

DESIGN DEVIATION NO. 3

Access Control

SR 99 S. Holgate St to S. King St. Viaduct Replacement Stage 2
MP 29.89 TO MP 30.78

XL-3237 PIN-809936D

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WASHINGTON STATE DEPARTMENT OF TRANSPORTATION

Urban Corridors Office
Seattle, Washington

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Design Approval:

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Date _____

By _____, P.E.
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By _____, P.E.
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Date _____



**Washington State
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Project Overview

The Alaskan Way Viaduct & Seawall Replacement Program (AWVSRP) is located in an urban area within the City of Seattle in King County. The program limits extend along SR 99 from north of the S. Spokane Street Bridge (Milepost [MP] 29.26) to Comstock Street (MP 33.26) and along the Seawall from S. Washington Street to Broad Street.

SR 99 is functionally classified as an Urban Principal Arterial Highway by Washington State Dept. of Transportation (WSDOT). It is also a designated National Highway System (NHS) route and a Highway of Statewide Significance, per WSDOT classification. The project corridor has a WSDOT freight tonnage designation of T-1 (more than 10 million tons per year), and the City of Seattle classifies it as a Major Truck Street.

On March 14, 2007, the Project Team was directed by WSDOT to advance portions of the project that would contribute to improving safety and mobility, and have fundamental consensus among the project partners. One of the six Moving Forward: Early Safety and Mobility Projects (ESMP) is the South Holgate Street to South King Street Viaduct Replacement Project (H2K). This project has been divided into three phases and each phase will be released as a separate construction contract. Phase one involves relocating existing utilities; phase 2 involves reconstructing SR 99 from S. Holgate to King St; and phase 3 involves demolishing the existing viaduct and roadside restoration.

In January 2009, the Governor, King County, and the City of Seattle agreed to recommend replacing the existing Viaduct through downtown Seattle with a 55' diameter single bore tunnel that will include stacked roadways consisting of two northbound lanes and shoulders above two southbound lanes and shoulders. The south portal to the tunnel will start at Royal Brougham Way S. (MP xx) and travel north under First Ave until reaching Mercer St (MP xx) where the north portal will emerge and connect to the existing SR 99 route near Ward St. (MP xx). At the north and south portals will be fully directional interchanges that will be designed to current WSDOT design guidelines and will increase access to the city's Central Business District. (CBD). After the tunnel has been completed and open to traffic, the city of Seattle will construct new surface streets and urban design elements on the waterfront after the existing viaduct and detours are removed.

The removal and replacement limits for bridge structures within the South Project extend from approximately S. Holgate Street (MP 29.89) to S. Dearborn Street (MP 30.66). Other required improvements for SR 99 and city surface streets extend the project construction limits as far north as S. King Street and as far south as S. Stacy Street. The project includes demolition of the existing viaduct and reconstruction of infrastructure elements, including portions of many local streets and portions of SR 99. Near S. Holgate Street, SR 99 will transition from an at-grade roadway to a bridge structure over railroad tracks and S. Atlantic Street, returning to grade near S. Royal Brougham Way. An interim bridge structure, in place for 4 to 5 years, will be built to connect the bridge structure spanning S Atlantic Street to the existing Viaduct near the Railroad Way Ramps (MP 30.78) while construction for the deep bored tunnel takes place. After the tunnel is opened to traffic, the interim bridge structure and existing Viaduct will be removed.

Design Matrix 3, line 3-7 (*WSDOT Design Manual* Figure 325-5, November 2009) applies to this project. This requires that improvements be designed to full design guidelines. The AWVSRP is partially funded through a combination of state funds from the 2003 Nickel Funding Package and

the 2005 Transportation Partnership Account (TPA) Package. It has also received funding from the U.S. Federal Highway Administration (FHWA) and the City of Seattle.

This document requests a deviation for access control within the project limits.

Existing Conditions though Project Limits

The average daily traffic (ADT) along the existing mainline in the vicinity of S Holgate Street is 42,500 for the northbound direction and 39,500 for the southbound direction. In this area, northbound mainline traffic operates at a Level of Service (LOS) C and southbound mainline traffic operates at a LOS D. Existing ADT truck traffic volumes are approximately 5% of the total traffic. The existing viaduct near S Holgate Street experiences low collision rates. See the *SR 99 Collision Analysis* for accident information.

Comment [LKM1]: Per MA—this seems low. LKM response—this information came directly from the previous approved deviations.

Topography in the vicinity of S Holgate Street is mostly level terrain. The posted speed limit is 50 mph in this segment for both the northbound and southbound roadways.

SR 99 is classified as an M1 Managed Access Highway from Spokane St (MP xx.xx) to Thomas St. (MP xx.xx).

