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R & R Services
Corporation

GEOLABS-WESTLAKE VILLAGE

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March 3, 2017

B.N. 8667.010

William S. Hart High School District
26308 Spirit Court
Santa Clarita, California 91350

Attention: Michael Otavka

Subject: Proposal for Geotechnical Investigation
Proposed South Access Road, Castaic High School,
Romero Canyon Site, Santa Clarita Area,
County of Los Angeles, California

Mr. Otavka:

Pursuant to your request, we have prepared this proposal for a geotechnical investigation and evaluation of the proposed southern access road into the Castaic High School site. This proposal is based on contemplated alignments (Alt. A, B, & C) illustrated in plans provided by Sikand Engineering. These plans indicate the road alignment spans Baringer Road in the north to Hillcrest Parkway in the south. We anticipate conducting our work in the following three steps;

RECONNAISSANCE and RESEARCH: The purpose of Step 1 would be to assemble existing geotechnical data regarding the project area, identify geotechnical elements about the alignment, and assess potential impacts of those elements upon the different alignments. To that end, we would research public records, our files, and those of Sikand Engineering for the various properties along the road alignment, review aerial photos, and complete reconnaissance geologic field mapping of the alignments. The assembled geotechnical information will allow us target critical elements with future exploration, avoid duplication of exploration by previous workers, and include exploration for hidden elements that may have been discovered by previous workers. We would also be able to provide guidance as to the "best" road location, i.e. the alignment that most reduces cost and impact. At the conclusion of this step we would produce a preliminary geologic constraints map and a written summary of our findings and opinions. We anticipate the cost for Step 1 will be \$20,000.

EXPLORATION and ANALYSIS: Step 2 would include exploration, laboratory testing,

analysis of assembled data, and preparation of a Grading Plan Review report. The scope of the field exploration would depend upon the findings of Step 1. Specific locations for exploratory excavations, as well as access roads to reach the targeted locations, would best be selected based upon the preliminary grading concept for the preferred alignment. At present, we know exploration is likely needed for the southern portion of the large landslide that straddles the southern boundary of the high school grading project (Qls3), a newly postulated landslide crossed by the road alignment (Baringer Slide), alluvial areas underlying the roadway, and planned cut and natural slopes adjacent to the roadway. Preliminary assessments suggest on the order of 15 large-diameter, bucket-auger borings totaling 1100-1200 feet of drill hole, 5-7 small-diameter, hollow stem auger borings totaling 250-350 feet of drill hole, 10-15 cone penetrometer soundings, and multiple excavator and backhoe-excavated test pits are likely to be needed.

Step 2 analyses include faulting and seismic hazards, anticipated groundwater impact on design and construction, potential alluvial settlement, on-site soils expansive and corrosive characteristics, earth material strengths, and slope stability. Upon completion of our analysis, pertinent criteria for grading design would be provided for consideration in a written report. The report would be prepared in consideration of the Los Angeles County guidelines for geotechnical reports.

Based on our current understanding of the project and the resulting scope of work noted above, the cost for Step 2 could be as much as \$200,000 to \$250,000. The scope and cost would be reevaluated at the completion of Step 1.

The cost of permitting and construction of access roads, drill pads, and any necessary erosion control measures needed to accomplish our exploratory work is not included in this estimate. The cost of the field exploration depends not only on the scope of the work, but also on the drilling conditions. Although we have extensive experience drilling for the adjacent school site, D.S. 541, and elsewhere in this rock formation, uncertainty regarding the drilling conditions remains. In this case, the uncertainty derives, in large part, from the fact that we could be drilling in heretofore unexplored ridges and canyons. Our estimate for the cost of the field exploration is based upon a historic completion rate (including setup, drilling, sampling, logging, backfilling with cuttings and tamping, and moving between holes) of 50 feet for bucket-auger borings and 100 feet for HSA borings per eight-hour day, with a 10% contingency for potential drilling difficulties. We will inform you of any unforeseen conditions that would cause an increase in the cost of the

study, if that were to occur, as soon as we become aware of such conditions.

