REGISTERED ARCHITECT
LUIS A. FIGUEROA
12856
STATE OF TEXAS
03.14.2019

ADDENDUM NO. 1 **LA VILLA HIGH SCHOOL NEW AGRICULTURAL BARN AND LA VILLA HIGH SCHOOL & ELEMNTARY SCHOOL SITE IMPROVEMENTS FOR LA VILLA INDPENDENT SCHOOL DISTRICT**
LA VILLA, TEXAS

DATE: **March 14, 2019**
PRIOR TO GENERAL CONSTRUCTION PROPOSAL OPENING

PROPOSAL DATE: ***Thursday, March 21, 2018 @ 4:00 P.M.***

ARCHITECT: **RIKE-OGDEN-FIGUEROA-ALLEX ARCHITECTS INC.**
1007 Walnut Avenue
McAllen, Texas 78501

(97) 8 ½" x 11"
(1) 24" x 36"
Total Pages 98

NOTICE:

A. The following changes, omissions or alterations to the specifications and drawings shall be made and insofar as the specifications and drawings are inconsistent with the following, this addendum shall govern.

B. Acknowledge receipt of this addendum by inserting its number and date of issue in the place provided for same in the proposal. This addendum forms a part of the Contract Documents.

C. It is imperative that this addendum be inserted INTO set of specifications.

Item No. 1 Specifications Section 00220 Soil Investigation Data:

A. Attached find soil investigation data for New Agricultural Barn Project (46 - 8 ½" x 11').

B. Attached find soil investigation data for High School & Elementary School Re-Paving Projects (34 - 8 ½" x 11").

Item No. 2 Specification Clarification to Section 00310UP:

A. Replace Section 00310UP Unit Prices form in project manual with attached Section 00310UP (00310UP-1).

Item No. 3 Specifications Clarification to Section 01020 Allowances:

A. Replace Section 01020 Allowances in project manual with attached Section 01020 Allowances (Section 01020 -1 & 01020 - 2).

Item No. 4 Specification Clarification to Section 07413 Metal Roof & Wall Panels:

A. Clarification to 1.11 Warranty in project manual. Warranty shall read as follows:

WARRANTY

A. Weathertightness Warranty: On manufacturer's standard form, in which manufacturer agrees to repair or replace metal panel assemblies that fail to remain weathertight, including leaks, [without monetary limitation] Single Source I up to cost limitation of seven dollars ($7.00) per square foot of covered area within [20] years from date of Substantial Completion.

B. Special Panel Finish Warranty: On Manufacturer's standard form, in which Manufacturer agrees to repair or replace metal panels that evidence deterioration of factory-applied finish within [25] years from date of Substantial Completion, including Fluoropolymer Two Coat System for PBR Wall Panels:

C. Roofing Contractor Warranty: Roofing contractor shall provide a 2-year materials and labor warranty from date of Substantial Completion.

Item No. 5 Specification Section 08710 Finish Hardware Specifications:

A. Add to specifications manual section 08710 Finish Hardware (08710 - 1 thru 08710 - 10).

Item No. 6 Drawing Clarifications:

A. Remove structural steel allowance noted on sheet S1.1 under structural steel number. 10. Structural Allowance is included under Section 1020 Allowances.

B. Reference to Sheet AD1.1 Demolition Plan, La Villa Independent School District will provide the demolish work of the existing Agricultural Barn noted on sheet AD1.1; except for note no. 7 Chain link fence to be part of base bid.

C. All exposed pre-engineered metal building rigid frames, purlins and secondary framings shall be painted as noted on structural drawings sheet S4.1, notes and per room finish schedule on sheet A6.1. Painting shall be as specified under section 09900 Painting specifications. Exposed insulation liner system shall not be painted.

D. Translucent Roof Panels shown on sheet S4.1 & A1.2 shall be centered on the 20’-0” rigid frame bays.

E. Overhead doors shall be standard lift in lieu of vertical lift noted on drawings. Overhead door shall as per section 08360 Sectional Overhead doors.

F. Clarification to detail 3 sheet AS1.2 Chain link detail, concrete curb shall have 2 # 4 bars centered vertically.

G. Clarification to detail 5 sheet AS1.2 Sidewalk Trench Detail. Trench cover shall be ¼” thick galvanized diamond pattern solid steel plate.

Item No. 7 MEP Addendum Items:

A. Contractor shall contact Electric Utility Companies AEP & MVEC to confirm who will be the provider for this specific project.

B. See attached MEP addendum items:
(Narrative, 1 - 81/2” x 11”, AES1.1, 8 ½” x 11” & AES2.1, 1- 24” x 36”).

END OF ADDENDUM # 1

GEOTECHNICAL ENGINEERING STUDY

FOR

PROPOSED LA VILLA ISD HIGH SCHOOL
FIELDS AND RUNNING TRACK ADDITIONS
LA VILLA, HIDALGO COUNTY, TEXAS

RABA KISTNER CONSULTANTS

Raba Kistner
Consultants, Inc.
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McAllen, TX 78501
www.rkci.com

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TBPE Firm F-3257
TBPLS Firm 10193784

Project No. AMA17-052-00
January 2, 2018

Dr. Jose A. Cervantes
La Villa Independent School District (La Villa ISD)
P.O. Box 9
La Villa, Texas 78562

Re: Geotechnical Engineering Study
Proposed La Villa ISD High School Fields and Running Track Additions
100 W. Highway 107
La Villa, Hidalgo County, Texas

Dear Dr. Cervantes:

RABA KISTNER Consultants Inc. (RKCI) is pleased to submit the report of our Geotechnical Engineering Study for the above-referenced project. This study was performed in accordance with **RKCI** Proposal No. PMA17-078-00 (Revised), dated December 7, 2017. It should be noted that the original of our proposal was revised in order to include a clarification in our scope of work, based on our telephone conversation held with Mr. Humberto Rodriguez, AIA, Principal, with Rike-Ogden-Figueroa-Allex (ROFA) Architects, Inc., the project's architectural firm on December 7, 2017. Written authorization to proceed with this study was received by our office via electronic-mail attachment on Friday, December 8, 2017. The purpose of this study was to drill borings within the project site, to perform laboratory testing to classify and characterize subsurface conditions, and to provide foundation design and construction recommendations for the proposed field and running track improvements, the backstop pole structures and the proposed dugout structure additions.

The following report contains our foundation recommendations and considerations based on our current understanding of finished grade elevation, design tolerances and structural loads. If any of these parameters change, then there may be alternatives for value engineering of the foundation system, and **RKCI** recommends that a meeting be held with La Villa ISD (CLIENT) and design team to evaluate these alternatives.

We appreciate the opportunity to be of professional service to you on this project. Should you have any questions about the information presented in this report, please call. We look forward to assisting La Villa ISD during the construction of the project by conducting the construction materials engineering and testing services (quality assurance program).

Very truly yours,

RABA KISTNER Consultants Inc.

Saul Cruz
Graduate Engineer

Katrin M. Leonard, P.E.
Associate

STATE OF TEXAS
KATRIN M. LEONARD
95810
LICENSED PROFESSIONAL ENGINEER
Jan 2, 2018

SC/KML

Attachments

Copies Submitted: Above (1)
ROFA Architects, Inc. (1)

GEOTECHNICAL ENGINEERING STUDY

For

PROPOSED LA VILLA ISD HIGH SCHOOL FIELDS AND RUNNING TRACK ADDITIONS
100 W. HIGHWAY 107
LA VILLA, HIDALGO COUNTY, TEXAS

Prepared for

LA VILLA ISD
La Villa, Texas

Prepared by

RABA KISTNER CONSULTANTS, INC.
McAllen, Texas

PROJECT NO. AMA17-052-00

January 2, 2018

RABAKISTNER

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Boring Location Map
Logs of Borings
Key to Terms and Symbols
Results of Soil Sample Analyses
Important Information About Your Geotechnical Engineering Report

INTRODUCTION

RABA KISTNER Consultants Inc. (RKCI) has completed the authorized subsurface exploration and foundation analysis for the proposed field improvements and the structure additions to be located within the existing La Villa Independent School District (La Villa ISD) High School campus, situated at 100 W. Highway 107 in La Villa, Hidalgo County, Texas. This report briefly describes the procedures utilized during this study and presents our findings along with our recommendations for foundation design and construction considerations.

PROJECT DESCRIPTION

We understand that the project will consists of the design and synthetic resurfacing of: 1) an existing softball field; 2) an existing baseball field; and 3) an existing football field along with its running track structure. Further, we understand that the project also includes the design and construction of two dugout structures and their associated backstop pole structures within the proposed softball and baseball fields. The proposed structures are to be located along the north side of the existing La Villa ISD High School campus, situated at 100 W. Highway 107 in La Villa, Hidalgo County, Texas. The proposed dugout structures are expected to create relatively light to moderate loads to be carried by the foundation systems, which are anticipated to consist of shallow foundation systems. The proposed backstop pole structures are expected to create relatively light loads to be carried by the foundation systems, which are anticipated to consist of deep foundation systems.

LIMITATIONS

This engineering report has been prepared in accordance with accepted Geotechnical Engineering practices in the region of South Texas and for the use of the La Villa ISD (CLIENT) and its representatives for design purposes. This report may not contain sufficient information for purposes of other parties or other uses. This report is not intended for use in determining construction means and methods.

The recommendations submitted in this report are based on the data obtained from 14 borings, our understanding of the project information, and the assumption that site grading will result in only minor changes in the topography existing at the time of our study. If the project information described in this report is incorrect, is altered, or if new information is available, we should be retained to review and modify our recommendations.

This report may not reflect the actual variations of the subsurface conditions along the subject site. The nature and extent of variations along the subject site may not become evident until construction commences. The construction process itself may also alter subsurface conditions. If variations appear evident at the time of construction, it may be necessary to reevaluate our recommendations after performing on-site observations and tests to establish the engineering impact of the variations.

The scope of our Geotechnical Engineering Study does not include an environmental assessment of the air, soil, rock, or water conditions either on or adjacent to the site. No environmental opinions are presented in this report. **RKCI**'s scope of work does not include the investigation, detection, or design related to the prevention of any biological pollutants. The term "biological pollutants" includes, but is not limited to, mold, fungi, spores, bacteria, and viruses, and the byproduct of any such biological organisms.

If final grade elevations are significantly different from the grades existing at the time of our study (more than plus or minus 1 ft), our office should be informed about these changes. If needed and/or desired, we will reexamine our analyses and make supplemental recommendations.

BORING AND LABORATORY TESTS

Subsurface conditions at the subject site were evaluated by conducting 14 borings as shown in the following table:

Proposed Structure	Number of Borings	Depth, ft. *	Boring Identification
Softball Field Dugout/Backstop Poles	1	20	B-1
Baseball Field Dugout/Backstop Poles	1	20	B-2
Softball Field	3	10	B-3 through B-5
Baseball Field	3	10	B-6 through B-8
Running Track	4	10	B-9 through B-12
Football Field	2	10	B-13 and B-14

* below the existing ground surface elevation, or auger refusal, whichever occurs first.

The borings (designated as "B-") were drilled on December 12, 2017, at the locations shown on the Boring Location Map, Figure 1. The boring locations are approximate and were located in the field by an **RKCI** representative based on Sheet No. A1.1 of the project's plans titled, "La Villa High School – Athletic Fields," dated November 1, 2017, and provided to us by Mr. Humberto Rodriguez, AIA, Principal, with Rike-Ogden-Figueroa-Allex (ROFA) Architects, Inc., the project's architectural firm via electronic-mail attachment on Wednesday, December 6, 2017. The borings were drilled utilizing straight flight augers and was backfilled with the auger cuttings following completion of the drilling operations. During the drilling operations, Standard Penetration Test (SPT) samples with Split-Spoons were collected.

The SPT samples were obtained in accordance with accepted standard practices and the penetration test results are presented as "blows per foot" on the boring logs. Representative portions of the samples were sealed in containers to reduce moisture loss, labeled, packaged, and transported to our laboratory for subsequent testing and classification.

In the laboratory, each sample was evaluated and visually classified by a member of our Geotechnical Engineering staff in general accordance with the Unified Soil Classification System (USCS). The geotechnical engineering properties of the strata were evaluated by the following laboratory tests: natural moisture content, Atterberg limits, and percent passing a No. 200 sieve determinations.

The results of the field and laboratory tests are presented in graphical or numerical form on the boring logs illustrated on Figures 2 through 15. A key to the classification of terms and symbols used on the logs is presented on Figure 16. The results of the laboratory and field testing are also tabulated on Figure 17 for ease of reference.

Standard penetration test results are noted as “blows per ft” on the boring logs and on Figure 17, where “blows per ft” refers to the number of blows by a falling hammer required for 1 ft of penetration into the soil.

Samples will be retained in our laboratory for 30 days after submittal of this report. Other arrangements may be provided at the request of the CLIENT.

GENERAL SITE CONDITIONS

SITE DESCRIPTION

The subject site for the proposed structure additions is located along the north side of the existing La Villa ISD High School campus, situated at 100 W. Highway 107 in La Villa, Hidalgo County, Texas. At the time of our field activities, the project site can be described as an existing landscaped area with existing sports fields and running track. In general, the topography at the subject site is relatively flat, with a visually estimated vertical relief of about 3 ft across the site. Surface drainage is estimated to be poor. The subject site is bounded to the north by an existing residential subdivision; to the east by existing commercial and residential structures, followed by S. Chapa Road; to the west by the existing school campus; and to the south by Carnival Avenue.

GEOLOGY

A cursory review of the Geologic Atlas of Texas (McAllen-Brownsville Sheet, dated 1976), published by the Bureau of Economic Geology at the University of Texas at Austin, indicates that the subject site appears to be located within the Lissie Formation consisting of clays, silts, sands, gravel, and caliche deposits of the Quaternary epoch (Pleistocene period).

According to the Soil Survey of Hidalgo County, Texas, published by the United States Department of Agriculture - Soil Conservation Service, in cooperation with the Texas Agricultural Experiment Station, the project site appears to be located within the Raymondville-Mercedes soil association consisting of deep, slowly and very slowly permeable soils that typically have a gray clay loam or clay surface layer. The corresponding soil symbols appear to be 28, Hidalgo sandy clay loam, 0 to 1 percent slopes; 31, Hidalgo-Urban land complex, 0 to 1 percent slopes; and 52, Raymondville clay loam, 0 to 1 percent slopes.

SEISMIC COEFFICIENTS

Based upon a review of Section 1613 *Earthquake Loads* of the 2012 International Building Code (IBC), the following information has been summarized for seismic considerations associated with this site.

- Site Class Definition (Chapter 20 of the American Society of Civil Engineers [ASCE] 7): **Class D**. Based on the soil boring conducted for this investigation, the upper 100 feet of soil may be may be characterized as a stiff soil profile.
- Risk-Targeted Maximum Considered Earthquake Ground Motion Response Accelerations for the Conterminous United Stated of a 0.2-Second, Spectral Response Acceleration (5% of Critical Damping) (Figure 1613.3.1(1)): $\mathbf{S_s = 0.043g}$. Note that the value taken from Figure 1613.3.1(1) is based on Site Class D and is adjusted as per 1613.3.3 below.
- Risk-Targeted Maximum Considered Earthquake Ground Motion Response Accelerations for the Conterminous United States of a 1-Second, Spectral Response Acceleration (5% of Critical Damping) (Figure 1613.3.1(2)): $\mathbf{S_1 = 0.015g}$. Note that the value taken from Figure 1613.3.1(2) is based on Site Class B and is adjusted as per 1613.3.3 below.
- Value of Site Coefficient (Table 1613.3.3 (1)): *from worksheet* $\mathbf{F_a = 1.6}$.
- Value of Site Coefficient (Table 1613.3.3 (2)): *from worksheet* $\mathbf{F_v = 2.4}$.

The Maximum Considered Earthquake Spectral Response Accelerations are as follows:

- 0.2 sec., adjusted based on equation 16-37: *from worksheet* $\mathbf{S_{ms} = 0.070g}$.
- 1 sec., adjusted based on equation 16-38: *from worksheet* $\mathbf{S_{m1} = 0.036g}$.

The Design Spectral Response Acceleration Parameters are as follows:

- 0.2 sec., based on equation 16-39: *from worksheet* $\mathbf{S_{DS} = 0.046g}$.
- 1 sec., based on equation 16-40: *from worksheet* $\mathbf{S_{D1} = 0.024g}$.

