

Section 4(f) Resources Subject to Use by the Preferred Alternative



FINAL SECTION 4(F) EVALUATION

BACKGROUND

The Alaskan Way Viaduct Replacement Project (the project) has prepared this evaluation to respond to a federal environmental law known as Section 4(f), which protects parks, recreation areas, historic and cultural resources, and wildlife and waterfowl refuges.

The Federal Highway Administration (FHWA), Washington State Department of Transportation (WSDOT), and City of Seattle (City) are proposing to replace the Alaskan Way Viaduct because it is likely to fail in an earthquake. The viaduct is located in downtown Seattle, King County, Washington. The viaduct structure needs to be replaced from approximately S. Royal Brougham Way to the Battery Street Tunnel. Alternatives to replace the viaduct within its existing corridor were considered previously in a 2004 Draft Environmental Impact Statement (EIS), a 2006 Supplemental Draft EIS, and the 2010 Supplemental Draft EIS.

The section describes Section 4(f) of the U.S. Department of Transportation Act and explains its role in FHWA's decision-making. It also summarizes several key terms, concepts, and legal standards. This is followed by the final Section 4(f) evaluation for the project.

1 What is Section 4(f)?

Section 4(f) refers to a federal law that protects public park and recreation lands, wildlife and waterfowl refuges, and historic sites. Section 4(f) applies to transportation projects that require the approval of the U.S. Department of Transportation (e.g., a highway project that uses federal funds). Congress established Section 4(f) as part of the

Exhibit 4(f)-2

Resources Subject to Use Under Section 4(f)

Name Location	Owner	Section 4(f) Status	Primary Function	Bored Tunnel (Preferred) Alternative	Cut-&Cover Tunnel Alternative	Elevated Structure Alternative
Alaskan Way Viaduct Above Alaskan Way on waterfront and	Public WSDOT	National Register Eligible	Transportation	●	●	●
Battery Street Tunnel Under Battery Street between First Avenue and Denny Way	Public WSDOT	National Register Eligible	Transportation	●	●	●
Alaskan Way Seawall Along Alaskan Way	Public City of Seattle	National Register Eligible			●	●
S. Washington Street Boat Landing S. Washington Street at Alaskan Way	Public City of Seattle	Pergola Structure National Register Park Resource	Views Relaxation Fishing		●	●
Pioneer Square Historic District <i>Western Building</i> 619 Western Avenue	Private	Historic District Contributing Building National Register	Retail/Office	●		
Archaeological Site 45K1958 (Seattle Maintenance Yard) Broad Street & Sixth Avenue	Public City of Seattle	Assumed to be National Register Eligible		●	●	●
Lake Union Sewer Tunnel	Public King County	National Register Eligible	Utility	●	●	●

Department of Transportation Act of 1966 (49 United States Code [USC] 303 and 23 USC 138).

FHWA and the Federal Transit Administration have issued joint regulations to implement their responsibilities under Section 4(f). The regulations can be found at 23 Code of Federal Regulations (CFR) Part 774. These Section 4(f) regulations were comprehensively updated in March 2008 to reflect amendments to Section 4(f) that were made in August 2005 as part of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA LU).

FHWA has provided further guidance for implementing Section 4(f) in its Section 4(f) Policy Paper,¹ and in other documents.²

2 What is a “Section 4(f) resource”?

A Section 4(f) resource is “publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of a historic site of national, State, or local significance.”

Parks, Recreation Areas, and Refuges

Section 4(f) applies to parks, recreation areas, and wildlife and waterfowl refuges only if they are “significant” and are located on publicly owned lands. In most cases, the resource is presumed significant as long as the resource is located on publicly owned land and its primary use is as a park or recreation property, or as a wildlife or waterfowl refuge.

Historic Sites

Section 4(f) applies to all “significant” historic sites, regardless of whether they are publicly or privately owned. Section 4(f) regulations further define a significant historic property as “a prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP).” The term “historic site” also includes archaeological properties, and properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization that are included in, or are

eligible for inclusion in, the National Register. FHWA identifies such historic sites through a consultation process that is required under a separate law, known as Section 106 of the National Historic Preservation Act.

3 What is a “use” of a Section 4(f) resource?

Section 4(f) restricts the authority of the U.S. Department of Transportation (in this case, FHWA) to approve transportation projects that “use” land from Section 4(f) resources. As defined in Section 4(f), a “use” occurs when a project permanently incorporates land from a Section 4(f) property, even if the amount of land used is very small. In addition, a use can result from a temporary use of land within a Section 4(f) property, unless the temporary use meets specific criteria that allow an exception to a use. A use also can result from proximity effects (such as noise, visual impacts, or vibration) if those effects “substantially” impair the protected features of the property. A use that results from proximity effects is known as a “constructive use.”

4 How can FHWA approve an alternative that uses a Section 4(f) resource?

There are two different ways that FHWA can approve the use of a Section 4(f) resource for a transportation project, as discussed below.

Finding of “De Minimis Impact”

FHWA can approve the use of a Section 4(f) resource if it finds that the project would result in a “de minimis impact” on that resource. For historic sites, de minimis impact means that FHWA has determined, in accordance with 36 CFR Part 800, that no historic property is affected by the project or that the project will have “no adverse effect” on the historic property in question. For parks, recreation areas, and wildlife and waterfowl refuges, a de minimis impact is one that will not adversely affect the features, attributes, or activities qualifying the property for protection under Section 4(f).

Finding of “No Feasible and Prudent Avoidance Alternative” and “Alternative with the Least Overall Harm”

FHWA also can approve the use of a Section 4(f) resource by preparing a Section 4(f) evaluation. This is the case with the Alaskan Way Viaduct Replacement Project. Therefore, the Section 4(f) evaluation is required to show that the project has considered alternatives to the use of the Section 4(f) resource. The Section 4(f) regulations establish a two-step process for considering alternatives:

- 1 **Avoidance Alternatives** – First, FHWA must determine whether there is any “feasible and prudent avoidance alternative.” An avoidance alternative that is not feasible and prudent can be rejected. If there is any feasible and prudent avoidance alternative, FHWA cannot approve an alternative that uses a Section 4(f) resource.
- 2 **Alternatives to Minimize Harm** – If feasible and prudent avoidance alternatives are not available, FHWA must consider alternatives to minimize harm resulting from the use of the Section 4(f) resource. In this situation, FHWA’s regulations require it to select the alternative that causes the “least overall harm.”

Based on this analysis of alternatives, FHWA can approve the use of a Section 4(f) resource if it finds that:

- There is no feasible and prudent alternative that completely avoids the use of any Section 4(f) properties and the alternative with the least harm to Section 4(f) resources has been selected
- and
- The project includes all possible planning to minimize harm to all of the Section 4(f) properties

These findings, and the supporting analysis considering the relative importance of the Section 4(f) resources, must be included in a Section 4(f) evaluation. The Section 4(f) regulations require these findings to be presented first in a

¹ FHWA 2005.

² Available at: <http://www.environment.fhwa.dot.gov/4f/index.asp>.

draft Section 4(f) evaluation, which is provided to the U.S. Department of Interior and other agencies for comment. After considering any comments, FHWA can issue a final Section 4(f) evaluation.

5 What factors must FHWA consider when determining whether an avoidance alternative is “feasible and prudent”?

The Section 4(f) regulations (23 CFR 774.17) list the factors that FHWA must consider when determining the prudence and feasibility of an avoidance alternative. An alternative is not **feasible** if it cannot be built as a matter of sound engineering judgment. An alternative is not **prudent** if:

- i. It compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need;
- ii. It results in unacceptable safety or operational problems;
- iii. After reasonable mitigation, it still causes:
 - a) Severe social, economic, or environmental impacts;
 - b) Severe disruption to established communities;
 - c) Severe disproportionate impacts to minority or low-income populations; or
 - d) Severe impacts to environmental resources protected under other federal statutes;
- iv. It results in additional construction, maintenance, or operational costs of an extraordinary magnitude;
- v. It causes other unique problems or unusual factors; or
- vi. It involves multiple factors in paragraphs (i) through (v) of this definition, that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

6 What factors must FHWA consider when determining which alternative causes “least overall harm”?

The regulations list specific factors that FHWA must consider when determining which alternative causes the “least overall harm.” See 23 USC 774.3(c)(1). These factors include:

- i. The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property);
- ii. The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection;
- iii. The relative significance of each Section 4(f) property;
- iv. The views of the official(s) with jurisdiction over each Section 4(f) property;
- v. The degree to which each alternative meets the purpose and need for the project;
- vi. After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f); and
- vii. Substantial differences in costs among the alternatives.

These factors are considered when comparing alternatives that all would use one or more Section 4(f) resources.

7 What does Section 106 consultation involve, and how does it relate to this Section 4(f) evaluation?

Section 106 of the National Historic Preservation Act requires federal agencies to consider the effects of their undertakings on historic properties (including archaeological resources) that are listed in or eligible for listing in the NRHP. The NRHP is administered by the National Park Service (NPS).

Parties Involved in Section 106 Consultation

Compliance with Section 106 involves consultation between the federal action agency (e.g., FHWA) and the State Historic Preservation Officer (SHPO). Other parties may also be involved in Section 106 consultation, including local governments, Native American tribes, historic preservation groups, and property owners. The parties for the Section 106 consultation for the Alaskan Way Viaduct Replacement Project are listed later in this Section 4(f) evaluation.

Criteria for Determining National Register Eligibility

To be listed in or eligible for inclusion in the NRHP, properties must meet one or more of the following criteria:

- **Criterion A** – The property is associated with events that have made a significant contribution to the broad patterns of our history.
- **Criterion B** – The property is associated with the lives of persons significant in our past.
- **Criterion C** – The property embodies distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.
- **Criterion D** – The property has yielded, or may be likely to yield, information important in prehistory or history. This criterion is generally associated with below-ground (archaeological) resources.

Relationship Between Section 106 and Section 4(f)

This Section 4(f) evaluation builds on the project’s Section 106 compliance and consultation efforts. These two laws have several important linkages:

- **Identifying Historic Resources** – Agencies use the Section 106 process to identify historic properties that are listed in or eligible for the NRHP and to

document the characteristics that contribute to the historic significance of those properties. Any properties that are listed or eligible for listing in the NRHP are subject to the requirements of Section 4(f).

- **Determining Adverse Effects** – The Section 106 process includes an assessment of each alternative’s effects on historic properties. Specifically, Section 106 requires the federal action agency to determine whether the project would have any “adverse effects” on historic properties. These findings play two important roles in Section 4(f):
 - First, when an alternative directly uses land from a historic site, a finding of “no adverse effect” in the Section 106 process can support a finding of de minimis impact under Section 4(f).
 - Second, when an alternative avoids a use of land or physical alteration of a resource but has proximity impacts on a historic site (for example, noise impacts), a finding of “no adverse effect” under Section 106 allows FHWA to conclude that there is no constructive use under Section 4(f), per 23 CFR 774.15 (f)(1).
- **Minimization of Harm** – The Section 106 process requires consultation to determine what can be done to avoid, minimize, or mitigate the adverse effects. This consultation typically results in a binding Memorandum of Agreement (MOA), in which the federal action agency commits to implement measures to minimize and/or mitigate impacts. Commitments made in the Section 106 process may also satisfy the requirement under Section 4(f) to minimize harm resulting from the use of the historic property.

What is the process for parks and other Section 4(f) resources?

To identify Section 4(f) resources and evaluate potential uses, the Section 4(f) evaluation also builds on the overall

EIS analysis, documentation, and related public, agency and tribal involvement and coordination activities. This includes the EIS’s analysis of park and recreation effects, as sources of proximity effects such as changes in visual, noise and vibration, or traffic conditions. WSDOT, the City, and FHWA have consulted directly with the agencies with jurisdiction over Section 4(f) resources, such as the public entities that own a specific park or recreation property, helping to confirm the ownership, important characteristics, and boundaries of the resources.

SECTION 4(F) EVALUATION

The remainder of this chapter serves as the Final Section 4(f) evaluation for this project. The evaluation is organized as follows:

- 1 **Agency Involvement** – This section describes the involvement of the U.S. Department of the Interior, Washington SHPO, the City of Seattle, King County, the Port of Seattle, and Washington State Parks in this Section 4(f) evaluation.
- 2 **Purpose and Need** – This section summarizes the purpose and need of the project. The lead agencies have updated the project’s purpose and need since issuing the previous Supplemental Draft EIS in 2006. For additional detail, refer to Chapter 1, Question 5 in this Final EIS.
- 3 **Alternatives Considered** – This section provides a basic description of the three build alternatives that are the primary focus of this Final EIS and this draft Section 4(f) evaluation. See Chapter 3 for more detailed descriptions of these alternatives. This evaluation also briefly reconsiders alternatives that were dismissed in the 2004 Draft EIS and 2006 Supplemental Draft EIS and related planning, in order to assess their potential to avoid Section 4(f) properties or minimize harm.
- 4 **Section 4(f) Resources** – This section identifies the Section 4(f) resources that would result in a use by one or more alternatives. These resources and

other Section 4(f) resources located in the project area are also described in Appendix J of the Final EIS.

