

# SR 520, I-5 to Medina: Bridge Replacement and HOV Project NEPA/SEPA Environmental Reevaluation: Floating Bridge and Landings Proposed Final Design Features

23 CFR §771.129

Washington State Department of Transportation/Federal Highway Administration

REGION/MODE	SR	PROJECT PROGRAM#	FEDERAL AID #	PROJECT#
ESO Mega Projects	520	852004B	0520.050	U52004B

PROJECT TITLE, ENVIRONMENTAL DOCUMENT TYPE & DATE APPROVED:

- 1) SR 520, I-5 to Medina: Bridge Replacement and HOV Project Final Environmental Impact Statement (EIS), June 2011. Approved by signatory agencies Federal Highway Administration and Washington State Department of Transportation on May 26, 2011.
- 2) SR 520, I-5 to Medina: Bridge Replacement and HOV Project Record of Decision (ROD), August 2011. Approved by signatory agency Federal Highway Administration on August 4, 2011.
- 3) SR 520, I-5 to Medina: Bridge Replacement and HOV Project SEPA Addendum (Public Place Designation), October 2011. Approved by signatory agency Washington State Department of Transportation on October 3, 2011.
- 4) SR 520, I-5 to Medina: Bridge Replacement and HOV Project SEPA Addendum (Floating Bridge and Landings), November 2011. Approved by signatory agency Washington State Department of Transportation on November 18, 2011.
- 5) SR 520, I-5 to Medina: Bridge Replacement and HOV Project NEPA/SEPA Environmental Reevaluation (Kenmore Yard), December 2011. Approved by signatory agencies Federal Highway Administration and Washington State Department of Transportation on December 8, 2011.
- 6) SR 520, I-5 to Medina: Bridge Replacement and HOV Project NEPA Environmental Reevaluation: Floating Bridge and Landings, January 2012. Approved by signatory agencies Federal Highway Administration and Washington State Department of Transportation on January 25, 2012.
- 7) SR 520, I-5 to Medina: Bridge Replacement and HOV Project NEPA/SEPA Environmental Reevaluation: Kenmore Yard Update, July 2012. Approved by agencies Federal Highway Administration and Washington State Department of Transportation on July 16, 2012.

REASON FOR CONSULTATION:

As part of the delivery approach for the Floating Bridge and Landings stage of the SR 520, I-5 to Medina: Bridge Replacement and High Occupancy Vehicle (HOV) Project (Project), the Washington State Department Of Transportation (WSDOT) contracted with a design-builder to complete final bridge design and to build the replacement structure. WSDOT awarded the contract after the NEPA Record of Decision (ROD) was issued; therefore, final design and architectural finishes for the floating bridge were not included as part of the *Final Environmental Impact Statement and Final Section 4(f) and 6(f) Evaluations* (Final EIS) or ROD.

In partnership with the design-builder, and after considering stakeholder input, WSDOT has finalized the design of the floating bridge and its architectural features. The proposed final design is intended to provide a positive experience for transit users and drivers, cyclists, pedestrians, and other viewers of the multimodal facility. The architectural features will create a distinctive, unified aesthetic character within the SR 520 corridor, and will result in an iconic regional structure. The proposed final design will not result in new or significant adverse environmental effects compared to those evaluated in the Final EIS.

DESCRIPTION OF PROPOSED FINAL DESIGN: (See Attachment 1 for more detailed description).

Changes in baseline information include:

- 1) Proposed final design, including three primary architectural features (sentinel elements, minor elements and belvederes) along the floating bridge and its approaches; and
- 2) Application of corridor aesthetics including special finishes or details on traffic barriers and railings, and architectural lighting effects.

HAVE ANY NEW OR REVISED LAWS OR REGULATIONS BEEN ISSUED SINCE APPROVAL OF THE LAST ENVIRONMENTAL DOCUMENT THAT AFFECT THIS PROJECT? YES ( ) NO ( x ) (If yes explain, use additional sheets if necessary)

WILL THE CHANGED CONDITIONS AFFECT THE FOLLOWING DIFFERENTLY THAN DESCRIBED IN THE ORIGINAL ENVIRONMENTAL DOCUMENT? (If yes, attach a detailed summary addressing the impacts and mitigation)

	YES	NO		YES	NO
1) THREATENED or ENDANGERED SPECIES	( )	( x )	5) HAZARDOUS WASTE SITES	( )	( x )
2) PRIME and UNIQUE FARMLAND	( )	( x )	6) HISTORIC or ARCHAEOLOGICAL SITES	( )	( x )
3) WETLANDS	( )	( x )	7) 4 (f) LANDS	( )	( x )
4) FLOODPLAINS	( )	( x )	8) 6 (f) LANDS	( )	( x )

1) Threatened or Endangered Species: A WSDOT Biologist has reviewed the changes to the proposed bridge design, and has provided an update to the U.S. Fish and Wildlife Service and National Marine Fisheries Services. The proposed architectural lighting would not change the extent of authorized take for the project under the Endangered Species Act and therefore, formal consultation is not required for ESA compliance.

