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MEMORANDUM

To: Honorable Mayor Ed Murray
Seattle City Councilmembers

From: Seattle Design Commission

Date: September 17, 2014

Subject: Seattle Design Commission recommendations for the Portage Bay Bridge and Montlake Lid components of the SR 520 Replacement Project

Dear Mayor Ed Murray and Councilmembers:

The Seattle Design Commission (SDC) is pleased to provide our comments on the conceptual design development and urban integration of two key elements of the State Route (SR) 520 project: replacement of the **Portage Bay Bridge** and the creation of a structure over portions of SR 520 near Montlake Blvd E (**Montlake Lid**). This memo provides the Mayor and City Council with the SDC's recommendations on questions of urban design for these two critical components of the SR 520 project.

The Seattle City Council requested the SDC's review of these project elements as part of their 2012 Resolution (Resolution 31427) concerning this key transportation corridor. This resolution included a request that SDC review these two project elements before the Washington State Department of Transportation (WSDOT) proceeds with funding requests to the Washington State Legislature. WSDOT has indicated that they are ready to proceed with funding for these project elements in the 2015 legislative session.



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To facilitate the SDC's review, WSDOT and City staff provided three briefings to the full SDC and five additional workshops with an SDC subcommittee. To support this work, WSDOT engaged a roster of consultants in urban planning, urban design, landscape design, and bridge design to illustrate and explain design options for both project elements. At the presentations to the full SDC, interested agencies and citizens also provided comments for the SDC to consider during our deliberations.

We understand that WSDOT has adopted the Legislature's *Least Cost Planning* approach for infrastructure funding. The SDC's composition of design, architecture, and engineering professionals allowed for a unique forum to balance conceptual decisions that promote quality design with fiscal analysis of each design alternative.

Endorsement of the Project Vision and Goals

In 2012, WSDOT developed a framework outlining their vision and goals for the SR 520 corridor in Seattle. That framework, also supported by the SDC, established a broader urban design framework beyond SR 520's role as a key regional transportation corridor. In 2014, WSDOT engaged the SDC to further define a vision and goals that specifically address the Portage Bay Bridge and Montlake Lid. The SDC continues to support WSDOT's visions and goals for this corridor. Given the complexity of these projects, their impacts at both the neighborhood and regional scale, and the importance of interdepartmental collaboration to achieve success, WSDOT's vision and goals should be the reference point for evaluating and proceeding with funding options for both the Portage Bay Bridge and the Montlake Lid.

Endorsement of and Recommendations for the Design Process

The SDC greatly appreciates WSDOT staff and their consultants for their focused design process, highly collaborative engagement, and extensive reviews with the SDC. The quality of WSDOT's presentations added much depth to the process. The SDC also appreciates the opportunity to have been part of the consultant selection for key projects within the SR 520 corridor. This collaborative approach will continue to benefit the project and is invaluable for our support of this important transportation infrastructure. We look forward to WSDOT's continued consultation with the SDC as it develops future RFPs, selects designers, and contracts projects in the corridor.

We particularly appreciate WSDOT's commitment to extend the regional multi-use trail across Portage Bay. The SDC advocated strongly for this important feature during the 2012 Seattle Community Design Process. As we revisit the Portage Bay segment of the corridor, we again thank WSDOT for their earlier work on reducing lane widths and providing flexible lanes to minimize the overall width of the bridge.

Moving forward, we hope that WSDOT will continue to engage the City of Seattle. With DPD and SDOT actively involved in design explorations, superior solutions can emerge that stitch the

