

INFORMATION HANDOUT

MATERIALS INFORMATION

GEOTECHNICAL DESIGN REPORT

For BEECHERS MS

Dated September 3, 2009

Memorandum

*Flex your power!
Be energy efficient!*

To: JOE ESFANDIARY - OSD
Senior Engineer

Date: September 3, 2009

File: 08-SBD-395-PM
08-0E3101
Beechers MS-Material Bin

From: DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Geotechnical Services - MS 5
Office of Geotechnical Design - South 2

Subject: Geotechnical Design Report.

The Geotechnical Design Services-South 2 has completed a Geotechnical Design Report (GDR) for construction of a Material and Storage Bin in Beechers Maintenance Station. The Station is located at the Kramer Junction, near the intersection of State Routes 395 and 58.

This report is based on site reconnaissance, literature search and technical information obtained from the previous Log Of Test Borings (LOTB) in the surrounding areas. The Office of Structure Design provided structure plans, including cross-sections and detailed layout sheets. The GDR discusses geotechnical aspects of the soil conditions and provides foundation recommendations.

References

1. "Log Of Test Borings (LOTB) for Boron Ave. O.C., Br. 50-0351," California Department of Transportation, Division of Highway, March 13, 1967.
2. "Log Of Test Borings (LOTB) for Community Blvd. U.C., Br. 54-1109L," California Department of Transportation, Division of Highway, September 26, 1994.
3. California Department of Water Resources, Groundwater Data Library, 2009.

Project Description

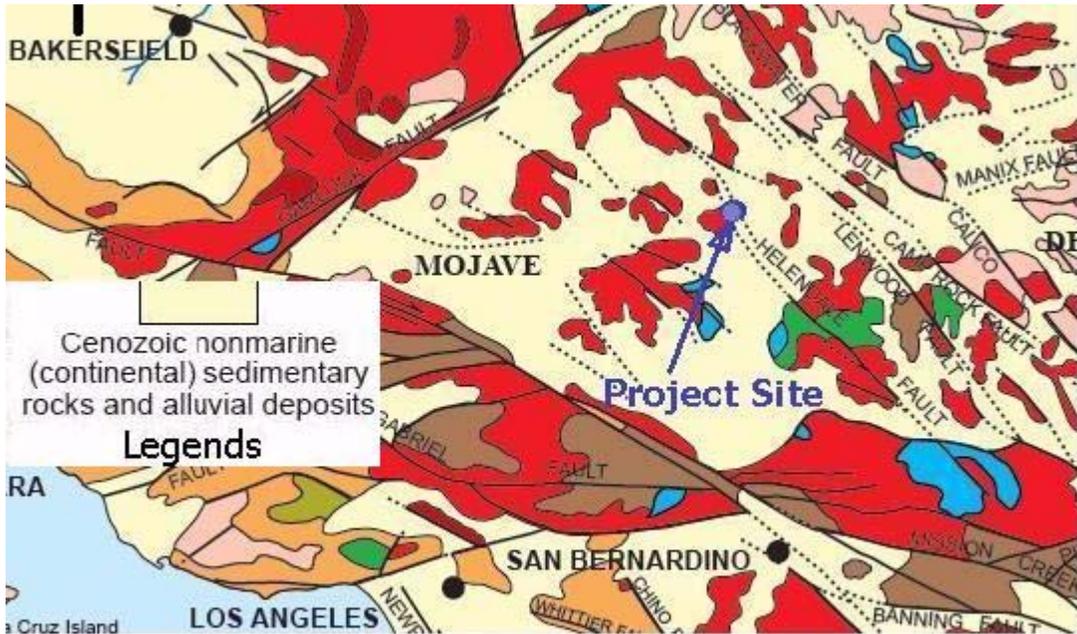
The District's Maintenance has planned to build a material bin. Within the scope of this project, a 30' x 60' storage bin will be supported by six one-foot square columns founded on the square 8' x 8' spread footings. Location of the project site is shown in the map below.

Existing Conditions

The Beechers (Edwards AFB) Maintenance Station is mostly located on an existing native soils in this Mojave Desert area. The area topography is generally flat and gradually lower to the west toward the Edwards AFB. The existing facility has its foundation plan situated near or partially covered the proposed structure foundation. According to our visual observation, most of the existing structures in this area have been performing well without any noted problem in the past.