WILL THESE CHANGES RESULT IN ANY CONTROVERSY? YES ( ) NO ( x ) (If yes explain)

WILL THESE CHANGES CAUSE ADVERSE IMPACTS IN THE FOLLOWING AREAS: (If yes, address comments below)

	YES	NO		YES	NO
1) AIR QUALITY	( )	( x )	7) WATER QUALITY	( )	( x )
2) NOISE	( )	( x )	8) VISUAL QUALITY	( )	( x )
3) LAND USE	( )	( x )	9) NATURAL RESOURCES and ENERGY	( )	( x )
4) TRAFFIC or TRANSPORTATION	( )	( x )	10) PUBLIC SERVICES and UTILITIES	( )	( x )
5) DISPLACEMENT (business or residence)	( )	( x )	11) VEGETATION and WILDLIFE	( )	( x )
6) ECONOMIC GROWTH and DEVELOPMENT	( )	( x )	12) RECREATION	( )	( x )
			13) SOCIAL IMPACTS	( )	( x )

COMMENTS:

This reevaluation does not change the overall impacts on resources that were discussed in the previously prepared project documents listed at the top of this form.

CONCLUSIONS and/ or RECOMMENDATIONS:

As noted above and described in Attachment 1, the proposed final design would not result in new or significant adverse effects. The SR 520, I-5 to Medina: Bridge Replacement and HOV Project remains compliant with current federal, state, local, and departmental regulations and directives with regard to National Environmental Policy Act (NEPA) and State Environmental Policy Act (SEPA) processes. This reevaluation document, along with supporting information, demonstrates that there would be no new or significant adverse effects resulting from these changes since the Final EIS was approved in May 2011 and the ROD was approved in August 2011.

I concur with the conclusions and recommendations above

Region / Mode Official

*[Handwritten Signature]*

Date

10/22/12

FHWA Official

*[Handwritten Signature]*

Date

10/22/12



## Attachment 1 Description of Proposed Final Design and Potential Effects

**Environmental Reevaluation/Consultation Form for  
SR 520, I-5 to Medina: Bridge Replacement and HOV Project  
Final Environmental Impact Statement, approved May 26, 2011;  
Record of Decision, approved August 4, 2011;  
SEPA Addendum: Public Place Designation, approved October 3, 2011;  
SEPA Addendum: Floating Bridge and Landings, approved November 18, 2011;  
NEPA/SEPA Environmental Reevaluation: Kenmore Yard, approved December 8, 2011;  
NEPA Environmental Reevaluation: Floating Bridge and Landings, approved January 25, 2012;  
NEPA/SEPA Environmental Reevaluation: Kenmore Yard Update, approved July 16, 2012**

### **Description of Proposed Final Design and Potential Effects Compared to those Described and Evaluated in the Final Environmental Impact Statement, Record of Decision, and Floating Bridge and Landings NEPA Environmental Reevaluation**

The Washington State Department of Transportation (WSDOT) and the Federal Highway Administration (FHWA) have prepared this National Environmental Policy Act (NEPA) and State Environmental Policy Act (SEPA) Environmental Reevaluation for the SR 520, I-5 to Medina: Bridge Replacement and High-Occupancy Vehicle (HOV) Project to evaluate architectural features proposed as part of the final design for the new floating bridge structure. As part of the delivery approach for the Floating Bridge and Landings construction stage of the Project, WSDOT contracted with a design-builder to complete final bridge design and to build the replacement structure. WSDOT awarded the design-build contract after the NEPA Record of Decision (ROD) was issued; therefore, the architectural features for the floating bridge were not included as part of the *SR 520, I-5 to Medina: Bridge Replacement and HOV Project Final Environmental Impact Statement and Final Section 4(f) and 6(f) Evaluations* (Final EIS) or ROD.

Throughout the design-build process, FHWA and WSDOT remain responsible for NEPA compliance and implementation of Project commitments. As part of the ROD, FHWA and WSDOT committed to expanding and refining an aesthetic vision for the SR 520 corridor, and have continued to collaborate on a corridor-wide vision with the Seattle Design Commission (SDC), City of Seattle, University of Washington (UW) Architectural Commission, Arboretum and Botanical Garden Committee (ABGC), Seattle Bicycle Advisory Board, Seattle Pedestrian Advisory Board, and the Seattle neighborhoods.

