

4 December 2014

Mr. Donald A. Williams
Polytech Associates, Inc.
235 Pine Street, 17th Floor
San Francisco, CA 94104

**Subject: Supplemental Geotechnical Recommendations
New Parking Lot
Veterans Affairs Medical Center
Martinez, California
Project No.: 750616601**

Dear Mr. Williams:

This letter report presents the results of our supplemental recommendations for the proposed parking lot at the Veterans Affairs Medical Center, Martinez, California. Our services were performed in accordance with our proposal dated 30 July 2014. Previously, we prepared a geotechnical investigation report dated 24 September 2014 for the proposed neurocognitive research building, which included recommendations for the proposed Parking Lot 3; we understand this parking lot is no longer planned. The recommendations presented herein supplement our 24 September 2014 report.

The medical center facility is located on the south side of Highway 4 and is partially bound by Muir Road, Veterans Drive, and Center Avenue. Residential and commercial developments bound other portions of the facility. The proposed parking lot will be located northwest of the proposed neurocognitive research building, as presented on Figure 1. The site for the parking lot is currently occupied by Building R-4. We understand Building R-4 will be demolished and removed prior to construction of the parking lot.

SCOPE OF SERVICES

Our scope of our services, outlined in our proposal dated 30 July 2014, consisted of collecting a bulk soil sample from within the footprint of the new parking lot, performing laboratory testing, and performing engineering analyses to develop recommendations for design of the parking lot pavement.

The bulk soil sample, designated R-1, was collected upper two feet below the ground surface by our field engineer using hand auger equipment on 28 October 2014 at the approximate location shown on Figure 1. Upon completion, the hole was backfilled with soil cuttings. The sample was submitted to a geotechnical laboratory for resistance value (R-value) testing, the results of which are attached as Figure 2.

SITE AND SUBSURFACE CONDITIONS

Based on a topographic survey completed in 2014 by BKF Engineers, current elevations in the area of the proposed parking lot are between approximately Elevation 234 and 239 feet.¹ Final parking lot elevations are not currently available; however, based on the existing site grades we anticipate that some cuts and fills will be required to construct the parking lot. We understand a new retaining wall, on the order of six feet tall based on current site grades, is planned along the northwestern edge of the lot.

¹ Elevations based on Schematic Design Submission 75% Draft, 5-1-14 by BKF Engineers; unspecified datum.

The bulk soil sample consisted of yellow-brown sandy silt. On the basis of subsurface data from our previous investigation, we anticipate bedrock is shallow and will likely be encountered during site grading.

CONCLUSIONS AND RECOMMENDATIONS

From a geotechnical standpoint, we conclude the proposed parking lot may be constructed as planned provided the geotechnical recommendations presented in this letter report are incorporated in the design and implemented during construction. Our conclusions and recommendations for parking lot design and construction are presented in this section.

Site Preparation and Grading

The site should be prepared per the recommendations in our report. We anticipate that most of the proposed parking lot will be constructed on silt, sand, or sandstone bedrock. Where soil is exposed, it should be scarified to a depth of at least six inches, moisture conditioned, and recompacted to at least 90 percent relative compaction². Exposed bedrock does not need to be scarified. Fill should be placed in accordance with the recommendations provided in our report.

Asphalt Pavement Design

The State of California flexible pavement design method was used to develop the recommended asphalt concrete pavement sections. We expect the final soil subgrade in asphalt-paved areas underlying the new parking lot site will generally consist of sand or bedrock. Laboratory results indicate the soil has an R-value of 65. This R-value is very high; therefore, we limited the R-value to 50 for design. If the existing subgrade will be raised beneath the paved areas, the fill material should have the same or higher R-value. Therefore, additional tests should be performed on the proposed fill to measure its R-value. Depending on the test results, the pavement design may need to be revised.

For our calculations, we assumed a Traffic Index (TI) from 4 for automobile parking areas with occasional trucks to 6 for driveways and truck-use areas; these TIs should be confirmed by the project civil engineer. Table 1 presents our recommendations for asphalt pavement sections.

TABLE 1
Pavement Section Design, R-Value = 50

TI	Asphaltic Concrete (inches)	Class 2 Aggregate Base R = 78 (inches)
4	2.5	6
5	3	6
6	3.5	6

Note: The minimum thickness of asphalt concrete and aggregate base is 2.5 and 6 inches, respectively.

² Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density of the same material, as determined by the ASTM D1557 laboratory compaction procedure.

ADDITIONAL GEOTECHNICAL SERVICES

During final design we should be retained to consult with the design team as geotechnical questions arise. Prior to construction, we should review the project plans and specifications to check their conformance with the intent of our recommendations. During construction, it is imperative that we observe pavement subgrade preparation and test compaction of fill and backfill as the geotechnical engineer of record. These observations will allow us to compare the actual with the anticipated soil conditions and to check that the contractors' work conforms with the geotechnical aspects of the plans and specifications. The recommendations contained in this report assume that we will be on-site during construction to make modification to them as needed.

