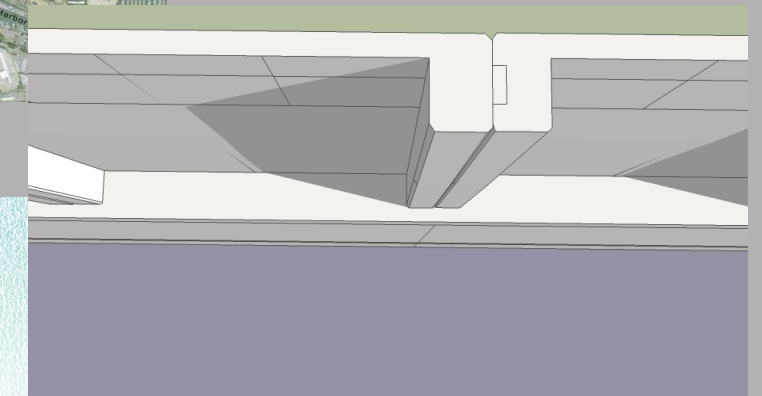
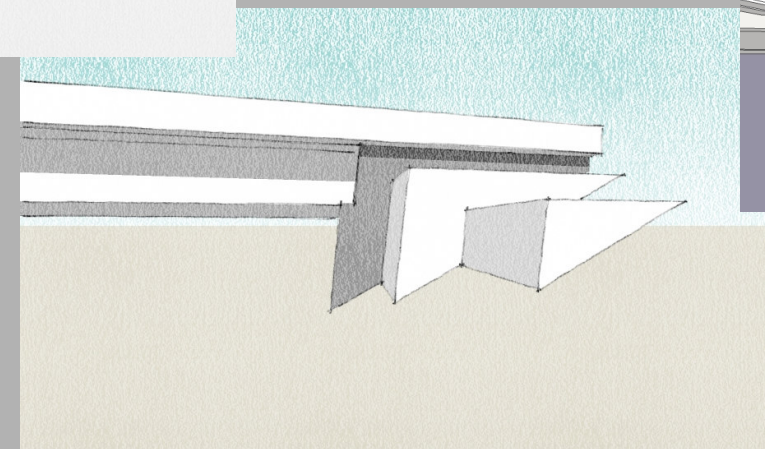
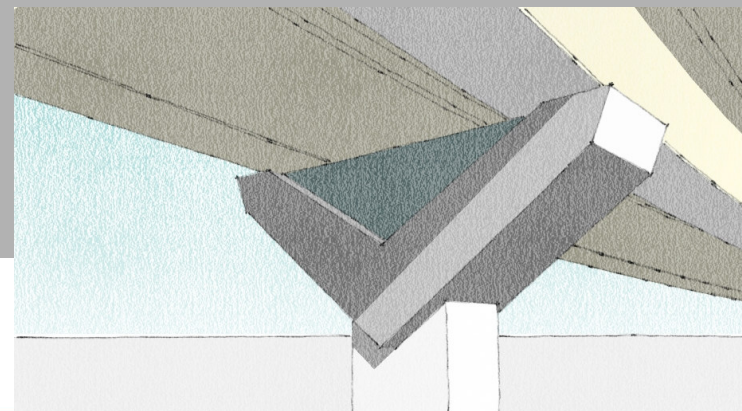
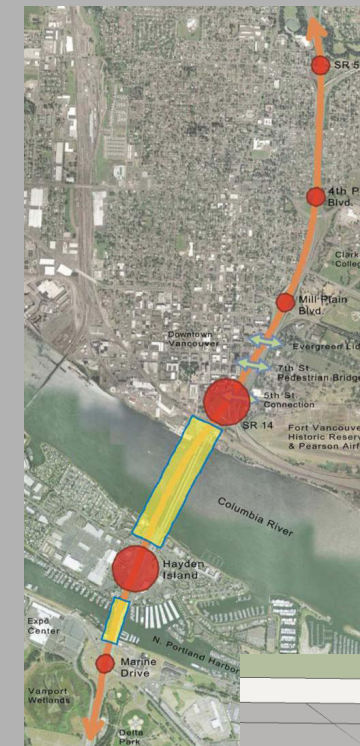


# Architectural Standards

**With Place Specific Requirements  
for bridges and landscape designs.**



## I 5 Columbia River Crossing Architectural Standards

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### Title VI

**The Columbia River Crossing project team ensures full compliance with Title VI of the Civil Rights Act of 1964 by prohibiting discrimination against any person on the basis of race, color, national origin or sex in the provision of benefits and services resulting from its federally assisted programs and activities. For questions regarding WSDOT's Title VI Program, you may contact the Department's Title VI Coordinator at (360) 705-7098**

### **Americans with Disabilities Act (ADA) Information**

**If you would like copies of this document in an alternative format – large print, Braille, cassette tape, or on computer disk, please call (360) 705-7097. Persons who are deaf or hard of hearing, please call the Washington State Telecommunications Relay Service, or Tele-Braille at 7-1-1, Voice 1-800-833-6384, and ask to be connected to (360) 705-7097. Reasonable accommodations in Oregon call: 503-731-3490. ¿Habla usted español? La información en esta publicación se puede traducir para usted. Para solicitar los servicios de traducción favor de llamar al (503) 731-3490.**

## Cover Sheet

**Interstate 5 Columbia River Crossing  
DRAFT –Architectural Standards  
With Place Specific Requirements  
for bridges and landscape designs**

**Submitted By:  
CRC Staff**

### **Abstract:**

**These standards provide design guidance for the highway structures including landscape elements. The standards will be used during final phases of the project. The architectural design of Transit facilities are beyond the scope of the standards.**

**The designs are based on the goals and objectives of the Urban Design Advisory Group.**

### **Comments Due:**

**Initial comments are due by September 14th 2010.**



## **I 5 Columbia River Crossing Architectural Standards**

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### **ACRONYMS**

#### **Acronym Description**

**CRC** Columbia River Crossing

**DEIS** Draft Environmental Impact

**PBAC** Pedestrian and Bicycle Advisory

**SPUI** Single Point Urban Interchange

**UDAG** Urban Design Advisory Group

**The document was prepared by the future facility owners and operators. The following took part as representatives of stakeholders.**

**Ron Anderson**

**Magnus Bernhardt**

**Derek Chisholm**

**Dan Corlett**

**Matt Deml**

**Frank Green**

**Lwin Hwee**

**Paul Kinderman**

**Wesley King**

**Casey Liles**

**Allan McDonald**

**Aaron Myton**

**Meghan Oldfield**

**Laura Peterson**

**Mary Priester**

**Lynn Rust**

**Craig Shike**

**Joel Tubbs**

**Rob Turton**

**Lyn Wylder**

**Steve Witter**

# I 5 Columbia River Crossing Architectural Standards

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**Note these elements will be developed in further drafts of the Standards:**

- Bridge Traffic Barrier**
- Bridge Railings**
- Throw Fences**
- Bridge Colors and Textures**
- Planting**



## I 5 Columbia River Crossing Architectural Standards

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### INTRODUCTION

**Columbia River Crossing is a bridge, transit and highway improvement project. The project is designed to address six interchange reconstructions on a five-mile segment of I-5 between Vancouver, Washington and Portland, Oregon, including: congestion, limited public transit, impaired freight mobility, high collision rates, inadequate pedestrian and bicycle paths, and earthquake vulnerability. These standards focus on the Washington and Oregon land bridges, walls and landscape architecture designs.**

**The standards draw upon the work of the Urban Design Advisory Group. Their efforts are documented in the *Design Guidance for the Columbia River Crossing*. Sensitivity to design context, relationship of designs to location, the use of color and light and unification of landscape to design are among the recommendations. These are discussed in detail in Section 3.1 Universal Urban Design Recommendations.**

**Additionally, these standards implement FHWA's Context Sensitive Design principals. The project strives to “add to the livability of the community because it preserves environmental, scenic, aesthetic, historic and natural resources of the area.”**

**Architectural Standards are developed to work as aides for design. They are conceptual recommendations which outline typical situations. Throughout each phase of design and construction exceptional situations may arise in which a standard solution is not applicable. Specific situations must be assessed individually so that alternatives harmonize with the project as a whole.**

**The Standards will take into account the visual tie-in at the corridor and Transit facilities interface. The architectural design of Transit facilities are beyond the scope of the standards.**

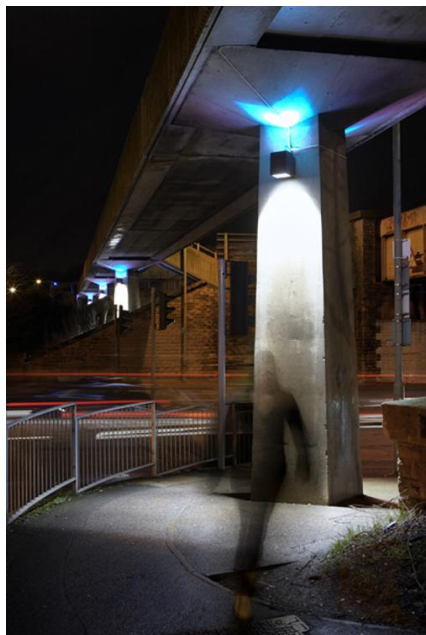
**High quality design also serves as mitigation for adverse effects. The *Visual and Technical Report* for the FEIS identifies several potential strategies included here. Landscape for screening and visual quality as well as architectural features to blend with the community context and unite the corridor are guiding principles in the standards.**

## I 5 Columbia River Crossing Architectural Standards

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### Landscape Imagery



### Bridge Architecture Imagery

### Design Approach

The standards are produced by CRC staff following the recommendations of the *Design Guidance for the Columbia River Crossing*.

The design process includes the contributions of stake holders. Representatives of local agencies as well as outside design professionals provide comments and guidance at key points during the design.

Core to the design approach is addressing two distinct viewer experiences. One as ‘viewed-from-the-roadway’ and the other as ‘viewed-toward-the-roadway’. For simplicity in these standards, discussions of ‘views from’ are taken in reference to a northbound traveler.

Views ‘from’ the road are concerned with corridor continuity; creating an experience of national and regional ownership of the Interstate. A continuity example is the use of common elements such as barrier and lighting details that drivers experience from the roadway.

Views ‘toward’ the road are more personal to the individual neighborhoods and expressing of local culture, history and character. As an example, throughout the corridor the standards will “..use native plants in a distinctive and consistent landscape marking interchanges and intersections throughout...”

Irrespective of views, the standards seek to use green soft-scape plantings over concrete hardscape as the first strategy in aesthetics.



## I 5 Columbia River Crossing Architectural Standards



### Place Specific Contextual Areas

The UDAG recommendations provide guidance to contextualize. The design requires sensitivity to existing communities by ‘...ensuring that each component of the bridge and highway structures complement nearby buildings in scale, materials and color.’

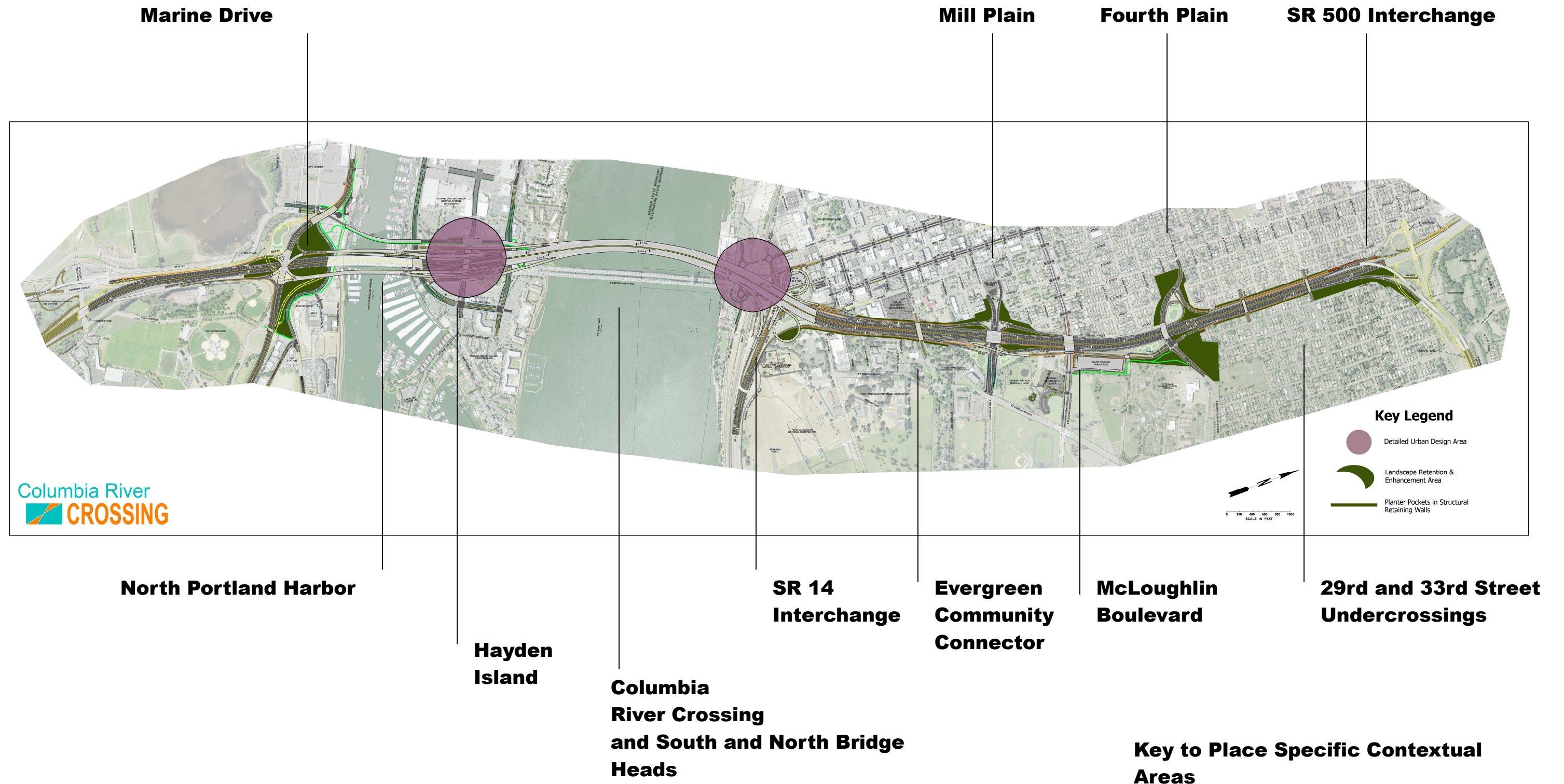
Additionally the elements should ‘...develop a design vocabulary of distinctive elements....that are abstractly derivative of the natural landscape and history of their setting.’

The UDAG identified the following areas:

- Marine Drive Interchange
- North Portland Harbor Crossing
- Hayden Island
- Columbia River Bridge Head on Hayden Island
- Columbia River Spans
- SR 14 Interchange, Vancouver Waterfront and CRC Bridgehead
- Evergreen Community Connector
- Mill Plain Interchange
- McLoughlin Boulevard Crossing
- Fourth Plain Interchange
  - 29th and 33rd Street Undercrossings
- SR 500 Interchange

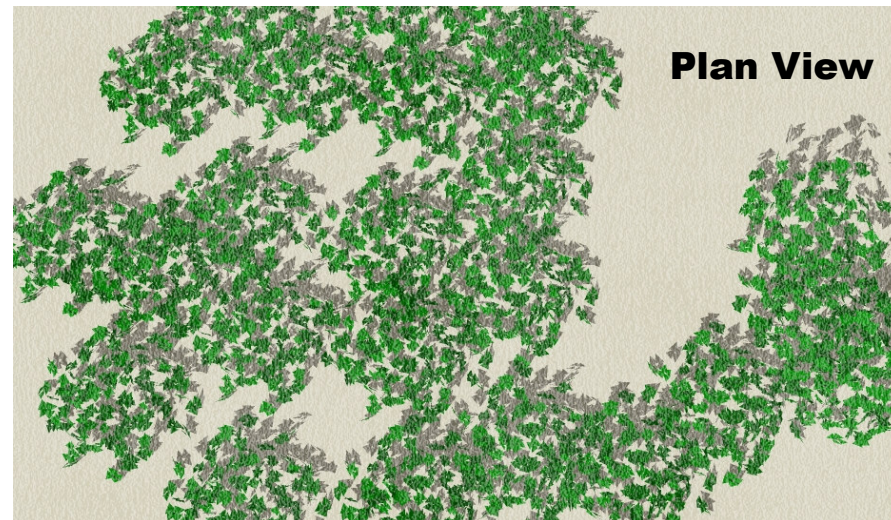


# I 5 Columbia River Crossing Architectural Standards

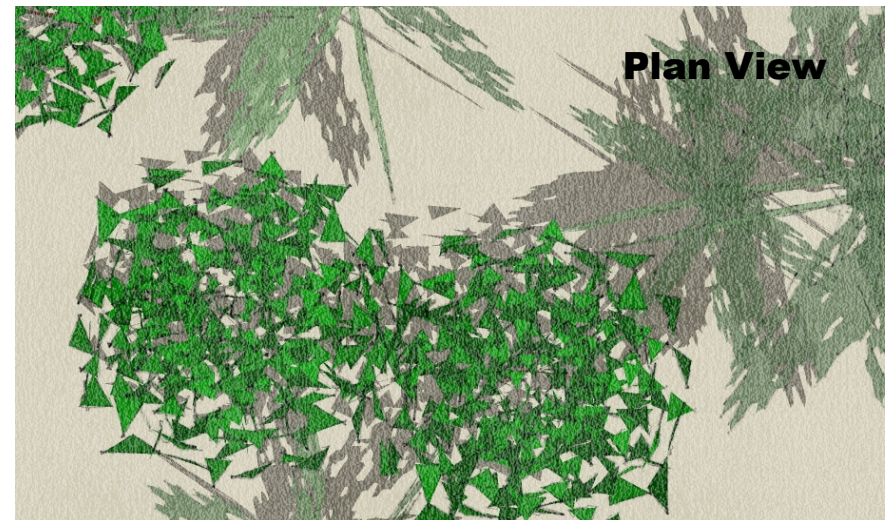




# I 5 Columbia River Crossing Architectural Standards



Plan View



Plan View

## Discussion:

The landscape palette consists of the four types shown.

Low cost maintenance shall be the key factor in design. Irrigation will be supplied only during the start up phase of growth.

Dense planting for infill and to minimize weed growth will be employed.

Principles of urban forest growth with canopy cover and CPTED will also guide the design.



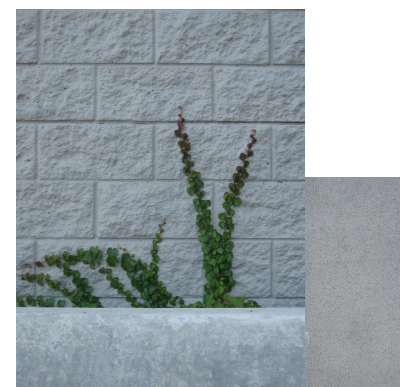
Ground Cover

## I Ground Cover



Vines

## II Massed Shrub Plantings



Recessed Alcove Planter Pockets



Barrier Planter Pockets



Examples

Landscape Palette



# I 5 Columbia River Crossing Architectural Standards

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**Plan View**



**Plan View**



**Screening  
Closeup View**



**Screening  
Vegetation  
Medium**

**III Large Screening  
Vegetation**

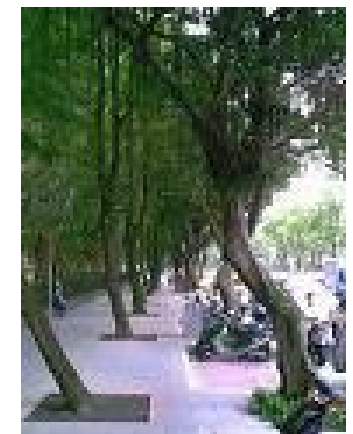
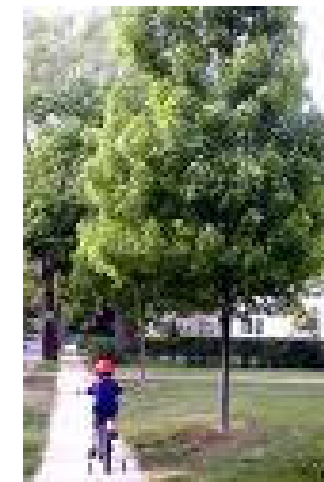


**Heavy Screening  
Medium View**



**Douglas Fir  
Specimen**

## IV Streetscape



**Landscape Palette**



## I 5 Columbia River Crossing Architectural Standards



**Landscaped embankment to soften mainline**

**Urban forest/tree canopy**

**CONTEXT:** Historic uses in this area include stockyards and shipyards at the turn of the century. Currently the west side is a public transit hub with freight industry and exposition center. The east is condominiums, hotels and marinas. Historic imagery is maritime in nature.

**VIEWS 'FROM' THE CORRIDOR:** The Marine Drive Interchange may include a bridge structure. This could involve building a larger 'squared-off' roadway rather than the curved design shown. If structurally feasible, the remaindered roadway deck areas may be landscaped.

The roadway shoulder adjacent to the ramps will have a blend of ground cover and shrubs from zero to 6 ft in height. This will create an open feeling with diffuse and softened edges.

**VIEWS 'TOWARD' THE CORRIDOR:** Selected areas will be screened with cottonwoods to complement existing stands in the southwest quadrant.



**Place Specific Contextual Area  
Marine Drive Interchange**



## I 5 Columbia River Crossing Architectural Standards



**New Portland Harbor  
bridges**

**Potential tree canopy  
locations between  
bridges.**

**CONTEXT:** The north shore is the site of the only island community in the Portland area. It is mixed socio-economically and includes condominium residences. The south shore is maritime industrial. While local aesthetics reflects maritime culture, the area just north of the site is currently the home of 'big box' retail. The area planned for major redevelopment.

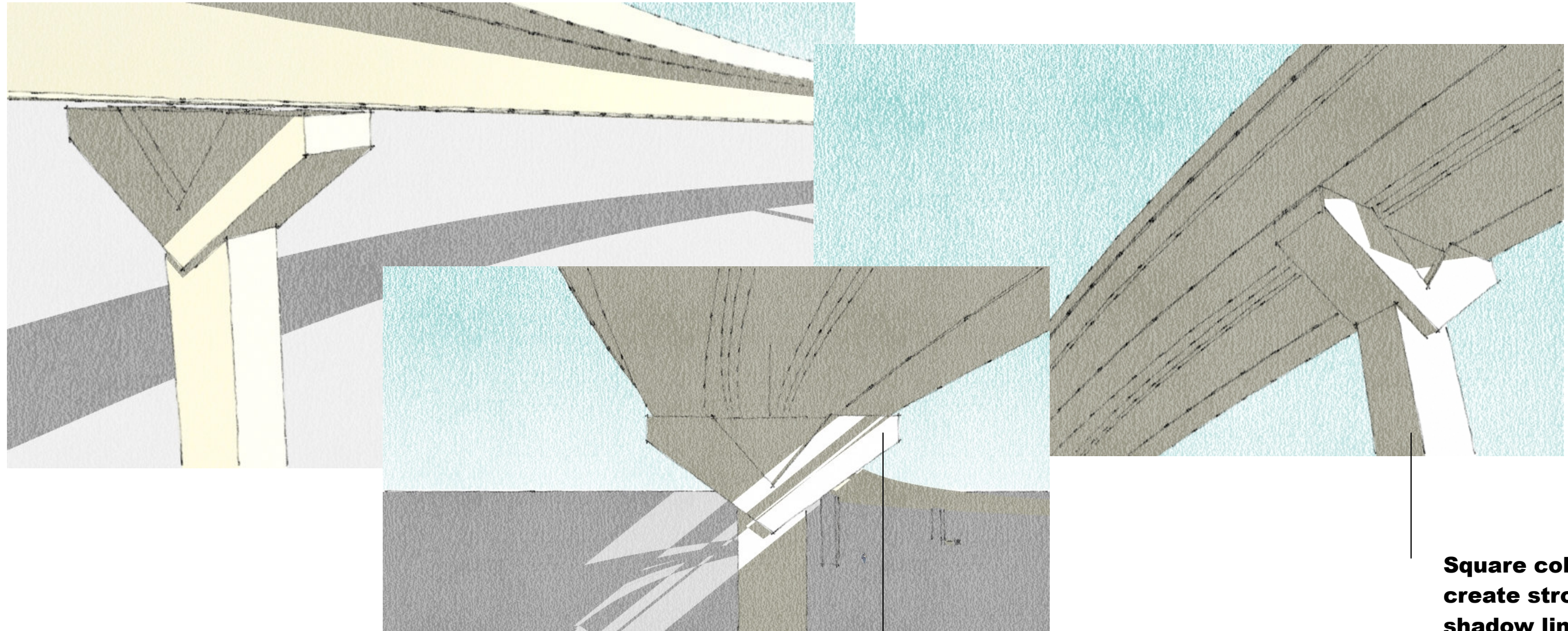
**VIEWS 'FROM' THE CORRIDOR:** The new North Portland Harbor bridges are on both sides existing I5 crossing. The bridges are higher in elevation and provide views of the harbor substructure columns. Architectural detailing of the square columns and the sculptural effects of the 'hammer head' crossbeams are primary aesthetic features.

**VIEWS 'TOWARD' THE CORRIDOR:** Waterfront views, such as those in the floating homes, will be softened by conifer trees between the existing and new bridges. In order to blend with the round columns of the existing I 5 bridge, the HI-5S ramp will also have round columns. The new transit bridge and North Portland Harbor bridges will have architecturally detailed square columns to match other corridor elements. The new sculpted columns and crossbeams, being higher, will visually dominate the older round columns, being lower and under the existing bridge.

