

**GEOTECHNICAL ENGINEERING
SERVICES REPORT
NO. 1-70414
SENIOR COMMUNITY CENTER
AND FIRE STATION
CERRILLOS, NEW MEXICO**

GEO-TEST, INC.
3204 RICHARDS LANE
SANTA FE,
NEW MEXICO
87507
(505) 471-1101
FAX (505) 471-2245

8528 CALLE ALAMEDA NE
ALBUQUERQUE,
NEW MEXICO
87113
(505) 857-0933
FAX (505) 857-0803

2805-A LAS VEGAS CT.
LAS CRUCES,
NEW MEXICO
88007
(575) 526-6260
FAX (575) 523-1660

PREPARED FOR:
**SANTA FE COUNTY
PUBLIC WORKS – PROJECTS DIVISION**

May 23, 2017
Job No. 1-70414

**Santa Fe County
Public Works – Projects Division
PO Box 276
Santa Fe, New Mexico 87504-0276**

ATTN: Ron Sandoval
Project Manager

**RE: Geotechnical Engineering Services Report
Senior Community Center & Fire Station
Cerrillos, New Mexico**

Dear Mr. Sandoval:


Submitted herein is the Geotechnical Engineering Services Report for the above referenced project. The report contains the results of our field investigation, laboratory testing, and recommendations for foundation design, slab support, pavement design, as well as criteria for site grading.

It has been a pleasure to serve you on this project. If you should have any questions, please contact this office.

Respectfully submitted:
GEO-TEST, INC.



Patrick R. Whorton, EI



Robert D Booth, P.E.

Professional Engineer Seal: ROBERT D. BOOTH, NEW MEXICO, 5711, LICENSED PROFESSIONAL ENGINEER

GEO-TEST, INC.
3204 RICHARDS LANE
SANTA FE,
NEW MEXICO
87507
(505) 471-1101
FAX (505) 471-2245

8528 CALLE ALAMEDA NE
ALBUQUERQUE,
NEW MEXICO
87113
(505) 857-0933
FAX (505) 857-0803

2805-A LAS VEGAS CT.
LAS CRUCES,
NEW MEXICO
88007
(575) 526-6260
FAX (575) 523-1660

Table of Contents

INTRODUCTION 4
PROPOSED CONSTRUCTION..... 4
FIELD EXPLORATION 4
LABORATORY TESTING 5
SITE CONDITIONS 5
SUBSURFACE SOIL CONDITIONS..... 5
CONCLUSIONS AND RECOMMENDATIONS 5
FOUNDATIONS..... 6
LATERAL LOADS..... 7
SLABS ON GRADE 7
PAVEMENT SECTION DESIGN..... 8
SITE-GRADING 9
MOISTURE PROTECTION 10
FOUNDATION REVIEW AND INSPECTION..... 11
CLOSURE 12
BORING LOCATION MAP 13
BORING LOGS..... 14
SUMMARY OF LABORATORY RESULTS..... 22
GRAIN SIZE DISTRIBUTION 24

GEO-TEST, INC.
3204 RICHARDS LANE
SANTA FE,
NEW MEXICO
87507
(505) 471-1101
FAX (505) 471-2245

8528 CALLE ALAMEDA NE
ALBUQUERQUE,
NEW MEXICO
87113
(505) 857-0933
FAX (505) 857-0803

2805-A LAS VEGAS CT.
LAS CRUCES,
NEW MEXICO
88007
(575) 526-6260
FAX (575) 523-1660

INTRODUCTION

This report presents the results of the geotechnical engineering services investigation performed for the proposed new Senior Community Center and Fire Station to be constructed in Cerrillos, New Mexico.

The objectives of this investigation were to:

- 1) Evaluate the nature and engineering properties of the subsurface soils underlying the site.
- 2) Provide recommendations for foundation design, slab support, pavement design, as well as criteria for site grading.

The investigation includes subsurface exploration, selected soil sampling, laboratory testing of the samples, performing an engineering analysis and preparation of this report.

PROPOSED CONSTRUCTION

It is understood that the project consists of the construction of two new structures with associated parking lots and drive lanes. The structures will be single story, metal and wood framed with no basements. Maximum column and wall loads are unknown at this time but are anticipated to be relatively light, not exceeding about 2 kips per lineal foot on walls and 40 kips on columns.

Should structural loads or other project details vary significantly from those outlined above, this firm should be notified for review and revision of recommendations contained herein.

FIELD EXPLORATION

A total of eight (8) exploratory borings were drilled on site; three (3) to depths of 15 and 20 feet within the footprint of the new Senior Center, one (1) to a depth of 20 feet within the footprint of the new Fire Station, and four (4) to depths of 5 feet within the parking lot and drive lanes. The locations of the borings are shown on the attached Boring Location Map, Figure 1. During the test drilling, the soils encountered in the borings were continuously examined, visually classified, and logged. The boring logs are presented in a following section of this report. Drilling was accomplished with a truck mounted drill rig using 5.5-inch diameter continuous flight hollow stem auger. Subsurface materials were sampled at five foot intervals or less utilizing an open tube split

barrel sampler and a brass ring-lined sampler driven by a standard penetration test hammer.

LABORATORY TESTING

Selected soil samples were tested in the laboratory to determine certain engineering properties of the soils. Moisture contents were determined to evaluate the various soil deposits with depth. The results of these tests are presented on the boring logs.

Sieve analysis and Atterberg limits tests were performed on selected samples to aid in soil classification. The results of these tests are presented in the Summary of Laboratory Results and on the individual test reports presented in a following section of this report.

