GEO-TEST

GEOTECHNICAL ENGINEERING SERVICES REPORT NO. 1-30106

ABEDON LOPEZ SENIOR CENTER

155A CAMINO DE QUINTANA SANTA CRUZ, NEW MEXICO

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

8528 CALLE ALAMEDA
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 DEPT.

GEO-TEST

June 12, 2023
Job No. 1-30106

Santa Fe County Public Works Dept.
901 west Alameda
Santa Fe, NM 87501

ATTN: Daniel M. Anderson

RE: Geotechnical Engineering Services Report
Abedon Lopez Senior Center
155A Camino de Quintana
Santa Cruz, NM

Dear Mr. Anderson,

Submitted herein is the Geotechnical Engineering Services Report regarding the above referenced project. The report contains the results of our field investigation, laboratory testing and recommendations for foundation, slab on grade, retaining structure and pavement design as well as excavation, fill and general site grading criteria.

It has been a pleasure to serve you on this project. If you should have and questions or concerns regarding the report or aspects of the investigation please contact our office.

Respectfully submitted:
GEO-TEST, INC.

Reviewed By:

Timothy Matson, *Staff Engineer*

PATRICK R. WHORTON NEW MEXICO 26342 PROFESSIONAL ENGINEER

Patrick R. Whorton, PE

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

8528 CALLE ALAMEDA
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3204 RICHARDS LANE
SANTA FE,
NEW MEXICO
87507
(505) 471-1101
FAX (505) 471-2245

8528 CALLE ALAMEDA
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 by this firm for the proposed Abedon Lopez Senior Center to be located at 155A Camino de Quintana in Santa Cruz, 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, retaining wall and pavement design as well as excavation, fill and general 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 demolition of the existing senior center building located on the subject site and replacement with a new senior center building in the approximate same footprint as the existing building. The new structure will be on the order of 5,000 square feet, single-story with no basements utilizing slab on-grade construction. Retaining walls will also be constructed, one on the west side of the proposed structure and one on the east side of the new proposed parking lot. Structural loads are unknown at this time but are anticipated to be relatively light, not exceeding 50 kips on columns and 2 kips per lineal foot on walls.

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

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3204 RICHARDS LANE
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NEW MEXICO
87507
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FAX (505) 471-2245

8528 CALLE ALAMEDA
ALBUQUERQUE,
NEW MEXICO
87113
(505) 857-0933
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2805-A LAS VEGAS CT
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88007
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FIELD EXPLORATION

A total of six (6) exploratory borings were drilled at the site to depths of 15 to 20 feet below existing grades. Locations of the borings are shown on the attached Boring Location Map, Figure 1. The soils encountered in the borings were continuously examined, visually classified and logged during the drilling operation. The boring logs are presented in a following section of this report. Drilling was accomplished using a truck mounted drill rig equipped with 3.25 inch inner diameter hollow stem auger. Subsurface soils within the building footprint were sampled at five-foot intervals or less utilizing an open tube split barrel sampler driven by a standard penetration test hammer.

LABORATORY TESTING

Selected samples were tested in Geo-Test, Inc. laboratories to determine certain engineering properties of the subsurface soils encountered in the field investigation. Moisture contents were determined to evaluate the various soil deposits with depth. The results of these tests are shown on the Boring Logs.

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

SURFACE CONDITIONS

A brief site reconnaissance was performed during our site exploration. The site for the proposed new senior center is currently occupied by the existing senior center building. The building is a single-story structure with no basements utilizing CMU and slab on-grade construction. In order to bring the building to its present grade, man-made fill soils were placed, and a retaining wall was constructed. It is assumed that the existing structure is bearing on shallow spread-type footings bearing on man-made fill soils. The regional slope of the area is to the west. It

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

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

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88007
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appears that the site was terraced during grading for the existing structure and a retaining wall was constructed on the westside of the building . The retaining wall appears to be in relatively poor condition with some major cracking. From the outside the existing structure appeared to be in relatively good condition.

SUBSURFACE SOIL CONDITIONS

As indicated by the exploratory borings, the subsurface soils beneath the site consist of both man-made fill soils and native soils. The man-made fill soils were encountered in Borings 2, 3 and 6 and appear to be associated with the existing construction and infrastructure. The man-made fill soils consisted loose, non-plastic silty sands and very loose to medium dense, low plasticity clayey sands and silty/clayey sands which extend to depths ranging from about 5 to 7 feet below existing site grades.

Below the man-made fill soils and at the surface in Borings 1, 4 and 5, native soils were encountered. The native soils below the man-made fill soils consisted of medium to high plasticity, hard clay in Boring 2 and medium dense to very dense silty sands in Borings 3 & 6 to full depths explored in both borings. The native soils encountered in Boring 1 consisted of relatively clean sands with various amounts of gravel and silty sands which extended to about 7 feet below existing site grades. These soils were non-plastic and medium dense. Below the granular soils, sandy clay was encountered and extended to full depth explored. These soils were hard and ranged from medium to high in plasticity. The soils encountered in Borings 4 & 5 consisted of non-plastic silty sands. These soils were loose in the upper 10 to 15 feet becoming medium dense below and extended to full depth explored.

No free groundwater was encountered in the borings and soil moisture contents were generally low in the granular soils and moderate to high in the clayey soils.

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SITE SEISMICITY

Based on the results of our investigations, as well as experience in the area, Site Class D is appropriate for structural design. Based on the seismic site class and regional factors, seismic coefficients were determined in accordance with IBC 2015 and are presented in the following table:

Mapped Spectral Acceleration, S_s	0.553 g
Mapped Spectral Acceleration, S_1	0.161 g
Maximum Spectral Acceleration, S_{MS}	0.751 g
Maximum Spectral Acceleration, S_{M1}	0.348 g
Design Spectral Acceleration, S_{DS}	0.500 g
Design Spectral Acceleration, S_{D1}	0.232 g
Site Coefficient, F_A	1.358
Site Coefficient, F_V	2.155
Seismic Design Category	**D**

CONCLUSIONS AND RECOMMENDATIONS

The near surface soils underlying the site were found to be very loose to loose in their present condition and may contain undocumented man-made fills and debris associated with previous construction on the site which 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 site preparation and very careful moisture protection, as recommended in a following section of this report, the proposed structure may 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 area to such an extent as to provide for a minimum of 5.0 feet of properly compacted, non-expansive structural fill below all foundations and floor slabs. The limits of the overexcavation

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

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

2805-A LAS VEGAS CT
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NEW MEXICO
88007
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FAX (575) 526-1660

should also extend laterally from the footing perimeters a distance equal to the depth of fill beneath their bases. Should any man-made fills, existing construction or debris be encountered during construction within the building overexcavation area, the depth of overexcavation should be increased such that all man-made fill is removed in its entirety and replaced with properly compacted structural fill. The exposed native soils at the base of the excavations should be densified prior to placement of structural fill. 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 5.0 feet of properly compacted structural fill are recommended for the support of the structures. An allowable 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 footing should be established a minimum of 2.0 feet below lowest adjacent finish grade, while interior footings should be at least 12 inches below finish floor elevation. The minimum recommended width of square and continuous footings is 2.0 and 1.33 feet, respectively.