**Place Specific Contextual Area  
North Portland Harbor Crossing**



## I 5 Columbia River Crossing Architectural Standards



**Square columns  
create strong  
shadow lines.**

**Steel girder bridges are currently under consideration for the North Portland Harbor bridges. Due to their proximity to I 5, the piers will be highly visible to northbound and southbound traffic. The designs also have an opportunity to visually relate to the main river crossing.**

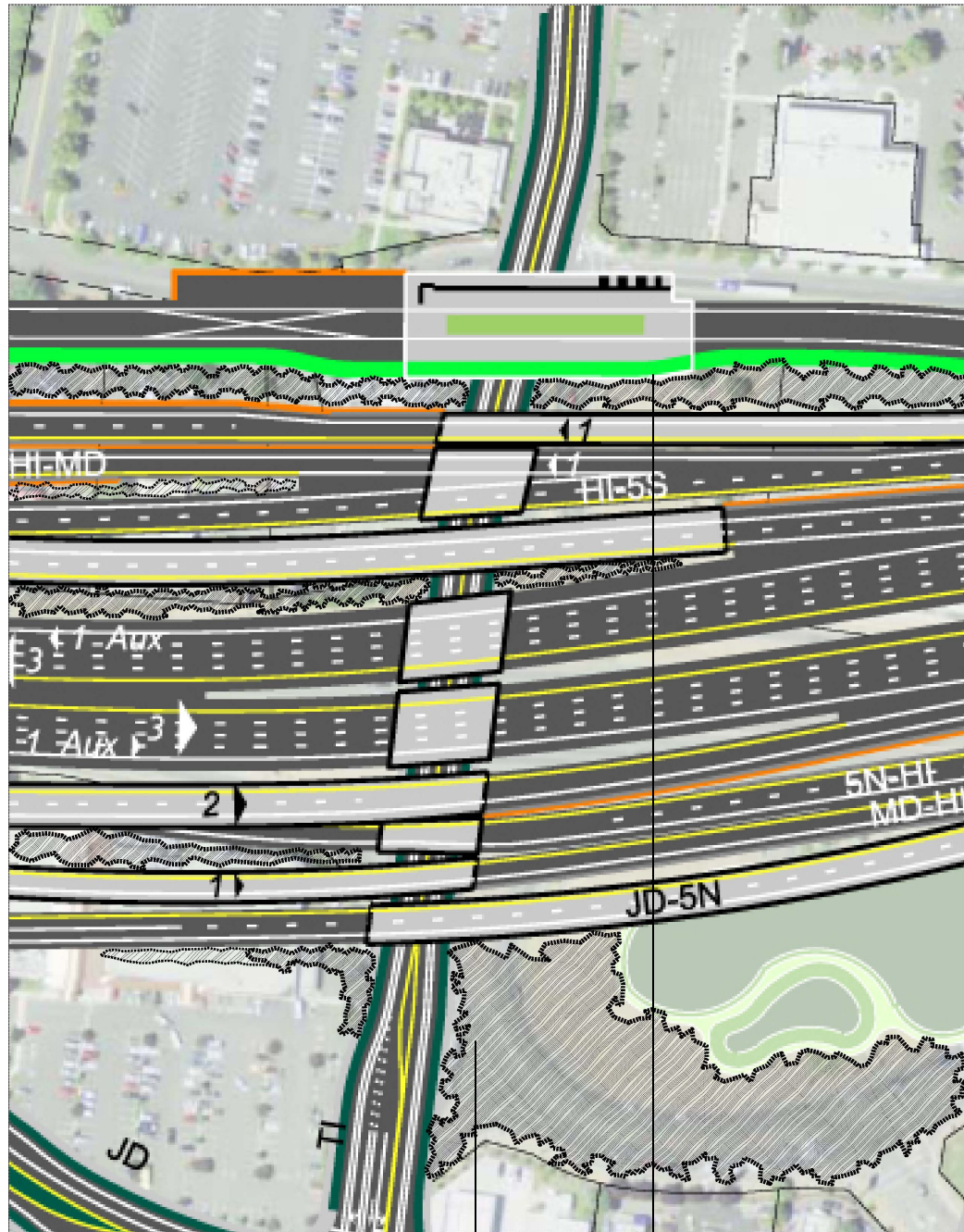
**Detailing of the dropped 'hammer-head' columns echo the shapes of the river crossing piers.**

**Classic hammer head crossbeams float below the superstructure and are detailed to echo the shapes of the main river crossing.**

**Major Design Elements  
North Portland Harbor Crossing**



## I 5 Columbia River Crossing Architectural Standards



**CONTEXT:** Early use included a theme and amusement park. Nautical architectural references were used for commercial buildings. The area is currently a 'big-box' commercial area with plans for redevelopment. A key element is the transit station discussed in the *Light Rail Station Concept Design Report*.

**VIEWS 'TOWARD' THE CORRIDOR:** The Hayden Island bridges are a series of overcrossings. Drivers will notice them only by their corridor specific traffic barriers and railing.

The design should be as 'airy' as possible, taking advantage of daylight between the bridge structures.

The continuous sidewalks on Tomahawk Drive have ample opportunities for street trees, especially in the northeast and southeast quadrants of the interchange.

**VIEWS 'FROM' THE CORRIDOR:** This project element will involve detailed urban design at a future time. The transit station area will also be designed by others.



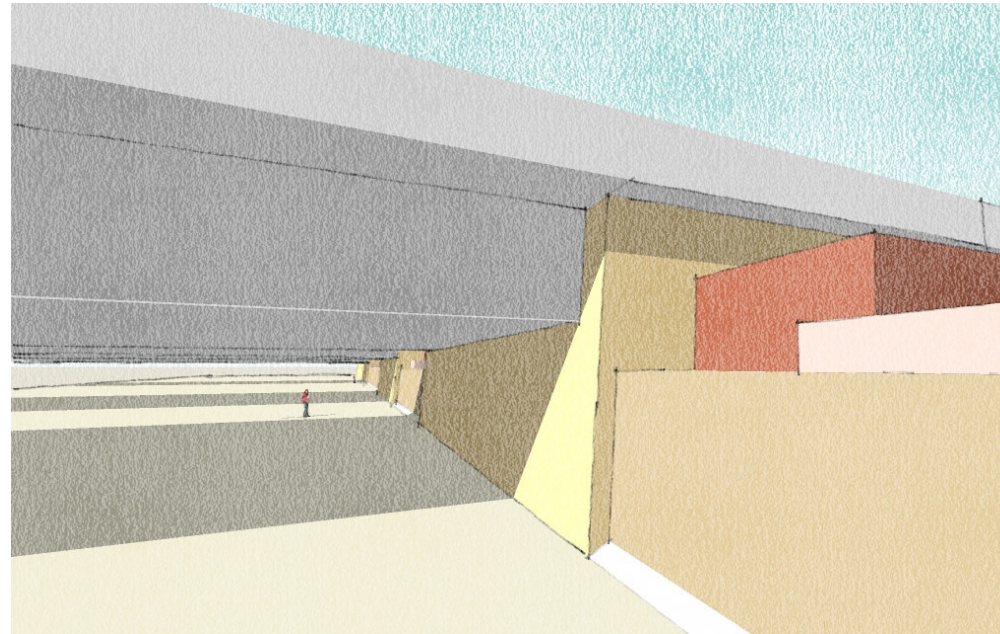
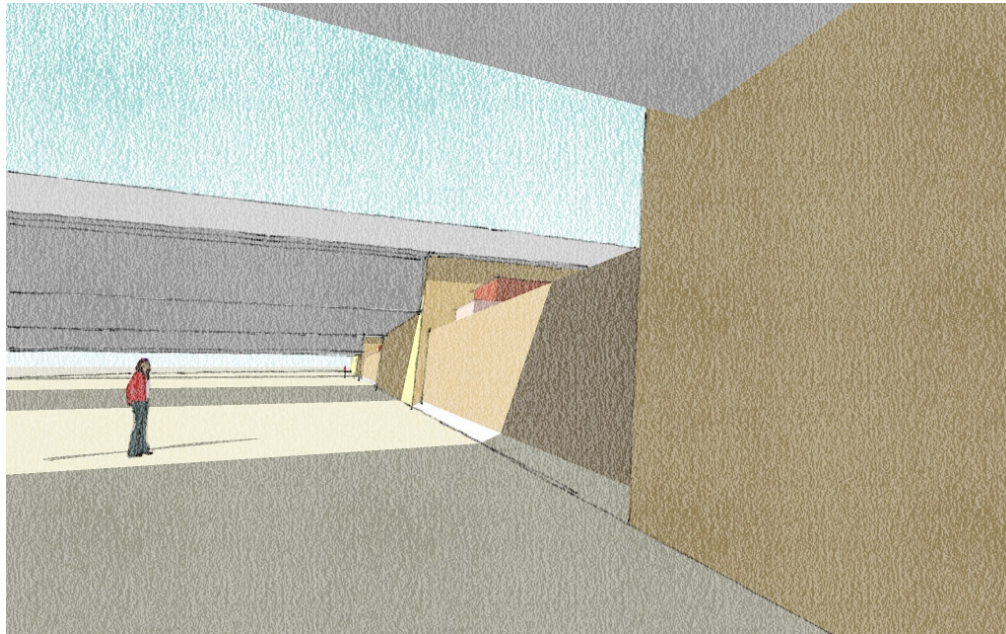
Shrubs or planter pockets  
depending on space constraints

Larger trees and tree canopy except  
those that may shade Tomahawk  
Drive.

Place Specific Contextual Area  
Hayden Island

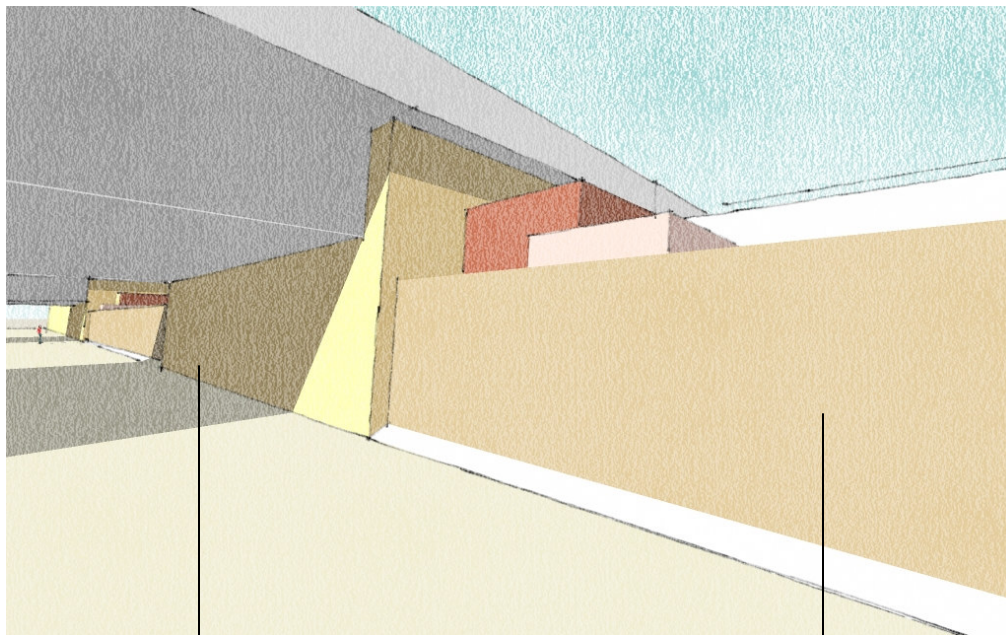


## I 5 Columbia River Crossing Architectural Standards

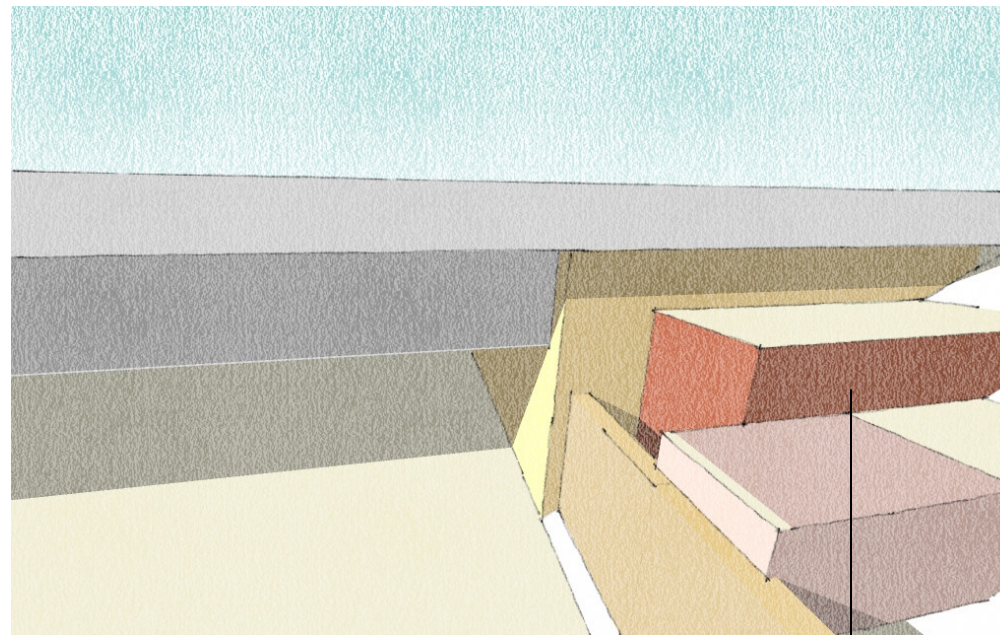


**Tomahawk Drive will be constructed below grade existing.**

**The resulting retaining walls will be continuous, battered and stepped for visual interest.**



**Bridge abutments:  
battered for visual  
interest**



**Retaining walls between  
bridge abutments: only  
to the height required to  
control ground water.**

**Planter boxes**

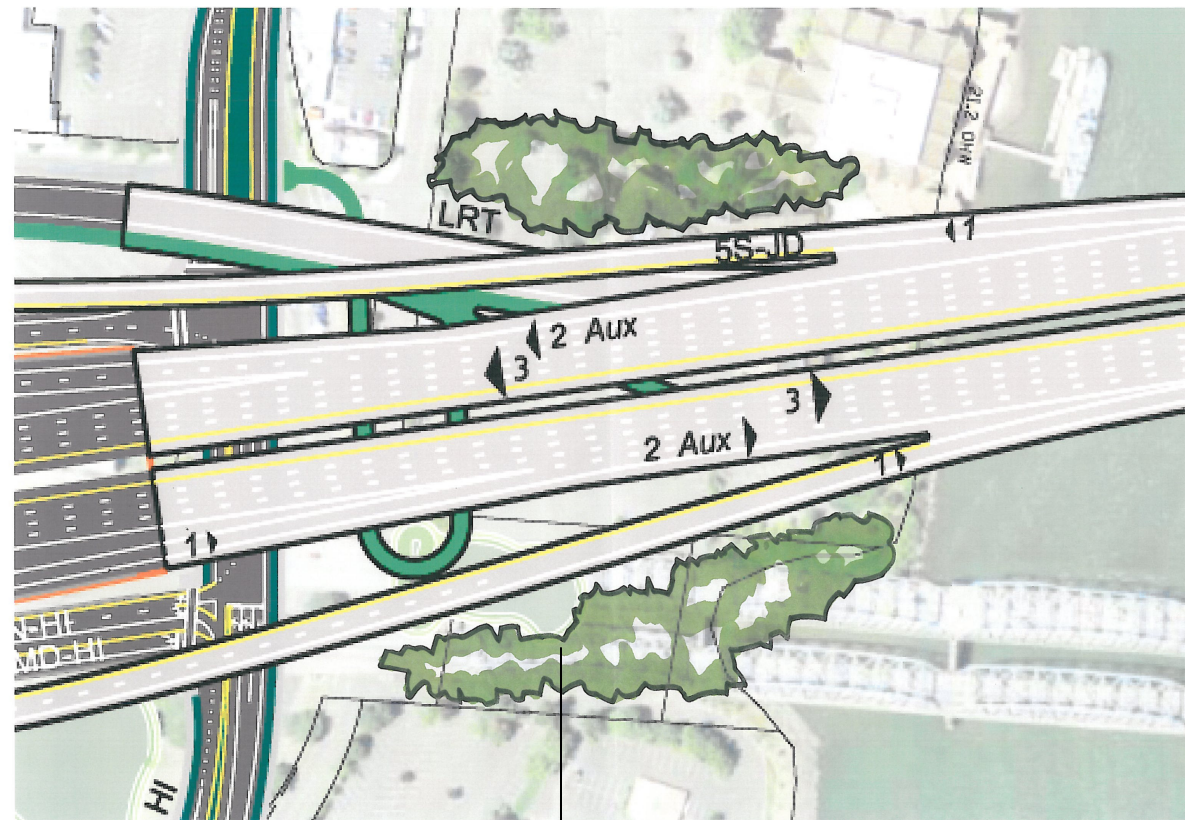
**Areas between bridges should be provided with the corridor theme planter boxes. These are located between the bridges. The design provides light and green space alternating with the sheltered feeling of the bridges.**

**This is a potential areas for public art.**

**Major Design Elements  
Hayden Island**



## I 5 Columbia River Crossing Architectural Standards



**Larger trees and screening.**

**CONTEXT:** The bridge head on Hayden Island is composed of the river crossing approaches, integration of the light rail to the west river bridge and bicycle and pedestrian access to the east river bridge.

**VIEWS 'TOWARD' THE CORRIDOR:** The approaches and main Columbia River Crossing will be viewed overhead. The skyline will be dominated by these structures.

The bicycle and pedestrian structure, located beneath the main river crossing, is to be included in future design work.

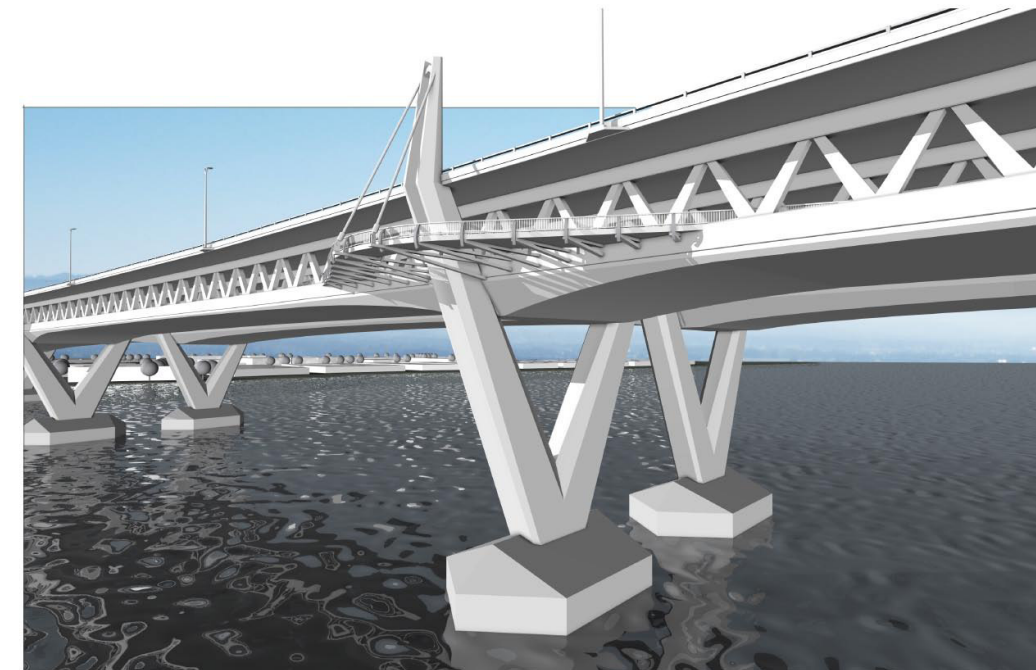
**VIEWS 'FROM' THE CORRIDOR:** The approaches and bridge rise from a land based experience toward one of panoramic views of the river.



**Place Specific Contextual Area**  
**Columbia River Bridge Head on Hayden Island**

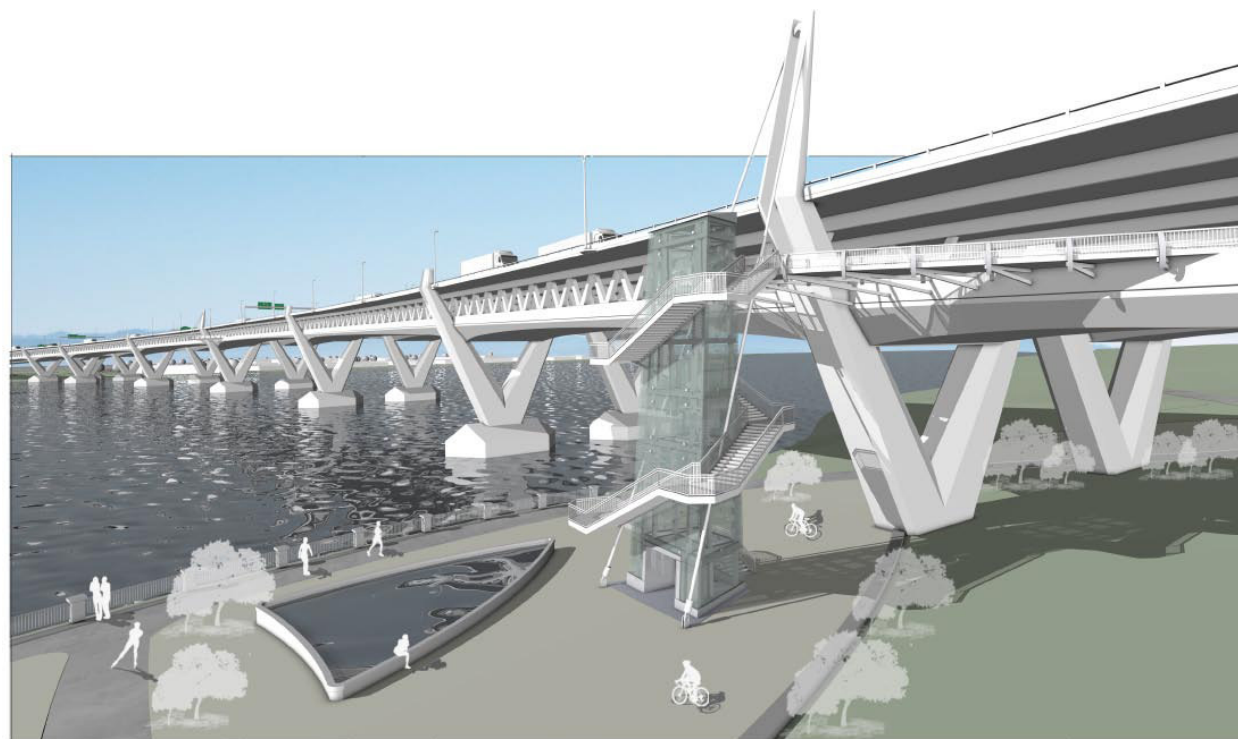


## I 5 Columbia River Crossing Architectural Standards



**The Columbia River Bridge architecture is detailed in the *Architectural Design Concept Document*.**

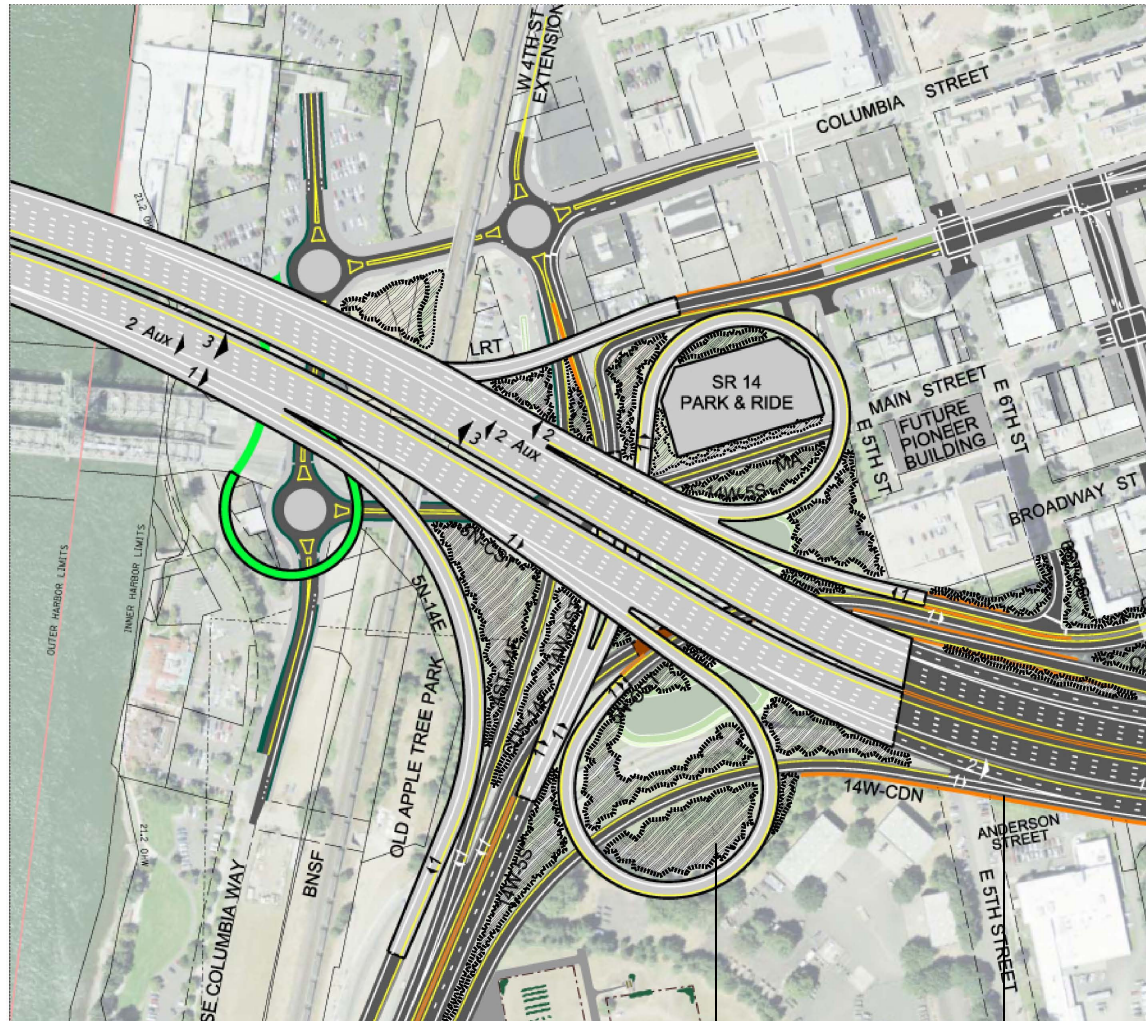
**The main river crossing is beyond the scope the standards. However the land bridges designs will be coordinated with river crossing's to provide corridor continuity.**



**Place Specific Contextual Area  
Columbia River Spans**



## I 5 Columbia River Crossing Architectural Standards



**Larger canopy trees:  
40-60 ft high.**

**Planter pockets adjacent  
to walls where constrained  
by right of way.**

**CONTEXT:** The North Bank and SR 14 Interchange include the approaches to the river crossing, loop ramps for SR 14, and downtown access as well as the light rail touchdown. Kanaka village is immediately to the west at Fort Vancouver.

**VIEWS 'TOWARD' THE CORRIDOR:** The ramps and approaches dominate overhead. The bridge columns architectural detailing as well as integrated landscape design will shape the cityscape.

**VIEWS 'FROM' THE CORRIDOR:** The height of the bridge approaches affords a 'birds eye view' of the Vancouver cityscape to the west. To the east rolling hills appear behind Fort Vancouver.

