March 12, 2012

Albuquerque Metropolitan Arroyo Flood Control Authority
2600 Prospect NE
Albuquerque, New Mexico 87107

Attn: Mr. Kurt Wagener
P: [505] 884-2215
E: kwagener@amafca.org

Re: Limited Geotechnical Engineering Evaluation
La Cueva Channel Diversion Berm
Barstow Street NE and Alameda Boulevard NE
Albuquerque, New Mexico
Terracon Project No. 66125018

Dear Mr. Wagener:

Terracon has completed a limited geotechnical engineering evaluation for the existing berm located near the intersection of Barstow Street NE and Alameda Boulevard NE in Albuquerque, New Mexico. The scope of the services performed for this project included a site reconnaissance by a principal engineer, review of existing geotechnical data at or near the project site, and a settlement analyses.

## 1.0 PROJECT DESCRIPITION

| ITEM | DESCRIPTION |
|---|---|
| **Structure/Feature** | The project consists of an existing earthen berm constructed adjacent and along the west side of the La Cueva Channel. The berm is located in an unlined portion of the channel and up gradient and adjacent to the Portland cement concrete lined section of the channel. The berm diverts storm water runoff to the Portland cement concrete lined portion of the channel. |
| **Lateral Dimensions** | The berm was observed to be about 300 feet in length with a crest width of about 15 feet. |
| **Time of Construction** | It is our understanding that the berm was originally constructed in April of 2007, with an additional 2 feet of engineered fill placed at the crest of the berm in late 2010 in order to increase freeboard height. |

| ITEM | DESCRIPTION |
|---|---|
| **Embankment Height and Grading** | During original and subsequent grading operations, about 12 to 13 feet of fill placed at the north end and about 2 to 3 feet at the south end.<br>It is our understanding that the original engineered fill placement was performed by another geotechnical consultant in accordance with plans and specifications (90 percent of maximum dry density and near optimum moisture content per ASTM D1557).<br>The subsequent fill placement operations was observed and tested on a periodic basis by Terracon Consultants, Inc. (Project No. 66111004). Density compaction test results have been provided under separate cover |
| **Cut and fill slopes** | The interior face of the berm was observed to be at about a 1:1 (horizontal:vertical) configuration and covered with basalt rip rap and wire mesh. The exterior face of the berm was observed to be at about a 2:1 (horizontal:vertical) configuration with exposed soil. |
| **Hydraulic Conditions** | It is our understanding that for 100-Year Storm Event, the berm was designed to detain water for a maximum of 6 hours. |

## 2.0 SUBSURFACE EXPLORATION AND TESTING PROCEDURES

Subsurface exploration was performed by others on the adjacent lots located on Rich Court NE and Halstrom Court NE, located directly west of the existing berm. The subsurface exploration was performed by Earthworks Engineering Group, LLC (Project Nos. A08-202 and A04-252) and included drilling four (4) borings to a depth of about 21-½ feet below existing site grade.

Based upon review of the reports, lithologic logs of the test borings were recorded by a field engineer during the drilling operations. At selected intervals, samples of subsurface materials and penetration tests were taken by driving split-spoon samplers (S). The number of blows required to advance the sampler the last 12 inches of an 18-inch sampling interval was recorded as the standard penetration resistance value (N-value).

Groundwater measurements are provided (if encountered) on the logs of borings as performed by others.

# 3.0 SUBSURFACE CONDITIONS

## 3.1 Subsurface Conditions

Specific conditions encountered at the boring locations are indicated on the individual boring logs. Stratification boundaries on the boring logs represent the approximate location of changes in soil types; in-situ, the transition between materials may be gradual. Details for the borings can be found on the attached boring logs as provided by AMAFCA and performed by Earthworks Engineering Group, LLC. Based on the results of the borings, subsurface conditions on the project site can be generalized as follows:

| Description | Approximate Depth to Bottom of Stratum (feet) | Material Encountered | Consistency/Density |
|---|---|---|---|
| Stratum 1 | 21-½ | Poorly graded to silty sand with varying amounts of gravel. | Medium Dense |

Laboratory tests as part of these studies indicate that the sands are non-plastic and cohesionless. The amount of fines (passing Minus 200 Sieve) ranged from about 6 to 35 percent. The in-situ moisture contents ranged from about 1.2 to 7.8 percent.