Resistance to lateral forces will be provided by soil friction between the base of floor slabs, footings and the soils as well as by passive earth pressure acting against the side of the footings and stem walls. A coefficient of friction of 0.40 should be used for computing the lateral resistance between bases of footing and slabs and the soil. With backfill placed as recommended in the Site Grading section of this

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

8528 CALLE ALAMEDA
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NEW MEXICO
87113
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88007
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FAX (575) 526-1660

report, a passive soil pressure of equivalent to a fluid weighing 375 pounds per cubic foot should be used for analysis.

Total settlements of foundations designed and constructed as recommended herein are estimated not to exceed ¾ 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 could cause excessive movements, at least in some areas of the site. Accordingly, the moisture protection provisions as recommended in the Moisture Protection section of this report are considered critical for the satisfactory performance of the structures.

SLABS ON GRADE

Concrete slabs on grade should be founded on a minimum of 5.0 feet of properly compacted structural fill and constructed in conformance with the methods outlined in the current edition of ACI 3021R.

Adequate support for lightly loaded slab-on-grade floors will be provided by the structural fill when compacted as recommended in the Site Grading section of this report. Thus, the use of a granular base for structural support of the slab is not considered necessary, however, should a gravel base be desired as a working surface or to increase the modulus of subgrade reaction, a course of granular base may be placed beneath concrete floor slabs on grade.

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

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

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3204 RICHARDS LANE
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NEW MEXICO
87507
(505) 471-1101
FAX (505) 471-2245

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The granular base should be compacted to at least 95 percent of maximum dry density as determined in accordance with ASTM D-1557.

Any heavily loaded slabs on the project bearing on 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 thick layer of granular base is placed and compacted below the slab, the modulus of subgrade reaction may be increased to 300 pounds per square inch per inch of deflection.

The granular base may act as a capillary barrier but will not totally eliminate the rise of moisture to the slabs. If floor coverings are proposed with a sensitive to moisture or moisture sensitive equipment will be installed in the building, a synthetic vapor barrier should be installed to prevent moisture intrusion through the slab. A minimum of 4 inches of granular base as recommended above should be placed between the vapor barrier and the slab. Barriers should be overlapped a minimum of 6 inches at joints, should be carefully fitted around service openings and should conform with ACI 302.1R specifications.

RETAINING WALL DESIGN

Site retaining walls which are structurally independent of the proposed building and will retain less than 4.0 feet of material with no building surcharge loading may be supported on shallow spread-type footings bearing directly on a minimum of 2.0 feet of properly compacted structural fill. The limit of the structural fill should extend laterally a minimum of 4.0 feet from footing perimeters.

An allowable soil bearing capacity of 1,500 pounds per square foot is recommended for independent retaining wall footing design. This bearing capacity applies to full dead loads plus realistic live loads and may be safely increased by one-third for total loads including wind and seismic forces. Independent retaining wall footings should be established a minimum of 2.0 feet below lowest adjacent finished grade. The minimum recommended width of continuous footings is 1.33 feet.

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

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ALBUQUERQUE,
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87113
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2805-A LAS VEGAS CT
LAS CRUCES,
NEW MEXICO
88007
(575) 526-6260
FAX (575) 526-1660

Total settlements of independent site retaining wall foundations designed and constructed as recommended above are estimated not to exceed ¾ inch for the soil moisture contents encountered during this investigations or moisture contents introduced during construction. Differential movements should be less than 75 percent of total movements. Significant post-construction moisture increases in the foundation supporting soils could create additional movements such that the moisture protection provisions included in the Moisture Protection section of this report are considered critical to the satisfactory performance of the retaining walls.

Retaining walls which are structurally integrated into the building or bear building surcharge loading or heavy traffic loading should be founded on foundations as recommended for the building. This firm should be notified if any non-integrated retaining walls which retain greater than 4 feet of soil will be used on the site. Amended foundation recommendations for these walls may be provided by this firm as required.

Lateral pressure against retaining walls will depend upon the degree of restraint. Walls which are restrained so as to limit movement at the top of the wall to less than 0.001 times the height of the wall should be designed for an ‘at rest’ earth pressure of 55 pounds per square foot per foot of depth. Walls free to move at the top should be designed using an ‘active’ earth pressure equal to 35 pounds per square foot per foot of depth. These recommended lateral pressures are applicable to a condition of horizontal backfill without surcharge loads. Analysis of earth pressures produced by sloping backfill or surcharge loads may be provided by this firm upon request.

The lateral pressures presented above assume no buildup of hydrostatic pressures behind the walls. To prevent the buildup of hydrostatic pressure, adequate weep holes should be provided or composite drainage systems such as Miradrain or equivalent may be installed on the backside of the wall prior to backfilling. The drainage layer should be connected to a collector pipe at the base of the walls and routed to a sump or to a positive gravity drain.

Retaining wall backfill should meet the structural fill specifications outlined in the Site Grading section of this report. During backfilling, the

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

8528 CALLE ALAMEDA
ALBUQUERQUE,
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FAX (575) 526-1660

contractor should be limited to the use of hand operated equipment within a zone of about 3 feet horizontally from the back of the wall. The use of heavier equipment could apply lateral pressures well in excess of the recommended design earth pressure particularly over the upper portions of the wall.