**A detailed urban design for the area will be included in future work by others, such as the City of Vancouver.**

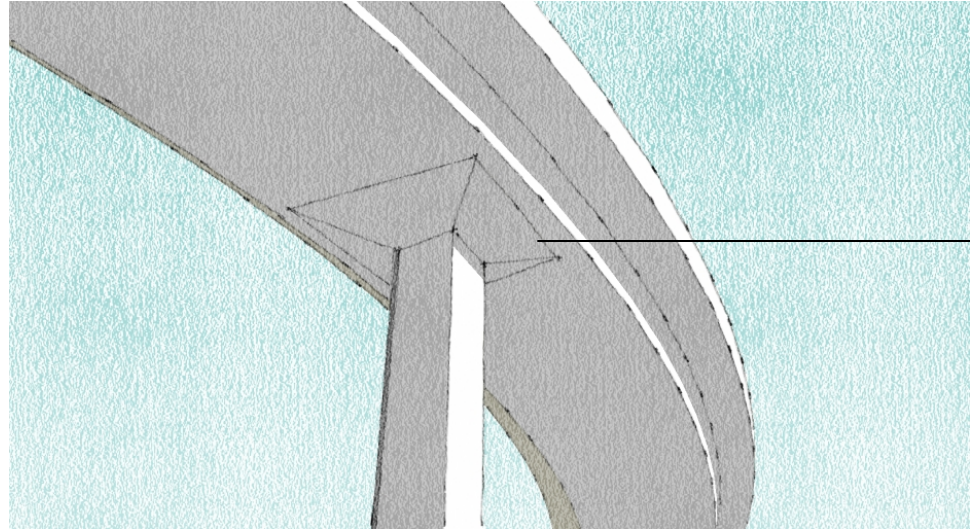
**One of several design studies is shown for reference. It is an examples of how the project team will take into account local agency plans to determine the best utilization of land in the post construction phases.**



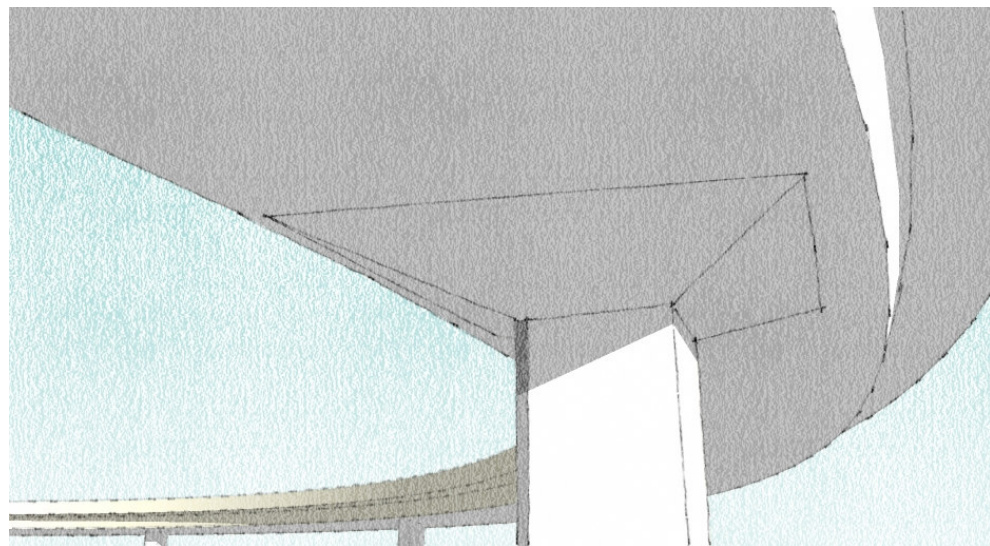
**Place Specific Contextual Area  
SR 14 Interchange, Vancouver  
Waterfront and CRC Bridgehead**



## I 5 Columbia River Crossing Architectural Standards

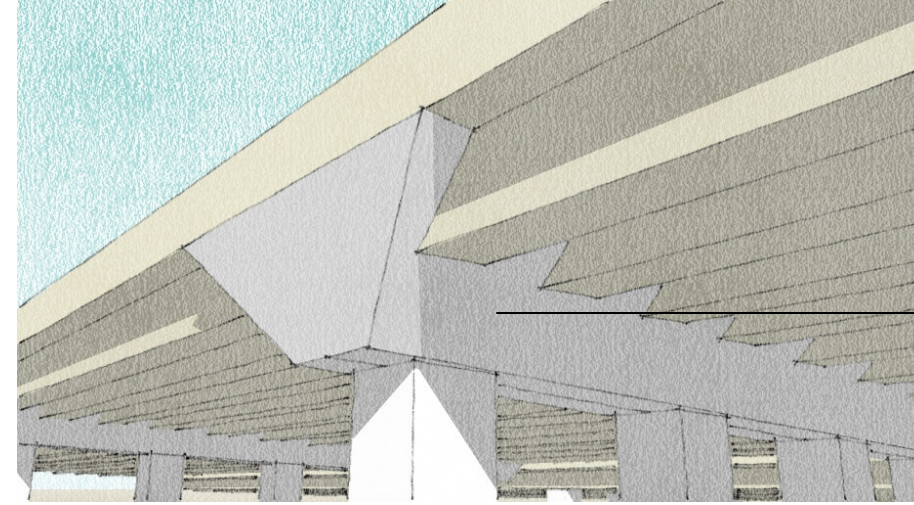


**Repeating  
angular  
geometry.**

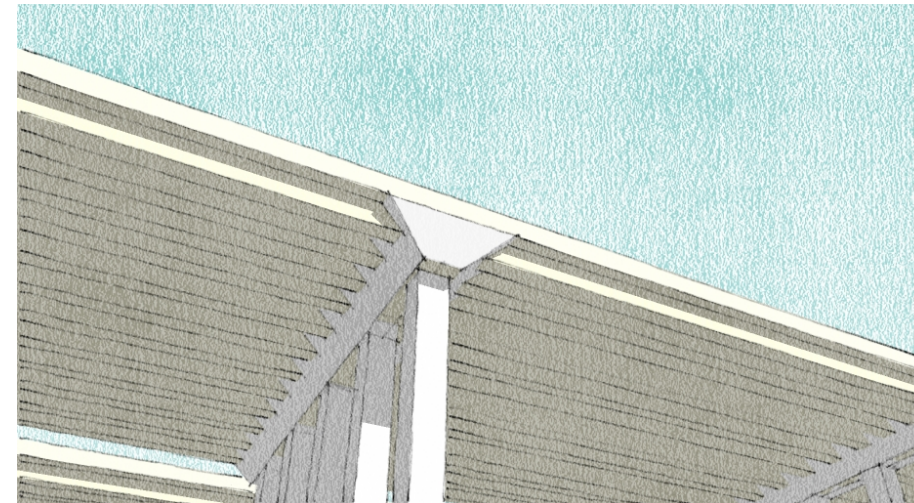


**Superstructure elements are cast-in-place concrete box girders for the off ramps to SR 14.**

**Substructure columns are prismatic squares. These create strong shadow lines and efficiently accommodate texturing. Continuous corbel collars echo the angular geometry of the main river crossing.**



**Cast in place angular  
crossbeam and square  
columns.**



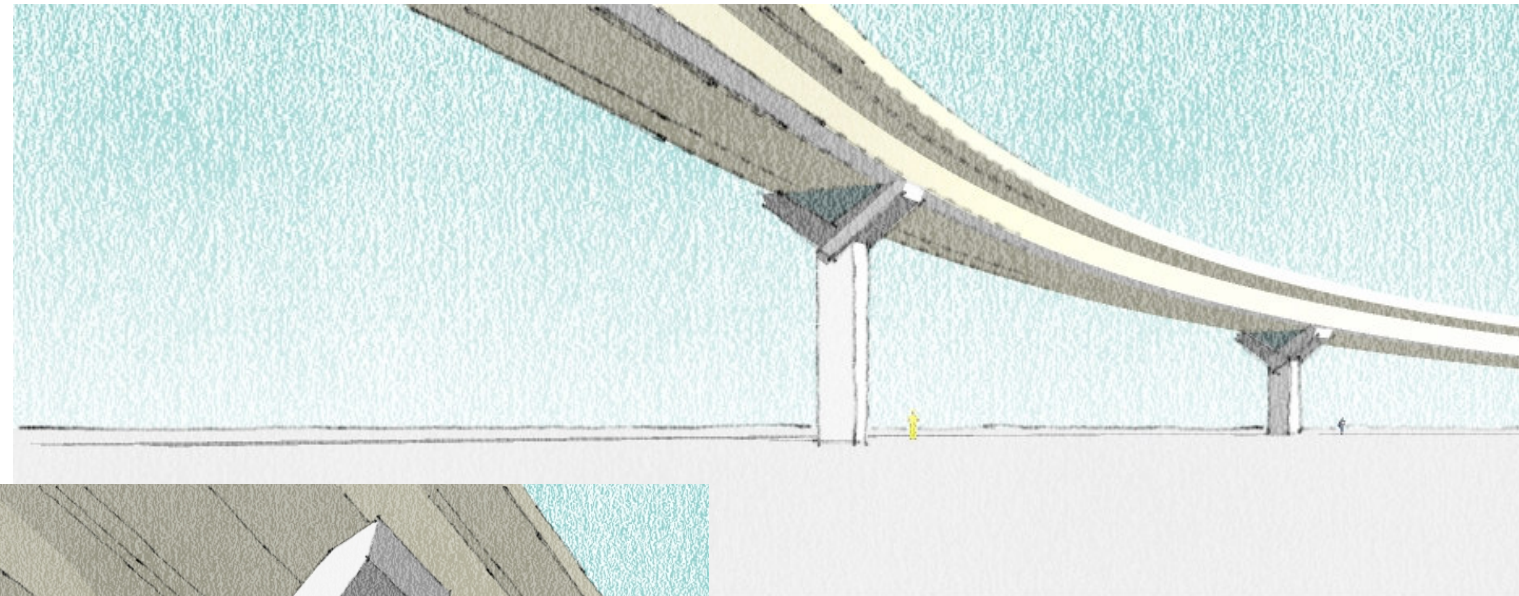
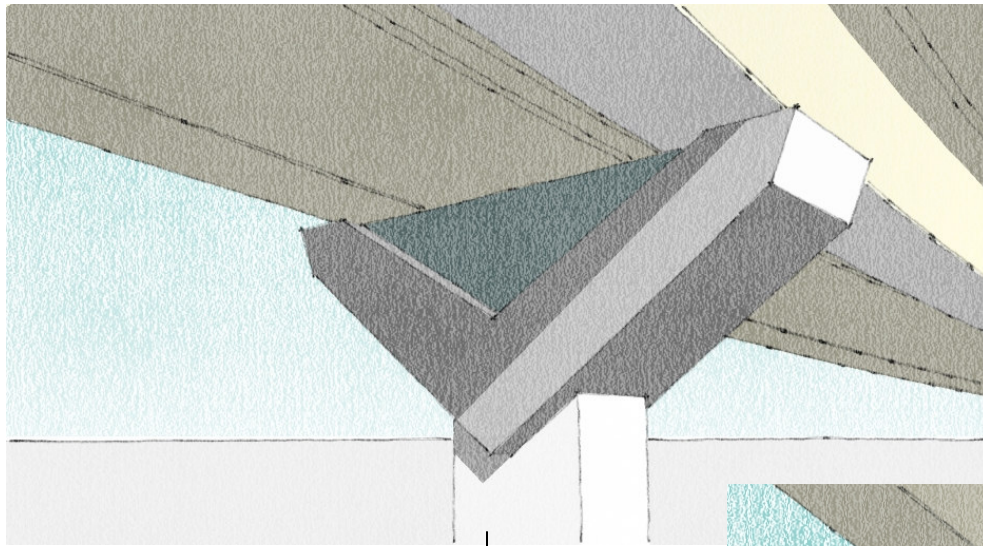
**The I5 north approach ramps are multicolumn bents carrying pre-stressed trapezoidal box girders.**

**The ‘uplifting’ orientation of the main river piers are repeated in the sloped semi-raised crossbeam.**

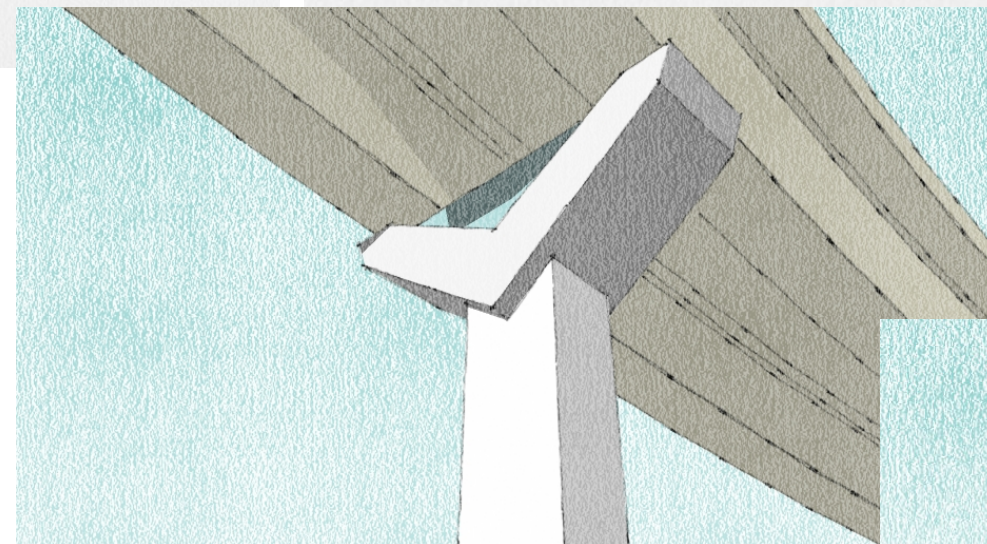
**Major Design Elements  
SR 14 Interchange, Vancouver  
Waterfront and CRC Bridgehead**



## I 5 Columbia River Crossing Architectural Standards



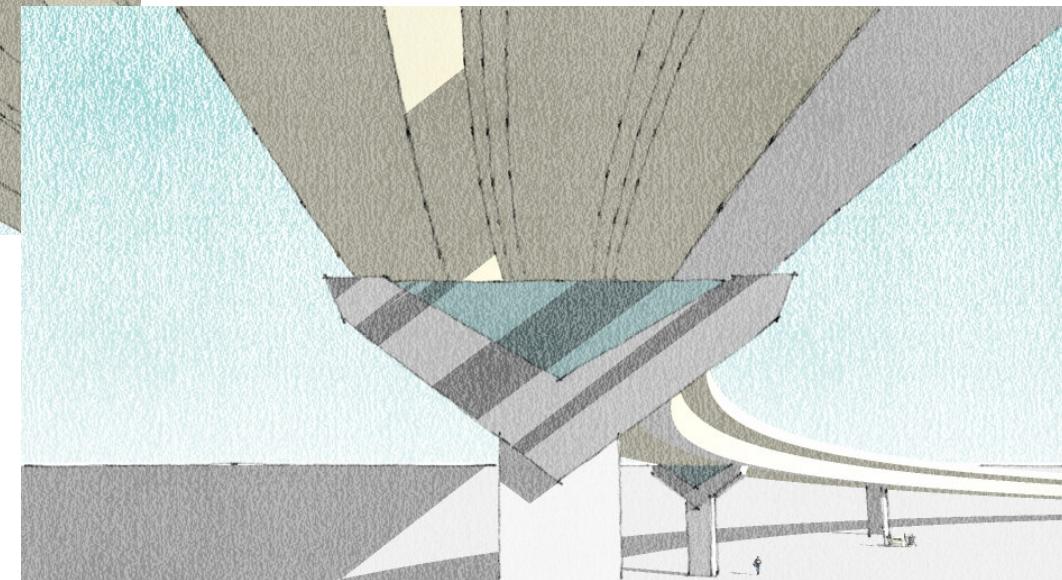
**Repetition of forms from the main river crossing and the Hayden Island bridges.**



**The 5N-14E off ramp is a twin box steel bridge. Due to its proximity, it most closely visually relates to the main river crossing.**

**Detailing of the dropped 'hammer-head' columns echo the shapes of the river crossing piers.**

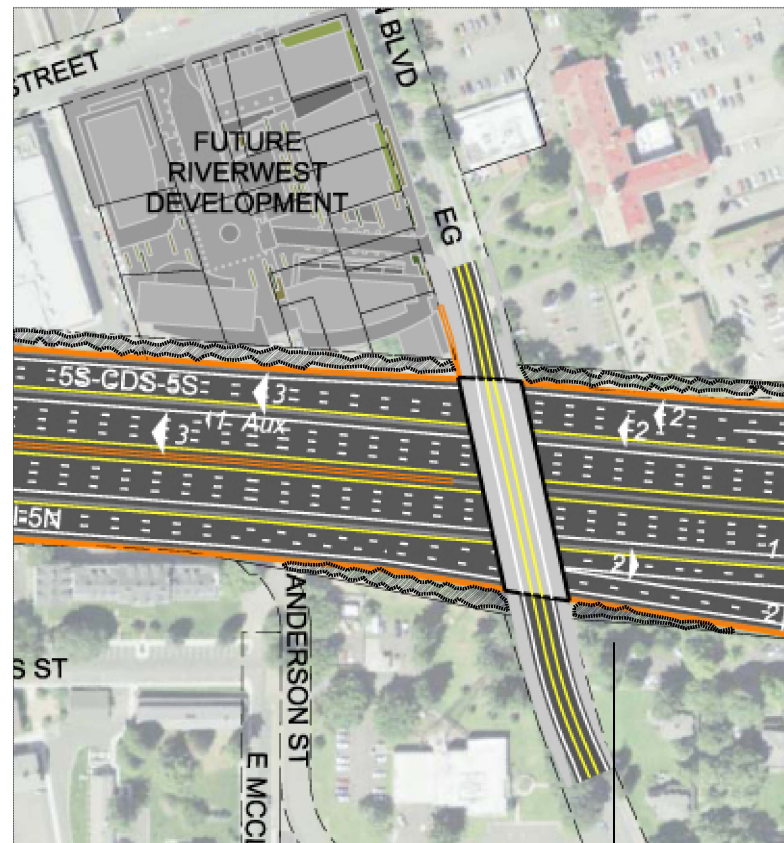
**For visual continuity with other land bridges, the square columns are repeated.**



**Major Design Elements  
SR 14 Interchange, Vancouver  
Waterfront and CRC Bridgehead**



# I 5 Columbia River Crossing Architectural Standards



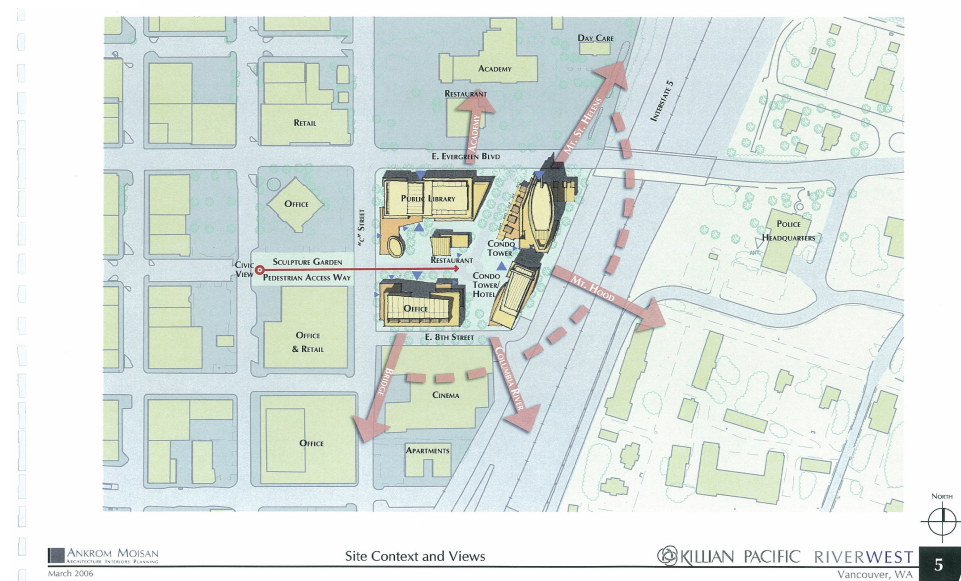
**CONTEXT:** To the west of I 5, the Evergreen Community Connector is the site of the Riverwest Redevelopment Project as well as the competition for the connector lid. To the east lies the historic Fort Vancouver. This site will be an area of detailed urban design including the proposed connector 'lid' directly south of the bridge.

**VIEWS 'TOWARD' THE CORRIDOR:** On the westward and the eastward views of the corridor are obscured by well established urban environment. Additionally the corridor is well below grade and therefore hidden from view.

**VIEWS 'FROM' THE CORRIDOR:** The corridor has a sense of enclosure. Its below grade and contained within retaining walls. The proposed community connector will be experienced as a tunnel from the roadway.



**Recessed Alcove  
Planter Pockets**

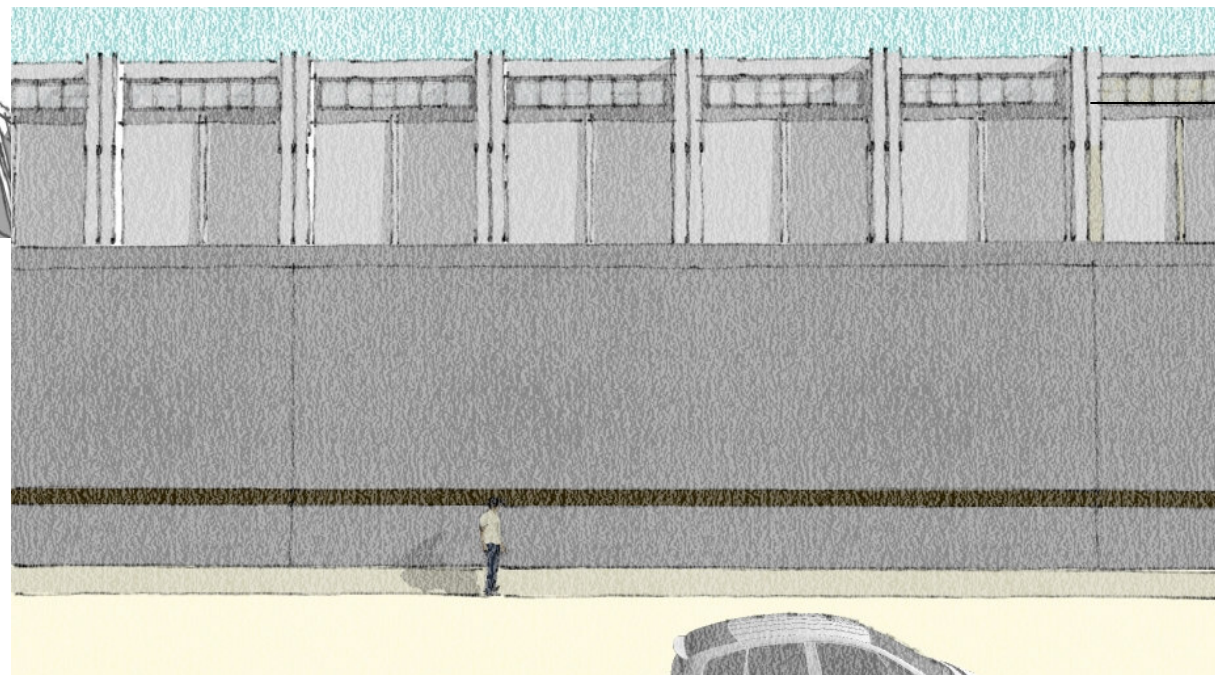
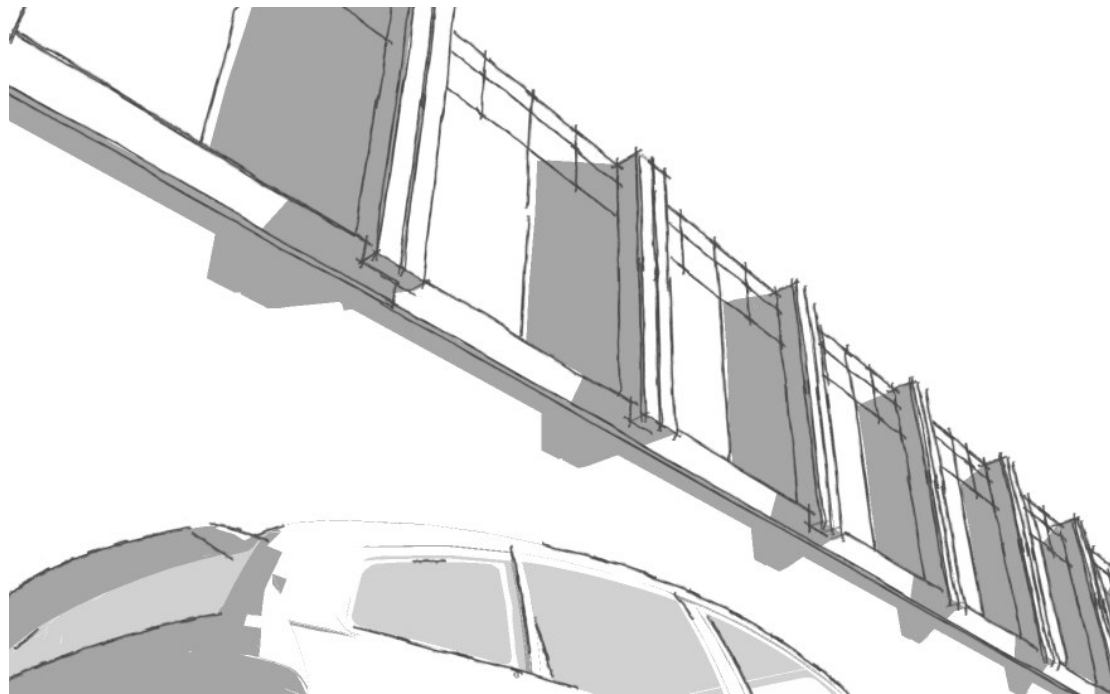


**Place Specific Contextual Area  
Evergreen Community Connector**



## I 5 Columbia River Crossing Architectural Standards

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**Noise walls on top of retaining structures are formal and geometric in the downtown Vancouver area.**



**Recessed alcove planter pockets allow for softening of the retaining walls.**

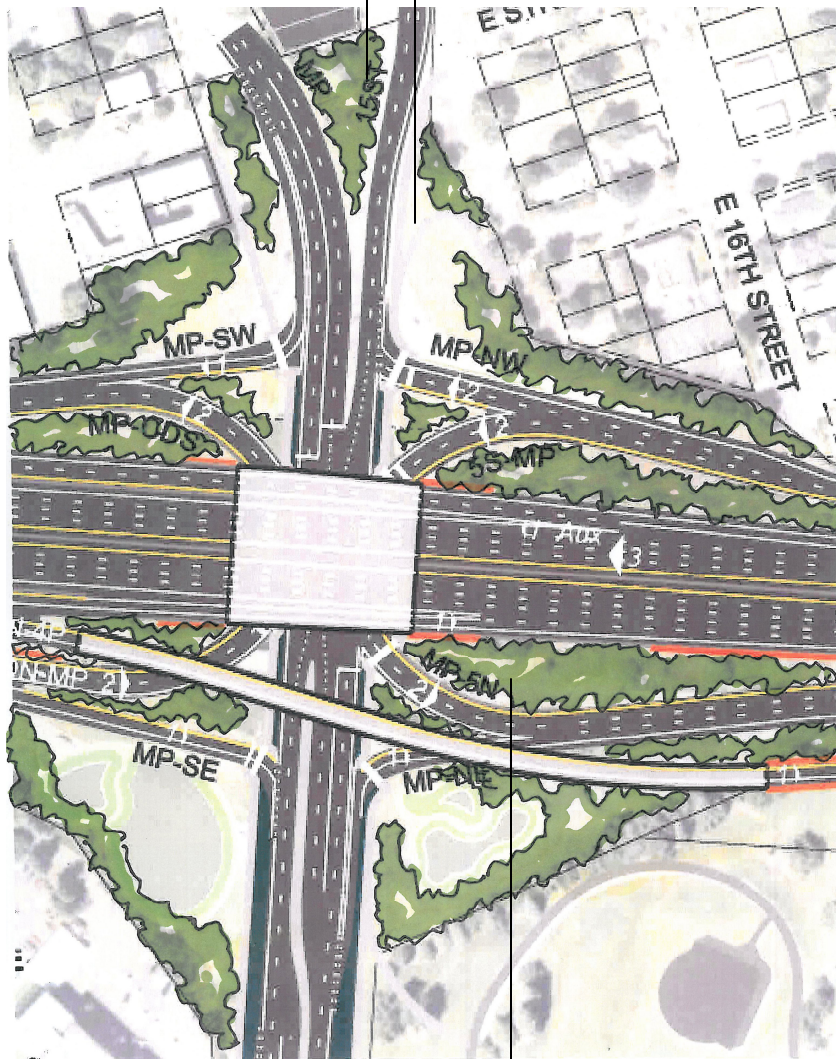
**Major Design Elements  
Evergreen Community Connector**



## I 5 Columbia River Crossing Architectural Standards

### Existing Community Gateway

Open area



**CONTEXT:** The Mill Plain bridge is one of four major intersections. Due to its proximity to the state border this area serves as a gateway to Washington State as well as the city of Vancouver. It has an urban feel.