# 4.0 GROUND WATER INFORMATION

Based upon review of the logs provided by Earthworks Engineering Group, LLC, groundwater was not observed in the test borings at the time of field exploration. These observations represent groundwater conditions at the time of the field exploration and may not be indicative of other times, or at other locations. Groundwater conditions can change with varying seasonal and weather conditions, and other factors.

Fluctuations in groundwater levels can best be determined by implementation of a groundwater monitoring plan. Such a plan would include installation of groundwater monitoring wells, and periodic measurement of groundwater levels over a sufficient period of time.

# 5.0 SETTLEMENT ANALYSES

## 5.1 Method of Analyses

In accordance with the request by URS Corporation, a settlement analysis was completed using the existing geotechnical data outlined above to determine the effects of the embankment

loading on the underlying native foundation soil from a post-construction standpoint. Per the request of URS Corporation, the settlement analysis was performed in accordance with U.S. Army Corps of Engineers "Engineering and Design – Settlement Analysis", Engineer Manual EM-1110-1-1904, Chapter 3, referred hereafter as the Specifications. The analysis presented herein is limited to the evaluation of immediate settlement and consolidation settlement of soil for static loads.

As outlined in Chapter 3 of the Specifications, "primary consolidation and secondary compression settlements are usually small if the effective stress in the foundation soil applied by the structure is less than the maximum effective past pressure of the soil". In addition, "primary consolidation/compression is normally insignificant in cohesionless soils and occurs rapidly because these soils have relatively large permeabilities". "Secondary compression settlement is in the form of soil creep which is largely controlled by the rate at which the skeleton of compressible soils, particularly clays, silts, and peats, can yield and compress".

Based upon the cohesionless soils encountered at or near the project site, it is our opinion that immediate settlement applies to the surface and subsurface soils associated with the foundation soils supporting the existing embankment. In addition, it is our opinion that primary compression is anticipated to occur in relatively short time frame and likely instantaneous with the construction of the embankment. In addition, due to the cohesionless nature of the soils, it is our opinion that secondary compression settlement is considered to be negligible.

To calculate the settlement of the foundation soils due to the existing constructed embankment, four methods were used as outlined in the Specifications and included the Alpan Approximation, the Schultze and Sherif Approximation, the Modified Terzaghi and Peck Approximation, and the Schmertmann Approximation. Using the existing geotechnical data outlined above, the following settlement values were calculated and summarized in the following table:

| Settlement Method | Approximate Settlement (in.) |
|---|---|
| Alpan | 1-½ |
| Schultze and Sherif | 1 |
| Modified Terzaghi and Peck | ½ |
| Schmertmann | 1 |

The settlement calculations and computer output sheet have been attached. It should be noted that the settlement calculation results are based upon existing information and data provided by others and under static conditions.

## 5.2 Settlement Approximations

Based upon the time that has elapsed since construction and the cohesionless nature of the subsurface soil conditions, it is our opinion the most, if not all, of the appreciable settlement due to the loads of the embankment has occurred. However, due to the variations in the calculated

settlement approximations outlined above, the potential variations in the subsurface conditions, and subsequent future storm events causing wetting and possible additional settlement of the foundation soils, we recommend that the annual maintenance program include inspection and survey of the channel berm. The magnitude of additional settlement will be directly related to the depth of surface water infiltration. If the foundation soils are subjected to wetting beyond previously occurring depths, additional settlement would likely occur. If appreciable settlement or erosion due to storm events has occurred that significantly impact the required freeboard, additional engineered fill should be placed to compensate for this loss in capacity.

## 6.0 GENERAL COMMENTS

The analyses presented in this report are based upon the data obtained from the borings performed by others at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between the borings, across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until several years after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that significant changes in the site conditions, the conclusions contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

We have appreciated being of service to you in the geotechnical evaluation phase of this project. If you have any questions concerning this letter, test results, and consulting services, please do not hesitate to contact us.

