

# 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

June 2009

### WASHINGTON STATE DEPARTMENT OF TRANSPORTATION

Urban Corridors Office  
Seattle, Washington

Mark Anderson, PE

Project Engineer

Design Approval:

By \_\_\_\_\_, P.E.  
Susan Everett, Deputy Project Engineer for Design

Date \_\_\_\_\_

By \_\_\_\_\_, P.E.  
Ed Barry, WSDOT Assistant State Design Engineer  
for UCO

Date \_\_\_\_\_

By \_\_\_\_\_, P.E.  
Randy Everett, FHWA Urban Area Engineer

Date \_\_\_\_\_



Washington State  
Department of Transportation

## Deviation revision

This document “Design Deviation #3 Access Control” supersedes the project’s Design Deviation #3 “Shoulder Width (Inside and Outside) through the Transition Section”, approved Dec. 18, 2008.

Formatted: Body Text

Formatted: Font: Garamond, Font color: Auto, Condensed by 0.1 pt

## 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] 29.29) to Mercer Street vicinity (MP 32.78) and underneath First Ave in downtown Seattle.

Deleted: 6

Deleted: Comstock

Deleted: 33.26

Deleted: 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 30.32) and travel north under First Ave until reaching Mercer St (MP 32.78) where the north portal will emerge and connect to the existing SR 99 route near Ward St. (MP 33.08). At the north and south portals will be fully directional interchanges (currently in the design phase) that will increase access to the city’s Central Business District (CBD). Once the tunnel has been opened to traffic, and the existing Viaduct and detours are removed, the city of Seattle will construct new surface streets and urban design features on the waterfront.

Deleted: xx

Formatted: Font color: Auto

Formatted: Font color: Auto

Deleted: xx

Formatted: Font color: Auto

Deleted: xx

Deleted: will be designed to current WSDOT design guidelines and

Deleted: .

Deleted: After

Deleted: completed and

Deleted:

Deleted: elements

Deleted: after the existing viaduct and detours are removed

Deleted: South

The removal and replacement limits for bridge structures within the H2K 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 transition 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, this interim bridge structure and existing Viaduct will be removed.

Deleted: e

Design Matrix 3, line 3-7 (*WSDOT Design Manual* Figure 325-5, January 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.

Deleted: November

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

Deleted:

### Existing Conditions though the Project Limits

SR 99 is classified as an M1 Managed Access Highway from Spokane St (MP 28.61) to Thomas St. (MP 32.58). Speed limits are posted between 40-50mph.

On SR 99 within the program corridor limits, existing Average Daily Traffic (ADT) ranges from approximately 32,400 to 56,100 in the northbound direction and from 31,000 to 55,000 in the southbound direction. Ingress and egress on SR 99 from just north of S. Spokane Street (MP 29.26) to Thomas St. (MP 32.58) is currently limited to on- and off-ramps connecting to First Ave. S, Columbia Street, Seneca Street, Elliot Ave, Western Ave, and Denny Way.

Deleted: 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.

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.

Deleted: ¶

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 (MP 29.89 vic.), 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. The existing roadway design speed is 50mph when these existing horizontal geometrics are compared against the 6% maximum superelevation rate table (WSDOT Design Manual Figure 642-4c, November 2007), based on current design guidelines. 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 650-11 from the WSDOT Design Manual (May 2008) indicates these existing sag curves meet 50 mph design criteria.

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

Deleted: Using

Deleted: 10

Deleted: s

Deleted: 3a

Deleted: to determine a design speed

Deleted: standards

Deleted: for the existing horizontal geometric elements indicates the design speed is less than 40 mph

Formatted: Not Highlight

Deleted: 4

Formatted: Not Highlight

Deleted:

Deleted: Phase 2: Atlantic Corridor

Formatted: Not Highlight

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/I-90 to SR 99 Intermodal Access Project—I/C Improvements (SR 519 Phase 2) and SR 99 Deep Bore Tunnel Project.