PAVEMENT SECTION DESIGN

The existing near surface soils encountered in the borings generally classify as silty sand (SM), clayey sand (SC) and relatively clean sands with silt (SP-SM) according to the Unified Soil Classification System (USCS). Respectively, these soils classify as A-2-4, A-4, A-6 and A-1-b according to the American Association of State Highway and Transportation Officials (AASHTO) soil classification system. According to the NMDOT, these soils possess a wide range of correlated R-values ranging from 8 to 69. As such, the existing near surface soils to be used as subgrade vary considerably throughout the site.

Given that this variation in subgrade is consistent throughout the site, the use of variable pavement sections or the overexcavation of all pavement areas to provide for a uniform high R-Value subgrade would be required. Rather, the pavement sections presented below were developed to be used with the lowest R-Value subgrade encountered on the site. As such, these sections may be used throughout the site with minimal subgrade preparation beyond densification required.

Based on the above, the onsite soils may be used as pavement subgrade and require no special subgrade preparation other than moisture conditioning and compaction. Prior to the placement of pavement sections recommended below, the subgrade soils should be scarified to a depth of 12 inches, moisture conditioned to within 2 percent of optimum moisture content and compacted to a minimum of 95 percent of maximum dry density as determined in accordance with ASTM D-1557.

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3204 RICHARDS LANE
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NEW MEXICO
87507
(505) 471-1101
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8528 CALLE ALAMEDA
ALBUQUERQUE,
NEW MEXICO
87113
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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 a minimum of 12 inches of properly compacted native subgrade is recommended for automobile parking and drive lanes with an allowance for 2 percent truck traffic. Areas of regular truck traffic exceeding this allowance should utilize a heavy-duty flexible pavement section consisting of 4 inches of Hot Mix Asphalt (HMA) over 6 inches of aggregate base course placed directly over a minimum of 12 inches of properly compacted native subgrade or the rigid pavement section recommended below.

The HMA should be SPIII, SPIV or equivalent parking lot mix, 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. These pavement recommendations are in general conformance with publications prepared by the *Asphalt Institute.*

With the above recommended subgrade preparation, a rigid pavement section consisting of 6 inches of Portland Cement Concrete (PCC) over 4 inches of aggregate base course placed directly over a minimum of 12 inches of properly compacted subgrade is recommended for areas of concentrated heavy vehicle loads such as dumpster pads and loading docks. The pavement recommendations are in general conformance with ACI 330R-01 *Guide for Design and Construction of Concrete Parking Lots.*

The PCC 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 that 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.

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

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

2805-A LAS VEGAS CT
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88007
(575) 526-6260
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EXCAVATIONS

Excavated slopes for foundation and utility construction should be designed and constructed in accordance with 29 CFR 1926, Subpart P as well as any applicable state or local regulations. Excavated temporary and permanent slopes should not exceed 2.0 to 1 (horizontal to vertical). Excavation of the surficial soils may be readily accomplished using normal earth moving equipment.

SITE GRADING

The following general 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 demolition of the existing structure and the removal of all existing construction, the existing soils throughout the building area should be overexcavated to such an extent as to provide for a minimum thickness of 5.0 feet of structural fill beneath all footings and floor slabs, or to such an extent as to remove all man-made fill soils in their entirety, whichever is the greater depth of overexcavation. Where possible, the overexcavation limits should extend beyond the perimeter of the footings equal to the depth of fill beneath the footings.

2) After the required overexcavation the exposed cut surface should be densified. Densification of the exposed native soils should consist of scarifying to a depth of 12 inches, moisture conditioning to the optimum moisture content or above and 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 in general, the on-site soils will be suitable for use as structural fill given blending, processing and screening to meet the specifications presented below. The higher plasticity clay encountered is not suitable for use as structural fill and should be wasted or placed in non-

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

8528 CALLE ALAMEDA
ALBUQUERQUE,
NEW MEXICO
87113
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structural areas of the site. Imported fill/blend soils will likely be required. Any imported material must also meet the criteria for structural fill.

4) All structural fill and backfill 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:

Sieve Size Square Openings	Percent Passing by Dry Weight
3 inch	100
No. 4	40 -100
No. 200	15 - 45

5) The plasticity index of the structural fill should be no greater than 15 when tested in accordance with ASTM D-4318.

6) Pavement base course should meet the specifications for NMDOT Type 1 base course.

7) Structural fill, general backfill, subgrade and base course consisting of soils approved by the geotechnical engineer shall be placed in 8 inch loose lifts and compacted with approved compaction equipment. Loose lifts should be reduced to 4 inches in handheld compaction equipment is used. All compaction of fill or backfill shall be accomplished to a minimum of 95 percent of the maximum dry density as determined in accordance with ASTM D-1557. The moisture content of the structural fill during compaction should be within 2 percent of the optimum moisture content.

8) Tests for degree of compaction should be determined by ASTM D-1556 (Sand Cone) or ASTM D-6938 (Nuclear Method). 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 adjustments to the moisture content as necessary until 95 percent compaction is obtained.

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MOISTURE PROTECTION

Precautions should be taken during and after construction to minimize moisture increases in foundation bearing soils. Accumulations of excessive moisture be harmful to some types of interior flooring and HVAC systems as well as weaken or cause other changes in the soils supporting the foundations and slabs which may cause differential movement of the foundations and may result in cosmetic or structural damage to the structure.

Positive drainage should be established away from the exterior walls of the structure. A typical adequate slope is 6 inches in the first five feet with positive drainage being provided from those points to streets, pavement or natural water courses. If necessary to provide positive drainage, the building area should be raised above adjacent grades with structural fill.

Roof runoff from the structure should be collected by gutters and downspouts or roof canales and discharged to splash blocks which carry water rapidly away from the structure's foundation. Should lot size or other factors impede positive drainage away from the structure to less than 5 feet from foundations, a non-perforated drain system should be installed to carry water to a minimum of five feet from foundations or to streets or natural water courses.

Utility backfill should be well compacted and should meet the specifications outlined within the Site Grading section of this report. Special care should be taken during installation of the subfloor sewer and water lines to reduce the possibility of future subsurface saturation.

Irrigation within 10 feet of foundations is discouraged or at the very least should be carefully controlled. Proper landscaping and drainage maintenance are required to preclude accumulation of excessive moisture in the soils below the structure and throughout the site. This should include but is not limited to routine maintenance checks of the irrigation system to ensure no leakage and proper functionality and that irrigation is adjusted and maintained seasonally so that over watering does not occur. Native drought resistant plants are recommended for use in landscaping. Landscape features should not impede positive drainage away from foundations as recommended above.