**VIEWS 'TOWARD' THE CORRIDOR:** Views from the west are obscured by residential neighborhoods. From the east lies the boundary between Fort Vancouver and Clark College. The corridor is slightly above grade and experienced as part of the community.

**VIEWS 'FROM' THE CORRIDOR:** The roadway emerges from the deeper retaining wall bordered area to the south. The open feeling is part of the gateway experience.

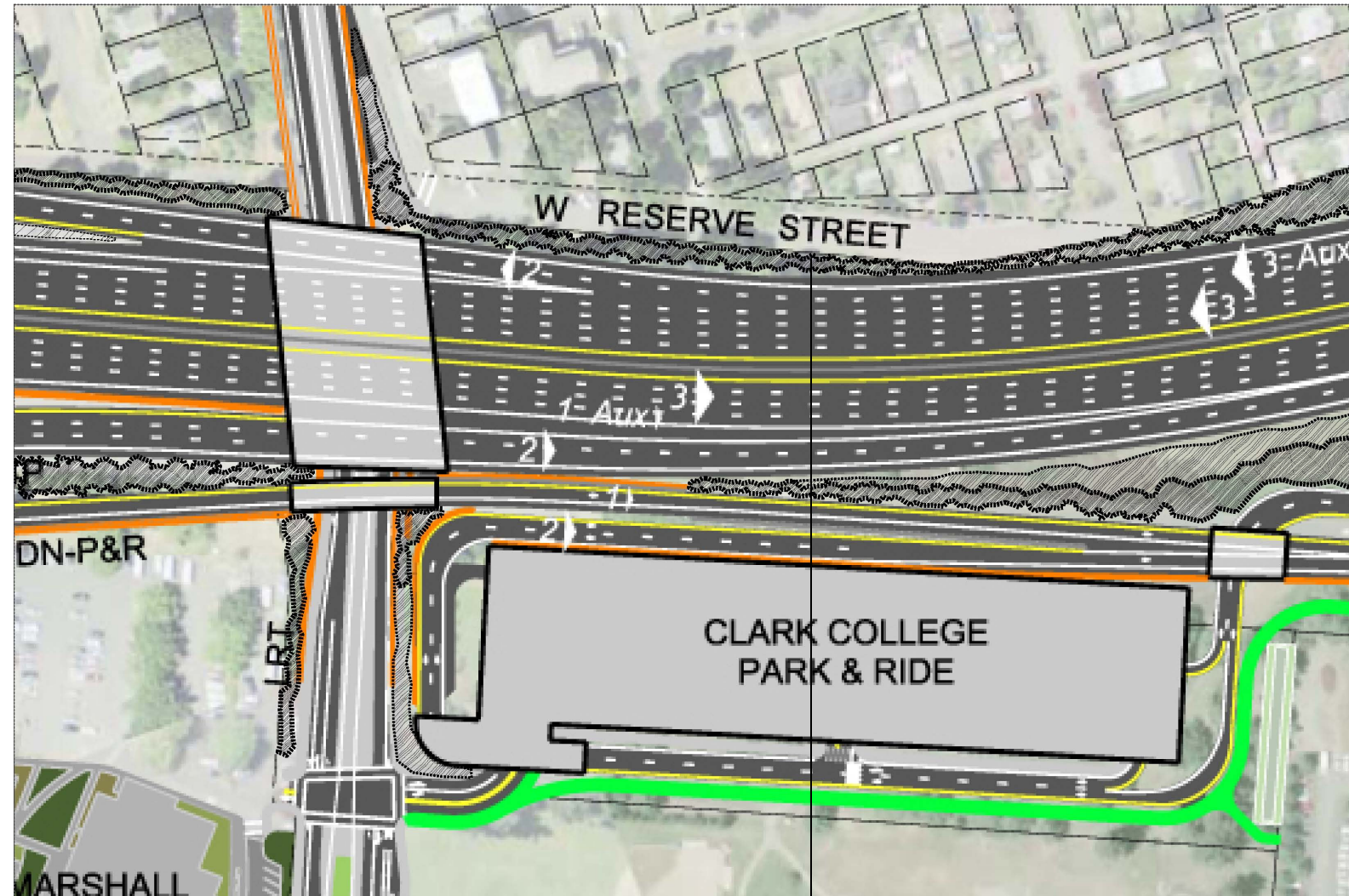
The ramp to the east rises above the roadway revealing the architecturally detailed columns and sculptural shape of the superstructure.

Taller coniferous trees and screening.

Place Specific Contextual Area  
Mill Plain Interchange



## I 5 Columbia River Crossing Architectural Standards



**Dense neighborhood  
screening.**

**CONTEXT:** Residential neighborhoods to the west and Clark College to the east define the context.

**VIEWS 'TOWARD' THE CORRIDOR:** The residential neighborhoods to the west interrupt direct views of the corridor. To the east Clark College and the Marshall Community Center obscure the roadway.

**VIEWS 'FROM' THE CORRIDOR:** The views from the corridor are open to the east & west, yet bounded by the approaching overcrossing.

**Place Specific Contextual Area  
McLoughlin Boulevard Undercrossing**

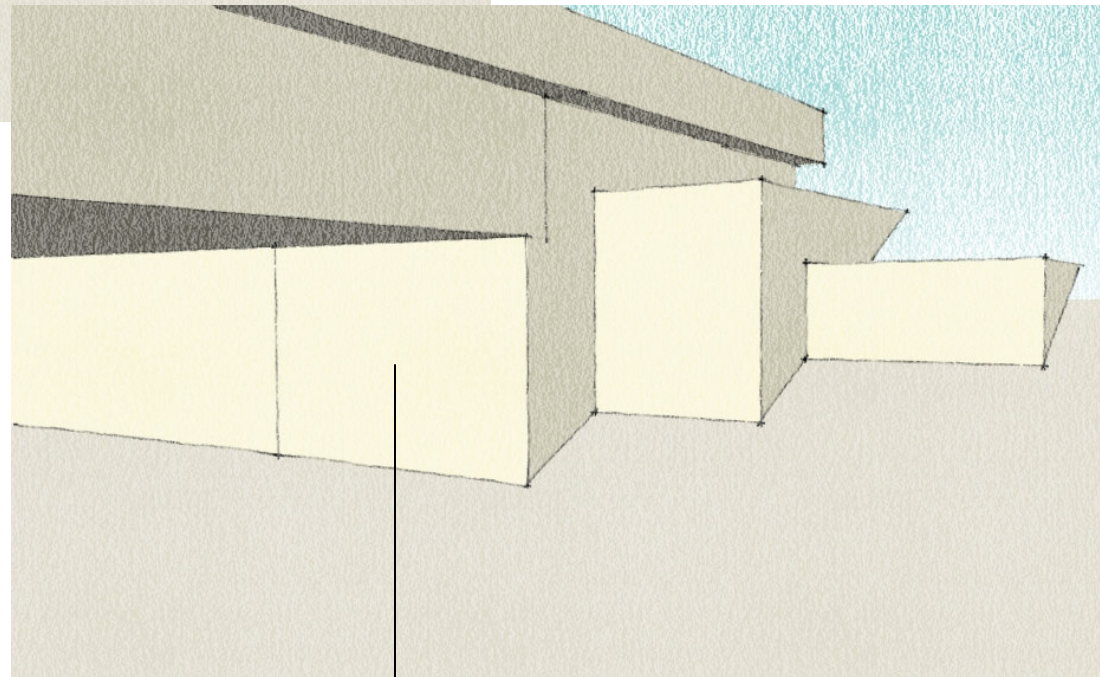
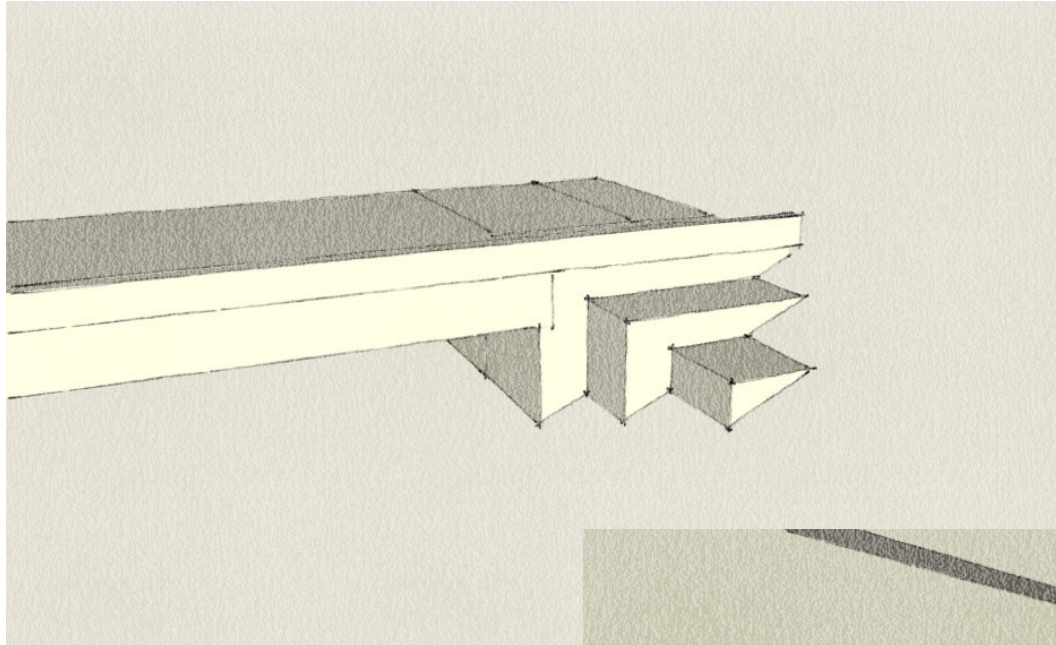




**VIEWS 'TOWARD' THE CORRIDOR: Like the McLoughlin interchange, neighborhoods to the west interrupt views of the corridor. To the east the cemetery provides screening.**



## I 5 Columbia River Crossing Architectural Standards



**Vertical abutments with planters  
correspond to the vertical nature  
of walls in this part of the  
corridor.**

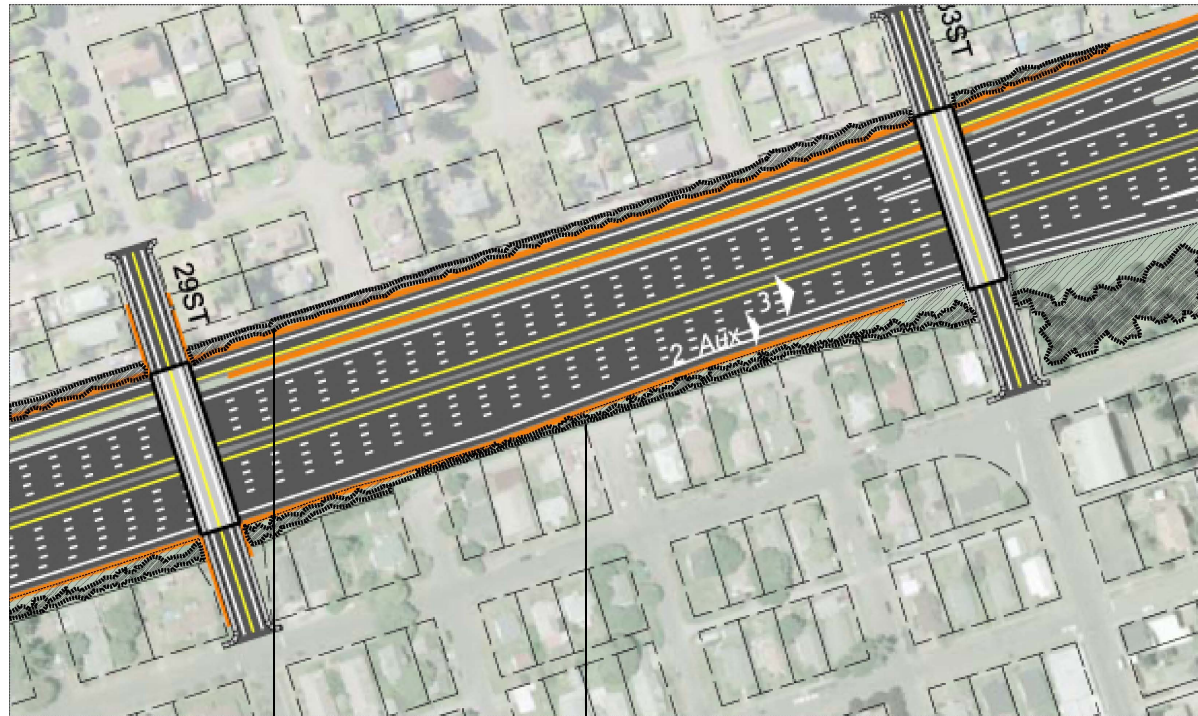


**Landscape planting  
will soften concrete  
surfaces.**

**Major Design Elements  
Fourth Plain Undercrossing**



## I 5 Columbia River Crossing Architectural Standards



**Barrier  
Planter  
Pockets  
on the  
west side.**

**Recessed Alcove  
Planter Pockets  
combined with  
noise walls on  
east and west**

**CONTEXT:** Established residential neighborhoods built between 1900 and 1950 define the context.

**VIEWS 'TOWARD' THE CORRIDOR:** Since residential neighborhoods are on both the west and east, the views of the corridor and screened by noise walls.

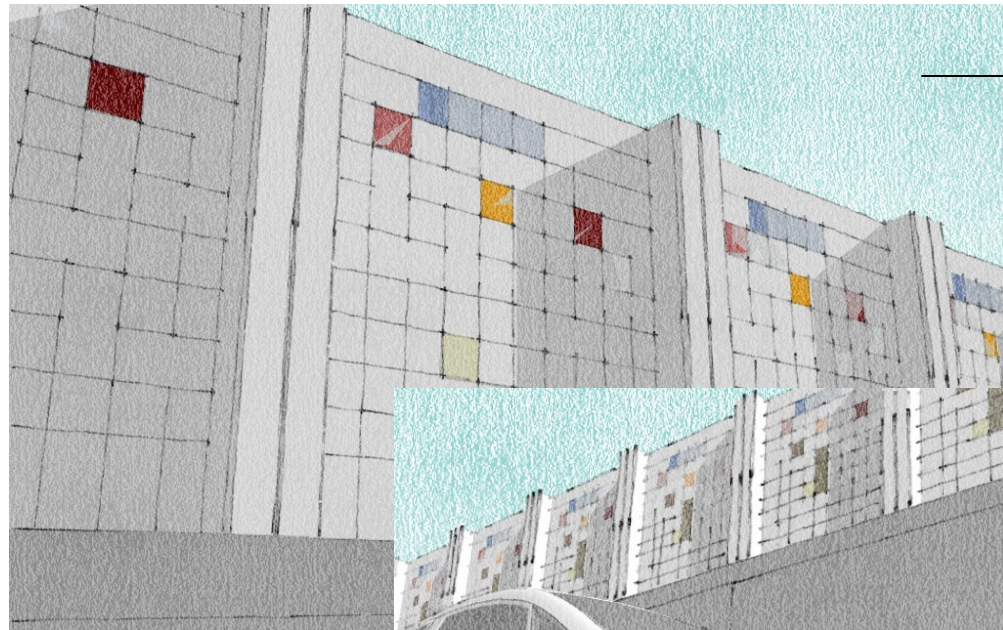
**VIEWS 'FROM' THE CORRIDOR:** The roadway continues to be open yet somewhat enclosed by mid height retaining walls. The experience of enclosure is accentuated by the presence of the noisewalls rising above the retaining walls. The 29th and 33rd Street bridges are encountered as a set in close proximity when viewed from the roadway.



**Place Specific Contextual Area  
29th and 33rd Street Undercrossings**



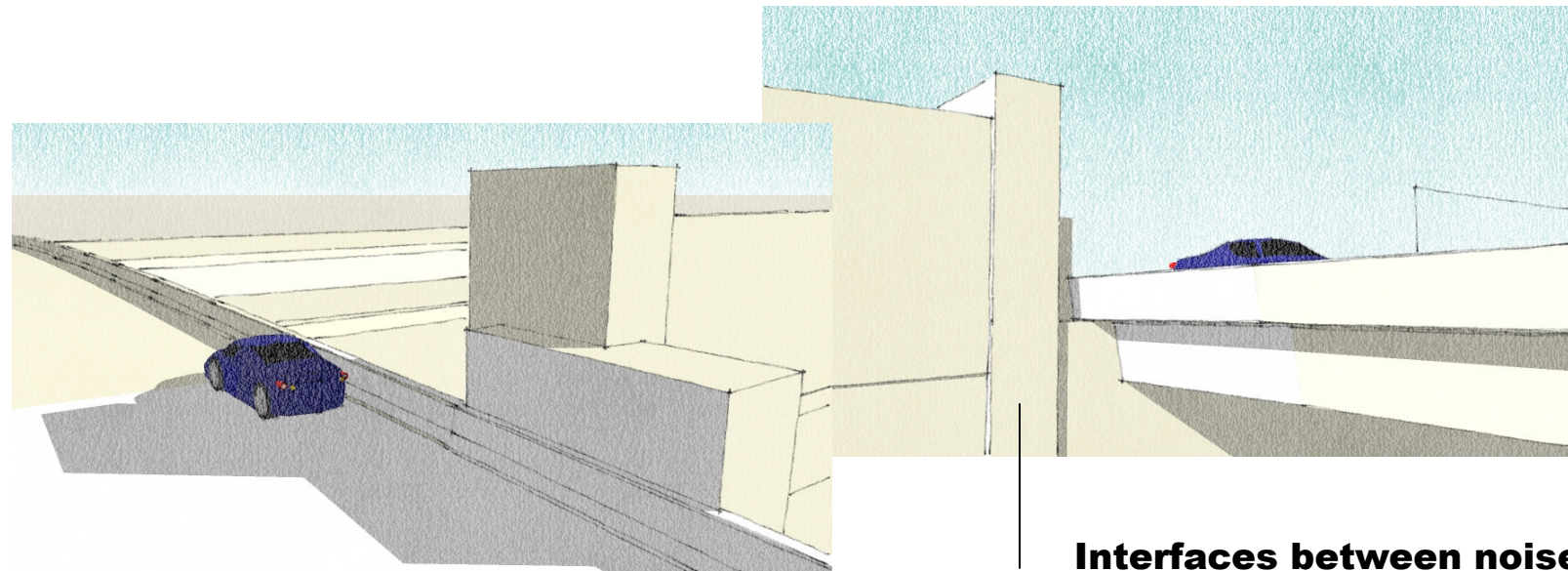
## I 5 Columbia River Crossing Architectural Standards



**The noise walls at the north end of the corridor become less formal. Subtle native American art theme may be incorporated.**



**Large wall surfaces are softened with combinations of recessed alcove and barrier planter pockets.**



**Interfaces between noise walls and bridge structures provide opportunities for neighborhood gateway elements.**

**Major Design Elements  
29th and 33rd Street Undercrossings**



## I 5 Columbia River Crossing Architectural Standards



**Dense neighborhood screening.**

**Tunnel with portal north and south. Landscape plantings over the length of the tunnel.**

**CONTEXT:** The project end at the north includes the SR 500 Interchange. Residential neighborhoods are to the southeast and southwest. Leverich Park is to the northeast. The northwest is the site of Discovery Middle School, a richly detailed example of postmodern architecture.

**VIEWS 'FROM' THE CORRIDOR:** The grade rises to the north, and is a continuation of those features to the south. The long existing SR 500 ramp bridge provides a thin silhouette against the horizon as the grade immediately falls to the north.

**VIEWS 'TOWARD' THE CORRIDOR:** Plant screening and noise walls obscure the corridor from the neighborhoods. The park is sheltered and below the corridor. The school is sited well above the roadway and is also screened by large trees.



**Place Specific Contextual Area  
SR 500 Interchange**



# I 5 Columbia River Crossing Architectural Standards

Bridge Superstructure Elements

	State	Locations
Cast-in-Place Post-Tensioned Concrete Box Girder	OR	MD (transit)
	WA	14W-5S1, 14W-5S2, 5N-CST, 14W-5S/4ST, 14W-4ST, MP (SR14 loop ramps and Mill Plain)
Precast Tub Girder	OR	MD-5N, MD-HI, 5S-MD, HI-MD, HI-5S, 5N-HI, JD-5N(TI), JD-5N, 5S (TI), 5N (TI)
	WA	WA approaches, 14W-CST/5S, CST-5S, EG, MC, CDN-4P2, 29th, 33rd,
Steel Tub Girder	OR	MD-HI and HI-MD (both over NPH)
	WA	5N-14E (SR14), CDN-4P1, 4P
Steel I Girder	OR	MD (I-5)
	WA	None
Precast I or Bulb Tee Girder	OR	MD (Marine Way), MD (Union Court)
	WA	CDN-4P3

Bridge Substructure Elements

Abutments built into Retaining Walls	WA	Community Connector, Evergreen Blvd., 29th St. 33rd St.)
Abutments with Planter Boxes	WA	Fourth Plain, 33rd St (NE corner), CST-5S, 14W-S52
Vertical Wall Abutments	BOTH	Marine Drive, Hayden Island (except TI Drive), OR and WA highway and transit touchdowns 5N-14E (east end, 14W-5S1, 14W-5S/4ST, 14W-4ST, 5N-CST, Mill Plain, McLoughlin, Fourth Plain
Interior pier in median of I-5	BOTH	Marine Drive, Evergreen Blvd., Fourth Plain, 29th St., 33rd St.
Hammer head piers	BOTH	5N-14E (and possibly others for narrow ramps with single column piers--need to discuss) CD ramps over NPH and connecting ramps to the CDs, 5N and 5S
Multi-column bents	BOTH	Approaches
Integral raised crossbeam with multiple square columns		Typical at most bridges with prestressed trapezoidal and I girder shapes.
Semi-raised crossbeam with multiple square columns		Used as required on prominent bridge undercrossings or where vertical clearance controls.