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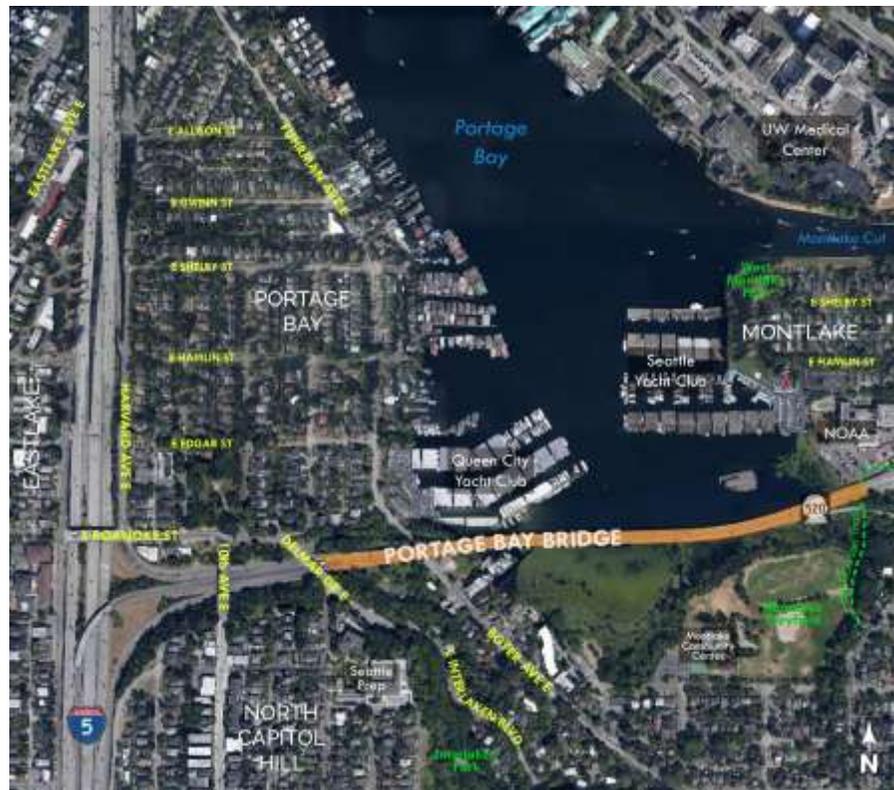
freeway corridor into the urban fabric and modal networks of our city. The SDC believes that the project will suffer if WSDOT terminates its design efforts at the edge of its right-of-way. We hope the City will remain a proactive partner in order to build on the momentum of change for the benefit of the communities along the corridor.

The SDC also recommends that WSDOT continue its integrative approach towards project design, with urban design at the center of design development. We recognize the time and resources WSDOT has spent to facilitate such a comprehensive, multidisciplinary, and interagency design process. This innovative and collaborative approach has produced context-sensitive infrastructure that is functional and reflects the needs, concerns, and voices of diverse and complex users, stakeholders, and community groups. We are hopeful that WSDOT will continue to implement this process on this and other projects.

Portage Bay Bridge

Context

Portage Bay and the surrounding neighborhoods form a unique environment within Seattle. The arrangement of hills, water, and wetlands forms a curved bowl that is intimate in scale. The surrounding built environment includes large institutional uses like the University of Washington, smaller institutional and water-dependent uses in Portage Bay, and fine-grained residential



development on the hillsides and in floating residences to the north. As is the case in other locations within Seattle, SR 520 passes through and touches residential neighborhoods without the buffer of large-scale commercial or industrial uses. Sensitivity to designs that buffer the freeway from the adjacent neighborhoods is thus essential to successful integration.

The Portage Bay Bridge is one of a series of bridges interspersed throughout the city. These bridges provide fundamental connections among Seattle's neighborhoods. A diversity of bridge types surrounds Portage Bay, including the high, double-deck, steel truss Ship Canal Bridge; the

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ornate and historic University and Montlake Bridges; and the low-profile Evergreen Point Floating Bridge. Any new bridge at Portage Bay will (and should) acquire an equally unique identity.

Overall Recommendations

The new Portage Bay Bridge must be both a distinctive and context-sensitive element within the family of SR 520 bridges. Given its context, the bridge should appear elegant and light and enhance the unique character of Portage Bay. Bridge elements such as piers, abutments, and vertical lighting poles should complement the context without mimicking the natural, historical, or built environments. With the addition of a shared-use path, the Portage Bay Bridge helps complete regional connectivity for all modes of users from SR 202 in Redmond to I-5 in Seattle and beyond.

