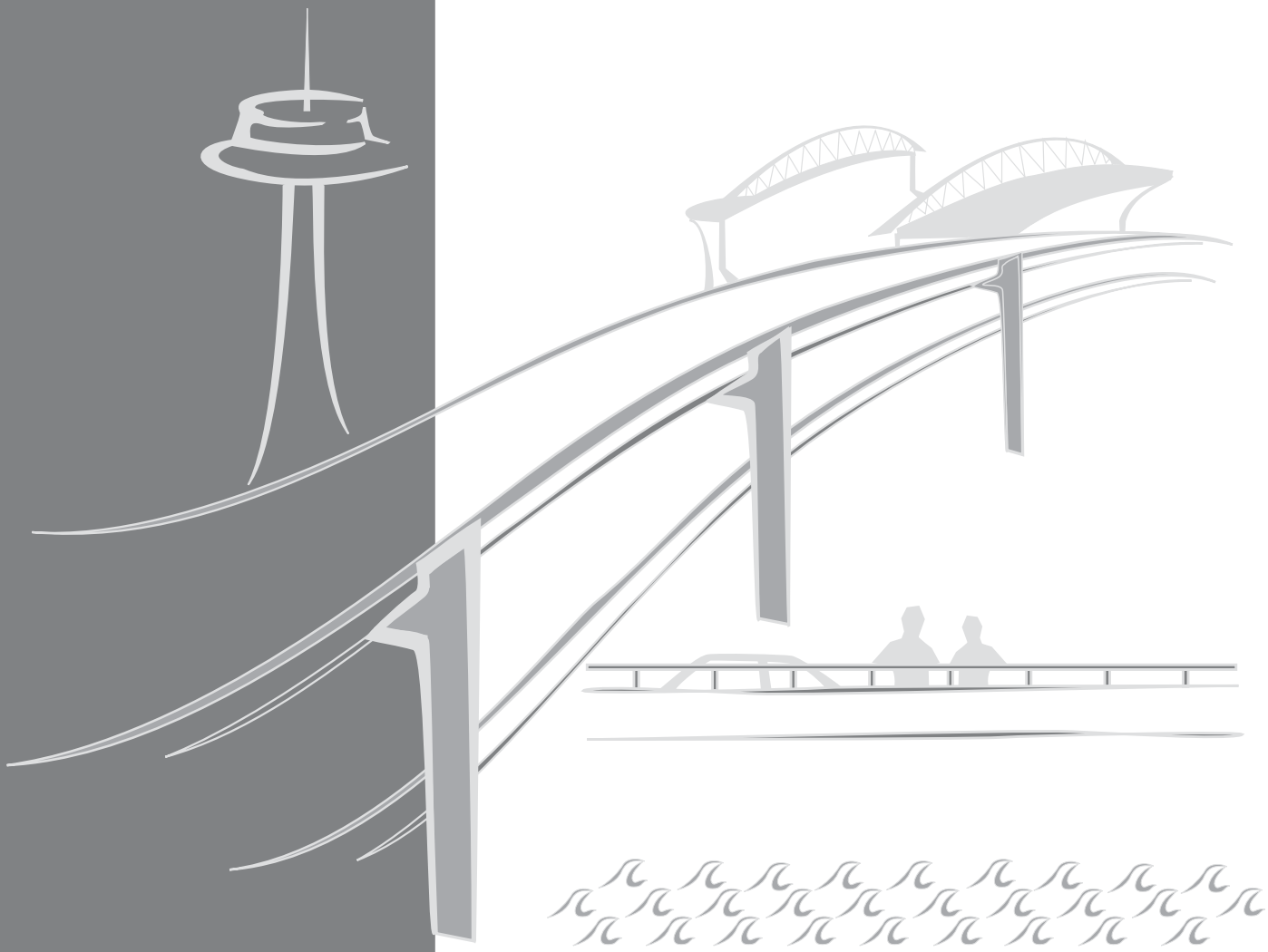
SR 99: ALASKAN WAY VIADUCT & SEAWALL REPLACEMENT PROJECT

Draft Environmental Impact Statement
Appendix N
Section 4(f) Technical Memorandum



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Washington State Department of Transportation

City of Seattle

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SR 99: ALASKAN WAY VIADUCT & SEAWALL REPLACEMENT PROJECT

Draft EIS
Section 4(f) Technical Memorandum

AGREEMENT NO. Y-7888

FHWA-WA-EIS-04-01-D

Submitted to:

Washington State Department of Transportation
Alaskan Way Viaduct and Seawall Replacement Project Office
999 Third Avenue, Suite 2424
Seattle, WA 98104

The SR 99: Alaskan Way Viaduct & Seawall Replacement Project is a joint effort between the Washington State Department of Transportation (WSDOT), the City of Seattle, and the Federal Highway Administration (FHWA). To conduct this project, WSDOT contracted with:

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In association with:

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ACRONYMS

BNSF	Burlington Northern Santa Fe Railway Company
EIS	Environmental Impact Statement
FHWA	Federal Highway Administration
HAER	Historic American Engineering Record
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
SDOT	Seattle Department of Transportation
SR	State Route
WOSCA	Washington Oregon Shippers Cooperative Association

Chapter 1 SUMMARY

The intent of the Section 4(f) statute and the policy of the Department of Transportation is to avoid public parks, recreation areas, refuges, and historic sites (Title 23 U.S.C. Section 138). In order to demonstrate that there is no feasible and prudent alternative to the use of Section 4(f) land, an evaluation must address location alternatives and design shifts that avoid the Section 4(f) land. Supporting information must demonstrate that such alternatives result in unique problems. Unique problems are present when there are truly unusual factors or when the costs or community disruption reach extraordinary magnitude.

When the Section 4(f) evaluation is completed between the Draft EIS and the Final EIS, it will address the purpose and need of the project. This discussion will support the project termini and the types of alternatives, e.g., new location or modification of the existing alignments that would satisfy the need for the project. That need will be sufficiently explained to show that the No Build Alternative and any alternative that does not serve that need results in unique problems, i.e., truly unusual factors or cost or community disruption.

When making a finding that an alternative is not feasible and prudent, it is not necessary to show that any single factor presents unique problems. Adverse factors such as environmental impacts, safety and geometric problems, decreased traffic service, increased costs, and any other factors may be considered collectively. A cumulation of problems such as these may be a sufficient reason to use a 4(f) property, but only if it creates truly unique problems.

In applying the standard of "unique problems," the nature, quality, and effect of the taking of the 4(f) property may be considered to show that there are truly unusual factors, or cost or community disruption of extraordinary magnitude. Thus the net impact of any build, no-build, or mitigation alternative on both the 4(f) property and the surrounding area or community must be considered. This may include the mitigation opportunities presented by an alternative (which uses some 4(f) property) that would reduce or eliminate the impact on the 4(f) property. Not all uses of 4(f) property have the same magnitude of effect and not all 4(f) properties being used have the same quality. For example, evaluation of net impact may consider whether the use of the 4(f) property involves (1) a large taking or a small taking (2) shaving an edge of its property or cutting through the middle, (3) altering part of the land surrounding an historic building or removing the building itself, or (4) an unused portion of a park or a highly used portion.

Care should be taken that consistent standards are applied throughout the length of any given project. For example, it would be inconsistent to accept a restricted roadway cross section (with a Jersey barrier in the median or substandard width shoulders) for a highway over a drainage structure or for a bridge in order to reduce the project cost when at other locations on the same project (or similar projects) this roadway cross section is rejected as unacceptable in order to avoid a park.

Section 4(f) resources that have been identified within the area affected by the project are indicated in Exhibits 4-1 through 4-3.

1.1 Resources Displaced or Altered by Permanent Facilities

Potential Section 4(f) resources affected by permanent facilities are summarized in Exhibit 1-1.

1.1.1 Park and Recreation Resources Displaced by Permanent Facilities

All Alternatives

Park and recreation resources displaced by permanent facilities will include:

The Waterfront Trail: A multi-purpose asphalt trail extending from Bell Street to S. Royal Brougham Way (planned to be extended to S. Atlantic Street) will be

- Displaced between S. Atlantic Street and Pike Street by all alternatives.
- Altered in configuration between Pike and Virginia Streets by portals in the Tunnel Alternative.

1.1.2 Historic Resources Displaced by Permanent Facilities

All Alternatives

Historic resources that are potential 4(f) resources that would be displaced by permanent facilities include:

The Alaskan Way Viaduct itself: This elevated highway, determined eligible for the NRHP, will be replaced or reconstructed under all alternatives.

Because alteration or replacement of the existing viaduct is included in all alternatives, prior to issuance of the Final EIS and Record of Decision, a documentation plan to ensure that fully adequate records are made of the bridge in accordance with the Historic American Engineering Record (HAER).

Exhibit 1-1. Summary of Effects by Alternative

Potential Resource	Potential Effect	Rebuild	Aerial	Tunnel	Bypass Tunnel	Surface
The Waterfront Trail	Displaced between Atlantic Street and Pike Street.					
The Waterfront Trail	Altered by tunnel portal between Pike and Lenora Streets.			X		
Construction Impacts						
Construction Noise Impacts on the Seattle Aquarium:	Noise associated with construction effects on visitors. Could affect attendance.	X	X	X	X	X
Pier 62/63 Park Summer Concert Series:	Noise from the Battery Street Flyover Detour.	X	X	X	X	X
Fee-Supported Resources: • Seattle Aquarium • Pier 62/63 Summer Waterfront Concert Series	Reduction in attenda nce during construction. Prolonged construction periods along the waterfront could limit attendance at public park facilities, or concessionaires to public parks. The facilities are dependent upon user fees for a substantial part of their operating or capital costs.	X	X	X	X	X
Historic Resources						
Bemis Building	Atlantic Street Overcrossing may restrict access to loading docks.	X	X	X	X	X
Bemis Building	Atlantic Street Overcrossing may change historic context of north façade.	X	X	X	X	X
WOSCA Freight Shed	Demolish for staging area and/or ferry holding.	X	X	X	X	X
Alaskan Way Seawall	Demolish and rebuild.	X	X	X	X	X
Alaskan Way Viaduct	Demolish and rebuild. Portions of original segments would be preserved.	X	X	X	X	X
Battery Street Tunnel	Ventilation retrofit will extend portals approximately 100 feet.		X	X	X	X
Washington Street Boat Landing	Displace or relocate.	X	X	X	X	X

Exhibit 1-1. Summary of Effects by Alternative (continued)

Potential Resource	Potential Effect	Rebuild	Aerial	Tunnel	Bypass Tunnel	Surface
1 Yesler Building	Demolish or relocate for northbound lanes to Western Avenue.			X	X	X
First Avenue Areaways	Vibration impacts on structural integrity from heavy vehicle use of curb lane.					X
First Avenue Areaways	Construction detour vibration impacts on structural integrity.	X	X	X	X	X
Antique Importers/Snowboard Connection	Vent structures may affect integrity of Historic District context.			X	X	
Catholic Seamen's Club (Paramount Studios)	Battery Street Tunnel retrofit may alter building.		X	X	X	X
Construction Impacts						
Historic Buildings Adjacent to Construction Area	Construction vibration impacts on structural integrity.	X	X	X	X	X
Historic Buildings Adjacent to Construction Area	Restriction to access.	X	X	X	X	X

The Alaskan Way Seawall: The seawall between S. Washington Street and Myrtle Edwards Park, determined eligible for the NRHP, will be reconstructed or replaced under all alternatives.

Because alteration or replacement of the seawall is included in all alternatives, a specific documentation plan to ensure that fully adequate records are made of the structure in accordance with the HAER.

The WOSCA freight house, 801 First Avenue S.: This building, determined eligible for the NRHP, could be displaced under design options which place construction staging and parking for the Washington State Ferries at the site.

Because alternative staging and ferry parking areas may be available, use of the entire WOSCA site is not likely to be needed. Additional project design to determine whether portions of the site can be used without compromising the historic building or whether use of other sites for construction staging and ferry parking is feasible and prudent will be done.

The Washington Street Boat Landing: This structure is listed in the National Register of Historic Places. It will be displaced in all alternatives by the proposed access road between Pier 48 and the Colman Dock Ferry Terminal. It is proposed to be relocated to the water's edge on the new over-water structure that supports the access road at an analogous position at the foot of S. Washington Street.

Additional analysis to support a finding that there is no feasible and prudent alternative to the use of such land and to minimize potential harm of isolating from the historic context by providing effective pedestrian connections to the Pioneer Square Historic District.

Tunnel, Bypass Tunnel, and Surface Alternatives

Historic resources displaced by permanent facilities, in addition to those listed above, include:

The One Yesler Way Building: This building, located in the Pioneer Square Historic District, will be displaced under the Tunnel, Bypass Tunnel, and Surface Alternatives. This building could potentially be moved to the east or west or to the parking lot across the street, which is also a candidate site for a ventilation facility to serve the Tunnel and Bypass Tunnel Alternatives.