Location Map



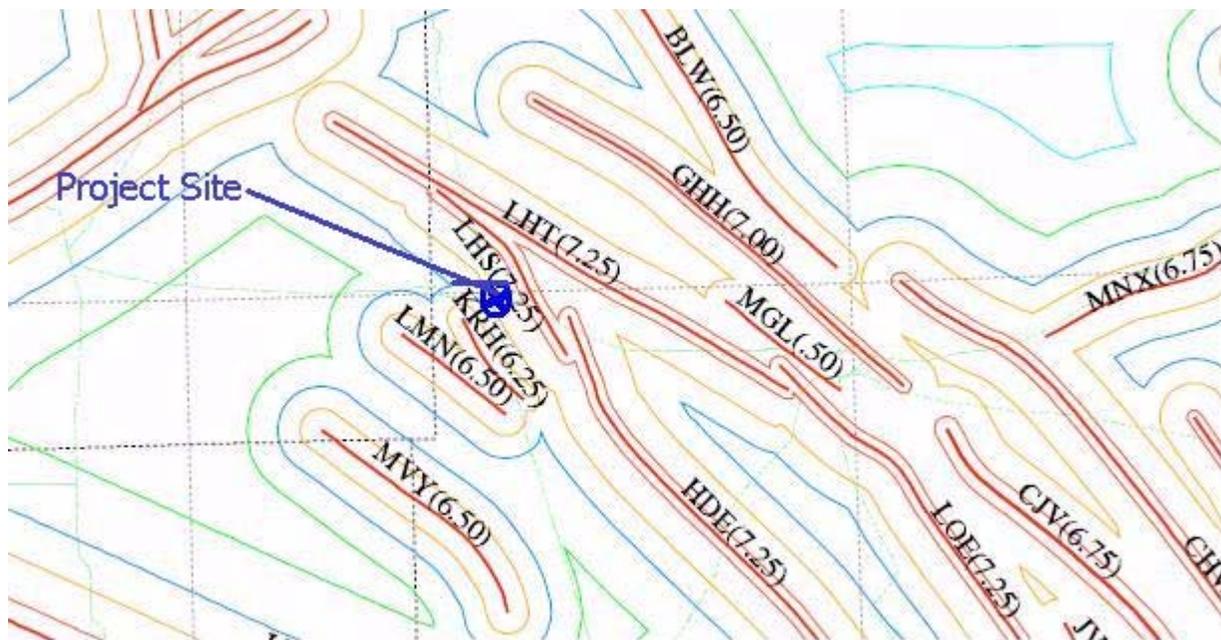
Geologic Map

Subsurface Investigation

Since the proposed MS storage bin is located in this Desert area formed by mostly uniformed, sandy soils, and its structure is not much larger than any of the nearby buildings, therefore, no drilling was performed. Instead, two 6' x 3', 5-foot deep trenches were dug near the two corners of the proposed location of the MS storage bin. One trench was excavated along the East-West direction, and the other was along the North-South direction. In addition, soil information and data are also referred to, and obtained from the previous LOTB located at the Boron Avenue OC (Reference 1).

Subsurface Conditions

Based on soil information and visual observation of the two trenches, this Mojave Desert area consists mainly of non-marine alluvium including the top 30 to 40-foot layer of medium dense to dense, moist, fine Sand with Silt and little mineral. Underlain below are layers of dense to very dense, fine Sand. Water was not observed in the trenches nor previously recorded in the LOTB in surrounding areas. In fact, the ground water level in the nearby well (Reference 3) was recorded at around 2288-foot elevation, which is more than 150 feet below the ground surface.



EQ Map (Hazard Map 1996)

Seismic

The project site is located approximately 2.0 miles west of the LOCKHART/S (LHS) fault, about 3.0 miles east of the KRAMER HILL (KRH) and 5.0 miles east of LEUHMANN (LMN) faults. Based on the Department's 1996 Seismic Hazard Map, Maximum Credible Earthquake (MCE) is

7.25. The mean Peak Bedrock Acceleration (PBA) is estimated as 0.5 g at this site. The area is not considered prone to surface rupture due to being located far away from fault movement.

Soil Foundation Information

According to information provided by the HQ's Design Architect, our calculations show the soil bearing capacity for this storage bin as follows:

Material Description	Unit Weight (PCF)	Friction Angle (Degree)	Cohesion (PSF)	Bearing Capacity (KSF)*
Medium Dense to Dense, Fine SAND with some SILT	125.0	30	50	4.0*

* With a Safety Factor of 3.0.

Corrosion

The non-marine alluvium in the vicinity of this area indicates generally that soils are not corrosive.

Conclusions and Recommendations

In summary, our conclusions and recommendations are as follows:

- Based on the highest water level of in the nearby well, ground water level in this area should be at least, more than 150 feet below the ground surface.
- Foundation materials are suitable for the proposed MS storage structure. The soils are also satisfied to the required, minimum bearing capacity of 1,500 PSF.
- Soil parameters are recommended for foundation design as: Density $\gamma = 125$ pcf, frictional angle $\phi = 30^\circ$ and cohesion $C = 50$ psf

If you have any question, please call Cuong Nguyen at (916) 227-4513.

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MS Storage Bin
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Prepared by: Date: September 3, 2009

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Project file