SITE CONDITIONS

A brief site reconnaissance was performed during our site exploration. The site is located south of Main Street in Cerrillos between Highway 14 and 1st Street, west of the existing Post Office. The site is currently a relatively flat vacant lot populated by native shrubs and grasses, and the remains of an old corral.

SUBSURFACE SOIL CONDITIONS

As indicated by the exploratory borings, the soils underlying the site consist of a surficial layer of non-plastic, loose to medium dense silty sand which extends depths of about 8 to 9 feet below existing surface grade. Below this layer, a 1 to 3 foot thick layer of low plasticity, firm, sandy/silty clay was encountered. Below the clay layer, non-plastic, medium dense, poorly graded sand with gravel was encountered and extended to the full depths explored.

Free groundwater was encountered in the borings at a depth of between 18 and 19 feet below existing grade. The groundwater level may fluctuate seasonally and could be higher or lower during certain times of the year. Soil moisture contents above the water table were relatively low.

CONCLUSIONS AND RECOMMENDATIONS

The some of the near surface soils underlying the site are loose in their present condition and are not considered suitable to provide reliable support of the proposed structure. Foundations bearing on these soils would be susceptible to excessive differential settlements, particularly upon significant moisture

increases. However, with special site preparation, the proposed structure can be supported on shallow spread type footings bearing directly on properly compacted structural fill.

The site preparation would involve overexcavation of the existing soils throughout the building areas to such an extent as to provide for at least 2.0 feet of properly compacted, non-expansive structural fill below all foundations and floor slabs. The limits of the overexcavation should also extend laterally from the footing perimeters a distance equal to the depth of fill beneath their bases. The exposed native soils at the base of the excavation should be densified prior to placement of structural fill. The overexcavated material may be blended and used as structural fill provided it meets the structural fill requirements outlined in the Site Grading section of this report. Detailed recommendations for foundation design and the required site grading are presented in the following sections of this report.

Post-construction moisture increases in the supporting soils could cause some differential foundation movements. Therefore, moisture protection is considered a critical design consideration and should be reflected in overall site grading and drainage details as recommended in the Moisture Protection section of this report.

FOUNDATIONS

Shallow spread-type footings, bearing directly on a minimum thickness of 2.0 feet of properly compacted structural fill, are recommended for the support of the structures. An allowable soil bearing pressure of 2,000 pounds per square foot is recommended for footing design. This bearing pressure applies to full dead load plus realistic live loads, and can be safely increased by one-third for totals loads including wind and seismic forces.

Exterior footings should be established a minimum of 2.0 feet below lowest adjacent finished grade, while interior footings should be at least 12 inches below finished floor grade. The minimum recommended width of square and continuous footings is 2.0 and 1.33 feet, respectively.

Total settlements of foundations designed and constructed as recommended herein are estimated not to exceed $\frac{3}{4}$ inch for the soil moisture contents encountered during this investigation or moisture contents introduced during construction. Differential movements should be less than 75 percent of total movements. Significant post-construction moisture increases in the supporting soils could create additional movements, and thus, the moisture

GEO-TEST, INC.
3204 RICHARDS LANE
SANTA FE,
NEW MEXICO
87507
(505) 471-1101
FAX (505) 471-2245

8528 CALLE ALAMEDA NE
ALBUQUERQUE,
NEW MEXICO
87113
(505) 857-0933
FAX (505) 857-0803

2805-A LAS VEGAS CT.
LAS CRUCES,
NEW MEXICO
88007
(575) 526-6260
FAX (575) 523-1660

protection provisions as recommended in a following section of this report are considered important for the satisfactory performance of the structures.

LATERAL LOADS

Resistance to lateral forces will be provided by soil friction between the base of floor slabs and footings and the soil and by passive earth resistance against the sides of the footings and stem walls. A coefficient of friction of 0.40 should be used for computing the lateral resistance between bases of footings and slabs and the soil. With backfill placed as recommended in the site grading section of this report, a passive soil resistance equivalent to a fluid weighing 325 pounds per cubic foot should be used for analysis.

SLABS ON GRADE

Adequate support for lightly loaded slab-on-grade floors will be provided by structural fill when compacted as recommended in a following section of this report. Thus, the use of granular base for structural support of lightly loaded slabs is not considered necessary. However, should it be desired as a working surface, a course of granular base can be placed beneath concrete floor slabs.

Where granular base is used beneath the slabs, it should have a plasticity index of no greater than 3 and meet the following grading requirements:

Sieve Size Square Openings	Percent Passing by Dry Weight
1 Inch	100
¾ Inch	70-100
No. 4	35-85
No. 200	0-10

The granular base should be compacted to at least 95 percent of maximum dry density as determined in accordance with ASTM D1557.

The granular base will act as a capillary barrier, but will not totally eliminate the rise of moisture to the slabs. If floor coverings are proposed which are highly sensitive to moisture, it is recommended the slab be placed in accordance with the procedures recommended by the American Concrete Institute (ACI 302.1R-04).

Any heavily loaded slabs on the project bearing on the structural fill should be designed using a modulus of subgrade reaction of 200 pounds per square inch per inch of deflection. If a 6 inch thickness of granular base is placed and

compacted beneath the slabs, the modulus of subgrade reaction can be increased to 300 pounds per square inch per inch of deflection.

PAVEMENT SECTION DESIGN

The existing subgrade soils underlying the proposed parking lots and drive areas generally classify as A-2-4 according to the American Association of State Highway and Transportation Officials (AASHTO) soil classification system. According to the NMDOT, these soils possess correlated R-Values on the order of 55 and are considered good to excellent subgrade materials for pavements.

