Western Technologies Inc.

GEOTECHNICAL EVALUATION REPORT

ARROYO HONDO DE SANTA FE
Santa Fe, New Mexico

WT Job No. 3222JK148

PREPARED FOR:
JENKINSGAVIN AND DEVELOPMENT
130 Grant Avenue, Suite 101
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February 1, 2023

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1.0 PURPOSE

This report contains the results of our geotechnical evaluation for the proposed Arroyo Hondo de Santa Fe subdivision and off-site sewer interceptor to be located at the above referenced site in Santa Fe, New Mexico. The purpose of these services is to provide information and recommendations regarding:

- Subsurface conditions
- Lateral earth pressures
- Slabs-on-grade
- Drainage
- Foundation design parameters
- Earthwork guidelines
- Pavement sections
- Seismic conditions

Results of the field exploration, field tests, and laboratory testing program are presented in the Appendices.

2.0 PROJECT DESCRIPTION

Project information supplied by Jennifer Jenkins, indicates that the proposed project consists of a subdivision with one-to two story residential structures, approximately 4 miles of sewer interceptor and associated roadways to be located in Santa Fe, New Mexico. We assumed that maximum wall and column loads will not exceed 3 kips per linear foot (klf) and 50 kips, respectively. Final site grading plans were not available at the time of this report. Should this information not be correct WT should be notified.

3.0 SCOPE OF SERVICES

3.1 Field Exploration

Twenty-Two (22) borings were drilled to depths ranging from 16.5 to 21.5 feet below existing site grade in the proposed areas, except boring 10. At boring 10, drilling was

terminated at 3 feet due to utility conflicts. The borings were at the approximate locations shown on the attached Boring Location Diagram. A field log was prepared for each boring. These logs contain visual classifications of the materials encountered during drilling as well as interpolation of the subsurface conditions between samples. Final logs, included in Appendix A, represent our interpretation of the field logs and may include modifications based on laboratory observations and tests of the field samples. The final logs describe the materials encountered, their thickness, and the locations where samples were obtained.

The Unified Soil Classification System was used to classify soils. The soil classification symbols appear on the boring logs and are briefly described in Appendix A. Local and regional geologic characteristics were used to estimate the seismic design criteria.

3.2 Laboratory Analyses

Laboratory analyses were performed on representative soil samples to aid in material classification and to estimate pertinent engineering properties of the on-site soils for preparation of this report. Testing was performed in general accordance with applicable standard test methods. The following tests were performed, and the results are presented in Appendix B.

- Field moisture content
- In-situ soil density
- Swell
- Compression
- Sieve analysis
- Liquid Limit and Plasticity Index
- Corrosivity

3.3 Analyses and Report

This geotechnical engineering report includes a description of the project, a discussion of the field and laboratory testing programs, a discussion of the subsurface conditions, and design recommendations as appropriate to its purpose. The scope of services for this project does not include, either specifically or by implication, any environmental assessment of the site, discovery of underground storage tanks or other underground structures, or identification of contaminated or hazardous materials or conditions. If there is concern about the potential for such contamination, other studies should be undertaken. We are available to discuss the scope of such studies with you.

3.4 Previous Evaluation

Prior to this report, a subsurface exploration and geotechnical evaluation was performed by Western Technologies at the proposed subdivision area. The results of this previous exploration were presented in a report entitled Preliminary Geotechnical Evaluation, Arroyo Hondo Santa Fe, WT Job No. 3222JJ004, dated February 14, 2022.

The results of the previous exploration correspond relatively well with the results of this current exploration and evaluation, recognizing the normal variations in foundation materials. The previous exploration and evaluation information is not repeated herein; however, reference is made to inform the reader of the existence of this previous report.

4.0 SITE CONDITIONS

4.1 Surface

At the time of our exploration, the site was essentially undeveloped in the north section of the project. Development around the south end of the project consisted of residential subdivisions or undeveloped private property lots. The ground surface was relatively flat and contained a sparse growth of grasses and shrubs. Site drainage trended to the southwest as sheet surface flow. The site starts south of NM-14 and Fire Place. The site continues parallel to I-25 and ends west of Rabbit Road and Entrada de Santiago.

4.2 Subsurface

As presented on the Boring Logs, surface soils to depths of 10-feet of exploration consisted of loose to medium dense Silty to Clayey SAND and Poorly-to Well-graded SAND, and firm to stiff Lean CLAY. Near surface soils are of nil to medium plasticity. The materials underlying the surface soils and extending to the full depth of exploration consisted of very stiff Lean CLAY and medium dense to very dense Clayey SAND, Poorly-graded SAND and Silty SAND. Groundwater was not encountered in any boring at the time of exploration. A detailed description of the soils encountered can be found on the boring logs in Appendix A.

5.0 GEOTECHNICAL PROPERTIES & ANALYSIS

5.1 Laboratory Tests

Laboratory test results (see Appendix B) indicate that on-site subsoils near shallow foundation level exhibit low compressibility at existing water contents. Low to high levels of additional compression occurs when the water content is increased.

Chemical tests were performed on representative samples of on-site soils to determine the amount of water-soluble sulfates and chlorides. The test results indicate that the soils classify as negligibly corrosive to concrete according to Table 19.3.1.1 of ACI 318-19.

Minimum electrical resistivity and hydrogen ion concentration (pH) were performed on representative samples to aid in assessing, by others, the potential for corrosion of buried metals. The test results are presented in Appendix B.

6.0 RECOMMENDATIONS

6.1 General

Recommendations contained in this report are based on our understanding of the project criteria described in Section 2.0 and the assumption that the soil and subsurface conditions are those disclosed by the explorations. Others may change the plans, final elevations, number and type of structures, foundation loads, and floor levels during design or construction. Substantially different subsurface conditions from those described herein may be encountered or become known. Any changes in the project criteria or subsurface conditions shall be brought to our attention in writing.

6.2 Design Considerations

Some of the surficial on-site soils encountered are loose in relative density. In addition, laboratory test results indicate that these soils become weaker and collapsible with an increase in moisture content. These soils are not suitable for support of foundations in their present state and should be over-excavated and recompacted as recommended in the **EARTHWORK** section of this report. Proper drainage should be provided to help prevent infiltration of moisture below the foundations.

It should be noted that shallow foundation systems are not designed to resist soil movements resulting from sewer or plumbing leaks, excessive or leaking irrigation systems, poor drainage, or water ponding near structures.

6.3 Building Foundations

The proposed homes can be supported by s[read footing foundations bearing on engineered fills. An allowable bearing capacity of 2,500 pounds per square foot (psf) should be used in proportioning the footings. Footings should bear a minimum of 24 inches below finished grade, which is the lowest adjacent grade for perimeter footings and floor level for interior footings. Recommended minimum widths of column, wood-frame and/or masonry wall footings are 24 and 16 inches, respectively.

We anticipate that total and differential settlement of the proposed structures, supported as recommended, should be less than ¾ inch and ½ inch, respectively. Additional foundation movements could occur if water from any source infiltrates the foundation soils. Therefore, proper drainage should be provided in the final design and during construction.

When new foundations are adjacent to the existing structure, the new foundations should be at least as deep as the existing foundations, or the deeper foundations should be designed for increased loading. Support of the existing foundations would be required if adjacent new foundations will be constructed lower than the existing foundations.

Finished grade is the lowest adjacent grade for perimeter footings and floor level for interior footings. The allowable bearing capacities apply to dead loads plus design live load conditions.

For foundations adjacent to slopes, a minimum horizontal setback of 5 feet should be maintained between the foundation base and slope face. In addition, the setback should be such that an imaginary line extending downward at 45 degrees from the nearest foundation edge does not intersect the slope.

All footings, stem walls and masonry walls should be reinforced to reduce the potential for distress caused by differential foundation movements. The use of joints at openings or other discontinuities in masonry walls is recommended.

We recommend that the geotechnical engineer or his representative observe the footing excavations before reinforcing steel and concrete are placed. This observation is to evaluate whether the soils exposed are similar to those anticipated for support of the footings. Any soft, loose, or unacceptable soils should be undercut to suitable materials and backfilled with approved fill materials or lean concrete. Soil backfill should be properly compacted.

6.4 Sewer Interceptor Foundation

The soils encountered along the proposed alignments are predominantly Class III according to the New Mexico Standard Specification for Public Works (NMSSPW), Section 701. These materials should provide adequate support for the sewer interceptor. Borings 7, 9, 12, and 15 show Class IV, which is not a good supporting material. Class IV material, if encountered, should be removed and replaced with Classes I, II and III in accordance with NMSSPW. In any case, the sewer interceptor foundation should be prepared in accordance with NMSSPW, Section 701.12. Differential settlement in the pipe should not exceed ½ of an inch for 20-foot sewer sections if the recommended **EARTHWORK** is followed. Settlement will primarily result from elastic movement of the soil mass during backfill and compaction operations.

The sewer line should be installed using NMSSPW, specifically, Section 701.13 and any other applicable national, state, city, and county standards. Bedding materials should surround the sewer line for support. The sewer line trench backfill should be designed in accordance with NMSSPW, Section 701.14.

6.5 Lateral Design Criteria

Lateral loads may be resisted by concrete interface friction and by passive resistance. For shallow foundations bearing on properly compacted fill at this site we recommend the following lateral resistance criteria:

- Passive:
  Shallow wall footings.....250 psf/ft
  Shallow column footings.....400 psf/ft

- Coefficient of base friction 0.40

Earth retaining structures less than 10 feet in height, above any free water surface, with level backfill and no surcharge loads may be designed using the equivalent fluid pressure

method. Recommended active equivalent fluid pressures and coefficients of base friction for unrestrained elements are:

- Active:
  Undisturbed subsoil.....40 psf/ft
  Compacted granular backfill .....30 psf/ft
  Compacted on-site soils .....35 psf/ft
  Clay site soils.....not recommended for use

- Coefficient of base friction (active).....0.40

The equivalent fluid pressures presented herein do not include the lateral pressures arising from the presence of:

- hydrostatic conditions, submergence or partial submergence
- sloping backfill, positively or negatively
- surcharge loading, permanent or temporary
- seismic or dynamic conditions

We recommend a free-draining soil layer or manufactured geosynthetic material be constructed adjacent to the back of any retaining walls. A filter may be required between the soil backfill and drainage layer. This drainage zone should help prevent development of hydrostatic pressure on the wall. This vertical drainage zone should be tied into a gravity drainage system at the base of the wall. It is important that all backfill be properly placed and compacted. Backfill should be mechanically compacted in layers. Flooding or jetting should not be permitted. Care should be taken not to damage the walls when placing the backfill. Backfills should be observed and tested during placement.