Additional analysis of design prior to selection of a preferred alternative will help identify whether feasible and prudent alternatives that would avoid displacement or relocation of the building are available. Additional

analysis will be necessary to determine whether relocation would affect the historic integrity of the district.

1.1.3 Historic Resources Altered by Permanent Facilities

Aerial, Tunnel, Bypass Tunnel, and Surface Alternatives

Historic resources altered by permanent facilities include:

The Battery Street Tunnel: The tunnel that carries State Route (SR) 99 between Bell Street and Denny Street has been determined eligible for the NRHP. It will be altered for fire and life safety improvements under all alternatives except the Rebuild Alternative.

Additional analysis will be done to support a finding that there is no feasible and prudent alternative to the fire and life safety upgrades. Additional design work will be required to minimize harm and ensure that the historic integrity of the tunnel is preserved to the greatest extent possible. If the historic integrity of the structure cannot be preserved, a specific documentation plan will be developed to ensure that fully adequate records are made of the facility in accordance with the HAER.

Tunnel and Bypass Tunnel Alternatives

Historic resources altered by permanent facilities, in addition to those listed above, include:

Snowboard Connection, 619 Western Avenue: Construction of a vent structure adjacent to this building may affect the historic integrity of the Pioneer Square Historic District through a change in context.

Additional design will be done to support a finding that there is no feasible and prudent alternative to the location within the Pioneer Square Historic District and that all possible planning to minimize harm has been incorporated in design of the vent structures to fit into the historic context.

Pike Place Market: Construction of a vent structure adjacent to the Pike Place Market Historic District may affect the historic integrity of the district through a change in context.

Additional design will be needed to support a finding that there is no feasible and prudent alternative to the location of the vent structure adjacent to the historic district and that all possible planning to minimize harm has been incorporated in design of the vent structures to fit into the historic context.

1.2 Constructive Use

The following resources would not be displaced or physically altered, but may be potentially affected (constructive use) by permanent facilities. Additional analysis and design will be done to support a finding that there is no feasible and prudent alternative to the project features that would affect views of the south façade. Additional planning to minimize harm is anticipated to ensure that remaining im pacts are reduced to the extent feasible.

1.2.1 Constructive Use of Park Resources by Permanent Facilities

There will be no constructive use of park resources by permanent facilities.

1.2.2 Constructive Use of Historic Resources by Permanent Facilities

All Alternatives

Historic resources that could be potentially affected by permanent facilities include the following:

The Bemis Building, 55 S. Atlantic Street: This building, determined eligible for the NRHP, may be affected by:

- Alternation to existing access on S. Atlantic Street by the elevated structure to carry S. Atlantic Street over the at-grade SR 99 (a proposed element or design option for all alternatives).
- Blockage of views of the decorative south façade of the building could affect the historic integrity of the resource and features that render it eligible for the NRHP.

Surface Alternative

Historic resources that could be potentially affected by permanent facilities, in addition to those listed above, include the following:

First Avenue S. Areaways: First Avenue traffic lanes between S. King Street and Yesler Way would be increased from one in each direction to two in each direction, displacing current parking. The weight and vibration from heavy vehicle traffic such as buses and trucks adjacent to existing areaways could cause structural failure and/or would require substantial strengthening (structural modification) of the areaways to prevent their collapse. Such strengthening may affect their historic qualities.

1.3 Construction Effects

1.3.1 Park Resources Affected by Construction

All Alternatives

Park resources that are potential Section 4(f) resources that could be affected by construction include the following:

Construction noise impacts on the Seattle Aquarium: Noise levels associated with construction may affect visitors of the Seattle Aquarium during periods of intense construction activities. The construction noise could affect attendance, in that some of the popular exhibits of marine mammals or interactive activities are located outdoors.

Reduction in attendance at fee-supported resources: Prolonged construction periods along the waterfront could reduce attendance at public park facilities, or concessionaires to public parks. The facilities dependent upon user fees for a substantial part of their operating or capital costs could experience loss of revenues that could reduce programs offered, lead to possible closure, or lead to deferral of planned capital improvements. Public park facilities or concessionaires potentially affected include:

- The Seattle Aquarium, owned and operated by the Seattle Parks Department.
- The Summer Waterfront Concert Series, a concessionaire of the Seattle Parks Department.

Pier 62/63 Park Summer Concert Series: Noise from the Battery Street Flyover Detour, consisting of an elevated ramp over the Art Institute, would produce noise levels adjacent to the Summer Concert Series at the Pier 62/63 Park that would likely result in curtailing, eliminating, or relocating this use.

Because the alternative routes for this detour, the Broad Street Detour, also has potential noise impacts on the summer concert series at Pier 62/63, additional planning (including more detailed construction noise analysis) will be needed to determine that there is no feasible and prudent alternative to the constructive use. Additional planning will be needed to determine whether impacts can be mitigated, therefore minimizing harm.

1.3.2 Historic Resources Affected by Construction

All Alternatives

This section describes historic resources that could be affected by construction.

Vibration During Construction

Vibration from construction, demolition, and traffic on detour routes could affect historic buildings, particularly those in poor condition. Buildings and areas that could be most affected include the following:

- The Bemis Building at S. Atlantic Street could be affected by noise and vibration from construction of the interchange at that location.
- The Triangle Building, in the NRHP, could be affected by vibration from demolition of the adjacent First Avenue S.
- Brick buildings adjacent to the existing viaduct in the Pioneer Square Historic District between S. King and Columbia Streets could be affected by demolition of the existing viaduct and construction of any of the alternatives.
- First Avenue S. Areaways: Anticipated detours during construction include additional traffic lanes on First Avenue between S. King Street and Yesler Way. The weight and vibration from traffic adjacent to existing areaways could cause structural failure and/or would require substantial strengthening (structural modification) of the areaways to prevent their collapse. Such strengthening may affect their historic qualities.
- The Polson, Journal, Grand Pacific, National, and Colman Buildings could be affected by noise and vibration from demolition and/or replacement of the Columbia and Seneca Street ramps.
- Brick buildings adjacent to Alaskan Way north of the Pioneer Square area that could be affected during construction include the National Building and the Olympic Warehouse (Immunex).
- Piers 54 through 59, determined eligible for the NRHP, could be affected by vibration from seawall reconstruction, primarily from jet grouting that could potentially damage piling supports or the pier sheds.
- Belltown Lofts and the Old Spaghetti Factory could be affected by construction vibration.

Additional analysis of feasible and prudent alternatives to features such as detour routes would be required. In addition, planning to minimize harm likely would include incorporation of specific plans to assess the structural integrity of buildings, and incorporate specific construction methods to reduce vibration.

Limited Access During Construction

Prolonged limited access during construction could possibly threaten the viability of businesses occupying historic structures. The loss of business income could affect the financial return to building owners and may lead to a reduction in building maintenance. Over a long term, the deferral of maintenance could affect the continued structural integrity of historic buildings. Buildings most affected could include the following:

- The Bemis Building at S. Atlantic Street could be affected by limits to access from S. Atlantic Street during construction of the interchange at that location.
- Historic buildings adjacent to the existing viaduct in the Pioneer Square Historic District between S. King and Columbia Streets that have access only to Alaskan Way to the west could be affected by limits to access during demolition of the existing viaduct and construction of any of the alternatives. This affects the 305 Alaskan Way Building, the OK Hotel, the Prudential Building, and the Old Firehouse.
- Piers 54 through 59, determined eligible for the NRHP, could be affected by limits to access from seawall reconstruction and the tunnel alternatives.

Prior to issuance of the Final EIS and Record of Decision, additional planning to minimize harm likely would include assessment of structures to determine whether structural integrity could be threatened during construction if regular maintenance is deferred. Adequate measures to ensure structural integrity would be incorporated in project plans. Alternative access from alleys at the back of buildings adjacent to Alaskan Way in Pioneer Square could also be explored.

Chapter 2 METHODOLOGY

Potential impacts on publicly owned land in a public park, recreation area, or wildlife or waterfowl refuge and historic sites of national, state, or local significance were identified based on Appendix H, Parks and Recreation Technical Memorandum and Appendix L, Historic Resources Technical Memorandum. These resources were further analyzed to determine whether facilities are eligible to be considered Section 4(f) resources and whether potential impacts meet the criteria of a use as defined by Section 4(f) criteria.

The Federal Highway Administration (FHWA) has determined that designated Seattle Landmarks qualify as Section 4(f) resources pursuant to 23 CFR 771.135, regardless of whether they are eligible for the NRHP.

This analysis has not been fully coordinated with the State Historic Preservation Officer (SHPO). Detailed coordination on eligibility for the National Historic Register and the potential for "use" and "constructive use" will take place based on specific plans developed for the preferred alternative.

Whether use occurs was based on guidance contained in an FHWA Section 4(f) Policy Paper issued September 24, 1987, and revised June 7, 1989.[1] As indicated in that paper:

A "use" occurs when:

(a) land from a Section 4(f) site is acquired for a transportation project,

(b) there is an occupancy of land that is adverse in terms of the statute's preservationist purposes, or

(c) the proximity impacts of the transportation project on the Section 4(f) sites, without acquisition of land, are so great that the purposes for which the Section 4(f) site exists are substantially impaired (normally referred to by courts as a constructive use).

Further guidance of "constructive use" is found in the FHWA Section 4(f) Regulations (23 CFR 771.135):

(a) The Administration has reviewed the following situations and determined that a constructive use occurs when:

[1] FHWA website: http://www.fhwa.dot.gov/environment/nepa/4fpo11.htm.

i. The projected noise level increase attributable to the project substantially interferes with the use and enjoyment of a noise-sensitive facility of a resource protected by section 4(f), such as hearing the performances at an outdoor amphitheater, sleeping in the sleeping area of a campground, enjoyment of a historic site where a quiet setting is a generally recognized feature or attribute of the site's significance, or enjoyment of an urban park where serenity and quiet are significant attributes,

ii. The proximity of the proposed project substantially impairs esthetic features or attributes of a resource protected by section 4(f), where such features or attributes are considered important contributing elements to the value of the resource. Examples of substantial impairment to visual or esthetic qualities would be the location of a proposed transportation facility in such proximity that it obstructs or eliminates the primary views of an architecturally significant historical building, or substantially detracts from the setting of a park or historic site which derives its value in substantial part due to its setting,

iii. The project results in a restriction on access which substantially diminishes the utility of a significant publicly owned park, recreation area, or a historic site,

iv. The vibration impact from operation of the project substantially impairs the use of a section 4(f) resource, such as projected vibration levels from a rail transit project that are great enough to affect the structural integrity of a historic building or substantially diminish the utility of the building, or

v. The ecological intrusion of the project substantially diminishes the value of wildlife habitat in a wildlife or waterfowl refuge adjacent to the project or substantially interferes with the access to a wildlife or waterfowl refuge, when such access is necessary for established wildlife migration or critical life cycle processes.

(b) The Administration has reviewed the following situations and determined that a constructive use does not occur when:

i. Compliance with the requirements of section 106 of the National Historic Preservation Act and 36 CFR part 800 for proximity impacts of the proposed action, on a site listed on or eligible for the National Register of Historic Places, results in an agreement of "no effect" or "no adverse effect",

ii. The projected traffic noise levels of the proposed highway project do not exceed the FHWA noise abatement criteria as contained in Table 1, 23 CFR part 772, or the projected operational noise levels of the proposed transit project do not exceed the noise impact criteria in the UMTA guidelines,

iii. The projected noise levels exceed the relevant threshold in paragraph (p)(5)(ii) of this section because of high existing noise, but the increase in the projected noise levels if the proposed project is constructed, when compared with the projected noise levels if the project is not built, is barely perceptible (3 dBA or less),

iv. There are proximity impacts to a section 4(f) resource, but a governmental agency's right-of-way acquisition, an applicant's adoption of project location, or the Administration approval of a final environmental document, established the location for a proposed transportation project before the designation, establishment, or change in the significance of the resource. However, if the age of an historic site is close to, but less than, 50 years at the time of the governmental agency's acquisition, adoption, or approval, and except for its age would be eligible for the National Register, and construction would begin after the site was eligible, then the site is considered a historic site eligible for the National Register,

v. There are impacts to a proposed public park, recreation area, or wildlife refuge, but the proposed transportation project and the resource are concurrently planned or developed. Examples of such concurrent planning or development include, but are not limited to:

   1. Designation or donation of property for the specific purpose of such concurrent development by the entity with jurisdiction or ownership of the property for both the potential transportation project and the section 4(f) resource, or

   2. Designation, donation, planning or development of property by two or more governmental agencies, with jurisdiction for the potential transportation project and the section 4(f) resource, in consultation with each other,

vi. Overall (combined) proximity impacts caused by a proposed project do not substantially impair the activities, features, or attributes that qualify a resource for protection under section 4(f),

vii. Proximity impacts will be mitigated to a condition equivalent to, or better than, that which would occur under a no-build scenario,

viii. Change in accessibility will not substantially diminish the utilization of the section 4(f) resource, or

ix. Vibration levels from project construction activities are mitigated, through advance planning and monitoring of the activities, to levels that do not cause a substantial impairment of the section 4(f) resource.