Based on the above, it is recommended that the existing silty sands be used as a subgrade material. After clearing, grubbing and grading and before the placement of the pavement sections recommended below, the native subgrade material should be scarified to a depth of 12 inches, moisture conditioned to optimum moisture content or above, and compacted to 95 percent or greater of maximum dry density. Should structural fill be required beneath pavements, it should consist of the native silty sands and be placed onto the prepared native material according to the methods outlined within the Site Grading section of this report.

With the above recommended subgrade preparation, a flexible pavement section consisting of 3 inches of Hot Mix Asphalt (HMA) over 6 inches of aggregate base course, placed directly over the minimum of 12 inches of properly compacted subgrade material is recommended for the project. The recommended pavement section applies to automobile parking and drive lanes only. Areas subjected to heavy truck traffic, including delivery trucks, trash collection trucks, and fire trucks, should have the asphaltic concrete sections thickened by 1 inch. The pavement recommendations are in general conformance with publications prepared by the *Asphalt Institute*.

The HMA should be SPIII or SPIV, compacted to a target density of 94.5 percent, with a minimum compaction of 92 and a maximum compaction of 97 percent of the theoretical maximum density. The recommended Performance Grade (PG) asphalt binder used should be 58-28 according to the NMDOT Design Manual Exhibit 620-9. Aggregate base course should meet the specifications for NMDOT Type I base course.

With the above recommended subgrade preparation, a rigid pavement section consisting of 6 inches of Portland Cement Concrete (PCC) placed directly over the minimum of 12 inches of properly compacted subgrade materials recommended for the project. The pavement recommendations are in general

GEO-TEST, INC.
3204 RICHARDS LANE
SANTA FE,
NEW MEXICO
87507
(505) 471-1101
FAX (505) 471-2245

8528 CALLE ALAMEDA NE
ALBUQUERQUE,
NEW MEXICO
87113
(505) 857-0933
FAX (505) 857-0803

2805-A LAS VEGAS CT.
LAS CRUCES,
NEW MEXICO
88007
(575) 526-6260
FAX (575) 523-1660

conformance with ACI 330R-01 *Guide for Design and Construction of Concrete Parking Lots*.

The PPC should have a minimum compressive strength of 4000 psi, be air entrained to between 4.5 and 7.0 percent, and have a maximum aggregate size of 2 inches. The concrete should be placed at a maximum slump of 4 inches. Admixtures may be used to increase the slump and workability provided the compressive strength is not compromised.

The use of reinforcement within the PCC should be left to the discretion of the structural engineer, however, it is recommended that the pavement be constructed with load transfer joints designed for heavy traffic.

SITE-GRADING

The following guidelines should be included in the project construction specifications to provide a basis for quality control during site grading. It is recommended that all structural fill and backfill be placed and compacted under engineering observation and in accordance with the following:

- 1) After clearing and grubbing, the existing site soils throughout the building areas should be overexcavated to such an extent as to provide for at least 2.0 feet of properly compacted non-expansive structural fill beneath all footings and floor slabs. The overexcavation limits should extend laterally beyond the footing perimeters equal to the depth of fill beneath their bases. The soils exposed at the base of the overexcavation should be densified before the placement of structural fill.
- 2) The exposed native soils in the base of the excavation within the building areas should be scarified to a depth of 12 inches and moisture conditioned to optimum moisture content or above. The area shall then be compacted to a minimum of 95 percent of maximum dry density as determined in accordance with ASTM D-1557.
- 3) The results of this investigation indicate that most of the on-site soils will meet the criteria for structural fill, however, some blending may be required.
- 4) All structural fill or backfill material should be free of vegetation and debris and contain no rocks larger than 3 inches. Gradation of the backfill material, as determined in accordance with ASTM D-422, should be as follows:

GEO-TEST, INC.
3204 RICHARDS LANE
SANTA FE,
NEW MEXICO
87507
(505) 471-1101
FAX (505) 471-2245

8528 CALLE ALAMEDA NE
ALBUQUERQUE,
NEW MEXICO
87113
(505) 857-0933
FAX (505) 857-0803

2805-A LAS VEGAS CT.
LAS CRUCES,
NEW MEXICO
88007
(575) 526-6260
FAX (575) 523-1660

Size	Percent Passing
3 inch	100
No. 4	60 - 100
No. 200	20 - 50

- 4) The plasticity index should be no greater than 15 when tested in accordance with ASTM D-4318.
- 5) Fill or backfill, should be placed in 8-inch loose lifts and compacted with approved compaction equipment. Lifts should be reduced to 4-inches if hand held compaction equipment is used. Each lift should be firm and non-yielding.
- 6) All compaction of fill or backfill should be accomplished to a minimum of 95 percent of the maximum dry density, and within 2 percent of the optimum moisture content, as determined in accordance with ASTM D-1557.
- 7) Tests for degree of compaction should be determined by the ASTM D-1556 method or ASTM D-6938. Observation and field tests should be carried on during fill and backfill placement by the geotechnical engineer to assist the contractor in obtaining the required degree of compaction. If less than 95 percent is indicated, additional compaction effort should be made with adjustment of the moisture content as necessary until 95 percent compaction is obtained.

MOISTURE PROTECTION

Precautions should be taken during and after construction to minimize moisture increases of foundation soils. Positive drainage should be established away from the exterior walls of the structures. A typical adequate slope is 6 inches in the first 5 feet with positive drainage being provided from those points to streets or natural water courses. If necessary to provide positive drainage, the building areas should be raised above adjacent grade with structural fill. Backfill should be well compacted and should meet the specifications outlined in the site grading section of this report. Irrigation within 10 feet of foundations should be carefully controlled. All utility trenches leading into the structures should be backfilled with compacted fill. Special care should be taken during installation of the subfloor sewers and water lines to reduce the possibility of post-construction soil moisture increases beneath the structures.

