Washington State
Department of Transportation

SR 99 - Aurora Bridge Fence

Design Summary

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Description of Project

The SR 99 Aurora Bridge Fence project proposes to build a fence on the outside edge of the George Washington Memorial Bridge (commonly known as the Aurora Bridge). The fence is intended to deter individuals from jumping over the existing bridge railing.

The Washington State Department of Transportation (WSDOT) is the lead agency on the project. WSDOT wants to help protect those who live, work and travel in the community below the bridge. These people are at risk of physical harm when someone jumps from the bridge and are often traumatized by experiencing the aftermath of suicide attempts.

WSDOT also wants to enhance safety for emergency responders, for example, those who must make emergency dives into the murky and debris-filled waters of the Ship Canal in an attempt to save people who jump from the Aurora Bridge.

Background

The Aurora Bridge, spanning the Lake Washington Ship Canal between the Queen Anne and Fremont neighborhoods in Seattle, was completed in 1932. In 1980 it was designated a City of Seattle Landmark[1] and in 1982 it was placed on the National Register of Historic Places[2].

The bridge is known for its steel cantilever truss construction, reaching a height of over 135 feet above the waterway. The historic designation of the bridge is based on the distinctive architectural style of the bridge as well as the importance of the bridge in helping to allow the north-south economic expansion of Seattle.

The first suicide death by jumping from the Aurora Bridge occurred in 1932, prior to the bridge's opening to traffic. As of 2003, over 230 people were known to have jumped from the bridge[3].

In 2006, representatives from the City of Seattle, WSDOT, Seattle Police Department, and a suicide prevention specialist met to discuss the issue of suicide from the Aurora Bride. They proposed installing call boxes and signs directing potentially suicidal individuals to crisis counseling. The call boxes and signs were installed in late 2006 by the City of Seattle.

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[1] *City of Seattle Landmarks Preservation Board Report on Designation* (7/16/1980). See Appendix A.
[2] Atly, Elizabeth; Sodeberg, Lisa; National Park Service. *National Register of Historic Places Nomination Form* (1982). See Appendix B.
[3] Long, Priscilla. "*Seattle's George Washington Memorial Bridge (Aurora Bridge) is dedicated on February 22, 1932* (3/14/2003). http://www.historylink.org/index.cfm?DisplayPage=output.cfm&file_id=5418. Accessed on May 11, 2009.

A local group, Seattle FRIENDS (Fremont Individuals & Employees Nonprofit to Decrease Suicides) discussed suicide from the Aurora Bridge with several local organizations and legislators through 2007. In summer 2007 the Seattle Department of Transportation (SDOT) allocated funds for a preliminary feasibility study for a suicide barrier on the bridge. WSDOT examined design alternatives and prepared an executive summary in November 2007 that recommended a fence be constructed on the bridge[4].

In October 2007, the Seattle City Council funded a design charette to explore fence designs. The city held two barrier design workshops in January and February 2008 and prepared a summary report[5]. In December 2007 WSDOT submitted a preliminary cost estimate for consideration as part of the state 2008 supplemental transportation budget.

In March 2008 the state legislature approved funding for design work. The approved project scope was to "Add an 8 foot fence to the bridge that would be designed in a manner to help deter accidental or intentional falls over the existing railing. Additional illumination would be added across the structure"[6].

In April 2009, funding for construction of the fence was included in the 2009-2011 Transportation Budget passed by the state legislature.

Alternatives Considered

Several suicide prevention options were considered for the Aurora Bridge.

No Build

The no build alternative is the alternative that has the lowest cost and least impact to the bridge; however, taking no action would not result in a reduction of the number of individuals jumping from the bridge. This alternative was not selected because the goal of the legislature is to prevent jumps or falls from the bridge.

Surveillance and Patrols

The addition of signs call boxes to the bridge was successful in connecting individuals with crisis counseling but did not eliminate suicide from the bridge. Traffic cameras will be added to locations near the end of the bridge in 2010 that have the ability to pan, tilt, and zoom in on the bridge, but will not be continually monitored to watch pedestrian activity. Adding staffed patrols to the bridge would

[4] Washington State Department of Transportation. *SR 99 – Aurora Bridge Suicide Prevention Fence Project Proposal (*11/2007). See Appendix C.
[5] EnviroIssues. *SR 99 Aurora Bridge Suicide Prevention Fence* Community Conceptual Design Report (2008). See Appendix D.
[6] Washington State Transportation Executive Information System. *Project Detail Report, SR 99/Aurora Ave Bridge Fence – Suicide Prevention*. http://www.transinfo.state.wa.us. Accessed March 2008.

have the potential to provide intervention, but can not guarantee that all suicidal individuals would be stopped from jumping, so this alternative was not selected.

Netting
Installation of netting suspended by cantilever supports on the understructure of the bridge is a plausible option to deter suicides. The initial cost of construction is similar to fencing – but the cost to maintain the netting would be substantially higher because the netting would need to be replaced every few years. The netting would make typical maintenance and inspection tasks much more difficult. Due to the significant cost and increased difficulty of maintenance, this option was eliminated.

Closing the Bridge to Pedestrians
Closing the bridge to pedestrians would mean that bicyclists have no other option for riding across the bridge but to use the travel lanes. The narrow lanes and substantial volume of vehicles using the bridge would make potentially hazardous travel for bicyclists. Pedestrians (and bicyclists not wishing to ride in a travel lane) would either have to board a transit bus to cross the bridge or detour their route to cross the canal at the Fremont Bridge. This option was not selected because a safe viable option exists that maintains pedestrian and bicycle travel on the bridge.

Pedestrian/Bicycle Structure Suspended Under the Bridge
This option would provide an enclosed structure attached underneath the bridge for pedestrian and bicycle travel. Estimated to cost in the range of $29 million (in 2003 dollars), which is several times more than fencing. In addition, WSDOT was concerned that the pedestrians and bicyclists using the enclosed structure would be targeted for crime since they would be traveling on a secluded path/tunnel over one-half mile in length.

Fencing
The use of fencing for the prevention of suicides has been used successfully on other bridges such as the Bloor Street Viaduct in Toronto, and the Duke Ellington Bridge in Washington, D.C. This option was deemed to be the most feasible – maintenance costs will be minimal, safety and route of pedestrians and bicyclists will be maintained, and this option will have the lowest cost over the duration of the fence life compared to other barrier options.

WSDOT Design Process

A design workbook conveying the chronological development of the fence was prepared by WSDOT bridge architect Paul Kinderman[7]. The workbook includes fence design visualizations and shows the evolution of the design between the conceptual and final designs. WSDOT sought advice and comments from an

[7] Kinderman, Paul, Washington State Department of Transportation. *SR 99 Aurora Avenue Bridge Fence Design Committee Work Book* (2009). See Appendix E.

advisory committee, a technical design committee, members of the public, the Washington State Department of Archaeology and Historic Preservation, and the City of Seattle's Architectural Review Committee.

Advisory Committee and Technical Design Committee

In June 2008 WSDOT formed an advisory committee to help guide the design of the fence. Members of the advisory committee included representatives from:

- Queen Anne Community Council
- Fremont Neighborhood Council
- Historic Seattle
- Seattle Department of Neighborhoods
- King County Crisis Clinic
- Seattle FRIENDS
- A former Landmarks Preservation Board member
- WSDOT engineers, cultural resource specialists, and architect

WSDOT distributed several news releases and sent a postcard to approximately 16,000 local addresses inviting the community to attend the advisory committee meetings and make public comment[8]. The advisory committee had an initial informal meeting followed by six meetings between July and October 2008.

In addition to the advisory committee, WSDOT formed a technical design committee to review comments from the advisory committee and assist WSDOT in developing the fence design. The design committee meetings alternated with the advisory committee meetings and concluded in October 2008. The design committee included WSDOT engineers, state bridge architect, cultural resource specialists including a historic preservation specialist, and two volunteer architects from Seattle.

Public Involvement

WSDOT encouraged members of the public to provide feedback through a project Web site. Information about the advisory committee, frequently asked questions, and a chronological design workbook were posted on the Web site. A project fact sheet[9] was developed in November 2008 which was also posted to the Web site and distributed by hard copy to community members by request and at community briefings. WSDOT project staff briefed the Queen Anne/Magnolia District Council, Queen

[8] Washington State Department of Transportation. *SR 99 Aurora Bridge Fence (postcard)* (2008). See Appendix F.
[9] Washington State Department of Transportation. *SR 99 Aurora Bridge Fence (fact sheet)* (2008). See Appendix G.

Anne Community Council, Fremont Chamber of Commerce, and Fremont Neighborhood Council.

Consultation with DAHP

WSDOT conducted an informal consultation with the state Department of Archeology and Historic Preservation (DAHP) in fall 2008. The guidance received instructed WSDOT to follow state Executive Order 05-05 regarding Archeological and Cultural Resources[10] and the Secretary of the Interior Standards for Rehabilitation[11].

Consultation with the City of Seattle's Architectural Review Committee

As the design progressed, WSDOT met with the Architectural Review Committee (ARC), a subset of the City of Seattle Landmarks Preservation Board (SLPB). Since the bridge is a designated city landmark, the Seattle Municipal Code states that a Certificate of Approval must be obtained prior to making alterations to the bridge[12].

In November 2007 WSDOT Program Management staff met with the ARC to provide information on project status, and design options and recommendations. WSDOT design engineers first met with the ARC in August 2008. WSDOT discussed the project and preliminary design concept including 3/16-inch stainless steel cables at 4-inch spacing. The ARC provided guidance to WSDOT to make the fence as visually light and simple as possible.

In fall 2008, WSDOT determined that replacing the lighting on the Aurora Bridge was sufficient and additional illumination was not necessary, and would not increase the effectiveness of the proposed fence. As a result, WSDOT removed additional illumination from the project scope.

WSDOT returned to the ARC twice in October 2008 and discussed options for the top of the fence. Based on feedback from the ARC, DAHP, and advisory committee, WSDOT decided to move forward with vertical pickets at the top of the fence, and extend the bottom of the fence to the elevation of the sidewalk. Existing photos and renderings of the bridge, as well as the engineering criteria for the fence and a summary of alternatives were provided to the ARC[13].

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[10] State of Washington. *Executive Order 05-05* (2005). See Appendix H.
[11] Secretary of the Interior, National Park Service. *Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings.* See Appendix I.
[12] City of Seattle. *Seattle Municipal Code 25.12.080*. See Appendix J.
[13] Washington State Department of Transportation. *SR 99 Aurora Bridge Fence Summary of Alternatives (*2008), *Existing Photos* (2009), *Engineering Criteria* (2008), *Common Questions* (2008), Channel Frame and Tube Frame Details (2008), Channel Frame/Tube Frame Horizontal and Vertical Pickets. See Appendix K.

Between November 2008 and January 2009 WSDOT continued to develop the fence design and constructed a steel-frame test panel (see Appendix L for photos). In January 2009, WSDOT held a meeting with members of the engineering, maintenance, and construction staff to view and discuss the test panel. The stainless steel cables were abandoned in favor of stainless steel rods to improve the visual and functional qualities of the fence. Changing from cables to rods allowed the bridge engineers to minimize the size of the fence frame, vertical supports, and connections.

In February 2009, WSDOT submitted an application for a Certificate of Approval to the SLPB. A fourth meeting was held that month to discuss the application. The ARC expressed a desire to see a mockup of the fence placed on the bridge. On March 29th, a wood-frame mockup was placed on the west side of the bridge near N 34th Street for two hours. WSDOT invited members of the SLPB to view the bridge panel, as well as members of the advisory committee and design committee (see Appendix M for photos).

WSDOT met again with the ARC in April 2009. The ARC requested that WSDOT propose alternate fence colors and end treatments, as well as submit updated plans. WSDOT provided the information and met twice more with the ARC in May 2009.

Guidelines Followed During Design Development

Executive Order 05-05

Executive Order 05-05, issued by Governor Christine Gregoire, directs all Washington state agencies to review capital construction projects with DAHP to determine potential impacts to historic resources. WSDOT followed the direction of this order and coordinated with DAHP to discuss the project and to determine if the addition of the fence to the bridge constituted an adverse effect on the historic structure.

As part of the requirements of Executive Order 05-05, WSDOT also initiated formal consultation with Tribes and other Interested Parties. This consisted of a description of the project, and a discussion of the Section 106 process (federal funds were anticipated at that time). Four Tribes and 38 groups or individuals were thus contacted.

WSDOT further followed the guidance of the order and took action to avoid, minimize, and mitigate the adverse effect by:

- Preserving existing historic features by designing a fence that does not impact the historic cast iron railing,

- Minimizing the visual impact of the fence by using thin vertical elements and aligning fence posts with existing rail posts, and
- Designing a fence that can be removed without damaging or otherwise impacting the appearance of the existing bridge.

Secretary of the Interior Standards for Rehabilitation

The Secretary of the Interior Standards are issued by the National Park Service and are "intended to promote responsible preservation practices that help protect our Nation's irreplaceable cultural resources."[14]

The standards, and narrative on how WSDOT followed key standards, is provided below:

1. *A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.*

2. *The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.*

   This project does not remove any distinctive materials or alter features and spatial relationships that characterize the bridge. The cantilevered trusses are the primary character-defining features of the bridge, demonstrating an engineering technology that was innovative at the time of its construction (the longest cantilevered deck truss bridge in the state at the time). The railings are considered secondary character-defining elements, and they will not be altered as part of this project. Furthermore, the railings are a diminutive element when the bridge is viewed as a whole. While the introduction of the fence alters the spatial relationship of the deck to the substructure (trusswork, piers, approach spans), the addition has been designed to be as transparent and visually unobtrusive as possible, while maintaining tensile strength to resist bending forces, wind loading, and other engineering criteria.

3. *Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical*

[14] National Park Service. *Introduction: Choosing an Appropriate Treatment for the Historic Building.* http://www.nps.gov/history/hps/tps/standguide/overview/choose_treat.htm Accessed on 5/8/2009.

development, such as adding conjectural features or elements from other historic properties, will not be undertaken.

The new fence is not at all conjectural, nor does it introduce a false sense of historicity: It is designed using contemporary yet compatible materials, utilizing modern fence designs and construction technologies, and it will be painted in a manner that does not compete with the original bridge's character-defining elements (trusswork, original railings).

4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.

7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.

The new addition does not destroy historic materials. While the introduction of the barrier modifies the spatial relationship of the deck and railing (superstructure) to the substructure (trusswork, piers, approach spans), the addition has been designed to be as transparent and visually unobtrusive as possible, while maintaining tensile strength to resist bending forces, wind loading, etc. In addition, the

barrier is designed to be removable in panels for maintenance and future dismantling (if warranted). The original railing remains visible, it is not altered by the addition of the new barrier, and it will be rehabilitated in the future as part of a bridge painting project.

10. *New additions and adjacent or related new construction will be undertaken in a such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.*

Seattle Municipal Code

Through seven meetings with the ARC, WSDOT has provided information to assist the SLPB in making a decision on the application for a Certificate of Approval. The Seattle Municipal Code cites factors to be considered by the board in making a decision[15]. The two key factors that apply to this project are listed below:

A. The extent to which the proposed alteration or significant change would adversely affect the specific features or characteristics specified in the latest of: the Board approval of nomination, the Board report on approval of designation, the stipulated agreement on controls, the Hearing Examiner's decision on controls, or the designating ordinance.

B. The reasonableness or lack thereof of the proposed alteration or significant change in light of other alternatives available to achieve the objectives of the owner and the applicant.

To the greatest extent practicable, the fence was designed to meet the Secretary of the Interior Standards, in consultation with the DAHP, the ARC, and a design committee comprised of the state bridge architect, two volunteer architects, and a historic preservation specialist. Measures to minimize harm to the bridge were incorporated into the final design submittal, including a minimalist climbing deterrent on top of the barrier, minimization of the top chord of the barrier by changing the vertical elements to a steel rod design instead of tensioned steel cables, and by keeping the overall design ethos contemporary, but streamlined so as not to interfere with the ornate elements in the original pedestrian railings.

To demonstrate the effect of the fence, extensive design visualizations were provided to the ARC, including a scale plot of the bridge including the fence. A full-scale mockup was also placed on the bridge for in-person

[15]City of Seattle. *Seattle Municipal Code 25.12.750*. See Appendix N.

viewing by the Board members. WSDOT has also provided information about fence alternatives explored prior to the state legislature's funding and direction to proceed with the project.

Preferred Alternative

WSDOT's preferred alternative is indicated in the plans submitted to the SLPB. The fence will be composed of removable steel-frame panels that are bolted into steel support posts connected to the bridge. Each frame contains 3/8 inch diameter stainless steel rods placed vertically and spaced 5 inches apart. At the top of the fence are vertical pickets alternating in height between 2 and 4 inches.

The fence will be placed on both sides of the bridge from one end to the other, except for approximately 20 feet at the bridge ends. The fence will terminate with 2 foot-six inch wide perpendicular outrigger panels located two full panels prior to the end of the fence.

The proposed color of the fence is Federal Standard 595B color 26307, the same color as the steel truss of the bridge. The steel channels of the fence frame, vertical supports, and connections will be painted. The stainless steel rods and pickets will not be painted.

The City of Seattle
Landmarks Preservation Board
400 Yesler Building Seattle, Washington 98104 · (206) 625-4501

LPB-311/80

REPORT ON DESIGNATION

Name of Property: The George Washington Memorial Bridge (The Aurora Bridge)

Legal Description: Aurora Ave. North over Lake Washington Ship Canal; City Bridge Engineer's File #11.

At its Public Hearing held on July 16, 1980 the City of Seattle's Landmarks Preservation Board voted to approve the designation of the George Washington Memorial (Aurora) Bridge as a City of Seattle Landmark based upon satisfaction of the following criteria for designation, Ordinance 106348:

> *Section 3.01 (3) It is associated in a significant way with a significant aspect of the cultural, political, or economic heritage of the community, city, state or nation;*

The construction of this Bridge was an important, economic development in conjunction with other highway/roadway improvements in providing north-south expansion of the city; facilitating north-south traffic flow and direction; and improved linkage with major highways running the length of the state.

> *Section 3.01 (4) It embodies the distinctive visible characteristics of an architectural style, or period, or of a method of construction;*

The Bridge is an excellent, well designed and executed example (and the best in the City) of a cantilevered structure, with an ellipitical main arch where top chord (and of the ancillary arches) provides the roadway deck. This bridge, in contrast to later structures (such as the I-5 bridge nearby) demonstrates unified design of all its elements, including its cantilevered arches, roadway, piers and approaches.

Administered by The Office of Urban Conservation. The Seattle Department of Community Development

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City of Seattle
Department of Community Development/Office of Urban Conservation

Landmark Nomination Form

Name George Washington Memorial Bridge **Year Built** 1932
(Common, present or historic)
"Aurora Bridge"

Street and Number Aurora Avenue North over Lake Washington Ship Canal

Assessor's File No. City Bridge Engineer's File #11

Legal Description **Plat Name** _____ **Block** _____ **Lot** _____

Present Owner State of Washington **Present Use** vehicular traffic bridge over waterway

Address _____

Original Owner State of Washington **Original Use** same

Architect Washington State Highway Department
Samuel J. Humes, Director
T.G. McCrory, Chief Engineer
R.M. Murray, Resident Engineer
Jacobs & Ober, designers under Humes

Builder substructure: Pacific Bridge Co., Portland
superstructure: U.S. Steel Products Corporation
approaches: N.Nygren, Seattle

Description: Present and original (if known) physical appearance and characteristics

The George Washington Memorial Bridge, a structural steel cantilever deck bridge, was dedicated on February 22, 1932 by President Herbert Hoover via the golden telegraph key, and has been known ever since as the Aurora Bridge. Two hundred drillings into the substrata below Lake Union at 5 potential crossings showed conditions best for its erection at the Aurora Avenue location. Designs by the consulting firm of Jacobs and Ober for through cantilever bridges, suspension bridges and cantilever arch bridges were submitted to Samuel J. Humes, State highway director before the latter form was agreed upon.

The cantilever bridge is constructed by first establishing the piers on piles driven to bedrock (which is variable and quite deep in places below Lake Union's muddy bottom. From these reinforced concrete piers, the steel superstructure is built outward in both directions in a subtle balancing act. The shoreward cantilever, constituting half an arch is made firm to an anchoring pier; the two 325-foot lakeward projections are connected by a separate 150-foot suspended span which is hoisted into place between them and fastened. The resultant arch is alliptical, with a variable radius, built up of Warren trusses with subdivided panels. The top chord of the truss is the roadway deck, the total length of which is 1450 feet.The 1200-foot long north approach, a steel span extending inland from the north anchor pier, and the 500-foot south approach, of steel and concrete supported by concrete bents, added to the 3 main spans, give a total bridge length of approximately 3150 feet. The high water clearance under the center of the arch meets the War Department standard of 135 feet, high enough for most conventional ships but prohibiting Lake Union access to the high-masted schooners, known affectionately by Seattle residents as the "tall ships". Slotted reinforced concrete piers of cruciform section form the anchoring piers and carry the approach girders at both ends. The gothic arch

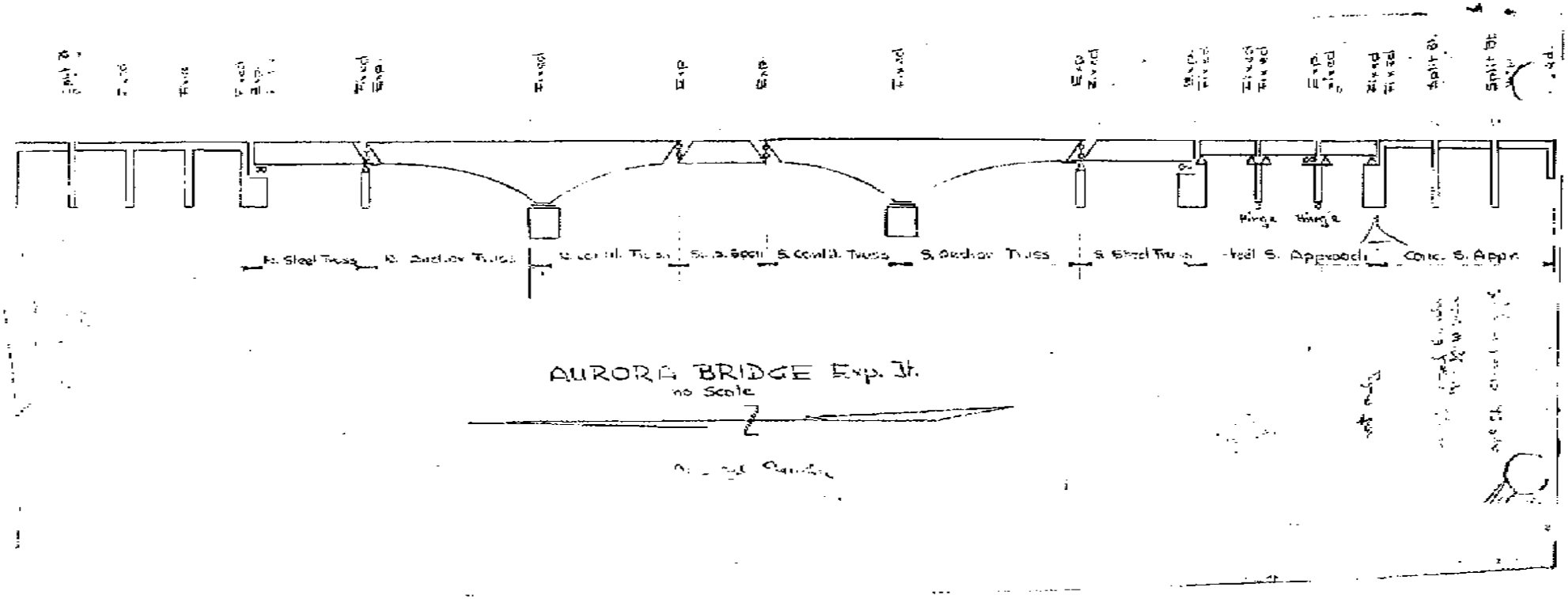
Statement of significance

The George Washington Memorial Bridge was the first large-scale highway bridge linking the central area of Seattle with the expanding residential districts to the northwest, and connecting into the highway 99 complex. The three moveable bridges built in 1917-1919 (Ballard, Fremont and University), and the Montlake Bridge (1927) had previously handled all north-south traffic over the waterway and were rapidly being overwhelmed by the volume of automobile traffic. The Aurora Bridge is the first fixed span bridge allowing unobstructed passage of most conventional watercraft. The demise of the streetcar in Seattle was foreshadowed in this bridge, the first to be built without tracks.

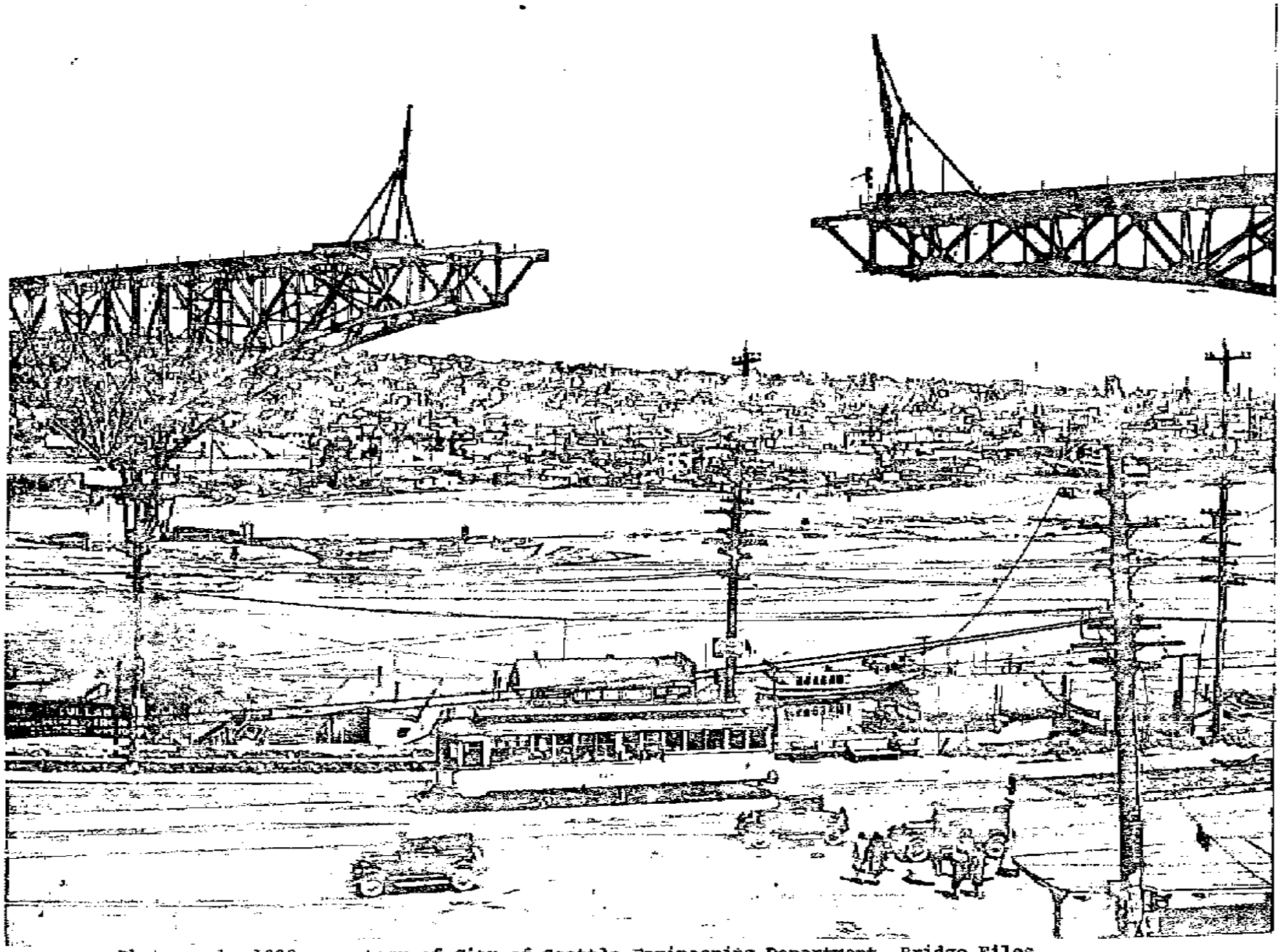
Description: Present and original (if known) physical appearance and characteristics

form of the north side piers creates an unusual umbrella over a short stretch of uphill street.

In his authoritative two-volume Bridge Engineering of 1916, J.A. L. Waddell describes the cantilever bridge as developed at the time as "uncompromisingly ugly". Subsequent advances in the art and science of bridge design have resulted sixteen years later in a bridge form which derives an aesthetic from its pure expression of functionality.



Drawing courtesy of City of Seattle Engineering Department, Bridge Files



Photograph, 1932; courtesy of City of Seattle Engineering Department, Bridge Files

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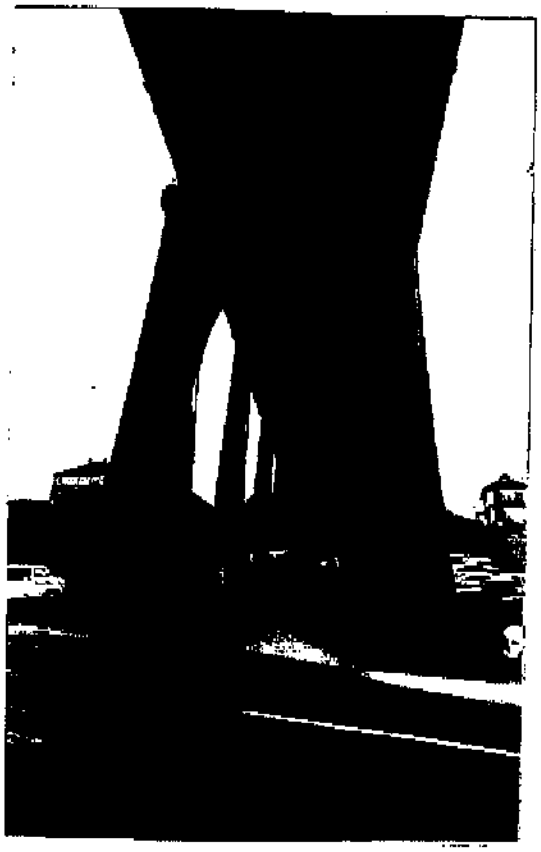
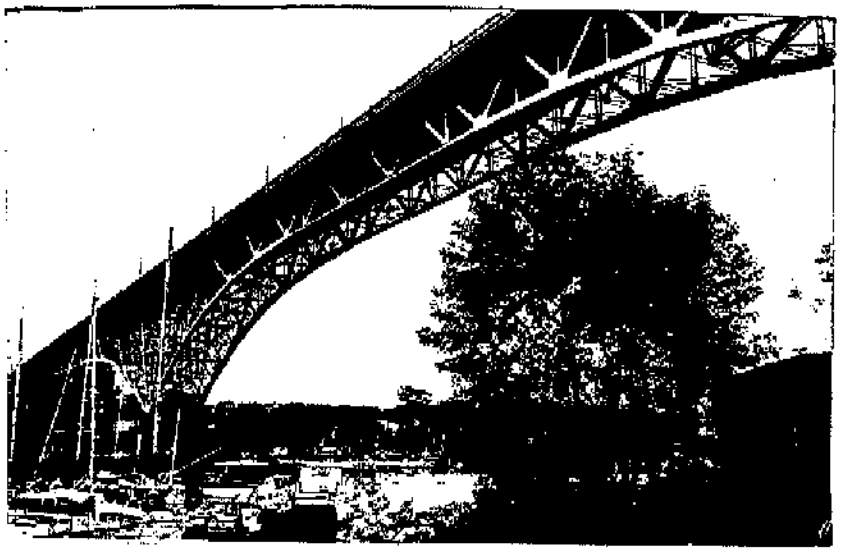
Photographs:





Submitted by: Elizabeth Shellin Atly

Address Office of Urban Conservation Phone 206-625-4501

Date January 2, 1980

Reviewed _____ Date _____
Historic Preservation Officer

LAW DEPARTMENT

ORDINANCE 110345

AN ORDINANCE relating to historic preservation, imposing controls upon the George Washington Memorial "Aurora" Bridge, a Landmark designated by the Landmarks Preservation Board under Ordinance 106348.

WHEREAS, the Landmarks Ordinance (106348) establishes a procedure for the designation and preservation of structures and areas having historical, cultural, architectural, engineering or geographic importance; and

WHEREAS, the Landmarks Preservation Board after a public hearing on June 4, 1980, voted to approve the nomination of the George Washington Memorial "Aurora" Bridge in Seattle as a Landmark under Ordinance 106348; and

WHEREAS, after a public hearing on July 16, 1980, the Board voted to approve the designation of the George Washington Memorial "Aurora" Bridge as a Landmark under Ordinance 106348; and

WHEREAS, on September 17, 1980, the Board and the City department with jurisdiction of the designated property agreed to controls and incentives; and

WHEREAS, the Board recommends to the City Council approval of the agreed controls and incentives; Now, Therefore,

BE IT ORDAINED BY THE CITY OF SEATTLE AS FOLLOWS:

Section 1. That the designation by the Landmarks Preservation Board of the George Washington Memorial "Aurora" Bridge, more particularly described as Aurora Avenue North over the Lake Washington Ship Canal; City Bridge Engineer's File No. 11, as a Landmark based upon satisfaction of the following criteria of Ordinance 106348:

(1) It is associated in a significant way with a significant aspect of the cultural, political, or economic heritage of the community, city, state or nation; and

(2) It embodies the distinctive visible characteristics of an architectural style, or period, or of a method of construction; and

(3) Because of its prominence of spatial location, contrasts of siting, age, or scale, it is an easily identifiable

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visual feature of its neighborhood or the city and contributes to the distinctive quality or identity of such neighborhood or the city;

is hereby acknowledged.

Section 2. The following controls upon alteration of the landmark are hereby imposed:

A Certificate of Approval must be obtained or the time for denying a Certificate of Approval must have expired before the owner may make alterations to the entire structure, including span and approaches, and all related attached structural elements. Changes on the property beneath the bridge and any in-kind maintenance and repair for the above noted features shall be excluded from the above controls.

Section 3. The following incentives are hereby made available to the owner:

1. The incentives available to all Seattle Landmarks under the City's Zoning Ordinance; and
2. Historic Preservation Grants-in-Aid funds, on an application basis, should the property be entered in the National Register of Historic Places.

Section 4. Enforcement of this Ordinance and penalties for its violation shall be as provided in Section 14.08 of Ordinance 106348.

Section 5. The City Clerk is hereby directed to record this ordinance with the King County Director of Records and Elections, deliver two copies to the City Historic Preservation Officer, 400 Yesler Building, and deliver one copy to the Director of the Department of Construction and Land Use.

(__ e used for all Ordinances except Eme__ cy.)

Section 6 This ordinance shall take effect and be in force thirty days from and after its passage and approval, if approved by the Mayor; otherwise it shall take effect at the time it shall become a law under the provisions of the city charter.

Passed by the City Council the 28th day of December, 1981, and signed by me in open session in authentication of its passage this 28th day of December, 1981.

[signature]
President of the City Council.

Approved by me this 4th day of January, 1982.

Charles Royer
Mayor.

Filed by me this 4th day of January, 1982.

Attest: [signature]
City Comptroller and City Clerk.

(SEAL)

Published

By Theresa Dunbar
Deputy Clerk.

A. C.
S. E.
C. O.
LIGHT

TIONAL REGISTER OF HISTORIC PLACES

ied States Department of the Interior
ional Park Service

EVALUATION / RETURN SHEET
82004230

Aurora Avenue (Geo. Washington Mem.) Bridge (Hist. Bridges/Tunnels in WA State TR), King County, WASHINGTON,

Working No. 4/3/82-1706
Fed. Reg. Date: 2-1-83
Date Due: [illegible]
Action: ✓ ACCEPT 7/16/82
___ RETURN
___ REJECT
Federal Agency: ___

___ resubmission
___ nomination by person or local government
___ owner objection
___ appeal

Substantive Review: ___ sample ___ request ___ appeal ___ NR decision

Reviewer's comments:

Recom./Criteria ___
Reviewer ___
Discipline ___
Date ___
___ see continuation sheet

Nomination returned for: ✓ technical corrections cited below
___ substantive reasons discussed below

1. Name

2. Location

3. Classification

Category	Ownership	Status	Present Use
	Public Acquisition	Accessible	

4. Owner of Property

5. Location of Legal Description

6. Representation in Existing Surveys

has this property been determined eligible? ___ yes ___ no

7. Description Please fill in blank

Condition		Check one	Check one
✓ excellent	deteriorated	unaltered	original site
good	ruins	altered	moved date ___
fair	unexposed		

Describe the present and original (if known) physical appearance

___ summary paragraph
___ completeness
___ clarity
___ alterations/integrity
___ dates
___ boundary selection

Description (cont.)

The 800 foot cantilever structure is of the deck type and consists of two 325 foot cantilever arms and one 150 foot Warren truss suspended span. The main span is flanked by two anchor arms, 300 and 350 feet in length, and two Warren deck truss spans, 200 and 225 feet in length. All truss panels are 25 feet long, and the trusses are spaced 40 feet apart. The superstructure, which is composed of carbon and silicon steel, was fabricated and erected by the U.S. Steel Products Corporation.

The approaches are composed of reinforced concrete spans ranging in length from 41 to 63 feet. There are 12 girder spans at the north end, and three girder spans at the south end. The south approach also includes three 75 foot Warren deck truss spans. The foundations for the substructure, which were constructed by N. Nygren of Seattle, consist of reinforced concrete piles upon which the piers and bents were poured.

The two main piers and the two anchor piers were erected by the Pacific Bridge Company of Portland, Oregon. The main piers, which support a load of 8000 tons, rest on timber piles. There are 828 piles in the south main pier, and 684 piles in the north main pier. These 110 to 120 foot piles were driven so that their tops are 50 to 55 feet below the water surface. The work required a specially designed pile driver with long, subaqueous leads.

The final design of the bridge was prepared in the office of Jacobs and Ober, consulting engineers of Seattle. The Washington Department of Highways, under the direction of Samuel J. Humes, Director, T.G. McCrory, Chief Engineer, and R.M. Murray, Resident Engineer, supervised the design and construction of the bridge. On February 22, 1932 the George Washington Memorial Bridge was opened to traffic.

The bridge, more commonly known as the Aurora Avenue Bridge, demonstrates the evolution and progressive refinement of the cantilever truss in the 20th century. Its bold structural simplicity epitomizes the merging of a functional and an aesthetic form in the cantilever truss.

REFERENCES (CONTINUED)

Elizabeth Shellin Atly, "Landmark Nomination Form," Office of Urban Conservation, 2 January 1980.

NAER INVENTORY

U.S. Department of the Interior
Heritage Conservation and Recreation Service

1. SITE I.D. NO

2. INDUSTRIAL CLASSIFICATION: Bridges, Trestles, and Aqueducts

TRUSS: steel — 7 6 0 3

99/560 099000341400

3. PRIORITY: 1

5. DATE: 1931/00

4. DANGER OF DEMOLITION? (SPECIFY THREAT) ☐ YES ☒ NO ☐ UNKNOWN

6. GOVT SOURCE OF THREAT: OWNER ADMIN

7. OWNER ADMIN: State Department of Transportation

8. NAME(S) OF STRUCTURE: Aurora Avenue (George Washington Memorial) Bridge

9. OWNER'S ADDRESS: Highway Administration Building, KF-01
Olympia, WA 98504

10. STATE: WA — COUNTY: 033 — COUNTY NAME: King — CITY/VICINITY: Seattle — CONG. DIST.: 03

STATE / COUNTY / COUNTY NAME / CITY/VICINITY / CONG. DIST.

11. SITE ADDRESS (STREET & NO.)
7.3 N. Jct. SR 509
Aurora Avenue North over Lake Washington Ship Canal

12. EXISTING SURVEYS: ☐ NR ☐ NHL ☐ HABS ☐ HAER-I ☐ HAER ☐ NPS ☐ CLG ☐ CONP ☐ STATE ☐ COUNTY ☐ LOCAL ☐ OTHER

13. SPECIAL FEATURES (DESCRIBE BELOW): ☐ INTERIOR INTACT ☐ EXTERIOR INTACT ☐ ENVIRONS INTACT

14. UTM ZONE 10 — EASTING 549100 — NORTHING 5277710 — SIGN — SCALE ☒ 1:24 ☐ 1:62.5 ☐ OTHER — QUAD NAME Seattle North, Washington

UTM ZONE 10 — EASTING 549120 — NORTHING 5276680 — SIGN — SCALE ☒ 1:24 ☐ 1:62.5 ☐ OTHER — QUAD NAME Seattle North, Washington

15. CONDITION: 70 ☐ EXCELLENT 71 ☐ GOOD 72 ☐ FAIR 73 ☐ DETERIORATED 74 ☐ RUINS 75 ☐ UNEXPOSED 76 ☐ ALTERED ☐ DESTROYED 85 ☐ DEMOLISHED

16. INVENTORIED BY: Lisa Soderberg — AFFILIATION: HAER/Washington State Bridge Inventory — DATE: September 1980

17. DESCRIPTION AND BACKGROUND HISTORY, INCLUDING CONSTRUCTION DATE(S), HISTORICAL DATE(S), PHYSICAL DIMENSIONS, MATERIALS, EXTANT EQUIPMENT, AND IMPORTANT BUILDERS, ENGINEERS, ETC

In 1931, the State of Washington erected a 2955 foot steel cantilever arch truss over Lake Union and the Lake Washington Ship Canal to link Seattle's business center with the expanding residential districts to the northwest. This 57 foot wide structure consisted of a four lane highway which provided a major connection to the Pacific and Lincoln Highways. Because the bridge was a significant link, it was funded jointly by the State, County and City at a cost of about $2.5 million. The bridge absorbed the growing volume of automobile traffic which could no longer be handled adequately by the four bascule bridges built across the canal during the late teens and 20's. The cumbersome delays that occurred on the bascule bridges due to the raising of the spans to allow for the passage of ships were eliminated on the Aurora Avenue Bridge, because its 135 foot vertical clearance provided unobstructed passage for most conventional vessels. It was the first Seattle bridge to be constructed without street car tracks - a tangible result and affirmation of the emerging dominance of the automobile in the city's transportation network.

(CONT OVER)

18. ORIGINAL USE: vehicular — PRESENT USE: vehicular — ADAPTIVE USE:

19. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Department of Transportation bridge files.
"Lake Union Bridge Provides New Traffic Link in Seattle," Engineering News-Record, 3 March 1932, p. 343.
"Superstructure for Highway Bridge at Seattle, Washington," Engineering News-Record, 28 August 1930, p. 351.
"Lake Union Bridge, Seattle, Washington," Western Construction News, 10 May 1930, pp. 226-229.

(CONT OVER)

20. URBAN AREA 50,000 POP. OR MORE? ☒ YES ☐ NO

21. N W

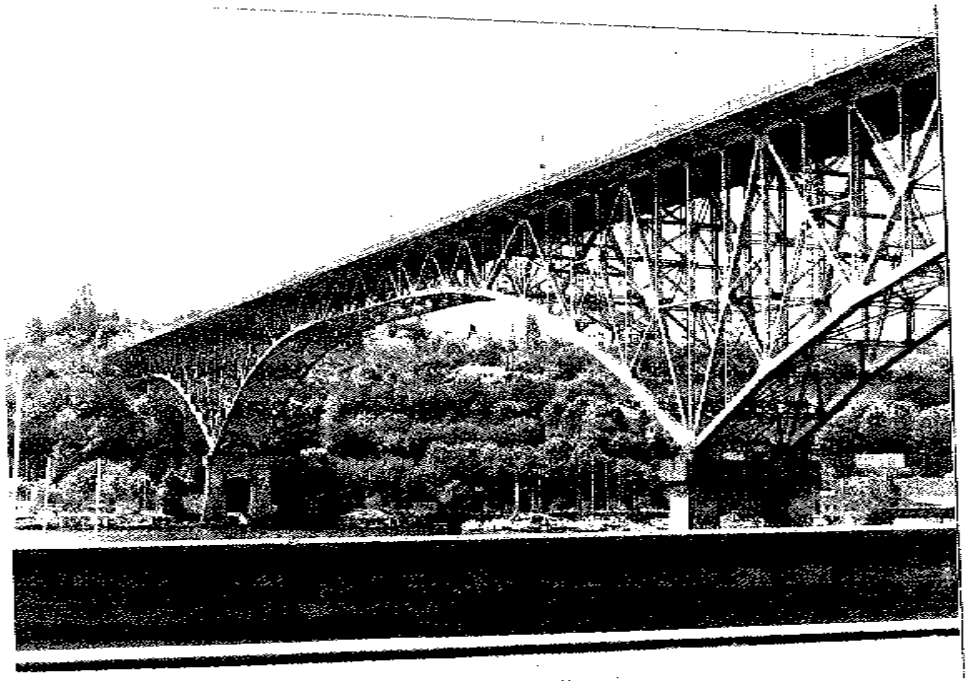
22. PUBLIC ACCESSIBILITY: ☐ YES, LIMITED ☒ YES, UNLIMITED ☐ NO ☐ UNKNOWN

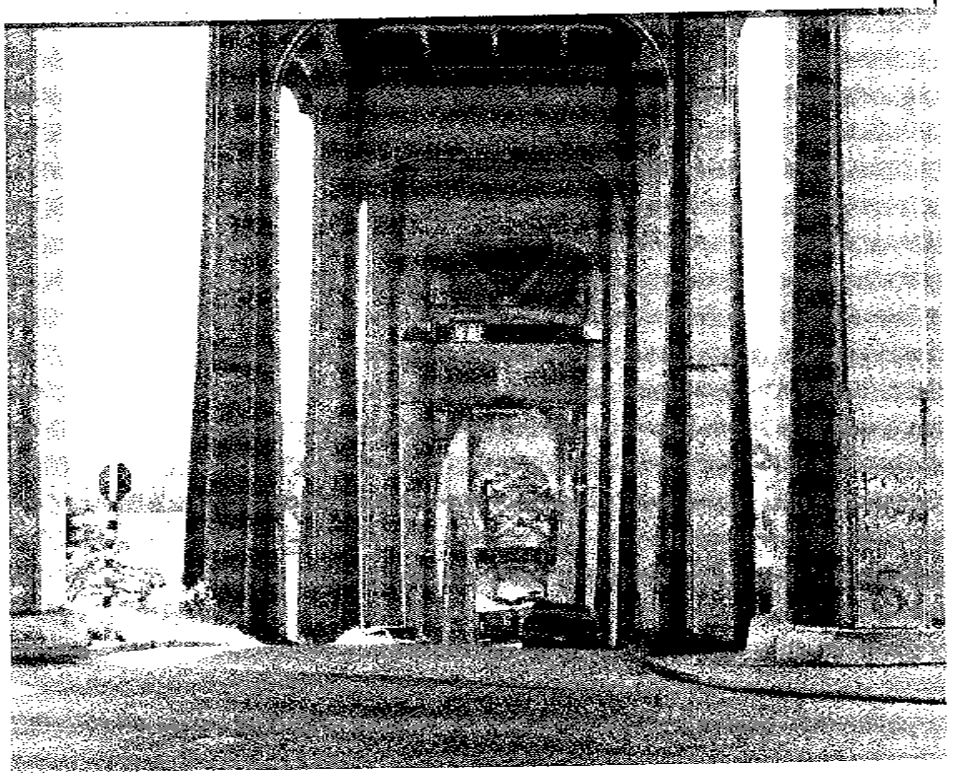
23. EDITOR / INDEXER

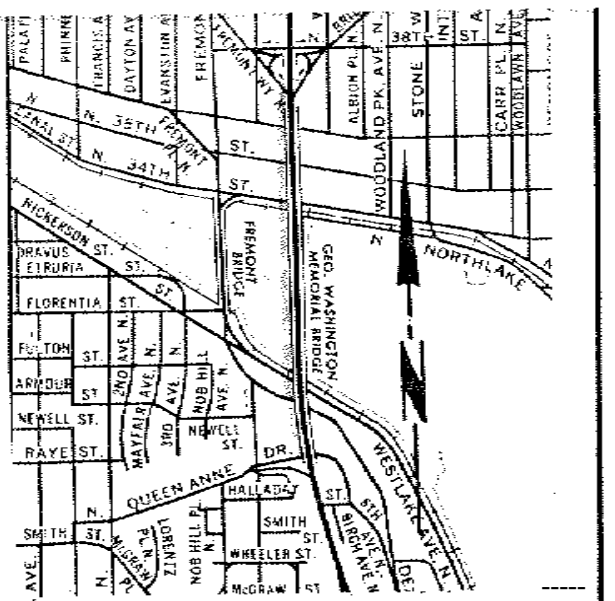
24. LOCATED IN AN HISTORIC DISTRICT? ☐ YES ☒ NO — NAME — DISTRICT I.D. NO

FHR-8-260 1/79 HCRS REGION
GPO 871 981

25. Photos and Sketch Map of Location







Washington State
Department of Transportation

SR 99 - Aurora Bridge Suicide Prevention Fence Project Proposal

Executive Summary

Design Options and Recommendations

Submitted by
WSDOT - NW Region
Program Development
15700 Dayton Avenue North
P.O. Box 330310, Seattle Wa 98133-9710
206-440-4749

Executive Summary

Since the George Washington Memorial Bridge (commonly known as the Aurora Bridge) was constructed in 1931, it has been utilized for suicides. The aftermath of these suicides affects more than those who commit or attempt suicide and their family and friends. They significantly affect people who live and work below the bridge and first responders.

The Washington State Department of Transportation (WSDOT) has been asked to provide a cost estimate and schedule to the state Legislature for construction of a suicide prevention fence on the Aurora Bridge.

The Aurora Bridge is a designated National Historic Landmark. Any suicide preventive measure that will affect bridge aesthetics would require regulatory review and approval.

We are coming to the Seattle Landmarks Preservation Board to familiarize the Board with the project. In addition, we are looking for input to determine whether there are any serious design flaws that could cause schedule delays and/or cost increases associated with obtaining the Board's approval.

Background

Constructed in 1931-32 the Aurora Bridge is a cantilever steel truss bridge that carries Aurora Avenue (State Route 99) over the west end of Seattle's Lake Union between the Queen Anne and Fremont neighborhoods. The bridge is 2,945 feet long, 70 feet wide, and 167 feet above Lake Union. The Seattle Department of Transportation (SDOT) is responsible for maintaining the bridge and WSDOT is responsible for inspections and upgrading the bridge to preserve its long-term integrity.

Project Description

WSDOT and the City of Seattle are investigating options for fencing on the Aurora Bridge which will deter suicide attempts.

The Washington State Legislature will consider funding the bridge fencing project in the 2008 legislative session. If the project receives funding during the session, design work could start in spring 2008, with construction starting as early as summer 2009.

Project Benefits

Thus far this year at least five people committed suicide by jumping from the bridge. WSDOT, the City of Seattle and local health care professionals hope to help prevent people from committing suicide by jumping from the Aurora Bridge. In addition, we will help protect those who live, work and travel in the community below the bridge. These people are at risk of physical harm when someone jumps from the bridge and are often traumatized by experiencing the aftermath of suicide attempts.

We also want to enhance safety for emergency responders, for example, those who must make emergency dives into the murky and debris-filled waters of the Ship Canal in an attempt to save people who jump from the Aurora Bridge.

Public Outreach

Strategies and tools

- **Responsible reporting.** Research indicates that media reports of suicide contribute to suicide contagion. Our communications will respect this concern and we will encourage media to do the same.
- **No surprises.** We must communicate with officials and other people in the most affected communities as we proceed with project development and design. These include local and state elected officials, Fremont and Queen Anne neighborhood groups, interest groups, workers, business owners, residents, rowing club, mental health professionals, and emergency responders. We must also clearly convey the benefits and drawbacks of suicide prevention fencing.
- **Lead with face-to-face outreach and the Web.** Given the sensitive nature of this issue, we will schedule community and informal meetings to talk with affected groups face-to-face. In addition, our project Web page will provide a place for interested people to get information on the issue. Information should appear on the Web page as soon as it is discussed or released to the public. We'll also use WSDOT e-mail alerts to push new information to our target audiences.

Design Options and Recommendations

Several suicide prevention options were considered for the Aurora Bridge.

- **Netting**
  Installation of netting suspended by cantilever supports on the understructure of the bridge is a plausible option to deter suicides. The initial cost of construction is similar to fencing – but the cost to maintain the netting would be substantially higher because the netting would need to be replaced every few years. The netting would make typical maintenance and inspection tasks much more difficult. Due to the significant cost and increased difficulty of maintenance, this option was eliminated.

- **Closing the bridge to pedestrians**
  Closing the bridge to pedestrians would mean that bicyclists have no other option for riding across the bridge but to use the travel lanes. The narrow lanes and substantial volume of vehicles using the bridge would make potentially hazardous travel for bicyclists. Pedestrians (and bicyclists not wishing to ride in a travel lane) would either have to board a transit bus to cross the bridge or detour their route to cross the canal at the Fremont Bridge. This option was not selected because a safe viable option exists that maintains pedestrian and bicycle travel on the bridge.

- **Pedestrian/bicycle structure suspended under the bridge**
  This option would provide an enclosed structure attached underneath the Aurora Bridge for pedestrian and bicycle travel. Estimated to cost in the range of $29 million, which is several times more than fencing. In addition, we are concerned that the pedestrians and bicyclists using the enclosed structure would be targeted for crime since they would be traveling on a secluded path/tunnel over one-half mile in length.

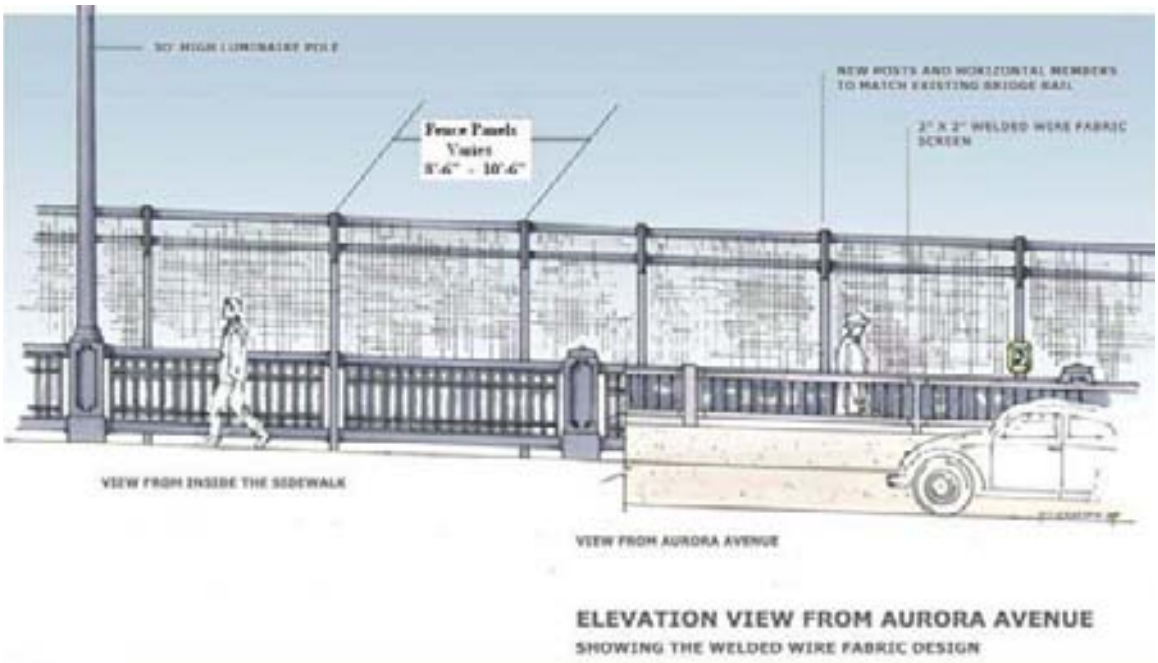
- **Fencing**
  The use of fencing for the prevention of suicides has been used successfully on other bridges (see examples below). The estimated cost of the fencing is in the range of $4 to $8 million. This option was deemed to be the most feasible – maintenance costs will be minimal, safety and route of pedestrians and bicyclists will be maintained, and this option will have the lowest cost over the duration of the fence life.

Proposed Fence Design Features

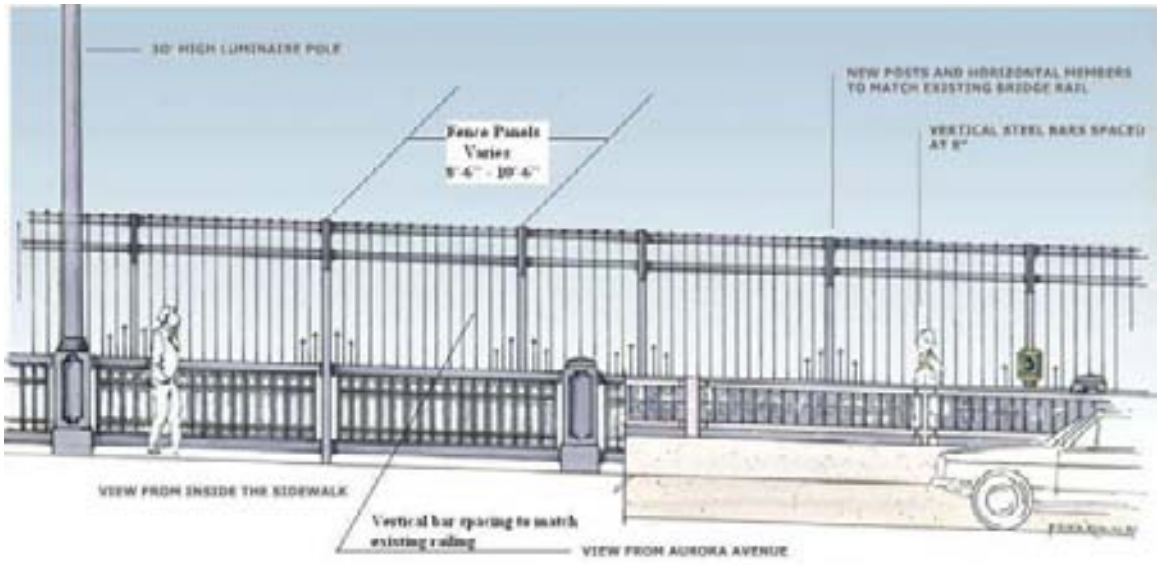
WSDOT is proposing two fencing options; vertical bars and screening with 2 inch by 2 inch wire mesh. Both options are 8 feet - 9 inches in height above the sidewalk, making the fence no more than 10 feet above the roadway. The 10 foot height is the maximum allowed for WSDOT Bridge Maintenance access with the under bridge inspection truck (UBIT). Anything higher would limit access and the ability to reach with the UBIT truck. Access below the roadway for inspection of the steel truss bridge is necessary to ensure the structure is maintained in good condition. The steel trusses are completely inspected every two years.

Each fence post would be bolted to the bridge deck with removable fence panels between (the existing railing will not be altered). Each panel would be attached to the posts with bolts and would be removable for further maintenance access. Fence panel width varies from 8.5 feet to 10.5 feet in length. All of the fence panels will be angled over the sidewalk to prevent climbing.

Mesh Type Fencing

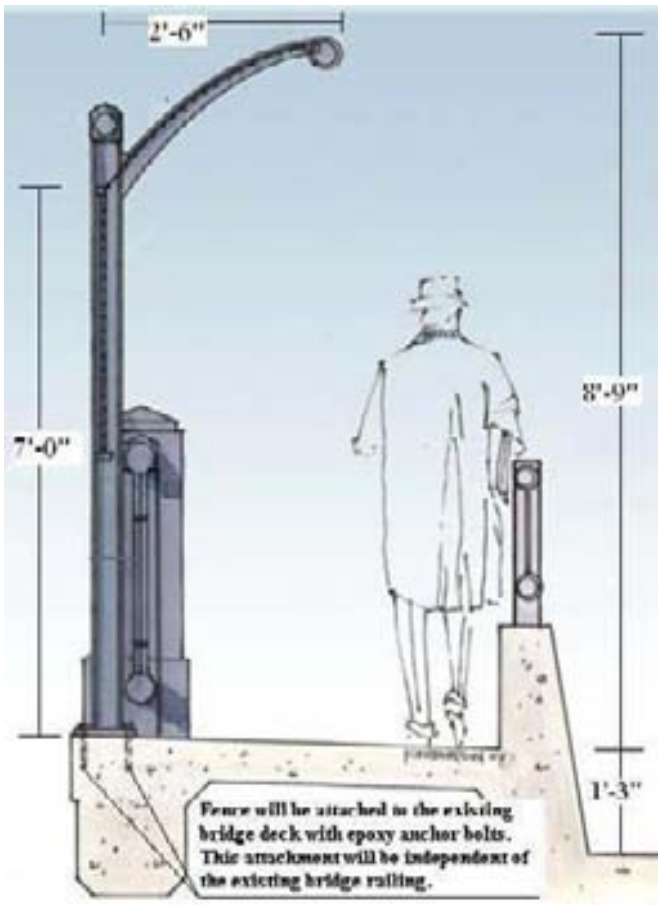


Vertical Bar Type Fencing



ELEVATION VIEW FROM AURORA AVENUE
SHOWING THE VERTICAL BARS DESIGN

Attachment Details



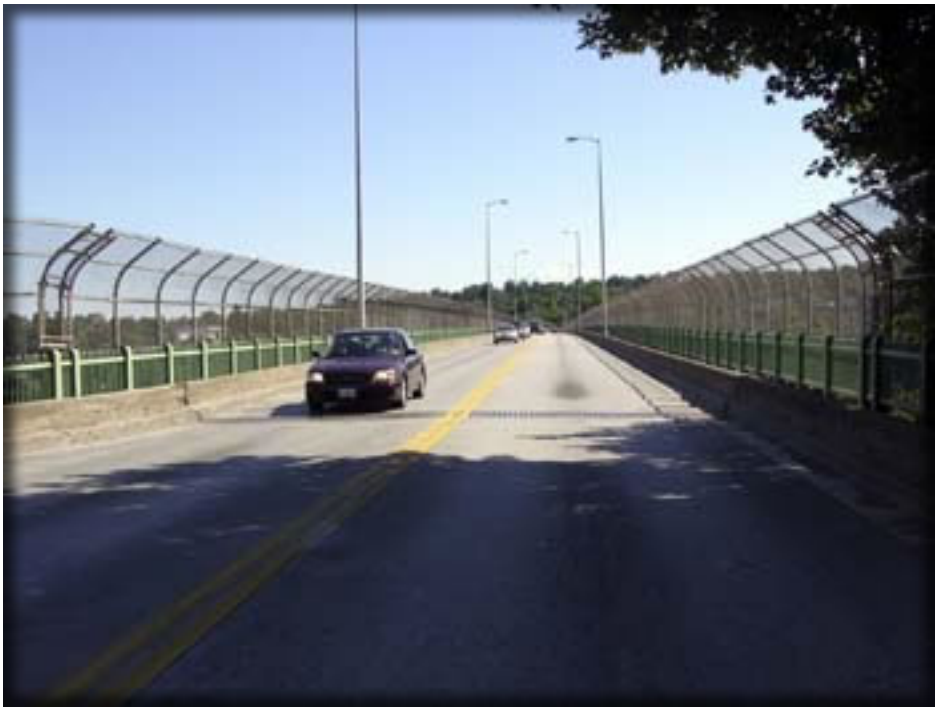
Mesh Type Fence Design Visualization

Examples of Suicide Prevention Fencing:

Golden Gate Bridge, California

The state of California has funded a two-year, $1.78 million study to look at viable options for a suicide barrier. The study is in its early stages, but tests so far indicate that solutions are workable for either a new railing or adding to the existing railing with consideration for the extra wind loads on the suspension bridge. A railing as high as 14 feet is one structurally viable option to help prevent people from committing suicide from the Golden Gate Bridge, according to early findings of the study being conducted by the agency that oversees the span. Tests are under way to consider a suicide barrier of 8 to 14 feet, which would at least double the height of the current 4-foot railing. The study so far shows that any barrier higher than the existing one could be only 12 to 24 percent solid because of wind conditions on the suspension span. The study is expected to be completed in spring 2008.

