath the new, reclaimed ground, rows of sculpted columns indicate clear paths of travel through the earth while allowing lateral views and increased access to ambient light. Tall evergreen trees hint at the land above, where three landscapes converge: Fort Vancouver, the Harvest Meadows, and the Northwest Meadow, where the evergreen is a hallmark of the landscape at the historic Veterans Hospital. Rustic Douglas Fir (Pseudotsuga menziesii) and Cedar (Thuja plicata) trees augment the western facade of the Veterans Hospital. In its foreground, the facade's reflection ripples across a woodland pond, its edges are softened by the surrounding meadow's rich mosaic of native grasses, ferns, and perennials. The hospital commands the view of the decidedly picturesque landscape, an era of landscape that the British Hudson's Bay Company brought with them as they arrived to a region once cloaked in dense fir forests."*

The design, as proposed in the competition, has been modified based on adopted engineering standards, and with the intent of avoiding the impacts related to the ventilation of tunnels. As originally designed, the Community Connector would have been considered a tunnel and would have required a ventilation system and, consequently, would have introduced new visual intrusions as well as high noise levels associated with the ventilation fans. CRC project staff have collaborated with the City of Vancouver, National Park Service, and Fort Vancouver National Trust to modify the designs, while still achieving the primary purposes of the lid. The finishing treatment of this new design is, as-yet, unresolved. However, the general shape, position, and location of the structure have been agreed to. The structure crosses I-5 between the Riverwest development and the hospital, providing east-side pedestrian access north of the hospital building (Exhibit 6-1).

Exhibit 6-1. Cover Structures Concepts



6.6 UDAG Recommendations

In December 2006, the UDAG was formed, including 14 government and non-government representatives from the cities of Vancouver and Portland under the joint chairmanship of Mayor Royce Pollard and Mayor Sam Adams. At the first meeting, CRC staff presented the defined alignment of the five mile I-5 corridor and intersections and outlined constraints imposed by river and air traffic on the envelope within which a replacement bridge over the Columbia River would have to fit. UDAG members determined that one of their primary functions would be to develop design guidelines for implementation by CRC staff throughout the design process. These design guidelines would pertain to the main span across the Columbia River, but also to the urban design of all other elements of the five mile corridor. The guidelines are detailed later in this document.

With these results in mind, the UDAG used 10% engineering plans and on-site exploration to examine each proposed bridge and interchange improvement. In the course of fifteen months, UDAG identified design principles that would be important to the appearance of the project, the ways in which project components could fit most comfortably into the urban context, and the features necessary to lessen separation between communities that are divided by the freeway. Those design principles were stated and progressively refined as the set of design guidelines presented in this report. These design guidelines are intended for the CRC design team to use for project development from conceptual through final design to construction. In the course of its research, the Group considered examples of bridges from around the world. The purpose was to broaden the aesthetic vocabulary with which each piece of the CRC project was approached. The UDAG completed a detailed examination of materials, finishes and design components that would be utilized as the design guidelines are applied.

6.6.1 Universal Urban Design Recommendations

The UDAG developed a number of urban design recommendations that are applicable throughout the CRC project. These are given below. Other recommendations that relate to specific parts of the project appear on the following pages. Each design guideline is preceded by a concise statement of purpose in italics.

1. Be sensitive to design context. *Be sensitive to existing communities by ensuring that each component of the bridge and highway structures complements nearby buildings in scale, materials and color. Respect the needs of established neighboring uses.*

2. Improve connections across I-5. *Improve the safety and convenience of connections between communities on the east and west sides of the highway.*

3. Relate designs to location. *Develop a design vocabulary of distinctive elements (e.g. retaining walls, fences, finishes, landscape materials) that are abstractly derivative of the natural landscape and history of their setting.*

4. Mark bridgeheads. *Signal transitions from land to water and between structure types (e.g. with changes in lighting or materials; changes in fence or barrier design; marking with pylons).*

5. Design bridges from all viewpoints. *Design all bridges and other structures to be seen from above and below, and where possible, use above-deck structure to define the span.*

6. Protect important views. *Protect valued views from the highway and its structures, especially towards Mount Hood.*

7. Use color and light in designs. *Use color to highlight key structural elements. Use light to highlight form and color after dark.*

8. Distinguish each intersection with trees of suitable scale. *Use tall-growing conifers and other native plants in a distinctive and consistent landscape marking interchanges and intersections throughout the alignment and sequestering carbon from the air.*

9. Design landscape to treat rain water. *Design highway landscapes to treat, and otherwise manage storm-water runoff sustainably.*

10. Unify highway and landscape designs. *Treat noise walls, retaining structures and berms as integral components of landscape.*