Proper landscaping and drainage maintenance is required to preclude accumulation of excessive moisture in the soils below the structures. Accumulations of excessive moisture could be harmful to some types of interior flooring, to HVAC ductwork beneath the slabs, and can weaken or cause other changes in the soils supporting the foundations. This can cause additional differential movement of foundations and can result in cosmetic or structural damage to the structures.

If any water line leaks or if irrigation system leaks are detected, they should be promptly repaired. In addition, if any depressions develop from the settlement of soils in utility trenches or other areas, they should be promptly backfilled to maintain the grade so that surface water drains rapidly away from the structures.

Increases in the subgrade moisture content can weaken the subgrade soils, thereby shortening pavement life and causing localized failure. Therefore, all paved areas should be graded to drain and not allow any ponding on the surface of the paved areas. Positive drainage should be provided away from the perimeter of all paved areas for a distance of at least 10 feet. It is recommended that the pavement be graded with a 2 percent crown or slope to facilitate drainage.

The foregoing recommendations should only be considered minimum requirements for overall site development. It is recommended that a civil/drainage engineer be consulted more detailed grading and drainage recommendations.

FOUNDATION REVIEW AND INSPECTION

This report has been prepared to aid in the evaluation of this site and to assist in the design of this project. It is recommended that the geotechnical engineer be provided the opportunity to review the final design drawings and specifications in order to determine whether the recommendations in this report are applicable to the final design. Review of the final design drawings and specifications should be noted in writing by the geotechnical engineer.

In order to permit correlation between the conditions encountered during construction and to confirm recommendations presented herein, it is recommended that the geotechnical engineer be retained to perform continuous observations and testing during the earthwork portion of this project. Observation and testing should be performed during construction to confirm that suitable fill soils are placed upon competent materials and

GEO-TEST, INC.
3204 RICHARDS LANE
SANTA FE,
NEW MEXICO
87507
(505) 471-1101
FAX (505) 471-2245

8528 CALLE ALAMEDA NE
ALBUQUERQUE,
NEW MEXICO
87113
(505) 857-0933
FAX (505) 857-0803

2805-A LAS VEGAS CT.
LAS CRUCES,
NEW MEXICO
88007
(575) 526-6260
FAX (575) 523-1660

properly compacted and foundation elements penetrate the recommended soils.

CLOSURE

Our conclusions, recommendations and opinions presented herein are:

- 1) Based upon our evaluation and interpretation of the findings of the field and laboratory program.
- 2) Based upon an interpolation of soil conditions between and beyond the explorations.
- 3) Subject to confirmation of the conditions encountered during construction.
- 4) Based upon the assumption that sufficient observation will be provided during construction.
- 5) Prepared in accordance with generally accepted professional geotechnical engineering principles and practice.

This report has been prepared for the sole use of the Santa Fe County Public Works-Projects Division, specifically to aid in the design of the proposed new Senior Community Center and Fire Station to be constructed in Cerrillos, New Mexico, and not for use by any third parties.

We make no other warranty, either express or implied. Any person using this report for bidding or construction purposes should perform such independent investigation as they deem necessary to satisfy themselves as to the surface and subsurface conditions to be encountered and the procedures to be used in the performance of work on this project. If conditions encountered during construction appear to be different than indicated by this report, this office should be notified.

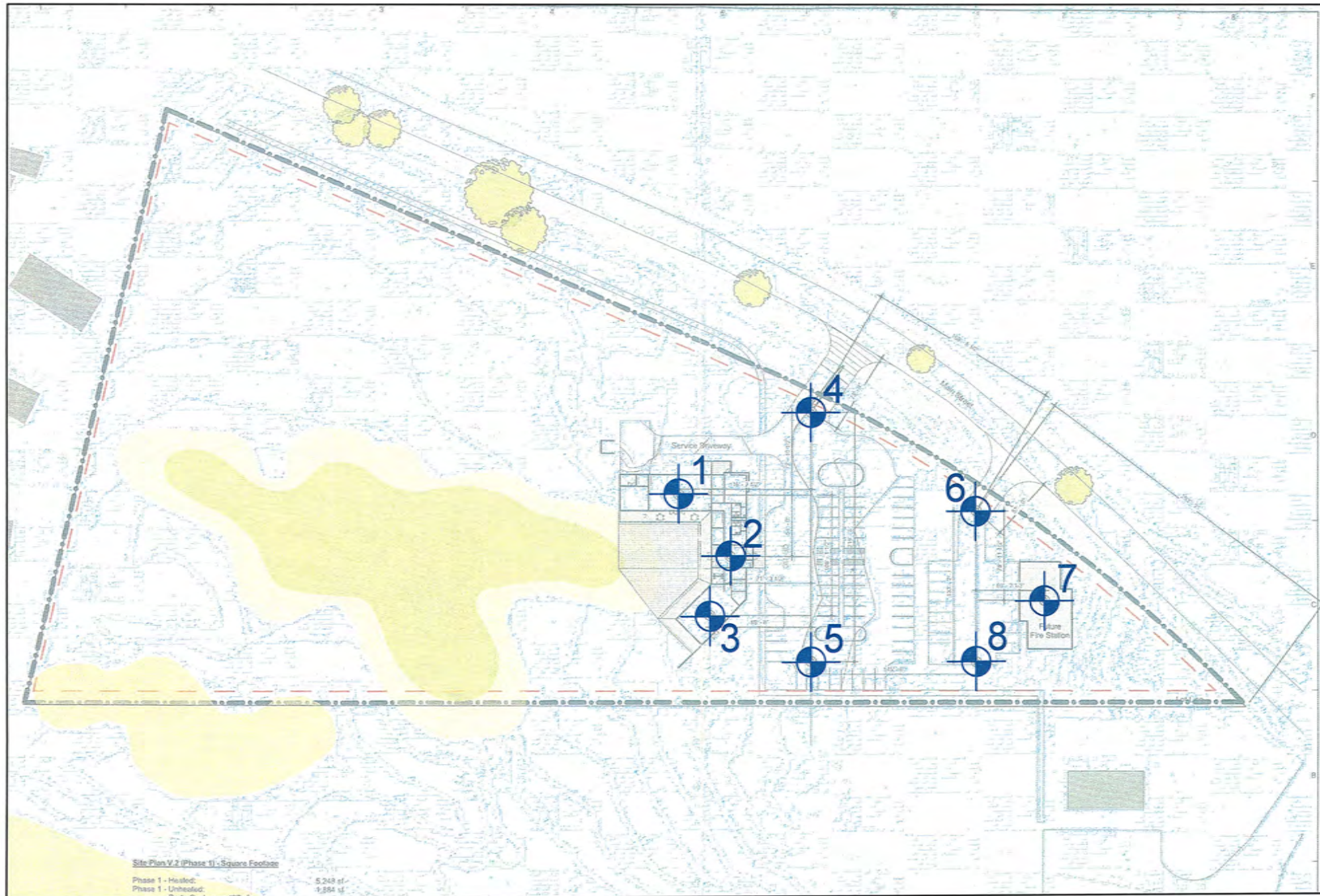
All soil samples will be discarded 60 days after the date of this report unless we receive a specific request to retain the samples for a longer period of time.