LIMITATIONS

The conclusions and recommendations presented in this report result from limited engineering studies based on our interpretation of the existing geotechnical conditions and available subsurface data. Actual subsurface conditions may vary. If variations or unforeseen conditions are encountered during construction or if the proposed construction will differ from that which is described in this report, Langan Treadwell Rollo should be notified so that supplemental recommendations can be made.

We appreciate the opportunity to provide services on this project. If you have any questions, please call.

Sincerely,
Langan Treadwell Rollo

Elena M. Ayers

Elena M. Ayers, G.E. #2916
Senior Project Manager



Lori A. Simpson

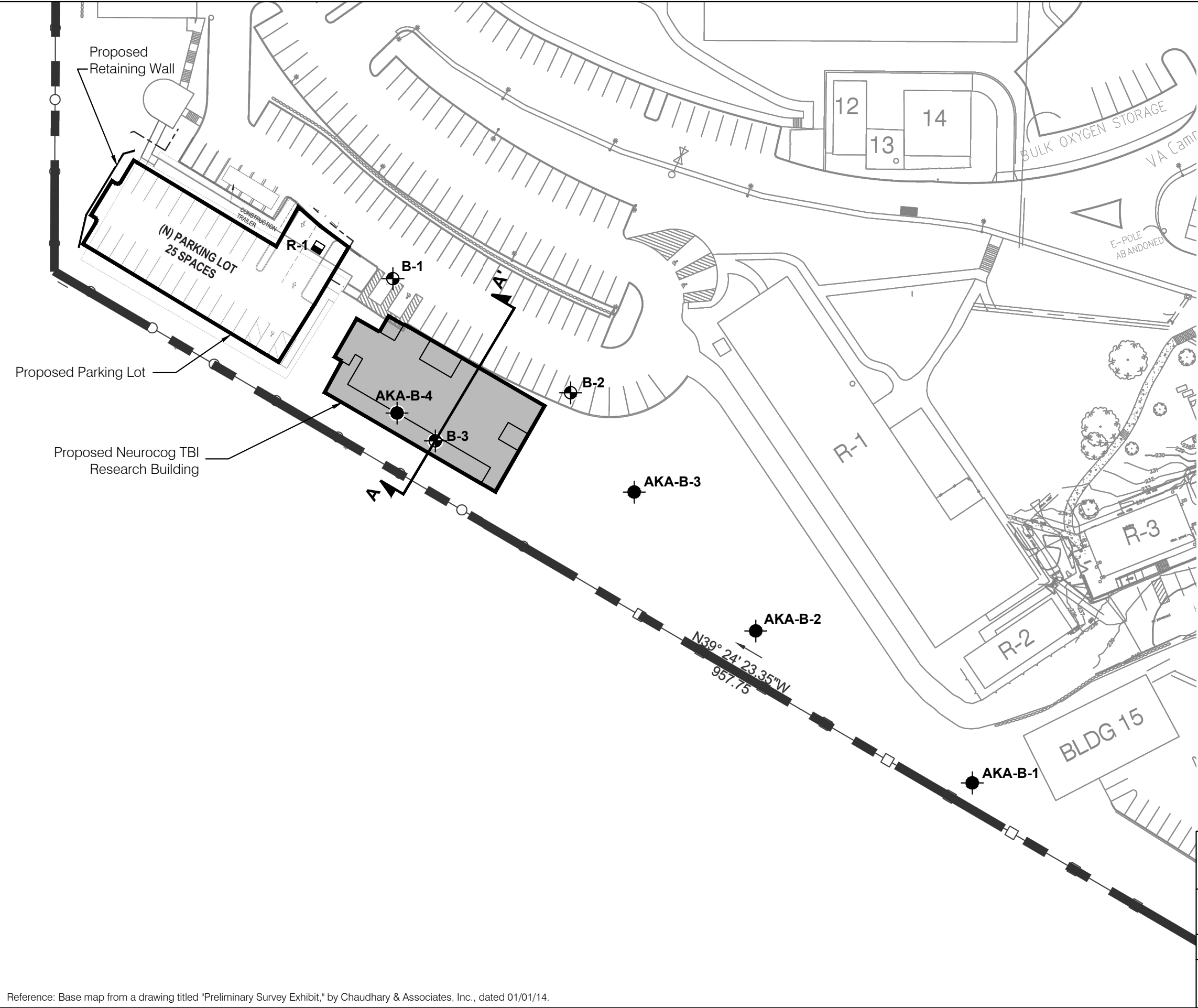
Lori A. Simpson, G.E. #2396
Vice President/Principal



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Attachments: Figure 1 – Site Plan
Figure 2 – Resistance Value Test Data