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Drainage control ponds or any other drainage/landscaping feature which allows for surface waters to infiltrate the subsurface soils should not be placed within 20 feet of building foundations.

Increases in the subgrade moisture content can weaken the subgrade soils thereby shortening pavement life and causing localized pavement 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 as minimum requirements of overall site development. It is recommended that a civil/drainage engineer be consulted for more detailed grading and drainage recommendations.

FOUNDATION REVIEW AND INSPECTION

This report has been prepared to aid in the evaluation of the subject 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 the report are applicable to 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 properly compacted and that foundation elements penetrate the recommended soils.

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

8528 CALLE ALAMEDA
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) 526-1660

CLOSURE

Our conclusions, recommendations and opinions presented herein are:

1) Based on our evaluation and interpretation of the findings of the field and laboratory programs.
2) Based on 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 principle and practice.

This report has been prepared for the sole use of the Santa Fe County Public Works Dept. specifically to aid in the design of the proposed new Abedon Lopez Senior Center to be constructed on the property located at 155A Camino de Quintana in Santa Cruz, NM and not for use by a third party without consent.

We make no warranty, either expressed 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 samples for a longer period of time.

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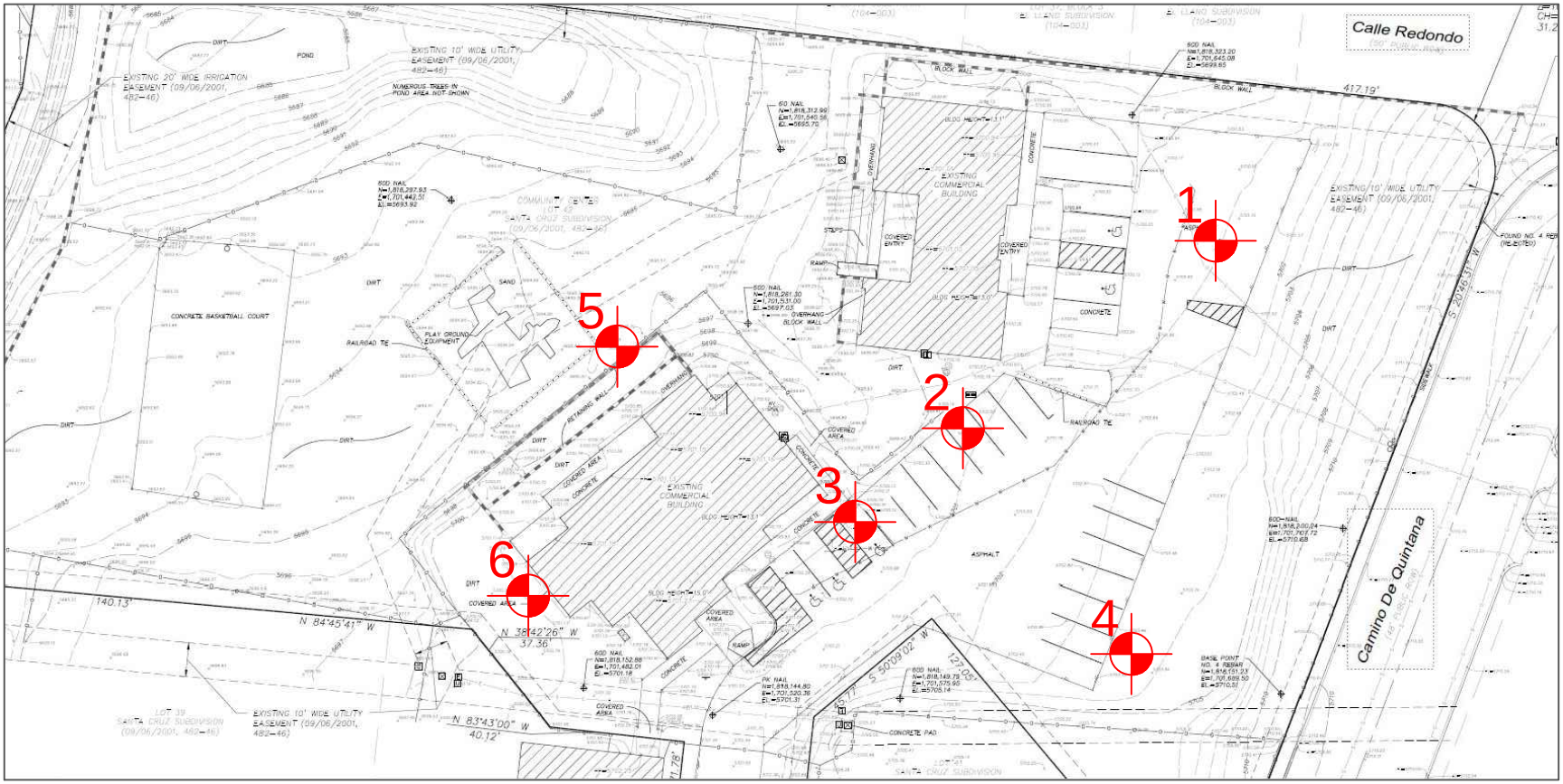
BORING LOCATION MAP



New Community/Senior Center
Santa Cruz, New Mexico
Job No. 1-30106

Figure 1

N
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GEO-TEST
GEOTECHNICAL ENGINEERING
AND MATERIAL TESTING

GEO-TEST

Project: New Community/Senior Center
Date: 02/20/2023 Project No: 1-30106
Elevation: Type: 2.25" I.D. HSA

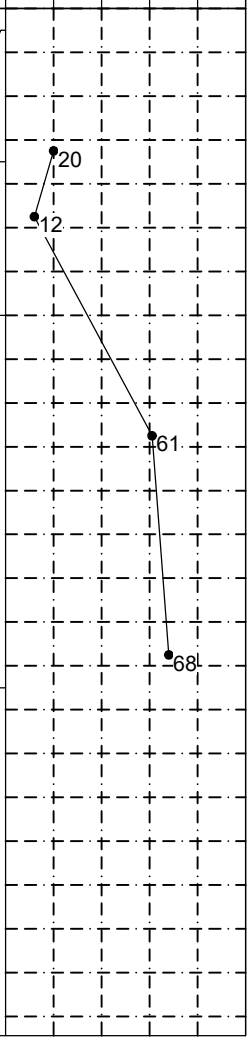
LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 1