GEO-TEST, INC.
3204 RICHARDS LANE
SANTA FE,
NEW MEXICO
87507
(505) 471-1101
FAX (505) 471-2245

8528 CALLE ALAMEDA NE
ALBUQUERQUE,
NEW MEXICO
87113
(505) 857-0933
FAX (505) 857-0803

2805-A LAS VEGAS CT.
LAS CRUCES,
NEW MEXICO
88007
(575) 526-6260
FAX (575) 523-1660

BORING LOCATION MAP



Senior Center & Fire Station
Cerrillos, New Mexico
Job No. 1-70414

Figure 1



GEO-TEST
GEOTECHNICAL ENGINEERING
AND MATERIAL TESTING



Project: Senior Center & Fire Station

Date: 05/15/2017

Project No: 1-70414

Elevation:

Type: 5.5" OD HSA

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 1

During Drilling: 18.0

After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE						SUBSURFACE PROFILE	
		SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION	N blows/ft
5			SS	2-2-3 5	4		SM	SILTY SAND, non-plastic, loose to medium dense, dry, light brown	5
			SS	2-3-5 8	9				8
			SS	6-7-7 14	6				14
10			SS	6-10-14 24	7		CL	SANDY CLAY, low plasticity, firm, dry, brown	24
15			SS	4-6-7 13	4		SP	POORLY GRADED SAND with GRAVEL, non-plastic, medium dense, dry to wet, brown	13
20			SS	6-7-9 16	16				16
25									
30									

LOG OF TEST BORING 1-70414 SENIOR CENTER AND FIRE STATION.GPJ GEO TEST.GDT 5/23/17

LEGEND

SS - Split Spoon

AC - Auger Cuttings

UD/SL - Undisturbed Sleeve

AMSL - Above Mean Sea Level

CS - Continuous Sampler

UD - Undisturbed

ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.



Project: Senior Center & Fire Station

Date: 05/15/2017

Project No: 1-70414

Elevation:

Type: 5.5" OD HSA

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 2

During Drilling: none

After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE						SUBSURFACE PROFILE	
		SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION	N blows/ft
									20 40 60 80
5			SS	5-5-8 13	5		SM	SILTY SAND, non-plastic, medium dense, dry, light brown * with Gravel 8-9 feet	13
			SS	4-6-7 13	3				13
10			SS	4-6-10 16	10		CL	SANDY CLAY, low plasticity, firm, slightly moist, brown	16
15			SS	5-3-8 11	7		SP	POORLY GRADED SAND with GRAVEL, non-plastic, medium dense, dry, brown	11
20								Stopped Auger @ 14.5 feet Stopped Sampler @ 16 feet	
25									
30									

LOG OF TEST BORING 1-70414 SENIOR CENTER AND FIRE STATION.GPJ GEO TEST.GDT 5/23/17

LEGEND

SS - Split Spoon
AC - Auger Cuttings
UD/SL - Undisturbed Sleeve

AMSL - Above Mean Sea Level
CS - Continuous Sampler
UD - Undisturbed
ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.



Project: Senior Center & Fire Station

Date: 05/15/2017

Project No: 1-70414

Elevation:

Type: 5.5" OD HSA

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 3

During Drilling: none

After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE						SUBSURFACE PROFILE		
		SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION	N blows/ft	
5		2-1-4 5	SS	4			SM	SILTY SAND, non-plastic, loose to medium dense, dry, light brown	5	
		4-6-9 15	SS	3					15	
10		4-5-16 21	SS	8			CL-ML		SANDY, SILTY CLAY, low plasticity, firm, dry, brown	21
15		8-10-15 25	SS	3			SP		POORLY GRADED SAND with GRAVEL, non-plastic, medium dense, dry, brown	25
20								Stopped Auger @ 14.5 feet Stopped Sampler @ 16 feet		
25										
30										

LOG OF TEST BORING 1-70414 SENIOR CENTER AND FIRE STATION.GPJ GEO TEST.GDT 5/23/17

LEGEND

SS - Split Spoon
AC - Auger Cuttings
UD/SL - Undisturbed Sleeve

AMSL - Above Mean Sea Level
CS - Continuous Sampler
UD - Undisturbed
ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.



