Geotechnical Investigation

Aloravita – Phases 3 and 4

67th Avenue and Jomax Road
Peoria, Arizona
ProTeX Job No.: 9821

Report Prepared for: Shea Homes and the Arizona State Land Department

REGISTERED PROFESSIONAL ENGINEER (Civil)
CERTIFICATE NO. 66876
THOMAS M. PERKINS
DATE SIGNED 2.12.20
ARIZONA U.S.A.

Registered Professional Engineer (Civil)
CERTIFICATE NO. 35917
DELBERT A. RAPIER
Date Signed 2/12/20
ARIZONA, U.S.A.
EXP 3/31/22

1102 W Southern Ave, Ste 4 / Tempe, Arizona 85282-3102 / (o) 602-272-PTX1 (7891)
Dispatch 602-272-7890 / (f) 602-272-7892
www.protex-az.com

PHOENIX
1102 W SOUTHERN AVE, STE 4
TEMPE, ARIZONA 85282
(O) 602-272-PTX1 (7891)
DISPATCH 602-272-7890
(F) 602-272-7892
WWW.PROTEX-AZ.COM

TUCSON
916 W GRANT ROAD
TUCSON, ARIZONA 85705
(O) 520-352-1050 (EXT 157)
DISPATCH 520-352-0150
(F) 520-352-0150
WWW.PROTEX-AZ.COM

February 11, 2020 (Revised February 12, 2020)

Shea Homes
Arizona State Land Department

Re: **Geotechnical Investigation**

Project: Aloravita – Phases 3 and 4
67th Avenue and Jomax Road
Peoria, Arizona

ProTeX Job No.: 9821

Attention: Mr. Matt Telban

At your request, ProTeX has completed a soil investigation for the subject project. The accompanying report includes field observations and laboratory testing supporting our conclusions and recommendations for the buildable area within the proposed development.

Respectfully submitted,
ProTeX - the PT Xperts, LLC

REGISTERED PROFESSIONAL ENGINEER (Civil)
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THOMAS M.
PERKINS
DATE SIGNED 2.12.20
ARIZONA U.S.A.

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CERTIFICATE NO.
35917
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RAPIER
Date Signed 2/12/20
ARIZONA, U.S.A.

Date Expires: 3/31/2021
Thomas M. Perkins, P.E.

Date Expires: 3/31/2022
Delbert A. Rapier, M.S.E., P.E.

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Executive Summary

ProTeX was contracted by Shea Homes and the Arizona State Land Department to provide general information with respect to the engineering characteristics of onsite soils and provide recommendations for foundations and pad preparation of residential structures for the anticipated buildable area within Aloravita – Phases 3 and 4, located at 67th Avenue and Jomax Road in Peoria, Arizona.

Field investigation consisting of a combination of 8 inch auger borings, backhoe test pits and seismic refraction survey with laboratory testing of bulks samples. The field observations and laboratory testing indicated that the site consists mainly of silty sand, silty clayey sand, clayey sand, clayey gravel, silty gravel, silty clayey gravel and sandy clay soils all underlain by varying rock/cemented stratums. The expansion potential for site soils when foundation bearing soils are exposed to a moisture increase is anticipated to be very low to medium for the surface level soils. All lots are subject to expansive soils and post-tensioned slab/foundation systems are recommended.

Refusal of test borings and backhoe tests pits indicated that there is a significant stratum of weathered rock and/or strongly cemented soil with gravel and cobbles which will increase the difficulty of excavation. Seismic lines performed indicated the same conclusions. Based on the field investigation, geologic maps for the area, and local experience, the site is anticipated to encounter hard dig conditions during excavation activities. The field testing indicates refusal depths as shallow as 2 feet below with the existing ground elevation due to weathered rock and/or strongly cemented soils with grave and cobbles. The following figure provides a contour map with estimated depths of varying excavation difficulty based on the drilled test holes, backhoe test pits and seismic refraction survey. The boundary displayed in the image below was approximated based on the 20% Slope Line Displayed on the Phase 3 &4 Land Use Plan produced by CVL Consultants (20 November 2019).

Aloravita – Phases 3 and 4
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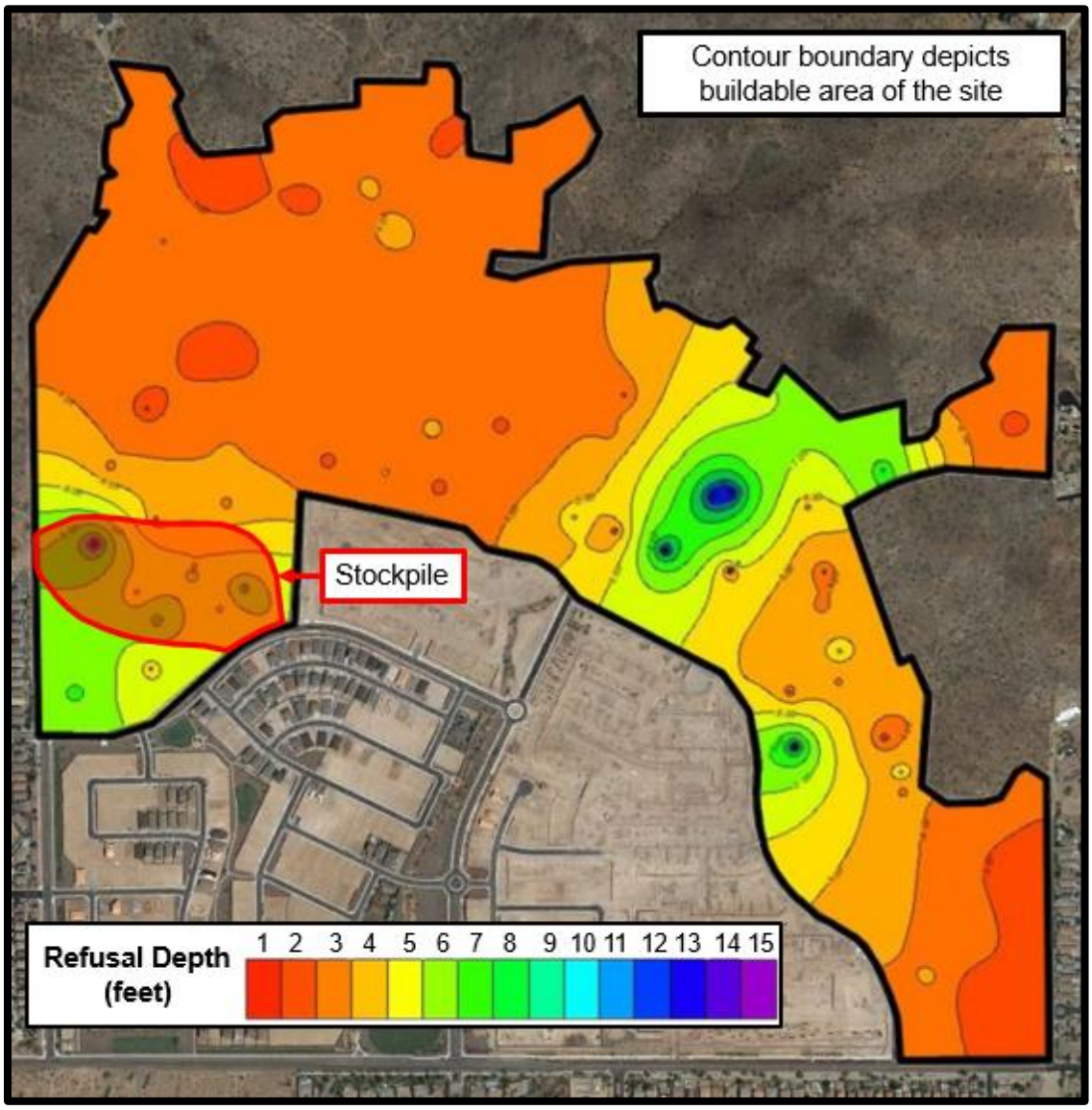


The site is located within an area of regional groundwater withdrawal; however, based on the Earth fissure Maps provided by the Arizona Geological Survey, there is no indication of earth fissures on site or within approximately 12.3 miles of the site. All parties should be aware that the site soils are clayey and have a potential for expansion. Fluctuation in moisture content of foundation bearing soils may result in slight movements that may result in cosmetic distress.

1.0 INTRODUCTION

1.1 Scope

ProTeX was retained by Shea Homes and the Arizona State Land Department to evaluate the surface and subsurface soil conditions. The report contains the findings from the field exploration and laboratory testing, with supporting recommendations for the anticipated buildable area within the proposed development boundaries.

1.2 Proposed Site Development

It is this firm's understanding the proposed development will consist of one or two story single family residential structures using masonry, wood and/or steel frame construction imposing relatively light to moderate foundation loads.

1.3 Terms and Conditions

This report was prepared for Shea Homes and the Arizona State Land Department. The contents of this report may not be relied upon by any other party without the expressed written permission of ProTeX - the PT Xperts, LLC and the written permission of Shea Homes and the Arizona State Land Department. The report presents site conditions at the time of the investigation and for the aforementioned proposed development. The report should be updated prior to construction if a maximum of one year has elapsed from the issued date.

2.0 FIELD AND LABORATORY TESTING

2.1 Geotechnical Site Reconnaissance

The site consists of approximately 269 acres of native desert and undeveloped land. At the time of the field site visits between December 20, 2019 and January 28, 2020 the following site conditions were observed:

- Rock outcrops were observed throughout the native portion of the site
- Natural washes with steep slopes were located throughout the native portion of the site
- Light to zero vegetation coverage throughout the cleared southwestern portion of the site
- Moderate native vegetation in the native portion consisting of grasses, bushes, trees and cacti.
- Previously constructed, temporary, drainage channel located in the northern portion of the cleared area
- Mountainside topography with general slope and drainage of the site trends toward the southwest
- Large soil and aggregate stockpile, created during the construction of previous phases within Aloravita development, approximately 10 to 30 feet high. Evidence of hard dig conditions was observed in the stockpile consisting of large chunks of cementation and weathered rock

Figure 1 - South side of the Large Stockpile

Figure 2 - Large Chunks of Cementation

2.2 Historical Aerial Investigation

The following descriptions and Historical Aerial Photographs were obtained from the Maricopa County (https://gis.maricopa.gov/GIO/HistoricalAerial/index.html) and show evidence of former site activities and conditions. Former land use is identified by historical aerial photographs and described based on engineering experience.

Former land use was identified on the property. Former land use consisted of dirt hiking trails and a staging area for stockpiles and end dump piles. Dirt trails, possibly for hiking, were constructed at various locations on the site between January and December of 1986. The number of trails increased at various times throughout the years up to February of 2006. The north-south trail on the western edge of the property was expanded between November and December of 2004. The southwest portion of the property was roughly graded and used as a staging area for stockpiles and end dump piles beginning between September and December of 2018.

2.3 Field Investigation

The field investigation consisted of drilled test holes, backhoe test pits and a seismic refraction survey. The investigation was limited to the anticipated buildable area. The anticipated buildable area was approximated based on the 20% Slope Line Displayed on the Phase 3 &4 Land Use Plan produced by CVL Consultants (20 November 2019).

A total of fifty (50) test holes, were completed at the site for the purpose of evaluating subsurface conditions. Test holes were terminated at depths of 2 to 15 feet due to auger refusal on weathered rock, cementation and dense gravel and cobbles.

A total of twenty-one (21) test pits were completed for the purpose of evaluating subsurface conditions and evaluating future excavations. Test pits were terminated at depths between 1.5 and 10 feet due to backhoe refusal on weathered rock, cementation and dense gravel and cobbles.

A total of twenty (20) seismic refraction lines were completed at the site to further analyze the subsurface conditions and evaluate conditions with respect to future difficulty of excavations.

As a part of the investigation samples were obtained from the large stockpile to evaluate the use as structural fill in the proposed construction. Four (4) boring locations (B37, B38, B39 and B40) and three (3) test pits (TP19, TP20 and TP21) were advanced on the stockpile to evaluate subsurface conditions.

At each test location, the soils encountered were visually observed, classified, logged and representative samples were obtained where applicable. Refer to the site plan in Appendix B for approximate test hole locations.

2.4 Laboratory Testing

Subsequent to the field investigation, soil samples were submitted for laboratory testing. Tests were performed to determine the following:

- **Sieve Analysis and Atterberg Limits**- Used for formal classification of soils in general accordance with the Unified Soil Classification System (USCS) per ASTM Test Method D2487. Sieve analysis is performed in general accordance with ASTM Test Methods D421, D422 and D1140. The Atterberg Limits were determined in general accordance with ASTM Test Method D4318.
- **Expansion Index**- To determine the potential expansion of remolded soils based on the Expansion Index Test Method (ASTM D4829).

Expansion Index- Expansive Potential Categorization	
0-20	Very Low
21-50	Low
51-90	Medium
91-130	High
>130	Very High

- **Sulfates and Chlorides**- To determine levels of water soluble sulfate (ARIZ 733) and chloride (ARIZ 736) content, which could negatively impact project steel/concrete.

Laboratory Test Summary

Location	Depth (ft)	PI	%Passing #200	% < 0.002mm	USCS Soil Class	Expansion Index
B1	0-3	NP	33		SM	
B2	0-3	4	34		SC-SM	
B3	0-3	14	41		GC	
B4	0-3	6	15		GC-GM	
B5	0-2	10	29		SC	
B6	0-3	10	23	6.5	SC	25
B7	0-3	NP	24		SM	
B9	0-3	NP	31		SM	
B9	5-7	NP	21		SM	
B9	12-14	NP	19		SM	
B10	0-3	NP	20		SM	1
B11	0-3	15	32		SC	0
B13	0-3	NP	18		SM	
B14	0-3	NP	41		SM	
B14	5-7	NP	29		SM	
B16	0-3	7	21		SC-SM	
B16	5-7	NP	16		SM	
B16	12-14	NP	22		SM	
B17	0-3	11	45		GC	
B17	5-7	NP	26		SM	
B17	12-14	NP	21		SM	
B18	0-3	4	43		SC-SM	
B19	0-3	NP	27		SM	
B21	0-3	NP	24		SM	

Location	Depth (ft)	PI	%Passing #200	% < 0.002mm	USCS Soil Class	Expansion Index
B22	0-3	NP	23		SM	
B23	0-3	5	22		SC-SM	
B24	0-3	NP	22		SM	
B26	0-3	9	33		SC	
B30	0-2	NP	12		GM	
B31	0-3	NP	30		SM	
B32	0-3	NP	17		SM	8
B33	0-3	NP	24		SM	
B34	0-3	NP	10		SP-SM	
B35	0-3	NP	9		GW-GM	
B35	5-7	NP	12		GM	
B37	0-3	8	25		SC	
B38	0-3	12	34		SC	
B39	0-3	7	14		GM	
B40	0-3	10	15		GC	
B40	5-7	13	32		SC	
B40	11-13	7	33		SC-SM	12
B41	0-3	9	23		GC	
B42	0-3	11	22		SC	
B43	0-3	10	34		GC	
B44	0-3	NP	16		GM	
B45	0-3	6	27		SC-SM	10
B46	0-3	20	30		GC	59
B47	0-3	11	40		SC	
B48	0-3	4	21		SC-SM	
B49	0-3	NP	17		GM	
B50	0-2	NP	6		SM	
B41	0-3	9	23		SC-SM	
B42	0-3	11	22		GC	
B43	0-3	10	34		GC-GM	
B44	0-3	NP	16		SC	
B45	0-3	6	27		SC	25
B46	0-3	20	30		SM	
B47	0-3	11	40		SM	
B48	0-3	4	21		SM	
B49	0-3	NP	17		SM	
B50	0-2	NP	6		SM	1
B41	0-3	9	23		SC	0
B42	0-3	11	22		SM	
B43	0-3	10	34		SM	
B44	0-3	NP	16		SM	
B45	0-3	6	27		SC-SM	
B46	0-3	20	30		SM	
B47	0-3	11	40		SM	
B48	0-3	4	21		GC	
B49	0-3	NP	17		SM	
B50	0-2	NP	6		GP-GM	

Location	Depth (ft)	PI	%Passing #200	% < 0.002mm	USCS Soil Class	Expansion Index
TP3	0-2	21	51	20.1	CL	80
TP19	0-2	4	19		GM	13
TP20	0-3	7	23		SC-SM	14

See Appendix A for a detailed compilation of the laboratory test results.

3.0 GENERAL SITE CONDITIONS

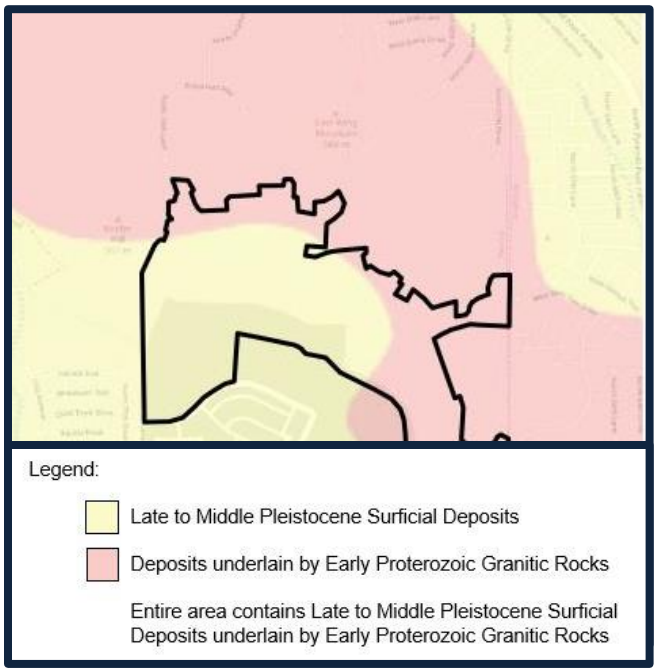
3.1 Soil Stratigraphy

Based on the field exploration and laboratory testing, the subsurface profile to the depths explored, consist primarily of silty sand, silty clayey sand, clayey sand, clayey gravel, silty gravel, silty clayey gravel and sandy clay of plasticity ranging from non-plastic to 21. Refer to the boring logs in Appendix C for a detailed description of the subsurface soil profile.

3.2 Site Geology

The geology of the site was provided from the following reference: ***Arizona Geological Survey Website (Interactive Geological Map of Arizona)*** and ***United States Geological Survey (Mineral Resources Online Spatial Data: Geologic Maps)***.

The southern portion of the site is located in an area of Late and Middle Pleistocene Surficial Deposits (10-750 ka) – unconsolidated to weakly consolidated alluvial fan, terrace, and basin-floor deposits with moderate to strong soil development. Fan and terrace deposits are primarily poorly sorted, moderately bedded gravel and sand, and basin floor deposits are primarily sand, silt and clay. The northern and eastern portions of the site are located in an area of Early Proterozoic Granitic Rocks (1600-1800 Ma) – which can contain a wide



variety of granitic rocks, including granite, granodiorite, tonalite, quartz diorite, diorite, and gabbro. These rocks commonly are characterized by steep, northeast-striking foliation.

3.3 Potential for Soil Hydro-Collapse (Settlement Potential)

Blow counts (N-values) were performed but no laboratory testing could be performed due to the existence of gravels and disturbance of samples due to vibration. The field blow counts indicate a low potential for hydro collapse at the anticipated foundation load of 1500psf (See the attached laboratory test results and boring logs).

3.4 Potential for Soil Expansion (Expansion Potential)

The expansion potential of the native surface soils, to the depths explored based on ASTM test method D4829, is considered very low to medium (Expansion indexes of 0, 1, 8, 10, 12, 13, 14, 25, 59 and 80). Soils selected for testing for expansion potential were those that represented clayey soils with varying plasticity index values to determine the range of expansive potential soils across the site. The Expansion Index values typically tend to be higher with higher plasticity indices as can be seen in the test data for the site. However, soils that have high plasticity indices but have a small percent passing the 200 sieve may have lower potential for expansion based on the soil composition. The soils that tested non-plastic are comprised of silts and sands and are considered to have a very low potential for expansion.

3.5 Potential for Corrosion

Soils were tested for water soluble sulfates and chlorides The International Building Code specifies limits for soluble sulfate levels of 1000ppm. The soils tested yielded results below these levels and do not require any specialized design requirements. The test results are presented in Appendix A.

3.6 Seismic Survey

The seismic refraction survey consists of introducing a sound pulse into the ground and recording the time of first arrival vibrations at different horizontal distances. The sound pulse is most often generated by manually striking a steel plate/ball with a sledge hammer but can also be generated by small explosions. For the purpose of this survey a sledge hammer was utilized. The sound is recorded on an engineering seismograph utilizing one or more sound vibration detection devices known as

geophones. The seismic refraction survey is interpreted to indicate a subsurface profile consisting of three consistent and distinct subsurface strata described below (See Appendix D for individual seismic line profiles):

Figure 3 - Typical Seismic Refraction Line

Layer 1: This uppermost surficial layer (layer 1) has an average velocity of 1750 feet per second (fps) in a range from 1000 to 2500 fps. The layer thickness and depth from existing site surface grade varies from about 1 to 15 feet and likely represents a sandy soil, clayey sandy soil and clayey soil with various amounts of gravel and cobbles. Layer 1 exists to an average depth of 3.5 feet below the existing site surface at the locations of the seismic survey.

Layer 2: An intermediate layer (Layer 2) that has an average velocity of 3750 fps within a range from 2500 to 5000 fps. This layer extends from the base of the surficial layer and was encountered at depths ranging from 1 to 15 feet below existing site surface grades. The intermediate layer thickness likely represents a zone of very highly to highly weathered rock and/or possible

moderately cemented soils with gravels and cobbles. Layer 2 exists below an average depth of 3.5 feet below existing site surface at the locations of the seismic survey lines.

Layer 3: A bottom layer (Layer 3) that interfaces with the base of Layer 2 and has an average velocity of 6500 fps within a range of 5000 fps to 8000 fps. This layer extends from the base of the surficial layer and was encountered at depths ranging from 3 to 15 feet below existing site surface grades. Layer 3 likely represents highly to moderate weather rock and/or possible strongly cemented soils with gravels and cobbles. Layer 3 exists below an average depth of 11.5 feet below existing site surface at the locations of the seismic survey lines.