- 5 **Bored Tunnel Alternative** – This section describes the impacts of the project’s Preferred Alternative, the Tolloled Bored Tunnel Alternative, on Section 4(f) resources. It determines whether this alternative would result in a “use” of Section 4(f) resources. Where there would be a use, it considers the potential for a de minimis impact finding. Where the impact would not be de minimis, it considers potential variations on this alternative to avoid or minimize harm to the resource.
- 6 **Effects of Other Alternatives on Section 4(f) Properties** – This section covers the findings regarding Section 4(f) uses for the other two build alternatives: Cut-and-Cover Tunnel and Elevated Structure Alternatives.
- 7 **Other Alternatives Considered to Avoid and Minimize Harm** – This section considers other alternatives, including those previously dismissed in the National Environmental Policy Act (NEPA) process and related planning, to determine whether any of them have the potential to avoid or minimize harm to Section 4(f) resources, in comparison to the three build alternatives that are currently being considered.
- 8 **Conclusion on Search for Feasible and Prudent Avoidance Alternatives** – This section describes the information FHWA used to conclude there is no feasible and prudent alternative that completely avoids the use of Section 4(f) resources.
- 9 **Identifying a Least Harm Alternative** – This section compares the three build alternatives to one another to determine which of them causes the “least overall harm” based on the factors listed in Section 774.3(c)(1) of the Section 4(f) regulations.

Appendix J, Section 4(f) Supplemental Materials

Appendix J describes Section 4(f) resources in the project area.

It identifies the Bored Tunnel Alternative as the alternative that causes the least overall harm.

10 Conclusions – This section summarizes the conclusions of the draft Section 4(f) evaluation. It finds that there is no feasible and prudent alternative that completely avoids the use of Section 4(f) property. It also finds that the Bored Tunnel Alternative is the alternative that causes “least overall harm” and that the Bored Tunnel Alternative incorporates all possible planning to minimize harm to Section 4(f) resources.

1 Agencies Involved in Developing This Section 4(f) Evaluation

FHWA has prepared this Section 4(f) Evaluation based in part on Section 106 consultation with the SHPO, the City, and King County. In addition, the entire EIS process and its public, tribal, and agency involvement efforts and related documentation contribute to the Section 4(f) evaluation.

For the Alaskan Way Viaduct Replacement Project, the focus of the coordination has been on agencies with jurisdiction over the area’s many public parks and recreation facilities and its historic and cultural resources. There are no nature refuges in the project area that could be affected.

Throughout the development of the project and its EIS, representatives from FHWA and WSDOT have coordinated with NPS, the Seattle Parks and Recreation Department, King County, and the Port of Seattle, to identify and evaluate the potential for impacts to public parks and recreation resources in the project area.

In conjunction with the Section 106 process, the following parties have been coordinated with to determine historic and cultural resources and impacts:

- The SHPO at the Washington State Department of Archaeological and Historic Preservation

- The City of Seattle Preservation Officer
- Tribal governments, including eight federally recognized tribes: the Muckleshoot Indian Tribe, Snoqualmie Indian Tribe, Suquamish Tribe, The Tulalip Tribes, Confederated Tribes and Bands of the Yakama Nation, the Lower Elwha Klallam Tribe, Jamestown S’Klallam Tribe, Port Gamble S’Klallam Tribe; and the Duwamish Tribe (a non-federally recognized tribe)

Park and Recreation Resources

Park and recreation facilities in the project area have been identified with the cooperation of Seattle Parks and Recreation, the Port of Seattle, and the Seattle Department of Planning and Development. Local plans and guidelines that address park and recreation policies and provide a framework for the evaluation of use were consulted in development of this report. A complete list of resources is provided in Appendix J of the 2004 Draft EIS, 2006 Supplemental Draft EIS, 2010 Supplemental Draft EIS, and this Final EIS. All park and recreation facilities within three to five blocks of the proposed project alternatives were identified for further analysis of their effects. Appendix J, Part B of this Final EIS provides further detail on the resources identified as being eligible for protection under Section 4(f).

Historic Properties

Historic properties, which include historic buildings, sites, districts, as well as archaeological sites, have been identified through the Section 106 consultation process. The locations of historic properties in the project area are shown in Chapter 4, Exhibit 4-19 of this Final EIS. Detailed maps are also provided in Appendix J, Section 4(f) Supplemental Materials, Exhibits 1 through 3.

The lead agencies, following WSDOT standard practice, in consultation with the Section 106 consulting parties defined an area of potential effects that extends horizontally one block on each side of alternative alignments (including both surface or tunnel features), as well as around the existing viaduct structure. In the areas

of potential effects they identified properties that are listed in or eligible for the NRHP; evaluated alternatives to assess potential adverse effects; and considered measures to avoid, minimize, and mitigate adverse effects. Records of this consultation are included in the following documents:

- 2004 Draft EIS, Appendix L, Historic Resources Technical Memorandum
- 2006 Supplemental Draft EIS, Appendix L, Historic Resources Technical Memorandum
- 2010 Supplemental Draft EIS, Appendix I, Section 106: Historic, Cultural, and Archaeological Resources Discipline Report
- 2011 Final EIS, Appendix I, Historic, Cultural, and Archaeological Resources Discipline Report
- 2011 Memoranda of Agreement among the Federal Highway Administration, the Washington State Department of Transportation, and the Washington State Historic Preservation Officer to Resolve Adverse Effects of the Alaskan Way Viaduct Replacement Project

National Park Service

NPS is a bureau within the U.S. Department of the Interior. The project’s lead agencies (FHWA, WSDOT, and the City) consulted with NPS through project scoping, correspondence, and in meetings and correspondence with NPS staff during the development of the 2004 Draft EIS, the 2006 Supplemental Draft EIS, the 2010 Supplemental Draft EIS, and in the development of this Final EIS. The dates of meetings and the supporting correspondence are provided in Appendix U, Final EIS Correspondence.

Department of the Interior

The Department of the Interior was provided the 2010 Supplemental Draft EIS, which included a Draft Section 4(f) Evaluation of the EIS alternatives. In the preparation of the Final EIS and this Final Section 4(f) Evaluation,

FHWA provided the Department of the Interior with a preliminary Final Section 4(f) Evaluation in April 2011. After a 45-day review period and an additional 15-day waiting period, FHWA confirmed the Department of Interior's lack of objection.

2 Purpose and Need of the Proposed Action

The Alaskan Way Viaduct is seismically vulnerable and at the end of its useful life. To protect public safety and provide essential vehicle capacity to and through downtown Seattle, the viaduct must be replaced. Because this facility is at risk of sudden and catastrophic failure in an earthquake, FHWA, WSDOT, and the City seek to implement a replacement as soon as possible. Moving people and goods to and through downtown Seattle is vital to maintaining local, regional, and statewide economic health. FHWA, WSDOT, and the City have identified the following purposes and needs the project should address.

The purpose of the proposed action is to provide a replacement transportation facility that will:

- Reduce the risk of catastrophic failure in an earthquake by providing a facility that meets current seismic safety standards
- Improve traffic safety
- Provide capacity for automobiles, freight, and transit to efficiently move people and goods to and through downtown Seattle
- Provide linkages to the regional transportation system and to and from downtown Seattle and the local street system
- Avoid major disruption of traffic patterns due to loss of capacity on State Route (SR) 99
- Protect the integrity and viability of adjacent activities on the central waterfront and in downtown Seattle

For further discussion of these needs, refer to Chapter 1 of this Final EIS.

3 Alternatives Considered

This Section 4(f) evaluation focuses on the Bored Tunnel Alternative, which is the project's Preferred Alternative.

In addition, the Section 4(f) Evaluation summarizes the effects on Section 4(f) properties for the other two "build" alternatives that are addressed in the Final EIS:

- Cut-and-Cover Tunnel Alternative
- Elevated Structure Alternative

The 2010 Supplemental Draft EIS Draft Section 4(f) Evaluation previously described the effects on Section 4(f) resources for all three of the build alternatives. The Final Section 4(f) Evaluation and Final EIS update this information, incorporating updated analyses on Section 106 resources, public park and recreation resources, and other environmental topics that have the potential to affect Section 4(f) resources. It also incorporates information and responses to public comments on the 2010 Supplemental Draft EIS, as well as assessments of the effects of tolls that could be implemented with the Bored Tunnel Alternative or other alternatives.

This Section 4(f) evaluation also considers other alternatives, including those that were previously considered and dismissed, as well as other potential alternatives or design options, to assess their potential to avoid or minimize harm to Section 4(f) resources. See the discussion below, "Other Alternatives Considered to Avoid and Minimize Harm."

Bored Tunnel Alternative

The Bored Tunnel Alternative is the Preferred Alternative to replace SR 99 between S. Royal Brougham Way and Roy Street (see Exhibit 3-1 in Chapter 3 of this Final EIS). The alternative includes constructing a tunnel that would replace the viaduct and the Battery Street Tunnel. The Bored Tunnel Alternative would begin with a southern

section connecting to the section of SR 99 that is being replaced by the S. Holgate Street to S. King Street Viaduct Replacement Project. It would then transition to a tunnel beginning near S. King Street, curving away from the waterfront at S. Washington Street and aligned below First Avenue near University Street. It would travel under First Avenue to Stewart Street, going east to connect to Aurora Avenue near Mercer Street.

As part of the development of the new facility, the existing viaduct would be demolished and the Battery Street Tunnel decommissioned, but they would remain in use for most of the construction period for the SR 99 replacement facility.

The south portal of the new tunnel would be located north of S. Royal Brougham Way and immediately west of the existing viaduct. In this area, a new street, S. Dearborn Street, would be constructed from Railroad Way S. to Alaskan Way S., and would include a new signalized intersection at Alaskan Way S. This intersection would provide access to and from East Marginal Way S., which would run along the west side of SR 99. A tunnel operations building would be constructed in the block bounded by S. Dearborn Street, Railroad Way S., and Alaskan Way S.

The north portal of the tunnel would be located at Harrison Street and Sixth Avenue N. A tunnel operations building would be constructed between Thomas and Harrison Streets on the east side of Sixth Avenue N.

Full northbound and southbound access to and from SR 99 would be provided near Harrison and Republican Streets. The existing on- and off-ramps provided at Denny Way would be closed. New ramps at Republican Street would provide northbound access from SR 99 and southbound access to SR 99. The northbound off-ramp to Republican Street would be provided on the east side of SR 99 and routed to an intersection at Dexter Avenue N. Drivers would access the southbound on-ramp via a new connection with Sixth Avenue N. at Republican

Street on the west side of SR 99. Access to SR 99 would continue to be available at Roy Street as it is today.

Other north portal area surface street improvements include rebuilding Aurora Avenue at grade level between Denny Way and Harrison Street. John, Thomas, and Harrison Streets would be connected as cross streets with signalized intersections on Aurora Avenue at Denny Way and John, Thomas, and Harrison Streets. The rebuilt section of Aurora Avenue would connect to SR 99 via the ramps at Harrison Street.

In addition, Mercer Street would become a two-way street and would be widened from Dexter Avenue N. to Fifth Avenue N. Broad Street would be filled and closed between Ninth Avenue N. and Taylor Avenue N. A new roadway would be built to extend Sixth Avenue N. in a curved formation between Harrison and Mercer Streets, and with a signalized intersection at the southbound on-ramp.

For a more detailed description of the Bored Tunnel Alternative, refer to Chapter 3 of this Final EIS.

Cut-and-Cover Tunnel Alternative

The Cut-and-Cover Tunnel Alternative would develop a cut-and-cover or lidded tunnel to replace the Alaskan Way Viaduct (see Exhibit 3-5). The alternative would be generally along the alignment of the existing viaduct and Alaskan Way. At the south end, it would transition from the section of SR 99 replaced by the S. Holgate Street to S. King Street Viaduct Replacement Project, which is elevated, to descend to a cut-and-cover tunnel section that would also replace the seawall. At the north end, the tunnel would rise to connect to the existing SR 99 Battery Street Tunnel. This would require lowering the southern end of the Battery Street Tunnel and making other safety and structural improvements through the entire length of the tunnel; however, these improvements to the Battery Street Tunnel would not upgrade the alignment to current WSDOT standards. This alternative would also provide improvements to better connect SR 99 and local streets in the area from Denny Way to Aloha Street. From Denny

Way to Republican Street, SR 99 would be lowered in a retained cut with Thomas and Harrison Streets crossing over Aurora Avenue. Mercer Street would continue to cross under Aurora Avenue but would be reconfigured to a two-way street. In addition, Roy Street would be regraded to connect to SR 99.

Elevated Structure Alternative

The Elevated Structure Alternative would develop a new, wider, double-level aerial structure to replace the existing Alaskan Way Viaduct (shown in Exhibit 3-7). The southern section would connect to the section of SR 99 replaced by the S. Holgate Street to S. King Street Viaduct Replacement Project. It features a double-level stacked structure through most of the central waterfront, incorporating a replacement for the seawall, and transitioning to a side-by-side structure as it climbs the hill to the Battery Street Tunnel. The Elliott/Western Avenues ramp configuration for the Elevated Structure Alternative would be the same as the existing ramps. SR 99 would then pass over Elliott and Western Avenues. The Battery Street Tunnel would be retrofitted to provide seismic and other structural improvements through the entire length of the tunnel, including other fire and life safety improvements, and the vertical clearance would be increased to 16.5 feet by lowering the existing roadway. However, these improvements to the Battery Street Tunnel would not upgrade the alignment to current WSDOT standards. New ventilation buildings would be located above each Battery Street Tunnel portal. This alternative would also provide improvements to better connect SR 99 and local streets in the area from Denny Way to Aloha Street, similar to those described for the Cut-and-Cover Tunnel Alternative.