6.6 Seismic Considerations

Structures should be designed in accordance with applicable building codes. The seismic design parameters presented in the following table, in accordance with the 2015 International Building Code are applicable to the project site:

Seismic Design Parameters International Building Code 2015	
Soil Site Class per SPT blow count	D
Mapped Spectral Response Acceleration at 0.2 sec period (S_s)	0.45g
Mapped Spectral Response Acceleration at 1.0 sec period (S_1)	0.135g
Site Coefficient for 0.2 sec period (F_a)	1.44
Site Coefficient for 1.0 sec period (F_v)	2.262
Design Spectral Response Acceleration at 0.2 sec period (S_{DS})	0.432g
Design Spectral Response Acceleration at 1.0 sec period (S_{D1})	0.203g

6.7 Slab-on-Grade Support

Floor slabs can be supported on properly placed and compacted fill. The slab subgrade should be prepared by the procedures outlined in this report. A minimum 4-inch layer of base course should be provided beneath all slabs to help prevent capillary rise and a damp slab. The modulus of subgrade reaction (k) is estimated to be 150 pounds per cubic inch (pci), based upon a 30-inch diameter plate.

The use of vapor retarders or barriers is desirable for any slab-on-grade where the floor will be covered by products using water-based adhesives, wood, vinyl backed carpet, impermeable floor coatings (urethane, epoxy, acrylic terrazzo, etc.) or where the floor will be in contact with moisture sensitive equipment or product. When used, the design and installation should be in accordance with the recommendations given in ACI 302.1R and 302.2R. Final determination on the use of a vapor retarder should be left to the slab designer.

All concrete placement and curing operations should follow the American Concrete Institute manual recommendations. Improper curing techniques and/or high slump (high water-cement ratio) could cause excessive shrinkage, cracking or curling. Concrete slabs should be allowed to cure adequately before placing vinyl or other moisture sensitive floor covering.

6.8 Drainage

The major cause of soil problems in this vicinity is moisture increase in soils below structures. Therefore, it is extremely important that positive drainage be provided during construction and maintained throughout the life of the structure. Infiltration of water into utility or foundation excavations must be prevented during construction.

Planters or other surface features that could retain water adjacent to the structure should not be constructed.

In areas where sidewalks or paving do not immediately adjoin the structure, protective slopes should be provided with an outfall of 5 percent for at least 10 feet from perimeter walls. Scuppers and drainpipes should be designed to provide drainage away from the structure for a minimum of 10 feet. Backfill against footings, exterior walls, and in utility and sprinkler line trenches should be well compacted and free of all construction debris to minimize the possibility of moisture infiltration.

6.9 Pavements

The on-site soils are considered as poor-to fair-quality materials for support of pavements. The types of traffic anticipated to use the facility include passenger vehicles and small to medium size trucks. On this basis, a daily traffic value of two Equivalent 18-kip Single Axle Loads (ESAL) was estimated for passenger car parking and drives (light duty) and a daily traffic value of five ESALS were used for major access drives. A resilient modulus (M_r) of 8,000 pounds per square inch was assigned to the on-site soil. A reliability value of 80 percent was assigned to the facility that corresponds to occasional interruption of traffic for pavement repairs. Based upon these parameters, the resulting pavement sections according to the AASHTO procedure for a 20-year design life are:

Traffic Area	Asphalt Concrete Pavement (inches)	Base Course (inches)
Passenger car parking and roadways	3.0	4.0
Major access drives	3.5	6.0

For existing roadways crossing the sewer interceptor, if existing pavement sections are thicker than those recommended above, the existing pavement section should be matched.

For loading and unloading areas and at dumpster locations, we recommend that a rigid pavement section be considered for these areas. A minimum 6-inch thick portland cement concrete pavement is recommended. Base course, while not required from a structural point of view, may be desirable for subdrainage.

Base course and asphalt concrete should conform to the New Mexico Department of Transportation (NMDOT) Standard Specifications for Road and Bridge Construction or the New Mexico Standard Specifications for Public Works Construction, whichever is applicable. Bituminous surfacing should be constructed of dense-graded, central plant-mix, asphalt concrete and SP-IV or SP-III.

Material and compaction requirements should conform to recommendations presented under **EARTHWORK**. The gradient of paved surfaces should ensure positive drainage. Water should not pond in areas directly adjoining paved sections. The on-site (clayey) subgrade soils may soften and lose stability if subjected to conditions that result in an increase in water content.

The "design life" (20 years) of a pavement is defined as the expected life at the end of which reconstruction of the pavement will need to occur. Normal maintenance, including crack sealing, slurry sealing, and/or chip sealing, should be performed during the life of the pavement.

The pavement section designs presented herein are based upon normal traffic loading. Some damage may occur in localized areas during periods of abnormally heavy traffic loads, such as from repeated passage of construction equipment, heavily loaded delivery, haul or concrete trucks during facility construction. Consideration should be given to a staged construction and maintenance program or alternative access routes during these periods to limit damage to the final pavement section.

7.0 EARTHWORK

7.1 General

The conclusions contained in this report for the proposed construction are contingent upon compliance with recommendations presented in this section. Any excavating, trenching, or disturbance that occurs after completion of the earthwork must be backfilled, compacted and tested in accordance with the recommendations contained herein. It is not reasonable to rely upon our conclusions and recommendations if any future unobserved and untested trenching, earthwork activities or backfilling occurs.

If any unobserved and untested earthwork, trenching or backfilling occurs, then the conclusions and recommendations in this report may not be relied on. We recommend

that Western Technologies Inc. be retained to provide services during these phases of the project. Observation and testing of all foundation excavations should be performed prior to placement of reinforcing steel and concrete to confirm that foundations are constructed on satisfactory bearing materials.

7.2 Site Clearing

Strip and remove any existing, vegetation, debris, and any other deleterious materials from the building and pavement areas. The building area is defined as that area within the building footprint plus 5 feet beyond the perimeter of that footprint. All exposed surfaces should be free of mounds and depressions that could prevent uniform compaction.

7.3 Excavation

We anticipate that excavations for shallow foundations and utility trenches for the proposed construction can be accomplished with conventional equipment. The speed and ease of excavation is dependent on the nature of the deposit, the type of equipment used, and the skill and experience of the equipment operator.

On-site soils may become unworkable at high water contents. Workability may be improved by scarifying and drying. Over-excavation of wet zones and replacement with granular materials may be necessary. The use of lightweight excavation and compaction equipment may be required to minimize subgrade movement.

The soils to be penetrated by the proposed excavations may vary significantly across the site. Our soil classifications are based solely on the materials encountered in widely spaced exploratory test borings. The contractor should verify that similar conditions exist throughout the proposed area of excavation. If different subsurface conditions are found at the time of construction, we should be contacted immediately to evaluate the conditions encountered.

7.3.1 Temporary Excavations and Slopes

Temporary, non-surcharged construction excavations should be sloped or shored. The individual contractor should be made responsible for designing and constructing stable, temporary excavations as required to maintain stability of both the excavation sides and bottom. All excavations should be sloped or shored in the interest of safety following local and federal regulations, including current OSHA excavation and trench

safety standards. OSHA recommends a maximum slope inclination of ¾:1 (horizontal:vertical) for Type A soils, 1:1 for Type B soils, and 1½:1 for Type C soils. Majority of the soils encountered in the site are classified as class C. Consequently, we recommend that temporary and permanent cut slopes less than 20 feet in height should not exceed 1½:1.

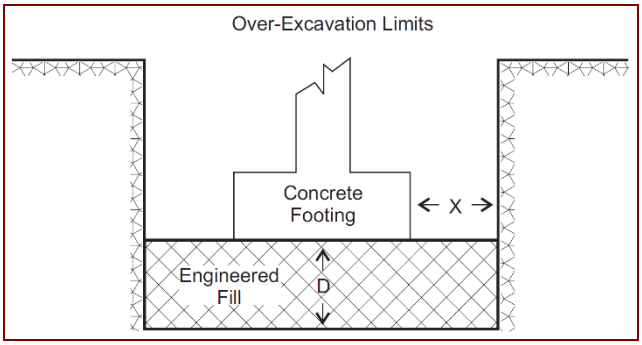
As a safety measure, it is recommended that all vehicles and soil piles be kept a minimum lateral distance back from the crest of the slope at least equal to the slope height. The exposed slope face should be protected against the elements.

If any excavation, including a utility trench, is extended to a depth of more than 20 feet, it will be necessary to have the side slopes designed by a professional engineer.

We recommend that the contractor retain a geotechnical engineer to observe the soils exposed in all excavations and provide engineering design for the slopes. This will provide an opportunity to classify the soil types encountered, and to modify the excavation slopes as necessary. This also allows the opportunity to analyze the stability of the excavation slopes during construction.

7.4 Foundation Preparation

In footing areas, remove existing soils as required to a minimum depth of 4 feet below the bottom of the footing (depth D in the diagram below) or 6 feet below existing grade, whichever is deeper. Removal and recompaction should extend a minimum of 4 feet beyond the footing edges (length X in the diagram below).



7.5 Slab-on-grade Preparation

Slabs-on-grade should be founded on engineered fill material. Remove existing soils to a minimum depth of 18 inches feet below the bottom of the slab. Following removal, the

exposed soils should be moisture conditioned and recompacted as recommended herein. Replace the overexcavated material with properly compacted, low-expansive, fill material. On-site clayey soils cannot be re-used as engineered fill.

7.6 Pavement Preparation

The subgrade should be scarified, moistened as required, and recompacted for a minimum depth of 10 inches prior to placement of fill and pavement materials.

7.7 Materials

Clean imported materials with low expansive potentials and maximum dimension of 6 inches or imported materials may be used as fill material for the following:

- Foundation areas
- Interior slab areas
- Pavement areas
- Backfill

Frozen soils should not be used as fill or backfill.

Imported soils should conform to the following:

- Gradation (ASTM C136): percent finer by weight

6"	100
4"	85-100
¾”	70-100
No. 4 Sieve	50-100
No. 200 Sieve	30 (max)

- Maximum Plasticity Index 5
- Maximum soluble sulfates (%) 0.10

Base course should conform to NMDOT Specifications.

7.8 Placement and Compaction

a. Place and compact fill in horizontal lifts, using equipment and procedures that will produce recommended water contents and densities throughout the lift.

b. Uncompacted lift thickness should not exceed 10 inches.
c. Materials should be compacted to the following:

Material	Minimum Percent Compaction (ASTM D1557)
On-site or imported soil, reworked and fill	95
Base course below slabs-on-grade	95
Aggregate base below pavement	96
Nonstructural backfill	90

Imported and on-site soils should be compacted within a water content range of 3 percent below to 3 percent above optimum.

7.9 Compliance

Recommendations for foundations, slabs-on-grade, and pavements supported on compacted fills or prepared subgrade depend upon compliance with the **EARTHWORK** recommendations. To assess compliance, observation and testing should be performed under the direction of a WT geotechnical engineer. Please contact us to provide these observation and testing services.

8.0 PLAN REVIEW

Foundation and grading plans were not available at the time of this report. WT should be retained to review the final plans to determine if they are consistent with the recommendations presented in this report. If the Client does not retain WT to review the plans and specifications, WT shall have no responsibility for the suitability of the plans for project application.

9.0 ADDITIONAL SERVICES

The recommendations provided in this report are based on the assumption that a sufficient schedule of tests and observations will be performed during construction to verify compliance. At a minimum, these tests and observations should be comprised of the following:

- Observations and testing during site preparation and earthwork,
- Observation of foundation excavations, and
- Consultation as may be required during construction.