In partnership with the design-builder, and considering stakeholder input, WSDOT has finalized the design of the floating bridge and its architectural features. The proposed final design develops the replacement bridge into an iconic regional structure that will not result in new or more significant adverse environmental effects compared to those evaluated in the Final EIS. A summary of the design development process, a description of the final design elements, and a supporting analysis is provided herein.

## *Design Development Process*

As noted above, final design for the floating bridge commenced once WSDOT executed a contract with the design-builder in August 2011. However, fundamental architectural and urban design standards for the SR 520 corridor were developed over a number of years, beginning in 2005.

Following public involvement efforts and a number of stakeholder workshops, in 2005 WSDOT formulated a Design Advisory Group (DAG), which included volunteers from communities along the SR 520 highway, as well as bridge designers and lighting designers, architects and landscape architects, and other specialists. The purpose of the DAG was to explore and articulate an aesthetic vision for the new SR 520 facilities, and to establish aesthetic guidelines. Over the course of five months, the DAG explored corridor aesthetics from the highway users' perspective, as well as from outside of the corridor, in settings such as local communities or adjacent park properties. Recommendations from the DAG were outlined in the 2006 SR 520 Corridor Aesthetics Handbook – a document that has influenced design for the SR 520 corridor. One of the most important goals documented within the Corridor Aesthetics Handbook is that of “corridor unity;”

“Corridor Unity is a strategy that acknowledges that SR 520 is an important regional connector and carries high volumes of traffic between Seattle and communities east of Lake Washington. Corridor-wide design principles are therefore concerned with the visual unity and aesthetic integrity of the corridor right-of-way between Interstates 5 and 405, and reflect the fact that most observers will be traveling at highway speeds. High speeds mean that aesthetic treatments should be large, simple, and not distracting to drivers.”

Two years after these ideas were expressed in the Corridor Aesthetics Handbook the project team translated the recommendations into design concepts through a strategic collaboration process between the project engineering, urban design and landscape architecture teams. This process included extensive site tours and documentation, review of background materials, definition of design elements that are important aesthetic features, and meetings and discussions with WSDOT leadership. Thematic ideas articulated by the DAG were transformed into a corridor-wide vision statement based on context, character and connection. Corridor-wide design principles were carried forward into design, and consistent imagery was developed for elements such as bridge structures, vertical elements, signage, railing and lighting. The bridge structures were to be designed as regional gateway bridges, using aesthetic treatments to announce the entry threshold to the region. At the end of this process, the comprehensive approach to aesthetic design was documented in a Corridor Design Concept Plan.

Concurrent with this effort, WSDOT was collaborating with Eastside jurisdictions and engaging in a mediation process with Seattle neighborhoods. Thematic corridor aesthetics and design concepts were discussed at various outreach events during 2007 and 2008, and all public feedback was documented and brought back to the design team. Additionally, many team members integral to development of the abovementioned Corridor Design Concept Plan attended these meetings and were available to interact with the communities.

Subsequent to the Corridor Design Concept Plan and public outreach process, an Eastside community design collaboration commenced. Eastside mayors, jurisdictional staff, local design professionals and community members convened in 2008 and 2009 to develop preliminary urban design guidelines for the eastside corridor. Ideas from the Eastside Community Design Collaboration were qualitatively and quantitatively captured in an Eastside Urban Design Criteria document, which establishes some of the baseline design principles for the SR 520 corridor. As corridor unity has been one of the leading design

goals, decisions within this document have influenced aspects of the floating bridge design and will influence the remaining portion of the SR 520 corridor.

The 2011 Floating Bridge and Landings Project Request for Proposal (RFP) included a copy of the Eastside Urban Design Criteria, which provided supplementary information to the design-builder and complimented the Bridge Architectural Standards Report. The Bridge Architectural Standards Report was a document developed in 2011 and focused on design of the floating bridge. This report provided architectural and aesthetic concepts that should be applied to the floating bridge structure. Design concepts contained within this document reflected those of the Eastside Urban Design Criteria, further ensuring that corridor themes and unity would be advanced through the application of architectural features on the new floating bridge.

These documents, along with the Corridor Aesthetics Handbook and Corridor Design Concept Plan, provided guidance to the potential design-builders regarding the fundamental corridor-wide architectural and urban design standards. As described in a WSDOT Guidebook for Design-Build Highway Project Development, the design-builder starts the project with design concepts provided by WSDOT, but ultimately completes the final design, including the details. As such, the design-builder has led the final design effort for the floating bridge and its architectural features.