- To accommodate different users within the corridor, whose use varies based on speed, skill, and field of vision, consider any bridge design from all perspectives including on, above, and below the bridge and from various vantage points.
- Emphasize minimizing the appearance of the bridge deck and related infrastructure for recreational users and nearby residents.
- Consider the bridge within the context of the larger SR 520 network, particularly its role as a gateway experience both entering and leaving Seattle.
- Closely examine where each bridge section lands near Montlake Blvd E to the east and 10th Avenue E and Delmar Drive E to the west in order to integrate the project within the urban fabric of each neighborhood. Pay special attention to how the design affects deck heights at both ends and the experience and networks of cyclists and pedestrians. Connect the shared-use path up to and over the Delmar Lid as directly as possible.
- The slope of the bridge should both enhance its contextual relationship to Portage Bay and consider the needs of cyclists and pedestrians. While we recommend that WSDOT continue to study retaining the elegance of hugging the natural grade, this should not come at the expense of a consistent design for the entire Portage Bay span.
- Any bridge design should emphasize lightness in appearance and scale and complement its location within Portage Bay. This is particularly important given the size and number of columns below the deck, which should be reduced as much as possible in number and prominence.
- Integrate architectural elements within the overall design of the bridge to provide aesthetic interest and follow a structural logic.
- Design the bridge to relate to the horizon line in a logical and compelling fashion.
- Maximize the amount of natural light that reaches the water and land. To accomplish this, pursue greater horizontal separation between the east- and westbound bridge segments.

Option 1: Cable Stay Bridge

Background

WSDOT presented the SDC with three separate versions of a cable stay bridge over Portage Bay. Our initial review began with the two-tower version evaluated in the Final Environmental Impact Statement (FEIS). During our review, WSDOT refined the cable stay concept to include two additional bridge types—one with a single tall tower and the other with three towers of various heights. In all versions, the eastern portion of the bridge nearest Montlake is a beam bridge; this secondary bridge type reduces construction costs. Attachment A shows the cable stay designs we considered.

Analysis

Cable stay bridges offer the opportunity to reduce the amount of structure below the bridge deck. Spans can be wider, columns fewer, and the bridge deck thinner. These characteristics create a positive environment for portions of Portage Bay used for recreation purposes at or near the water and improve the overall experiential quality of the bridge. The distinctive character of cable stay bridges and their vertical elements attracts the eye and commands attention. When properly designed and sited, these elements can enhance and define their settings. However, the concept alternatives the SDC reviewed overpowered Portage Bay and its unique context. The visual impacts of these vertical elements detracted from the desirable horizontal character and lightness inherent in cable stay bridges.



Recommendations

After careful analysis, the SDC believes a cable stay bridge is not the most compelling option for Portage Bay. A small number of Commissioners felt that the time allotted for the study did not allow for a full exploration of cable stay options and that a concerted effort here could result in an appropriate design. However, weighted against other bridge types and project considerations, the majority of Commissioners believe a cable stay bridge to be the least appropriate of those presented in this study.



If WSDOT proceeds with a cable stay bridge, the SDC recommends the following:

- Maximize the cable stay technology to significantly reduce the profile of the bridge deck, size of vertical elements, and number and girth of columns in the water. The bridge should be as thin and light on the water as possible. Take great care not to create a structure that overwhelms the scale of the Portage Bay bowl.
- Leverage the bridge technology to create a dynamic and elegant formal solution to the design.
- Design the bridge lighting with consideration for the residents in the area and with the aim of elegance rather than drama.

Option 2: Box Girder Bridge

Background

The SDC evaluated a box girder bridge and had the opportunity to help refine the design as part of our explorations. The initial renderings presented to the SDC from the 2010 FEIS showed a bridge with a varied slope and up to 14 columns, 11 of them in the water:

As our review progressed, WSDOT refined the design to have a uniform slope, which enhances the non-motorized experience. The refined design also reduced the number of columns, resulting in reduced environmental impacts. Attachment B shows the box girder designs we considered.



Analysis

A box girder bridge is a utilitarian solution that places function above form and aesthetics. It is commonly seen as part of the American highway bridge vernacular. The box girder is bulkier and heavier at and below the bridge deck than the cable stay bridge. More columns are necessary, adding to the innate heaviness of this bridge type. Because it does not have above-deck structural elements, the box girder is horizontally oriented. While it lacks the presence of more structurally expressive bridge types, the width of the deck and location within Portage Bay will nevertheless have a visual impact that warrants careful consideration.

There are many examples of designs that have pushed the limits of this typology to achieve a higher aesthetic and contextual standard. The work of the design consultants and our experience reviewing the West Approach Bridge North make us confident that the box girder can provide an elegant, distinctive solution. The design effort should focus on maximizing the thinness and lightness of the bridge. The WSDOT team has already started to investigate reducing the number of columns and adjusting the profile of the structure to minimize the visual impacts of the bridge deck.