3.7 Excavation and Workability

Based on the field investigation (dilled test holes, backhoe test pits and seismic refraction survey) and local engineering experience, it is anticipated that conventional excavation equipment may be utilized only for Layer 1. See below for more

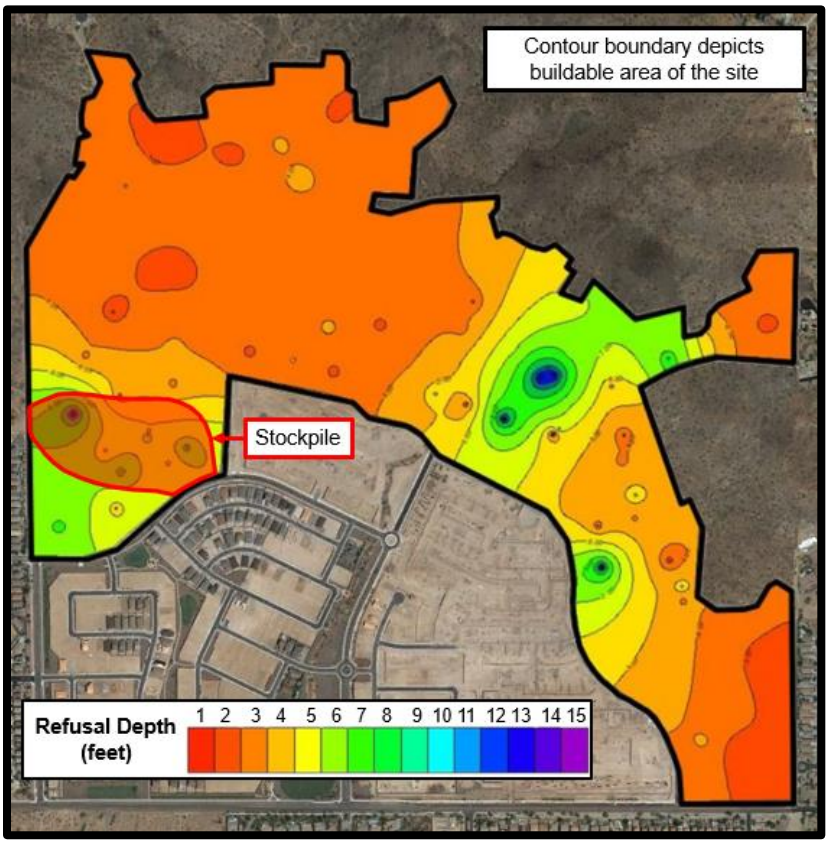
Layer 1, surficial layer, to depths ranging from 0 to 15 feet (with an average depth of 3 feet) below existing ground elevation.

Layer 2 – may require additional equipment i.e. hoe-ram attachment and possible blasting techniques due to very highly to highly weathered rock formations or moderately cemented soils with gravel and cobbles. Layer 2 was encountered as shallow as 1 foot and at an average depth of approximately 3 foot below existing ground elevation.

Layer 3 – highly to moderate weather rock formations and/or possible strongly cemented soils with gravels and cobbles may require hoe-ram attachment and blasting techniques. Layer 3 was encountered as shallow as 2 foot below existing ground elevation.

The depths of the various weathered rock formation are highly variable at the site as indicated by seismic refraction survey profiles and observed areas of rock outcropping. See the figure below for the refusal depth contour map for anticipated depth to refusal based on the drilled test holes, backhoe test pits and seismic refraction survey. The contour map below represents the anticipated

depth to hard dig (alternative excavation) conditions within the boundaries of the anticipated buildable area.



However, this generalized assessment is not intended to be the sole basis for contractors preparing earthwork bids. Undiscovered shallow bedrock, cemented soils, cobbles, boulders, and weathered/broken bedrock may make excavation more difficult than expected. In addition, the relative ease/efficiency of excavation is heavily dependent on operator skill and the type of equipment assigned to the project. Thus, prospective earthwork contractors bidding on this project need to assess site excavation conditions for themselves. Trench shoring, benching, or laying back of excavations greater than 3 feet in depth may be required to satisfy government safety regulations for personnel safety.

3.8 Earth Fissure Review

The site is located within an area of regional groundwater withdrawal. Arizona Geological Survey has been commissioned to study earth fissures associated with the groundwater withdrawal. The Earth Fissure Maps provided by the Arizona Geological Survey indicate no known earth fissures on site or within approximately 12.3 miles of the site.

3.9 Seismic Characteristics

The subject site is located in an area of low seismic activity. Values have been developed based on knowledge of the local geological conditions, soils encountered during the site investigation of the subsurface soils, and the 2018 International Building Code (IBC). The 2018 IBC references the American Society of Civil Engineers (ASCE) 7-16 standard. Based on knowledge of the geology of the area a 100 feet boring was not advanced.

Site Class	D (Stiff Soil Profile)
Central Latitude	33.73446268ºN
Central Longitude	112.20910737º W
S_s Spectral Acceleration for Short Period	0.22g
S_1 Spectral Acceleration for a 1-Second period	0.073g
F_a Site Coefficient for Short Period	1.60
F_v Site Coefficient for a 1-second Period	2.40

3.10 Liquefaction Potential

The soil encountered during the site investigation consisted of silty sand, silty clayey sand, clayey sand, clayey gravel, silty gravel, silty clayey gravel and sandy clay. Based on the soil types and the low ground motion hazard (relatively low ground acceleration), the potential for liquefaction of the site soils is considered to be negligible.

3.11 Flood Plains

ProTeX reviewed the Federal Emergency Management Agency (FEMA) Flood Maps and determined the subject site is <u>not</u> within the 100 year flood zone. A partial copy of the FEMA Flood Map with site location is shown to the right. The map indicates the subject site is located in a Zone X, which is an area of 0.2% annual chance flood with average depths of less than 1 foot or

with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood. The FEMA map reviewed is Map Number 04013C1255L and revision date of October 16, 2013.

3.12 Groundwater

ProTeX reviewed the Arizona Department of Water Resources (ADWR), GIS Groundwater Data and referenced monitored wells within the vicinity of the subject site. Wells located within this radius indicated depths of water ranging from approximately 320 to 446 feet below ground surface. Wells were measured using different techniques such as ADWR calibrated electric sounder and steel tape.

3.13 Shrinkage/Swell

Field observation, test borings, backhoe test pits and seismic refraction survey of subsurface profiles indicates that during grading, soils will likely be compacted to densities greater than the current density of the native soils. **In areas of weathered or intact rock formations (Layer 2 and Layer 3) that require additional hydraulic hoe-ram attachments or blasting techniques, may experience an increase in volume (swell).** Both site specific testing and experience indicates that there is variability of the site soils subsurface and thus shrinkage/swell across the site will vary such that uniform shrinkage/swell across this site during earthwork operations is unlikely. The shrinkage values provided are based on standard construction techniques and may vary depending on the equipment used and the manner in which the grading is performed.

Surface Stratum	Estimated Shrinkage (%)
Layer 1 – Sandy Silt Soils	10-15
Subsurface Stratum	
Layers 2 and 3 – Cemented Soils and Rock Formations	Potential Expansion

4.0 RECOMMENDATIONS

The recommendations contained herein are based on the findings of the field investigation, laboratory test results and local experience.

4.1 Foundations

It is highly recommended that the design of foundations be done under the direction of a registered professional engineer with structural expertise. Post-tension slab-on-grade foundations may be utilized in the design of light to moderately loaded single family residential structures. Conventional foundations can be utilized for isolated patio footings, site walls or in conjunction with post-tensioned slabs. It is recommended that foundation excavations be inspected prior to placement of concrete to ensure they are free of debris and loose soils.

Laboratory testing indicates soil characteristic indicated expansion potential generally very low to low with pockets of soils with expansion potential is in a higher medium range. It is anticipated that during the site grading activities soil profiles will change with cuts and fills. It is this firm's recommendation that a post-grading soils report be performed for each parcel following site grading activities to determine final design profile with final foundation design parameters.

4.1.1 Conventional Foundation System for Patios and Site Walls

Shallow foundations systems should bear a minimum of 1.5 feet below lowest adjacent grade extending laterally within 5 lateral feet from the edge of foundation. Due to the properties of the native soils as indicated by laboratory testing, it is recommended that foundations bear on native undisturbed soils or controlled compacted fill. Controlled compacted fill may consist of on-site and/or imported material that is placed or areas that are scarified, moisture processed and re-compacted. The following table provides allowable bearing capacities for the site.

Allowable Bearing Capacity for Shallow Depth Conventional Slab-On-Grade/Foundation Systems:

*Footing Depth (ft.)	Bearing Stratum	Allowable Soil Bearing Capacity
1.5	Firm Undisturbed Native soils or Controlled Compacted Fill	1500 psf

****Depth to base of perimeter footings is measured from the lowest adjacent finished grade elevation within 5 feet of edge of footing. Depth to base of interior footings measured from top of floor slab when used in conjunction with post-tension slabs.***

Foundation widths should meet building code minimums and should not be larger than 7 feet and 4 feet, for spread and continuous foundations, respectively.

The recommended foundation bearing pressures should be considered allowable maximums for dead plus design live loads and may be increased by one-third when considering total loads including transient wind or seismic forces. The weight of the foundation concrete below grade may be neglected in dead load computations.

Foundation excavations should be inspected to verify that they are free of loose soil that may have blown or sloughed into the excavations and ensure that the footings will bear upon firm native undisturbed soils or engineered fill.

The stem walls should be well reinforced to distribute stresses caused by possible non-uniform bearing capacity and/or minor differential foundation movements. It is recommended that stem walls and footings be reinforced. The structural engineer should design the footings and stems for the site soil conditions.

Preparation of the site to raise or lower the building pad should be done in accordance to the Section 5 - Site Preparation

4.1.2 Post-tension Slab-on-Grade Foundation System

For the purpose of the post-tension slab design an allowable bearing capacity of 1250psf is assigned. The post-tensioned foundation system should bear on a minimum of 1.0 feet of controlled compacted fill.

The following design parameters are assigned for use in the structural design of the foundation systems.

Soil Subgrade Modulus (Ks)(for compacted fill):150pci

Edge Moisture Variation (Em):

Edge Lift Condition:	*4.9 feet*
Center Lift Condition:	*9.0 feet*

Maximum Differential Soil Movement (Ym):

Edge Lift Condition:	*0.8 inches*
Center Lift Condition	*0.4 inches*

4.2 Exterior Slab-on-Grade

Exterior slabs on grade should bear directly on grade and contain a minimum of 5.0 sacks of Portland cement per cubic yard with a minimum thickness of 4 inches. A minimum of 6 inches of subgrade should be scarified moisture processed and compacted to the specifications in the earthwork section of this report.

4.3 Lateral Loadings

The design of retaining walls for the site should be designed to retain the lateral loads applied by the site soils. The following values are provided in Equivalent Fluid Pressures for unrestrained, restrained and passive resistance.

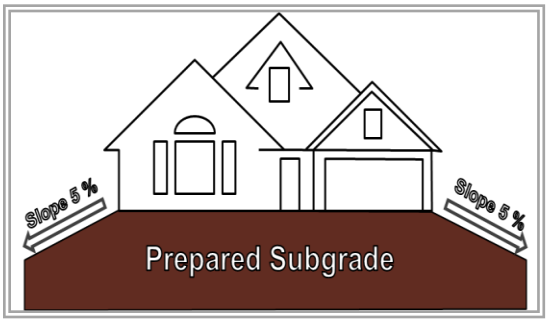
Lateral Equivalent Fluid Pressures for Backfill:	
*Unrestrained Walls	35 pcf
*Restrained Walls	50 pcf
Passive Resistance	373 pcf
Coefficient of Base Friction:	0.50

The backfill pressures stated do not include temporary forces imposed during compaction of the backfill, swelling pressures developed by over-compacted clayey backfill soils, hydrostatic pressures from inundation of backfills, and/or surcharge loads. Walls should be suitably braced during backfilling to prevent damage and deflection.

Design of below grade structures should account for or prevent potential hydrostatic buildup. In addition, any below grade structure penetrations to facilitate drainage may allow piping of soil and water if not addressed properly in the design of the structure.

4.4 Drainage

Establishment and long term maintenance of proper lot post-construction surface drainage is critical. Because of the potential for an adverse effect on structures, it is highly recommended that moisture infiltration and fluctuation of bearing soils for structural foundation/floor be minimized. Roof runoff should be collected and discharged away from the house structures. Drainage of surface water away from the structures should be provided during construction and maintained by the homeowner throughout the life of the structure. In no case, should long-term ponding be allowed near house structures. IRC Section R401.3 specifically requires "The grade away from the foundation walls shall fall a minimum of 6 inches within the first 10 feet. Where lot lines, walls, slopes or other physical barriers prohibit 6 inches of fall within 10 feet, drains or swales shall be provided to ensure drainage away from the house structure". Thus, un-drained landscape "islands" bounded by concrete flatwork and/or foundation wall/slab elements are to be avoided. Installation of rain gutters along the perimeter of the residential structure with drain systems to transport water away from the foundation and to the outfall of the lot is an option to minimize moisture infiltration and fluctuation of bearing soils for structural foundation/floor systems.



In yard areas, it is suggested that, where possible, finished slopes extend a minimum of 10 feet horizontally from building walls and have a minimum vertical fall of 6 inches. Backfill against footings, exterior walls and in utility trenches should be compacted to minimize the possibility of moisture infiltration through loose soil.

Drainage and moisture infiltration should be considered during landscaping design and placement to ensure foundation and slab bearing soils are not exposed to moisture infiltration or moisture content fluctuation. Distance from house structures to vegetative plants, planters, irrigation lines or landscape borders should not be less than 3 feet. Trees should be placed at a distance of 8 feet

or more. Landscape irrigation schedules should be adjusted for climatic changes to minimize moisture content fluctuation of foundation bearing soils.

4.5 Slope Stability

Stability of cut and fill slopes are dependent on soil properties such as density, cohesion, moisture content, etc. Site specific laboratory testing and experience indicates that these properties can vary significantly across the site. Temporary slopes for installation of underground utilities or structures should follow OSHA guidelines. A minimum slope of 2.5:1 horizontal to vertical may be utilized for design of cut slopes and compacted fill slopes. The slope recommendation does not consider safety for fall dangers.

4.6 Preliminary Pavement Section Recommendations

The pavement recommendations have been prepared in accordance with City of Peoria requirements. The design for local/residential streets is based on surface soil properties and City of Peoria Technical Design Requirements Figure 3-4.

Recommendations for pavement sections utilizing Asphaltic Concrete (AC) Pavement:

Street Classification	AC (inches)	ABC (inches)
Local Streets/Residential Streets	3.0	6.0

It should be noted that the design for Pavement Sections only account for subgrade soil properties with respect to traffic loads/volumes and does not take in to account the potential for heave from expansive soils found on-site. Following the movement of site soils during rough grading and earthwork construction, additional samples shall be taken within the limits of the proposed roadway to confirm subgrade classification according to M.A.G. Table 340 and determine final pavement section design. If soils are classified as expansive then corrective measures shall be recommended by the geotechnical engineer. Corrective measures may include additional sub-base (select material), removal/replacement of subgrade soils or treatment/stabilization of subgrade soils are not required.

Care should be taken with regard to parkway grading, placement of landscape vegetation and irrigation systems to minimize moisture infiltration in subgrade soils below pavement sections. In addition, the use of monolithic curb/sidewalk combination placement and soil cement of subgrade soils may be considered for long-term performance.

Pavement materials and placement should conform to Maricopa Association of Governments (M.A.G.) specifications. In no case should pavement surfacing be placed on unstable wet subgrade and/or aggregate base course.

5.0 SITE PREPARATION

The following recommendations are presented for site grading. *It is recommended that a ProTeX geotechnical engineer's representative observe and test the earthwork and foundation portions of this project to ensure compliance with this Soil Investigation report.*

Prior to placement of fill a representative of ProTeX should observe the clearing process. Clearing will include removal of (including but not necessarily limited to):

- Large stockpile/undocumented fill
- Previously constructed, temporary, drainage channel
- Site vegetation

The areas cleared should be inspected prior to and during scarification for evidence of organic material or loose areas that may require additional removal or processing.

It is recommended when final grading plan is developed, the plan be reviewed with a representative of ProTeX to determine finalize grading recommendations. The following recommendations are provided with anticipation of small cuts and fills.

The surface soils should be over-excavated a minimum depth of 1.0 foot below existing grade or 1.0 feet below final pad elevation, whichever is deeper. It is recommended that the over-excavation extend across the entire building pad and to a minimum lateral distance of five feet

beyond foundation edges. If rock or cemented stratums are encountered during the site mass grading this office should be contacted to evaluate the potential for over-excavation requirements to be reduced.

After clearing and over-excavation, **the exposed soils should be scarified a minimum of 8 inches, moisture conditioned and compacted.** The surface should be free from ruts, or other uneven features that would tend to prevent uniform compaction by the equipment used.

Sloping areas steeper than 5:1 (horizontal: vertical) should be benched to reduce the potential for slippage between slopes and fills. Benches should be level and wide enough to accommodate compaction and earth moving equipment.

Fill material should be free of organics, vegetative matter, deleterious or foreign material, rocks, and lumps having a diameter of more than 6 inches. Native soils may be used as fill material provided they are compacted as specified. If imported fill material is required, it should be approved very low expansive potential soils.

Based on the soil samples taken, the large stockpile located in the south western portion of the site may be used as fill material provided, they are compacted as specified. However, stockpiled material may require screening or crushing in order to meet the maximum diameter requirement of 6 inches. **However, prior to grading operations, an evaluation of mass grading plans and potential use of larger size particles may be an option.**

Fill material should be placed in layers, that when compacted, do not exceed 6 inches. Each layer should then be placed evenly and thoroughly mix during spreading to ensure uniformity of moisture throughout each layer. Each fill layer should be compacted to specified density and moisture content. Compaction equipment should be able to compact the fill to the specified density. Compaction of each layer should be continuous over its entire area and the compaction equipment should make sufficient passes to ensure that density has been obtained.

Soil compaction is recommended to the following densities and moisture contents as determined in accordance with ASTM D-698, AASHTO T-99 or applicable equivalent:

Compaction Specifications for Post-Tension and Conventional Foundations		
Material	**Compaction**	**Percent Moisture**
Below Conventional Foundation Level and Post-Tension Slab-on-Grade	95% Min	Optimum to +4
Fills at Depths 5 to 10 Feet Below Finish Grade	98% Min	-2 to +2 of Optimum
Fills at Depths 10 Feet or Greater Below Finish Grade	100% Min	-2 to +2 of Optimum

A ProTeX geotechnical engineer's representative should observe the grading operations to verify that all cut and fill areas are in accordance with the specifications. This office should be notified prior to earthwork operations so that appropriate observation and materials testing can be provided.

When work is interrupted by heavy rains, fill operations should not be resumed until the geotechnical engineer's representative indicates that the moisture content and density of the previously placed fill are as specified.

If building pads are altered or portions excavated as a part of construction activities, fill soils should be compacted as specified. If pads are not built on for an extended period of time, reconditioning of build pads may be required. Should this be the case, a representative of ProTeX should evaluate the pads for further recommendations.

6.0 CLOSURE

6.1 Limitations

The recommendations contained in this report are based on the assumption that the subsurface conditions do not deviate appreciably from those disclosed by the test holes. Should unusual material or conditions be encountered during construction, the ProTeX geotechnical engineer should be

notified to make supplemental recommendations should this be required. This report is issued with the understanding that it is the responsibility of the owner to see that its provisions are carried out or brought to the attention of those concerned.

The scope of services for this project does not include any environmental assessment of the site or identification of contaminated or hazardous materials or conditions.

The findings of this report are considered valid as of the present date. However, changes in the conditions of the site can occur with the passage of time, whether due to natural events or to human activities on this or adjacent sites. In addition, changes in applicable or appropriate codes and standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, this report may become invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and revision as changed conditions are identified.

6.2 Recommended Additional Services

The recommendations provided in this report are based on the assumption that a testing plan will be implemented with an adequate schedule of testing to ensure that the construction process meets the recommendations/specifications presented in this report. The testing and observation should be performed under the direction of the ProTeX Geotechnical Engineer/representative and should include, but not necessarily be limited to the following:

1. Observe and document that the existing surface and subsurface structures, vegetation and abandoned utilities are removed from the site as required in the earthwork section.

2. Approve and document that fill material used as engineered fill in building and pavement areas meets the specifications.

3. After clearing the site; monitor the over excavation, scarification and removal of any soft/loose conditions down to firm native soils.

4. Monitor and test placement of fill soils in building and pavement locations to verify and document conformance with project specifications.