Retaining the geotechnical engineer who developed your report to provide construction observation is the best way to verify compliance and to help you manage the risks associated with unanticipated conditions.

10.0 LIMITATIONS

This report has been prepared assuming the project criteria described in **2.0 PROJECT DESCRIPTION**. If changes in the project criteria occur, or if different subsurface conditions are encountered or become known, the conclusions and recommendations presented herein shall become invalid. In any such event, WT should be contacted in order to assess the effect that such variations may have on our conclusions and recommendations. If WT is not retained for the construction observation and testing services to determine compliance with this report, our professional responsibility is accordingly limited.

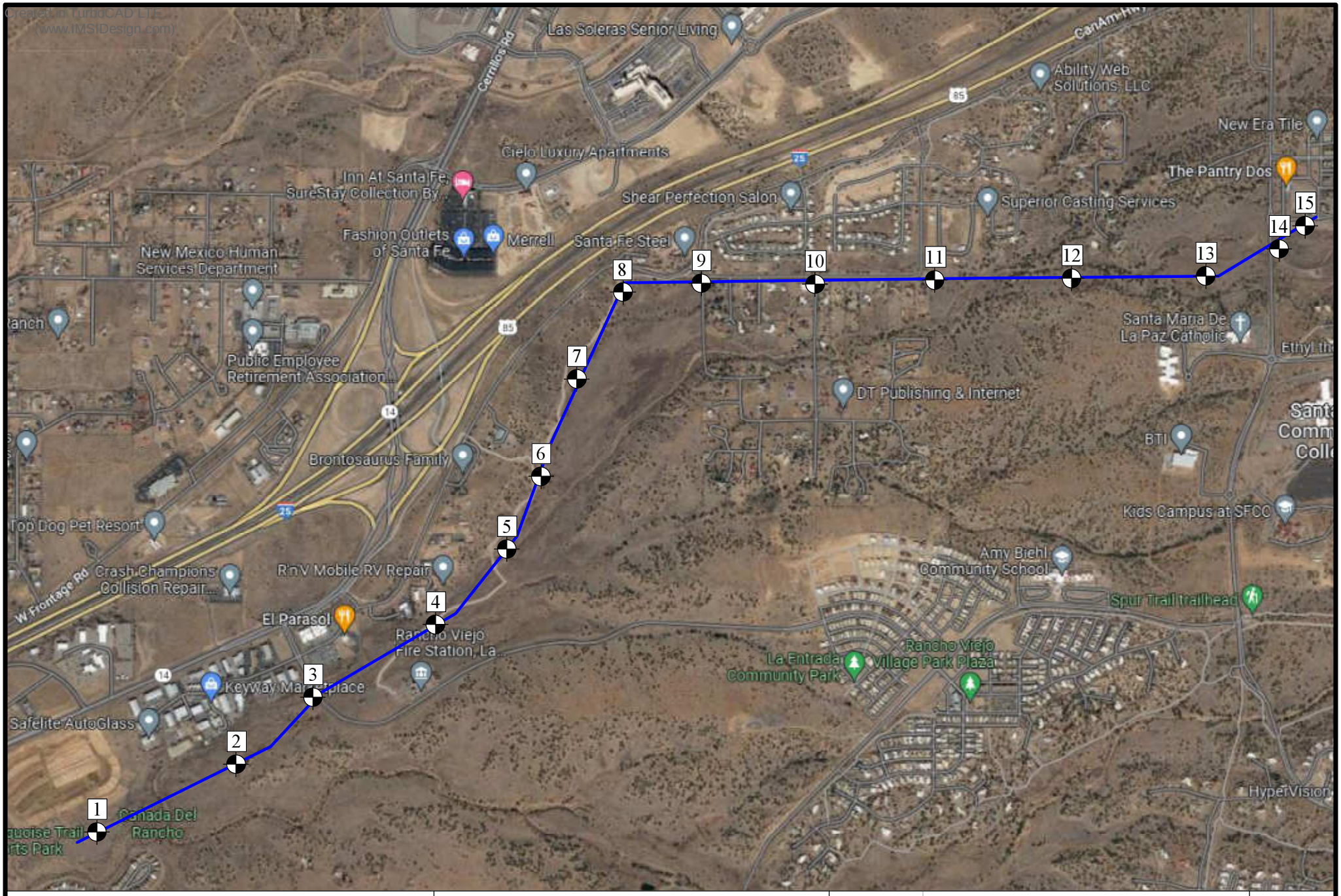
The recommendations presented are based entirely upon data derived from a limited number of samples obtained from widely spaced explorations. The attached logs are indicators of subsurface conditions only at the specific locations and times noted. This report assumes the uniformity of the geology and soil structure between explorations, however variations can and often do exist. Whenever any deviation, difference, or change is encountered or becomes known, WT should be contacted.

This report is for the exclusive benefit of our client alone. There are no intended third-party beneficiaries of our contract with the client or this report, and nothing contained in the contract or this report shall create any express or implied contractual or any other relationship with, or claim or cause of action for, any third party against WT.

This report is valid for the earlier of one year from the date of issuance, a change in circumstances, or discovered variations. After expiration, no person or entity shall rely on this report without the express written authorization of WT.

11.0 CLOSURE

We prepared this report as an aid to the designers of the proposed project. The comments, statements, recommendations and conclusions set forth in this report reflect the opinions of the authors. These opinions are based upon data obtained at the location of the explorations, and from laboratory tests. Work on your project was performed in accordance with generally accepted standards and practices utilized by professionals providing similar services in this locality. No other warranty, express or implied, is made.



Approximate Boring Location

Proposed Sewer Line

NOT TO SCALE

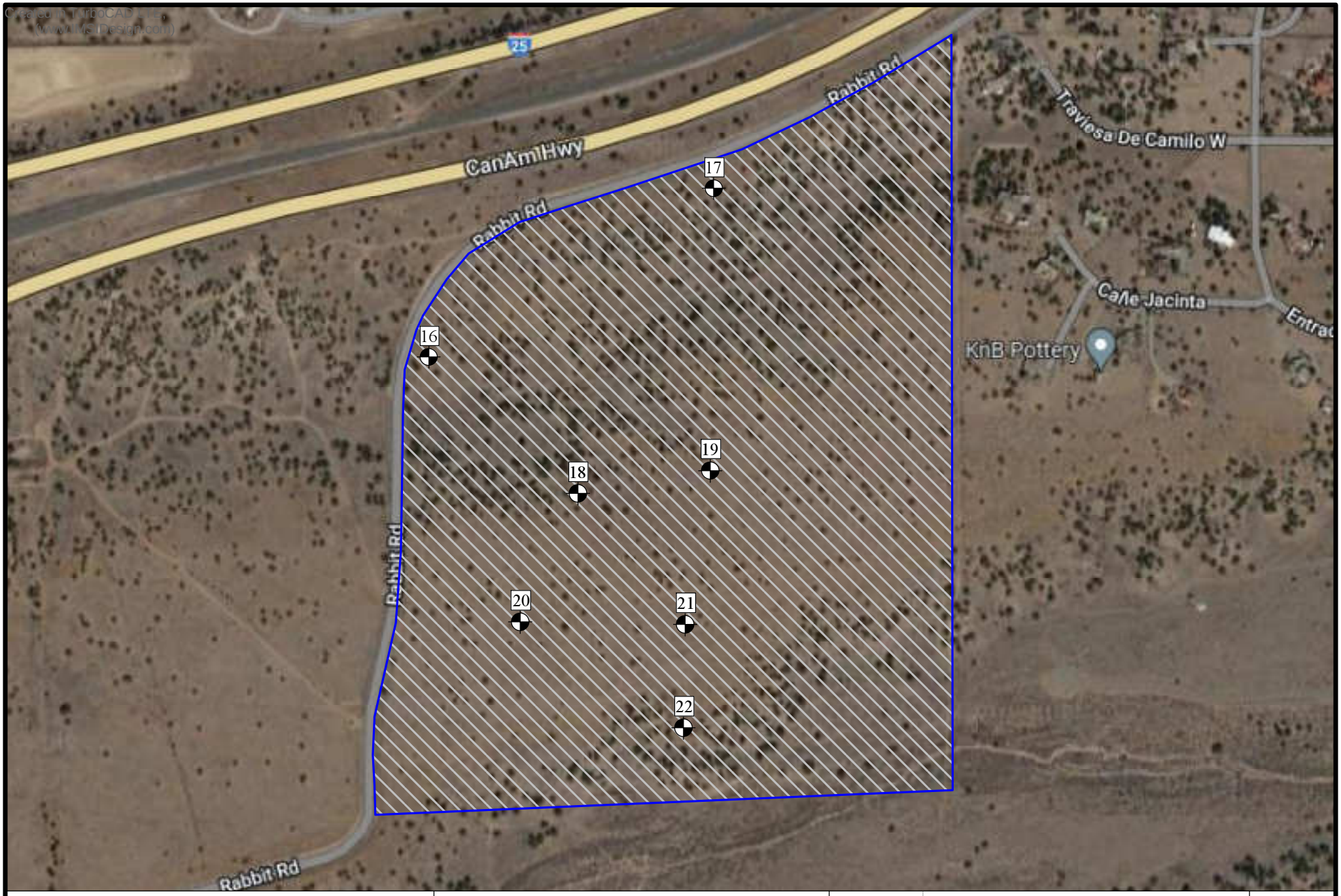
Geotechnical Environmental Inspections Materials

Western Technologies Inc.
The Quality People
Since 1955

PROJECT:	**ARROYO HONDO DE SANTA FE**
JOB NO.:	**3222JJ148**

PLATE **1**

BORING LOCATION DIAGRAM



Approximate Boring Location

Proposed Subdivision

NOT TO SCALE

Geotechnical
Environmental
Inspections
Materials

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PROJECT:	**ARROYO HONDO DE SANTA FE**
JOB NO.:	**3222JJ148**

BORING LOCATION DIAGRAM

PLATE

2

Allowable Soil Bearing Capacity	The recommended maximum contact stress developed at the interface of the foundation element and the supporting material.
Backfill	A specified material placed and compacted in a confined area.
Base Course	A layer of specified aggregate material placed on a subgrade or subbase.
Base Course Grade	Top of base course.
Bench	A horizontal surface in a sloped deposit.
Caisson/Drilled Shaft	A concrete foundation element cast in a circular excavation which may have an enlarged base (or belled caisson).
Concrete Slabs-On-Grade	A concrete surface layer cast directly upon base course, subbase or subgrade.
Crushed Rock Base Course	A base course composed of crushed rock of a specified gradation.
Differential Settlement	Unequal settlement between or within foundation elements of a structure.
Engineered Fill	Specified soil or aggregate material placed and compacted to specified density and/or moisture conditions under observations of a representative of a soil engineer.
Existing Fill	Materials deposited through the action of man prior to exploration of the site.
Existing Grade	The ground surface at the time of field exploration.
Expansive Potential	The potential of a soil to expand (increase in volume) due to absorption of moisture.
Fill	Materials deposited by the actions of man.
Finished Grade	The final grade created as a part of the project.
Gravel Base Course	A base course composed of naturally occurring gravel with a specified gradation.
Heave	Upward movement.
Native Grade	The naturally occurring ground surface.
Native Soil	Naturally occurring on-site soil.
Rock	A natural aggregate of mineral grains connected by strong and permanent cohesive forces. Usually requires drilling, wedging, blasting or other methods of extraordinary force for excavation.
Sand and Gravel Base Course	A base course of sand and gravel of a specified gradation.
Sand Base Course	A base course composed primarily of sand of a specified gradation.
Scarify	To mechanically loosen soil or break down existing soil structure.
Settlement	Downward movement.
Soil	Any unconsolidated material composed of discrete solid particles, derived from the physical and/or chemical disintegration of vegetable or mineral matter, which can be separated by gentle mechanical means such as agitation in water.
Strip	To remove from present location.
Subbase	A layer of specified material placed to form a layer between the subgrade and base course.
Subbase Grade	Top of subbase.
Subgrade	Prepared native soil surface.