The Elevated Structure Alternative was previously examined in detail in the 2006 Supplemental Draft EIS and its accompanying draft Section 4(f) evaluation. The analysis of the alternative was updated in the 2010 Supplemental Draft EIS and this Final EIS. For a more detailed description of the Elevated Structure Alternative, refer to Chapter 3 of this Final EIS.

4 Section 4(f) Resources

The project area includes a rich array of Section 4(f) resources, including park and recreation resources, historic structures and districts, and archaeological sites. At the end of this evaluation, Exhibit 4(f)-5 provides a listing of all the Section 4(f) resources that were evaluated for potential use by FHWA.

The project area encompasses the Area of Potential Effects (APE) defined through the Section 106 process. The APE includes portions of two districts that are listed in the NRHP: the Pioneer Square Historic District and the Pike Place Market Historic District. It also includes multiple properties outside of the districts that are NRHP-eligible.

There are also a number of park and recreation properties in the project area. The project area encompasses at least three blocks from any alternative, but in some cases is extended out to the limits of other potential effects such as noise, parking or traffic that could result in an impact to the resource.

The project area includes other properties that were reviewed for their recreational or historic characteristics, but the project found that they do not possess the essential attributes to qualify them as Section 4(f) resources. Appendix J of this Final EIS provides a complete inventory of all the properties that the lead agencies have evaluated for their potential to qualify as Section 4(f) resources. This includes a waterfront pedestrian/bicycle facility along the east side of Alaskan Way that has been determined to be a transportation facility, and not subject to Section 4(f), consistent with 23 CFR 774.139f(4).

For the properties that qualify as Section 4(f) resources, the lead agencies reviewed each to assess the potential for a use from direct impacts as well as proximity effects, including noise, visual, or traffic effects, both long term and during construction. Appendix J of this Final EIS provides a map of all Section 4(f) resources in the APE and details the Section 4(f) resources that have been evaluated. This appendix also documents that the project would not impact properties that have received funding

from the federal Land and Water Conservation Fund, also known as Section 6(f).

The resources that would be subject to use under Section 4(f) by the Bored Tunnel Alternative are shown in Exhibit 4(f)-1. Resources subject to use under Section 4(f) by all build alternatives are listed in Exhibit 4(f)-2.

Resources Used by the Bored Tunnel Alternative

The Bored Tunnel Alternative will affect four Section 4(f) resources in a manner that constitutes a use of the resources. The four properties used by the Bored Tunnel Alternative are historic resources that would be affected because of the direct impacts of removing the existing viaduct and Battery Street Tunnel, and constructing the bored tunnel and its related facilities. The alternative avoids uses of Section 4(f) park or recreation facilities because most of the effects of construction occur within existing transportation rights-of-way, with no physical impacts to park or recreational properties, and no indirect effects that would result in a constructive use.

Through the Section 106 process, FHWA has concluded that the effects on the four historic properties would result in an adverse effect that would constitute a use under Section 4(f):

- Alaskan Way Viaduct and Battery Street Tunnel
- The Pioneer Square Historic District – Western Building
- Seattle Maintenance Yard – Archaeological Site 45KI958
- Lake Union Sewer Tunnel

Alaskan Way Viaduct and Battery Street Tunnel

The Alaskan Way Viaduct and Battery Street Tunnel have been determined eligible for listing in the NRHP as a single resource. The Alaskan Way Viaduct and Battery Street Tunnel are eligible for the NRHP under Criterion A for their association with bridge and tunnel building in Washington in the 1950s and under Criterion C for their type, period, materials, and methods of construction.

The Alaskan Way Viaduct 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.

The Battery Street Tunnel is significant because of its association with tunnel building in Washington in the 1950s and its status as the first tunnel designed and built by the City of Seattle Engineering Department. It is also significant 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.

Pioneer Square Historic District – Western Building

The Western Building is a contributing building within the Pioneer Square-Skid Road National Historic District. The district, (referred to here as the Pioneer Square Historic District) was established as a National Historic District and listed in the National Register of Historic Places in 1970. The district is generally bounded by Columbia and Cherry Streets to the north, Alaskan Way to the west, Fourth Avenue S. to the east, and S. Royal Brougham Way to the south. This area began to be developed in 1852. It was largely rebuilt in a 2-year period after the devastating Great Fire of 1889 and expanded into the filled tidal flats to the west of the original downtown. The district features late 19th century brick and stone buildings and is one of the nation’s best surviving collections of the “Chicago Style” of Romanesque Revival style urban architecture.

The nomination form that established the definition of the district in the National Register identified properties that were considered to be contributing properties. A contributing property is any building, structure, or object that adds to the historical integrity or architectural qualities that distinguish the district. Many of the historic buildings within the district were built within a 2-year

period following the Great Fire, and Pioneer Square was the center of Seattle’s economic activity at the peak of the Alaska Gold Rush in 1897. However, development within the District’s defined boundaries include properties constructed through the early part of the 20th century, as development continued to expand into former tidal flats to the west of Pioneer Square.

The Western Building is the only property within the district with effects that rise to a level that constitute a Section 4(f) use. This six-story warehouse building at 619 Western Avenue, constructed in 1910, is a contributing resource to the Pioneer Square Historic District. While less ornate than other warehouse buildings in the district, it remains an intact example of utilitarian warehouses constructed of reinforced concrete and featuring large multi-light windows.

Seattle Maintenance Yard – Archaeological Site 45KI958

This historic archaeological resource site was discovered during investigations for the Bored Tunnel Alternative, and it is located near the north portal near Harrison Street. The site contains stratified remains of residential and commercial structures dating to the first half of the 20th century. The remains are beneath 15 to 20 feet of fill that was placed on the site and surrounding areas (including the south Lake Union area) in the 1920s and 1930s when Denny Hill was regraded. The site has potential to yield information on residential life, commerce, and trade that is not available from written sources. The site also has an underlying peat layer, which indicates that it has the potential to contain prehistoric archaeological resources. While the project has conducted an archaeological investigation in one section of the site, allowing them to confirm the presence of remnants of structures, the depth of fill does not safely allow extensive investigation.

WSDOT and FHWA anticipate the site is NRHP-eligible under Criterion D for its potential to yield information about early development in Seattle, but its value is in the data that may be recovered and likely does not depend on being preserved in place. If this is the case, the site would meet the conditions needed for an exception to a

Historic and Archaeological Memorandum of Agreement

For more information about effects to historic and archaeological resources, see the Memorandum of Agreement in Attachment C of *Appendix I, Historic, Cultural, and Archaeological Resources Discipline Report*.

Section 4(f) use, as established by 23 CFR 774.13(b), with written agreement from the SHPO. As there is a limited amount of archaeological information that can be collected prior to construction, the MOA defines the process the lead agencies will use to determine if the remains of the early 20th century historic occupation require protection in place. The MOA also includes provisions to guide further investigations for potential prehistoric artifacts in the underlying peat layer. Because the information needed to allow an exception cannot be obtained until after construction activities begin, construction within the site is evaluated as a Section 4(f) use.

The Lake Union Sewer Tunnel

The Lake Union Sewer Tunnel is one of Seattle's oldest sewer tunnels. The eastern section was completed in 1891, with the remainder being completed by 1894. The brick-lined tunnel appears to be largely intact. The Section 4(f) evaluation is focused on a manhole shaft, which is one element of the larger system. The manhole is located east of Republican Street and Sixth Avenue. The tunnel is eligible for listing in the NRHP under Criterion A for its association with the development of the City of Seattle and its infrastructure, and under Criterion C as an example of an early brick-lined sewer tunnel with original materials, design, and workmanship.

Resources Used by the Cut-and-Cover Tunnel or Elevated Structure Alternatives

The other two build alternatives considered in this Final EIS addresses would use the following Section 4(f) resources:

- The Alaskan Way Viaduct and Battery Street Tunnel
- The Alaskan Way Seawall
- Seattle Maintenance Yard – Archaeological Site 45KI958
- Washington Street Boat Landing
- Lake Union Sewer Tunnel

The Alaskan Way Viaduct and the Battery Street Tunnel, Seattle Maintenance Yard (Archaeological Site 45KI958),

and the Lake Union Sewer Tunnel are described above in the discussion of the Bored Tunnel Alternative. The other affected Section 4(f) resources are described below.

Alaskan Way Seawall

The Alaskan Way Seawall is eligible for listing in the NRHP under Criterion A for its association with development of the central waterfront from the early 1900s to the mid-1930s. It is significant under Criterion C for the type, period, materials, and methods of construction. It was designed and built by the Seattle Engineering Department using a unique piling and platform design.

Washington Street Boat Landing

The Washington Street Boat Landing is both a park property and a historic resource. It has been determined eligible for listing in the NRHP under Criterion C for its design characteristics. It is on City right-of-way at the end of S. Washington Street. The pergola is listed individually in the NRHP. The park facility consists of the pergola and an additional feature, the dock, which has included a float and ramp to connect with the pergola. This facility has been operated by the Seattle Parks and Recreation Department for public open space and includes benches. However, the floats typically were removed in winter to avoid possible storm damage. The floats were not replaced in the summer of 2001, after the Nisqually earthquake, due to the need for replacement of pilings and because the investment was deemed unwise due to uncertainty about future plans for the viaduct and seawall.

5 Bored Tunnel Alternative

The Section 4(f) resources with a use by the Bored Tunnel Alternative are shown on Exhibit 4(f)-1 and discussed below.

Alaskan Way Viaduct and Battery Street Tunnel

Would this alternative result in a use of this resource?

The Bored Tunnel Alternative is located to the east of the existing viaduct, so complete demolition is not needed. However, the Bored Tunnel Alternative will require alteration and closure of the Battery Street Tunnel, the

other element of this historic property. Given the existing viaduct's inherent structural limitations and high risk of failure during a seismic event, and the fact that its functions would be replaced by the bored tunnel, leaving the viaduct in place would create unacceptable public safety risks and is not prudent.

Similarly, the Bored Tunnel Alternative will replace the function provided by the Battery Street Tunnel, which will be decommissioned. While other uses of the old tunnel could be possible (such as pedestrian or bicycle use), the tunnel would require costly retrofits to meet current standards, including structural, seismic, and health and safety standards. These improvements would still result in a Section 4(f) use. Further, the Battery Street Tunnel may be used for debris disposal from the Alaskan Way Viaduct, which would avoid the need for seismic retrofits and reduce construction-related traffic, noise, and debris disposal costs.

Can this alternative be modified to avoid the use or to minimize the harm resulting from the use?

Design modification of the Bored Tunnel Alternative would not avoid or minimize the use. As described above, the primary reason that a use occurs is that the Bored Tunnel Alternative replaces the function of the viaduct and Battery Street Tunnel. The viaduct is unsafe and will be demolished as part of the project. High levels of investment in the viaduct and the Battery Street Tunnel would still be needed to avoid unacceptable safety risks.

What measures to minimize harm to this resource have been incorporated into this alternative?

Measures to minimize harm to the Alaskan Way Viaduct and the Battery Street Tunnel include documenting the historic attributes of the viaduct and tunnel in accordance with Historic American Engineering Record (HAER) standards. The lead agencies have completed HAER documentation (including photography) for the viaduct and the tunnel and have submitted the HAER report to NPS.

Pioneer Square Historic District – Western Building
Would this alternative result in a use of this resource?

FHWA has determined that settlement damage and related activities to protect the Western Building, a contributing resource to the Pioneer Square Historic District, would result in the Section 4(f) use of the District, but the area of use is confined to the Western Building. The loose fill soils beneath the Western Building have a high potential for causing settlement damage, since the bored tunnel alternative would excavate soils directly beneath the building. Engineering evaluations of the building found it to be in very poor structural condition due to settlement, deterioration of its wooden pile foundation, the effects of the Nisqually earthquake, and general deterioration over time. The building today has many large cracks in columns and large visible cracks on external walls, in most other structural and interior walls, and on the ground floor slab. Some cracks or gaps are 5 inches or more wide and extend through several floors of the building. There are visible variations in building settlement resulting in floor slopes of up to 5 percent, and there are gaps between floors and walls.

WSDOT’s engineering assessment rates the potential settlement damage as “very severe” if the project does not provide protective measures. Settlement otherwise would damage major structural and architectural elements of the building. There are also concerns about the building’s instability and potential for collapse, given its poor existing structural condition. In response, WSDOT has defined a program of protective measures that are needed to protect the building, but this will involve construction of structural reinforcements and bracing for the interior and exterior of the building, and relocating all tenants for up to a year.