Recommendations

Given the analysis to date, the SDC believes that the box girder bridge has the greatest potential for success in Portage Bay. However, to fully meet the vision and goals of this project, the box girder bridge must be well funded in order to be designed *for this place and its context*.

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If the budget is spare, the result will be a boxy, heavy highway bridge. Furthermore, architects and urban designers must continue to play leading roles on the project team. WSDOT's project engineers and agency leadership must continue to explore solutions that push the boundaries of standard design. An integrated team can develop and refine the box girder to be distinctive and contextual.

Additional SDC design recommendations include:

- Allocate funding commensurate to the project's unique, dense location in order to produce an exceptional bridge.
- Stretch the bounds of the box girder design to create an elegant bridge that enhances its unique location, while achieving lightness and a contemporary appearance.
- Refine the strategy for the vertical elements to add visual interest and rhythm. However, do not detract from the horizontal character and contemporary expression of the bridge.
- While the bridge should enhance the context without mimicking its historical and natural elements, do not strip the bridge of all enhancements and leave a bare box girder bridge in an effort to be contemporary.

Montlake Lid

Context

Prior to the construction of SR 520, the Montlake neighborhood was a connected community of single-family homes bounded by the Montlake Cut and Portage Bay to the north and west and the Washington Park Arboretum to the south.



Today, SR 520 isolates the Shelby-Hamlin neighborhood and former MOHAI site on the north from the rest of Montlake neighborhood to the south. The junction of SR 520 and Montlake Blvd E effectively places a freeway interchange in the middle of this residential neighborhood, interfering with bicycle and pedestrian traffic across the Montlake Cut to the University of Washington and the future light rail station.

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Past SDC Input

The SDC provided recommendations on the Montlake Lid concept during the 2010 EIS process and 2012 Seattle Community Design process. In 2012, the SDC recommendations to WSDOT included:

- Maximize the qualitative and functionality of the lid space.
- Prioritize non-motorized connections.
- Provide activated open spaces.
- Enhance the user experience.
- Better integrate the program within the neighborhood and its context.

To achieve these recommendations, the SDC encouraged WSDOT and the City to explore diverse design options and scales that would focus on quality over quantity, reduce the reliance on disruptive mechanical equipment, increase benefits to users and neighbors, and provide better connectivity and impact mitigation.



Endorsement of the Montlake Lid Design Refinements

The SDC endorses WSDOT's refined concept design for a "smarter" lid. This approach identifies the desired goals that the lid should achieve and then, through thoughtful moves, maximizes the planning, engineering, and design of the project to meet or exceed these goals with an emphasis on quality over quantity. Through these investigations, WSDOT balanced the SR 520 tunnel size with project goals, eliminating the need for ventilation infrastructure and operations

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and maintenance facilities. This resulted in a thinner, less invasive lid that could effectively be lowered by 15 feet.

Above all, the smarter lid concept achieves the following key benefits:

1. Enhanced regional connectivity

The smarter lid does not merely become a destination; the reductions in grade improve multimodal connections along the SR 520 corridor, across the Montlake Cut, and through the neighborhood. The primary north–south pedestrian and bicycle connection takes on a more direct alignment *above* rather than *beneath* the highway, at a lower slope, and with greater visual connection to the University of Washington. This allows the shoreline trail under SR 520 to become an overwater boardwalk with better visibility and connections to the Arboretum and Foster Island. Finally, the refined design improves on the previous east–west connections to, from, and across the lid.

2. More useable open space

The design and programming of open space in the refined concept focuses on quality usable spaces over quantity. The goal is to provide meaningful activity and not promote unintended uses. Spaces are functional, safe, and thoughtfully placed within the context of the neighborhood and the network of paths and trails. Lowering the lid height improves visibility and physical access and eliminates the need for large ventilation stacks that break up the open space and decrease its functionality.

The refined design goes beyond the lid and thoughtfully integrates the stormwater facility at the former MOHAI site as additional green space within East Montlake Park. This capitalizes on stormwater infrastructure and captures it as an element of the open space network that will extend north from the Arboretum toward the Montlake Triangle and Burke-Gilman Trail.

3. Enhanced view corridors

The project team studied grades and landscape elements to buffer views of the highway and control roadway noise. Lowering the overall height of the lid maintains visual connectivity throughout the neighborhood and from Lake Washington Blvd E.