Within the project limits, SR 99 existing lane widths range from 9.5 to 12 feet and shoulder widths range from 0 to 3 feet. Near S Holgate Street, the existing lane widths are 12 feet and the shoulder widths are approximately 1 foot. The existing transition between the six-lane surface highway and the viaduct occurs near S. Holgate Street. The existing curve near S. Holgate Street is built on separate elevated structures for both northbound and southbound. The northbound roadway has a radius of 920 feet, and the southbound roadway has a radius of 1040 feet, with a superelevation rate of 6% for both roadways. Using the 10% maximum superelevation rates (*WSDOT Design Manual* Figure 642-3a, November 2007) to determine a design speed based on current standards for the existing horizontal geometric elements indicates the design speed is less than 40 mph. The vertical curves in this area for both northbound and southbound roadways are 350 feet. The grade for both roadways in this area is 5 percent. Figure 650-1 from the *WSDOT Design Manual* (May 2008) indicates these sag curves meet 40 mph design criteria.

The Seattle International Gateway (SIG) Rail Yard lies immediately east of SR 99 and the Whatcom Rail Yard is immediately west of SR 99 in the vicinity of S. Holgate Street. In some areas the closest rail tracks are within 12 feet of the roadway.

The project team is coordinating with the SR 519 Intermodal Access Project Phase 2: Atlantic Corridor and SR 99 Deep Bore Tunnel Project.

Comment [LKM2]: Verify project name

Proposed Access Control on SR 99 from MP 29.89 to MP 30.78

SR 99 through the Deep Bored Tunnel will be a P-1 roadway with full Limited Access rights and the decision was made to extend the P-1 classification to SR 99 within the Holgate to King Project

limits. However, it is unlikely that the Limited Access rights will be acquired by the time the SR 99 H2K project is awarded.

Deviation Description

Within the project limits, SR 99 will maintain its current access classification as an M1 Managed Access Highway.

Table 1: Access Control

Design Class	Standard	Existing/Proposed
P-1 Roadway	Full ⁽¹⁾	M1/M1
U _{M/A} -1 Roadway	Managed Access ⁽²⁾	NA

(1)—Design Manual Figure 440-6 (May 2008)

(2)—Design Manual Figure 440-9 (May 2008)

Alternatives Considered

Alternative 1: Preferred alternative—maintain existing M1 Managed Access control while designing roadway to P-1 design guidelines

Alternative 1 allows for the roadway to be reconstructed to a higher design class than urban managed access highways while meeting the project’s accelerated design schedule. In all aspects except Full Access control, this roadway will be a P-1 roadway. The Deep Bored Tunnel team is actively seeking to obtain Full Access for the corridor, which includes the portion of SR 99 included in this project.

M1 Managed Access highways have the strictest access control of any managed access highway, and access control will not be decreased as part of this project.

This is the design team’s preferred alternative.

Alternative 2: Full Limited Access P-1 Freeway Design Guidelines alternative

Alternative 2 is the same as Alternative 1 except that the project’s ad date will have to be delayed until the Limited Access acquisition is complete. This may take up to a year, which sets an unacceptable delay for this project with its milestones set by the Governor and State Legislature.

Comment [LKM3]: MA comment—Doesn't this also support possible tolls on SR 99? LKM response—it's my understanding that only L/A roadways can be tolled. This project will create P-1 geometrics on a managed access roadway.

Comment [LKM4]: MA comment—Do we want to say anything about being able to convert to Full Limited Access P-1 in the event the DBT team is successful? LKM response—good point. I will add this language.

Comment [LKM5]: MA—Is this true? LKM response—yes. L/A cannot be acquired by the time this project goes to ad.

The design team does not recommend this alternative, as delaying this project's construction date will delay several other projects as well.

Alternative 3: Urban Managed Access U_{M/A}-1 Highway Design Guidelines Alternative

Existing SR 99 within the project limits is classified as an Urban Principal arterial within a Managed Access corridor and is held to design guidelines more suited to a lower-speed roadway within an urban area. These include narrower lanes and shoulder widths, and lower maximum superelevation rate. Although the existing roadway is officially classified as lower-speed urban highway, it operates as a freeway corridor through Seattle.

The design team does not recommend this alternative, because the travelling public, including mass transit and freight, are best served by a roadway which is designed to P-1 Freeway guidelines.

Conclusion and Recommendation

The Project Team recommends that the access control of the mainline roadways be deviated from current design guidelines within the project limits. The justifications for this recommendation are:

- The Deep Bored Tunnel design team is actively working to obtain full limited access for this corridor, from **MP xx.xx** to the northern limits of the tunnel (**MP xx.xx**).
- This roadway is being designed as if it were a P-1 Limited Access facility, although the roadway is currently classified as an M1 Managed Access Highway.

Alternative 1 provides a roadway which meets the geometric features of a freeway.

The Project Team recommends approval of this deviation based on the above justifications.