To ensure collaboration as the design-builder finalized WSDOT's design concepts, the RFP included a stipulation that opportunity for review and comment on all design elements and architectural features be provided through an Urban Design Task Force (UDTF). A UDTF was developed shortly after the design-build contract was executed, and included representatives from the design-build team, the City of Medina, Seattle Design Commission, WSDOT and technical disciplines. Drawing upon recommendations from the Corridor Aesthetics Handbook, the Corridor Design Concept Plan, Eastside Urban Design Criteria document, the Bridge Architectural Standards Report, and previous community feedback, the aesthetic treatments for all exposed structural and architectural elements were advanced from conceptual design to final design through this process.

WSDOT's outreach efforts have continued throughout the final design process for the floating bridge. The Seattle Design Commission and the City of Medina have been engaged through periodic briefings. WSDOT has also sponsored or attended public events, in which information regarding the proposed design has been provided to the community. Additionally, information regarding the design of the floating bridge has been provided to the public on the WSDOT website.

Reflecting many years of collaboration, the final design of the floating bridge is intended to provide a positive experience for transit users and drivers, as well as cyclists, pedestrians, and other viewers of this multimodal facility. It will reflect one of the Corridor Aesthetics Handbook's fundamental design goals, which states that the new SR 520 should be "a coherent and graceful facility that reflects a harmonious relationship with the surrounding landscape, structures and other elements of the corridor."

### ***Current Design Assumptions for the Floating Bridge, as discussed in the Final EIS and Floating Bridge and Landings NEPA Environmental Reevaluation***

The current construction stage of the SR 520, I-5 to Medina Project involves replacing the existing Evergreen Point Floating Bridge with a new six-lane floating bridge that includes a continuous HOV lane in each direction and regional bicycle and pedestrian path. The replacement bridge will be located approximately 190 feet north of the existing bridge at the west end and 160 feet north of the existing bridge at the east end. The low-rise portion of the bridge, located between the east and west transition

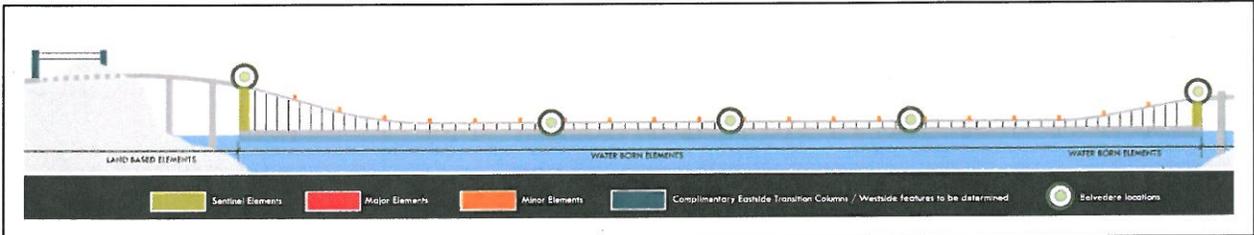
spans, will be approximately 20 feet above the water surface at midspan and will be supported by circular concrete columns mounted on the pontoon decks. The column bents will be spaced at 30 foot intervals along the pontoons. The steel-truss superstructure proposed in the Final EIS design was eliminated in the January 2012 NEPA Environmental Reevaluation, and was replaced with a reinforced concrete superstructure.

The floating bridge design includes navigation safety lights as well as lighting on the regional bicycle and pedestrian path. Illumination for the path, which will have a number of scenic vantage pullouts (belvederes), will be provided by low-wattage down-cast lamps, recessed into walls or barriers. Four overhead luminaires will also be provided on the floating bridge, positioned to provide additional lighting at traffic merge points. In addition to these lighting fixtures, overhead tolling and active traffic management equipment will be included on the bridge structure.

***Proposed Final Design Features for the Floating Bridge***

A coherent set of architectural features (sentinel elements, minor elements, and belvederes) have been developed through the WSDOT-led design process described above. The sentinel elements, minor elements, and belvederes provide a way to view the corridor as a whole and will be included at various intervals along the replacement bridge structure (Exhibit 1). Consistent with the DAG’s original recommendations, the proposed architectural features will create a distinctive, unified aesthetic character that is compatible with neighboring landscapes and communities, includes a variety of scales, and establishes a consistent visual pattern along the SR 520 corridor.

Through the proposed height, horizontal spacing, and lighting, these elements will establish the rhythm of sequential scale and experience from the highway users’ perspective and from outside of the corridor. Unified corridor-wide aesthetics will be further reinforced by the consistent use of special finishes or details on traffic barriers and railings, and architectural lighting effects.