4. Improved transit, bicycle, and pedestrian experiences

The design refinements improve the experience of pedestrians, cyclists, and transit users through better undercrossings, enhanced site design, and greater connectivity. The project team enhanced the pedestrian experience along Montlake Blvd E by expanding the lid to the west to create a larger vegetated buffer between pedestrians and SR 520 and shortening pedestrian crossings in this area.

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Pathways across the lid were aligned to create convergence zones at two critical points: near Montlake Blvd E in the form of urban trailhead and where the landbridge meets 24th Ave E. This enhances non-motorized connections, improves transit access, and activates open space.

In addition, the concept refinements enhance the safety, functionality, and overall character of the Bill Dawson trail by easing the grades, adjusting the trail alignment, improving sightlines, and providing alternative routes.



5. Improved integration within the Montlake neighborhood fabric.

The reduced height, buffering of SR 520, and enhanced physical and visual connectivity of the smarter lid create more seamless connections with the neighborhood. The landbridge connection replaces the large retaining wall along the north side of SR 520 and creates an enhanced landscaped edge.

Moving east to west along the SR 520 corridor, the landbridge and lid create a series of thresholds that transition from the large landscape of Lake Washington to the urban fabric of the city.

Recommendations for Further Design Development

While the SDC is very encouraged by the changes resulting from the smarter lid approach, this approach also creates design challenges. As the SDC evaluated this updated approach, we also provided a number of key recommendations to guide WSDOT and the City in further development of the project.

1. *Environment*

- Strengthen the sustainability strategy for the project as a whole, particularly as it relates to stormwater, materiality, constructability and the integration of the project into our larger network of open space and habitat.

2. *Enhance the Sequential Gateway Experience*

- Consider the SR 520 as a succession of elements—the floating bridge, West Approach Bridge North, landbridge, Montlake Lid, Portage Bay Bridge, Delmar Lid—that together create a larger gateway experience as one moves into or out of our City. Consider the Montlake Lid as part of this series of thresholds and clarify how it fits within that context. The sequence of the landbridge and tunnel should work together to create this threshold experience. Consider materiality, movement through the tunnel, and the moment of emerging from under a structure to see Foster Island or Portage Bay.
- In addition to east–west movement, consider the experience of thresholds moving north to south along Montlake Blvd E and throughout the network of paths on the lid and landbridge.

3. *Strengthen Connectivity and Wayfinding*

- Develop a clear hierarchy for the paths and trails that transect the lid. This hierarchy should be weighted to clearly indicate how paths connect to nearby and regional destinations. Consider how people will connect to the Burke-Gilman Trail, Arboretum, and future transit hub at the Montlake Triangle.
- Continue to study grades, visual connections, desire lines, and buffers between bicyclists, pedestrians, and vehicular traffic. Pay particular attention to the pinch points where 24th Ave E crosses Lake Washington Blvd E and where the Bill Dawson Trail connects to E Roanoke St.

4. *Landbridge*

- Continue to study the landbridge typology. The bridge profile should be unique and expressive without resembling typical highway infrastructure. Topography and vegetation should provide a unique experience from all angles.
- Resolve where the landbridge connects to the land at both ends and how it emerges from the landscape. On the deck of the landbridge, explore widening the east edge to provide adequate width for generous landforms and vegetation. Continue to develop moments for pause and views, and provide opportunities to look eastward towards Lake Washington.

5. *West Lid*

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- The “urban trailhead” area works as a strong placemaking gesture. Its success, however, is crucial to the function of the lid as a hub within the city. It will be important to proactively develop the kiosks and program the space to activate it and achieve the desired civic outcomes.
- Continue to focus on developing quality public space, especially at the west end of the lid. Provide a good experience for non-motorized users moving across the lid and along 24th Ave E. To that end, consider increasing the amount of lid on the east side of Montlake Blvd E at 24th Ave E.