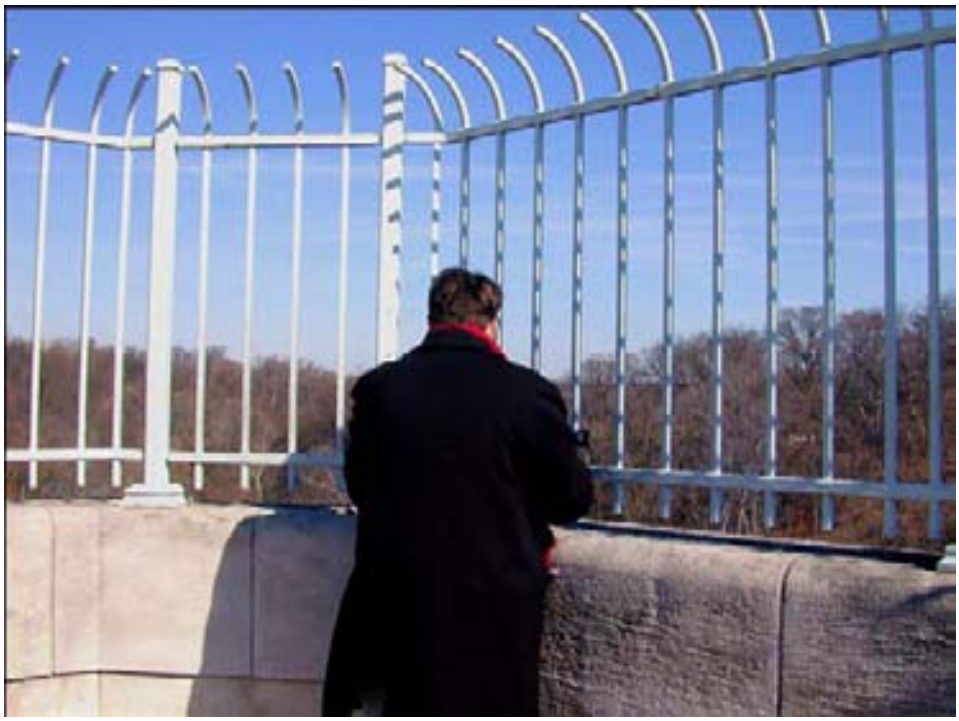
FDR Memorial Bridge
Augusta, Maine



FDR Memorial Bridge
Augusta, Maine

Sydney Harbor Bridge
Sydney, Australia

Bourne Bridge
Bourne, Massachusetts



Duke Ellington Bridge
Washington, D.C.

Jacques-Cartier Bridge
Montreal, Canada

Prince Edward Viaduct
Toronto Canada

Prince Edward Viaduct
Toronto Canada

SR 99
Aurora Bridge

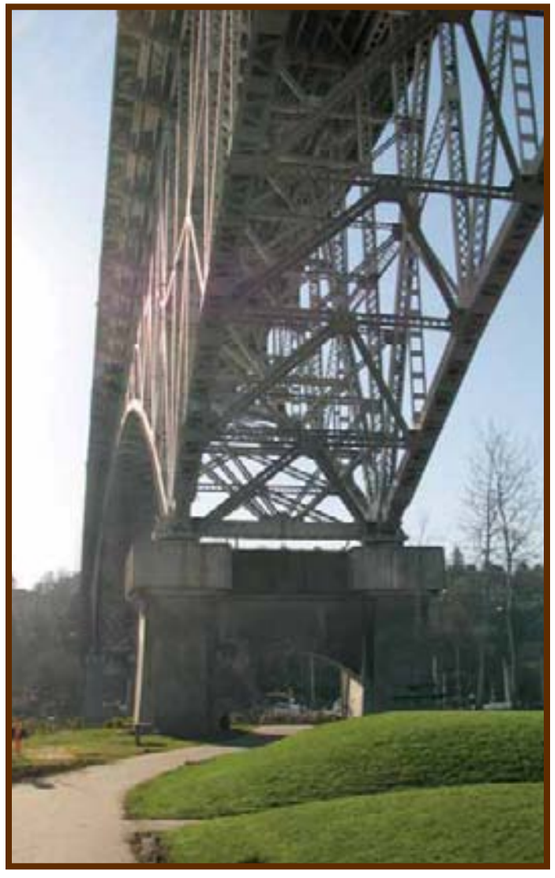
SUICIDE
PREVENTION
FENCE

Community Conceptual Design Report

City of Seattle

Washington State
Department of Transportation

Acknowledgements



Seattle City Council

Washington State Department of Transportation

Architects Without Borders

Seattle Fremont Individuals and Employees Nonprofit to Decrease Suicides (FRIENDS)

Fremont Chamber of Commerce

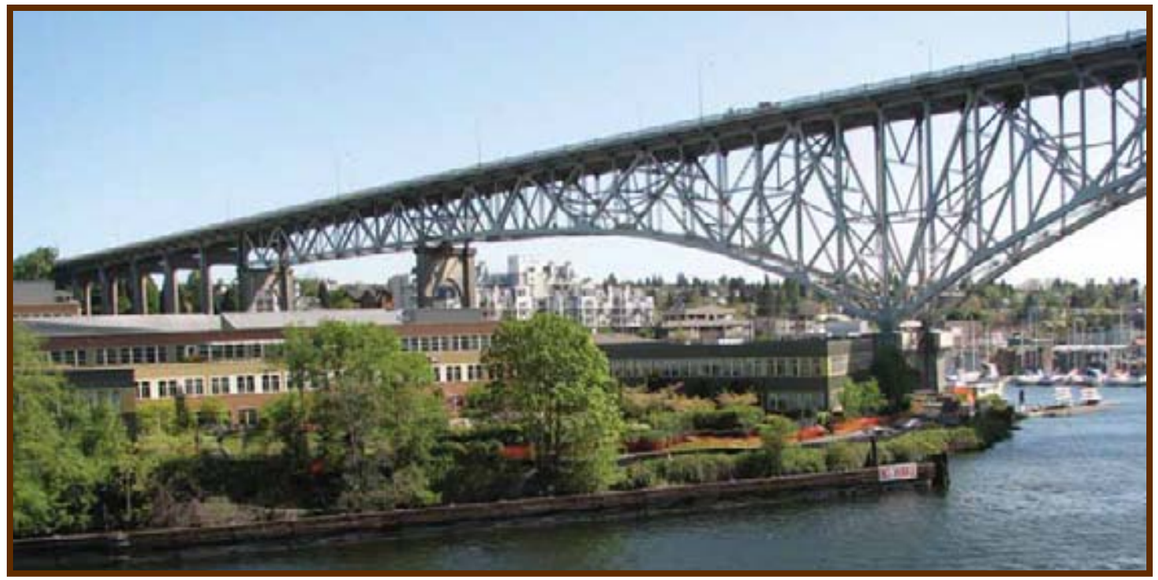
Many people were instrumental stakeholders in this process. We are grateful for the participation and help of the following organizations:

- Seattle Department of Transportation
- Seattle Police Department
- King County Crisis Clinic
- Washington State Department of Archaeology and Historic Preservation
- Seattle Landmarks Preservation Board
- Historic Seattle
- Lake Union District Council
- Queen Anne Community Council
- Fremont Neighborhood Council
- CB Richard Ellis

Thanks to the following architectural firms for their expertise and participation:

- Clinkston Brunner Architects
- Johnston Architects
- Mithun
- Schacht Aslani Architects
- The Miller Hull Partnership, LLP

Project Background



History

The Aurora Bridge, officially known as the George Washington Memorial Bridge, was built in 1931. This cantilevered steel truss bridge is 167 feet high and 2,945 feet long, carrying State Route 99 across the Lake Washington Ship Canal and connecting Seattle's Queen Anne and Fremont neighborhoods.

Today, the Aurora Bridge is a National Historic Landmark. In 1982, it was listed in the National Register of Historic Places and the Washington Heritage Register, and was also designated a Landmark by the Seattle Landmarks Preservation Board.

The area below the bridge is a vibrant part of the Seattle community and has changed significantly in recent years. Growing density on both sides of the Ship Canal has increased the number of people who live and work below the bridge. The waterway and Burke-Gilman trail attract a variety of recreational users.

Since it was constructed, more than 230 people are known to have jumped from the bridge, presenting significant safety risks for those who work, play and live below the bridge. Emergency response staff also put themselves at risk attempting to rescue people in the hazardous Ship Canal waterway. Public safety is the highest priority for both the City of Seattle and the Washington State Department of Transportation (WSDOT). To fulfill this responsibility at the Aurora Bridge, WSDOT is planning to construct a barrier on both sides of the bridge that will prevent people from jumping.

Project Purpose

The City of Seattle sponsored a conceptual design process to provide the Washington State Legislature and WSDOT with the community's thoughts, ideas and values regarding a barrier on the Aurora Bridge. The purpose of this process was to work with community members and stakeholders to develop design ideas for the barrier that reflect community values and the historic character of the bridge.

Some members of the community disagreed that a barrier is the best solution. These and all comments received through this process are summarized within this report and can be found in Appendix D. However, it is important to remember that the purpose of this process was to identify community values regarding a barrier on the Aurora Bridge and translate those values into conceptual designs.

Who is involved?

The Seattle City Council, WSDOT, the Seattle Chapter of Architects Without Borders, Seattle Fremont Individuals and Employees Nonprofit to Decrease Suicides (FRIENDS), and the Fremont Chamber of Commerce provided guidance during the community outreach and conceptual design process.

Funding

WSDOT estimates it will cost $4.3 million to design and construct a barrier on the bridge. WSDOT also estimates it will cost an additional $3.2 million to replace the lighting on the bridge. The governor's 2008 budget request

includes $1.4 million for barrier design. The Washington State Legislature must approve any funding for the barrier.

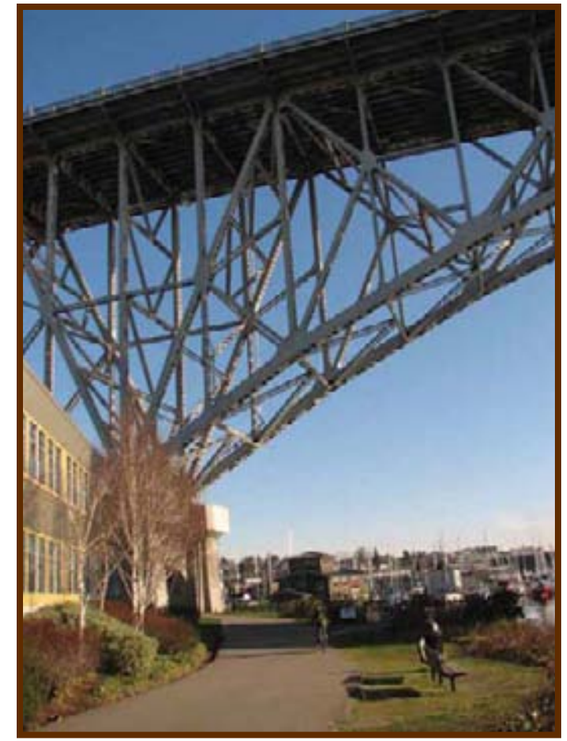
Other Options Considered

As it developed its cost estimate, WSDOT considered other solutions to solve the Aurora Bridge public safety problem. Other suggested solutions included installing netting under the bridge, closing pedestrian and bicycle access across the bridge, and constructing an enclosed bicycle and pedestrian structure under the bridge deck.

While the initial cost of installing netting would be similar to fencing, the life-cycle cost would be substantially higher because netting would need to be replaced every few years. Netting also makes typical maintenance and inspections much more difficult.

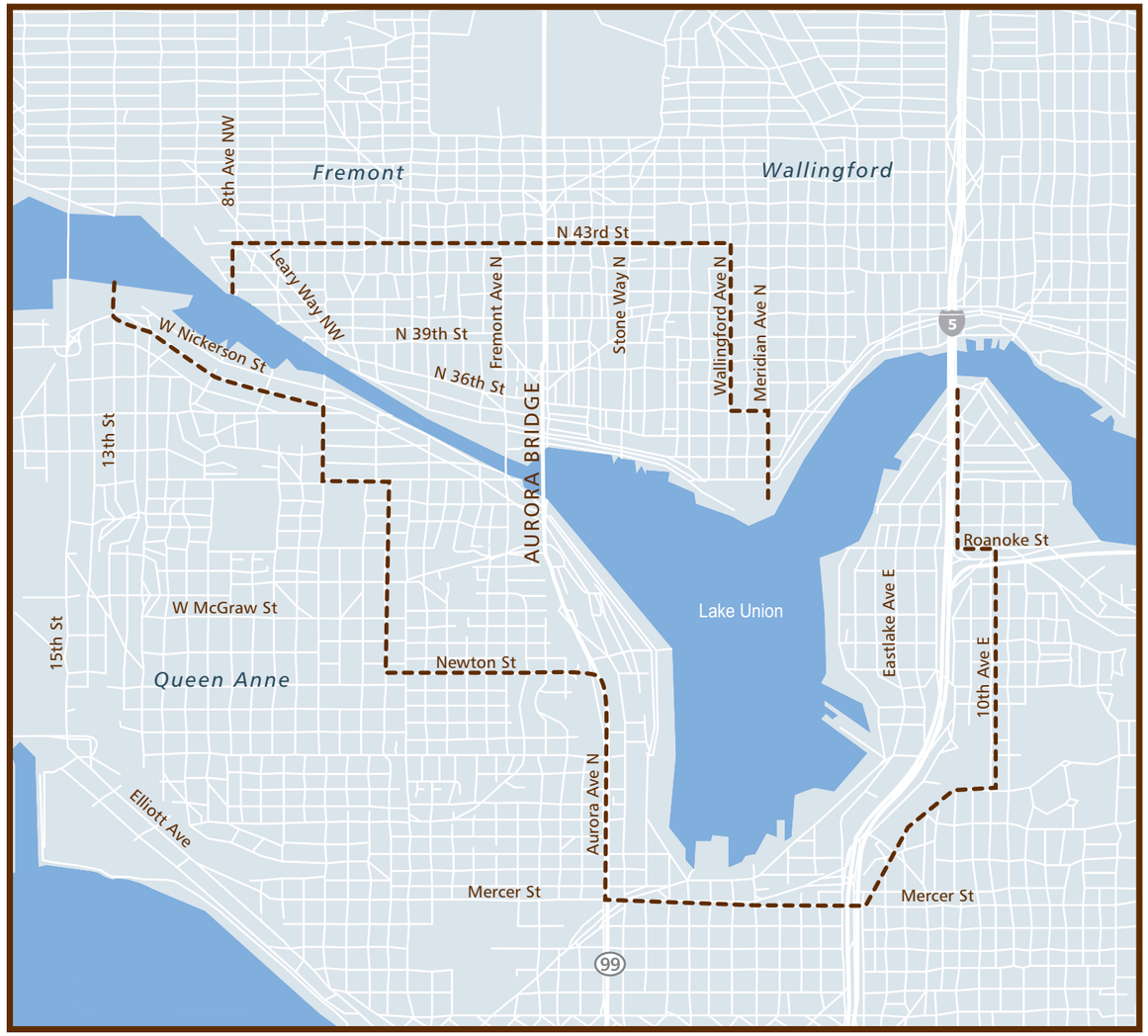
Closing bicycle and pedestrian access is inconsistent with state and city policies regarding multi-modal transportation. Both agencies are committed to preserving existing transportation corridors and to making bicycling and walking more convenient and attractive for our growing population.

The option of constructing an enclosed bicycle and pedestrian structure under the bridge deck was recommended in WSDOT's 2002 Route Development Plan for the SR 99 Corridor. This type of structure presents challenging safety and funding issues. In addition to significantly changing the look of the bridge, crime prevention would be difficult because people would travel over half a mile in a secluded enclosed path high above the water. The structure would require a sophisticated security and surveillance system. A bicycle and pedestrian structure would be part of a larger project to widen lanes and install a median barrier on the bridge. Funding this project would be very difficult, requiring a significant investment of at least $60 million from the Legislature.



The Process

Postcard notification boundaries



The conceptual design process consisted of stakeholder interviews, a community values workshop, a design charette and a community open house. These four main outreach events took place from early January to mid-February. A variety of communication tools were used simultaneously with each event.

Communication Tools

At the outset of the project, several avenues of communication with the community were established to engage people in the conceptual barrier design process and to provide ample opportunity for two-way communication.

Postcards

Postcards were used to notify people in the vicinity of the bridge of project events (see Appendix A). Postcard notification was sent to 15,971 addresses, including 4,384 homes, 9,562 apartments and 2,025 businesses. Postcards were also sent to the project contact list, which grew to 230 people and included members of the public, stakeholders, and elected officials.

Electronic versions of the postcards, with and without graphics, were also emailed to the contact list.

Phone and Email

A dedicated project phone and email list was developed to establish two-way communication with the public. A contact name, phone number and email were included on all project materials to provide contact information for people who had questions or who wanted to share their comments. As of March 4, the project received and responded to 19 phone calls and 29 emails. People could request to be added to the email list by emailing, calling, or attending an event. The email list was also used to provide project event notification.

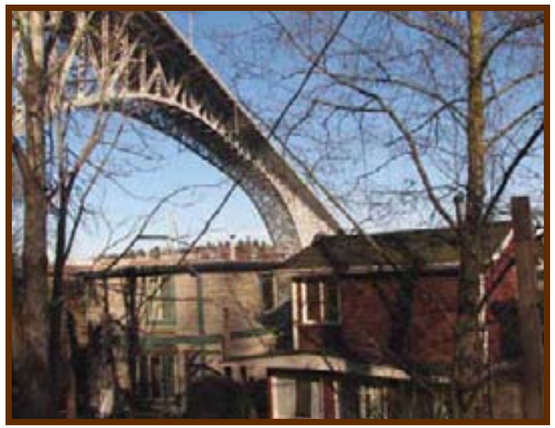
Website

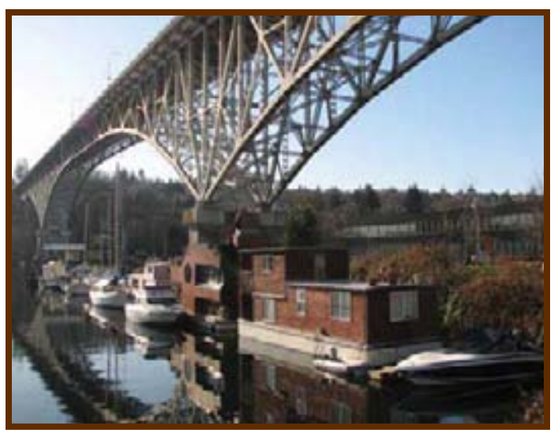
A project website (www.aurorabridgefence.com) was created to share information and to provide contact information for people who wanted to share their comments or ask questions. Links to the Seattle City Council homepage, the WSDOT SR 99 Aurora Bridge Suicide Prevention Project webpage, and the Seattle FRIENDS website were available. Project materials were provided as well as information about funding, the need for a barrier, how to get involved, and project updates.

Notification of all project events was also provided on the website.

Media

Press releases were distributed to local media to advertise the workshop, design charette and open house.





Purpose

Stakeholder interviews were conducted to determine community issues and concerns that should be addressed during the conceptual design process, identify additional stakeholders to be involved in the process, and inform development of the community workshop and design charette.

Before conducting the interviews, nearly 50 organizations and individuals with an interest in the Aurora Bridge and a potential suicide prevention fence were identified. From this list, 20 individuals representing a variety of Seattle and Aurora Bridge stakeholders were interviewed between January 15 and 23, 2008. The following stakeholders were selected for interviews:

- WSDOT
- Seattle Department of Transportation (SDOT)
- Seattle Police Department
- King County Crisis Clinic
- WA Department of Archaeology and Historic Preservation
- Seattle Landmarks Preservation Board
- Historic Seattle
- Lake Union District Council
- Queen Anne Community Council
- Fremont Neighborhood Council
- Fremont Chamber of Commerce
- Property managers of businesses below the bridge (CB Richard Ellis)
- Seattle FRIENDS

At the interviews, stakeholders were asked to share some information about themselves and if they were aware of the suicide problem and barrier discussions. Some of the questions stakeholders were asked include:

- How concerned are you about suicides on the Aurora Bridge?
- What types of concern do you have?
- Do you have concerns about the conceptual design process?
- What issues or information do you think the City should provide and/or discuss at a public workshop?
- Which issues do you think are likely to interfere with the project's success?
- Where do you receive local/community information?
- How would you like to receive information? (word of mouth, newspaper, mailing, internet, etc.)
- Would you like to be on a mailing list to receive updates?
- Are there other interested parties we should talk with?

Interview Results

Although all of the interviewees were familiar with the SR 99 Aurora Bridge Suicide Prevention Fence project, the level of familiarity varied: most were aware of the issues, but not all were aware of the stakeholder consultation process currently ongoing, or that the City and the State were pursuing barrier design. As a result of this variation, many of the concerns and questions expressed have as much to do with the need for the project itself as with the barrier conceptual design stakeholder process.

Concerns about the project fall primarily into the following categories:

- **Right solution** – consideration of other solutions
- **Economic** – is the cost of the project excessive for the gain, or the best choice of where to invest dollars
- **Political** – concerns about the lack of public process to select the barrier option and the impression that a select group of stakeholders are driving the project
- **Safety** – what safety priorities does this project follow
- **Historic and aesthetic impacts** – the project threatens the historic and aesthetic integrity of the bridge

A full list of identified stakeholders, interview questions and the interview summary can be found in Appendix B.

Purpose

More than 75 people attended the evening community workshop held on January 30, 2008 at B.F. Day Elementary School in the Fremont neighborhood. The overall purpose of the workshop was to solicit the community's thoughts, ideas and values regarding a barrier on the Aurora Bridge. Specific workshop objectives were to:

- Educate the community about the Aurora Bridge suicide barrier – background, need, proposed solution, historic landmark status and other constraints, and process
- Define how community input will be used
- Identify and prioritize community perspectives and issues that should be incorporated into the conceptual design process as appropriate
- Identify any additional stakeholders and interested community members
- Demonstrate the City's and WSDOT's commitment to working with the community

Format

At the beginning of the workshop, attendees were provided with several resource materials including a project fact sheet and a one-page summary of the use of barriers on other bridges. Workshop attendees were shown a video presentation to educate them about project background, the need for the suicide barrier, other proposed solutions considered but rejected, why a barrier is being carried forward, and the structure and focus of the workshop. They were then broken into four facilitated small groups to identify community issues and perspectives. Each small group then chose their priority issues to report back to the rest of the workshop attendees. Facilitators for each group documented the groups' discussions and developed a summary of community issues for use at a conceptual design charette.

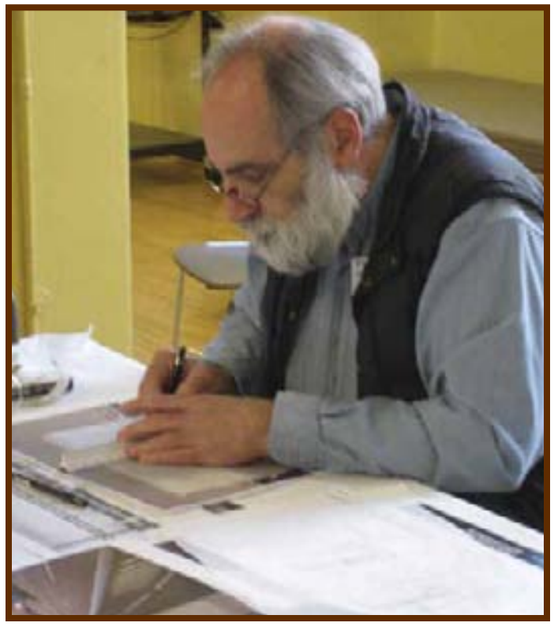
A DVD of the presentation is provided on the back cover of this report.

Outcomes

The following list is a compilation of the priority issues and considerations identified by each of the small groups at the January 30 community values public workshop. Recognizing that all attendees may not think a barrier is the best solution, they were asked to participate anyway by providing values and identifying issues about a barrier with the assumption that WSDOT will construct a barrier on the Aurora Bridge. The full list of community values can be found in Appendix C.

- Create a safe environment: ensure effectiveness
- Ensure functionality and structural integrity
- Aesthetics are important (e.g. materials used)
- Maintain the historic character of the bridge
- Aesthetics of the barrier are more important than historic character
- Preserve views of the bridge and from the bridge
- Consider the psychology of the space
  - A barrier should deter someone from feeling lonely and vulnerable
  - A barrier should connect with a neighborhood feel
- Constructible in a timely manner
- Low maintenance
  - Use long-lasting materials and maintain access to maintenance crews
- Consider different lighting options
- Enhance the pedestrian experience
- Creative design solutions
  - Utilize a variety of designers to ensure the best design
  - Investigate artistic designs
  - Consider non-vertical barriers or alternative designs
- Continue to involve the community and stakeholders, and deliver what is promised

The community values identified at the workshop were provided at the design charette held two weeks later.



Purpose

The community design charette was held on February 13, 2008 at the Phinney Neighborhood Center, two weeks after the community values workshop. The purpose of the charette was to engage stakeholders, local design professionals and the community to help apply and translate the issues and values criteria developed at the workshop into barrier design concepts. Other objectives included:

- Creating barrier design concepts to share with the community at the open house following the charette.
- Creating barrier designs to include in the report to the Washington State Legislature.
- Demonstrating the City's and WSDOT's commitment to investigating creative designs and working with the community and stakeholders.

Format

Approximately 40 people participated in the design charette. Participants were broken into three groups comprised of community members, local design professionals, and stakeholders representing interests such as historic preservation, suicide prevention, and pedestrian and bicycle travel. Each group was also assigned a design facilitator, responsible for helping their group turn ideas into conceptual drawings. Additionally, representatives from WSDOT bridge engineering and architecture departments, Seattle Police Department, and the King County Crisis Clinic were available as resources.

At the beginning of the charette, participants viewed the same presentation shown at the January 30 community workshop so they could gain an understanding of project background and issues that could be addressed through design. To set parameters for the groups' work, participants were also provided with several resource documents and design tools including:

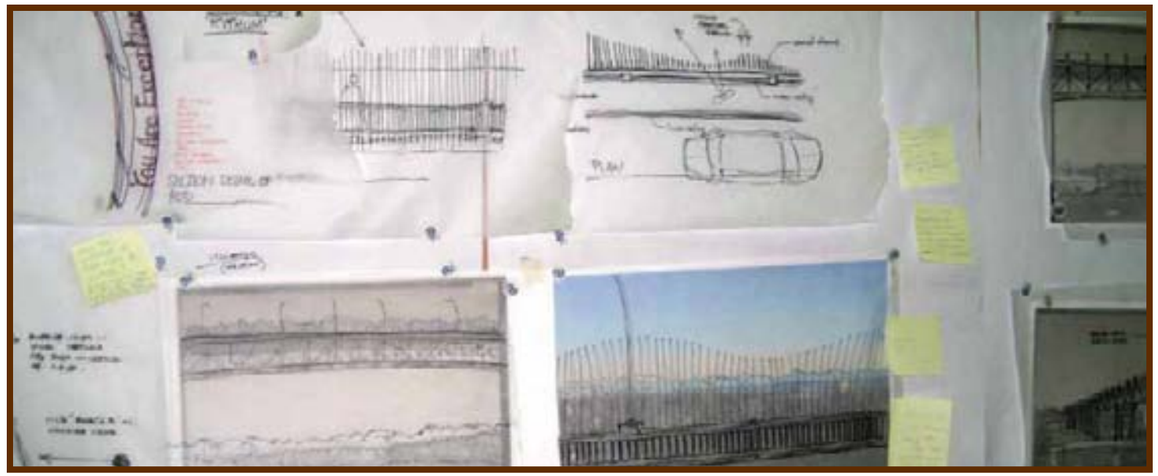
- American Association of State Highway Transportation Officials (AASHTO) design load guidelines
- WSDOT's SR 99 Aurora Bridge Suicide Prevention Fence Requirements
- Community issues identified at the January 30 community workshop
- As-built drawings of the bridge
- Historic and modern photos of the bridge

Copies of the guiding documents are provided in Appendix C.

Outcomes

Each group took a slightly different approach to collaboratively creating conceptual designs. Group 1 discussed many design options and arrived at one comprehensive concept. For the first half of the charette, Group 2 focused on verbally discussing community issues, visions and design themes before the design facilitator began to shape those values into sketches. Group 3 developed many sketches and strategies that the design facilitator summarized.

The three groups at the design charette produced several concepts with accompanying narratives to explain the designers' thought processes and to show how community values and comments were incorporated. These design concepts were shared with the public at an open house that evening.



Purpose

A public open house was held the evening of the design charette to share the early results of the charette with the public. Additionally, the open house was used to gather and incorporate the community's feedback and comments about the concepts.

Format

The open house was held from 6:30 to 8:30 at B.F. Day Elementary School in the Fremont neighborhood. Concepts created at the charette were posted for the public to view and provide comment on, via comment form or sticky notes attached directly to specific drawings. Design facilitators from each group were available to answer questions and discuss their group's drawings.

Outcomes

Comments about the barrier concepts were submitted at the February 13 public open house and were compiled for review by lead table designers. Examples of comments include:

- All are very creative. I am most attracted to the simple, least obstructive designs. The less noticeable the barrier, the better! Sure, something would be cool if it were artsy – but for how long? I don't want to get tired of a design that calls my attention to it every time I cross the bridge. Keep it simple!
- What about any of these ideas is historical? Looks like the 1930's era? Nothing looks like it might have been built within 50 years of 1931.
- I do not like the designs where the fence curves in over the sidewalks – that reminds me of an overpass in the projects. The fence should be minimally obstructive to the views of the riders, walkers (and drivers) crossing the bridge. The fence line should be symmetrical and not too modern to keep with the historical design of the bridge.
- Anything making the pedestrian walkway more tunnel-like should be avoided.
- Each concept had the idea of suicide prevention incorporated. Each tried to stay true to its historic origin and maintain its stunning views.
- Seattle has the highest per capita public art pieces. Let this new structure reflect that. No horizontal bars, or keep them very low.
- Make it a memorial for those who have died.
- What happened to the idea of building out so a fence is not so visible? All but one seems very severe and invasive.

A separate summary including all comments is available in Appendix D.

Potential Barrier Design Concepts

Comments received throughout the project and comments specifically received at the open house on February 13 were reviewed and incorporated into the concepts by the design facilitators. Public comments related to specific designs are included in the final concept packages on the following pages. Designers also refined the narratives to ensure they comprehensively reflect the designs, discussions and community values.

Thanks to all the designers, stakeholders and members of the community who participated in the design charette. This process would not have been possible without their help. Most of the participants are listed below; however, not all participants signed in.

Phil Bannon	Sue Eastgard	Paul Kinderman	Jana Rekosh
Jennifer Barron	Liz Eddy	Don Kuch	Skip Satterwhite
Krishna Bharathi	Char Eggleston	Rachel Minnery	Julie Siple
Evan Bourquard	Pat Gallagher	John Novak	Katsuya Suyamatsu
Suzie Burke	Daniel Gero	Ned Olson	Matt Swope
Scheer Chan	Sheridan Hammond	Marilyn Perry	Ryan Thurston
Beth Chave	Dave Helton	Marc Pevoto	Amity Trowbridge
David Clinkston	Rob Hendrickson	Greg Phipps	Ron van der Veen
Lee Copeland	Gregory Hill	Alex Pulver	
Erin Doherty	Bernie Kay	Autumn Pulver	

Architectural vocabulary

Drawings on the following pages make use of common architectural terms.

Perspective: A partial view of the bridge deck and conceptual fence, from the pedestrian perspective.

Elevation: A view of one vertical side of the bridge and conceptual fence.

Section: The area or surface made visible by cutting through the bridge and conceptual fence.

Plan: A “bird’s eye” view of the deck of the bridge.

Concept Narrative

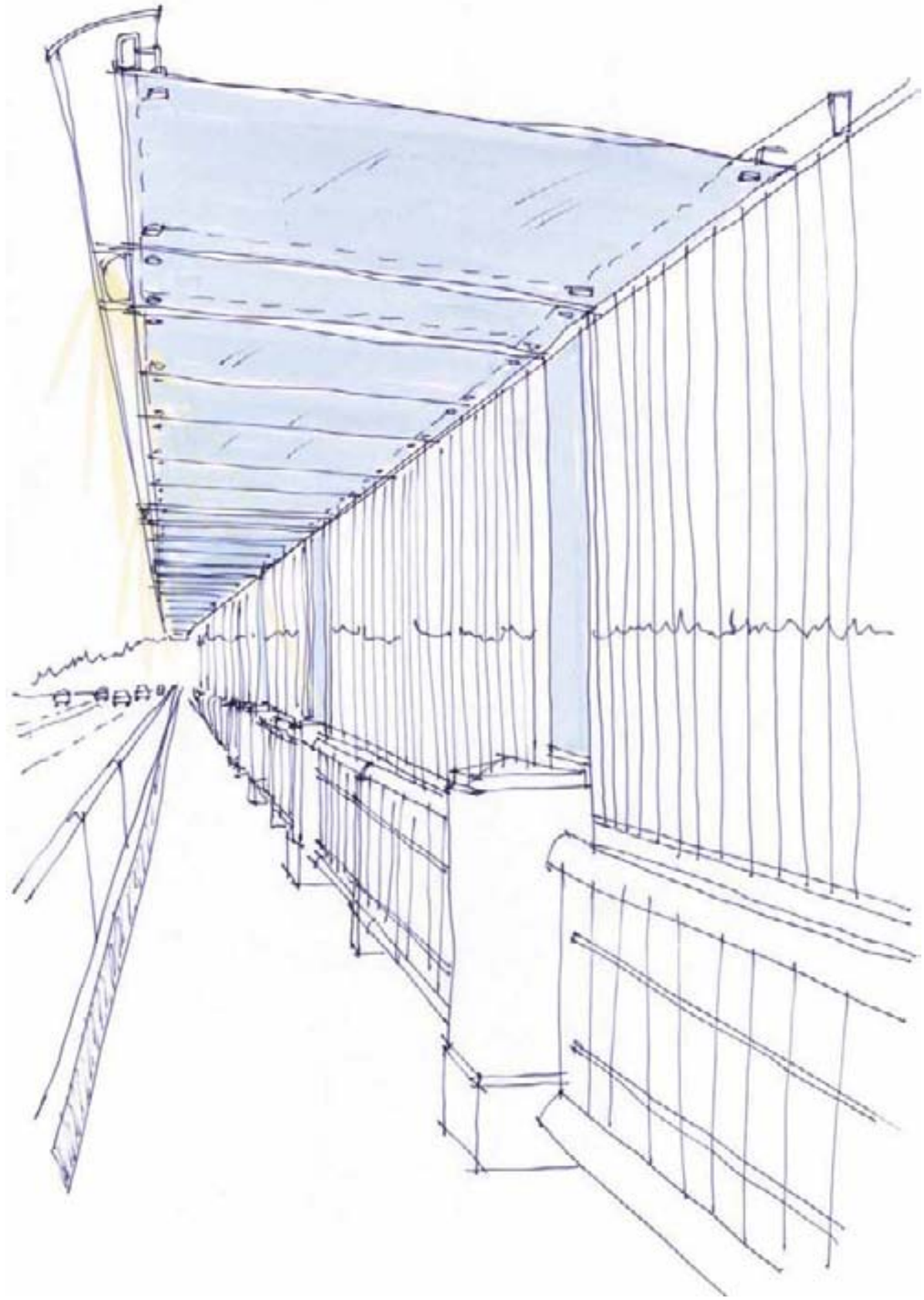
The design works with the historic criteria for the barrier to be reversible, and honor the goal to be as transparent as its function will allow.

The barrier is designed to be added to the exterior side of the bridge, not narrowing the pedestrian/bike path, and adding shelter and lighting.

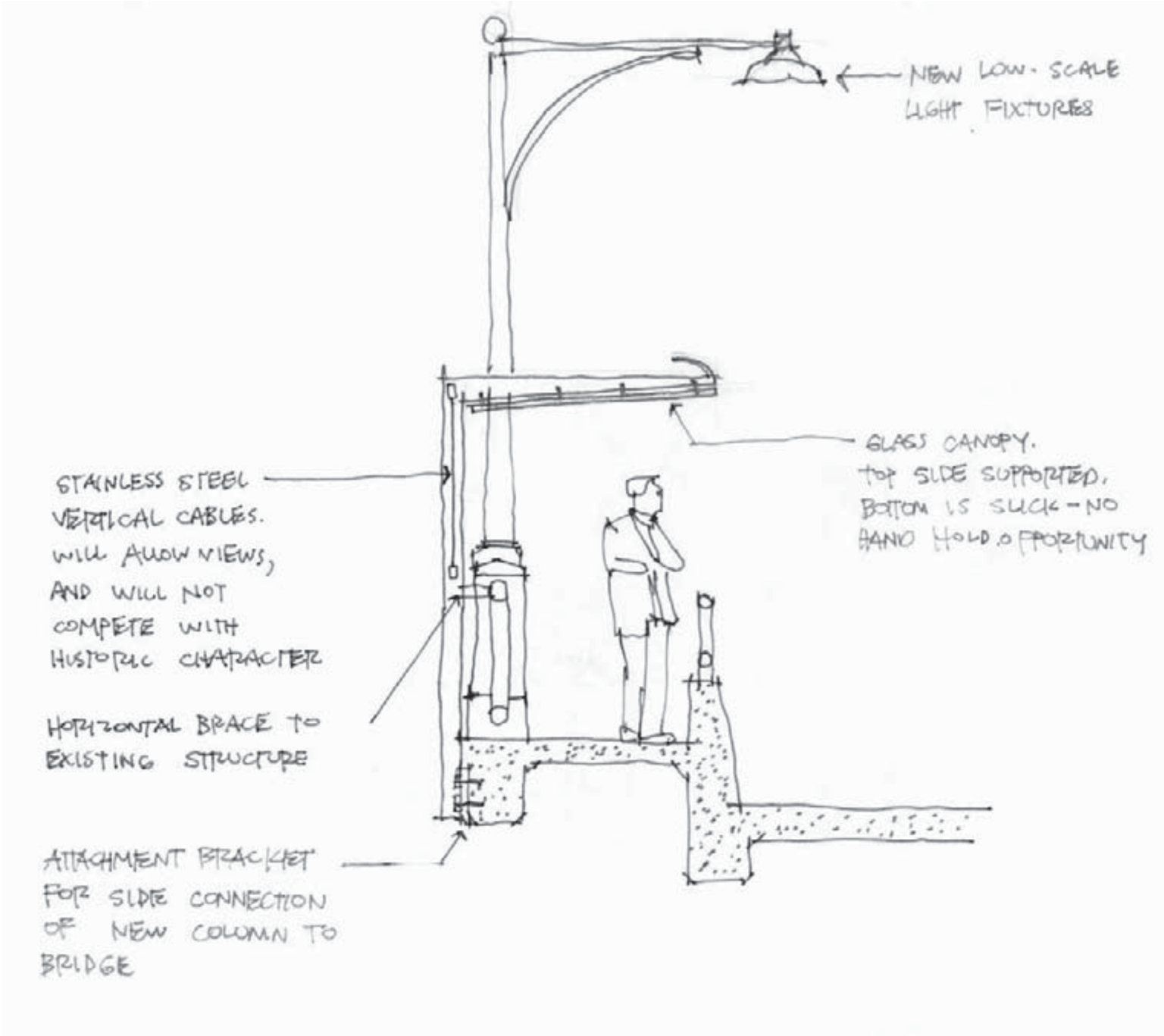
To defeat climbability, a slick surface overhead is made of laminated, translucent glass panels supported from above. The glass panels are modular, durable, easy to maintain, and easy to replace. Thin, vertical cables are used between the uprights.

The upright supports respect the rhythm of the current structure without trying to mimic it. Lights can be incorporated into the curved edge of the canopy, adding pedestrian level lighting.

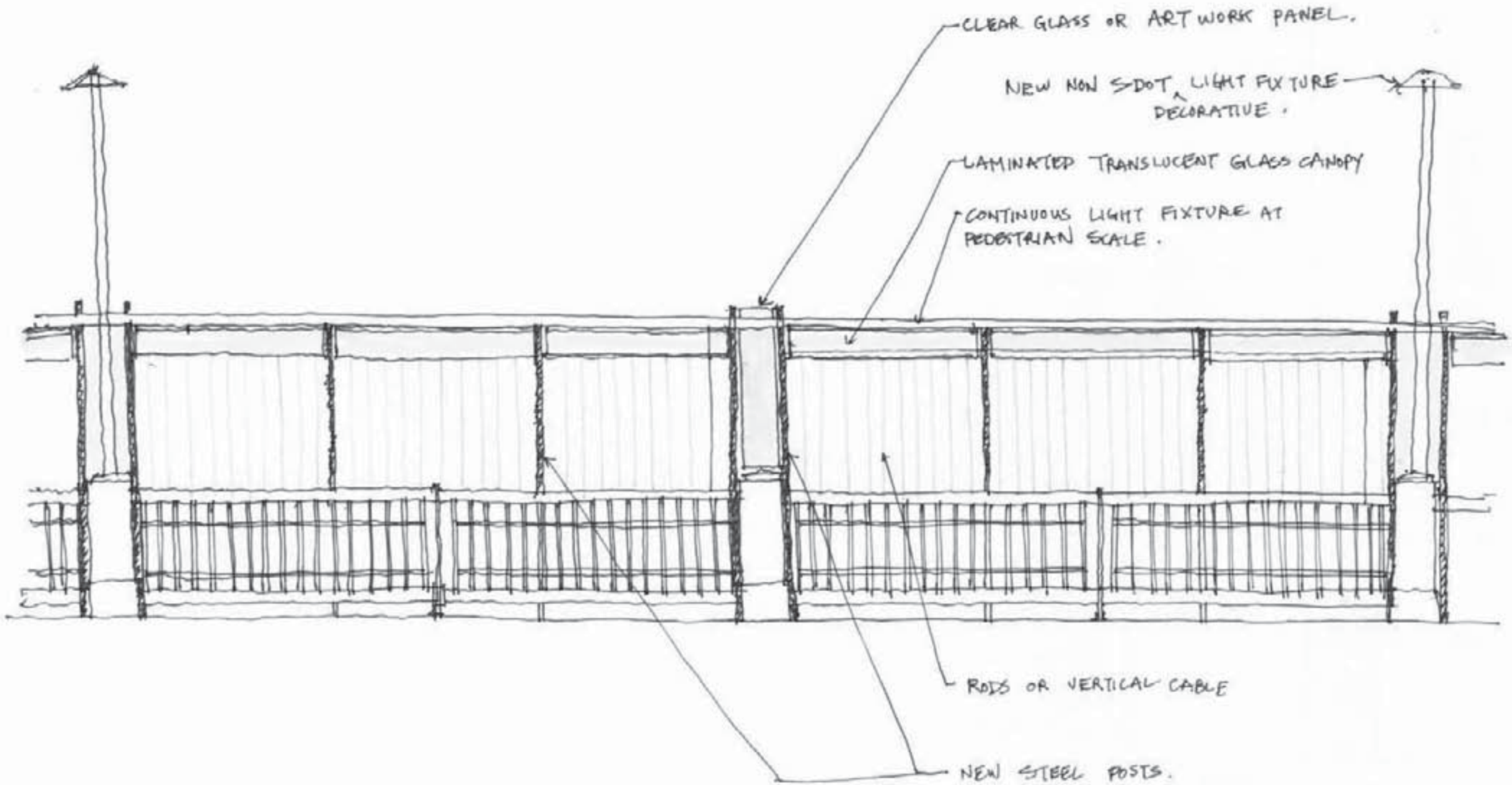
The primary light poles should be more respectful of the scale of the new barrier design, and made lower than the existing fixtures.



Pedestrian Perspective


NEW LOW-SCALE
LIGHT FIXTURES
GLASS CANOPY.
TOP SIDE SUPPORTED.
BOTTOM IS SLICK - NO
HAND HOLD OPPORTUNITY
STAINLESS STEEL
VERTICAL CABLES.
WILL ALLOW VIEWS,
AND WILL NOT
COMPETE WITH
HISTORIC CHARACTER
HORIZONTAL BRACE TO
EXISTING STRUCTURE
ATTACHMENT BRACKET
FOR SIDE CONNECTION
OF NEW COLUMN TO
BRIDGE

Section



Group 1

Elevation

Public Comments

Is it prone to graffiti? Blue Glass Concept could create some issues if glass is used with vandals and graffiti. Glass would need to be cleaned annually at least.

Lovely and subtle.

Best design.

I like the lighting concept – try that first before any fence [construction].

Will the glass get grubby with exhaust, rain, and bird dropping accumulation?

I like the cable aspect but not the glass cover – it is too modern and not in keeping with the design of the bridge. It will also get scratched and dirty.

I also liked the design which featured the glass overhang – perhaps it would disappear more when looking at the bridge? There would be more options to feature greenery/plants in this design.

Will people be able to take photographs from the bridge and not have beautiful views blocked by mesh/wire/net etc? Will garbage/debris accumulate in this protective barrier and who will clean? Has glare from vehicles, bridge lighting and sun light been accounted for?

I don't like the glass cover as I think it is too modern and will get dirty and scratched. Trash will end up on top of it.

"Blue Glass Concept" looks great and adds a simple yet functional looking design. It seems to add character to the bridge design and ensures maximum safety. Blue Glass Concept adds tasteful lighting options.

The first design (w/ glass roof) is very light and airy, and I like the shelter it provides from the rain. The potential for cool lighting is also great. I'd actually walk across it just for the experience. The idea of colored glass is nice, especially on the grey gloomy days.

LED!! They are too costly! The produce unfavorable glares!

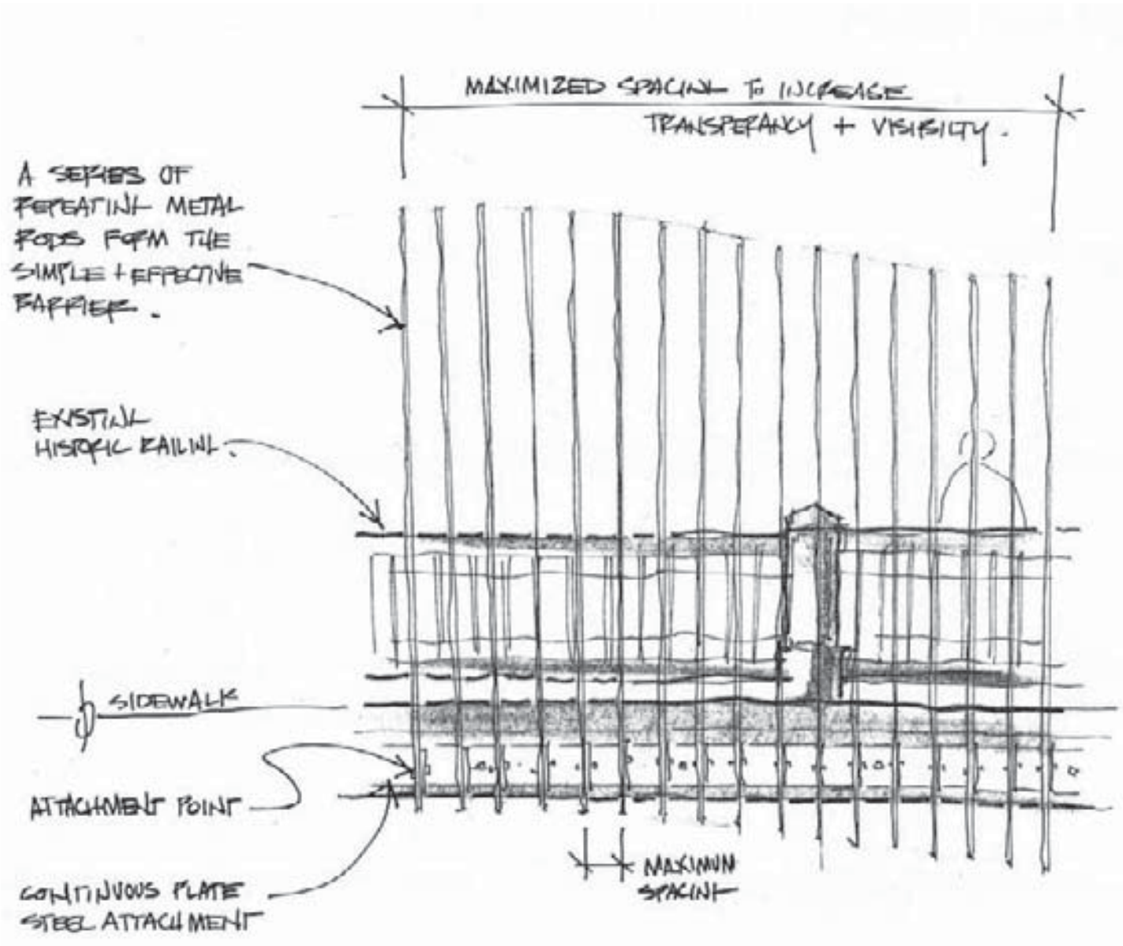
Concept Narrative

Comprised of delicately undulating rods, this screen takes on a rising and falling profile, echoing the peaks and valleys of Washington's mountain ranges on the horizon. Because of their slenderness and spacing, the effect of travelling at any speed will cause the rods to blur and fade. They disappear to reveal the city skyline and regional mountains, as well as the hills and trees of the surrounding neighborhoods. By constructing this barrier as a delicate curtain, a visual connection to the sky and water is given to the pedestrian crossing the bridge. This creates a sense of openness while still providing effective safety.

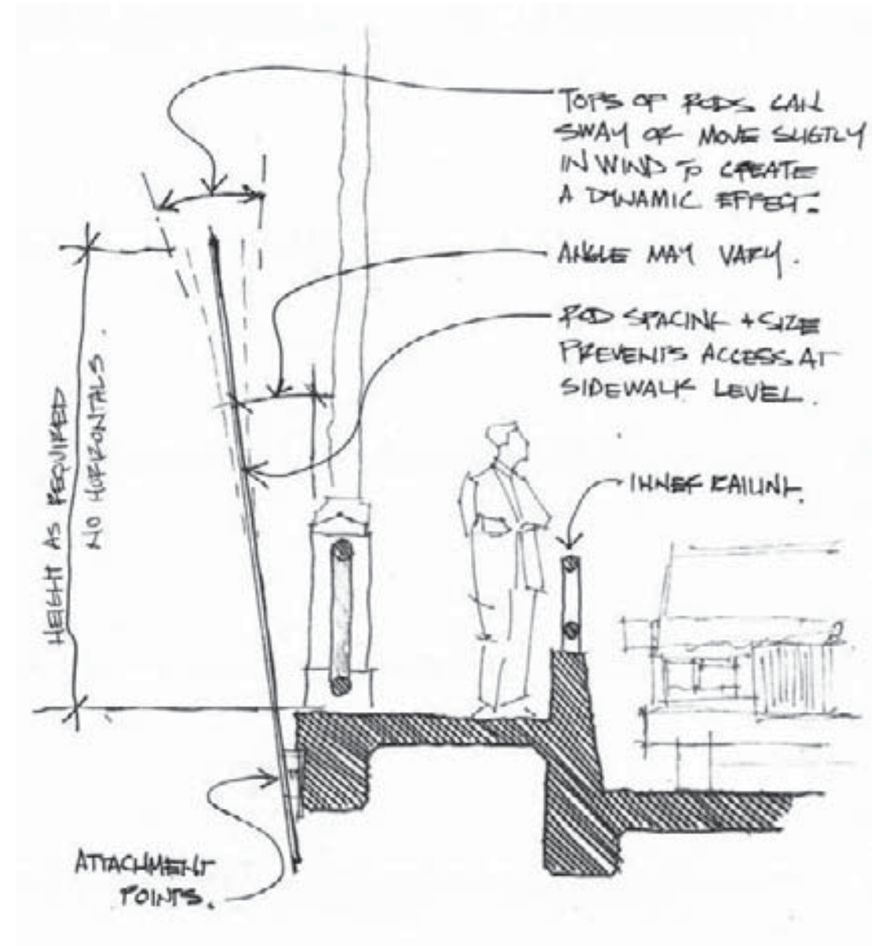
The screen's waving form and lack of horizontal members do not allow for climbing over the barrier. As a visitor approaches they will find a personal message etched into the rod at eye-level. Inspired by a sticker found during our site visit that said simply, "you are extraordinary," the message is meant as an expression of warmth and hope for the person who has come to the bridge in despair. For the passing individual, the inscriptions offer another connection to their community.

Our intent in offering this proposal is to provide a simple solution that respects the historic significance of the bridge while detaching from its form. The new barrier's framework will match the rhythm of the bridge's structure, while the screen's form departs in a gesture of lightness and transparency.

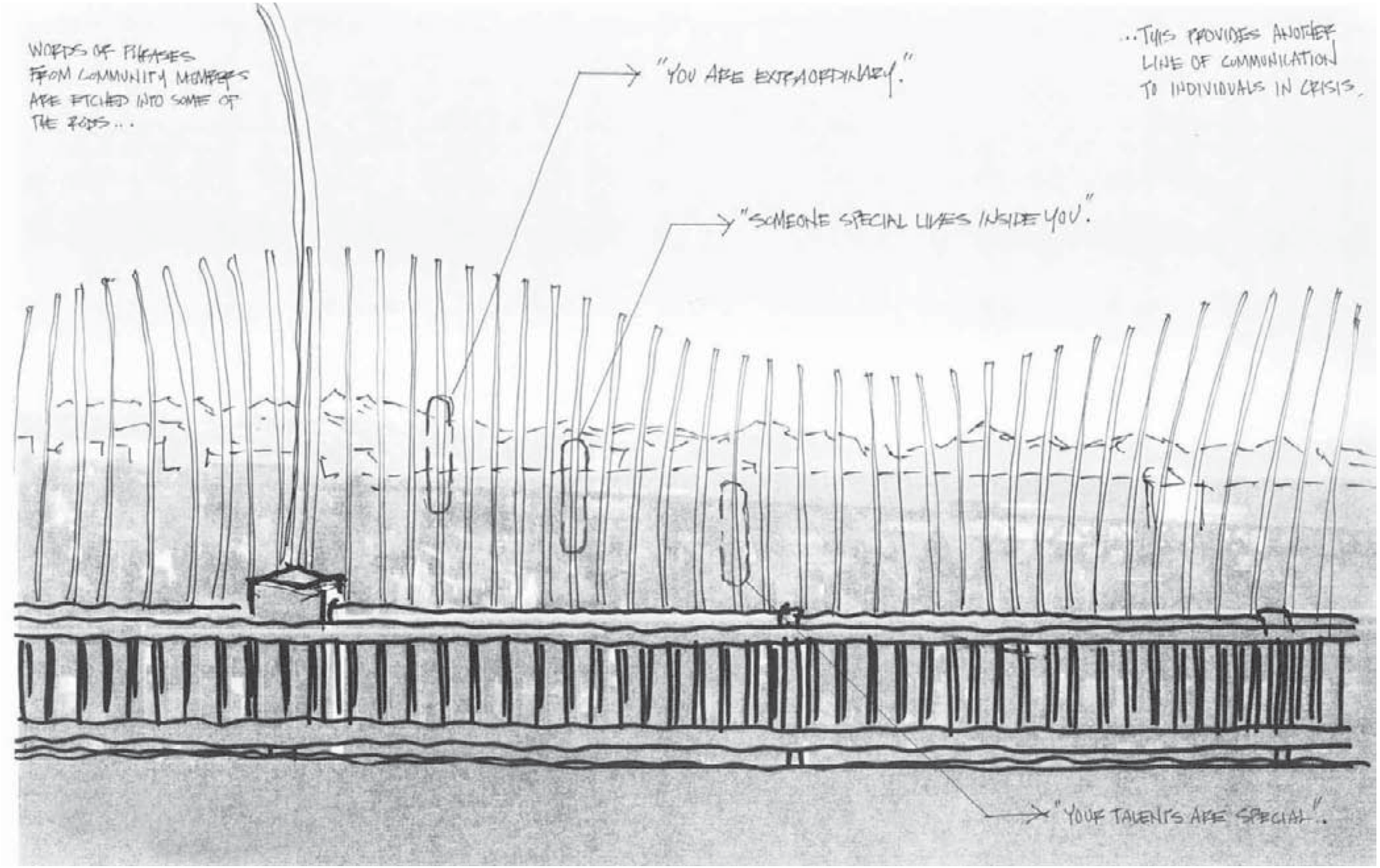
Pedestrian Perspective



Typical Elevation

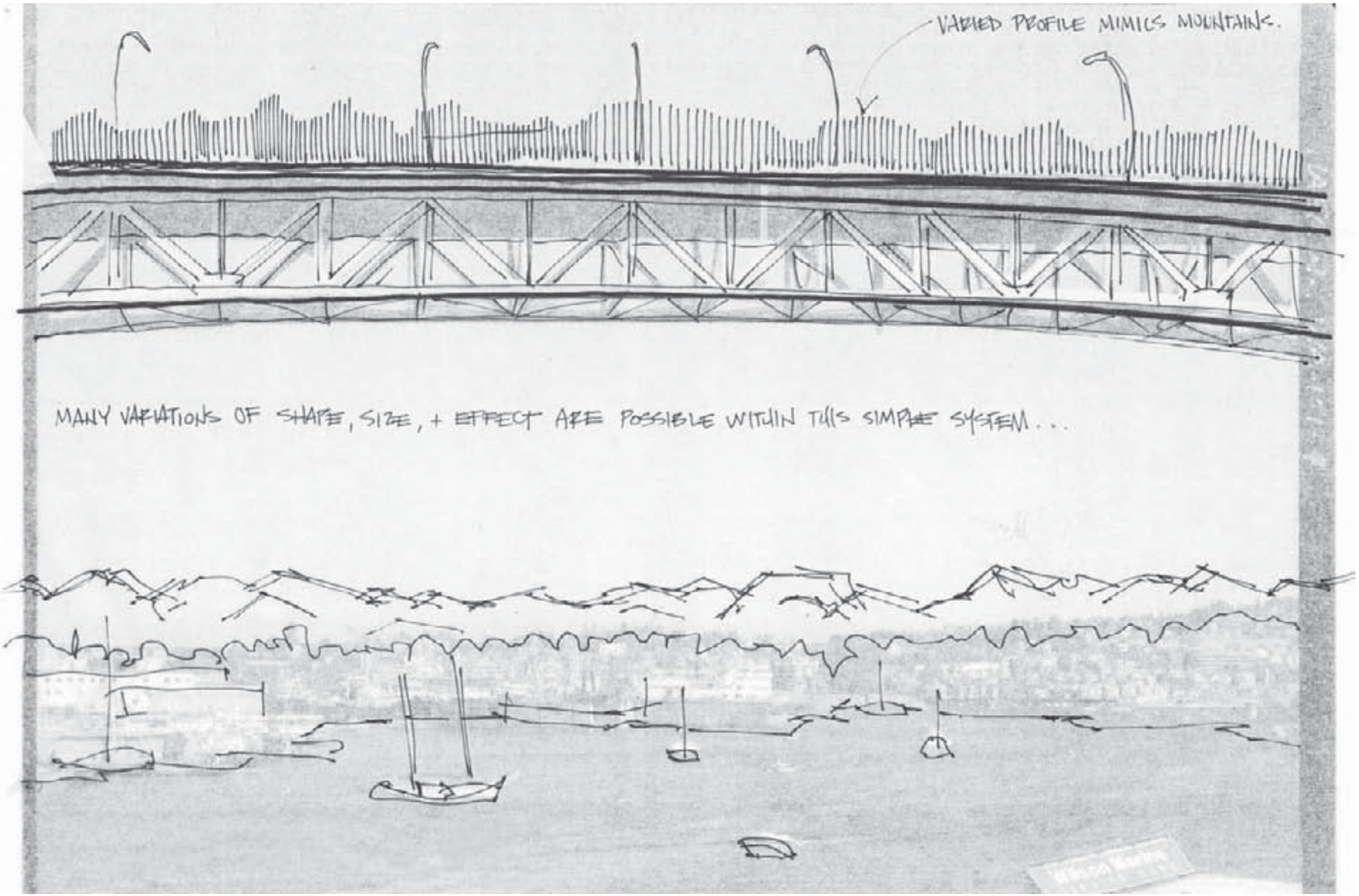


Section

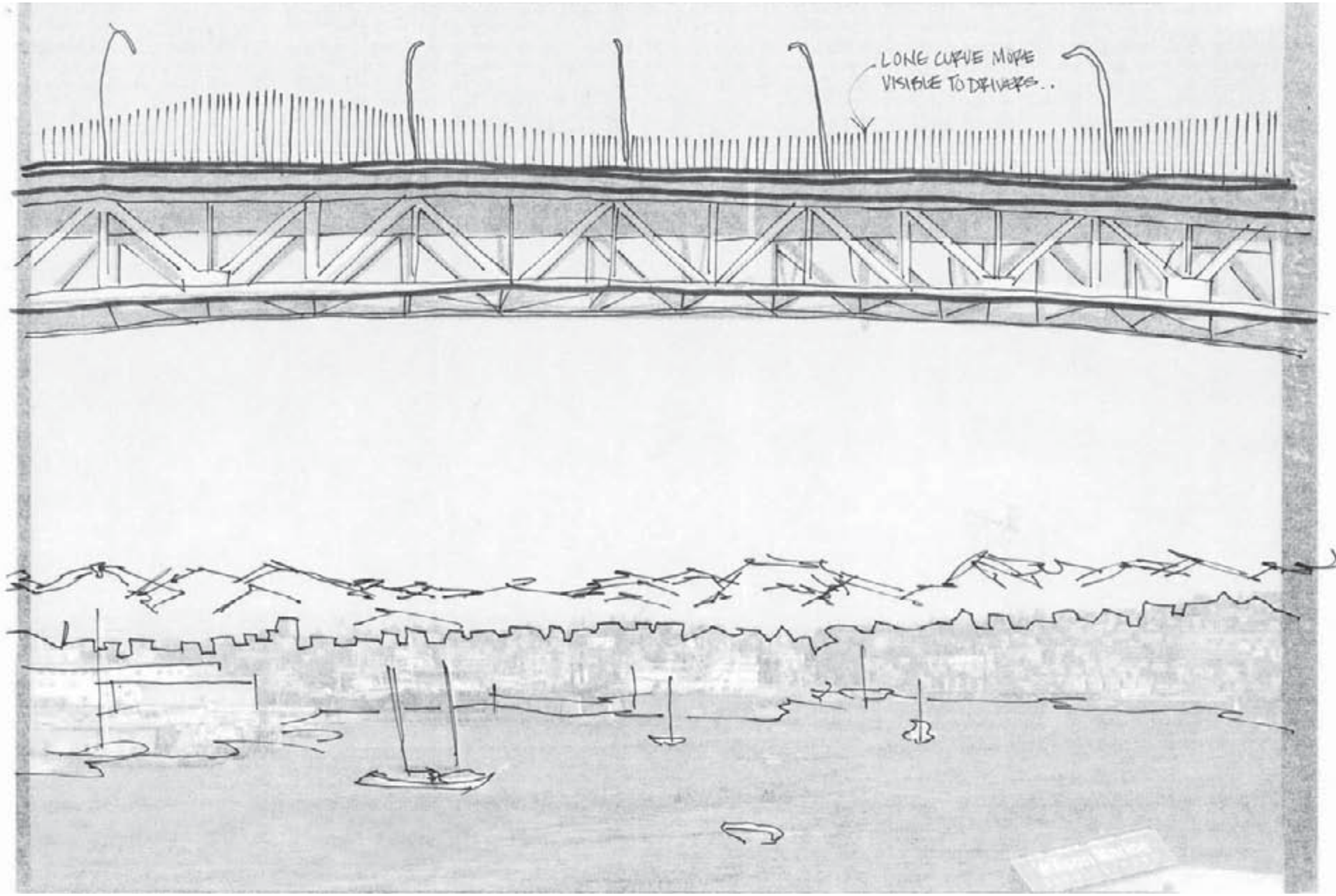


Group 2

View From Sidewalk

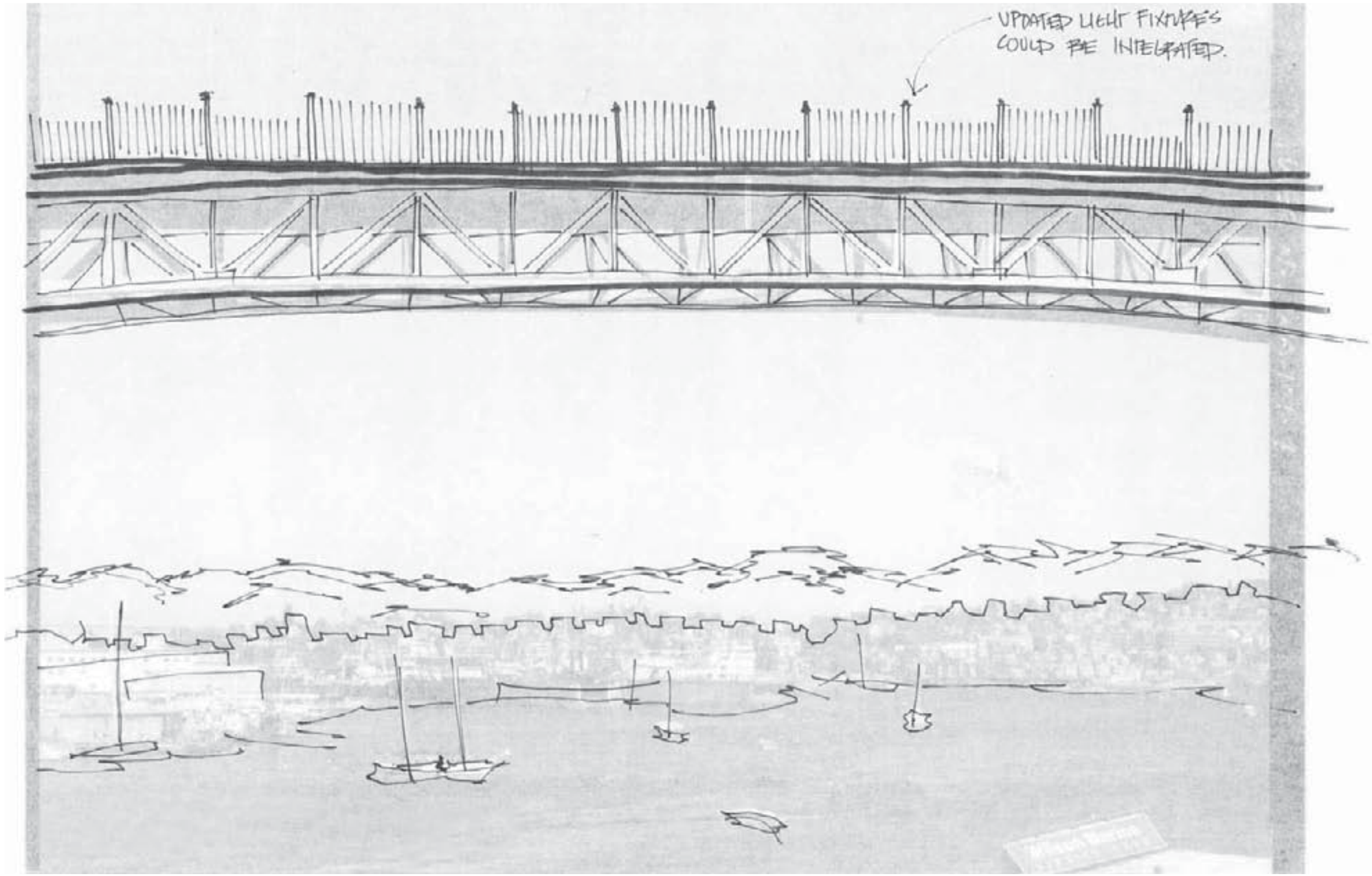


Distant View / Option A



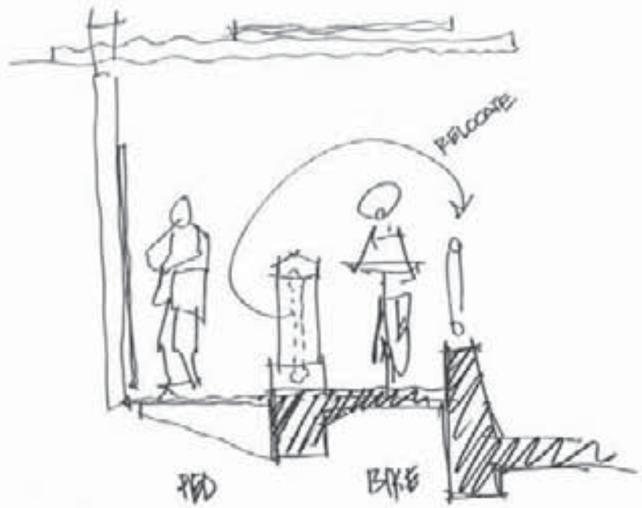
Group 2

Distant View / Option B

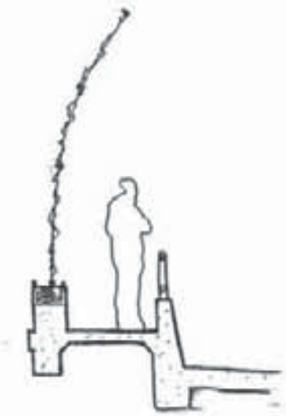


Distant View / Option C

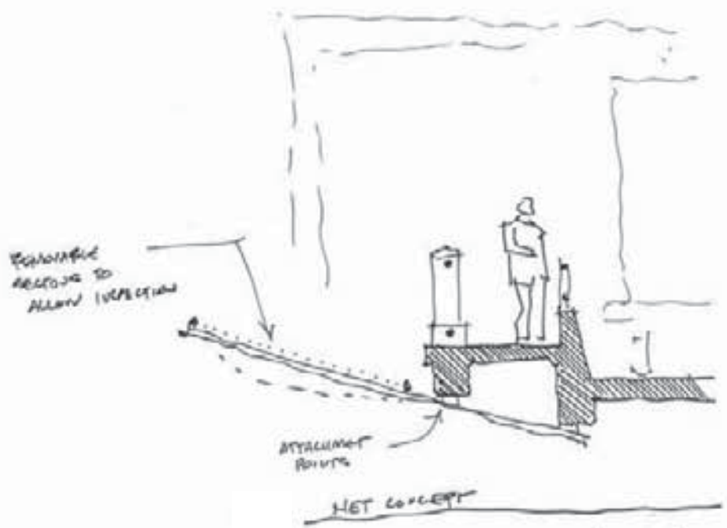
Secondary Schemes



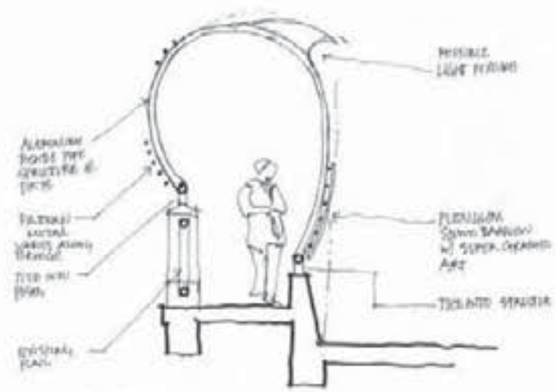
1. BIKEWAY + CANOPY



2. GREENSCREEN



3. HORIZONTAL NET



4. TUBE

5. RAILING ATTACHED RODS.

Public Comments

"Blades of Grass/Graceful Undulation"

Needs more perspective drawings to flesh out concept. Could look tacked on if not truly mocked-up in advance.