Structure Design Matrix  
Types by location

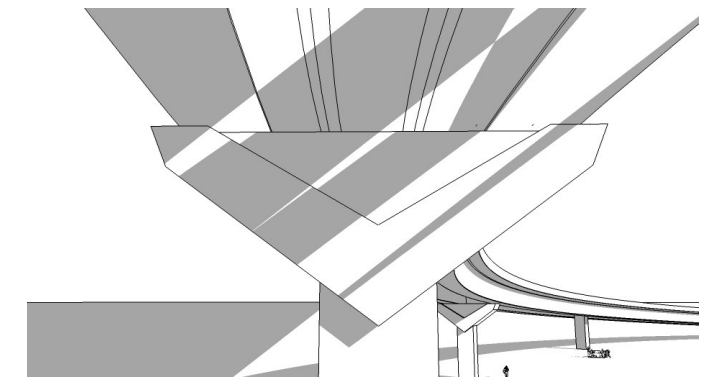
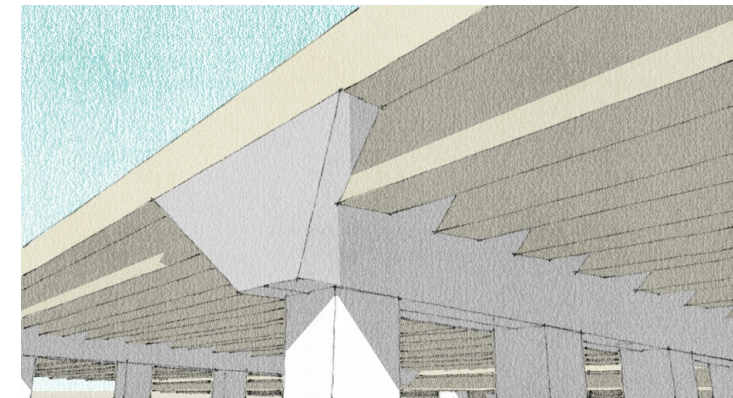
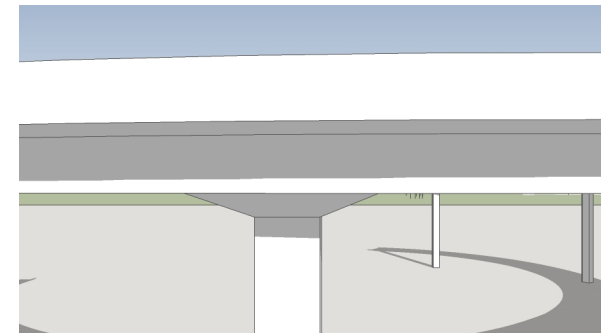


### Bridge Details

**The following geometry details address each individual structure by type. Details will be developed during future phases of the standards.**

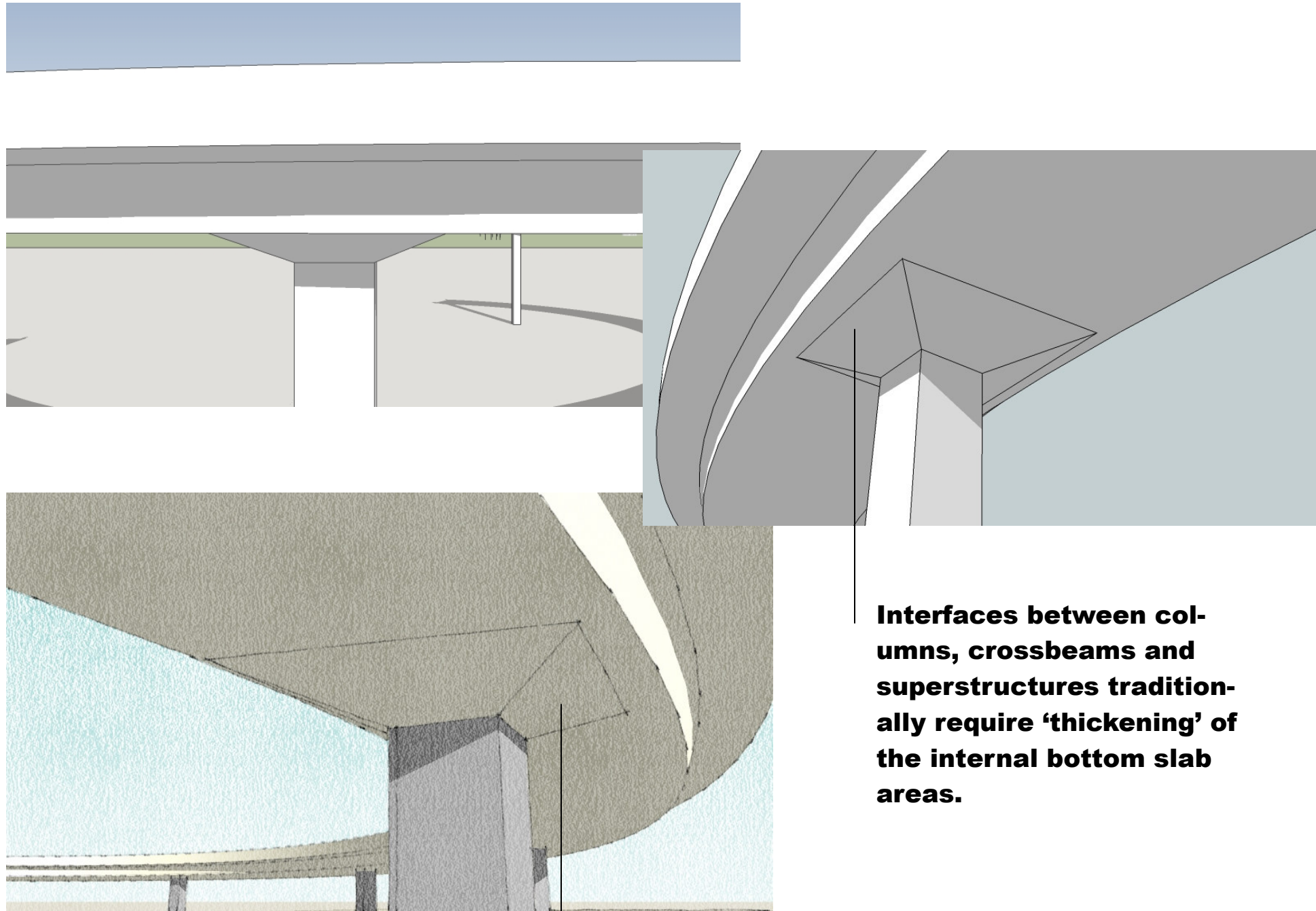
**Bridge superstructure types fall into the following categories.**

- **Cast in place concrete box girders**
- **Precast concrete trapezoidal girders**
- **Steel trapezoidal box girders.**



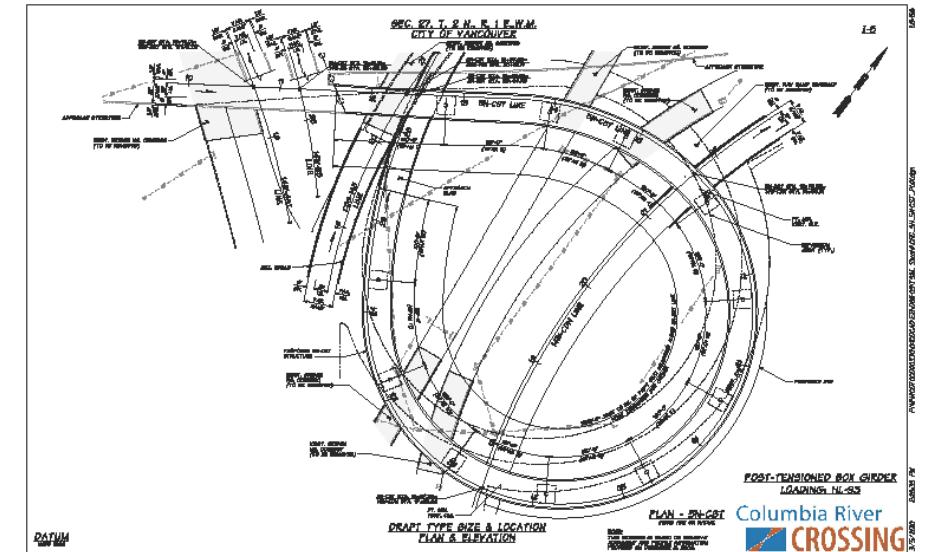


## I 5 Columbia River Crossing Architectural Standards



**Interfaces between columns, crossbeams and superstructures traditionally require ‘thickening’ of the internal bottom slab areas.**

**A column capital provides angular geometric continuity with other corridor structures.**



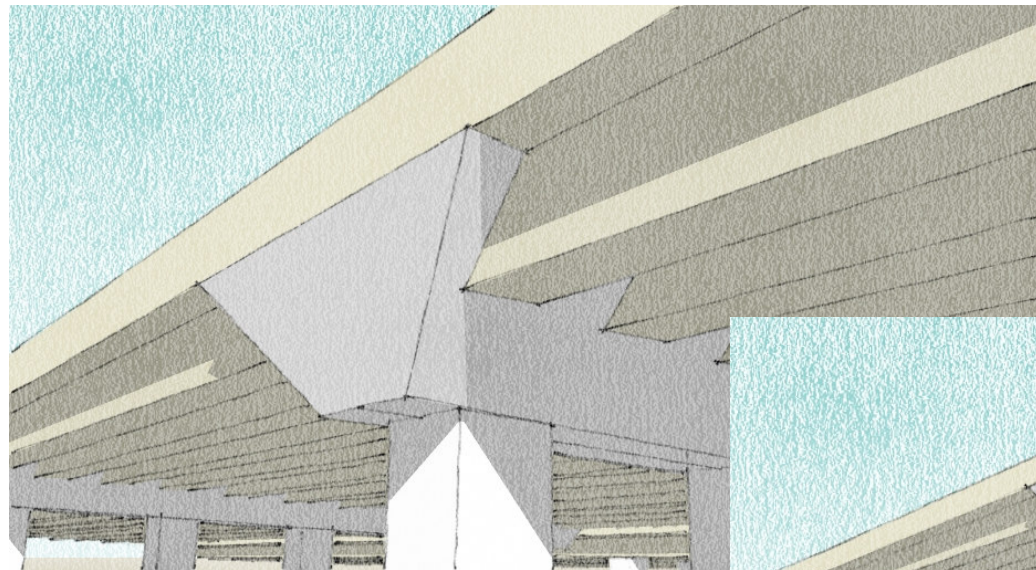
**Cast in place Post Tensioned Concrete Superstructure.**

**Integral Raised Crossbeams: Prismatic Square Columns Substructure**

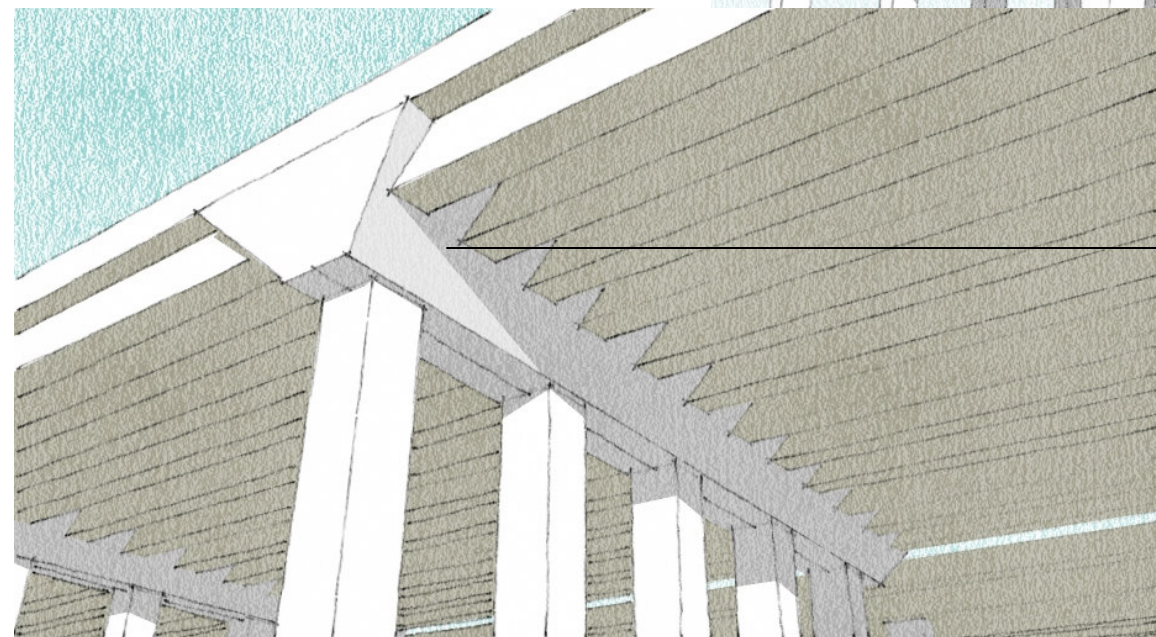
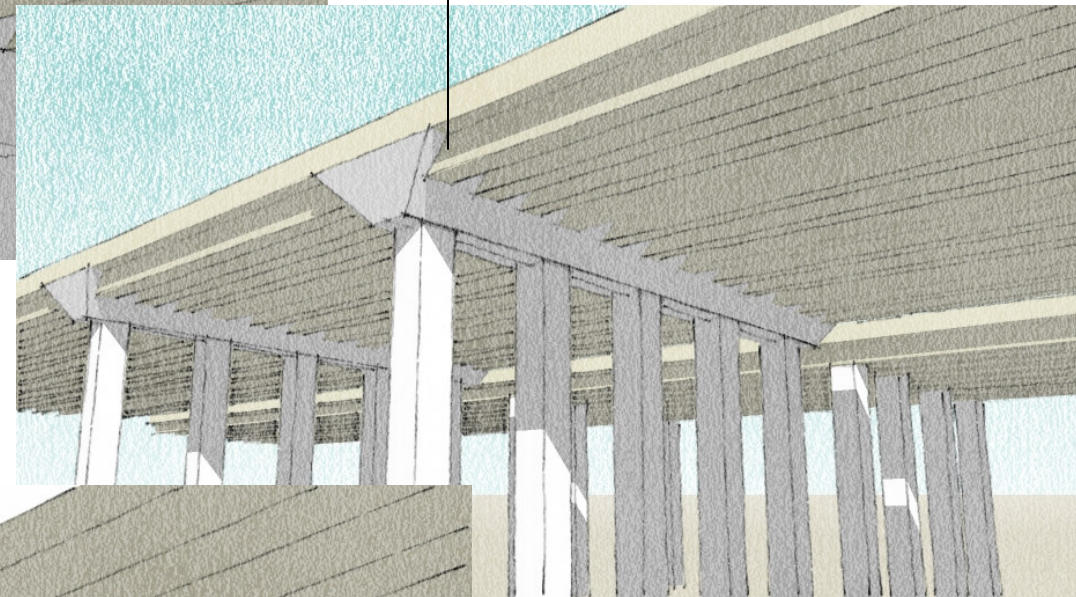
**Example: SR 14 Interchange Loop Ramps**



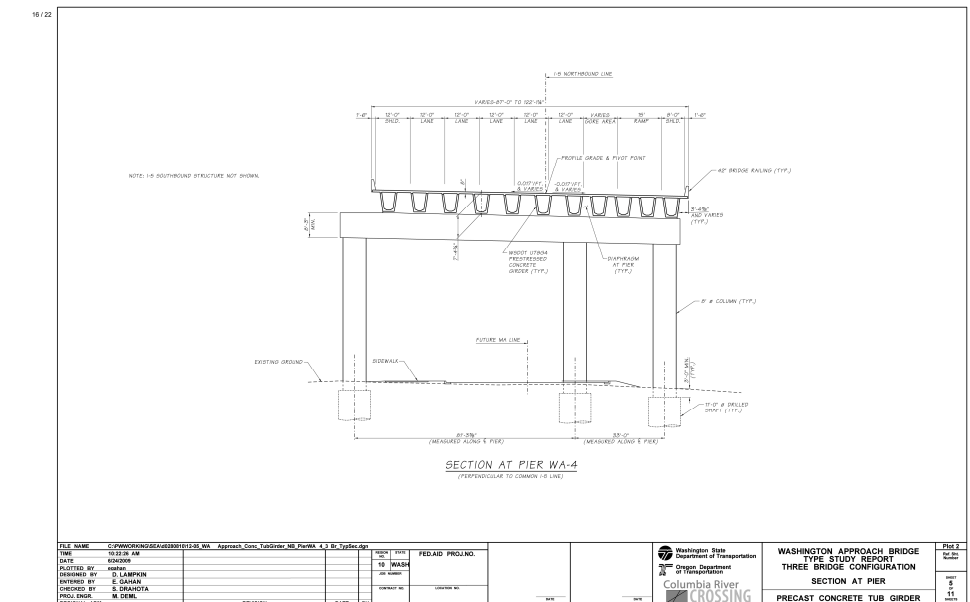
## I 5 Columbia River Crossing Architectural Standards



## Sculptural opportunities for trapezoidal girders at interface between columns and super-structure



**Lowered crossbeams facilitate construction and repeat the angular nature of corridor bridges.**



## Precast Pre-stressed Concrete Trapezoidal Girder Superstructure

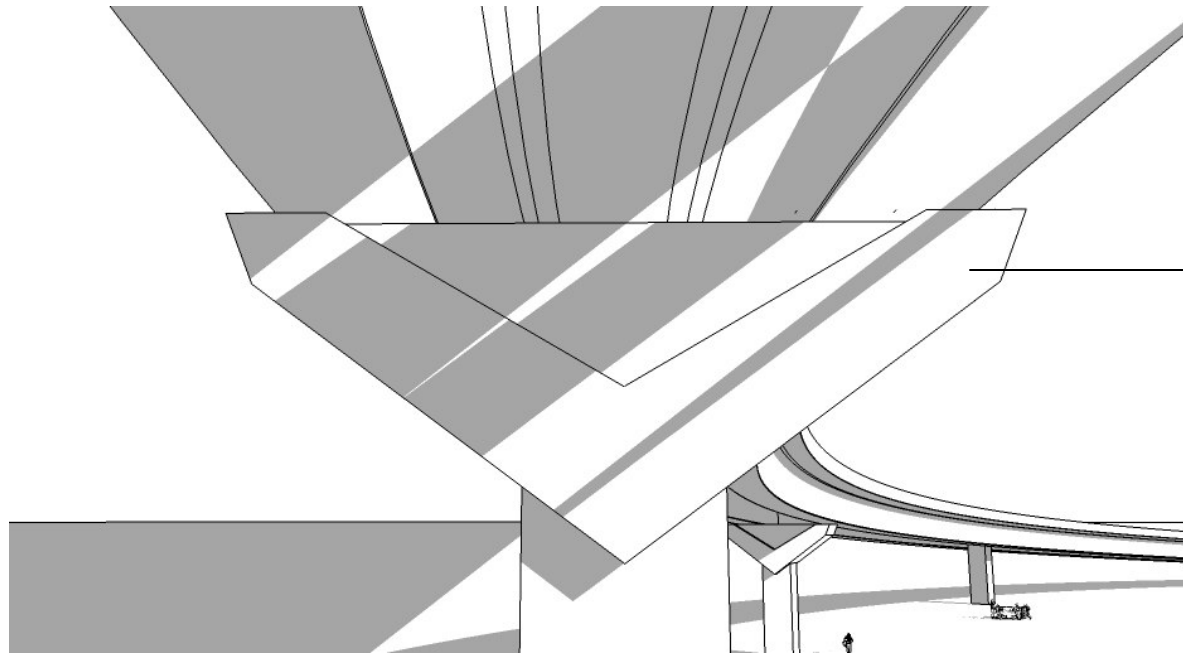
### Semi-Raised Crossbeams with Prismatic Square Columns

### Example: Washington and Oregon approach bridges.

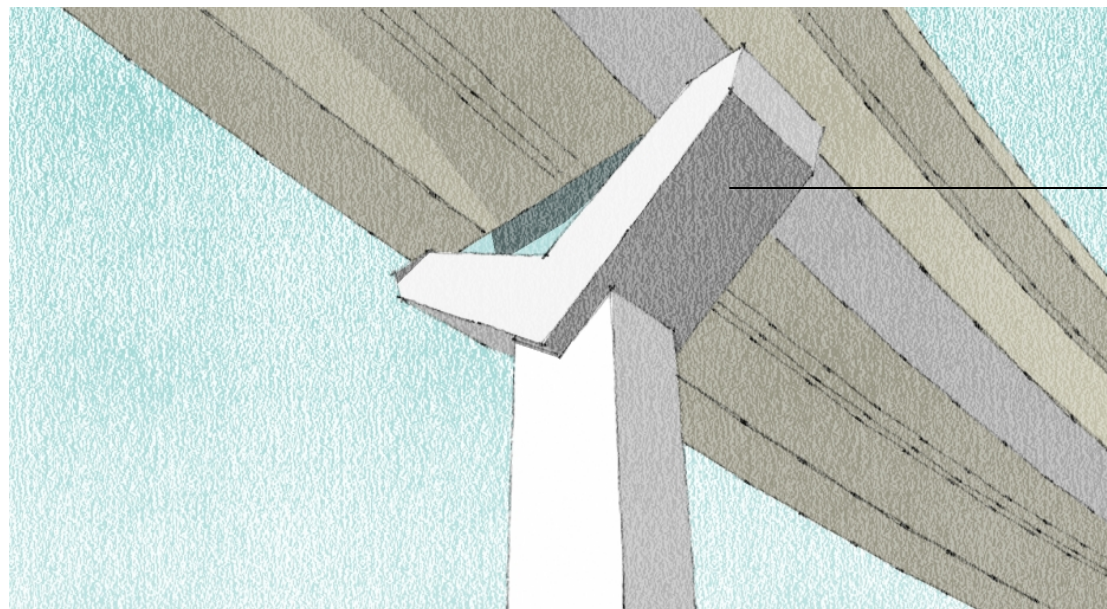
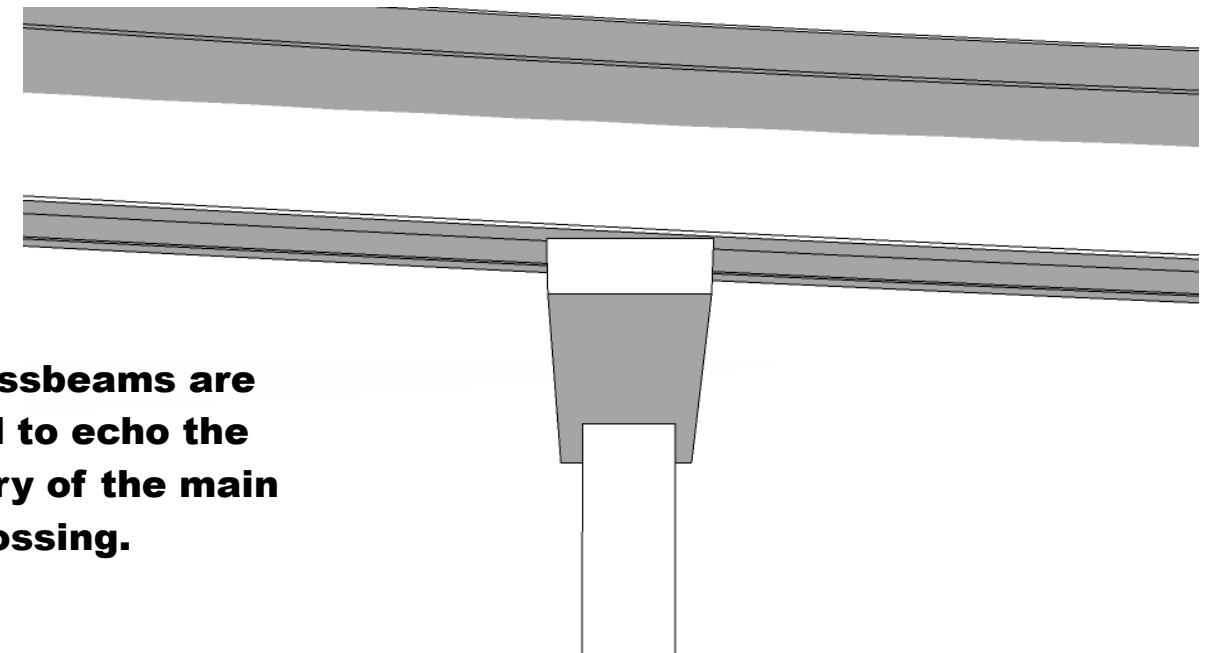


## I 5 Columbia River Crossing Architectural Standards

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**The crossbeams are detailed to echo the geometry of the main river crossing.**



**Square columns and hammer head crossbeams 'float' beneath the continuous steel superstructure.**

**There is a perceivable distance between the substructure and superstructure connected only by small bridge bearings.**

**Steel trapezoidal box girder bridges.**

**This bridge type requires a 'dropped crossbeam'. The crossbeam is traditionally configured as a 'hammer head.'**

**Example: Ramps at North Portland Harbor**

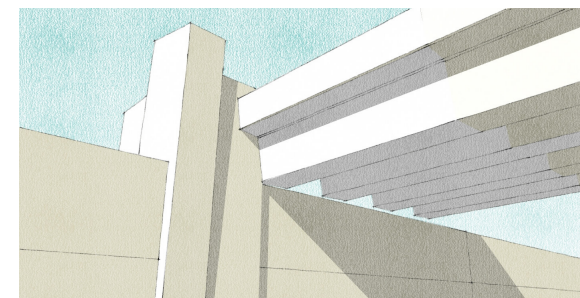
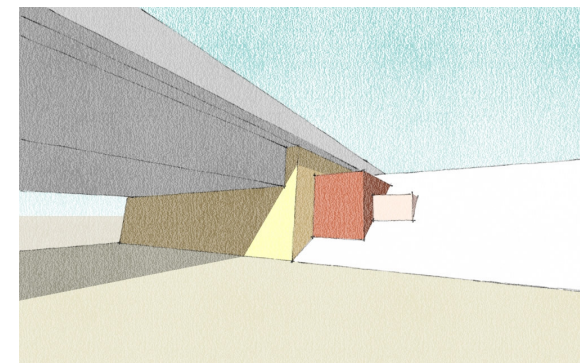
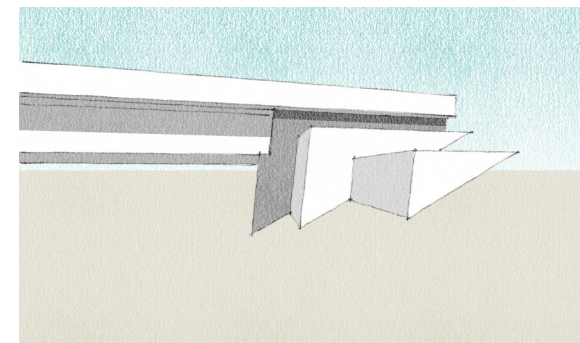
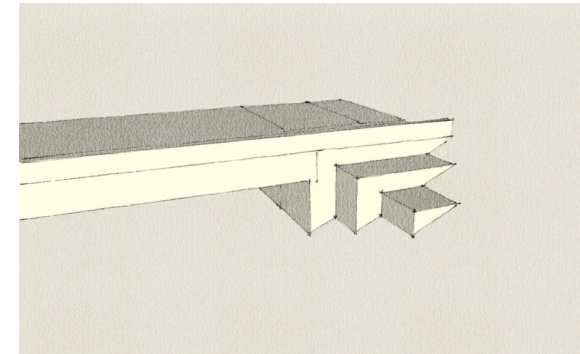


### Bridge Abutment and Wall Details

The following geometry details address each individual structure by type. Details will be developed during future phases of the standards.

Bridge abutment and wall types fall into the following categories.