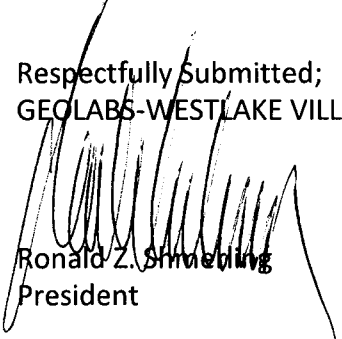
VALUE ENGINEERING: Step 3 would focus alternative mitigation measures for known geologic elements, such as documenting the consolidation and collapse potential of large landslides in hopes of limiting required removal and recompaction, and/or additional documentation of alluvial soil depths to reduce uncertainty regarding the remedial grading quantities in pursuit of meaningful and competitive bids for the work. This type of evaluation is discretionary, and its importance would be revealed by the magnitude of the remedial grading quantities estimated based upon the Step 2 exploration plus the variability of the removal requirements in different areas about the project, also as defined in Step 2. These assessments may include additional field work, laboratory testing, geotechnical analyses, and report. At this time it is not possible to anticipate the scope of work or estimate the cost of Step 3, although it could warrant expenditures on the order of \$20,000 to \$30,000 or more.

We suggest authorization of the Step 1 work at this time. Services would be billed on a time-and-material basis in accordance with the attached fee schedule. As noted above, the scope and estimated cost of each successive Step would be evaluated upon completion of the prior Step.

We can begin work on this project upon authorization. We anticipate completion of Step 1 within six weeks of authorization.

We look forward to continuing to work with you on this project. Please do not hesitate to call if you have any questions.

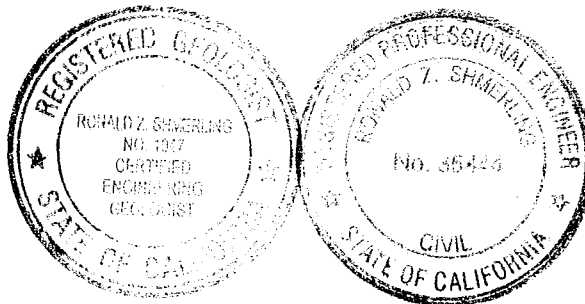
Respectfully Submitted;
GEOLABS-WESTLAKE VILLAGE