**Exhibit 1: Primary Architectural Features Included in the Final Design of the Floating Bridge**

Four sentinel elements will exist as the largest and most prominent of the proposed architectural features. They will mark the transition between the floating bridge and the bridge approach structures. These precast elements will be located at each of the cross pontoons that frame the bridge’s floating portion (Exhibit 2). They are intended to act as a point of reference or gateway as users cross from water-based to land-based structures.

The sentinel elements provide structural support and are also functional components of the bridge, incorporating a maintenance stairwell that will allow workers to access the pontoons below the roadway surface. This hidden stairwell establishes the overall width of the sentinel. The height of the sentinel has been designed to fit within the context of the corridor, and is also influenced by wind exposure. The sentinels will extend approximately 45-feet above the bridge deck. The sentinels have been scaled to provide significant expression above the roadway, to be noticeable from a regional perspective, and to

establish the floating bridge as an iconic regional structure. They will fulfill the vision included in the Corridor Design Concept Plan by “reflecting and framing the landscape and views,” and will establish the end points of the world’s longest floating bridge.

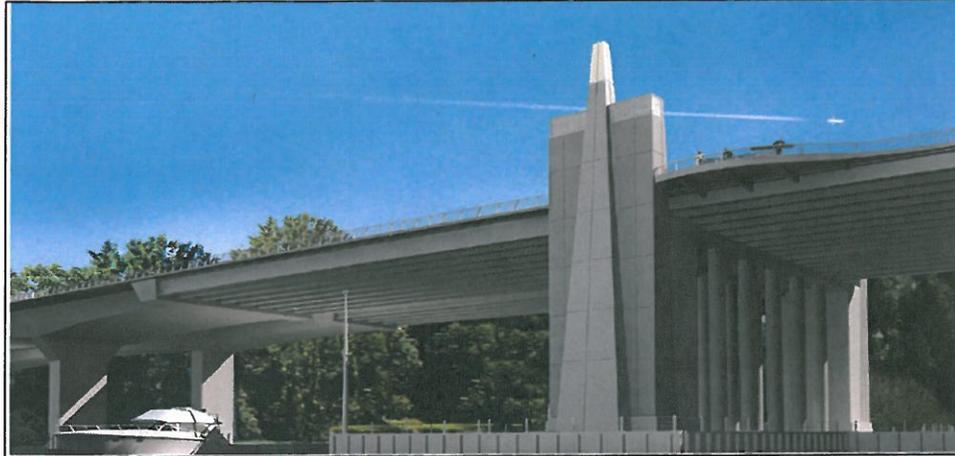
The Corridor Aesthetic Design Handbook suggested that lighting be used as an aesthetic treatment to add beauty and to help make a structure iconic; the sentinel elements will be up-lit with a series of lights and a crowning lantern. At the suggestion of the Seattle Design Commission, a team of architectural lighting experts were hired to review and refine the lighting plan for the sentinels. The lighting will utilize high performance LED lighting systems that will allow flexibility and the ability to adjust for changes in appearance over time. In addition to the proposed lighting, a stainless steel mesh will be installed as an aesthetic treatment on the top portion of the sentinel and will create active reflections in daylight conditions. Although not part of the navigational safety lighting scheme, the lights will help to frame the navigation channels and provide secondary lighting to the regulatory navigational lighting.

The minor elements are smaller architectural features that establish aesthetic continuity along the floating bridge. They will have a shape and form similar to the sentinel elements, and are also reminiscent of the transition columns included at the new portal on the east side of the lake, in Medina. As markers of the underlying structural form, the minor elements will exist near each pontoon joint, set within the north and south traffic barriers at a regular spacing of 360 feet. This consistent spacing will also create a sense of passage, allowing users to feel progress as they move along the bridge structure.

These minor elements will be topped with an architectural lighting feature similar to the translucent lantern on the sentinel (Exhibit 3). The lighting will create an even, noticeable rhythm along the floating bridge for motorists, cyclists and pedestrians, and will become a visual feature that contributes to the character of the floating bridge structure. By extending only 10 feet above the bridge deck, the minor elements also bring a pedestrian-scale to the bridge and provide lighting for the regional bicycle and pedestrian path.

As the last of the three primary architectural features, five belvederes will be located along the north side of the replacement bridge, and have been included to enhance the non-motorized aspect of the floating bridge (Exhibit 3). The belvederes will provide opportunities to experience the bridge from a stationary position, and will make the path safer and more comfortable for cyclists and pedestrians. The belvederes will extend approximately 11 feet from the north edge of the regional bicycle and pedestrian path to the outer railing, and will include seating for at least six people. From the belvederes, non-motorized users will be able to view the surrounding landscape. Individually themed wayfinding signage will also be incorporated at the belvederes. This wayfinding signage will reinforce a sense of place and connectivity by identifying points of interest and providing information about the neighboring communities, local history, and the regional environment.