COARSE-GRAINED SOILS

LESS THAN 50% FINES

GROUP SYMBOLS	DESCRIPTION	MAJOR DIVISIONS
GW	WELL-GRADED GRAVEL OR WELL-GRADED GRAVEL WITH SAND, LESS THAN 5% FINES	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE
GP	POORLY-GRADED GRAVEL OR POORLY-GRADED GRAVEL WITH SAND, LESS THAN 5% FINES	
GM	SILTY GRAVEL OR SILTY GRAVEL WITH SAND, MORE THAN 12% FINES	
GC	CLAYEY GRAVEL OR CLAYEY GRAVEL WITH SAND, MORE THAN 12% FINES	
SW	WELL-GRADED SAND OR WELL-GRADED SAND WITH GRAVEL, LESS THAN 5% FINES	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE
SP	POORLY-GRADED SAND OR POORLY-GRADED SAND WITH GRAVEL, LESS THAN 5% FINES	
SM	SILTY SAND OR SILTY SAND WITH GRAVEL, MORE THAN 12% FINES	
SC	CLAYEY SAND OR CLAYEY SAND WITH GRAVEL, MORE THAN 12% FINES	

NOTE: Coarse-grained soils receive dual symbols if they contain 5% to 12% fines (e.g., SW-SM, GP-GC).

FINE-GRAINED SOILS

MORE THAN 50% FINES

GROUP SYMBOLS	DESCRIPTION	MAJOR DIVISIONS
ML	SILT, SILT WITH SAND OR GRAVEL, SANDY SILT, OR GRAVELLY SILT	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50
CL	LEAN CLAY OF LOW TO MEDIUM PLASTICITY, SANDY CLAY, OR GRAVELLY CLAY	
OL	ORGANIC SILT OR ORGANIC CLAY OF LOW TO MEDIUM PLASTICITY	
MH	ELASTIC SILT, SANDY ELASTIC SILT, OR GRAVELLY ELASTIC SILT	SILTS AND CLAYS LIQUID LIMIT MORE THAN 50
CH	FAT CLAY OF HIGH PLASTICITY, SANDY FAT CLAY, OR GRAVELLY FAT CLAY	
OH	ORGANIC SILT OR ORGANIC CLAY OF HIGH PLASTICITY	
PT	PEAT AND OTHER HIGHLY ORGANIC SOILS	HIGHLY ORGANIC SOILS

NOTE: Fine-grained soils may receive dual classification based upon plasticity characteristics (e.g. CL-ML).

SOIL SIZES

COMPONENT	SIZE RANGE
BOULDERS	Above 12 in.
COBBLES	3 in. – 12 in.
GRAVEL	No. 4 – 3 in.
Coarse	¾ in. – 3 in.
Fine	No. 4 – ¾ in.
SAND	No. 200 – No. 4
Coarse	No. 10 – No. 4
Medium	No. 40 – No. 10
Fine	No. 200 – No. 40
Fines (Silt or Clay)	Below No. 200

NOTE: Only sizes smaller than three inches are used to classify soils

CONSISTENCY

CLAYS & SILTS	BLOWS PER FOOT
VERY SOFT	0 – 2
SOFT	3 – 4
FIRM	5 – 8
STIFF	9 – 15
VERY STIFF	16 – 30
HARD	OVER 30

RELATIVE DENSITY

SANDS & GRAVELS	BLOWS PER FOOT
VERY LOOSE	0 – 4
LOOSE	5 – 10
MEDIUM DENSE	11 – 30
DENSE	31 – 50
VERY DENSE	OVER 50

NOTE: Number of blows using 140-pound hammer falling 30 inches to drive a 2-inch-OD (1⅜-inch ID) split-barrel sampler (ASTM D1586).

PLASTICITY OF FINE GRAINED SOILS

PLASTICITY INDEX	TERM
0	NON-PLASTIC
1 – 7	LOW
8 – 20	MEDIUM
Over 20	HIGH

DEFINITION OF WATER CONTENT

DRY
SLIGHTLY DAMP
DAMP
MOIST
WET
SATURATED

The number shown in **"BORING NO."** refers to the approximate location of the same number indicated on the "Boring Location Diagram" as positioned in the field by pacing or measurement from property lines and/or existing features, or through the use of Global Positioning System (GPS) devices. The accuracy of GPS devices is somewhat variable.

"DRILLING TYPE" refers to the exploratory equipment used in the boring wherein **HSA = hollow stem auger**, and the dimension presented is the outside diameter of the HSA used.

"N" in "BLOW COUNTS" refers to a 2-inch outside diameter split-barrel sampler driven into the ground with a 140 pound drop-hammer dropped 30 inches repeatedly until a penetration of 18 inches is achieved or until refusal. The number of blows, or "blow count", of the hammer is recorded for each of three 6-inch increments totaling 18 inches. The number of blows required for advancing the sampler for the last 12 inches (2nd and 3rd increments) is defined as the Standard Penetration Test (SPT) "**N**"-Value. Refusal to penetration is considered more than 50 blows per 6 inches. (Ref. ASTM D1586).

"R" in "BLOW COUNTS" refers to a 3-inch outside diameter ring-lined split barrel sampler driven into the ground with a 140 pound drop-hammer dropped 30 inches repeatedly until a penetration of 12 inch is achieved or until refusal. The number of blows required to advance the sampler 12 inches is defined as the "**R**" blow count. The "**R**" blow count requires an engineered conversion to an equivalent SPT N-Value. Refusal to penetration is considered more than 50 blows per foot. (Ref. ASTM D3550).

"CS" in "BLOWS/FT." refers to a 2½-in. outside diameter California style split-barrel sampler, lined with brass sleeves, driven into the ground with a 140-pound hammer dropped 30 inches repeatedly until a penetration of 18 inches is achieved or until refusal. The number of blows of the hammer is recorded for each of the three 6-inch increments totaling 18 inches. The number of blows required for advancing the sampler for the last 12 inches (2nd and 3rd increments) is defined as the "CS" blow count. The "CS" blow count requires an engineered conversion to an equivalent SPT N-Value. Refusal to penetration is considered more than 50 blows for a 6-inch increment. (Ref. ASTM D 3550)

"SAMPLE TYPE" refers to the form of sample recovery, in which **N** = Split-barrel sample, **R** = Ring-lined sample, **"CS"** = California style split-barrel sample, **G** = Grab sample, **B** = Bucket sample, **C** = Core sample (ex. diamond bit rock coring).

"DRY DENSITY (LBS/CU FT)" refers to the laboratory-determined dry density in pounds per cubic foot. The symbol **"NR"** indicates that no sample was recovered.

"WATER (MOISTURE) CONTENT" (% of Dry Wt.) refers to the laboratory-determined water content in percent using the standard test method ASTM D2216.

"USCS" refers to the "Unified Soil Classification System" Group Symbol for the soil type as defined by ASTM D2487 and D2488. The soils were classified visually in the field, and where appropriate, classifications were modified by visual examination of samples in the laboratory and/or by appropriate tests.

These notes and boring logs are intended for use in conjunction with the purposes of our services defined in the text. Boring log data should not be construed as part of the construction plans nor as defining construction conditions.

Boring logs depict our interpretations of subsurface conditions at the locations and on the date(s) noted. Variations in subsurface conditions and characteristics may occur between borings. Groundwater levels may fluctuate due to seasonal variations and other factors.

The stratification lines shown on the boring logs represent our interpretation of the approximate boundary between soil or rock types based upon visual field classification at the boring location. The transition between materials is approximate and may be more or less gradual than indicated.

DATE DRILLED: **1-12-23**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 1

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **S. O'Herron-Alex**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
6.1		G				SC		Clayey SAND; brown, medium dense, damp
6.6	84	R		12				
11.5	74	R		11	5			
1.3	118	R		43	10	SP-SC		Poorly Graded SAND with Clay; brown / light brown, dense, damp
		N		20	15	SC		Clayey SAND; with gravel, brown, medium dense, damp
		N		19	20			
								BORING TERMINATED AT 21.5 FEET

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

Geotechnical Environmental Inspections Materials
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Since 1955

PROJECT: **ARROYO HONDO DE SANTA FE**
JOB NO.: **3222JK148**

PLATE **A-4**

BORING LOG

DATE DRILLED: **1-12-23**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 2

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **S. O'Herron-Alex**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
7.2		G				SC-SM		Silty Clayey SAND; brown, loose, damp
		N		8				
		N		11	5			Medium dense
		N		27	10	SP		Poorly Graded SAND; light brown, medium dense, damp
		N		18	15	SP-SC		Poorly Graded SAND with Clay; brown, medium dense, damp
								BORING TERMINATED AT 16.5 FEET
					20			

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

Geotechnical Environmental Inspections Materials
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PROJECT: **ARROYO HONDO DE SANTA FE**
JOB NO.: **3222JK148**

PLATE **A-5**

BORING LOG

DATE DRILLED: **1-12-23**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 3

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **S. O'Herron-Alex**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
8.5		G				SC		Clayey SAND; brown, medium dense, damp
2.1	104	R		16				
5.2	92	R		8	5			Loose
1.4	103	R		19	10	SP		Poorly Graded SAND; light brown, medium dense, damp
		N		25	15			
		N		40	20			Dense
								BORING TERMINATED AT 21.5 FEET

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

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PROJECT: **ARROYO HONDO DE SANTA FE**
JOB NO.: **3222JK148**

PLATE **A-6**

BORING LOG

DATE DRILLED: **1-12-23**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 4

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **S. O'Herron-Alex**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
6.6		G				SM		Silty SAND; light brown, loose, damp
		N		9				
						SC		Clayey SAND; brown, loose, damp
		N		9	5			
		N		13	10			Medium dense
		N		12	15			
								BORING TERMINATED AT 16.5 FEET
					20			

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

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PROJECT: **ARROYO HONDO DE SANTA FE**
JOB NO.: **3222JK148**