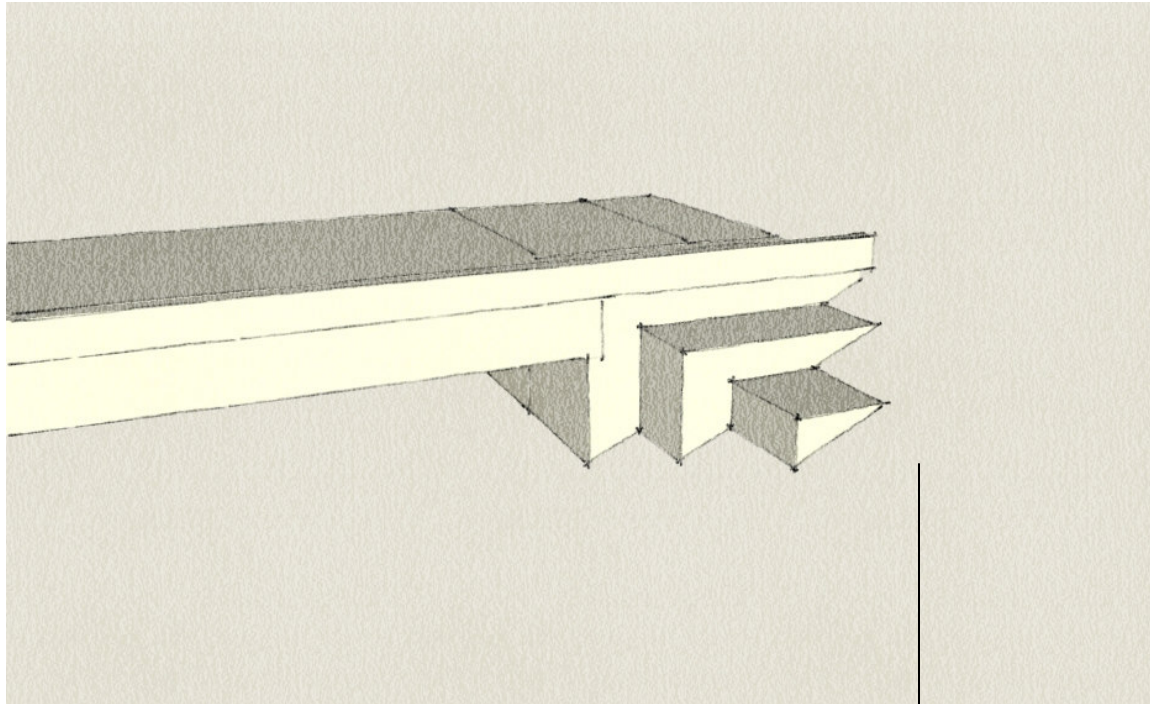
- Vertical abutment walls
- Battered abutment walls
- Interface between large walls and bridge abutments



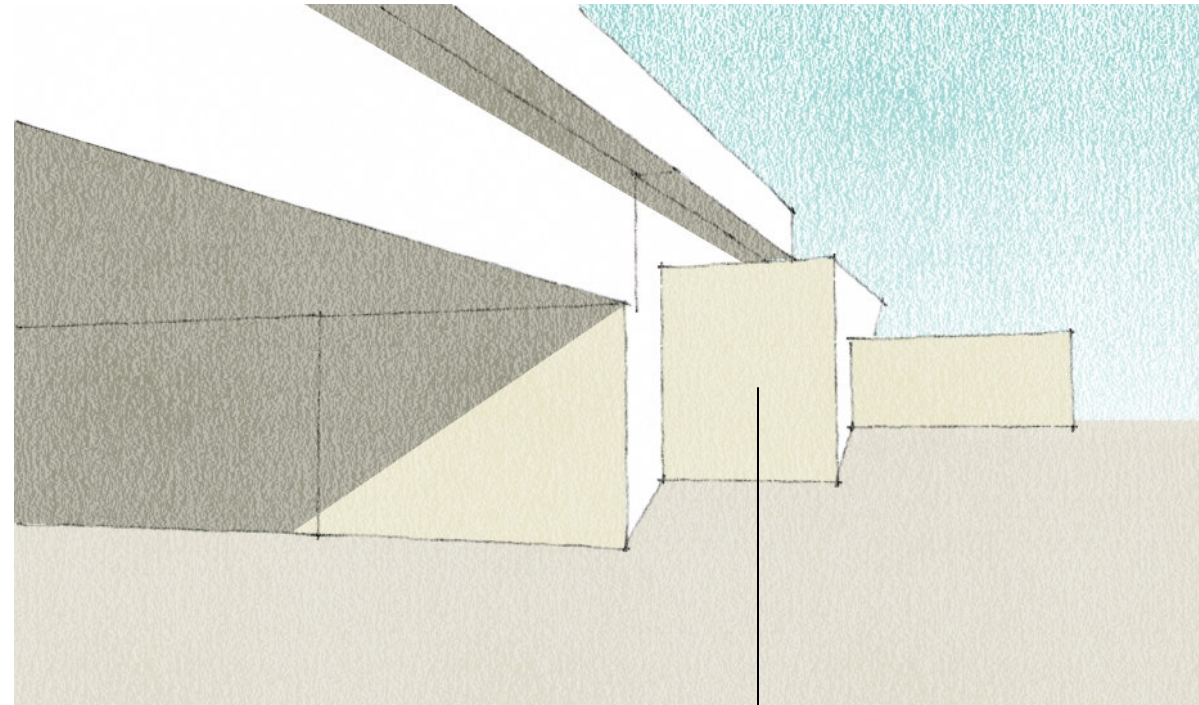


## I 5 Columbia River Crossing Architectural Standards

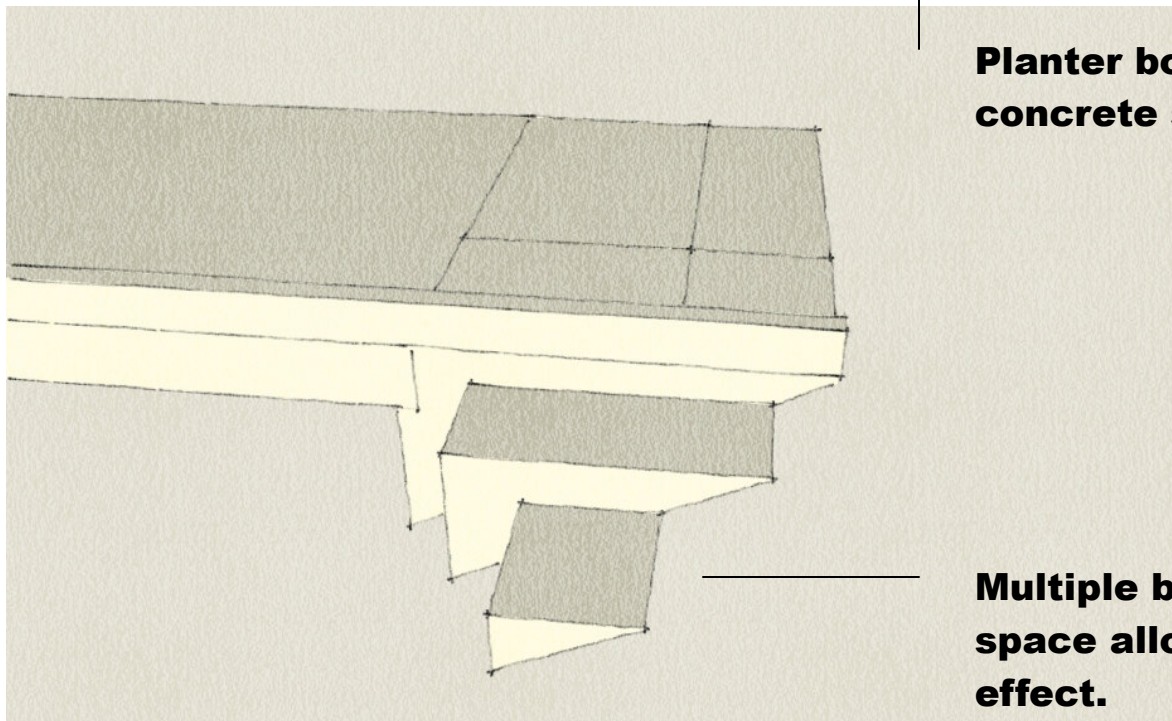
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**Planter boxes provide softening of concrete surfaces with landscape.**



**Vertical walls are used in areas where the majority of surfaces are vertical, such as the areas near downtown Vancouver.**



**Multiple boxes are provided where space allows and create a layered effect.**

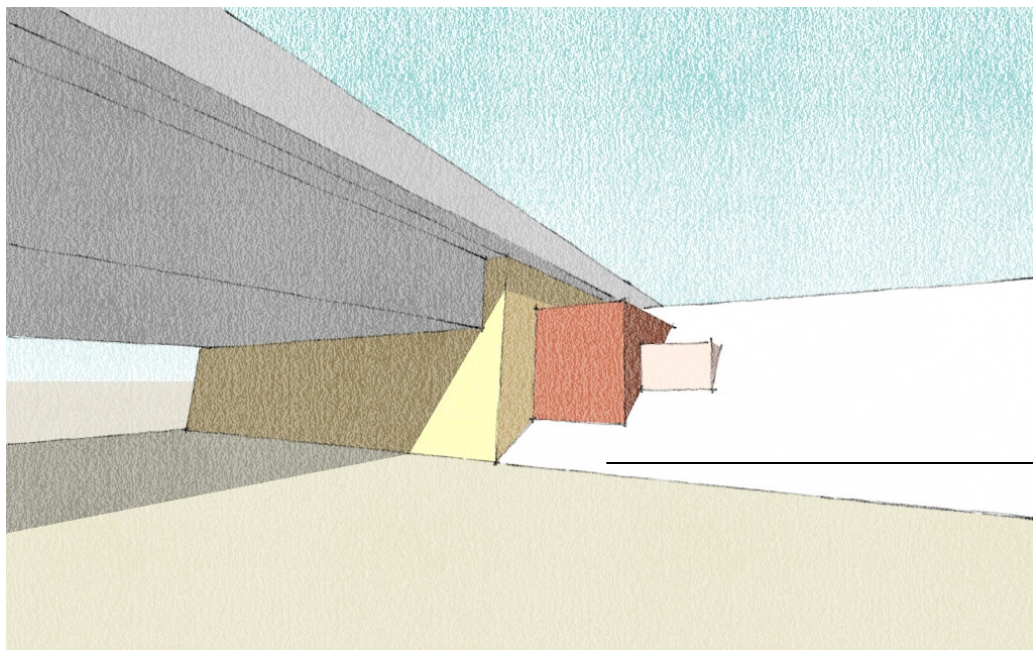
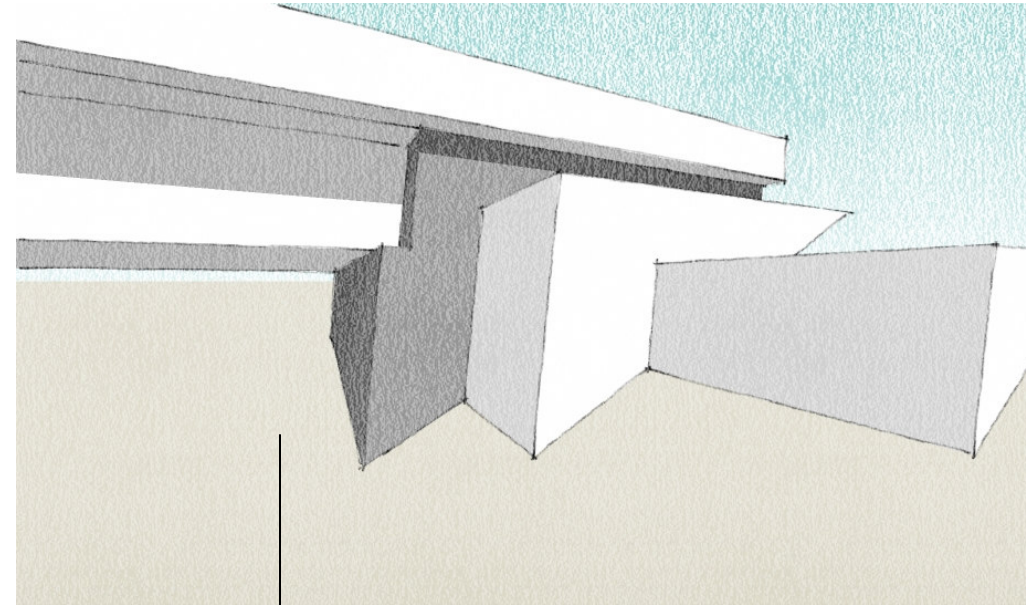
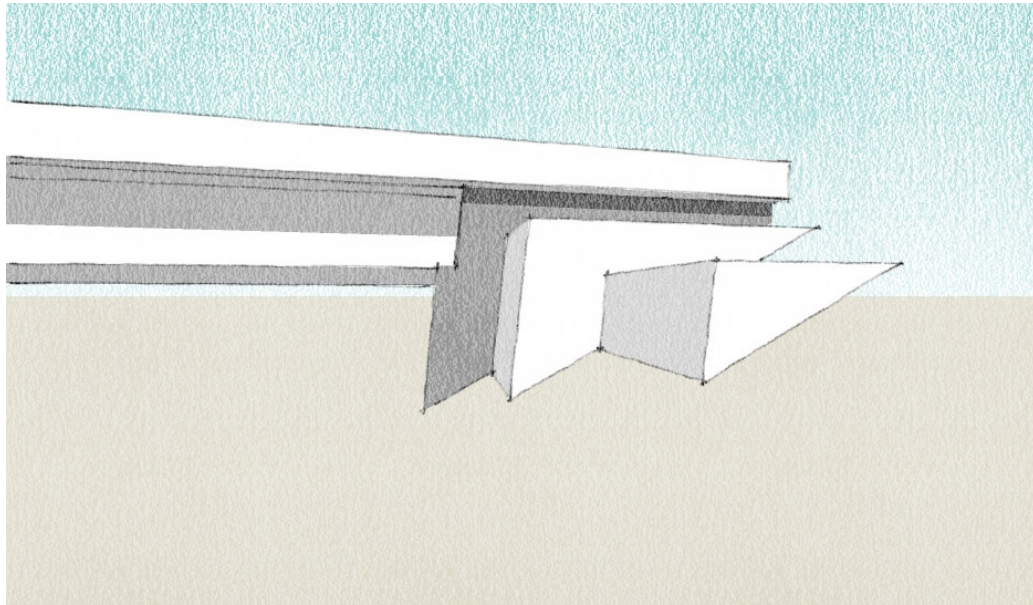
### **Typical Abutment Shapes**

**Example locations:  
29th and 33rd Street Undercrossings  
East side of I5.**

**Showing Classic Planter Boxes**



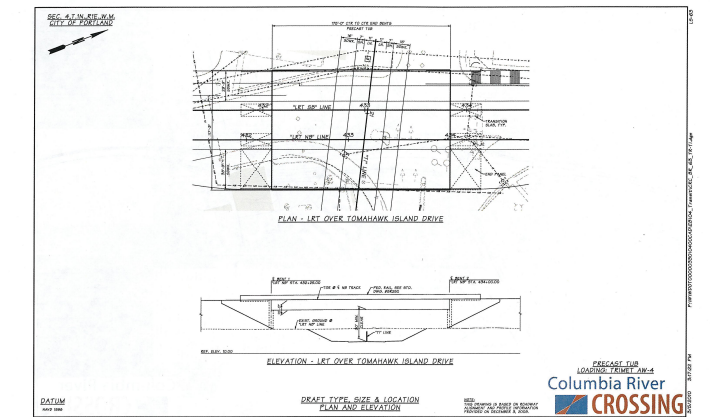
## I 5 Columbia River Crossing Architectural Standards



**The angular orientation is appropriate in areas such as near the transit station, where modern transportation facilities traditionally take on such design features.**

**Battered walls are structurally efficient since they accommodate heavy lateral earth forces at the bottom of the wall.**

**They are expressive of structural 'honesty'.**



**Typical Abutment Shapes**

**Example location: Tomahawk Island**

**Showing Planter Boxes with battered walls.**

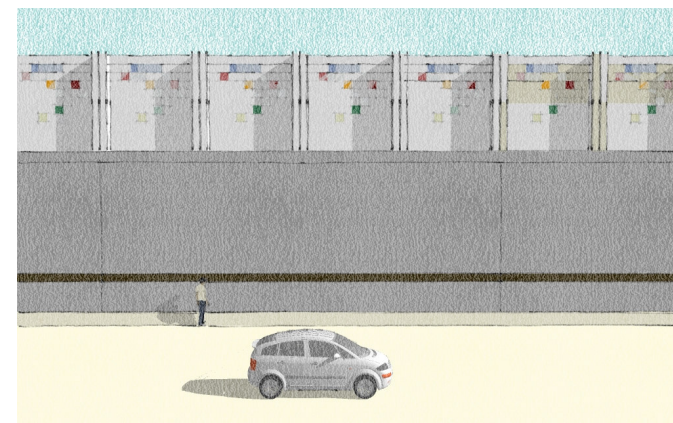
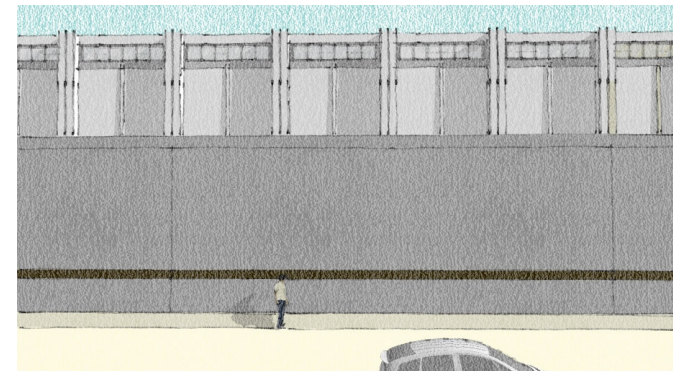
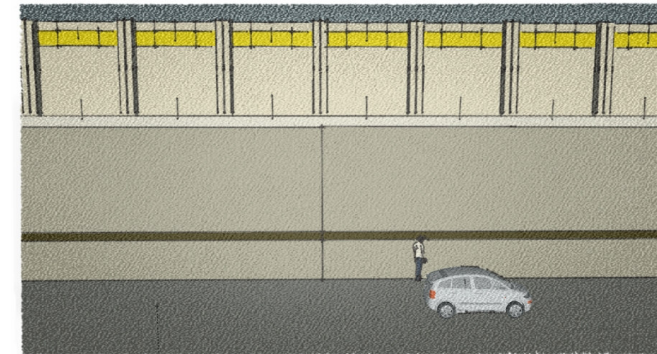


### Retaining Wall and Noise Wall Details

**The following geometry details address each individual retaining wall and noise wall by type. Details will be developed during future phases of the standards.**

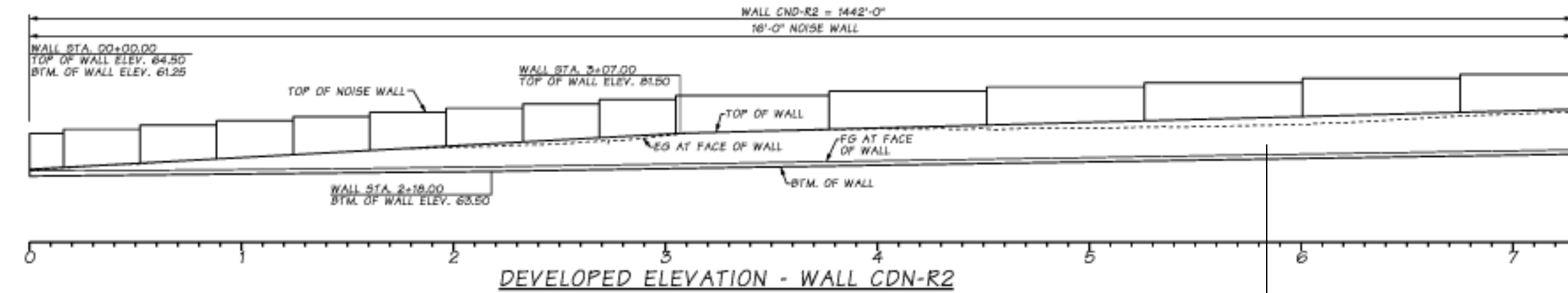
**Retaining Wall and Noise Wall types fall into the following categories.**

- **Formal designs**
- **Artistic designs**





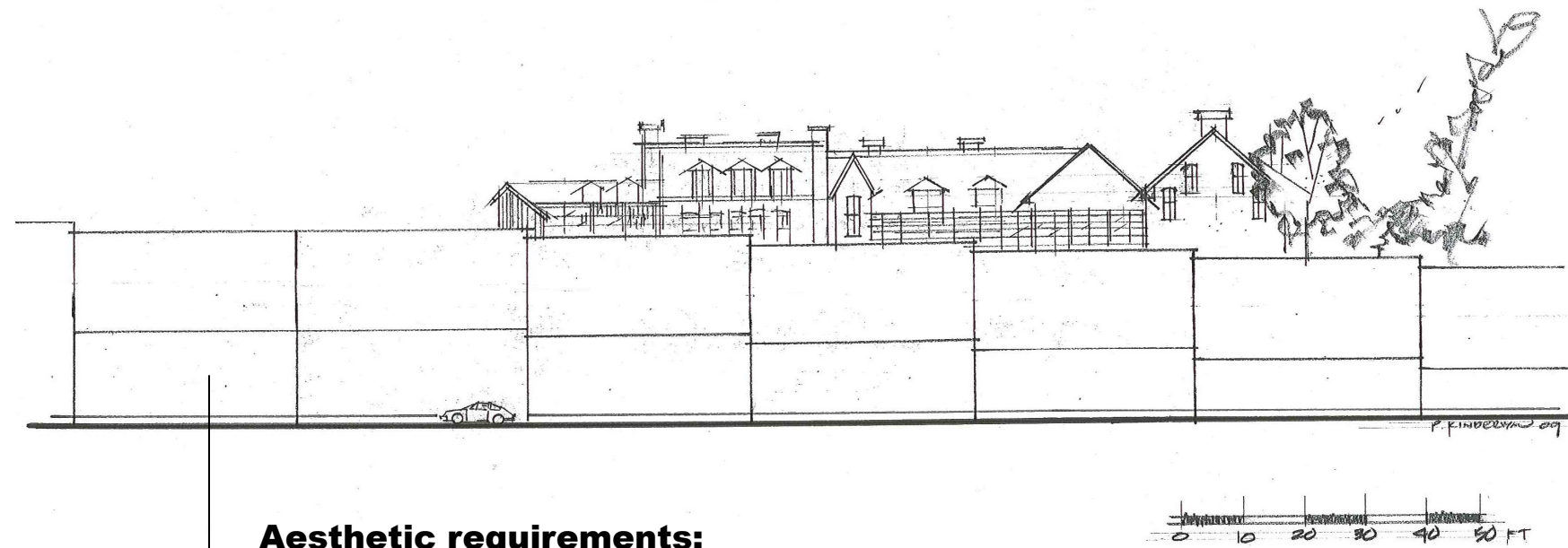
## I 5 Columbia River Crossing Architectural Standards



### Engineering requirements:

The base of the wall retains the earth while the top portion mitigates noise.

The top of the wall elevation generally follows the existing ground line.



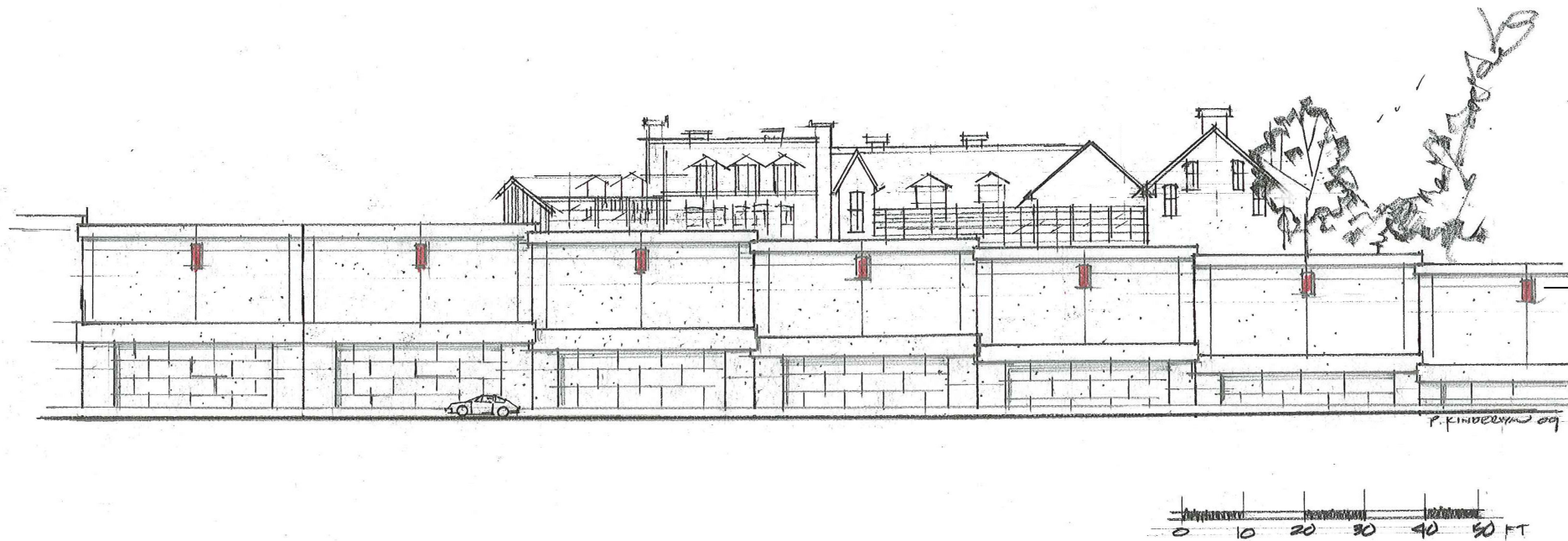
### Retaining Wall with Noise Walls Designs:

#### Geometric Control

PRE- DRAFT 2 6 2010



## I 5 Columbia River Crossing Architectural Standards



**These designs are shown for reference only,. They were studies during early phases of the project.**

**The concepts demonstrate the formal nature of walls in the downtown Vancouver area.**



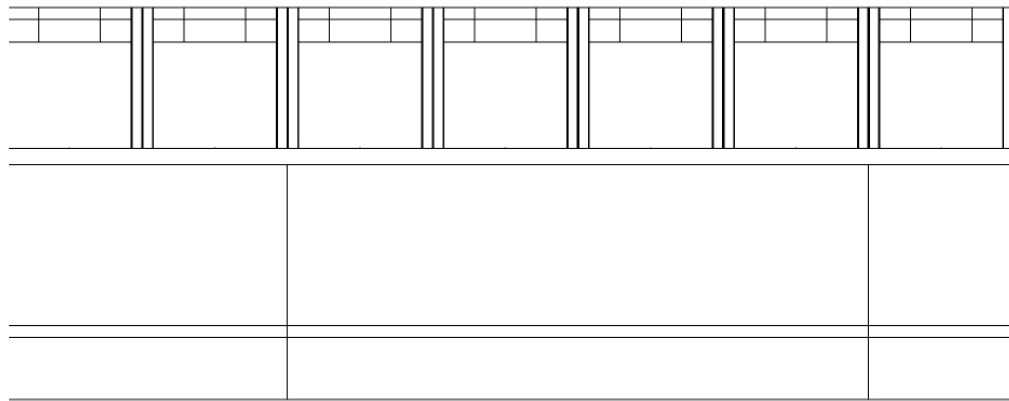
**Landscape plantings will be used to reduce the scale of retaining walls and to soften surfaces.**

**Preliminary Retaining Wall Designs:**

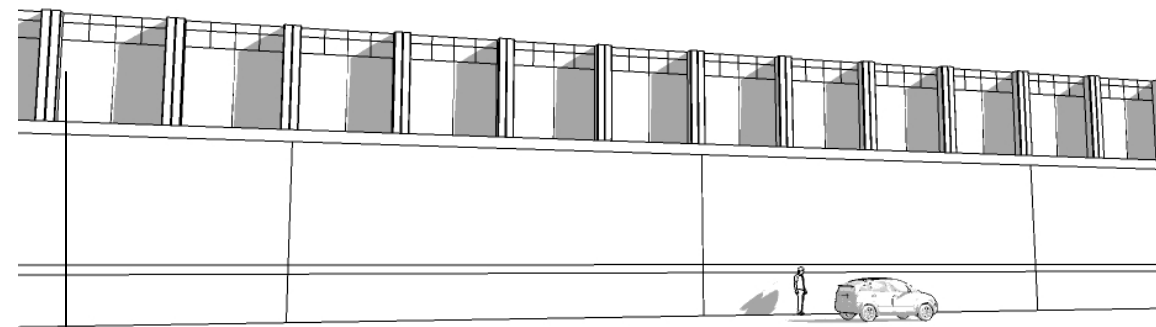
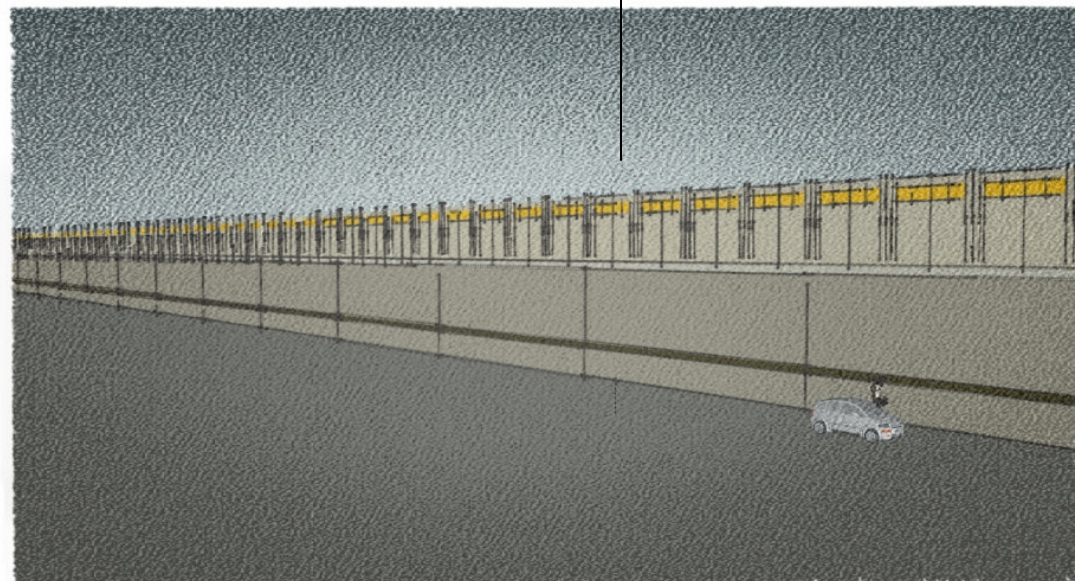
**Designs were used to validate right of way.**