Deleted:

Deleted: Phase 2: Atlantic Corridor

Formatted: Not Highlight

## Proposed Access Control on SR 99 within the project corridor, Holgate St. vicinity to Mercer St. vicinity (MP 29.89 to MP 32.78)

When the decision was made to realign SR 99 into a deep bore tunnel under 1<sup>st</sup> Avenue, WSDOT decided to change the access classification of SR 99 from Mercer to Holgate from M1 Managed Access and Urban Managed Access design class to Limited Access P-1 Design class. That decision affected this Holgate to King Stage 2 project since its portion of SR 99 is within the limited access designation change. However, the project team and management has indicated that Full Limited Access rights could not be acquired by the time the SR 99 H2K project is awarded during the first quarter of 2010.

Alaska Way Viaduct Project Director John White has agreed that acquiring full limited access can be delayed to facilitate construction of the Holgate to King Stage 2 project but will be acquired on SR 99 from Holgate to Mercer prior the first Request for Proposal (RFP) or Ad date of any bored tunnel project.

### Deviation Description

Within the project limits, SR 99 will maintain its current access classification as an M1 Managed Access Highway as identified in WSDOT's Limited and Managed Access Master Plan.

Table 1: Access Control

Design Class	Standard	Existing/Proposed
P-1 Roadway	Full <sup>(1)</sup>	M1/M1
U <sub>M/A</sub> -1 Roadway	Managed Access <sup>(2)</sup>	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**

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. The existing on- and off-ramps connecting SR 99 to First Ave will be removed but replaced with temporary ramps connecting to the interim bridge structure.

Deleted:

Deleted: from

Comment [LKM1]: Why deviate beyond the project limits? Corridor wide issues should be covered in the corridor analysis.

Deleted: 0

Formatted: Font: Garamond, Font color: Red

Formatted: Body Text

Formatted: Font: Garamond, Font color: Red

Formatted: Font: Garamond, Font color: Red

Formatted: Font: Garamond, Font color: Red

Formatted: Font: Garamond, Font color: Red

Formatted: Font: Garamond, Font color: Red

Formatted: Font: Garamond, Font color: Red

Deleted: 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. ¶

Deleted: .

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.

This is the design team's preferred alternative.

**Deleted:** 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.

### 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 the project's milestones set by the Governor and State Legislature.

**Deleted:** is  
**Deleted:** with its

The design team does not recommend this alternative, as delaying this project's construction date will cause major delays to several other projects as well, including the Deep Bore Tunnel work.

### Alternative 3: Urban Managed Access U<sub>M/A</sub>-1 Highway Design Guidelines Alternative

In the original approved corridor analysis, SR 99 within the project limits (which includes the Holgate to King Stage 2 project limits) is classified as an Urban Principal arterial within a Managed Access corridor. Under this designation, the design criteria are more suited to a lower-speed roadway within an urban area. These elements 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.

**Deleted:** Existing

**Deleted:** and is held to design guidelines

The design team does not recommend this alternative, because the travelling public, including public transit and freight, are best served by a roadway which access controlled.

**Deleted:** mass

**Deleted:** is designed to P-1 Freeway guidelines

## Recommendation

**Deleted:** Conclusion and

The Project Team recommends that the access control of the mainline roadways be deviated from current design guidelines found in the approved corridor analysis for this project.

**Deleted:** within the

**Deleted:** 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 29.89 to the northern limits of the tunnel (MP 32.78).
- This roadway is being designed to meet the guidelines of a P-1 Limited Access facility, although the roadway is currently classified as an M1 Managed Access Highway.

**Formatted:** Not Highlight

**Deleted:** xx.xx

**Formatted:** Not Highlight

**Deleted:** xx.xx

**Deleted:** as if it were a

- Delaying this project in order to obtain full limited access rights will jeopardize the entire SR 99 tunnel program as set forth in legislative rule making.

Formatted: Bullets and Numbering

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.