Appendix A

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199246 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B1 (0-3')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty sand

Symbol: SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**15**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	95		
#4	85		
#10	68		
#40	50		
#100	41		
#200	32		

Remarks:

Reviewed By: Jayde Moloney

Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199247 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B2 (0-3')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**25**
Plastic Limit	**21**
Plasticity Index	**4**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty, clayey sand with gravel

Symbol: SC-SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**16**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	95		
#4	84		
#10	68		
#40	51		
#100	41		
#200	34		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199248 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B3 (0-3')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**37**
Plastic Limit	**23**
Plasticity Index	**14**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Clayey gravel with sand

Symbol: GC

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**29**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	81		
#4	71		
#10	61		
#40	51		
#100	45		
#200	41		

Remarks:

Reviewed By: Jayde Moloney

Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199249 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B4 (0-3')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**28**
Plastic Limit	**22**
Plasticity Index	**6**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = NA

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty, clayey gravel with sand

Symbol: GC-GM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**66**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	67		
1/2"	54		
#4	34		
#10	27		
#40	21		
#100	17		
#200	15		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199250 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B5 (0-2')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**28**
Plastic Limit	**18**
Plasticity Index	**10**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Clayey sand with gravel

Symbol: SC

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**24**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	91		
#4	76		
#10	58		
#40	41		
#100	34		
#200	28		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199251 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B6 (0-3')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**26**
Plastic Limit	**16**
Plasticity Index	**10**

ASTM D4829

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **25**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Clayey sand with gravel

Symbol: SC

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**25**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	92		
#4	75		
#10	54		
#40	37		
#100	29		
#200	23		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199252 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B7 (0-3')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty sand with gravel

Symbol: SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**25**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	83		
#4	75		
#10	62		
#40	43		
#100	32		
#200	24		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199253 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B9 (0-3')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty sand

Symbol: SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**10**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	95		
#4	90		
#10	75		
#40	51		
#100	40		
#200	31		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199254 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B9 (5-7')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty sand

Symbol: SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**4**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	96		
#10	80		
#40	44		
#100	28		
#200	21		

Remarks:

Reviewed By: Jayde Moloney

Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199255 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B9 (12-14')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty sand

Symbol: SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**4**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	96		
#10	78		
#40	42		
#100	26		
#200	19		

Remarks:

Reviewed By: Jayde Moloney

Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199256 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B10 (0-3')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

ASTM D4829

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **1**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty sand with gravel

Symbol: SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**18**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	96		
#4	82		
#10	63		
#40	42		
#100	29		
#200	20		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199257 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B11 (0-3')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**32**
Plastic Limit	**17**
Plasticity Index	**15**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Clayey sand

Symbol: SC

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**14**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	94		
#4	86		
#10	66		
#40	47		
#100	38		
#200	32		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199258 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B13 (0-3')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty sand

Symbol: SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**5**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	95		
#10	65		
#40	35		
#100	23		
#200	18		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199259 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B14 (0-3')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty sand

Symbol: SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**13**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	95		
#4	87		
#10	79		
#40	64		
#100	50		
#200	41		

Remarks:

Reviewed By: Jayde Moloney

Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199260 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B14 (5-7')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty sand with gravel

Symbol: SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**19**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	91		
#4	81		
#10	72		
#40	60		
#100	44		
#200	29		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199261 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B16 (0-3')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**26**
Plastic Limit	**19**
Plasticity Index	**7**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty, clayey sand with gravel

Symbol: SC-SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**16**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	93		
#4	84		
#10	60		
#40	35		
#100	27		
#200	21		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199262 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B16 (5-7')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty sand

Symbol: SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**8**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	99		
#4	92		
#10	68		
#40	31		
#100	20		
#200	16		

Remarks:

Reviewed By:

Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199263 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B16 (12-14')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty sand

Symbol: SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**6**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	94		
#10	73		
#40	40		
#100	28		
#200	22		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199264 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B17 (0-3')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**29**
Plastic Limit	**18**
Plasticity Index	**11**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Clayey gravel with sand

Symbol: GC

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**30**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	85		
#4	70		
#10	62		
#40	57		
#100	52		
#200	45		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199265 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B17 (5-7')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty sand with gravel

Symbol: SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**25**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	94		
#4	75		
#10	61		
#40	44		
#100	33		
#200	26		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199266 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B17 (12-14')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty sand with gravel

Symbol: SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**18**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	93		
#4	82		
#10	71		
#40	51		
#100	30		
#200	21		

Remarks:

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ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199267 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B18 (0-3')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**21**
Plastic Limit	**17**
Plasticity Index	**4**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty, clayey sand

Symbol: SC-SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**4**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	96		
#10	84		
#40	71		
#100	58		
#200	43		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199268 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B19 (0-3')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty sand with gravel

Symbol: SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**20**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	95		
#4	80		
#10	62		
#40	43		
#100	34		
#200	27		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199387 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/31/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/30/2019
Sample Location:	B21 (0-3')	Submitted By:	Delbert A Rapier

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty sand with gravel

Symbol: SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**24**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	89		
#4	76		
#10	58		
#40	38		
#100	30		
#200	24		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199238 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B22 (0-3')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty sand with gravel

Symbol: SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**33**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	85		
#4	67		
#10	55		
#40	40		
#100	31		
#200	23		

Remarks:

Reviewed By: Jayde Moloney

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1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199239 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B23 (0-3')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**24**
Plastic Limit	**19**
Plasticity Index	**5**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty, clayey sand with gravel

Symbol: SC-SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**38**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	89		
#4	62		
#10	46		
#40	33		
#100	28		
#200	22		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199240 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B24 (0-3')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty sand with gravel

Symbol: SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**32**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	88		
#4	68		
#10	54		
#40	39		
#100	30		
#200	22		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199241 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B26 (0-3')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**31**
Plastic Limit	**22**
Plasticity Index	**9**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Clayey sand with gravel

Symbol: SC

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**21**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	94		
#4	79		
#10	64		
#40	46		
#100	39		
#200	33		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199243 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B30 (0-2')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty gravel

Symbol: GM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**78**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	49		
1/2"	32		
#4	22		
#10	19		
#40	17		
#100	15		
#200	12		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199244 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/24/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/23/2019
Sample Location:	B31 (0-3')	Submitted By:	Amos McCurdy

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty sand with gravel

Symbol: SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**17**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	91		
#4	83		
#10	70		
#40	52		
#100	40		
#200	30		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199388 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/31/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/30/2019
Sample Location:	B32 (0-3')	Submitted By:	Delbert A Rapier

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

ASTM D4829

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **8**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty sand with gravel

Symbol: SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**39**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	83		
1/2"	71		
#4	61		
#10	51		
#40	33		
#100	22		
#200	17		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199389 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/31/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/30/2019
Sample Location:	B33 (0-3')	Submitted By:	Delbert A Rapier

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty sand with gravel

Symbol: SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**19**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	91		
#4	81		
#10	72		
#40	56		
#100	37		
#200	24		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199390 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/31/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/30/2019
Sample Location:	B34 (0-3')	Submitted By:	Delbert A Rapier

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Poorly-graded sand with silt and gravel

Symbol: SP-SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**18**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	94		
1/2"	94		
#4	82		
#10	56		
#40	25		
#100	15		
#200	10		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199391 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/31/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/30/2019
Sample Location:	B35 (0-3')	Submitted By:	Delbert A Rapier

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Well-graded gravel with silt and sand

Symbol: GW-GM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**50**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	76		
1/2"	65		
#4	50		
#10	33		
#40	19		
#100	13		
#200	9.0		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199392 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/31/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/30/2019
Sample Location:	B35 (5-7')	Submitted By:	Delbert A Rapier

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty gravel with sand

Symbol: GM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**50**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	90		
1/2"	69		
#4	50		
#10	34		
#40	23		
#100	18		
#200	12		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199393 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/31/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/30/2019
Sample Location:	B37 (0-3')	Submitted By:	Delbert A Rapier

ASTM D4318

Plasticity Index

Liquid Limit	**28**
Plastic Limit	**20**
Plasticity Index	**8**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Clayey sand with gravel

Symbol: SC

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**37**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	81		
1/2"	79		
#4	63		
#10	51		
#40	40		
#100	33		
#200	25		

Remarks:

Reviewed By: Jayde Moloney

Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199394 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/31/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/30/2019
Sample Location:	B38 (0-3')	Submitted By:	Delbert A Rapier

ASTM D4318

Plasticity Index

Liquid Limit	**33**
Plastic Limit	**21**
Plasticity Index	**12**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Clayey sand with gravel

Symbol: SC

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**18**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	99		
#4	82		
#10	65		
#40	49		
#100	41		
#200	34		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199395 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/31/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/30/2019
Sample Location:	B39 (0-3')	Submitted By:	Delbert A Rapier

ASTM D4318

Plasticity Index

Liquid Limit	**33**
Plastic Limit	**26**
Plasticity Index	**7**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty gravel with sand

Symbol: GM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**55**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	76		
1/2"	65		
#4	45		
#10	34		
#40	24		
#100	18		
#200	14		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199396 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/31/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/30/2019
Sample Location:	B40 (0-3')	Submitted By:	Delbert A Rapier

ASTM D4318

Plasticity Index

Liquid Limit	**31**
Plastic Limit	**21**
Plasticity Index	**10**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Clayey gravel with sand

Symbol: GC

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**56**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	56		
1/2"	54		
#4	44		
#10	35		
#40	26		
#100	20		
#200	15		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199397 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/31/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/30/2019
Sample Location:	B40 (5-7')	Submitted By:	Delbert A Rapier

ASTM D4318

Plasticity Index

Liquid Limit	**33**
Plastic Limit	**20**
Plasticity Index	**13**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Clayey sand with gravel

Symbol: SC

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**20**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	94		
#4	80		
#10	64		
#40	48		
#100	40		
#200	32		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199398 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/31/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/30/2019
Sample Location:	B40 (11-13')	Submitted By:	Delbert A Rapier

ASTM D4318

Plasticity Index

Liquid Limit	**26**
Plastic Limit	**19**
Plasticity Index	**7**

ASTM D4829

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **12**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty, clayey sand with gravel

Symbol: SC-SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**20**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	94		
1/2"	90		
#4	80		
#10	66		
#40	50		
#100	41		
#200	33		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199399 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/31/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/30/2019
Sample Location:	B41 (0-3')	Submitted By:	Delbert A Rapier

ASTM D4318

Plasticity Index

Liquid Limit	**29**
Plastic Limit	**20**
Plasticity Index	**9**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Clayey gravel with sand

Symbol: GC

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**40**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	79		
1/2"	75		
#4	60		
#10	48		
#40	36		
#100	29		
#200	23		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199400 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/31/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/30/2019
Sample Location:	B42 (0-3')	Submitted By:	Delbert A Rapier

ASTM D4318

Plasticity Index

Liquid Limit	**34**
Plastic Limit	**23**
Plasticity Index	**11**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Clayey sand with gravel

Symbol: SC

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**38**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	83		
#4	62		
#10	47		
#40	35		
#100	27		
#200	22		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199401 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/31/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/30/2019
Sample Location:	B43 (0-3')	Submitted By:	Delbert A Rapier

ASTM D4318

Plasticity Index

Liquid Limit	**30**
Plastic Limit	**20**
Plasticity Index	**10**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Clayey gravel with sand

Symbol: GC

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**32**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	94		
1/2"	83		
#4	68		
#10	57		
#40	46		
#100	39		
#200	33		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199402 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/31/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/30/2019
Sample Location:	B44 (0-3')	Submitted By:	Delbert A Rapier

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty gravel with sand

Symbol: GM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**53**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	95		
1/2"	76		
#4	47		
#10	36		
#40	26		
#100	21		
#200	16		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199403 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/31/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/30/2019
Sample Location:	B45 (0-3')	Submitted By:	Delbert A Rapier

ASTM D4318

Plasticity Index

Liquid Limit	**26**
Plastic Limit	**20**
Plasticity Index	**6**

ASTM D4829

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **10**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty, clayey sand with gravel

Symbol: SC-SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**27**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	93		
#4	73		
#10	53		
#40	40		
#100	34		
#200	27		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199404 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/31/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/30/2019
Sample Location:	B46 (0-3')	Submitted By:	Delbert A Rapier

ASTM D4318

Plasticity Index

Liquid Limit	**37**
Plastic Limit	**17**
Plasticity Index	**20**

ASTM D4829

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = 59

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Clayey gravel

Symbol: GC

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**56**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	63		
1/2"	52		
#4	44		
#10	41		
#40	37		
#100	34		
#200	30		

Remarks:

Reviewed By: Jerald W Grossarth

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199405 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/31/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/30/2019
Sample Location:	B47 (0-3')	Submitted By:	Delbert A Rapier

ASTM D4318

Plasticity Index

Liquid Limit	**29**
Plastic Limit	**18**
Plasticity Index	**11**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Clayey sand with gravel

Symbol: SC

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**19**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	92		
#4	81		
#10	67		
#40	50		
#100	43		
#200	40		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199406 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/31/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/30/2019
Sample Location:	B48 (0-3')	Submitted By:	Delbert A Rapier

ASTM D4318

Plasticity Index

Liquid Limit	**22**
Plastic Limit	**18**
Plasticity Index	**4**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty, clayey sand with gravel

Symbol: SC-SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**36**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	88		
1/2"	73		
#4	64		
#10	50		
#40	36		
#100	28		
#200	21		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199407 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/31/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/30/2019
Sample Location:	B49 (0-3')	Submitted By:	Delbert A Rapier

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty gravel with sand

Symbol: GM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**43**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	93		
1/2"	70		
#4	57		
#10	44		
#40	31		
#100	23		
#200	17		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	199408 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	12/31/2019
Material:	Geo (Native)	Sampled By:	Amos McCurdy
Material Supplier:	-	Date Sampled:	12/30/2019
Sample Location:	B50 (0-2')	Submitted By:	Delbert A Rapier

ASTM D4318

Plasticity Index

Liquid Limit	**NV**
Plastic Limit	**NP**
Plasticity Index	**NP**

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **NA**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Poorly-graded gravel with silt

Symbol: GP-GM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**82**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	55		
1/2"	31		
#4	18		
#10	15		
#40	12		
#100	9		
#200	6.1		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	200282 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	1/14/2020
Material:	Geo (Backhoe) (Native)	Sampled By:	Thomas M Perkins
Material Supplier:	-	Date Sampled:	1/10/2020
Sample Location:	TP3 (0-2')	Submitted By:	Thomas M Perkins

ASTM D4318

Plasticity Index

Liquid Limit	**48**
Plastic Limit	**27**
Plasticity Index	**21**

ASTM D4829

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = **80**

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Sandy lean clay

Symbol: CL

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**5**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	100		
1/2"	98		
#4	95		
#10	90		
#40	78		
#100	65		
#200	51		

Remarks:

Reviewed By:

Jerald W Grossarth

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	200283 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	1/14/2020
Material:	Geo (Backhoe) (Native)	Sampled By:	Thomas M Perkins
Material Supplier:	-	Date Sampled:	1/10/2020
Sample Location:	TP19 (0-2')	Submitted By:	Thomas M Perkins

ASTM D4318

Plasticity Index

Liquid Limit	**26**
Plastic Limit	**22**
Plasticity Index	**4**

ASTM D4829

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = 13

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty gravel with sand

Symbol: GM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**46**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	65		
1/2"	62		
#4	54		
#10	45		
#40	35		
#100	27		
#200	19		

Remarks:

Reviewed By: Jayde Moloney

ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4
Tempe, AZ 85282
Office: (602)-272-7891
Fax: (602) 272-7892

Soils Summary

Client:	Shea Homes Limited Partnership	ProTeX Job No:	9821
Project Name:	Aloravita	ProTeX Lab No:	200284 - Phoenix
Job Name:	Phases 3 and 4	Date Received:	1/14/2020
Material:	Geo (Backhoe) (Native)	Sampled By:	Thomas M Perkins
Material Supplier:	-	Date Sampled:	1/10/2020
Sample Location:	TP20 (0-3')	Submitted By:	Thomas M Perkins

ASTM D4318

Plasticity Index

Liquid Limit	**27**
Plastic Limit	**20**
Plasticity Index	**7**

ASTM D4829

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index

EI = 14

Percent Swell of Soil

% Swell	**NV**

Notes:

pH and Resistivity

pH Reading:	**NA**
Resistivity (ohms-cm)	**NA**

Class: Silty, clayey sand with gravel

Symbol: SC-SM

Moisture Density (Proctor)

Max. Dry Density	**NV**
Opt. Moisture %	**NV**
Corr. Max. Dry Density	**NV**
Corr. Opt. Moisture %	**NV**
% Rock	**36**

* = out of specification

ASTM D1140 / D422

Sieve	% Pass	Specs	*
1"	86		
1/2"	70		
#4	64		
#10	53		
#40	40		
#100	31		
#200	23		

Remarks:

Reviewed By:

Jerald W Grossarth

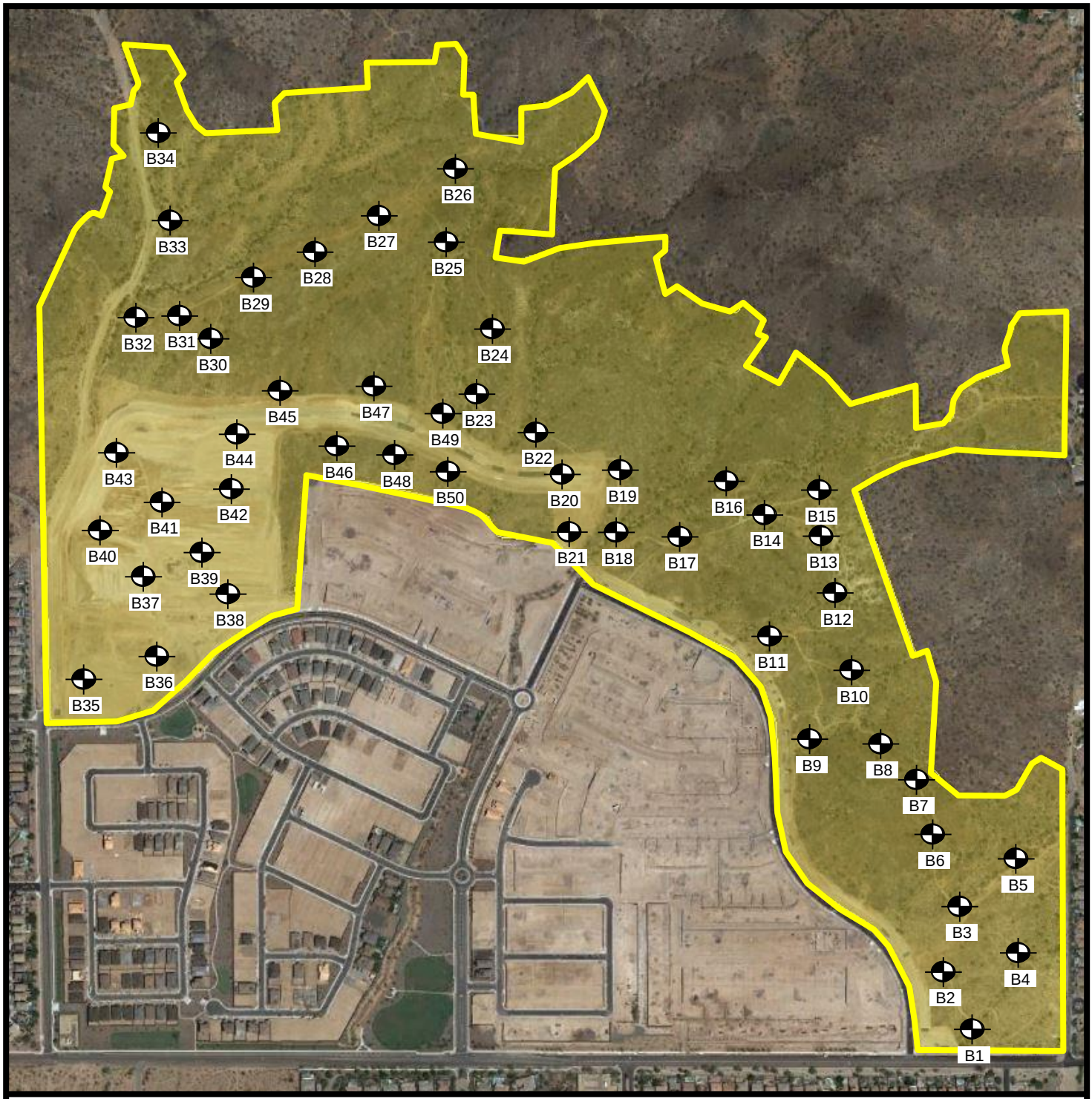
Summary of Laboratory Test Results Potential for Corrosion

Client: Shea Homes Limited Part Builder: Shea Homes Limited Part Project Name: Aloravita

Job Name: Phases 3 and 4 Job ID #: 9821

ProTeX Lab#	Location	Depth	Material Type	Sample Date	Sulfate (SO4) (ppm)	Chloride (CL) (ppm)	Soluble Salts (ppm)	Minimum Resistivity (ohms-cm)	pH	Oxidation-Reduction Potential of Water (mV)
199238	B22	0-3'	Geo	12/23/2019	19	102				
199244	B31	0-3'	Geo	12/23/2019	15	19				
199246	B1	0-3'	Geo	12/23/2019	21	17				
199253	B9	0-3'	Geo	12/23/2019	46	15				
199261	B16	0-3'	Geo	12/23/2019	18	10				
199267	B18	0-3'	Geo	12/23/2019	6	13				
199387	B21	0-3'	Geo	12/30/2019	99	267				
199388	B32	0-3'	Geo	12/30/2019	41	11				
199405	B47	0-3'	Geo	12/30/2019	12	23				
200283	TP19	0-2'	Geo (Backhoe)	1/10/2020	21	107				
200284	TP20	0-3'	Geo (Backhoe)	1/10/2020	32	22				

Appendix B



Legend:

Approximate Boring Location

N

Site Plan

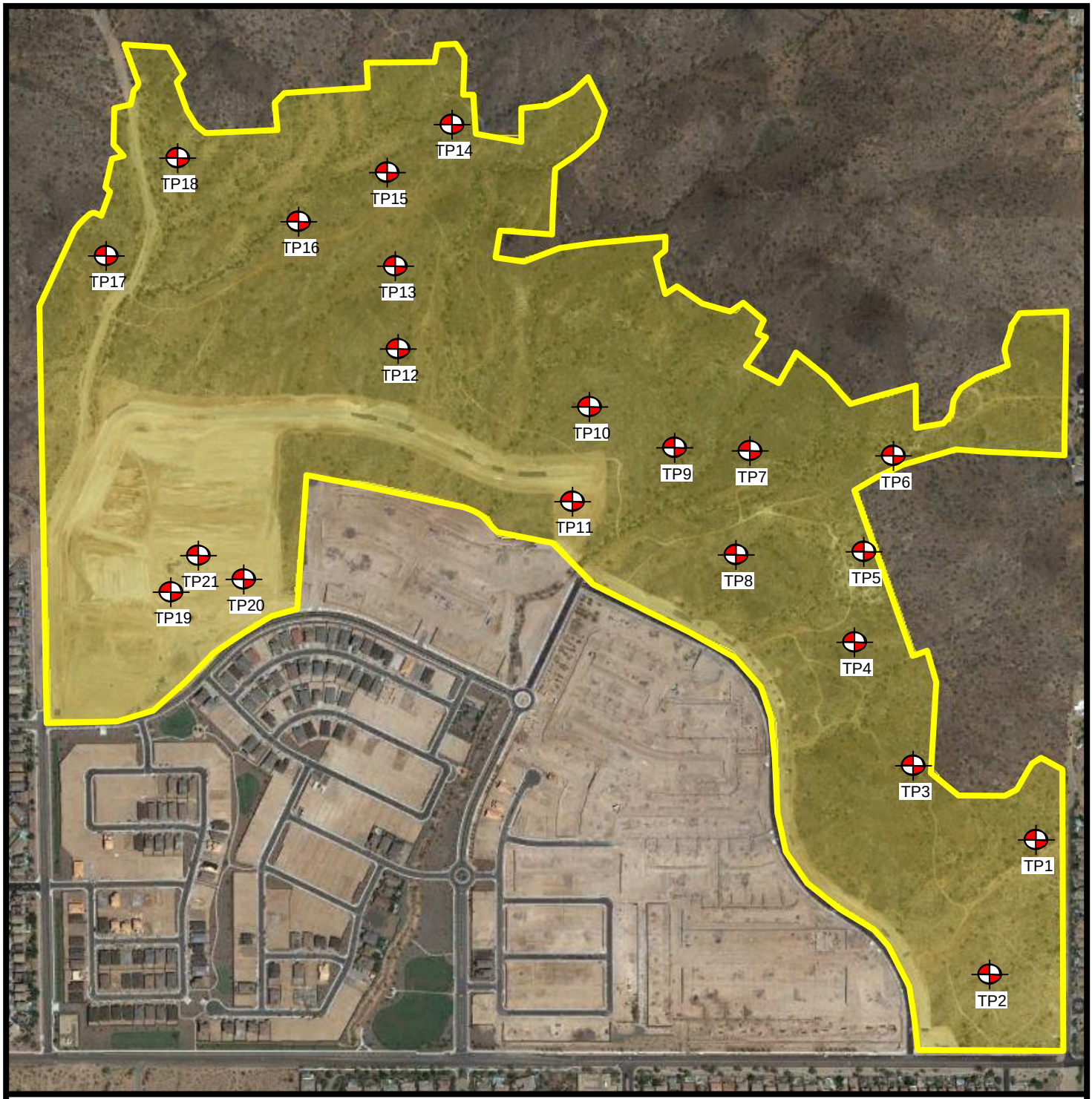
Scale: N.T.S.	Drawn by: MSK	Date:01/16/2020

Aloravita - Phase 3 and 4

67th Avenue and Jomax Road

Peoria, Arizona

ProTeX Job No.: 9821



Legend:

Approximate Test Pit Location

N

Site Plan

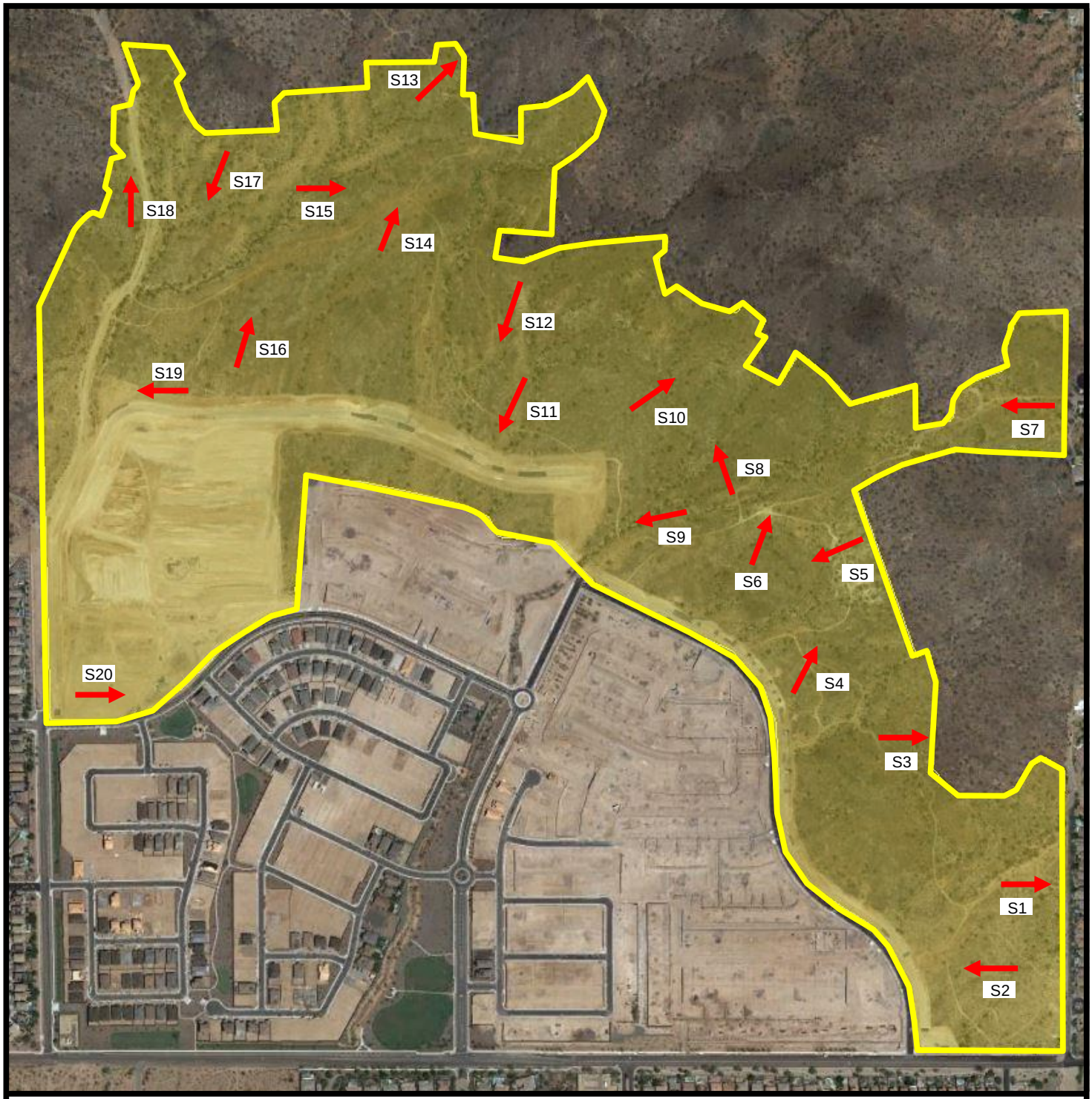
Scale: N.T.S.	Drawn by: MSK	Date:01/16/2020

Aloravita - Phase 3 and 4

67th Avenue and Jomax Road

Peoria, Arizona

ProTeX Job No.: 9821



Legend:

Approximate Seismic Refraction Line

N

Site Plan

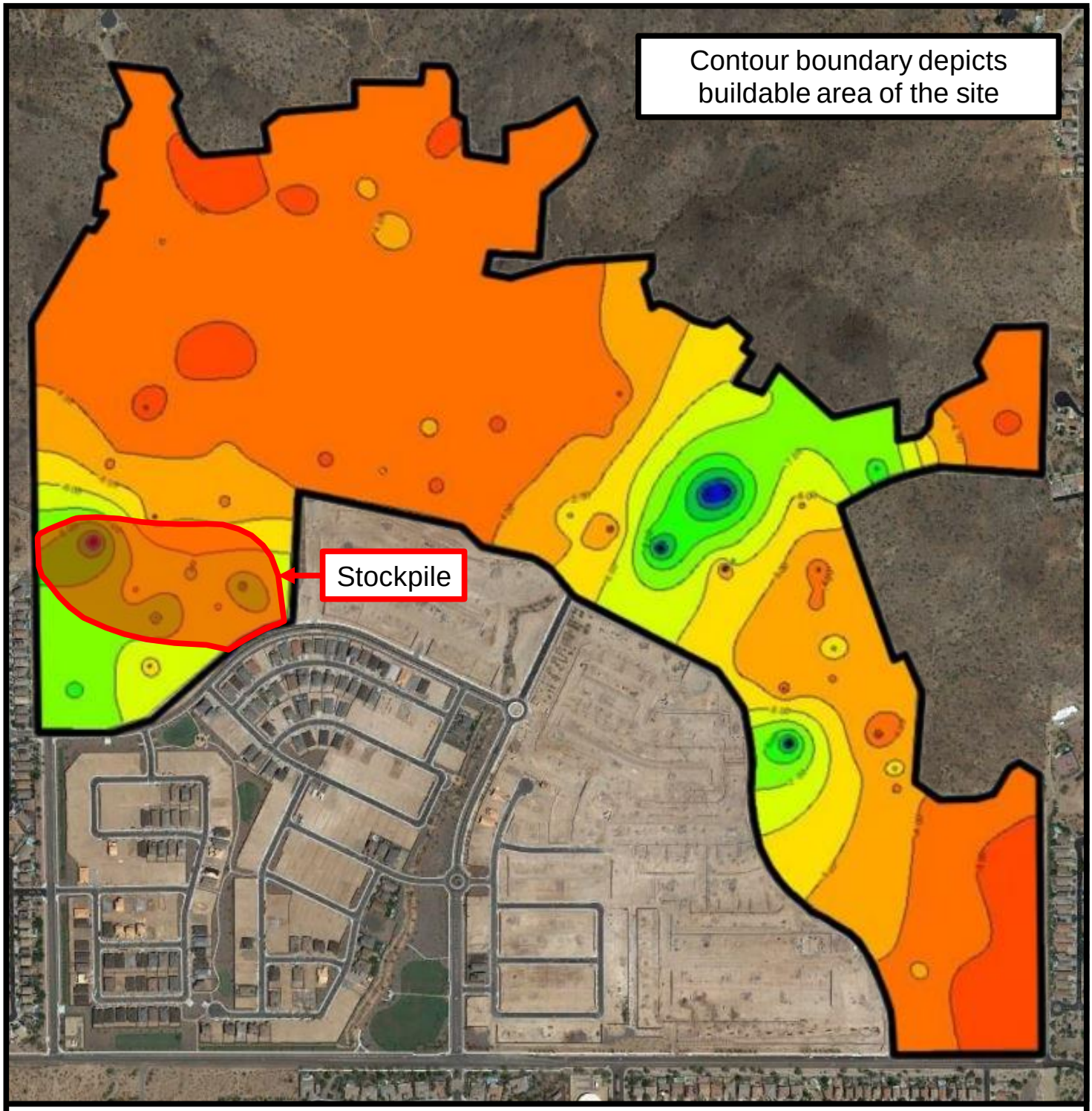
Scale: N.T.S.	Drawn by: MSK	Date:01/27/2020

Aloravita - Phase 3 and 4

67th Avenue and Jomax Road

Peoria, Arizona

ProTeX Job No.: 9821



Legend:

Refusal Depth (feet)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

N

Site Plan

Scale: N.T.S.	Drawn by: MSK	Date:02/11/2020

Aloravita - Phase 3 and 4

67th Avenue and Jomax Road

Peoria, Arizona

ProTeX Job No.: 9821

Appendix C

LOG OF BORING No. B1

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/23/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0						
	(SM) Silty Sand some Gravel, non-plastic, light brown, slightly damp		199246		33	
2.5						
	Boring terminated at 3 ft. Refusal due to strong Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B2

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/23/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>** C

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SC-SM) Silty Clayey Sand with Gravel, low plasticity, tan, slightly damp		99247		34	
	50 blows for 5 inches on the first 6 inch interval			N 50		
2.5						
5	Boring terminated at 5 ft. Refusal due to strong Cementation					
7.5						
10						
12.5						
15						
17.5						

Figure

LOG OF BORING No. B3

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/23/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0						
	(GC) Clayey Gravel, low-medium plasticity, brown, damp		99248		41	
2.5						
	Boring terminated at 3 ft. Refusal due to strong Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B4

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/23/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>** C

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200
0	(GC-GM) Silty Clayey Gravel, low plasticity, brown, damp		99249		15
2.5					
	Boring terminated at 4 ft. Refusal due to strong Cementation				
5					
7.5					
10					
12.5					
15					
17.5					

TEST RESULTS
Plastic Limit — Liquid Limit
Water Content - ●
Penetration -
10 20 30 40 50

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B5

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/23/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SC) Clayey Sand with Gravel, low-medium plastiticy, brown, slightly damp		99250		29	
	50 blows for 6 inches on the first 6 inch interval			N 50		
2.5	Boring terminated at 2 ft. Refusal due to strong Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B6

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/23/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200
0	(SC) Clayey Sand with Gravel, low-medium plastiticy, brown, damp		99251		23
2.5					
	Boring terminated at 4 ft. Refusal due to highly Weathered Rock				
5					
7.5					
10					
12.5					
15					
17.5					

TEST RESULTS
Plastic Limit — Liquid Limit
Water Content - ●
Penetration -
10 20 30 40 50

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Figure

LOG OF BORING No. B7

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/23/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0						
	(SM) Silty Sand with Gravel, non-plastic, brown, damp		199252		24	
2.5						
	Boring terminated at 3 ft. Refusal due to highly Weathered Rock					
5						
7.5						
10						
12.5						
15						
17.5						

LOG OF BORING No. B8

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/23/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>** C

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit ⊢—⊣ Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0						
	(SM) Silty Sand with Gravel, non-plastic, light brown, damp					
	50 blows for 5 inches on the second 6 inch interval			13 50		
2.5						
5	Boring terminated at 4.5 ft. Refusal due to highly Weathered Rock					
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B9

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/23/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit ⊢—⊣ Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SM) Silty Sand some Gravel, non-plastic, brown, damp		199253		31	
2.5						
5	Soil transitions to trace Gravel, slightly damp		199254		21	
7.5						
10						
12.5			199255		19	
15	Boring terminated at 15 ft.					
17.5						

LOG OF BORING No. B10

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/23/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0						
	(SM) Silty Sand with Gravel, non-plastic, brown, damp		199256		20	
2.5						
	Boring terminated at 3 ft. Refusal due to Weathered Rock and moderate Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B11

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/23/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>** C

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SC) Clayey Sand some Gravel, medium plastiticy, brown, slightly damp		99257		32	
	50 blows for 6 inches on the fist 6 inch interval			N 50		
2.5						
	Boring terminated at 4 ft. Refusal due to Weathered Rock and moderate Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B12

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/23/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0						
	(SM) Silty Sand trace Gravel, non-plastic, brown, damp					
2.5						
	Boring terminated at 3 ft. Refusal due to moderately Weathered Rock					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B13

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/23/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SM) Silty Sand trace Gravel, non-plastic, brown, damp		199258		18	
2.5						
	Boring terminated at 4 ft. Refusal due to moderately Weathered Rock					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B14

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/23/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit ⊢—⊣ Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0						
	(SM) Silty Sand some Gravel, non-plastic, brown, damp		199259		41	
2.5						
5	Soil transitions to with Gravel, grey, slightly damp		199260		29	
7.5	Boring terminated at 7 ft. Refusal due to moderately Weathered Rock					
10						
12.5						
15						
17.5						

LOG OF BORING No. B15

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/23/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>** C

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SM) Silty Sand trace Gravel, non-plastic, brown, damp					
2.5	50 blows for 4 inches on the third six inch interval			10 23 50		73
	Boring terminated at 4 ft. Refusal due to moderately Weathered Rock					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B16

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/23/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200
0	(SC-SM) Silty Clayey Sand with Gravel, low plasticity, light brown, slightly damp		99261		21
2.5					
5	(SM) Silty Sand trace Gravel, non-plastic, tan, slightly damp	5-7'	99262		16
7.5					
10					
12.5			99263		22
15	Boring terminated at 15 ft.				
17.5					

TEST RESULTS
Plastic Limit — Liquid Limit
Water Content - ●
Penetration -
10 20 30 40 50

LOG OF BORING No. B17

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/23/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>** C

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200
0	(GC) Clayey Gravel, low-medium plasticity, light brown, slightly damp		99264		45
2.5					
5	(SM) Silty Sand with Gravel, non-plastic, tan, slightly damp	5-7'	99265		26
7.5					
10					
12.5			99266		21
15	Boring terminated at 15 ft.				
17.5					

TEST RESULTS
Plastic Limit — Liquid Limit
Water Content - ●
Penetration -
10 20 30 40 50

LOG OF BORING No. B18

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/23/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SC-SM) Silty Clayey Sand, low plasticity, brown, slightly damp		99267	8 10 12	43	
2.5						
	Boring terminated at 4 ft. Refusal due to Weathered Rock and moderate Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B19

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/23/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SM) Silty Sand with Gravel, non-plastic, tan, slightly damp		199268		27	
2.5						
5	Boring terminated at 5 ft. Refusal due to Weathered Rock and strong Cementation					
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B20

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/23/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>** C

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit ⊢—⊣ Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SM) Silty Sand with Gravel, non-plastic, tan, slightly damp					
	50 blows for 5 inches on the second 6 inch interval			12 50		
2.5						
	Boring terminated at 4 ft. Refusal due to strong Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B21

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 4" Flight Auger **DATE:** 12/30/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>** C

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SM) Silty Sand with Gravel, non-plastic, tan, slightly damp		99387		24	
2.5	50 blows for 4 inches on the second 6 inch interval			34 50		
5	Boring terminated at 4.5 ft. Refusal due to strong Cementation					
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B22

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/20/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0						
	(SM) Silty Sand with Gravel, non-plastic, brown, slightly damp		199238		23	
2.5						
	Boring terminated at 3 ft. Refusal due to Weathered Rock and strong Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B23

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/20/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SC-SM) Silty Clayey Sand and Gravel, low plasticity, brown, damp		99239	3 3 3	22	
2.5						
	Boring terminated at 3.5 ft. Refusal due to Gravel and Cobbles and strong Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B24

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/20/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SM) Silty Sand with Gravel, non-plastic, brown, damp		99240		22	
2.5				R 8 10		
	Boring terminated at 4 ft. Refusal due to Gravel and Cobbles and strong Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B25

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/20/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit ⊢—⊣ Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0						
	(SC) Clayey Sand with Gravel, low-medium plastiticy, light brown, slightly damp					
2.5						
	Boring terminated at 4 ft. Refusl due to Weathered Rock and strong Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

LOG OF BORING No. B26

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/20/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SC) Clayey Sand with Gravel, low-medium plastiticy, tan, slightly damp		99241		33	
	50 blows for 5 inches on the first 6 inch interval			N 50		
2.5						
	Boring terminated at 4 ft. Refusal due to Weathered and Fractured Rock					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B27

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/20/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit ⊢—⊣ Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0						
	(SC) Clayey Sand with Gravel, low-medium plastiticy, light brown, slightly damp					
2.5						
	Boring terminated at 4 ft. Refusl due to Weathered Rock and strong Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B28

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/20/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>** C

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit ⊢—⊣ Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0						
	(SM) Silty Sand some Gravel, non-plastic, brown, damp					
2.5						
	Boring terminated at 4 ft. Refusal due to Gravel and Cobbles and strong Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B29

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/20/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0						
	(SM) Silty Sand some Gravel, non-plastic, tan, slightly damp					
	50 blows for 3 inches on the first 6 inch interval			R 50		
2.5						
	Boring terminated at 3 ft. Refusal due to Gravel and Cobbles and strong Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B30

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/20/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200
0	(GM) Silty Gravel, non-plastic, brown, slightly damp		99243		12
2.5	Boring terminated at 2 ft. Refusal due to Gravel and Cobbles and strong Cementation				
5					
7.5					
10					
12.5					
15					
17.5					

TEST RESULTS
Plastic Limit — Liquid Limit
Water Content - ●
Penetration -
10 20 30 40 50

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B31

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 6" Flight Auger **DATE:** 12/20/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0						
	(SM) Silty Sand some Gravel, non-plastic, brown, damp		99244		30	
2.5						
	Boring terminated at 3 ft. Refusal due to Gravel and Cobbles and strong Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B32

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 4" Flight Auger **DATE:** 12/30/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit ⊢—⊣ Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SM) Silty Sand and Gravel, non-plastic, brown, damp		199388		17	
2.5						
	Boring terminated at 4 ft. Refusal due to Gravel and Cobbles and strong Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B33

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 4" Flight Auger **DATE:** 12/30/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SM) Silty Sand with Gravel, non-plastic, brown, damp		199389		24	
	50 blows for 5 inches on the first 5 inch interval			N 50		
2.5						
5	Boring terminated at 4.5 ft. Refusal due to Weathered and Fractured Rock and strong Cementation					
7.5						
10						
12.5						
15						
17.5						

Figure

LOG OF BORING No. B34

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 4" Flight Auger **DATE:** 12/30/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>** C

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit ⊢—⊣ Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SP-SM) Silty Sand with Gravel, non-plastic, brown, damp		99390		10	
	50 blows for 6 inches on the first 6 inch interval			N 50		
2.5	Boring terminated at 3 ft. Refusal due to Weathered and Fractured Rock and strong Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B35

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 4" Flight Auger **DATE:** 12/30/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(GM) Silty Gravel, non-plastic, brown, damp		99391	8 9 9	9	
2.5						
5	Soil transitions to light brown, slightly damp 50 blows for 4 inches on the second 6 inch interval	5-7'	99392	R 28 50	12	78
7.5						
10	Boring terminated at 9 ft. Refusal due to highly Weathered Rock and moderate Cementation					
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B36

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 4" Flight Auger **DATE:** 12/30/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>** C

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit ⊢—⊣ Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0						
	(SC) Clayey Sand and Gravel, low-medium plastiticy, tan, slightly damp					
	50 blows for 5 inches on the first 6 inch interval			N 50		
2.5						
	Boring terminated at 4 ft. Refusal due to highly Weathered Rock and moderate Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B37

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 4" Flight Auger **DATE:** 12/30/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200
0	(SC) Clayey Sand and Gravel, low-medium plastiticy, brown, damp		99393		25
2.5					
5	Boring terminated at 5 ft. Refusal due to highly Weathered Rock and moderate Cementation				
7.5					
10					
12.5					
15					
17.5					

TEST RESULTS
Plastic Limit — Liquid Limit
Water Content - ●
Penetration -
10 20 30 40 50