This section incorporates relevant information from the Parks and Recreation element and Historic and Cultural element on Section 4(f) resources, relating to area of impact, direct impacts (property acquisition), and constructive use (related to proximity impacts [increased noise, visual intrusion, access restrictions, shading effects, etc.]) that may be severe enough that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired. This includes:

- Total or partial acquisition of property for right-of-way or related facilities (such as ventilation equipment for tunnels) resulting in displacing some or all functions.
- Partial acquisitions that result in a change in the relationship between facilities.
- Acquisitions that permanently alter access.
- Acquisitions or design features that change parking supply on-site or off-site, and therefore may affect access and use of the facility.
- Interruption of connections between facilities.
- Changes in the length, grade, or other characteristics of trails.
- Relocation of trails that changes amenities and interest.
- Displacement of specific amenities such as benches.
- Changes in views from park and recreation facilities.
- Introduction of adjacent impacts such as noise or additional traffic, which degrades the recreational experience. Adjacent or proximity impacts will be based in large part on the findings of other relevant environmental elements (such as Traffic, Noise, Air Quality, Land Use, and Visual Quality).
- Displacement or other impacts on historic resources.

For this draft report, additional information needs are identified that are relevant if a preferred alternative uses Section 4(f) facilities and a finding must be made that there are no feasible and prudent alternatives. Evaluating the prudence and feasibility of alternatives pursuant to 23 CFR 771.135 includes evaluation of:

- Unique engineering or construction problems.
- Extraordinary costs.
- Community disruption of extraordinary magnitude.
- Severe adverse environmental impacts.
- Greater impacts on other Section 4(f) lands.
- Failure to fulfill a public need.
- Other truly unusual factors.

Resources for which effects are documented in the Parks and Recreation or the Historic Resources Technical Memoranda (Appendices H and L) are not necessarily discussed in this Section 4(f) analysis. The criteria to qualify as a Section 4(f) resource and for an effect to quality as a use are narrower than the criteria used to identify an effect in those technical memoranda.

The analysis presented in the Draft EIS and Appendix N is a tiered analysis pursuant to 23 CFR 771.135(o). This Draft Section 4(f) evaluation assesses the potential impacts that the alternatives may have on Section 4(f) facilities in order to assist in the choice of a preferred alternative. This preliminary assessment identifies the extent to which the alternatives differ in effects on potential 4(f) resources and the potential for additional planning to minimize harm. A final Section 4(f) determination will accompany the Final EIS.

The final Section 4(f) report will fully report on prudent and feasible alternatives and why alternatives that avoid use of Section 4(f) facilities were not selected. In addition, conceptual plans will be revised to address design changes designed to minimize harm.

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Chapter 3 STUDIES AND COORDINATION

Studies and coordination for the Parks and Recreation and Historic Resources Technical Memoranda (Appendices H and L) are described in those documents.

Coordination for the Section 4(f) review included coordination meetings, field visits, and preliminary memoranda outlining Section 4(f) issues with representatives of the FHWA, the Washington State Department of Transportation (WSDOT), and the City of Seattle.

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Chapter 4 DESCRIPTION OF AFFECTED RESOURCES, POTENTIAL EFFECTS, ALTERNATIVES TO AVOID THE USE OF SECTION 4(F) RESOURCES, AND POSSIBLE MEASURES TO MINIMIZE HARM TO SUCH LANDS

All resources are described from the south portion of the corridor to the north, with potential impacts of each alternative following a description of the resource. Exhibits 4-1 through 4-3 provide the locations of parks, recreation areas, and historic resources referenced in the text. Exhibit 4-4 provides a summary of park, recreational, and historic resources referenced in the other technical memoranda and how they relate to Section 4(f) criteria for affected resources and use.

4.1 Park and Recreation Resources

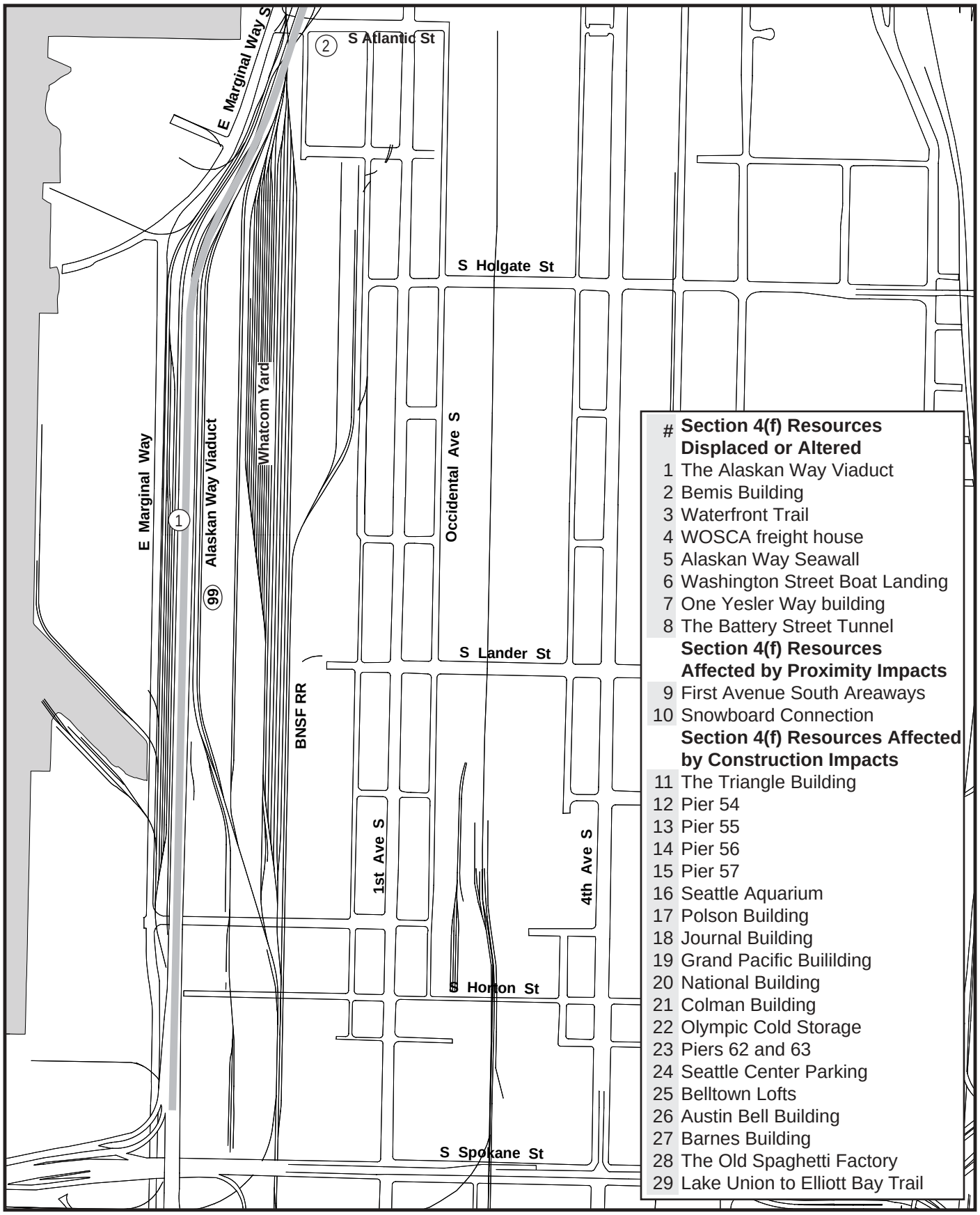
4.1.1 Waterfront Trail

Affected Environment

This multi-purpose asphalt pathway extends from S. Royal Brougham Way on the south to Broad Street on the north where it connects to the Elliott Bay Trail. It is planned to be extended to S. Atlantic Street to connect to the Mountains to Sound Greenway Trail as part of the SR 519 project.

The Waterfront Trail is designated as part of the Seattle Urban Trails System in the City's Comprehensive Plan. The Urban Trails System is designated to facilitate walking and bicycling as a viable transportation choice, provide recreational opportunities, and link major parks and open spaces with Seattle neighborhoods. These trails provide an off-road path or sidewalk for pedestrians (separated from motor vehicles) for bicyclists, as well as off-road trails, special bike lanes, and signed routes in the street right-of-way.

The Waterfront Trail is planned to be extended to connect with the future Mountains to Sound Greenway Trail at S. Atlantic Street. It connects to the south with the multi-use trail along E. Marginal Way, which is accommodated on a bicycle lane painted on the west side of the roadway and on the sidewalk. The trail along E. Marginal Way connects to a more extensive trail system in West Seattle via an east–west trail that crosses Harbor Island via S. Spokane Street and continues to the west along West Seattle's Alki Park (Port of Seattle 1997). The Waterfront Trail connects to the north with the Elliott Bay Trail, which extends through Myrtle Edwards Park, Elliott Bay



Alaska Way Viaduct/554-1585-025/06(0620) 3/04 (K)

