

**SR 99 S. Holgate St. to S. King St. Viaduct Replacement Project, Stage 2  
XL 3237 and PIN 809936D  
Deviation #4 Maximum Superelevation Rate  
June 10, 2009**

**Description of Design Element, Matrix, Design level, and WSDOT Reference**  
Superelevation Rate on Principal Arterial (P-1)

Matrix 3-7 ([Exhibit 1100-6, June 2009](#)), Full Design Level ([Exhibit 1140-6, June 2009](#))  
Max. 8% (Chapter [1250.04](#) and [Exhibit 1250-4b, June 2009](#))

Deleted: Fig. 440-6, May 2008

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**Existing Conditions**

The existing maximum superelevation is 6% and the design and posted speed is 50 mph.

**Proposed Deviation**

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**Comment [JBK1]:** Please write up a proposed design paragraph.

Deleted: and Justification

**Deviation description**

The proposed roadway does not meet current WSDOT design criteria for a P-1 roadway with a design speed of 55mph. However, it does meet AASHTO guidelines for a low-speed freeway in an urban area. "...this design speed should not be less than 50 mph." "Superelevation rates of 6 to 8 percent are generally the maximum that should be used on viaducts. ...In lower speed situations, a maximum superelevation rate of 6 percent may be applicable."

**Comment [JBK2]:** Doesn't the new Corridor Analysis set this to 50 MPH from Spokane to Mercer? You might want to mention the reason why 55 mph was used instead of 50 mph.

**Comment [JBK3]:** Correct, AASHTO does say this but the viaduct is coming down and this does not apply here.

The posted speed will be 50mph, which is a low-speed freeway. Therefore, the maximum 6% superelevation rate is applicable.

**Comment [JBK4]:** Out of all this is written here, I think this justification is extremely thin. You are showing Engineering Judgment that this is OK by meeting AASHTO. This is fine but I'd like to see more here such as (but not limited to) the following possibilities:

- Route continuity – This Limited Access piece of SR 99 route is sandwiched between UMA to the south (south of Spokane St.) and to the north (north of Mercer St.). It would seem reasonable to have this Limited Access thread in as seamless as possible to this Urban Managed Access.
- Cost to Build to Standards – You already have a project that has been designed over the past couple of years to using the 6% table. You have a bridge and roadway that is already designed to using the 6% table. Changing to the 8% table would cause a redesign of the this roadway and impact the bridge design. This would result in additional costs for new bridge site data, new bridge design, possible impact to the railroad, etc.
- Others?

**Justification**

**AASHTO Reference: title, publication date, page**

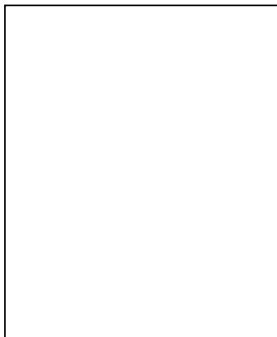
*A Policy on Geometric Design of Highways and Streets*, 2004, pages 503 (design speed) and 505 (superelevation)

**Recommendation**

Use the 6% max. superelevation rate table (WSDOT Design Manual [Exhibit 1250-4c, June 2009](#)).

**Comment [JBK5]:** Please separate your justification from your Deviation Description.

Deleted: Fig. 642-4c, Nov. 2007



Mark Anderson, PE  
Project Engineer

**Deviation Approval**

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**Deviation #4 Maximum Superelevation Rate**

**June 10, 2009**

Date \_\_\_\_\_

By \_\_\_\_\_, P.E.  
Susan Everett, P.E. Alaskan Way Viaduct Design Manager