Terracon

Sincerely,
**Terracon Consultants, Inc.**


Michael E. Anderson, P.E.
Office Manager/Principal

Kim M. Preston, P.E. FOR
Senior Associate

Enclosures: Boring Location Plan (Earthworks Engineering Group, LLC Project Nos. A08-202 and A04-252)
Boring Logs (Earthworks Engineering Group, LLC Project Nos. A08-202 and A04-252)
Laboratory Test Results (Earthworks Engineering Group, LLC Project Nos. A08-202 and A04-252)
Settlement Calculations and Computer Output Sheet

EARTHWORKS ENGINEERING GROUP, L.L.C.
314 EL PUEBLO NW• ALBUQUERQUE, NM 87114
505-899-4886•505-899-4861(FAX)

# GEOTECHNICAL INVESTIGATION

## RICH COURT
## ALBUQUERQUE, NEW MEXICO

EEG Project No.: A08-202

Prepared for:

LLAVE CONSTRUCTION

Prepared by

Lee Hopkins, Geologist

Earthworks Engineering Group, LLC.

Reviewed by

Dave Liebelt, P.E.

DAVID K. LIEBELT NEW MEXICO 14069 REGISTERED PROFESSIONAL ENGINEER

August 21, 2008

# LOG OF TEST HOLE NO.: 1

| | |
|---|---|
| **Project:** | Rich Court |
| **Date Drilled:** | 8/4/2008 |
| **Drilling Method:** | 7" Hollow Stem Auger |
| **Surface Elevation:** | Not Available |
| **Depth to Groundwater:** | Not Encountered |
| **Bottom of Hole:** | 16.5 feet |

| Depth (feet) | N-Value (blows/ft) | Sample Type | Unified Class. | Description | Dry Density (pcf) | Moisture Content (%) |
|---|---|---|---|---|---|---|
| | 10 | S | SM | FILL, SAND, silty, fine to coarse grained, loose to medium dense, moist, brown | | 5.7 |
| 2 | 13 | S | | - medium dense | | 7.4 |
| 5 | 30 | S | | - dense | | 7.5 |
| | | | SM | NATURAL GROUND, SAND, silty, fine to coarse grained, medium dense, moist, brown | | |
| 10 | 12 | S | | | | 7.8 |
| 15 | 7 | S | SP SM | SAND, slightly silty, fine to coarse grained, loose, slightly moist, light brown | | 4.6 |
| | | | | **Bottom of Hole at 16.5 feet** | | |
| 20 | | | | | | |
| 25 | | | | | | |

# LOG OF TEST HOLE NO.: 2

| | |
|---|---|
| **Project:** | Rich Court |
| **Date Drilled:** | 8/4/2008 |
| **Drilling Method:** | 7" Hollow Stem Auger |
| **Surface Elevation:** | Not Available |
| **Depth to Groundwater:** | Not Encountered |
| **Bottom of Hole:** | 16.5 feet |

| Depth (feet) | N-Value (blows/ft) | Sample Type | Unified Class. | Description | Dry Density (pcf) | Moisture Content (%) |
|---|---|---|---|---|---|---|
| | | | SM | SAND, silty, fine grained, moist, brown | | |
| 2 | 12 | S | SP SM | SAND, slightly silty, fine to coarse grained, medium dense, medium moist, light brown | | 2.2 |
| 5 | 9 | S | | - loose | | 3.8 |
| 10 | 13 | S | | - medium dense | | 1.7 |
| 15 | 17 | S | SM | SAND, silty, fine to coarse grained, medium dense, medium moist, light brown | | 4.4 |
| | | | | **Bottom of Hole at 16.5 feet** | | |
| 20 | | | | | | |
| 25 | | | | | | |