During Drilling: NONE After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION
							AC & ABC	Asphalt over Base Course
			SS	10-10-10 20	2		SP-SM	SAND with SILT and GRAVEL, fine to coarse grained, non-plastic, medium dense, dry, brown/light brown
5			SS	6-6-6 12	6		SM	SILTY SAND, fine grained, non-plastic, medium dense, slightly moist, tan/light brown
10			SS	15-27-34 61	22		CL	SANDY CLAY, medium to high plasticity, hard, slightly moist to moist, reddish/brown
15			SS	17-30-38 68	15			STOPPED AUGER AT 14' STOPPED SAMPLER AT 15.5'
20								



LOG OF TEST BORING 1-30106-COMMUNITY CENTER.GPJ GEO TEST.GDT 6/2/23

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 measurments were made.

GEO-TEST

Project: New Community/Senior Center
Date: 02/20/2023 Project No: 1-30106
Elevation: Type: 2.25" I.D. HSA

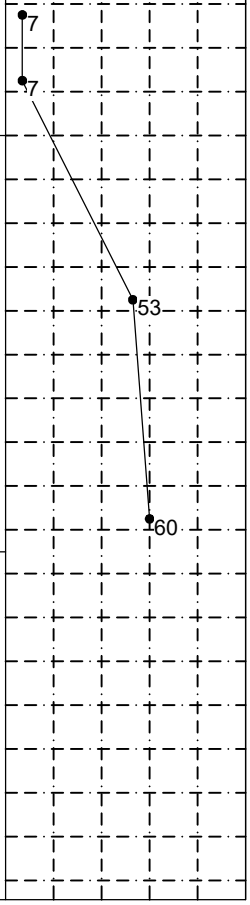
LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 2

During Drilling: NONE After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION
							AC & ABC	Asphalt over Base Course
			SS	4-3-4 7	6		FILL	SILTY SAND (SM), fine grained, non-plastic, loose, slightly moist, brown/light brown/tan
5			SS	4-4-3 7	7			
10			SS	11-21-32 53	20		CL	SANDY CLAY, medium to high plasticity, slightly moist to moist, reddish/brown
15			SS	18-24-36 60	20			STOPPED AUGER AT 14' STOPPED SAMPLER AT 15.5
20								



LOG OF TEST BORING 1-30106-COMMUNITY CENTER.GPJ GEO TEST.GDT 6/2/23

LEGEND

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GEO-TEST

Project: New Community/Senior Center
Date: 02/20/2023 Project No: 1-30106
Elevation: Type: 2.25" I.D. HSA

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 3

During Drilling: NONE After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION
							AC & ABC	Asphalt over Base Course
			SS	1-1-1 2	12		FILL	CLAYEY SAND (SC), fine grained, low to medium plasticity, very loose, moist, brown
5			SS	2-1-1 2	11			
10			SS	4-8-18 26	12		SM	SILTY SAND, fine grained, non-plastic, medium dense to to very dense, slightly moist to moist, tan/light brown
15			SS	20-30-37 67	12			STOPPED AUGER AT 14' STOPPED SAMPLER AT 15.5'
20								

N blows/ft: 20 40 60 80

2 2 26 67

LOG OF TEST BORING 1-30106-COMMUNITY CENTER.GPJ GEO TEST.GDT 6/2/23

LEGEND

SS - Split Spoon
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UD/SL - Undisturbed Sleeve
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GEO-TEST

Project: New Community/Senior Center
Date: 02/20/2023 Project No: 1-30106
Elevation: Type: 2.25" I.D. HSA

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 4

During Drilling: NONE After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION
			SS	6-5-5 10	6			
5			SS	5-4-5 9	6		SM	SILTY SAND, fine grained, non-plastic, loose to medium dense, slightly moist, tan/light brown
10			SS	4-3-5 8	5			
15			SS	8-8-8 16	7			STOPPED AUGER AT 14' STOPPED SAMPLER AT 15.5'
20								

N blows/ft: 20 40 60 80 — 10, 9, 8, 16

LOG OF TEST BORING 1-30106-COMMUNITY CENTER.GPJ GEO TEST.GDT 6/2/23

LEGEND

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

Project: New Community/Senior Center
Date: 05/11/2023 Project No: 1-30106
Elevation: Type: 2.25" I.D. HSA

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 5

During Drilling: NONE After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION
			AC		5		SC-SM	SILTY, CLAYEY SAND, fine grained, non-plastic to low plasticity, loose, slightly moist to dry, tan/light brown
			SS	5-5-5 10	5			
5			SS	4-4-5 9	5			
10			SS	7-8-6 14	6		SM	SILTY SAND, fine grained, non-plastic, loose to medium dense, slightly moist to dry, tan/light brown
15			SS	3-4-4 8	4			
20			SS	5-6-7 13	6			
								STOPPED AUGER AT 19' STOPPED SAMPLER AT 20.5'

N blows/ft: 20 40 60 80

10 9 14 8 13

LOG OF TEST BORING 1-30106-COMMUNITY CENTER.GPJ GEO TEST.GDT 6/2/23

LEGEND

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

Project: New Community/Senior Center
Date: 05/11/2023 Project No: 1-30106
Elevation: Type: 2.25" I.D. HSA

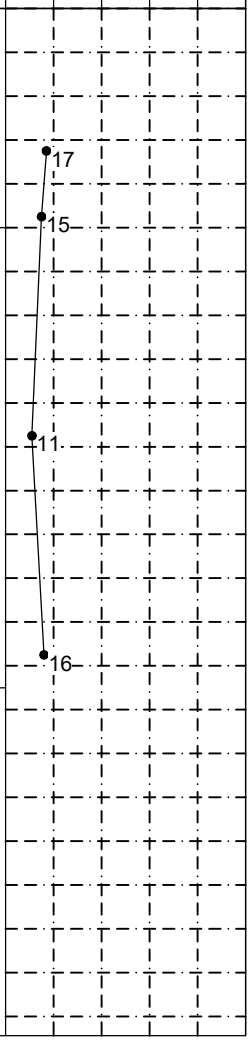
LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 6

During Drilling: NONE After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION
			AC		8		FILL	CLAYEY SAND (SC), fine grained, low plasticity, firm to moderately firm, slightly moist, brown to tan/light brown
			SS	6-9-8 17	7			
5			SS	5-8-7 15	4			
10			SS	3-5-6 11	9		SM	SILTY SAND, fine grained, non-plastic, medium dense, slightly moist, light brown
15			SS	7-7-9 16	5			
								STOPPED AUGER AT 14' STOPPED SAMPLER AT 15.5'
20								



LOG OF TEST BORING 1-30106-COMMUNITY CENTER.GPJ GEO TEST.GDT 6/2/23

LEGEND

SS - Split Spoon
AC - Auger Cuttings
UD/SL - Undisturbed Sleeve
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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 measurments were made.