Based on the parameters listed above, the critical nature of the structures, Tables 1613.3.5(1) and 1613.3.5(2), and calculations performed using a Java program titled, “Seismic Hazard Curves and Uniform Hazard Response Spectra” published by the United States Geological Survey (USGS) website, the Seismic Design Category for both short period and 1 second response accelerations is **A**. As part of the assumptions required to complete the calculations, a Risk Category of **II** was selected.

STRATIGRAPHY

It should be noted that Borings B-9 through B-12 were drilled along the existing polyurethane surfacing running track. The existing polyurethane surfacing thickness was measured to be about 3/4 inch. The hot-mix asphalt concrete (HMAC) thickness underlying the polyurethane surfacing was measured to be about 2 inches, while the caliche flexible base material (FBM) thickness underlying the HMAC was measured to range from about 3 to 8 inches.

The subsurface stratigraphy at this site can be described by two generalized strata. Each stratum has been designated by grouping soils that possess similar physical and engineering characteristics. For purposes of this report, we have designated the subsurface strata as Strata I and II. The lines designating the interfaces between strata on the boring logs represent approximate boundaries. Transitions between strata may be gradual.

Stratum I consists of dark brown to brown to grayish-brown, firm to very stiff, sandy lean clay soils and lean clay soils with sand and with calcareous nodules and roots. This layer was noted in Borings B-3, B-5 through B-12, and B-14 from the ground surface elevation existing at the time of our study, extending down to at least the termination depths of these borings. In Boring B-1, this layer was noted from the ground surface elevation existing at the time of our study, extending down to a depth of about 18 ft. In Boring B-2, this layer was noted from a depth of about 2-1/2 ft, extending down to a depth of about 18 ft. In Borings B-4 and B-13, this layer was noted from depths of about 5 ft and 2-1/2 ft, respectively, extending down to at least the termination depth of these borings. Moisture contents were measured to range from about 13 to 23 percent for this layer. This stratum is classified as moderately plastic to plastic, with measured plasticity indices ranging from 14 to 27 percent. Percent passing a No. 200 sieve tests demonstrates percent fines ranging from about 51 to 70 percent for this layer. SPT N-values ranging from 4 blows to 17 blows per foot of penetration were measured for this stratum. These soils are classified as CL soils in general accordance with the USCS.

Stratum II consists of dark brown to brown to light brown, loose to medium dense, clayey sand soils with roots. This layer was noted in Boring B-1, from beneath the Stratum I soils, extending down to at least the termination depth of this boring. In Boring B-2, this layer was noted from the ground surface elevation existing at the time of our study, extending down to a depth of about 2-1/2 ft and again from a depth of about 18 ft, extending down to at least the termination depth of this boring. In Borings B-4 and B-13, this layer was noted from the ground surface elevation existing at the time of our study, extending down to depths of about 5 ft and 2-1/2 ft, respectively. Moisture contents were measured to range from about 12 to 22 percent for this layer. This stratum is classified as moderately plastic, with a single measured plasticity index of about 16 percent. Percent passing a No. 200 sieve tests demonstrates percent fines ranging from about 42 to 49 percent for this layer. SPT N-values ranging from 4 blows to 21 blows per foot of penetration were measured for this stratum. These soils are classified as SC soils in general accordance with the USCS.

GROUNDWATER

Groundwater was observed only in Borings B-1 and B-2, drilled within the proposed dugout footprint areas, at depths of about 18 ft each below the ground surface elevations existing at the time of our study. The boreholes were left open for the duration of the field exploration phase to allow monitoring of water levels. It is possible for groundwater to exist beneath this site at shallower depths on a transient basis following periods of precipitation. Fluctuations in groundwater levels occur due to variations in rainfall and surface water run-off. The construction process itself may also cause variations in the groundwater level.

Based on the findings in the borings and on our experience in this region, we believe that groundwater seepage encountered during site earthwork activities may be controlled using temporary earthen berms and conventional sump-and-pump dewatering methods. For deep foundation excavations, this could include the use of temporary casing to reduce groundwater seepage and sloughing of the subsurface soils.

FOUNDATION ANALYSIS

EXPANSIVE SOIL-RELATED MOVEMENTS

The anticipated ground movements due to swelling of the underlying soils at this site were estimated for slab-on-grade construction using the empirical procedure, Texas Department of Transportation (TxDOT) Tex-124-E, Method for Determining the Potential Vertical Rise (PVR). PVR values on the order of about 1 inch were estimated for the stratigraphic conditions encountered in the borings. The PVR value was estimated using a surcharge load of 1 pound per square inch (psi) for the concrete slab and dry moisture conditions within the regional zone of seasonal moisture variation.

The TxDOT method of estimating expansive soil-related movements is based on empirical correlations utilizing the measured plasticity indices and assuming typical seasonal fluctuations in moisture content. If desired, other methods of estimating expansive soil-related movements are available, such as estimations based on swell tests and/or soil-suction analyses. However, the performance of these tests and the detailed analysis of expansive soil-related movements were beyond the scope of the current study. It should also be noted that actual movements can exceed the calculated PVR values due to isolated changes in moisture content (such as due to leaks, landscape watering....) or if water seeps into the soils to greater depths than the assumed active zone depth due to deep trenching or excavations.

Drainage Considerations Considerations of surface and subsurface drainage may be crucial to construction and adequate foundation performance of the soil-supported structures. Filling excavations in relatively impervious plastic clays with relatively pervious select fill material creates a “bathtub” beneath the structures, which can result in ponding or trapped water within the fill unless good surface and subsurface drainage is provided.

Water entering the fill surface during construction or entering the fill exposed beyond the structures lines after construction may create problems with fill moisture control during compaction and increased access for moisture to the underlying expansive clays both during and after construction.

Several surface and subsurface drainage design features and construction precautions can be used to limit problems associated with fill moisture. These features and precautions may include, but are not limited to, the following:

- Installing berms or swales on the uphill side of the construction areas to divert surface runoff away from the excavation/fill areas during construction;
- Sloping of the top of the subgrades with a minimum downward slope of 1.5 percent out to the base of a dewatering trench located beyond the structures’ perimeters;
- Sloping the surface of the fill during construction to promote runoff of rain water to drainage features until the final lift is placed;
- Sloping of a final, well-maintained, impervious clay or pavement surface (downward away from the proposed structures) over the select fill material and

any perimeter drain extending beyond the structures lines, with a minimum gradient of 6 in. in 5 ft;

- Constructing final surface drainage patterns to prevent ponding and limit surface water infiltration at and around the structures' perimeters;
- Locating the water-bearing utilities, roof drainage outlets, and irrigation spray heads outside of the select fill and perimeter drain boundaries; and
- Raising the elevation of the ground level floor slabs.

Details relative to the extent and implementation of these considerations must be evaluated on a project-specific basis by all members of the project design team. Many variables that influence fill drainage considerations may depend on factors that are not fully developed in the early stages of design. For this reason, drainage of the fill should be given consideration at the earliest possible stages of the project.

FOUNDATION RECOMMENDATIONS

SITE GRADING

Site grading plans can result in changes in almost all aspects of foundation recommendations. We have prepared the foundation recommendations based on the ground surface elevations and the stratigraphic conditions encountered in the borings at the time of our study. If site grading plans differ from the grades existing at the time of our study by more than plus or minus 1 ft, we must be retained to review the site grading plans prior to bidding the project for construction. This will enable us to provide input for any changes in our original recommendations, which may be required as a result of site grading operations or other considerations.

SHALLOW FOUNDATIONS

The proposed dugout structures may be founded on rigid-engineered beam and slab-on-fill foundations and/or on conventional spread and/or continuous footing foundations, provided that the shallow foundation type(s) can be designed to withstand the estimated soil-related movements (see the *Foundation Analyses* section of this report) without impairing either the structural or the operational performance of the structures.

Allowable Soil-Bearing Capacity

Shallow foundations founded on undisturbed, native soils and/or on new, properly-compacted, suitable, select fill materials may be proportioned using the design parameters shown in the following table:

Minimum depth below FGE:	24 in.
Minimum beam width:	12 in.
Maximum allowable soil-bearing pressure for continuous footings – grade beams:	1,250 psf
Maximum allowable soil-bearing pressure for spread footings – widened beams:	1,500 psf

Where psf = pounds per square feet

The above maximum allowable soil-bearing pressures will provide a factor of safety of about 3 with respect to the measured soil shear strength, and provided that the subgrade is prepared in accordance with the recommendations outlined in the *Site Preparation* subsection of the *Foundation Construction Considerations* section of this report. We estimate total settlements to be on the order of about 1 inch. Differential settlements are typically estimated to be about one-half of the total estimated settlement for most subsurface conditions.

Furthermore, the design parameters presented on the previous table are contingent upon the fill materials being selected and placed in accordance with the recommendations presented in the *Select Fill* subsection of the *Foundation Construction Considerations* section of this report. Should select fill selection and placement differ from the recommendations presented herein, **RKCI** should be informed of the deviations in order to reevaluate our recommendations and design criteria.

Wire Reinforcement Institute (WRI) Criteria

Beam and slab-on-fill foundations are sometimes designed using criteria developed by the WRI. On the basis of the subsurface stratigraphy encountered, a general effective plasticity index for the proposed dugout and backstop pole structures of 23 percent and a climatic rating (C_w) of 15 should be utilized for the design of the proposed dugout and backstop pole structure's foundations.

AREA FLATWORK

It should be noted that ground-supported flatwork such as walkways, courtyards, sidewalks, etc., will be subject to the same magnitude of potential soil-related movements as discussed previously (see the *Foundation Analyses* section of this report). Thus, where these types of elements abut rigid building foundations or isolated structures, differential movements should be anticipated. As a minimum, we recommend that flexible joints be provided where such elements abut the main structures to allow for differential movement at these locations. Where the potential for differential movement is objectionable, it may be beneficial to consider methods of reducing anticipated movements to match the adjacent building's performance.

DRILLED, STRAIGHT-SHAFT PIERS

Drilled, straight-shaft piers should be considered to support the proposed backstop pole structures. We recommend that piers extend to a minimum depth of 12 ft below the ground surface elevation existing at the time of our study or below final ground surface, whichever is greater. The piers should be designed as end bearing units and as friction units, utilizing a maximum allowable end-bearing pressure of 3.5 kips per square foot (ksf) and an allowable side shear resistance of 0.25 ksf.

If designed as skin friction units, the side shear resistance value shown previously should be used for the portion of the shaft extending below a depth of 8 ft. To proportion the drilled piers for axial compression, the side shear resistance should be neglected along the portion of the shaft located one shaft diameter from the bottom of the pier. The allowable values for end bearing and side shear resistance were evaluated using factors of safety of 3 and 2, respectively, with respect to the measured soil shear strength. Based on the 20 ft maximum depth of exploration, pier depths should not exceed a depth of 15 ft below the ground surface elevation existing at the time of our study.

PIER SHAFTS

The pier shafts will be subjected to potential uplift forces if the surrounding expansive soils within the active zone are subjected to alternate drying and wetting conditions. The maximum potential uplift force acting on the shafts may be estimated by:

$$F_u = 7\ D$$

where: F_u = uplift force in kips; and
D = diameter of the shaft in feet.

It is recommended that the pier shafts be a minimum of 24 inches in diameter to facilitate reinforcing steel placement and shaft observation prior to placing concrete.

ALLOWABLE UPLIFT RESISTANCE

Resistance to uplift forces exerted on the drilled, straight-shaft piers will be provided by the sustained compressive axial force (dead load) plus the allowable uplift resistance provided by the soil. The resistance provided by the soil depends on the shear strength of the soils adjacent to the pier shaft and below the depth of the active zone. The allowable uplift resistance value provided by the soils at this site is recommended to be 0.17 ksf for the portion of the shaft extending below a depth of 8 ft from the ground surface elevation existing at the time of our study. This value was evaluated using a factor of safety of 2.

Reinforcing steel will be required for the entire length of each pier shaft to withstand a net force equal to the uplift force minus the sustained compressive load carried by the pier. We recommend that the pier be reinforced to withstand this net force or an amount equal to 1 percent of the cross-sectional area of the shaft, whichever is greater.

PIER SPACING

Where possible, we recommend that the piers be spaced at a center-to-center distance of at least three shaft diameters. Such spacing will not require a reduction in the load carrying capacity of the individual piers.

If design and/or construction restraints require that piers be spaced closer than the above recommended spacing, **RKCI** must be retained to re-evaluate the allowable bearing capacity presented above for the individual piers. Reductions in load-carrying capacities may be required depending upon individual loading and spacing conditions.

LATERAL RESISTANCE

Resistance to lateral loads and the expected pier behavior under the applied loading conditions will depend not only on subsurface conditions, but also on loading conditions, the pier size, and the engineering properties of the pier. The pier should be analyzed to determine the resulting lateral deflections, maximum bending moments, and ultimate bending moments. This type of analysis is typically performed utilizing a computer analysis program and usually requires a trial and error procedure to appropriately size the pier and meet project tolerances.

To assist the structural engineer in this procedure, we are providing the following subsurface parameters for use in analysis. These parameters are in accordance with the input requirements of one of the more commonly used computer programs for laterally-loaded piles, the “L-Pile Plus” program. If a different program is used for analysis, different parameters may be required and different limitations may be required than what was assumed in selecting the parameters given in the following table. Thus, if a program other than “L-Pile Plus” is used, **RKCI** must be notified of the analysis method and the required soil parameters, so that we can review and revise our recommendations, if required. The soil-related parameters required for input into the “L-Pile Plus” program are summarized in the following table.

Soil Type	**Approximate Depth Range (ft) ***	**c, tsf**	**ϕ (°)**	**ε_{50}**	**k_s, (pci)**	**k_c, (pci)**	**γ, (pcf)**
Clay Soils (Above the Groundwater Table)	0 to 5	0.3	0	0.020	100	--	100
Clay Soils (Above the Groundwater Table)	5 to 15	0.6	0	0.010	500	200	105

* below the ground surface elevation existing at the time of our study.

Where:

c = undrained shear strength
ϕ = angle of internal friction
ε_{50}= strain at 50 percent
k_s = horizontal modulus of subgrade reaction (static)
k_c = horizontal modulus of subgrade reaction (cyclic)
γ = density (effective unit weight)

The values presented in the previous table for subgrade modulus and the strain at 50% are based on recommended values for the “L-Pile Plus” computer program for the strength of the subsurface conditions encountered in the borings, and are not necessarily based on laboratory test results.

The parameters presented in the previous table **do not** include factors of safety. Consequently, it is recommended that a factor of safety of at least 2 be introduced to the analysis by doubling the applied lateral loads and moments.

FOUNDATION CONSTRUCTION CONSIDERATIONS

SITE DRAINAGE

Drainage is an important key to the successful performance of any foundation. Good surface drainage should be established prior to and maintained after construction to help prevent water from ponding within or adjacent to the proposed structures' foundations and to facilitate rapid drainage away from the structures' foundations. Failure to provide positive drainage away from the structures can result in localized differential vertical movements in soil supported foundation and floor slabs.

Current ordinances, in compliance with the Americans with Disabilities Act (ADA), may dictate maximum slopes for walks and drives around and into new buildings. These slope requirements can result in drainage problems for buildings supported on expansive soils. We recommend that, on all sides of the proposed structures, the maximum permissible slope be provided away from the proposed structures.

Also to help control drainage in the vicinity of the structures, we recommend that roof/gutter downspouts and landscaping irrigation systems not be located adjacent to the structures' foundations. Where a select fill overbuild is provided outside of the floor slab/foundation footprints, the surface should be sealed with an impermeable layer (pavement or clay cap) to reduce infiltration of both irrigation and surface waters. Careful consideration should also be given to the location of water bearing utilities, as well as to provisions for drainage in the event of leaks in water bearing utilities. All leaks should be immediately repaired.

Other drainage and subsurface drainage issues are discussed in the *Foundation Analysis* section of this report.

SITE PREPARATION

The structure areas and all areas to support select fill should be stripped of all vegetation, and/or organic topsoil down to a minimum depth of 8 inches and extending a minimum of 5 ft beyond the structures' footprint areas.

Exposed subgrades should be thoroughly proofrolled in order to locate and densify any weak, compressible zones. A minimum of 5 passes of a fully-loaded dump truck or a similar heavily-loaded piece of construction equipment should be used for planning purposes. Proofrolling operations should be observed by the Geotechnical Engineer or his/her representative to document subgrade conditions and preparation. Weak or soft areas identified during proofrolling should be treated with hydrated lime or Portland cement, or removed and replaced with a suitable, compacted select fill in accordance with the recommendations presented under the *Select Fill* subsection of this section of the report. If the treatment option is selected, the weak or soft areas may be mixed with hydrated lime or Portland cement down to a minimum depth of 8 inches in order to aid in drying the soils and develop a firm working surface. Proofrolling operations and any excavation/backfill activities should be observed by **RKCI** representatives to document subgrade preparation.