0 800
SCALE IN FEET

N

Exhibit 4-1
Section 4(f) Resources
South

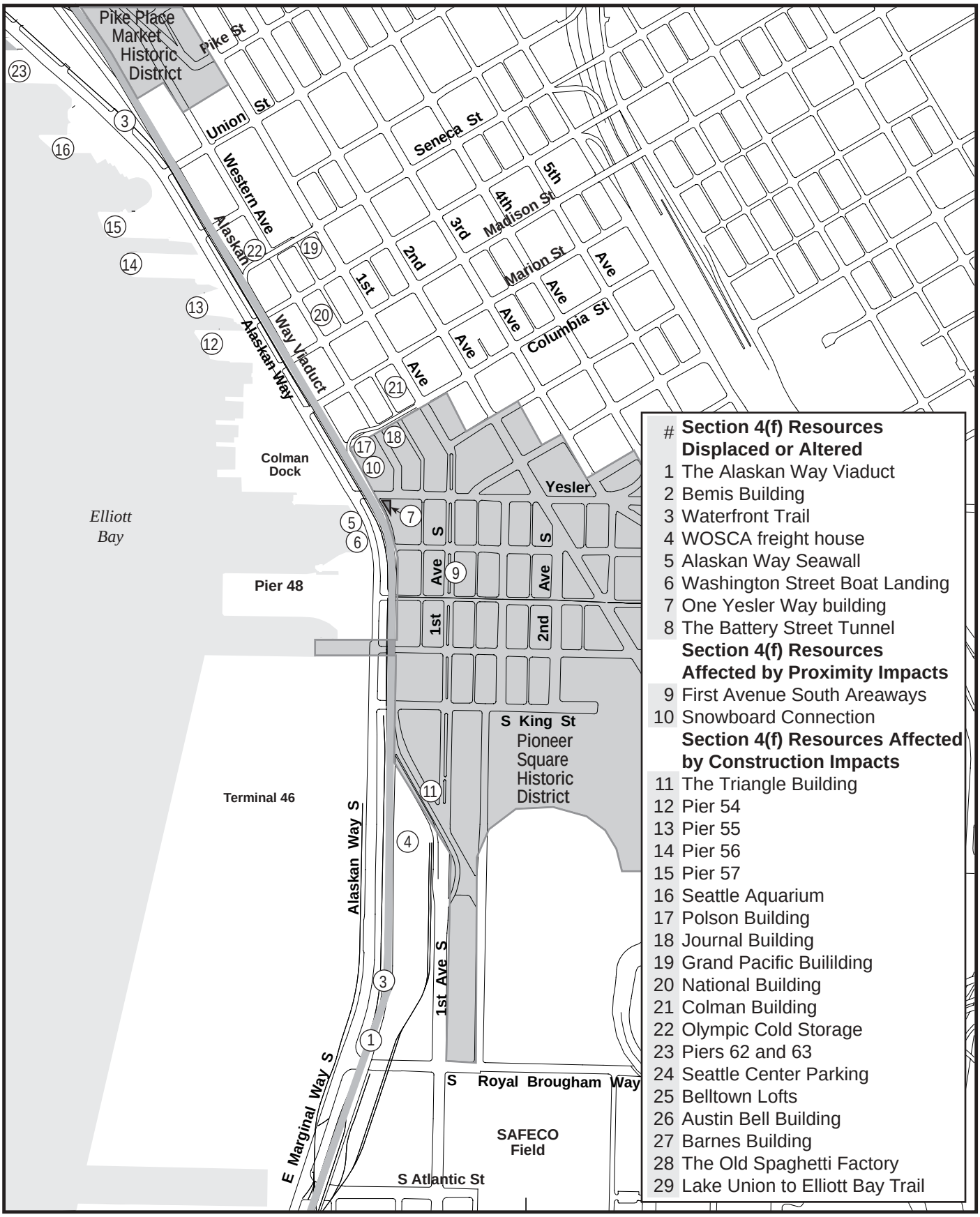


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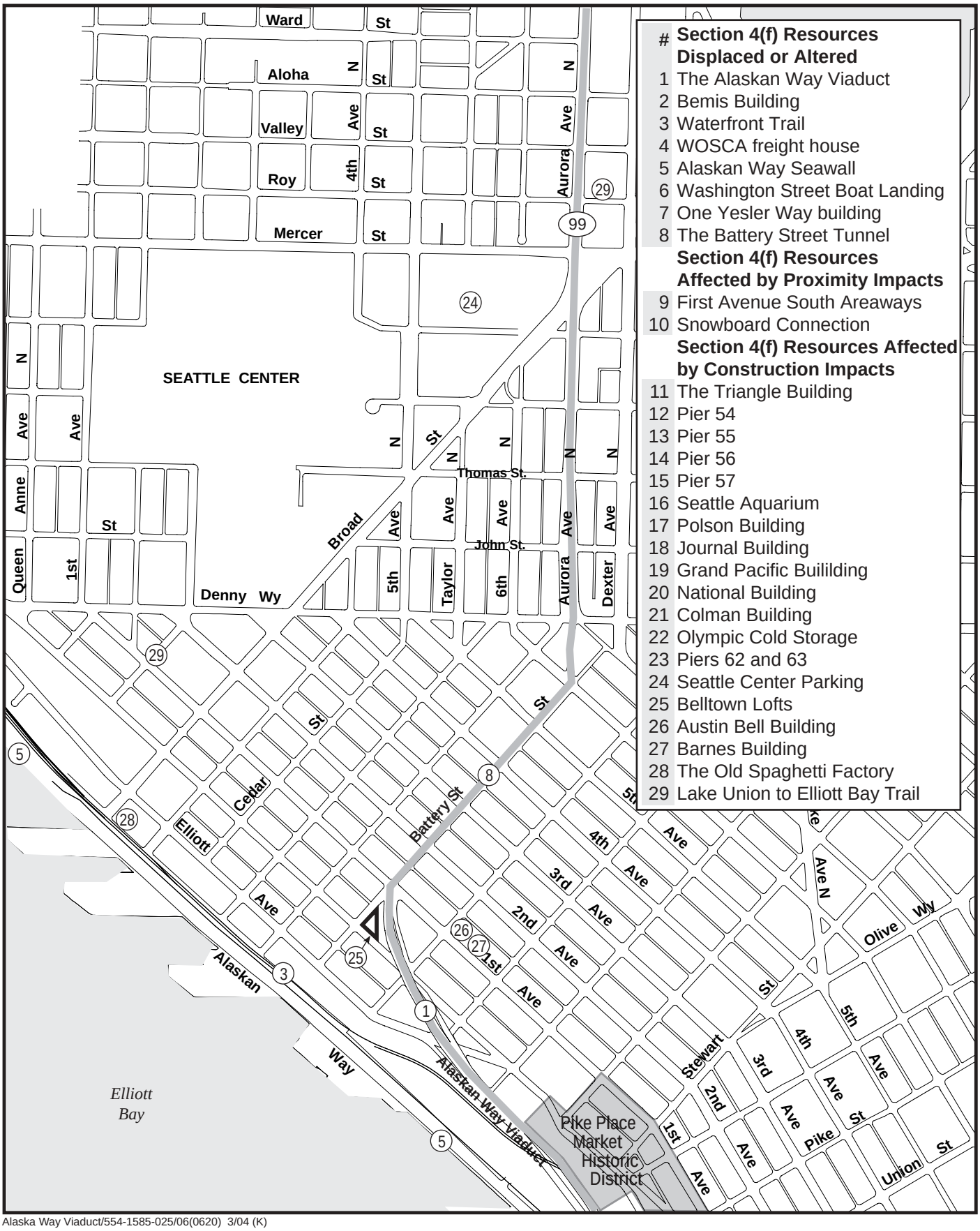
Exhibit 4-2
Section 4(f) Resources
Central



#	Section 4(f) Resources Displaced or Altered
1	The Alaskan Way Viaduct
2	Bemis Building
3	Waterfront Trail
4	WOSCA freight house
5	Alaskan Way Seawall
6	Washington Street Boat Landing
7	One Yesler Way building
8	The Battery Street Tunnel
	Section 4(f) Resources Affected by Proximity Impacts
9	First Avenue South Areaways
10	Snowboard Connection
	Section 4(f) Resources Affected by Construction Impacts
11	The Triangle Building
12	Pier 54
13	Pier 55
14	Pier 56
15	Pier 57
16	Seattle Aquarium
17	Polson Building
18	Journal Building
19	Grand Pacific Buililding
20	National Building
21	Colman Building
22	Olympic Cold Storage
23	Piers 62 and 63
24	Seattle Center Parking
25	Belltown Lofts
26	Austin Bell Building
27	Barnes Building
28	The Old Spaghetti Factory
29	Lake Union to Elliott Bay Trail

Alaska Way Viaduct/554-1585-025/06(0620) 3/04 (K)

0 800
SCALE IN FEET

N

Exhibit 4-3
Section 4(f) Resources
North

Exhibit 4-4. Summary of Effects and Potential Alternatives and Potential to Minimize Effects

Current Name (Historic Name)	Historic Designation	Potential Effects	Potential Feasible and Prudent Alternatives	Planning to Minimize Effects
The Waterfront Trail: A multi-purpose asphalt trail extending from Bell Street to S. Royal Brougham Way (planned to be extended to S. Atlantic Street)	NA	**Retrofit Alternative** Displaced between S. Atlantic Street and Pike Street	Retrofit	Provide alternative facilities with equal or greater provision to accommodate pedestrians and bicycles.
Construction Impacts				
Construction Noise Impacts on the Seattle Aquarium	NA	**All Alternatives** **Noise** levels associated with construction may affect visitors to the Aquarium. Many of the exhibits are located outdoors. Attendance could be affected.	No	Incorporate a construction noise control plan and other measures to ensure that the project minimizes harm.
Pier 62/63 Park Summer Concert Series	NA	**All Alternatives** Noise from the Battery Street Flyover Detour, consisting of an elevated ramp over the Art Institute, would produce noise levels adjacent to the Summer Concert Series at that would likely result in curtailing, eliminating, or relocating this use.	Broad Street Detour (except Surface Alternative) with ramp connection to existing viaduct Because the alternative routes for this detour also have effects on Section 4(f) resources	Construction noise analysis will be needed prior to determining a detour alternative
Reduction in Attendance at Fee-Supported Resources: • Seattle Aquarium, • Pier 62/63 Summer Waterfront Concert Series •	NA	**All Alternatives** **Reduction in Attendance** Prolonged construction periods along the waterfront could limit attendance at public park facilities, or concessionaires to public parks. The facilities are dependent upon user fees for a substantial part of their operating or capital costs.	No	Incorporate construction access plans and other measures to ensure continued public access.

Exhibit 4-4. Summary of Effects and Potential Alternatives (continued)

Current Name (Historic Name)	Historic Designation	Potential Effects	Potential Feasible and Prudent Alternatives	Planning to Minimize Effects
Historic Resources Displaced				
Bemis Building	Eligible NR	**All Alternatives** Atlantic Street Overcrossing: **Restrict access to loading docks**	Elevated SR 99 At-grade Intersection	Potential design to preserve surface street connections
		Atlantic Street Overcrossing: **Change historic context of south facade**	Elevated SR 99 At-grade Intersection	None with Elevated Atlantic Street Overcrossing
WOSCA Freight House	Determined eligible NR; eligible SL PSHD	**All Alternatives** Demolish for Staging Area	Terminal 46 Staging Possible other Staging	Reconfigure Staging Area
Alaskan Way Seawall	Eligible NR Eligible SL	**All Alternatives** Demolish	No	Documentation
Alaskan Way Viaduct	Determined eligible NR; eligible SL	**All Alternatives** Demolish	No	Documentation
Battery Street Tunnel	Determined eligible NR; eligible SL	**All Alternatives except Retrofit** Ventilation Retrofit will extend portals approx. 100 feet	Retrofit does not include	Documentation
Washington St. Boat Landing	NR, PSPD	**All Alternatives** Relocate	Additional Study of Ferry Access Options	Potential planning and design to maintain connection with Historic District

Exhibit 4-4. Summary of Effects and Potential Alternatives (continued)

Current Name (Historic Name)	Historic Designation	Potential Effects	Potential Feasible and Prudent Alternatives	Planning to Minimize Effects
1 Yesler Building	PSHD	**Tunnel, Bypass Tunnel, Surface** Demolish or Relocate for northbound lanes to Western Avenue	Retrofit, Aerial Aerial For Tunnel, potential alternative roadway configurations that would retain building requires detailed transportation analysis of Alternatives	Potential planning for relocation
First Avenue Areaways		**Surface Alternative** **Construction vibration** impacts on structural integrity	Alternatives to additional vehicular lanes on First Avenue requires detailed transportation analysis of Alternatives	Reconstruction of Areaways as part of proposal
Antique Importers/Snowboard Connection	PSHD PPPM	**Tunnel, Bypass Tunnel** **Vent Structures** may affect integrity of Historic District context	Aerial Surface	Potential planning and design for vents to fit into historic context
Catholic Seamen's Club (Paramount Studios)	Eligible SL	**All Alternatives except Retrofit** Existing Battery Street Tunnel runs through basement, retrofit may alter building	Retrofit	Potential planning and design to avoid changing historic features
Construction Impacts				
Historic Buildings Adjacent to Construction Area **(Numerous Buildings)**	PSHD eligible NR; eligible SL	**All Alternatives** **Construction vibration** impacts on structural integrity	Some variation depending on facilities for each alterna tive	Planning for controls on construction or structural improvements to buildings
First Avenue Areaways		**All Alternatives** **Construction vibration** impacts on structural integrity	Alternatives to additional vehicular lanes on First Avenue as detour routes requires detailed transportation analysis of alternatives	Reconstruction of Areaways as part of proposal

Exhibit 4-4. Summary of Effects and Potential Alternatives (continued)

Current Name (Historic Name)	Historic Designation	Potential Effects	Potential Feasible and Prudent Alternatives	Planning to Minimize Effects
Historic Buildings Adjacent to Construction Area Applies primarily to buildings with sole access to Alaskan Way	PSHD eligible NR; eligible SL	**All Alternatives** **Restriction to access** Temporary (days to weeks) prohibition of access during demolition	Some variation depending on facilities for each alternative	Planning for specific access proposal, including access via alley

Abbreviations: NR = National Register; SL = Seattle Landmark;
PSHD = Pioneer Square Historic District; PSPD = Pioneer Square Preservation District (**local**); PPMHD = Pike Place Market Historic District

Park, and around Terminals 89, 90, and 91 to Smith Cove Park and the Elliott Bay Marina in the Magnolia neighborhood (Seattle 2001).

The facility consists of a 9-foot-wide asphalt trail between S. Royal Brougham Way and Pike Street located between the existing viaduct and the surface street. The Waterfront Trolley line is located immediately west of the trail north of Main Street. It consists of a 12-foot-wide asphalt trail from Pike Street to Bell Street on the east side of the trolley line. In this section, a separate concrete sidewalk is located on the west side of the trolley line. Between Bell Street and Clay Street, the trail is accommodated on a 24-foot-wide sidewalk between the surface street and the BNSF rail line. Between Clay Street and Myrtle Edwards Park, a separate trail is not provided. Pedestrians are accommodated on the sidewalk on the west side of the surface street with bicycles accommodated in the vehicular lanes.

The Waterfront Trail is designated as part of the Seattle Urban Trails System in the City's Comprehensive Plan. Because the trail was built prior to standards for bicycle facilities were developed, it does not meet minimum American Association of State Highway and Transportation Officials (AASHTO) (national) design guidelines. Generally, the multi-purpose trail fills with pedestrians during midday, making it unworkable for heavy bike use (Lagerwey 2002 personal communication).

Recreational activities currently provided on the Waterfront Trail include exercise-related activities such as walking, bicycling, and skating as well as passive activities such as enjoyment of scenery and people watching. The location of the trail along the waterfront allows those using the trail primarily as a transportation facility to incidentally enjoy the urban and natural scenery. The width, grade, and surface of the existing trail are adequate for persons with mobility impairments, including wheelchairs and walkers with limited stamina and limited ability to negotiate grades, such as the elderly.