This is the best by far of "vertical" schemes. The horizontal "net" is better. I wonder if this "Blades of Grass" idea could work horizontally.

I love this one!

I prefer undulating or vertical [design] to box panels.

This is great! I love the transparency and how it echoes the mountain aspect. Art makes people want to live.

This turns a problem into an asset! Terrific!

The wave type verticals look much better than the straight verticals.

Love the curve idea – it ensures that the barrier doesn't create a constant view blockage or any one part of the view. The curve also mirrors the mountains and is easy on the eyes. It is attractive from on the bridge and from far away.

Will this whistle in the wind and clang? [Consider that] things that fly off of vehicles (wheels). A bicycle fell onto a houseboat once.

Would it possible, as with the floor tiles in the Market, for people to purchase bars and submit a saying or memorial to someone? It would be a way to involve the community and create a sense of community ownership. It could reduce costs and/or help fund the project. The organic, unique design of this one is exciting and interesting to look at. I think this is my favorite design overall. It incorporates the vertical emphasis, compliments the view, and brings a personal and inspirational touch with the sayings while remaining subtle. Perhaps placing the emphasis on simply inspirational saying rather than directing them to potential jumpers would be less morbid?

Both ideas are really artistic. I like the idea of wind moving rods. Two issues: glare and heavy winds?

This design has incorporate a design element into the functional aspect which I feel best represents the style of Fremont art within architecture. Tasteful.

The "Blades of Grass" design is a simple yet elegant design. It has many possibilities. It seems that it could have elements of the "old" and "new." Old as in European soft lights added to the lamp posts. "New" as in the undulating rhythm of long and short blades of grass.

It would be interesting to add architectural elements from nearby communities (Queen Anne, Belltown, downtown, Magnolia) as well as Fremont and Ballard. Using metals which change color as the temperature changed, such as Gehry's EMP, would add an additional "living" effect. Because preventing suicide is about saving lives.

The "Blades of Grass" can be an eclectic design much like quirky Fremont.

Question: Does cantilevered design work with historical nature of the bridge? I hope so!

If "blades" are moveable, will people mess with them? Will it attract attention to the edge of the bridge?

"Blades of Grass" captured my interest most – it's organic, lyrical design was very nice to look at while emulating the movement of the view beyond. It also was the design which offered the most opportunity for "community ownership" as the saying on each bar could provide a source of funding if folks could donate to have a saying of their choice etched on the rods.

What about any of these ideas is historical? Looks like the 1930's era? Etc. Nothing looks like it might have been built within 50 years of 1931.

"Blades of Grass" is the best from a pure individualistic standpoint. It is distinctively "Fremont" and Seattle-ish in being whimsical and effective.

I am definitely in favor of the designs incorporating more artistic approach (for instance "Blades of Grass"

Same with the Blades of Grass, it would be nice to walk across and look at the individual "reeds" and inscriptions. I like the idea of the archway entering the sidewalk onto the bridge.

I like the "blades of grass" design for the artistic element which I think is important to connect with Fremont's unique style.

I like the idea of phrases being etched along the bridge.

"Blades of Grass" living breathing concept

If the net concept is not feasible, then the one that keeps the views from the bridge in the cleanest, simplest way is the best. The Blades of Grass, without adding any horizontal elements actually ads a beautiful sculptural echoing of the mountain ranges in the distance. Brilliant approach.

Aluminum bend pipe structure

Could be unsafe for pedestrians. There is no secure escape if passing another pedestrian or unsavory character (mugger, aggressive, pan-handler, etc.)

Net scheme

Net scheme is the least visually troublesome. It is the only attractive concept.

It is good the net is being considered. If it's good enough for the Space Needle, why not the Aurora Bridge?

Net scheme should be given serious consideration. This is the only solution that doesn't degrade the view enjoyed by thousands of commuters on the bridge. It is also the least conspicuous from most other vantage points.

The only likeable concept is the "nets" concept which was not fully developed. Suggest starting with improved illumination only to achieve some added deterrent effect. The other concepts were too disruptive of views – both from the bridge and of the bridge.

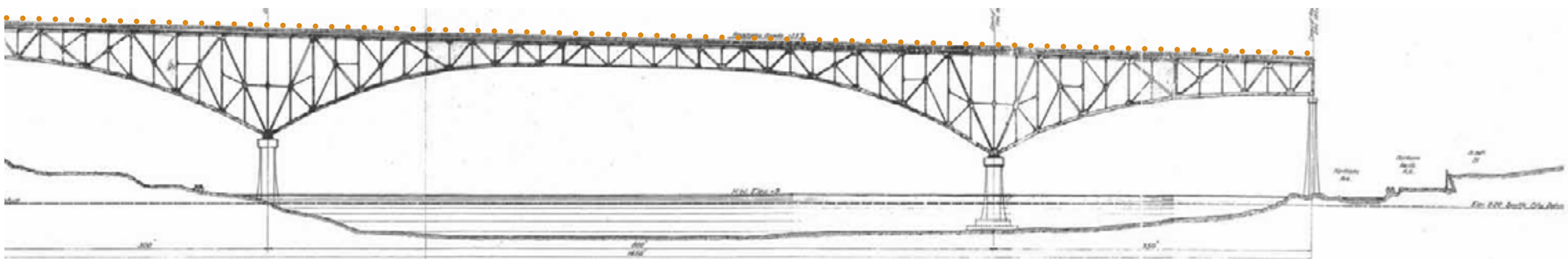
Concept Narrative

Approach
Our charette team consisted of Fremont residents, artists, as well as, mental health and design professionals.

The approach of this document is to summarize strategies raised by our team's thoughts, ideas and values regarding a suicide prevention barrier on the Aurora Bridge.

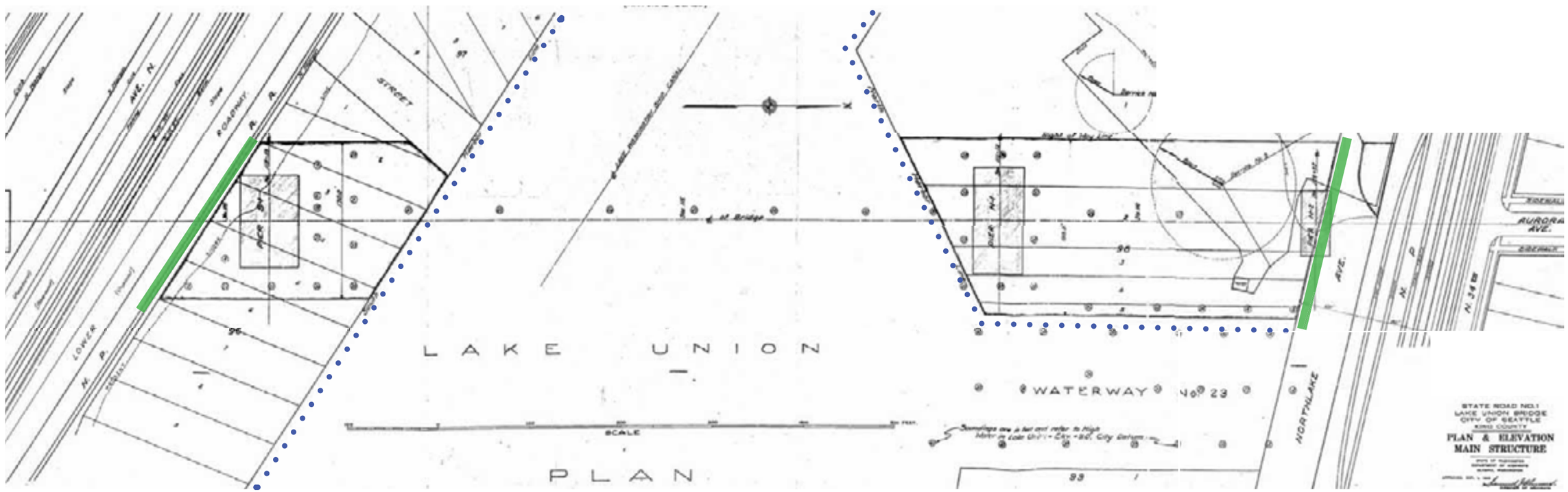
Elevation
The orange dotted line below indicates that even a 10 foot high barrier would not effect the overall historic character of the bridge when viewed from vantage points throughout the city.

Our charette team encouraged the use of integrated colored lighting in the design of the barrier.



Plan
The blue dotted lines below indicate the extent of the waterway. Varying the barrier strategy over residential and commercial properties to include stronger safety measures was recommended by our charette team.

The green bars above represent the north and south access points of the bridge and were identified by our charette team as locations for plaques, sculpture or other potential free standing works of art and memorials.



The biker/pedestrian experience
Our charette team's drawings focused on the experience of bicyclists and pedestrians crossing the Aurora Bridge. We felt strongly that the quality of bridge visitors' experience should not be compromised.

Team process
Our charette team decided to produce drawings illustrating physical relationships and design elements that were critical to their barrier designs. Drawings were posted and each team member presented their design concepts and group discussion followed.

Each of the schemes suggests a potential element of the barrier design to be considered.

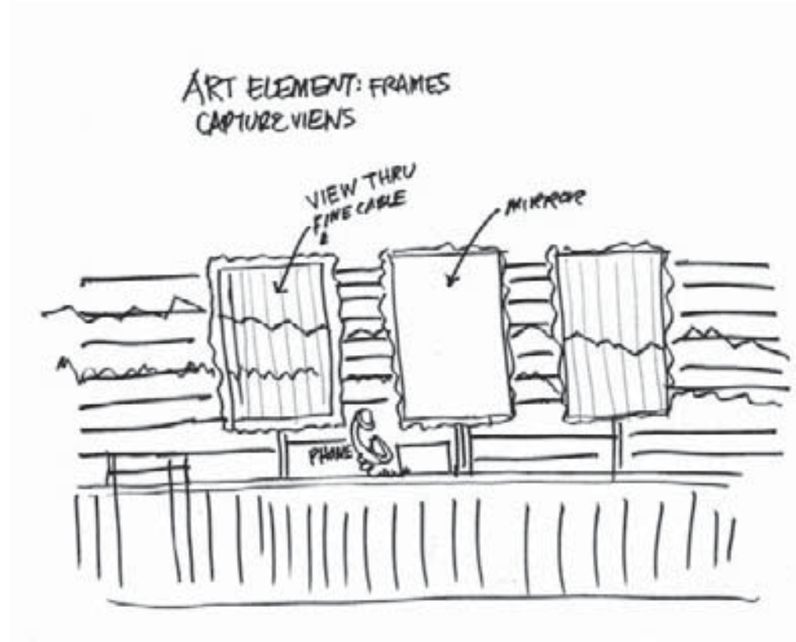
Some drawing text has been removed for clarity.

Elevations
Ⓐ Indicates the possibility of creating framed views along the bridge.

Ⓑ Suggests the inclusion of freestanding art elements at bridge entry points.

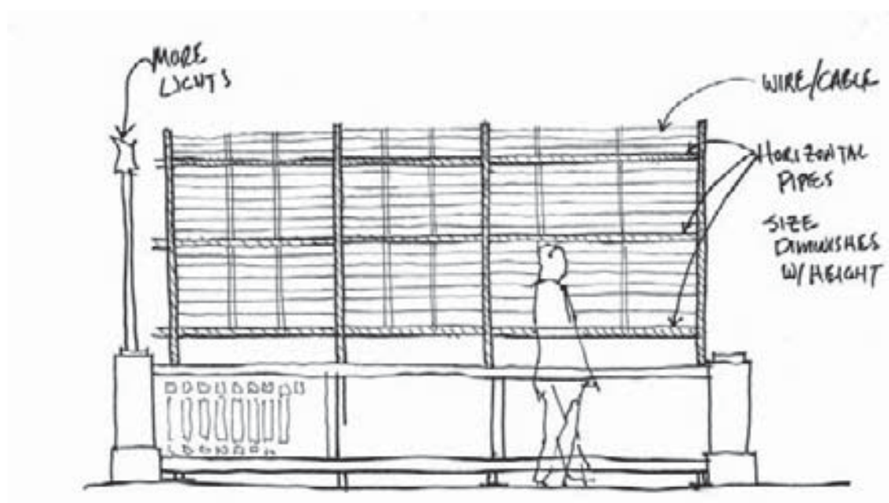
Ⓒ Although climbable horizontal elements are not advised, this image suggests careful study of the barrier component sizing relative to the pedestrian.

Ⓓ Indicates the possible use of accent color along the existing balustrade and the triangular form above suggests opportunities for unobstructed, framed views.



A

B



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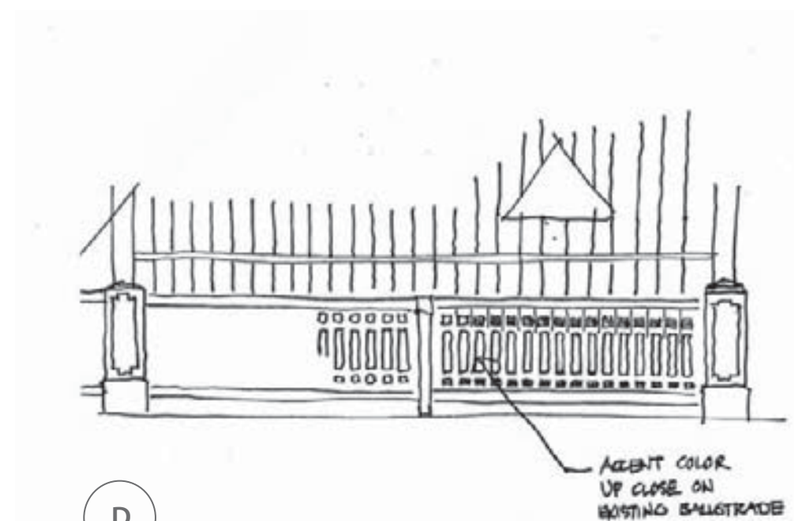
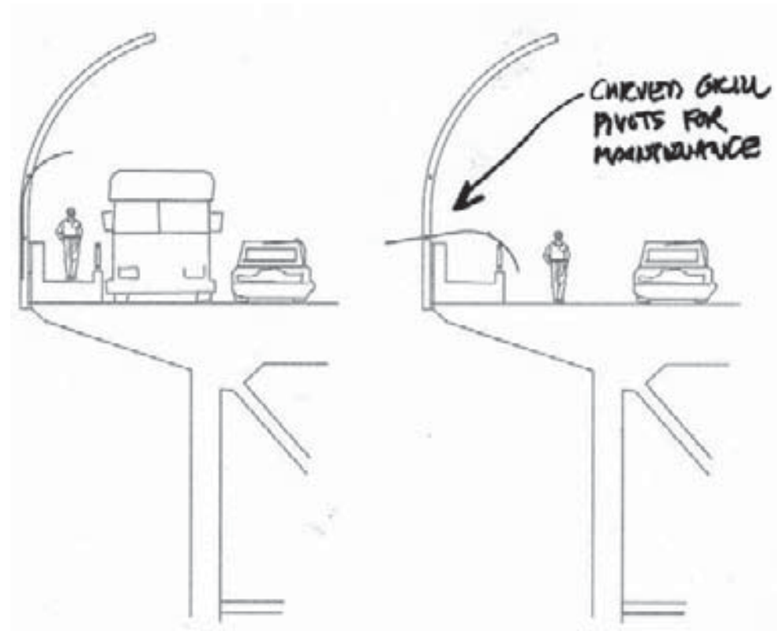


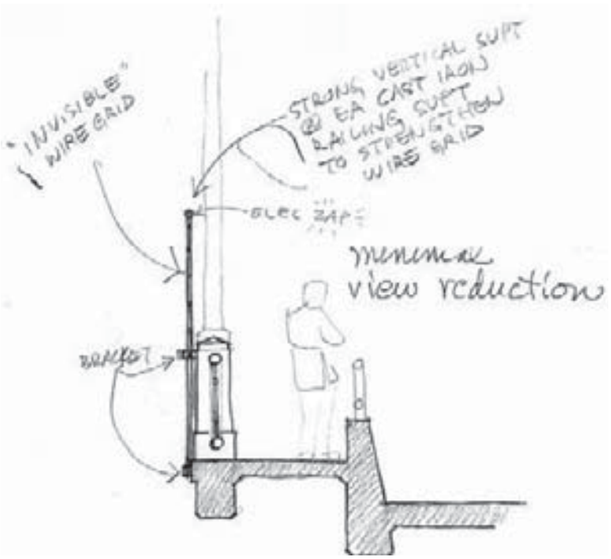
D

Group 3

A



B



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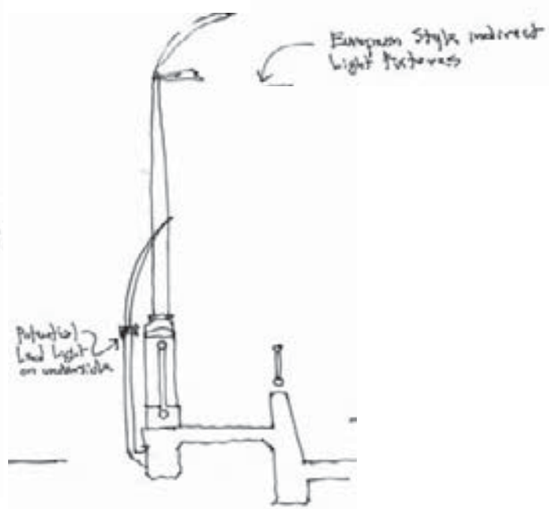

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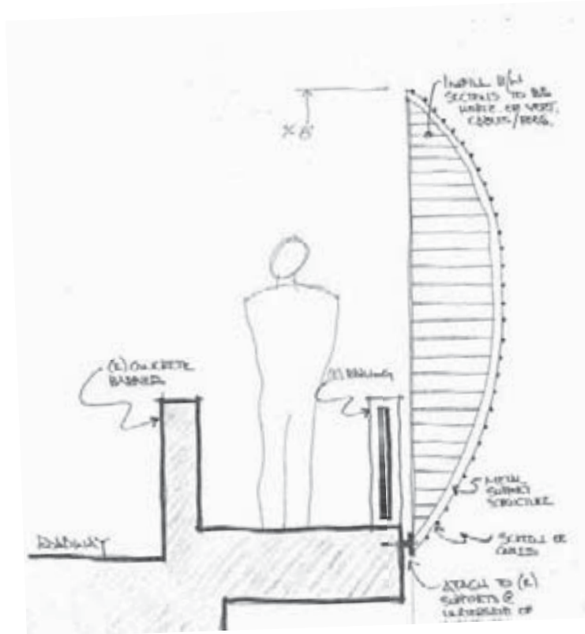
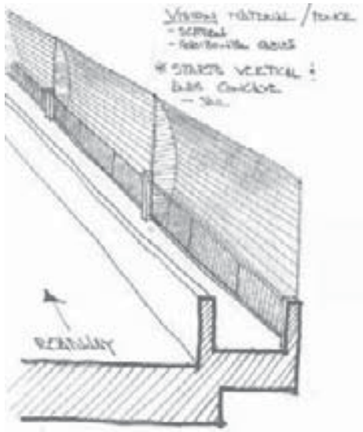




E

Sections

Ⓐ Although climbable horizontal elements are not advised, this image suggests an inwardly curved barrier which allows clearance for bicyclists. The drawing also indicates that the current width of the walkway does not comfortably accommodate both bikers and pedestrians.

Ⓑ Indicates lighting elements which are shielded by the bridge and a pivoting barrier section for maintenance ease.

Ⓒ Suggests the incorporation of subtle, but stronger deterrents to climbing the barrier.

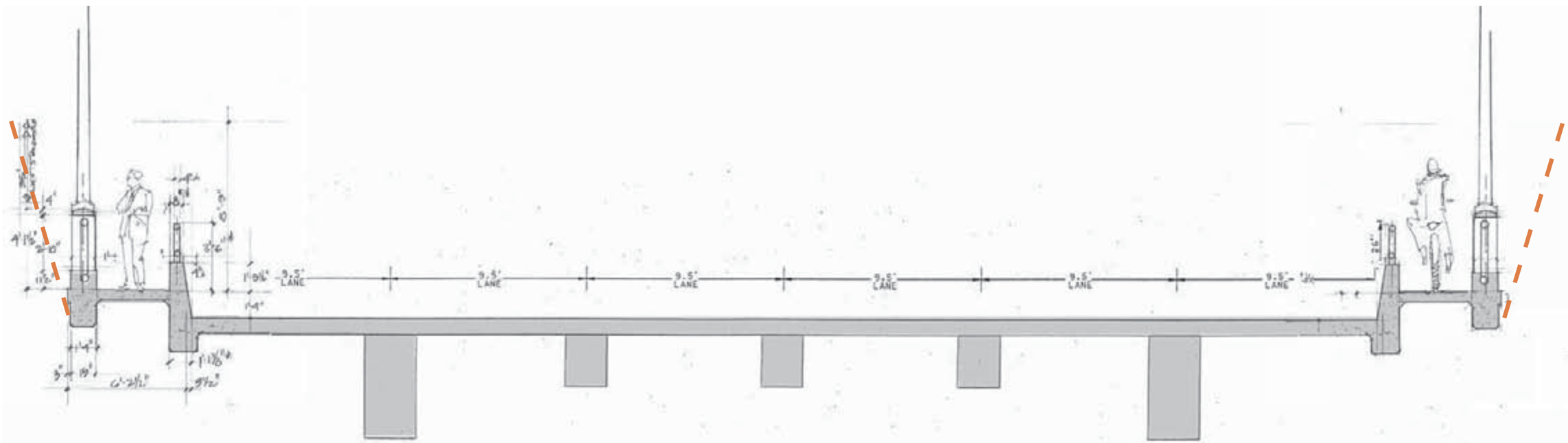
Ⓓ Suggests an integrated lighting strategy.

Ⓔ Indicates an outwardly curved barrier and a non linear plan.

The bridge experience
The Aurora Bridge provides breathtaking views in all directions for all modes of travelers: pedestrians, bicyclists and motorized vehicular travel alike. It is important to note that charette participants discussed experiencing a narrowing or tunnel effect while traveling across the bridge at higher speeds.

To address this shared concern, the team suggests that the barrier angle out and away from the existing guardrail. The orange dashed lines in the diagram below indicate the barrier's relationship to the Aurora Bridge; meant to reduce tunnel effect, as well as address climbing concerns and maintenance issues.

Conclusion
When a final design is developed, it is recommended that the needs of pedestrians, bicyclists and vehicular traffic are carefully balanced to produce an effective and timely solution.



Group 3

Elevation

Public Comments

An Artistic View

Put historic plaques (National Register and City Landmark) on bridge so people are aware of its history!

Too silly.

Could this be incorporated in any of the ideas? Some sort of gateway at the end of each pedestrian access?

Yuck – trying to be too cute. It's not appropriate.

These frames won't help the drivers see views at all. Way too busy and cluttered looking.

I really like this design – very creative! Nice kiosk touch.

I also really like the archway concept as entrances to the sidewalks.

I am definitely in favor of the designs incorporating more artistic approach (for instance "Blades of Grass" "An artistic view" – though you may have difficulty with a kiosk box – who collects them? Suicide notes?

I think the one with the frames is too non-uniform, and might look "cluttered" and more obstructive.

Minimalist Approach with a "Zap"

If the zap puts you off, that is the whole point – it will deter jumpers too.

What about the liability of the "zap?"

Uh oh! We can't be sapping people like cattle! I can see the liability with triggering heart attacks, seizures and anxiety attacks.

How strong of a zap are we talking about? People could possibly still get around this.

No zapping! I do not think it sends the right message to potential suicide victims.

I like the mesh on the veil (like Toronto). No zap, though.

I don't like the "zap" concept – I think it is a little too prison-like. With design there ought to be ways to ensure that the barrier cannot be reached without this aggressive touch.

I like most of the designs but there are 2 I don't like – the first being entitled "minimalist with a zap". I don't like the idea of people being zapped by touching the fence. It treats people – possible jumpers – like they are criminals and this is not the message I think we should send.

Electrical fence is distasteful.

The ZAP fence is interesting, but I don't think people would be happy. I could see some kids up to no good trying to mess with it.

I like the veil idea of the Toronto bridge. Perhaps that is what the zap-less mesh fence could be.

Curved Barrier "lights over the roadway will spill less into the neighborhoods"

The amount of curvature starts to remind me of a tunnel (which is bad). If you go with a curve, there needs to be lots of openness for views.

Please avoid curving over. It is very confining and oppressive.

The Comb

Looks nice in section but imposing in elevation view.

The comb seemed in keeping with the bridge's style and I liked the European style lighting which gives a more pleasurable pedestrian experience.

Sails

A bit busy and cluttered for this bridge. However, this would look great on a different, cleaner lined and more modern bridge.

Sails obstruct the view.

Severe and cage-like.

These seem to highly impact the pre-existing character of the bridge. I would prefer a less noticeable design. The view of the bridge from the ground would greatly differ with the "sails."

The "sails" are perhaps too contemporary, sort of Japanese-modern.

Do not like "sail" effect nor the more "artistic/creative" designs. The extra cost and effort for those details are at too great a distance to be fully appreciated and valued.

"Sails" is another good design and kind of goes with theme of bridge i.e. passageway for boats).

Sails is too heavy and doesn't fit the bridge – it looks like an add-on.

The sails wouldn't match the bridge, would look foreboding and heavy.

The sail design is too modern and not in keeping with the bridges historic design. It shouldn't look like a prison fence – should enhance the bridge as well as being functional.

Pedestrian-Experience Along the Bridge

The outward slope infringes less on pedestrians (a big positive!). I like it and its open feeling.

I like the open feeling as long as horizontal view-blocking elements are minimized.

This doesn't "match" the bridge.

It seems to be modeled after the 'luminous veil' barrier on the Prince Edward/Bloor Street Viaduct in Toronto.

Bicycle Zone Emphasis

"Blade" is too close to cyclists and pedestrians.

Yes! Wire cable seems the least obtrusive of what is here. However, vertical cable could be climbed like a ladder.

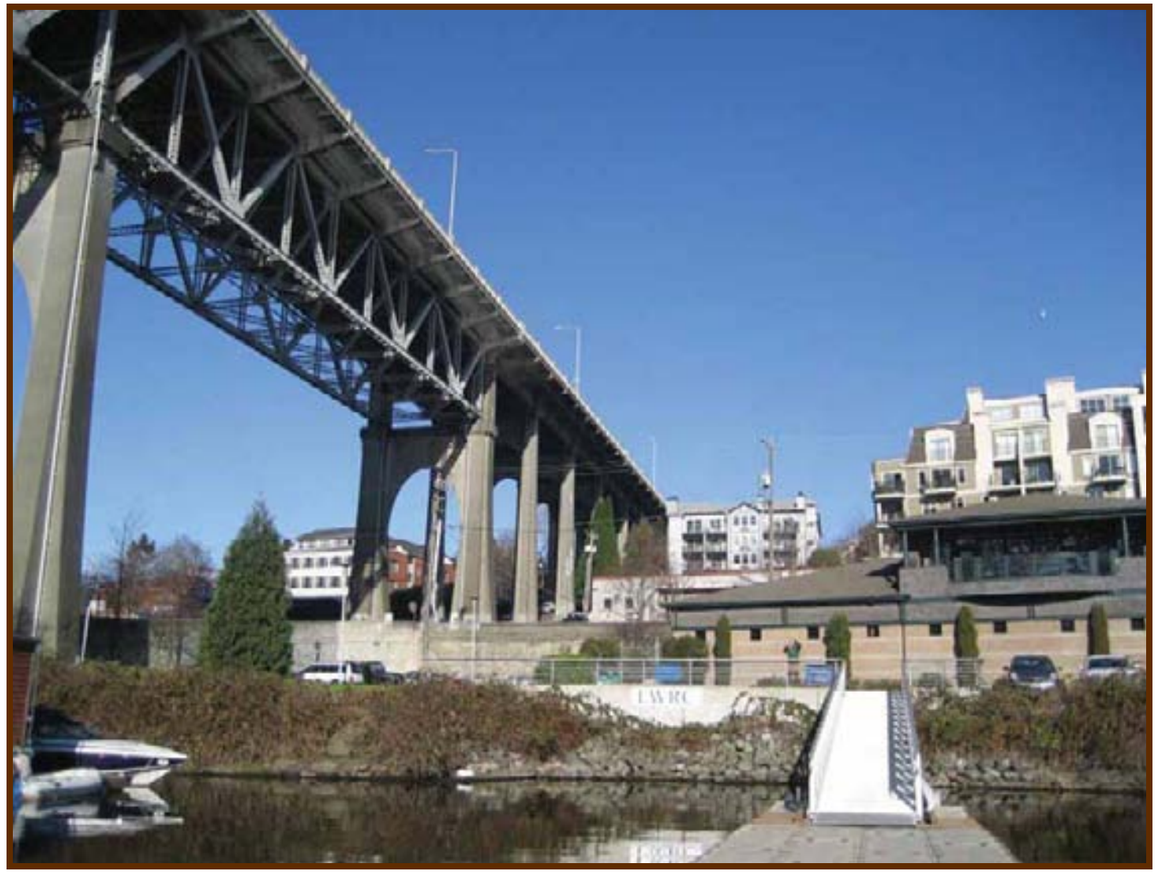
Rather boring design; the curve is oppressive. Please avoid the tunnel feel.

I like the cable concept which allows for less interrupted views when driving.

Next Steps

The Seattle City Council funded this project as a means to engage the public on potential barrier designs. The City Council will provide copies of this report to the Washington State Legislature and WSDOT. If the barrier receives funding in the 2008 state budget, design and construction will be conducted by WSDOT. The City Council will continue to stay engaged in the process.

If the project receives funding, WSDOT will begin designing the barrier in spring 2008. WSDOT will use the comments from the workshop and concepts generated in the charette to inform barrier design. As WSDOT proceeds toward construction, the design team will continue to involve the public and will consider their input while working within the constraints of budget, scope, maintenance, constructability, effectiveness in deterring suicides, and national design codes. Since the Aurora Bridge is listed on the National Historic Register, WSDOT's design must also be approved by the City of Seattle Landmarks Preservation Board and the Washington State Department of Archaeology and Historic Preservation.



Appendix

Appendix A: Communications Tools
Appendix B: Stakeholders
Appendix C: Community Design Charette
Appendix D: Community Comments

Appendix A: Communication Tools

Project fact sheet
Workshop notification postcard
Open house notification postcard

Project fact sheet

front

SR 99
Aurora Bridge

SUICIDE
PREVENTION
FENCE

Project Purpose

The City of Seattle, the Washington State Department of Transportation and the community are working together to identify potential design concepts for a barrier to prevent people from jumping from the State Route (SR) 99 Aurora Bridge.

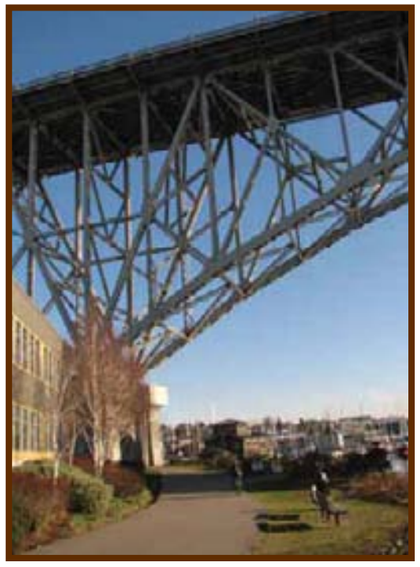
The goal of the barrier is to improve public safety. Each time someone jumps from the SR 99 Aurora Bridge it presents serious safety risks for those who work, play and live below the bridge. Emergency response staff also put themselves at risk attempting to rescue people in the hazardous Ship Canal waterway. The effects of people jumping from the bridge reach beyond those who commit or attempt suicide and their loved ones.

A Growing Need

Constructed in 1931, the SR 99 Aurora Bridge is a registered national historic landmark connecting Seattle's Queen Anne and Fremont neighborhoods across the Ship Canal. The area below the bridge is a vibrant part of the Seattle community and has changed significantly in recent years. The waterway and Burke-Gilman Trail attract a variety of recreational users and the number of people who live and work below the bridge has increased on both sides of the Ship Canal.

Proven Effectiveness

Physical barriers have proven to be an effective solution and have reduced jumping rates to near zero where installed on other bridges. A study supported by a grant from the American Foundation for Suicide Prevention examined the effectiveness of a suicide barrier on a bridge in England known for suicides. According to this study, barriers worked at reducing suicide. The research shows that jumps did not increase from other nearby bridges – another common misconception. Additional studies regarding suicide prevention barriers on bridges throughout the world continue to show that barriers can help save lives.



Statistics

- More than 230 people are known to have jumped from the Aurora Bridge since it was built in 1931, and the first known suicide occurred at the bridge in 1932.
- More than 50 of the known suicides have occurred since 1995.
- In 2007, six people are known to have jumped from the bridge.
- Over half of the jumpers fall on land.
- Approximately 1,000 people currently work under or near the bridge. This number is expected to grow.

back

For More Information

For more information or to learn about ways to get involved, call Hillary Johnson at EnviroIssues (206-269-5041), email aurorabridge@enviroissues.com, or visit the project Web site at www.aurorabridgefence.com.

Open House

February 13
7:00 - 8:30 p.m.
B.F. Day Elementary
3921 Linden Ave. N., Seattle

City of Seattle Washington State Department of Transportation

Other Ideas Considered

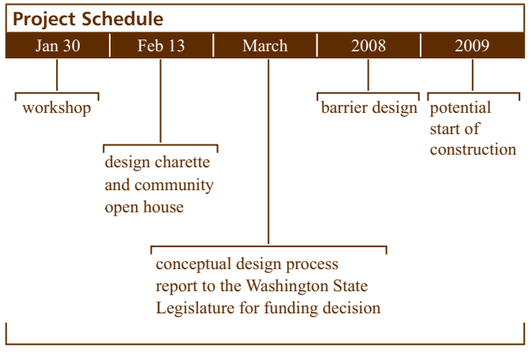
WSDOT reviewed several options to address this public safety issue before selecting the barrier as the solution. These included:

- Netting (high maintenance cost)
- Closing bicycle and pedestrian access to the bridge (conflicts with City and WSDOT policies)
- Constructing an enclosed pedestrian and bicycle structure below the bridge deck (high cost and public safety concerns)

Ways to Be Involved

The City of Seattle is leading an outreach process to identify community issues and ideas that should be considered as WSDOT moves forward with the design and construction of the barrier. The result of this community involvement process will be a report to the Washington State Legislature to help inform their funding decision. The report is expected to be complete in early March 2008 and will provide information about community issues and conceptual design ideas developed in collaboration with the community.

This process will provide several ways for interested community members to share their ideas, including a community workshop to identify issues that should be considered prior to design, and a follow-up open house to showcase how community input has been incorporated into conceptual barrier designs.



Funding

The total cost of designing and constructing a suicide barrier to the SR 99 Aurora Bridge is estimated to be $4.3 million. An additional $3.2 million has been requested to replace the lighting on the bridge if needed. While funding for the barrier will ultimately be decided by the Washington State Legislature, Governor Gregoire has included $1.4 million for the barrier in her 2008 supplemental budget request.

Postcard invitation to public workshop

front

SR 99
Aurora Bridge

SUICIDE
PREVENTION
FENCE

SR 99 - Aurora Bridge Suicide Prevention Fence

The City of Seattle, Washington State Department of Transportation, and the community are working to develop potential design concepts for a suicide barrier on the Aurora Bridge.

The first step will be a community workshop to identify issues that should be considered.

Please join us at this workshop to learn more and to share your thoughts:

Wednesday, January 30, 2008
6:30 to 8:30 p.m.
B.F. Day Elementary School Gymnasium
3921 Linden Ave. N, Seattle

Visit the project Web site at www.aurorabridgefence.com for more information. A follow-up open house will be held on Wednesday, February 13, 2008 to show how community input has been incorporated into potential design concepts.

For more information:

Contact Hillary Johnson at EnviroIssues
Call (206) 269-5041
Email aurorabridge@enviroissues.com
Visit www.aurorabridgefence.com

City of Seattle Washington State Department of Transportation

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SR 99-Aurora Bridge Suicide Prevention Fence
c/o EnviroIssues
101 Stewart Street, Suite 1101
Seattle,WA 98101

SR 99
Aurora Bridge

SUICIDE
PREVENTION
FENCE

Please join us!

Workshop
Wednesday, January 30
6:30 to 8:30 p.m.
B.F. Day Elementary School
Gymnasium
3921 Linden Ave. N, Seattle

Postcard invitation to open house

front

SR 99
Aurora Bridge
SUICIDE
PREVENTION
FENCE

Please join us

See how community input from the January 30 workshop is being incorporated into potential conceptual fence designs.

Wednesday, February 13, 2008
7:00 to 8:30 p.m.
B.F. Day Elementary School Gymnasium
3921 Linden Ave. N, Seattle 98103

For more information:

Visit www.aurorabridgefence.com
Email aurorabridge@enviroissues.com
Call Hillary Johnson at EnviroIssues: (206) 269-5041

SR 99 – Aurora Bridge Suicide Prevention Fence

The City of Seattle, Washington State Department of Transportation (WSDOT), and the community are working to develop potential design concepts for a suicide barrier on the historic landmark Aurora Bridge.

The first step in this process was a community workshop that identified values and issues that should be considered.

The next step is to translate those values into conceptual designs at a design charette with key stakeholders and design professionals. Come see the results of the charette and share your thoughts.

City of Seattle
Washington State Department of Transportation

back

SR 99-Aurora Bridge Suicide Prevention Fence
c/o EnviroIssues
101 Stewart Street, Suite 1101
Seattle,WA 98101

SR 99
Aurora Bridge
SUICIDE
PREVENTION
FENCE

Please join us!

Wednesday, February 13 • 7:00 to 8:30 p.m.
B.F. Day Elementary School Gymnasium
3921 Linden Ave. N, Seattle 98103

Appendix B: Stakeholders

List of stakeholders
Stakeholder interview questions
Stakeholder interview summary

Stakeholder List

Aurora Bridge Suicide Barrier
Last updated January 7, 2008

✓ = proposed interview candidates

Community
- ✓ Seattle FRIENDS
- ✓ Lake Union District Council
- ✓ Fremont Chamber of Commerce
- ▪ Fremont businesses not associated with the Chamber
- ✓ Businesses below the Aurora Bridge/property managers
  - Adobe
  - Impinj
  - Getty Images
  - Google
  - Net Motion
  - Cutter and Buck
  - CB Richard Ellis and other property management
- ✓ Historic Seattle
- ▪ Queen Anne Historic Society
- ▪ Bike and pedestrian organizations (Cascade Bicycle Club and Feet First)
- ✓ Houseboat owners (Floating Homes Association)
- ▪ Queen Anne Magnolia District Council
- ✓ Queen Anne Community Council
- ▪ Greater Queen Anne Chamber of Commerce
- ✓ Fremont Neighborhood Council
- ▪ Eastlake Community Council
- ▪ Wallingford Community Council
- ▪ Wallingford Chamber of Commerce
- ▪ SLUFAN (South Lake Union Friends and Neighbors Community Council)
- ▪ North Capitol Hill Community Council
- ▪ Moorage leasers
- ▪ Recreational users
  - Lake Washington Rowers Club
  - Sailing community
  - Lake Union Crew
  - Pocock Rowing Center
- ▪ Families of jumpers
- ▪ American Association of Architects (AIA)

Emergency Response
- ✓ King County Crisis Clinic
- ▪ Youth Suicide Prevention Program
- ✓ Seattle Police Department (SPD)
  - SPD Harbor Patrol
- ▪ Seattle Fire Department (SFD)
- ▪ SPD Guild
- ▪ Seattle Office of Emergency Management
- ▪ Other emergency responders
- ▪ American Association of Suicidology

Local Government
- ✓ WSDOT
- ✓ SDOT
- ✓ Seattle Landmarks Preservation Board
- ✓ Washington State Archaeology and Historic Preservation
- ▪ City Council
- ▪ Governor's office
- ▪ King County Council
- ▪ Ron Sims' office
- ▪ 43rd District elected officials
  - Senator Ed Murray (D)
  - Rep. Frank Chopp (D, Speaker of the House)
  - Rep. Jamie Pedersen (D)
- ▪ 36th District elected officials
  - Senator Jeanne Kohl-Welles (D)
  - Rep. Helen Sommers (D)
  - Rep. Mary Lou Dickerson (D)
- ▪ Seattle Department of Neighborhoods (DON)
- ▪ Seattle Department of Planning and Development (DPD)
- ▪ Seattle Parks and Recreation
- ▪ Pedestrian/bicycle advisory boards
- ▪ Seattle Design Review Board

Stakeholder Interview Questions

Aurora Bridge Suicide Barrier
Last updated January 4, 2008

Purpose

- To determine the community issues and concerns that should be addressed during the conceptual design process.
- To determine who needs to be involved in the process.
- To inform development of the community workshop and design charette.

Outcome
The interviews will be summarized with findings and recommendations to be incorporated into the workshop and charette.

Proposed Strategy
Approximately 12 interviews will be scheduled and conducted during the second and third weeks of January 2008. Persons to be interviewed will include representatives from Fremont Chamber of Commerce, community organizations (including FRIENDS, Queen Anne Historic Society, Floating Homes Association), and emergency responders including Seattle Police Department and Seattle Crisis Clinic. The interview list will be developed in consultation with the City of Seattle, the Steering Committee and WSDOT.

EnviroIssues will take the lead in scheduling and conducting the interviews. Detailed notes will be taken and a summary with key findings and recommendations will be prepared.

Potential Interview Questions

1. Introduction
   a. Description of the project, including the goals and objectives, planned community process and key stakeholders
   b. Purpose of the interview and how input will be used

2. Individual's Background
   a. Provide a little information about yourself
   b. Are you aware of the suicide issues and the barrier discussions?

3. Concerns and issues
   a. How concerned are you about suicides on the Aurora Bridge?
      - Very, somewhat, interested but not concerned, not interested and not concerned
   b. What types of concern do you have?
      - Preventing suicide
      - Impacts of suicides and suicide attempts
      - Cost of proposed solution
      - Historic and aesthetic impacts of proposed solution
      - Maintenance implications of proposed solution
      - Safety

      - Bicycle / pedestrian access
      - Other?
   c. Do you have concerns about the conceptual design process?
   d. What issues or information do you think the City should provide and/or discuss at a public workshop?
   e. Which issues do you think are likely to interfere with the project's success?

4. Outreach
   a. Where do you receive local/community information?
      - Word of mouth
      - Newspaper (name?)
      - Mail
      - Posted notices at post office, City hall, Library, grocery store
      - Internet/email
      - School programs
      - Community forums or events
      - Advocacy groups
      - Other?
   b. How would you like to receive information? (word of mouth, newspaper, mailing, internet, etc.)
   c. Would you like to be on a mailing list to receive updates?

5. Other stakeholders
   a. Are there other interested parties we should talk with?

City of Seattle
SR 99 Aurora Bridge Suicide Prevention Fence
Community Interviews Summary

January 2008

Prepared by

EnviroIssues

101 Stewart Street – Suite 1101
Seattle, WA 98101
(206) 269-5041

Scope of Interviews

Twenty individuals representing a variety of Seattle and Aurora Bridge stakeholders were interviewed over a period of two weeks. The interviews were conducted in person.

Familiarity with the Project

The City and the steering committee identified the list of potential interviewees, all of whom were familiar with the SR 99 Aurora Bridge Suicide Prevention Fence project. Although everyone was aware of the project, the level of familiarity varied: most were aware of the issues, but not all were aware the current status of the stakeholder consultation process currently ongoing, or that the City and the State were pursuing barrier design. As a result of this variation, many of the concerns and questions expressed have as much to do with the need for the project itself as with the barrier conceptual design stakeholder process.

Concerns

Concerns about the project fall primarily into the following categories:

- Right solution – consideration of other solutions
- Economic – is the cost of the project excessive for the gain, or the best choice of where to invest dollars
- Political – concerns with lack of public process to select this path forward and the impression that a select group of stakeholders are driving the project
- Safety – what safety priorities does this project follow
- Historic and aesthetic impacts – the project threatens the historic and aesthetic integrity of the bridge

Right Solution

A frequently expressed concern was about the solution selected. Many respondents asked if other alternatives had been thoroughly considered and studied and several different alternatives were suggested:

- A couple of respondents suggested developing the concept that was included in the Washington State Department of Transportation's 2003 Route Development Plan. This included removing pedestrian/bicycle access from the bridge deck, widening the lane width, placing a solid barrier in the middle of the bridge, and building a bike/pedestrian corridor under the bridge deck.
- Three respondents suggested closing the bridge to pedestrian/bicycle traffic completely. Some observations were that very few bicyclists or pedestrians use the bridge; there isn't enough data to know how many

bicycles or pedestrians use the bridge; and it is an unfriendly bridge to cross on bicycle or on foot due to the high speeds of vehicular traffic. One respondent believed suicide barriers are not at all effective in preventing suicide.
- One respondent said the proposal was based on a flawed premise – suicide barriers don't actually prevent suicides.
- Several respondents, who were in favor of the barriers, were most concerned with how quickly the barriers could be installed so as to address the significant risk to public safety

Additional Comments:

- "This bridge should be one exception to the city's multi-modal policies."

Economic

Several respondents had concerns with the proposed cost of the suicide barrier installation, thinking it was too high. Many respondents erroneously believed the $7.5 million dollar price tag referred to in a Seattle Times article was all for the barrier and did not know that $3.2 million was intended for light replacement on the bridge.

Others questioned spending this money on the barrier instead of applying it to more comprehensive improvements since it only addresses one component of what they saw were several safety problems with the bridge.

Two respondents expressed concern that the cost of the barrier would be driven inordinately high due to aesthetic or historic demands of certain stakeholder.

Additional Comments

- "If a barrier is built, do the most economical barrier possible and do it quickly."
- "If something isn't done, we stand to have negative economic impacts from jobs and/or employees leaving the area due to the impact of jumping incidents"

Social Concerns

Two respondents suggested that the money for the suicide prevention barrier would be more effective in suicide prevention if it were applied to broader suicide prevention or mental health services. Other respondents offered their belief that a barrier was the right solution and had been proven in other locations to be effective. Some respondents mentioned the corollary negative impacts of suicides off the Aurora Bridge – to employees, residents and people recreating under the bridge.

Additional Comments

- "It's a valid question, to ask if the money wouldn't be more effective if applied more broadly to social services, but the reality is, this money wouldn't go there – it would be spent on some other transportation issue."
- "The data does support a barrier as an effective way to prevent suicides off the bridge."
- "If WSDOT is so concerned about the impacts of suicide attempts, they should close the pedestrian/bicycle access right away – even if they do install barriers later or pick some other solution."
- "There's no question in my mind that if this bridge was built today it would have higher railings to prevent this problem."
- "It's hard having to think about being prepared for the impacts of suicides. We have a screen we keep on hand to bring out to block the view when necessary while waiting for emergency response."

Political / Public Process Concerns

Several respondents expressed concern with how the city or the state determined that the suicide barrier was the solution to pursue. Comments included questions about what public process has contributed to the barrier decision. Several respondents expressed concern that one specific interest group seemed to be driving the decision. Two respondents mentioned that this process had the potential to become a political issue. They expressed their belief that elected officials were under the erroneous impression that there is community unanimity in the desire for a suicide barrier.

Specific to the conceptual design process, several respondents said the process needs to be inclusive and that all interests need to be able to express their opinions without feeling like their issues were of less significance than preventing suicides. When those who expressed dislike for the suicide barrier option were asked if they would participate in the conceptual design process, they answered in the affirmative.

Additional Comments

- "People like to process things to death, but in this case, it's not in our best interest take time a lot of time over the process."
- "This [decision] isn't the Seattle process we're used to."
- "It feels like a real railroaded process."
- "I'm very glad you're making this [conceptual design process] very inclusive."
- "This could become a powder keg for elected officials."

Safety Concerns

Several respondents mentioned that the issue of safety on and near the bridge was much larger than just with suicide attempts. Issues cited were head-on collisions, speed on the bridge, and queuing at bridge approaches. Others said the safety of those under the bridge was of paramount concern, as it was only a matter of time before someone was hurt by a jumper. One respondent questioned WSDOT's safety priorities and where the suicide barrier issue falls within the order of priorities.

Historic and Aesthetic Concerns

Reaction to historic preservation concerns with the bridge was mixed. Several respondents felt very strongly that it would be difficult to design a barrier that does not threaten the historic integrity of the landmark bridge. Others were equally concerned that historic preservation concerns not cause the project to be delayed, the cost to climb, or design concepts to be put forward that were too elaborate or complicated to be practical. Several respondents expressed disappointment or mistrust with WSDOT and how it constructed a recent pedestrian rail on the bridge. Concerns revolved around whether WSDOT installed the exact rail design that was approved by the Landmark Preservation Board.

Additional Comments

- "I don't want to have preservationists punished by the legislators or anti-suicide folks when we oppose the barrier or express our concerns."

Information or Issues to Discuss at the Workshop

Respondents were asked specifically about the January 30 workshop. Suggestions include:

- Have all voices represented at the table
- Provide good visuals
- Discuss alternatives considered - show how the city/WSDOT is making a good faith effort to look at alternatives
- Avoid emotionalism and rhetoric
- State right up front the acknowledgement of the bridge's historic status and the need to preserve the historic integrity of the bridge
- Use clear visuals, including historic pictures of the bridge
- Think about how to structure the workshop so passionate interest groups don't dominate the discussion
- Have experts talk about the data – not advocacy groups

Interviewees

Name	Date Interviewed
Ryan Thurston, Seattle FRIENDS	1/15/08
Michael Jerret, Fremont Chamber of Commerce	1/15/08
Casey Hanewell, SDOT	1/16/08
Beth Chave, City of Seattle, Seattle Landmarks Preservation Board	1/16/08
Leann Olson, Queen Anne Historical Society	1/16/08
Matthew Sterner, WA.Dept. of Archeology and Historic Preservation	1/16/08
John Coney, Queen Anne Comm. Council	1/17/08
Mike Warren, Queen Anne Comm. Council	1/17/08
Christine Palmer, Historic Seattle	1/17/08
John Maas, WSDOT	1/17/08
Steve Shipe, WSDOT	1/17/08
Archie Allen, WSDOT (phone)	1/17/08
Paul Kinderman, WSDOT (phone)	1/17/08
Gregg Phipps, WSDOT	1/17/08
Sgt. E.J. Eddy, Seattle Police Department	1/18/08
Don Kuch, King County Crisis Clinic	1/18/08
Vafa Ghazi, Fremont Neighborhood Council	1/18/08
Erik Pihl, Fremont Neighborhood Council	1/18/08
Susie Burke, Lake Union District Council	1/23/08
Doug Hixson, CB Richard Ellis	1/23/08

Appendix C: Community Design Charette

Community values identified at the January 30 workshop

AASHTO design load guidelines

WSDOT's SR 99 Aurora Bridge fence requirements

Top Priorities

The following list is a compilation of the priority issues and considerations identified by each of the small groups at the January 30 community workshop:

- Create a safe environment: ensure effectiveness
- Ensure functionality and structural integrity
- Aesthetics are important (e.g. materials used)
- Maintain the historic character of the bridge
- Aesthetics of the barrier are more important than historic character
- Preserve views of the bridge and from the bridge
- Consider the psychology of the space
  - A barrier should deter someone from feeling lonely and vulnerable
  - A barrier should connect with a neighborhood feel
- Constructible in a timely manner
- Low maintenance
  - Use long-lasting materials and maintain access to maintenance crews
- Consider different lighting options
- Enhance the pedestrian experience
- Creative design solutions
  - Utilize a variety of designers to ensure the best design
  - Investigate artistic designs
  - Consider non-vertical barriers or alternative designs
- Continue to involve the community and stakeholders, and deliver what is promised

General Themes

Flip chart notes from each of the small groups have been grouped according to the following general discussion themes:

Effectiveness and Safety

- This is a public safety issue; in addition to suicide prevention, a barrier is for neighborhood protection
- Barriers should be effective and functional
  - Should be impossible or difficult to climb
  - Should be most effective over land
  - Minimize the impulse to jump
- Barriers should be built quickly
- Continue to provide the hotline phones
- Consider building a barrier to the lowest effective height
- Look at "return on investment" (e.g. a six foot tall barrier produces an 80% suicide reduction)
- The barrier should be 100% effective; the population is growing and 100% effectiveness is necessary

Community Values and Ideas
As identified at the January 30th public workshop
Last updated: February 13, 2008

- Utilize the barrier as a way to provide time for intervention and/or reflection (e.g. different construction materials)
- Should be high enough to discourage jumpers (something curved, not straight up)
- Could use warning system technology; maybe when people get to close or touch the outer railing, the crisis clinic or 911 is called directly
- Use electric fencing
- A barrier should prevent all objects from falling off the bridge (e.g. car bumpers)
- Reduce debris that can be thrown from or fall off bridge
- When below bridge, make sure people can't take that first step to climb up

General aesthetics ("look and feel")

- Be creative!
- Think beyond existing structure
- Make the barrier as attractive as possible
- Use an elegant design
- Fit style and structure of existing bridge – should not look like an add-on or "bad remodel"
- A barrier should be unobtrusive
- Encourage connection to place
- A barrier should not look like a prison or induce an enclosed feeling
  - Don't make the roadway feel too enclosed
  - Should not look like a "suicide barrier"
- A barrier should not be hostile or negative, and should not resemble a fence or a barricade
- Consider the "psychology of the space"
- Make the barrier a design model/showcase
- Make the barrier beautiful
- Consider user/visual perspectives/vantage points
- Think beyond function (potential as an art installation rather than simply an architectural solution)
- Aesthetically pleasing design is more important than simply keeping with the historic character
- Minimize visibility of the barrier ("invisible" to drivers and pedestrians)
- Reflect the character of the communities
- Utilize attractive lighting
- Create a memorial for those who died
- A barrier should have an organic feel (e.g. plantings)
- Induce a sense of calm and peace when looking at the bridge (Currently, when walking below you feel a sense of dread and worry looking up)
- Should not encourage sign posting

Specific design ideas

- Should not create more wind noise
- Consider using recycled/reused materials
- Construct a taller rather than wider barrier

Community Values and Ideas

As identified at the January 30th public workshop
Last updated: February 13, 2008

- Construct a fence that goes out from the bridge, not up
- Utilize a barrier a person can see through
  - Use a transparent barrier
  - Consider low-angle transparency
- Lighting
  - Lights should not be too bright
  - Don't use glaring lights (for drivers and pedestrians)
  - Lighting should be historic
  - Don't make lighting on the bridge any brighter than it already is
  - Use L.E.D. lighting for people looking at the bridge from afar or below (color coded to indicate weather or traffic conditions)
- Explore a nautical theme
- Incorporate art in the design
  - Consider an artistic perspective (don't design like a pedestrian barrier)
  - Incorporate sculpture elements

Historic character

- Maintain the bridge's historic integrity
  - A barrier should "match" the bridge
- Keeping with the historic character of the bridge is important, but there have already been many changes to the bridge that have already changed it's historic character
- Utilize an elegant design with the bridge's historic character in mind
- Meet historic landmark process requirements
- Historic character includes the consistent use of materials
- Use historic lighting

Views

- Consider views of the bridge from all perspectives (e.g. boaters)
- Maintains picturesque view for tourist and pedestrians
- Don't negatively impact houseboat owners views of the bridge
- Don't inhibit the enjoyment of views by drivers and pedestrians
- Maintain views of/from bridge
  - No solid barrier
- Limit noise, but keep view

Construction

- Build them soon!
- Ensure structural integrity
- Ensure durability
- Fast construction is not essential if it means a better design is carefully built
- Minimize maintenance costs
- Ensure security of construction materials
- Paint the fence before installation

Maintenance

Community Values and Ideas

As identified at the January 30th public workshop
Last updated: February 13, 2008

- Build a barrier should not impact normal bridge maintenance; it should accommodate existing maintenance work
- Build a barrier that requires low maintenance
  - Have to be able to clean it
- Build a barrier that is practical to repair
- Structurally accessible for maintenance crews
- Design should not encourage vandalism or attract nuisances or invite mischief (e.g. removing and throwing bolts over the bridge, graffiti)
- Design should be tamper-proof
- Allow maintenance
- Use materials that
  - Do not require frequent re-painting
  - Do not require lots of work
  - Do not create a glare
  - Are not "cheap"
- Think about how far the barriers will go to the ends of the bridge

Bridge use

- Maintain multimodal use of/access to bridge (e.g., cars, bikes, and pedestrians)
- Consider context (views, historical structure, community, etc.)
- Effect on drivers
  - A barrier should not be distracting for drivers
    - Make sure the ends of a fence do not further limit site distance
    - Drivers have limited sight distance merging on to freeway when driving south on SR 99
  - Bridge currently has traffic issues; new barriers will create a tunnel effect causing people to drive inwards and on the center line

Design process and public involvement

- Involve community and stakeholders in design
- Install temporary fixture to reduce access immediately
- WSDOT needs to be true to the design that is selected
- Explore many types of designs and look at all points of view
- Look at other cities/designs
- Be creative and use competition to ensure a high-quality design
- Involve the public by sharing design examples
  - Mock up a portion of the design to full size for people to see
- Make the design process efficient
- Include stakeholders in lighting design

Cost

- Barrier should be economically feasible
- Project should come in at or under budget
- Barrier should be constructed on time

Other considerations

Community Values and Ideas

As identified at the January 30th public workshop
Last updated: February 13, 2008

- Wildlife-friendly
- Improve sight lines on exits
- Limit noise for pedestrians and residents
- Explore netting
- Steer in another direction

BRIDGE # 99/560 AURORA AVENUE OVER THE SHIP CANAL ~ SEATTLE

Gallagher & Kinderman 2 12
WSDOT Bridge Office

BRIDGE GEOMETRY ~ Bridge # 99/560

Width 60'
Length 1450' along main truss (three spans), 2953' entire length
Height 175' at South main Pier (Pier S1)
165' at North main Pier (Pier N1)

DESIGN LOADS

Live Loads ~ AASHTO 13.8.2, AASHTO 13.9.1

All Elements:

Live loads act at a max height of 5'.
50 klf for vertical and horizontal elements, acting vertically and horizontally.
200 lbs in any direction any location simultaniously with 50 klf load.
Additional point load in any direction at top of posts simultaniously with 50 klf load.
This load = 200 lbs + 0.05 * Post Spacing.
Mesh type fence has a 15 psf uniform pressure perpindicular to the surface.
Bicycle loads are inclusive of pedestrian loads. Bicycle specifications are geometric restrictions to the pedestrian loads.