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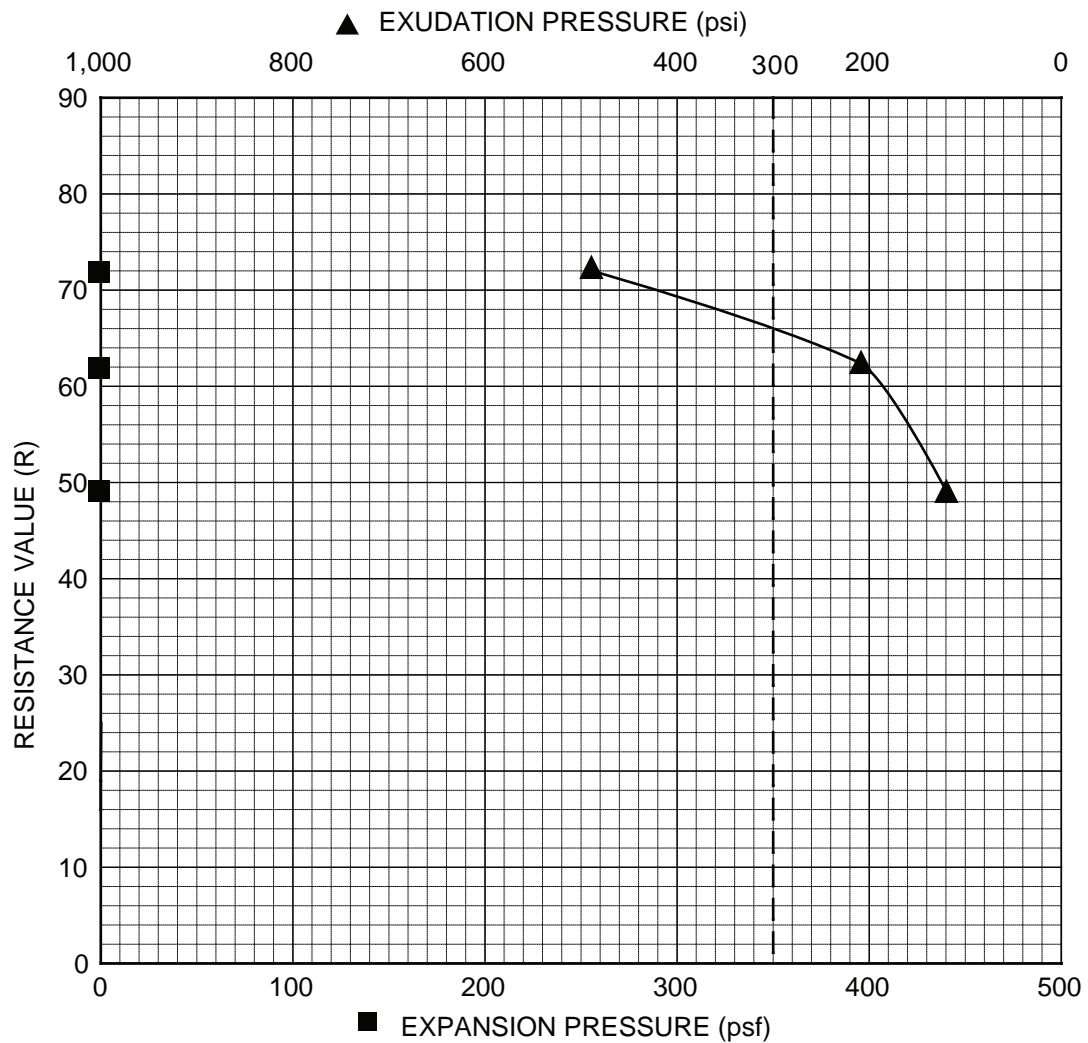


EXPLANATION

- B-1** Approximate location of boring by Langan Treadwell Rollo, February 2014
- R-1** Approximate location of bulk sample by Langan Treadwell Rollo, October 2014
- AKA-B-5** Approximate location of boring by Alan Kropp and Associates, Inc., 2008
- Approximate site boundary
- A** **A'**
Idealized subsurface profile location

NEUROCOG TBI RESEARCH BUILDING VETERANS AFFAIRS MEDICAL CENTER Martinez, California		
SITE PLAN		
Date 12/04/14	Project No. 750616601	Figure 1
LANGAN TREADWELL ROLLO		

Reference: Base map from a drawing titled "Preliminary Survey Exhibit," by Chaudhary & Associates, Inc., dated 01/01/14.



Specimen ID:	A	B	C	D
Water Content (%)	14.2	13.3	12.0	--
Dry Density (pcf)	113.5	114.1	114.1	--
Exudation Pressure (psi)	121	212	495	--
Expansion Pressure (psf)	0	0	0	--
Resistance Value (R)	49	62	72	--

Sample Source	Sample Description	Sand Equivalent	Expansion Pressure	R value
R-1 at 1/4 to 1 3/4 feet	SANDY SILT (ML), yellow-brown	--	--	65

**NEUROCOG TBI RESEARCH BUILDING
VETERANS AFFAIRS MEDICAL CENTER**
Martinez, California

LANGAN TREADWELL ROLLO

RESISTANCE VALUE TEST DATA

Date 12/04/14 Project No. 750616601 Figure 2