Project: Senior Center & Fire Station

Date: 05/15/2017

Project No: 1-70414

Elevation:

Type: 5.5" OD HSA

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 4

During Drilling: none

After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE						SUBSURFACE PROFILE				
		SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION	N blows/ft			
									20	40	60	80
5			AC		6		SM	SILTY SAND, non-plastic, dry, light brown				
								Stopped Auger @ 5 feet				
10												
15												
20												
25												
30												

LOG OF TEST BORING 1-70414 SENIOR CENTER AND FIRE STATION.GPJ GEO TEST.GDT 5/23/17

LEGEND

SS - Split Spoon
AC - Auger Cuttings

UD/SL - Undisturbed Sleeve

AMSL - Above Mean Sea Level

CS - Continuous Sampler

UD - Undisturbed

ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.



Project: Senior Center & Fire Station

Date: 05/15/2017

Project No: 1-70414

Elevation:

Type: 5.5" OD HSA

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 5

During Drilling: none

After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE						SUBSURFACE PROFILE					
		SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION	N blows/ft				
										20	40	60	80
5			AC		8		SM	SILTY SAND, non-plastic, slightly moist, light brown					
								Stopped Auger @ 5 feet					
10													
15													
20													
25													
30													

LOG OF TEST BORING 1-70414 SENIOR CENTER AND FIRE STATION.GPJ GEO TEST.GDT 5/23/17

LEGEND

SS - Split Spoon
AC - Auger Cuttings

UD/SL - Undisturbed Sleeve

AMSL - Above Mean Sea Level

CS - Continuous Sampler

UD - Undisturbed

ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.



Project: Senior Center & Fire Station

Date: 05/15/2017

Project No: 1-70414

Elevation:

Type: 5.5" OD HSA

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 6

During Drilling: none

After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE						SUBSURFACE PROFILE					
		SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION	N blows/ft				
										20	40	60	80
5			AC		6		SM	SILTY SAND, non-plastic, dry, light brown					
								Stopped Auger @ 5 feet					
10													
15													
20													
25													
30													

LOG OF TEST BORING 1-70414 SENIOR CENTER AND FIRE STATION.GPJ GEO TEST.GDT 5/23/17

LEGEND

- SS - Split Spoon
- AC - Auger Cuttings
- UD/SL - Undisturbed Sleeve
- AMSL - Above Mean Sea Level
- CS - Continuous Sampler
- UD - Undisturbed
- ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.



Project: Senior Center & Fire Station

Date: 05/15/2017

Project No: 1-70414

Elevation:

Type: 5.5" OD HSA

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 7

During Drilling: 19.0

After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE						SUBSURFACE PROFILE	
		SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION	N blows/ft
4-5			SS	4-4-5 9	6		SM	SILTY SAND, non-plastic, loose to medium dense, dry, light brown	9
5-6			SS	3-5-6 11	4				11
5-11			SS	5-5-11 16	4				16
9-10			SS	9-4-5 9	13		CL-ML	SILTY, SANDY CLAY, low plasticity, moderately firm, moist, brown	9
11-17			SS	11-9-8 17	3		SP	POORLY GRADED SAND with GRAVEL, non-plastic, medium dense, dry, light brown	17
19.5			SS	6-10-6 16	8				Stopped Auger @ 19.5 feet Stopped Sampler @ 21 feet

LEGEND

SS - Split Spoon

AC - Auger Cuttings

UD/SL - Undisturbed Sleeve

AMSL - Above Mean Sea Level

CS - Continuous Sampler

UD - Undisturbed

ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.



Project: Senior Center & Fire Station
 Date: 05/15/2017 Project No: 1-70414
 Elevation: Type: 5.5" OD HSA

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 8

During Drilling: none

After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE						SUBSURFACE PROFILE				
		SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION	N blows/ft			
									20	40	60	80
5			AC		6		SM	SILTY SAND, non-plastic, dry, light brown				
								Stopped Auger @ 5 feet				
10												
15												
20												
25												
30												

LOG OF TEST BORING 1-70414 SENIOR CENTER AND FIRE STATION.GPJ GEO TEST.GDT 5/23/17

LEGEND

- SS - Split Spoon
- AC - Auger Cuttings
- UD/SL - Undisturbed Sleeve
- AMSL - Above Mean Sea Level
- CS - Continuous Sampler
- UD - Undisturbed
- ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

SUMMARY OF LABORATORY RESULTS

SUMMARY OF LABORATORY RESULTS: 1-70414 SENIOR CENTER AND FIRE STATION.GPJ GEO TEST.GDT 5/21/17

TEST HOLE	DEPTH (FEET)	UNIFIED CLASS	(% MOIST)	LL	PI	SIEVE ANALYSIS PERCENT PASSING											
						NO 200	NO 100	NO 40	NO 10	NO 4	3/8"	1/2"	3/4"	1"	1 1/2"	2"	4"
1	1.0		4.0														
1	3.0	SM	9.5	NP	NP	46	91	100									
1	5.0		6.0														
1	10.0		6.5														
1	15.0		3.8														
1	20.0		15.8														
2	3.0		4.5														
2	5.0		3.4														
2	10.0	CL	10.1	27	9	70	85	95	97	99	100						
2	15.0		6.8														
3	3.0		4.3														
3	5.0	SM	2.7	NP	NP	19	47	98	100								
3	10.0		7.6														
3	15.0		3.4														
4	2.5		6.3														
5	2.5	SM	8.2	NP	NP	34	74	100									
6	2.5		6.2														
7	1.0	SM	5.6	NP	NP	30	58	96	100								
7	3.0		4.3														