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B38

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 4" Flight Auger **DATE:** 12/30/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration -)
0	(SC) Clayey Sand with Gravel, low-medium plastiticy, brown, damp		99394		34	
2.5						
5	Boring terminated at 5 ft. Refusal due to highly Weathered Rock and moderate Cementation					
7.5						
10						
12.5						
15						
17.5						

LOG OF BORING No. B39

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 4" Flight Auger **DATE:** 12/30/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(GM) Silty Gravel, low plasticity, brown, damp		199395		14	
2.5						
5	Boring terminated at 5 ft. Refusal due to highly Weathered Rock and moderate Cementation					
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B40

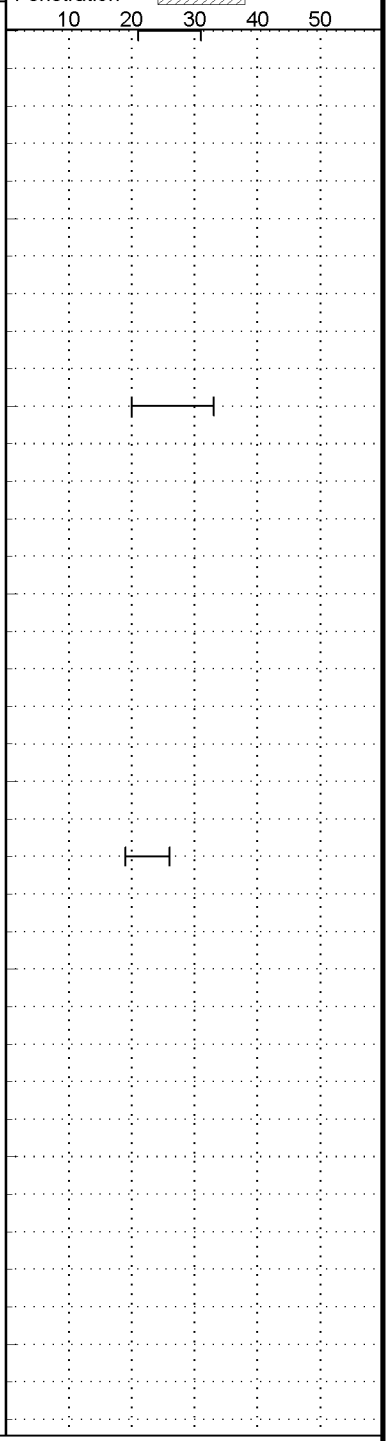
PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 4" Flight Auger **DATE:** 12/30/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200
0	(GC) Clayey Gravel, low-medium plasticity, brown, damp		99396		15
2.5					
5	(SC) Clayey Sand with Gravel, low-medium plastiticy, brown, damp (5-7')		99397		32
7.5					
10					
	(SC-SM) Silty Clayey Sand with Gravel, low plasticity, light brown, damp (11-13')		99398		33
12.5					
15	Boring terminated at 15 ft.				
17.5					

TEST RESULTS

Plastic Limit — Liquid Limit
Water Content - ●
Penetration -



LOG OF BORING No. B41

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 4" Flight Auger **DATE:** 12/30/2019
DEPTH TO - WATER> INITIAL: ▽ **AFTER 24 HOURS:** ▼ **CAVING>** C

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit ⊢—⊣ Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0						
	(GC) Clayey Gravel, low-medium plasticity, brown, damp		99399		23	
2.5						
	Boring terminated at 3 ft. Refusal due to Gravel and Cobbles and strong Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B42

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 4" Flight Auger **DATE:** 12/30/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0						
	(SC) Clayey Sand and Gravel, low-medium plastiticy, brown, damp		99400		22	
2.5						
	Boring terminated at 3 ft. Refusal due to Gravel and Cobbles and strong Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B43

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 4" Flight Auger **DATE:** 12/30/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(GC) Clayey Gravel, low-medium plasticity, brown, damp		99401		34	
	50 blows for 2 inches on the second 6 inch interval			17 50		
2.5	Boring terminated at 3 ft. Refusal due to Gravel and Cobbles and strong Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B44

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 4" Flight Auger **DATE:** 12/30/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(GM) Silty Gravel, non-plastic, brown, damp		99402		16	
2.5				26 27 30		
5	Boring terminated at 4.5 ft. Refusal due to Gravel and Cobbles and strong Cementation					
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B45

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 4" Flight Auger **DATE:** 12/30/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SC-SM) Silty Clayey Sand with Gravel, low plasticity, light brown, slightly damp		99403		27	
2.5						
	Boring terminated at 4 ft. Refusal due to Gravel and Cobbles and strong Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B46

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 4" Flight Auger **DATE:** 12/30/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>** C

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(GC) Clayey Gravel, medium plasticity, brown, damp		99404		30	
2.5	Boring terminated at 2 ft. Refusal due to Gravel and Cobbles and strong Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B47

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 4" Flight Auger **DATE:** 12/30/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>** C

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SC) Clayey Sand with Gravel, low-medium plastiticy, tan, slightly damp		99405		40	
	50 blows for 2 inches on the first 6 inch interval			N 50		
2.5	Boring terminated at 3 ft. Refusal due to Gravel and Cobbles and strong Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B48

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 4" Flight Auger **DATE:** 12/30/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0						
	(SC-SM) Silty Clayey Sand and Gravel, low plasticity, brown, damp		99406		21	
2.5						
5	Boring terminated at 4.5 ft. Refusal due to Gravel and Cobbles and strong Cementation					
7.5						
10						
12.5						
15						
17.5						

Figure

LOG OF BORING No. B49

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 4" Flight Auger **DATE:** 12/30/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200
0	(GM) Silty Gravel, non-plastic, brown, damp		199407		17
2.5					
5	Boring terminated at 5 ft. Refusal due to Gravel and Cobbles and strong Cementation				
7.5					
10					
12.5					
15					
17.5					

TEST RESULTS
Plastic Limit — Liquid Limit
Water Content - ●
Penetration -
10 20 30 40 50

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. B50

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: D&S Drilling **LOGGED BY:** AM
DRILLING METHOD: 4" Flight Auger **DATE:** 12/30/2019
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(GP-GM) Silty Gravel, non-plastic, brown, damp		99408		6	
2.5	Boring terminated at 2 ft. Refusal due to Gravel and Cobbles and strong Cementation					
5						
7.5						
10						
12.5						
15						
17.5						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING
No. TP1

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: JKI Solutions **LOGGED BY:** TMP
DRILLING METHOD: Howard 310J Backhoe **DATE:** 01/10/2020
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0						
	(SC) Clayey Sand with Gravel, low-medium plastiticy, brown, slightly damp Soil transitions to light brown Encountered weak Cementation					
2						
	Boring terminated at 3 ft. Refusal due to strong Cementation					
4						
6						
8						
10						
12						
14						

Figure

LOG OF BORING No. TP2

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: JKI Solutions **LOGGED BY:** TMP
DRILLING METHOD: Howard 310J Backhoe **DATE:** 01/10/2020
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0						
	(SC-SM) Silty Clayey Sand with Gravel, low plasticity, light brown, slightly damp					
2	Boring terminated at 2 ft. Refusal due to strong Cementation					
4						
6						
8						
10						
12						
14						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. TP3

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: JKI Solutions **LOGGED BY:** TMP
DRILLING METHOD: Howard 310J Backhoe **DATE:** 01/10/2020
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(CL) Sandy Clay, medium plasticity, red brown, slightly damp		200282		51	
2	Soil transitions to brown					
4	Encountered highly Weathered Rock					
6	Encountered Weathered Rock					
	Boring terminated at 7 ft. Refusal due to highly Weathered Rock					
8						
10						
12						
14						

LOG OF BORING No. TP4

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: JKI Solutions **LOGGED BY:** TMP
DRILLING METHOD: Howard 310J Backhoe **DATE:** 01/10/2020
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SM) Silty Sand with Gravel, non-plastic, red brown, slightly damp					
2	Soil transitions to brown					
	Encountered highly Weathered Rock and weak Cementation					
4	Encountered moderate Cementation					
6						
	Boring terminated at 7 ft. Refusal due to Weathered Rock and moderate Cementation					
8						
10						
12						
14						

Figure

LOG OF BORING No. TP5

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: JKI Solutions **LOGGED BY:** TMP
DRILLING METHOD: Howard 310J Backhoe **DATE:** 01/10/2020
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit ⊢—⊣ Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(GM) Silty Gravel, non-plastic, brown, slightly damp Encountered Boulders					
2						
	Encountered very highly Weathered Rock					
4						
	Boring terminated at 5 ft. Refusal due to moderately Weathered Rock					
6						
8						
10						
12						
14						

Rock outcropping, surface boulders and cobbles

Figure

LOG OF BORING No. TP6

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: JKI Solutions **LOGGED BY:** TMP
DRILLING METHOD: Howard 310J Backhoe **DATE:** 01/10/2020
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>** C

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit ⊢—⊣ Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SC) Clayey Sand some Gravel, medium plastiticy, red brown, slightly damp					
2						
	Soil transitions to light brown Encountered very highly Weathered Rock and weak Cementation					
4						
6						
8						
10						
	Boring terminated at 10 ft.					
12						
14						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. TP7

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: JKI Solutions **LOGGED BY:** TMP
DRILLING METHOD: Howard 310J Backhoe **DATE:** 01/10/2020
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SM) Silty Sand with Gravel, non-plastic, brown, slightly damp					
2	Soil transitions to light brown Encounterd very highly Weathered Rock					
	Encountered highly Weathered Rock and moderate Cementation					
4						
6	Encountered weak Cementation					
	Boring terminated at 7 ft. Refusal due to very highly Weathered Rock					
8						
10						
12						
14						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. TP8

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: JKI Solutions **LOGGED BY:** TMP
DRILLING METHOD: Howard 310J Backhoe **DATE:** 01/10/2020
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SM) Silty Sand trace Gravel, non-plastic, brown, slightly damp					
2	Encountered very highly Weathered Rock and weak Cementation					
4						
6	Encountered highly Weathered Rock and moderate Cementation					
8	Boring terminated at 8 ft. Refusal due to highly Weathered Rock and moderate Cementation					
10						
12						
14						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. TP9

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: JKI Solutions **LOGGED BY:** TMP
DRILLING METHOD: Howard 310J Backhoe **DATE:** 01/10/2020
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SM) Silty Sand with Gravel, non-plastic, brown, slightly damp					
2	Soil transitions to light brown Encountered very highly Weathered Rock					
4	Encountered highly Weathered Rock and moderate Cementation					
6						
	Boring terminated at 7 ft. Refusal due to Weathered Rock and moderate Cementation					
8						
10						
12						
14						

Figure

LOG OF BORING No. TP10

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: JKI Solutions **LOGGED BY:** TMP
DRILLING METHOD: Howard 310J Backhoe **DATE:** 01/10/2020
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SM) Silty Sand with Gravel, non-plastic, light brown, slightly damp					
	Encountered very highly Weathered Rock and moderate Cementation					
2	Encountered Weathered Rock and strong Cementation					
	Boring terminated at 3 ft. Refusal due to Weathered Rock and strong Cementation					
4						
6						
8						
10						
12						
14						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. TP11

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: JKI Solutions **LOGGED BY:** TMP
DRILLING METHOD: Howard 310J Backhoe **DATE:** 01/10/2020
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(GC) Clayey Gravel, low-medium plasticity, brown, slightly damp					
2	Encountered strong Cementation					
4						
6						
	Boring terminated at 7 ft. Refusal due to strong Cementation					
8						
10						
12						
14						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. TP12

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: JKI Solutions **LOGGED BY:** TMP
DRILLING METHOD: Howard 310J Backhoe **DATE:** 01/10/2020
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(GC) Clayey Gravel, low-medium plasticity, red brown, slightly damp					
2	Soil transitions to light brown Encountered moderate Cementation					
4	Boring terminated at 4 ft. Refusal due to Gravel and Cobbles and strong Cementation					
6						
8						
10						
12						
14						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. TP13

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: JKI Solutions **LOGGED BY:** TMP
DRILLING METHOD: Howard 310J Backhoe **DATE:** 01/10/2020
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0						
	(SC) Clayey Sand with Gravel, low-medium plastiticy, brown, slightly damp					
2	Encountered moderate Cementation					
	Boring terminated at 3 ft. Refusal due to Gravel and Cobbles and strong Cementation					
4						
6						
8						
10						
12						
14						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. TP14

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: JKI Solutions **LOGGED BY:** TMP
DRILLING METHOD: Howard 310J Backhoe **DATE:** 01/10/2020
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(GM) Silty Gravel, non-plastic, brown, slightly damp Encountered Weathered Rock					
2	Boring terminated at 2 ft. Refusal due to Weathered and Fractured Rock					
4						
6						
8						
10						
12						
14						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. TP15

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: JKI Solutions **LOGGED BY:** TMP
DRILLING METHOD: Howard 310J Backhoe **DATE:** 01/10/2020
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0						
	(GM) Silty Gravel, non-plastic, brown, slightly damp					
	Encountered highly Weathered Rock and moderate Cementation					
2						
4	Encountered Weathered Rock and weak Cementation					
	Boring terminated at 5 ft. Refusl due to Weathered Rock and strong Cementation					
6						
8						
10						
12						
14						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. TP16

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: JKI Solutions **LOGGED BY:** TMP
DRILLING METHOD: Howard 310J Backhoe **DATE:** 01/10/2020
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit ⊢—⊣ Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0						
	(SC-SM) Silty Clayey Sand, low plasticity, brown, slightly damp					
2	Encountered moderate Cementation					
	Boring terminated at 3 ft. Refusal due to Gravel and Cobbles and strong Cementation					
4						
6						
8						
10						
12						
14						

LOG OF BORING No. TP17

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: JKI Solutions **LOGGED BY:** TMP
DRILLING METHOD: Howard 310J Backhoe **DATE:** 01/10/2020
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SC) Clayey Sand with Gravel, low plastiticy, brown, damp					
2	Encountered heavily Weathered Rock and moderate Cementation					
4	Boring terminated at 4 ft. Refusal due to Weathered and Fractured Rock and strong Cementation					
6						
8						
10						
12						
14						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. TP18

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: JKI Solutions **LOGGED BY:** TMP
DRILLING METHOD: Howard 310J Backhoe **DATE:** 01/10/2020
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SC-SM) Silty Clayey Sand some Gravel, low plasticity, brown, slightly damp					
2	Encountered highly Weathered Rock					
	Boring terminated at 3 ft. Refusal due to Weathered and Fractured Rock and strong Cementation					
4						
6						
8						
10						
12						
14						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING No. TP19

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: JKI Solutions **LOGGED BY:** TMP
DRILLING METHOD: Howard 310J Backhoe **DATE:** 01/10/2020
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(GM) Silty Gravel, low plasticity, brown, slightly damp		200283		19	
2						
4						
6	Encountered some Cemented chunks Encountered Gravel and Cobbles					
8	Encountered large Cemented chunks Encountered Gravel and Cobbles					
10	Boring terminated at 10 ft.					
12						
14						

20-25' undocumented stockpile

LOG OF BORING No. TP20

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: JKI Solutions **LOGGED BY:** TMP
DRILLING METHOD: Howard 310J Backhoe **DATE:** 01/10/2020
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)
0	(SC-SM) Silty Clayey Sand, low plasticity, brown, slightly damp		200284		23	
2						
4	Soil transitions to light brown Encountered some Cobbles					
6	Soil transitions to brown Encountered some Cobbles					
8						
10	Boring terminated at 10 ft.					
12						
14						

20-30' undocumented stockpile

LOG OF BORING No. TP21

PROJECT: Aloravita - Phases 3 & 4 **PROJECT NO.:** 9821
CLIENT: Shea Homes Limited Partnership
PROJECT LOCATION: 67th Avenue and Jomax Road
LOCATION: See Site Plan **ELEVATION:**
DRILLER: JKI Solutions **LOGGED BY:** TMP
DRILLING METHOD: Howard 310J Backhoe **DATE:** 01/10/2020
DEPTH TO - WATER> INITIAL: **AFTER 24 HOURS:** **CAVING>**

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

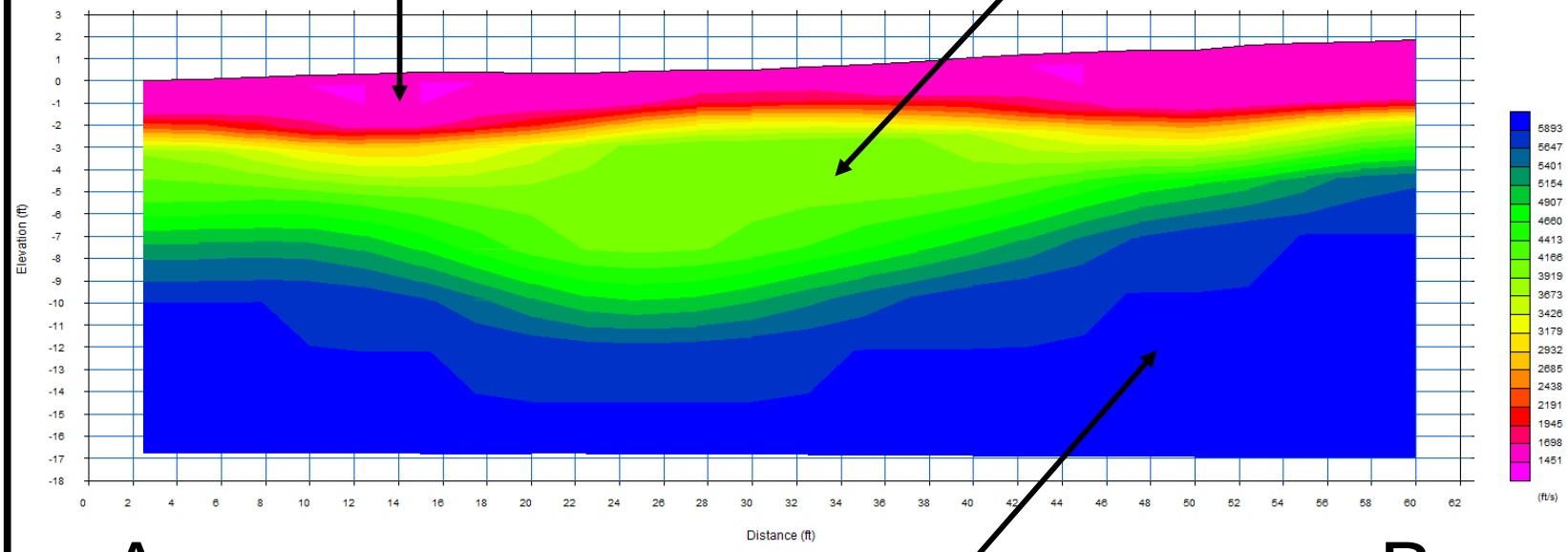
Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration -; 10 20 30 40 50)
0	(SC) Clayey Sand with Gravel, low-medium plastiticy, brown, slightly damp		200284		23	
2						
4	Encountered some Cobbles					
6						
8						
	Boring terminated at 9 ft. Refusal due to highly Weathered Rock and moderate Cementation Possible Native					
10						
12						
14						

possible stockpile

Appendix D

Layer 1
Surficial Layer of Silty Sand and Clayey Sand Soils with Varying Amounts of Gravel
Vp = 1000 - 2500 fps

Layer 2
Granitic Rock; Very Highly to Highly Weathered Rock/Decomposed Granite, Possible Cementation and Dense Gravel and Cobbles
Vp = 2500 - 5000 fps



A

B

Layer 3
Granitic Rock; Moderately Weathered Rock/Decomposed Granite
Vp = 5000 - 8000 fps

Seismic Line #1

Scale: N.T.S.

Drawn by: MSK

Date: 01/30/2020

Aloravita – Phases 3 & 4

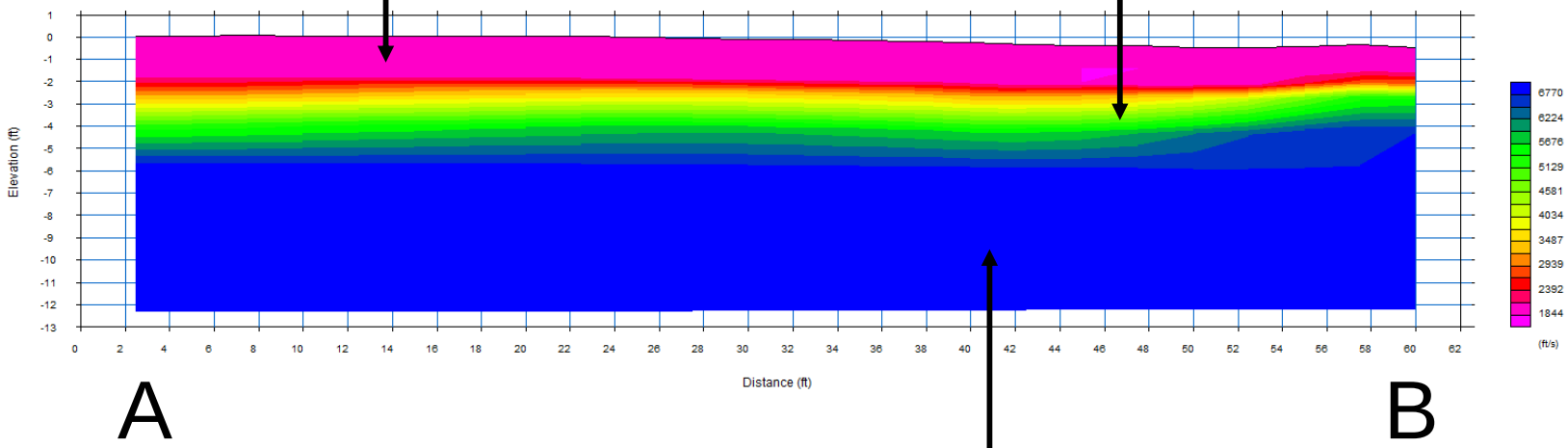
67th Avenue and Jomax Road

Peoria, Arizona

ProTeX Job No.: 9821

Layer 1
Surficial Layer of Silty Sand and Clayey Sand Soils with Varying Amounts of Gravel
Vp = 1000 - 2500 fps

Layer 2 (Transitional)
Granitic Rock; Very Highly to Highly Weathered Rock/Decomposed Granite, Possible Cementation and Dense Gravel and Cobbles
Vp = 2500 - 5000 fps



Layer 3
Granitic Rock; Moderately Weathered Rock/Decomposed Granite
Vp = 5000 - 8000 fps

Seismic Line #2

Scale: N.T.S.