Potential Operational Effects

Rebuild Alternative

In the Rebuild Alternative, the trail is not included in current plans, but could be replaced in its current configuration after construction.

Aerial Alternative

Conceptual plans for the segment between S. King and Pike Streets indicate the replacement of the trail by separate bicycle lanes adjacent to vehicular lanes and widening of the sidewalk on the west side of Alaskan Way right-of-way and construction of a new sidewalk on the east side of the right-of-way. The pedestrian capacity and amenities of the trail would be accommodated by

the widened sidewalk on the west side and new sidewalk on the east. The sidewalk on the west would provide greater visual interest than the existing trail because it is closer to the waterfront. The sidewalk on the east would provide less visual interest than the existing trail because it is further from the waterfront, the aerial structure intervenes in most views, and it would often be shaded. The bicycle lanes adjacent to vehicle lanes would provide safer and more effective bicycle capacity than the existing trail, which is often unavailable due to pedestrian use. Visual access from the northbound lane on the east side would be under the aerial structure, would experience higher noise levels and less visual interest because it is further from the waterfront, and would often be shaded. The aerial structure would intervene in most views.

North of Pike Street, the current trail configuration will be retained.

Tunnel and Bypass Tunnel Alternatives

Conceptual plans for the segment between S. King and Pike Streets indicate the replacement of the trail by separate bicycle lanes adjacent to vehicular lanes and widening of the sidewalk on the west side of Alaskan Way and construction of a new sidewalk on the east side. The pedestrian capacity and amenities of the trail would be accommodated by the widened sidewalk on the west side and new sidewalk on the east. The sidewalk on the west would provide additional width equal or greater to the width of the existing trail. It would provide greater visual interest than the existing trail because it is closer to the waterfront. The sidewalk on the east would provide less visual interest than the existing trail because it is further from the waterfront. However, the placement of the sidewalk adjacent to building street fronts, in the absence of the viaduct, would likely provide a lively urban context framed by both the waterfront and downtown buildings. The bicycle lanes adjacent to vehicle lanes would provide safer and more effective bicycle capacity than the existing trail, which is often unavailable due to pedestrian use. Visual access for bicyclists to waterfront and cityscape visual amenities would be available from both bicycle lanes. The overall quality of the facilities for recreation use would be greater in this segment than the existing trail.

North of Pike Street, the current trail configuration will be retained in the Bypass Tunnel Alternative. In the Tunnel Alternative, the asphalt trail and/or the sidewalk on the east side of Alaskan Way could be narrowed to accommodate the tunnel portal at Alaskan Way and Pine. The current conceptual configuration would place the streetcar tracks adjacent to vehicle lanes with a single 9-foot-wide pedestrian walkway at the east side of the right-of-way. The reduced width of the walkway would reduce the pedestrian capacity and comfort. The lack of bicycle lanes on the street would

potentially increase bicycle/vehicle and bicycle/pedestrian conflicts. North of the tunnel portal, pedestrian facilities on the east side of the roadway may be reduced in width to provide turn lanes at intersections to accommodate higher traffic volumes. In the vicinity of the portal, narrower facilities would discourage users from lingering in the area for relaxation and diversion. For users of the corridor for exercise-related activities such as walking, bicycling, and skating the restricted width at the portal area would not necessarily lead to avoidance of use of the rest of the corridor where visual amenities remain. In this constricted area, users would likely transit through more rapidly.

Surface Alternative

Conceptual plans for the segment between King and Pike Streets indicate the replacement of the trail by separate bicycle lanes adjacent to vehicular lanes and widening of the sidewalk on the west side of Alaskan Way and construction of a new sidewalk on the east side. The pedestrian capacity and amenities of the trail would be accommodated by the widened sidewalk on the west side and a new sidewalk on the east. The sidewalk on the west would provide additional width equal or greater to the width of the existing trail. It would provide greater visual interest than the existing trail because it is closer to the waterfront. The sidewalk on the east will be somewhat narrower than in the Tunnel and Bypass Tunnel Alternatives south of Yesler Way. The bicycle lanes adjacent to vehicle lanes would provide safer and more effective bicycle capacity than the existing trail, which is often unavailable due to pedestrian use. Visual access for bicyclists to waterfront and cityscape visual amenities would be available from both bicycle lanes. The overall quality of the facilities for recreation use would be greater in this segment than the existing trail.

North of Pike Street, the current trail configuration will be retained.

Possible Planning to Minimize Harm and Feasible and Prudent Alternatives

Aerial Alternative

Prior to selection of the Aerial Alternative as the preferred alternative, and prior to issuance of the Final EIS and Record of Decision, additional analysis will be needed to:

(a) Support a finding that use can be avoided by planning to minimize harm, including revised plans that may include elements such as:

Between S. King and Pike Streets, widening of the waterfront promenade by the width of the existing trail could provide equivalent or better facilities for pedestrians. Bicycles could be accommodated by providing bicycle lanes or a two-way trail on the west side of the surface street.

(b) If it is not possible to support a conclusion that the above measures will avoid the adverse impact, analysis must support a finding that there is no feasible and prudent alternative to the use of the resource.

Tunnel and Bypass Tunnel Alternatives

Prior to selection of the Tunnel or Bypass Tunnel Alternative as the preferred alternative, and prior to issuance of the Final EIS and Record of Decision, additional analysis will be needed to:

(a) Support a finding that use can be avoided by planning to minimize harm, including revised plans that may include elements such as:

Between Pike and Clay Streets, for the Tunnel Alternative only, for the area near the tunnel portal, greater trail and sidewalk width could be provided by several possible options:

1. Reducing the width of the tunnel portal.
2. Reducing street lane width.
3. Reducing the width of the streetcar corridor.
4. Other options not yet developed.

(b) If it is not possible to support a conclusion that the above measures will avoid the adverse impact, analysis must support a finding that there is no feasible and prudent alternative to the use of the resource.

Potential Construction Impacts

All Alternatives

In all alternatives, the trail will be displaced between S. Atlantic Street and Pike Street during construction. The duration of construction ranges between 7.5 and 11 years, with an additional 18 months of utility relocation in most cases, which also may displace portions of the trail. Because this impact occurs for a long period of time, the displacement may be considered use of a Section 4(f) resource.

Bicycles and pedestrians can be routed on the parallel First Avenue and Western Avenue during construction and use vehicle lanes and sidewalks. The lack of views of the waterfront and the combined facilities and high pedestrian volumes on city streets is not likely to provide the same visual and other amenities and is likely to attract fewer users for exercise-related activities such as walking, bicycling, and skating, as well as passive activities such as enjoyment of scenery and people watching.

Possible Planning to Minimize Harm and Feasible and Prudent Alternatives

Prior to issuance of the Final EIS and Record of Decision, additional analysis will be needed to:

(a) Support a finding that use can be avoided by planning to minimize harm including revised plans that may include elements that continue a route for the waterfront trail during construction, or

(b) If it is not possible to support a conclusion that the above measures will avoid the adverse impact, analysis must be developed to support a finding that there is no feasible and prudent alternative to the constructive use of the resource.

4.1.2 Central Waterfront – Fee-Supported Public Park and Recreation Facilities

Prolonged construction periods along the waterfront could limit attendance at public park facilities or concessionaires to public parks. The facilities dependent upon user fees for a substantial part of their operating or capital costs could experience loss of revenues that could reduce programs offered or lead to deferral of planned capital improvements. Public park facilities or concessionaires potentially affected include:

- The Seattle Aquarium, owned and operated by the Seattle Parks Department.
- The Summer Waterfront Concert Series, a concessionaire of the Seattle Parks Department.

These facilities are discussed below with a single mitigation strategy discussed for all.

Affected Environment

Seattle Aquarium

The facility is approximately 68,000 square feet and includes portions of Pier 59 and Pier 60 to the north. The purpose of the Seattle Aquarium program is to provide exhibits and environmental educational opportunities that expand knowledge of, inspire interest in, and encourage stewardship of the aquatic wildlife and habitats of Puget Sound and the Pacific Northwest. Exhibits focus on the water and shoreline environments of the Pacific Northwest and also include an exhibit on tropical coral reef life, as well as temporary exhibit spaces. The collections include marine mammals, native fish, mollusks, plants, and shore birds. Other programs include education programs, both at the aquarium and in the field, and research as well as breeding programs for a variety of species. These breeding programs are important to the aquarium to maintain the exhibits and to further the broad purposes of the Seattle Aquarium programs. The maintenance of live displays requires a plentiful supply of clean seawater, which is provided by a water intake at the end of Pier 59.

Annual attendance at the aquarium ranged between 620,989 and 630,021 visits per year in the past 10 years through 2002. Seasonal attendance is greatest in the summer, with August having the highest attendance. Approximately 50 percent of current attendees live within a 50-mile radius of the aquarium, with almost 40 percent residing in King County. Another 12 percent live elsewhere in Washington State. About 40 percent of attendees are from out of state (ConsultEcon, Inc. 2001). The aquarium attracted approximately 220,500 visits from out-of-state tourists in 2002. Approximately 60 percent of attendees are adults with 40 percent youth and children. About 7 percent of attendees are group visits from schools that occur largely in the winter and spring months, which otherwise are low attendance months for the aquarium (Woodland 2003 personal communication).

The Seattle Parks and Recreation Department and the Aquarium Society have proposed an expanded new aquarium incorporating the existing building at Pier 59 and replacing the existing Waterfront Park south of Pier 59.

Major factors influencing the success of the Seattle Aquarium in attracting visits include:

- Visibility to the public, supportive land uses, and strong connections to the water, which are provided by the location on the waterfront.
- Physical accessibility, especially with respect to the proximity of visitor parking. This is an especially important factor for the Seattle Aquarium since it is separated from the Pike Place Market, Retail Core, and other upland areas by a steep hillside.
- A critical mass of attractions in the area, which is provided by proximity to major pedestrian attractions such as the Pike Place Market and nearby Pioneer Square as well the Colman Dock Ferry Terminal and waterfront commercial attractions.
- A strong thematic focus and the depth of visitor experience offered.

Implementation of the new Aquarium Master Plan has been delayed pending schedule and funding decisions on the Alaskan Way Viaduct project.[2] Additional description is provided in the Parks and Recreation Technical Memorandum (see Appendix H).

Pier 62/63 Park

This facility is owned by the Seattle Parks Department and consists of a large unobstructed deck. Public access is provided with views of the water, Olympic Mountains, and downtown skyline. During the summer months, the

[2] Seattle Dept of Parks and Recreation, 2004 Budget Proposal http://www.pan.ci.seattle.wa.us/budget/04proposedbudget/parks.pdf.

pier is developed with temporary facilities for an outdoor concert series and public access is limited to a 12-foot line along the north edge. During concerts on 18 to 20 evenings, access is by paid admission. Future plans include relocation of functions of the Waterfront Park at Pier 57/59 to this area when the Seattle Aquarium expands to the south of Pier 59. Noise from the existing viaduct is a component of noise levels in the area. Noise levels limit the types of acts that can be staged at the concert venue. Sources of noise in addition to the existing viaduct include trains using the rail line and tunnel to the east and north, airplanes, ferries, and large trucks on the surface street (Zalutsky 2002 personal communication).

Potential Constructive Use During Construction

Construction Access – Public Attendance –Seattle Aquarium, Piers 62/63 Park, Summer Concert Series

Construction along the waterfront may reduce attendance at all three fee-supported facilities due to the public avoidance of the area because it is perceived as a construction site. Similar avoidance of construction areas have been experienced due to major construction projects such as the bus tunnel in downtown Seattle.

Three of the four major factors identified as influencing the success of an aquarium in attracting visits would also apply to other uses. These factors would be negatively affected during construction:

- Visibility, supportive land uses, and strong connections to the water.
- A critical mass of attractions in the area.
- Physical accessibility for both pedestrians and persons driving would be limited by the construction area in several ways:
- Displacement of parking under the viaduct would occur for extended periods and would limit access by car. Impacts vary according to the length of the construction period:
    - Rebuild Alternative – 9 years, including the initial 18 months or preliminary construction and utility relocation.
    - Aerial Alternative – 12.5 years, including the initial 18 months or preliminary construction and utility relocation.
    - Tunnel Alternative – 10.5 years, including the initial 18 months for preliminary construction and utility relocation.
    - Bypass Tunnel Alternative – 10 years, including the initial 18 months for preliminary construction and utility relocation.
    - Surface Alternative – 9.5 years, including the initial 18 months or preliminary construction and utility relocation.

The current proposal includes no specific measures to replace parking or otherwise compensate for the loss.