11. Practice sustainability throughout. *Use sustainable materials and practices throughout, demonstrating cost effective design over the long term. Measure the cumulative effects of such initiatives.*

12. Make transit design integral. *Ensure a good fit for transit by relating the design of platforms, furnishing, landscape, lighting and signage to adjacent neighborhoods and structures.*

13. Coordinate design and colors of signs with other elements. *Take a comprehensive approach to the design, size and color of way-finding and other signs, their supports, lighting, tolling structures, handrails, and other furniture. Develop a consistent and unifying theme for the entire corridor.*

14. Formally adopt these design guidelines in response to the DEIS. *Request adoption of these recommendations as conditions of approval by all relevant government bodies.*

15. Monitor design compliance. *Establish an independent authority to be responsible for design oversight of the Columbia River Crossing, including these urban design recommendations through completion of construction.*

16. Continue UDAG involvement. *Continue engagement of the Urban Design Advisory Group to ensure continuing design review and compliance with agreed recommendations.*

6.6.2 Place-Specific Design Recommendations

Marine Drive Interchange

1. Improve waterfront access and interconnect adjacent spaces. Investigate alternative reconfigurations of the Marine Drive intersection to open up waterfront land for public and private development uses, to improve ramp geometry and to improve interconnection of green spaces that converge at the interchange.

2. Improve transit alignment and access. *Investigate realignment of Marine Drive south of Expo Center, with Marine Drive crossing MAX tracks south of the station to simplify northward transit alignment.*

3. Interconnect open spaces under the interchange. *Configure and design green space related to the Marine Drive intersection structures to interconnect an expanded Delta Park to the Expo transit station and to open spaces to the southwest and along the North Portland Harbor.*

4. Create a local access network. *Integrate direct and safe bicycle and pedestrian circulation trails through and between these spaces and develop a local street network to provide necessary access.*

North Portland Harbor Crossings

1. Improve waterfront trails. *Improve pedestrian and bicycle access along the south bank of the North Portland Harbor under the highway with adequate headroom and lighting, thus connecting Bridgeton to the 40-mile loop. Provide safe and convenient access to the Expo transit station.*

2. Encourage other bridge types with fewer columns in the water. *Minimize piers in North Portland Harbor and encourage bridge types independent of the constraints that shape the bridge over the Columbia River.*

3. Make detached bridges light and elegant. *Construct the highway ramp and transitway spans over the North Portland Harbor as light and elegant bridges. Their architecture need not reflect that of the main highway spans.*

4. Preserve views to Mt. Hood. *Preserve highway views towards Mount Hood.*

Hayden Island

1. Create an iconic entrance to Oregon. *Identify the locations and type of gateway acknowledgements that announce arrival in the State of Oregon for southbound motorists.*

2. Integrate transit and interchange structures. *Locate the Hayden Island transitway and station on the west shoulder of the interchange structure, with landscaped terraces connecting it to ground level.*

3. Align transit station with Tomahawk Drive. *Locate the station directly above Tomahawk Drive, aligning access and landscape with the planned east-west corridor.*

4. Ensure Mount Hood views from transit platform. *Design the Hayden Island transit station to complement features that announce arrival in the state of Oregon. Enable views of Mount Hood from the platform.*

5. Locate boat docks for visitors under the highway. *Locate transient boat docks under the highway on the north and south sides of North Portland Harbor and on the north side of Hayden Island to facilitate public boat access.*

6. Anticipate a local traffic bridge over North Portland Harbor. *Plan for future addition of a local traffic, bicycle and pedestrian bridge across North Portland Harbor east of the highway, location to be determined (This is not seen as part of the CRC project, but something that should be planned for now).*

7. Space ramps to admit daylight and generous landscaping. *Increase separation between ramps at the Hayden Island interchange to enable creation of generously planted landscaped terraces. Use this landscape also for natural treatment of stormwater runoff. Design noise walls and berms integral with the interchange to reduce noise trespass to the east and west.*

Hayden Island Bridgehead

Several of the recommendations made for the Columbia River crossings, and the North Bank and SR 14 interchange are directly applicable to the Hayden Island bridgehead. UDAG members discussed the possibility of creating public open space under the bridge structures between North Hayden Island Drive and the south bank of the Columbia River, as proposed in the Hayden Island Concept Plan. Guidelines specific to this location are:

1. Separate structures to admit daylight. *Maintain the separation between bridge structures across the island to ensure daylight and viable landscape at ground level.*

2. Preserve elements of historic bridgeheads. *Explore preservation of parts of the existing bridgeheads as a historic reference.*

3. Explore public art opportunities. *Investigate public art options to announce arrival in Oregon, including pylons, piers and other structures.*

4. Keep banks clear of piers. *Keep piers and other massive structures clear of river bank open spaces. Summary descriptions of applicable design guidelines include:*

    a. Consider other bridge types south of the Pearson Field constraints.

    b. Reconfigure the under-bridge as destination public open space.

    c. Investigate different under-bridge designs.

    d. Include continuation of the waterfront trail.

    e. Restore original topography and realign streets under the new bridges. Provide visual and physical connections between under-bridge structures.