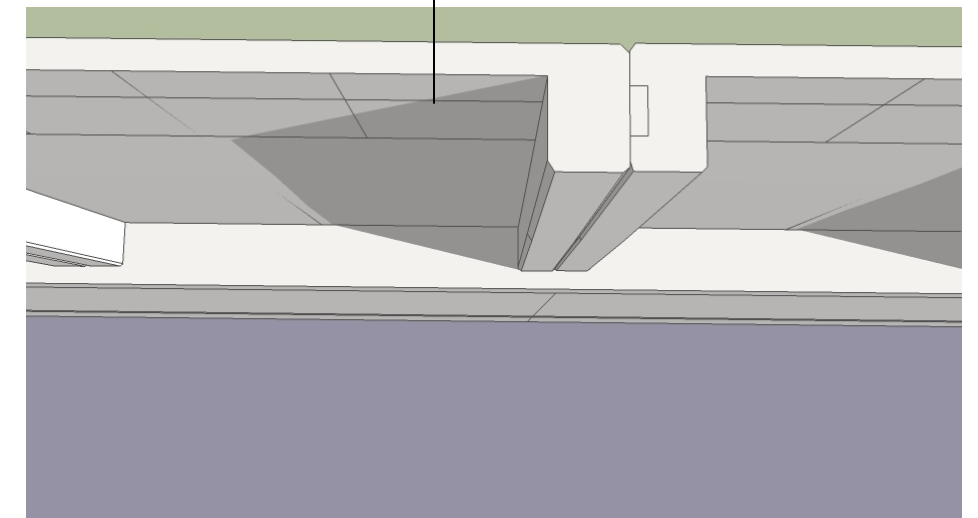
## I 5 Columbia River Crossing Architectural Standards



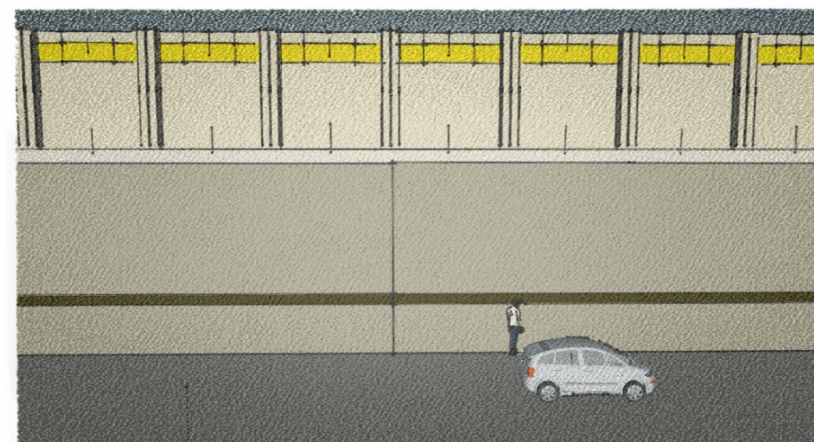
**Formal geometric designs.**



**Standard retaining wall panels reversed with pilasters on the roadway side.**



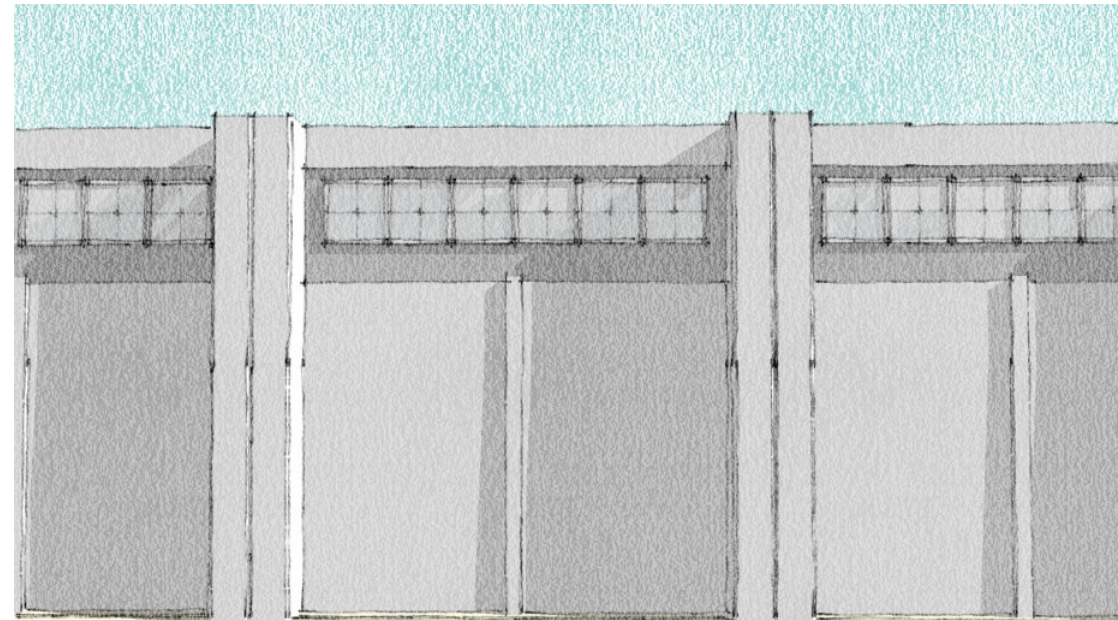
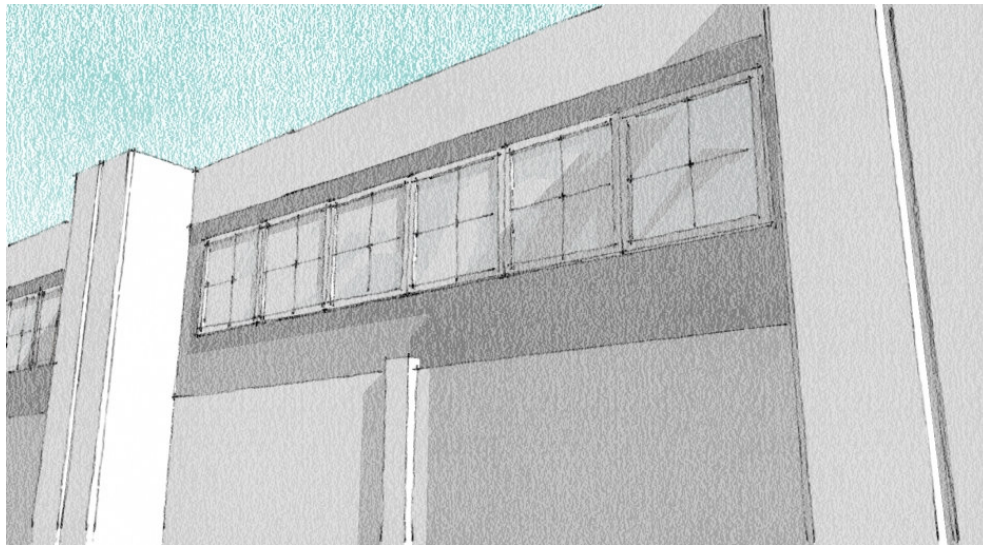
**The pilasters create strong vertical elements and shadow lines.**



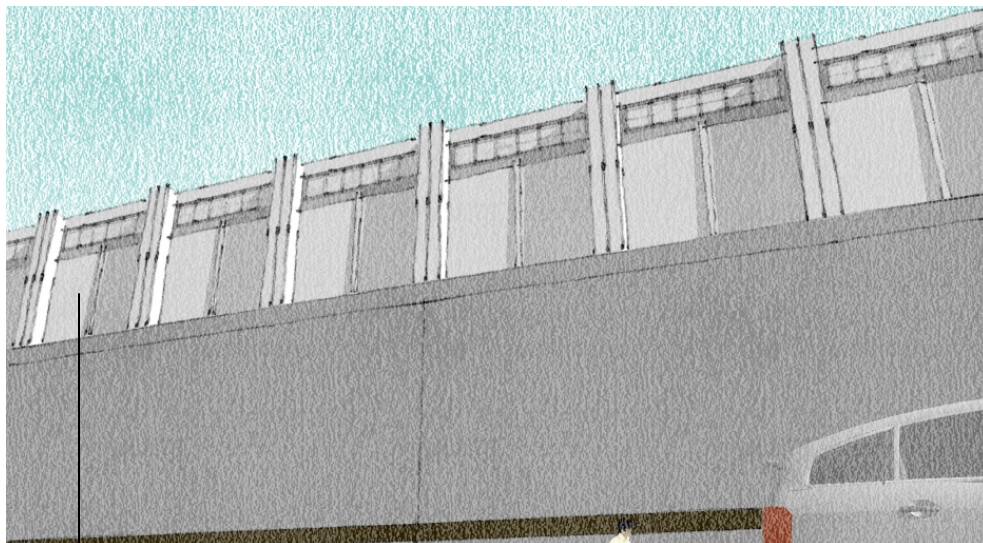
**Noise Walls on Retaining Walls  
Areas near downtown  
Vancouver and Fort Vancouver.**



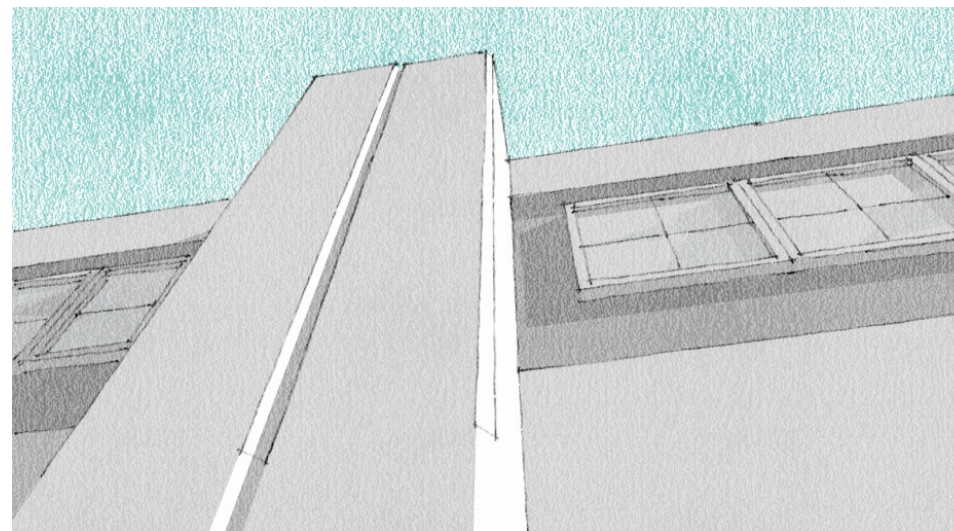
## I 5 Columbia River Crossing Architectural Standards



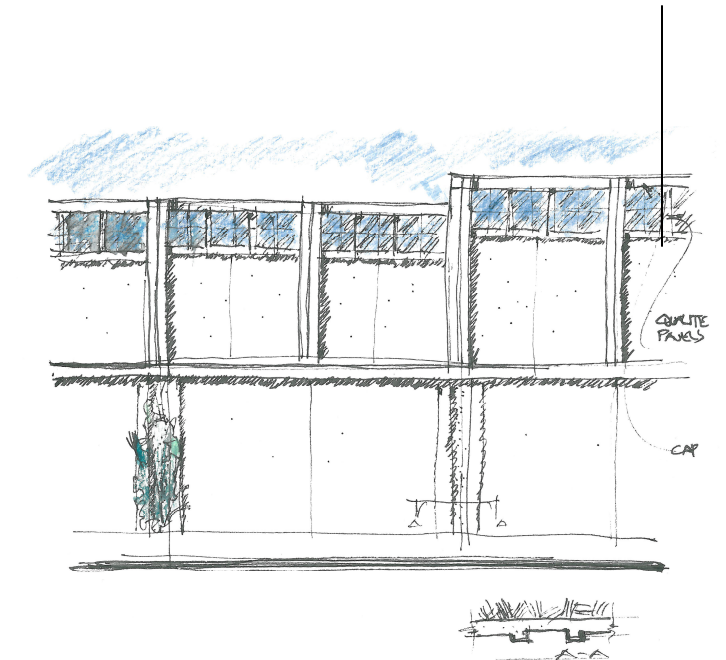
Light passes through panels and is used in limited areas on the wall tops only.



Views showing noise walls on top of retaining walls.



Quillite acrylic sound barrier set in concrete wall panels.



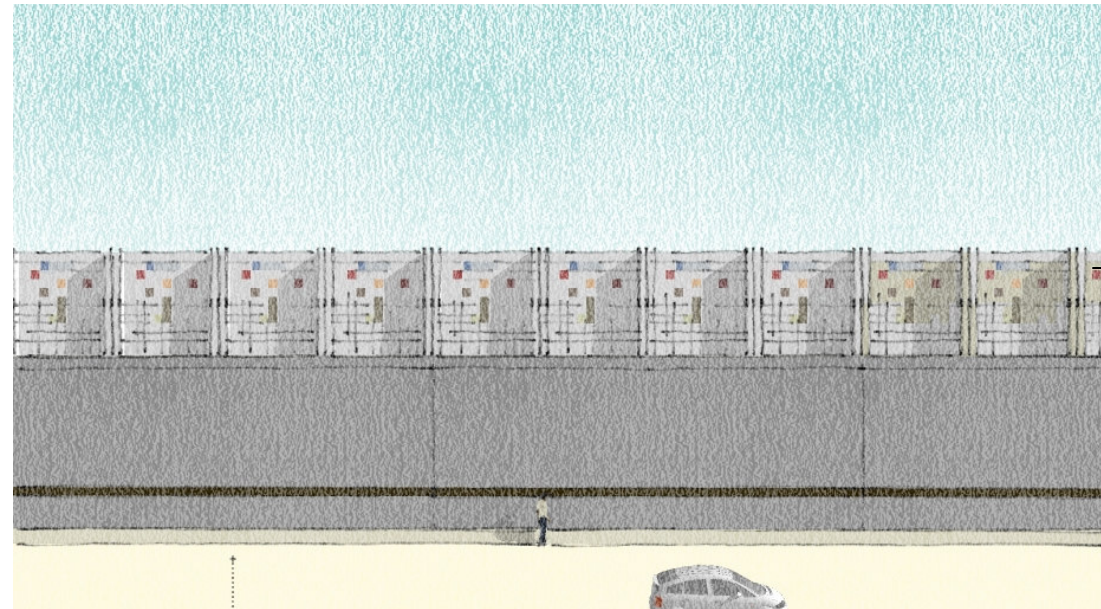
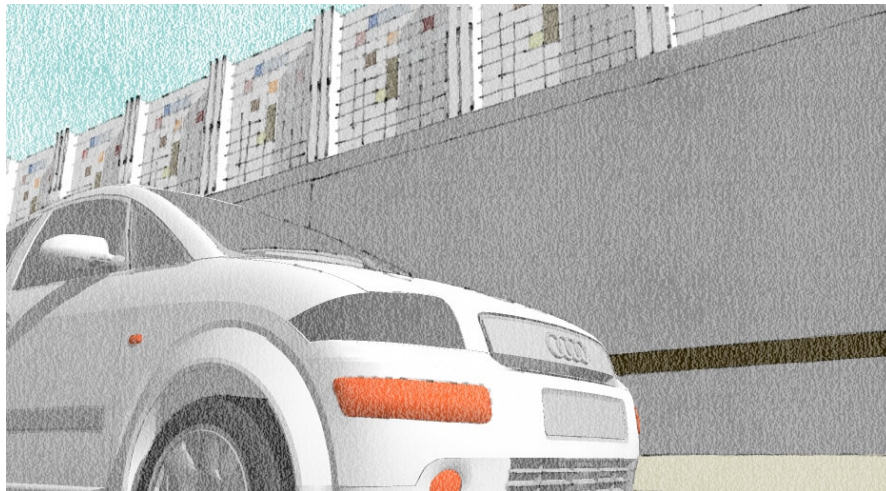
Quillite is an approved new product in Washington state.



Noise Walls on Retaining Walls

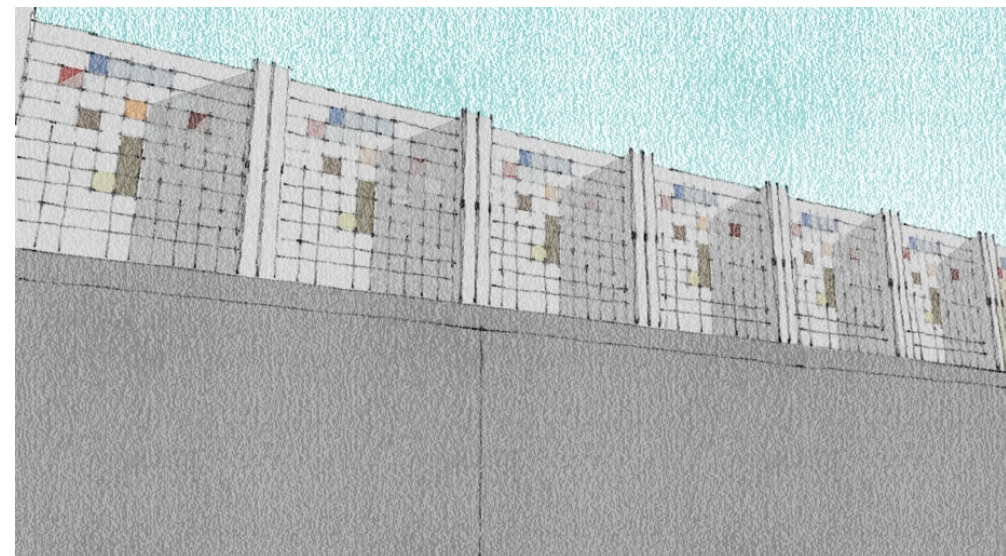
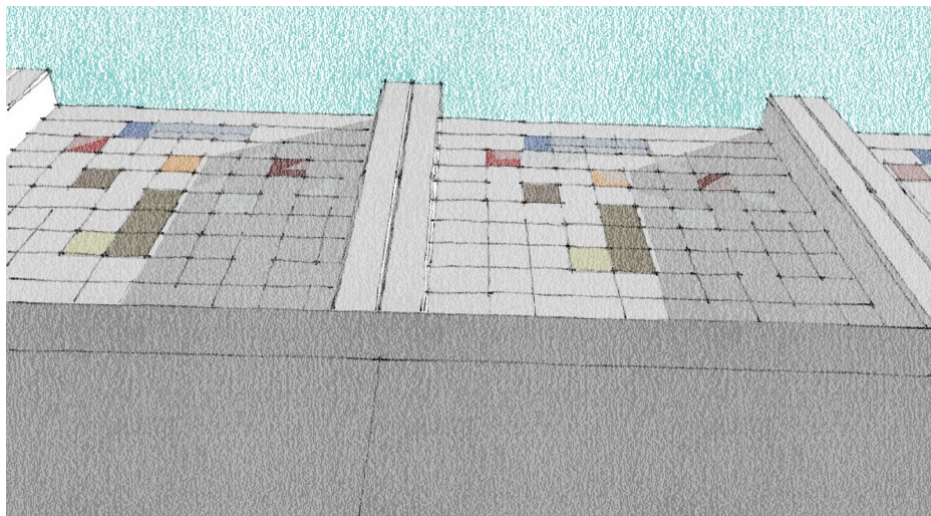


## I 5 Columbia River Crossing Architectural Standards

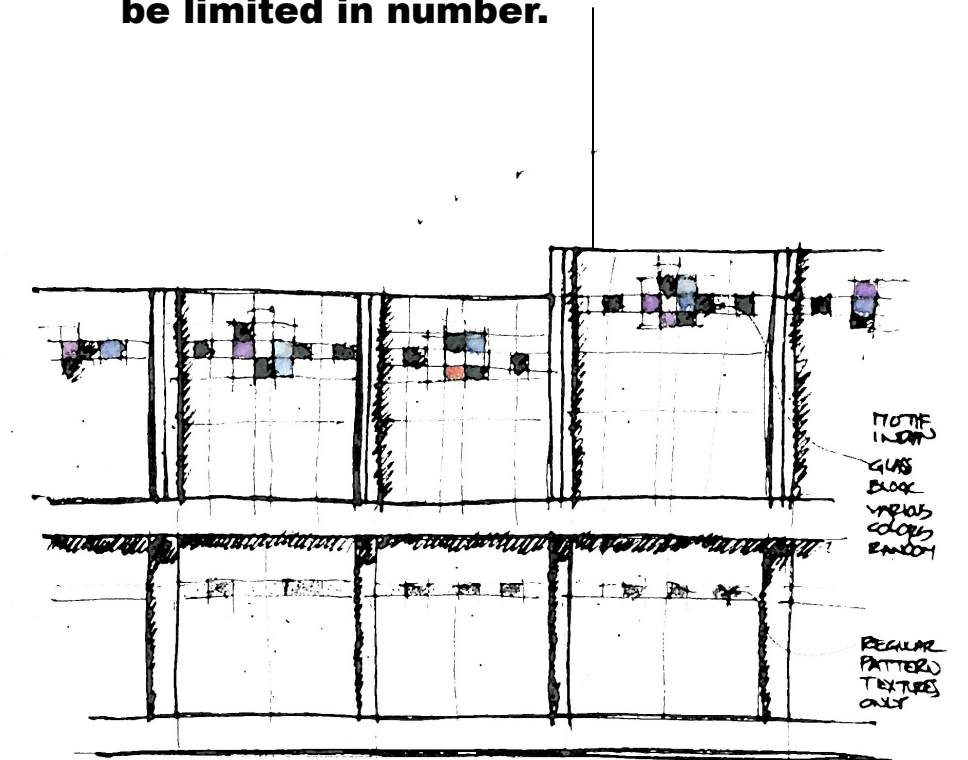
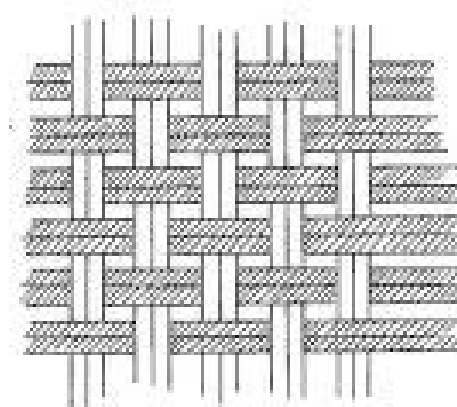


**Elevation Views showing noise walls on top of retaining walls.**

**Glass block set in wall panels. Integrate with native American theme motif. The blocks would be limited in number.**



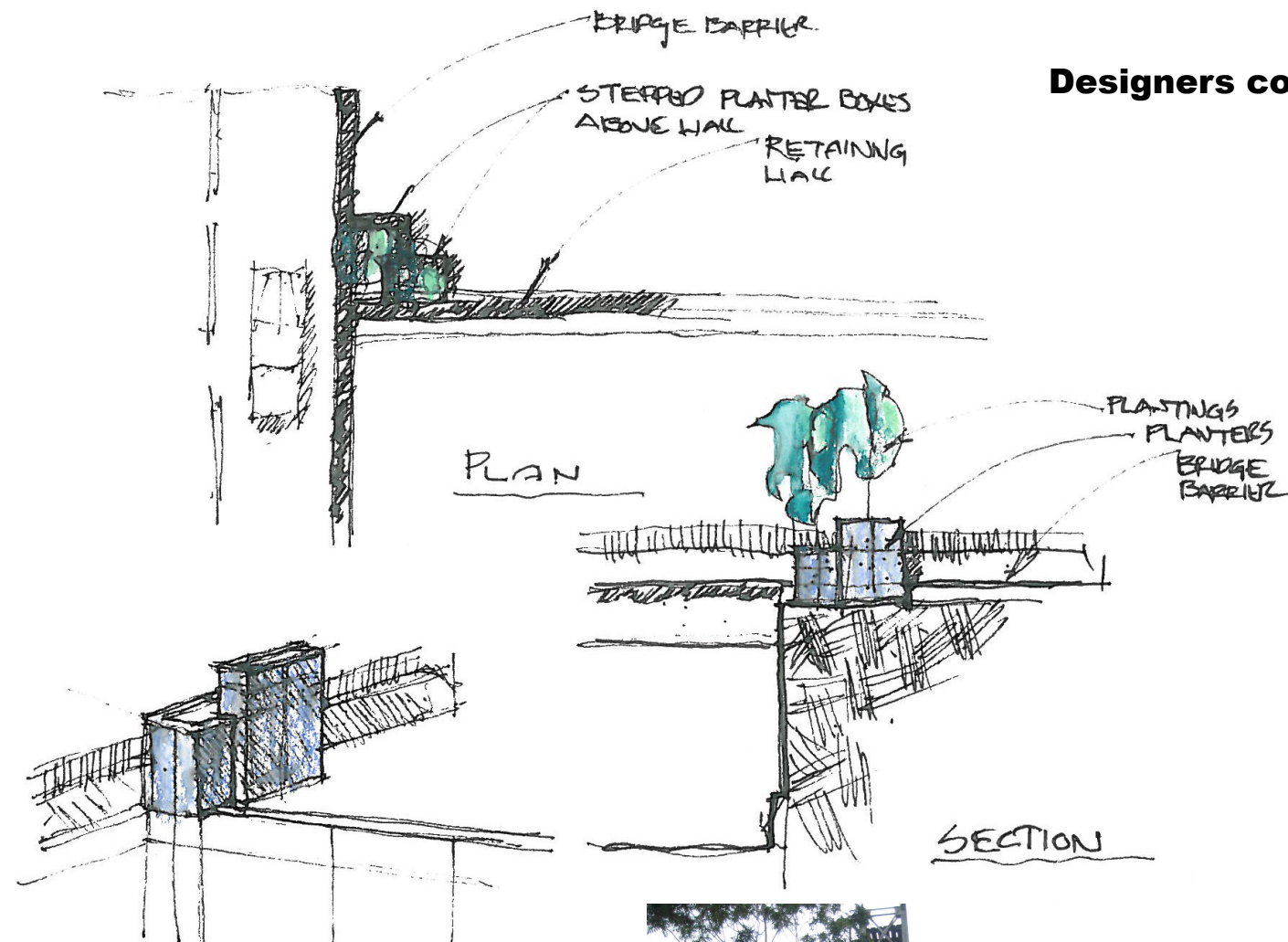
**Design based on native American imagery. Detailed in glass block on surface textures.**



**Noise Walls on Retaining Walls Discussion Sketches**



# I 5 Columbia River Crossing Architectural Standards



Designers concept sketch.