- Interruption of convenient connections to downtown and other centers from which visitors would access the waterfront, including tourist destinations such as Pioneer Square and the Pike Place Market. Impacts would vary by alternative both by construction time and by the character of construction between the waterfront and downtown.
  - Rebuild Alternative
    - During 2 years of seawall reconstruction, linear movement along the waterfront would be substantially curtailed.
    - During the 4.5 years of viaduct reconstruction, linear movement along the waterfront would be restored. Access to the east would be intermittent, as different sections varying in dimension would be closed to pedestrian and vehicle crossings, except along specific corridors.
  - Aerial Alternative
    - During 3 years of seawall reconstruction and construction of the temporary aerial structure, linear movement along the waterfront would be substantially curtailed.
    - During 4 years of construction of the new aerial structure, linear movement along the waterfront would be restored, but would be severely affected by traffic noise. Access to the east would be intermittent, as different sections varying in dimension would be closed to pedestrian and vehicle crossings, except along specific corridors.
  - Tunnel Alternative
    - During 5 years of construction of the initial tunnel, linear movement along the waterfront and movement to the east would be closed to pedestrian and vehicle crossings, except along specific corridors.
    - During 3 years of construction of the second tunnel, linear movement along the waterfront would be restored but movement to the east across the second tunnel would be closed to pedestrian and vehicle crossings, except along specific corridors.
  - Bypass Tunnel Alternative
    - During 4.5 years of construction of the bypass tunnel, linear movement along the waterfront and movement to the east

would be closed to pedestrian and vehicle crossings, except along specific corridors.

- During 2.5 years of removal of the existing viaduct, linear movement along the waterfront would be restored but movement to the east would be interrupted across sections of the existing viaduct corridor.

- Surface Alternative
  - During 2 years of seawall reconstruction, linear movement along the waterfront would be substantially curtailed.
  - After seawall construction, access to the east under the existing viaduct would be available during the period of construction of new facilities south of S. King Street and north of Pike Street, except for a period near the end of construction when the viaduct would be demolished in sections.

Construction Access – Public Attendance – Seattle Aquarium

The Seattle Aquarium is especially sensitive to any potential reduction in attendance during construction due to its dependence on the waterfront location and the synergistic relationship with other waterfront uses and other tourist destinations such as the Pike Place Market. The Aquarium is likely to be very sensitive to changes in revenue as the cost of maintaining the exhibits is nearly fixed. Few opportunities for reducing costs are available without reducing the collection of specimens, which in turn, is likely to reduce the appeal of the facility. In addition, the delay in implementing plans to build an enhanced facility, together with a decrease in attendance during seawall reconstruction, may make it more difficult to rebuild attendance and more difficult to build public acceptance of funding through bonds or other means.

Construction Access – Public Attendance – Piers 62/63 Park, Summer Concert Series

The Pier 62/63 site is especially dependent on access along the waterfront because connections to downtown are blocked by topography and intervening development. Even with maintenance of access routes across the construction zone, the site is likely to be perceived as isolated and difficult to access. The narrowing of vehicular lanes during construction together with the lack of pedestrian connections may present substantial challenges for patron access.

The loss of revenue from cessation, relocation, or reduced patronage may affect the economic viability of this cultural resource. Reduced income also may affect other cultural activities such as the Bumbershoot Festival, which is staged by the same non-profit organization. Income derived from the concert

series provides for maintenance of an adequate level of staffing and a stability of income that makes staging both events more economically reliable.

Possible Planning to Minimize Harm and Feasible and Prudent Alternatives

For any of the alternatives under consideration, prior to designation of the preferred alternative, and prior to issuance of the Final EIS and Record of Decision, additional analysis will be needed to:

(a) Support a finding that use can be avoided by planning to minimize harm, including revised plans that may include elements such as:

i. Develop a strategy to address each of the potential sources of reduced attendance, which may include measures such as:

1. The likely public perception that the waterfront is not as convenient or pleasant an environment to visit during construction could be addressed through a coordinated strategy to include public information, as well as the other elements listed below.
2. The loss of parking under the existing viaduct and the perceived lack of opportunities for vehicular access could be addressed by a number of strategies, including the following possibilities:
   - Provision of alternative parking supplies.
   - Provide and publicize alternative modes of access to the waterfront.
3. Address disruption of the connections between the Central Waterfront and other downtown centers, such as the Pike Place Market or Pioneer Square, by providing clear pedestrian and vehicular routes around or across construction sites.
4. Minimizing disruption of existing and accustomed patterns of movement along the waterfront corridor has the potential of reducing the overall attractiveness of the waterfront as a destination. Several strategies may be appropriate to address this, including the following possibilities:
   - Preserve continuity along the waterfront core area between Piers 54 and 59 by scheduling of construction activities.
   - Provide a continuous pedestrian corridor east of the construction area for continuous north–south movement when the waterfront promenade is displaced with east–west corridors to individual piers or other attractions.

- Construct a temporary access corridor on the water side of the existing seawall between Piers 54 and 55 and between Piers 56 and 57 to allow north–south movement between piers while the seawall and waterfront promenade are being reconstructed.

5. If park and recreation uses that are dependent on admission fees suffer reduced attendance and reduced financial support from that source, despite the mitigation strategy outlined above, curtailment of activities to reduce cost, or funding from other sources could be considered.

ii. More detailed construction noise analysis will be needed prior to determining a detour alternative to determine whether impacts can be mitigated. The alternative routes for traffic detour have different levels of impact on other Section 4(f) resources, discussed below.

(b) If it is not possible to support a conclusion that the above measures will avoid the adverse impact, analysis must support a finding that there is no feasible and prudent alternative to the use of the resource.

4.1.3 Potential Constructive Use – Noise and Vibration During Construction – Seattle Aquarium

Potential Construction Impacts

Noise levels associated with construction are likely to be at a level and pattern that may discourage visitors and potentially reduce attendance during construction. Many of the exhibits (including popular "hands-on" exhibits) are located outdoors.

Additional noise and vibration impacts are discussed in the Parks and Recreation Technical Memorandum (see Appendix H).

Possible Planning to Minimize Harm and Feasible and Prudent Alternatives

For any of the alternatives under consideration, prior to designation of the preferred alternative, and prior to issuance of the Final EIS and Record of Decision, additional analysis will be needed to:

(a) Support a finding that use can be avoided by planning to minimize harm, including revised plans that may include a detailed construction noise mitigation plan developed in conjunction with the Seattle Aquarium and other wildlife specialists.

(b) If it is not possible to support a conclusion that the above measures will avoid the adverse impact, analysis must support a finding that there is no feasible and prudent alternative to the use of the resource.

4.1.4 Potential Constructive Use – Noise and Vibration During Construction – Piers 62/63 Park, Summer Concert Series

Potential Construction Impacts

If seawall construction occurs during concert setup and performance hours, the summer concert program would not be viable because of noise disruption.

Construction impacts would vary somewhat between detour alternatives. The Battery Street Flyover Detour with an aerial structure adjacent to the park is likely to have noise levels that would preclude the summer concert program. With the Broad Street Detour, the additional traffic on the surface street may produce additional noise levels that affect viability as a performance venue, although noise from heavy trucks is likely to be lower during evening performance hours.

Possible Planning to Minimize Harm and Feasible and Prudent Alternatives

For any of the alternatives under consideration, prior to designation of the preferred alternative, and prior to issuance of the Final EIS and Record of Decision, additional analysis will be needed to:

(a) Support a finding that use can be avoided by planning to minimize harm, including revised plans that may include elements such as more detailed construction noise analysis. This detailed analysis will be needed prior to selecting a detour alternative to determine whether impacts can be mitigated. The alternative routes for traffic detours have different levels of impact on Section 4(f) resources, discussed below.

(b) If it is not possible to support a conclusion that the above measures will avoid the adverse impact, analysis must support a finding that there is no feasible and prudent alternative to the use of the resource.

4.1.5 Lake Union to Elliott Bay Trail

Affected Environment

This potential connection is designed to link South Lake Union to Elliott Bay. It is being developed with funds from the Pro Parks 2000 levy approved by Seattle voters in November 2000. It is proposed to utilize both public and private sidewalks and other corridors. It would connect the South Lake Union Park to Seattle Center, the Olympic Sculpture Park to Myrtle Edwards Park, and link to the Waterfront Trail via the Westlake Trail to the Burke Gilman Trail. The trail alignments are anticipated to be developed in conjunction with the City's South Lake Union plans and the Alaskan Way Viaduct and Seawall Replacement Project.

Potential Construction Impacts

Implementation of the connection to the waterfront may be affected by construction impacts, with long-term noise and visual impacts from the Broad Street overpass. The option of closing the Broad Street Underpass and widening Mercer Street to accommodate two-way traffic would likely involve shifting the Lake Union to Elliott Bay Trail from an underpass at Roy Street to the widened Mercer Street. The option of lowering Aurora Avenue N. to allow east–west surface streets to connect at-grade would likely result in the Potlatch Trail using a road crossing at Roy Street. Either crossing would serve as a connection, but the proximity impacts of co-location with the Mercer Street undercrossing would subject bicyclists and pedestrians to greater noise, fumes, and other traffic impacts.

Possible Planning to Minimize Harm and Feasible and Prudent Alternatives

For any of the alternatives under consideration, prior to designation of the preferred alternative, and prior to issuance of the Final EIS and Record of Decision, additional analysis will be needed to:

(a) Support a finding that constructive use can be avoided by planning to minimize harm, including revised plans that may include elements such as more detailed analysis to assess potential noise and other proximity impacts, as well as potential mitigating measures such as separation or barriers between vehicle lanes and the trail for each alternative.

(b) If it is not possible to support a conclusion that the above measures will avoid the adverse impact, analysis must support a finding that there is no feasible and prudent alternative to the use of the resource.

4.2 Historic Resources

4.2.1 Alaskan Way Viaduct

Affected Environment

The Alaskan Way Viaduct has been determined eligible for listing in the NRHP under Criterion A for its association with bridge and tunnel building in Washington in the 1950s and under criterion C for its type, period, materials and methods of construction. It is the only multi-span concrete double-level bridge in the state. It is also significant for its role in the development of the regional transportation system and of Seattle's waterfront.

Potential Operational Impacts of All Alternatives

All alternatives either displace the existing structure or modify the structure to an extent that its historic value is compromised.

Feasible and Prudent Alternatives

There are no feasible and prudent alternatives to replacement or reconstruction of the existing viaduct given inherent structural limitations and risk of failure.

Minimization of Harm

Because alteration or replacement of the existing viaduct is included in all alternatives, prior to issuance of the Final EIS and Record of Decision, specific documentation plan to ensure that fully adequate records are made of the bridge in accordance with the HAER.

4.2.2 WOSCA Freight House, 801 First Avenue S.

Affected Environment

This building (not the altered freight shed) has been determined eligible for listing in the NRHP and is important under Criterion A as one of the last and most intact of the numerous railroad freight houses that once determined the character of this area.

Potential Operational Impacts of All Alternatives

This building would be displaced for construction staging areas and for one of the ferry parking options under current conceptual plans.

Feasible and Prudent Alternatives

A potential alternative site for ferry parking has been identified on Terminal 46. Potential alternative sites for staging areas include a variety of industrial property in the Duwamish Industrial Area generally south of S. Atlantic Street and use of the Port of Seattle Terminals along the Duwamish Waterway. The use of the Port of Seattle Terminal 46 has been identified as an alternative staging site. Other sites are not as close to the construction site as the WOSCA site, which is adjacent to the existing viaduct.

Alternative privately owned sites have not been identified. Privately owned parcels to the immediate south of the site include the Whatcom Rail Yard, used for assembly of unit trains for containers delivered by ship to the Port of Seattle maritime terminals. Displacement of this facility would likely involve substantial economic disruption to the function of the Port of Seattle container facilities. Other privately owned sites generally are located between Utah Avenue S. and First Avenue S. A site comparable to the size of the WOSCA site could potentially be assembled. Access to the construction area would involve crossing rail lines, which is currently available only at S. Atlantic Street and S. Hanford Street. Because of conflict with other traffic, temporary

construction access across the railroad south of S. Atlantic Street would likely be required involving a temporary overpass.

The Port of Seattle terminals also can be considered as staging areas. The upland area of Pier 48 is currently used for parking with the majority of the balance of the pier unused because of structural issues. This site by itself, however, is not of adequate size. Terminal 46 is currently leased to a shipping line, but consolidation of that operation with others terminals is under consideration.[3] The Port of Seattle has acknowledged that some Port facilities have become underutilized as Seaport customers have consolidated and combined their operations.[4] This may provide flexibility to use other sites as well, depending on negotiations with the Port and their tenants.