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"
1	3.0	SP-SM	1.9	NP	NP	9	13	30	52	62	74	80	95	100			
1	5.0	SM	6.4	NP	NP	40	64	78	87	93	97	100					
1	10.0		22.3														
1	15.0		15.0														
2	3.0	SM	6.1	NP	NP	33	65	93	98	100							
2	5.0		6.6														
2	10.0	CL	19.9	48	28	70	87	97	100								
2	15.0		20.1														
3	3.0		11.8														
3	5.0	SC	10.6	37	21	36	63	87	93	97	100						
3	10.0		12.2														
3	15.0	SM	11.9	NP	NP	40	92	100									
4	3.0	SM	5.6	NP	NP	31	60	94	97	99	100						
4	5.0		6.1														
4	10.0		5.1														
4	15.0		7.0														
5	1.0		4.9														
5	3.0	SC-SM	4.6	21	4	35	67	93	98	98	98	99	100				
5	5.0	SM	4.8	19	3	33	63	94	97	98	99	100					

GEO-TEST

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

Project: New Community/Senior Center
Location: Santa Cruz, New Mexico
Number: 1-30106

SUMMARY OF LABORATORY RESULTS 1-30106-COMMUNITY CENTER.GPJ GEO TEST.GDT 5/18/23

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"
5	10.0		6.4														
5	15.0		4.3														
5	20.0		5.8														
6	1.0	SC	8.4	30	14	44	69	89	96	97	100						
6	3.0	SC	7.0	32	14	42	67	91	98	99	100						
6	5.0	SM	4.3	NP	NP	25	48	77	89	94	97	98	100				
6	10.0		9.2														
6	15.0		5.0														

GEO-TEST

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

Project: New Community/Senior Center

Location: Santa Cruz, New Mexico

Number: 1-30106

SUMMARY OF LABORATORY RESULTS 1-30106-COMMUNITY CENTER.GPJ GEO TEST.GDT 5/18/23

Borehole	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	Class-ification	Water Content (%)	Dry Density (pcf)	AASHTO CLASS	Corr. R-Value
1	3.0	NP	NP	NP	25	9	SP-SM	1.9		A-1-b	
1	5.0	NP	NP	NP	12.5	40	SM	6.4		A-4	
2	3.0	NP	NP	NP	4.75	33	SM	6.1		A-2-4	
3	5.0	37	16	21	9.5	36	SC	10.6		A-6	
4	3.0	NP	NP	NP	9.5	31	SM	5.6		A-2-4	
5	3.0	21	17	4	19	35	SC-SM	4.6		A-2-4	
5	5.0	19	16	3	12.5	33	SM	4.8		A-2-4	
6	1.0	30	16	14	9.5	44	SC	8.4		A-6	
6	3.0	32	18	14	9.5	42	SC	7.0		A-6	
6	5.0	NP	NP	NP	19	25	SM	4.3		A-2-4	