PLATE
A-7

BORING LOG

DATE DRILLED: **1-12-23**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 5

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **S. O'Herron-Alex**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
9.8		G				SC		Clayey SAND; brown, loose, damp
11.6	84	R		7				
		R		11	5			NR
6.4	82	R		9	10			
		N		20	15	SP-SC		Poorly Graded SAND with Clay; light brown, medium dense, damp
		N		18	20			
								BORING TERMINATED AT 21.5 FEET

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

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PROJECT: **ARROYO HONDO DE SANTA FE**
JOB NO.: **3222JK148**

PLATE **A-8**

BORING LOG

DATE DRILLED: **1-12-23**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 6

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **S. O'Herron-Alex**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
5.8		G				SC-SM		Silty Clayey SAND; brown, medium dense, damp
		N		11				
		N		165	5			Light brown
		N		13	10			
		N		15	15			
					20			BORING TERMINATED AT 16.5 FEET

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

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PROJECT: **ARROYO HONDO DE SANTA FE**
JOB NO.: **3222JK148**

PLATE **A-9**

BORING LOG

DATE DRILLED: **1-12-23**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 7

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **S. O'Herron-Alex**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
8.4		G				CL		Lean CLAY; light brown, medium dense, damp
		N		13				
		N		16	5			
		N		25	10			
		N		22	15			
					20			BORING TERMINATED AT 16.5 FEET

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

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PROJECT: **ARROYO HONDO DE SANTA FE**
JOB NO.: **3222JK148**

PLATE **A-10**

BORING LOG

DATE DRILLED: **1-12-23**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 8

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **S. O'Herron-Alex**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
7.1		G				SC-SM		Silty Clayey SAND; brown, medium dense, damp
6.1	94	R		12				
12.9	100	R		13	5			
7.9	85	R		50/11"	10	SP		Poorly Graded SAND; light brown, dense, damp
		N		33	15			
								BORING TERMINATED AT 16.5 FEET
					20			

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

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PROJECT: **ARROYO HONDO DE SANTA FE**
JOB NO.: **3222JK148**

PLATE **A-11**

BORING LOG

DATE DRILLED: **1-12-23**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 9

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **S. O'Herron-Alex**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
7.5		G				CL		Lean CLAY; brown, medium dense, damp
		N		19				
		N		22	5			
		N		28	10			
		N		41	15	SP		Poorly Graded SAND; light brown, dense, damp
								BORING TERMINATED AT 16.5 FEET
					20			

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

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PROJECT: **ARROYO HONDO DE SANTA FE**
JOB NO.: **3222JK148**

PLATE
A-12

BORING LOG

DATE DRILLED: **1-12-23**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 10

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **A. Gonzalez**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
						SC		Clayey SAND; brown, damp
								BORING TERMIANTED AT 3 FEET

5
10
15
20

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Boring terminated at three feet due to utility line hit.**

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

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PROJECT: **ARROYO HONDO DE SANTA FE**
JOB NO.: **3222JK148**

PLATE
A-13

BORING LOG

DATE DRILLED: **1-12-23**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 11

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **A. Gonzalez**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
5.2		G				SC-SM		Silty Clayey SAND; brown, dense, damp
		N		31				
		N		11	5			Medium dense
		N		5	10			Loose
4.2	97	R		9				
6.0	94	R		8	15			
								BORING TERMINATED AT 16 FEET
					20			

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

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PROJECT: **ARROYO HONDO DE SANTA FE**
JOB NO.: **3222JK148**

PLATE
A-14

BORING LOG

DATE DRILLED: **1-12-23**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 12

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **A. Gonzalez**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
3.1		G				SM		Silty SAND; brown, loose, damp
		N		5				
		N		7	5	CL		Sandy Lean CLAY; brown, loose, damp, low plasticity
		N		6	10			
		N		7	15			Light brown
								BORING TERMINATED AT 16.5 FEET
					20			

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

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PROJECT: **ARROYO HONDO DE SANTA FE**
JOB NO.: **3222JK148**

PLATE
A-15

BORING LOG

DATE DRILLED: **1-12-23**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 13

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **A. Gonzalez**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
2.5		G				SP-SM		Poorly Graded SAND with Silt; with gravel, light brown, medium dense, damp
1.5	104	R		19				
3.8	103	R		18	5	SC		Clayey SAND; with gravel, light brown, medium dense, damp
		R		51	10			Very dense
1.6	118	R		34	15			NR, dense
		N		17	20			Medium dense
								BORING TERMINATED AT 21.5 FEET

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

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PROJECT: **ARROYO HONDO DE SANTA FE**
JOB NO.: **3222JK148**

PLATE **A-16**

BORING LOG

DATE DRILLED: **1-12-23**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 14

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **A. Gonzalez**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G				SC-SM		Silty Clayey SAND; with gravel, light brown, medium dense, damp
3.4	107	R		11		SM		Silty SAND; with gravel, light brown, medium dense, damp
3.5	101	R		19	5			
3.0	104	R		19				
3.1		G			10	SW-SM		Well Graded SAND with Silt and Gravel; light brown, medium dense, damp
9.8	100	R		12	15	SC-SM		Silty Clayey SAND; with gravel, brown, medium dense, damp
2.4	102	R		11	20			
								BORING TERMINATED AT 21 FEET

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

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PROJECT: **ARROYO HONDO DE SANTA FE**
JOB NO.: **3222JK148**

PLATE
A-17

BORING LOG

DATE DRILLED: **1-12-23**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 15

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **A. Gonzalez**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
3.1		G				SC		Clayey SAND; brown, medium dense, damp
		N		11				
						CL		Sandy Lean CLAY; brown, medium dense, damp
		N		20	5	SC		Clayey SAND; brown, medium dense, damp
		N		15	10	CL		Sandy Lean CLAY; brown, medium dense, damp
		N		12	15	SM		Silty SAND; with gravel, brown, medium dense, damp
								BORING TERMINATED AT 16.5 FEET
					20			

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

Geotechnical Environmental Inspections Materials
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PROJECT: **ARROYO HONDO DE SANTA FE**
JOB NO.: **3222JK148**

PLATE
A-18

BORING LOG

DATE DRILLED: **1-12-23**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 16

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **A. Gonzalez**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
2.4		G				SM		Silty SAND; with gravel, light brown, medium dense, damp
		N		25				
2.1	113	R		44	5			Dense
4.1	108	R		50/5"	10			
		N		43	15			
		N		19	20	CL		Sandy Lean CLAY with Silt; brown, medium dense, damp
								BORING TERMINATED AT 21.5 FEET

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

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Since 1955

PROJECT: **ARROYO HONDO DE SANTA FE**
JOB NO.: **3222JK148**

PLATE **A-19**

BORING LOG

DATE DRILLED: **1-10-23**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 17

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **A. Gonzalez**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
4.6		G				SM		Silty SAND; with gravel, light brown, medium dense, damp
5.9	98	R		24				
5.1	97	R		11	5			Less gravel
2.5	105	R		7	10			Some gravel, loose
1.9	119	R		70/4"	15			Very dense
		N		22	20			Medium dense
								BORING TERMINATED AT 21.5 FEET

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

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PROJECT: **ARROYO HONDO DE SANTA FE**
JOB NO.: **3222JK148**

PLATE **A-20**

BORING LOG

DATE DRILLED: **1-10-23**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 18

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **A. Gonzalez**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	BLOW COUNTS	DEPTH (FEET)	USCS	SOIL DESCRIPTION
4.4		G			SC-SM	Silty Clayey SAND; with some gravel, light brown, medium dense, damp
5.3	105	R	25	5		
3.6	110	R	16	10	SM	Silty SAND; with gravel, light brown, medium dense, damp
7.2	93	R	16	15		Increase in silt content
		N	22	20		
						BORING TERMINATED AT 21.5 FEET

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

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PROJECT: **ARROYO HONDO DE SANTA FE**
JOB NO.: **3222JK148**

PLATE
A-21

BORING LOG

DATE DRILLED: **1-10-23**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 19

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **A. Gonzalez**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
5.3		G				SC-SM		Silty Clayey SAND; brown / light brown, loose, damp
9.6	92	R		5				
4.2	107	R		4	5			With gravel, very loose
1.2	122	R		29	10	SM		Silty SAND; mwith gravel, light brown, medium dense, damp
		N		14	15			Some gravel, brown
		N		45	20	CL		Lean CLAY; brown, dense, damp
								BORING TERMINATED AT 21.5 FEET

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

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PROJECT: **ARROYO HONDO DE SANTA FE**
JOB NO.: **3222JK148**

PLATE
A-22

BORING LOG

DATE DRILLED: **1-10-23**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 20

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **A. Gonzalez**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
6.8		G				CL		Lean CLAY; brown, loose, damp
6.0	93	R		5		SM		Silty SAND; with trace clay, light brown, loose, damp
		R		8	5			NR, with gravel
1.6	101	R		24	10			Medium dense
		N		10				
					15	CL		Lean CLAY; brown, loose, damp
3.6	102	R		14				Medium dense
		N		15	20	SM		Silty SAND; with gravel, light brown, medium dense, damp
								BORING TERMINATED AT 21.5 FEET

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

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PROJECT: **ARROYO HONDO DE SANTA FE**
JOB NO.: **3222JK148**

PLATE
A-23

BORING LOG

DATE DRILLED: **1-10-23**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 21

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **A. Gonzalez**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
5.8		G				SC		Clayey SAND ; light brown, medium dense, damp
4.2	110	R		22				
6.8	95	R		13	5			
2.4	109	R		10	10			Loose
		N		17	15			With coarse gravel, medium dense
						SM		Silty SAND; with some gravel, light brown, medium dense, damp
		N		22	20			
								BORING TERMINATED AT 21.5 FEET

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

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PROJECT: **ARROYO HONDO DE SANTA FE**
JOB NO.: **3222JK148**

PLATE
A-24

BORING LOG

DATE DRILLED: **1-10-23**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 22

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **A. Gonzalez**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOW COUNTS	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
7.7		G				SC		Clayey SAND; light brown, medium denmse, damp
5.3	99	R		17				
		R		22	5			NR, with coarse gravel
1.6	110	R		25	10	SM		SIlty SAND; with gravel, light brown, medium dense, damp
		N		14	15			White / light grey, with trace gravel
		N		14	20			White
								BORING TERMINATED AT 21.5 FEET

N- STANDARD PENETRATION TEST
R- RING SAMPLE
NR- NO SAMPLE RECOVERY
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

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PROJECT: **ARROYO HONDO DE SANTA FE**
JOB NO.: **3222JK148**

PLATE
A-25

BORING LOG

Boring No.	Depth (ft.)	USCS Class.	Initial Dry Density (pcf)	Initial Water Content (%)	Compression Properties			Expansion Properties		Plasticity		Soluble Chloride (ppm)	Soluble Sulfate (ppm)	Minimum Resistivity (OHM-CM)	pH	Remarks
					Surcharge (ksf)	Total Compression (%)		Surcharge (ksf)	Expansion (%)	Liquid Limit	Plasticity Index					
						In-Situ	After Saturation									
1	0-5	SC		6.1						31	12	9.3	30	1200	9.2	
1	10-11	SC	114	1.3	0.5	0.3										
					1.0	0.6										
					2.0	0.9	2.0									2
					4.0		2.5									2
3	5-6	SC	87	5.2	0.5	0.5										
					1.0	1.3										
					2.0	1.6	8.5									2
					4.0		12.2									2
5	2-3	SC	84	11.6	0.5	1.0										
					1.0	2.2										
					2.0	2.7	15.3									2
					4.0		18.4									2

Note: Initial Dry Density and Initial Water Content are in-situ values unless otherwise noted.
NP = Non-Plastic

Remarks

1. Compacted density (approx. 95% of ASTM D1557 max. density at moisture content slightly below optimum.)
2. Submerged to approximate saturation.
3. Slight rebound after saturation.
4. Sample disturbance observed.