# LABORATORY TEST RESULTS

| Test Hole | Depth (feet) | Dry Density (pcf) | Moisture Content (%) | Liquid Limit | Plasticity Index | Percent Passing - U.S. Sieve Numbers | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 1-1/2" | 3/4" | 3/8" | No. 4 | No. 8 | No. 16 | No. 30 | No. 50 | N0. 100 | No. 200 |
| 1 | 0 | | 5.7 | | | | 100 | 97 | 94 | 88 | 80 | 74 | 65 | 50 | 34.4 |
| | 2 | | 7.4 | | | | 100 | 96 | 89 | 75 | 61 | 50 | 43 | 36 | 26.4 |
| | 5 | | 7.5 | | | | 100 | 99 | 93 | 80 | 66 | 55 | 47 | 38 | 27.8 |
| | 10 | | 7.8 | | | | 100 | 99 | 94 | 83 | 72 | 63 | 55 | 46 | 33.1 |
| | 15 | | 4.6 | | | | 100 | 98 | 87 | 67 | 50 | 40 | 33 | 28 | 19.8 |
| | | | | | | | | | | | | | | | |
| 2 | 2 | | 2.2 | | | 100 | 95 | 95 | 85 | 62 | 39 | 23 | 14 | 9 | 6.1 |
| | 5 | | 3.8 | | | | 100 | 99 | 89 | 68 | 46 | 32 | 22 | 17 | 11.9 |
| | 10 | | 1.7 | | | | 100 | 99 | 90 | 69 | 46 | 30 | 19 | 11 | 5.8 |
| | 15 | | 4.4 | | | | | 100 | 94 | 79 | 63 | 54 | 48 | 43 | 34.8 |

*Table 2. - Summary of Laboratory Test Results*

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314 EL PUEBLO NW• ALBUQUERQUE, NM 87114
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# GEOTECHNICAL INVESTIGATION

## HALSTROM COURT
## ALBUQUERQUE, NEW MEXICO

EEG Project No.: A04-252

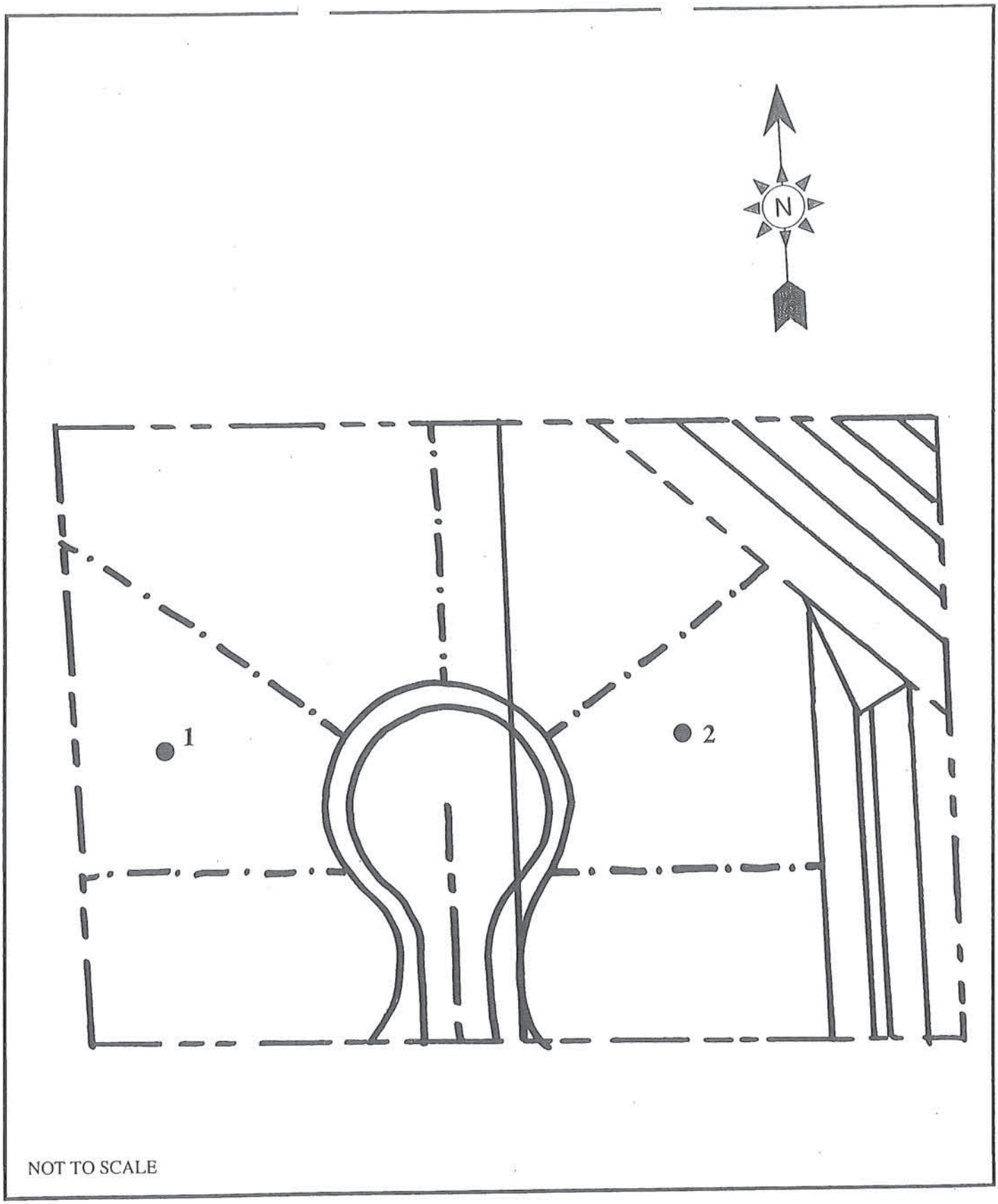
Prepared for:

LLAVE CONSTRUCTION

Prepared by


Dave Liebelt, P.E.
Earthworks Engineering Group, LLC.

October 11, 2004




NOT TO SCALE

# SITE PLAN

● TEST HOLE LOCATION

FIGURE 1.

# LOG OF TEST HOLE NO.: 1

| | |
|---|---|
| Project: | Halstrom Court |
| Date Drilled: | 10/6/2004 |
| Drilling Method: | 7" Hollow Stem Auger |
| Surface Elevation: | Not Available |
| Depth to Groundwater: | Not Encountered |
| Bottom of Hole: | 21.5 ft. |

| Depth (feet) | N-Value (blows/ft) | Sample Type | Unified Class. | Description | Dry Density (pcf) | Moisture Content (%) |
|---|---|---|---|---|---|---|
| | | | SM | SAND, silty, fine to coarse grained, medium dense, medium moist, brown | | |
| 2 | 23 | S | | | | 2.8 |
| 5 | 22 | S | | | | 4.6 |
| | | | | -fine grained, interbedded with clean coarse layers | | |
| 10 | 17 | S | | | | 6.6 |
| 15 | 18 | S | | | | 7.2 |
| 20 | 16 | S | | | | 7.8 |
| | | | | Bottom of Hole @ 21.5 feet | | |
| 25 | | | | | | |

# LOG OF TEST HOLE NO.: 2

| | |
|---|---|
| Project: | Halstrom Court |
| Date Drilled: | 10/6/2004 |
| Drilling Method: | 7" Hollow Stem Auger |
| Surface Elevation: | Not Available |
| Depth to Groundwater: | Not Encountered |
| Bottom of Hole: | 21.5 ft. |

| epth (eet) | N-Value (blows/ft) | Sample Type | Unified Class. | Description | Dry Density (pcf) | Moisture Content (%) |
|---|---|---|---|---|---|---|
| 2 | 10 | S | SM | SAND, silty, fine to coarse grained, medium dense, medium moist, brown | | 1.8 |
| 5 | 11 | S | SP-SM | SAND, slightly silty, fine to coarse grianed, medium dense, slightly moist, brown | | 1.2 |
| 10 | 26 | S | SP | SAND, fine to coarse grained, medium dense, slightly moist, light brown | | 1.3 |
| 15 | 24 | S | SP-SM | SAND, slightly silty, fine to coarse grained, dense, slightly moist, light brown | | 1.7 |
| 20 | 25 | S | | | | 1.5 |
| | | | | Bottom of Hole @ 21.5 feet | | |
| 25 | | | | | | |

