

March 24, 2017



RSCCD Facility Planning, District
Construction and Support Services
2323 N. Broadway, Suite 112
Santa Ana, CA 92706

Attn: Ms. Allison Coburn
Facilities Project Manager
P: (714) 480-7530
E: Coburn_allison@rsccd.edu

**Re: Addendum 1 to Geotechnical Engineering Report
Proposed Johnson Student Center - Santa Ana College
1530 West 17th Street, Santa Ana, California
Terracon Project No. 60145100**

Dear Ms. Coburn,

Terracon Consultants, Inc. (Terracon) previously prepared a Geotechnical Report for this project dated November 21, 2016. Based on conversations with the design team, it is our understanding that there will be excavations extending to depths not exceeding 20 feet below site grades to accomplish the overexcavation and demolition of existing foundations as recommended in our original geotechnical report. This addendum letter provides additional geotechnical recommendations concerning earthwork, reuse of clayey soils anticipated to be encountered in the excavations and the recommendations concerning the design and construction of shoring systems for the proposed excavation.

Fill Materials and Placement

Based on the borings performed at the site, subsurface soils generally consisted of fill materials comprised of sand with variable amounts of silt and clay extending to depths of approximately 2 to 5 feet below existing ground surface. The native soils encountered beneath fill materials generally consisted of lean clay with variable amounts of sand interbedded with layers of silt.

Our original geotechnical report recommended that footings be supported on a minimum of 3 feet of low volume change (LVC) engineered fill. The on-site clayey soils are not considered suitable for use within 3 feet below the proposed footings. These clayey soils however, may be reused to backfill the excavations between the bottom of the excavations and 3 feet below the bottom of the proposed foundation. The soils should be compacted to a minimum of 90% relative compaction with moisture contents ranging from a minimum of 0% to maximum of 4% above the optimum moisture content as determined using the Modified Proctor Test (ASTM D 1557).

Excavation and Shoring Recommendations

It is anticipated that excavations for the proposed construction can be accomplished with conventional earthmoving equipment. At the time of our site exploration, moisture contents of the materials within



Terracon Consultants, Inc. 1421 Edinger Avenue, Suite C Tustin, California 92780
P [949] 261 0051 F [949] 261 6110 terracon.com

Geotechnical



Environmental



Construction Materials



Facilities

Addendum to Geotechnical Engineering Report

Proposed Johnson Student Center – Santa Ana College ■ Santa Ana, California

March 24, 2017 ■ Terracon Project No. 60145100

20 feet of the surface ranged from about 5 percent to 24 percent. Based on these moisture contents, some moisture conditioning will likely be needed for soils placed as engineered fill on the project.

Depending upon the depth of excavations and seasonal conditions, groundwater or perched groundwater may be encountered in excavations. Pumping from sumps may be utilized to control water within excavations. Well points may be required for significant groundwater flow, or where excavations penetrate groundwater to a significant depth. Terracon should be notified if groundwater is encountered during construction.

On-site clayey soils may pump or become unworkable at high water contents. If the exposed soils at the bottom of the excavations have elevated water contents and are pumping or yielding during attempts to compact the bottom of the excavations, the bottom of the excavations should be over-excavated to a minimum depth of 12 inches, and replaced with granular engineered fill. As an alternative, aggregate materials wrapped (top, bottom and sides) with a non-woven geotextile such as Mirafi 140N, or an approved equivalent may be utilized. The crushed aggregate could have a nominal particle size of ¾ to 1 inch. The aggregate layer and the geotextile layer are anticipated to create a stable platform beneath the overlying backfill materials.

The design of shoring systems should consider surcharge loads imposed on the shoring system by structural and vehicular loads anticipated within a lateral distance of the depth of the excavations. We recommend shoring be designed using a uniform 750 psf at 5 feet below the ground surface (based on an excavation depth of 20 feet). The contractor should verify the depth of groundwater prior to excavation as hydrostatic pressures should be added to these pressures, if encountered.

All other recommendations presented in our original report remain applicable to this project and this letter should be considered a part of that report.

If you have any inquiries or comments on this report, please do not hesitate to contact the undersigned at (949) 261-0051.

Sincerely,
Terracon Consultants, Inc.

F. Fred Buhamdan, P.E.
Senior Project Manager

Michael W. Laney, P.E., G.E.
Senior Geotechnical Engineer



Stephen Jacobs, PG, CEG
Senior Engineering Geologist