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PROJECT: Arroyo Hondo De Santa Fe
JOB NO.: 3222JK148

SOIL PROPERTIES

PLATE
B-1

Boring No.	Depth (ft.)	USCS Class.	Initial Dry Density (pcf)	Initial Water Content (%)	Compression Properties			Expansion Properties		Plasticity		Soluble Chloride (ppm)	Soluble Sulfate (ppm)	Minimum Resistivity (OHM-CM)	pH	Remarks
					Surcharge (ksf)	Total Compression (%)		Surcharge (ksf)	Expansion (%)	Liquid Limit	Plasticity Index					
						In-Situ	After Saturation									
12	0-5	SM		3.1							NP	ND	ND	7200	8.9	
16	5-6	SM	112	2.1	0.5	0.5										
					1.0	0.7										
					2.0	1.1	1.9									2
					4.0		2.4									2
17	10-11	SM	106	2.5	0.6	1.3										
					1.1	2.7										
					2.2	3.6	11.1									2
					4.4		12.9									2
18	5-6	SC-SM	100	5.3	0.6	2.0										
					1.1	3.0										
					2.2	3.5	8.5									2
					4.4		11.1									2

Note: Initial Dry Density and Initial Water Content are in-situ values unless otherwise noted.
NP = Non-Plastic

Remarks

1. Compacted density (approx. 95% of ASTM D1557 max. density at moisture content slightly below optimum.)
2. Submerged to approximate saturation.
3. Slight rebound after saturation.
4. Sample disturbance observed.

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PROJECT: Arroyo Hondo De Santa Fe
JOB NO.: 3222JK148

SOIL PROPERTIES

PLATE **B-2**

Boring No.	Depth (ft.)	USCS Class.	Initial Dry Density (pf)	Initial Water Content (%)	Compression Properties			Expansion Properties		Plasticity		Soluble Chloride (ppm)	Soluble Sulfate (ppm)	Minimum Resistivity (OHM-CM)	pH	Remarks
					Surcharge (ksf)	Total Compression (%)		Surcharge (ksf)	Expansion (%)	Liquid Limit	Plasticity Index					
						In-Situ	After Saturation									
19	5-6	SC-SM	108	4.2	0.5	0.6										
					1.0	0.9										
					2.0	1.4	4.4									2
					4.0		5.5									2
20	2-3	CL	93	6.0	0.5	1.0										
					1.0	1.4										
					2.0	2.5	8.5									2
					4.0		11.5									2
20	16-17		94	3.6	0.5	1.2										
					1.0	1.6										
					2.0	2.5	12.5									
					4.0		14.0									

Note: Initial Dry Density and Initial Water Content are in-situ values unless otherwise noted.
NP = Non-Plastic

Remarks

1. Compacted density (approx. 95% of ASTM D1557 max. density at moisture content slightly below optimum.)
2. Submerged to approximate saturation.
3. Slight rebound after saturation.
4. Sample disturbance observed.

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PROJECT: Arroyo Hondo De Santa Fe
JOB NO.: 3222JK148

PLATE B-3

SOIL PROPERTIES

Boring No.	Depth (ft.)	USCS Class.	Initial Dry Density (pcf)	Initial Water Content (%)	Compression Properties			Expansion Properties		Plasticity		Soluble Chloride (ppm)	Soluble Sulfate (ppm)	Minimum Resistivity (OHM-CM)	pH	Remarks
					Surcharge (ksf)	Total Compression (%)		Surcharge (ksf)	Expansion (%)	Liquid Limit	Plasticity Index					
						In-Situ	After Saturation									
21	5-6	SC	95	6.8	0.6	3.0										
					1.1	3.8										
					2.2	5.3	10.6									2
					4.4		13.2									2
22	0-5	SC		7.7						31	16	140	200	1400	8.6	
22	2-3	SC	93	5.3	0.5	0.6										
					1.0	0.8										
					2.0	1.3	4.7									2,3
					4.0		7.3									2

Note: Initial Dry Density and Initial Water Content are in-situ values unless otherwise noted.
NP = Non-Plastic

Remarks

1. Compacted density (approx. 95% of ASTM D1557 max. density at moisture content slightly below optimum.)
2. Submerged to approximate saturation.
3. Slight rebound after saturation.
4. Sample disturbance observed.

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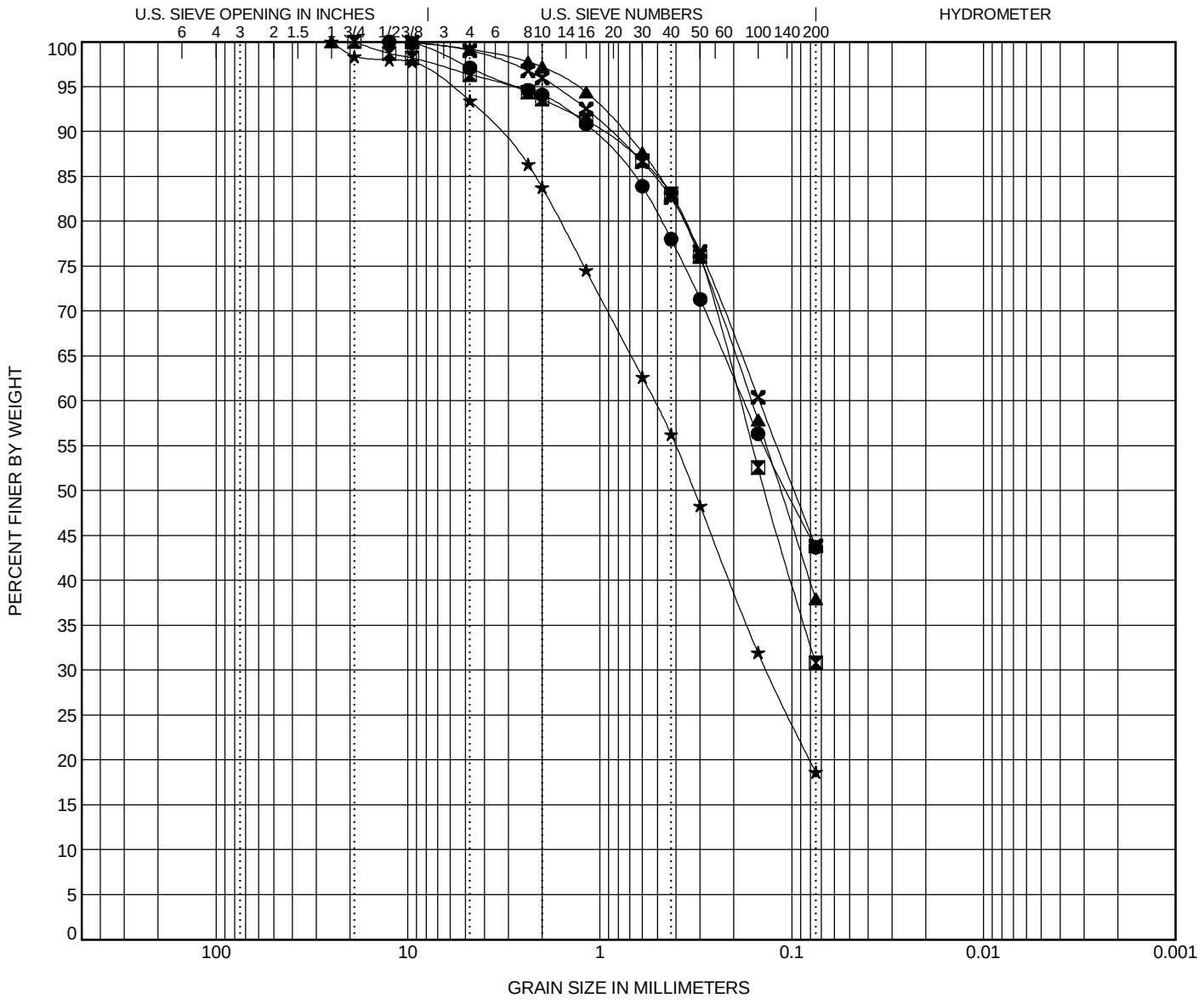
PROJECT: Arroyo Hondo De Santa Fe
JOB NO.: 3222JK148

PLATE B-4

SOIL PROPERTIES



	Sample Identification		Symbol	Classification	LL	PL	PI	C_c	C_u	F_m
●	1	5.0 ft	SC	Clayey SAND	31	19	12			3.47
⊠	2	5.0 ft	SC-SM	Silty Clayey SAND	24	20	4			3.54
▲	3	5.0 ft	SC	Clayey SAND	28	18	10			3.61
★	4	5.0 ft	SM	Silty SAND	NP	NP	NP			2.91
✕	5	5.0 ft	SC	Clayey SAND	29	18	11			3.59

	Sample Identification		D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	1	5.0 ft	12.5	0.178			2.9	53.4		
⊠	2	5.0 ft	19	0.187			3.7	65.5		
▲	3	5.0 ft	25	0.163			0.8	61.2		
★	4	5.0 ft	25	0.52	0.135		6.6	74.8		
✕	5	5.0 ft	9.5	0.147			1.0	55.2		