In conducting the Section 106 consultation process, WSDOT and FHWA have determined that the settlement damage to the Western Building would result in an adverse effect to the building and to the Pioneer Square Historic District, as the building is a contributing element to the District.

The preferred approach that WSDOT has developed to protect the building calls for:

- Strengthening the foundation with micropiles and grade beams, or constructing a reinforced concrete wall system, or using a combination of both approaches
- Installing epoxy grout and wrap on cracked concrete columns and beams
- Constructing a temporary exterior steel frame and interior shoring and bracing
- Injecting compensation grout to manage building settlement to less than 0.5 inch

The steel framing and the interior shoring and bracing would be removed when the risk of settlement diminishes, leaving the exterior appearance of the building approximately the same as it is currently. The interior would also have a similar appearance as today, but some interior bracing may remain. With this approach, the risk of irreparable damage is low, but there is a moderate risk that building movement may transfer the structural load to the temporary framing and/or shoring, meaning that additional structural work would be required to remove the framing. The process would take about 10 months, including construction of the temporary framing, monitoring while the tunnel boring machine advances, and removal of the framing and restoring utilities. The work would be reviewed by the Pioneer Square Preservation Board and would be done in compliance with the Secretary of the Interior’s Standards for Rehabilitation of Historic Buildings (36 CFR 67.6).

In the 2010 Supplemental Draft EIS, FHWA identified a Section 4(f) use of the Western Building as a contributing building to Pioneer Square Historic District. It also identified a Section 106 adverse effect for the Western Building. This was because the anticipated settlement damage to the building was severe enough for the lead agencies to consider demolition to avoid the collapse of

the building and preserve public safety, and WSDOT anticipated the need to fully acquire the building.

WSDOT’s protection measures are designed to return the building to its current condition or better, and full acquisition of the building can be avoided. The extent of work required to preserve the building are temporary but they would not be minor, and there is still the potential for at least aesthetic damage that would require repair, consistent with the Secretary of Interior Standards. Through subsequent Section 106 consultation, FHWA and WSDOT identified a Section 106 adverse effect to the Pioneer Square Historic District, since the Western Building contributes to the District. As the building contributes to the Pioneer Square Historic District, the Section 4(f) use is of the District, but the area of use is confined to the Western Building.

Other Resources Within the District with Effects Not Resulting in a Use

The Bored Tunnel Alternative has the potential to cause settlement resulting in damage to the Polson and Yesler buildings, if no protective measures are provided. Both buildings are contributing resources to the Pioneer Square Historic District. WSDOT and FHWA have concluded that the protective measures defined through the project’s MOA would avoid a Section 4(f) use, and no other effects would rise to the level of causing a constructive use.

Polson Building

This six-story warehouse building at 61 Columbia Street was constructed in 1910 and is immediately north of the Western Building. The building was designed by Charles Saunders and George Lawton, who designed several other warehouses in the district as well as other notable buildings in Seattle. It is significant because it was part of the reconstruction of the Pioneer Square District in the original heart of Seattle and the former tidal flats of Elliott Bay.

The potential settlement damage to the Polson Building was rated “severe to very severe.” However, this building is in good structural condition; therefore, protective

measures prior to construction and high levels of monitoring during construction would prevent major structural damage. Any remaining structural and aesthetic damage could be repaired.

The tunneling activities beneath this building have the potential to cause settlement that could result in severe to very severe damage, including damage to architectural finishes and distortion of windows and doors. WSDOT, the City, and FHWA have concluded that without protective measures and additional mitigation, the structural and architectural damage to this building would result in an adverse effect to the property under Section 106.

The Bored Tunnel Alternative would include a comprehensive program of protection measures for the Polson Building, beginning prior to tunnel construction. These measures, which are described in the project's Section 106 MOA, include preconstruction protection, a monitoring plan, and an action plan for addressing ground changes or building settlement. Preconstruction prevention measures to protect and stabilize the building would include the use of various soil improvement and grouting techniques to improve soil strength or compensate for ground loss due to excavation.

While construction is under way and as construction is completed, the building would be monitored for any signs of damage. If damage does occur, all restoration and repair work would be done in compliance with the Secretary of the Interior's Standards for Rehabilitation. This and other mitigation actions are defined in the MOA developed through the Section 106 process.

With these measures for protection, repair, and rehabilitation of the building, the lead agencies expect the property to retain the qualities, features, and attributes that qualify it as a Section 4(f) resource.

No temporary or permanent acquisition of the building is needed. The building would also maintain the warehouse building features and characteristics that are part of its historic significance. Other proximity effects, including

the short-term effects of construction disruption for areas surrounding the building, are also not expected to result in a substantial short- or long-term impairment to the building or remove the characteristics that qualify it as a Section 4(f) resource. Considering all of these factors, WSDOT and FHWA have concluded that no Section 4(f) use or constructive use would occur.

One Yesler Building

This three-story brick building in the Pioneer Square Historic District could have very slight structural damage due to ground settlement. In the Section 106 MOA, the project commits to measures needed to avoid direct adverse effects due to structural damage, including the use of micro piles to increase the stability of soils near the building, prior to tunnel construction, monitoring and protection during construction. Any repairs or restoration, if needed, would be done in compliance with the Secretary of the Interior's Standards for Rehabilitation. WSDOT and FHWA have determined that effects would be "not adverse" under Section 106.

No temporary or permanent acquisition of the building would occur. The building will retain the features and characteristics that are part of its historic significance. Other proximity effects, including the short-term effects of construction disruption for areas surrounding the building, are also not expected to result in a substantial short- or long-term impairment to the building or remove the characteristics that qualify it as a Section 4(f) resource. Considering all of these factors, WSDOT and FHWA have concluded that no Section 4(f) use or constructive use will occur.

Other Effects to the District

Demolition of the viaduct would also occur in close proximity to buildings that are part of the historic district. The potentially affected buildings within the district are adjacent to the viaduct between S. Jackson and Columbia Streets and near the ramps on Columbia and Seneca Streets. Demolition would take approximately 9 months, but it is expected to occur in two-block segments, which would affect specific properties for a much shorter period.

Employees, customers, and residents will be able to occupy the buildings continually but may be affected by noise, dust, and limited access and parking for a period. The Bored Tunnel Alternative does not require acquisition of the buildings, will not involve their physical alteration, and would not change the historic features or characteristics of the buildings or their importance to the District.

No other buildings or resources within the District would have settlement damage or other effects that would rise to the level of a use. With the measures to protect and preserve all of the buildings within the district, the district will retain the features, attributes, and associations that make it historically significant.

Additional details on the assessment of potential effects to other properties within the District, including long term or construction effects are provided in Appendix J.

Can this alternative be modified to avoid the use of the District's Western Building or to minimize the harm resulting from the use?

The Bored Tunnel Alternative has been modified to include a program of extensive protective measures to preserve the Western Building and avoid potential loss of the resource through collapse or demolition. In addition, several design variations of the Bored Tunnel Alternative have been considered in an effort to avoid or minimize impacts to the Western Building and a use of the Pioneer Square Historic District. These variations include:

- Move the alignment to the west or south
- Move the alignment to the east
- Increase the depth of the tunnel
- Use other construction methods
- Change the size or type of tunnel being constructed

There are many engineering constraints and other factors that limit the opportunities to shift this alternative away from the Western Building. The tunnel alignment and its size are driven primarily by geotechnical conditions, highway and tunnel design standards, and project constraints to the north, south, east, and west. The project

has also made engineering and construction modifications to minimize the effects to Section 4(f) resources, including the Western Building. After thorough consideration, potential alignment variations that would reduce or avoid impacts to the Western Building have been rejected. The discussion below identifies the reasons for rejecting these variations as being either not prudent or feasible or because they do not avoid the use of Section 4(f) resources.

Move the alignment to the west or south – The tunnel’s south portal was sited to avoid other major foundations and buildings, including the existing Alaskan Way Viaduct structure immediately west. Moving the tunnel alignment to the west or the south would potentially require closing the Alaskan Way Viaduct. Either would also require a substantial deviation from geometric standards for the bored tunnel, affecting factors such as grades, sight distance, and other features important to the safe and effective operation of the tunnel. With the earlier closure of the Alaskan Way Viaduct before a replacement facility is available, there would be higher environmental and transportation impacts throughout the downtown area during the construction period. The lead agencies have concluded that such major deviations in geometric standards for the highway in the new tunnel would carry unacceptable safety risks to traffic operations. As improved safety is a key element of the project’s purpose and need, and these realignment options would fail to address critical safety factors, they are not considered prudent.

Shift the tunnel alignment to the east to avoid the Western Building – The project has extensively reviewed the potential for using other tunnel alignments to the east. This includes an earlier alignment for the bored tunnel that placed a tunnel portal near First Avenue S. and S. Charles Street. This location would have involved a Section 4(f) use of the Triangle Building, a historic property that is also part of the Pioneer Square Historic District, and it would have affected at least 11 other historic structures within the Pioneer Square Historic District. The extent of potential damage for the earlier alignment was more severe than for the current alignment.

This would have constituted higher levels of Section 4(f) uses, and would not be an avoidance measure. The project also reviewed the potential for aligning the tunnel even farther east, but this area is occupied by several blocks of buildings, which include multistory structures and other Section 4(f) resources. Construction period settlement affecting historic properties and other buildings would have remained an issue, particularly in the Pioneer Square Historic District where the tunnel alignment would have remained shallow. The net effect of shifting the tunnel alignment east would be to increase the use of Section 4(f) resources, and therefore would not be a prudent avoidance option.

Increase the depth of the tunnel – Deepening the tunnel would result in unacceptable grades to the north and south for effective connections to surface streets, making it not prudent. A greater depth also would not be likely to reduce the potential for settlement to the Western Building, given soil and groundwater conditions and the building’s currently weakened foundation and structural characteristics. Therefore, it is not likely to avoid the Section 4(f) use.

Use other construction methods – The project is already incorporating innovative methods for initiating the tunnel construction to help minimize construction impacts. The Cut-and-Cover Tunnel Alternative reflects the other most commonly used construction method for a major tunnel. Because it involves open excavation, this method is most appropriate where right-of-way is potentially available, such as where the Alaskan Way Viaduct is currently located. The alignment identified for the Bored Tunnel Alternative, which is designed to allow the viaduct to remain in place until the replacement is built, would not be appropriate using a cut-and-cover method. A cut-and-cover tunnel through the Pioneer Square Historic District would require excavating all soils between the bottom of the tunnel and the surface, which would have a greater potential for archaeological impacts, as well as increased traffic impacts, property impacts, historic resource impacts, utility impacts, and long-term construction disruption than

any of the other identified alternatives. For these reasons, other construction methods were not considered prudent.

Change the size or type of tunnel being constructed – During the development of the bored tunnel concept, several variations were considered, including a twin bored tunnel, each containing two lanes, as well as hybrids that could return to the surface north of Pioneer Square. However, none of these options would avoid the underlying geotechnical and soil stabilization issues present in the area of the Western Building and the Pioneer Square Historic District. Other smaller tunnels with fewer lanes or with reduced shoulders were not considered to be prudent because they did not provide sufficient capacity to replace the existing viaduct facility or meet current safety standards, and therefore would not meet the project’s purpose and need.

What measures to minimize harm to this resource have been incorporated into this alternative?

The lead agencies’ detailed engineering assessments have defined measures that the project can take to minimize harm to the Western Building in the Pioneer Square Historic District. These measures and procedures are described in the MOA developed through the Section 106 process, and are designed to preserve the Western Building and prevent the loss of a contributing resource to the District.

To address potential damage to the Western Building and to avoid or minimize harm to other historic buildings in the District, the MOA includes these mitigation commitments:

- Damage to historic buildings caused by the project will be repaired in kind and in accordance with the Secretary of the Interior’s Standards for Rehabilitation of Historic Buildings. If exterior alterations are necessary, approval would be sought, as required, from the Pioneer Square Preservation Board, the Seattle Landmarks Preservation Board, or the Pike Place Market Historical Commission, as appropriate.

- An architectural historian will be involved in evaluating and repairing damage to historic buildings.

Seattle Maintenance Yard – Archaeological Site 45KI958

Would this alternative result in a use of this resource?

The Bored Tunnel Alternative would require excavation of this site to allow construction of the new north tunnel portal and related ramps, structures, and roadways connecting to local streets and to the existing SR 99 facility to the north. The lead agencies are presuming this archaeological site will be determined eligible, and construction activity and the redevelopment of the site as a transportation facility would result in an adverse effect under Section 106. The lead agencies are defining this as a Section 4(f) use.

Can this alternative be modified to avoid the use or to minimize the harm resulting from the use?