Drawn by: MSK

Date: 01/30/2020

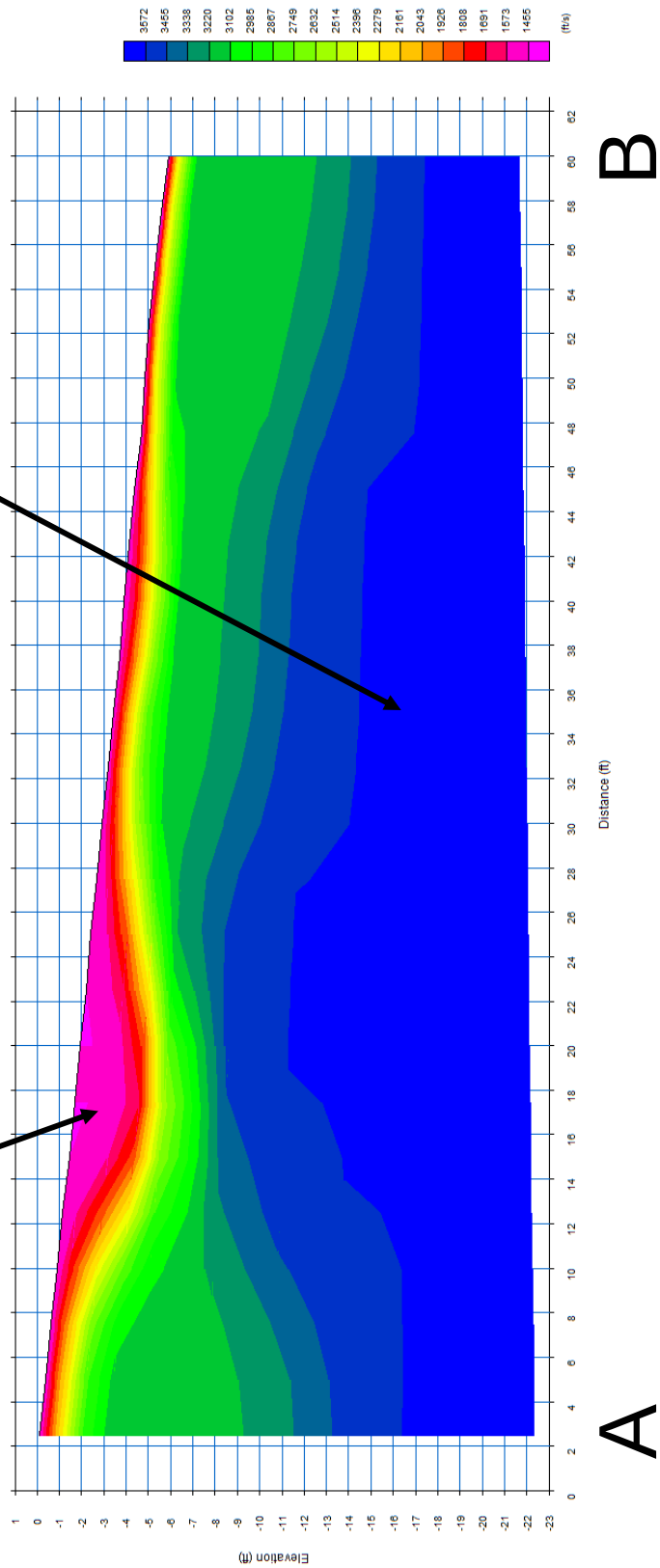
Aloravita – Phases 3 & 4

67th Avenue and Jomax Road
Peoria, Arizona

ProTeX Job No.: 9821

Layer 2
Granitic Rock; Very Highly to Highly Weathered Rock/Decomposed Granite, Possible Cementation and Dense Gravel and Cobbles
Vp = 2500 - 5000 fps

Layer 1
Surficial Layer of Silty Sand and Clayey Sand Soils with Varying Amounts of Gravel
Vp = 1000 - 2500 fps



Seismic Line #3

Scale: N.T.S.	Drawn by: MSK	Date: 01/30/2020

Aloravita – Phases 3 & 4

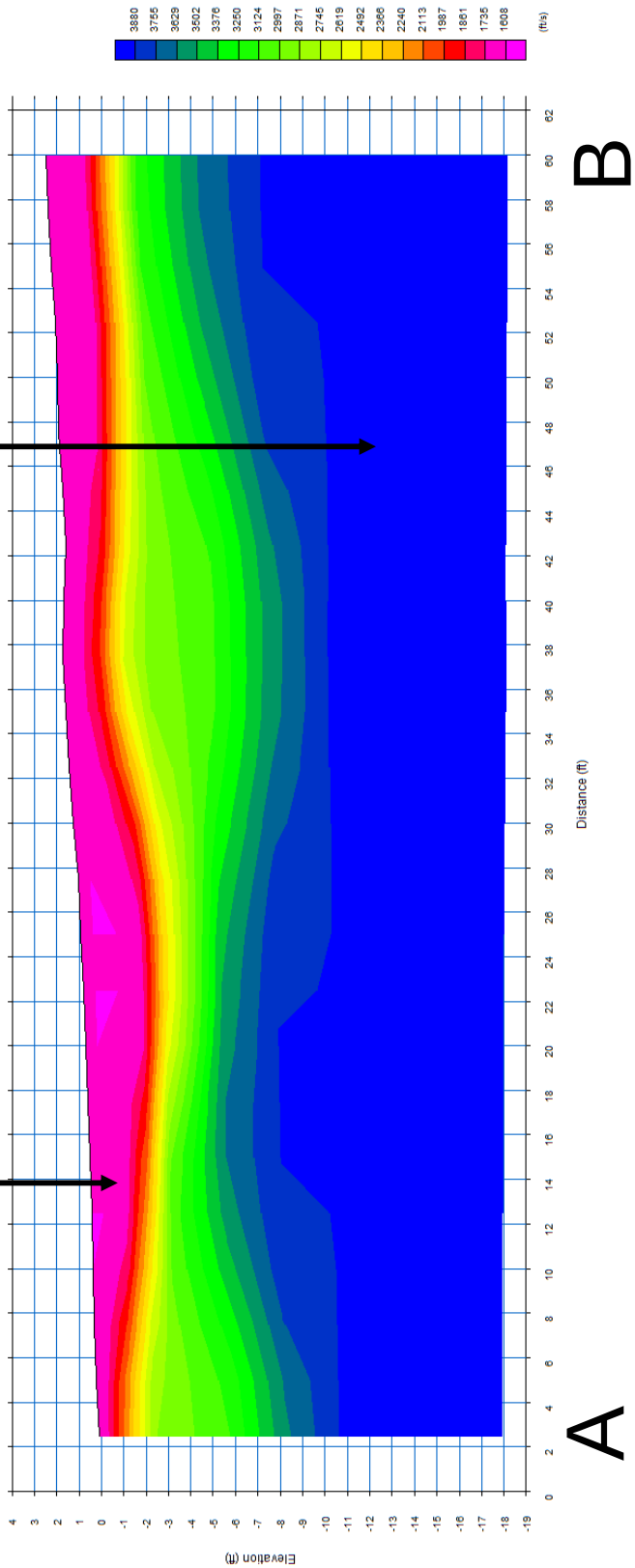
67th Avenue and Jomax Road

Peoria, Arizona

ProTeX Job No.: 9821

Layer 2
Granitic Rock; Very Highly to Highly Weathered Rock/Decomposed Granite, Possible Cementation and Dense Gravel and Cobbles
Vp = 2500 - 5000 fps

Layer 1
Surficial Layer of Silty Sand and Clayey Sand Soils with Varying Amounts of Gravel
Vp = 1000 - 2500 fps



Seismic Line #4

Scale: N.T.S.	Drawn by: MSK	Date: 01/30/2020

Aloravita – Phases 3 & 4

67th Avenue and Jomax Road

Peoria, Arizona

ProTeX Job No.: 9821

Layer 1
Surficial Layer of Silty Sand and Clayey Sand Soils with Varying Amounts of Gravel
Vp = 1000 - 2500 fps

Layer 2
Granitic Rock; Very Highly to Highly Weathered Rock/Decomposed Granite, Possible Cementation and Dense Gravel and Cobbles
Vp = 2500 - 5000 fps

Seismic Line #5

Scale: N.T.S.	Drawn by: MSK	Date: 01/30/2020

Aloravita – Phases 3 & 4

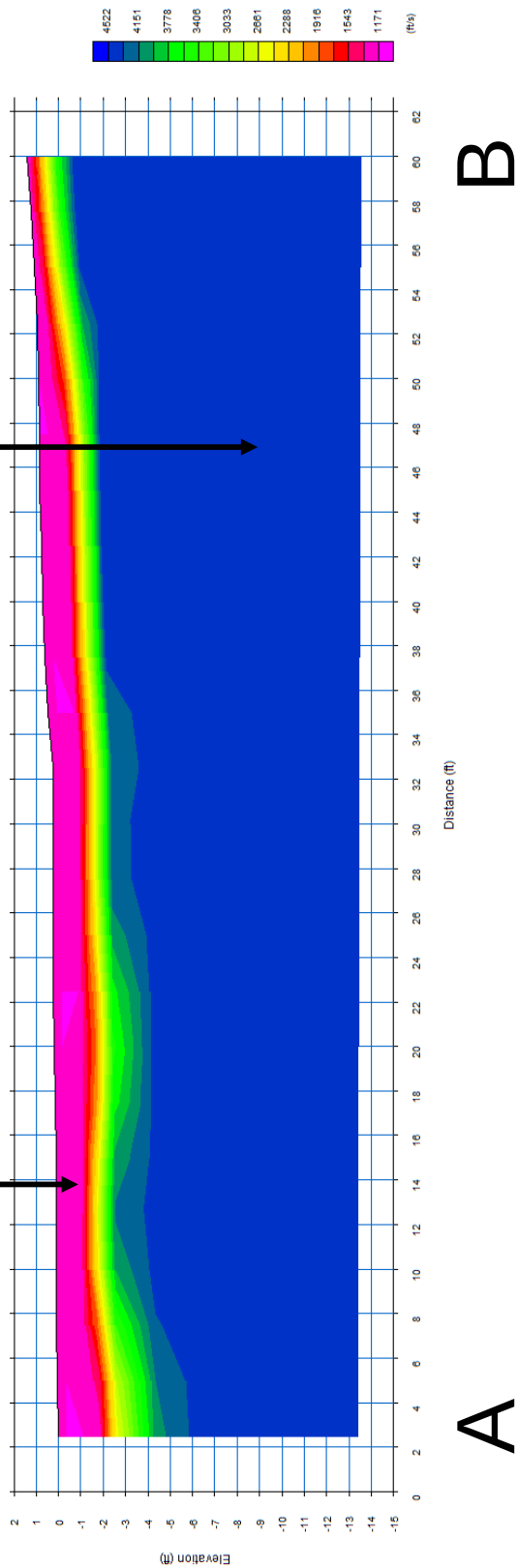
67th Avenue and Jomax Road

Peoria, Arizona

ProTeX Job No.: 9821

Layer 1
Surficial Layer of Silty Sand and Clayey Sand Soils with Varying Amounts of Gravel
Vp = 1000 - 2500 fps

Layer 2
Granitic Rock; Very Highly to Highly Weathered Rock/Decomposed Granite, Possible Cementation and Dense Gravel and Cobbles
Vp = 2500 - 5000 fps



Seismic Line #6

Scale: N.T.S.	Drawn by: MSK	Date: 01/30/2020

Aloravita – Phases 3 & 4

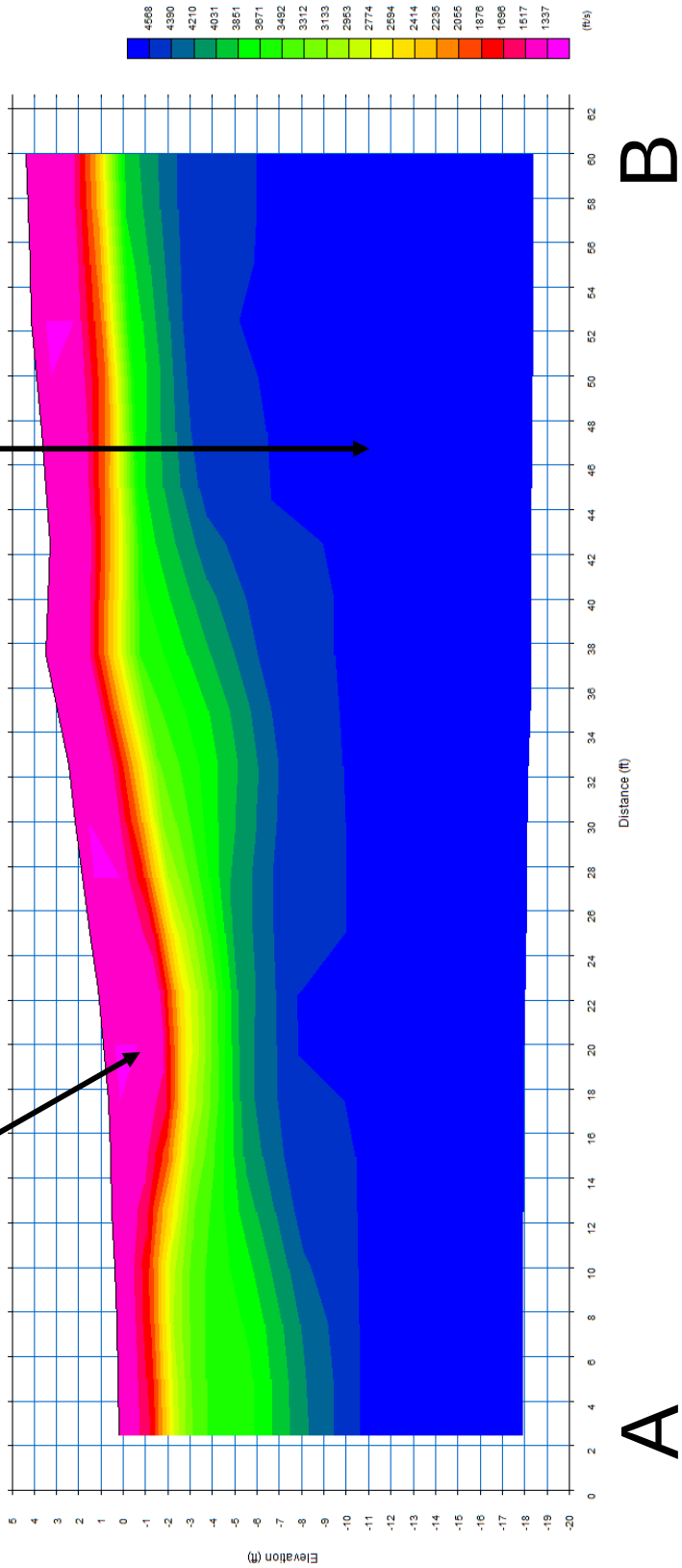
67th Avenue and Jomax Road

Peoria, Arizona

ProTeX Job No.: 9821

Layer 2
Granitic Rock; Very Highly to Highly Weathered Rock/Decomposed Granite, Possible Cementation and Dense Gravel and Cobbles
Vp = 2500 - 5000 fps

Layer 1
Surficial Layer of Silty Sand and Clayey Sand Soils with Varying Amounts of Gravel
Vp = 1000 - 2500 fps



Seismic Line #7

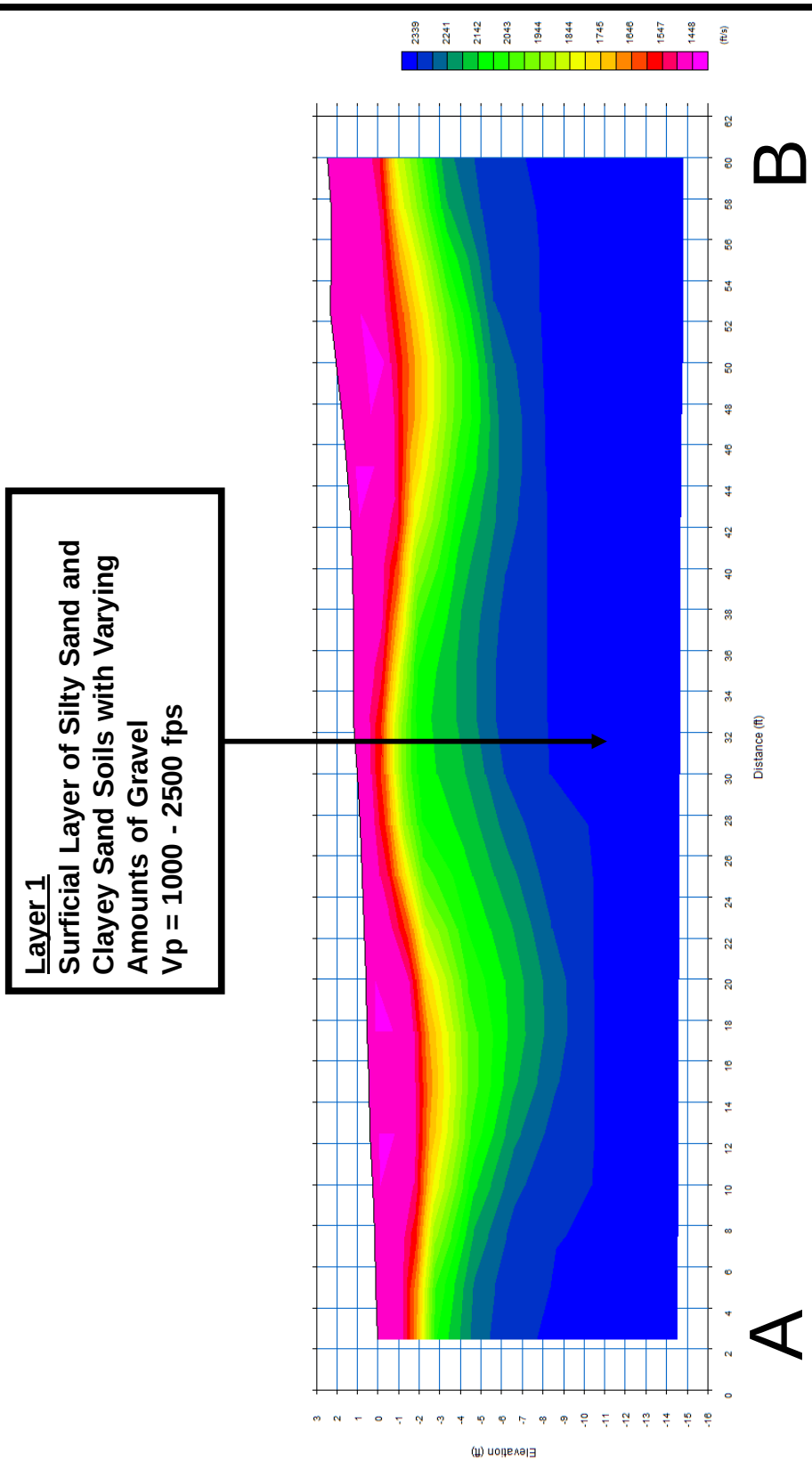
Scale: N.T.S.	Drawn by: MSK	Date: 01/30/2020

Aloravita – Phases 3 & 4

67th Avenue and Jomax Road

Peoria, Arizona

ProTeX Job No.: 9821



Seismic Line #8

Scale: N.T.S.	Drawn by: MSK	Date: 01/30/2020

Aloravita – Phases 3 & 4

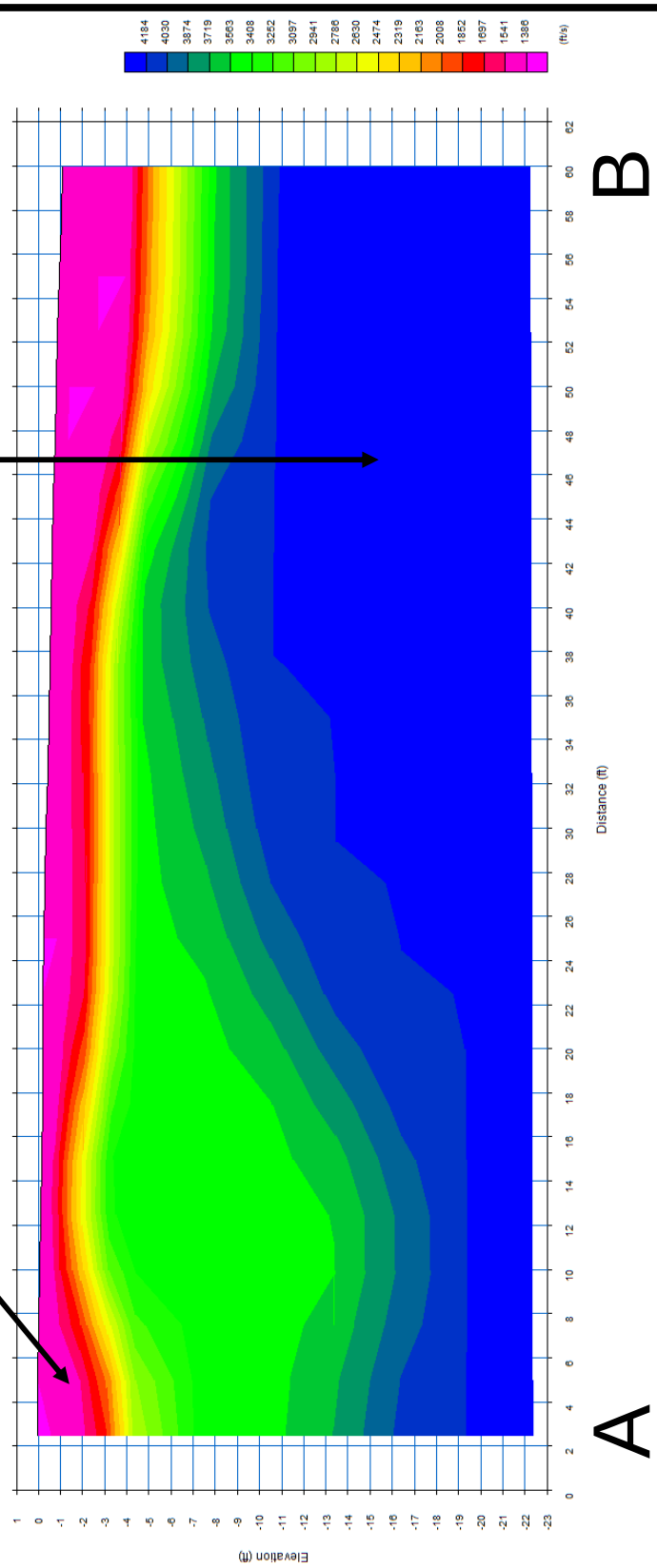
67th Avenue and Jomax Road

Peoria, Arizona

ProTeX Job No.: 9821

Layer 2
Granitic Rock; Very Highly to Highly Weathered Rock/Decomposed Granite, Possible Cementation and Dense Gravel and Cobbles
Vp = 2500 - 5000 fps