Recessed lighting will be provided at the belvederes and along the shared use path to illuminate the surface and enhance safety for users. Pedestrian-scaled overhead lighting will also be installed at the pullouts to increase overall visibility, safety and comfort for bicyclists and pedestrians.



**Exhibit 2: Proposed Sentinel Element and Belvedere**



**Exhibit 3: Proposed Minor Element and Belvedere**

Architectural treatment of the traffic barriers and railing has been considered as part of the final design process and will continue to enhance continuity throughout the corridor, as these treatments will be consistent with those applied east of the floating bridge. A scored finish will be included on the north side of the traffic barrier and will be consistent with surrounding features (Exhibit 3). The bridge railing incorporated on the north side of the regional bicycle and pedestrian path will have a horizontal linear pattern, which has been designed with a high level of transparency to maximize views to the north.

As a unified set, these architectural features will allow users to see the SR 520 corridor as a unified, single domain. The consistency in design and regular spacing of these features will help to achieve this experience. In addition to providing an overall feeling of continuity, the architectural features also encourage the multimodal aspect of this facility, by creating and enhancing the space for cyclists and pedestrians.

## **Discipline Specific Analyses of Final Design for the Floating Bridge**

The sections below discuss how the proposed architectural features could affect the natural and built environment, and whether those effects differ from the overall effects described in the Final EIS and Floating Bridge and Landings Environmental Reevaluation (January 2012). For this environmental reevaluation, FHWA and WSDOT determined which disciplines had the potential to be affected; the identified disciplines are addressed below, and include visual quality and aesthetics, and ecosystems. Other disciplines, including land use, economics, and relocations; cultural resources; navigable waterways; and cumulative effects were discussed in the Final EIS and Floating Bridge and Landings Environmental Reevaluation, but are not discussed below. FHWA and WSDOT have concluded that there would be no potential for changes in effects on those resources as a result of these updates.

Potential environmental justice effects have also been considered. All architectural features exist on the floating bridge, and thus, are within the existing limits of construction. Spillover from the proposed lighting is expected to be minimal and the lighting plan includes fewer lights than existing conditions; therefore, this lighting is not expected to affect Endangered Species Act (ESA)-listed species or other aquatic species. As such, these design features would not result in new significant effects to environmental justice or to tribal treaty fishing from those discussed in the Final EIS.

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### ***Visual Quality and Aesthetics***

Seattle Ordinance 97025 identified the SR 520 corridor, between I-5 and the midspan of the Evergreen Point Bridge (the end of Seattle's jurisdiction), as a scenic route due to its views of scenic beauty. The Cascade Mountains, Olympic Mountains, Mount Rainier, Lake Washington Ship Canal, and Lake Washington are classified as important visual resources, and can be seen from the roadway within this corridor. WSDOT classifies this roadway as a semi-urban route, which is a term that recognizes that the structure lies within a transitional landscape where built elements begin to dominate natural elements.

The SR 520 floating bridge span and east and west highrises are visible from many locations on Lake Washington, although these structures become less visible with distance. The replacement bridge will also be viewed by a number of different viewer groups, from a variety of different angles across the lake. As such, sensitivity to any change is expected to be high. Residents with views across Lake Washington are affected by the bridge to varying degrees, depending on how close the viewpoint is to the bridge; and will be affected in a similar manner by the replacement bridge and its features.

For viewers near the bridge in Medina or north Madison Park, the addition of architectural elements would be noticeable but is not expected to diminish or degrade visual quality. During the day, the effects of the sentinel elements on views would be less than or comparable to those of the existing overhead trusses, depending on the angle of view. The sentinel elements would be approximately 20 feet taller than the existing overhead trusses; however they have been designed as discrete, vertical features that would not affect most views or add bulk to the highrise bridges (Exhibit 5). The sentinels would have a more streamlined form than the geometric shape of the overhead trusses that extend over the roadway for approximately 200 feet. The overall high quality of the views from this area would not change because the bridge is already a large part of their viewshed.



**Exhibit 4: Daytime view of the existing bridge and architectural features from Medina**



**Exhibit 5: Daytime view of the replacement bridge and architectural features from Medina**



**Exhibit 6: Nighttime view of the replacement bridge and architectural features from Medina**

When seen from relatively distant shoreline neighborhoods such as Laurelhurst or Kirkland (Exhibit 8), the sentinel elements would be visible as discrete, vertical structures projecting above the roadway deck. They would not diminish or degrade the quality of those daytime views. Designed as an aesthetic enhancement, and in scale with the mid-rise buildings along north Madison Park, the sentinel elements would be compatible with the existing visual context, and would not diminish the quality of views from these shoreline neighborhoods. The other proposed architectural features, such as minor elements and belvederes, would not change views perceptibly from this distance.