Several variations of the Bored Tunnel Alternative's north portal access features have been considered in an effort to avoid this archaeological site. However, the variations would introduce other construction, safety, or operational factors that jeopardized the ability of the Bored Tunnel Alternative to satisfy the project's purpose and need, or they had a high potential for affecting other Section 4(f) resources or worsening overall environmental effects. As in the southern portion of the tunnel, the north tunnel alignment and the portal location are driven primarily by geotechnical conditions, highway and tunnel design standards, the need to connect to the local street system and existing portions of SR 99, and the need to minimize construction period effects by maintaining traffic on SR 99 during much of the construction period. The potential variations that have been considered include the following:

- **Placing the portal to the south** – To avoid the archaeological site or other properties that have a similar potential to contain historic archaeological resources from early 20th century development, the portal would need to be placed at least two blocks to the south, which would require substantially

increased grades and bring the tunnel closer to the surface in other areas. The resulting geometry would affect operating conditions and create safety concerns for the tunnel. The revised vertical alignment would likely undermine or directly affect portions of the existing Battery Street Tunnel, which would likely need to be closed during construction, eliminating a primary benefit of the Bored Tunnel Alternative. Raising the vertical profile of the tunnel would also introduce a higher potential for ground settlement and other impacts to historic properties, other structures, and major utilities.

- **Moving the portal to the east or north** – Other locations to the east or north would also be likely to contain historic archaeological resources as well as prehistoric resources, and would be unlikely to avoid a Section 4(f) use. The Seattle Maintenance Yard (Archaeological Site 45KI958) is not extensively developed, which minimizes property, displacement, or major utility impacts. The site also provides the opportunity to meet standards for roadway connections to the existing SR 99 to the north as well as other connections to local streets, while also allowing SR 99 traffic to be maintained during several years of construction. If the tunnel were moved to the east, such as to Dexter Avenue, the environmental effects to property and traffic would be substantially higher. This location would require removal of several blocks of developed property to make the necessary connections to SR 99 and improvements to Sixth Avenue and other east-west streets. Extending the portal to the north would have similarly worsened effects, with fewer opportunities to reconnect the street grid. In addition, based on photographs of historic Seattle and other records that show the locations of the original streets and buildings that were removed and then buried as part of the Denny Regrade, WSDOT and FHWA have concluded that other sites for the portal would have a similar or higher potential to encounter other archaeological resources from Seattle's early development.

- **Moving the portal to the west** – Moving the tunnel to the west would still involve construction within the Seattle Maintenance Yard (Archaeological Site 45KI958), and would not avoid a Section 4(f) use. Several other features essential to safety and improved traffic circulation and access to and from the portal and nearby streets either could not be made or would directly conflict with a major new development complex for the Gates Foundation, as well as the Bored Tunnel Alternative's Mercer Street features.

What measures to minimize harm to this resource have been incorporated into this alternative?

Since the site has not yet been determined eligible for listing in the NRHP, additional investigations will be undertaken as construction begins. The MOA outlines the procedures for addressing the site. The results of additional investigations will be used to determine the NRHP eligibility of the site. If WSDOT and FHWA determine that the site is NRHP eligible and the SHPO concurs, data recovery will be undertaken to recover the information that qualifies the site for the NRHP.

In concert with the investigation of site 45KI958, additional archaeological investigation will also be undertaken in other areas within the footprint of the cut-and-cover trench where peat deposits and extant historic surfaces have been identified. If archaeological deposits are discovered and are determined eligible for the NRHP Criterion D (important chiefly for the information they may yield), data recovery would also be undertaken at these locations. If significant archaeological deposits are discovered that warrant preservation in place, FHWA and WSDOT would consult further with the SHPO, and FHWA would be required to conduct an additional Section 4(f) evaluation prior to approving activities that result in the use of the resource. In either case, the archaeological treatment plan will guide the procedures to be followed for this investigation, including potential data recovery. During construction, archaeological monitoring would be required for ground disturbing activities that would

intersect the elevation of peat deposits and extant historic surfaces identified during geoarchaeological investigations.

Lake Union Sewer Tunnel

Would this alternative result in a use of this resource?

The proposed off-ramp from SR 99 at Republican Street is approximately 6.5 feet below the existing top of a manhole shaft connecting to the main tunnel. Construction would require removing the upper section of the brick manhole shaft; this includes approximately 4.7 feet of the original brick lining material. The opening would be covered with a reinforced concrete top slab with an integral manhole ring and will continue to function as an access point to the sewer tunnel. While the function of the sewer tunnel will be maintained, and this alteration affects a portion of the tunnel, the alteration would result in a Section 4(f) use.

Can this alternative be modified to avoid the use or to minimize the harm resulting from the use?

The use of part of the sewer tunnel is caused by the off-ramp to Republican Street, which is vital to maintaining connections to the South Lake Union and Seattle Center areas and the area transportation network. Eliminating this off-ramp is not prudent because it is the first northbound exit after the Alaskan Way S. off-ramp, near the south portal, and would greatly reduce the transportation mobility benefits the project is intended to provide.

The location of the Republican Street off-ramp depends on the location of the north portal itself, which is part of a complex multi-level solution allowing the bored tunnel to connect to an improved local street network while avoiding a sustained closure of SR 99.

Potential variations of the Bored Tunnel Alternative's north portal have been described above as part of the search for measures to avoid the Seattle Maintenance Yard (Archaeological Site 45KI958). The need to maintain the north portal's currently proposed location and depth constrain the potential for altering the location of the off-ramp to Republican Street and the intersection with Dexter Avenue.

Variations to the grade or geometrics of the off-ramp to connect with Republican Street would introduce other construction, safety and transportation problems that jeopardize the ability of the Bored Tunnel Alternative to satisfy the project's purpose and need, and would not be prudent.

The design of the off-ramp has already been modified to raise the grade of the off-ramp by more than 5 feet, in order to minimize the amount of the manhole shaft that would be altered. Further modifications to the grade would result in unsafe sight distances and an unacceptable grade for effective traffic operations, including for trucks. The resulting safety and operation problems from a steeper grade would be contrary to the project's purpose and need.

Shifting the alignment of the off-ramp to the south side of Republican Street to avoid the manhole would also result in unsafe conditions due to curves, grades, and sight distance leading to the new intersection with Dexter Avenue. Shifting the alignment to the north side of Republican Street would have similar problems, again due to curves and limited sight distance. Locating the off-ramp even further north toward Mercer Street would conflict with the location of the northbound on-ramp to SR 99, and would result in poor connectivity and high levels of traffic impacts to the street network, including to Dexter Street and the reconfigured Mercer Street. These results would be contrary to the project's purpose and need and would not be prudent.

What measures to minimize harm to this resource have been incorporated into this alternative?

The project has already modified the design of the off-ramp to raise it to minimize impacts to the manhole shaft. The project's MOA defines further mitigation measures to be taken for the resources, including documentation of its historic attributes.

Other Historic Resources Potentially Affected by Construction

No other historic properties outside the Pioneer Square Historic District are expected to result in a Section 4(f) use, but there are other properties that may experience settlement during construction. The lead agencies have conducted a preconstruction assessment of all buildings along the tunnel alignment to determine which properties may be affected by tunnel settlement. Structural engineers have inspected every building within the anticipated settlement zone (approximately one block on each side of the proposed alignment).

Based on these investigations, WSDOT has identified the potential for minor levels of settlement damage (rated as slight or very slight) affecting the following historic buildings shown on Exhibit 4(f)-3 and listed in Exhibit 4(f)-4. These buildings qualify as Section 4(f) resources because they are listed in or have been determined eligible for the NRHP. Through the Section 106 process, FHWA has determined that the potential effects to the following buildings would be minor and "not adverse."

- Federal Office Building – 901 First Avenue
- National Building – 1000 Western Avenue
- Alexis Hotel/Globe Building – 1001 First Avenue
- Arlington South/Beebe Building – 1015 First Avenue
- Arlington North/Hotel Cecil – 1015 First Avenue
- Grand Pacific Hotel – 1115 First Avenue
- Colonial Hotel – 1123 First Avenue
- Fire Station No. 2 – 2334 Fourth Avenue
- Two Bells Tavern – 2313 Fourth Avenue
- Archstone Belltown – Grosvenor House, 500 Wall Street

The Bored Tunnel Alternative would not incorporate land from these properties, and the alternative would not directly or indirectly impair the features that make the buildings historically significant. The Section 106 MOA defines the monitoring, protection and repair commitments for these properties. The MOA also defines monitoring and protection commitments for a longer list

of historic properties where no damage is anticipated. The measures ensure that these buildings will not incur permanent damage from construction of the bored tunnel. If temporary damage occurs, it would not be severe. Restoration and repair work for these buildings, if needed, will comply with the Secretary of the Interior's Standards for Rehabilitation, which would avoid impacts due to alteration of each building's historic attributes.

The properties with potential settlement effects listed in Exhibit 4(f)-4 were evaluated for potential constructive use as a result of construction effects or other project effects. However, the historic attributes of all of the properties would be maintained given the MOA commitments to protect the buildings during construction and to repair potential damage consistent with the Secretary of the Interior's Standards for Rehabilitation.

Therefore, no use or constructive use is anticipated for the properties in Exhibit 4(f)-4 with effects that are anticipated to be determined "not adverse" under Section 106.

In addition, there would be no use or constructive use of the larger set of historic resources within the APE. Through the Section 106 process, WSDOT and FWHA have evaluated and determined these other properties would have "no effect" under the Bored Tunnel Alternative.

WSDOT will be obtaining underground easements for the tunnel for the properties that are above the tunnel, but an underground easement does not involve physical alteration of buildings, and does not alter the ownership of the subject properties. Easement would not directly or indirectly alter the historic integrity of the properties. Therefore, the easements would not constitute a use.

Archaeological Resources Affected During Construction

One archaeological property within the APE (the Dearborn South Tideland Site) may be disturbed during construction of the Bored Tunnel Alternative. The site contains foundations, structural, and other materials from

commercial and industrial development that occurred between 1895 and 1910 on filled tidelands. FHWA and WSDOT have determined and SHPO has agreed the site is eligible under Criterion D for its potential to yield information about early development in Seattle, but its value is in the data that may be recovered and does not depend on being preserved in place. Section 4(f) regulations provide an exception for the use of these types of archaeological properties in 23 CFR 774.13(b).

The SHPO agreed in writing on March 29, 2010 with FHWA's request to concur with a Section 4(f) exemption for the site (Appendix U provides this correspondence). Therefore, under FHWA's Section 4(f) regulations, construction activities affecting this site are exempt from Section 4(f), and there is no requirement to consider avoidance alternatives and incorporate all possible planning to minimize harm. The MOA still commits the project to developing an Archaeological treatment plan for the project, which will include monitoring and data recovery measures for the Dearborn South Tideland Site.

Other Archaeological Sites

Additional sub-surface exploration would be undertaken in areas identified as highly sensitive for archaeological deposits prior to construction. The construction schedule would be designed to accommodate evaluation and mitigation of significant archaeological sites found during construction in areas inaccessible for examination prior to construction. Construction would proceed in compliance with an archaeological treatment plan, which shall provide the procedures guiding internal WSDOT notification protocols and consultation with the SHPO, the tribes, and consulting parties upon unanticipated discovery of archaeological material or human remains, in accordance with Section 106 requirements. Depending on the significance of resources that may be discovered, an additional Section 4(f) evaluation may also be required before the project resumes further construction activities that affect the resource.

6 Effects of the Cut-and-Cover Tunnel and Elevated Structure Alternatives on Section 4(f) Properties

The Cut-and-Cover Tunnel and Elevated Structure Alternatives would result in uses of Section 4(f) properties due to the activities described below for each alternative. The 2010 Supplemental Draft EIS provided further discussions of the potential for the alternatives to avoid or minimize their Section 4(f) uses, but concluded they were unavoidable without creating higher levels of impacts or compromising the project to a degree that it would no longer be reasonable to continue with the project in light of the stated purpose and need.

Cut-and-Cover Tunnel Alternative

The Cut-and-Cover Tunnel Alternative would require the use of the Alaskan Way Viaduct, the Battery Street Tunnel, the Alaskan Way Seawall, the Washington Street Boat Landing, and the Seattle Maintenance Yard (Archaeological Site 45KI958).

Alaskan Way Viaduct and Battery Street Tunnel

The Cut-and-Cover Tunnel Alternative is located directly on the existing location of the Alaskan Way Viaduct. Therefore, it would require the removal of the viaduct and result in an unavoidable Section 4(f) use.

The Cut-and-Cover Tunnel Alternative would include substantial modification of the Battery Street Tunnel to meet seismic design criteria and improve safety. These improvements would involve the removal of existing historically significant features of the tunnel, including the tiled walls. To satisfy the purpose and need for objective for safety, this alternative must modify the tunnel, and results in an unavoidable Section 4(f) use.

The alternative requires the continued use of the Battery Street Tunnel to connect to the termini of the project. Continued use of the Battery Street Tunnel is possible only if the necessary upgrades are made so that the tunnel meets current fire safety standards.

Section 4(f) Resources With Potential Minor Effects but Not Subject to Use by the Preferred Alternative

Elliott Bay

National Building

Colonial Grand Pacific (Grand Pacific)

Colonial Grand Pacific (Colonial)

Polson Building

Arlington North (Hotel Cecil)

Arlington South (Beebe)

1 Yesler Building

Alexis Hotel (Globe)

Federal Office Building

Fire Station #2

Grosvenor House

1 Yesler Building

Polson Building

Federal Office Building

Alexis Hotel (Globe)

Colonial Grand Pacific (Colonial, left, Grand Pacific, right)

Arlington North (Hotel Cecil)

Arlington South (Beebe Building)

Grosvenor House

Exhibit 4(f)-3

Alaskan Way Seawall

The Cut-and-Cover Tunnel Alternative would replace the seawall from S. Washington Street up to Broad Street. Between S. Washington Street and Union Street, the existing seawall would be replaced by the outer wall of the tunnel. From Union Street to Broad Street, the seawall would be rebuilt by improving the soils and replacing the existing seawall in most locations. Therefore, this alternative would result in an unavoidable use of the seawall.

