



September 9, 2008

TO: Bijan Khaleghi /Mark Anderson  
Bridge and Structures, MS 47340

FROM: Tony M. Allen/Donald A. Williams  
E&EP Geotechnical Division, MS 47365

SUBJECT: SR-520, MP 11.8, XL-2028  
West Lake Sammamish Parkway to SR-202  
RWN Bridge – Wall RW-RWN4  
Addendum 3 to Geotechnical Design Recommendations

During our review of the PS&E Documents, we became aware that a retaining wall was overlooked for this structure. Wall RW-RWN4 was not addressed in our previous geotechnical report dated May 30, 2008. The wall is approximately 24 ft long with a maximum design height of 14 ft between Stations RWN 25+08 and RWN 25+32, 5 ft Right. In our Geotechnical Report dated May 30, 2008, we provided foundation recommendations for Wall RW-RWN3 which will be a 32 ft high Structural Earth Wall, located parallel (back-to-back) to Wall RW-RWN4.

RWN-4 Wall will retain the new RWN Ramp east approach fill on the right side and will be constructed up to the Pier 5 curtain wall. A Structural Earth Wall is recommended to be consistent with the design of Wall RW-RWN3. For a Structural Earth Wall, Figure E-2 can be used to determine the minimum embedment requirements. A standard plan concrete is not recommended since the wall foundation will be within the Wall RW-RWN3 reinforcement zone.

The soils in the vicinity of the wall sites consist of up to 30 ft of compacted fill similar to gravel borrow. Due to the favorable geometry, global stability is adequate in this segment of the wall. Ground water will be greater than 25 ft below the finished wall.

We recommend an allowable bearing capacity of 6 ksf be used for static loading and 12 ksf for seismic loading. Settlement should occur as the wall is constructed, with settlements being 1.0 inch or less. Post-construction settlement should be negligible.

We recommend that Wall RW-RWN4 be included with the other similar walls, RW-RNE, RW-F4, RW-F5, RW-F10, RW-BR, and RW-AR2. The specific design information needs to be included as part of the Structural Earth Wall GSP. The following design information should be inserted in the GSP for all walls:

Table 1: GSP Fill-ins for Walls RW-RWN4, RW-RNE,  
RW-F4, RW-F5, RW-F10, RW-BR, and RW-AR2.

Soil Properties	Wall Backfill	Retained Soil	Foundation Soil
Unit Weight (pcf)	130	130	125
Friction Angle (degrees)	36°	36°	36°
Cohesion (psf)	0	0	0
		AASHTO Load Group I	AASHTO Load Group VII
Allowable Bearing Capacity		6 ksf	12 ksf
Peak Ground Acceleration Coefficient, PGA (g)		0	0.46

### Construction Considerations

- Shoring will likely be required to construct Pier 5 and the first segment of the RWN-3 Wall. We estimate the temporary shoring wall height to be approximately 35 ft. Due to expected wall height, a special shoring wall design will be required such as a dead-man or tieback anchor system. There may be a conflict between the face of Wall RW-RWN4 and the temporary shoring wall. Hand compaction may be needed to compact the new fill in between Wall RW-RWN4 and the temporary shoring wall.



*Donald A. Williams*

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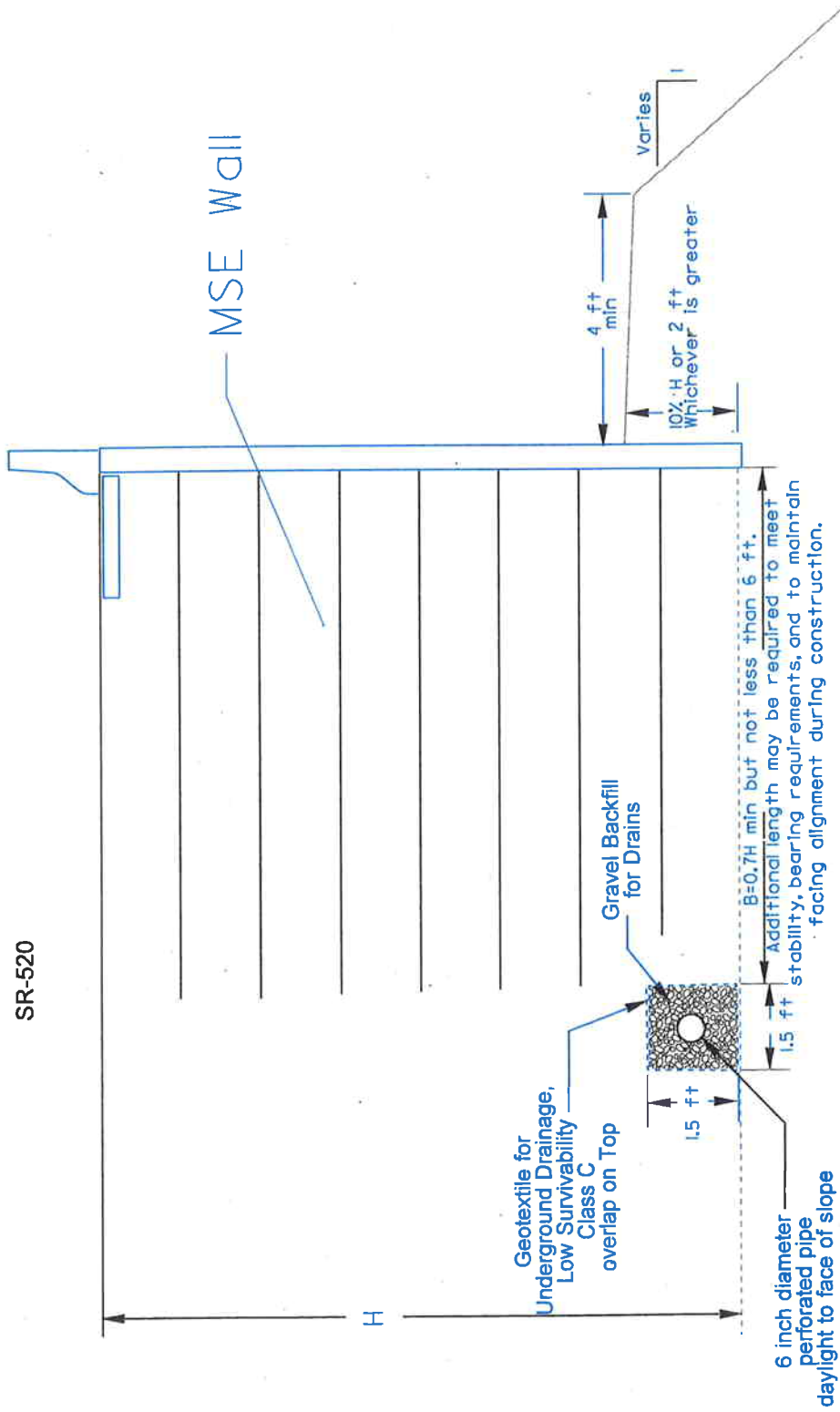
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SR-520



JOB XL-2028 S.R. 520

SR520 West Lake Sammamish Parkway  
to SR-202 - Hov and  
SR202 Interchange

DATE 8/2006  
SCALE NOT TO SCALE  
SHEET OF  
DRAWN BY DWG



WASHINGTON STATE  
DEPARTMENT OF TRANSPORTATION  
GEOTECHNICAL DIVISION

Figure E-2: Typical MSE Wall Section