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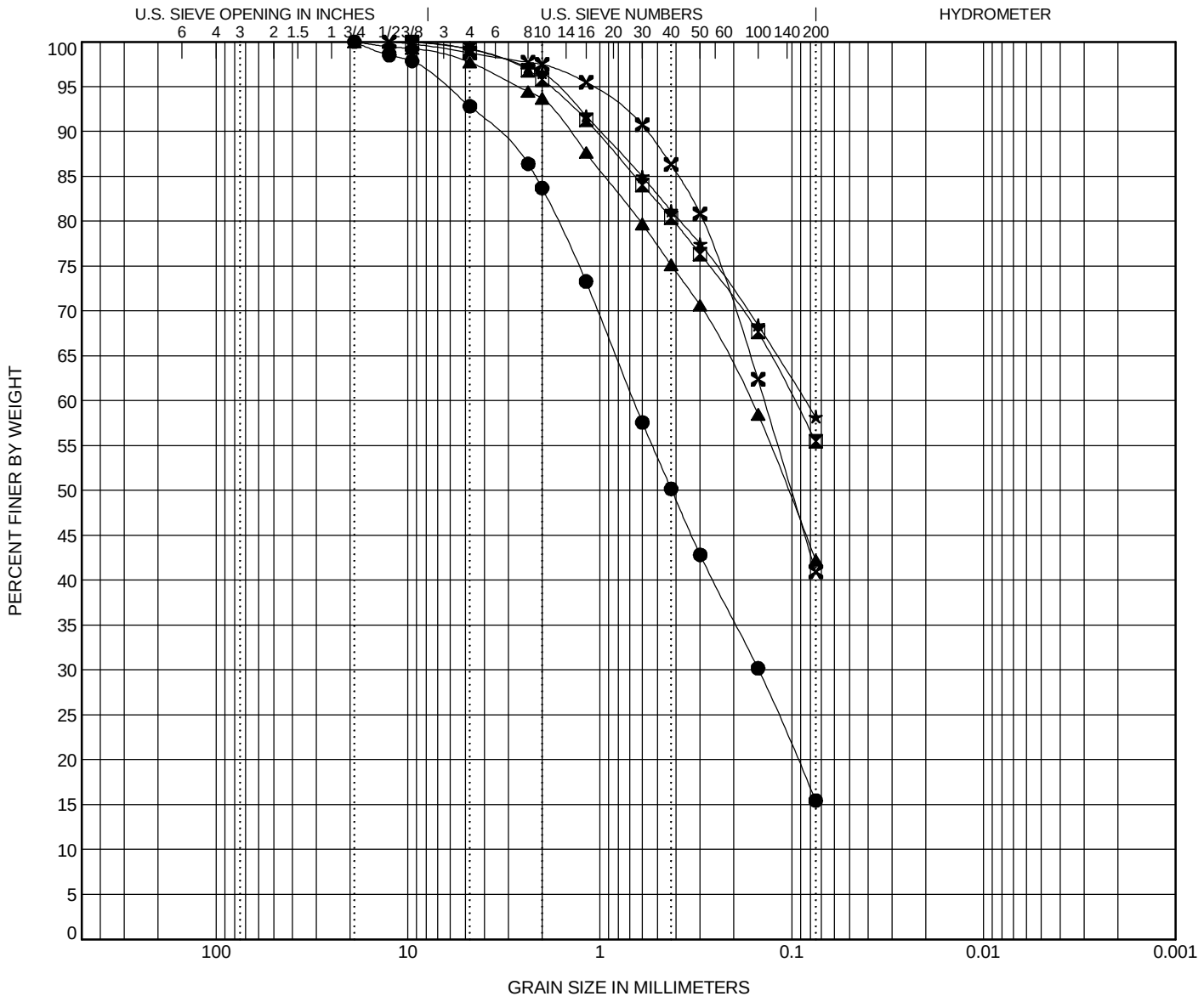
PROJECT: **ARROYO HONDO DE SANTA FE**
LOCATION:
PROJECT NO.: **3222JK148**

PLATE **B-5**

GRAIN SIZE DISTRIBUTION



	Sample Identification		Symbol	Classification	LL	PL	PI	C_c	C_u	F_m
●	6	5.0 ft	SC-SM	Silty Clayey SAND	22	17	5			2.80
⊠	7	5.0 ft	CL	Lean CLAY	29	17	12			3.56
▲	8	5.0 ft	SC-SM	Silty Clayey SAND	24	18	6			3.43
★	9	5.0 ft	CL	Lean CLAY	27	17	10			3.59
✕	11	5.0 ft	SC-SM	Silty Clayey SAND	25	18	7			3.68

	Sample Identification		D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	6	5.0 ft	19	0.666	0.149		7.2	77.4		
⊠	7	5.0 ft	9.5	0.097			0.8	43.7		
▲	8	5.0 ft	19	0.163			2.3	55.5		
★	9	5.0 ft	9.5	0.085			0.8	41.0		
✕	11	5.0 ft	12.5	0.139			1.2	57.8		

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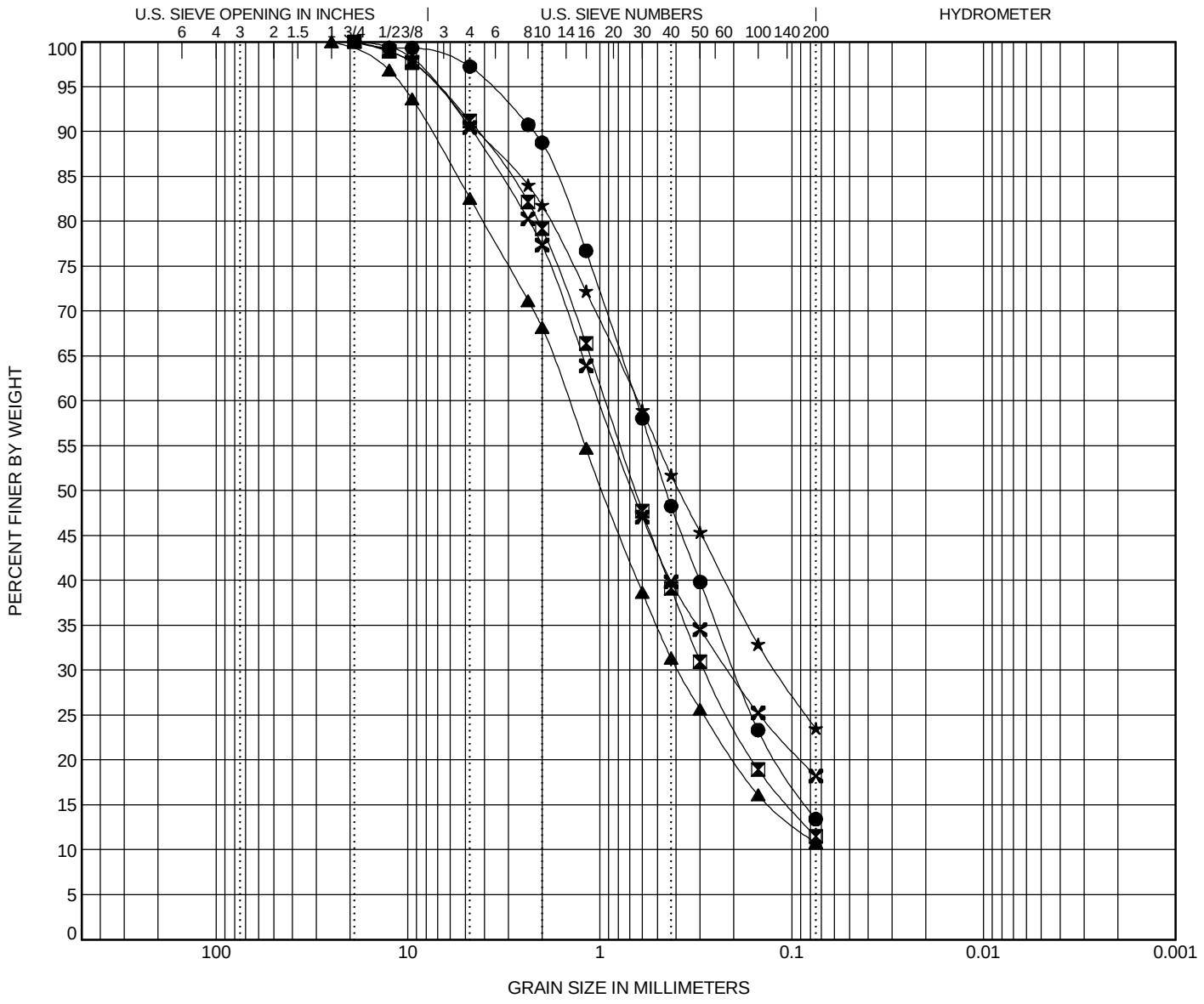
PROJECT: **ARROYO HONDO DE SANTA FE**
LOCATION:
PROJECT NO.: **3222JK148**

PLATE **B-6**

GRAIN SIZE DISTRIBUTION



	Sample Identification		Symbol	Classification	LL	PL	PI	C_c	C_u	F_m
●	12	5.0 ft	SM	Silty SAND	NP	NP	NP			2.86
⊠	13	5.0 ft	SP-SM	Poorly Graded SAND with Silt	NP	NP	NP	1.32	14.34	2.52
▲	14	15.0 ft	SW-SM	Well Graded SAND with Silt	NP	NP	NP	1.56	21.41	2.18
★	15	5.0 ft	SC	Clayey SAND	24	16	8			2.79
✕	16	5.0 ft	SM	Silty SAND	NP	NP	NP			2.52

	Sample Identification		D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	12	5.0 ft	19	0.644	0.199		2.8	83.8		
⊠	13	5.0 ft	19	0.936	0.284		8.8	79.7		
▲	14	15.0 ft	25	1.451	0.392		17.4	71.8		
★	15	5.0 ft	19	0.633	0.121		9.1	67.4		
✕	16	5.0 ft	19	1.008	0.214		9.5	72.2		

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LOCATION:
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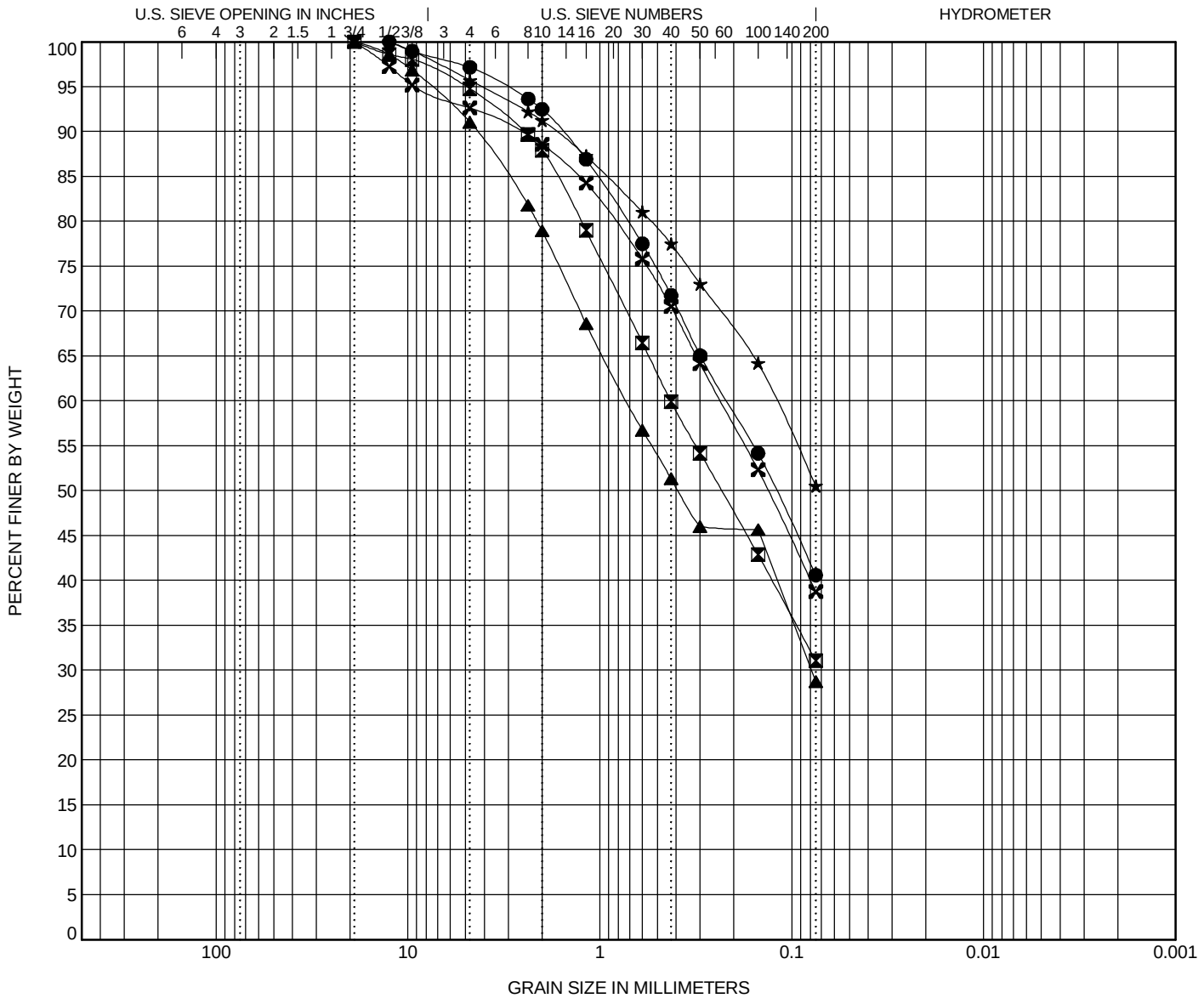
PLATE **B-7**