Washington Street Boat Landing

The Cut-and-Cover Tunnel Alternative would affect the Washington Street Boat Landing pergola, which is also a historic resource. Construction of this alternative would displace the pergola, and it would then be relocated to a nearby site at the foot of S. Washington Street. Additional discussion of this alternative’s effect on this site was included in the 2006 Supplemental Draft EIS Appendix N, Part A. Therefore, this alternative would result in a use of the Washington Street Boat Landing park.

Seattle Maintenance Yard – Archaeological Site 45KI958

The Cut-and-Cover Tunnel Alternative would require excavation and construction within this site. Construction activity and the redevelopment of the site as a transportation facility would result in an adverse effect under Section 106, and would constitute a Section 4(f) use.

Lake Union Sewer Tunnel

The Cut-and-Cover Tunnel Alternative would require the reconstruction of Republican Street, altering a manhole shaft. This would result in an adverse effect under Section 106, and would constitute a Section 4(f) use.

The Elevated Structure Alternative

The Elevated Structure Alternative would require the use of the Alaskan Way Viaduct and Battery Street Tunnel, the Alaskan Way Seawall, the Washington Street Boat Landing, and the Seattle Maintenance Yard (Archaeological Site 45KI958), and the Lake Union Sewer Tunnel. The uses are substantially the same as the uses resulting from the Cut-and-Cover Tunnel Alternative, because the Elevated

Exhibit 4(f)-4

Section 4(f) Resources With Potential Minor Effects but Not Subject to Use by the Preferred Alternative

Name (Historic Name) Address	Historic Status	Key Characteristics	Potential Effect	Proposed Protection and Impact Minimization Actions	Section 106 Effects Determination	Section 4(f) Evaluation Results
Dearborn South Tideland Site West of First Avenue S. between S. Dearborn Street and S. Royal Brougham Way	Eligible for National Register	Archaeological site eligible under Criteria A and C. Contains building remains, refuse accumulations and other cultural features from 1898 to 1910.	<i>Risk of ground disturbance from construction activities</i>	Monitoring and data recovery measures defined in archaeological treatment plan.	Not adverse	No use. No constructive use.
1 Yesler Way	Pioneer Square Historic District (contributing building)	Three-story brick-clad building constructed in 1911 as a hotel. Significant for its part in the reconstruction of the Pioneer Square Historic District (Criterion A) and for the building type and characteristics (Criterion C).	<i>Very Slight Building damage due to ground settlement</i>	Level 3 Monitoring, Possible compensation grouting.	Not adverse	No use. No constructive use.
Polson Building 61 Columbia Street	Pioneer Square Historic District (contributing building)	Six-story warehouse building, constructed in 1910. Significant for its part in the reconstruction of the Pioneer Square Historic District (Criterion A) and for the building type and characteristics (Criterion C).	<i>Severe to Very Severe building damage due to ground settlement</i>	Level 3 Monitoring, Compensation grouting, Foundation strengthening.	Adverse	No use. No constructive use.
Federal Building 901 First Avenue	Listed in the National Register	Completed in 1933. 7- and 8- story Art Deco brick and terra cotta building. Significant for Criterion A, as the first Seattle building designed for federal offices, and for Criterion C, for building type and characteristics.	<i>Slight building damage due to ground settlement</i>	Level 3 Monitoring, Compensation grouting.	Not adverse	No use. No constructive use.
National Building 1000 Western Avenue	Listed in the National Register	Completed in 1904. A 6-story brick building designed for the Northern Pacific Railroad. Significant under Criterion A for its role in Seattle’s development, and for Criterion C for building type and characteristics.	<i>Slight building damage due to ground settlement</i>	Level 3 Monitoring, Compensation grouting.	Not adverse	No use. No constructive use.
Alexis Hotel (Globe) 1001 First Avenue	Listed in the National Register	Part of the “First Avenue” group developed as a block. Significant under Criterion A as a work by noted architect (Umbrecht) and as part of Seattle development after the Great Fire, and for Criterion C, for building type and characteristics.	<i>Slight building damage due to ground settlement</i>	Level 3 Monitoring, Compensation grouting.	Not adverse	No use. No constructive use.
Arlington South (Beebe Building) 1015 First Avenue	Listed in the National Register	Developed in 1901. Part of the “First Avenue” group developed as a block. Significant under Criterion A as a work by noted architect (Umbrecht) and as part of Seattle development after the Great Fire, and for Criterion C, for building type and characteristics.	<i>Slight building damage due to ground settlement</i>	Level 3 Monitoring, Compensation grouting.	Not adverse	No use. No constructive use.
Arlington North (Hotel Cecil) 1015 First Avenue	Listed in the National Register	Completed in 1904. Part of the “First Avenue” group developed as a block. Significant under Criterion A as a work by noted architect (Umbrecht) and as part of Seattle development after the Great Fire, and for Criterion C, for building type and characteristics.	<i>Slight building damage due to ground settlement</i>	Level 3 Monitoring, Compensation grouting.	Not adverse	No use. No constructive use.
Colonial Grand Pacific (Grand Pacific) 1119 First Avenue	Listed in the National Register	Designed in 1901. Part of the “First Avenue” group, significant under Criterion A as a work by noted architect (Umbrecht) and as part of Seattle development, and for Criterion C, for building type and characteristics.	<i>Slight building damage due to ground settlement</i>	Level 3 Monitoring, Compensation grouting.	Not adverse	No use. No constructive use.
Colonial Grand Pacific (Colonial) 1123 First Avenue	Listed in the National Register	Part of the “First Avenue” group, significant under Criterion A as a work by noted architect (Umbrecht) and as part of Seattle development, and for Criterion C, for building type and characteristics.	<i>Slight building damage due to ground settlement</i>	Level 3 Monitoring, Compensation grouting.	Not adverse	No use. No constructive use.
Fire Station #2 2334 Fourth Avenue	Eligible for National Register	Built in 1920. The City’s oldest fire station still in use. Significant under Criterion A for its association with the city’s development and its fire department, and under Criterion C as an example of finely detailed industrial architecture and a work by Seattle’s most prominent municipal architect (Huntington).	<i>Slight building damage due to ground settlement</i>	Level 3 Monitoring, Compensation grouting.	Not adverse	No use. No constructive use.
Grosvenor House 500 Wall Street	Eligible for National Register	Built in 1949. Significant under Criterion C as one of the first large apartment building built during Post-World War II Seattle.	<i>Slight building damage due to ground settlement</i>	Level 3 Monitoring, Compensation grouting.	Not adverse	No use. No constructive use.

Structure Alternative would be in the same location as the existing viaduct, requiring its removal. However, the Elevated Structure Alternative would be more than twice as wide as the existing structure in the Pioneer Square area. This would affect views and the pedestrian environment along Alaskan Way. It also would require replacing the seawall to provide support for the soils surrounding the foundation of the new elevated structure. The same modifications to the Battery Street Tunnel would be needed, along with local street improvements near the portal.

7 Other Alternatives Considered to Avoid and Minimize Harm

WSDOT began the planning and alternatives evaluation process for the replacement of the Alaskan Way Viaduct in 2001. Nearly 100 different approaches to the project have been considered since that time, covering six groups of improvements, including improvements to the viaduct, to the Battery Street Tunnel, to the seawall, to roadways, and for multimodal systems. These formed the basis for five alternatives that were considered in the 2004 Draft EIS, in addition to a No Build Alternative:

- Rebuild
- Aerial
- Surface
- Tunnel
- Bypass Tunnel

A public vote in 2007 rejected both elevated and cut-and-cover tunnel replacements of the viaduct. In 2008, the lead agencies initiated the Partnership Process, a public evaluation of scenarios that took a systems-level approach to SR 99 replacement solutions.

Through the Partnership Process, three hybrid scenarios were considered, each incorporating an element with the potential to address the need for an SR 99 replacement, supported by other projects and strategies at the system level:

- I-5, Surface, and Transit Hybrid
- Elevated Bypass Hybrid
- Twin Bored Tunnel/Single Bored Tunnel Hybrid

In the 2010 Supplemental Draft EIS, the lead agencies updated and confirmed their findings, and documented the reasons for removing alternatives considered prior to the 2006 Supplemental Draft EIS. The 2010 Supplemental Draft EIS provided an additional opportunity for public review and comment. The Final EIS provides further discussion on alternatives considered in Chapter 2.

In the following sections, the Section 4(f) evaluation briefly summarizes the primary reasons that other alternatives, including potential new alternatives or variations, as well as alternatives no longer being considered in the current EIS process, do not constitute prudent or feasible avoidance alternatives to Section 4(f) uses, or because they do not represent an opportunity to further minimize harm compared to the remaining EIS alternatives.

No Build Alternative

Under the No Build Alternative, there would be no construction project to replace the existing Alaskan Way Viaduct within the termini of this project. For safety reasons, the Alaskan Way Viaduct would need to be closed. The No Build Alternative is not considered a feasible and prudent avoidance alternative because it takes no action to address the problems presented in the project's purpose and need.

In addition to the loss of transportation service that would occur, the uncertainty of when the SR 99 closure would be needed would make this alternative imprudent, because it would hamper the lead agencies' ability to provide for an orderly program to preserve public safety and replace capacity or develop and implement programs to maintain transportation and minimize construction and demolition period impacts. This alternative would leave SR 99 vulnerable to seismic events for an undetermined amount of time, which would be an unacceptable risk to public safety as well as a presenting the high potential for major

transportation, community, and other environmental impacts if a seismic event occurred.

Rebuild Alternative

The Rebuild Alternative (considered in the 2004 Draft EIS) proposed replacing the viaduct with a structure similar to what is there today; it did not include safety-related alterations to the Battery Street Tunnel. This alternative was refined into the current Elevated Structure Alternative. It did not avoid uses of Section 4(f) resources, including the Alaskan Way Viaduct, the Alaskan Way Seawall, and the Washington Street Boat Landing. This alternative was also eliminated because it had longer construction period and long-term impacts than other alternatives, and because a rebuild would require major deviations from design standards to a degree that substantially compromised the project's ability to achieve the safety and capacity objectives presented in the purpose and need. The lead agencies have concluded that it does not constitute a prudent and feasible Section 4(f) avoidance alternative.

Surface Alternative

The Surface Street Alternative would replace the viaduct with an at-grade roadway, which would have three lanes in each direction between Yesler Way and Pike Street, and two lanes in each direction north of Pike Street. The Battery Street Tunnel would be improved with modernized safety and operational features, and there would be improvements to surface streets in the South Lake Union and Seattle Center areas.

The 2004 Draft EIS found that while the surface street alternative offered cost advantages and allowed the visual reconnection between the waterfront and downtown, it had the worst congestion impacts of any of the alternatives considered. In addition, the Battery Street Tunnel's design deficiencies would not be improved, the alternative would lower capacity in the transportation system, and it would not improve safety conditions in the tunnel. With a projected 7.5 years of major construction, it had a longer construction period and related environmental impacts of congestion and economic disruption than the other

alternatives. Due to these factors, the lead agencies removed the alternative from further consideration. Further, since this alternative requires the removal of the viaduct and modifications to the Battery Street Tunnel, both of which are Section 4(f) resources, it does not provide a Section 4(f) avoidance alternative. It also would not provide a “least harm” alternative compared to the effects of the three build alternatives currently considered in this Final EIS.

Tunnel and Bypass Tunnel Alternatives

This set of alternatives proposed replacing the viaduct with a tunnel, and they have been modified to result in the Cut-and-Cover Tunnel Alternative that is still under consideration. As with the current Cut-and-Cover Tunnel Alternative, these alternatives do not avoid the use of Section 4(f) properties, with uses including the Alaskan Way Viaduct, the Alaskan Way Seawall, and the Washington Street Boat Landing. These earlier alternatives were removed from further consideration by the project because they were superseded by the Cut-and-Cover Tunnel Alternative, which added measures to address Battery Street Tunnel safety and operating deficiencies.

Partnership Process Scenarios

I-5, Surface, and Transit Hybrid

This scenario would replace SR 99 with a pair of northbound and southbound one-way streets, modifying Western Avenue and Alaskan Way, coupled with additional transit investments serving downtown along with a program of I-5 improvements to improve operations. This scenario was not advanced as a project alternative because it would not address Battery Street Tunnel design deficiencies and would reduce mobility, increase travel times for some trips, and reduce north-south capacity. It also did not avoid the use of Section 4(f) resources.

Elevated Bypass Hybrid

This scenario would replace SR 99 with two side-by-side elevated roadways along the waterfront, coupled with improvements to I-5 and additional transit investments serving downtown. This scenario was not advanced as a project alternative because it would still involve the use of

Section 4(f) resources. It would carry similar noise, visual, and barrier impacts as the existing viaduct; it did not address design deficiencies for the Battery Street Tunnel that are critical to the improved safety conditions identified in the project’s purpose and need; it increased travel times; and it caused several years of high construction period impacts because SR 99 would need to be removed before the replacement structures could be built.