LL = LIQUID LIMIT
PI = PLASTICITY INDEX
NP = NON PLASTIC or NO VALUE

Project: Senior Center & Fire Station
Location: Cerrillos, New Mexico
Number: 1-70414

SUMMARY OF LABORATORY RESULTS

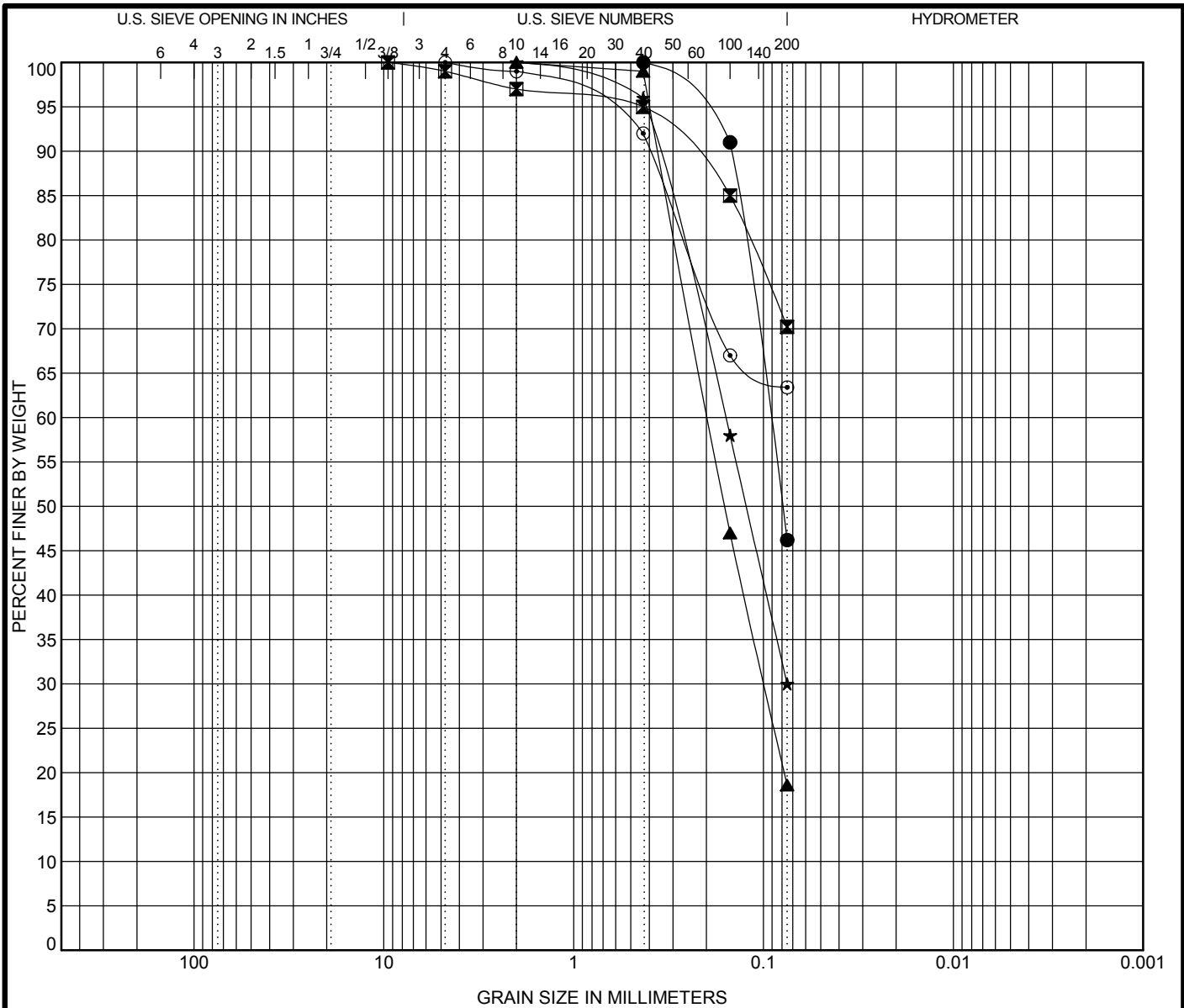
						SIEVE ANALYSIS PERCENT PASSING											
TEST HOLE	DEPTH (FEET)	UNIFIED CLASS	(%) MOIST	LL	PI	NO 200	NO 100	NO 40	NO 10	NO 4	3/8"	1/2"	3/4"	1"	1 1/2"	2"	4"
7	5.0		3.8														
7	10.0	CL-ML	13.3	24	6	63	67	92	99	100							
7	15.0		2.8														
7	20.0		7.9														
8	2.5	SM	5.7	NP	NP	31	63	95	100								

SUMMARY OF LABORATORY RESULTS: 1-70414 SENIOR CENTER AND FIRE STATION.GPJ GEO TEST.GDT 5/21/17



LL = LIQUID LIMIT
PI = PLASTICITY INDEX
NP = NON PLASTIC or NO VALUE

Project: Senior Center & Fire Station
Location: Cerrillos, New Mexico
Number: 1-70414