Columbia River Spans

1. Challenge aviation height limits. *Members of the UDAG recommend that the FAA be approached to consider a greater height allowance for the north end of the CRC span, permitting consideration of bridge types other than girder and box-girder. (It has been suggested that an element of interpretation by FAA staff has been involved in setting the imaginary surface height restrictions, and that a different interpretation might change the limits on bridge type).*

2. Find elegance amid dimensional constraints. *Use constraints on height and clearance over the water to inspire a great and unique design solution. (Explore the feasibility of a composite box girder bridge with open webs).*

3. Locate fewer piers in the river. *Minimize the number of piers in the river and on river banks, consistent with reasonable economy.*

4. Express experience and function with form. *Give expression to the integration of pier and deck structures. (e.g. consider deep haunches and slender mid-span deck). Investigate design opportunities above and below the bridge deck.*

5. Make transit, bike and footbridges open and airy. *If a pair of box girders is to be used for the main span, a composite construction with open webs should be used, accommodating light rail in one, bicycle and pedestrian facilities within the other.*

6. Consider other bridge types south of the Pearson Field constraints. *Consider design opportunities on the south parts of the span that are relatively unconstrained in height. (FAA height limitations related to Pearson Field have effectively reduced bridge type selection to a single choice: box girder bridge. This might suggest a non-symmetrical bridge design or inclusion of an iconic object associated with the river crossing. Astoria Bridge demonstrates use of two distinct bridge types, one of limited height, the other much higher. Such options do not appear to have been considered for CRC).*

7. Design dramatic approaches to the river crossings. *Use public art, landscape and controlled views to build anticipation of the river crossing in those approaching the main span.*

8. Integrate architectural lighting. *Include in the design of the bridges architectural lighting that would give expression to the architecture after dark.*

9. Provide welcoming views into Vancouver. *Frame views for northbound traffic and transit passengers into downtown Vancouver and the Historic Reserve.*

North Bank and SR 14 Interchange

1. Reconfigure the under-bridge as destination public open space. *Redesign the river bank at the former bridgehead under I-5 and the Red Lion site as urban park space in which people can meet, enjoy views, and otherwise use this shoreline destination.*

2. Investigate different under-bridge designs. *Investigate options for regrading and redesign of the river bank under the highway, including options for retention of fragments of the old bridges.*

3. Include continuation of the waterfront trail. *Designate a continuation of the regional trail through this space.*

4. Restore original topography and realign streets under the new bridges. *Regrade land between the railroad embankment and the river bank. Realign Columbia Way as a continuation of the alignment to the east which roughly parallels the railroad.*

5. Restore views of the river from Downtown along Main Street. *Extend Main Street south with clear sight lines to the river and connect it with Columbia Way for vehicular, bicycle and pedestrian traffic.*

6. Activate the edges of Main Street extended to the river. *Define with appropriate easements active open spaces and other uses that would flank the Main Street extension.*

7. Restore local access under I-5 on 5th Street. *Reconnect 5th Street east and west of the highway for pedestrians and vehicles with trail connections to Apple Tree Park and the Land Bridge.*

8. Provide visual and physical connections between underbridge structures. *Connect the Land Bridge and Apple Tree Park with downtown Vancouver by combining improved sight lines, improved access and integrating landscape design.*

9. Extend Land Bridge landscaping under the bridges. *Extend landscape treatment associated with the Land Bridge all the way to the river via the BNSF underpass. Also provide a landscaped trail to Main Street extended south to Columbia Way.*

10. Introduce active and functional uses under the SR 14 interchange. *Design open space within the SR 14 interchange to treat but not detain storm water runoff, reduce broadcast of traffic noise, integrate structures into the landscape, accommodate active open space and provide integral security for structures.*

11. Organize and screen open spaces and structures with landscaping. *Use landscape to organize the diversity and extent of open spaces associated with the interchanges and to screen the railroad berm.*

12. Announce the bridges with markers. *Use architecture or public art to mark entry and departure from each bridge.*

7th Street Footbridge

1. Connect 7th Street over I-5. *Construct a footbridge connection over the highway at 7th Street.*

2. Make the footbridge a colorful gateway. *Consider the design of the 7th Street footbridge as an opportunity to announce approach to the bridge with an elegant and colorful structure.*

3. Consider the collective appearance and function of Downtown crossings. *All of the Downtown highway crossings should be addressed functionally and visually as an integrated system.*

4. Create a highway park over I-5 at Evergreen. *Develop a landscaped deck as a community connection over I-5 at Evergreen Blvd. (This could make an apt entry marker to the Evergreen State if landscaped appropriately).*

5. Mark arrival in the Evergreen State with a dramatic park view. *Treat the covered portion of the highway as an arrival gateway for drivers.*

Mill Plain Interchange

1. Distinguish the Mill Plain interchange as the principal entrance to Downtown.

2. Acknowledge through urban design and landscape that Mill Plain is the principal point of access to Downtown from the north and east.

