DESIGN DEVIATION NO. 3

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

XL-3237 PIN-809936D

May 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

Comment [KS1]: This is a whole new deviation departing from the previously approved deviation which included Dev #3 & #4 together (like #1 & #2). Question: Will all of the other deviations that were previously approved not apply and will go by the way side and disappear, or should this be numbered next in the sequence (as #10)?

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 to provide increased access to the city's Central Business District. (CBD). After the tunnel has been completed open to traffic, and after the existing viaduct and detours are removed, the City of Seattle will construct new surface streets and urban design elements along the waterfront.

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 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.

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

Comment [KS2]: If from the first comment it is determined that all of the previously approved deviations are no long valid, then recommend a page be added to this document noting that the previously approved Dev #3, approved on 12-18-08 is superseded by this deviation.

Comment [b3]: Not sure this is true. Left side ramps do not meet guidelines.

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Comment [KS4]: Suggest "features"

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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.

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 (Vic MP 29.89), 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 642-4a, 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.

Proposed Access Control on SR 99 from MP 29.89 to MP 30.78 (the entire project length)

When the decision was made to place SR 99 into a deep bore tunnel under 1st Avenue, WSDOT decided to change the classification of SR 99 from Mercer to Holgate as P1 limited access. That

Comment [KS5]: Should this reference the Construction Corridor analysis since that will be in place during this transition.

Comment [KS6]: See comments made in Dev #1&2 review for possible inclusion in this section.

Comment [b7]: Discuss SR 99 access points within the project limits.

Comment [KS8]: Should this be comparing to the 8% table in Figure 642-4b instead?

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Comment [KS9]: Dev #1-2 notes that it meets the 40 mph, please verify.

Comment [KS10]: Is this correct figure to reference for the effect of grade? Also, the figure references the SSD for a grade but there is no information presented to connect to the figure???

Comment [KS11]: What are the MP limits for these two projects in order to provide a perspective on the H2K project?

Comment [LKM12]: Verify project name

Comment [b13]: We need to discuss with FHWA if we need an IJR since we are going to limited access on this facility. This is such an unusual circumstance, we need to have a discussion if it would be a worthwhile endeavor.

Comment [KS14]: Suggest: "by a Corridor analysis and the P1 designation includes the project limits of the Holgate …"

Deleted: SR 99 through the Deep Bored Tunnel will be a P-1 roadway with full Limited Access rights

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decision effected this project, Holgate to King Stage 2 since it's portion of SR 99 is within the area of above 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 in early 2010??.

Alaska Way Viaduct Project Director, John White has agreed that 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 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(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 committed 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. Within the H2k project limits there are no existing accesses to SR 99 and therefore provides the same access control on SR 99 as if it was a Full limited access highway (is this a true statement?)

This is the design team's preferred alternative.

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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 milestones set by the Governor and State Legislature.

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 $U_{M/A}$-1 Highway Design Guidelines Alternative

The original approved corridor analysis for the existing SR 99 (which includes the H2K project limits) is classified as an Urban Principal arterial within a Managed Access corridor. Under this designation design guidelines consider design elements that 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.

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

Conclusion and Recommendation

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. 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 to meet the guidelines of a P-1 Limited Access facility.
- Delaying this project in order to obtain full access rights will jeopardize the entire SR 99 tunnel program as set forth in legislative rule making.

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.

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