**Exhibit 7: Daytime view of the existing bridge and architectural features from Laurelhurst**



**Exhibit 8: Daytime view of the replacement bridge and architectural features from Laurelhurst**



**Exhibit 9: Nighttime view of the replacement bridge and architectural features from Laurelhurst**

All architectural elements would be most visible and noticeable from viewpoints near or on the bridge, in particular from Medina, north Madison Park, Lake Washington, and the roadway itself. The four sentinel

elements would be visible, day and night, from most locations because of their height, width, and lighting. The smaller minor elements would be visible only from locations near the floating bridge and approach bridges because they would rise only moderately above the railings. Seen during the day from locations near the north side of the bridge, the belvederes would not be distinguishable from the sentinels, bridge deck, and railings. The belvederes may be visible from distant viewpoints during the nighttime because of their illumination and safety lighting.

For daytime views, the proposed architectural elements would be a small change relative to the scale and design of the replacement bridge. The elements may slightly change the bulk, height and form of the bridge as seen during the day, but would not reduce the quality of views in which the bridge appears. Overall visual quality ratings (vividness, intactness, and unity) would remain high because the architectural elements are designed to provide a cohesive aesthetic appearance, and would not interfere with views of the important visual resources described above.

Light and glare effects would occur because of the proposed architectural lighting at the elements, use of reflective materials on the sentinels, and overhead illumination at the belvederes. As mentioned, the sentinel elements would be outfitted with a series of lights and a crowning lantern (Exhibit 9) that would be visible at lake level for at least one quarter mile. This additional lighting would increase illumination on the floating bridge structure compared to the level of illumination discussed in the Final EIS.

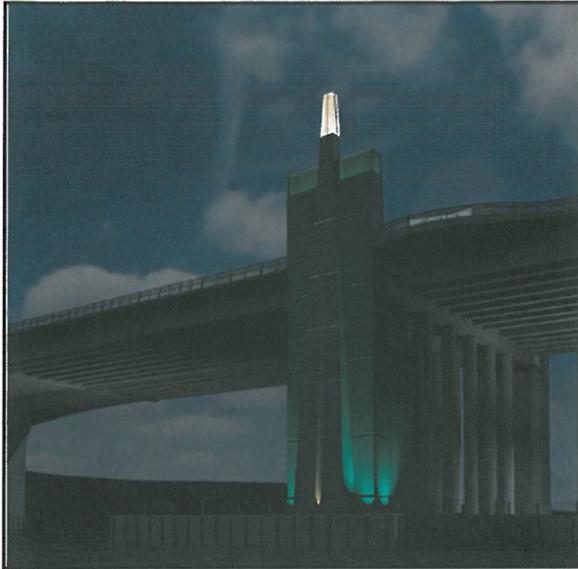
The potential daytime glare effects from the proposed design would occur during days when there is direct sunlight. Effects from the proposed architectural lighting would be most noticeable at night when the sentinels and belvederes would be lit. Whether the effects are considered positive or negative is likely to vary according to individual perception and opinion.

Based on the above analysis, FHWA and WSDOT have determined that the proposed architectural features would not diminish or degrade visual quality during daylight hours. Nighttime views would change due to the lighting of the sentinel and minor elements, but these changes are not expected to be adverse.

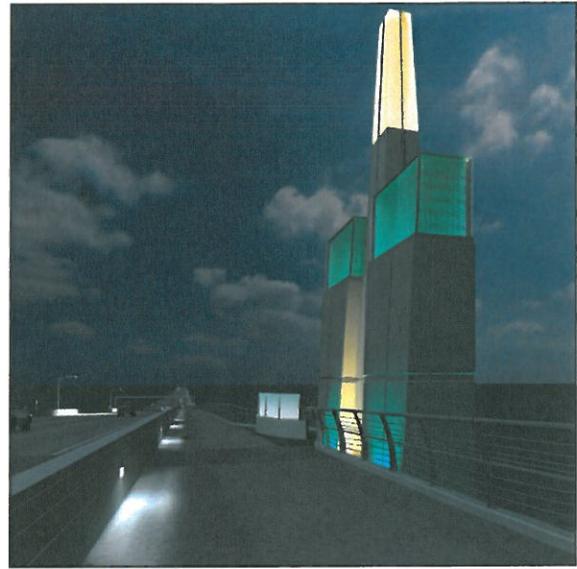
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### ***Ecosystems***

Illumination near and over water bodies is an important consideration for ecosystem analysis because some aquatic species, such as juvenile salmonids, are sensitive to light. Light spillage onto the water surface from artificial lighting has the potential to affect salmonid behavior; for example, juvenile salmonids may slow down between light and dark areas as their eyes adjust to the change in light levels, or they may alter their normal movement patterns to avoid these high-contrast areas altogether. Additionally, lighted areas can attract fish—including ESA-listed species—as well as their predators. This has the potential to affect the distribution of fish within the lake.