Layer 1
Surficial Layer of Silty Sand and Clayey Sand Soils with Varying Amounts of Gravel
Vp = 1000 - 2500 fps



Seismic Line #9

Scale: N.T.S.	Drawn by: MSK	Date: 01/30/2020

Aloravita – Phases 3 & 4

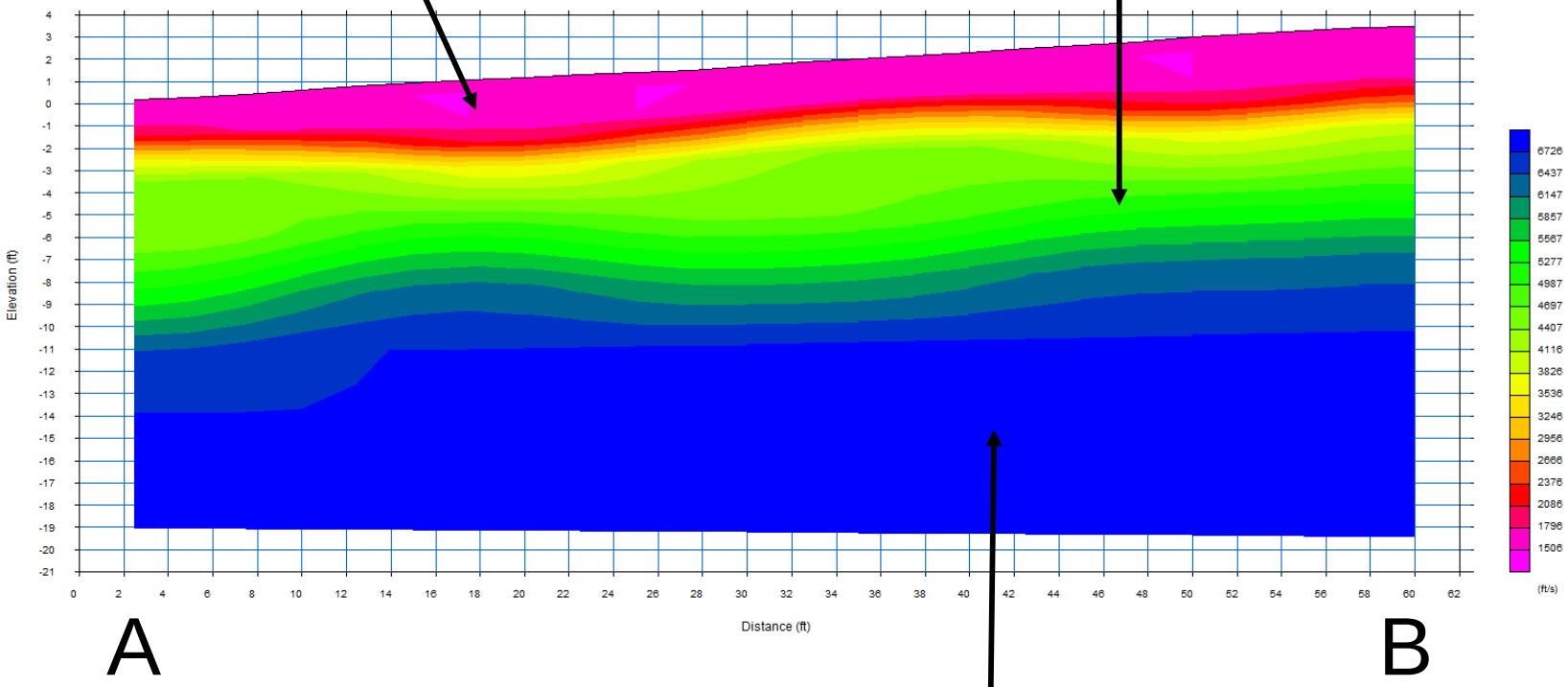
67th Avenue and Jomax Road

Peoria, Arizona

ProTeX Job No.: 9821

Layer 1
Surficial Layer of Silty Sand and Clayey Sand Soils with Varying Amounts of Gravel
Vp = 1000 - 2500 fps

Layer 2
Granitic Rock; Very Highly to Highly Weathered Rock/Decomposed Granite, Possible Cementation and Dense Gravel and Cobbles
Vp = 2500 - 5000 fps



Layer 3
Granitic Rock; Moderately Weathered Rock/Decomposed Granite
Vp = 5000 - 8000 fps

Seismic Line #10

Scale: N.T.S.

Drawn by: MSK

Date: 01/30/2020

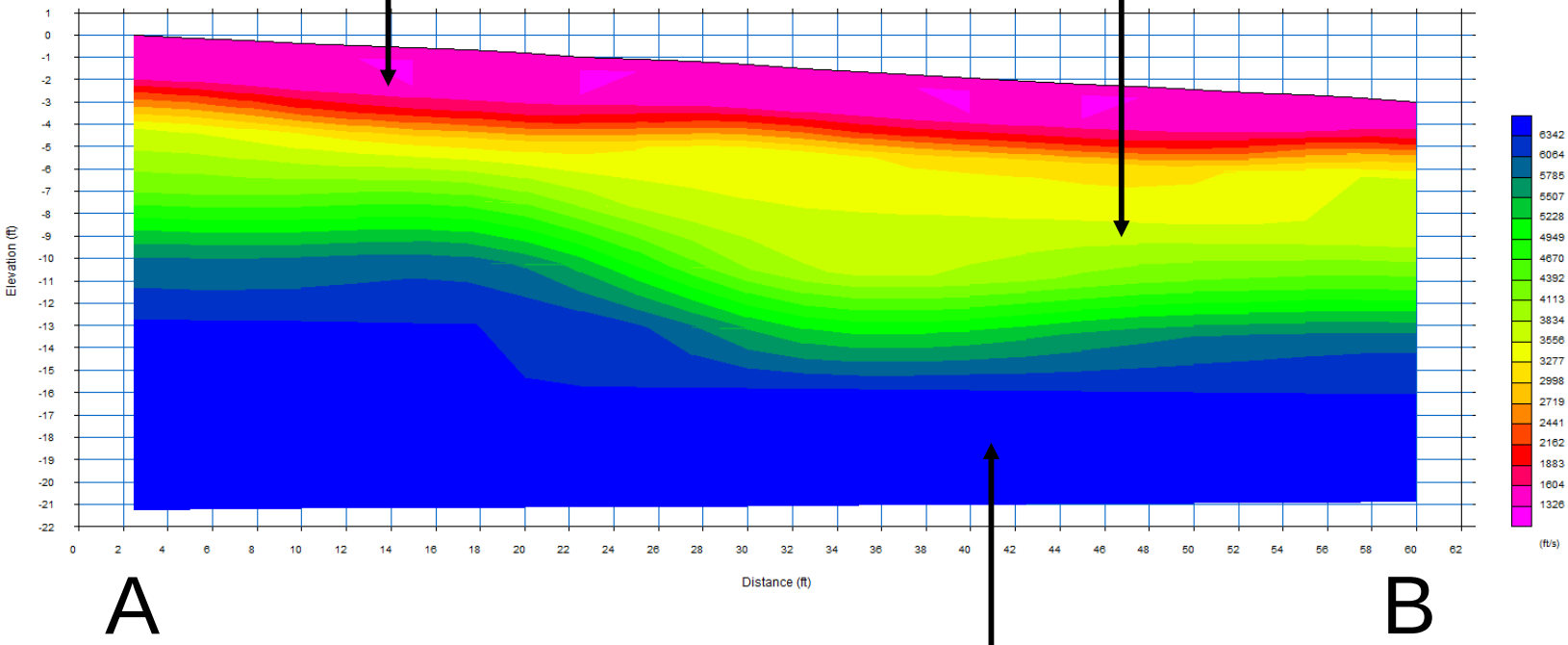
Aloravita – Phases 3 & 4

67th Avenue and Jomax Road
Peoria, Arizona

ProTeX Job No.: 9821

Layer 1
Surficial Layer of Silty Sand and Clayey Sand Soils with Varying Amounts of Gravel
Vp = 1000 - 2500 fps

Layer 2
Granitic Rock; Very Highly to Highly Weathered Rock/Decomposed Granite, Possible Cementation and Dense Gravel and Cobbles
Vp = 2500 - 5000 fps



Layer 3
Granitic Rock; Moderately Weathered Rock/Decomposed Granite
Vp = 5000 - 8000 fps

Seismic Line #11

Scale: N.T.S.

Drawn by: MSK

Date: 01/30/2020

Aloravita – Phases 3 & 4

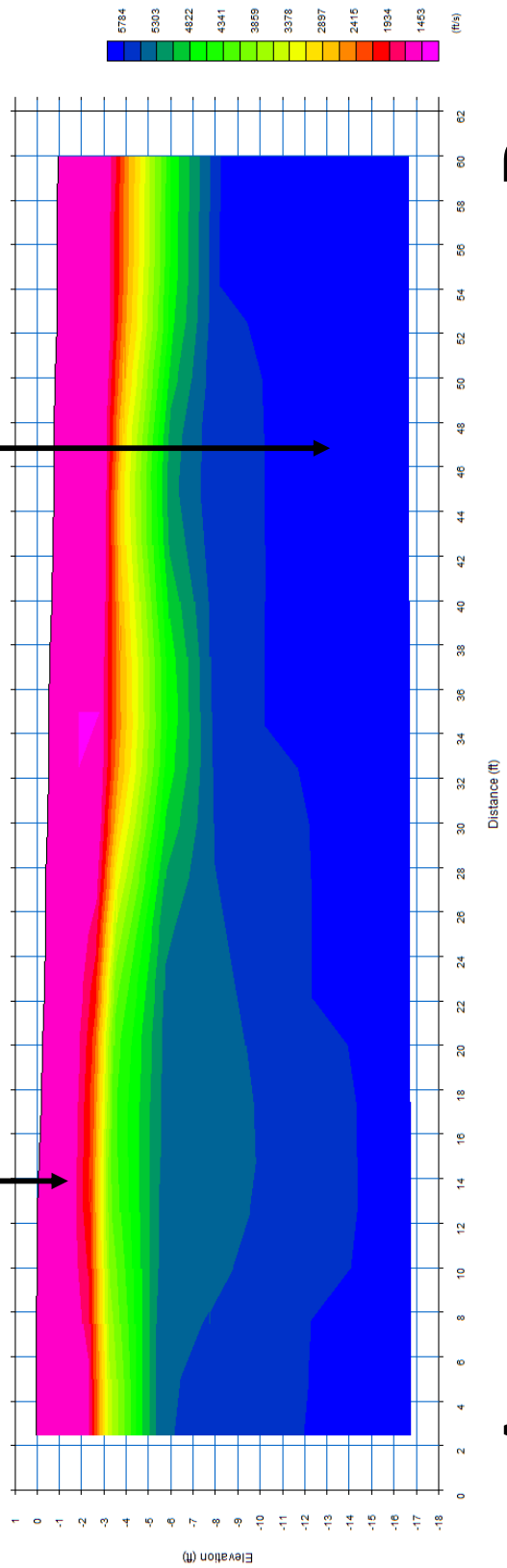
67th Avenue and Jomax Road

Peoria, Arizona

ProTeX Job No.: 9821

Layer 1
Surficial Layer of Silty Sand and Clayey Sand Soils with Varying Amounts of Gravel
Vp = 1000 - 2500 fps

Layer 2
Granitic Rock; Very Highly to Highly Weathered Rock/Decomposed Granite, Possible Cementation and Dense Gravel and Cobbles
Vp = 2500 - 5000 fps



Seismic Line #12

Scale: N.T.S.	Drawn by: MSK	Date: 01/30/2020

Aloravita – Phases 3 & 4

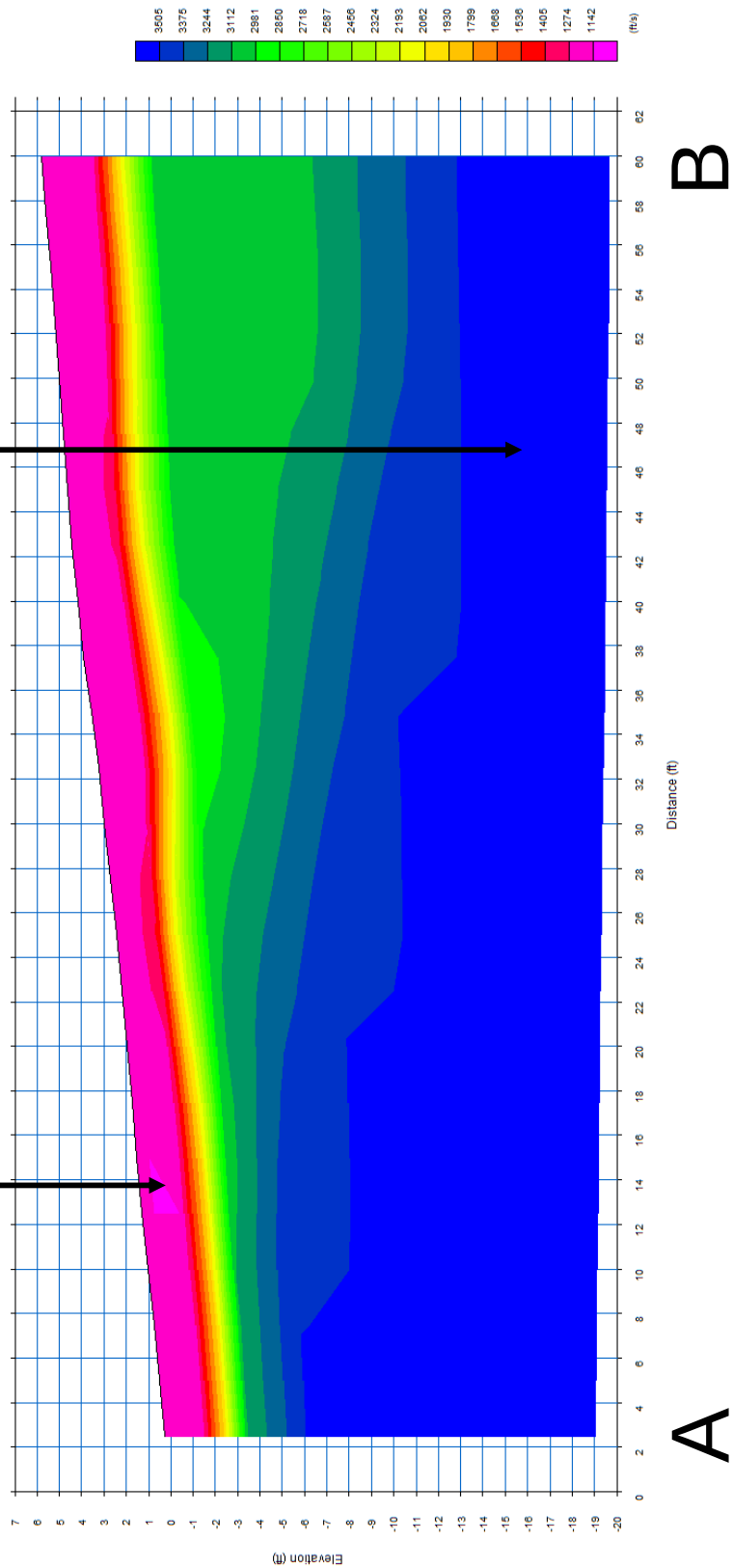
67th Avenue and Jomax Road

Peoria, Arizona

ProTeX Job No.: 9821

Layer 2
Granitic Rock; Very Highly to Highly Weathered Rock/Decomposed Granite, Possible Cementation and Dense Gravel and Cobbles
Vp = 2500 - 5000 fps

Layer 1
Surficial Layer of Silty Sand and Clayey Sand Soils with Varying Amounts of Gravel
Vp = 1000 - 2500 fps



Seismic Line #13

Scale: N.T.S.	Drawn by: MSK	Date: 01/30/2020

Aloravita – Phases 3 & 4

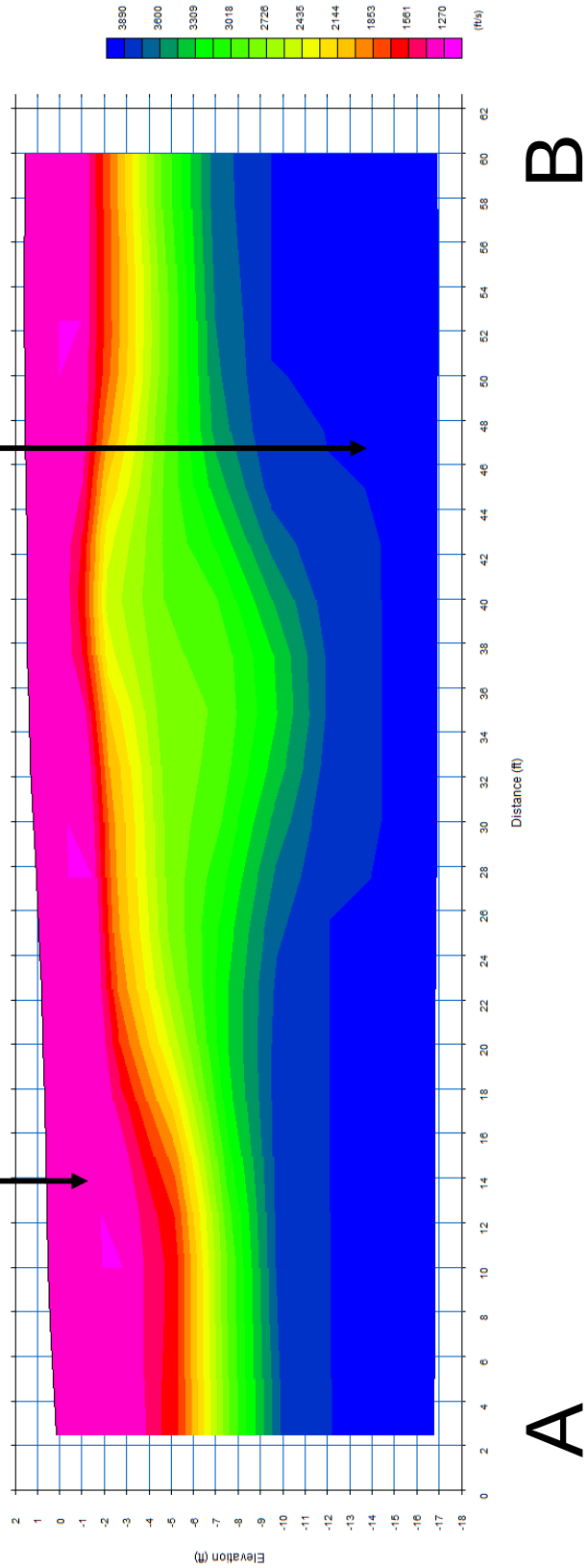
67th Avenue and Jomax Road

Peoria, Arizona

ProTeX Job No.: 9821

Layer 2
Granitic Rock; Very Highly to Highly Weathered Rock/Decomposed Granite, Possible Cementation and Dense Gravel and Cobbles
Vp = 2500 - 5000 fps

Layer 1
Surficial Layer of Silty Sand and Clayey Sand Soils with Varying Amounts of Gravel
Vp = 1000 - 2500 fps



Seismic Line #14

Scale: N.T.S.	Drawn by: MSK	Date: 01/30/2020

Aloravita – Phases 3 & 4

67th Avenue and Jomax Road

Peoria, Arizona

ProTeX Job No.: 9821

Layer 1
Surficial Layer of Silty Sand and Clayey Sand Soils with Varying Amounts of Gravel
Vp = 1000 - 2500 fps

Layer 2
Granitic Rock; Very Highly to Highly Weathered Rock/Decomposed Granite, Possible Cementation and Dense Gravel and Cobbles
Vp = 2500 - 5000 fps

Seismic Line #15

Scale: N.T.S.	Drawn by: MSK	Date: 01/30/2020

Aloravita – Phases 3 & 4

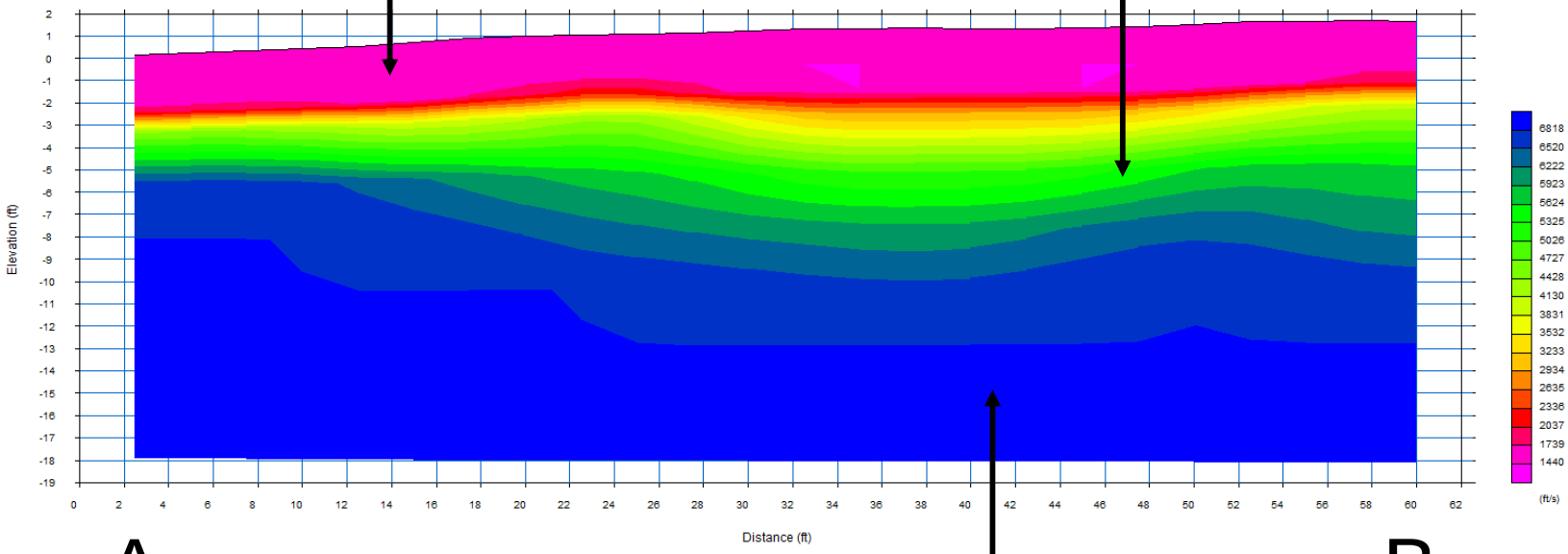
67th Avenue and Jomax Road

Peoria, Arizona

ProTeX Job No.: 9821

Layer 1
Surficial Layer of Silty Sand and Clayey Sand Soils with Varying Amounts of Gravel
Vp = 1000 - 2500 fps

Layer 2
Granitic Rock; Very Highly to Highly Weathered Rock/Decomposed Granite, Possible Cementation and Dense Gravel and Cobbles
Vp = 2500 - 5000 fps



Layer 3
Granitic Rock; Moderately Weathered Rock/Decomposed Granite
Vp = 5000 - 8000 fps

Seismic Line #16

Scale: N.T.S.