Upon completion of the proofrolling operations and just prior to fill placement or slab construction, the exposed subgrade should be moisture conditioned by scarifying to a minimum depth of 6 in. and recompacting to a minimum of 98 percent of the maximum density determined from the American Society for Testing and Materials (ASTM) D698, Compaction Test. The moisture content of the subgrade should be maintained within the range of the optimum moisture content to three percentage points above the optimum moisture content until permanently covered.

SELECT FILL

Materials used as select fill for final site grading preferably should be crushed stone or gravel aggregate. We recommend that materials specified for use as select fill meet the TxDOT 2014 Standard Specification for Construction and Maintenance of Highways, Streets, and Bridges, Item 247, Flexible Base, Type A through Type E, Grades 1, 2, 3, and 5.

Alternatively, the following soils, as classified according to the USCS, may be considered satisfactory for use as select fill materials at this site: SC, GC, CL, and combinations of these soils. In addition to the USCS classification, alternative select fill materials shall have a maximum liquid limit of 40 percent, a plasticity index between 7 and 18 percent, and a maximum particle size not exceeding 4 inches or one-half the loose lift thickness, whichever is smaller. In addition, if these materials are utilized, grain size analyses and Atterberg Limits must be performed during placement at a minimum rate of one test each per 5,000 cubic yards of material due to the high degree of variability associated with pit-run materials.

If the above listed alternative materials are being considered for bidding purposes, the materials should be submitted to the Geotechnical Engineer for pre-approval a minimum of 10 working days or more prior to the bid date. Failure to do so will be the responsibility of the General Contractor. The General Contractor will also be responsible for ensuring that the properties of all delivered alternate select fill materials are similar to those of the pre-approved submittal. It should also be noted that when using alternative fill materials, difficulties may be experienced with respect to moisture control during and subsequent to fill placement, as well as with erosion, particularly when exposed to inclement weather. This may result in sloughing of beam trenches and/or pumping of the fill materials.

Soils classified as CH, MH, ML, SM, GM, OH, OL, and Pt under the USCS and not meeting the alternative select fill material requirements, are **not** considered suitable for use as select fill materials at this site.

Select fill should be placed in loose lifts **not** exceeding 8 in. in thickness and compacted to at least 98 percent of the maximum dry density as determined by ASTM D698. The moisture content of the subgrade should be maintained within the range of two percentage points below the optimum moisture content to two percentage points above the optimum moisture content until permanently covered.

The select fill should be properly compacted in accordance with these recommendations and tested by **RKCI** personnel for compaction as specified.

SHALLOW FOUNDATION EXCAVATIONS

Shallow foundation excavations should be observed by the Geotechnical Engineer or his/her representative prior to placement of reinforcing steel and concrete. This is necessary to document that the bearing soils at the bottom of the excavations are similar to those encountered in the borings and that excessive soft/loose materials and water are not present in the excavations. If soft/loose soil pockets are encountered in the foundation excavations, they should be removed and replaced with a compacted non-expansive fill material or lean concrete up to the design foundation bearing elevations.

Disturbance from foot traffic and from the accumulation of excess water can result in losses in bearing capacity and increased settlement. If inclement weather is anticipated at the time construction, consideration should be given to protecting the bottoms of beam trenches by placing a thin mud mat (layer of flowable fill or lean concrete) at the bottom of trenches immediately following excavation. This will reduce disturbance from foot traffic and will impede the infiltration of surface water. All necessary precautions should be implemented to protect open excavations from the accumulation of surface water runoff and rain.

DRILLED PIERS

Drilled pier excavations must be examined by an **RKCI** representative who is familiar with the geotechnical aspects of the subsurface stratigraphy, the structural configuration, foundation design details, and assumptions prior to placing concrete. This is to observe that:

- The shaft has been excavated to the specified dimensions at the correct depth established by the previously mentioned criteria;
- The shaft has been drilled plumb within specified tolerances along its total length; and
- Excessive cuttings, buildup and soft, compressible materials have been removed from the bottom of the excavation.

Drilled pier excavation observations should be scheduled with the Geotechnical Engineer a minimum of 48 hours prior to pier drilling. Failure to do so will be the responsibility of the General Contractor.

Reinforcement and Concrete Placement

Reinforcing steel should be checked for size and placement prior to concrete placement. Placement of concrete should be accomplished as soon as possible after excavation to reduce changes in the moisture content or the state of stress of the foundation materials. Concrete should not be placed in the pier excavations without the approval of the Engineer. No foundation element should be left open overnight without concreting.

Temporary Casing

Groundwater was observed in the borings drilled within the proposed backstop pole structures footprint areas at the time of our drilling operations at a depth of about 18 ft below the ground surface elevations existing at the time of our study. Groundwater seepage and/or side sloughing may be encountered at the time of construction, depending on climatic conditions prevalent at the time of construction. Therefore, we recommend that the bid documents require the foundation contractor to specify unit costs for different lengths of casing and/or slurry drilling techniques which may be required.

EXCAVATION SLOPING AND BENCHING

Excavations that extend to or below a depth of 5 ft below construction grade shall require the General Contractor to develop a trench safety plan to protect personnel entering the trench or trench vicinity. The collection of specific geotechnical data and the development of such a plan, which could include designs for sloping and benching or various types of temporary shoring, are beyond the scope of the current study. Any such designs and safety plans shall be developed in accordance with current Occupational Safety and Health Administration (OSHA) guidelines and other applicable industry standards.

EXCAVATION EQUIPMENT

The boring logs are not intended for use in determining construction means and methods and may therefore be misleading if used for that purpose. We recommend that General Contractors and their subcontractors interested in bidding on the work perform their own tests in the form of test pits and/or test piers to determine the quantities of the different materials to be excavated, as well as the preferred excavation methods and equipment for this site.

UTILITIES

Utilities which project through slab-on-grade, slab-on-fill, or any other rigid unit should be designed with either some degree of flexibility or with sleeves. Such design features will help reduce the risk of damage to the utility lines as vertical movements occur. These types of slabs will generally be constructed as monolithic, grid type beam and slab foundations.

Our experience indicates that significant settlement of backfill can occur in utility trenches, particularly when trenches are deep, when backfill materials are placed in thick lifts with insufficient compaction, and when water can access and infiltrate the trench backfill materials. The potential for water to access the backfill is increased where water can infiltrate flexible base materials due to insufficient penetration of curbs, and at sites where geological features can influence water migration into utility trenches (such as fractures within a rock mass or at contacts between rock and clay formations). It is our belief that another factor which can significantly impact settlement is the migration of fines within the backfill into the open voids in the underlying free-draining bedding material.

To reduce the potential for settlement in utility trenches, we recommend that consideration be given to the following:

- All backfill materials should be placed and compacted in controlled lifts appropriate for the type of backfill and the type of compaction equipment being utilized and all backfilling procedures should be tested and documented.

- Consideration should be given to wrapping free-draining bedding gravels with a geotextile fabric (similar to Mirafi 140N) to reduce the infiltration and loss of fines from backfill material into the interstitial voids in bedding materials.

CONSTRUCTION RELATED SERVICES

CONSTRUCTION MATERIALS TESTING AND OBSERVATION SERVICES

As presented in the attachment to this report, *Important Information About Your Geotechnical Engineering Report*, subsurface conditions can vary across a project site. The conditions described in this report are based on interpolations derived from a limited number of data points. Variations will be encountered during construction, and only the geotechnical design engineer will be able to determine if these conditions are different than those assumed for design.

Construction problems resulting from variations or anomalies in subsurface conditions are among the most prevalent on construction projects and often lead to delays, changes, cost overruns, and disputes. These variations and anomalies can best be addressed if the geotechnical engineer of record, **RKCI** is retained to perform construction observation and testing services during the construction of the project. This is because:

- **RKCI** has an intimate understanding of the geotechnical engineering report's findings and recommendations. **RKCI** understands how the report should be interpreted and can provide such interpretations on site, on the client's behalf.
- **RKCI** knows what subsurface conditions are anticipated at the site.
- **RKCI** is familiar with the goals of the owner and project design professionals, having worked with them in the development of the geotechnical workscope. This enables **RKCI** to suggest remedial measures (when needed) which help meet the owner's and the design teams' requirements.
- **RKCI** has a vested interest in client satisfaction, and thus assigns qualified personnel whose principal concern is client satisfaction. This concern is exhibited by the manner in which contractors' work is tested, evaluated and reported, and in selection of alternative approaches when such may become necessary.
- **RKCI** cannot be held accountable for problems which result due to misinterpretation of our findings or recommendations when we are not on hand to provide the interpretation which is required.

BUDGETING FOR CONSTRUCTION TESTING

Appropriate budgets need to be developed for the required construction testing and observation activities. At the appropriate time before construction, we advise that **RKCI** and the project designers meet and jointly develop the testing budgets, as well as review the testing specifications as it pertains to this project.

Once the construction testing budget and scope of work are finalized, we encourage a preconstruction meeting with the selected contractor to review the scope of work to make sure it is consistent with the construction means and methods proposed by the contractor. **RKCI** looks forward to the opportunity to provide continued support on this project, and would welcome the opportunity to meet with the Project Team to develop both a scope and budget for these services.

* * * * * * * * * * * * * * * * * *

The following figures are attached and complete this report:

Figure 1	Boring Location Map
Figures 2 through 15	Logs of Borings
Figure 16	Key to Terms and Symbols
Figure 17	Results of Soil Analyses

ATTACHMENTS

RABA KISTNER CONSULTANTS

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Facilities • Infrastructure

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McAllen, Texas 78501

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(956)682-5487 FAX
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TBPE Firm F-3257

BORING LOCATION MAP
PROPOSED HIGH SCHOOL FIELDS AND RUNNING TRACK ADDITIONS

LA VILLA ISD - 100 W. HIGHWAY 107
LA VILLA, HIDALGO COUNTY, TEXAS

REVISIONS:

No.	DATE	DESCRIPTION

PROJECT No.: AMA17-052-00

ISSUE DATE:	12-21-17
DRAWN BY:	DV
CHECKED BY:	SC
REVIEWED BY:	KML

FIGURE

1

O:\Active Projects\McAllen\2017\AMA17\AMA17-052-00 Prop. La Villa ISD H. S. Fields & Running Track Add\Drawings\Figure 1 - 11x17.dwg

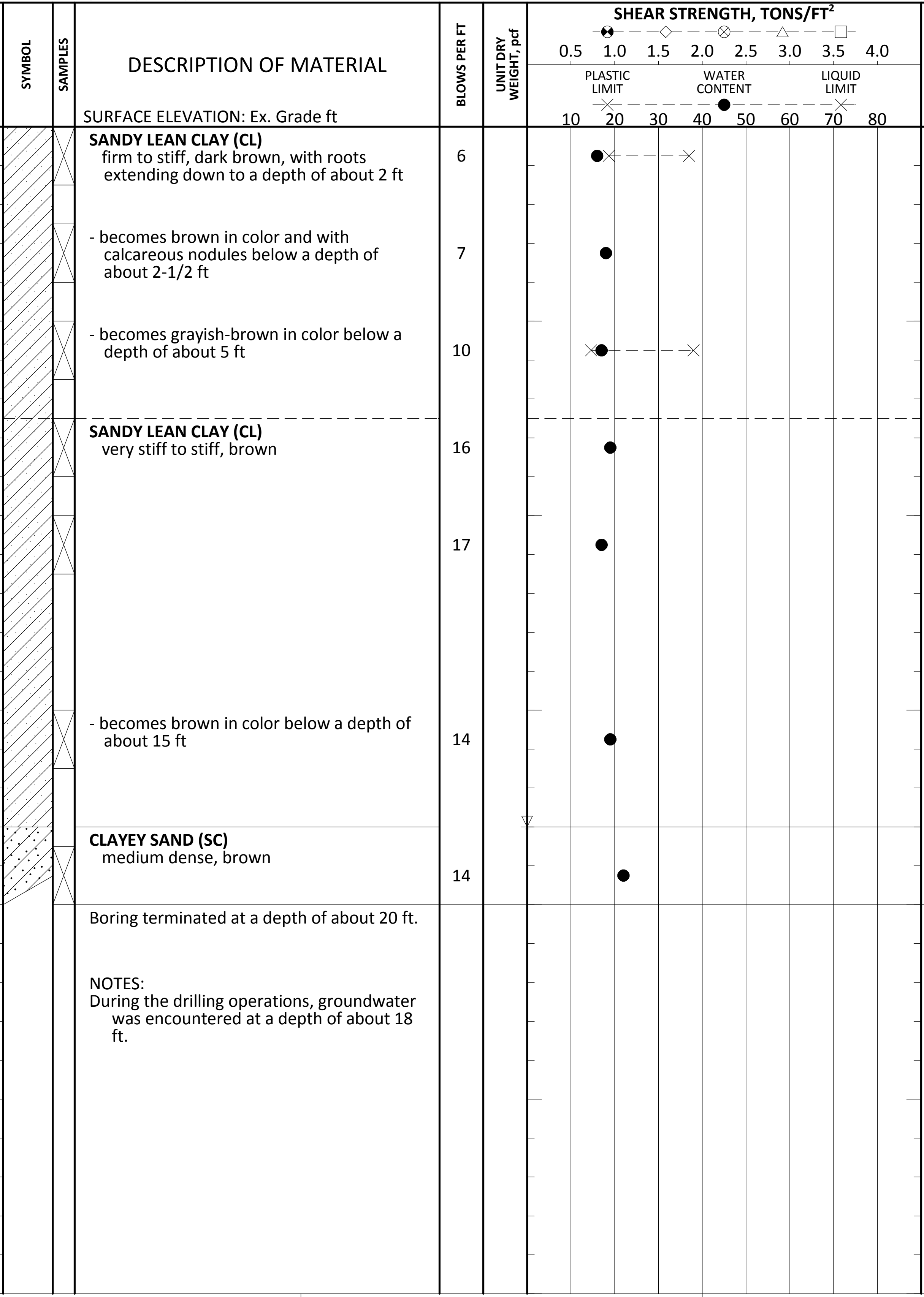
LOG OF BORING NO. B-1

Proposed High School Fields & Running Track Additions
La Villa ISD - 100 W. Highway 107
La Villa, Hidalgo County, Texas

RABA KISTNER
TBPE Firm Registration No. F-3257

DRILLING METHOD: Straight Flight Auger
LOCATION: See Figure 1

SURFACE ELEVATION: Ex. Grade ft



DEPTH, FT	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	PLASTICITY INDEX	% -200
	SANDY LEAN CLAY (CL) firm to stiff, dark brown, with roots extending down to a depth of about 2 ft	6		18	
	- becomes brown in color and with calcareous nodules below a depth of about 2-1/2 ft	7			65
5	- becomes grayish-brown in color below a depth of about 5 ft	10		23	
	SANDY LEAN CLAY (CL) very stiff to stiff, brown	16			
10		17			61
15	- becomes brown in color below a depth of about 15 ft	14			
	CLAYEY SAND (SC) medium dense, brown	14			
20	Boring terminated at a depth of about 20 ft.				
25					

NOTES:
During the drilling operations, groundwater was encountered at a depth of about 18 ft.