Additional Analysis

Prior to proceeding with alternatives incorporating ferry parking or staging areas that may affect this building and prior to issuance of the Final EIS and Record of Decision, additional analysis will be needed to

a) Determine whether ferry parking:

i) can be developed on other sites;

ii) can be developed on this site while retaining the historic building, possibly adapting it to other uses such as offices for the ferry system.

b) Develop specific planning to determine whether construction staging area can be:

i) accommodated on other sites, or

ii) accommodated on this site while retaining the historic building without unique problems or cost, or social, economic, or environmental impacts of extraordinary magnitudes.

If it is not possible to support a conclusion that the above measures will avoid the adverse impact, analysis must support a finding that there is no feasible and prudent alternative to the use of the resource.

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[3] Seattle PI, February 20, 2003 http://seattlepi.nwsource.com/business/109362_port20.shtml.

[4] Port of Seattle Press Release, July 10, 2002 http://www.portseattle.org/press/07_10_2002_58.htm.

Minimization of Harm

Additional planning may identify feasible options that will maintain the historic building for storage or office use and incorporate preservation into plans for the staging area and ferry parking.

If no feasible alternative is developed, additional analysis will be needed to develop a specific documentation plan to ensure that fully adequate records are made of the historic resources.

4.2.3 Bemis Building

Affected Environment

This building was the manufacturing plant for Bemis Brothers Bag Company for more than 80 years. It has been determined eligible for listing in the NRHP and is important under Criterion C as an example of an early twentieth century industrial building. The main façade is on the north, with a distinctive entry and terra cotta ornament.

Potential Operational Impacts of All Alternatives

The Bemis Building could potentially have restricted access on S. Atlantic Street from the elevated S. Atlantic Street overcrossing of the at-grade SR 99. This roadway structure may limit or preclude continued truck access to a single loading dock that fronts S. Atlantic Street through the elevation of the deck or the location of columns. The elevated ramp in the current conceptual design also may restrict access to the majority of truck loading access to the building, which is from the west from Colorado Avenue S.

Construction of the elevated structure for S. Atlantic Street to cross over SR 99 will obstruct much of the decorative north façade of the building. This obstruction of the view of the façade may permanently affect the integrity of one of the building features that quality it for the NRHP.

Possible Planning to Minimize Harm and Feasible and Prudent Alternatives

For any of the alternatives under consideration, prior to designation of the preferred alternative, and prior to issuance of the Final EIS and Record of Decision, additional analysis will be needed to:

(a) Support a finding that use can be avoided by planning to minimize harm, including revised plans that may include elements such as:

   i. Develop specific planning to minimize harm by ensuring that truck access to the building is maintained from Colorado Avenue S. If this access is maintained, the building would retain adequate access for productive economic use.

ii. This planning would support a finding that the roadway improvements do not affect the economic use of the building such that the continued viable use of the building is compromised.

iii. If necessary, develop specific planning to ensure that roadway improvements do not compromise the historic integrity of the structure.

(b) Analysis of Prudent Alternatives must examine the feasibility of designs that avoid the ramps south of the building. Concepts in the Draft EIS analysis that would avoid obscuring the north-facing façade include an elevated SR 99 structure with S. Atlantic Street passing underneath on at-grade intersections.

(c) If it is not possible to support a conclusion that the above measures will avoid the adverse impact, analysis must support a finding that there is no feasible and prudent alternative to the use of the resource.

4.2.4 Pioneer Square Historic District

Affected Environment

The Pioneer Square National Historic District qualifies as a significant historic site under Section 4(f). Pioneer Square marks Seattle's original downtown, dating back to 1852. Rebuilt after the devastating Great Fire of 1889, the district is characterized by late nineteenth century brick and stone buildings and one of the nation's best surviving collections of Romanesque Revival style urban architecture. Established as both a National historic district and a local preservation district in 1970, Pioneer Square is protected by an ordinance and design guidelines focused on preserving its unique historic and architectural character, ensuring the sensitive rehabilitation of buildings, promoting development of residential uses for all income levels, and enhancing the district's economic climate for residents, employers, workers, and visitors.[5]

4.2.5 First Avenue S. Areaways

Affected Environment

Along First Avenue S. and other streets in the area are the remains of old storefronts and building entrances predating the Seattle fire of 1889 and rebuilding of the area.

Areaways are the usable areas, generally in the street right-of-way, below the sidewalk and between the building foundation and the street wall; that street wall holds back the earth below the road surface and provides support for the

[5] http://www.cityofseattle.net/neighborhoods/preservation/pioneersquare.htm.

sidewalk between the street and the building walls. Most areaways in the Pioneer Square Historic District were created when City engineers raised Pioneer Square's streets a full story following the Great Seattle Fire of 1889. Since many buildings were already under construction, architects provided for two ground floors the lower at the level beneath the new sidewalks. Merchants on the lower level tried to survive with skylights in the sidewalks and stairways, but most soon failed and access to their businesses was paved over.

In addition to being located in the historic district, many areaways are the preserved remains of original Seattle buildings and are historically significant in their own right under Section 4(f).

In 2000, the Seattle Department of Transportation (SDOT) undertook a thorough study of the condition of the Pioneer Square areaways and, as a result, did some emergency repairs only weeks before the February 2001 Nisqually Earthquake. That emergency repair work may well have reduced earthquake damage. The earthquake damaged five areaways. The City secured federal funding to help pay for repairs to some of the earthquake-damaged areaways. These areaways had the highest and most immediate priority as the damage made them the most vulnerable. Since the summer of 2002, six of the damaged areaways were partially filled with a removable lightweight concrete; two of the areaways were restored according to historic preservation criteria as they display significant architectural qualities. SDOT plans to fill 21 and restore/reconstruct six of the Pioneer Square Areaways (SDOT 2003).

Construction Detour and Surface Alternative Impacts

Restrictions on SR 99 capacity during construction and the Surface Alternative create generally higher traffic demand on surface streets throughout downtown, including First Avenue S. through the Pioneer Square Historic District. First Avenue S. takes on added importance in that it provides one of the few alternative routes into downtown from the south for both transit and general traffic. For both construction detours and the Surface Alternative, First Avenue traffic lanes between S. King Street and Yesler Way will be increased from one in each direction to two in each direction, displacing current parking.

The weight and vibration from traffic adjacent to existing areaways could require substantial strengthening (structural modification) of the areaways to prevent their collapse. Such strengthening may affect their historic qualities. Most of the First Avenue Areaways are designated in a 2003 City of Seattle report as adequate or restorable. The exception is at the corner of First Avenue and S. Washington Street, where lightweight concrete fill has been

installed in the areaway. If this fill is removed, the street wall would have a high probability of failure. There is, however, not currently evidence that reconstructing these areaways is precluded by unique problems or cost, or social, economic, or environmental impacts of extraordinary magnitudes.

Possible Planning to Minimize Harm and Feasible and Prudent Alternatives

For construction detours and the Surface Alternative, prior to designation of the preferred alternative, and prior to issuance of the Final EIS and Record of Decision, additional analysis will be needed to:

(a) Support a finding that use can be avoided by planning to minimize harm, including revised plans that may include elements such as:

   i. Develop specific planning to confirm whether construction detours or the Surface Alternative can proceed without changing the two travel-lane configuration of First Avenue without unique problems or cost, or social, economic, or environmental impacts of extraordinary magnitude.

   ii. Develop specific planning to confirm whether areaways can be reconstructed as part of the project without unique problems or cost, or social, economic, or environmental impacts of extraordinary magnitude.

(b) If it is not possible to support a conclusion that the above measures will avoid the adverse impact, analysis must support a finding that there is no feasible and prudent alternative to the use of the resource. Such a finding would include the conclusion that the other alternatives considered are not feasible because of unique problems or cost, or social, economic, or environmental impacts of extraordinary magnitude.

4.2.6 Limited Access During Construction

Potential Impacts of All Alternatives

During construction of all alternatives, prolonged limited access or avoidance of the area because of perceived construction disturbance in the vicinity could threaten the viability of businesses occupying historic structures. The loss of business income could affect the financial return to building owners and may lead to reduction in building maintenance. Over a long term, the deferral of maintenance could affect the continued structural integrity of historic buildings.

Direct restriction of access during construction is likely to have the greatest effect on buildings with sole frontage on Alaskan Way. The most severely affected buildings may be the 305 Alaskan Way Building, the OK Hotel south

of S. Washington Street, the Prudential Building, and the Old Firehouse. Plans for rehabilitation by a private owner are dependent upon income from commercial and residential rents (Ramres 2003).

Possible Planning to Minimize Harm and Feasible and Prudent Alternatives

For any of the alternatives under consideration, prior to designation of the preferred alternative, and prior to issuance of the Final EIS and Record of Decision, additional analysis will be needed to:

(a) Support a finding that use can be avoided by planning to minimize harm, including revised plans or programs that may include elements such as:

   i. Develop a specific construction access plan for all buildings adjacent to Alaskan Way to ensure that safe and convenient pedestrian and vehicular access is providing during the entire construction period.

   ii. Develop a public information program to communicate that the Pioneer Square Historic District is accessible during construction.

   iii. Develop a transportation management plan during construction to ensure that additional traffic on local streets does not impede pedestrian movement or degrade the pedestrian environment of the district.

   iv. Provide for other mobility resources for the loss of existing parking under the existing viaduct and the possible perceived lack of opportunities for vehicular access by a number of potential strategies.

   v. Perform a detailed economic analysis to determine whether reduced business revenues are likely to lead to deferred maintenance. If it were concluded that the loss in economic return would threaten the buildings, measures such as interim improvements to prevent structural degradation may be developed.

(b) If it is not possible to support a conclusion that the above measures will avoid the adverse impact, analysis must support a finding that there is no feasible and prudent alternative to the use of such land through such impacts.

4.2.7 Construction Vibration Impacts on Historic Buildings Within the Pioneer Square Historic District

Potential Construction Impacts of All Alternatives

Buildings in the historic district adjacent to the existing viaduct may be subject to vibration from demolition and construction that could affect the structural integrity of historic buildings, particularly those in poor condition. Buildings and areas most affected include:

- The Triangle Building near the First Avenue S. ramp could be affected by vibration from demolition of that structure.
- Brick buildings adjacent to the existing viaduct in the Pioneer Square Historic District between S. King and Columbia Streets could be affected by demolition of the existing viaduct and construction of any of the alternatives.

Possible Planning to Minimize Harm and Feasible and Prudent Alternatives

For all alternatives, prior to designation of the preferred alternative, and prior to issuance of the Final EIS and Record of Decision, additional analysis will be needed to:

(a) Support a finding that use can be avoided by planning to minimize harm, including revised plans that may include elements such as:

  i. More detailed analysis of the structural integrity of the buildings and more detailed analysis of vibration created by specific construction methods to determine whether the buildings are threatened.

  ii. Include in the project specific vibration control measures during construction.

  iii. Include temporary or permanent shoring or structural improvements to avoid damage to the buildings.

(b) If it is not possible to support a conclusion that the above measures will avoid the adverse impact, analysis must support a finding that there is no feasible and prudent alternative to the constructive use of such land through such impacts.

4.2.8 Potential Effects of Vent Structures on the Pioneer Square Historic District

Potential Operational Impacts of the Tunnel and Bypass Tunnel Alternatives

Vent structures proposed for the Tunnel and Bypass Tunnel Alternatives may be located at Yesler Way and Western Avenue adjacent to the Snowboard

Central Building. This could be a visual impact by introducing an incompatible architectural element into the Pioneer Square Historic District.

Possible Planning to Minimize Harm and Feasible and Prudent Alternatives

For all alternatives, prior to designation of the preferred alternative, and prior to issuance of the Final EIS and Record of Decision, additional analysis will be needed to:

(a) Support a finding that use can be avoided by planning to minimize harm, including revised plans that may include elements such as:

   i. Develop specific planning, including conceptual plans of vent structures, to ensure that roadway improvements do not compromise the historic integrity of the Historic Districts within or adjacent to which the vent structures are located. Building alteration and new construction is required to be visually compatible with the architectural style, building materials, and historic character of the District and is reviewed by the Pioneer Square Preservation Board pursuant to SMC 23.66.

   ii. For this location, develop specific conceptual plans of vent structures may be incorporated into the relocated One Yesler Building, discussed below, if relocation is pursued, to ensure that vents do not compromise the historic integrity of the Historic Districts or the relocated building.

(b) If it is not possible to support a conclusion that the above measures will avoid the adverse impact, analysis must support a finding that there is no feasible and prudent alternative to the constructive use of such land through such impacts.

4.2.9 One Yesler Way Building Displacement or Relocation

Affected Environment

This small brick building, originally the Pacific Banking company and later the Bedford Hotel, is a significant resource within the Pioneer Square Historic District, which is listed in the NRHP. It is an important part of the overall historic context of the district.