3. Improve pedestrian and bicycle safety under I-5. *Provide safe and direct passage for pedestrians and cyclists on Mill Plain Blvd traveling between destinations east and west of I-5. (Refine the single point urban interchange (SPUI) design to accommodate all modes equitably).*

4. Create a memorable landscape around the interchange. *Investigate landscape options for surplus land at the four corners of the Mill Plain interchange that acknowledge views from Evergreen underpass.*

5. Design the ramp bridge as a sculptural feature. *At Mill Plain, design the long ramp bridge east of the interchange as an artifact in the landscape, visually distinct from the massive highway.*

McLoughlin Boulevard Crossing

1. Keep underpass sidewalks level as roadway dips. *Where McLoughlin Boulevard dips under I-5, maintain level sidewalks through the underpass for safety and clear sightlines.*

2. Accommodate transit, pedestrians, bicycles and local vehicular traffic. *Provide east-west passage for all modes that improve safety and convenience over existing access.*

3. Coordinate lighting under structures with City and I-5 lighting. *Ensure that pedestrian and street lighting under the freeway and ramp structures does not create sharp contrasts of light and shadow. Design lighting to complement City and Freeway lighting.*

4. Landscape under-spaces to be clear of activities. *Design the environment beneath freeway structures to discourage encampments and other inappropriate uses.*

Fourth Plain Interchange

1. Improve safety and convenience for all modes across I-5. *Redesign the Fourth Plain interchange to accommodate safe access and movement of pedestrians and bicycles, including access to and from local streets.*

2. Improve sidewalks on both sides of Fourth Plain overpass. *Provide sidewalk access along the north side of Fourth Plain adjacent to the cemetery (as stipulated by the Vancouver Central Park policy document).*

The 29th and 33rd Street Overpasses

1. Ensure compatibility of bridge approaches with neighborhoods. *Design visible portions of the bridges over the highway at 29th and 33rd Street with input from the neighborhood facing each end of the bridges.*

SR 500 Interchange

1. Consider a local design theme for bridges. *Consider shared artistic themes in the designs of bridges over I-5 between 39th Street and the Columbia River. (The bridges could reference stories of historic places or events nearby).*

2. Calm traffic on 39th Street. *Widen sidewalks and slow traffic on 39th between the school and NE 15th Ave.*

3. Create a grand entry to Leverich Park. *Design the northbound ramp overpass to appear from below as an entry to Leverich Park.*

Highway 99 Interchange

No specific recommendations were made for the interchange with Highway 99, mainly because only minor changes to the existing configuration are contemplated. The universal design guidelines at the beginning of this section are of course relevant here. This interchange marks the northern limit of the CRC project.

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7. Mitigation for Temporary Effects

7.1 Introduction

Temporary effects on visual quality and aesthetics would result from construction and construction-related activities, and would be common to the LPA to varying degrees.

7.2 Mitigation Common to the Locally Preferred Alternative

During construction, views of and from the project area would be greatly altered. To protect neighborhoods and view quality, the primary mitigation measures for temporary construction-related effects include:

- Shielding construction site lighting to reduce spillover light onto nearby residences and businesses.
- Minimizing visual obtrusiveness by locating construction equipment and stockpiling materials in less visually sensitive areas, when feasible, and in areas not visible from the road or to residents and businesses.

Even though scenic quality of the river would be impacted, the construction of the proposed river crossing would be of great interest to most people. An additional mitigation measure would be to provide public areas for observing the construction and demolition processes, using it as an opportunity for public education.

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8. Permits and Approvals

8.1 Federal

No federal permits would be required. However, coordination with the NPS regarding the VNHR would be necessary if visual impacts alter the context of the historic landscape and buildings.

8.2 State

No state permits would be required. However, coordination with the State Historic Preservation Officer at the Washington Department of Archaeology and Historic Preservation (DAHP) would be required regarding visual impacts to the historic landscape and buildings at the VNHR.

8.3 Local

No local permits are necessary. The cities of Portland and Vancouver have design review functions, which are addressed in the Land Use Technical Report.

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