Engineer's preliminary suggested load of 200 lbs anywhere on the fence regardless of height.

Wind Loads ~ AASHTO 3.8

At this site:

Wind velocity: 136 mph ~ at 175 ft height
Site specific factors:
Wind condition = "Open Country" per AASHTO Table 3.8.1.1-1
This is due to the height above the city and proximity to the open water.
This is the engineering judgement call I made.
Base wind speed = 100 mph. WSDOT standards.

Wind pressure: 44 psf ~ 60% coverage of screen (60% of wind pressure for solid fence).
60% coverage (44 psf wind pressure) is a judgement call. This could be modified.
Allowances for the curved overhang not deemed significant at this stage. It will add some moment to the poles, but reduce the horizontal component of wind load.
Engineering judgement will resolve this small area.

Design memo dated January 18, 2007 does not apply to this structure due to its height and type.

Pedestrian Railing Geometry ~ AASHTO 13.8.4

Minimum height = 42 inches . Note that project specific overall height is10 ft.
Clear opening minimum 6 inches below 27 inch height when both horizontal and vertical elements are used.
Clear opening minimum 8 inches above 27 inch height when both horizontal and vertical elements are used.
The above rail spacing should not apply to chain link or metal fabric.
Openings no larger than 2 inches for chain link or metcal fabric.

Washington State Department of Transportation

SR 99 Aurora Bridge Suicide Prevention Fence Requirements

The city of Seattle and WSDOT are hosting a community workshop and design charrette to develop potential design concepts for a suicide barrier on the Aurora Bridge. The following elements must be considered for the workshop and charrette to succeed.

Cost

This project is not yet funded. The estimated total budget for the proposed suicide prevention fence is $7.5 with new lighting and $4.3 million without new lighting (2007 dollars). This is based on the cost estimates WSDOT provided to the Washington State Legislature. We do not anticipate the Legislature will provide additional funds for the project. Additional funding sources should be considered if design concepts exceed current the proposed estimate.

Effectiveness

We cannot lose sight of the chief goal of this project – preventing suicides. Fence design options must have features that are proven effective in preventing suicides.

Design requirements

Workshop facilitators and participants should work with WSDOT Program Management staff as design concepts are developed.

Height

The height of the fence design cannot exceed 10 feet above the bridge driving surface. This is to ensure that WSDOT Under Bridge Inspection Trucks (UBIT) can be extended over the fence and underneath the bridge to allow inspections.

Width

Current sidewalk widths and location must be maintained.

Removable panels

Bridge inspectors, maintenance personnel, and contractors must be able to remove fence panels to allow more detailed maintenance and preservation activities.

Historic significance

The Aurora Bridge is a designated National Historic Landmark. Any suicide prevention measure that will affect bridge aesthetics will require regulatory review and approval from the city of Seattle Landmarks Preservation Board and the Washington State Department of Archaeology and Historic Preservation.

Structural issues

Fencing must be structurally sound in the event of a windstorm or earthquake and must with able to withstand the weight of those who might attempt to climb it.

A fence must be independent of the existing outer railing and must be attached to the bridge deck.

Any design concept will require engineering review and approval from WSDOT Bridge and Structures Office and must comply with American Association of State Highway and Transportation Officials (AASHTO) bridges codes

Appendix D: Community Comments

Complete list of community comments

Community comments

Community values and ideas

Top Priorities
The following list is a compilation of the priority issues and considerations identified by each of the small groups at the January 30 community workshop.

- Create a safe environment: ensure effectiveness
- Ensure functionality and structural integrity
- Aesthetics are important (e.g. materials used)
- Maintain the historic character of the bridge
- Aesthetics of the barrier are more important than historic character
- Preserve views of the bridge and from the bridge
- Consider the psychology of the space
    - A barrier should deter someone from feeling lonely and vulnerable
    - A barrier should connect with a neighborhood feel
- Constructible in a timely manner
- Low maintenance
    - Use long-lasting materials and maintain access to maintenance crews
- Consider different lighting options
- Enhance the pedestrian experience
- Creative design solutions
    - Utilize a variety of designers to ensure the best design
    - Investigate artistic designs
    - Consider non-vertical barriers or alternative designs
- Continue to involve the community and stakeholders, and deliver what is promised

General Themes
Flip chart notes from each of the small groups have been grouped according to the following general discussion themes.

Effectiveness and Safety
- This is a public safety issue; in addition to suicide prevention, a barrier is for neighborhood protection
- Barriers should be effective and functional
    - Should be impossible or difficult to climb
    - Should be most effective over land
    - Minimize the impulse to jump
- Barriers should be built quickly
- Continue to provide the hotline phones
- Consider building a barrier to the lowest effective height
- Look at "return on investment" (e.g. a six foot tall barrier produces an 80% suicide reduction)

Community comments

- The barrier should be 100% effective; the population is growing and 100% effectiveness is necessary
- Utilize the barrier as a way to provide time for intervention and/or reflection (e.g. different construction materials)
- Should be high enough to discourage jumpers (something curved, not straight up)
- Could use warning system technology; maybe when people get to close or touch the outer railing, the crisis clinic or 911 is called directly
- Use electric fencing
- A barrier should prevent all objects from falling off the bridge (e.g. car bumpers)
- Reduce debris that can be thrown from or fall off bridge
- When below bridge, make sure people can't take that first step to climb up

General aesthetics ("look and feel")
- Be creative!
- Think beyond existing structure
- Make the barrier as attractive as possible
- Use an elegant design
- Fit style and structure of existing bridge – should not look like an add-on or "bad remodel"
- A barrier should be unobtrusive
- Encourage connection to place
- A barrier should not look like a prison or induce an enclosed feeling
    - Don't make the roadway feel too enclosed
    - Should not look like a "suicide barrier"
- A barrier should not be hostile or negative, and should not resemble a fence or a barricade
- Consider the "psychology of the space"
- Make the barrier a design model/showcase
- Make the barrier beautiful
- Consider user/visual perspectives/vantage points
- Think beyond function (potential as an art installation rather than simply an architectural solution)
- Aesthetically pleasing design is more important than simply keeping with the historic character
- Minimize visibility of the barrier ("invisible" to drivers and pedestrians)
- Reflect the character of the communities
- Utilize attractive lighting
- Create a memorial for those who died
- A barrier should have an organic feel (e.g. plantings)
- Induce a sense of calm and peace when looking at the bridge (Currently, when walking below you feel a sense of dread and worry looking up)
- Should not encourage sign posting

Specific design ideas
- Should not create more wind noise

Community comments

- Consider using recycled/reused materials
- Construct a taller rather than wider barrier
- Construct a fence that goes out from the bridge, not up
- Utilize a barrier a person can see through
  - Use a transparent barrier
  - Consider low-angle transparency
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  - Lights should not be too bright
  - Don't use glaring lights (for drivers and pedestrians)
  - Lighting should be historic
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  - Use L.E.D. lighting for people looking at the bridge from afar or below (color coded to indicate weather or traffic conditions)
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Views

- Consider views of the bridge from all perspectives (e.g. boaters)
- Maintains picturesque view for tourist and pedestrians
- Don't negatively impact houseboat owners views of the bridge
- Don't inhibit the enjoyment of views by drivers and pedestrians
- Maintain views of/from bridge
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- Limit noise, but keep view

Construction

- Build them soon!
- Ensure structural integrity
- Ensure durability
- Fast construction is not essential if it means a better design is carefully built
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- Ensure security of construction materials
- Paint the fence before installation

Community comments

Maintenance

- Build a barrier should not impact normal bridge maintenance; it should accommodate existing maintenance work
- Build a barrier that requires low maintenance
  - Have to be able to clean it
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- Think about how far the barriers will go to the ends of the bridge

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- Maintain multimodal use of/access to bridge (e.g., cars, bikes, and pedestrians)
- Consider context (views, historical structure, community, etc.)
- Effect on drivers
  - A barrier should not be distracting for drivers
    - Make sure the ends of a fence do not further limit site distance
    - Drivers have limited sight distance merging on to freeway when driving south on SR 99
  - Bridge currently has traffic issues; new barriers will create a tunnel effect causing people to drive inwards and on the center line

Design process and public involvement

- Involve community and stakeholders in design
- Install temporary fixture to reduce access immediately
- WSDOT needs to be true to the design that is selected
- Explore many types of designs and look at all points of view
- Look at other cities/designs
- Be creative and use competition to ensure a high-quality design
- Involve the public by sharing design examples
  - Mock up a portion of the design to full size for people to see
- Make the design process efficient
- Include stakeholders in lighting design

Cost

- Barrier should be economically feasible
- Project should come in at or under budget
- Barrier should be constructed on time

Other considerations

- Wildlife-friendly
- Improve sight lines on exits
- Limit noise for pedestrians and residents
- Explore netting
- Steer in another direction

Email

29 comments were emailed to aurorabridge@enviroissues.com

1/16/08
I think that this project is ill-conceived and is bound to be costly and unsightly. If a person chooses to attempt suicide and is prevented by a suicide fence, then he/she will find a different location or a different method. So what is really being accomplished?

Moreover, why should the city get involved in an individual's right to take his/her own life anyway? I personally feel that each individual has that right. As physician-assisted suicide is not (yet) an option, why place impose other impediments.

To whom may I voice my objection to this project?

Thank you.

1/17/08
Thank you so very much for taking on the entire population of people with mental health problem. Building a disgusting fence along the aurora bridge will only cause the mentally ill to seek another bridge or building. Then you can move on to building another fence, and then another, and then another. The way I figure it, you will have job security for quite some time. Then after you build 80,000 miles of fence, maybe you can work on making razor blades illegal to prevent people from slashing their wrists. Then you can move on to removing all medication from the market.

Shame on you for pouring ugly all over our city. You are pathetic! Perhaps your effort would be more appreciated in a city that already looks like a ghetto retreat. Let us help you pack your bags and buy you a one way ticket to Jersey.

1/18/08
We STRONGLY support this suicide barrier.

We are a family of four (two daughters, ages 4 and 6) who live on a houseboat almost directly under the bridge. Our concern became intense after we walked with

our girls within 20 feet of the body of a 15 year old girl who had jumped moments before. Shortly thereafter, we had two jumpers in one day. On another occasion, [my wife] was picking blackberries on a summer evening with our girls when someone landed about 50 feet away. (So far, the girls haven't figured out what is going on. But they're smart and it won't take long.)

1/19/08
How much weight will be added to the bridge structure from its original design? How much will the safety margin be reduced by this added weight? The bridge in Minnesota collapsed after 300 tones were added and they say it was a design failure? NO. They added more weight than it was designed to carry and are passing the buck. The aurora bridge will never be as strong as it was when it was first built. I want to know how slim the margin is today and how much smaller it will be with the additional weight that has been added over the years?

1/21/08
I have lived for thirty-one years in Fremont with an unrestricted view of the entire east side of the George Washington Memorial Bridge [GWMB] (SR 99). In that time I have never witnessed a jump or an attempted jump, though I have read about them in the newspapers. My friends who live on houseboats below the bridge have also filled me in on the gruesome aftermath of the suicide jumps.
As bad as all this is spending $7.5 million to build a suicide prevention fence is an utter waste of public resources. It will not stop the self destruction, it will only move it to another bridge or another venue.
Two blocks from the south end of the GWMB on Queen Anne Dr. is another bridge with sufficient height to kill oneself by leaping. Two blocks south of that is the McGraw St Bridge which also is high enough to achieve terminal velocity. Ten blocks south of that are towers that are easily climbed...etc.
No amount of brandreth building will end some people's need to hurl themselves into the well of Death. If I may make a modest suggestion it would involve a very different approach. Eliminate the sidewalks on top of the GWMB, widen the traffic lanes, and install a Jersey barrier in the middle. The carnage of traffic drifting across the center lane is far worse than the few suicides.
Then take the $7.5 million and build a pedestrian/bicycle path in the superstructure underneath GWMB. This would improve traffic up above and separate human powered movement from fossil fuel powered movement, make everyone safer and prevent the deaths of those still fired with the joys of life.

1/24/08
I was unable to attend the meeting. I did have an idea to propose to the project.

A public art installation at the entry points to the bridge.
-It would be a zigzag pathway (created with a fence type structure) with a series of life affirming quotes incorporated into it.

Community comments

-Part of the installation would have a phone with a direct link to a suicide hotline.
-There also would be a small kiosk with note cards to record thoughts and messages.

The whole purpose of this installation would be to slow down the person walking on to the bridge, give them several opportunities to revisit their thoughts, introduce ideas that there might be some hope in this world.

1/24/08
It sounds like there are many who have the best of intentions but it is ludicrous to think that 7.5 million dollars of our tax money is a reasonble expenditure for this project. Where do we draw the line for those who are pushing the limits of sanity. Should we also run cables up the mountains so those who use poor judgement and are lured up the mountains in inclement weather can find their way home, put safety nets out for the snowmobilers whose loud engines cause them to be caught up in avalanches, have free life jackets at each boat launch for those who choose not to wear a life jacket out on the lake? The list can go on and on. Why all the attention to the bridge now if it has been going on since the 1930's. The builders of the Adobe building knew it was a fact of life under the bridge but built the building anyway. Those working at Adobe didn't have to choose to work there if the conditions were too unbearable. There is something terribly wrong with this picture. I live in an apartment that looks directly at the bridge, the water, and the parking lots. I don't feel I am callused in any way toward mankind but I am stable enough to be able to understand why people may jump, climb mountains, run snowmobiles in the mountains and so forth. I have seen the responders caring for the bodies as well. They have been very professional and respectful of the privacy needed in doing their work. I would really wonder how many lives have been turned around because their suicide attempts were averted. I don't mean just that they didn't do it that day, week or month, but at all, ever! Please, do not spend my tax money on such a thoughtful and caring but frivolous project!

1/28/08
I am responding to a postcard I received in the mail about the Aurora Bridge Suicide Prevention Fence. As a resident of Fremont and a resident of St. James Tower Apartments at 920 N 34th Street, I strongly support the construction of a suicide prevention fence. I have lived at St. James for 3 years and I have a top floor apartment with a full view of the bridge. Despite the fact that I have fortunately never been looking out my window when someone takes their life off of the bridge, I still feel impacted by these tragic events because more suicides have occurred in the last 3 years while I have been home then I can count. I know when someone has killed themselves because of the immediate police and fire presence on the ground and in the water. There children who live in my apartment building- imagine the horror if a child witnessed a suicide. People who live in this building and below the bridge and those who work below the bridge need not be further traumatized. While the bridge is beautiful to look at the way it currently is, I am in favor of saving lives. The city has to do something about the bridge- we cannot let this problem continue.

Community comments

Thank you.

1/28/08
I'm interested in knowing more about the design approach for this project.
Has a design team been selected? Will there be a public art component to the project? Has a feasibility study already been done? (It seems that way from the cost estimate) In addition to these there is a recently completed highway bridge in Salina, Kansas
that has safety and security fencing that is not yet on the website.
I'm sure we could send you some views of that as it would be directly applicable.

This would be an interesting project to us for its design potential as well as for the potential to do something attractive that prevented suicide attempts without necessarily calling attention to that part of its purpose. We also have experience with incorporating roadway lighting. I see that is a potential component of the design.

I would appreciate whatever information you can send.
Thank you.

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I am responding to a postcard I recieved in the mail about the Aurora Bridge Suicide Prevention Fence. As a resident of Fremont and a resident of St. James Tower Apartments at 920 N 34th Street, I strongly support the construction of a suicide prevention fence. I have lived at St. James for 3 years and I have a top floor apartment with a full view of the bridge. Despite the fact that I have fortunately never been looking out my window when someone takes their life off of the bridge, I still feel impacted by these tragic events because more suicides have occured in the last 3 years while I have been home then I can count. I know when someone has killed themself because of the immediate police and fire prescence on the ground and in the water. There children who live in my apartment building- imagine the horror if a child witnessed a suicide. People who live in this building and below the bridge, and those who work below the birdge need not be further traumatized. While the bridge is beautiful to look at the way it currently is, I am in favor of saving lives. The city has to do something about the bridge- we cannot let this problem continue.
Thank you.

1/29/08
You are spending how much to appease a few houseboat owners?!? I'm sorry for the very few who've had to directly suffer from jumpers but wonder if you've heard of eminent domain. They should move, because that's what the suicidal are going to do — just move to another high place. This fencing is as farcical as the fence between us and Mexico.

Community comments

Put that money into a fund for the police and fire department personnel to get a well-deserved, relaxing vacation after cleaning up the mess.

If the legislature can tell parents they can't smoke in a vehicle with their kids, why can't they make a law fining the estates and/or relatives of those who commit suicide? Something substantial. It wouldn't be the most ridiculous law by far and it makes a whole lot more sense than a straw to stop a pinhole leak in the Hoover Dam.

1/29/08
I really appreciate that this is moving forward. I won't be able to attend the workshop but wanted to at least give some feedback in case public comments are being noted. It would be great if the fence looked "nice" and preserved the beauty of the bridge but I am less concerned about that then the real issues. So whatever is decided is great in my book.

1/30/08
I am the park manager at Deception Pass State Park. As you may know, we have similar issues of suicide prevention on the bridge across Deception Pass (SR 20) as you are studying for the Aurora Bridge.

I was wondering if I could be added to any email list generated by this study to be kept abreast of the results of meetings and studies undertaken in this regard. The two bridges have many similarities, and our local community is interested in finding solutions as well.

1/30/08
I shall begin by telling you that we are unalterably opposed to this project! On the surface it appears to protect a segment of our population from itself and its actions but, does it really?

If this fence and lighting are installed at a cost of some $8 million does this preclude a "jumper" from taking his/her own life? No. It only removes one available means to accomplishing what the individual feels the need to accomplish. The Aurora bridge will no longer be a means to the bitter end BUT that person will seek other bridges (Ballard, I-5 or Montlake) from which to jump or other avenues to end a life. Will we then fund projects to provide fences and lighting on other bridges?

Why not use these millions of dollars to shore up those community-based mental health programs that seek to help the suicidal members of our society? I can tell you that all of the existing programs are short funded today and could use the additional monies to help them do their jobs more efficiently and thus reach more of those in need.

Community comments

The recently installed signs and telephones didn't provide a solution and neither will fences and lights. I hope that our legislature comes to its senses before Governor Gregoire begins spending funds on this inane solution. Mental health is a serious problem that deserves better solutions than this one!!

1/30/08
I am unable to attend tonight's meeting on the Aurora Bridge Suicide Prevention project but would like:
1) to be added to the distribution list for future information
2) receive copies of information from tonight's meeting.

Thank you.

1/30/08
I am sending comments because I will be unable to attend tonight's public workshop regarding the proposed Aurora Bridge barrier. I am strongly opposed to the construction of such a barrier on the historic Aurora Bridge, which is a designated City of Seattle landmark, and one of the most significant historic bridges in Seattle. I understand that the City of Seattle and Washington State Department of Transportation are not considering any alternatives to constructing a barrier or suicide-prevention fence along the bridge, and I urge the city and WSDOT to consider alternatives to such a barrier that would have less visual impact on the bridge. This would include possible closure of the sidewalks, construction of a net or under-bridge passageway, and other alternatives.

I am a Fremont resident, member of the Fremont Neighborhood Council, the Fremont Historical Society and Historic Seattle, and a past member of the Seattle Landmarks Preservation Board. I also served on Seattle's Northwest Design Review Board in the past.

I understand that a design charrette regarding the Aurora Bridge barrier is scheduled for February 13, and I would like to participate in the charrette. By profession, I am a planner and historic preservation consultant.

Please reconsider the Aurora Bridge barrier proposal and evaluate other alternatives that would preserve the historic character of this important landmark bridge structure.

Thank you for the opportunity to express my concerns.

1/30/08
BTW, you (or someone) did a good job of publicizing this evening's meeting. However, I would suggest the addition, at some point, of signs at the ends of the

bridge providing notice of this effort. Signage is a bit challenging given vandalism, I know, but pedestrians and bicyclists are the people most likely to be affected.

2/1/08
I just wanted to let you know that I think this isn't a good idea. If people want to kill themselves, they will find a way and climb the fence – and this will just make the bridge ugly.

If you are worried about the people below, maybe you could provide alternative suicide options for them on the bridge where they could leave their body on the sidewalk.

Sorry to be crass, but this seems to be a poor solution to the problem.

2/2/08
I will be unable to attend the community workshop on February 13th at the B.F. Day gymnasium concerning the Aurora Bridge Suicide Prevention Fence Plan.

I live near the Aurora Bridge, and in fact I can see it from the windows of my home. I also drive on the bridge regularly.

The Aurora Bridge provides perhaps the only view of both the Cascade and Olympic mountains from a major Seattle road, and as such it provides a unique view for passengers. I am concerned that a fence would ruin the unique and beautiful vistas that the city currently provides from the Aurora Bridge. Would it be possible to install a horizontal net instead of a fence? A net would deter jumpers while still maintaining the views that we all enjoy today.

Thank you for your consideration.

2/2/08
It seems that if we're talking about using public funds to save lives and suffering there might be better ways to direct the money.

2/2/08
I feel great sadness that we have disturbed people who decide to take their own lives and I believe we should try to help these people, however I believe that the proposed fence is a poor way to help them and a poor use of our tax dollars. Six million dollars used on Mental Health Care and Outreach for these troubled ones would be a much better use of the funds. Thank you for reconsidering this idea. As for those who live below, we have no obligation to them. The bridge and its attraction to jumpers was there long before the current residents came along.

SIX MILLION DOLLARS IS A LOT OF MONEY!!!!! YOU ARE NOT SAVING THE LIVES OF THE JUMPERS. THEY WILL DO THEIR SUICIDE ELSEWHERE. A fence will mar the beauty of the bridge and our ability to enjoy the view when walking across.
I cannot attend the upcoming meeting.

Thank you for presenting my opinion.

2/4/08
Thank you for the mailer we received at home; I'm so glad to hear the City of Seattle and WSDOT are finally working together to solve the problem of suicide on the bridge. We can't make it to the open house meeting you're having on the 13th so I'd like to add a couple comments.

In the big picture, it's not as important what the fence looks like than its function, so please just make sure it's tall enough, long enough and unscalable.

If there's room for efficient, inexpensive aesthetic improvement, please design to keep in context with the colors and materials that are nearby. If it's possible to have a consistent, abstract design on the fencing that defines the whole bridge area, that'd be great. I think the goal would not be to have anything that distracts drivers as the lanes are so bloody narrow it takes all one's attention just to drive it safely. But perhaps a geometric or set of flowing lines affixed along the fencing could provide a reasonably cheap and nice fence.

Good luck! And in all cases, just stop the suicides.

2/4/08
The last jumper landed twenty feet from my office (I'm a chiropractor) while my massage therapist was working on a new client. Both of them were traumatized when they were finished and found a police car and a yellow tarp out in front afterwards. Once, a patient had to walk up to 35th St and back down because 34th St was closed off due to another jumper. She also was traumatized.

While I appreciate the concern for the suicides and how the barrier looks, I'm concerned that the attention is being paid to the wrong issues. It's a matter of time before one of them actually hits a pedestrian or a bicyclist or a moving vehicle and causes additional death. In the meantime, there are more than a few of us walking around with adjustment disorder or even post-traumatic stress syndrome. The employees at Adobe have access to counselors, but the rest of us don't. Maybe the city of Seattle and the state of Washington ought to be considering community counseling for us. The barrier is for our protection from the terror of being assaulted by a selfish individual killing themself at the expense of so many others. I don't see how this is much different than the suicide bombers in the middle east that we read about in the newspapers. We're horrified by that, but this issue is hushed up so that the general public doesn't know the suffering that's going on in this neighborhood.

This is not a suicide prevention barrier--it's an urban terrorist barrier. I hope that any jumpers that live are prosecuted for attempted murder.

2/4/08
I received your well presented flyer in the mail recently. My response to you is; Please DO NOT WASTE MY TAX DOLLARS ON AN OVERPRICED PROJECT WHOSE SUCCESS, IF COMPLETED WILL BE LAUGHABLE. Do you really think that by spending 7.5 million dollars you will deter people from ending their lives in our neighborhood??? That is a laughable thought ... I realize that the bodies be may hard to take for those living/working in the area, but they can move if it's too much to bear. I think the money would be better spent trying to keep people from wanting to end their lives rather than building a fence. They will just go somewhere else. Did that ever occur to you?? Besides, if a person chooses to end his/her life, why should that option not be available??? It's incredibly self righteous of you to impose your values on the rest of us. I for one (of many) love riding my bicycle over the aurora bridge, the view is fantastic. A fence will make us all feel like prisoners, caged in and cut off. The thought of you building a fence is completely UNACCEPTABLE to me. PLEASE, do not waste any more money on a project that is doomed to FAIL.

2/4/08
Hello,

I live near the Aurora Bridge and I'm appalled that the city is considering spending money on this fence when we have many other issues in Seattle that require attention: schools/education/teachers, the roads themselves, the Viaduct, public transportation, etc. How can we properly reallocate the $1.4M already promised by the governor to more appropriate use of those funds?

2/9/08
Thank you for your reply.

Fremont has a long history of providing volunteers for community efforts.
Could a group of volunteers potentially help bring the maintenance costs of a net down to an acceptable range?

Thank you.

2/9/08
Hello!

I'm forwarding you a copy of an editorial letter I've sent to the PI. I've been in contact with my neighbor Pat and we've agreed that a fence is a bad idea and worth putting energy in fighting. Sadly, I have been unable to addend meetings as I've

been called away to care for my mother who is recovering from hip surgery. I will, however, be back on the 14th and will meet with neighbors to explore options to put a stop to this ill considered idea.

Thank You.

2/11/08
What's next?
A fence across the I-5 bridge where it cross' the ship canal,
A fence spanning the west Seattle freeway,
A fence spanning the Tacoma Narrows Bridge,
A fence surrounding every bike lane entering the city.
Something to think about before you start spending MILLIONS of dollars.
Do we need to review how many MILLIONS of dollars the city of Seattle has squandered trying to address the question of rapid mass transit???
I'm still taking the same bus to the airport that I did when I first came to Seattle over 25 years ago... something to think about.
Feel free to share this correspondence with the mayor.
Thank-you for letting me express my opinion.
I'm sure that I'm in good company with this...

2/21/08
It's important to allow the community to see the designs if you expect them to advocate FOR the barrier with the Legislature in March.

For example - without a chance to review – I won't be calling the Legislative hotline.

Phone

Comments received January 14 – March 5. Comments made by phone are summarized (19).

Comment
Sympathetic to the issue, but against using tax payer dollars for suicide barrier; put the money into mental health programs. Concerned about aesthetic impacts to the historic bridge.

Comment
Can't attend the January 30th workshop or February 13 open house; concerned about impacts to views of and from the bridge; the solution should be invisible. Understands the emotional impacts of the issue but would like to look at alternative solutions. Suggested a catch net on horizontal outriggers that could be equipped with sensors that would alert emergency response.

Community comments

Comment
Would like to be updated as the project moves forward [added to email contact list].

Comment
Solution should reduce all hazards on the bridge and look comprehensively at bridge safety, including jumpers and car collisions. Look at the 2003 plan to install a middle barrier and utilize an enclosed walkway under the bridge.

Comment
Use money for mental health programs to reach people before they get to the bridge; help those who want to be helped; a lot of crazy/violent people on the streets. Concerned about impacts to views of and from the bridge.

Comment
Sympathetic to the issue, but questioned whether this should be a high priority. Does not want the view from the bridge altered. Suggested creating a green space under the bridge.

Comment
Don't make the bridge lanes any narrower; they are far too narrow as it is.

Comment
The cost is too high.

Comment
Provide a zipcode for the workshop location and a direct line to the contact person to avoid using the EnviroIssues weekend phone menu.

Comment
Provided information on Roll Guard, Inc "the Coyote Roller," a device that could be incorporated into the barrier design [in-person comment].

Comment
Send draft design concepts as soon as they are available.

Comment
Money should be spent on mental health programs (friend killed himself by jumping off the bridge 15 years ago). [At first, the caller did not want a fence built. After discussion, the caller understood the public safety issue and was somewhat supportive of a barrier]. A fence should look nice and fit the historic character of the bridge.

Comment
Pedestrian walkway is too narrow, claustrophobic-feeling, and too close to vehicles. Try to make it better. Good project, thanks for doing it.

Community comments

Comment
Requested information on the project

Comment
Just build it! Glad this project is happening, need to slow down the trauma. Proud of the City for moving forward with a barrier.

Comment
Suggested using plain language in notification. Did not like the use of the word "charette."

Comment
Sloan Security Fencing - wanted contract information. Added to email list for WSDOT.

Comment
The cost is too high. Questioned priorities. Asked for information about the legislative session so he can lobby against a fence

Comment
Wants to see the concepts. The pedestrian/bike path is too narrow, hard to bike through. Do not make the sidewalk enclosed or feel enclosed. Questioned priorities - is this necessary? Developers get what they want.

Comment forms

*Comments submitted via comment form at the **January 30 public workshop**.*

Comment

What should be considered when WSDOT develops conceptual design ideas for a fence on the Aurora Bridge?

Public safety for those on the bridge and under the bridge. Need for a good looking safety fence, durable and easy to maintain.

Please share any additional questions, concerns or ideas you may have.

This has been needed for a long time and the bridge has been retrofit to support such an improvement. Do it now before someone is killed under the bridge by a falling body.

Comment

What should be considered when WSDOT develops conceptual design ideas for a fence on the Aurora Bridge?

It would be wonderful to integrate a visual pleasing element. For example LED [lights] on the exterior to provide an interesting visual appeal from a

distance. For example, traffic flow would be reflected by colors one could see from a distance. Or temperature, light blue hues reflect the cold, red tones means it's hot. Change in color reflect wind. Again not to distract driver, but those from a distance see colors that reflect a bridge that is alive.

Please share any additional questions, concerns or ideas you may have.

I simply cannot express how happy I am this issue is being addressed. My daughter, now a senior at Ballard High School, lost a classmate to suicide off the bridge her freshman year. So many studies show why this is so important.

Please complete this project as soon as possible.

Comment

What should be considered when WSDOT develops conceptual design ideas for a fence on the Aurora Bridge?

Stay with the character of bridge. I would like the barrier to "match" and stand out as little as possible (at least from the perspective of being off the bridge).

Please share any additional questions, concerns or ideas you may have.

Will WSDOT deliver what it promises? Trust in community – we need assurance.

Comment

What should be considered when WSDOT develops conceptual design ideas for a fence on the Aurora Bridge?

Making the bridge more inviting to pedestrians.

*Comments submitted via comment form at the **February 13 public open house**.*

Comment

What do you like about each concept?

"Blades of Grass" captured my interest most – it's organic, lyrical design was very nice to look at while emulating the movement of the view beyond. It also was the design which offered the most opportunity for "community ownership" as the saying on each bar could provide a source of funding if folks could donate to have a saying of their choice etched on the rods. I also liked the design which featured the glass overhang – perhaps it would disappear more when looking at the bridge? There would be more options to feature greenery/plants in this design. I also really like the archway concept as entrances to the sidewalks.

What don't you like about each concept?

I don't like the "zap" concept – I think it is a little too prison-like. With design there ought to be ways to ensure that the barrier cannot be reached without this aggressive touch.

Comment

What do you like about each concept?

Other issue: The current pedestrian barrier on the southwest end of the bridge extends too far south. The roadway begins to curve slightly east. At the end of the bridge traffic is trying to enter the southbound lanes and your view of oncoming traffic is limited. You can't see oncoming vehicles turn signals. At night all you can see is glare of headlights. Traffic is backing up further into Raye Street on Queen Anne because drivers are unsure if it is safe to turn right onto southbound 99. Please be sure additional pedestrian safety measures won't adversely affect the more voluminous vehicle traffic.

Comment

What do you like about each concept?

The one with glass covering – how will it be kept clean of bird droppings and road grime/dust? Will people be able to take photographs from the bridge and not have beautiful views blocked by mesh/wire/net etc? Will garbage/debris accumulate in this protective barrier and who will clean? Has glare from vehicles, bridge lighting and sun light been accounted for?

Comment

What do you like about each concept?

Would like as minimal and invisible as possible.

What don't you like about each concept?

Do not like "sail" effect nor the more "artistic/creative" designs. The extra cost and effort for those details are at too great a distance to be fully appreciated and valued. Has the jump rate increased since the current barrier [interior pedestrian railing] was installed? It seems that pedestrians are more isolated and it would be easier to jump and have no one notice or intervene.

Comment

What do you like about each concept?

Remove the historical requirement and they are all excellent.

What don't you like about each concept?

What about any of these ideas is historical? Looks like the 1930's era? Etc. Nothing looks like it might have been built within 50 years of 1931.

Community comments

Comment

What do you like about each concept?

Well, it is hard to group all of the designs together as some of them are very different. I am definitely in favor of the designs incorporating more artistic approach (for instance "Blades of Grass" and "An Artistic View" – though you may have difficulty with a kiosk box – who collects them? Suicide notes? "Sails" is another good design and kind of goes with theme of bridge i.e. passageway for boats). Overall, I am very grateful for the opportunity to participate in both of these meetings as I believe involving stakeholders, community in the process is important.

What don't you like about each concept?

I like most of the designs but there are two I don't like – the first being entitled "Minimalist with a Zap." I don't like the idea of people being zapped by touching the fence. It treats people – possible jumpers – like they are criminals and this is not the message I think we should send. I also don't like the one at the far left (under the flag) – it seems to be modeled after the 'luminous veil' barrier on the Prince Edward/Bloor Street Viaduct in Toronto.

Comment

What do you like about each concept?

"Blades of Grass" is the best from a pure individualistic standpoint. It is distinctively "Fremont" and Seattle-ish in being whimsical and effective. "Blue Glass Concept" looks great and adds a simple yet functional looking design. It seems to add character to the bridge design and ensures maximum safety.
Blue Glass Concept adds tasteful lighting options.

What don't you like about each concept?

Electrical fence is distasteful. "Sails" is too heavy and doesn't fit the bridge – it looks like an add-on. "Blue Glass Concept" could create some issues if glass is used with vandals and graffiti. Glass would need to be cleaned annually at least. "Blades of Grass" may look odd without truly looking at a mock-up; it has the potentially to look added on.

Comment

What do you like about each concept?

The first design (w/ glass roof) is very light and airy, and I like the shelter it provides from the rain. The potential for cool lighting is also great. I'd actually walk across just for the experience. Same with the Blades of Grass, it would be nice to walk across and look at the individual "reeds" and inscriptions. I like the idea of the archway entering the sidewalk onto the

Community comments

bridge. The idea of colored glass is nice, especially on the grey gloomy days.

What don't you like about each concept?

I think the one with the frames is too non-uniform, and might look "cluttered" and more obstructive. The sails wouldn't match the bridge, would look foreboding and heavy. The Zap fence is interesting, but I don't think people would be happy. I could see some kids up to no good trying to mess with it.

Comment

What do you like about each concept?

I like the cable concept which allows for less interrupted views when driving. I like the "blades of grass" design for the artistic element which I think is important to connect with Fremont's unique style. "The Comb" seemed in keeping with the bridge's style and I liked the European style lighting which gives a more pleasurable pedestrian experience. I like the idea of phrases being etched along the bridge.

What don't you like about each concept?

I don't like the glass cover as I think it is too modern and will get dirty and scratched. Trash will end up on top of it. The sail design is too modern and not in keeping with the bridges historic design. It shouldn't look like a prison fence – should enhance the bridge as well as being functional.

Comment

What do you like about each concept?

"Blades of Grass" living and breathing concept.

What don't you like about each concept?

LED!! They are too costly! The produce unfavorable glares!

Comment

What do you like about each concept?

[Illegible]…we need to spend money to implement the 2002 plan. We spent two years developing it. It would make the bridge safer and prevent suicides. I understand this solution was taken off the table.

What don't you like about each concept?

It needs to come back on so we can make the bridge safer. Why does there have to be pedestrian/bicycle traffic on what has become a freeway?

Comment

What don't you like about each concept?
NO BARRIER! Too expensive.
Golden Gate is #1 they have NO BARRIER.

Comment
What do you like about each concept?
All fall short of the real prevention, to fund mental health centers.

What don't you like about each concept?
The presumption that any can really stop jumpers! I question the expertise of the proposals. Why not use funds to pre-create mental health centers. The handout implies "community values." I question that statement!!

Comment
What do you like about each concept?
I do not like the designs where the fence curves in over the sidewalks – that reminds me of an overpass in the projects. The fence should be minimally obstructive to the views of the riders, walkers (and drivers) crossing the bridge. The fence line should be symmetrical and not too modern to keep with the historical design of the bridge.

What don't you like about each concept?
I would prefer no fence. I believe the money could be better spent in the community addressing the root causes of suicide (drug use, domestic issues, etc.).

Comment
What do you like about each concept?
I like the veil idea of the Toronto Bridge. Perhaps that is what the zap-less mesh fence could be.

Comment
What do you like about each concept?
The only likeable concept is the "nets" concept which was not fully developed.
Suggest starting with improved illumination only to achieve some added deterrent effect.

What don't you like about each concept?
The other concepts were too disruptive of views – both from the bridge and of the bridge. Very expensive project. Would more lives be saved if that money were spent on counseling or drunk driving prevention? How many people jump from other bridges in WA State? This project would set

precedent for SP Fences statewide. Can we afford that in light of other needs?

Comment
What do you like about each concept?
This project to convert the Aurora Bridge into an enormous hamster tube is a bad idea made worse by failure to consider two of the most promising fixes.

1. Close the walks. Save money and don't wreck the old bridge. "Cry policy" in this regard is simply misguided; the walks are rarely used and could be kept in reserve for those rare occasions when the low bridge is closed for maintenance.
2. Horizontal netting should be put back on the table. At least that wouldn't wreck the view for people using the bridge. Removing this idea without study of the possibilities is irresponsible. Netting could be stainless steel or galvanized cable, doesn't need to be fabric. How can you assign a "maintenance" cost before you identify the material? And why should we spend just enough to wreck the bridge but not enough to minimize the damage?

Comment
What do you like about each concept?
All are very creative. I am most attracted to the simple, least obstructive designs. The less noticeable the barrier – the better! Sure, something would be cool if it were artsy – but for how long? I don't want to get tired of a design that calls my attention to it every time I cross the bridge. KEEP IT SIMPLE!!!

What don't you like about each concept?
Complication. Some will actually draw attention to the bridge's edge. Bad idea!

Comment
What do you like about each concept?
If the net concept is not feasible, then the one that keeps the views from the bridge in the cleanest, simplest way is the best. The Blades of Grass, without adding any horizontal elements actually ads a beautiful sculptural echoing of the mountain ranges in the distance. Brilliant approach.

What don't you like about each concept?
Anything making the pedestrian walkway more tunnel-like should be avoided.

Community comments

Comment
What do you like about each concept?
Each concept had the idea of suicide prevention incorporated. Each tried to stay true to its historic origin and maintain its stunning views.

Comment
What do you like about each concept?
Seattle has the highest per capita public art pieces. Let this new structure reflect that. No horizontal bars, or kept them very low.

Comment
What do you like about each concept?
[Create a] memorial for those who have died.

Comment
What don't you like about each concept?
What happened to the idea of building out so not so visible? All but one seem very severe and invasive.

Design specific comments

The following comments are specifically related to designs. They were submitted via comment form or by placing a comment directly on a design at the February 13 public open house.

General comments relating to all designs

- What about any of these ideas is historical? Looks like the 1930's era? Nothing looks like it might have been built within 50 years of 1931.
- I do not like the designs where the fence curves in over the sidewalks – that reminds me of an overpass in the projects. The fence should be minimally obstructive to the views of the riders, walkers (and drivers) crossing the bridge. The fence line should be symmetrical and not too modern to keep with the historical design of the bridge.
- All are very creative. I am most attracted to the simple, least obstructive designs. The less noticeable the barrier, the better! Sure, something would be cool if it were artsy – but for how long? I don't want to get tired of a design that calls my attention to it every time I cross the bridge. Keep it simple!
- Anything making the pedestrian walkway more tunnel-like should be avoided.
- Each concept had the idea of suicide prevention incorporated. Each tried to stay true to its historic origin and maintain its stunning views.
- Seattle has the highest per capita public art pieces. Let this new structure reflect that. No horizontal bars, or kept them very low.

Community comments

- Make it a memorial for those who have died.
- What happened to the idea of building out so a fence is not so visible? All but one seem very severe and invasive.

Comments specific to each group's design(s)

Group 1

- Is it prone to graffiti? Blue Glass Concept could create some issues if glass is used with vandals and graffiti. Glass would need to be cleaned annually at least.
- Lovely and subtle.
- Best design.
- I like the lighting concept – try that first before any fence [construction].
- Will the glass get grubby with exhaust, rain, and bird dropping accumulation?
- I like the cable aspect but not the glass cover – it is too modern and not in keeping with the design of the bridge. It will also get scratched and dirty.
- I also liked the design which featured the glass overhang – perhaps it would disappear more when looking at the bridge? There would be more options to feature greenery/plants in this design.
- Will people be able to take photographs from the bridge and not have beautiful views blocked by mesh/wire/net etc? Will garbage/debris accumulate in this protective barrier and who will clean? Has glare from vehicles, bridge lighting and sun light been accounted for?
- I don't like the glass cover as I think it is too modern and will get dirty and scratched. Trash will end up on top of it.
- "Blue Glass Concept" looks great and adds a simple yet functional looking design. It seems to add character to the bridge design and ensures maximum safety. Blue Glass Concept adds tasteful lighting options.
- The first design (w/ glass roof) is very light and airy, and I like the shelter it provides from the rain. The potential for cool lighting is also great. I'd actually walk across it just for the experience. The idea of colored glass is nice, especially on the grey gloomy days.
- LED!! They are too costly! The produce unfavorable glares!

Group 2

- Needs more perspective drawings to flesh out concept. Could look tacked on if not truly mocked-up in advance.
- This is the best by far of "vertical" schemes. The horizontal "net" is better. I wonder if this "Blades of Grass" idea could work horizontally.
- I love this one!
- I prefer undulating or vertical [design] to box panels.
- This is great! I love the transparency and how it echoes the mountain aspect. Art makes people want to live.
- This turns a problem into an asset! Terrific!
- The wave type verticals look much better than the straight verticals.

Community comments

- Love the curve idea – it ensures that the barrier doesn't create a constant view blockage or any one part of the view. The curve also mirrors the mountains and is easy on the eyes. It is attractive from on the bridge and from far away.
- Will this whistle in the wind and clang? [Consider that] things that fly off of vehicles (wheels). A bicycle fell onto a houseboat once.
- Would it possible, as with the floor tiles in the Market, for people to purchase bars and submit a saying or memorial to someone? It would be a way to involve the community and create a sense of community ownership. It could reduce costs and/or help fund the project. The organic, unique design of this one is exciting and interesting to look at. I think this is my favorite design overall. It incorporates the vertical emphasis, compliments the view, and brings a personal and inspirational touch with the sayings while remaining subtle. Perhaps placing the emphasis on simply inspirational saying rather than directing them to potential jumpers would be less morbid?
- Both ideas are really artistic. I like the idea of wind moving rods. Two issues: glare and heavy winds?
- This design has incorporate a design element into the functional aspect which I feel best represents the style of Fremont art within architecture. Tasteful.
- The "Blades of Grass" design is a simple yet elegant design. It has many possibilities. It seems that it could have elements of the "old" and "new." Old as in European soft lights added to the lamp posts. "New" as in the undulating rhythm of long and short blades of grass.
- It would be interesting to add architectural elements from nearby communities (Queen Anne, Belltown, downtown, Magnolia) as well as Fremont and Ballard. Using metals which change color as the temperature changed, such as Gehry's EMP, would add an additional "living" effect. Because preventing suicide is about saving lives.
- The "Blades of Grass" can be an eclectic design much like quirky Fremont.
- Question: Does cantilevered design work with historical nature of the bridge? I hope so!
- If "blades" are moveable, will people mess with them? Will it attract attention to the edge of the bridge?
- "Blades of Grass" captured my interest most – it's organic, lyrical design was very nice to look at while emulating the movement of the view beyond. It also was the design which offered the most opportunity for "community ownership" as the saying on each bar could provide a source of funding if folks could donate to have a saying of their choice etched on the rods.
- What about any of these ideas is historical? Looks like the 1930's era? Etc. Nothing looks like it might have been built within 50 years of 1931.
- "Blades of Grass" is the best from a pure individualistic standpoint. It is distinctively "Fremont" and Seattle-ish in being whimsical and effective.
- I am definitely in favor of the designs incorporating more artistic approach (for instance "Blades of Grass"
- Same with the Blades of Grass, it would be nice to walk across and look at the individual "reeds" and inscriptions. I like the idea of the archway entering the sidewalk onto the bridge.

Community comments

- I like the "blades of grass" design for the artistic element which I think is important to connect with Fremont's unique style.
- I like the idea of phrases being etched along the bridge.
- "Blades of Grass" living breathing concept
- If the net concept is not feasible, then the one that keeps the views from the bridge in the cleanest, simplest way is the best. The Blades of Grass, without adding any horizontal elements actually ads a beautiful sculptural echoing of the mountain ranges in the distance. Brilliant approach.

Tube

- Could be unsafe for pedestrians. There is no secure escape if passing another pedestrian or unsavory character (mugger, aggressive, pan-handler, etc.)

Horizontal net scheme

- Net scheme is the least visually troublesome. It is the only attractive concept.
- It is good the net is being considered. If it's good enough for the Space Needle, why not the Aurora Bridge?
- Net scheme should be given serious consideration. This is the only solution that doesn't degrade the view enjoyed by thousands of commuters on the bridge. It is also the least conspicuous from most other vantage points.
- The only likeable concept is the "nets" concept which was not fully developed. Suggest starting with improved illumination only to achieve some added deterrent effect. The other concepts were too disruptive of views – both from the bridge and of the bridge.

Group 3

An Artistic View

- Put historic plaques (National Register and City Landmark) on bridge so people are aware of its history!
- Too silly.
- Could this be incorporated in any of the ideas? Some sort of gateway at the end of each pedestrian access?
- Yuck – trying to be too cute. It's not appropriate.
- These frames won't help the drivers see views at all. Way too busy and cluttered looking.
- I really like this design – very creative! Nice kiosk touch.
- I also really like the archway concept as entrances to the sidewalks.
- I am definitely in favor of the designs incorporating more artistic approach (for instance "Blades of Grass" "An artistic view" – though you may have difficulty with a kiosk box – who collects them? Suicide notes?
- I think the one with the frames is too non-uniform, and might look "cluttered" and more obstructive.

Minimalist Approach with a "Zap"

- If the zap puts you off, that is the whole point – it will deter jumpers too.
- What about the liability of the "zap?"
- Uh oh! We can't be sapping people like cattle! I can see the liability with triggering heart attacks, seizures and anxiety attacks.

Community comments

- How strong of a zap are we talking about? People could possibly still get around this.
- No zapping! I do not think it sends the right message to potential suicide victims.
- I like the mesh on the veil (like Toronto). No zap, though.
- I don't like the "zap" concept – I think it is a little too prison-like. With design there ought to be ways to ensure that the barrier cannot be reached without this aggressive touch.
- I like most of the designs but there are 2 I don't like – the first being entitled "minimalist with a zap". I don't like the idea of people being zapped by touching the fence. It treats people – possible jumpers – like they are criminals and this is not the message I think we should send.
- Electrical fence is distasteful.
- The ZAP fence is interesting, but I don't think people would be happy. I could see some kids up to no good trying to mess with it.
- I like the veil idea of the Toronto bridge. Perhaps that is what the zap-less mesh fence could be.
- The amount of curvature starts to remind me of a tunnel (which is bad). If you go with a curve, there needs to be lots of openness for views.
- Please avoid curving over. It is very confining and oppressive.

The Comb

- Looks nice in section but imposing in elevation view.
- The comb seemed in keeping with the bridge's style and I liked the European style lighting which gives a more pleasurable pedestrian experience.

Sails

- A bit busy and cluttered for this bridge. However, this would look great on a different, cleaner lined and more modern bridge.
- Sails obstruct the view.
- Severe and cage-like.
- These seem to highly impact the pre-existing character of the bridge. I would prefer a less noticeable design. The view of the bridge from the ground would greatly differ with the "sails."
- The "sails" are perhaps too contemporary, sort of Japanese-modern.
- Do not like "sail" effect nor the more "artistic/creative" designs. The extra cost and effort for those details are at too great a distance to be fully appreciated and valued.
- "Sails" is another good design and kind of goes with theme of bridge i.e. passageway for boats).
- Sails is too heavy and doesn't fit the bridge – it looks like an add-on.
- The sails wouldn't match the bridge, would look foreboding and heavy.
- The sail design is too modern and not in keeping with the bridges historic design. It shouldn't look like a prison fence – should enhance the bridge as well as being functional.

Pedestrian-Experience Along the Bridge

- The outward slope infringes less on pedestrians (a big positive!). I like it and its open feeling.

Community comments

- I like the open feeling as long as horizontal view-blocking elements are minimized.
- This doesn't "match" the bridge.
- It seems to be modeled after the 'luminous veil' barrier on the Prince Edward/Bloor Street Viaduct in Toronto.

Bicycle Zone Emphasis

- "Blade" is too close to cyclists and pedestrians.
- Yes! Wire cable seems the least obtrusive of what is here. However, vertical cable could be climbed like a ladder.
- Rather boring design; the curve is oppressive. Please avoid the tunnel feel.
- I like the cable concept which allows for less interrupted views when driving.

For More Information

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Mailing Address
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Seattle, WA 98124-4025

Washington State Department of Transportation

SR 99 AURORA AVENUE BRIDGE FENCE

Design Committee

Work Book

Revised 2 2009
PDKinderman

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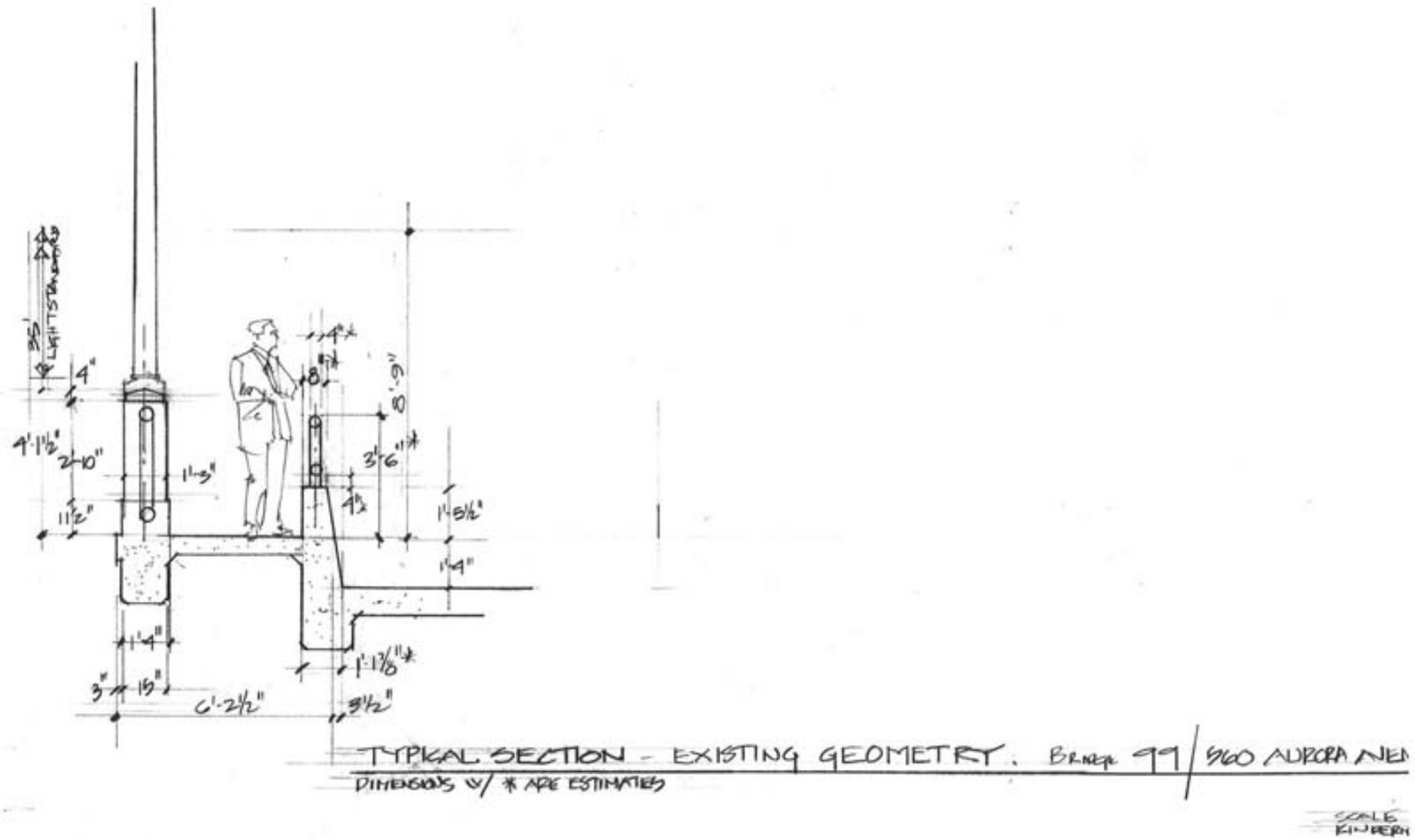
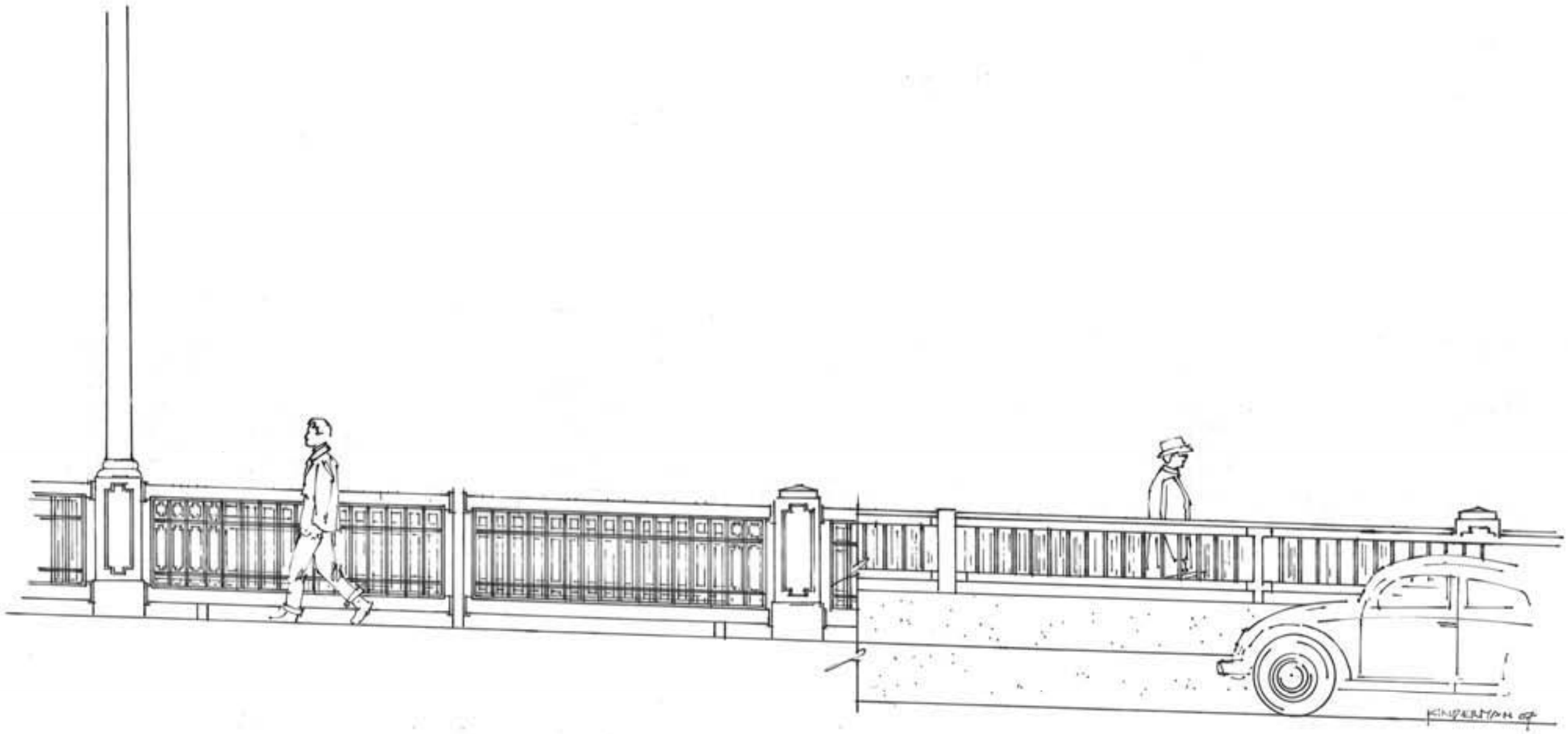
Existing Geometry

- Typical Section of sidewalk
- Elevation View from the Roadway



Existing Typical Section

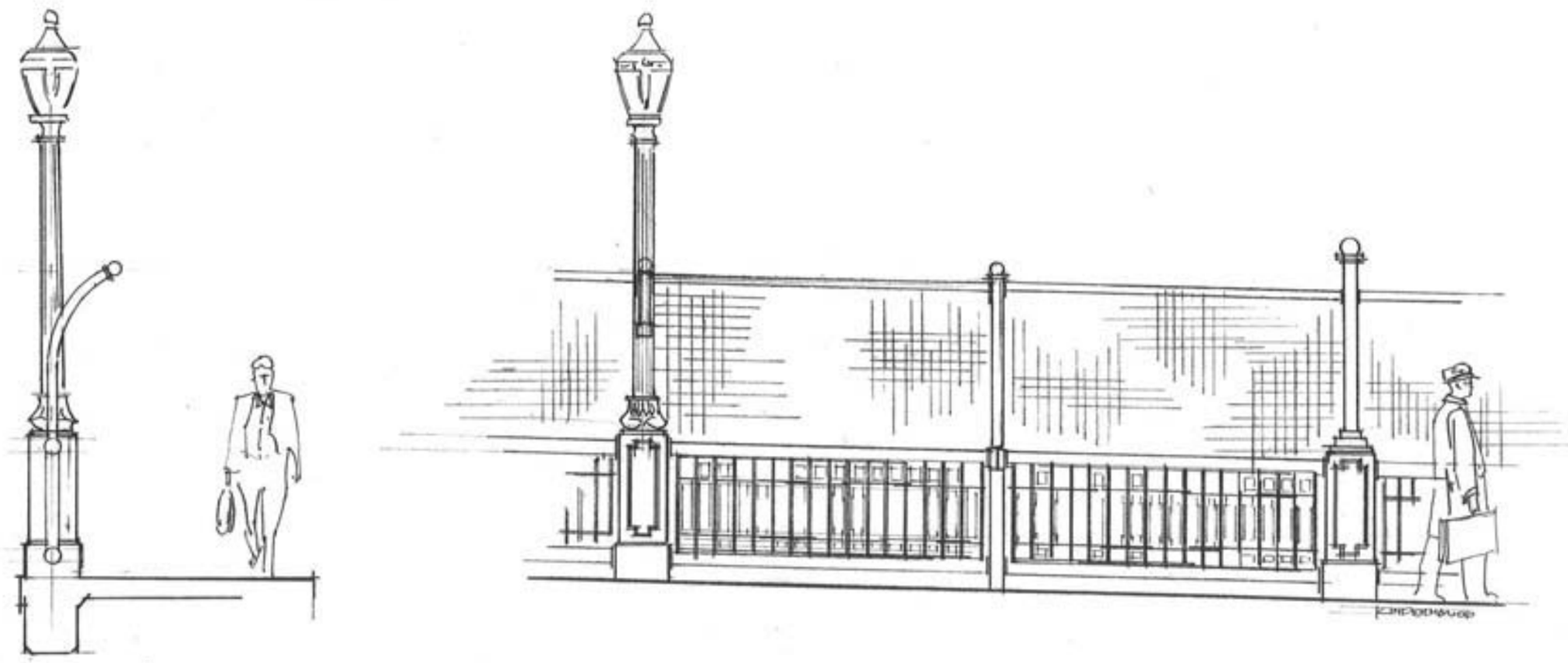


Existing Elevation

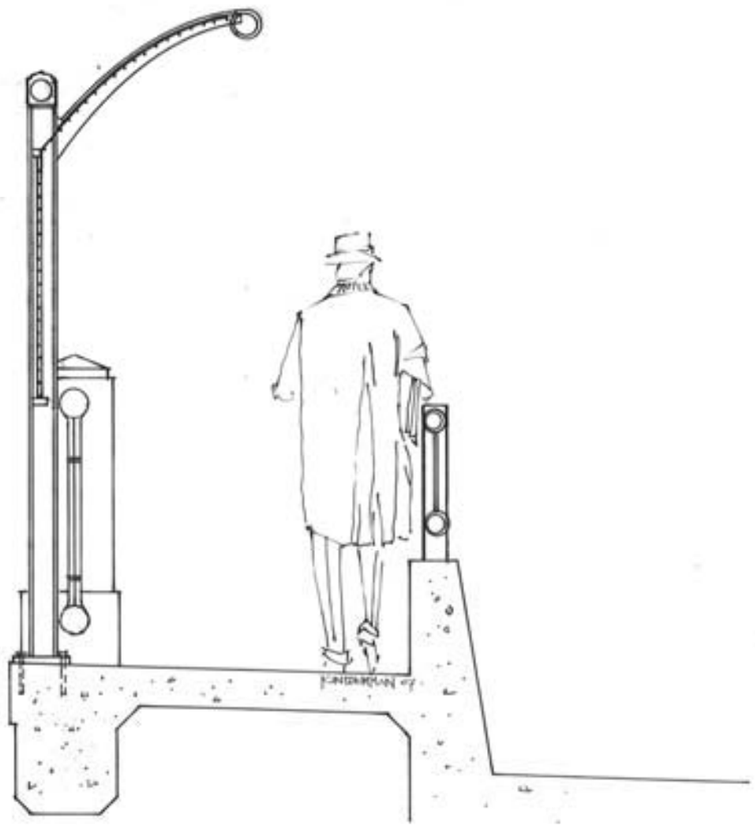
Preliminary Design Concepts

Provided during the early project funding phases

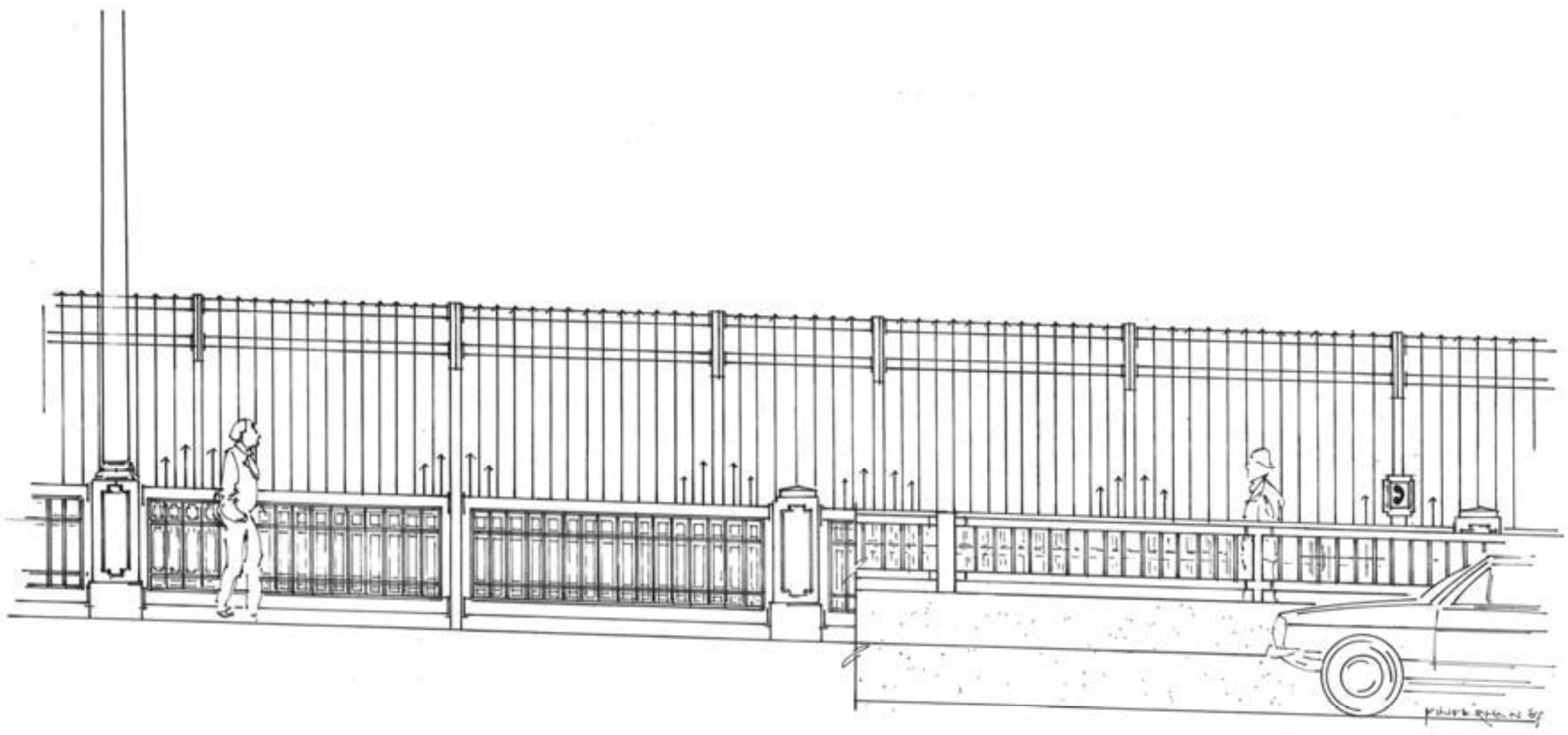
- Design for the Secretary of Transportation
- Design for the Washington State Legislature