| Test Hole | Depth (feet) | Dry Density (pcf) | Moisture Content (%) | Liquid Limit | Plasticity Index | Percent Passing - U.S. Sieve Numbers | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 1-1/2" | 3/4" | 3/8" | No. 4 | No. 8 | No. 16 | No. 30 | No. 50 | N0. 100 | No. 200 |
| 1 | 2 | | 2.8 | | | | 100 | 95 | 89 | 72 | 51 | 37 | 28 | 22 | 13.3 |
| | 5 | | 4.6 | | | | 100 | 93 | 87 | 77 | 61 | 49 | 40 | 32 | 20.1 |
| | 10 | | 6.6 | | | | | | | | | | | | |
| | 15 | | 7.2 | | | | | | | | | | | | |
| | 20 | | 7.8 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| 2 | 2 | | 1.8 | | | | | | | | | | | | |
| | 5 | | 1.2 | | | | | | | | | | | | |
| | 10 | | 1.3 | | | | | | | | | | | | |
| | 15 | | 1.7 | | | | | | | | | | | | |
| | 20 | | 1.5 | | | | | | | | | | | | |

*Table 2. - Summary of Laboratory Test Results*

LA CUENTA SERM
TERRACON PROJECT NO. 66125018
3/7/12

1. ALPAN APPROXIMATION

$$p_i = m' \cdot \left[\frac{2B}{1+B}\right]^2 \cdot \frac{\alpha_0}{12} \cdot q$$

$$p_i = 5 \cdot \left[\frac{2(60)}{1+60}\right]^2 \cdot \frac{0.1}{12} \cdot 0.8125 \text{ tsf}$$

$$p_i = 0.13' = \underline{1.6''}$$

$L = 300 \quad B = 60$

$m' = \frac{L}{B} = \frac{300}{60} = 5$

$0 - 10' = N = 9$

$10' - 21' = N = 24$

$q_q = 13 \times \frac{125}{2,000} = 0.8125 \text{ tsf}$

$N_1 = 31 \quad \alpha_0 = 0.1'' / \text{tsf}$

2. SCHULTZE AND SHEKIF APPROXIMATION

$$p_i' = \frac{f \cdot q \cdot \sqrt{B}}{N_{AV4}^{0.87} \cdot (1 + 0.4\frac{D}{B})}$$

$$p_i = \frac{0.098 \cdot 0.8125 \cdot \sqrt{60}}{7 \cdot (1 + 0.4(\frac{1}{60}))}$$

$$p_i = \frac{0.6168}{7.08} = 0.087' = \underline{1.1''}$$

$L = 300 \quad B = 60$

$L/B = 5 \quad f = 0.098$

$N_{AV4} = 10 \quad N_{AV4}^{0.87} = 7$

$D = 1.0$

$q = 0.8125 \text{ tsf}$

$H = \leq 2B = \leq 120$

3. MODIFIED TERZAGHI AND PECK APPROXIMATION

$$p_i = \frac{q}{18 \cdot q_1}$$

$$p_i = \frac{0.8125 \text{ tsf}}{18 \cdot 1.5 \text{ tsf}} = 0.03' = \underline{0.36''}$$

$C_w = 1.0$

$q = 0.8125 \text{ tsf}$

$C_N = 1.8$

$N' = 10 \cdot 1.0 \cdot 1.8 = 18$

$q_1 = 1.5 \text{ tsf}$

4. SCHMERTMANN APPROXIMATION

$$p_i = C_1 \cdot C_2 \cdot \Delta p \cdot \sum_{i=1}^{n} \frac{\Delta z_i}{E_{s_i}} \cdot I_{z_i}$$

PER COMPUTER OUTPUT $p_i = \underline{0.6''}$

# Footing Analysis

Footing Analysis for Bearing Capacity and Settlement is based on criteria by Peck Hanson &Thornburn

- Footing settlement is based on either Shmertman or Meyerhoff criteria
- All footings are proportioned to tolerable settlement limits unless bearing capacity governs
- This analysis is for cohesionless soils only