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

DEPTH DRILLED: 20.0 ft
DATE DRILLED: 12/12/2017
DEPTH TO WATER: 18 ft
DATE MEASURED: 12/12/2017
PROJ. No.: AMA17-052-00
FIGURE: 2

LOG OF BORING NO. B-2

Proposed High School Fields & Running Track Additions
La Villa ISD - 100 W. Highway 107
La Villa, Hidalgo County, Texas

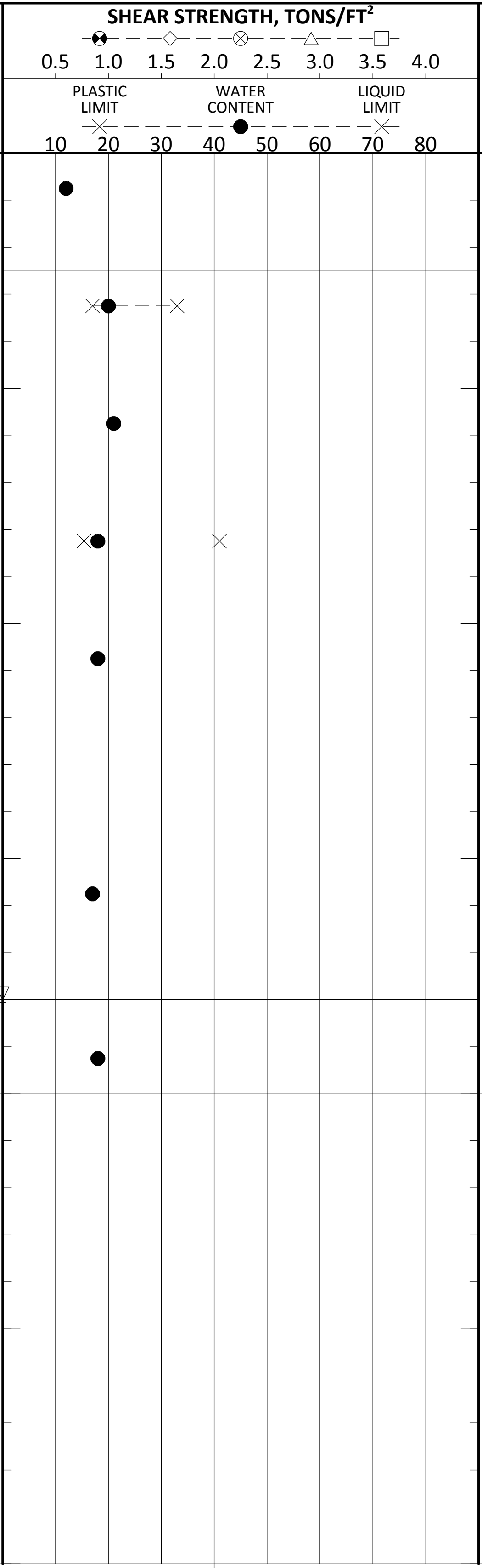
RABA KISTNER
TBPE Firm Registration No. F-3257

DRILLING METHOD: Straight Flight Auger

LOCATION: See Figure 1

SURFACE ELEVATION: Ex. Grade ft

DEPTH, FT	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	PLASTICITY INDEX	% -200
	CLAYEY SAND (SC) loose, dark brown, with roots extending down to a depth of about 2 ft	7			49
	SANDY LEAN CLAY (CL) firm to stiff, dark brown	5		16	
5	- becomes grayish-brown in color and with calcareous nodules below a depth of about 5 ft	8			70
		8		26	
10	- becomes brown in color below a depth of about 10 ft	8			
15		13			
	CLAYEY SAND (SC) medium dense, brown to light brown	21			
20	Boring terminated at a depth of about 20 ft.				
25					



NOTES:
During the drilling operations, groundwater was encountered at a depth of about 18 ft.

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

DEPTH DRILLED: 20.0 ft
DATE DRILLED: 12/12/2017
DEPTH TO WATER: 18 ft
DATE MEASURED: 12/12/2017
PROJ. No.: AMA17-052-00
FIGURE: 3

LOG OF BORING NO. B-3

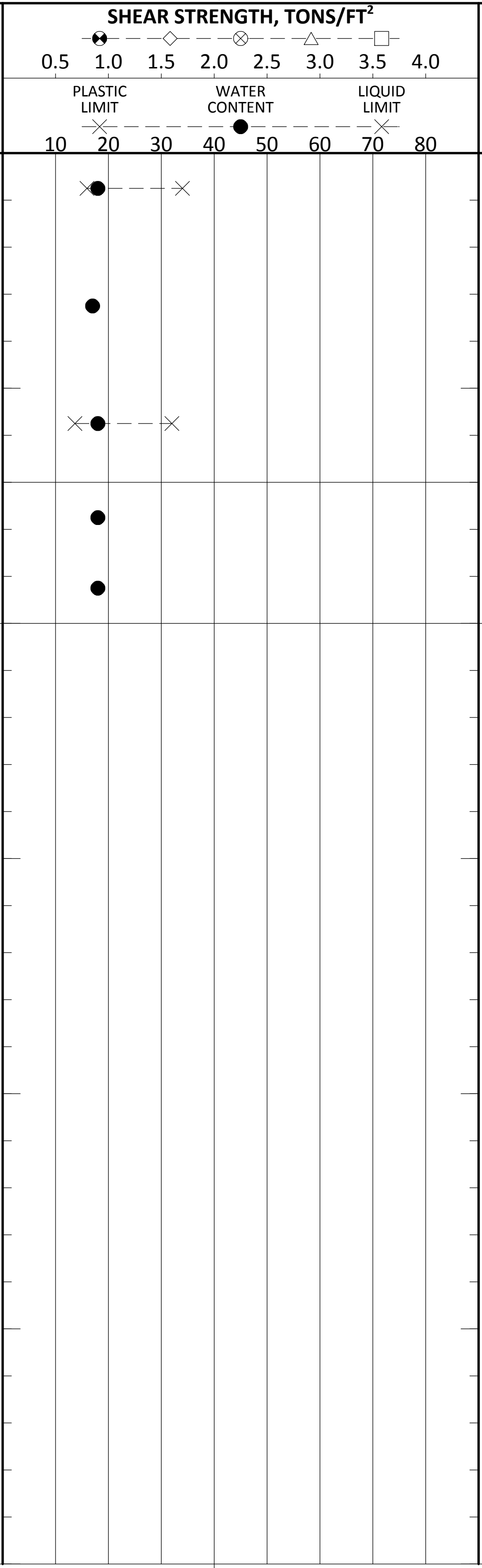
Proposed High School Fields & Running Track Additions
La Villa ISD - 100 W. Highway 107
La Villa, Hidalgo County, Texas

RABA KISTNER
TBPE Firm Registration No. F-3257

DRILLING METHOD: Straight Flight Auger

LOCATION: See Figure 1

SURFACE ELEVATION: Ex. Grade ft



DEPTH, FT	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	PLASTICITY INDEX	% -200
	SANDY LEAN CLAY (CL) firm, dark brown	5		18	
	- becomes brown in color and with calcareous nodules below a depth of about 2-1/2 ft	7			68
5		7		18	
	LEAN CLAY with SAND (CL) stiff, brown	15			
		11			
10	Boring terminated at a depth of about 10 ft.				
15					
20					
25					

NOTES:
Upon completion of the drilling operations, the boring was observed dry.

DEPTH DRILLED: 10.0 ft
DATE DRILLED: 12/12/2017
DEPTH TO WATER: DRY
DATE MEASURED: 12/12/2017
PROJ. No.: AMA17-052-00
FIGURE: 4

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

LOG OF BORING NO. B-4

Proposed High School Fields & Running Track Additions
La Villa ISD - 100 W. Highway 107
La Villa, Hidalgo County, Texas

RABA KISTNER
TBPE Firm Registration No. F-3257

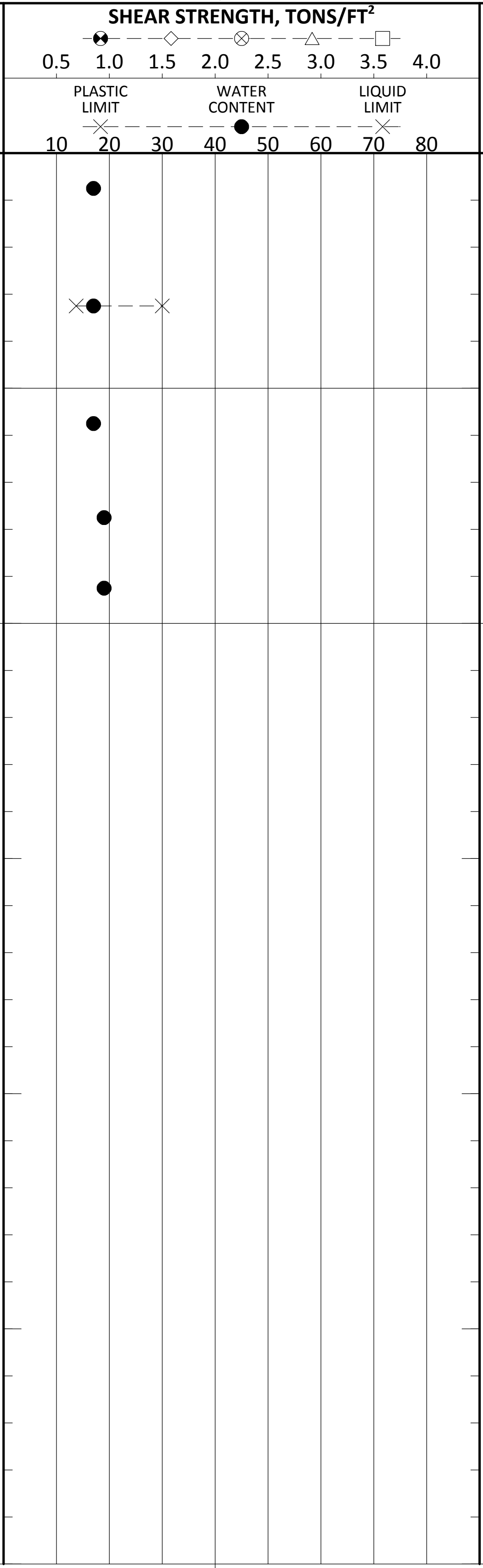
DRILLING METHOD: Straight Flight Auger

LOCATION: See Figure 1

SURFACE ELEVATION: Ex. Grade ft

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	PLASTICITY INDEX	% -200
			CLAYEY SAND (SC) very loose to loose, dark brown, with roots extending down to a depth of about 2 ft	4			44
				5		16	
5			**SANDY LEAN CLAY (CL)** stiff, brown, with calcareous nodules	10			70
				11			
				13			
10			Boring terminated at a depth of about 10 ft.				

NOTES:
Upon completion of the drilling operations, the boring was observed dry.



NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

DEPTH DRILLED: 10.0 ft
DATE DRILLED: 12/12/2017
DEPTH TO WATER: DRY
DATE MEASURED: 12/12/2017
PROJ. No.: AMA17-052-00
FIGURE: 5

LOG OF BORING NO. B-5

Proposed High School Fields & Running Track Additions
La Villa ISD - 100 W. Highway 107
La Villa, Hidalgo County, Texas

TBPE Firm Registration No. F-3257

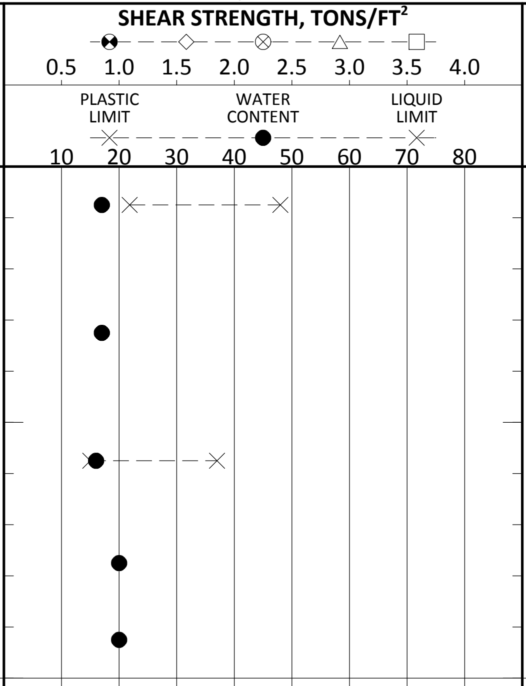
DRILLING METHOD: Straight Flight Auger

LOCATION: See Figure 1

SURFACE ELEVATION: Ex. Grade ft

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	PLASTICITY INDEX	% -200
			SANDY LEAN CLAY (CL) firm to stiff, dark brown, with calcareous nodules	5		26	
				6			62
5				12		22	
			- becomes brown in color below a depth of about 7 ft	11			
				13			
10			Boring terminated at a depth of about 10 ft.				
15							
20							
25							

NOTES:
Upon completion of the drilling operations, the boring was observed dry.



NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

DEPTH DRILLED:	10.0 ft	**DEPTH TO WATER:**	DRY	**PROJ. No.:**	AMA17-052-00
DATE DRILLED:	12/12/2017	**DATE MEASURED:**	12/12/2017	**FIGURE:**	6

LOG OF BORING NO. B-6

Proposed High School Fields & Running Track Additions
La Villa ISD - 100 W. Highway 107
La Villa, Hidalgo County, Texas

TBPE Firm Registration No. F-3257

DRILLING METHOD: Straight Flight Auger

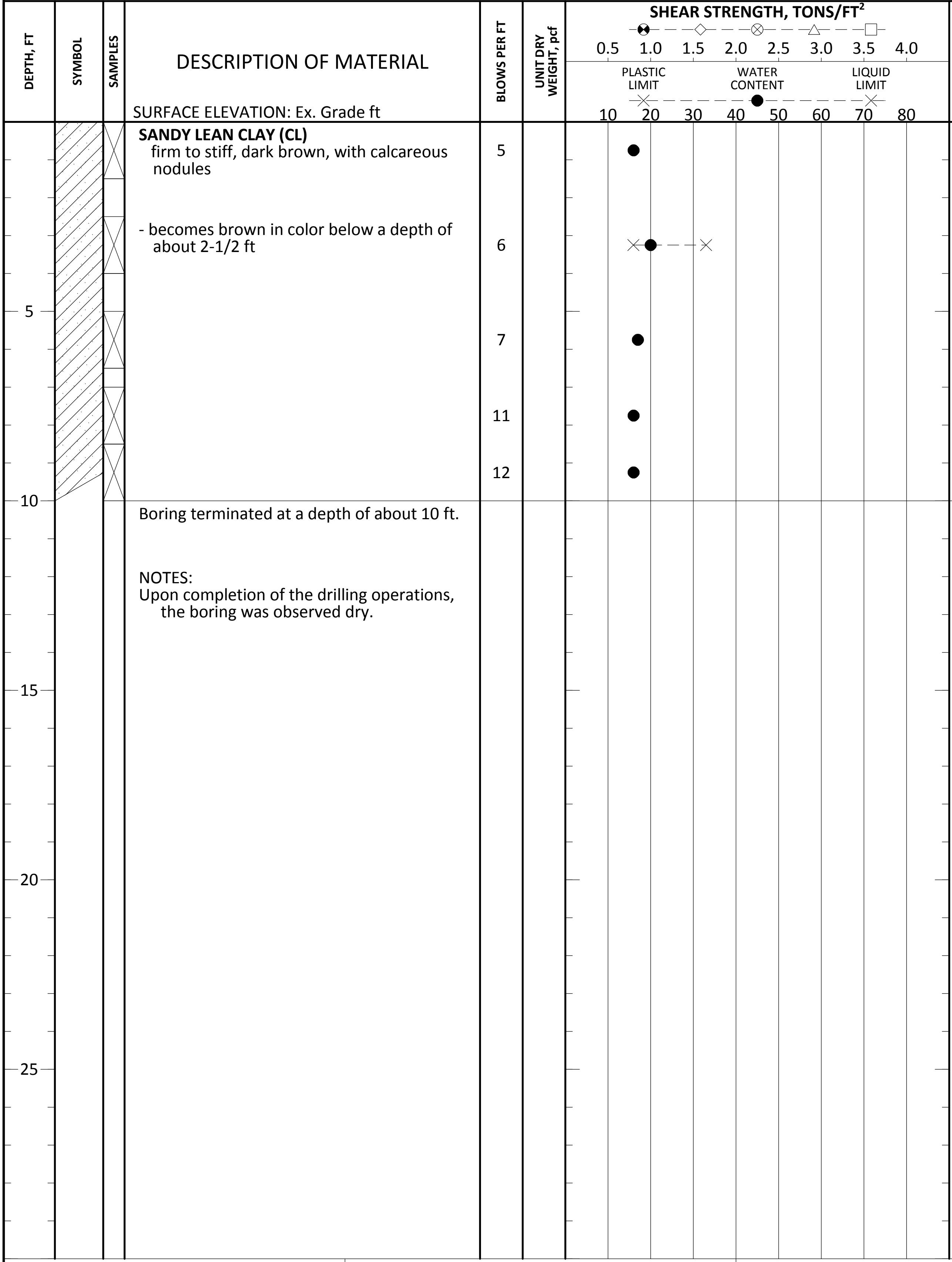
LOCATION: See Figure 1

SURFACE ELEVATION: Ex. Grade ft

DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	PLASTICITY INDEX	% -200
SANDY LEAN CLAY (CL) firm to stiff, dark brown, with calcareous nodules	5			53
- becomes brown in color below a depth of about 2-1/2 ft	6		17	
	7			
	11			
	12			

Boring terminated at a depth of about 10 ft.

NOTES:
Upon completion of the drilling operations, the boring was observed dry.



NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

DEPTH DRILLED: 10.0 ft
DATE DRILLED: 12/12/2017

DEPTH TO WATER: DRY
DATE MEASURED: 12/12/2017

PROJ. No.: AMA17-052-00
FIGURE: 7

LOG OF BORING NO. B-7

Proposed High School Fields & Running Track Additions
La Villa ISD - 100 W. Highway 107
La Villa, Hidalgo County, Texas

TBPE Firm Registration No. F-3257

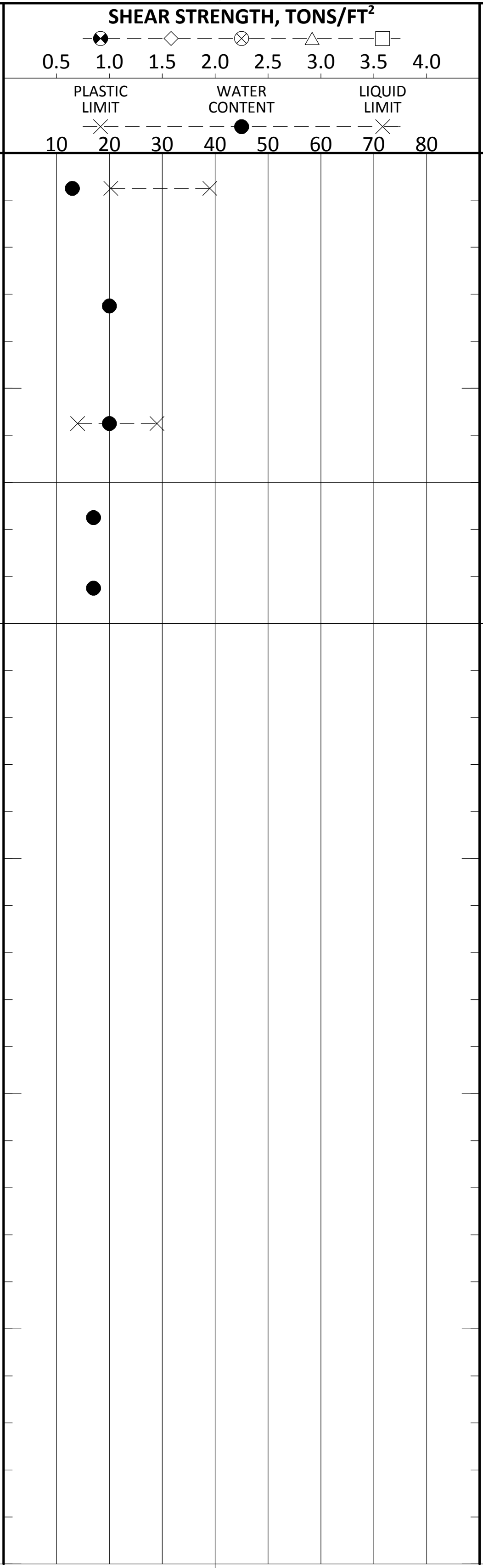
DRILLING METHOD: Straight Flight Auger

LOCATION: See Figure 1

SURFACE ELEVATION: Ex. Grade ft

DEPTH, FT	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	PLASTICITY INDEX	% -200
	SANDY LEAN CLAY (CL) firm, dark brown	6		19	
	- becomes brown in color and with calcareous nodules below a depth of about 2-1/2 ft	7			69
5		8		15	
	LEAN CLAY with SAND (CL) stiff, brown	13			
		12			
10	Boring terminated at a depth of about 10 ft.				
15					
20					
25					

NOTES:
Upon completion of the drilling operations, the boring was observed dry.



DEPTH DRILLED: 10.0 ft
DATE DRILLED: 12/12/2017
DEPTH TO WATER: DRY
DATE MEASURED: 12/12/2017
PROJ. No.: AMA17-052-00
FIGURE: 8

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

LOG OF BORING NO. B-8

Proposed High School Fields & Running Track Additions
La Villa ISD - 100 W. Highway 107
La Villa, Hidalgo County, Texas

RABA KISTNER
TBPE Firm Registration No. F-3257

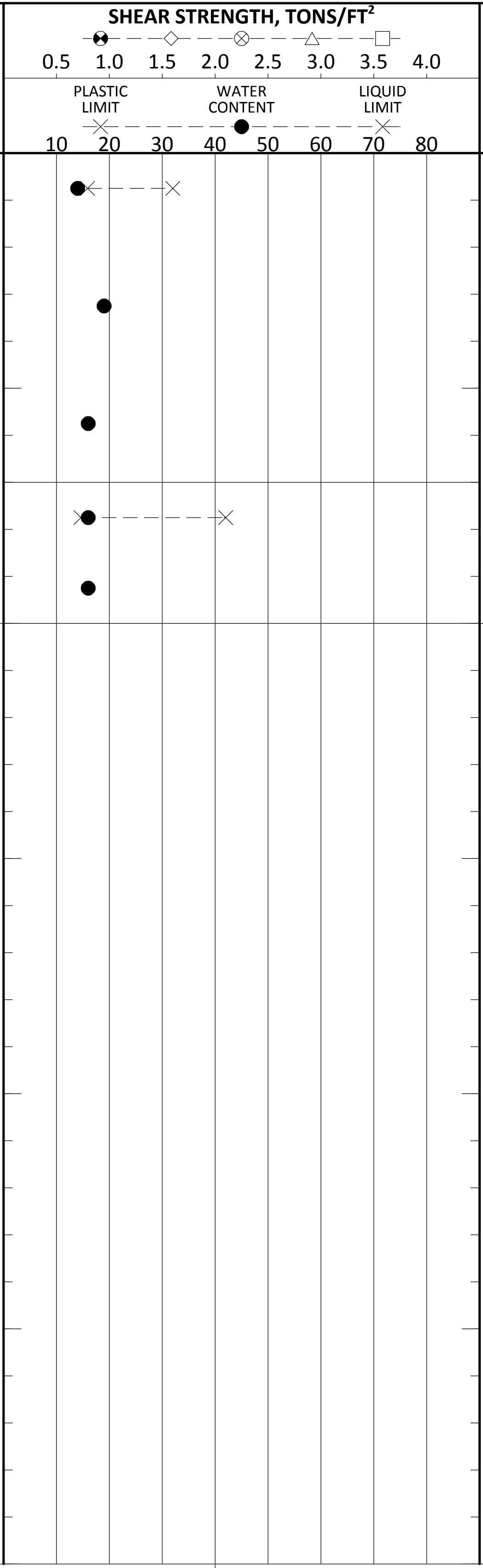
DRILLING METHOD: Straight Flight Auger

LOCATION: See Figure 1

SURFACE ELEVATION: Ex. Grade ft

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	PLASTICITY INDEX	% -200
			SANDY LEAN CLAY (CL) firm, brown, with calcareous nodules	5		16	
				4			56
5			- becomes light brown in color below a depth of about 5 ft	6			
			LEAN CLAY with SAND (CL) stiff, light brown	11		27	
10				13			
			Boring terminated at a depth of about 10 ft.				
15							
20							
25							

NOTES:
Upon completion of the drilling operations, the boring was observed dry.



DEPTH DRILLED: 10.0 ft
DATE DRILLED: 12/12/2017
DEPTH TO WATER: DRY
DATE MEASURED: 12/12/2017
PROJ. No.: AMA17-052-00
FIGURE: 9

LOG OF BORING NO. B-9

Proposed High School Fields & Running Track Additions
La Villa ISD - 100 W. Highway 107
La Villa, Hidalgo County, Texas

TBPE Firm Registration No. F-3257

DRILLING METHOD: Straight Flight Auger

LOCATION: See Figure 1

SURFACE ELEVATION: Ex. Grade ft

DESCRIPTION OF MATERIAL

Polyurethane Surfacing - 3/4 in.

Hot-Mix Asphaltic Concrete (HMAC) - 2 in.

Flexible Base Material (FBM) - 3 in.

SANDY LEAN CLAY (CL)
firm, dark brown, with calcareous nodules

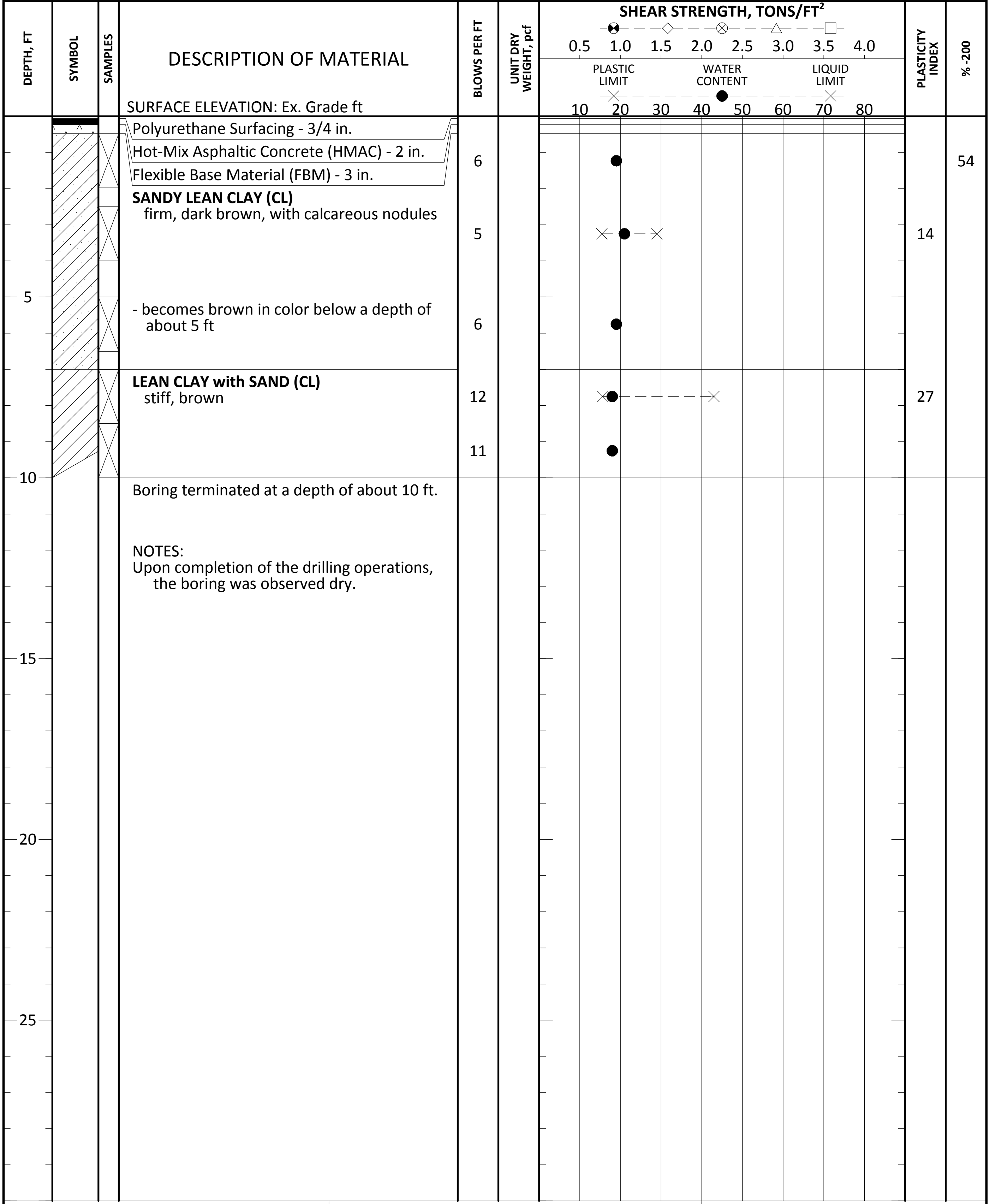
- becomes brown in color below a depth of about 5 ft

LEAN CLAY with SAND (CL)
stiff, brown

Boring terminated at a depth of about 10 ft.

NOTES:
Upon completion of the drilling operations, the boring was observed dry.

BLOWS PER FT	UNIT DRY WEIGHT, pcf	PLASTICITY INDEX	% -200
6			54
5		14	
6			
12		27	
11			



NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

DEPTH DRILLED: 10.0 ft
DATE DRILLED: 12/12/2017

DEPTH TO WATER: DRY
DATE MEASURED: 12/12/2017

PROJ. No.: AMA17-052-00
FIGURE: 10

LOG OF BORING NO. B-10

Proposed High School Fields & Running Track Additions
La Villa ISD - 100 W. Highway 107
La Villa, Hidalgo County, Texas

RABA KISTNER
TBPE Firm Registration No. F-3257

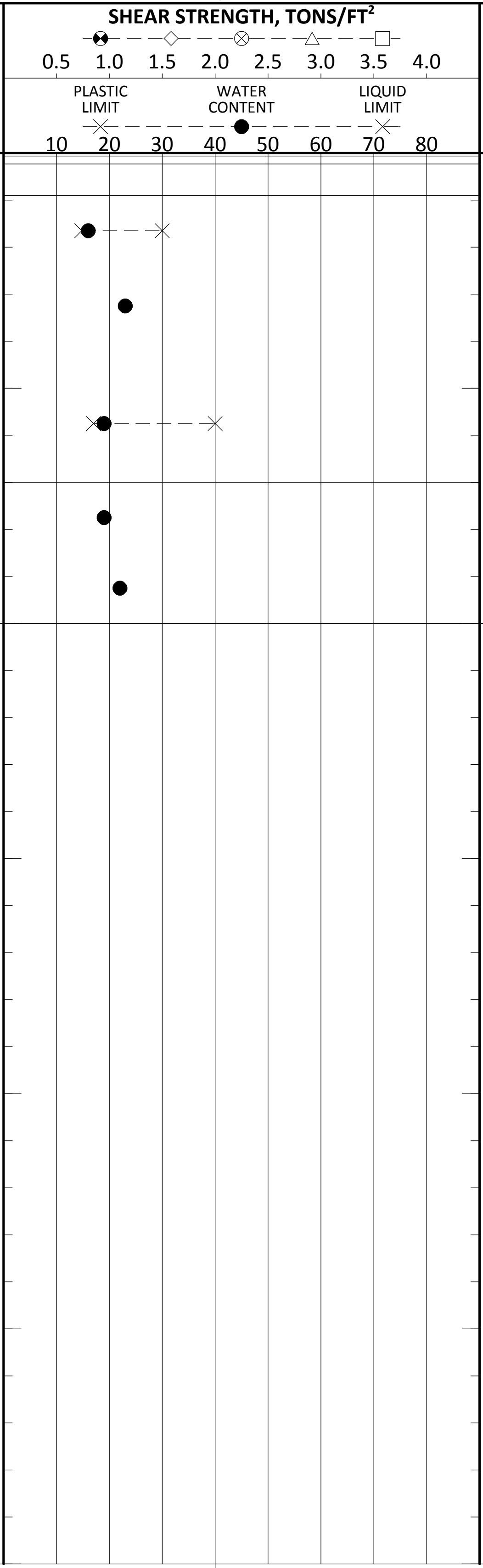
DRILLING METHOD: Straight Flight Auger

LOCATION: See Figure 1

SURFACE ELEVATION: Ex. Grade ft

DEPTH, FT	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	PLASTICITY INDEX	% -200
	Polyurethane Surfacing - 3/4 in.				
	Hot-Mix Asphaltic Concrete (HMAC) - 2 in.				
	Flexible Base Material (FBM) - 8 in.	10		15	
	SANDY LEAN CLAY (CL) stiff to firm, dark brown - becomes brown in color and with calcareous nodules below a depth of about 2-1/2 ft	4			61
5		6		23	
	LEAN CLAY with SAND (CL) stiff, brown	10			
		10			
10	Boring terminated at a depth of about 10 ft.				
15					
20					
25					

NOTES:
Upon completion of the drilling operations, the boring was observed dry.



NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

DEPTH DRILLED: 10.0 ft
DATE DRILLED: 12/12/2017
DEPTH TO WATER: DRY
DATE MEASURED: 12/12/2017
PROJ. No.: AMA17-052-00
FIGURE: 11

LOG OF BORING NO. B-11

Proposed High School Fields & Running Track Additions
La Villa ISD - 100 W. Highway 107
La Villa, Hidalgo County, Texas

RABA KISTNER
TBPE Firm Registration No. F-3257

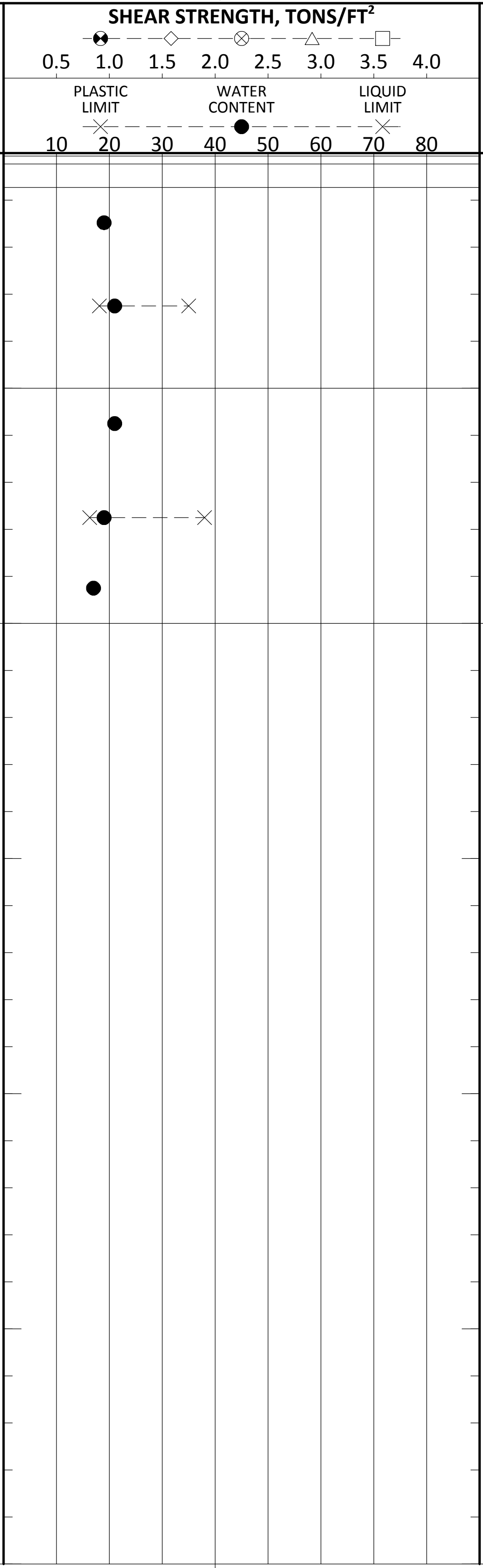
DRILLING METHOD: Straight Flight Auger

LOCATION: See Figure 1

SURFACE ELEVATION: Ex. Grade ft

DEPTH, FT	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	PLASTICITY INDEX	% -200
	Polyurethane Surfacing - 3/4 in.				
	Hot-Mix Asphaltic Concrete (HMAC) - 2 in.				
	Flexible Base Material (FBM) - 6 in.	4			51
	SANDY LEAN CLAY (CL) firm, dark brown - becomes brown in color below a depth of about 2-1/2 ft	5		17	
5	**LEAN CLAY with SAND (CL)** stiff, brown	10			
	- with calcareous nodules below a depth of about 7 ft	12		22	
		8			
10	Boring terminated at a depth of about 10 ft.				
15					
20					
25					

NOTES:
Upon completion of the drilling operations, the boring was observed dry.



NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

DEPTH DRILLED: 10.0 ft
DATE DRILLED: 12/12/2017
DEPTH TO WATER: DRY
DATE MEASURED: 12/12/2017
PROJ. No.: AMA17-052-00
FIGURE: 12

LOG OF BORING NO. B-12

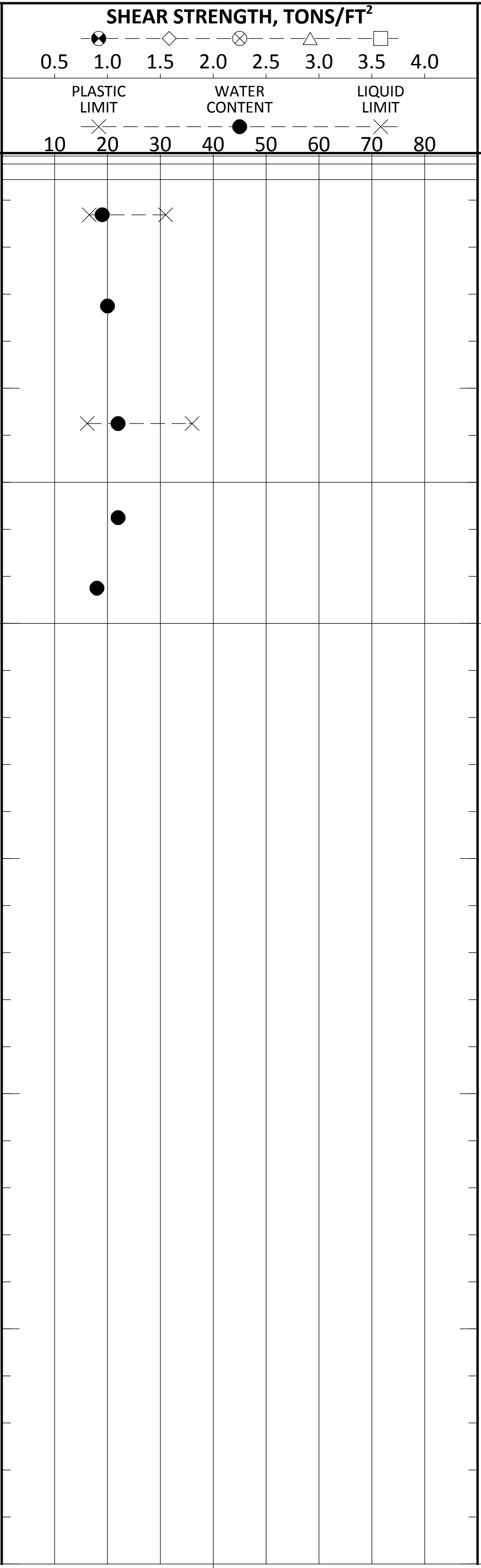
Proposed High School Fields & Running Track Additions
La Villa ISD - 100 W. Highway 107
La Villa, Hidalgo County, Texas

TBPE Firm Registration No. F-3257

DRILLING METHOD: Straight Flight Auger

LOCATION: See Figure 1

DEPTH, FT	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	PLASTICITY INDEX	% -200
	SURFACE ELEVATION: Ex. Grade ft				
	Polyurethane Surfacing - 3/4 in.				
	Hot-Mix Asphaltic Concrete (HMAC) - 2 in.				
	Flexible Base Material (FBM) - 4 in.	8		14	
	SANDY LEAN CLAY (CL) firm, dark brown - becomes brown in color below a depth of about 2-1/2 ft	5			60
5		6		20	
	LEAN CLAY with SAND (CL) stiff, brown, with calcareous nodules	12			
		10			
10	Boring terminated at a depth of about 10 ft.				
	NOTES: Upon completion of the drilling operations, the boring was observed dry.				
15					
20					
25					



NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

DEPTH DRILLED: 10.0 ft
DATE DRILLED: 12/12/2017
DEPTH TO WATER: DRY
DATE MEASURED: 12/12/2017
PROJ. No.: AMA17-052-00
FIGURE: 13

LOG OF BORING NO. B-13

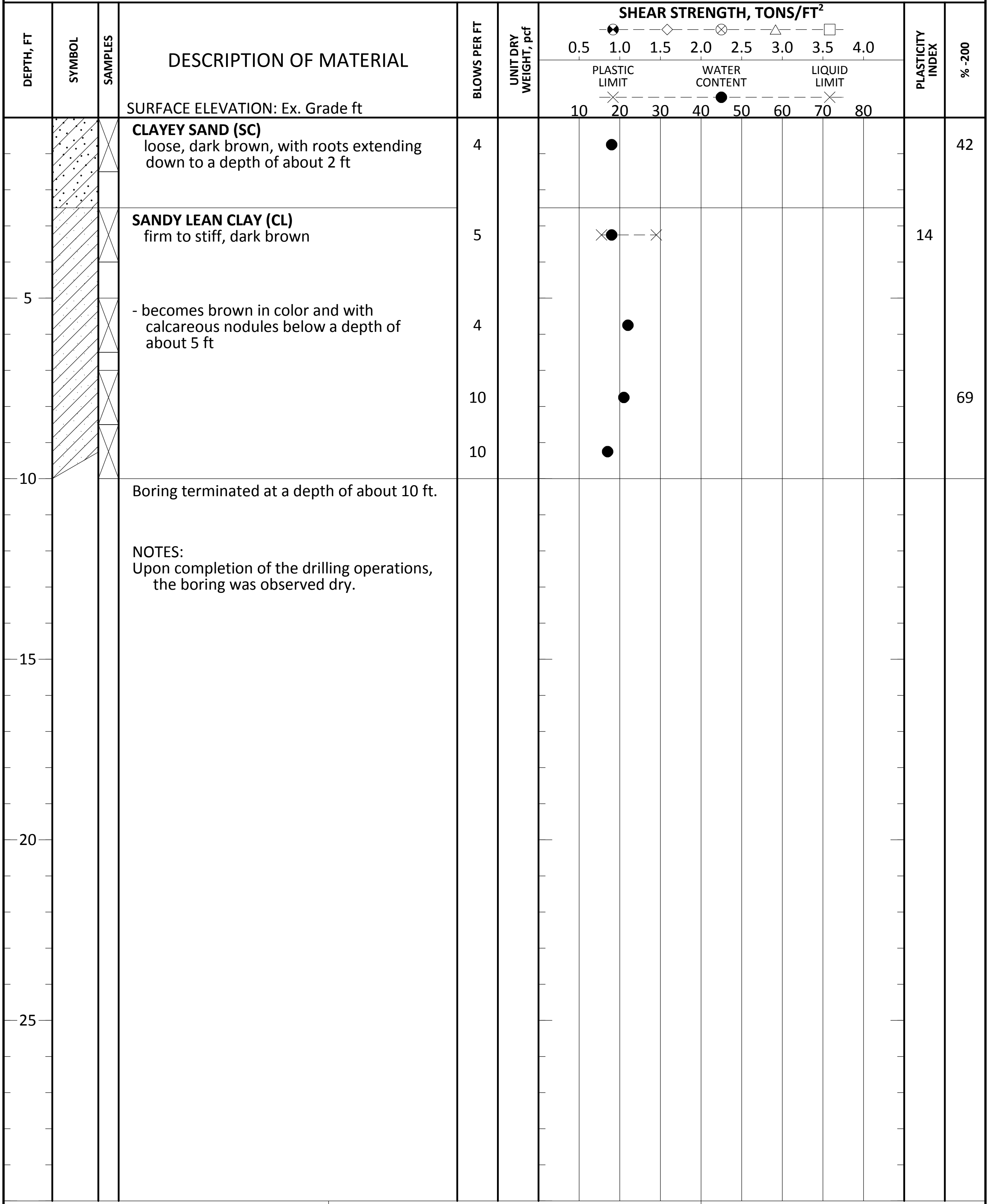
Proposed High School Fields & Running Track Additions
La Villa ISD - 100 W. Highway 107
La Villa, Hidalgo County, Texas

RABA KISTNER
TBPE Firm Registration No. F-3257

DRILLING METHOD: Straight Flight Auger

LOCATION: See Figure 1

SURFACE ELEVATION: Ex. Grade ft



DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	PLASTICITY INDEX	% -200
CLAYEY SAND (SC) loose, dark brown, with roots extending down to a depth of about 2 ft	4			42
SANDY LEAN CLAY (CL) firm to stiff, dark brown	5		14	
- becomes brown in color and with calcareous nodules below a depth of about 5 ft	4			
	10			69
	10			

Boring terminated at a depth of about 10 ft.

NOTES:
Upon completion of the drilling operations, the boring was observed dry.

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

DEPTH DRILLED: 10.0 ft
DATE DRILLED: 12/12/2017
DEPTH TO WATER: DRY
DATE MEASURED: 12/12/2017
PROJ. No.: AMA17-052-00
FIGURE: 14

LOG OF BORING NO. B-14

Proposed High School Fields & Running Track Additions
La Villa ISD - 100 W. Highway 107
La Villa, Hidalgo County, Texas

TBPE Firm Registration No. F-3257

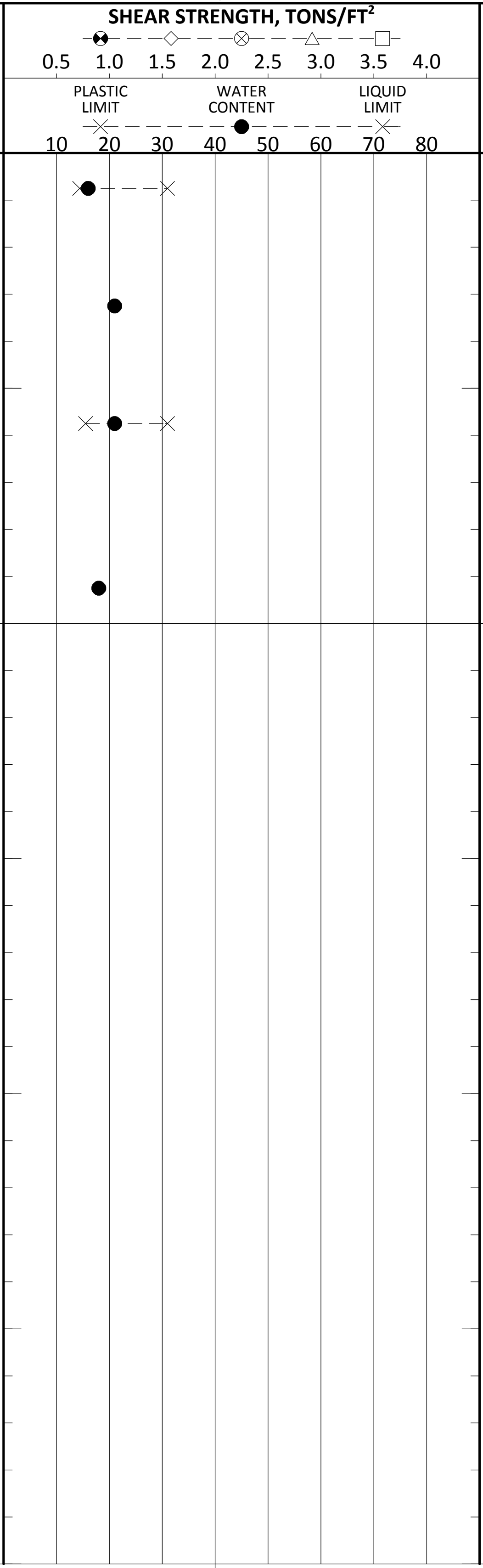
DRILLING METHOD: Straight Flight Auger

LOCATION: See Figure 1

SURFACE ELEVATION: Ex. Grade ft

DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	PLASTICITY INDEX	% -200
SANDY LEAN CLAY (CL) firm to stiff, dark brown, with roots extending down to a depth of about 2 f t	5		17	
	6			54
- becomes brown in color below a depth of about 5 ft	8		16	
	8			
	12			
Boring terminated at a depth of about 10 ft.				

NOTES:
Upon completion of the drilling operations, the boring was observed dry.



NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

DEPTH DRILLED: 10.0 ft
DATE DRILLED: 12/12/2017
DEPTH TO WATER: DRY
DATE MEASURED: 12/12/2017
PROJ. No.: AMA17-052-00
FIGURE: 15

KEY TO TERMS AND SYMBOLS

MATERIAL TYPES

SOIL TERMS

- CALCAREOUS
- CALICHE
- CLAY
- CLAYEY
- GRAVEL
- GRAVELLY
- PEAT
- SAND
- SANDY
- SILT
- SILTY
- FILL

ROCK TERMS

- CHALK
- CLAYSTONE
- CLAY-SHALE
- CONGLOMERATE
- DOLOMITE
- IGNEOUS
- LIMESTONE
- MARL
- METAMORPHIC
- SANDSTONE
- SHALE
- SILTSTONE

OTHER

- ■ ASPHALT
- BASE
- CONCRETE/CEMENT
- BRICKS / PAVERS
- WASTE
- □ NO INFORMATION

WELL CONSTRUCTION AND PLUGGING MATERIALS

- BLANK PIPE
- SCREEN
- BENTONITE
- CEMENT GROUT
- BENTONITE & CUTTINGS
- CONCRETE/CEMENT
- CUTTINGS
- GRAVEL
- SAND
- VOLCLAY

SAMPLE TYPES

- AIR ROTARY
- GRAB SAMPLE
- CORE
- GEOPROBE SAMPLER
- ROTOSONIC -DAMAGED
- MUD ROTARY
- NO RECOVERY
- NX CORE
- PITCHER
- ROTOSONIC -INTACT
- ■ SHELBY TUBE
- SPLIT BARREL
- ⊠ SPLIT SPOON
- TEXAS CONE PENETROMETER
- DISTURBED

STRENGTH TEST TYPES

- ⧓ POCKET PENETROMETER
- ◇ TORVANE
- ⊗ UNCONFINED COMPRESSION
- △ TRIAXIAL COMPRESSION UNCONSOLIDATED-UNDRAINED
- □ TRIAXIAL COMPRESSION CONSOLIDATED-UNDRAINED

NOTE: VALUES SYMBOLIZED ON BORING LOGS REPRESENT SHEAR STRENGTHS UNLESS OTHERWISE NOTED

PROJECT NO. AMA17-052-00

FIGURE 16a

KEY TO TERMS AND SYMBOLS (CONT'D)

TERMINOLOGY

Terms used in this report to describe soils with regard to their consistency or conditions are in general accordance with the discussion presented in Article 45 of SOILS MECHANICS IN ENGINEERING PRACTICE, Terzaghi and Peck, John Wiley & Sons, Inc., 1967, using the most reliable information available from the field and laboratory investigations. Terms used for describing soils according to their texture or grain size distribution are in accordance with the UNIFIED SOIL CLASSIFICATION SYSTEM, as described in American Society for Testing and Materials D2487-06 and D2488-00, Volume 04.08, Soil and Rock; Dimension Stone; Geosynthetics; 2005.