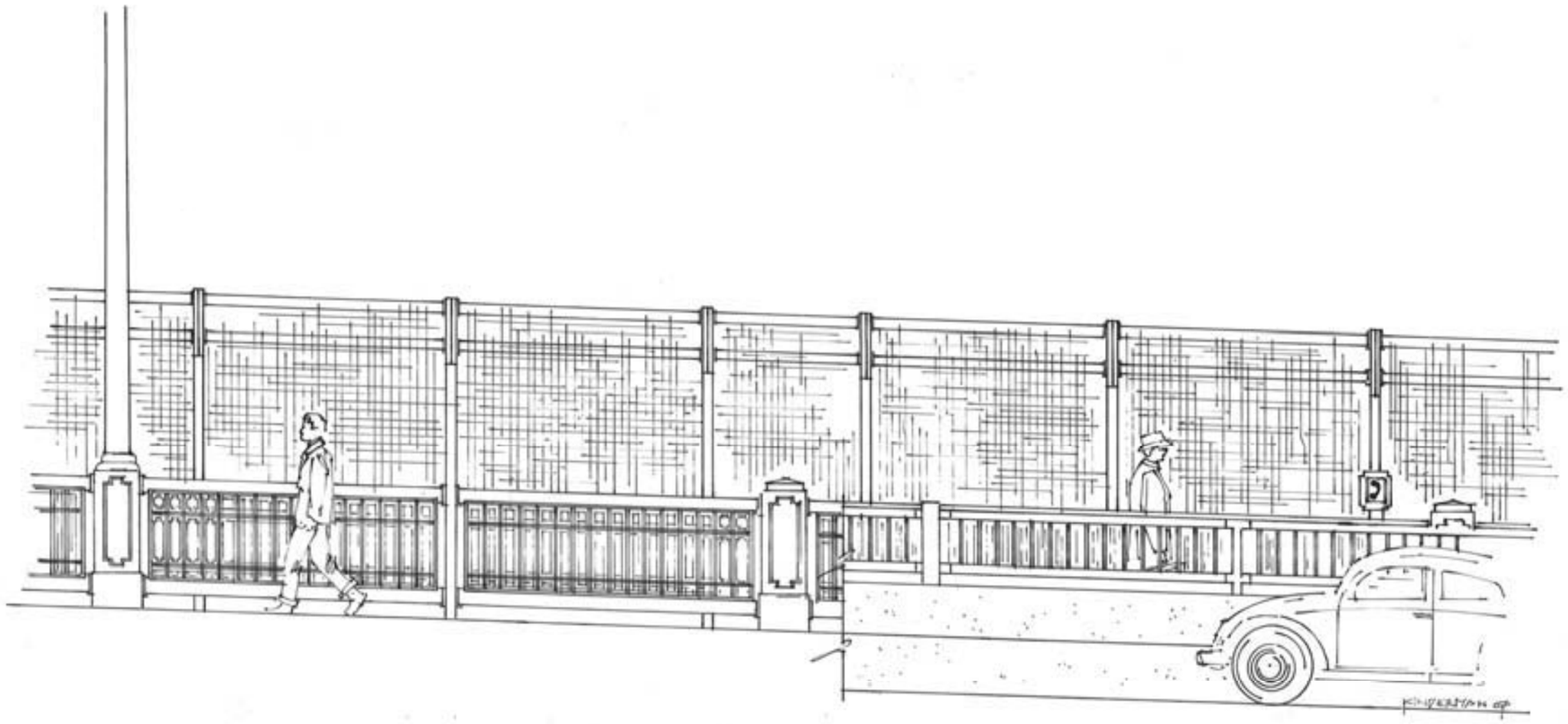
Design for the Secretary of Transportation



Design for the State Legislature



Design with Bars for the State Legislature

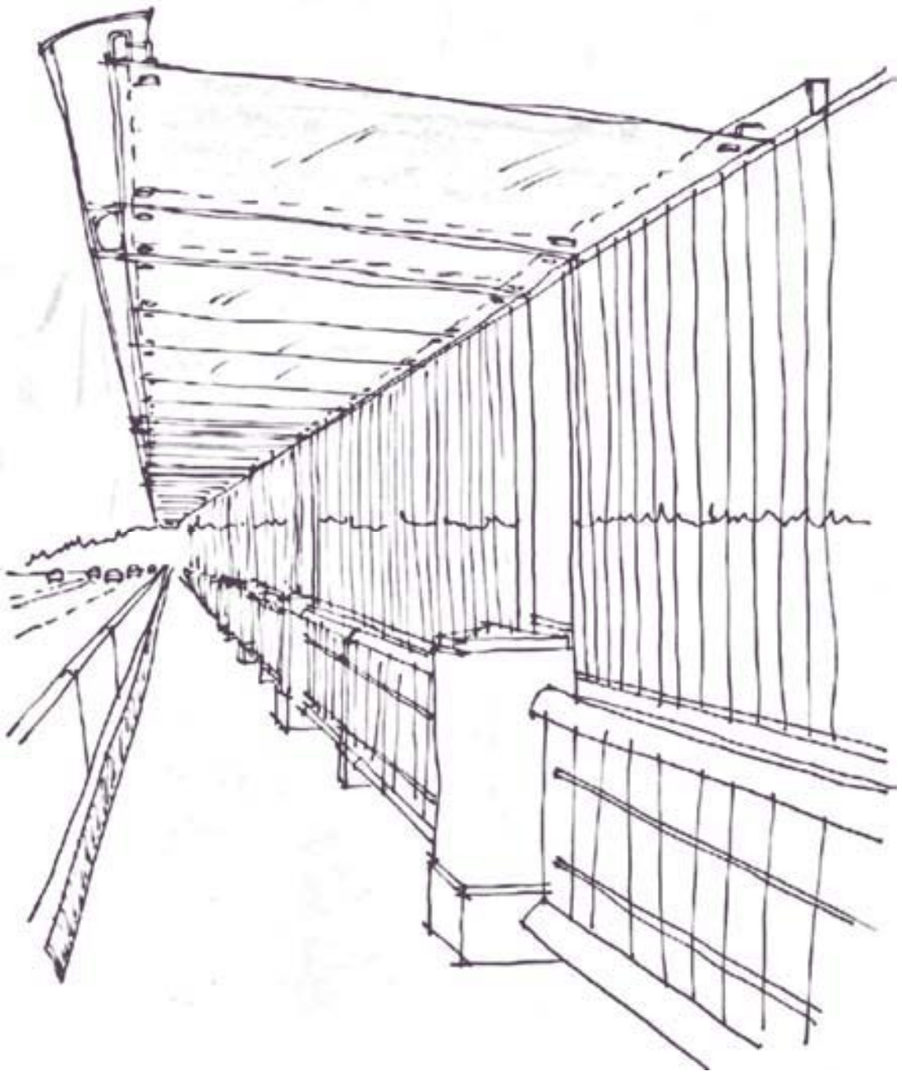


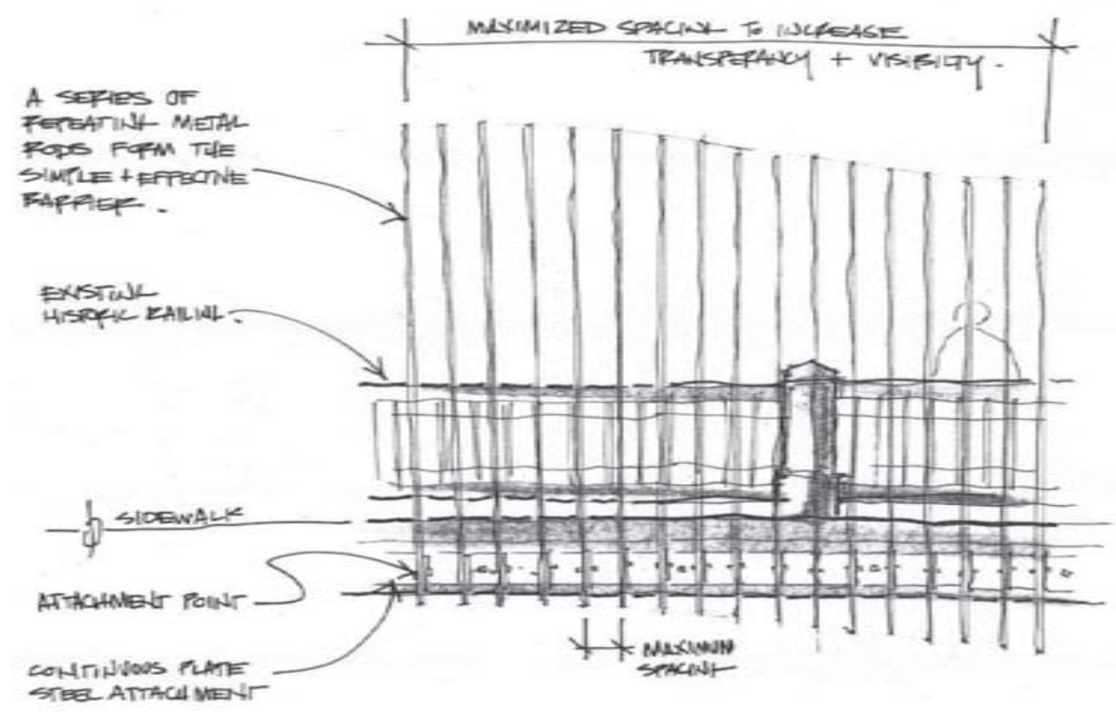
Design with screen for the State Legislature

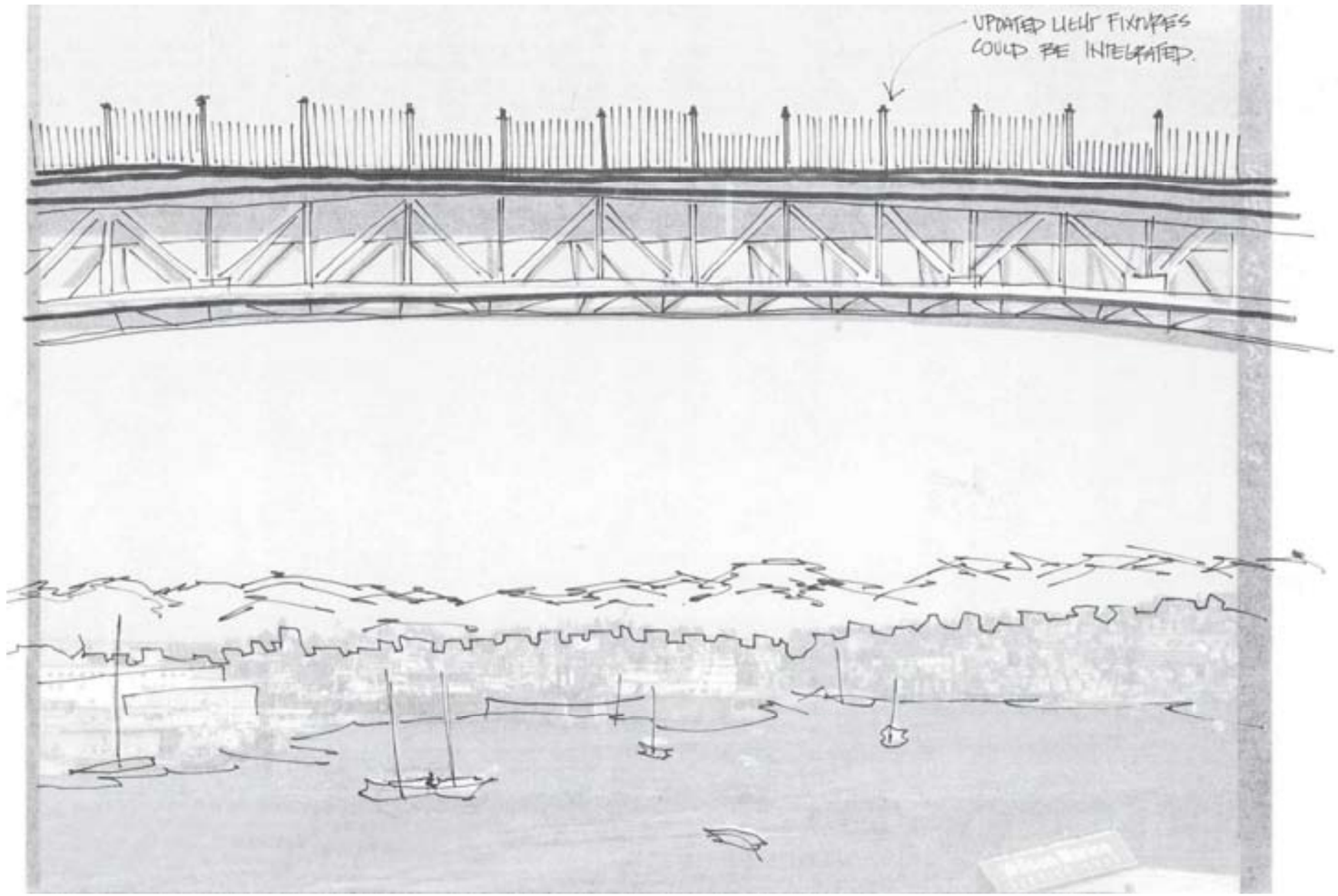
Design Concepts

- Designs concepts from the *Community Conceptual Design Report 2007* to be integrated into the final design

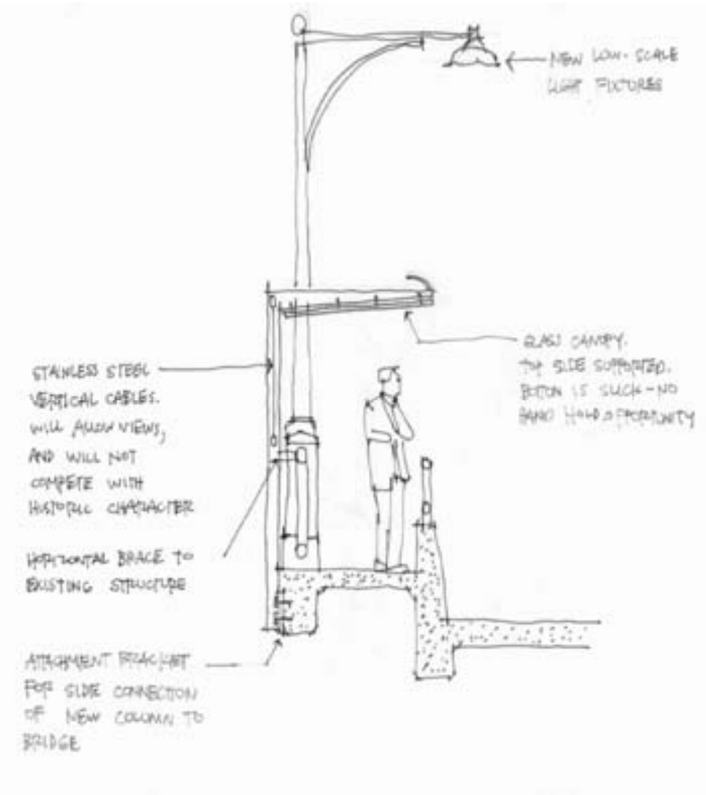
Vertical Elements

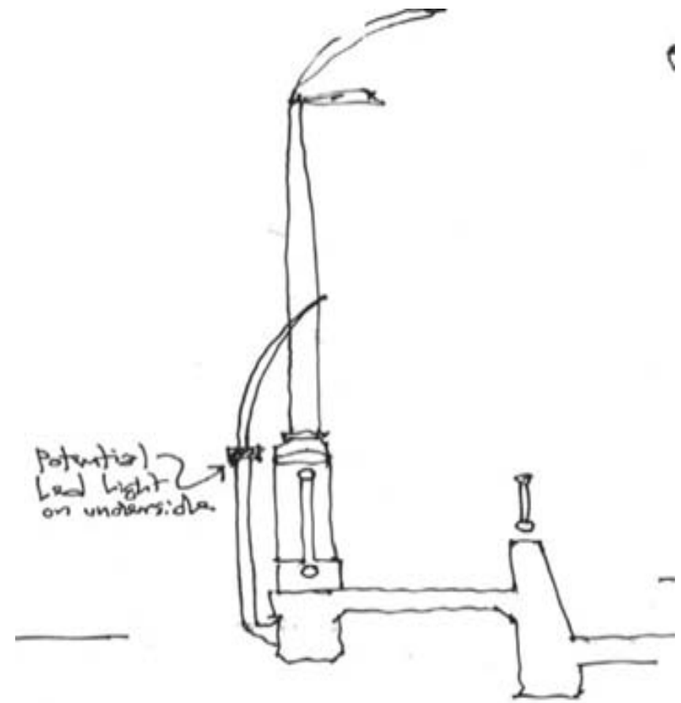




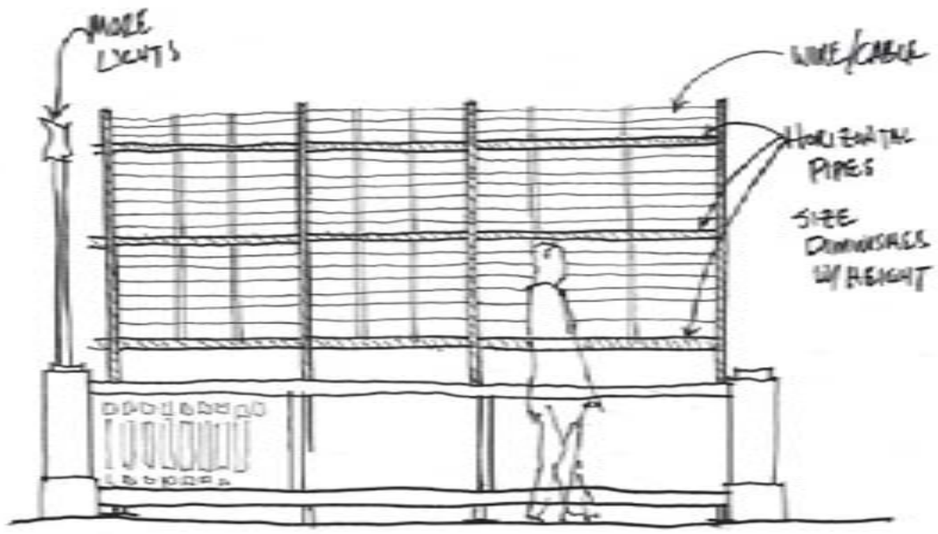


Pedestrian Lighting

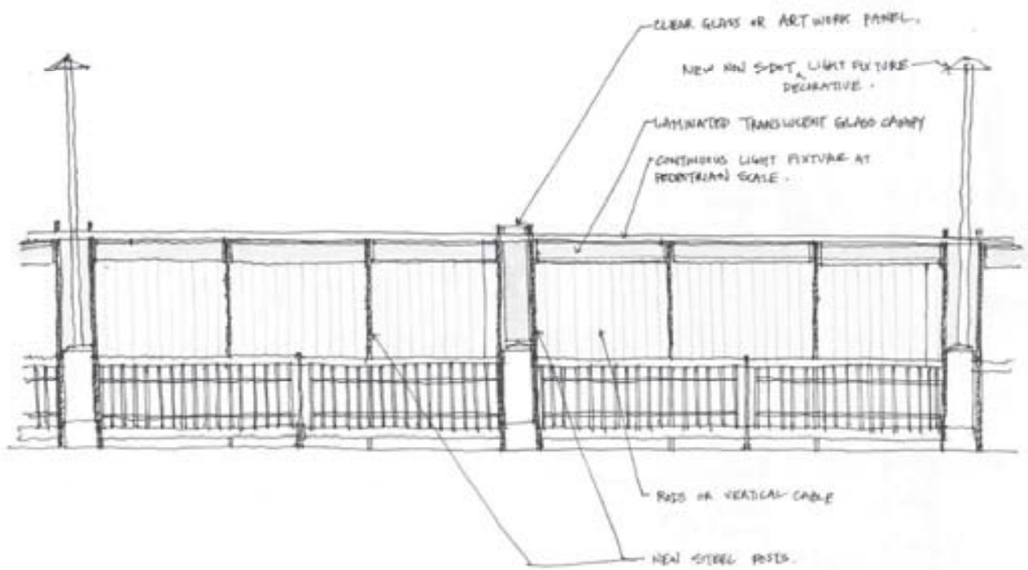


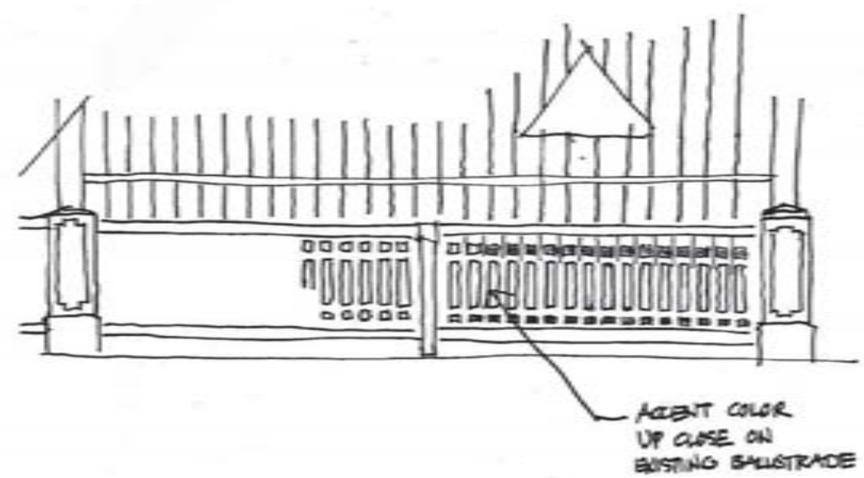


Historic Character



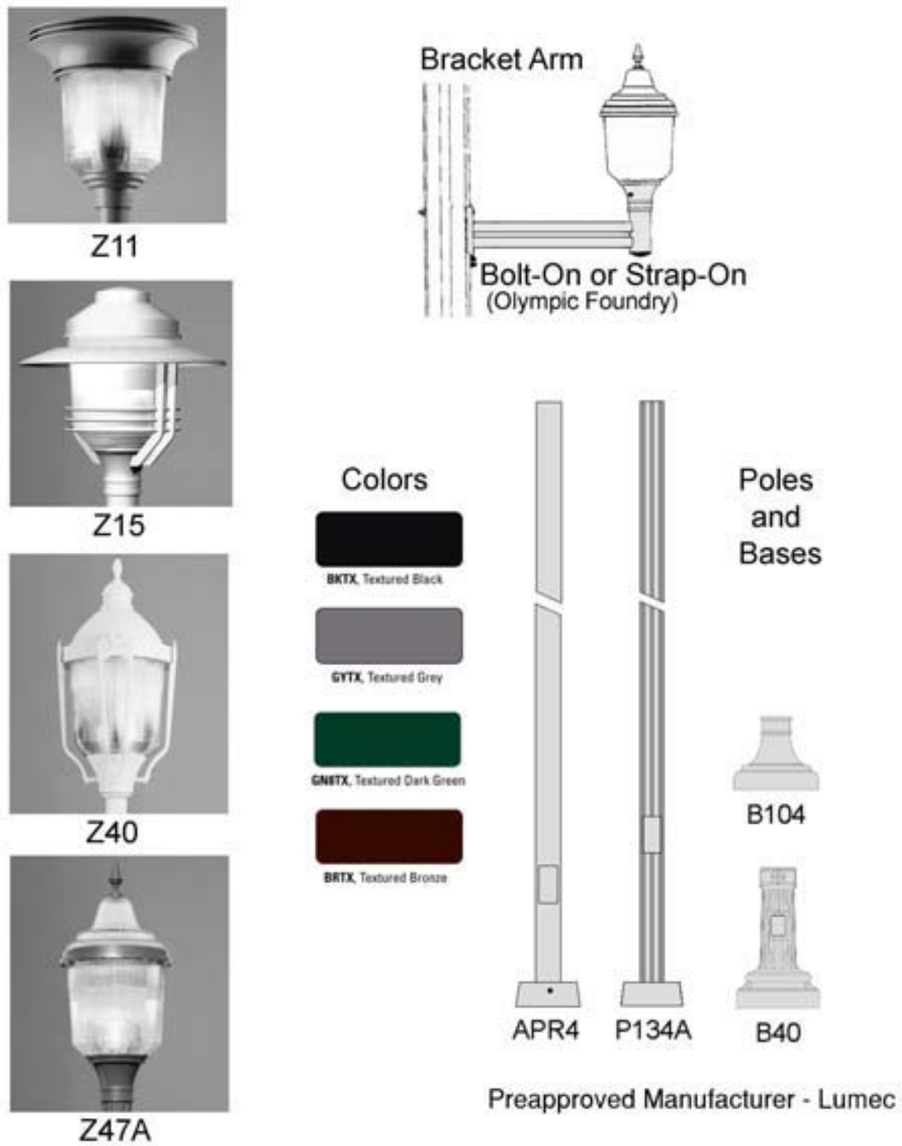
Pedestrian Scale





City of Seattle Lighting Standards

- Standard lights from the City's Right of Way Manual



City of Seattle Pedestrian Lighting Design Standards

- City of Seattle Right of Way Manual figure 4-21

Anthropometric Data

- Human Dimensions

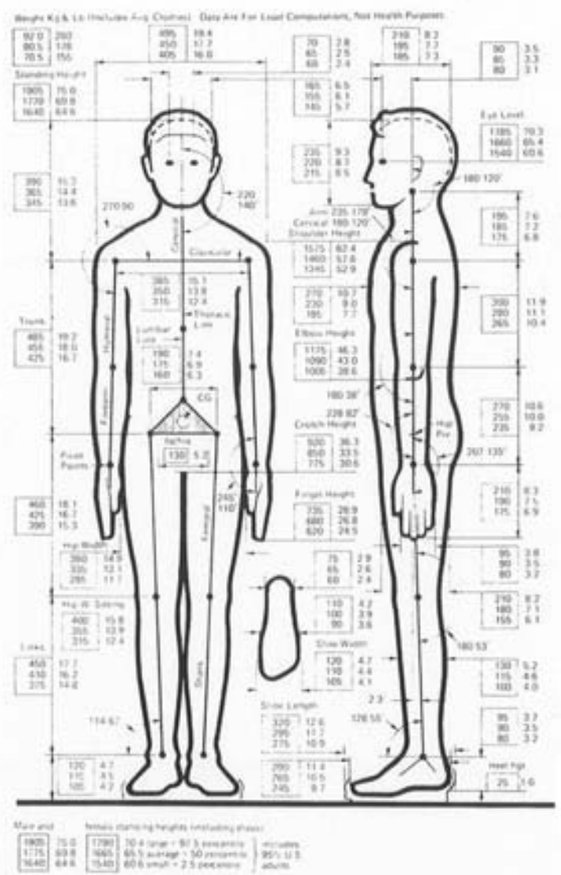
Anthropometric Data

INTRODUCTION TO ANTHROPOMETRIC DATA

The following anthropometric drawings show three values for each measurement: the top figure is for the large person or 97.5 percentile, the middle figure, the average person or 50 percentile; and the lower figure, the small person or 2.5 percentile. The chosen extreme percentiles thus include 95%. The remaining 5% include some who learn to adapt and others, not adequately represented, who are excluded to keep designs for the majority from becoming too complex and expensive. Space and access charts are designed to accept the 97.5 percentile large man and will cover all adults except a few giants. Therefore, use the 97.5 percentile to determine space envelopes, the 2.5 percentile to determine the maximum "kinetospheres" or reach areas by hand or foot, and the 50 percentile to establish control and display heights. To accommodate both men and women, it is useful at times to add a dimension of the large man to the corresponding dimension of the small woman and divide by 2 to obtain data for the average adult. This is the way height standards evolve. Youth data are for combined sex. Although girls and boys do not grow at the same rate, differences are small when compared with size variations.

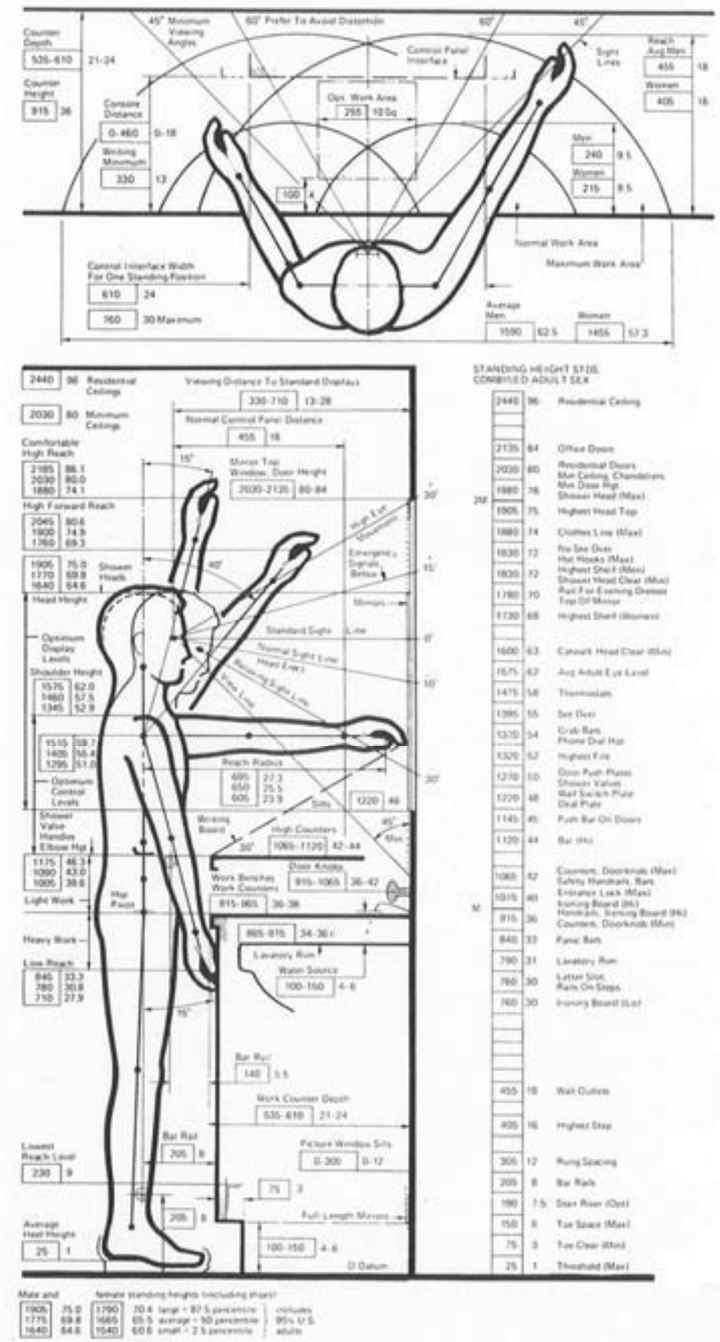
Pivot point and link systems make it easy to construct articulating templates and manikins. Links are simplified bones. The spine is shown as a single link; since it can flex, pivot points may be added. All human joints are not simple pivots, though it is convenient to assume so. Some move in complicated patterns like the roving shoulder. Reaches shown are easy and comfortable; additional reach is possible by bending and rotating the trunk and by extending the shoulder. Stooping to reach low is better than stretching to reach high. The dynamic body may need 10% more space than the static posture allows. Shoes have been included in all measurements; allowance may need to be made for heavy clothing. Sight lines and angles of vision given in one place or another apply to all persons.

The metric system of measurement has been included, since it is used in scientific work everywhere and is the most practical system of measurement ever devised. Millimeters have been chosen to avoid use of decimals. Rounding to 5 mm aids mental retention while being within the tolerance of most human measurements.



Niels Diffrient, Alvin R. Tilley, Henry Dreyfuss Associates, New York, New York

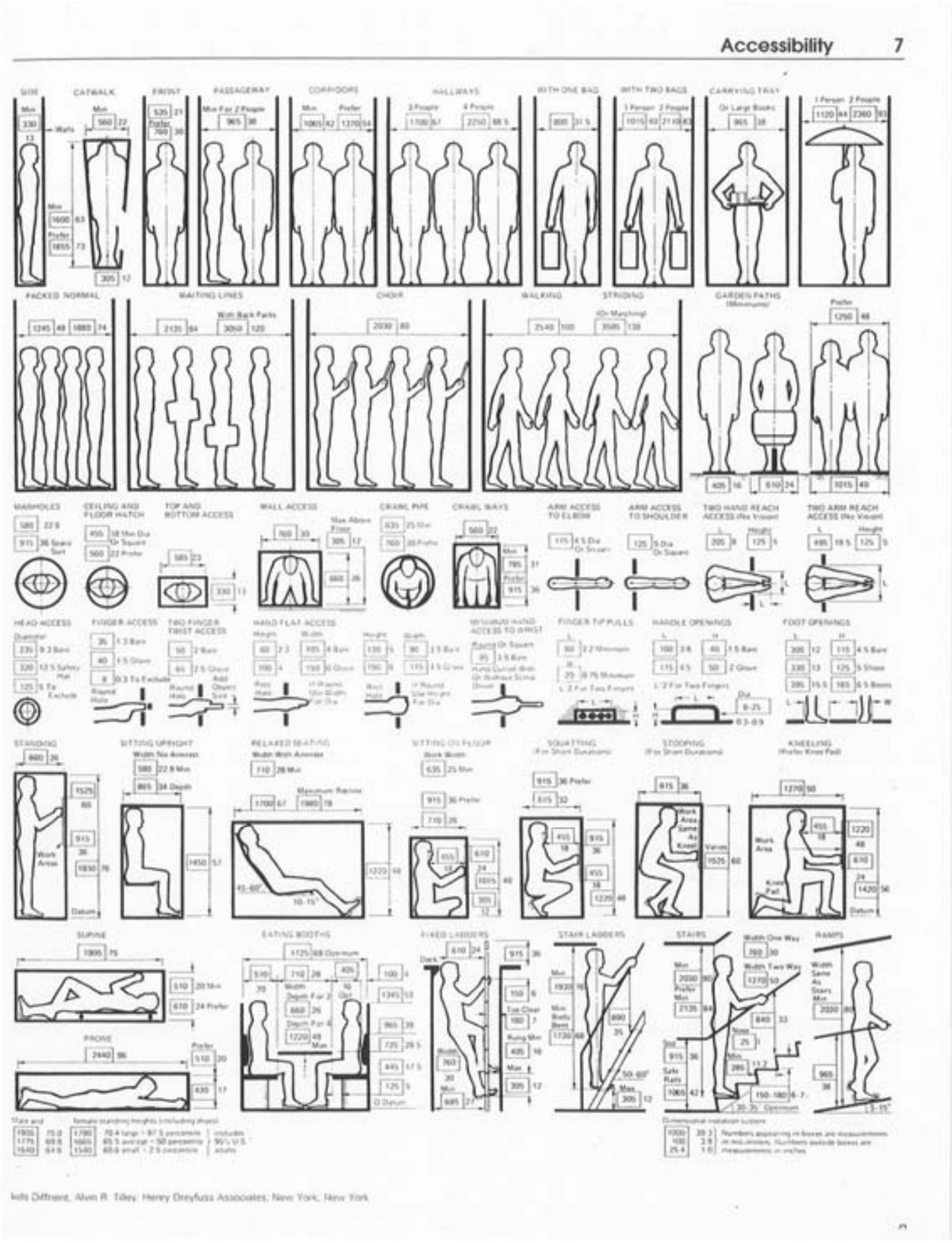
1 HUMAN DIMENSIONS



Niels Diffrient, Alvin R. Tilley, Henry Dreyfuss Associates, New York, New York

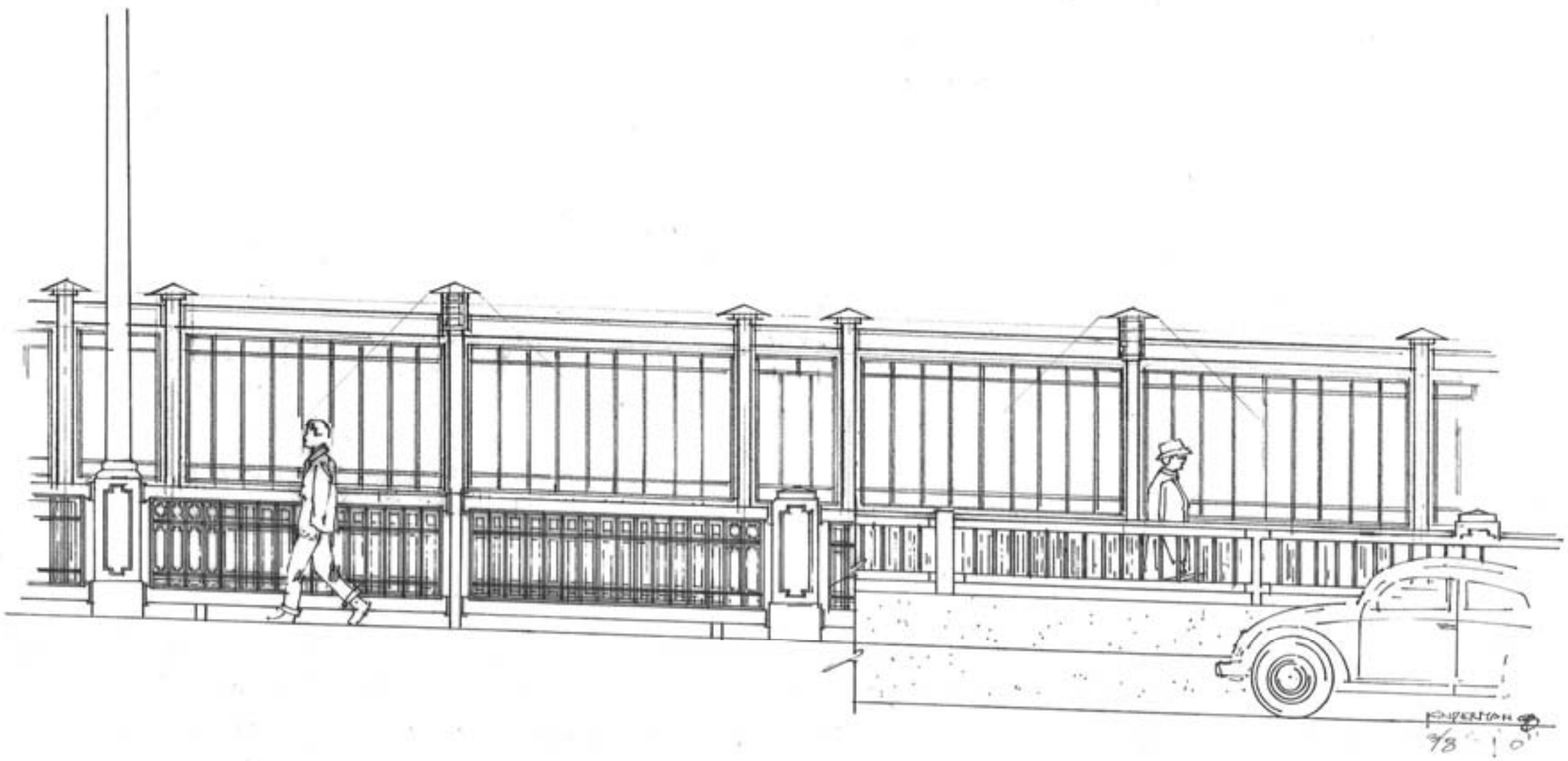
1 HUMAN DIMENSIONS

Anthropometric Data

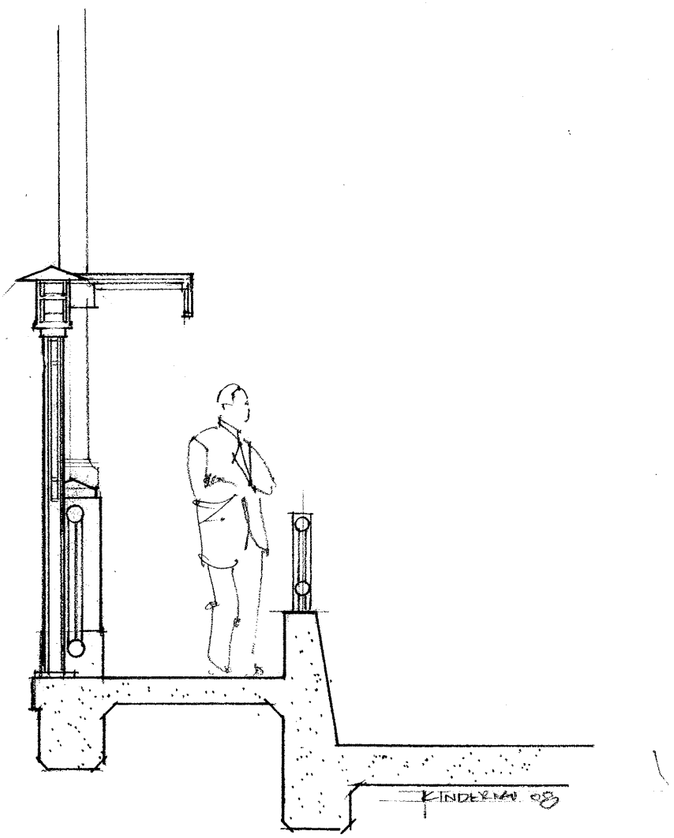


Design Concepts

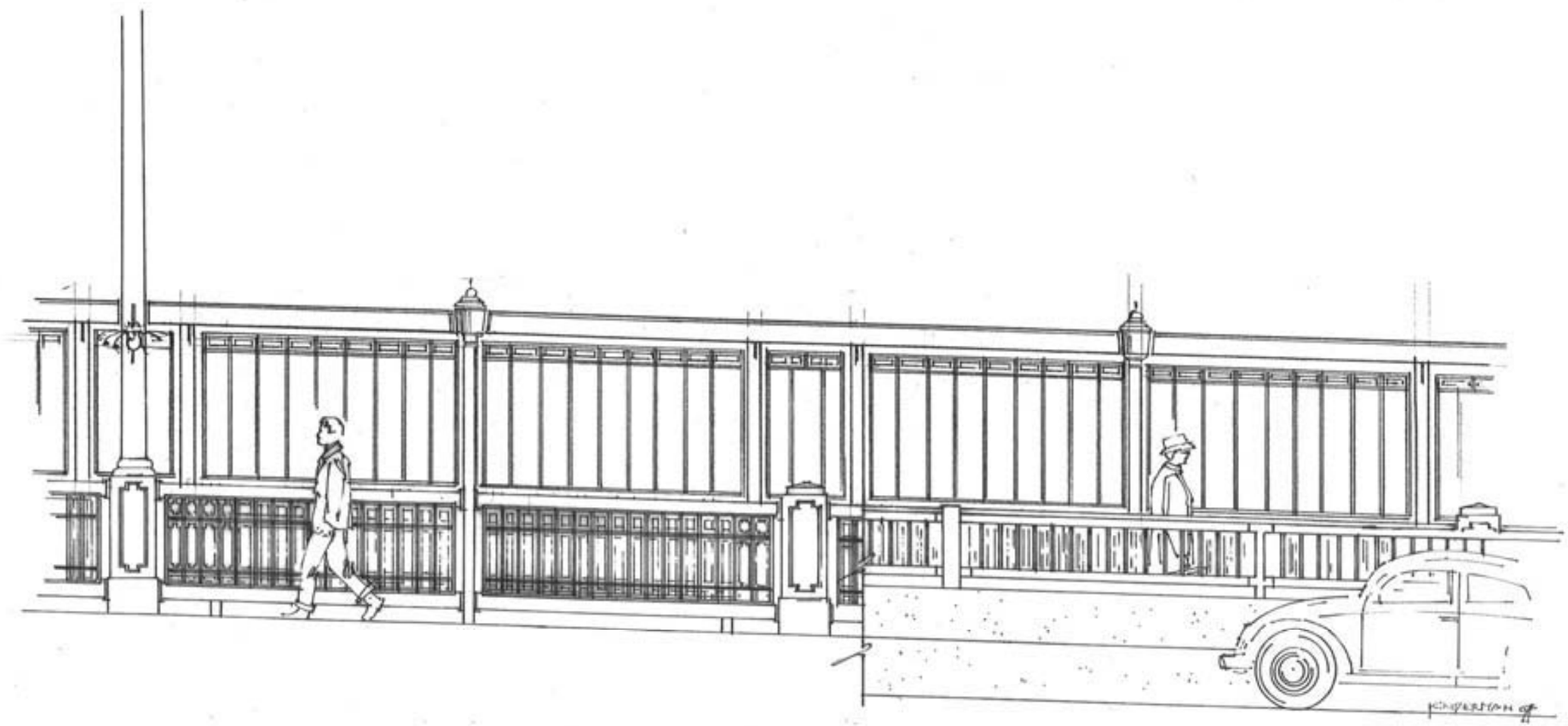
- First designs following the *Community Conceptual Design Report 2007*



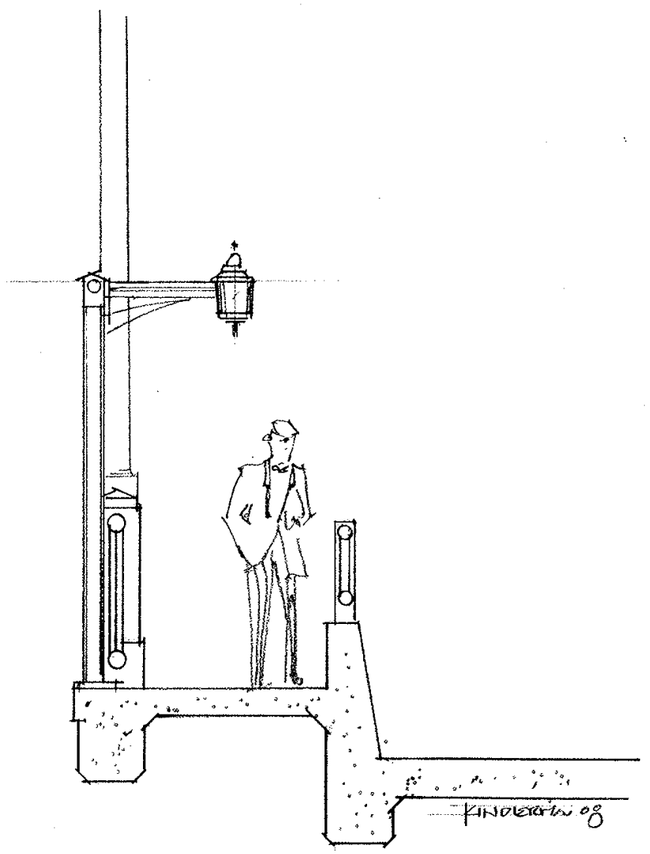
Concept A
Classic Fence with Pedestrian Lights
Niland Aspen Series light standard similar



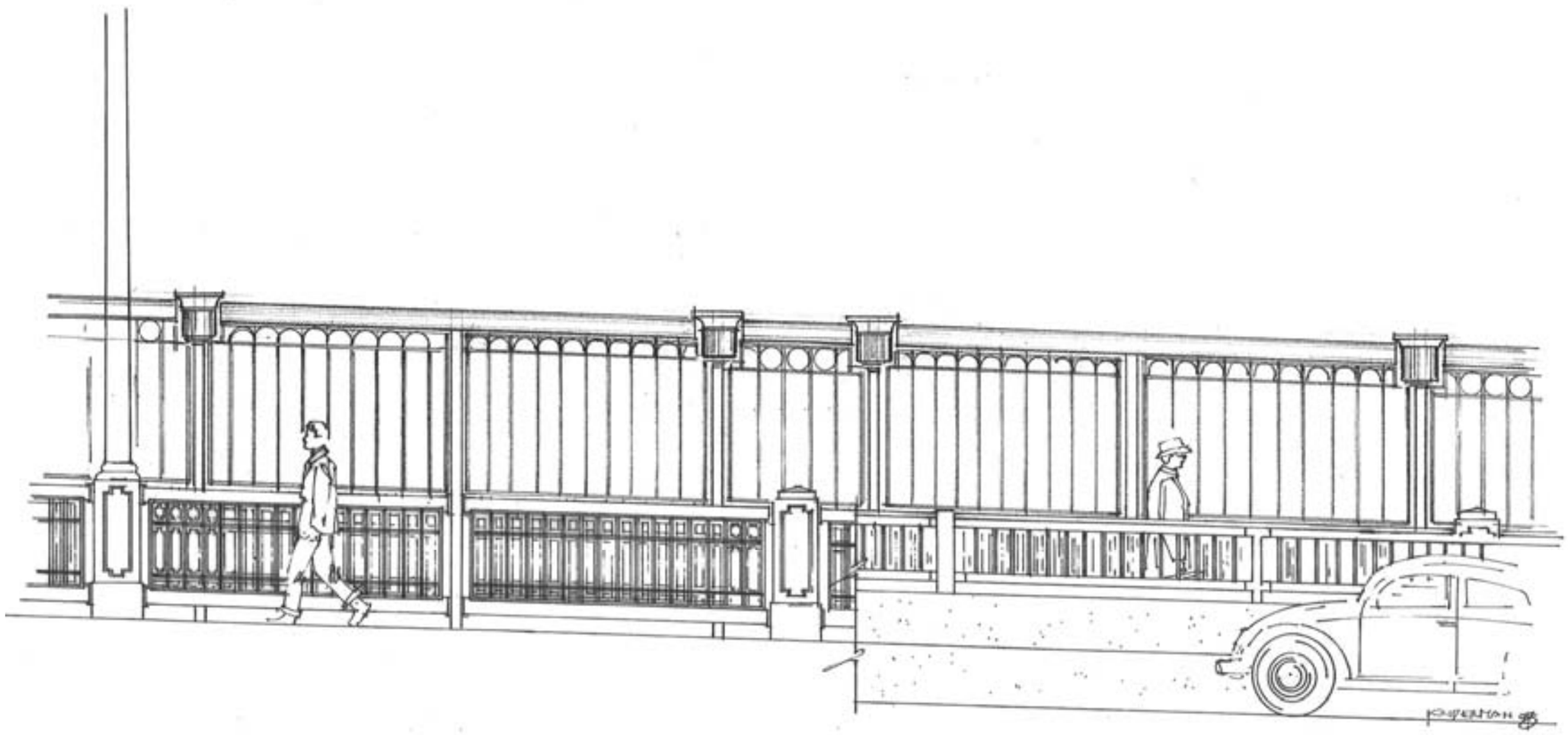
Concept A Typical Section
Classic Fence with Pedestrian Lights
Niland Aspen Series light standard similar



Concept B
Classic Fence with Pedestrian Lights
Lumec Z47A light standard similar



Concept B Typical Section
Classic Fence with Pedestrian Lights
Lumec Z47A light standard similar



Concept C
Classic Fence with Pedestrian Lights
Lumec Z11 light standard similar

Concept C Typical Section
Classic Fence with Pedestrian Lights
Lumec Z11 light standard similar

Post Advisory Committee Meetings 1 & 2

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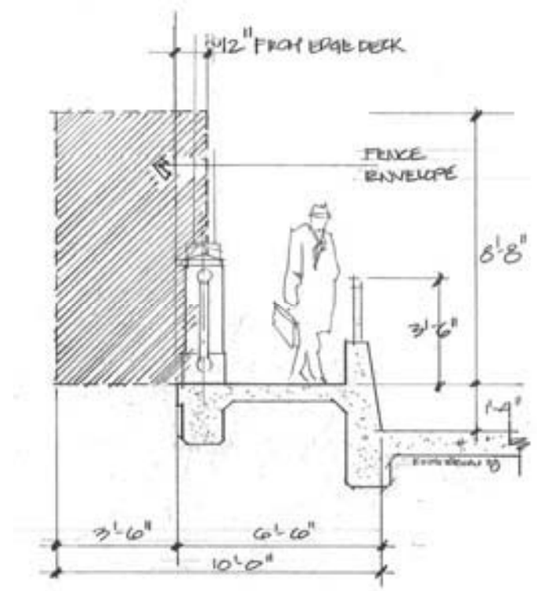
Design Considerations

Qualitative

- Use vertical elements as the main fence safety feature.
- Do not use mesh or wire fabric.
- The elements should be stainless steel wire rope or rods. Small diameters contribute to visibility from the bridge.
- The fence may extend only slightly 'outward' toward the water to provide a more 'open' experience for pedestrians. However, not required beyond that of a reasonable structural installation.
- The fence should have an overhang to discourage climbing. Recognize the 'face validity' of such an assembly. Although climbable by some, the overhang may be perceived as difficult to climb.
- The climb ability of the existing rail should be taken into account. Designs should discourage access to the fence top from the top rail or posts.
- Pedestrian lighting, if used, should be low wattage and essentially decorative.

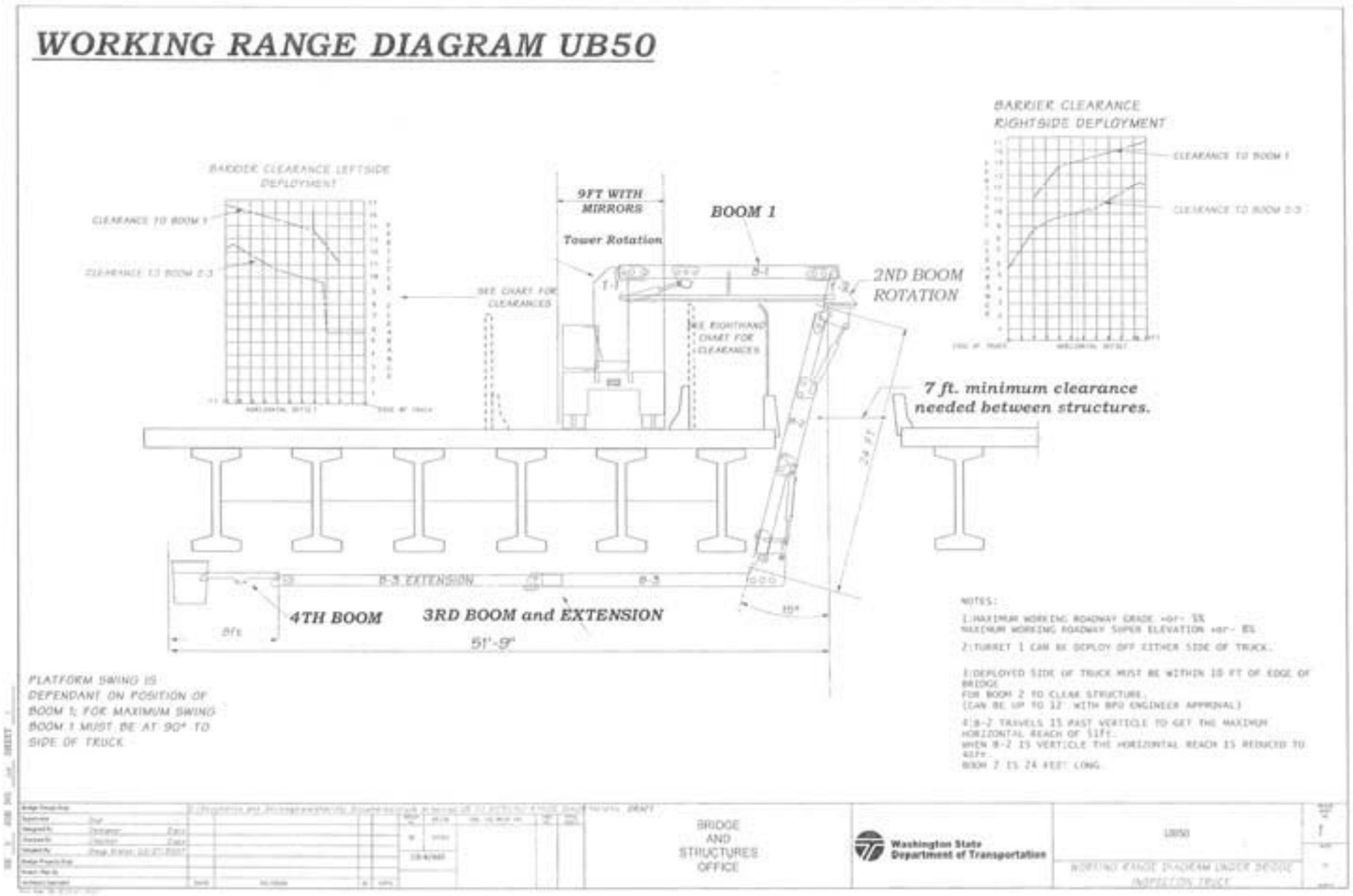
Quantitative

- The elements should be spaced no greater than 6" apart.
- The overhang is limited by inspection truck requirements. The Bridge Office is studying inspection traffic control requirements which may affect the dimension.

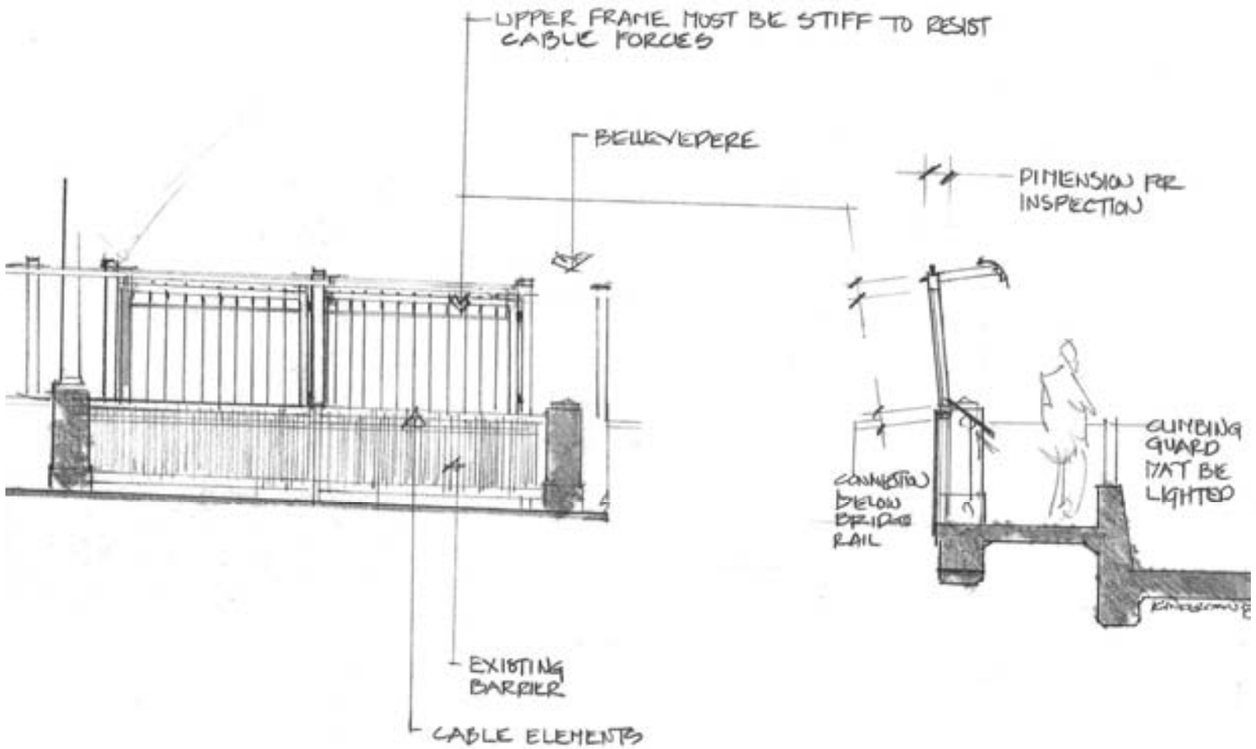


Fence Envelope

The fence must be contained within this space.

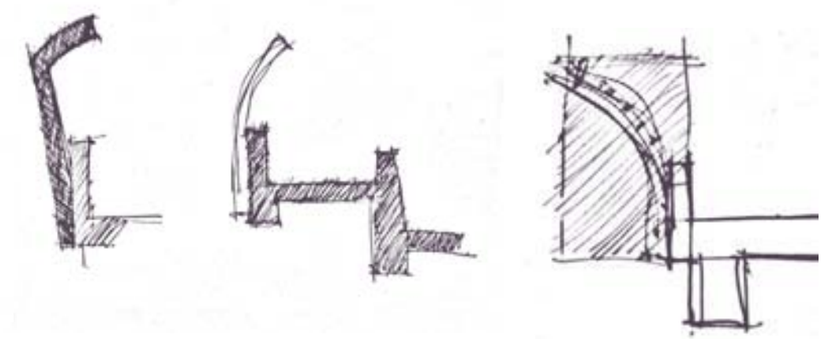


Under Bridge Inspection Truck (UBIT)



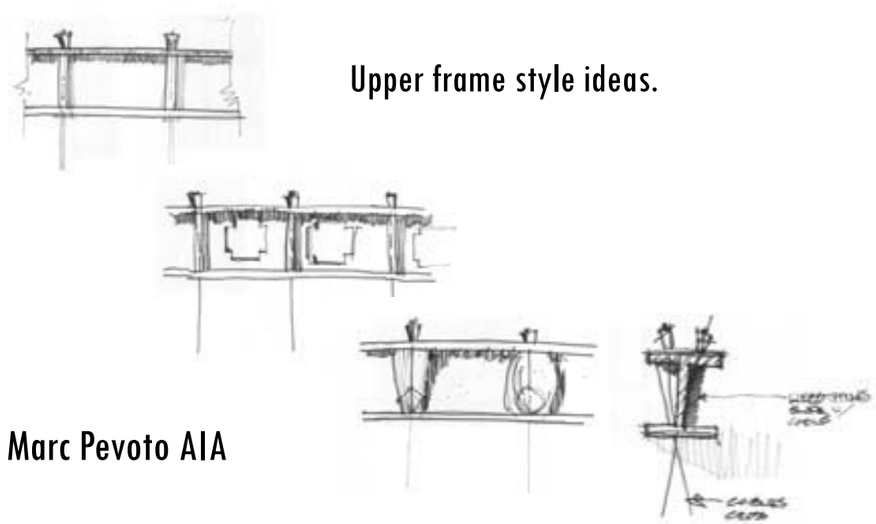
Elevation View

Vertical cables concept.