**PROJECT**

| | |
|---|---|
| Project Name: | La Cueva Berm |
| Project Location: | Albuquerque, NM |
| Project Number: | 125018 |

## Footing Data

**Continuous Footings**

| | | |
|---|---|---|
| Maximum Size | 30.0 | ft. |
| Minimum Size | 25 | ft. |
| Increment for Size | 1 | ft. |
| Depth from Ground Surface | 0.5 | ft. |
| Depth of Surcharge | 0.5 | ft. |

**Square Footings**

| | | |
|---|---|---|
| Maximum Size | 30.0 | ft. |
| Minimum Size | 25.0 | ft. |
| Increment for Size | 1.0 | ft. |
| Depth from Ground Surface | 0.5 | ft. |
| Depth of Surcharge | 0.5 | ft. |

**Footing Settlement Criteria**

| | | |
|---|---|---|
| Max. Allowable Settlement | 1.0 | in. |
| Differential Settlement | 0.5 | in. |

**Factor Safety for Bearing Capacity**

| | |
|---|---|
| Min Factor of Safety | 3 |

## Subsurface Data

**Initial Conditons**

| | | |
|---|---|---|
| Number of Soil Layers | 2 | |
| Depth to Groundwater | 150 | ft. |

**This analysis was done using Schmertmann criteria**
**For silts, sandy silts or silty sands**

**Schmertman Soil Types**

| | |
|---|---|
| 1 | Silts, Sandy Silts & Slightly Cohesive Sand-Silt |
| 2 | Clean Fine to Medium Sands & Slightly Silty Sands |
| 3 | Coarse Sands & Sands with little Gravel |
| 4 | Sandy Gravels & Gravels |

**Soil Layer Properties**

| Layer Number | 1 | 2 |
|---|---|---|
| Depth from Ground Surface | 10 | 80 |
| Unit Weight of Layer ($\gamma$) pcf | 105 | 110 |
| Penetration Resistance "N" Blows/ft | 10 | 24 |
| Schmertman Soil Type (1 thru 4) | 1 | 2 |
| Schmertman Soil Modulus (tsf) | 40 | 168 |

# Square Footing Analysis

| Footing Width B (ft) | Average SPT N | Internal Friction $\phi$ | Average Unit Weight $\gamma$ | Bearing Capacity Factors $N_\gamma$ | Bearing Capacity Factors $N_q$ | Water Correction Factor $C_w$ | Bearing Capacity Calculations (psf) $0.4\gamma BN_\gamma$ | Bearing Capacity Calculations (psf) $\gamma DfN_q$ | Ultimate Bearing Capacity | Contact Pressure (ksf) | Factor of Safety | Footing Settlement S (in) | Column Load (kips) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25.00 | 21.3 | 33.4 | 109.1 | 28.1 | 27.4 | 1.0 | 30661 | 1439 | 32.10 | 1.07 | 30.1 | 0.50 | 666.9 |
| 26.00 | 21.4 | 33.4 | 109.1 | 28.3 | 27.5 | 1.0 | 32084 | 1444 | 33.53 | 1.26 | 26.6 | 0.60 | 852.8 |
| 27.00 | 21.5 | 33.5 | 109.1 | 28.4 | 27.6 | 1.0 | 33507 | 1449 | 34.96 | 1.45 | 24.1 | 0.70 | 1057.5 |
| 28.00 | 21.6 | 33.5 | 109.2 | 28.6 | 27.7 | 1.0 | 34932 | 1454 | 36.39 | 1.63 | 22.3 | 0.80 | 1281.6 |
| 29.00 | 21.7 | 33.5 | 109.2 | 28.7 | 27.8 | 1.0 | 36358 | 1458 | 37.82 | 1.81 | 20.8 | 0.90 | 1525.5 |
| 30.00 | 21.8 | 33.5 | 109.2 | 28.8 | 27.9 | 1.0 | 37784 | 1462 | 39.25 | 1.99 | 19.7 | 1.00 | 1789.7 |