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MEMORANDUM

K510.01

TO: CHRIS ROBERTSON, P.E. @ HHPR/VANCOUVER
TONY COOPER, P.E. @ HHPR/VANCOUVER

FROM: PAT KELLY, P.E.

DATE: AUGUST 20, 2005

RE: PRELIMINARY GEOTECHNICAL MEMORANDUM; NE 78TH STREET
OPERATIONS CENTER; CLARK COUNTY, WA

This memorandum presents summary comments regarding the results of exploratory drilling, sampling and testing to evaluate the potential for the in-ground disposal of stormwater in the north portion of the NE 78th Street Operations Center where pavement and building improvements are planned. The scope of work for this study was described in a proposal letter dated December 20, 2004.

Field Studies

Three exploratory borings were made at the site on May 5 and 6, 2005. The borings were located at approximate distances (in feet) from NE St. Johns Road of 290 (B-1), 440 (B-2) and 850 (B-3). All borings were made to a maximum depth of 40 feet, and samples were obtained at 5-foot intervals utilizing a Standard Penetration Test (SPT) sampler.

The exploratory borings disclosed that a surficial layer of sandy SILT and silty SAND is present to depths ranging from 8 feet in Boring B-2 to 10.8 feet in B-1. Below this layer of low or very low permeability soils, medium dense (N-values of 10 to 30 blows per foot) fine to medium SAND with some silt was encountered to a depth of about 23 feet below the ground surface. The SAND becomes dense (N-values of 30 to 50 blows per foot) below the 23 to 25 foot depth level, and occasional layers of silty SAND were observed.

Water table levels at the time of drilling ranged from 27 to 31.5 feet below the ground surface. During subsequent testing on June 29, 2005 in the observation wells installed in Borings B-2 and B-3, the depth to ground water was essentially the same, varying from 28 to 31.4 feet.

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Field permeability testing included down-hole tests at all SPT sample locations above the water table (unless very low permeable soils were present). Permeability tests were also conducted in the observation wells at Borings B-2 and B-3; these tests were made over sections of the borings that were 7.5 and 16.5 feet in length.

Laboratory Testing

In addition to visual examination of the soil samples all samples from Borings B-2 and B-3 above the water table were tested for grain size distribution using the washed gradation method. Based on the gradation test results the coefficient of permeability for each sample was calculated using the Hazen correlation. The laboratory-determined k-values agreed reasonably well with the field test values.

Soil Permeability Values

The permeability values determined in the field and laboratory testing are summarized in the following table in units of inches per hour.

SOIL PERMEABILITY VALUES*

Boring No.	Location	k-value, Inches per Hour		
		Maximum	Minimum	Average
B-1	West Portion	7.0	< 0.5	< 3.0
B-2	Central	17.5	7.5	9.0
B-3	East Portion	10.0	3.0	5.5

* k-values are for the zone 9 to 25 feet below the ground surface.

I trust this information is sufficient for your current requirements. Please call to discuss.

Patrick Kelly, P.E.

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