6. Montlake Boulevard

- Give as much attention to the design articulation of the west side of Montlake Blvd E as to the east side. This is a major non-motorized route that links transit to the north with the heart of Montlake to the south. It is also a desire line between Capitol Hill and the UW.
- Work with the property owner of the gas station site at Montlake Blvd E and Lake Washington Blvd E to win space for transit users, cyclists, and pedestrians.
- Continue to explore the idea of providing a bike and pedestrian bridge over the Montlake Cut at a point close to where 24th Ave E would transect the waterway. This would strengthen the connective function of the landbridge within the larger north–south continuum between the Arboretum and the University of Washington. The SDC has not thoroughly analyzed the question of a second bascule bridge, but in 2010 we recommended that, if constructed, the second bascule bridge be limited to pedestrian, cyclist, and transit use. A separate pedestrian/bicycle bridge over the Cut further east would help alleviate pressure for a crossing close to the existing historic bridge. It would also relieve pressure on Montlake Blvd E between SR 520 and the Montlake Triangle.

7. Ramps to Nowhere

Though not part of this review or our review of the West Approach Bridge North, the SDC supports the idea of retaining a part of the “ramps to nowhere” at the Arboretum that are slated for removal.

The ramps to nowhere are existing structures that relate to former plans to extend a freeway through the Arboretum and the successful fight to stop those plans. The ramps represent an important time in Seattle’s history and express a key personality trait of our city. Furthermore, their presence has created unique experiences from the “unauthorized” pedestrian access to the ramps, providing elevated views of the lake and opportunities to jump into the water. This attracts spectators regularly. The structures provide an interesting sense of scale and a unique contrast between the softness of nature and hardness of infrastructure. The ramps to nowhere offer thought-provoking irony and ties to our history that, with further public art interventions

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and safety and access improvements, could preserve and strengthen this extraordinary place in the history of our city.

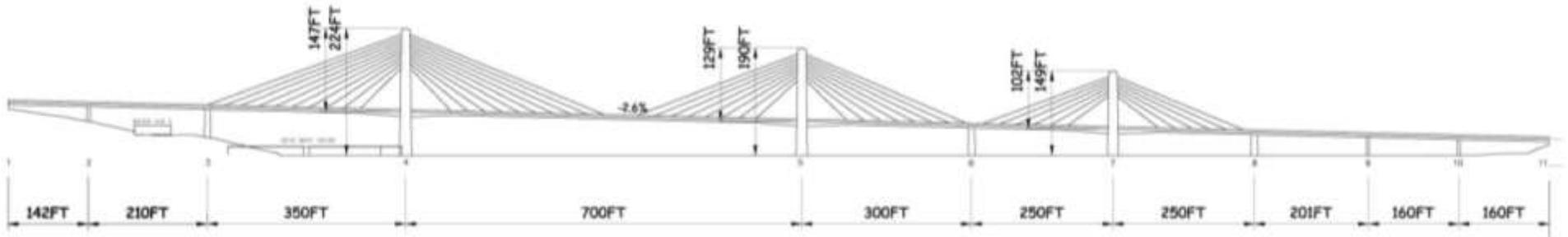
We recommend that the State and City explore the idea of retaining part of the ramps to nowhere. They are located where plans are underway to expand recreational use as part of the Arboretum North Entry project. There is an important opportunity to enrich that design of that project with these socially significant relics of the past.

In closing, the SDC greatly appreciates the time and commitment that WSDOT and the City have made in presenting this project. As the project proceeds, we look forward to continued involvement.

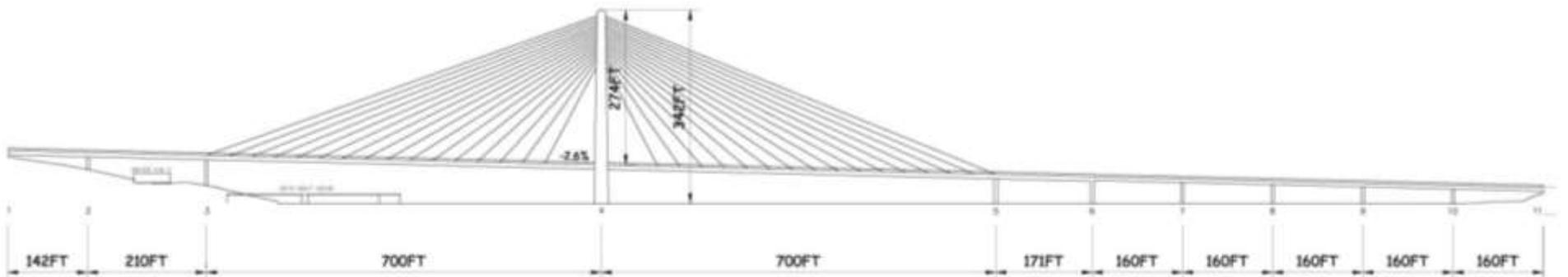
CC: Diane Sugimura, DPD Director
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Attachment A

