

## VandenBerghe, Alissa (Consultant)

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**From:** Everett, Susan  
**Sent:** Tuesday, April 21, 2009 6:06 PM  
**To:** Khaleghi, Bijan; Williamson, Alec; Lemus, Rudy (Consultant)  
**Cc:** Struthers, James  
**Subject:** SR 99 Bored Tunnel -- Structural Design Criteria  
**Follow Up Flag:** Follow up  
**Flag Status:** Red

Hi,

I'm new to the project and realize that the document -- Structural Design Criteria -- Draft Supplement A Bored Tunnel Conceptual Engr Spt for EIS was distributed on 3/18/09 and comments were due 3/23/09. I have a few questions that I am hoping one of you could answer.

The major questions are:

- Is the requirement for the expected earthquake (the 1/100 annual risk) rigorous enough? Will the structure inside the tunnel and the tunnel itself have the same Expected Earthquake and Rare Earthquake? For the cost of the tunnel, structure and control systems, can we consider an expected earthquake with an annual risk of exceedence of 980 years?
- Will WSDOT provide the tunnel designer the design fires? Have the design fire intensities been determined?
- Will WSDOT provide the tunnel designer the design explosion?
- Will WSDOT provide the tunnel designer with the maximum expected hydrostatic pressure, and will we provide the tunnel designer with the safety factor to add to this maximum expected hydrostatic pressure?
- Does WSDOT want to require tunnel wall monitoring systems be included as part of the tunnel design? Should these requirements be included in this conceptual engineering requirements?
- Is there a preliminary bridge design that will inform the tunnel designer the bridge loading on the tunnel walls?

A few minor points --

Page 1 , Direction 1.1.1 -- The sentence -- Although the owner should perform the task, they may choose not to. -- Could we change should to could?

Page 4, Design of the Liners 1.3.2 B -- Can this sentence be reworded so the word consider is not used? (I've had problems with this word in contractual direction in the past, no matter how it is used.)

I didn't even try to understand the section on Seismic demands from Ovaling/Racking Deformations, so I don't have any questions on this section.

Thanks,  
Susan Everett