Twin Bored Tunnel/Single Bored Tunnel Hybrid

This scenario would replace SR 99 with a bored tunnel and included additional transit investments through downtown. It was adapted to become the Bored Tunnel Alternative currently being evaluated in this Final EIS. It would not represent a Section 4(f) avoidance option and it carried similar environmental consequences as the current Bored Tunnel Alternative.

8 Conclusion on Search for Feasible and Prudent Avoidance Alternatives

For the reasons given above, there are no feasible and prudent alternatives that completely avoid the use of Section 4(f) resources.

9 Identifying a Least Harm Alternative

Of the three build alternatives that are considered in this Final EIS, all would require the use of Section 4(f) resources.

In past planning and ongoing project development efforts, other alternatives have been considered and rejected, because they failed to meet the project’s purpose and need, because they are not feasible and prudent avoidance alternatives, or because they would not cause less overall harm.

In this final step of the Section 4(f) evaluation, the three remaining alternatives are compared to one another to determine which alternative would cause the least overall harm. In this step, the alternatives are compared to one another based on the relevant factors listed in Section 774.3(c)(1) of the Section 4(f) regulations.

Ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property), and the relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection.

Each of the three build alternatives would involve a use of the Alaskan Way Viaduct and Battery Street Tunnel. These facilities are considered a single property under Section 106, and the Section 4(f) analysis also considers them a single resource, although the effects to each part of the resource have been described separately. All three of the current alternatives encompass the same mitigation programs, which primarily involved documentation. None of the alternatives offers the ability to preserve the existing facilities without altering the characteristics that qualify them as Section 4(f) resources.

All three build alternatives would require excavation and construction within the Seattle Maintenance Yard site (Archaeological Site 45KI958), which is presumed to be a Section 4(f) resource until further investigations during construction can determine its significance. Construction activity and the redevelopment of the site as a transportation facility are being evaluated as a Section 4(f) use for all three build alternatives, and the same impact measures to minimize harm would be applied.

All three build alternatives will require alteration of part of the Lake Union Sewer Tunnel, resulting in a Section 4(f) use. The street improvements that result in the use are similar with all three alternatives, and the same mitigation measures would be applied.

The Elevated Structure and Cut-and-Cover Tunnel Alternatives both involve a use of the Washington Street Boat Landing. Both of these uses would be accompanied by mitigation to restore these resources to a level that maintains the characteristics that qualify them as Section 4(f) resources. This, along with the additional information and documentation involved in these efforts, would help reduce the remaining harm after the Section 4(f) use occurs.

The Bored Tunnel Alternative would result in a use of the Pioneer Square Historic District's Western Building, a contributing building to the District. However, the project has defined mitigation measures to protect the building and confine the use to a short-term activity that would occur only during construction. These mitigation measures would preserve the building and restore it to its current condition, avoiding the loss of a contributing building to the District. After the mitigation is complete, FHWA anticipates no remaining harm to the building or the District. In addition, the project would avoid the permanent displacement of the Western building's tenants, a community of artists and other businesses. Public comments on the 2010 Supplemental Draft EIS encouraged the project to avoid the relocation of the artists' businesses, which commenters stated were important to the current identity and economic vitality of the Pioneer Square Historic District.

The Elevated Structure Alternative would be more than twice as wide as the existing structure in the Pioneer Square area, which would affect views and the pedestrian environment along Alaskan Way.

The relative significance of each Section 4(f) property. The views of the official(s) with jurisdiction over each Section 4(f) property.

The relative significance of each affected Section 4(f) property can be a distinguishing factor when the set of alternatives for a project involve uses of different resources, including different types of resources (for instance, a park or a trail, along with a historic property). With this project, most of the resources that would be used are common to all three alternatives.

The affected resources are all historic. Section 106 processes do not provide procedures for evaluating relative significance among historic properties, as the consultation process is focused on identifying historic resources and minimizing potential harm.

The use of the Alaskan Way Viaduct and Battery Street Tunnel is common to all alternatives. The facilities are

historically significant for their association with the region's major transportation infrastructure projects developed in the 1950s, the shaping of downtown Seattle's waterfront, and for the characteristics of their design, construction and materials. In comparison to the set of Section 4(f) resources affected by alternatives, it has a high level of relative historic significance.

The Seattle Maintenance Yard site (Archaeological Site 45KI958), which is used by all alternatives, encompasses an area of Seattle that had buildings removed for the regrading of Denny Hill and contains foundations and other artifacts from this earlier period of Seattle's development. Although further investigation will be conducted during construction when access to the site can more safely be provided, FHWA and WSDOT believe that the site may be significant for the information it may yield about Seattle's development, not because of an association with a historically important person or event. The SHPO has indicated it cannot concur with any determination of significance until further site investigation has been completed. Based on current information, FHWA and WSDOT anticipate that this resource may be less significant than other resources affected by the project's alternatives. Still, it would be affected by all alternatives.

The Lake Union Sewer Tunnel would have a use by all alternatives due to the alteration of a part of the tunnel system. The resource is significant for its materials and type, but it is considered less significant than other resources affected by the project's alternatives.

The Cut-and-Cover Tunnel Alternative and the Elevated Alternative would result in a use of the Washington Street Boat Landing and the Alaskan Way Seawall. The Bored Tunnel Alternative would avoid these uses, and instead would have a use to the Western Building, a contributing resource in the Pioneer Historic District.

The Washington Street Boat Landing is significant because of its design features, but it is not associated with a major historic person or event. It is also a park and recreation resource owned by the City, but most of its park and

recreation features are not currently open. As either a historic or a park or recreation property, it could be considered relatively less significant than other resources affected by the project's alternatives.

The Alaskan Way Seawall is significant because it shaped the development of Seattle's central waterfront from the 1900s to the 1930s, and because it is an example of the type, period, methods and materials used during that time. These historic features and associations with Seattle's historic development indicate it has a high level of relative significance.

The Western Building, a contributing building of the Pioneer Square Historic District, would have a Section 4(f) use with the Bored Tunnel Alternative. The District marks the site of Seattle's original downtown, and the Western Building is significant as an example of the warehouse types of buildings constructed in the district, and its location is in an area that marked a specific phase in the district's development. The City Historic Preservation Officer, the SHPO, consulting parties, and the public have encouraged the lead agencies to seek measures to preserve the Western Building and avoid the loss of a building within the Pioneer Square Historic District. These parties have all emphasized the importance of preserving the integrity, character and vitality of the District. Therefore, the Western Building is considered to have a high level of relative significance.

The degree to which each alternative meets the purpose and need for the project.

The lead agencies have concluded that the Bored Tunnel Alternative is best able to meet the purpose and need for the project. In doing so, they considered the relative ability of the alternatives to address seismic problems, traffic safety problems, provide adequate transportation capacity to and through downtown, provide effective regional and local transportation linkages, avoid major disruptions of traffic, and protect adjacent activities on the central waterfront and in downtown Seattle.

While the three alternatives were designed to achieve the longer term seismic and transportation capacity and safety objectives stated in the purpose and need, they are primarily different in terms of how they meet the final two factors, including disruption of traffic, and the ability of the project to protect the integrity and viability of the central waterfront and downtown Seattle.

The Bored Tunnel Alternative would allow the project to avoid years of disruption of traffic on SR 99 during construction. The other two alternatives must remove the viaduct and close the Battery Street Tunnel in order to construct a replacement, and the EIS findings predict years of heavy congestion and lost capacity, negatively affecting transportation performance for downtown Seattle and the larger transportation system.

The difference in how the alternatives approach construction also affects how well they protect and enhance the integrity and viability of the central waterfront and nearby areas. The Bored Tunnel Alternative would reduce the period of construction immediately adjacent to the land uses and economic activities along the existing viaduct, including central waterfront businesses and attractions, as well as the Pioneer Square Historic District and the Pike Street Historic District. The other two alternatives would require several years of construction for the viaduct's removal and replacement. The adjacent areas of downtown would experience several years of negative effects such as reduced parking, reduced access due to closed streets, detours, delays, and increased hauling and related heavy construction activities. Other impacts would include noise, vibration, dust, dirt, a loss of visibility, and the potential perception by customers that these areas are difficult to reach. The Final EIS anticipates the Elevated Structure and Cut-and-Cover Tunnel Alternatives would have a higher potential for several years of lower economic activity for area businesses. This would make these alternatives less effective at satisfying the project's purpose and need, compared to the Bored Tunnel Alternative.

**Exhibit 4(f)-5
List of Section 4(f) Resources Evaluated for Potential Use**

Park Name	Location	
Washington Street Boat Landing*	S. Washington Street at Alaskan Way	
Occidental Park	Occidental Avenue S. between S. Washington and S. Main Streets	
Pioneer Square Park	Yesler Way and First Avenue	
Boat Access to Blake Island	Pier 55 – Alaskan Way and Seneca Street	
Waterfront Park	Alaskan Way between University and Pike Streets	
Victor Steinbrueck Park	Western Avenue at Virginia Street	
Pier 62/63 Park	Alaskan Way at Pine Street	
Pier 66, the Bell Street Terminal, Shoreline Access	Alaskan Way at Bell Street	
Belltown Cottage Park	2512 Elliott Avenue	
Olympic Sculpture Park	Between Western Avenue and Alaskan Way at Broad Street	
Myrtle Edwards Park	Alaskan Way at Bay Street	
Elliott Bay Park	Pier 86 Waterfront Between Harrison Street and 16th Avenue West	
Denny Park	Between Dexter Avenue N. and Ninth Avenue N. and Denny Way and John Street	
Seattle Center	Between Broad Street and Mercer Street and First Avenue N. and Fifth Avenue N.	
Tilikum Place	Fifth Avenue and Denny Way	
Lake Union Park	Valley Street and Terry Avenue N.	
Historic District Name	Location	
Pioneer Square Historic District	See Exhibit 4(f)-1 on page 238	
Pike Place Market Historic District	See Exhibit 4-19 on page 100	
Building Name	Historical Name	Address
101 King Street	Norfin Building	500 First Avenue S.
2 nd and James parking garage		515 Second Avenue
606 Post	Post Hotel	90 Yesler Way
80 S. Jackson Condo	Steinberg Building	80 S. Jackson
83 King Street and garage	Seattle Hardware Co.	83 S. King Street
Ace Hotel	Glaser Building/Latona Hotel	2419 First Avenue
Adams Apartments		304 Bell Street
Alaska Trade Building		1915 First Avenue
Alaskan Way Viaduct and Battery Street Tunnel		Alaskan Way/Battery Street
Alexis Hotel	Globe Building	1001–1011 First Avenue
All-Rite Parking Garage/US Bank		701–723 First Avenue
Archstone Belltown	Grosvenor House	500 Wall Street
Argens Safe and Lock Co.		80 S. Main Street
Arlington North	Hotel Cecil	1019 1023 First Avenue
Arlington South	Beebe Building	1013 First Avenue
Artforte Gallery		213 First Avenue S.
Austin Bell Building		2326 First Avenue
Barnes Building		2320 First Avenue
Bedlam	Bell Street Studios	2235 Second Avenue
Bergman's	Donohoe Garage	1907 Third Avenue
Boston Hotel		76 S. Main Street
Bread of Life Mission	Matilda Winehill Block	301 First Avenue S.
Broderick Building		619 Second Avenue
Buckley's	MGM-Loew's	2331 Second Avenue
Burlington Northern Railway Tunnel	Great Northern Railway Tunnel	S. Main Street to Bell Street
Butler Garage		601 Second Avenue
Butterworth Building		1921 First Avenue
Buttnick Building		202 First Avenue S.
C&H Company	Otto Sturham & Sons	304 Alaskan Way S.
Castle Apartments		2132 Second Avenue
Champion Building		1928 Pike Place

Building Name	Historical Name	Address
Cherry Street Coffee House	Colski Building	2121 First Avenue
City Club Building		112 First Avenue S.
City Hostel	William Tell Hotel	2327 Second Avenue
City Loan Building		206 First Avenue S.
Colman Building		801–821 First Avenue
Compton Building	Bon Marché Stable	2315 Western Avenue
Corner Market		1505 First Avenue
Crown Hotel		313 First Avenue S.
Delmar Hotel		108 S. Washington Street
Denny Park Lutheran Church		766 John Street
Devonshire Apartments		420 Wall Street
Diller Hotel		1216–1222 First Avenue
Doyle Building	J.S. Graham Store	119 Pine Street
E.O. Graves Building		1020–1022 First Avenue S.
Economy Market		1423 First Avenue
Eitel Building		1501 Second Avenue
Elephant Car Wash Sign		616 Battery Street
Elliott Bay Seawall	Alaskan Way Seawall	Alaskan Way
Elysian Fields/Reedo Building	Carstens Brothers/Nordic Cold Storage	548 First Avenue S.
Emerald City Building	K&R/Pioneer Office Equipment	625 First Avenue
Exchange Building		821 Second Avenue
F.X. McRory's		419 Occidental Avenue S.
Fairmount Apartments		1901 First Avenue
Federal Office Building		901 First Avenue
Federal Reserve Bank		1015 Second Avenue
Fire Station No. 5		925 Alaskan Way
Fire Station No. 2		2334 Fourth Avenue
Fisher Building		115 S. Jackson Street
Fix Building		1507 Western Avenue
Florentine Condominiums	Seattle Security Co. Warehouse	508–534 First Avenue S.
Fobes Supply Co.		558 First Avenue S.
Fourth and Blanchard	Otis Elevator	2200 Fourth Avenue
Franklin Apartments		2302 Fourth Avenue
Garden Center Building		1600 Pike Place
Gatewood Apartments		107 Pine Street
Globe Building		310 First Avenue S.
Grand Central	Squire-Latimer Building	216 First Avenue S.
Grand Pacific	Colonial Hotel	1123 First Avenue
Grand Pacific	Grand Pacific Hotel	1115 1117 First Avenue
Guiry Hotel		2101–2105 First Avenue
Haddon Hall Apartments	Kelley-Gorham Building	1921 Third Avenue
Heritage Building	Wax & Raine	101 S. Jackson
Heritage House/garage		1527–1531 Western Avenue
Herman Blumenthal Building		122 S. Jackson Street
Hoge Building		705 Second Avenue
Holyoke Building		1018 First Avenue
Howard Building		612 First Avenue
Hull Building		2401 First Avenue
Inn at the Market		86 Pine Street
J&M Hotel & Café		201–205 First Avenue S.
Jackson Building		322 First Avenue S.
Jackson Square Building		123 S. Jackson Street
Jetway Apartments/E.E. Robbins	Donald/Alexandria Hotel	2200–2204 First Avenue

After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f); and substantial differences in costs among the alternatives.