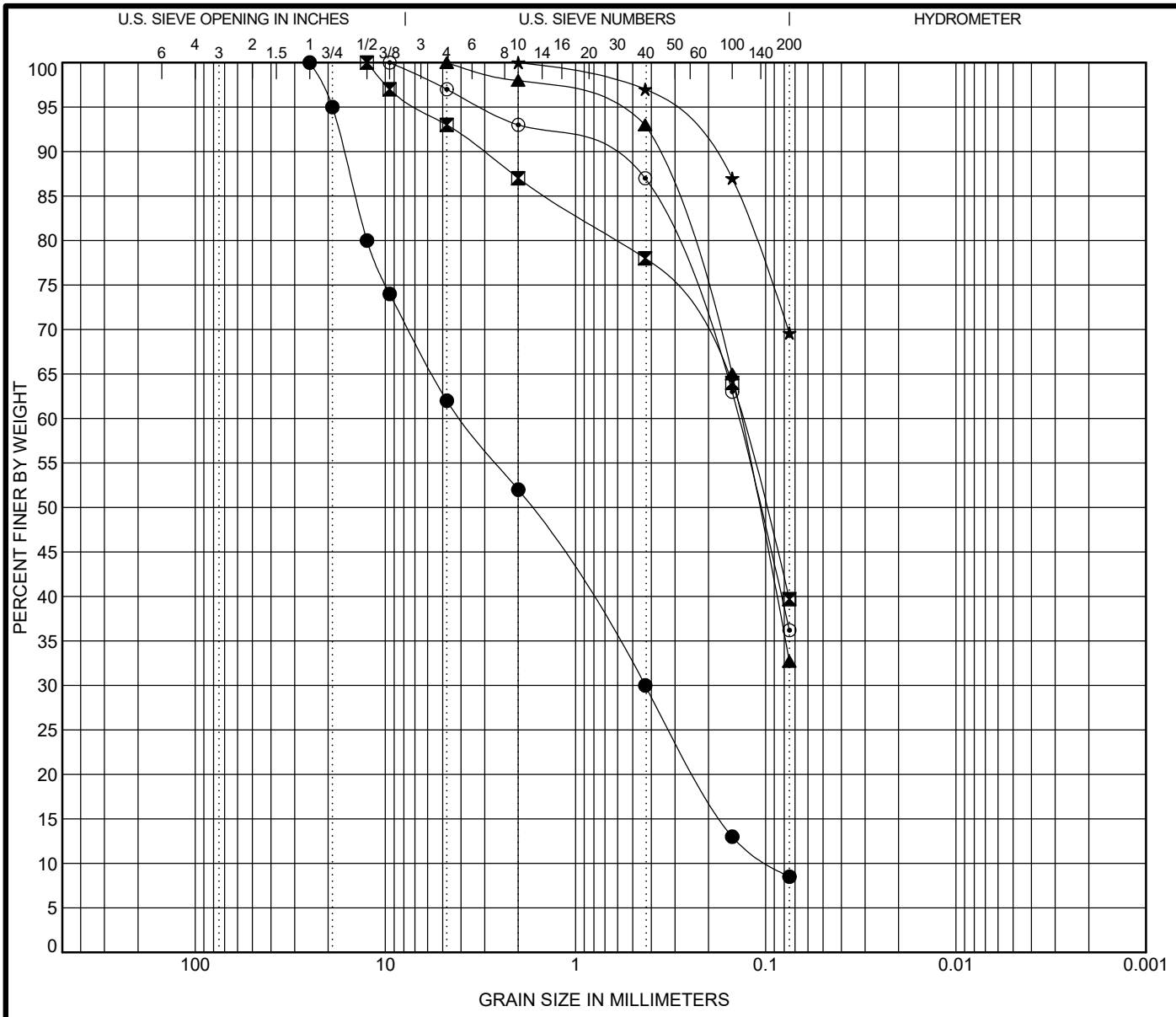
GEO-TEST

Summary of Laboratory Results

Project: New Community/Senior Center

Location: Santa Cruz, New Mexico

Number: 1-30106



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	1	3.0	**POORLY GRADED SAND with SILT and GRAVEL(SP-SM)**	**NP**	**NP**	**NP**	**0.49**	**42.28**
⊠	1	5.0	**SILTY SAND(SM)**	**NP**	**NP**	**NP**		
▲	2	3.0	**SILTY SAND(SM)**	**NP**	**NP**	**NP**		
★	2	10.0	**SANDY LEAN CLAY(CL)**	**48**	**20**	**28**		
⊙	3	5.0	**CLAYEY SAND(SC)**	**37**	**16**	**21**		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	1	3.0	**25**	**3.995**	**0.43**	**0.094**	**38.0**	**53.5**	**8.5**	
⊠	1	5.0	**12.5**	**0.134**			**7.0**	**53.3**	**39.7**	
▲	2	3.0	**4.75**	**0.135**			**0.0**	**67.3**	**32.7**	
★	2	10.0	**2**				**0.0**	**30.4**	**69.6**	
⊙	3	5.0	**9.5**	**0.139**			**3.0**	**60.8**	**36.2**	