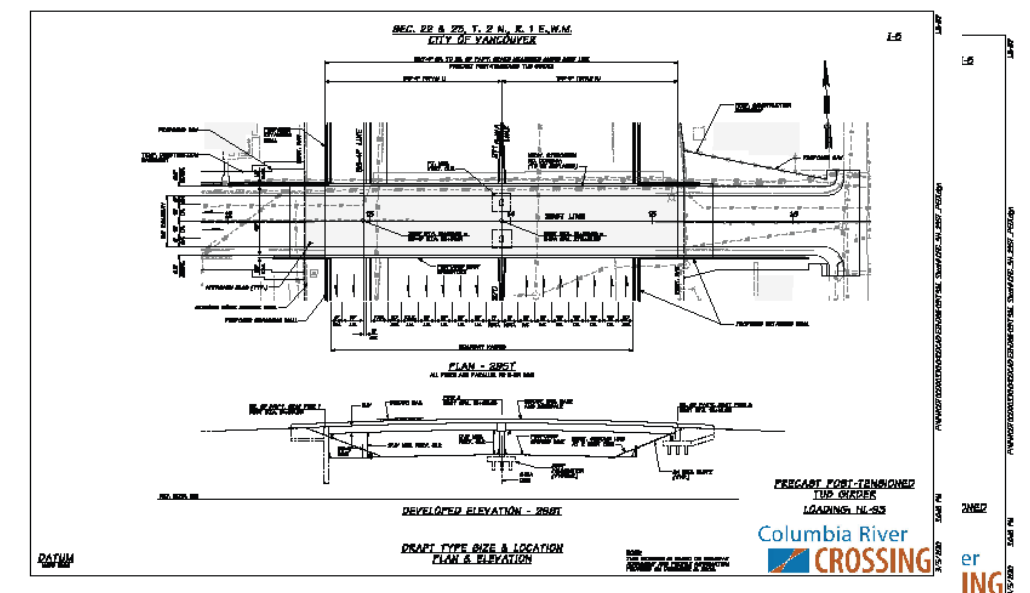
Typical Abutment Shapes where vertical walls are adjacent to bridge abutments.

33rd Street Undercrossing Example.

Showing abutments with raised planter boxes at neighborhood side.

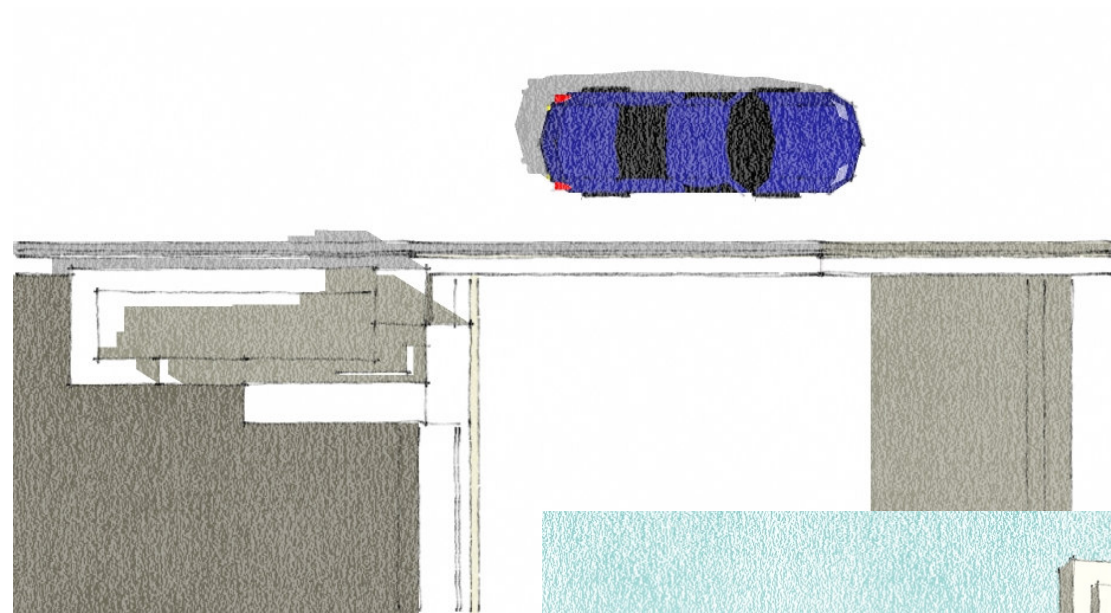
The planters create neighborhood gateway elements at street level.

Inspirational images.

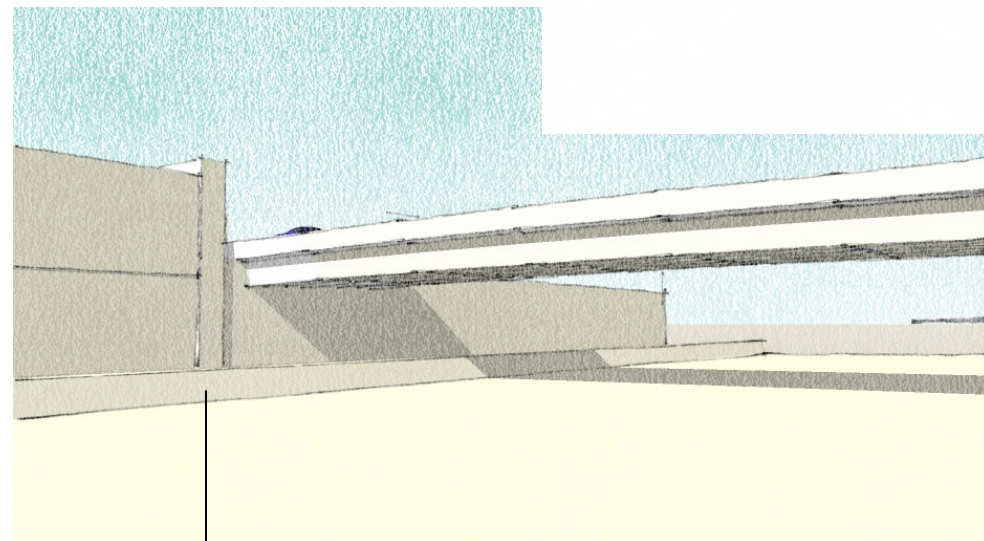
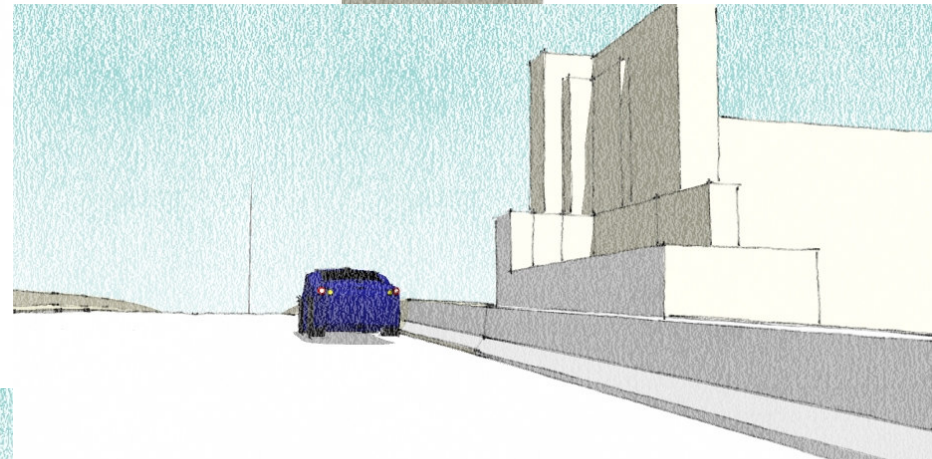




## I 5 Columbia River Crossing Architectural Standards

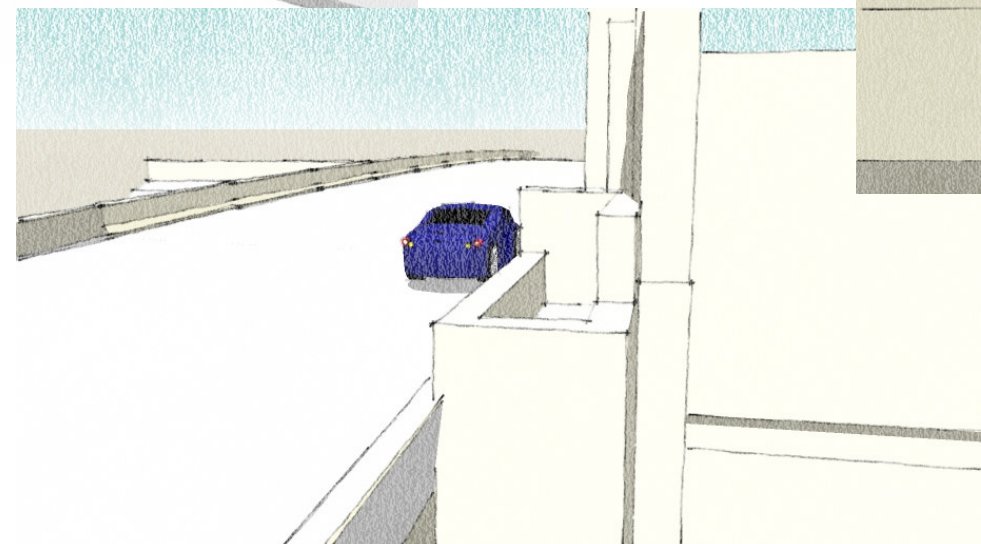
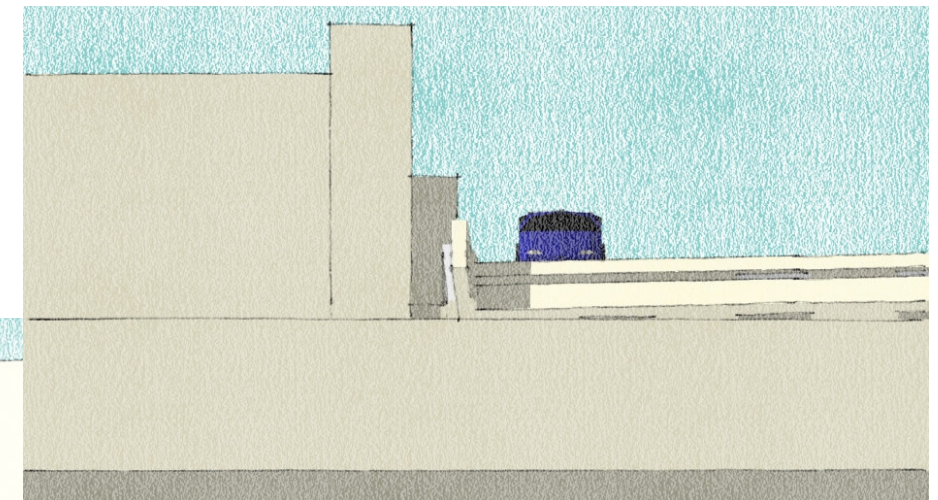


**The pilasters create strong vertical elements and shadow lines as viewed from the neighborhoods.**



**The pilasters create strong vertical elements and shadow lines from the corridor.**

**The gateway planters are sculptural using simple geometric shapes. These serve as a backdrop for landscape plantings.**



**Abutment Shapes where large vertical walls are adjacent to bridge abutments.**



### **Tunnel Portal and Wall Details**

**The following geometry details address tunnel portals. Details will be developed during future phases of the standards.**

**The project has one tunnel portal near the SR 500 Interchange.**



## I 5 Columbia River Crossing Architectural Standards

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**Inspirational images.**

**The tunnel portals will be designed to provide landscape plantings. The cast in place concrete portals will provide simple sculptural qualities.**

**Structure Design Concepts**



### **Public Art**

**The following locations provide potential for public art integrated into structural elements.**

- The areas along Tomahawk Drive: retaining walls and bridge abutments.**
- Noise Walls on Retaining Walls north of central Vancouver and Fort Vancouver.**
- Gateway obelisks on the neighborhood side of the 29th Street and 33rd Street Undercrossings.**

**Other locations such as transit facilities and stand alone areas will be developed during future phases of the standards.**



# **Appendix**

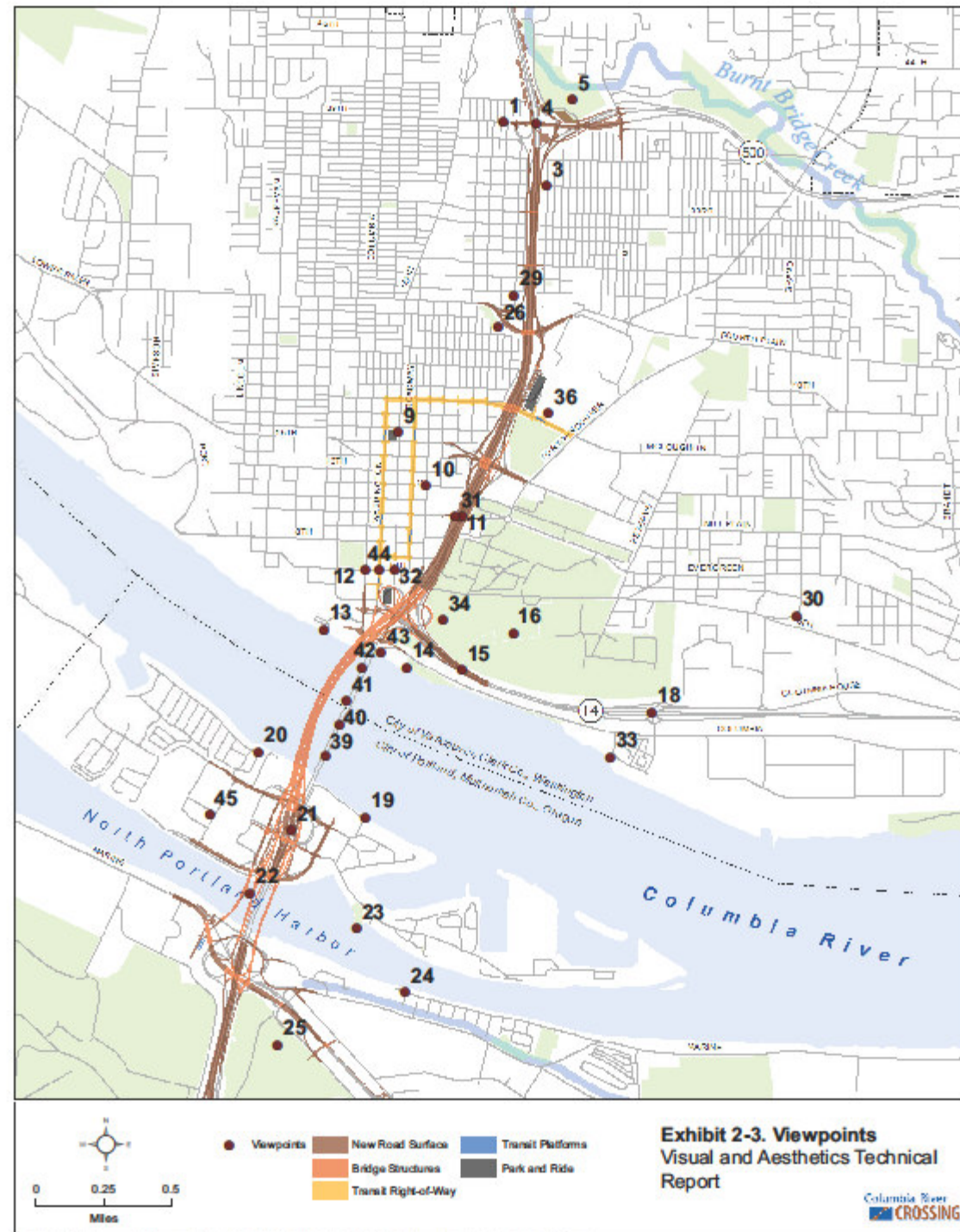
## **View Sheds**

## **Portland and Vancouver Land Use Maps**

**Shown for reference during the draft phases of the standards development.**



## I 5 Columbia River Crossing Architectural Standards

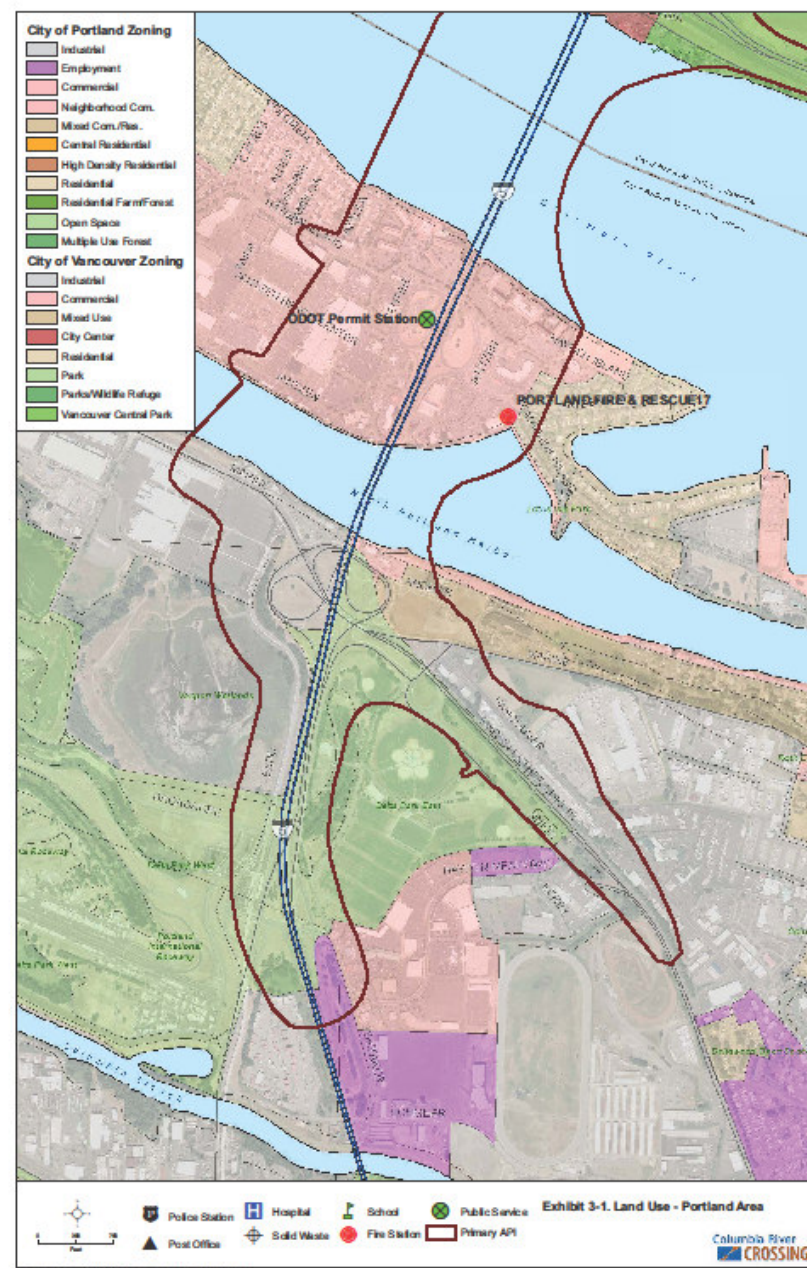


**View sheds.**

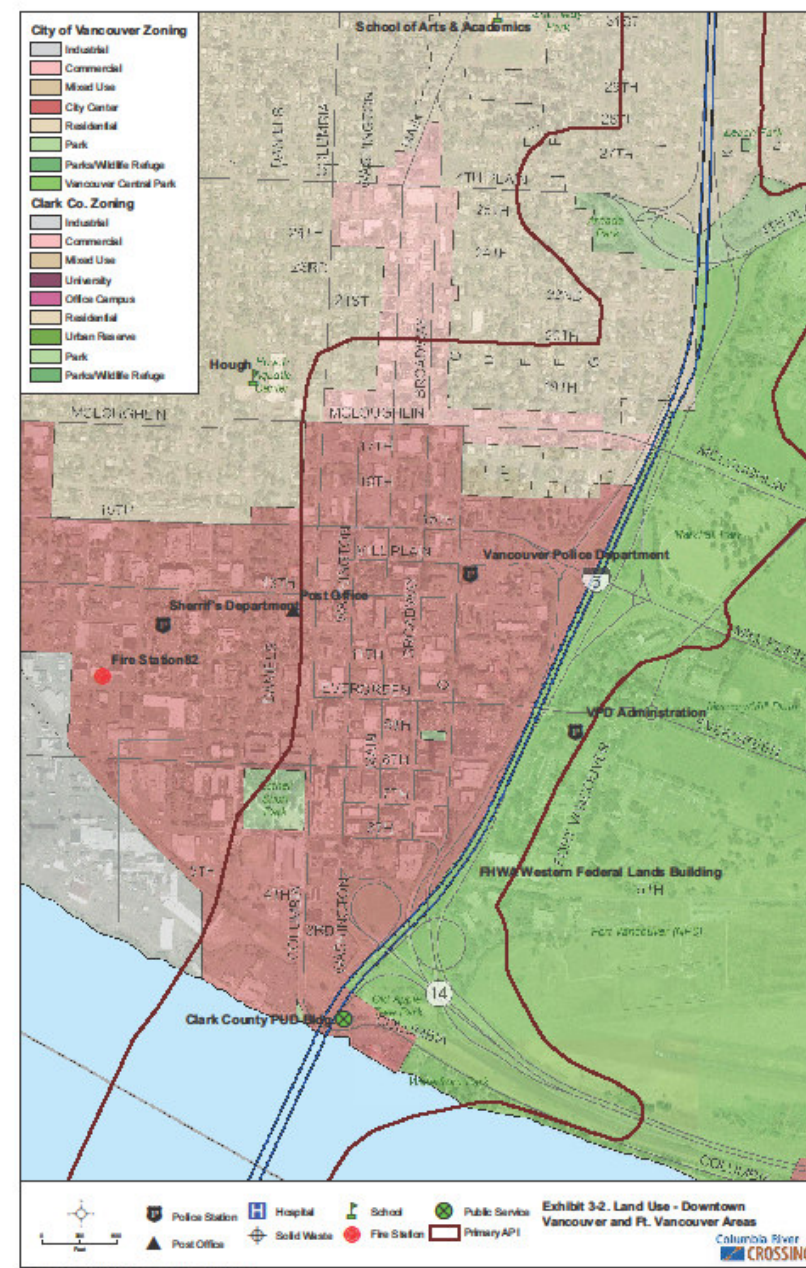
**Shown for reference.**



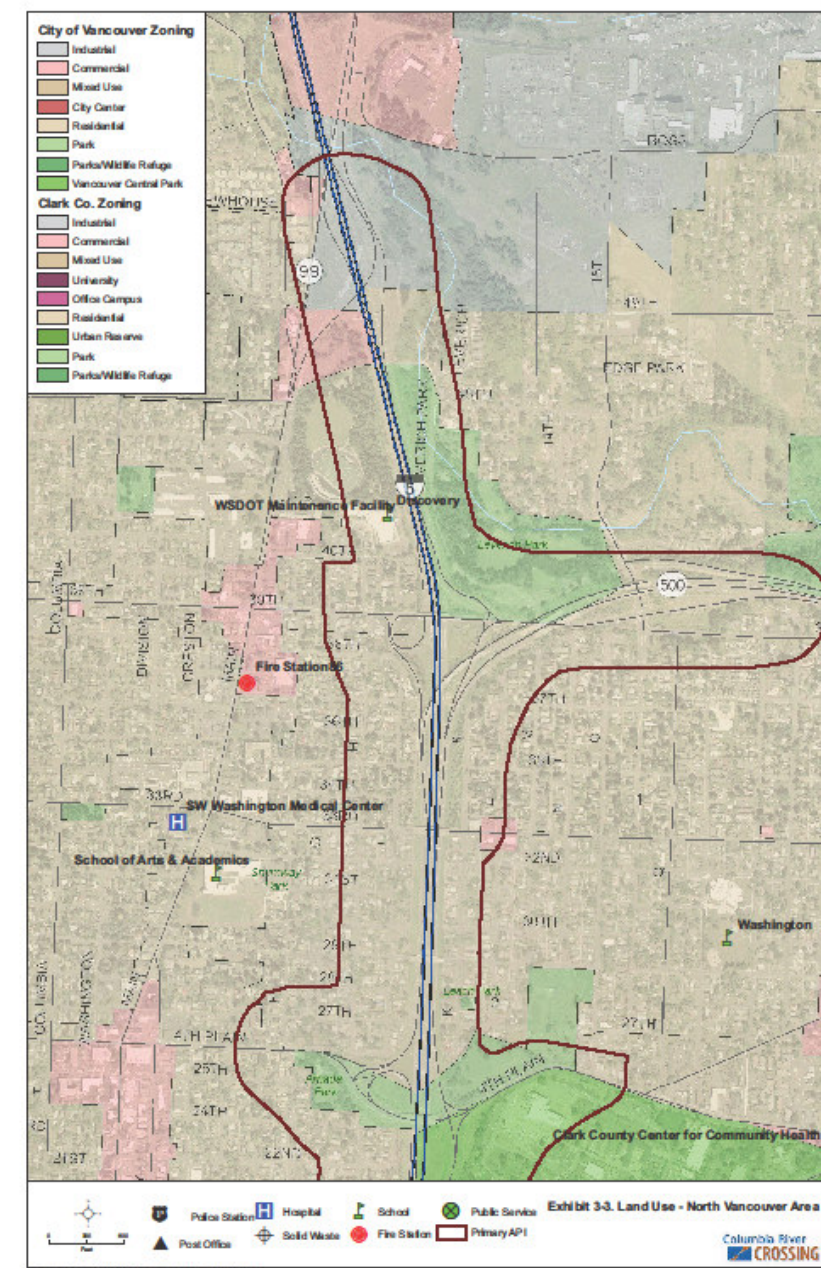
# I 5 Columbia River Crossing Architectural Standards



**Portland Land use.**



**Vancouver Land Use.**



**Shown for reference only and to  
aide in context understanding  
during draft phases.**



## **I 5 Columbia River Crossing Architectural Standards**

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Kurt Stiles**

**CRC Staff: Laura Peterson PE, Lwin Hwee PE**