Ronald Z. Shmerling
President

RZS:af

Enclosure: Fee Schedule

XC: (2) Addressee



GEOLABS-WESTLAKE VILLAGE

2017 FEE SCHEDULE

| <u>Professional, Technical, and Support Staff</u> | | <u>PW*</u> | <u>Aggregates</u> | |
|--|----------|------------|--|----------|
| Senior Principal Engineer/Geologist (per hour) | \$162.00 | | Sieve Analysis, Coarse, C-136, CT-202 | \$72.00 |
| Principal Engineer/Geologist (per hour) | \$141.00 | | Sieve Analysis W/Wash, Fines, C-136 & ASTM D 1140 | \$139.00 |
| Senior Staff Engineer/Geologist (per hour) | \$121.00 | | % Pass #200 Sieve, C-117 | \$70.00 |
| Staff Engineer/Geologist (per hour) | \$102.00 | | Specific Gravity & Absorption, Coarse, C-127, CT-206 | \$139.00 |
| Field Technician (per hour) | \$87.00 | \$105.00 | Specific Gravity & Absorption, Fine Aggregates, ASTM C-128 | \$139.00 |
| Sr. Field Technician (per hour) | \$93.00 | \$105.00 | Cleaness Value, CT-227 | \$139.00 |
| Laboratory Testing (per hour) | \$101.00 | \$105.00 | Durability Index, Coarse, D-3744, CT-229 | \$139.00 |
| Special Inspector (per hour, 4 hour minimum) | \$87.00 | \$107.00 | Durability Index, Fines, D-3744, CT-229 | \$139.00 |
| Asphalt Batch Plant Inspection (per hour, 4 hour minimum) | \$87.00 | \$107.00 | L.A. Rattler, ASTM C-535, CT-211 | Quote |
| Sample Pick-up (per hour, 2 hour minimum) | \$87.00 | \$105.00 | Organic Impurities, ASTM C-40 | \$94.00 |
| Administrative | \$66.00 | | Magnesium & Sodium Sulfate Soundness (including grading), C-88 | \$345.00 |
| CAD | \$90.00 | | Sand Equivalent, D-2419 & CT-217 | \$124.00 |
| | | | | |
| <u>Soils</u> | | | <u>Asphaltic Concrete, Aggregate & Mixes</u> | |
| Atterberg Limits, ASTM D-4318, CT-204 | \$174.00 | | Extraction: % Bitumen (Solvent), D-5444 | \$169.00 |
| Hydrometer Analysis, ASTM D-422, CT-203 | \$139.00 | | Extraction: % Bitumen (Oven), D-6307, CT-382 | \$157.00 |
| Hydrometer Analysis, ASTM D-422 & Sieve W/Wash, ASTM C 202 & C-136 | \$277.00 | | Specific Gravity of Compacted Sample, D-2726 | \$70.00 |
| Specific Gravity, ASTM C-128 | \$104.00 | | Specific Gravity of Compacted Sample, Paraffin Ctd., D-2726 | \$85.00 |
| R-Value, ASTM D-2844 & CT-301 (Untreated) | \$402.00 | | 5 Point LTMD, CA-375, CT-308 | \$374.00 |
| R-Value, ASTM D-2844 & CT-301 (Treated) | \$489.00 | | 3 Point LTMD, CA-375, CT-308 | \$242.00 |
| Consolidation, ASTM D-2435 | \$116.00 | | Maximum Specific Gravity (RICE), D-2041, CT-309 | \$231.00 |
| Unconfined Compressive Strength, ASTM D-2166 | \$116.00 | | Stabilometer Test with Mixing, D-1560, CT-366 | \$631.00 |
| Remolded Consolidation, ASTM D-2435 | \$402.00 | | Stabilometer Test, Premixed, D-1560, CT-366 | \$459.00 |
| Direct Shear, ASTM-D-3080 | \$231.00 | | | |
| Remolded Shear, ASTM D-3080 | \$398.00 | | <u>Soil Stabilization</u> | |
| Remolded Shear (Additional Cycles Each) | \$73.00 | | Soil Cement Mix Design | Quote |
| Residual Shear (additional cycles, each) | \$42.00 | | Soil Lime Mix Design, Includes, 3 Different Lime %'s, | Quote |
| Expansion Index, ASTM D-4829 | \$197.00 | | 3 Max. Density & Opt. Moist., 2 Compressive | |
| Moisture Content, ASTM D-2216, CT-226 | \$20.00 | | Strength @ each Lime Percent (all other tests are | |
| Moisture/Density | \$25.00 | | extra which may include LOI, E.I., P.I., R-Value, | |
| % Organic (LOI) | \$60.00 | | Sulfates, Etc.) | |
| Permeability, Rigid Wall, ASTM D-2434 | \$231.00 | | Lime Suitability, Field Mixed, Includes Max. Density & | Quote |
| **Corrosivity (5 working days) | \$224.00 | | Opt. Moist, 2 Unconfined | |
| Remold Charge | \$60.00 | | | |
| | | | <u>Miscellaneous</u> | |
| <u>Soil Compaction</u> | | | Concrete Compression Testing, ASTM C-39/Test | \$28.00 |
| Max. Density & Optimum Moisture, ASTM D-698 | \$157.00 | | Mortar Samples Compression Test/Test | \$28.00 |
| Max. Density & Optimum Moisture, ASTM D-1557, 4" | \$169.00 | | Grout Samples Compression Test/Test | \$28.00 |
| Max. Density & Optimum Moisture, ASTM D-1557, 6" | \$208.00 | | Post Tension Report | \$20.00 |
| Rock Correction | \$104.00 | | Masonry Prisms | Quote |
| Cal Test 216 | \$174.00 | | **Corrosivity Summary | |
| | | | 3 day | \$434.00 |
| * Prevailing Wage Prior to July 1, 2017 | | | 1 day | \$650.00 |