Drawn by: MSK

Date: 01/30/2020

Aloravita – Phases 3 & 4

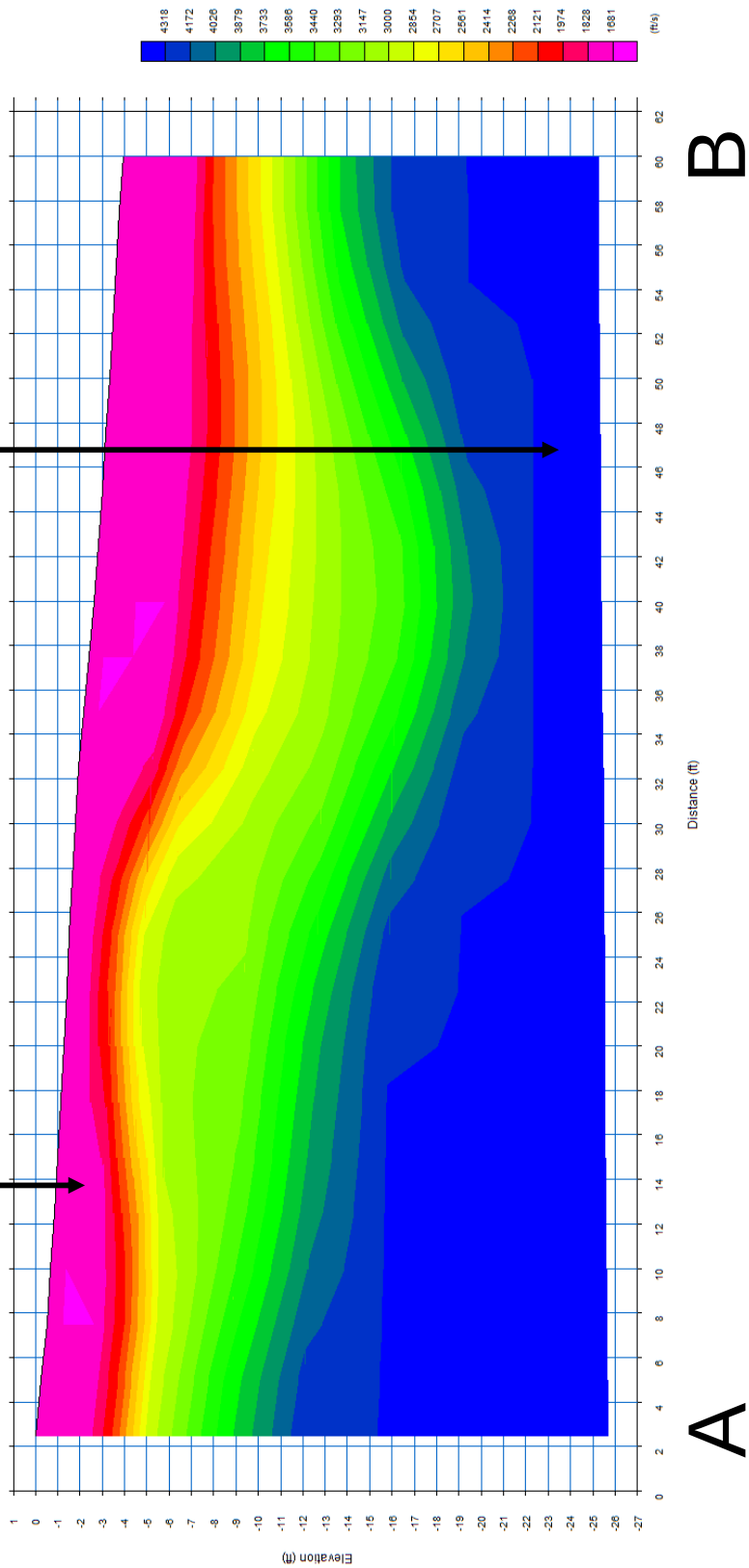
67th Avenue and Jomax Road

Peoria, Arizona

ProTeX Job No.: 9821

Layer 1
Surficial Layer of Silty Sand and Clayey Sand Soils with Varying Amounts of Gravel
Vp = 1000 - 2500 fps

Layer 2
Granitic Rock; Very Highly to Highly Weathered Rock/Decomposed Granite, Possible Cementation and Dense Gravel and Cobbles
Vp = 2500 - 5000 fps



Seismic Line #17

Scale: N.T.S.	Drawn by: MSK	Date: 01/30/2020

Aloravita – Phases 3 & 4

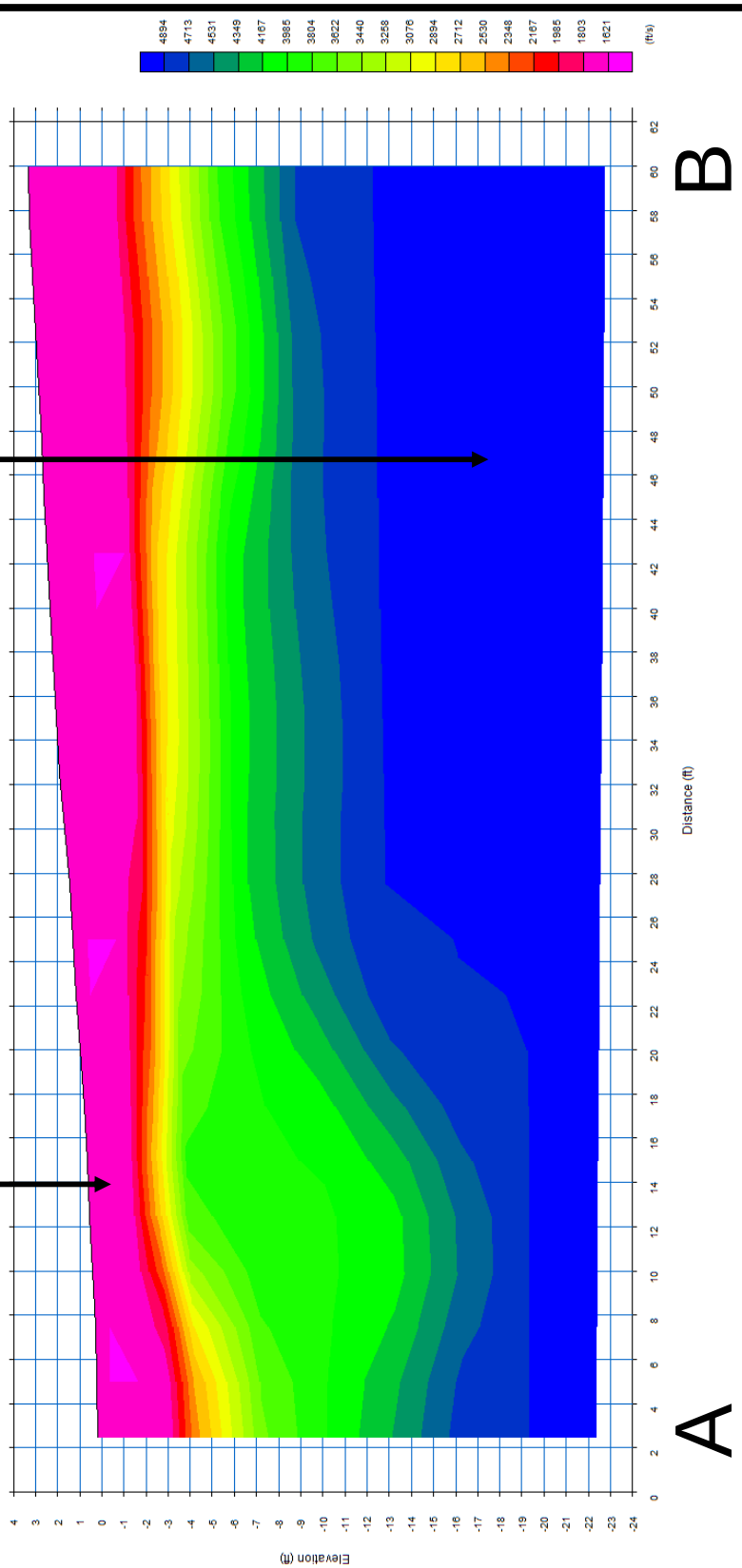
67th Avenue and Jomax Road

Peoria, Arizona

ProTeX Job No.: 9821

Layer 1
Surficial Layer of Silty Sand and Clayey Sand Soils with Varying Amounts of Gravel
Vp = 1000 - 2500 fps

Layer 2
Granitic Rock; Very Highly to Highly Weathered Rock/Decomposed Granite, Possible Cementation and Dense Gravel and Cobbles
Vp = 2500 - 5000 fps



Seismic Line #18

Scale: N.T.S.	Drawn by: MSK	Date: 01/30/2020

Aloravita – Phases 3 & 4

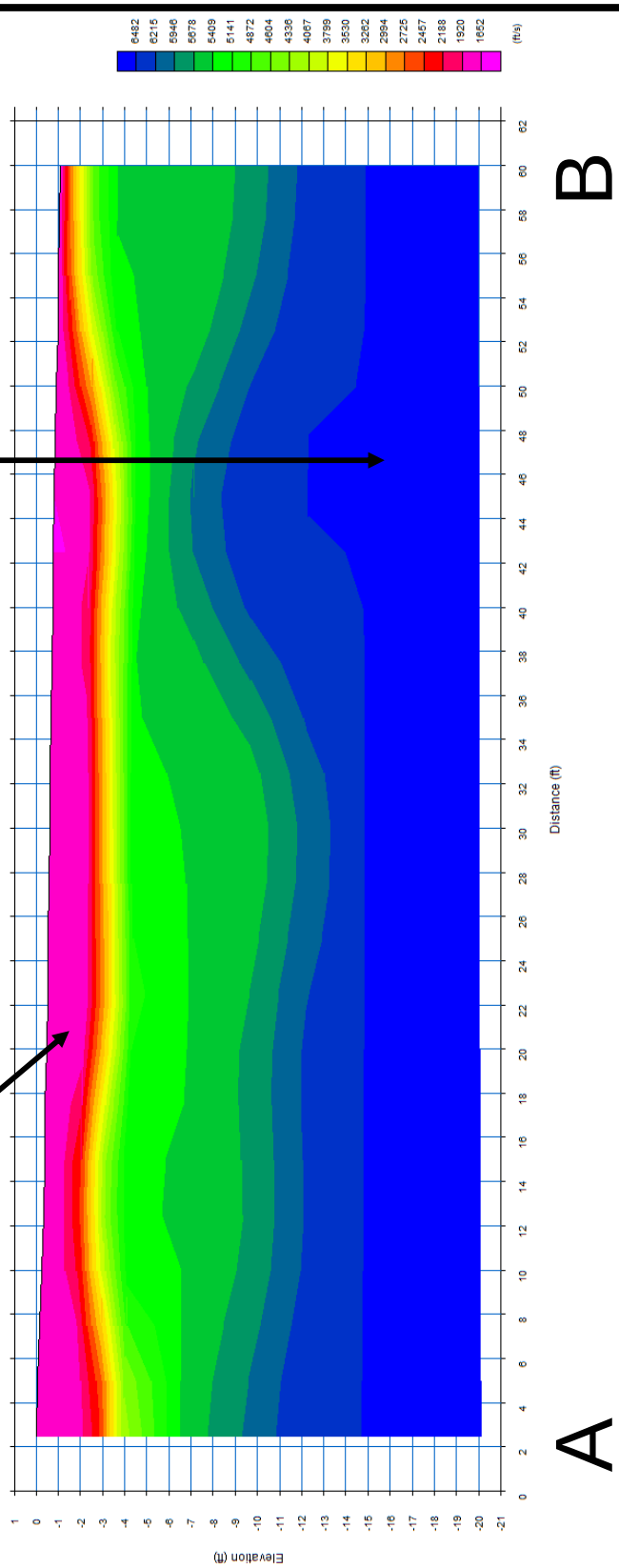
67th Avenue and Jomax Road

Peoria, Arizona

ProTeX Job No.: 9821

Layer 1
Surficial Layer of Silty Sand and Clayey Sand Soils with Varying Amounts of Gravel
Vp = 1000 - 2500 fps

Layer 2
Granitic Rock; Very Highly to Highly Weathered Rock/Decomposed Granite, Possible Cementation and Dense Gravel and Cobbles
Vp = 2500 - 5000 fps



Seismic Line #19

Scale: N.T.S.	Drawn by: MSK	Date: 01/30/2020

Aloravita – Phases 3 & 4

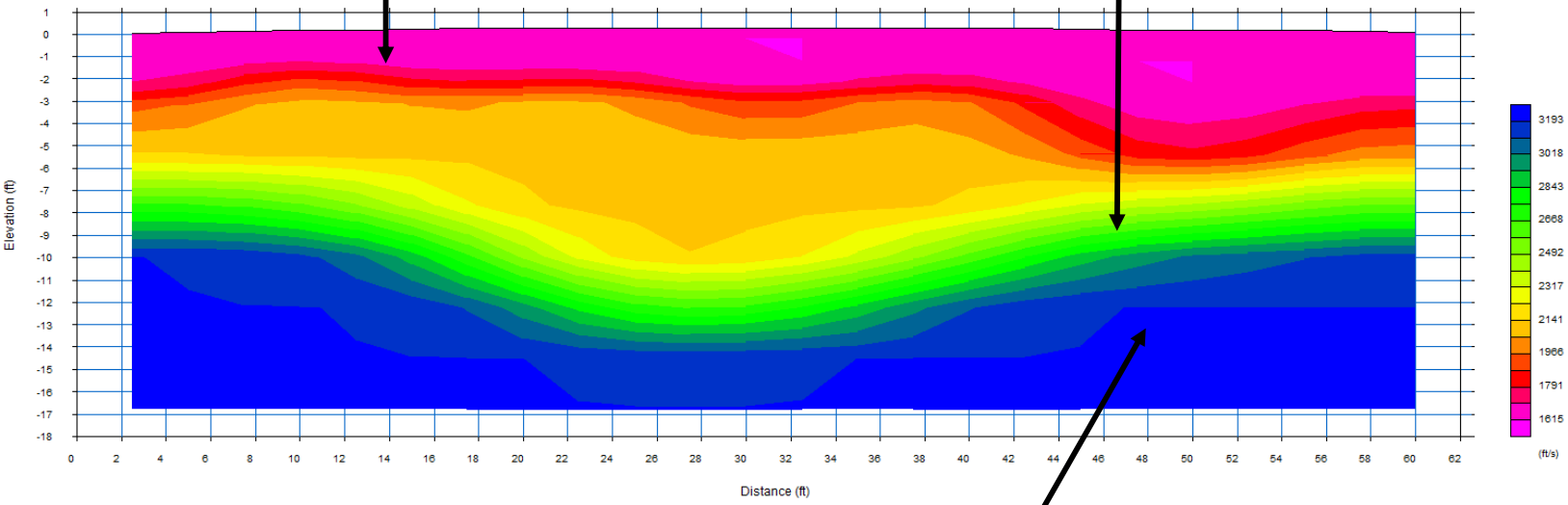
67th Avenue and Jomax Road

Peoria, Arizona

ProTeX Job No.: 9821

Layer 1
Surficial Layer of Silty Sand and Clayey Sand Soils with Varying Amounts of Gravel
Vp = 1000 - 2500 fps

Layer 2
Granitic Rock; Very Highly to Highly Weathered Rock/Decomposed Granite, Possible Cementation and Dense Gravel and Cobbles
Vp = 2500 - 5000 fps



A

B

Layer 3
Granitic Rock; Moderately Weathered Rock/Decomposed Granite
Vp = 5000 - 8000 fps

Seismic Line #20

Scale: N.T.S.

Drawn by: MSK

Date: 01/30/2020

Aloravita – Phases 3 & 4

67th Avenue and Jomax Road

Peoria, Arizona

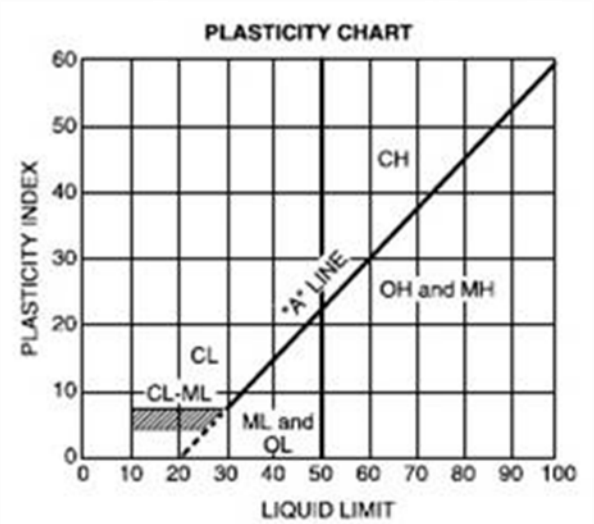
ProTeX Job No.: 9821

Appendix E

Key To Soil Symbols and Classifications

Common Strata Symbols

- High plasticity clay (CH -- C)
- Inorganic silts and clays (CH-MH -- MC)
- Low plasticity clay (CL -- O)
- Low-high plasticity clays (CL-CH -- CO)
- Silty low plasticity clay (CL-ML -- CZ)
- Fill (FILL -- F)
- Clayey gravel (GC -- O8)
- Clayey sand and gravel (GC-SC -- DO8)
- Silty gravel (GM -- Z8)
- Silty clayey gravel (GM-GC -- ZO8)
- Silty sand and gravel (GM-SM -- O8)
- Poorly graded gravel (GP -- G)
- Poorly graded gravel with clay (GP-GC -- DGO3)
- Poorly graded gravel with silt (GP-GM -- DGZ3)
- Poorly graded gravel and sand (GP-SP -- :G)
- Well graded gravel (GW -- 83)
- Well graded sand (SW -- D)
- Well graded sand with clay (SW-SC -- DR)
- Well graded sand with silt (SW-SM -- D=)
- Well graded gravel with clay (GW-GC -- 83O)
- Well graded gravel with silt (GW-GM -- 83Z)
- Well graded gravel/ clayey gravel (GW-GP -- 83G)
- Well graded gravel and sand (GW-SW -- 83D)
- Elastic silt (MH -- M)
- Silt (ML -- Z)
- High plasticity organic clays (OH -- 5)
- Low plasticity organic silts (OL -- 4)
- Basalt (or generic rock) (ROCK --])
- Clayey sand (SC -- DO)
- Silty sand (SM -- O)
- Poorly graded clayey silty sand (SC-SM -- :ZO)
- Poorly graded silty fine sand (SM-ML -- :Z)
- Poorly graded sand (SP -- :)
- Poorly graded sand with clay (SP-SC -- :R)
- Poorly graded sand with silt (SP-SM -- :=)
- Well graded sand with gravel (SW -- D9)
- Silty sand with gravel (SM -- 09)
- Clayey sand with gravel (SC -- DO9)



Relative Density of Cohesionless Soils (blows/ft)	
Very Loose	0 to 4
Loose	5 to 10
Medium	11 to 30
Dense	31 to 50
Very Dense	over 50

Relative Degree of Plasticity (PI)	
Non-Plastic	0
Low	1 to 7
Low-Medium	8 to 14
Medium	15 to 21
Medium-High	22 to 28
High	29 to 35
Very High	Over 35

Relative Proportions (%)	
Trace	5 to 10
Some	10 to 15
With	15 to 35
And	35 to 50

Particle Size Identification (Diameter)	
Boulder	8.0" or Larger
Cobbles	3.0" to 8.0"
Coarse Gravel	0.75" to 3.0"
Fine Gravel	5.0 mm to 3.0"
Coarse Sand	2.0 mm to 5.0 mm
Medium Sand	0.4 mm to 2.0 mm
Fine Sand	0.07 mm to 0.4 mm
Silt	0.002 mm to 0.07 mm
Clay	Less Than 0.002