Potential Operational Impacts of the Tunnel, Bypass Tunnel, and Surface Alternatives

This building is proposed to be displaced to provide one-way northbound traffic movement from the Alaskan Way surface street to Western Avenue as far north as Madison Street. Specific traffic analysis has not been conducted to explicitly quantify the level of service impact of not implementing this measure, but it has been addressed qualitatively based on modeled turning movements.

Potential Feasible and Prudent Alternatives for the Tunnel Alternative

The conceptual street configuration on the Alaskan Way surface street to the south of Yesler Way is three northbound lanes. Removal of this building would accommodate two northbound lanes on the Alaskan Way surface street north of Yesler Way with two northbound lanes on Western Avenue to Madison Street.

The operational impact of not implementing the northbound lanes on Western Avenue would be to diminish operations. The anticipated level of service may be workable, but not desirable. Without the Western Avenue connection, interaction with ferry traffic at Marion Street would be an especially critical issue. Without the Western Avenue connection, all northbound, southbound, and most exiting ferry traffic has to be accommodated at the Alaskan Way/Marion intersection. Significantly increased operational issues would be expected.

The option of implementing the northbound one-way connection to Western Avenue without eliminating the building would require closing Yesler Way to west bound traffic from First Avenue S. and eliminating the bus transit routing from southbound Alaskan Way to eastbound Yesler Way. Traffic would make a free right turn onto a one-way Yesler Way and a free left turn onto a one-way Western Avenue. Although this option is feasible geometrically, it does create an impact to the Pioneer Square circulation pattern as a whole. From a circulation standpoint, not many vehicles use Yesler Way between Western Avenue and Alaskan Way. A further concern is making the free right turn to Yesler Way and the free left turn to Western Avenue simple and straightforward enough that people actually use it.

Potential Feasible and Prudent Alternatives for the Bypass Tunnel Alternative

The conceptual street configuration on the Alaskan Way surface street to the south of S. Washington Street is three northbound lanes. A fourth northbound lane would be added between S. Washington Street and Yesler Way. Removal of this building would accommodate three northbound lanes on the Alaskan Way surface street north of Yesler Way with two northbound lanes on Western Avenue to Madison Street.

The operational impact of not implementing the northbound lanes on Western Avenue would be to diminish operations. The impact would be greater than with the Tunnel Alternative because of higher traffic volumes. The anticipated level of service may be workable, but not desirable. Without the Western Avenue connection, interaction with Ferry traffic at Marion Street would be an especially critical issue. Without the Western Avenue connection, all northbound, southbound, and most exiting ferry traffic has to

be accommodated at the Alaskan Way/Marion Street intersection. Significantly increased operational issues would be expected.

The option of implementing the northbound one-way connection to Western Avenue without eliminating the building would involve the same geometric and traffic circulation issues as for the Tunnel Alternative, discussed above.

Potential Feasible and Prudent Alternatives for the Surface Alternative

The conceptual street configuration on the Alaskan Way surface street to the south of Yesler Way is four northbound lanes. Removal of this building would accommodate three northbound lanes on the Alaskan Way surface street north of Yesler Way with two northbound lanes on Western Avenue to Madison Street. The Surface Alternative carries substantially more traffic than other alternatives, more than twice the No Build Alternative.

The operational impact of not implementing the northbound lanes on Western Avenue would be to severely impact the operations of the Columbia/Alaskan Way intersection, causing unacceptable delay that would propagate through the adjacent arterial network.

The option of implementing the northbound one-way connection to Western Avenue without eliminating the building would involve the same geometric and traffic circulation issues as for the Tunnel Alternative, discussed above. The greater traffic volumes for the Surface Alternative, however, could introduce operational issues for the free right and free left turns.

Avoidance and Minimization of Harm

Prior to proceeding with alternatives incorporating displacement of this building and prior to issuance of the Final EIS and Record of Decision, additional analysis will be needed to:

(a) Perform more detailed operational analysis to support a finding that there is no feasible and prudent alternative to the use of such land, including other operational alternatives for northbound traffic.

(b) If there is no prudent and feasible alternative, develop specific planning to minimize harm by relocating the facility. Three options are currently under consideration:

   i. Relocation to the west to allow the proposed two-lane roadway to pass between the building and the adjacent Pioneer Square Hotel by widening the existing alley that previously accommodated railway tracks. This option has the potential effects of isolating the building from surrounding buildings and thereby affecting the historic integrity of the district.

ii. Relocation to the east to close the gap that currently exists as an alley to the east.

iii. Relocation across Yesler Way in the parking lot at that location, if that can be accomplished without compromising the tunnel vent incorporated in the Tunnel and Bypass Tunnel Alternatives, and without compromising the historic integrity of the structure and surroundings.

4.2.10 Relocation of the Washington Street Boat Landing

Affected Environment

This structure is listed in the NRHP and is significant under Criteria A and C. The pergola was constructed in the 1920s as the City's harbor patrol office, with an adjacent landing dock for boats bringing sailors from ships anchored in the harbor. The dock is no longer extant and was not listed.

Potential Operational Impacts

This structure is displaced in all alternatives by the proposed access road between Pier 48 and the Colman Dock Ferry Terminal. It is proposed to be relocated to the water's edge on the over-water structure that supports the access road at the foot of S. Washington Street.

Possible Planning to Minimize Harm and Feasible and Prudent Alternatives

For all alternatives, prior to designation of the preferred alternative, and prior to issuance of the Final EIS and Record of Decision, additional analysis will be needed to:

(a) Support a finding that there is no feasible and prudent alternative to the use of such land.

(b) Develop specific planning to minimize harm by relocating the facility adjacent to the waterfront on the over-water structure containing the proposed access road and ensuring that the additional distance and additional vehicle lane crossings do not isolate the resource from its historic context by providing adequate pedestrian connections to the Historic District.

4.2.11 Construction Vibration Impacts on Existing Designated Seattle Landmarks Between Columbia and Pike Streets

Affected Environment

Existing locally designated landmarks in this segment of the corridor include the Polson Building, Journal Building, Grand Pacific Building, National

Building, Colman Building, and Olympic Warehouse (Amgen). These buildings are all of a similar vintage and construction type.

Potential Construction Impacts

These buildings could be subject to vibration that could affect the structural integrity of historic buildings, particularly those in poor condition.

Possible Planning to Minimize Harm and Feasible and Prudent Alternatives

For all alternatives, prior to designation of the preferred alternative, and prior to issuance of the Final EIS and Record of Decision, additional analysis will be needed to:

(a) Support a finding that use can be avoided by planning to minimize harm, including revised plans that may include elements such as:
   i. More detailed analysis of the structural integrity of the buildings and more detailed analysis of vibration created by specific construction methods to determine whether the buildings are threatened.
   ii. Include in the project specific vibration control measures during construction.
   iii. Include temporary or permanent shoring or structural improvements to avoid damage to the buildings.

(b) If it is not possible to support a conclusion that the above measures will avoid the adverse impact, analysis must support a finding that there is no feasible and prudent alternative to the constructive use of such land through such impacts.

4.2.12 Potential Effects of Vent Structures on the Pike Place Public Market Historic District

Affected Environment

Established in 1907, Seattle's Pike Place Market is the oldest continuously operating and most historically authentic public market in the country. When the Pike Place Market was threatened with demolition and replacement, citizens of Seattle voted in 1971 to establish a 7-acre Pike Place Market Historical District and a Market Historical Commission to preserve its physical and social character as "the soul of Seattle." In 1907 the Seattle City Council designated the newly planked Pike Place as a public market area where citizens could purchase fresh farm produce directly from local growers. By 1917, much of the Market we know today was constructed—the Economy Market, Corner Market, Sanitary Market, and the lower levels of the Main Market. The Market continued to grow and thrive during the 1920s and the Depression of the 1930s. On the November 1971 ballot, citizens of Seattle

voted on an initiative to preserve the Market. As a result, a 7-acre NRHP and local Market Historical District was created to preserve the Market's core, and a larger 22-acre area was established to provide opportunities for redevelopment and new construction. During the extensive 10-year restoration and redevelopment effort that followed, $50 million in public investment and $100 million in private money was channeled into the Market, which is today a healthy, bustling community of merchants and residents.[6]

Potential Operational Impacts of Tunnel and Bypass Tunnel Alternatives

Vent structures proposed for the Tunnel and Bypass Tunnel Alternatives may have impacts within and adjacent to Historic Districts that could affect the integrity of the Historic district. A vent structure north of Union Street would adjoin the Pike Place Market Historic District, introducing a new visual element that will be more evident with the removal of the viaduct.

Possible Planning to Minimize Harm and Feasible and Prudent Alternatives

For all alternatives, prior to designation of the preferred alternative, and prior to issuance of the Final EIS and Record of Decision, additional analysis will be needed to:

(a) Support a finding that use can be avoided by planning to minimize harm, including revised plans that may include elements such as conceptual plans of vent structures to ensure that vent structures do not compromise the historic integrity of the Historic Districts within or adjacent to which the vent structures are located.

(b) If it is not possible to support a conclusion that the above measures will avoid the adverse impact, analysis must support a finding that there is no feasible and prudent alternative to the constructive use of such land through such impacts.

4.2.13 Potential Construction Impacts of Vibration on the Pike Place Public Market Historic District

Construction Impacts of All Alternatives

These historic buildings could be subject to vibration that could affect the structural integrity of historic buildings, particularly those in poor condition.

Possible Planning to Minimize Harm and Feasible and Prudent Alternatives

For all alternatives, prior to designation of the preferred alternative, and prior to issuance of the Final EIS and Record of Decision, additional analysis will be needed to:

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[6] http://www.cityofseattle.net/neighborhoods/preservation/pikeplace.htm.

(a) Support a finding that use can be avoided by planning to minimize harm including revised plans that may include elements such as:

   i. More detailed analysis of the structural integrity of the buildings and more detailed analysis of vibration created by specific construction methods to determine whether the buildings are threatened.

   ii. Include in the project specific vibration control measures during construction.

   iii. Include temporary or permanent shoring or structural improvements to avoid damage to the buildings.

(b) If it is not possible to support a conclusion that the above measures will avoid the adverse impact, analysis must support a finding that there is no feasible and prudent alternative to the constructive use of such land through such impacts.

4.2.14 Alteration of the Battery Street Tunnel That Could Affect Historic Integrity

Affected Environment

The Battery Street Tunnel, along with the Alaskan Way Viaduct, has been determined eligible for listing in the NRHP under Criterion A for its association with tunnel building in Washington in the 1950s and as the first tunnel designed and built by the City of Seattle Engineering Department. It is also significant under criterion C for the type, period, materials, and methods of construction. It was designed and built to minimize disruption to street traffic and to minimize the risk to adjacent buildings. In addition to its engineering importance, it is significant for its contribution to the development of the local transportation system, connecting SR 99, built in the 1930s, with the Alaskan Way Viaduct, completed in the 1950s.

Potential Operational Impacts

The tunnel that carries SR 99 between Bell Street and Denny Street will be altered for fire and life safety improvements under all alternatives except the Rebuild Alternative.

Avoidance and Minimization of Harm

Prior to proceeding with alternatives including life safety improvements, and prior to issuance of the Final EIS and Record of Decision, additional analysis will be needed to:

(a) Support a finding that there is no feasible and prudent alternative to the fire and life safety upgrades.

(b) Develop specific planning to minimize harm by ensuring that the historic integrity of the Battery Street Tunnel is preserved, to the greatest extent possible, consistent with unavoidable transportation needs and safety requirements.

(c) If the historic integrity of the structure is not preserved, develop a specific documentation plan to ensure that fully adequate records are made of the facility in accordance with the HAER.

4.2.15 Construction Vibration Effects on Existing Designated Seattle Landmarks North of the Pike Place Public Market

Affected Environment

Existing locally designated landmarks in this segment of the corridor include the Belltown Lofts and Old Spaghetti Factory. These buildings are all of a similar vintage, construction type, and character.

Potential Construction Impacts of All Alternatives

These buildings could be subject to vibration during construction that could affect the structural integrity of historic buildings, particularly those in poor condition.

Possible Planning to Minimize Harm and Feasible and Prudent Alternatives

For all alternatives, prior to designation of the preferred alternative, and prior to issuance of the Final EIS and Record of Decision, additional analysis will be needed to:

(a) Support a finding that use can be avoided by planning to minimize harm, including revised plans that may include elements such as:

   i. More detailed analysis of the structural integrity of the buildings and more detailed analysis of vibration created by specific construction methods to determine whether the buildings are threatened.

   ii. Include in the project specific vibration control measures during construction.

   iii. Include temporary or permanent shoring or structural improvements to avoid damage to the buildings.

(b) If it is not possible to support a conclusion that the above measures will avoid the adverse impact, analysis must support a finding that there is no feasible and prudent alternative to the constructive use of such land through such impacts.

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