**Exhibit 10: Proposed Sentinel Lighting – Water View**



**Exhibit 11: Proposed Sentinel Lighting – Pedestrian View**

The proposed architectural lighting has been designed to illuminate the architectural features of the bridge and would not be directed toward the water surface. To minimize the risk that architectural lighting could affect aquatic species, WSDOT has incorporated a number of minimization measures into the proposed lighting plan. For example, the sentinel and minor element crowning lanterns will have a diffused glow. The remaining illumination will be shielded and directed upward. These measures will ensure that only a minimal amount of light from the bridge will spill over to the lake surface.

Based on a recent literature review, WSDOT assumes that the migration and movement patterns of juvenile salmonids may be affected by light levels greater than 2.0 footcandles. (Footcandles are a measurement of light; one footcandle is equivalent to the amount of illumination produced by one candle at a distance of one foot.) The aforementioned minimization measures would ensure that overall light spillage onto the adjacent water surface would not exceed 2.0 footcandles. The proposed lighting would likely result in a combined light spillage of approximately one tenth that amount, as a recent photometric analysis of the overhead luminaires resulted in light levels less than 0.2 footcandles, and the proposed architectural lighting would be much lower in intensity. Lighting studies also suggested that the recessed and overhead lighting proposed for the bicycle and pedestrian path would result in a maximum light level at the lake surface of 0.05 foot-candles. As such, effects to aquatic species are not expected.

Potential spillover from the proposed lighting is expected to be minimal and would not create areas of high contrast; therefore, it would not likely disrupt the behavior or distribution of fish. Additionally, the proposed lighting plan, including the additional architectural lighting, includes fewer lights than what exists on the bridge today (reducing overhead luminaires on the floating bridge from 44 to 4), and would not increase artificial light levels compared to existing conditions. The final design features would maintain or reduce the potential effects on fish and other aquatic species from operational lighting. For this reason, the proposed changes in lighting are not expected to affect the behavior of ESA-listed species or other aquatic organisms.

## **Conclusion**

Based on the above analysis, FHWA and WSDOT have determined that the proposed architectural features would not have a significant adverse effect on visual quality, as they would not interfere with views of important visual resources in the SR 520 corridor. The vividness, intactness and unity ratings for daytime views would remain high within the viewshed for all user groups, similar to those of the existing conditions and in the Final EIS design. Lighting associated with the proposed architectural elements could change nighttime views; however, these changes are not expected to be adverse. The proposed lighting has been designed to contribute to the character of the new floating bridge, but would emit low light levels that will be adjustable for potential future changes in appearance.

Lighting associated with the proposed architectural elements is not expected to affect ESA-listed fish species or other aquatic organisms. A number of minimization measures would be incorporated into the proposed lighting plan, including the use of lighting shields or screens. Uplighting and recessed lights would also be used to reduce lighting spillover on the lake. Any additional illumination reaching the lake surface would be negligible, and is not anticipated to exceed the 0.2 footcandles estimated for the roadway luminaires that were modeled as part of the Final EIS. Therefore the additional architectural lighting is not expected to affect the aquatic ecosystem.

A WSDOT Biologist has reviewed the proposed final design, and has provided a project update to the U.S. Fish and Wildlife Service and National Marine Fisheries Service regarding the additional illumination on the floating bridge structure. The above analysis is consistent with the Services' Biological Opinions, which have concluded that potential impacts from light spillage on fish behavior are negligible. Based on the information available, lighting from the proposed architectural features would not change the extent of take authorized for the project under the Endangered Species Act (ESA) and no reinitiation of formal consultation is required for ESA compliance.

A WSDOT Cultural Resources Specialist has determined that the incorporation of these architectural features does not have the potential to affect historic properties. No additional analysis or consultation is required in order to comply with Section 106 of the National Historic Preservation Act or Section 4(f) of the Department of Transportation Act.

WSDOT and FHWA have analyzed the potential impacts to visual quality and aesthetics and ecosystems from the architectural elements included in the final bridge design. Upon review, WSDOT and FHWA have determined that no significant effects to these disciplines would result from the proposed final design. Based on the above analysis, no new or significant adverse effects are expected. As documented above, the project remains compliant with current federal, state, local and department regulations and directives with regard to NEPA/SEPA processes, the Endangered Species Act, Section 106 and Section 4(f).