Branch Engineering, Inc.

Corporate Headquarters
(541) 746-0637
310 5th Street
Springfield, OR 97477

Salem Engineering Office
(503) 779-2577
4310 Cherry Avenue NE
Salem, OR 97303

www.BranchEngineering.com

Principals
M. Lane Branch, PE
Damien Gilbert, PE
Renee D. Clough, PE, PLS
Rene´ Fabricant, PE, SE
Ronald J. Derrick, PE, GE

December 8, 2011

City of Florence
250 Hwy 101 N.
Florence, Oregon 97439

RE: PHASE 2 SITE INVESTIGATION REPORT
SIUSLAW INTERPRETIVE WAYSIDE
FLORENCE, OREGON
Branch Engineering Inc. Project No. 11-001B

Branch Engineering Inc presents this summary report of our findings as compliance for the Phase II Site Investigation Report required in Florence City Code Title 10, Chapter 7. This information in this report it tailored to the requirements of Florence City Code 10-7-4 and shall not be solely used to design or construct the project site improvements.

The site is located directly beneath the north end of the State Highway 101 Bridge over the Siuslaw River, and consists of river bank terrain with wood and concrete surface debris, large stones, and numerous wood pilings randomly located along the river-bank and in the river. Currently, the property is undeveloped and adjacent the west side of a commercial building at 1236 Bay Street in Old Town Florence, Oregon. Identified geologic hazards determined in the Phase I Site Investigation may include water and wind erosion, and flooding.

Based on the August 23, 2006 Geotechnical Investigation report, the site subsurface stratum consists of five to ten feet of loose, fine-grain, silty sand that becomes dense at about 10-feet, and very dense about 18-feet below the ground surface. The online web soil for Natural Resources Conservation Service maps the site as Waldport-Urban land complex; which is described as stabilized loose sand dunes with slopes less than 12%.

Geologic Hazards

The site is located adjacent to the Siuslaw River and within one mile of the open ocean, making the site susceptible to tsunamis and seiches. The saturated loose sands are susceptible to liquefaction during a seismic event, and lateral spread of the sands may occur due to abrupt grade changes at the high-water bank and potential grades changes in the river channel below the water surface. Liquefaction is the result of increased pore pressures in the soil causing a loss of shear strength resulting in consolidation of the soil causing surface settlement and movement of soil down-slope. Since the site is above river bottom, it is likely that the saturated soil will move toward the river during an earthquake causing cracking and spreading of the nonsaturated surface soil.

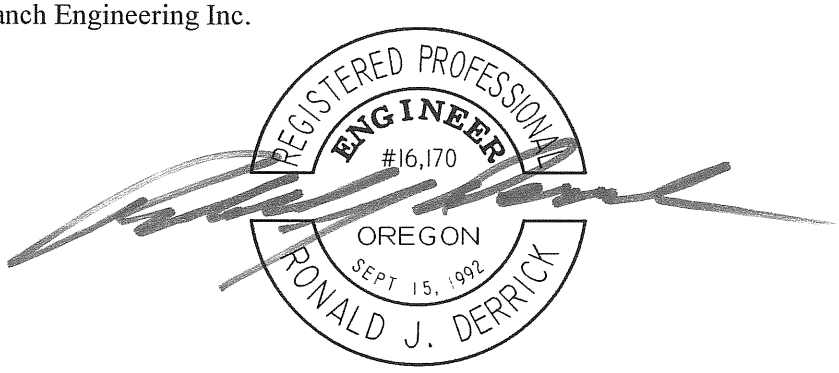
The site is also susceptible to inundation by flood water caused by a tsunami. The site lies below the upper limit of the area mapped by the Oregon State Geology and Mineral Industries that is expected to be covered by flood waters in the event of a large magnitude, undersea earthquake. Because of the proximity to the Siuslaw River, the site is also susceptible to flooding from a seiche, which is a large wave on a closed body of water generally caused by an earthquake of large landslide on the water bank.

Other site hazards include bank erosion from and both the Siuslaw River and the storm water outfall located on site. Currently, the river flows around the existing Highway 101 bridge columns which may cause scour on new structures. The overlying bridge deck does provide some protection from erosion due to rainfall, but drainage from the adjacent sites appears to flow onto the subject site. The site is currently stable in its existing condition, neglecting seismic influences. The gross stability of the river bank is stable, although areas are susceptible to erosion, particularly after removal of vegetation.

Conclusion

The proposed parking lot retaining wall and deck piers will be constructed on pilings to mitigate potential hazards to the structure related to erosion, scour, and liquefaction. No habitable structures are planned for this project and a floodplain construction permit application will be submitted. Soft erosion control measures, such as vegetative cover and erosion matting are expected to mitigate surface erosion of the sandy site soils above the river level as evidenced by nearby examples along the river bank. Hardening the bank with large stone or anchored wood may also be used, but it not expected to be necessary. Adequately designed protective measures described for the above geologic hazards shall withstand typical conditions for the life of the proposed development.

Sincerely,
Branch Engineering Inc.



EXPIRES: DECEMBER 31, 2011

Ronald J. Derrick, P.E., G.E.
Principal Geotechnical Engineer