GEO-TEST

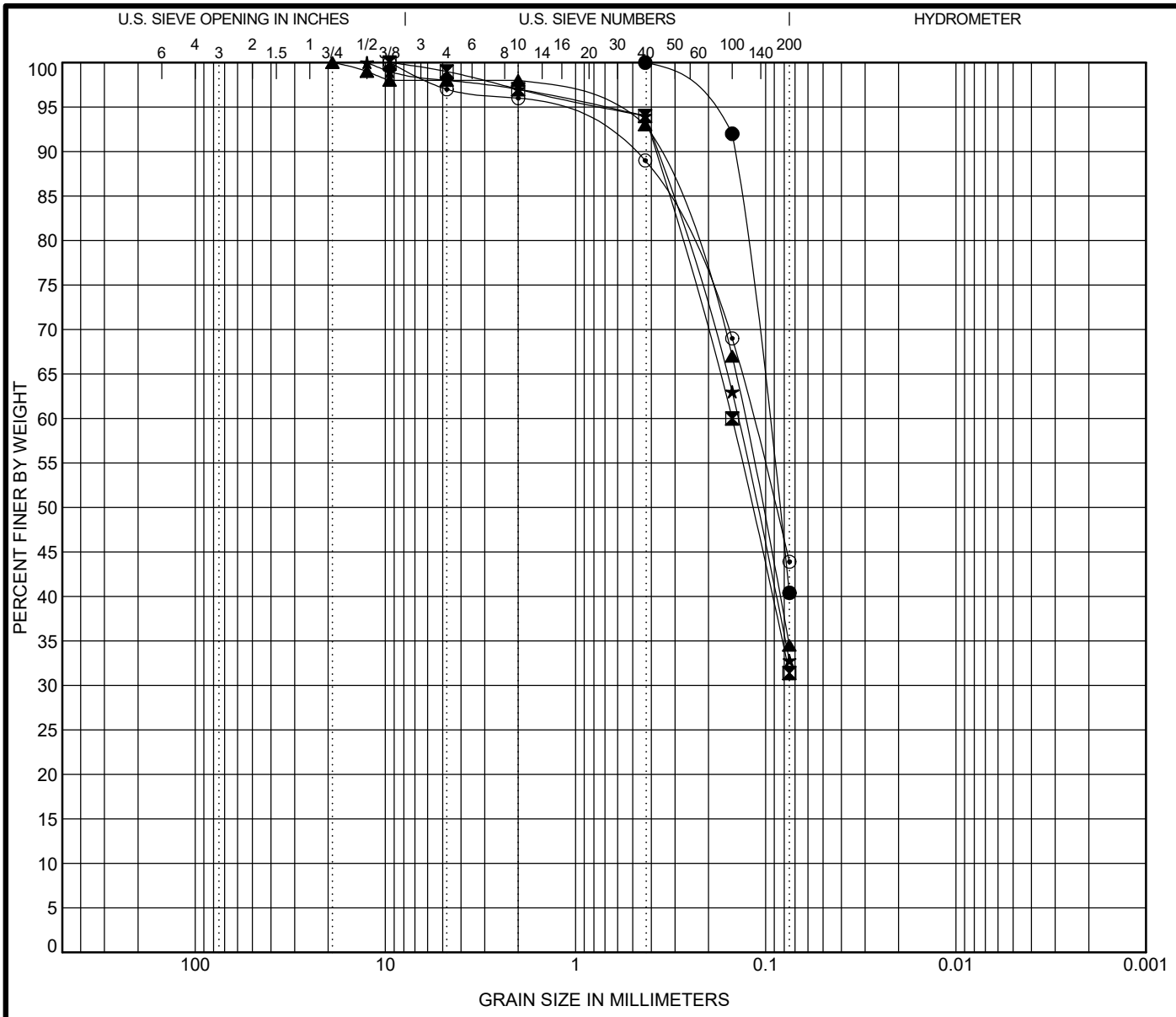
GRAIN SIZE DISTRIBUTION

Project: New Community/Senior Center

Location: Santa Cruz, New Mexico

Number: 1-30106

US GRAIN SIZE 1-30106-COMMUNITY CENTER.GPJ GEO TEST.GDT 5/18/23



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	3	15.0	**SILTY SAND(SM)**	**NP**	**NP**	**NP**		
⊠	4	3.0	**SILTY SAND(SM)**	**NP**	**NP**	**NP**		
▲	5	3.0	**SILTY, CLAYEY SAND(SC-SM)**	**21**	**17**	**4**		
★	5	5.0	**SILTY SAND(SM)**	**19**	**16**	**3**		
⊙	6	1.0	**CLAYEY SAND(SC)**	**30**	**16**	**14**		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	3	15.0	**0.43**	**0.098**			**0.0**	**59.6**	**40.4**	
⊠	4	3.0	**9.5**	**0.15**			**1.0**	**67.6**	**31.4**	
▲	5	3.0	**19**	**0.129**			**2.0**	**63.5**	**34.5**	
★	5	5.0	**12.5**	**0.14**			**2.0**	**65.2**	**32.8**	
⊙	6	1.0	**9.5**	**0.117**			**3.0**	**53.1**	**43.9**	

GEO-TEST

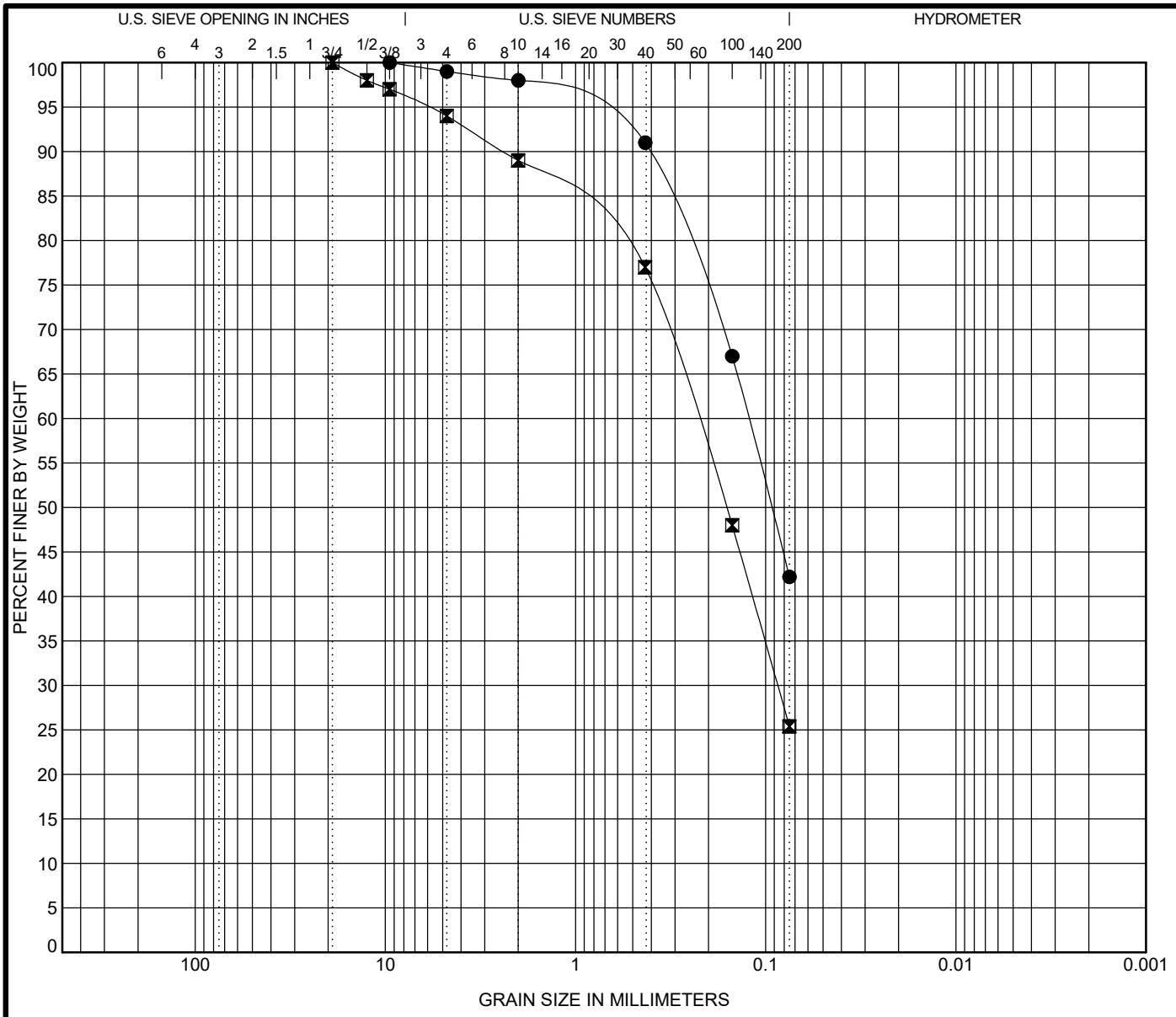
GRAIN SIZE DISTRIBUTION

Project: New Community/Senior Center

Location: Santa Cruz, New Mexico

Number: 1-30106

US GRAIN SIZE 1-30106-COMMUNITY CENTER.GPJ GEO TEST.GDT 5/18/23



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	6	3.0	**CLAYEY SAND(SC)**	**32**	**18**	**14**		
⊠	6	5.0	**SILTY SAND(SM)**	**NP**	**NP**	**NP**		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	6	3.0	**9.5**	**0.123**			**1.0**	**56.8**	**42.2**	
⊠	6	5.0	**19**	**0.232**	**0.086**		**6.0**	**68.6**	**25.4**	

GEO-TEST

GRAIN SIZE DISTRIBUTION

Project: New Community/Senior Center

Location: Santa Cruz, New Mexico

Number: 1-30106

US GRAIN SIZE 1-30106-COMMUNITY CENTER.GPJ GEO TEST.GDT 5/18/23