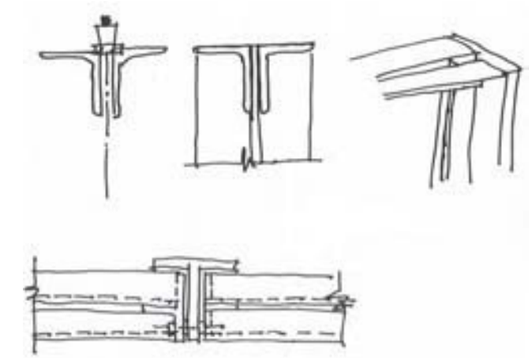


Section Views

The sidewalk as a 'room'



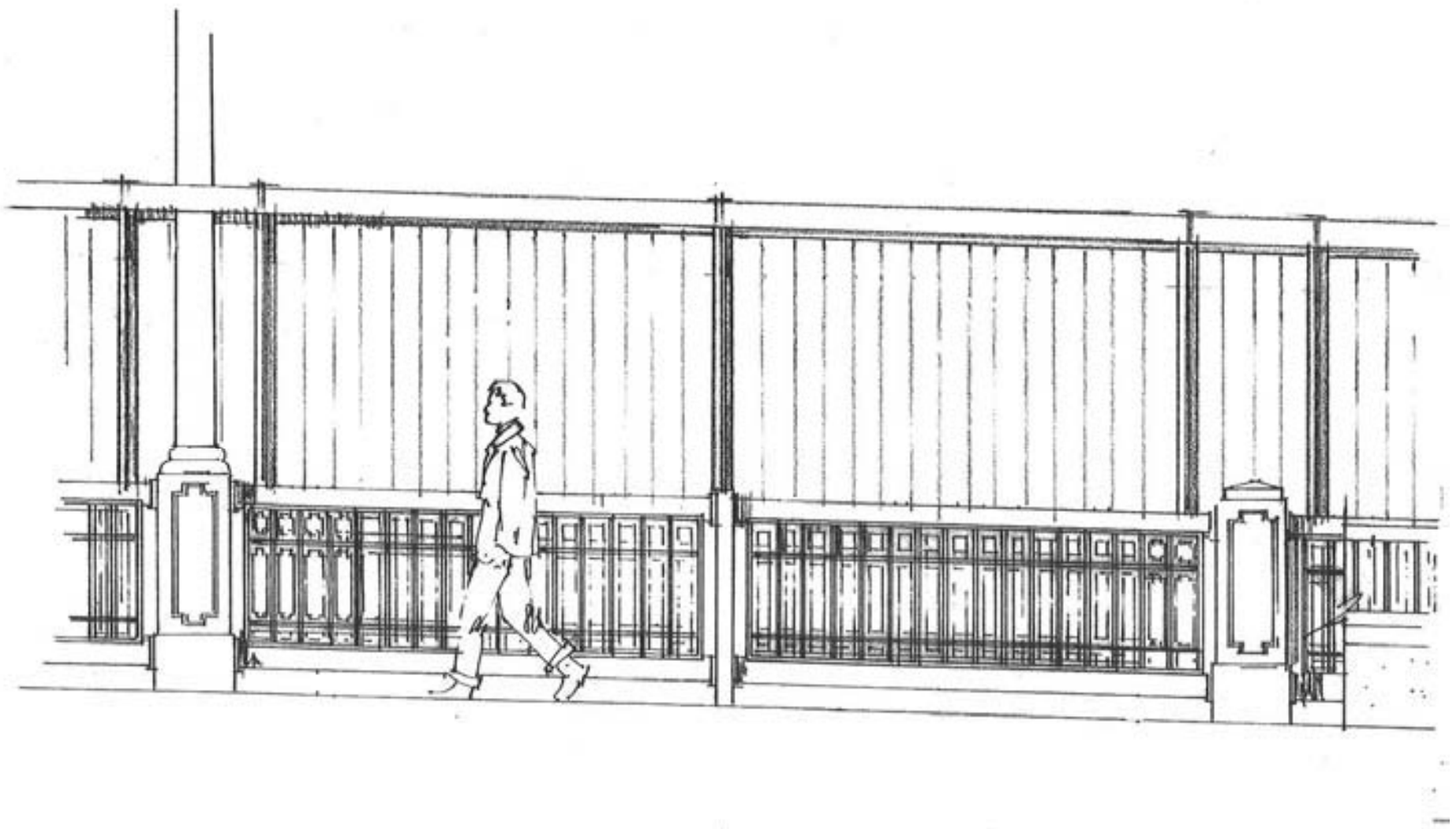
Upper frame style ideas.



Frame section shapes should be light in weight and appearance.

Design Committee: Sketch Diary

Conversations with citizen architects David Clinkston AIA and Marc Pevoto AIA



Elevation
Viewed from the traveled way

CURRENT DESIGN DISCUSSION

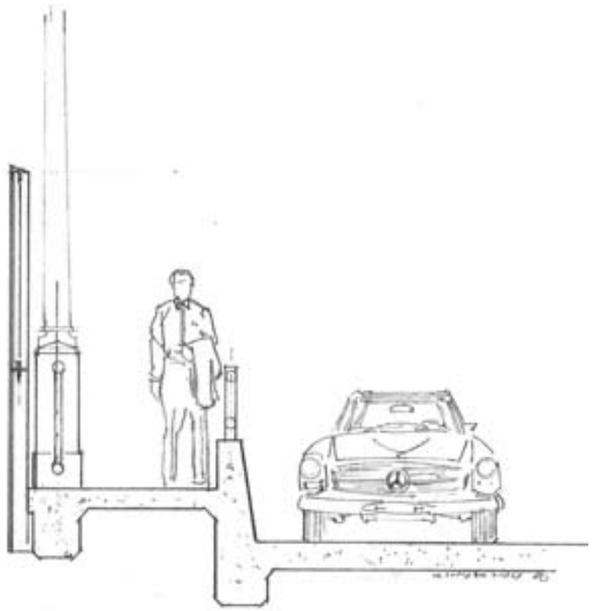
Provide a demountable double T frame system to house 3/16" stainless steel cables. Tension cables to prohibit spreading.

Design an overhang to discourage climbing.

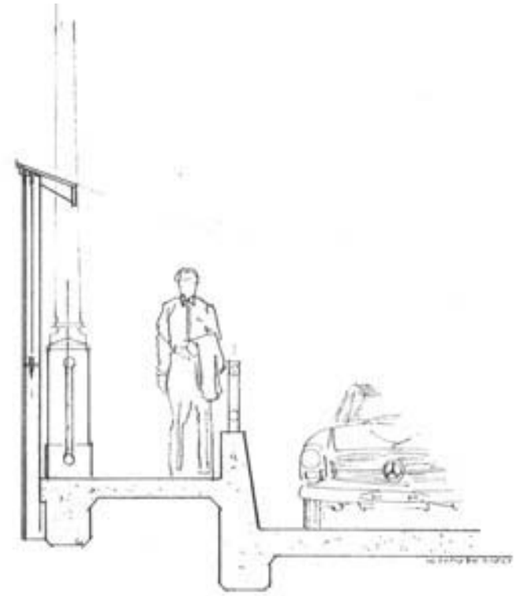
Frame detailing will be visually light to facilitate views.

The fence weight is critical to structural bridge preservation issues.

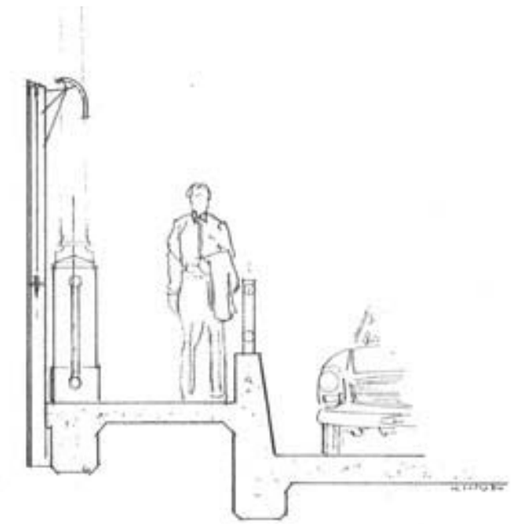
Vertical Cable Design



Straight Fence



Sloping Cap



Curved Cap

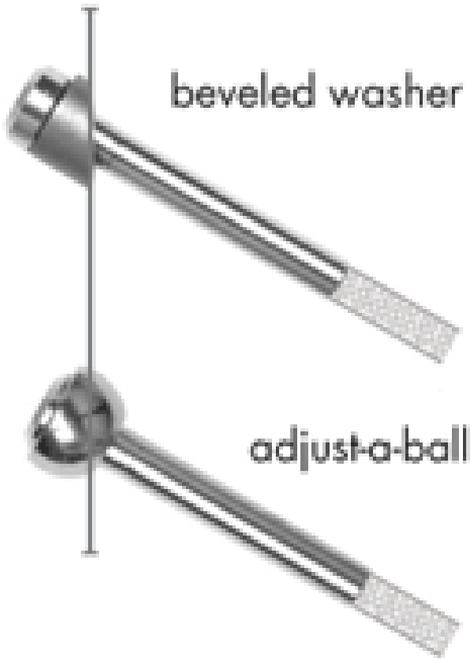
Discussion

The fence should have an overhang. The style will visually dominate the fence.

The designs shown are intended to be schematic in nature. The final design style will be developed as the project goes forward.

Typical Section Scenarios Study

Vertical Cable Design



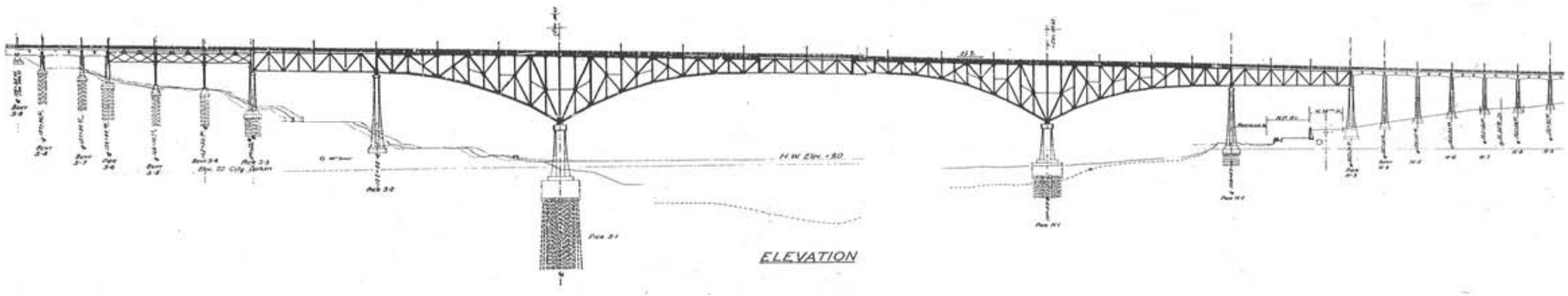
Cable system hardware for vertical elements.

The top of the overhang for the straight cap option.

Materials

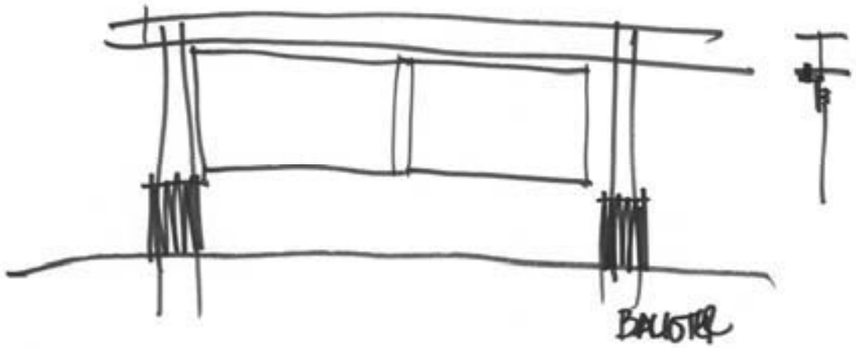
Currently under consideration.

Post Advisory Committee Meetings 3

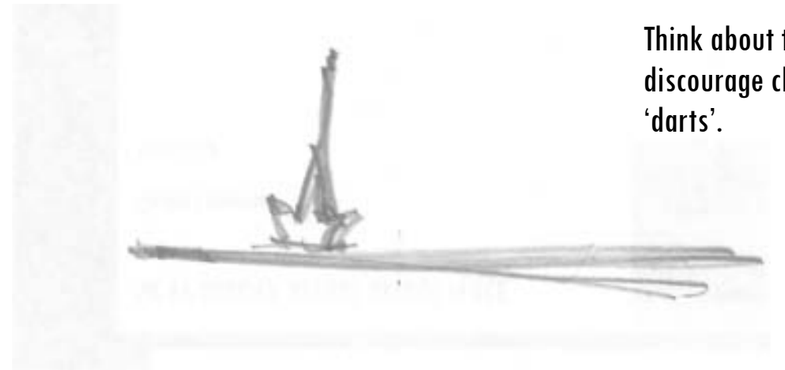


Elevation

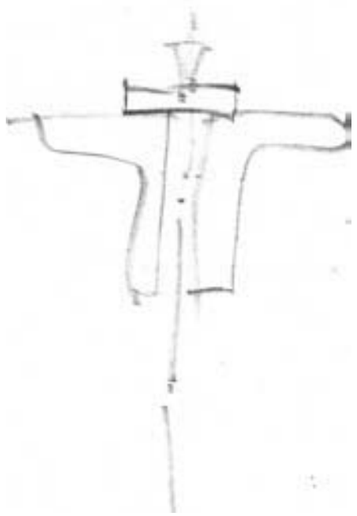
Original 1930 Contract Plans

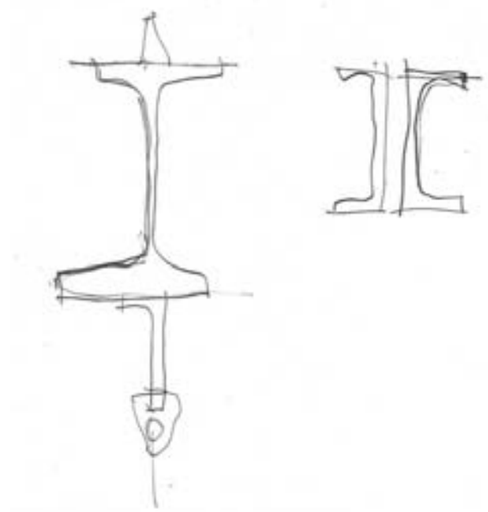


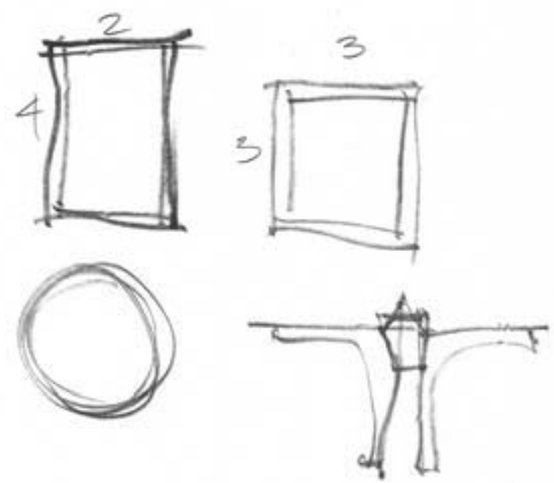
The top frame may span between main rail posts and the cable frame hang from the span.

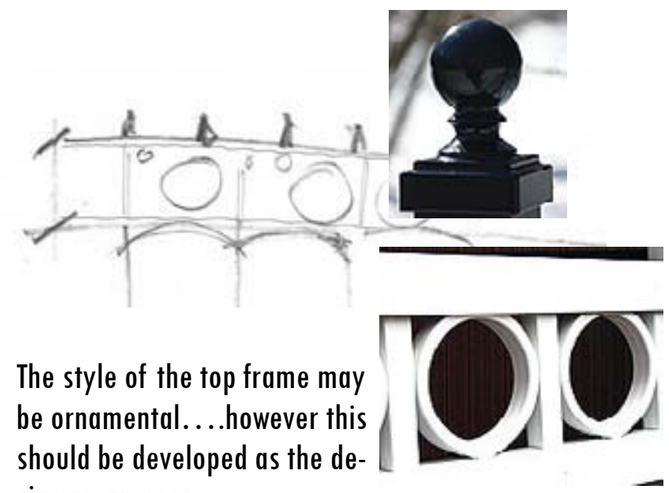


Think about traditional methods to discourage climbing such as fence 'darts'.







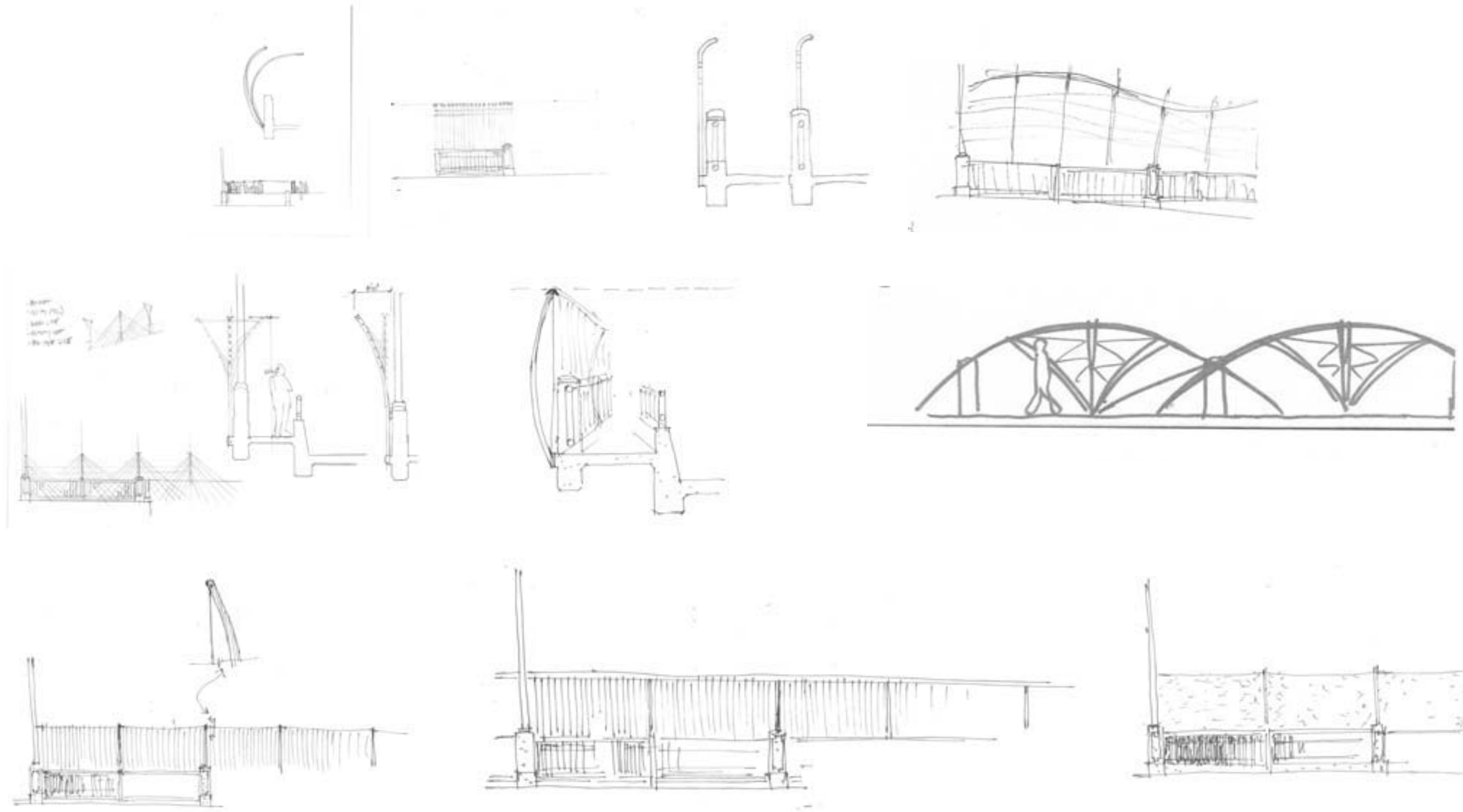


The style of the top frame may be ornamental....however this should be developed as the design progresses.

Sections under consideration for the frame. Look for sections that are visually light and produce interesting shadow lines.

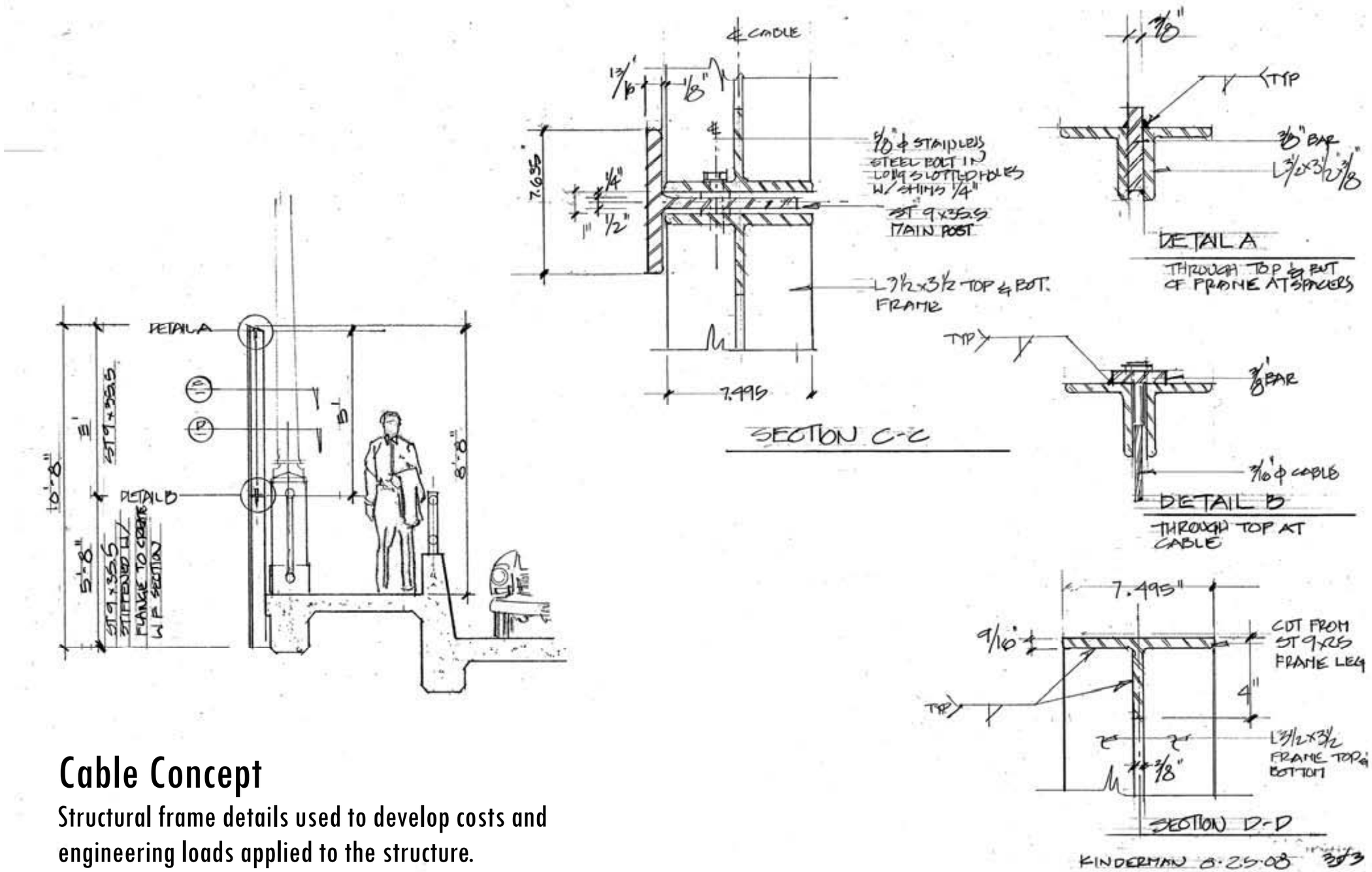
Design Committee: Sketch Diary

Conversations with citizen architects David Clinkston AIA and Marc Pevoto AIA



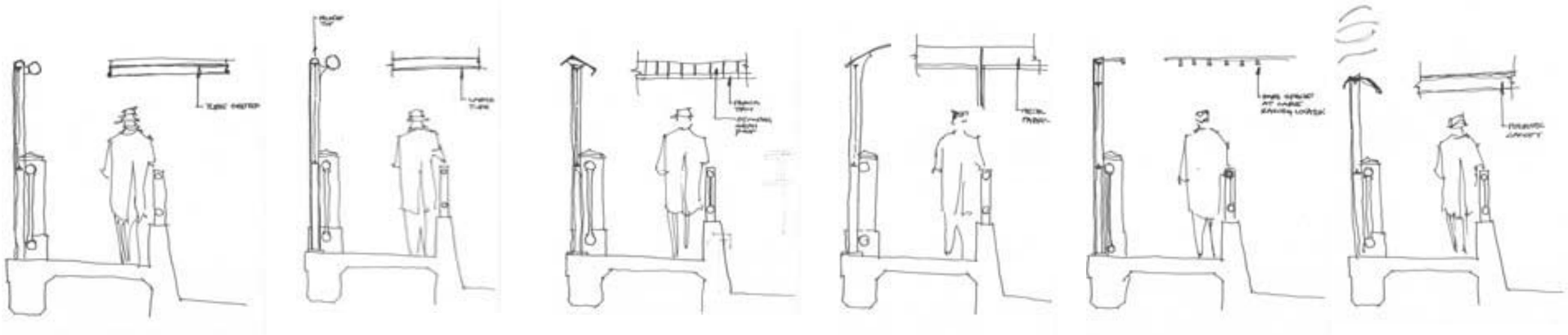
Sketches from Bassetti Architects

Provided following an afternoon in house charette at the Bassetti office.



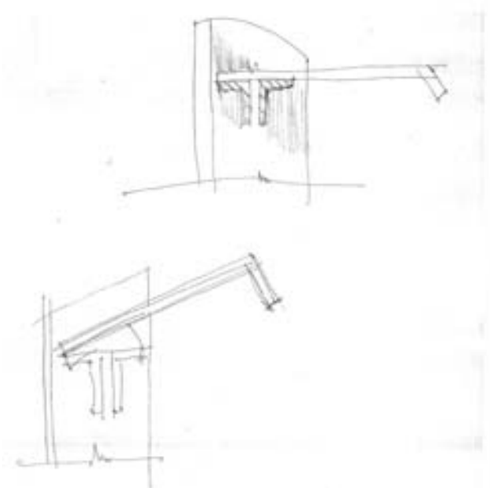
Cable Concept

Structural frame details used to develop costs and engineering loads applied to the structure.

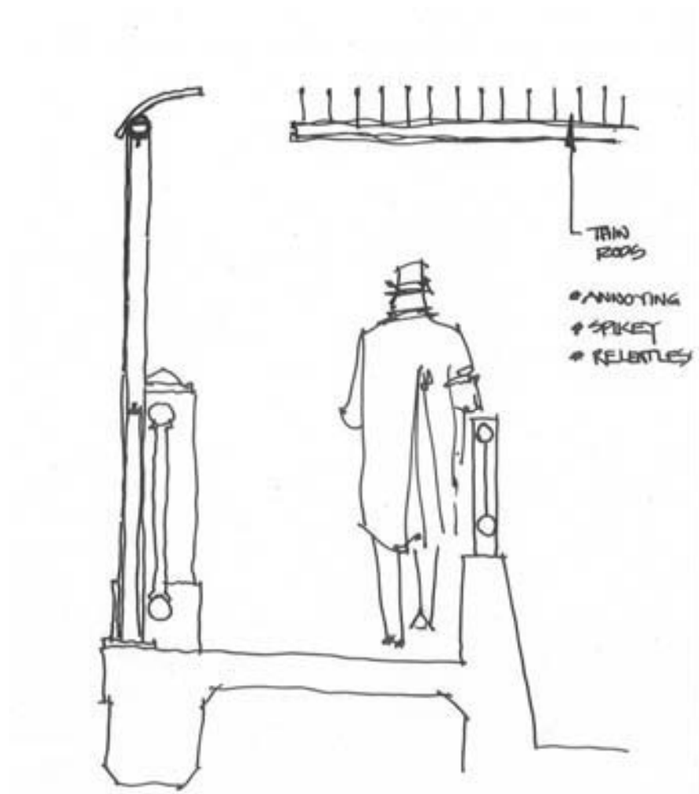


Section Views

Various scenarios.
'Prongs' vs. 'lidded canopy'.



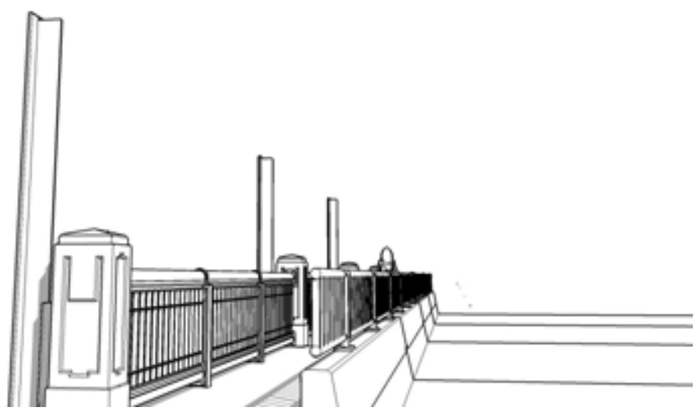
Connection ideas for prong concept.



Recommend 'prongs' in lieu of lidded canopy to discourage climbing. .

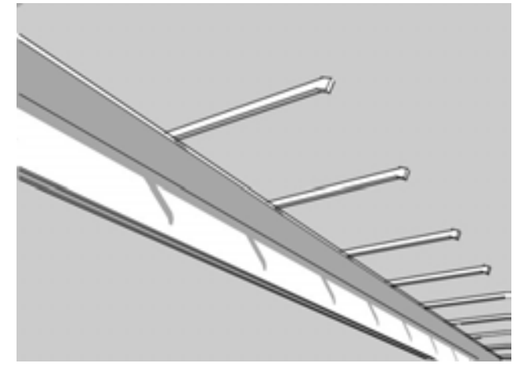
Design Committee: Sketch Diary

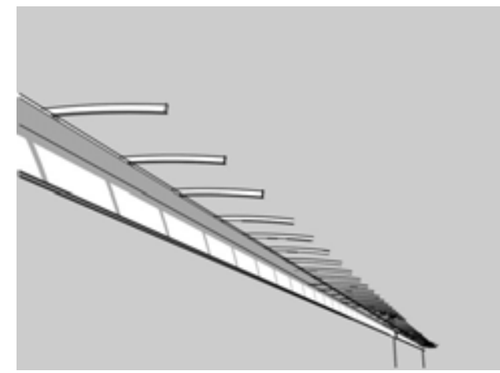
Conversations with citizen architects David Clinkston AIA and Marc Pevoto AIA

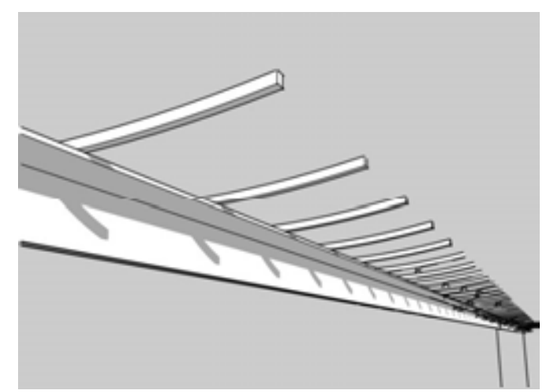


Cable Concept

Three dimensional computer models.
WSDOT is beginning modeling.

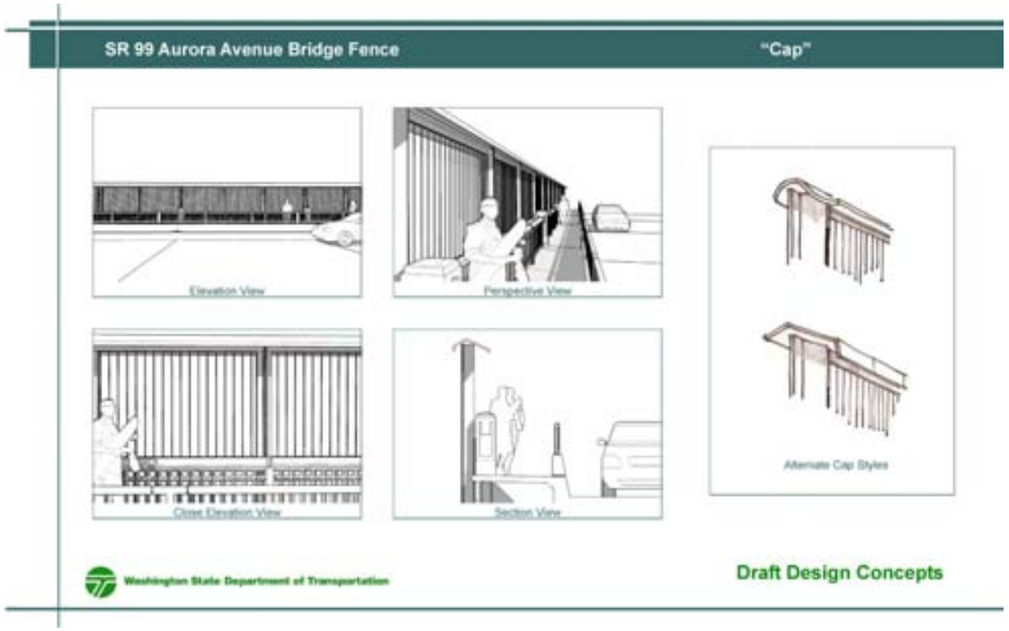


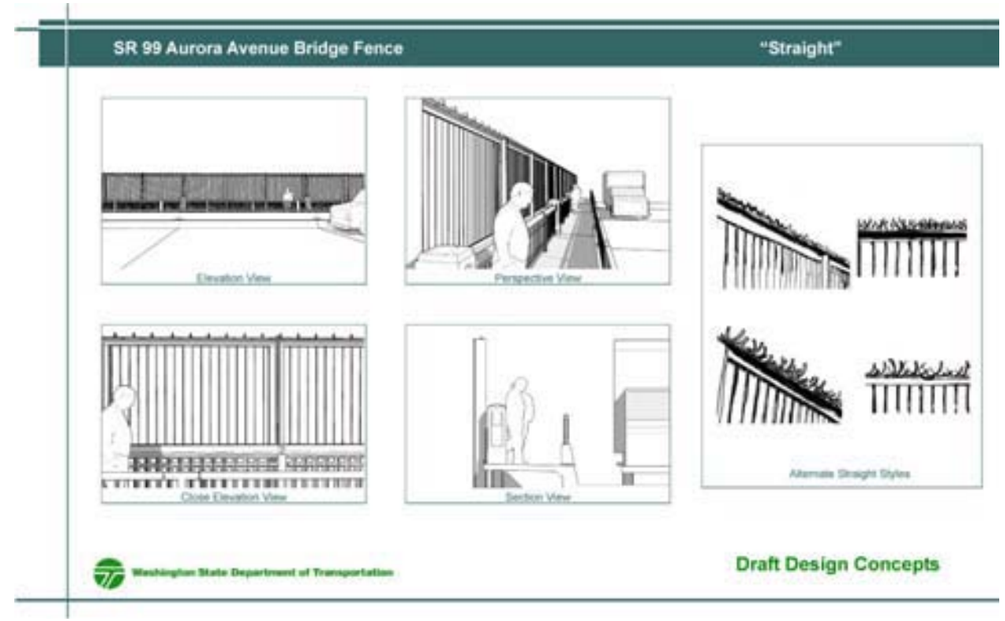


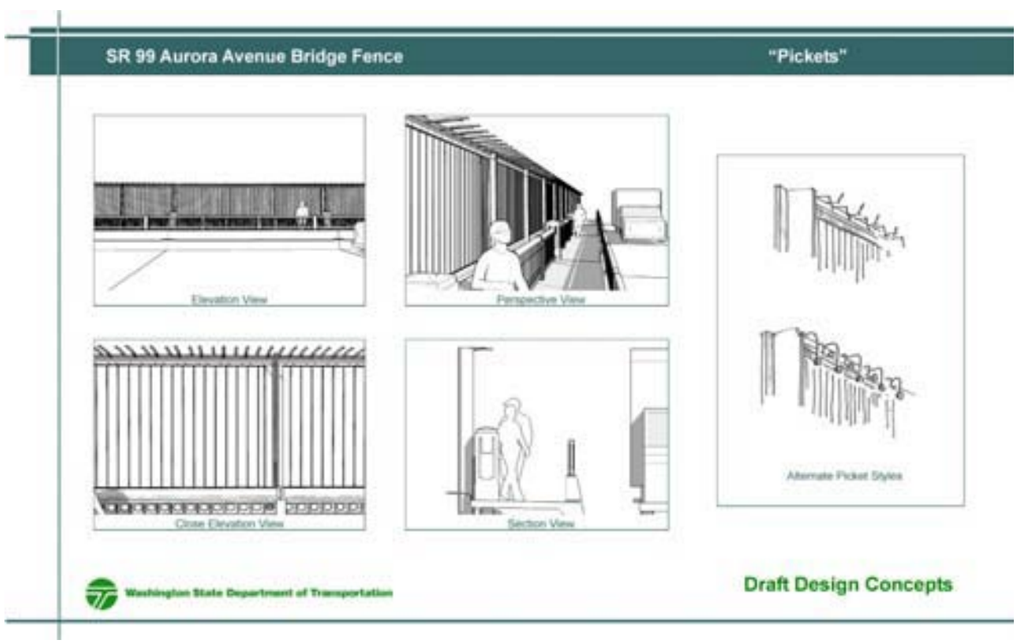


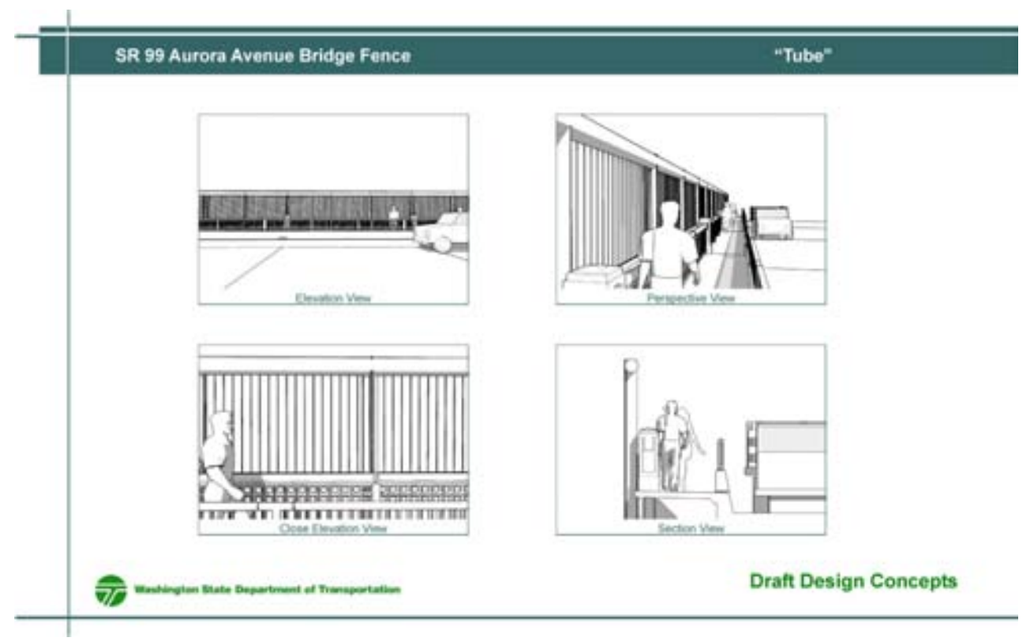
Tine designs

Post Advisory Committee Meetings 4

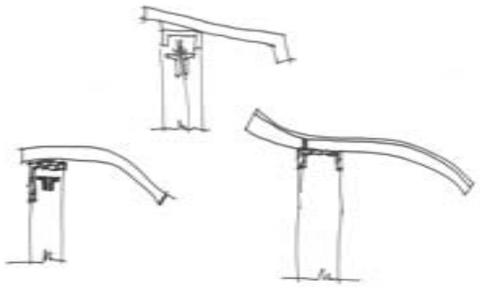


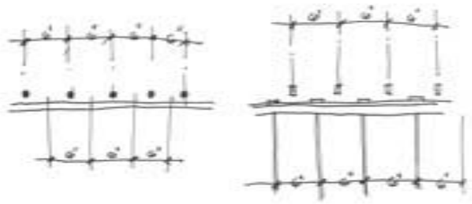






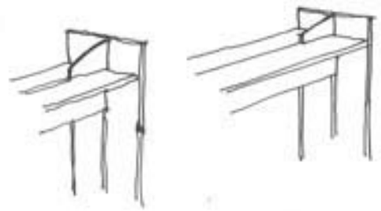
Concepts: The four families of top treatments



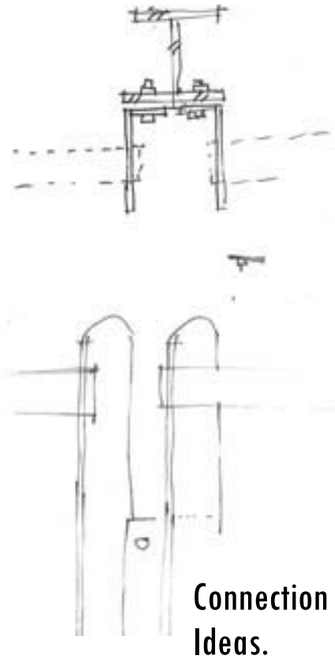


Spacing of top elements.

Straight top treatments to discourage climbing.

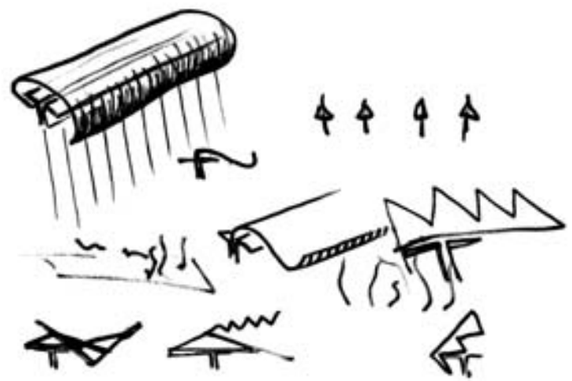


Sculpting the frame by 'coping'.

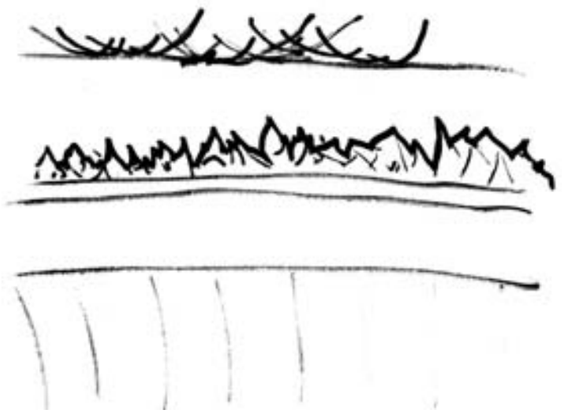


Connection Ideas.

Picket Ideas



Cap Ideas

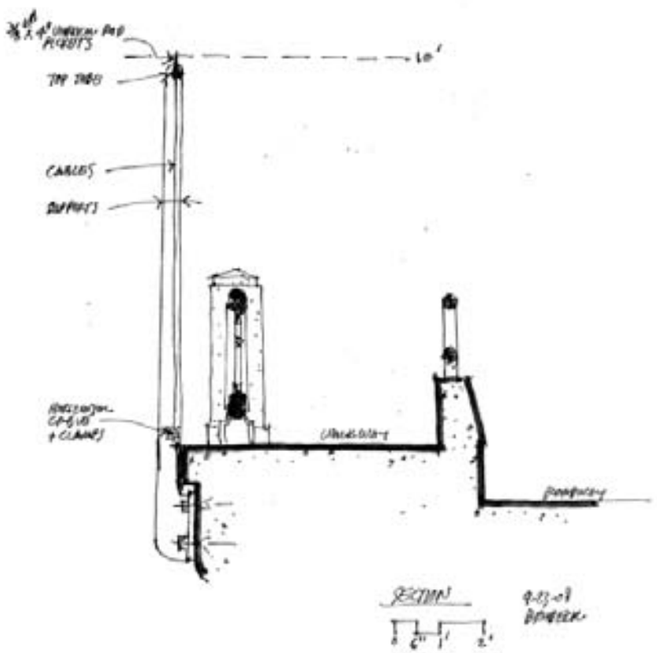


'Organic' straight top concept.

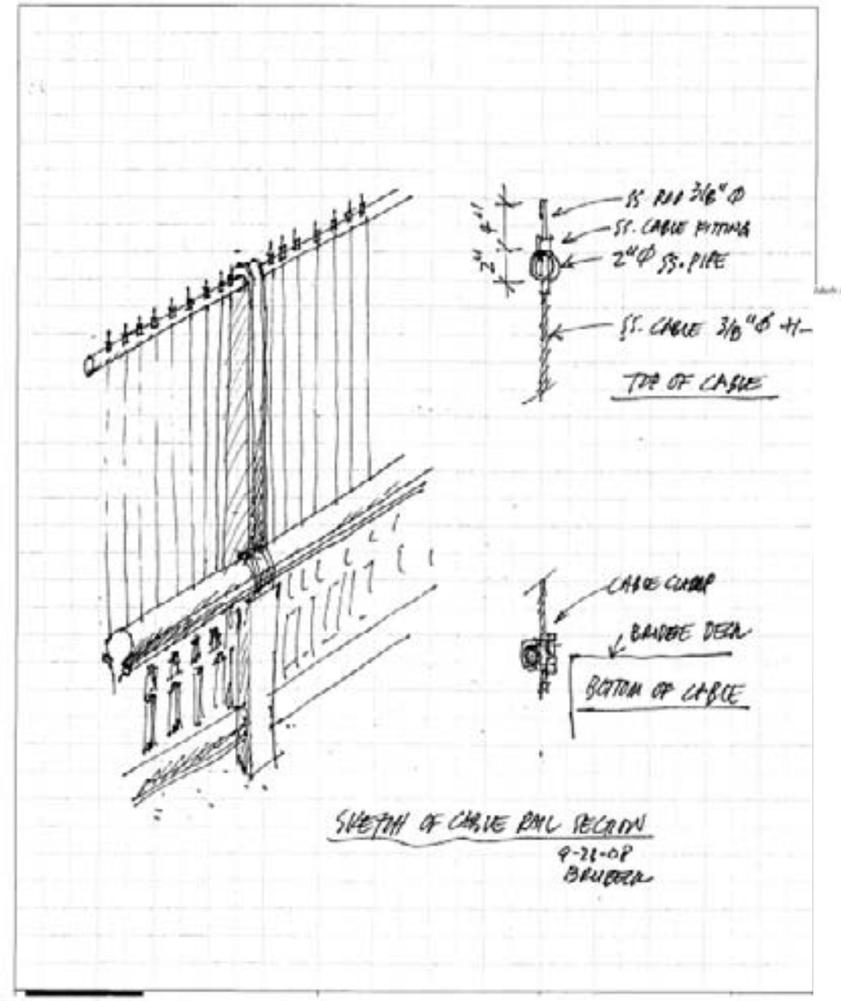
Design Committee: Sketch Diary

Conversations with citizen architects David Clinkston AIA and Marc Pevoto AIA

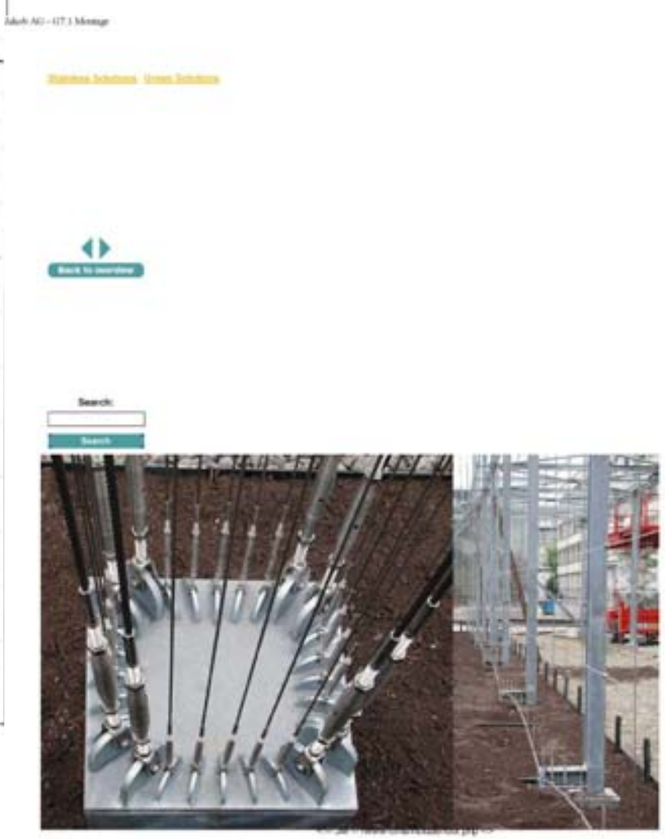
Brainstorming on various ideas within each of the four top treatment families..



Typical Section



Isometric View showing smaller top tube and integral small pickets at top.



Manufacturer's photo's showing the range of possibilities for cable systems.

Citizen Concept Sketch: Smaller top tube and extended cable length

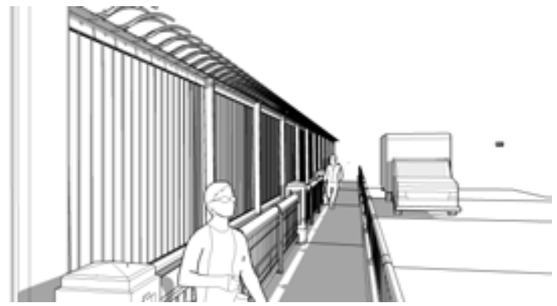
WSDOT Bridge Design Office WSDOT Cultural Resources Office

1

2

Cap

1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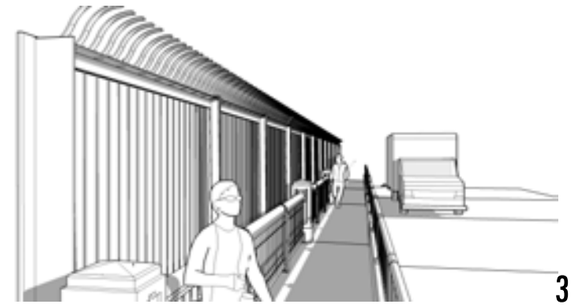
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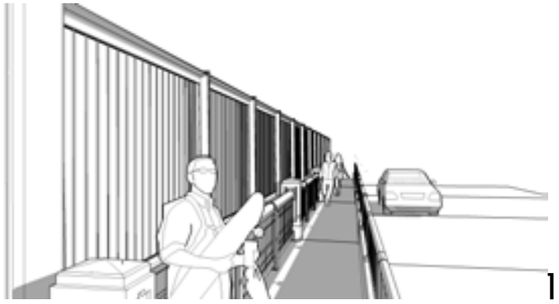
Pickets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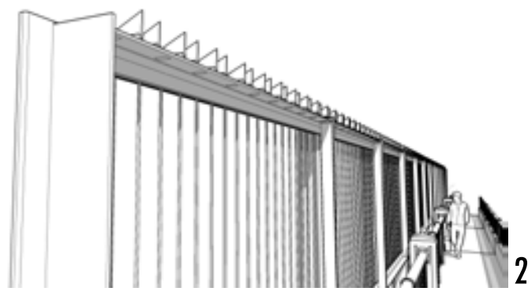
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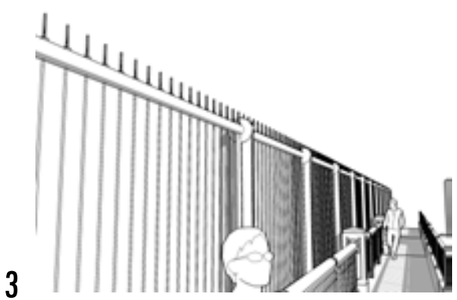
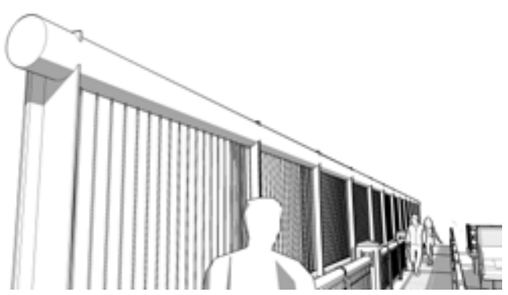


Straight



Tube

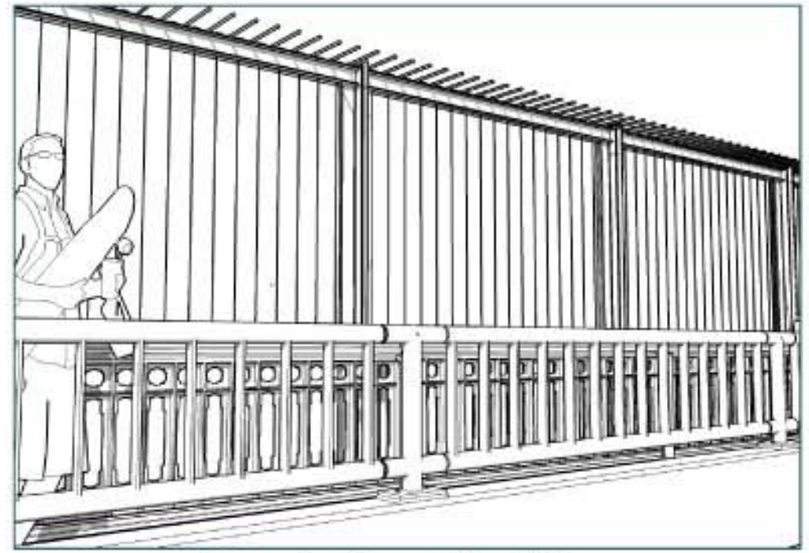
3D Computer Models: Exploring possibilities within the four families of top treatments

Post Advisory Committee Meetings 5

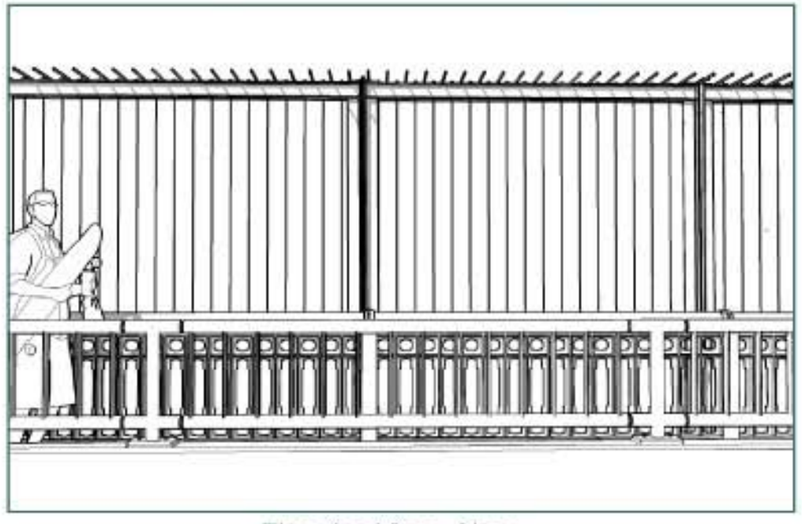
SR 99 Aurora Avenue Bridge Fence

Channel Frame with Horizontal Picket Top

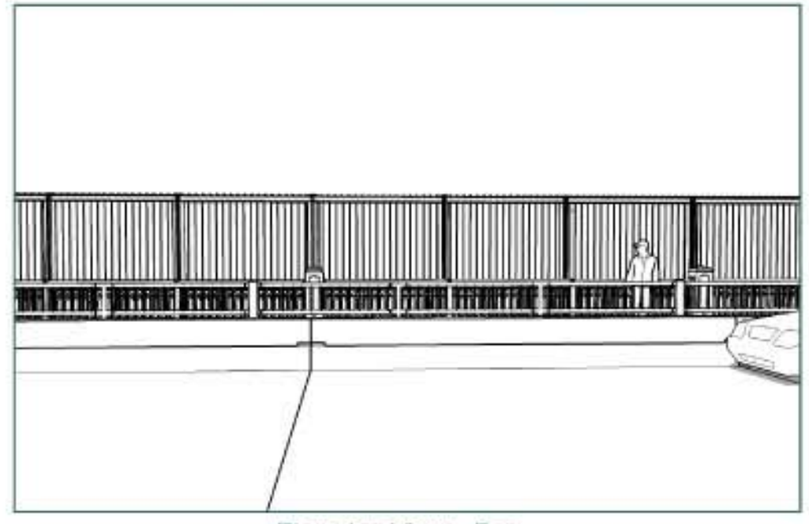
Perspective View—Below the Bridge



Perspective View—On the Bridge



Elevation View—Near



Elevation View—Far

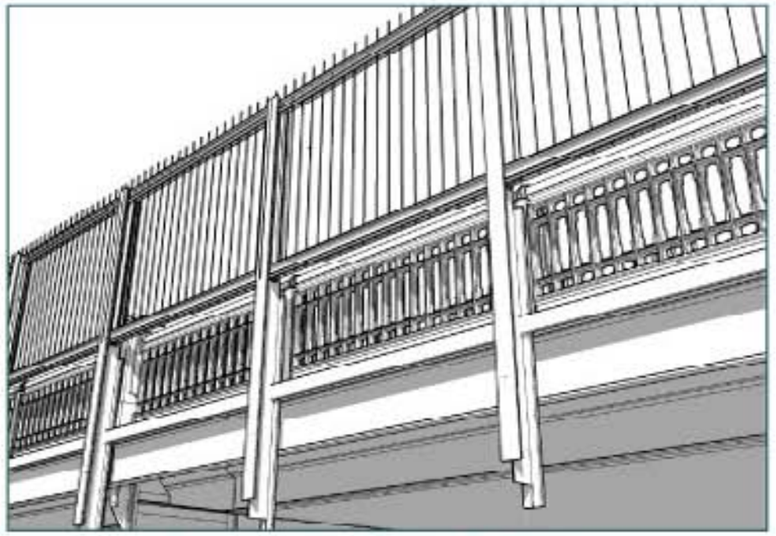
Washington State Department of Transportation