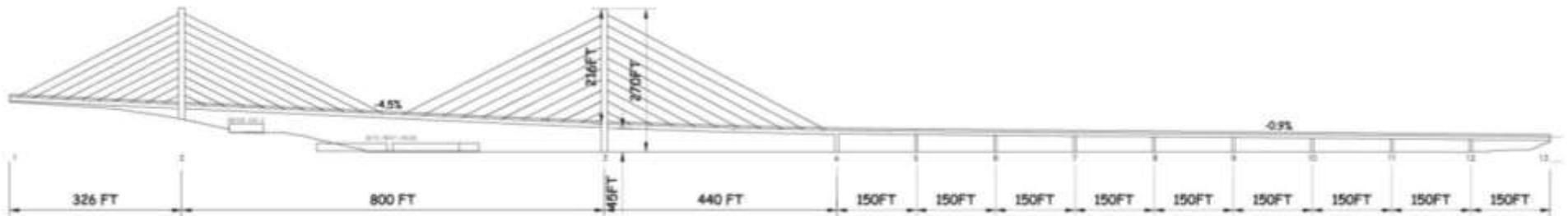
Cable stay bridge designs presented to the SDC



July 8, 2014 – three towers of varied heights (102, 129, and 147 feet above bridge deck) and uniform 2.6% grade



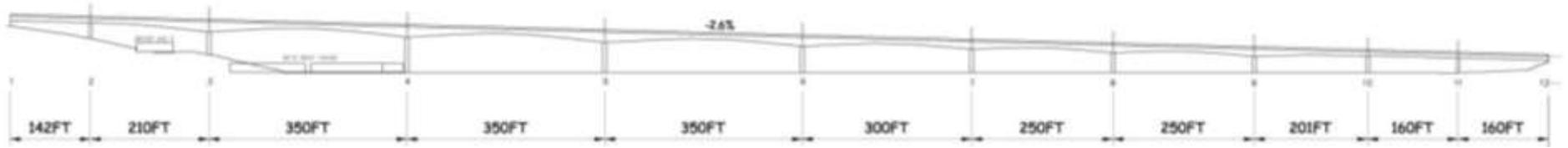
June 17, 2014 – one tall tower (274 feet above bridge deck) and uniform 2.6% grade



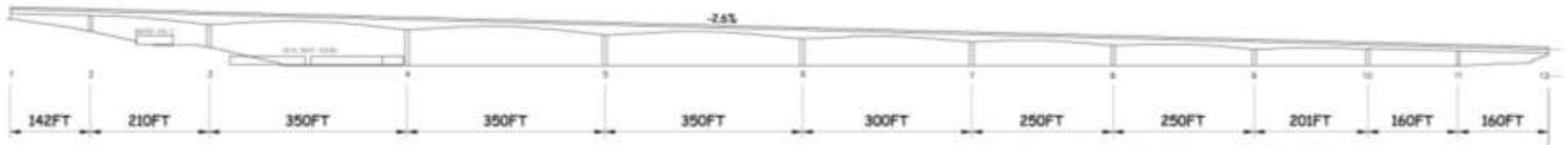
FEIS Baseline Design – two towers of equal height (each 216 feet above bridge deck)

Attachment B

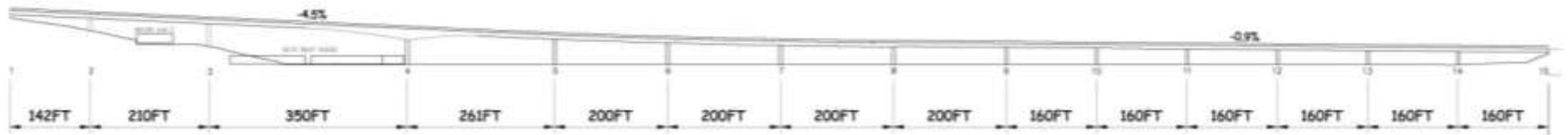
Box girder bridge designs presented to the SDC



July 8, 2014



June 17, 2014



FEIS Baseline Design