The depths shown on the boring logs are not exact, and have been estimated to the nearest half-foot. Depth measurements may be presented in a manner that implies greater precision in depth measurement, i.e 6.71 meters. The reader should understand and interpret this information only within the stated half-foot tolerance on depth measurements.

RELATIVE DENSITY

Penetration Resistance Blows per ft	Relative Density
0 - 4	Very Loose
4 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
> 50	Very Dense

COHESIVE STRENGTH

Resistance Blows per ft	Consistency	Cohesion TSF
0 - 2	Very Soft	0 - 0.125
2 - 4	Soft	0.125 - 0.25
4 - 8	Firm	0.25 - 0.5
8 - 15	Stiff	0.5 - 1.0
15 - 30	Very Stiff	1.0 - 2.0
> 30	Hard	> 2.0

PLASTICITY

Plasticity Index	Degree of Plasticity
0 - 5	None
5 - 10	Low
10 - 20	Moderate
20 - 40	Plastic
> 40	Highly Plastic

ABBREVIATIONS

B = Benzene
T = Toluene
E = Ethylbenzene
X = Total Xylenes
BTEX = Total BTEX
TPH = Total Petroleum Hydrocarbons
ND = Not Detected
NA = Not Analyzed
NR = Not Recorded/No Recovery
OVA = Organic Vapor Analyzer
ppm = Parts Per Million

Qam, Qas, Qal = Quaternary Alluvium
Qat = Low Terrace Deposits
Qbc = Beaumont Formation
Qt = Fluviatile Terrace Deposits
Qao = Seymour Formation
Qle = Leona Formation
Q-Tu = Uvalde Gravel
Ewi = Wilcox Formation
Emi = Midway Group
Mc = Catahoula Formation
El = Laredo Formation
Kknm = Navarro Group and Marlbrook Marl
Kpg = Pecan Gap Chalk
Kau = Austin Chalk

Kef = Eagle Ford Shale
Kbu = Buda Limestone
Kdr = Del Rio Clay
Kft = Fort Terrett Member
Kgt = Georgetown Formation
Kep = Person Formation
Kek = Kainer Formation
Kes = Escondido Formation
Kew = Walnut Formation
Kgr = Glen Rose Formation
Kgru = Upper Glen Rose Formation
Kgrl = Lower Glen Rose Formation
Kh = Hensell Sand

KEY TO TERMS AND SYMBOLS (CONT'D)

TERMINOLOGY

SOIL STRUCTURE

Slickensided	Having planes of weakness that appear slick and glossy.
Fissured	Containing shrinkage or relief cracks, often filled with fine sand or silt; usually more or less vertical.
Pocket	Inclusion of material of different texture that is smaller than the diameter of the sample.
Parting	Inclusion less than 1/8 inch thick extending through the sample.
Seam	Inclusion 1/8 inch to 3 inches thick extending through the sample.
Layer	Inclusion greater than 3 inches thick extending through the sample.
Laminated	Soil sample composed of alternating partings or seams of different soil type.
Interlayered	Soil sample composed of alternating layers of different soil type.
Intermixed	Soil sample composed of pockets of different soil type and layered or laminated structure is not evident.
Calcareous	Having appreciable quantities of carbonate.
Carbonate	Having more than 50% carbonate content.

SAMPLING METHODS

RELATIVELY UNDISTURBED SAMPLING

Cohesive soil samples are to be collected using three-inch thin-walled tubes in general accordance with the Standard Practice for Thin-Walled Tube Sampling of Soils (ASTM D1587) and granular soil samples are to be collected using two-inch split-barrel samplers in general accordance with the Standard Method for Penetration Test and Split-Barrel Sampling of Soils (ASTM D1586). Cohesive soil samples may be extruded on-site when appropriate handling and storage techniques maintain sample integrity and moisture content.

STANDARD PENETRATION TEST (SPT)

A 2-in.-OD, 1-3/8-in.-ID split spoon sampler is driven 1.5 ft into undisturbed soil with a 140-pound hammer free falling 30 in. After the sampler is seated 6 in. into undisturbed soil, the number of blows required to drive the sampler the last 12 in. is the Standard Penetration Resistance or "N" value, which is recorded as blows per foot as described below.

SPLIT-BARREL SAMPLER DRIVING RECORD

Blows Per Foot	Description
25	25 blows drove sampler 12 inches, after initial 6 inches of seating.
50/7"	50 blows drove sampler 7 inches, after initial 6 inches of seating.
Ref/3"	50 blows drove sampler 3 inches during initial 6-inch seating interval.

NOTE: To avoid damage to sampling tools, driving is limited to 50 blows during or after seating interval.

RESULTS OF SOIL SAMPLE ANALYSES

PROJECT NAME: Proposed High School Fields & Running Track Additions
La Villa ISD - 100 W. Highway 107
La Villa, Hidalgo County, Texas

FILE NAME: AMA17-052-00.GPJ 1/2/2018

Boring No.	Sample Depth (ft)	Blows per ft	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	USCS	Dry Unit Weight (pcf)	% -200 Sieve	Shear Strength (tsf)	Strength Test
B-1	0.0 to 1.5	6	16	37	19	18	CL				
	2.5 to 4.0	7	18						65		
	5.0 to 6.5	10	17	38	15	23	CL				
	7.5 to 9.0	16	19								
	10.0 to 11.5	17	17						61		
	15.0 to 16.5	14	19								
	18.5 to 20.0	14	22								
B-2	0.0 to 1.5	7	12						49		
	2.5 to 4.0	5	20	33	17	16	CL				
	5.0 to 6.5	8	21						70		
	7.5 to 9.0	8	18	41	15	26	CL				
	10.0 to 11.5	8	18								
	15.0 to 16.5	13	17								
	18.5 to 20.0	21	18								
B-3	0.0 to 1.5	5	18	34	16	18	CL				
	2.5 to 4.0	7	17						68		
	5.0 to 6.5	7	18	32	14	18	CL				
	7.0 to 8.5	15	18								
	8.5 to 10.0	11	18								
B-4	0.0 to 1.5	4	17						44		
	2.5 to 4.0	5	17	30	14	16	SC				
	5.0 to 6.5	10	17						70		
	7.0 to 8.5	11	19								
	8.5 to 10.0	13	19								
B-5	0.0 to 1.5	5	17	48	22	26	CL				
	2.5 to 4.0	6	17						62		
	5.0 to 6.5	12	16	37	15	22	CL				
	7.0 to 8.5	11	20								
	8.5 to 10.0	13	20								
B-6	0.0 to 1.5	5	16						53		
	2.5 to 4.0	6	20	33	16	17	CL				
	5.0 to 6.5	7	17								
	7.0 to 8.5	11	16								
	8.5 to 10.0	12	16								
B-7	0.0 to 1.5	6	13	39	20	19	CL				
	2.5 to 4.0	7	20						69		
	5.0 to 6.5	8	20	29	14	15	CL				
	7.0 to 8.5	13	17								
	8.5 to 10.0	12	17								

PP = Pocket Penetrometer TV = Torvane UC = Unconfined Compression FV = Field Vane UU = Unconsolidated Undrained Triaxial

CU = Consolidated Undrained Triaxial CNBD = Cound Not Be Determined NP = Non-Plastic

RESULTS OF SOIL SAMPLE ANALYSES

PROJECT NAME: Proposed High School Fields & Running Track Additions
La Villa ISD - 100 W. Highway 107
La Villa, Hidalgo County, Texas

FILE NAME: AMA17-052-00.GPJ 1/2/2018

Boring No.	Sample Depth (ft)	Blows per ft	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	USCS	Dry Unit Weight (pcf)	% -200 Sieve	Shear Strength (tsf)	Strength Test
B-8	0.0 to 1.5	5	14	32	16	16	CL				
	2.5 to 4.0	4	19						56		
	5.0 to 6.5	6	16								
	7.0 to 8.5	11	16	42	15	27	CL				
	8.5 to 10.0	13	16								
B-9	0.5 to 2.0	6	19						54		
	2.5 to 4.0	5	21	29	15	14	CL				
	5.0 to 6.5	6	19								
	7.0 to 8.5	12	18	43	16	27	CL				
	8.5 to 10.0	11	18								
B-10	0.9 to 2.4	10	16	30	15	15	CL				
	2.5 to 4.0	4	23						61		
	5.0 to 6.5	6	19	40	17	23	CL				
	7.0 to 8.5	10	19								
	8.5 to 10.0	10	22								
B-11	0.7 to 2.2	4	19						51		
	2.5 to 4.0	5	21	35	18	17	CL				
	5.0 to 6.5	10	21								
	7.0 to 8.5	12	19	38	16	22	CL				
	8.5 to 10.0	8	17								
B-12	0.6 to 2.1	8	19	31	17	14	CL				
	2.5 to 4.0	5	20						60		
	5.0 to 6.5	6	22	36	16	20	CL				
	7.0 to 8.5	12	22								
	8.5 to 10.0	10	18								
B-13	0.0 to 1.5	4	18						42		
	2.5 to 4.0	5	18	29	15	14	CL				
	5.0 to 6.5	4	22								
	7.0 to 8.5	10	21						69		
	8.5 to 10.0	10	17								
B-14	0.0 to 1.5	5	16	31	14	17	CL				
	2.5 to 4.0	6	21						54		
	5.0 to 6.5	8	21	31	15	16	CL				
	7.0 to 8.5	8									
	8.5 to 10.0	12	18								

PP = Pocket Penetrometer TV = Torvane UC = Unconfined Compression FV = Field Vane UU = Unconsolidated Undrained Triaxial

CU = Consolidated Undrained Triaxial CNBD = Cound Not Be Determined NP = Non-Plastic

PROJECT NO. AMA17-052-00

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical- engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply this report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by*: the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold- prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical- engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you GBC-Member geotechnical engineer for more information.

GBC GEOTECHNICAL BUSINESS COUNCIL
of the Geoprofessional Business Association

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RABAKISTNER

GEOTECHNICAL ENGINEERING STUDY

FOR

PROPOSED LA VILLA ISD HIGH SCHOOL AND LA VILLA ISD JOSE BERNABE MUÑOZ ELEMENTARY SCHOOL CAMPUSES PAVEMENT REHABILITATION PROJECTS

LA VILLA, HIDALGO COUNTY, TEXAS

RABA KISTNER
Building Better Tomorrows
800 East Hackberry
McAllen, TX 78501
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Project No. AMA18-057-00
January 8, 2019

Dr. Norma L. Salaiz, Interim Superintendent
La Villa Independent School District (La Villa ISD)
P.O. Box 9
La Villa, Texas 78562

RE: Geotechnical Engineering Study
Proposed Pavement Rehabilitation Projects at the
La Villa ISD High School and
La Villa ISD Jose Bernabe Muñoz Elementary School Campuses
La Villa, Hidalgo County, Texas

Dear Dr. Salaiz:

RABA KISTNER Consultants, Inc. (RKCI) is pleased to submit the report of our Geotechnical Engineering Study for the above-referenced project. This study was performed in accordance with **RKCI** Proposal No. PMA18-073-00, dated October 23, 2018. Written authorization to proceed with this study was received by our office via electronic-mail attachment on Monday, December 3, 2018. The purpose of this study was to determine subsurface conditions at the subject sites, and to provide pavement design and construction guidelines for the existing pavement areas to be rehabilitated.

The following report contains our pavement design recommendations and considerations based on our current understanding of the projected traffic information and expected service life. If any of these parameters changes, there may be alternatives for value engineering of the pavement systems, and **RKCI** recommends that a meeting be held with the La Villa ISD and the design team to evaluate these alternatives.

We appreciate the opportunity to be of professional service to you on this project. Should you have any questions about the information presented in this report, please call. We look forward to assisting La Villa ISD during the construction of the project by conducting the construction materials engineering and testing services (quality assurance program).

Very truly yours,

RABA KISTNER CONSULTANTS, INC.

STATE OF TEXAS
KATRIN M. LEONARD
95810
LICENSED
PROFESSIONAL ENGINEER

Jan 8, 2019

Saul Cruz
Graduate Engineer

Katrin M. Leonard, P.E.
Associate

SC/KML

Attachments

Copies Submitted: Above (1)
ROFA Architects, Inc. (1)

GEOTECHNICAL ENGINEERING STUDY

For

PROPOSED LA VILLA ISD HIGH SCHOOL AND LA VILLA ISD JOSE BERNABE MUÑOZ ELEMENTARY SCHOOL CAMPUSES
LA VILLA, HIDALGO COUNTY, TEXAS

Prepared for

LA VILLA ISD
La Villa, Texas

Prepared by

RABA KISTNER CONSULTANTS, INC.
McAllen, Texas

PROJECT NO. AMA18-057-00
January 8, 2019

RABAKISTNER

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INTRODUCTION

RABA KISTNER Consultants, Inc. (RKCI) has completed the authorized subsurface exploration and pavement recommendations for the existing pavement areas to be rehabilitated within the existing La Villa Independent School District (La Villa ISD) High School and La Villa ISD Jose Bernabe Muñoz Elementary School campuses in La Villa, Hidalgo County, Texas. This report briefly describes the procedures utilized during this study and presents our findings, as well as pavement design and construction guidelines for the existing pavement areas to be rehabilitated.

PROJECT DESCRIPTION

We understand that the project will consist of the design and reconstruction of the asphalt-paved parking lot and driveway areas within the existing La Villa ISD High School and La Villa ISD Jose Bernabe Muñoz Elementary School campuses. The existing La Villa ISD school campuses are situated at the following addresses:

- La Villa ISD High School campus: 200 W. Highway 107 in La Villa, Hidalgo County, Texas
- La Villa ISD Jose Bernabe Muñoz Elementary School campus: 810 Cottonwood Avenue in La Villa, Hidalgo County, Texas

We understand that the new pavement systems are anticipated to consist of either flexible (asphalt) or rigid (concrete) pavement systems.

LIMITATIONS

This engineering report has been prepared in accordance with accepted Geotechnical Engineering practices in the region of South Texas for the use La Villa ISD (CLIENT) and its representatives for design purposes. This report may not contain sufficient information for purposes of other parties or other uses and is not intended for use in determining construction means and methods.

The recommendations submitted in this report are based on the data obtained from five borings drilled within the subject sites, our understanding of the project information provided to us by the CLIENT, and the assumption that site grading will result in only minor changes in the topography existing at the time of our study. If the project information described in this report is incorrect, is altered, or if new information is available, we should be retained to review and modify our recommendations.

This report may not reflect the actual variations of the subsurface conditions within the subject sites. The nature and extent of variations across the subject sites may not become evident until construction commences. The construction process itself may also alter subsurface conditions. If variations appear evident at the time of construction, it may be necessary to reevaluate our recommendations after performing on-site observations and tests to establish the engineering impact of the variations.

The scope of our Geotechnical Engineering Study does not include an environmental assessment of the air, soil, rock, or water conditions either on or adjacent to the subject sites. No environmental opinions are presented in this report. **RKCI**’s scope of work does not include the investigation, detection, or design related to the prevention of any biological pollutants. The term “biological pollutants” includes, but is not limited to, mold, fungi, spores, bacteria, and viruses, and the byproduct of any such biological organisms.