Draft Design Concepts

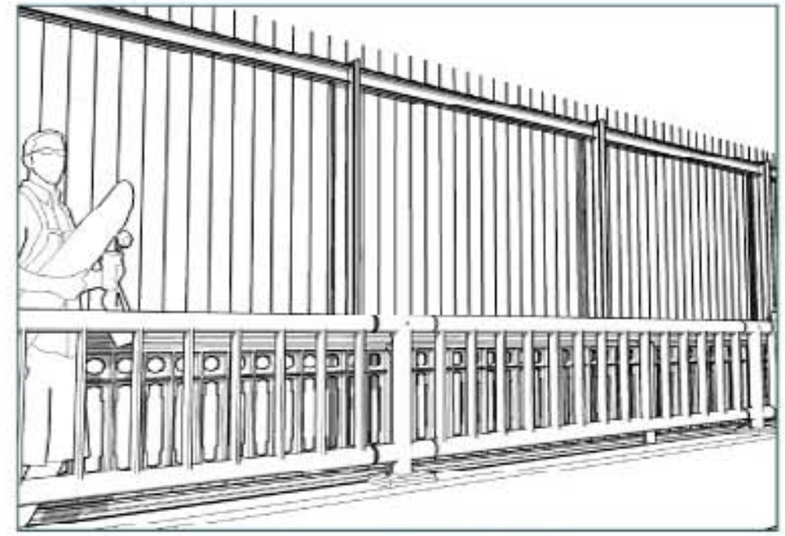
October 2008

SR 99 Aurora Avenue Bridge Fence

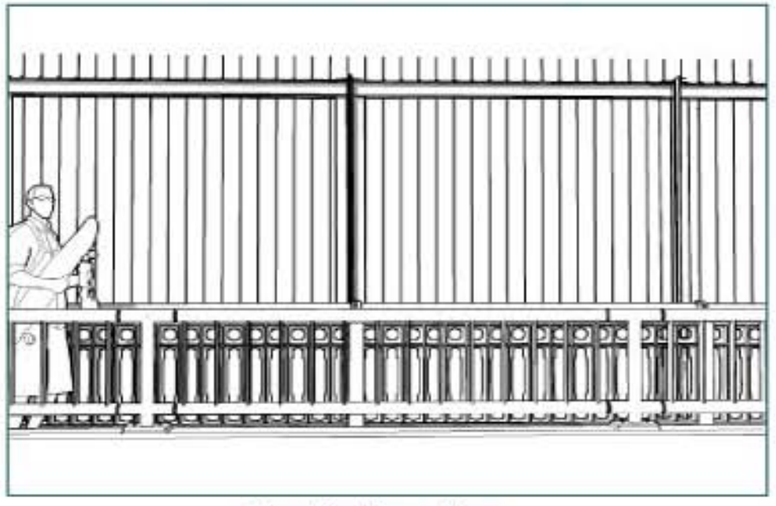
Channel Frame with Vertical Picket Top



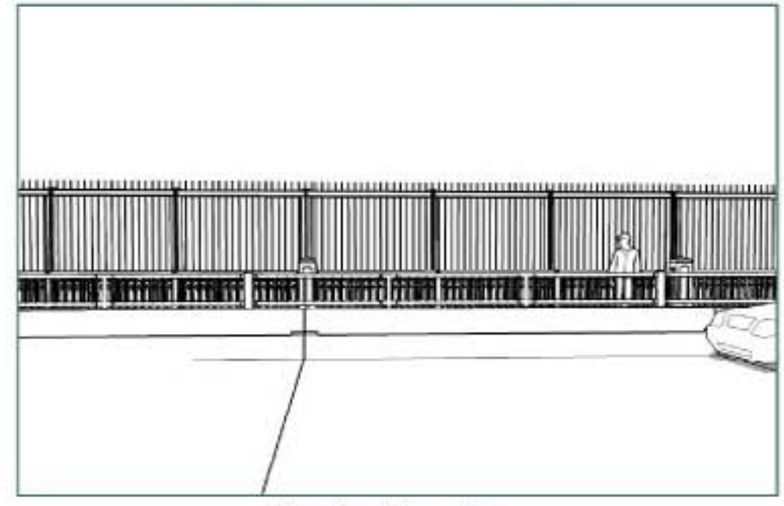
Perspective View—Below the Bridge



Perspective View—On the Bridge



Elevation View—Near



Elevation View—Far

Washington State Department of Transportation

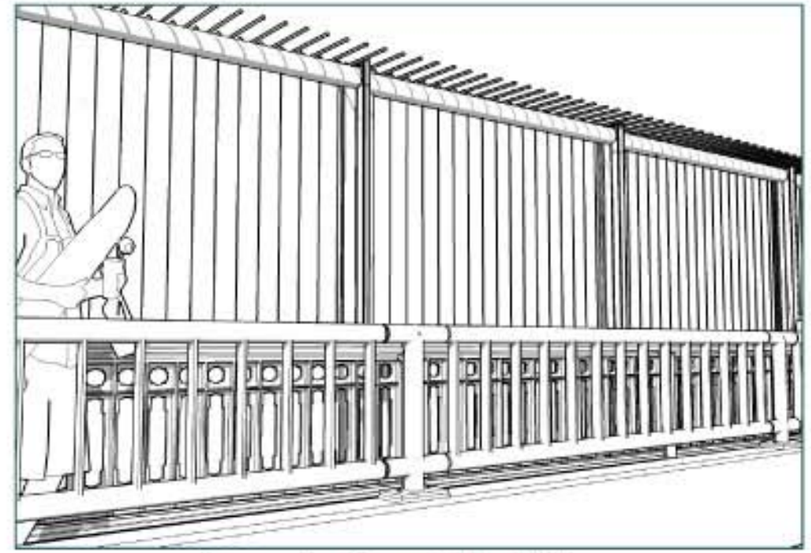
Draft Design Concepts

October 2008

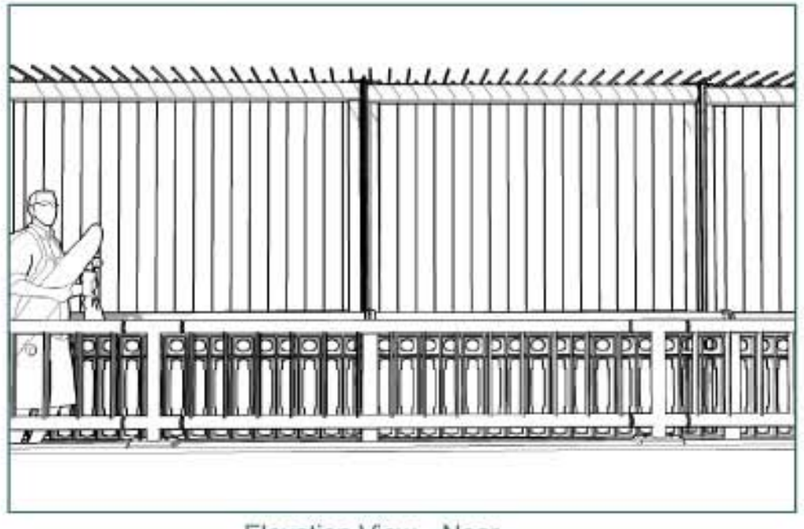
SR 99 Aurora Avenue Bridge Fence

Tube Frame with Horizontal Picket Top

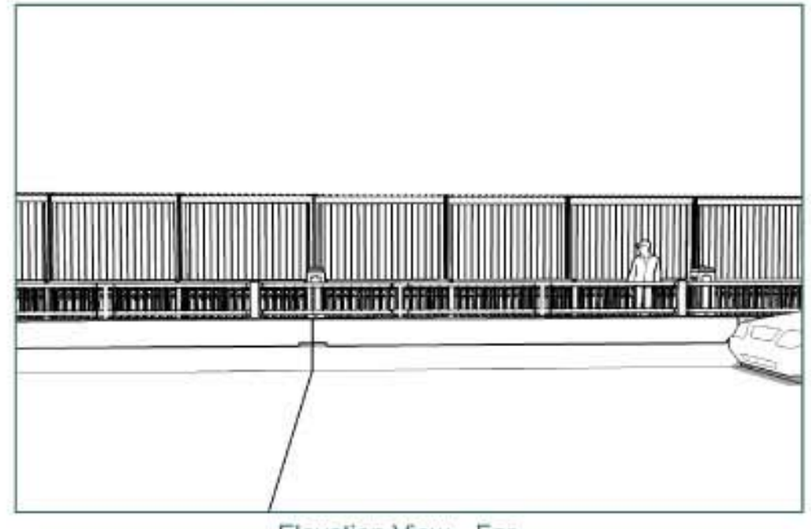
Perspective View—Below the Bridge



Perspective View—On the Bridge



Elevation View—Near



Elevation View—Far

Washington State Department of Transportation

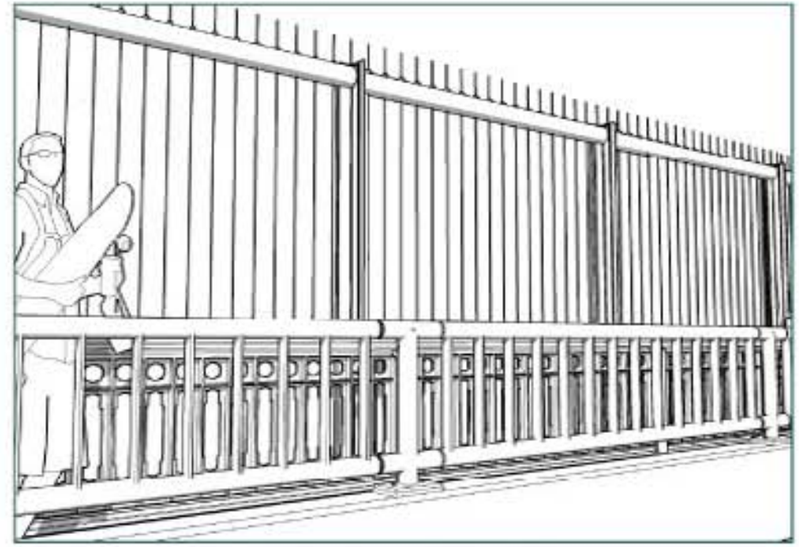
Draft Design Concepts

October 2008

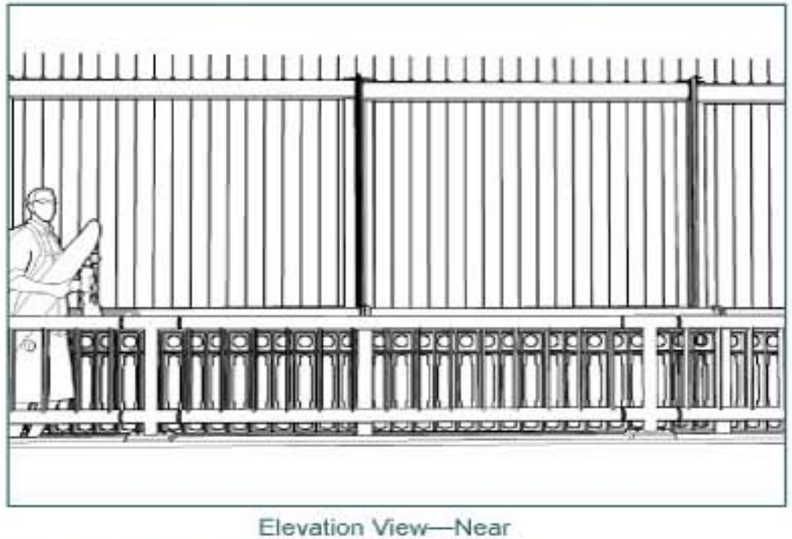
SR 99 Aurora Avenue Bridge Fence

Tube Frame with Vertical Picket Top

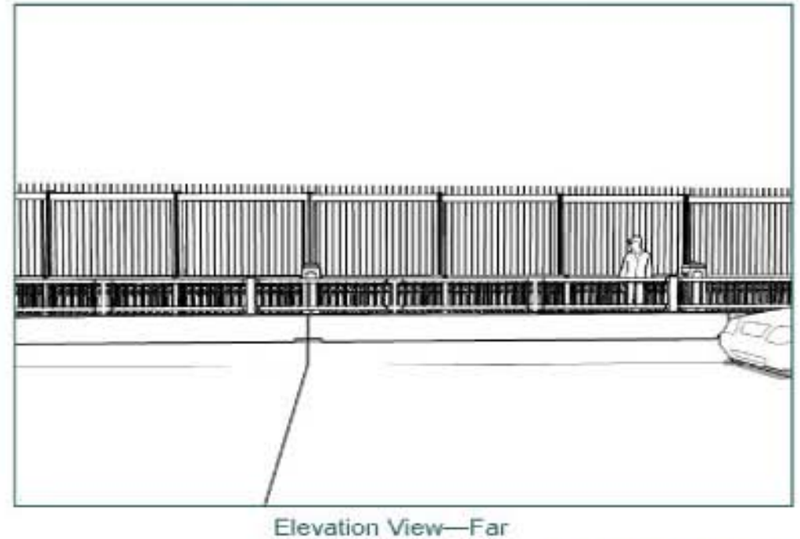
Perspective View—Below the Bridge



Perspective View—On the Bridge



Elevation View—Near



Elevation View—Far

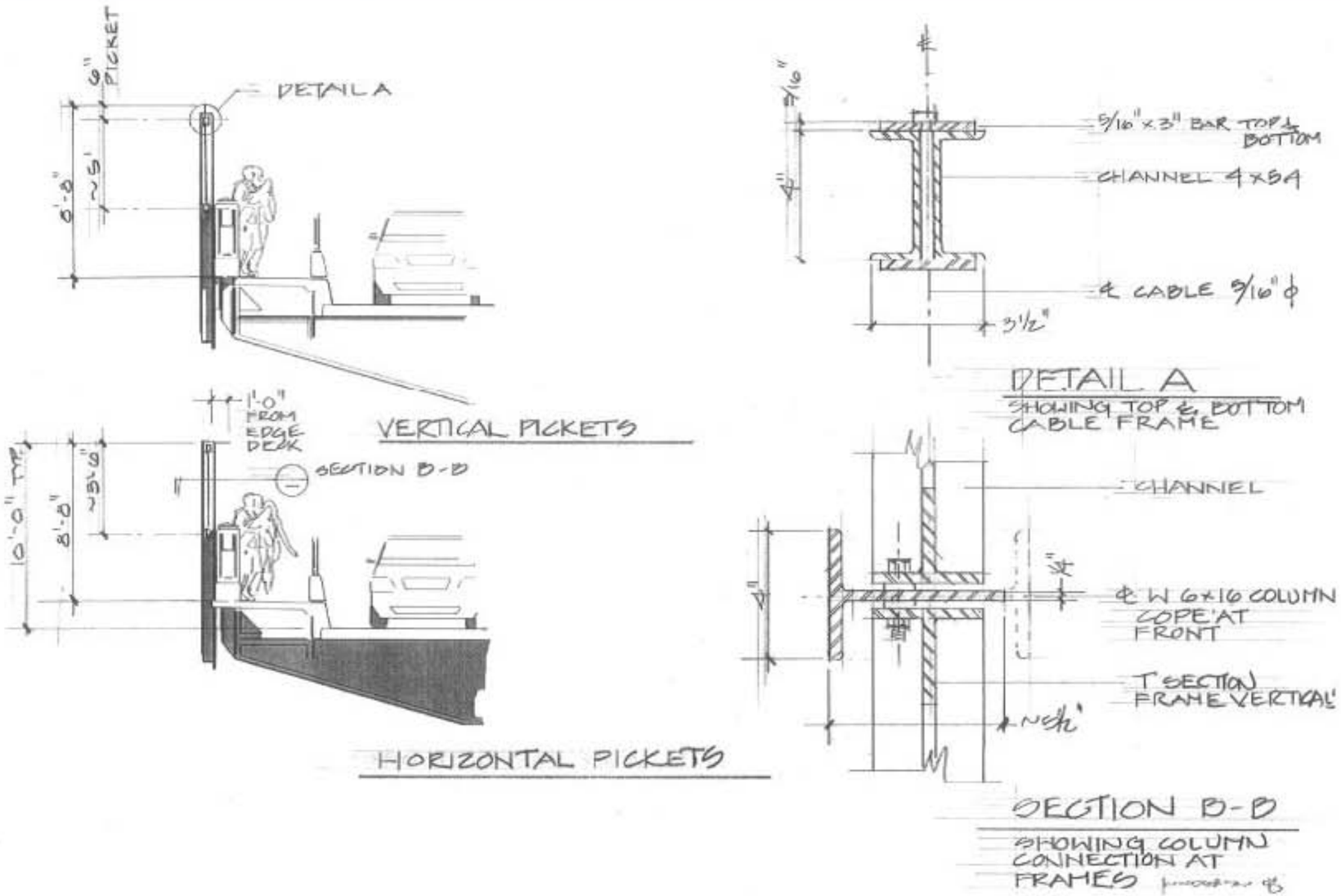
Washington State Department of Transportation

Draft Design Concepts

October 2008

SR 99 Aurora Avenue Bridge Fence

Channel Frame Details



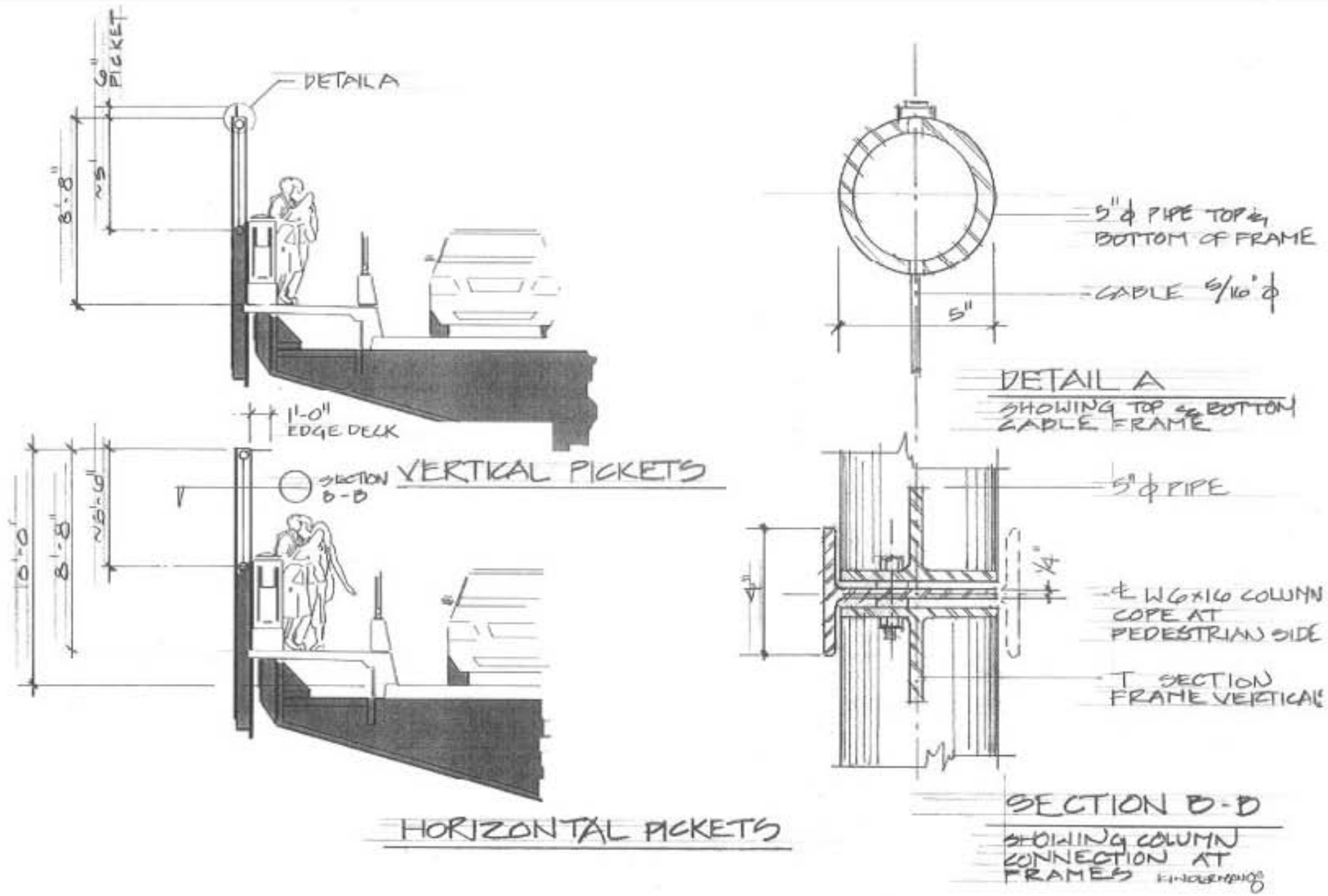
Washington State Department of Transportation

Draft Design Concepts

October 2008

SR 99 Aurora Avenue Bridge Fence

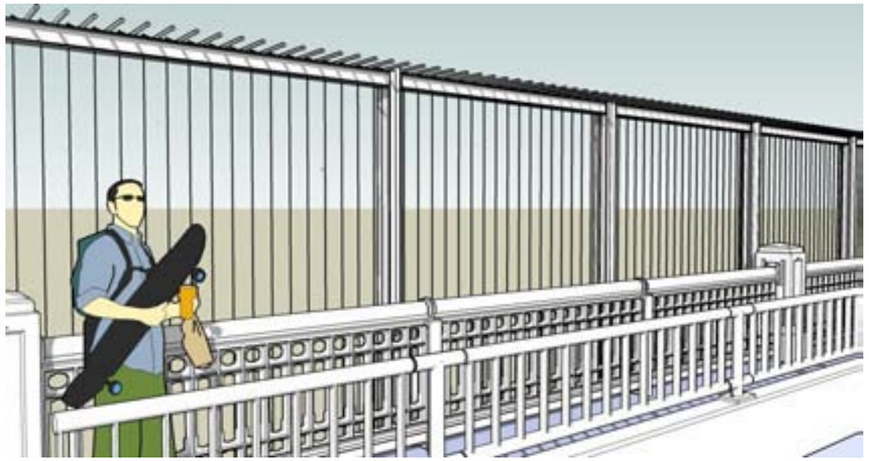
Tube Frame Details



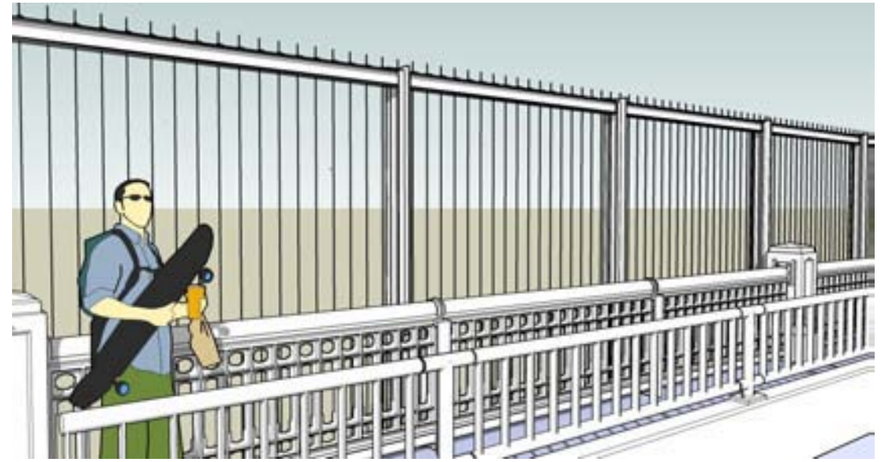
Washington State Department of Transportation

Draft Design Concepts

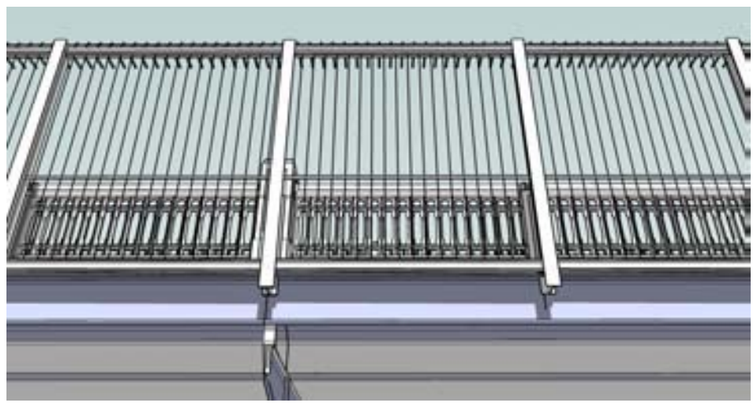
October 2008



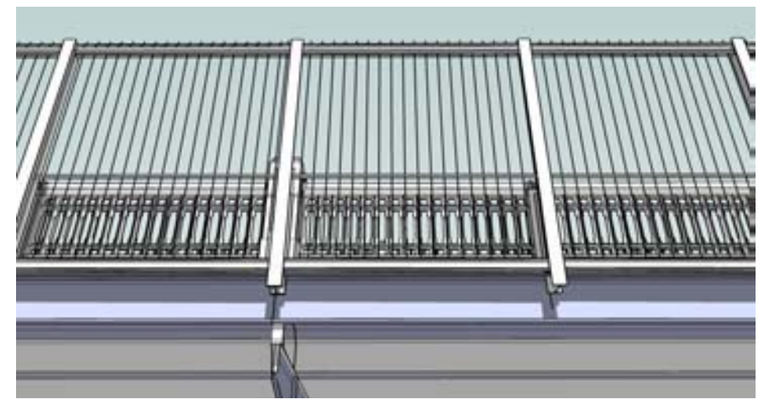
Horizontal
Top Pickets.



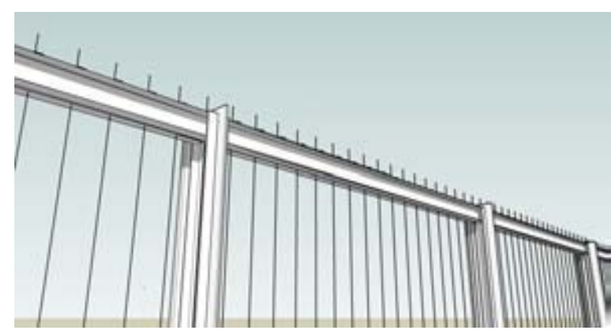
Vertical
Top Pickets



Extend stainless steel
cable vertical elements to
bottom of existing railing.

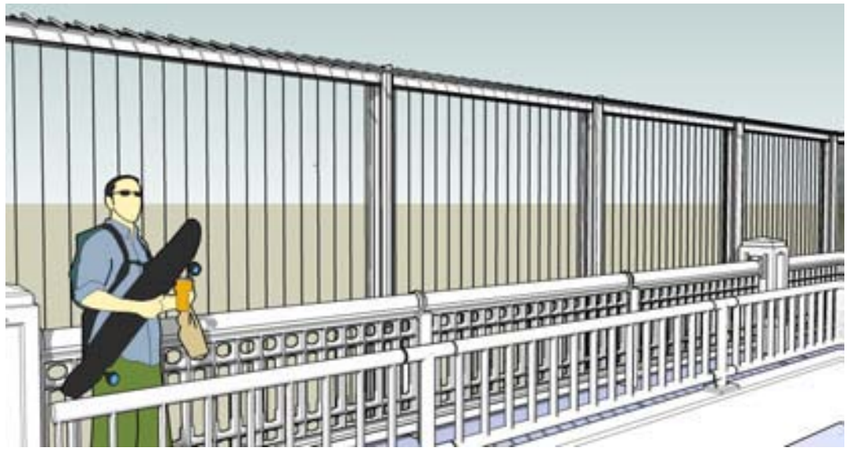


'Channel' sections
at the frame top in lieu of
'tubes'.
Decrease the size of vertical
structural elements to the extent
possible.



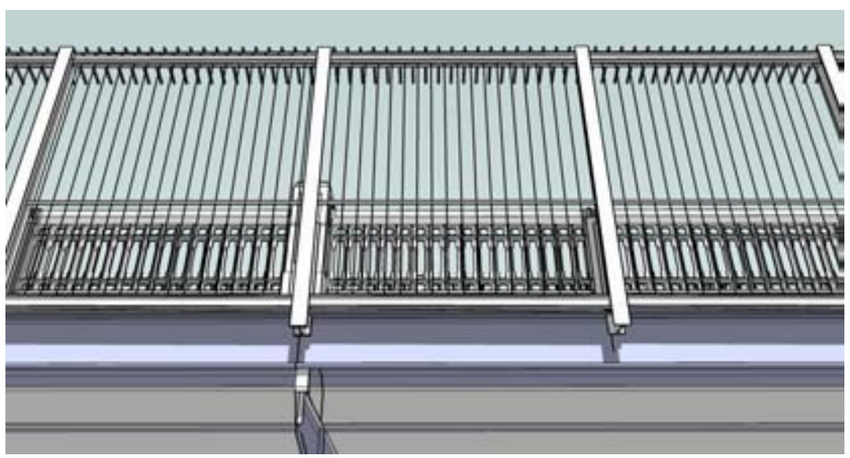
Design Concepts:

Created after the second meeting with the Architect's Review Committee.
Presented at the third committee meeting.



Channel' sections
at the frame top.

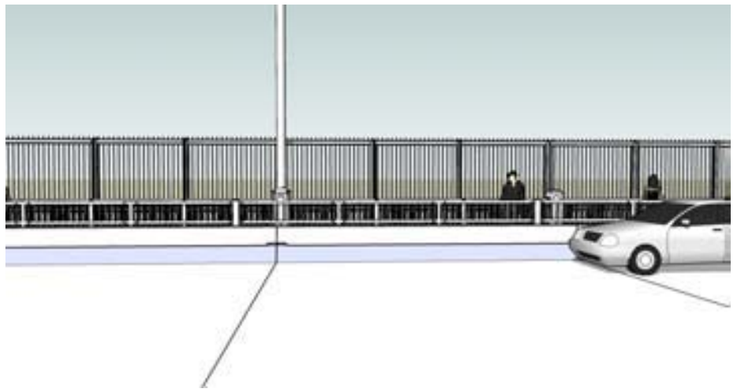
Sloped Top Pickets



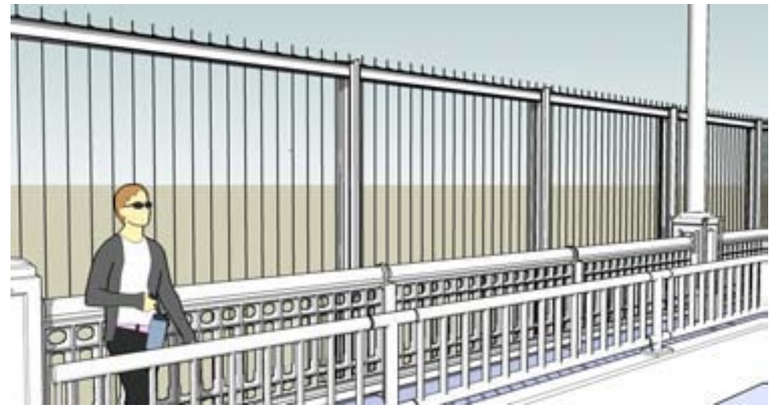
Extend stainless steel
cable vertical elements to bottom of
existing railing.

Design Concepts:

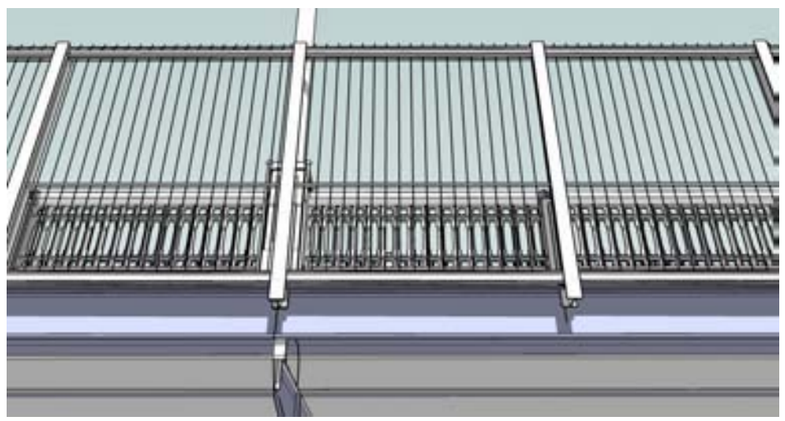
Additional design presented at the third Architect's Review Committee.
Presented at the third committee meeting.



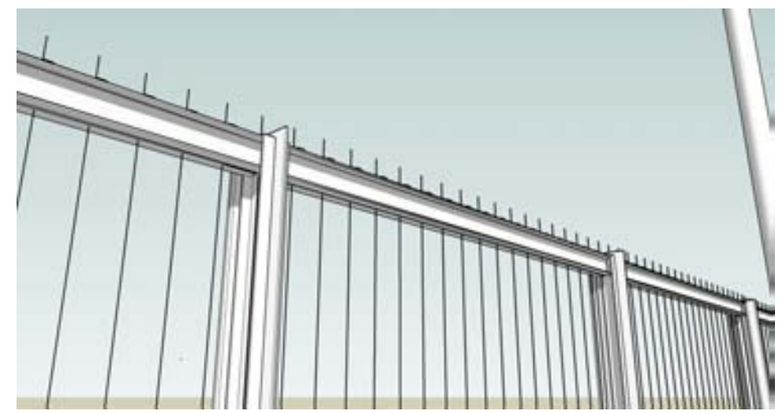
Elevation view from Aurora Avenue.



Perspective view showing sidewalk, existing railing with light pole and new fence.



Outside view showing vertical cables extending to the bottom of the existing railing.

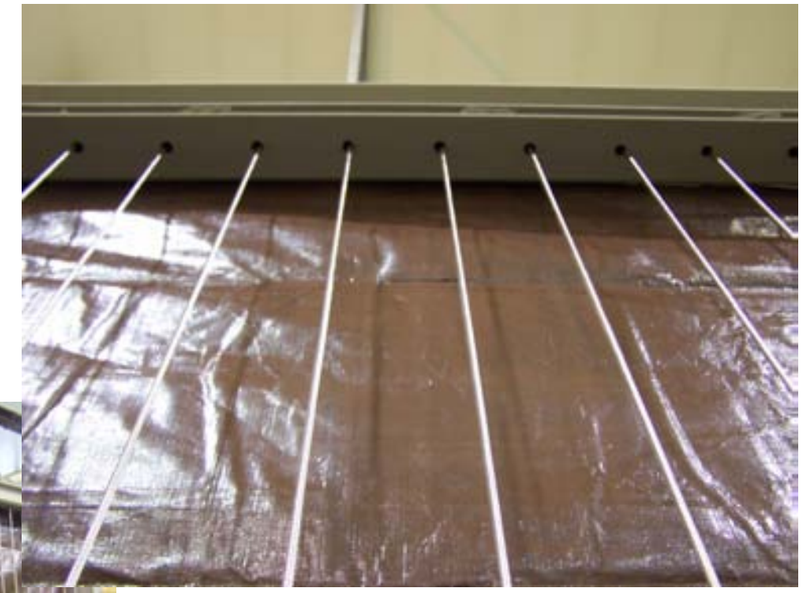


Close-up of fence top showing the frame, cables and pickets.

Final Design Concept: VERSION 1.0

Stainless steel cables with vertical top pickets

After the third meeting with the Architect's Review Committee.
Recommended design to be presented to the City of Seattle Landmarks Preservation Board.



Engineers placed brown plastic sheeting behind the model to make the vertical elements more visible for photographing.

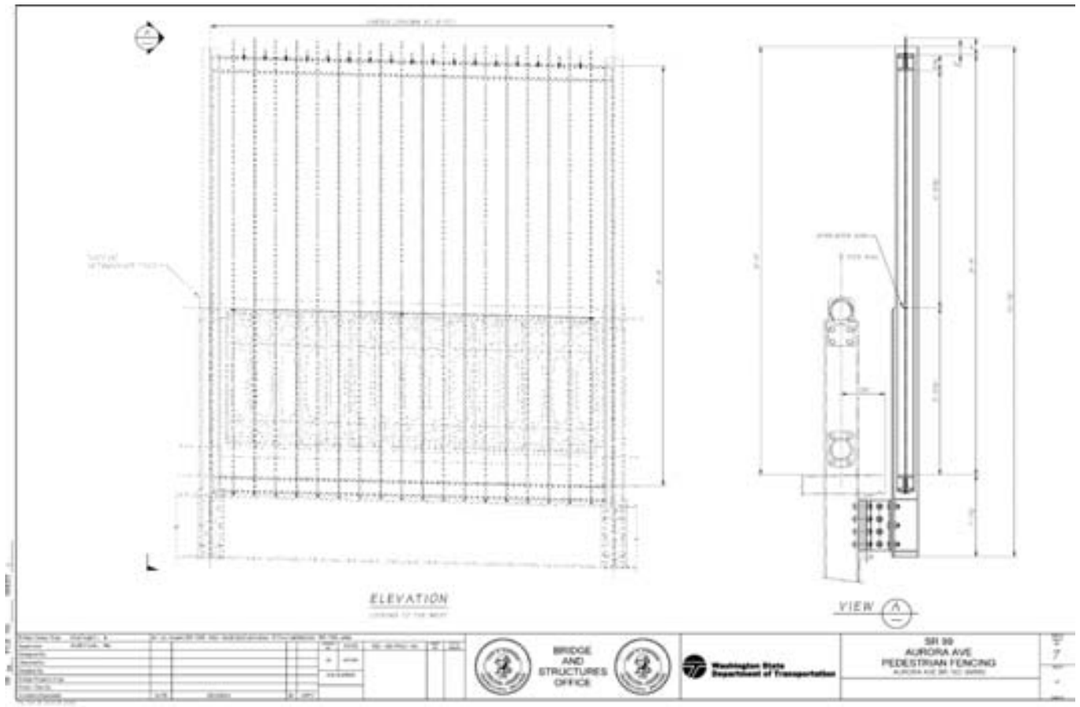
1/4” stainless steel cables are shown in this mockup. The final fence will use 3/8” diameter bars.

Final details will be somewhat different than those used in the mockup.

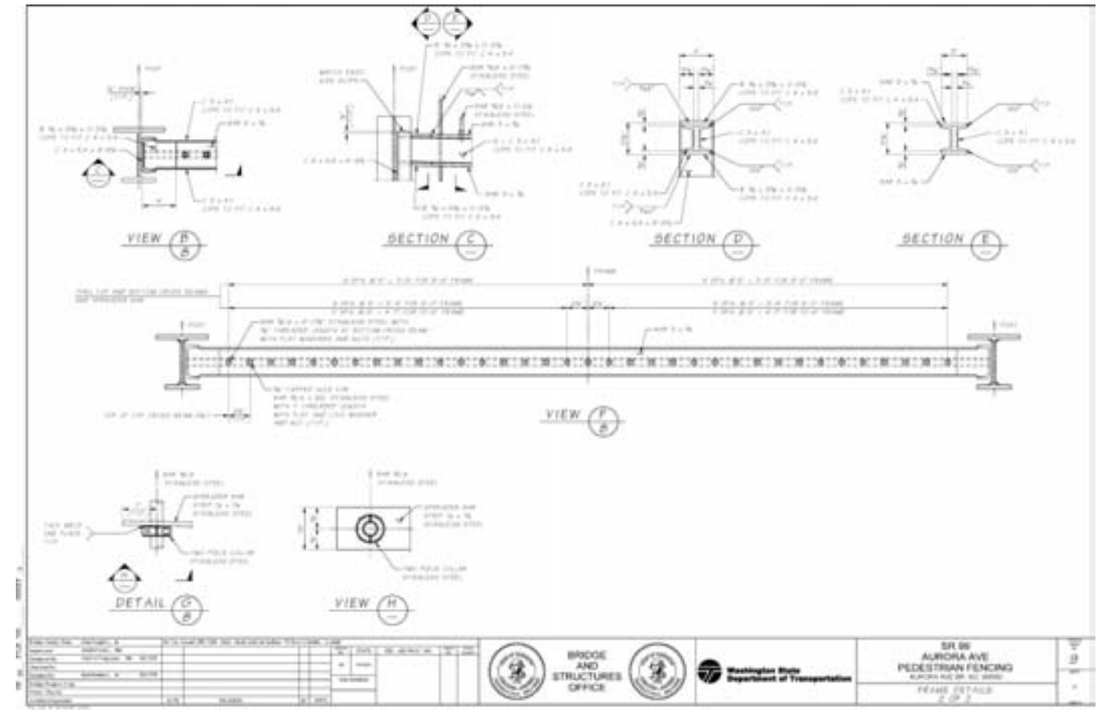
The welds connecting the plates will be ‘continuous’ in the final design. Those shown in the photo are ‘stitch’ welds.

Mockup of a Typical Fence ‘Frame’

WSDOT engineers built a full scale mockup of the frame assembly.



Outside view showing vertical bars extending to the bottom of the existing railing.

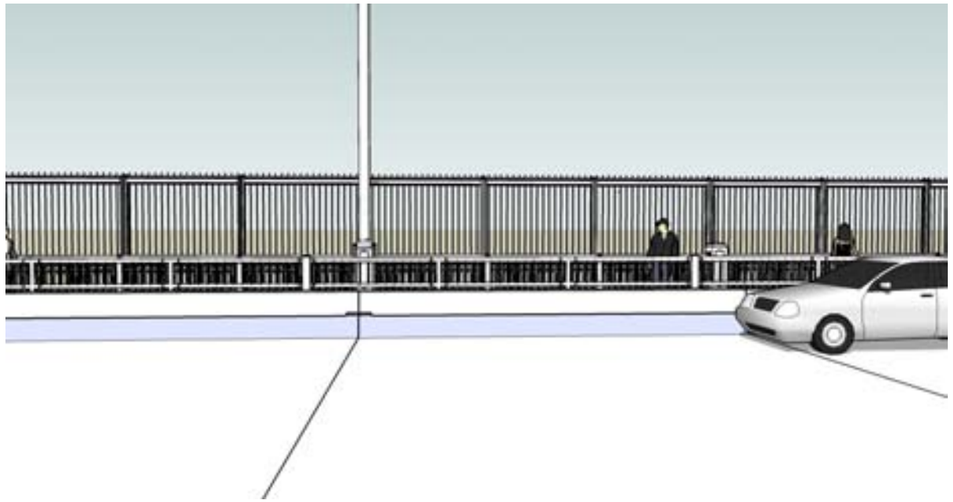


Engineer's preliminary construction drawing showing the top of the new fence and structural connections.

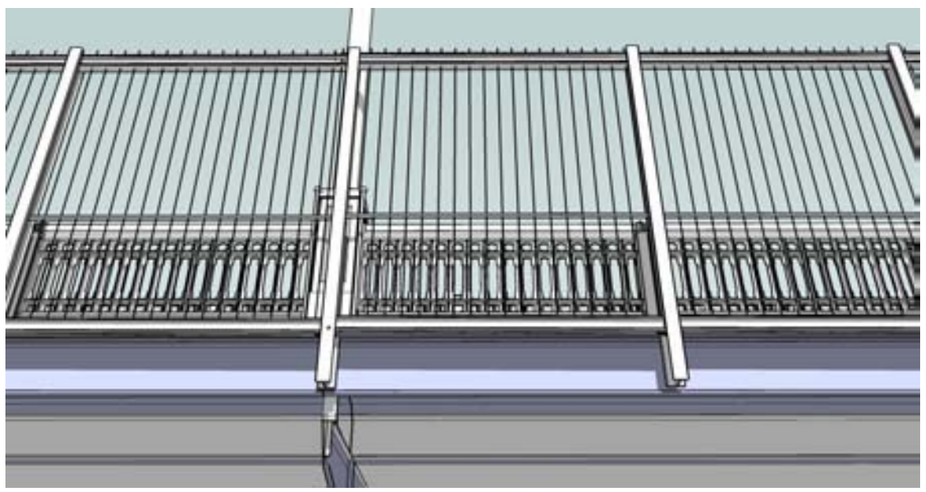
WSDOT engineers are in the process of assembling final contract drawings. These are two sheets amongst dozens to use by contractors to build the fence.

Bridge Engineer's Preliminary Construction Drawings

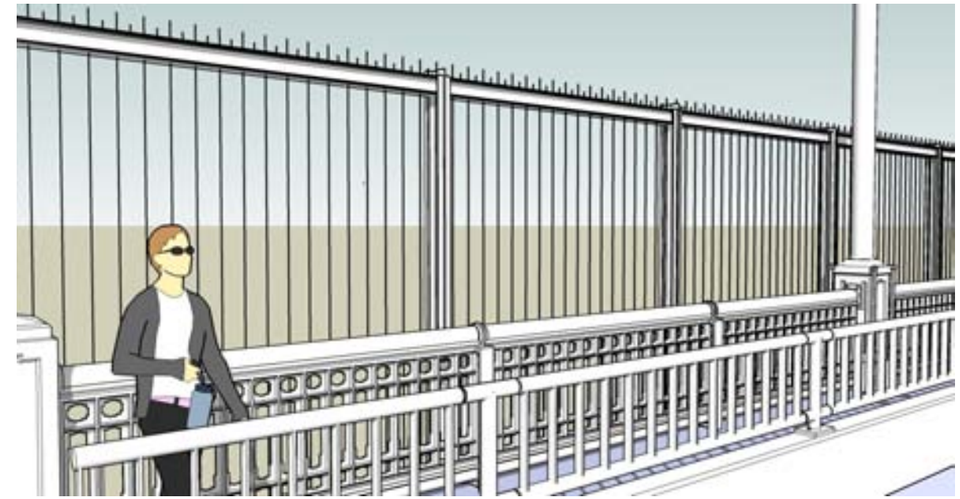
The drawings are preliminary and are not to be used for construction.



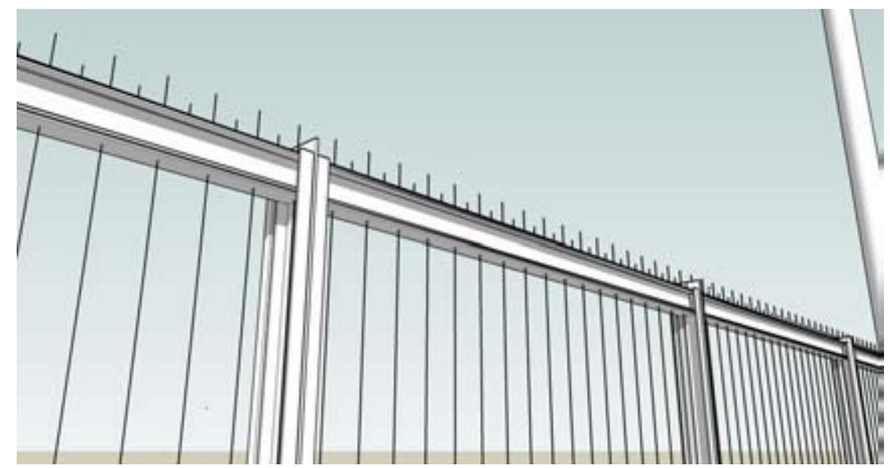
Elevation view from Aurora Avenue.



Outside view showing vertical bars extending to the bottom of the existing railing.



Perspective view showing sidewalk, existing railing and new fence.



Close-up of fence top showing the frame, bars and pickets.
Structural elements have been designed for smallest possible sizes.

Final Design Concept: UPDATE

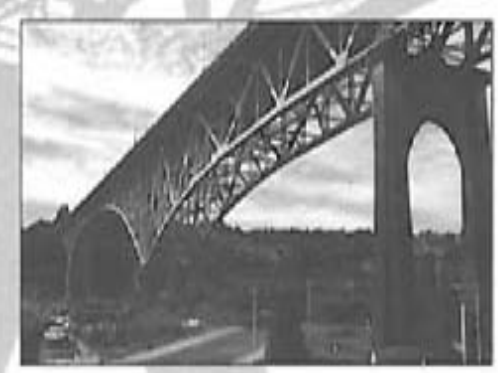
Before the fourth meeting with the Architect's Review Committee.
Final design refinements to be presented to the City of Seattle Landmarks Preservation Board.

Stainless steel 3/8" circular rods with 4" tall vertical top pickets and 2" intermediate pickets.

You're invited – SR 99 Aurora Bridge Fence advisory committee meetings

Washington State Department of Transportation

Design work is under way on a Washington State Department of Transportation project to add a fence along the outer edge of the State Route 99 Aurora Bridge. The fence will help to deter people from jumping off the bridge.



WSDOT has formed an advisory committee to help ensure our fence design reflects community values and issues, complements the bridge and surrounding landscape, and meets historic landmark standards.

You are invited to attend upcoming advisory committee meetings to learn about the project and provide feedback. At each meeting there will be a public comment period and the opportunity to fill out comment cards.

All meetings will be held at:

Place: Seattle Pacific University
Otto Miller Hall – Room 109
3307 Third Avenue West
Seattle, WA 98119

Time: 6 p.m. to 8 p.m.

Dates: August 12
September 9
September 30
October 21

Come to a Meeting!

August 12

September 9

September 30

October 21

You're invited – SR 99 Aurora Bridge Fence advisory committee meetings

August 12 • September 9 • September 30 • October 21

Can't attend the advisory committee meetings?

Members of the public who cannot attend advisory committee meetings can review the latest design concepts and submit comments on the project Web site at www.wsdot.wa.gov/Projects/SR99/AuroraBridgeFence.

You can also provide comments or schedule a presentation by contacting:

Greg Phipps
WSDOT Communications
401 Second Avenue S., Suite 400
Seattle, WA 98104
206-464-1265 or phippsg@wsdot.wa.gov

Washington State Department of Transportation

Title VI Statement to Public
WSDOT 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
This meeting site is accessible to persons with disabilities. Accommodations for people with disabilities can be arranged with advance notice by calling (enter the name of the event contact and phone number).

Washington State Department of Transportation
Northwest Region
PO Box 330310
Seattle, WA 98133-9710

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Washington State
Department of Transportation

SR 99 Aurora Bridge Fence

Fall 2008

The SR 99 Aurora Bridge connects Seattle's Fremont and Queen Anne neighborhoods across the Lake Washington Ship Canal and is listed on the National Register of Historic Places. In March 2008, the Washington State Legislature approved $1.54 million for fence design and directed WSDOT to begin designing a fence to deter people from jumping off of the bridge.

Design criteria and cost

In early 2009, the Legislature will consider funding for fence construction. The estimated cost for constructing a fence is $5.92 million. This includes material and fabrication costs as well as state and local sales taxes. It also includes the cost of activities needed to successfully complete the job, including those for labor, traffic control, erosion and sediment control, and daily inspections. The total estimated project cost, including design and construction, is $7.46 million.

WSDOT must consider a variety of criteria as it designs a fence. A fence design must:

- Be compatible with the historic character of the bridge.
- Gain approval from Seattle's Landmarks Preservation Board and the State Historic Preservation Officer.
- Meet engineering and constructability requirements.
- Fit within the construction budget.
- Be no more than eight feet nine inches above the sidewalk to allow for bridge inspections.

Preliminary fence designs

WSDOT is moving forward with a fence design that utilizes thin vertical elements, such as steel cables or rods. WSDOT feels such a design provides an aesthetically simple deterrent. It is also a design that minimizes the effect on the historic character of the bridge and views from the bridge, two values heard from the WSDOT advisory committee and the greater community.

Learn more

To increase awareness of the project and gain input from communities around the bridge, WSDOT is offering to host project briefings. These briefings can take various forms, such as informal brown bags or agenda items on community council meeting agendas. Organizations can learn more about the need for the project, why WSDOT is moving forward with a fence, and how they can offer comments and stay informed.

You can learn more about the project, review design concepts and submit comments by visiting WSDOT's Web site **www.wsdot.wa.gov/Projects/SR99/AuroraBridgeFence**.

You can also provide comments or schedule a briefing by contacting:

Greg Phipps
WSDOT Communications
401 Second Avenue S., Suite 400
Seattle, WA 98104
206-464-1265
phippsg@wsdot.wa.gov

Advisory committee

WSDOT convened an advisory committee made up of organizations and individuals that were involved in the City of Seattle's community conceptual design process. Advisory committee goals include ensuring the fence design reflects community values and issues, complements the bridge and surrounding landscape, and meets historic landmark standards. While WSDOT maintains decision-making authority regarding final design, the advisory committee plays a vital role in the development of fence designs and identification of a preferred design.

WSDOT also works with a technical design committee. This committee includes a WSDOT bridge architect and cultural resource specialist, and volunteer architects from Johnston Architects and Clinkston Brunner Architects.

Advisory committee members

- Fremont Chamber of Commerce
- Fremont Neighborhood Council
- Historic Seattle
- King County Crisis Clinic
- Department of Neighborhoods, Lake Union Neighborhood District
- Landmarks Preservation Board (former member)
- Office of King County Councilmember Larry Phillips
- Seattle Fremont Individuals and Employees Nonprofit to Decrease Suicides (FRIENDS)
- Queen Anne Community Council

Next steps

WSDOT will present the fence design to the Landmarks Preservation Board for review and decision and submit a design to the Legislature for funding in early 2009.

If the Legislature approves construction funding, WSDOT expects to complete its design and advertise the project to contractors in summer 2009. We will select a contractor through competitive bidding in fall 2009. Construction would begin in early 2010.

Washington State Department of Transportation

Americans with Disabilities Act (ADA) & Title VI Information:

Materials can be provided in alternative formats: large print, Braille, cassette tape, or on computer disk for people with disabilities by calling the Office of Equal Opportunity (OEO) at 360-705-7097. Persons who are deaf or hard of hearing may contact OEO through the Washington Relay Service at 7-1-1.

Title VI: WSDOT 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.

EXECUTIVE ORDER 05-05

ARCHEOLOGICAL AND CULTURAL RESOURCES

WHEREAS Washington has a rich and diverse cultural heritage, as represented by the numerous archaeological and historic sites that have been identified and located throughout our state; and

WHEREAS preservation and protection of these sites provides educational and cultural values for all citizens and leads to better understanding between cultures of our shared history; and

WHEREAS many citizens of Washington contribute their time and efforts to preserve and protect Washington's unique archaeological and historic sites, and traditional cultural places; and

WHEREAS these sites and places hold special cultural, historical, and spiritual significance for both tribal members and citizens of Washington; and

WHEREAS the Department of Archaeology and Historic Preservation (DAHP) and the Governor's Office of Indian Affairs (GOIA) have key statewide responsibility to enhance the public's awareness of the need and value of protecting Washington's heritage and establish effective consultation with Native American tribal governments.

NOW, THEREFORE, I, Christine O. Gregoire, Governor of the state of Washington, hereby order all state agencies to:

1. Review capital construction projects and land acquisitions for the purpose of a capital construction project, not undergoing Section 106 review under the National Historic Preservation Act of 1966 (Section 106), with the DAHP and affected Tribes to determine potential impacts to cultural resources. This review shall be required on all capital construction projects unless they are categorically exempted by DAHP. Cultural resources are defined as archeological and historical sites and artifacts, and traditional areas or items of religious, ceremonial and social uses to affected tribes. This review should be done as early in the project planning process as possible. Should DAHP identify a known culturally significant site in the area of a project, or should DAHP inform the agency of the potential that such a significant site is likely to be found in a project locale, the agency shall:

A. Work with DAHP and affected Tribes on appropriate archaeological survey and mitigation strategies consistent with state and federal laws.

B. Consult with affected Tribes in a way that includes a face-to-face meeting or other agreed upon method to discuss the project before a state agency completes the project design. The agency will work with GOIA and DAHP to identify affected Tribes and, if needed, seek their help to arrange a meeting to discuss the project in question. If an agency is unable to arrange such a meeting, it will promptly notify GOIA and DAHP of the situation.

C. Take reasonable action to avoid, minimize or mitigate adverse effects to the archeological or cultural resource.

D. Notify DAHP and GOIA, in advance, of any meeting with affected Tribes during which matters concerning cultural resources related to a capital construction project will be discussed, and extend invitations to both agencies to attend any such meetings. If representatives from DAHP or GOIA cannot attend, the agencies will provide DAHP and GOIA with detailed meeting notes.

2. Submit all agreements between state agencies and affected Tribes concerning cultural resources that are developed outside the Section 106 process for review and comment to DAHP. DAHP's review and comment on any such agreement must occur before the agency can sign such agreement. Consult with DAHP and affected Tribes during project design and prior to construction on projects not undergoing Section 106 review, as a condition to receiving state grants or loans for the purposes of a capital construction project. Should either DAHP or the affected Tribes identify cultural resources affected by the proposed project, the state agency or agencies will ensure that the grant recipient finds reasonable ways to avoid, minimize or mitigate impacts to the resource before state funding is disbursed. State agencies shall take steps to insure that this type of review is incorporated into their grant and loan management process.

3. The Office of Financial Management is directed to include in its capital budget instruction a requirement that agencies consult with DAHP and GOIA, as appropriate, as part of the budgeting process for pre-design, design and construction.

4. To the extent that they have not already received training, all appropriate state agency employees managing capital construction projects or pass through capital grants will attend Government-to-Government training and Cultural Resource training provided by GOIA and DAHP.

5. By January 15, 2007, DAHP shall report back to the Governor's Office and the Office of Financial Management on the implementation of this executive order including any recommendations on ways of improving implementation.

I invite institutions of higher education, public schools, statewide elected officials, boards, commissions, and others to implement the practices herein described within their agencies.

This executive order takes effect immediately.

IN WITNESS WHERE OF, I have hereunto set my hand and caused the seal of the state of Washington to be affixed at Olympia this 10th day of November, Two Thousand and Five.

CHRISTINE O. GREGOIRE
Governor of Washington

BY THE GOVERNOR:

_____
Secretary of State

standards for rehabilitation

-GUIDELINES-

The Approach

Exterior Materials
Masonry
Wood
Architectural Metals

Exterior Features
Roofs
Windows
Entrances + Porches
Storefronts

Interior Features
Structural System
Spaces/Features/Finishes
Mechanical Systems

Site

Setting

Special Requirements
Energy Efficiency
New Additions
Accessibility
Health + Safety

THE STANDARDS

1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.

2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.

3. Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.

4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.

7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.

10. New additions and adjacent or related new construction will be undertaken in a such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

Guidelines for Rehabilitation-->
HISTORICAL OVERVIEW - PRESERVING - rehabilitating - RESTORING - RECONSTRUCTING
main - credits - email

City of Seattle Legislative Information Service

Seattle Municipal Code

Information retrieved May 11, 2009 4:36 PM

Title 25 - ENVIRONMENTAL PROTECTION AND HISTORIC PRESERVATION
Chapter 25.12 - Landmarks Preservation
Subchapter II. Definitions

SMC 25.12.080 Certificate of approval.

"Certificate of approval" is written authorization which must be issued by the Board before any alteration or significant change may be made to the controlled features of a landmark or landmark site, or during the pendency of designation proceedings, to a site, improvement or object after its nomination has been approved by the Board for further proceedings. The term "certificate of approval" includes written approval of a preliminary design of a project as well as its subsequent design phases as provided for in Section 25.12.680 E.

(Ord. 119121 Section 3, 1998: Ord. 109125 Section 16(part), 1980: Ord. 106348 Section 1.03(5), 1977.)

***Search for ordinances* passed since the last SMC update (ordinances codified through Ordinance 122825) that may amend Section 25.12.080 .**
Note: this feature is provided as an aid to users, but is not guaranteed to provide comprehensive information about related recent ordinances. See also Recent Legislation and Council Bills and Ordinances.

For research assistance, contact the Seattle City Clerk's Office at 206-684-8344, or by e-mail at clerk@seattle.gov. For interpretation or explanation of a particular SMC section, please contact the relevant City department.

Washington State
Department of Transportation

SR 99 - Aurora Bridge Fence

Summary of Alternatives

“No Build” Alternative

Description

This alternative would make no alterations to the Aurora Bridge.

Advantages

- Lowest cost alternative
- Preserves view from the bridge
- No impact to cultural resources

Disadvantages

- Will not reduce incidence of suicide attempts from the bridge

Summary of Decision

The State Legislature approved funding for the design of a fence alternative as part of the 2008 Supplemental Transportation Budget.

“Close to Pedestrians” Alternative

Description

This alternative would close the sidewalks of the bridge, prohibiting pedestrians and bicyclists from crossing the structure.

Advantages

- Reduces the likelihood of individuals traveling across the Aurora Bridge with the intent to attempt suicide.
- Minimal cost.

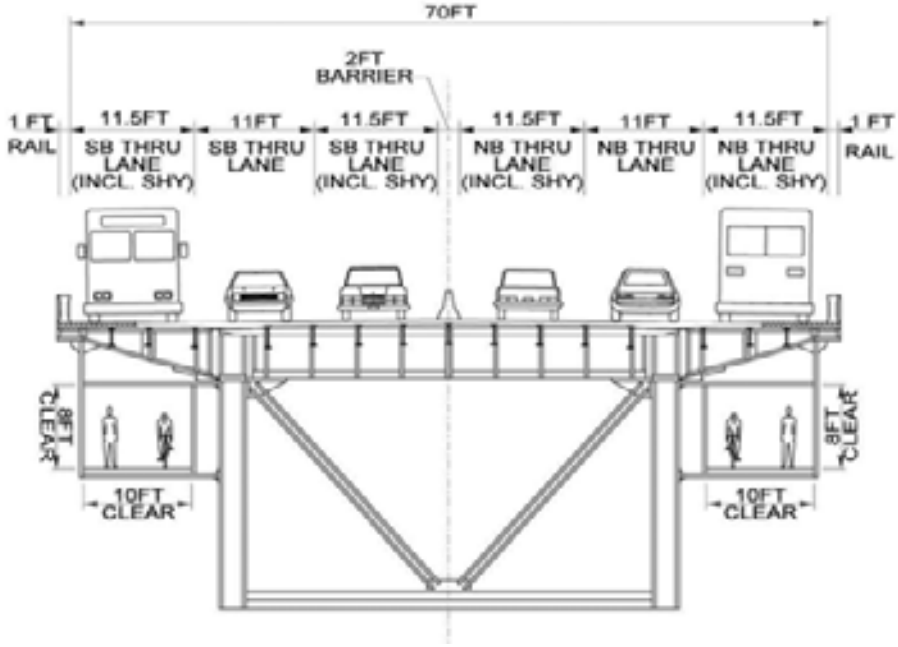
Disadvantages

- Removes a viable crossing for pedestrians and bicyclists.
- Does not deter individuals from driving onto the bridge with the intent to attempt suicide and does not prevent individuals from overcoming the closure to commit suicide.

Summary of Decision

While this alternative may reduce the total incidence of suicide from the bridge, it adversely affects pedestrian/bicycle accessibility and does not go far enough to reduce the rate of suicide by jumping from the bridge.

“Suspended Walkway” Alternative



Description

This alternative would construct an enclosed structure attached underneath the Aurora Bridge for pedestrian and bicycle travel.

Advantages

- Provides a wider crossing for bicyclists and pedestrians, and allows the vehicle lanes to be widened.
- Reduces the likelihood of individuals traveling across the Aurora Bridge with the intent to attempt suicide.

Disadvantages

- High cost (estimated at $29 Million in 2003).
- Surveillance or additional police patrols needed to ensure safety of individuals crossing in a closed structure. Is contrary to the principles of CPTED (Crime Prevention Through Environmental Design).
- Does not deter individuals from getting onto the bridge with the intent to attempt suicide.
- Highly adverse effect to the bridge’s appearance.

Summary of Decision

The cost of this alternative is very high and does not go far enough to reduce the rate of suicide by jumping from the bridge.

“Net” Alternative

Design visualization of steel net on the Golden Gate Bridge.

Description

This alternative would construct a net below the edge of the Aurora Bridge that would deter or “catch” individuals that attempt suicide from the bridge.

Advantages

- Deters suicide attempts, and prohibits those individuals who do jump off of the bridge from falling to the ground/water elevation.
- Preserves drivers’ views from the bridge.

Disadvantages

- Increases bridge maintenance costs to keep net clear of debris. Increases bridge inspection costs. Prohibits deployment of UBIT (Under Bridge Inspection Truck) since the fence extends beyond 3’-6” from the roadway deck.
- Adverse effect to the bridge’s appearance.
- Difficult to prevent individuals from jumping again after landing on net.
- Attracts nesting birds.

Summary of Decision

The cost of a net is higher than that of a fence, and will result in higher maintenance costs. The net has an adverse effect to the bridge’s appearance.

“Glass Panels” Alternative

Photo of glass panels on a pedestrian bridge in Shoreline.

Description

This alternative would construct a barrier on the Aurora Bridge composed of glass panels.

Advantages

- Preserves drivers’ views from the bridge if transparent panels are used.
- Will significantly reduce the incidence of suicide attempts from the bridge.

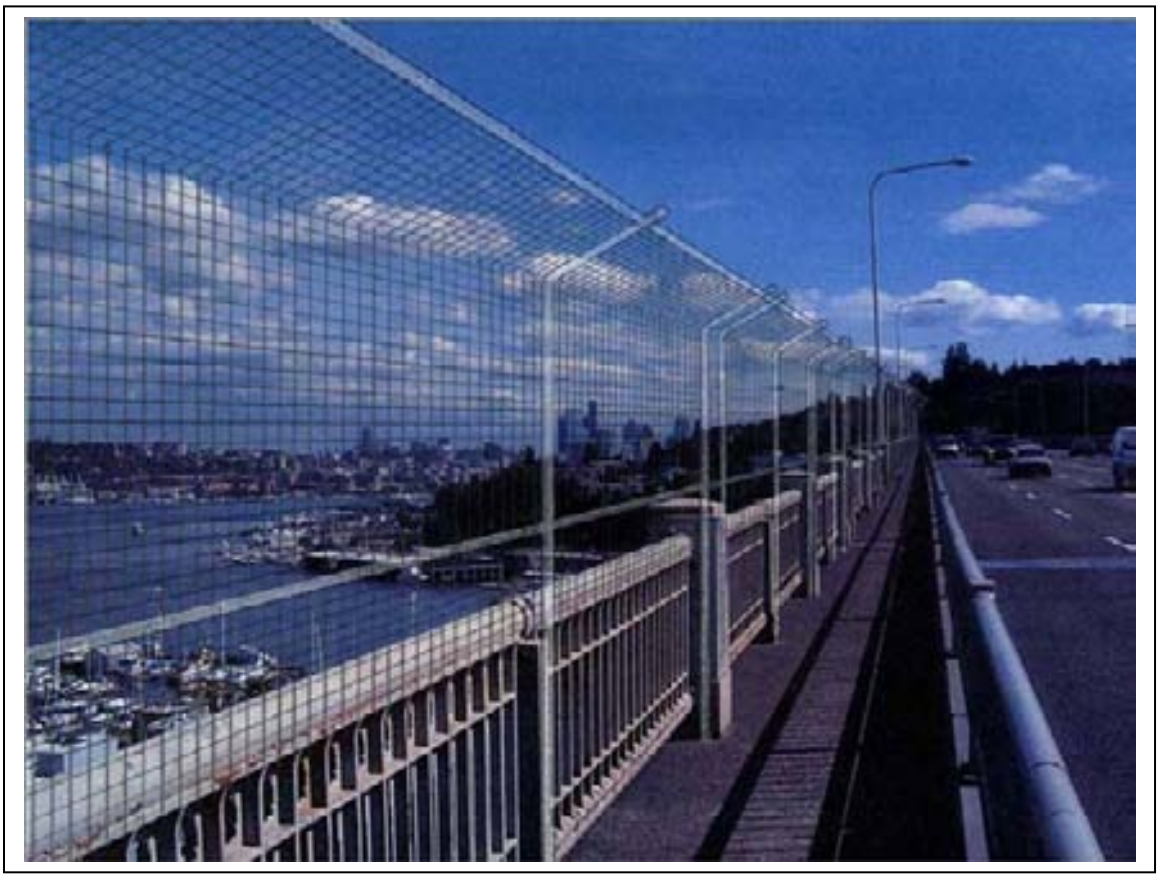
Disadvantages

- High maintenance costs for cleaning and graffiti removal.
- Will add significant wind loads to the bridge because it is a solid surface.
- Frame of glass panels has an adverse effect on bridge appearance.
- Poses risk to birds as they attempt to fly through glass.

Summary of Decision

The wind loads that would be added to the structure as a result of adding a large solid surface to the bridge are significant enough to eliminate this as a feasible option.

“Mesh Fence” Alternative



Description

This alternative would construct a mesh fence on the Aurora Bridge.