The primary difference among the alternatives is related to their ability to minimize construction period impacts while the viaduct is being replaced. In addition, there are substantial differences in the environmental performance of the alternatives.

As noted above, the Elevated Structure and Cut-and-Cover Tunnel Alternatives would require the closure of SR 99 for its demolition, and they would include the reconstruction of the seawall. Demolition of SR 99 would be followed by several years of construction throughout the central waterfront area. Transportation impacts during construction would be high, resulting in high levels of congestion, delay, and reduced capacity throughout the downtown area, especially in the central waterfront area. Access between the central waterfront and adjacent downtown neighborhoods would be restricted, affecting not only north-south but also east-west movements, such as those for Washington State Ferries users or for transportation between properties on either side of the current viaduct alignment. This long period of reduced access and transportation mobility would affect properties, businesses, employees, patrons, and residences nearby, including in the Pike Place Market Historic District and the Pioneer Square Historic District, the waterfront, and the many other historic and nonhistoric properties, institutions, and public facilities that occur throughout the central downtown area. Because this portion of SR 99 provides important linkages for the regional transportation system, reducing its capacity for an extended period would have economic impacts throughout the Puget Sound region.

The Bored Tunnel Alternative would have construction period impacts related to the demolition of the viaduct and the decommissioning of the Battery Street Tunnel, but it would allow a much more rapid transition to a replacement facility, greatly reducing the project’s construction period transportation and mobility impacts, including to the Pioneer Square Historic District. It also

**Exhibit 4(f)-5
List of Section 4(f) Resources Evaluated for Potential Use (continued)**

Building Name	Historical Name	Address
Josephinum	<i>New Washington Hotel</i>	1902 Second Avenue
Journal Building		83 Columbia Street
Key Bank	<i>Bank of California</i>	815 Second Avenue
Korn Building		119 Yesler Way
La Salle Apartments		1430 Western Avenue
Labor Temple		2800 First Avenue
Laguna Pottery	<i>Scandinavian Hotel/Clancy Building</i>	116 and 118 S. Washington Street
Lake Union Sewer Tunnel		Republican Street east of Aurora Avenue
Last Supper Club	<i>Interurban Hotel</i>	124 S. Washington Street
Lewiston Hotel		2205 First Avenue
Lexington-Concord Apartments		2402 Second Avenue
Lippy Building		104 First Avenue S.
Livingston Baker Apartments		1931 First Avenue
Lowman & Hanford Building		616 First Avenue
Lowman Building		107 Cherry Street
Lucky Hotel		211 First Avenue S.
Lutheran Compass Center	<i>Pacific Coast Co.</i>	77 S. Washington Street
Marathon Building		209 First Avenue S.
Maritime Building		911 Western Avenue
Market House		1531 First Avenue
Marketside Flats	<i>U.S. Immigration Building</i>	84 Union Street (1400 Western)
Maud Building		309 First Avenue S.
Maynard Building		117 First Avenue S.
McKinnon Furniture	<i>Frederick & Nelson Warehouse</i>	1518 First Avenue S.
Merchants' Café		109 Yesler Way
Merrill Place		79 S. Jackson
Merrill Place	<i>Schwabacher Hardware Co.</i>	401 First Avenue S.
Merrill Place	<i>Hambach Building</i>	419 First Avenue S.
Merrill Place	<i>Seller Building</i>	411 First Avenue S.
Merrill Place Garage		410 Alaskan Way S.
Metropolitan Printing Company	<i>Metropolitan Printing Company</i>	2107 Third Avenue
Moore Hotel/Theater		1926 Second Avenue
Mutual Life Building		605 First Avenue
National Building		1000–1024 Western Avenue
New England Hotel		217–19 First Avenue S.
Nord Building		314 First Avenue S.
Norton Building		801 Second Avenue
OK Hotel		212 Alaskan Way S.
Old Seattle Parking Garage		316 Alaskan Way S.
Old Spaghetti Factory		2800 Elliott Avenue
Olympic Block		102 First Avenue S.
Olympic Warehouse	<i>Olympic Warehouse</i>	1203 1207 Western Avenue
Olympic Reprographics	<i>M.F. Backus Warehouse</i>	1014 First Avenue S.
One Yesler Building	<i>Bedford Hotel</i>	1 Yesler Way
Oregon Hotel		2301–2305 First Avenue
Our Home Hotel		75 S. Main Street
Oxford Apartments		1920 First Avenue
Pacific Net and Twine Building	<i>Pacific Net and Twine Building</i>	51 University Street
Pacific Science Center		200 Second Avenue N.
Palladian Apartments	<i>Calhoun Hotel</i>	2000 Second Avenue
Palmer Court	<i>A.L. Palmer Building</i>	1000 First Avenue S.
Parking garage		706 First Avenue
Pathé Building		2025 Third Avenue

Building Name	Historical Name	Address
Pier 54	<i>NPRR 3/Galbraith Dock</i>	1001 Alaskan Way
Pier 55	<i>NPRR 4/Arlington Dock</i>	1101 Alaskan Way
Pier 56	<i>Frank Waterhouse House</i>	1201 Alaskan Way
Pier 57	<i>John P. Ager's/Milwaukee Dock</i>	1301 Alaskan Way
Pike & Virginia Building		1930 Pike Place
Pike Place Market Main Arcade		1501 Pike Place
Pioneer Building, Pioneer Place and Pergola		606 First Avenue at Yesler Way
Pioneer Square Hotel	<i>Yesler Hotel</i>	77 Yesler Way
Pioneer Square Hotel	<i>Heffernan Engine Works</i>	110 Alaskan Way S.
Polson Building		61 Columbia Street
Provident Building		568 First Avenue S.
Prudential Building		114 Alaskan Way S.
Rivoli Apartments		2125 Second Avenue
Roebling Building		900 First Avenue S.
Roq la Rue	<i>RKO</i>	2312 Second Avenue
Royal Typewriter	<i>Royal Typewriter</i>	2221 Fifth Avenue
Sanitary Market		1513 First Avenue
Saveway Market		109 Occidental Avenue S.
Scargo Apartments		2209 First Avenue
Scheuerman Building		102–110 Cherry Street
Schillestad Building		2111 First Avenue
Schoenfeld Furniture Store Building		1012 First Avenue
Schwabacher Building		93 Yesler Way/103–107 First Avenue S.
Seattle Alweg Monorail		Fifth Avenue from Pine Street to Seattle Center
Seattle City Light Broad Street Substation		319 Sixth Avenue N.
Seattle Hardware Annex	<i>Seattle Hardware Annex</i>	501 First Avenue S.
Seattle Housing Authority		120 Sixth Avenue N.
Seattle Image Setting	<i>People's Supply Company</i>	210 Alaskan Way S.
Seattle Parks Maintenance Facility	<i>Puget Sound Power & Light</i>	701 Dexter Avenue N.
Seattle Plumbing Building	<i>Seattle Plumbing Building</i>	590 First Avenue S.
Seattle Publishing		72 S. Washington Street
Seattle Quilt Building		316 First Avenue S.
Seattle Steam		619 Post Avenue
Seattle's Best		1530 Post Alley
Skagit Hotel		207 First Avenue S.
Sluggers	<i>Kaufman Warehouse</i>	538 First Avenue S.
Smith Block		1923 First Avenue
Soames Dunn Building		1924 Pike Place
Space Needle		400 Broad Street
St. Charles Hotel		81 S. Washington Street
Star Theater		115 Occidental Avenue S.
Starbucks		505 First Avenue S.
Starbucks Coffee		1912 Pike Place
State Hotel		114 First Avenue S.
Stewart House		1900 Pike Place (80 Stewart Street)
Swenson Say Faget	<i>Rex Land Company</i>	2124 Third Avenue
Terminal Sales Annex	<i>Puget Sound News</i>	1927 Second Avenue
Terminal Sales Building		1932 First Avenue
Terry-Denny Lofts	<i>Northern Hotel</i>	109–115 First Avenue S.
The Copy Machine	<i>Bornstein & Sons</i>	562 First Avenue S.
Travelers Hotel	<i>Travelers Hotel</i>	76–84 Yesler Way/611 Post Avenue
Triangle Building		1534 Pike Place

does not tie the SR 99 replacement to the replacement of the seawall, which further minimizes the construction period impacts in the central waterfront area and downtown compared to other alternatives. The central waterfront area also includes several piers (Piers 54, 55, 56 and 57) that are eligible for the NRHP and comprise a potential historic district. Most of the heavy construction of the replacement facility for SR 99 would be underground, compared to the surface level construction and seawall replacement activities required for the other two build alternatives throughout the central waterfront area. Therefore, the Bored Tunnel Alternative avoids the most severe construction impacts to the central waterfront area, including access and economic disruption to the uses along the waterfront. The Bored Tunnel Alternative's impacts would primarily occur in the tunnel portal areas, rather than throughout the central waterfront area. This reduces construction period impacts to properties, activities, and neighborhoods adjacent to the existing viaduct, and it reduces impacts to Washington State Ferries users and other activities that require crossing between downtown and the waterfront.

Longer term, the two tunnel alternatives are expected to offer lower long-term environmental effects and greater land use, aesthetic, and economic benefits compared to the Elevated Structure Alternative. The tunnel alternatives would remove and not replace an elevated structure that is adjacent to two historic districts and creates high levels of noise and visual impacts to adjacent properties. The alternatives would also remove an existing barrier between downtown neighborhoods and the waterfront and support opportunities to redevelop the urban space now occupied by the elevated structure.

10 Conclusions

Based on the analysis described in this Final Section 4(f) Evaluation and on the environmental findings contained in the Final EIS, FHWA is proposing to determine in a Record of Decision for this project:

- 1 There is no feasible and prudent alternative that completely avoids the use of Section 4(f) property.

- 2 The Bored Tunnel Alternative is the alternative that causes "least overall harm."
- 3 The Bored Tunnel Alternative incorporates all possible planning to minimize harm to Section 4(f) resources.

With the 2010 Supplemental Draft EIS, the lead agencies provided a Draft Section 4(f) evaluation to allow public comments on these determinations leading to the conclusion that the Bored Tunnel Alternative is the least overall harm alternative. As required under Section 4(f) regulations, the Supplemental Draft EIS and Section 4(f) evaluation was provided to the Department of Interior for review. The Department of the Interior responded in writing, confirming a lack of objections to the conclusions of the Section 4(f) evaluation. This correspondence is included in Appendix U.

Exhibit 4(f)-5
List of Section 4(f) Resources Evaluated for Potential Use (continued)

Building Name	Historical Name	Address
Triangle Hotel		553 First Avenue S.
Trust Building	Heiden Building	1925 Third Avenue
Two Bells Bar and Grill		2313 Fourth Avenue
Union Livery Stable		2200 Western Avenue
Union Trust Annex		117 S. Main Street
Union Trust Building		119 S. Main Street
US Bank		2401 Third Avenue
Virginia Inn	Landes Block	1937 First Avenue
Walgreen's	Seattle First National Bank	566 Denny Way
Waltham Block		311½ Occidental Avenue S.
Washington Park Building		68 S. Washington Street
Washington Shoe Building		542 First Avenue S.
Washington Street Boat Landing		Foot of S. Washington Street
Western Building		619 Western Avenue
Westland Building		100 S. King Street
Windham Apartments		420 Blanchard Street
Yam Oriental Rugs	Silver Hotel	627 First Avenue
Yesler Building	Bank of Commerce	95 Yesler Way