GRAIN SIZE DISTRIBUTION



	Sample Identification		Symbol	Classification	LL	PL	PI	C_c	C_u	F_m
●	17	5.0 ft	SM	Silty SAND	21	18	3			3.33
⊠	18	5.0 ft	SC-SM	Silty Clayey SAND	24	18	6			3.05
▲	19	5.0 ft	SC-SM	Silty Clayey SAND	24	19	5			2.76
★	20	5.0 ft	CL	Lean CLAY	26	17	9			3.42
✕	21	5.0 ft	SC	Clayey SAND	25	17	8			3.22

	Sample Identification		D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	17	5.0 ft	12.5	0.218			2.8	56.6		
⊠	18	5.0 ft	19	0.428			5.2	63.7		
▲	19	5.0 ft	19	0.722	0.079		8.9	62.3		
★	20	5.0 ft	12.5	0.121			4.3	45.2		
✕	21	5.0 ft	19	0.235			7.4	53.9		

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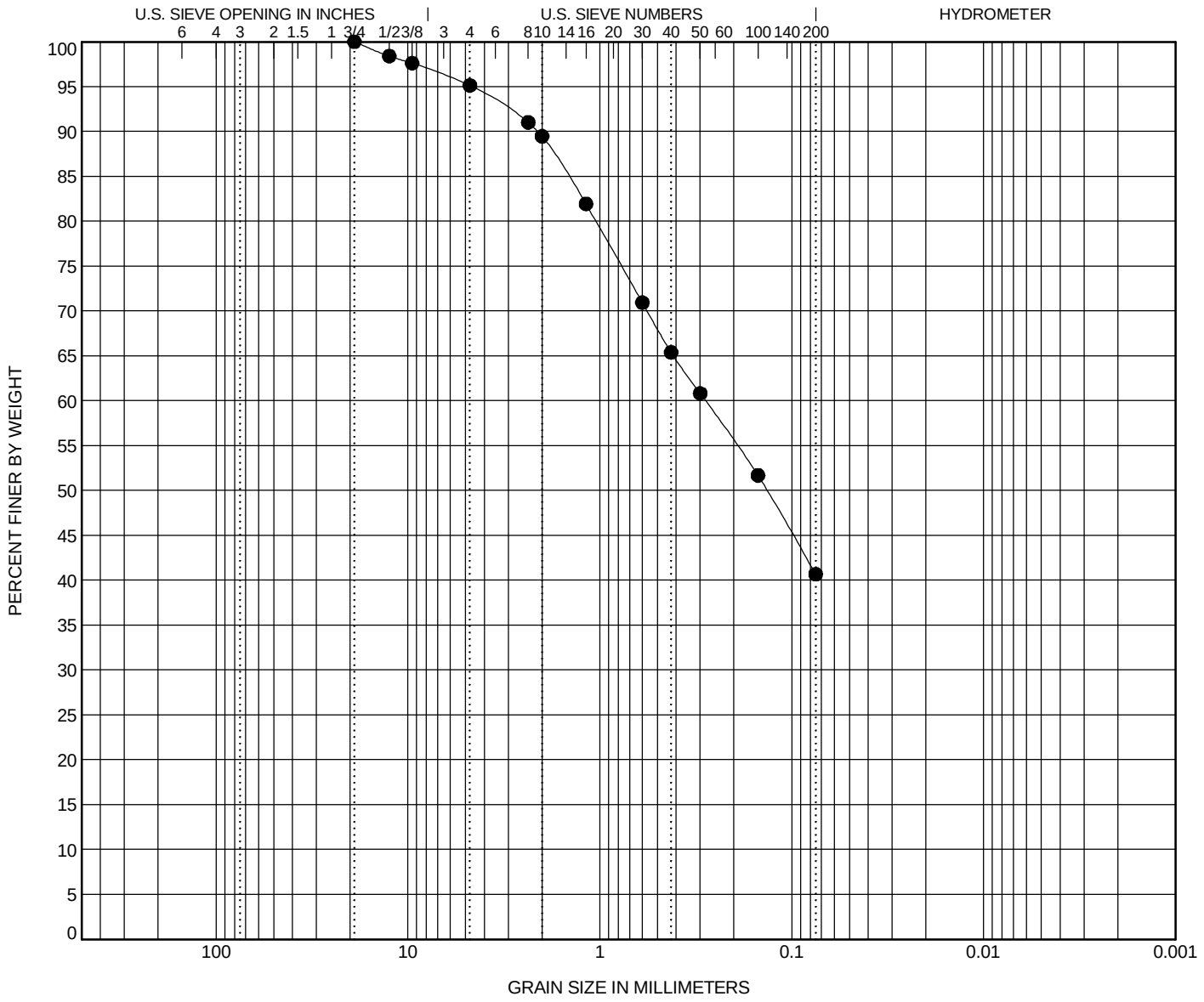
LOCATION:
PROJECT NO.: **3222JK148**

GRAIN SIZE DISTRIBUTION

PLATE
B-8



	Sample Identification		Symbol	Classification	LL	PL	PI	C_c	C_u	F_m
●	**22**	**5.0 ft**	**SC**	**Clayey SAND**	**31**	**15**	**16**			**3.18**

	Sample Identification		D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	**22**	**5.0 ft**	**19**	**0.282**			**4.9**	**54.5**		

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PROJECT: **ARROYO HONDO DE SANTA FE**
LOCATION:
PROJECT NO.: **3222JK148**

GRAIN SIZE DISTRIBUTION

PLATE
B-9

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Resistance R-Value and Expansion Pressure of Compacted Soils

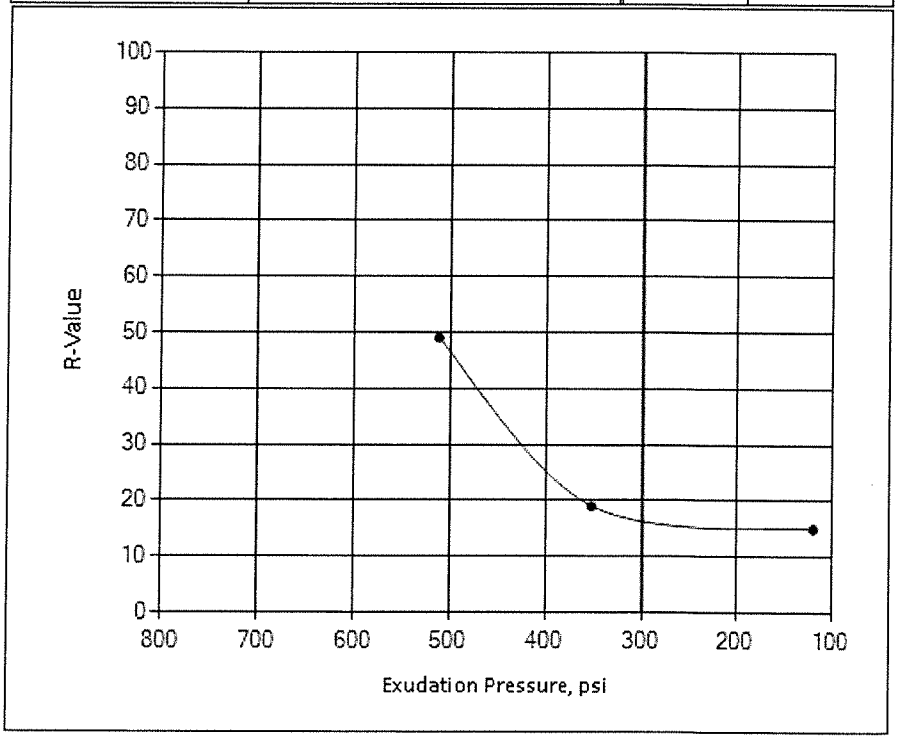
Client **SANTA FE GLOBAL PARTNERS**
C/O LISA@JENKINSGAVIN.COM
ATTN: ROBERT GORLOW
7485 FAIRWAY DRIVE, SUITE 400
MIAMI LAKES, FL 33014

Date of Report **01/24/23**
Job No. **3222JK148**
Event No.
Authorized By **ROBERT GORI** Lab No. **43232**
Sample Location Designated By Date **11/16/22**
Sampled By Date
Submitted By Date **01/20/23**
Date **01/20/23**

Project **ARROYO HONDO DE SANTA FE**
Project Address **NORTHEAST CONNECTOR AND SOUTHEAST CONNEC**
Material Description
Material Use
Material Source **BORING 18 (0-5')**
Sample Location

Sieve Analysis Finer than No. 200		
Sieve Size	Accumulative Passing, %	Specification
6 in		
3 in		
2 in		
1-1/2 in.		
1 in.		
3/4 in.		
1/2 in.		
3/8 in.		
1/4 in.		
No. 4		
No. 8		
No. 10		
No. 16		
No. 30		
No. 40		
No. 50		
No. 100		
No. 200		

Reference **ASTM D2844**	R-Value at 300 psi Exudation Pressure = **16**	Specification	



Liquid Limit, Plastic Limit & Plasticity Index	Result	Specification
Preparation Method		
Processing Method		
Liquid Limit		
Plastic Limit		
Plasticity Index		
Group Symbol		
Name		

Comments:

Specimen	1	2	3
Moisture at Compaction, %	**18.7**	**15.3**	**14.0**
Dry Density, lbf/ft^3	**113.9**	**117.4**	**113.4**
Compactor Pressure, psi	**25**	**125**	**120**
Exudation Pressure, psi	**119**	**352**	**512**
Expansion Pressure, psf	**14**	**16**	**26**
Corrected R-Value	**15**	**19**	**49**

Reviewed by: JAMES DACY, LAB SUPERVISOR