Advantages

- Will significantly reduce the incidence of suicide attempts from the bridge.

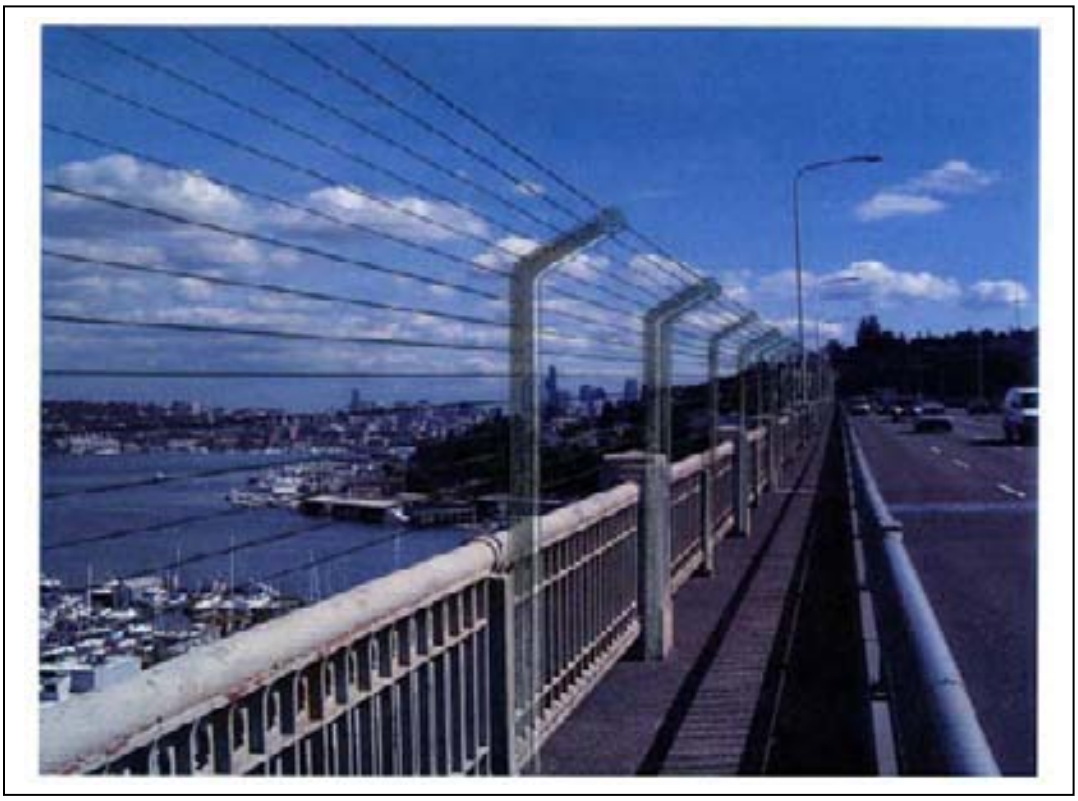
Disadvantages

- Adverse effect to views to/from the bridge.
- Collection of snow/ice during inclement weather has the potential to form a frozen solid surface, adding significant wind loads.

Summary of Decision

The potential for high wind loads that would be added to the structure as a result of freezing snow/ice collecting on the mesh fence is significant enough to eliminate this as a feasible option.

Horizontal Bars Alternative



Description

This alternative would construct a fence with horizontal elements on the bridge.

Advantages

- Will significantly reduce the incidence of suicide attempts from the bridge.
- Horizontal elements allow for a better view from the bridge from the pedestrian perspective than vertical elements or mesh.

Disadvantages

- Adverse effect to views to/from the bridge.
- Horizontal elements are contrary to the existing vertical elements of the existing railing.
- Horizontal elements could be used as a “ladder” for individuals intending to commit suicide, and pose an attractive nuisance for climbing to children and others not intending to commit suicide.

Summary of Decision

The potential to scale the fence by climbing the horizontal elements like a ladder make this alternative less desirable than one with vertical elements.

“Electric Fence” Alternative

Description

This alternative would add an electrical component to the existing railing that would deliver an electric shock when touched.

Advantages

- Deters individuals from scaling the existing railing with the intent of jumping from the bridge.
- Minimal visual impact.

Disadvantages

- Could deliver electric shock to any pedestrian.
- Not effective in stopping individuals who jump quickly over the railing.
- Highly negative public perception.

Summary of Decision

The potential for injuring pedestrians who inadvertently touch the electrified component eliminates this as a feasible alternative.

“Replace Existing Rail” Alternative

Description

This alternative would remove the existing railing from the Aurora Bridge and construct a new tall railing.

Advantages

- Allows for a uniform appearance of an outside barrier.

Disadvantages

- Significant adverse effect to the bridge’s appearance.

Summary of Decision

Removal of the existing railing has a significant adverse effect on the bridge, which is a landmark due to features such as the railing. Adding a fence behind the existing railing, preserving the historic element of the bridge, is preferred.

“Surveillance and Patrols” Alternative

Description

This alternative would add surveillance camera and human patrols to the Aurora Bridge.

Advantages

- Preserves views from the bridge and no adverse impact to cultural resources.

Disadvantages

- Requires around-the-clock staffing.
- Must have multiple human patrols due to length of bridge.
- Individuals who wish to commit suicide from jumping from the bridge may still be able to do so.
- Would require greater illumination of the bridge to spot potential jumpers.

Summary of Decision

This alternative may deter some individuals who wish to commit suicide from the bridge, but cannot reduce the incidence of suicide as effectively as a physical barrier.

Washington State Department of Transportation

Prior to Traffic Barrier Installation

Washington State Department of Transportation

Existing Traffic Barrier and Bridge Railing

Washington State Department of Transportation

Existing Railing

Washington State Department of Transportation

West Side of Bridge—Steel Span

Washington State Department of Transportation

West Side of Bridge—Concrete Span

Washington State Department of Transportation

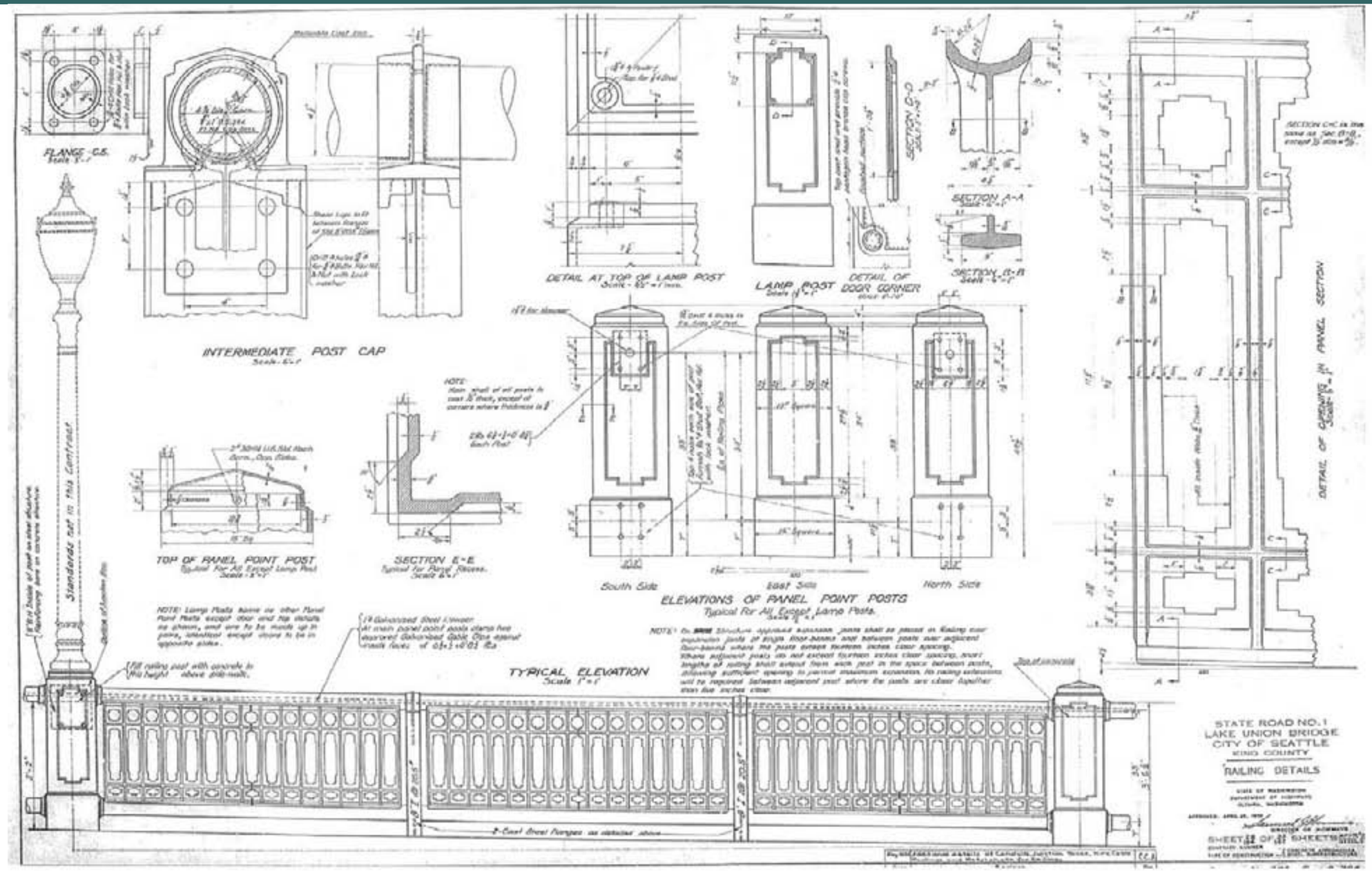
East Side of Bridge—Concrete Span

Example of Conduit to be Removed

Bridge Inspection Truck in Operation

Washington State Department of Transportation

Aerial View of Bridge


FLANGE C.S.
INTERMEDIATE POST CAP
DETAIL AT TOP OF LAMP POST
LAMP POST
DETAIL OF DOOR CORNER
SECTION D-D
SECTION A-A
SECTION B-B
TOP OF PANEL POINT POST
SECTION E-E
South Side
East Side
North Side
ELEVATIONS OF PANEL POINT POSTS
Typical For All Except Lamp Posts.
TYPICAL ELEVATION
Scale 1" = 1'
Standards not in this Contract
DETAIL OF OPENING IN PANEL SECTION
STATE ROAD NO. 1
LAKE UNION BRIDGE
CITY OF SEATTLE
KING COUNTY
RAILING DETAILS

Washington State Department of Transportation

SR 99 Aurora Bridge Fence Engineering Criteria

STATEMENT OF PURPOSE

The purpose of this project is to design and implement a fence that will help deter pedestrians from accidentally or intentionally falling over the existing railing on the Aurora Street Bridge.

MAINTENANCE

To allow access by an Under Bridge Inspection Truck (UBIT), the height of the fence cannot exceed 10 feet above the roadway height.

Bridge Inspectors, maintenance personnel, and contractors must be able to remove fence panels to allow more detailed maintenance and preservation activities.

DESIGN LOADS AND STRUCTURAL ISSUES

Any design concept will require engineering review and approval from the Washington State Department of Transportation (WSDOT) Bridge and Structures Office and must comply with American Association of State Highway and Transportation Officials (AASHTO) codes.

Bridge Geometry ~ Bridge # 99/560

Width	60'
Length	1450' along main truss (three spans), 2953' entire length
Height	175' at South main Pier (Pier S1)
	165' at North main Pier (Pier N1)

Dead Loads

Frame Elements:

Frame must be designed to handle dead load plus 150lb per cable.

Existing Bridge Structure:

Fence structure must be as light as possible to minimize the additional load applied to the existing bridge structure.

Live Loads ~ AASHTO 13.8.2, AASHTO 13.9.1

All Elements:

50 lb/ft acting on vertical and horizontal elements simultaneously.

200 lbs in any direction, at any location, acting simultaneously with 50 lb/lf load.

Additional point load in any direction at top of posts simultaneously with 50 lb/lf load.

This load = 200 lbs + 0.05 * Post Spacing.

Bicycle loads are inclusive of pedestrian loads. Bicycle specifications are geometric restrictions to the pedestrian loads.

Wind Loads ~ AASHTO 3.8

At this site:

Wind velocity: 136 mph ~ at 175 ft height

Site specific factors:

Wind condition = "Open Country" per AASHTO Table 3.8.1.1-1

This is due to the height above the city and proximity to the open water.

Base wind speed = 100 mph. WSDOT standards.

Wind pressure: 74psf

Additional wind load from pickets deemed insignificant.

Design memo dated January 18, 2007 does not apply to this structure due to its height and type.

Pedestrian Railing Geometry

AASHTO 13.8.4:

Minimum height = 42 inches.

Note that project specific overall height is 10 ft. Therefore, the allowable clear opening maximum for above 42 inches must be determined.

Clear opening maximum 6 inches below 27 inch height when both horizontal and vertical elements are used.

Clear opening maximum 8 inches above 27 inch height when both horizontal and vertical elements are used.

The above rail spacing should not apply to chain link or metal fabric.

Openings no larger than 2 inches for chain link or metal fabric.

International Building Code (IBC):

Minimum height = 42 inches

Openings:

Between 0” and 34” of height - Must ensure a 4” diameter sphere cannot pass.

Between 34” and 42” of height - Must ensure an 8” diameter sphere cannot pass.

Design Load = 50 lb/lf or 200 lbs at the top of guard (fence).

Washington State Department of Transportation

SR 99 Aurora Bridge Fence Common Questions

WSDOT, the city of Seattle, King County and community members from the Fremont and Queen Anne neighborhoods are working to prevent people from committing suicide by jumping off the Aurora Bridge in Seattle. These efforts will also help those who must deal with the aftermath of suicide: family and friends of the victim; people who live, work and play below the bridge and emergency response staff.

While suicide has been a concern since the Aurora Bridge was built in the 1930s, community members and government agencies were spurred to action in 2006 due to a recent increase in the number of people jumping from the bridge and the growing number of people who live, work and recreate below the bridge. At the request of community members, WSDOT and city staff began examining the issue in early 2006. Community members began a series of meetings to address the issue in late 2006 and have been working with the state, county and city to develop solutions.

What is WSDOT doing to prevent suicides on the Aurora Bridge?

WSDOT is designing a fence to deter people from jumping off of the bridge. This effort follows the city of Seattle's installation of signs and phones on the Aurora Bridge in 2006 to connect people directly to a suicide hotline.

What is the timeline for installing a fence on the bridge?

The project received design funding during the 2008 legislative session. Design work started in spring 2008. We expect the construction phase to start in late 2009, although actual fence installation won't begin until early 2010 because of the time it will take to manufacture the fence. Construction would be complete by the end of 2010.

Why fencing?

Adding fencing to the bridge is the most cost effective and practical answer to this issue. Fencing has these advantages:

- Successful record of deterring suicides on bridges and other elevated structures
- Lower cost over its life cycle compared to other options
- Preserves existing bicycle and pedestrian routes

How much would the project cost?

The estimated total budget for the proposed suicide prevention fence is $7.46 million. The Washington State Legislature provided $1.54 million for design during the 2008 legislative session. The Legislature will consider $5.2 million in construction funding during the 2009 legislative session.

Why does it cost $5.9 million to build a fence?

As you might expect, our construction budget includes the costs for fence materials and fabrication. However, the budget also includes state and local sales tax, and funds these activities that a contractor needs to perform to successfully complete the job:

- purchasing and transporting construction materials and equipment.
- hiring, training, paying, and providing benefits for skilled workers to erect the fence.
- providing safety measures or constructing platforms to ensure worker safety when attaching the fence.
- traffic control devices and staff to keep traffic moving during construction and keep workers safe.
- erosion and sediment control.
- daily inspection of construction work and contract administration to ensure the fence is built to our specifications.

Why are you considering vertical steel cables in your design?

We want to make sure to design an effective fence. Following guidance on design of safety barriers, we eliminated horizontal elements from consideration because they can be perceived as easy to climb. Mesh and diagonal elements may send a similar message. Vertical components will serve the purpose of preventing individuals from jumping over the existing railing while being hard to climb. Steel cable or “wire rope” has an advantage in that it is very light both in terms of weight and in visual appearance.

How does the lifespan of vertical cables compare to steel bars?

The exact material chosen is a factor in lifespan. Stainless steel has a high resistance to corrosion and does not have to be painted, requiring less maintenance than metal bars. Cables can also be replaced individually, if needed.

Why is preventing suicides from the Aurora Bridge a priority for WSDOT?

Improving safety is a top priority for WSDOT. The issue of suicides on the Aurora Bridge has a wide range of effects. We're concerned for the well being of those who consider suicide and the aftermath of suicides on their friends and families. Preventing suicides also protects the growing number of people who live, work and travel below the bridge. These people are at risk of physical harm when someone jumps from the bridge and are often traumatized by experiencing the aftermath of suicide attempts.

Preventing suicides also enhances safety for emergency responders, including those who must make emergency dives into the murky and debris-filled waters of the Ship Canal to save people who jump from the Aurora Bridge, and for those who often risk their lives trying to restrain people from jumping.

Do suicide prevention fences actually work?

Suicide prevention barriers have been successful on bridges, such as the Bloor Street Viaduct in Toronto, the Memorial Bridge in Augusta, Maine, the Colorado Street Bridge in Pasadena, the Duke Ellington Bridge in Washington D.C.and the Clifton Suspension Bridge in Bristol, England. Fencing has also been effective on the Space Needle, the Eiffel Tower, and Mount Mihara in Japan.

I've heard the fence can only be eight feet nine inches above the sidewalk to allow for under bridge inspections. How can you prevent people from getting over the fence by climbing first onto the outer railing?

Our designers are examining alternatives that would prevent successful fence climbing. Placing an overhanging element on the fence may block individuals from being able to grasp or scale the top of the fence. The design may also incorporate elements such as pickets that would substantially reduce the chance of being able to get a hand or foothold near the top of the fence.

How can you ensure that the fence you design will effectively deter suicides?

Research indicates that just having a barrier in place is an effective deterrent for individuals who wish to attempt suicide by jumping. There is evidence that suicides by jumping off tall structures are highly impulsive acts, sometimes with only seconds between the impulse and the jump. Barriers make jumping more difficult and buy time for reconsideration or intervention by others. Along with physical design features that make the fence hard to climb, our design will aim for what is known as face validity. Face validity is the impression that it would take considerable effort to overcome the fence.

Even if the fence is an effective deterrent, won't people go elsewhere to commit suicide?

That is a common perception; however, studies show otherwise. For example, a 1978 University of California Berkeley study of 500 people who were stopped from jumping off the Golden Gate Bridge showed that only about six percent went on to commit suicide in some other way. In another study, researchers looked at two bridges a block apart in Washington, D.C. After fencing was installed on the Duke Ellington Bridge, they found no corresponding increase in the number of suicides on the nearby Taft Bridge.

Did you look at other ways to prevent suicides?

Many have suggested using netting instead of a fence. Although the Legislature asked WSDOT to build a fence, we also examined netting and determined that netting is not feasible because it would:

- impede inspections of the underside of the bridge.
- catch trash and birds, requiring frequent and maintenance to clear debris.
- need to be replaced on a regular basis.
- present unique challenges for emergency personnel responding to suicide attempts.

Officials chose a net for the Golden Gate Bridge's proposed suicide deterrence project. Why is a net feasible for the Golden Gate Bridge and not the Aurora Bridge?

The Golden Gate Bridge is a long span suspension bridge with many of the key structural components close to or above the roadway surface. The Aurora Bridge is a cantilever truss bridge with the key structural components completely below the roadway surface. On the Golden Gate Bridge, a net 20 feet below the sidewalk does not restrict the ability of inspection and maintenance crews to access structural components. On the Aurora Bridge, a similar net would severely impede inspection and maintenance operations, and block access by an under bridge inspection truck (UBIT).

The Golden Gate Bridge extends over water and unpopulated land. More than two thirds of the Aurora Bridge extends over residential and commercial areas. A net extending 20 feet below and 20 feet outside of the bridge would be in lateral and vertical conflict with many structures. In addition, the “visual footprint” of the bridge would become significantly larger when viewed from neighborhoods below the bridge.

Why does the Golden Gate Bridge net option have lower maintenance costs than the fence options?

The fence options proposed for the Golden Gate Bridge had different characteristics than the proposed Aurora Bridge fence. WSDOT is proposing an eight foot nine inch fence made of identical removable panels. The Golden Gate Bridge fence options were 10-12 feet tall, not removable, and incorporated glass lookout areas. Because the Golden Gate fence options were tall and fixed in place, special gates, safety harnesses, and new walkways would be needed to access areas behind the fence. This is a departure from the way the maintenance staff currently uses to access the Golden Gate Bridge, and is estimated to add over three hours per day in lost productivity for their maintenance crew.

Maintenance and inspections on the Aurora Bridge are accomplished through the use of a UBIT, which has an arm that extends over and below the bridge. We are designing our proposed fence so the ability to access the bridge with a UBIT would not change. In cases of special inspection or maintenance needs, fence panels could be temporarily removed from our fence to allow unrestricted access.

The use of clear panels in the Golden Gate Bridge fence options also required a heavy amount of cleaning to remove grime and sea spray, which added labor and equipment cost to the maintenance estimate.

What about closing the bridge to pedestrians?

The city of Seattle, and bicycle and pedestrian advocacy groups oppose this idea. WSDOT is particularly concerned that closing the sidewalk may encourage bicyclers to ride in traffic lanes, which would increase the risk of collisions. Pedestrians (and bicyclists not wishing to ride in a travel lane) would either have to board a transit bus to cross the bridge or detour to the Fremont Bridge. As a result, the idea is not feasible.

What about moving the sidewalks underneath the bridge, as recommended in the SR 99 Route Development Plan?

The SR 99 Route Development Plan recommended wider travel lanes on the bridge along with a median barrier to physically separate opposing traffic. This option would provide an enclosed structure attached underneath the Aurora Bridge for pedestrian and bicycle travel. However, this conceptual project is outside the scope of the current project and would present these challenges:

- Construction cost. The conceptual project would require a significant investment from the Legislature, perhaps more than double the $29 million estimate provided in the RDP due to inflation in labor costs and materials.
- Public safety. Pedestrians and bicyclists on an under-the-bridge walkway would not be visible from vehicles on the bridge. This could encourage crime, and require safety and security measures, such as escape ladders and surveillance cameras.
- Aesthetics. The Aurora Bridge is listed on the National Register of Historic Places. A walkway suspended underneath the bridge would need to garner the support of the community and must be approved by city and state preservation boards.
- Maintenance and inspection issues. Ongoing maintenance and regular inspections would be difficult and costly since walkways are separate structures.

I've heard that WSDOT can't add a median barrier because the bridge can't support the additional weight. How can the bridge support the concrete barrier and railing on the sidewalk that was added in 2005 and the fence you are designing now?

An important consideration of any bridge alteration is where additional weight is placed. Weight placed in the center or roadway deck (the flat piece that vehicles travel on) of the bridge would have a different impact than weight added to the edge of the bridge.

For example, adding weight to the deck of the bridge may exceed the maximum weight that the deck was designed to carry, which would require significant structural reinforcement. However, the bridge can safely support the added weight of the concrete and steel pedestrian barrier on the edges of the bridge because the additional weight is supported by large steel girders instead of by the roadway deck. The weight of a new fence would be supported similarly.

Why did you start the fence design before determining if the bridge can support the weight of a fence?

Our bridge engineers reviewed the data, ran preliminary calculations, and gave the go-ahead to start design. Following recommendations released by FHWA after the I-35 bridge collapse in Minnesota, we are conducting a detailed analysis of how additional weight affects specific bridge components, as well as taking the opportunity to verify the bridge's load capacity. The results from that analysis are expected later this year.

Why didn't WSDOT formally involve the community as you developed a cost estimate and looked at alternatives to fencing?

We developed our cost estimate in response to a request from the Legislature. That request specifically asked WSDOT to estimate costs for fencing. Although we investigated other options, such as netting and closing the bridge to pedestrian, neither alternative was feasible for the reasons described above.

Ultimately, it will be up to the Legislature to decide whether to fund the construction of the project. Community members who oppose installing a fence on the Aurora Bridge can get involved by contacting the Legislature and expressing their viewpoint.

Why did WSDOT form a citizen's advisory committee for this project?

The Aurora Bridge is a designated City of Seattle landmark and listed on the National Register of Historic Places. The committee will help ensure our fence design reflects community values and issues, complements the bridge and surrounding landscape, and meets the permit requirements of the City of Seattle's Landmarks Preservation Board and the Washington State Department of Archaeology and Historic Preservation. Establishing an advisory committee is an integral part of a concept known as Context Sensitive Design.

What is Context Sensitive Design?

Context sensitive design (CSD) is a process that broadens the focus of project development to look beyond the basic transportation issues, and develop projects that are integrated with the unique contexts of the project setting. The CSD concept is a collaborative effort that obligates the participants to understand the effects and trade-offs associated with project decisions. The CSD process is endorsed by the Federal Highway Administration and WSDOT has accepted it by executive order.

The technical design committee also will provide input to the WSDOT design team. The technical design committee will be comprised of experts in historic preservation and bridge design. The design team will integrate the recommendations and values of the advisory committees into the fence design.

Will the advisory committee choose the fence design?

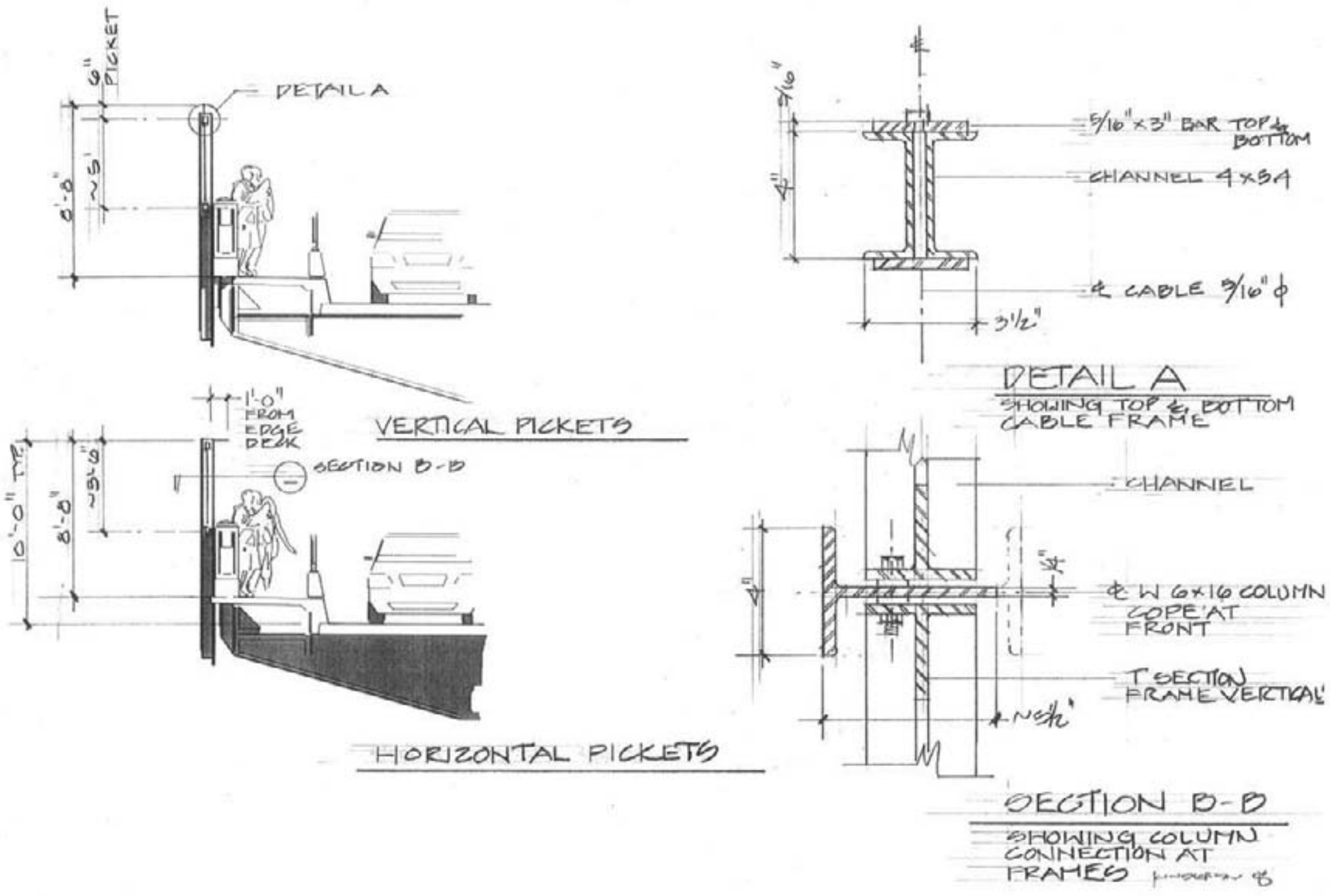
No. WSDOT will decide which preliminary design it submits to the Landmarks Preservation Board this November. However, the advisory committee will play a vital role in the development of fence designs and identification of a preferred design for board review.

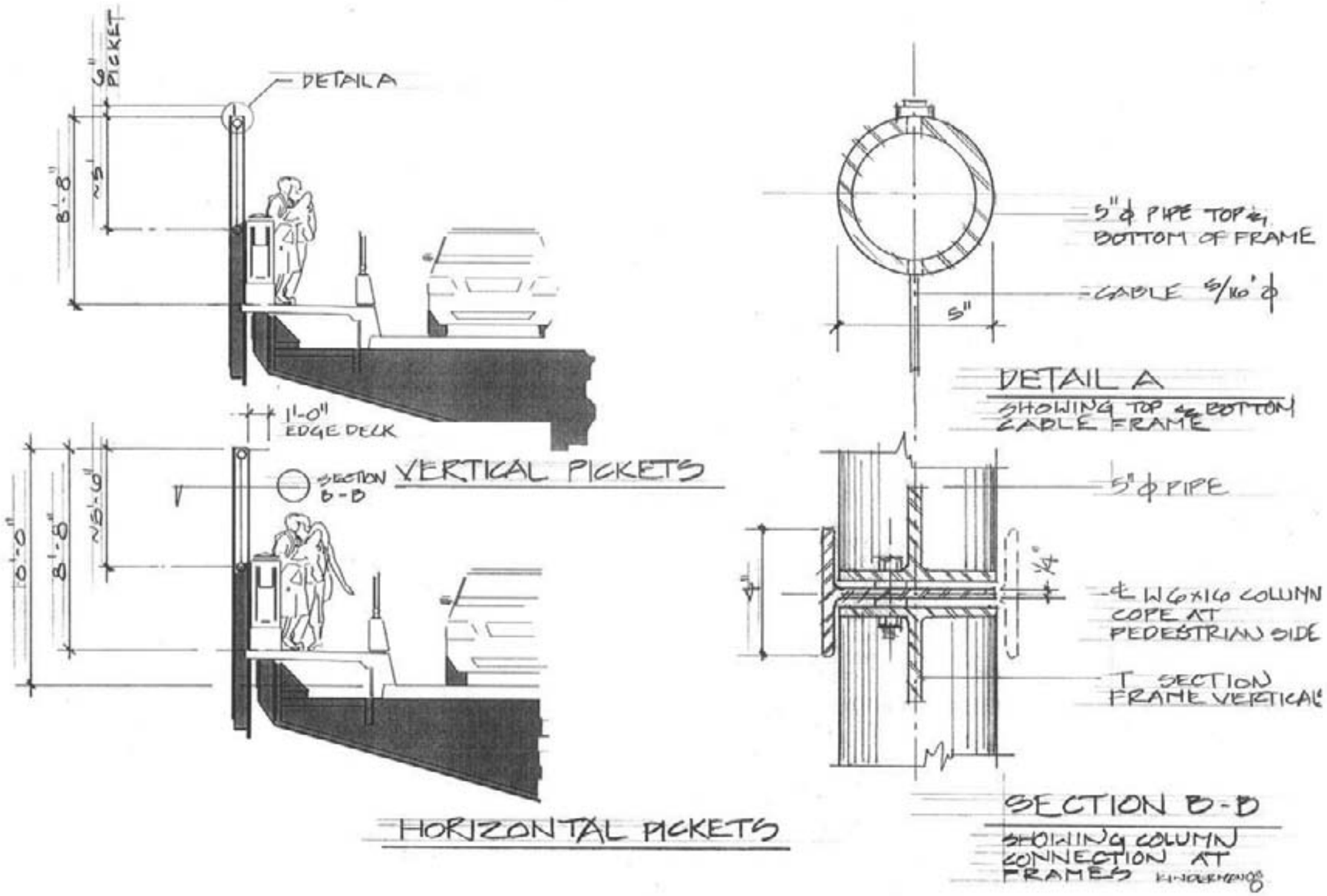
How can the public stay involved in this project?

The public is invited to attend advisory committee meetings to review design progress, make comments and fill out comment cards. Members of the public who cannot attend advisory committee meetings can review the latest design concepts and submit comments on the project home page.

Why not spend project funds on suicide prevention measures instead, such as mental health counseling and education campaigns?

This project is funded through the gas tax. The 18th amendment to the Washington State Constitution dedicates gas taxes to highway purposes.


6" PICKET
DETAIL A
8'-8"
~5'
VERTICAL PICKETS
1'-0" FROM EDGE DECK
SECTION B-B
10'-0" TYP.
8'-8"
~5'-8"
HORIZONTAL PICKETS
5/16"
4"
5/16" x 3" BAR TOP & BOTTOM
CHANNEL 4x5A
℄ CABLE 5/16" ϕ
3 1/2"
DETAIL A
SHOWING TOP & BOTTOM CABLE FRAME
CHANNEL
℄ W 6x16 COLUMN COPE AT FRONT
T SECTION FRAME VERTICAL
SECTION B-B
SHOWING COLUMN CONNECTION AT FRAMES


DETAIL A
9" PICKET
8'-8"
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1'-0" EDGE DECK
SECTION B-B
VERTICAL PICKETS
6'-0"
8'-8"
~5'-9"
HORIZONTAL PICKETS
5" ϕ PIPE TOP & BOTTOM OF FRAME
CABLE 5/16" ϕ
5"
DETAIL A
SHOWING TOP & BOTTOM CABLE FRAME
5" ϕ PIPE
4"
1/4"
℄ W6x16 COLUMN COPE AT PEDESTRIAN SIDE
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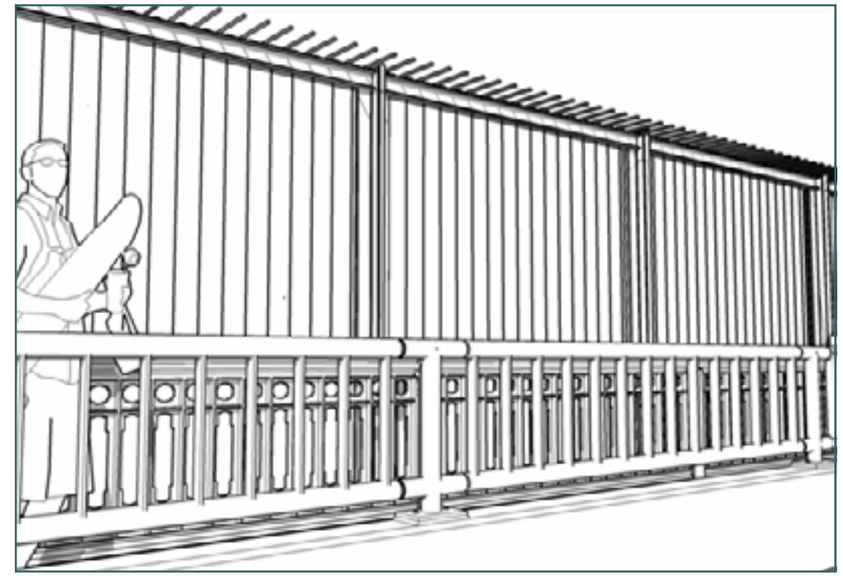
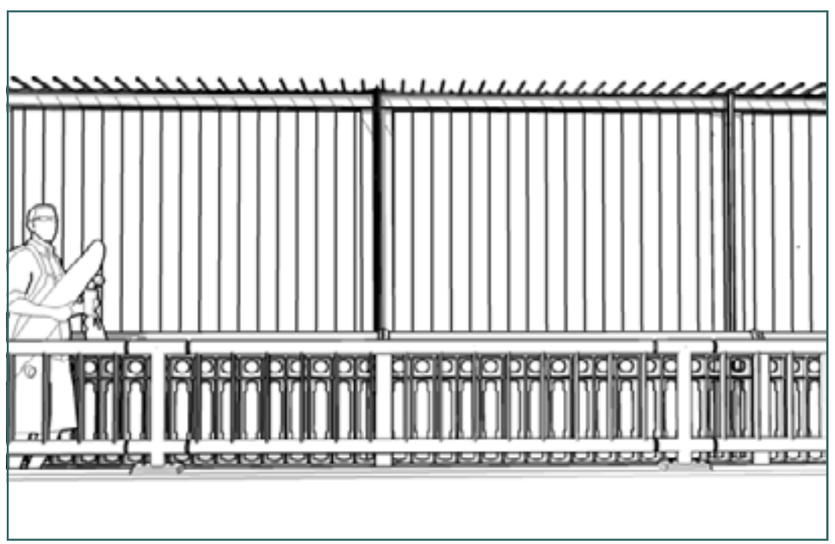
SECTION B-B
SHOWING COLUMN CONNECTION AT FRAMES

Channel Frame with Horizontal Picket Top

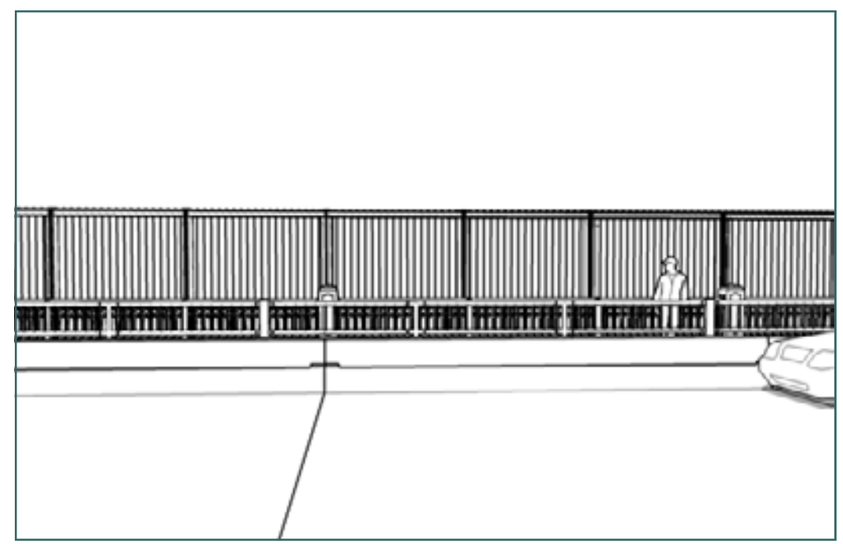
Perspective View—Below the Bridge



Perspective View—On the Bridge

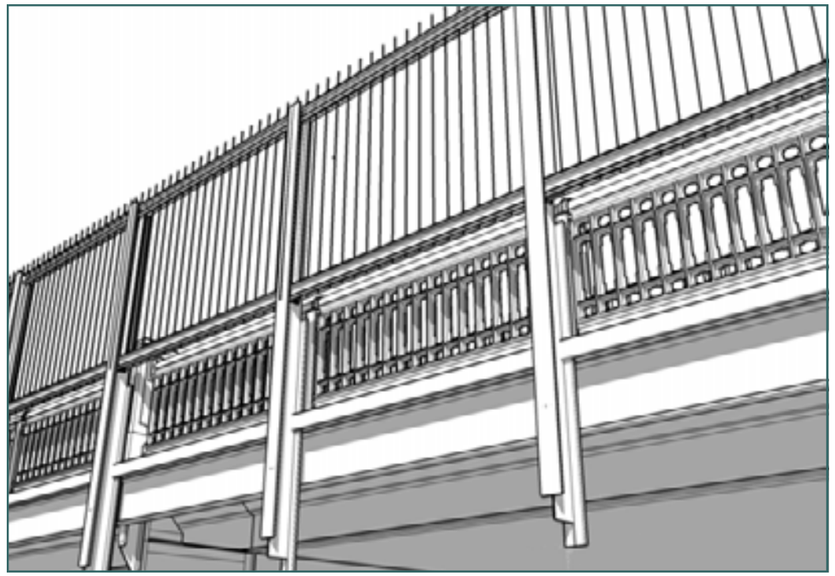


Elevation View—Near

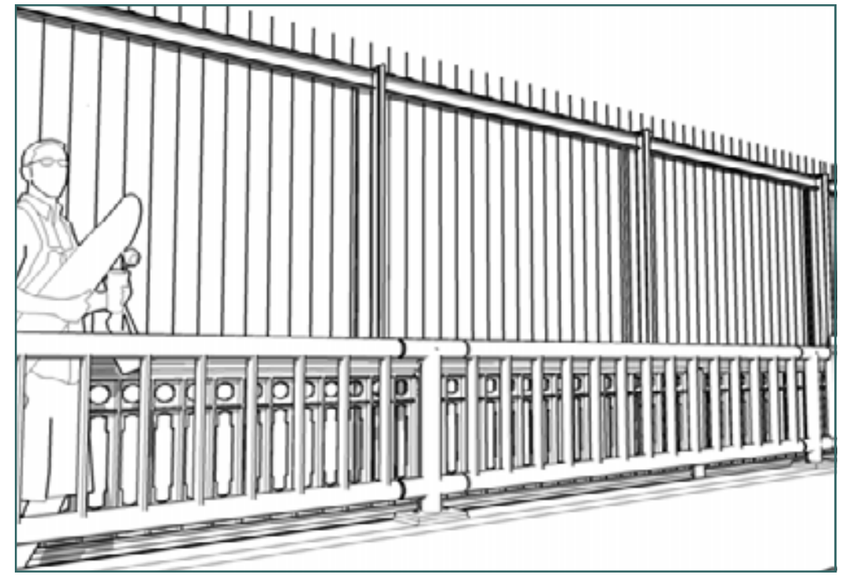


Elevation View—Far

Channel Frame with Vertical Picket Top



Perspective View—Below the Bridge



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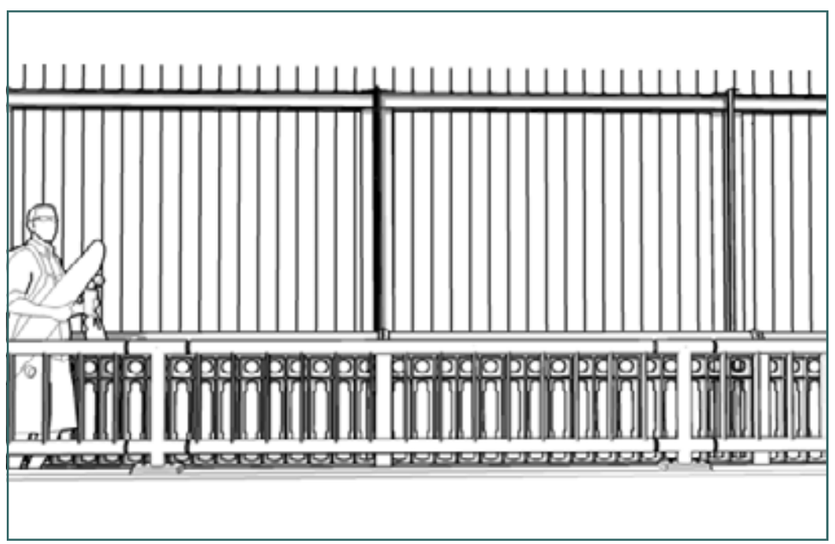
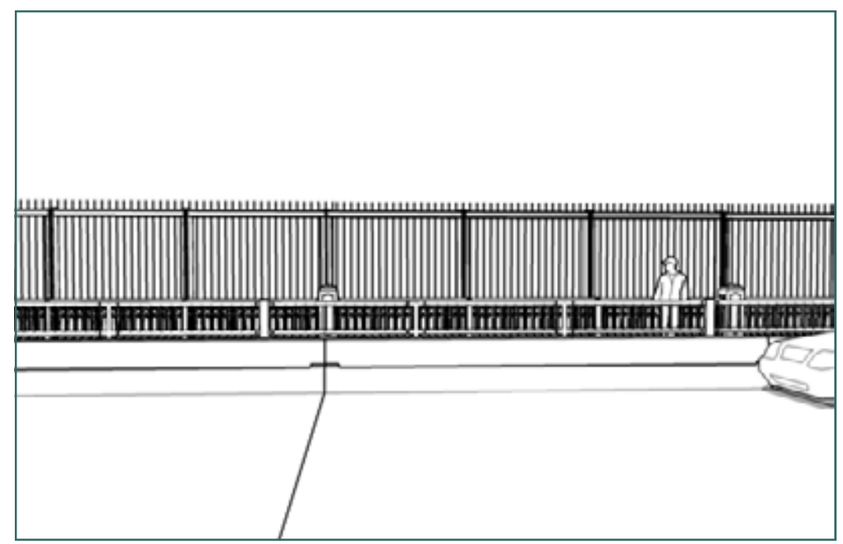


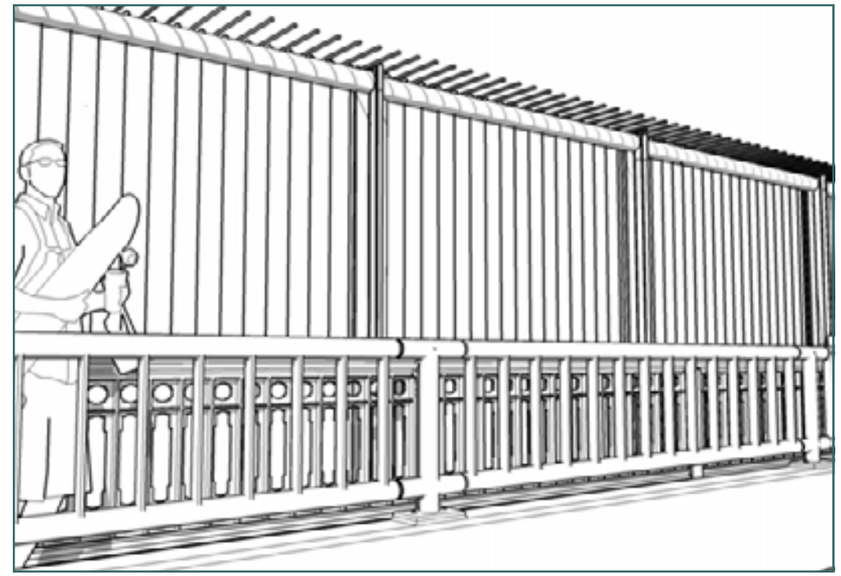
Elevation View—Near



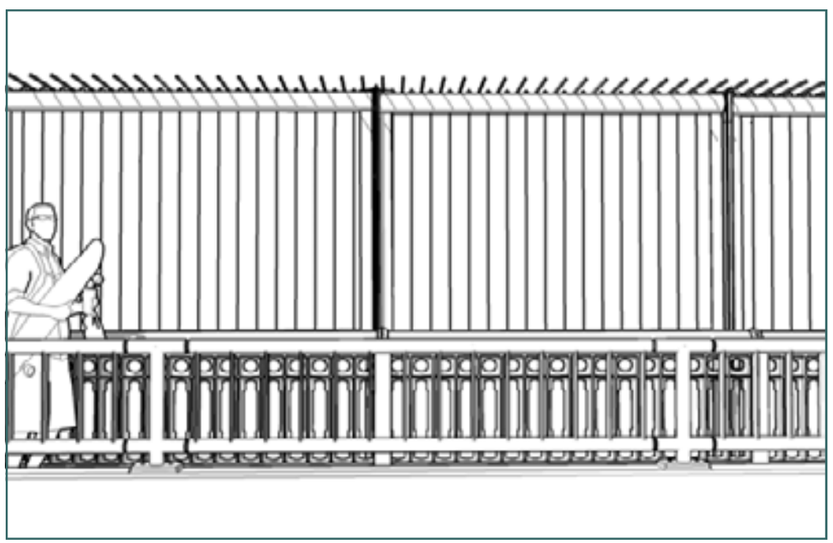
Elevation View—Far

Tube Frame with Horizontal Picket Top

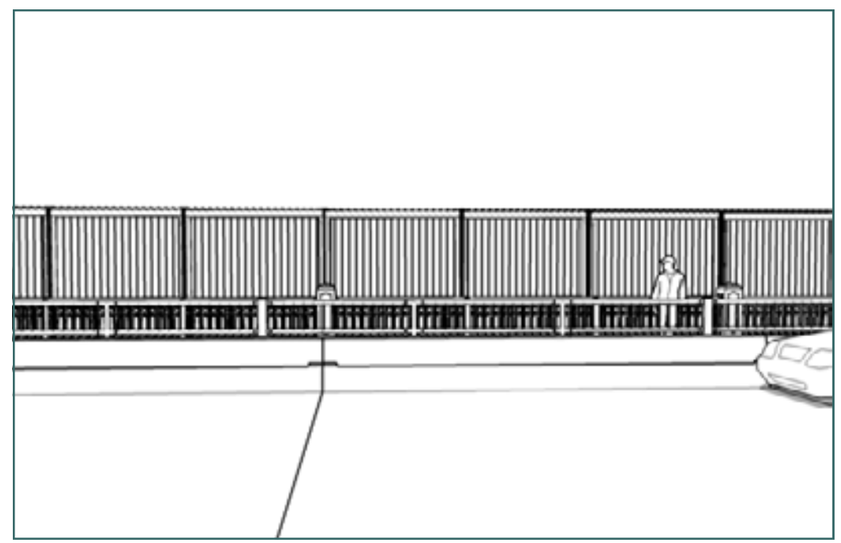
Perspective View—Below the Bridge



Perspective View—On the Bridge



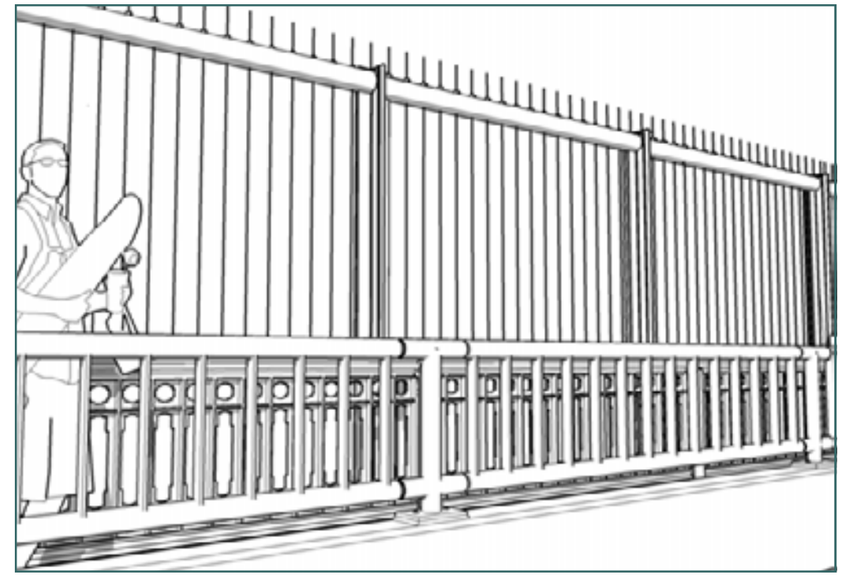
Elevation View—Near



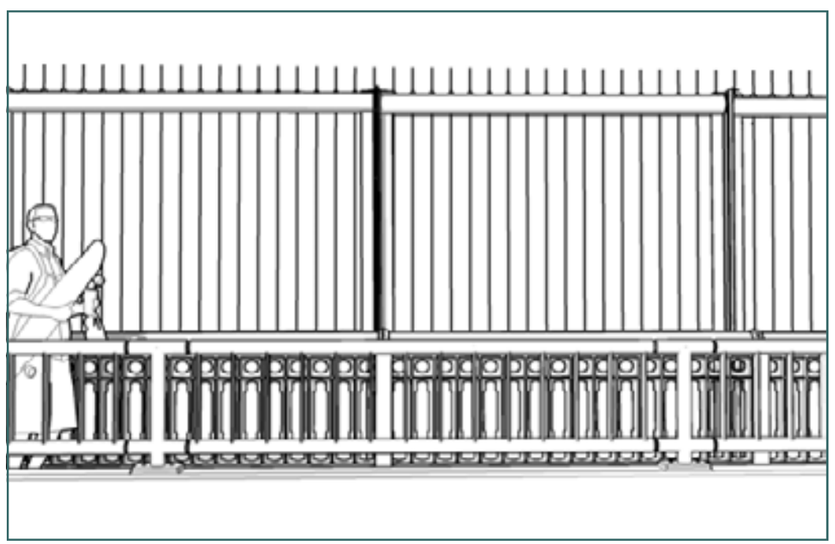
Elevation View—Far

Tube Frame with Vertical Picket Top

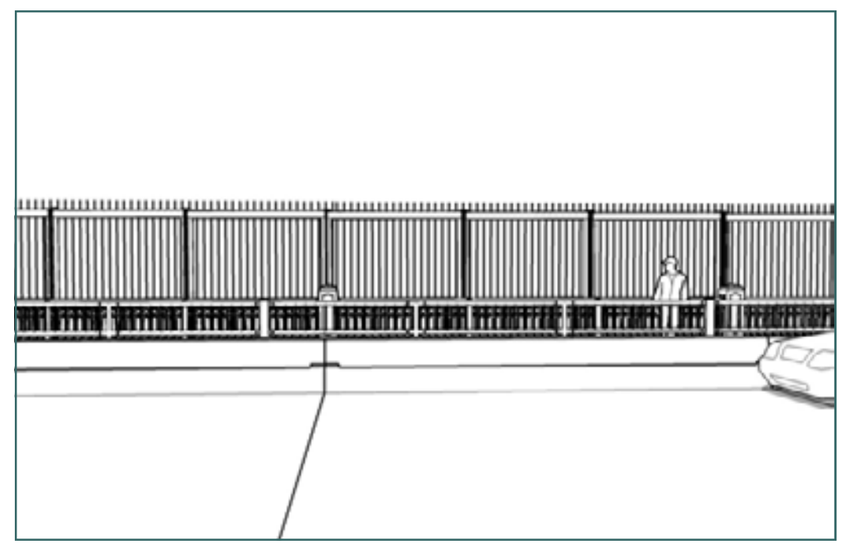
Perspective View—Below the Bridge



Perspective View—On the Bridge

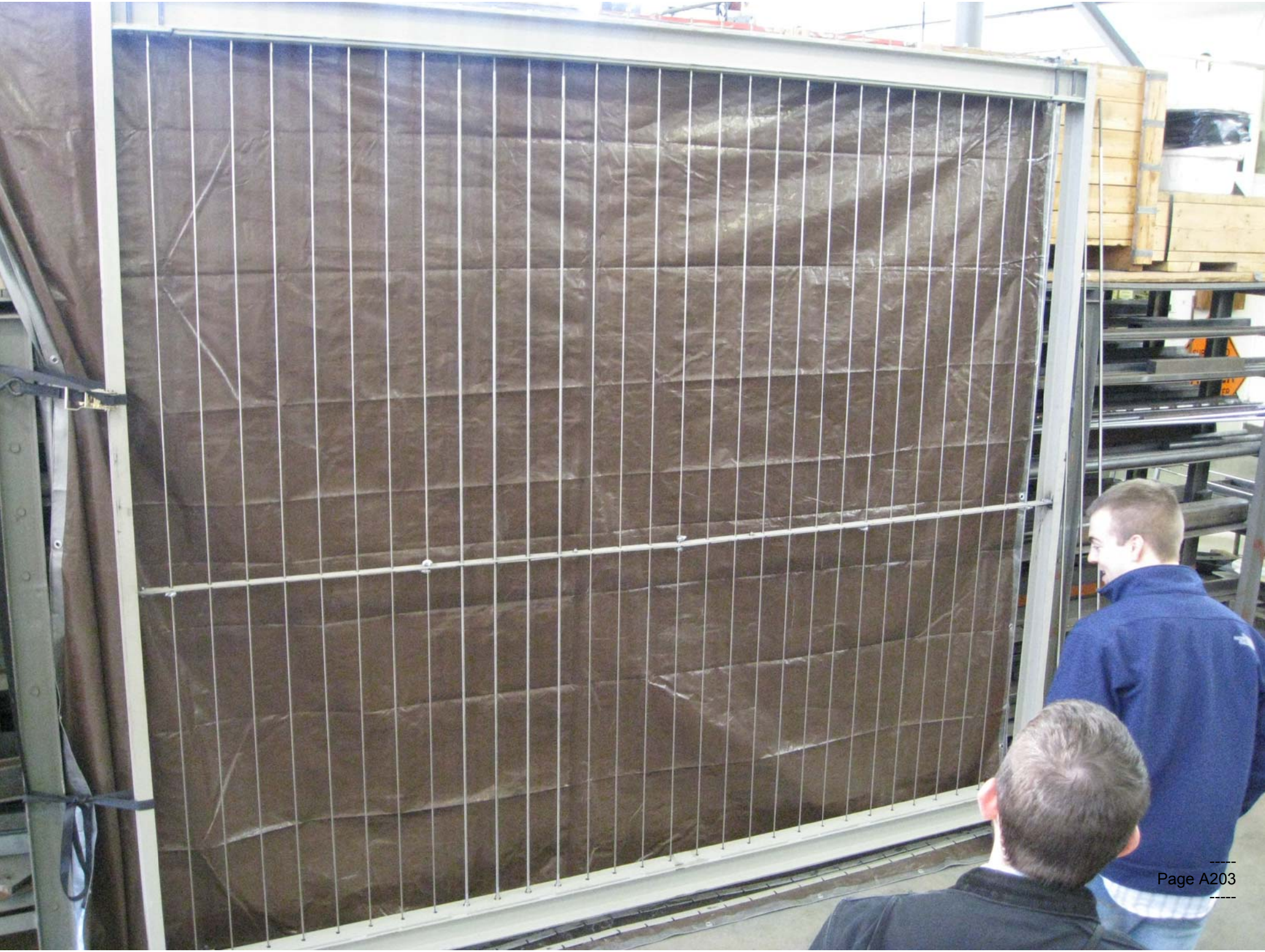


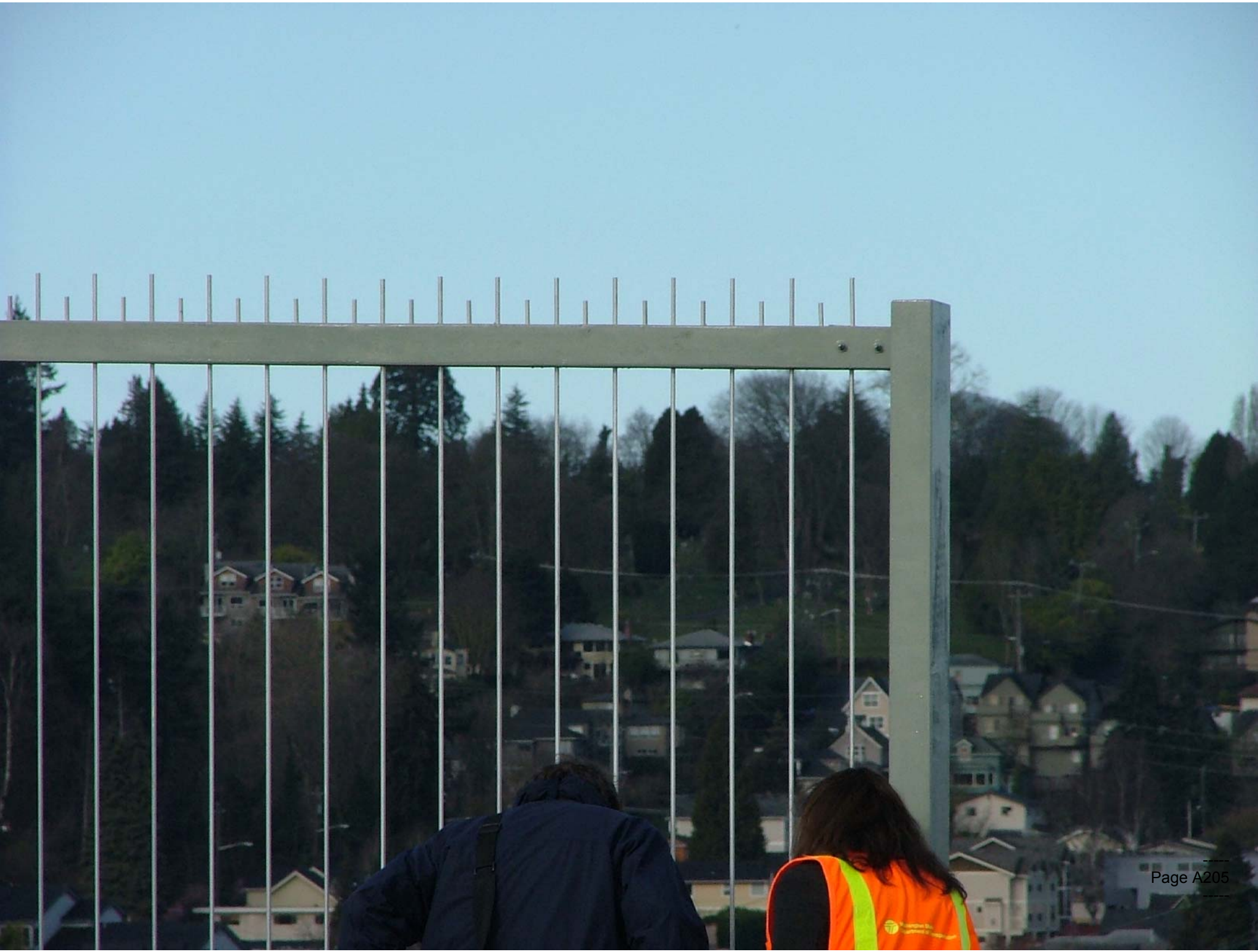
Elevation View—Near



Elevation View—Far

NORTH-WEST
TO / FROM
MAIN





City of Seattle Legislative Information Service

Seattle Municipal Code

Information retrieved May 11, 2009 4:56 PM

Title 25 - ENVIRONMENTAL PROTECTION AND HISTORIC PRESERVATION
Chapter 25.12 - Landmarks Preservation
Subchapter VI. Alterations or Significant Changes

SMC 25.12.750 Factors to be considered by Board or Hearing Examiner.

In considering any application for a certificate of approval the Board, and the Hearing Examiner upon any appeal, shall take into account the following factors:

A. The extent to which the proposed alteration or significant change would adversely affect the specific features or characteristics specified in the latest of: the Board approval of nomination, the Board report on approval of designation, the stipulated agreement on controls, the Hearing Examiner's decision on controls, or the designating ordinance;

B. The reasonableness or lack thereof of the proposed alteration or significant change in light of other alternatives available to achieve the objectives of the owner and the applicant;

C. The extent to which the proposed alteration or significant change may be necessary to meet the requirements of any other law, statute, regulation, code or ordinance;

D. Where the Hearing Examiner has made a decision on controls and economic incentives, the extent to which the proposed alteration or significant change is necessary or appropriate to achieving for the owner or applicant a reasonable return on the site, improvement or object, taking into consideration the factors specified in Sections 25.12.570 through 25.12.600 and the economic consequences of denial; provided that, in considering the factors specified in Section 25.12.590 for purpose of this subsection, references to times before or after the imposition of controls shall be deemed to apply to times before or after the grant or denial of a certificate of approval; and

E. For Seattle School District property that is in use as a public school facility, educational specifications.

(Ord. 119439 Section 2, 1999: Ord. 106348 Section 12.06, 1977.)

Search for ordinances passed since the last SMC update (ordinances codified through Ordinance 122825) that may amend Section 25.12.750 .
Note: this feature is provided as an aid to users, but is not guaranteed to provide comprehensive information about related recent ordinances. See also Recent Legislation and Council Bills and Ordinances.

For research assistance, contact the Seattle City Clerk's Office at 206-684-8344, or by e-mail at clerk@seattle.gov. For interpretation or explanation of a particular SMC section, please contact the relevant City department.