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● 1	SILTY SAND(SM)	NP	NP	NP		
■ 2	LEAN CLAY with SAND(CL)	27	18	9		
▲ 3	SILTY SAND(SM)	NP	NP	NP		
★ 7	SILTY SAND(SM)	NP	NP	NP		
⊙ 7	SANDY SILTY CLAY(CL-ML)	24	18	6		

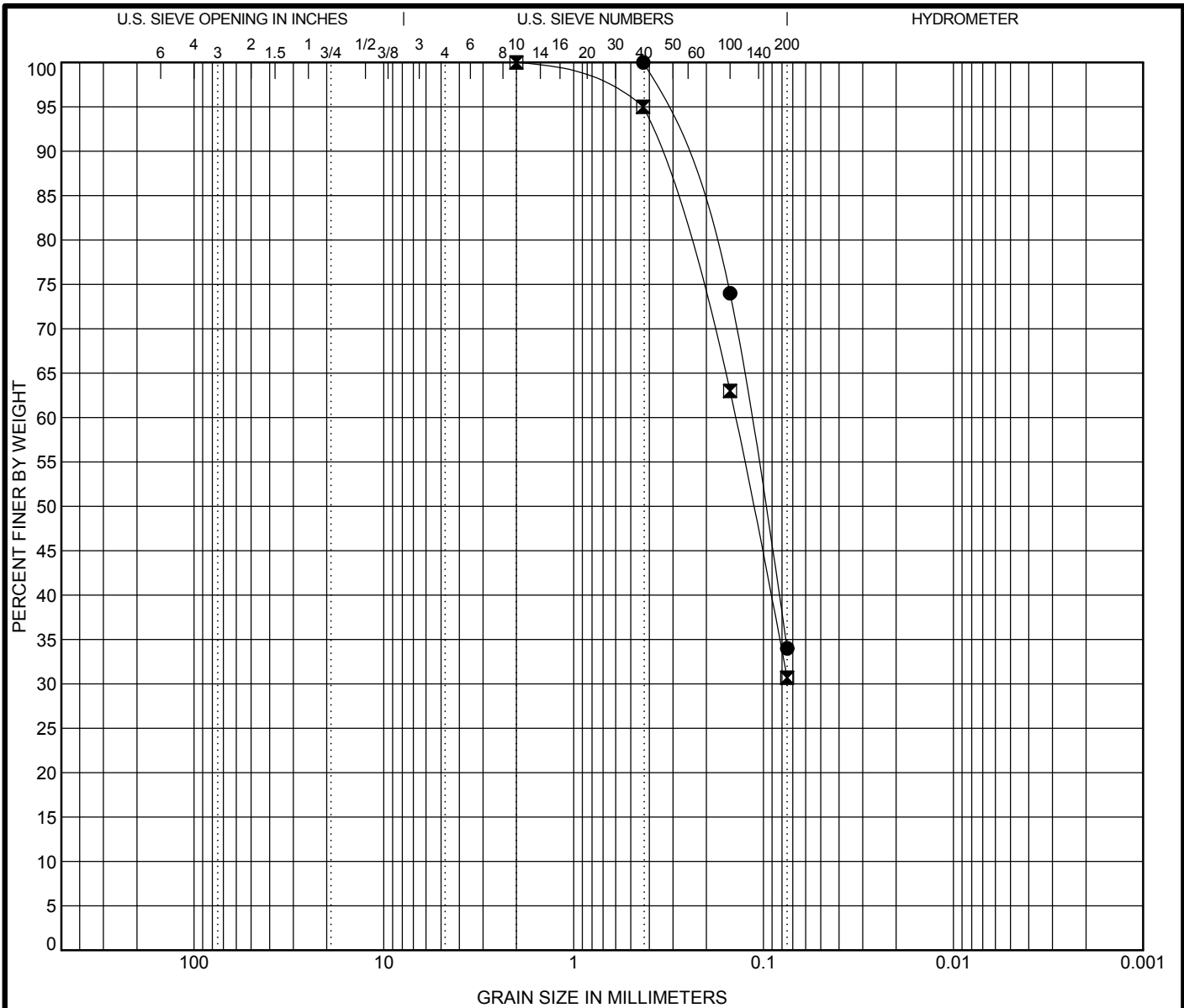
Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 1	3.0	0.43	0.093		0.0	53.8	46.2	
■ 2	10.0	9.5			1.0	28.8	70.2	
▲ 3	5.0	2	0.195	0.099	0.0	81.4	18.6	
★ 7	1.0	2	0.159	0.075	0.0	70.0	30.0	
⊙ 7	10.0	4.75			0.0	36.6	63.4	



GRAIN SIZE DISTRIBUTION

Project: Senior Center & Fire Station
 Location: Cerrillos, New Mexico
 Number: 1-70414

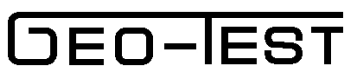
US GRAIN SIZE 1-70414 SENIOR CENTER AND FIRE STATION.GPJ GEO TEST.GDT 5/21/17



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● 5 2.5	SILTY SAND(SM)	NP	NP	NP		
■ 8 2.5	SILTY SAND(SM)	NP	NP	NP		

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 5 2.5	0.43	0.118			0.0	66.0	34.0	
■ 8 2.5	2	0.141			0.0	69.3	30.7	



GRAIN SIZE DISTRIBUTION

Project: Senior Center & Fire Station
 Location: Cerrillos, New Mexico
 Number: 1-70414

U.S. GRAIN SIZE 1-70414 SENIOR CENTER AND FIRE STATION.GPJ GEO TEST.GDT 5/21/17