If final grade elevations are significantly different from the grades existing at the time of our study (more than plus or minus 1 ft), our office should be informed about these changes. If needed and/or desired, we will reexamine our analyses and make supplemental recommendations.

BORINGS AND LABORATORY TESTS

The subsurface conditions within the existing pavement areas to be rehabilitated were evaluated by drilling five borings down to a maximum depth of about 10 ft each below the pavement surface elevations existing at the time of our study. The borings (designated as “P-”) were drilled on December 7, 2018, at the locations shown on the Boring Location Maps, Figure 1A and 1B.

The boring locations are approximate and were located in the field by an **RKCI** representative based on Sheet Nos. AS1.1 and AS1.4 of the project’s plans titled “La Villa High School & Elementary – Site Improvements,” dated September 9, 2018, and provided to us Mr. Humberto Rodriguez, AIA, Principal, with Rike-Ogden-Figueroa-Allex (ROFA) Architects, Inc., the project’s architectural firm via electronic-mail attachment on Monday, October 22, 2018. The borings were drilled in utilizing straight flight augers and were backfilled with the auger cuttings following completion of the drilling operations. The upper 2 inches of each boring drilling was filled with cold-mix asphalt and flushed with the adjacent asphalt pavement surface level. During the drilling activities, the following Split-Spoon (with Standard Penetration Test, SPT) samples were collected.

The SPT samples were obtained in accordance with accepted standard practices and the penetration test results are presented as “blows per foot” on the boring logs. Representative portions of the samples were sealed in containers to reduce moisture loss, labeled, packaged, and transported to our laboratory for subsequent testing and classification.

In the laboratory, each sample was evaluated and visually classified by a member of our Geotechnical Engineering staff in general accordance with the Unified Soil Classification System (USCS). The geotechnical engineering properties of the strata were evaluated by the following laboratory tests: natural moisture content, Atterberg limits, and percent passing a No. 200 sieve determinations.

The results of the field and laboratory tests are presented in graphical or numerical form on the boring logs illustrated on Figures 2 through 6. A key to the classification of terms and symbols used on the logs is presented on Figure 7. The results of the laboratory and field testing are also tabulated on Figure 8 for ease of reference.

SPT results are noted as “blows per ft” on the boring logs and on Figure 8, where “blows per ft” refers to the number of blows by a falling 140-lb (pound) hammer required for 1 ft of penetration into the subsurface materials.

Samples will be retained in our laboratory for 30 days after submittal of this report. Other arrangements may be provided at the written request of the CLIENT.

GENERAL SITE CONDITIONS

SITE DESCRIPTION

The existing La Villa ISD school campuses are situated at the following addresses:

- La Villa ISD High School campus: 200 W. Highway 107 in La Villa, Hidalgo County, Texas
- La Villa ISD Jose Bernabe Muñoz Elementary School campus: 810 Cottonwood Avenue in La Villa, Hidalgo County, Texas.

At the time of our field operations, the subject sites can generally be described as existing asphalt-paved, parking lots and driveway areas. The topography is relatively flat with a visually estimated vertical relief of less than 3 ft. Surface drainage is visually estimated to be poor. Further, the existing parking lots and driveway areas to be rehabilitated exhibited the following distresses: moderate to high, raveling; moderate to high, shoving; low to moderate, longitudinal cracking; and moderate, patching. Please refer to the following photographs of the distress within the existing parking lots and driveway areas to be rehabilitated:

Photographs 1 and 2: Pavement Distresses Within the Existing Driveways of the La Villa ISD High School Campus

Photographs 3 and 4: Pavement Distresses Within the Existing Driveways of the La Villa ISD J. B. Muñoz E.S. Campus

SITE GEOLOGY

A cursory review of the Geologic Atlas of Texas (McAllen-Brownsville Sheet, dated 1976), published by the Bureau of Economic Geology at the University of Texas at Austin, indicates that the subject sites appear to be located within the Windblown deposits consisting of stabilized sand dune deposits of the Quaternary epoch (Holocene period).

According to the Soil Survey of Hidalgo County, Texas, published by the United States Department of Agriculture - Soil Conservation Service, in cooperation with the Texas Agricultural Experiment Station, the project sites appear to be located within the Raymondville Mercedes soil association consisting of deep, slowly and very slowly, permeable soils that typically have a gray clay loam or sandy clay loam surface layer. The corresponding soil symbol within the La Villa ISD High School campus appears to be 52, Raymondville clay loam; and 31, Hidalgo-Urban land complex and 48, Racombes sandy clay loam within La Villa ISD Jose Bernabe Muñoz Elementary School campus.

STRATIGRAPHY

It should be noted that the Borings P-1 through P-5 were drilled on existing asphalt-paved areas. The existing HMAC thickness was measured to range from about 1 to 4 inches, while the FBM thickness underlying the HMAC was measured to range from about 6 to 10 inches. The subgrade soils encountered underneath the FBM material were introduced to phenolphthalein solution, and the presence of lime was not detected in the subgrade soils obtained from any of the borings conducted within these sites.

On the basis of the borings, the subsurface stratigraphy at these sites can be described by a single generalized stratum with similar physical and engineering characteristics. This stratum consists of dark brown to brown to light grayish-brown, soft to firm, sandy lean clay soils. This layer was noted in the borings from the pavement surface elevations existing at the time of our drilling operations down to at least the termination depth of the borings. Moisture contents were measured to range from about 12 to 24 percent. This stratum is classified as moderately plastic, with measured plasticity indices ranging from 12 to 22 percent. Two percent passing a No. 200 sieve test demonstrate percent fines of about 52 and 56 percent. SPT N-values ranging from 2 blows to 12 blows per foot of penetration were measured for this stratum. These soils are classified as CL soils in general accordance with the USCS.

GROUNDWATER

Groundwater was not observed in the borings either during or immediately upon completion of the field drilling activities. The boreholes were left open for the duration of the field exploration phase to allow monitoring of water levels, and remained dry. However, it is possible for groundwater to exist beneath these sites on a transient basis following periods of precipitation. Fluctuations in groundwater levels occur due to variations in rainfall and surface water run-off. The construction process itself may also cause variations in the groundwater level.

Based on the findings in the borings and on our experience in this region, we believe that any groundwater seepage encountered during pavement rehabilitation site earthwork activities may be controlled using temporary earthen berm and conventional sump-and-pump dewatering methods.

PAVEMENT RECOMMENDATIONS

Recommendations for both flexible and rigid pavements for a 20-year design period are presented in this report. The CLIENT may select either pavement type depending on the performance criteria established for the proposed pavement rehabilitation project. In general, flexible pavement systems have a lower initial construction cost as compared to rigid pavements. However, maintenance requirements over the life of the pavement are typically much greater for flexible pavements. This typically requires regularly scheduled observation and repair, as well as overlays and/or other pavement rehabilitation at approximately one-half to two-thirds of the design life. Rigid pavements are generally more "forgiving", and therefore tend to be more durable and require less maintenance after construction.

For either pavement type, drainage conditions will have a significant impact on long-term performance, particularly where permeable base materials are utilized in the pavement section. Drainage considerations are discussed in more detail in a subsequent section of this report.

SUBGRADE CONDITIONS

A single generalized subgrade condition has been assumed for these sites. The predominant subgrade soils used in developing the pavement sections for this project are the moderately plastic, subgrade clay soils. On the basis of our past experience with similar subsurface conditions in this area, a design California Bearing Ratio (CBR) value of 4 was assigned to evaluate the pavement components.

DESIGN INFORMATION

The following recommendations for the pavement sections are based on our past experience with similar subgrade soils; an assumed light, moderate, and heavy vehicular traffic loading for the proposed pavement areas; an assumed CBR test value for the subgrade soils; and design procedures published by the American Association of State Highway and Transportation Officials (AASHTO). The pavement design and analyses performed are based directly on the 1993 and 1997 editions of the “Guide for the Design of Pavement Structure” by AASHTO.

The pavement systems for the proposed pavement areas can be divided into three general areas, each with different loading conditions and performance criteria. These areas are:

- Automobile drives and parking lots (light vehicular traffic);
- Driveways, bus lanes, and drive-in lanes (moderate vehicular traffic); and
- Driveways, bus lanes, and drive-in lanes (heavy vehicular traffic).

For a 20-year design period, Equivalent Single Axle Loads (ESAL's) were estimated for an assumed traffic loading of 1 tractor-trailer truck per day for the light vehicular traffic areas. This corresponds to about 17,500 ESAL's. For the moderate vehicular traffic areas, ESAL's were estimated for an assumed moderate-duty traffic loading of five school buses, twice per day, five days a week for a 20-year design period. This corresponds to about 83,500 ESAL's. For the heavy vehicular traffic areas, ESAL's were estimated for an assumed moderate-duty traffic loading of ten school buses, twice per day, five days a week for a 20-year design period. This corresponds to about 166,500 ESAL's It is recommended that the project Civil Engineer review the above-mentioned levels of traffic and design period to ensure that they are appropriate for the intended use of the proposed pavement areas.

FLEXIBLE PAVEMENTS

The following equivalent flexible pavement sections are available for these sites:

Pavement Section	PS* (in)	FBM (in.)	HMAC (in.)
Automobile Drives and Parking Lots (Light Duty)	12	10	2
Driveways, Bus Lanes, and Drive-in Lanes (Moderate Duty)	12	12	2-1/2
Driveways, Bus Lanes, and Drive-in Lanes (Heavy Duty)	12	14	3

***A layer of MIRAFI® HP 270 woven geotextile or approved equivalent should be placed at the interface of the prepared subgrade and the flexible base material section. The MIRAFI® HP 270 woven geotextile or approved equivalent must be installed in accordance with the manufacturer’s specifications and recommendations.**

Where: PS =Prepared Subgrade
FBM = Flexible Base Material
HMAC = Hot-Mix Asphaltic Concrete Surface Course

The existing asphaltic concrete surface and flexible base material courses within the study area may be reused as flexible base materials, provided that these existing materials are processed and treated in such a way as to comply with the requirements of the *Flexible Base Course* subsection of the *Pavement Reconstruction Considerations* section of this report. Care should be exercised as to not contaminate the existing HMAC and FBM materials with the underlying subgrade clay soils.

Please note that no construction equipment traffic should be allowed directly over the geotextile. Direct equipment traffic will cause irreversible damage to these materials. Construction traffic should only be allowed after a sufficiently thick layer of flexible base material, as applicable, has been laid over the respective geosynthetic product. Please refer to the manufacturer's construction recommendations for the proper installation and proper utility cut repairs of the geosynthetic materials. Please refer to Figure 9 of the attachments for the MIRAFI® HP 270 woven geotextile mechanical properties.

Garbage Dumpsters

Where flexible pavements are constructed at any site, it is recommended that reinforced concrete pads be provided in front of and beneath trash receptacles. The dumpster trucks should be parked on the concrete pads when the receptacles are lifted. It is suggested that such pads also be provided in drives where the dumpster trucks make turns with small radii to access the receptacles. The concrete pads at these sites should be a minimum of 7 inches thick and reinforced with conventional steel reinforcing bars, and underlain by 8 inches of prepared subgrade.

RIGID PAVEMENTS

The rigid pavement sections below are available for these sites:

Pavement Area	Prepared Subgrade (in.)	Flexible Base Material (in.)	Reinforced Concrete (in.)
Automobile Drives and Parking Lots (Light Duty)	12	4	5-1/2
Driveways, Bus Lanes, and Drive-in Lanes (Moderate Duty)	12	4	6
Driveways, Bus Lanes, and Drive-in Lanes (Heavy Duty)	12	4	7

We recommend that the concrete pavements be reinforced with welded wire mats or bar mats. As a minimum, the welded wire mats should be 6 x 6 in., W4.0 x W4.0, and the bar mats should be No. 3 reinforcing bars spaced 18 in. on center in both directions. The concrete reinforcing should be placed approximately 1/3 the slab thickness below the surface of the slab, but not less than 2 in. The reinforcing should not extend across expansion joints.

If possible, the pavements should develop a minimum slope of 0.015 ft/ft to provide surface drainage. Reinforced concrete pavements should cure a minimum of 7 days before allowing any traffic.

PAVEMENT RECONSTRUCTION CONSIDERATIONS

SUBGRADE PREPARATION

Areas to support pavements should be stripped of all existing pavement constituents, all vegetation and organic matter extending a minimum of 2 ft beyond the pavement perimeters. Upon completion of site stripping activities, the exposed subgrade should be thoroughly proofrolled in order to locate and densify any weak, compressible zones. A minimum of 5 passes of a fully-loaded dump truck or a similar heavily-loaded piece of construction equipment should be used for planning purposes. Proofrolling operations should be observed by the Geotechnical Engineer or his representative to document subgrade condition and preparation. Weak or soft areas identified during proofrolling should be removed and replaced with a suitable, compacted select fill in accordance with the recommendations presented under the *Select Fill* subsection of this section of the report. Proofrolling operations and any excavation/backfill activities should be observed by **RKCI** representatives to document subgrade condition and preparation.

Upon completion of the proofrolling operations and just prior to flexible base placement, the exposed subgrade should be moisture-conditioned by scarifying to a minimum depth of 6 in. and recompacting to a minimum of 98 percent of the maximum dry density as determined from the American Society for Testing and Materials (ASTM) D698, Compaction Test. The moisture content of the subgrade should be maintained within the range of optimum moisture content to three percentage points above the optimum moisture content until permanently covered.

DRAINAGE CONSIDERATIONS

As with any soil-supported structure, the satisfactory performance of a pavement system is contingent on the provision of adequate surface and subsurface drainage. Insufficient drainage which allows saturation of the pavement subgrade and/or the supporting granular pavement materials will greatly reduce the performance and service life of the pavement systems.

Surface and subsurface drainage considerations crucial to the performance of pavements at these sites include (but are not limited to) the following:

1) Any known natural or man-made subsurface seepage at the sites which may occur at sufficiently shallow depths as to influence moisture contents within the subgrades should be intercepted by drainage ditches or below grade French drains.
2) Final site grading should eliminate isolated depressions adjacent to curbs, which may allow surface water to pond and infiltrate into the underlying soils. Curbs should completely penetrate flexible base materials and should be installed to sufficient depth to reduce infiltration of water beneath the curbs.
3) Pavement surfaces should be maintained to help minimize surface ponding and to provide rapid sealing of any developing cracks. These measures will help reduce infiltration of surface water downward through the pavement section.

ON-SITE CLAY FILL

The pavement recommendations presented in this report were prepared assuming that on-site soils will be used for site grading in proposed pavement areas. If used, we recommend that on-site soils be placed in loose lifts not exceeding 8 in. in thickness and compacted to a minimum of 98 percent of the maximum dry density as determined from ASTM D698. The moisture content of the subgrade should be maintained within the range of two percentage points below the optimum moisture content to two percentage points above the optimum moisture content until permanently covered. We recommend that fill materials be free of roots and other organic or degradable material. We also recommend that the maximum particle size not exceed 4 in. or one half the lift thickness, whichever is smaller.

SELECT FILL

If and where implemented, materials used as select fill for final site grading preferably should be crushed stone or gravel aggregate. We recommend that materials specified for use as select fill meet the TxDOT 2014 Standard Specification for Construction and Maintenance of Highways, Streets, and Bridges, Item 247, Flexible Base, Type A through Type E, Grades 1, 2, 3, and 5.

Alternatively, the following soils, as classified according to the USCS, may be considered satisfactory for use as select fill materials at these sites: SC, GC, CL, and combinations of these soils. In addition to the USCS classification, alternative select fill materials shall have a maximum liquid limit of 40 percent, a plasticity index between 5 and 18 percent, and a maximum particle size not exceeding 4 inches or one-half the loose lift thickness, whichever is smaller. In addition, if these materials are utilized, grain size analyses and Atterberg Limits must be performed during placement at a minimum rate of one test each per 5,000 cubic yards of material due to the high degree of variability associated with pit-run materials.

If the above listed alternative materials are being considered for bidding purposes, the materials should be submitted to the Geotechnical Engineer for pre-approval at a minimum of 10 working days or more prior to the bid date. Failure to do so will be the responsibility of the General Contractor. The General Contractor will also be responsible for ensuring that the properties of all delivered alternate select fill materials are similar to those of the pre-approved submittal. It should also be noted that when using alternative fill materials, difficulties may be experienced with respect to moisture control during and subsequent to fill placement, as well as with erosion, particularly when exposed to inclement weather. This may result in sloughing of beam trenches and/or pumping of the fill materials.

Soils classified as CH, MH, ML, SM, GM, OH, OL, and Pt under the USCS and not meeting the alternative select fill material requirements, are **not** considered suitable for use as select fill materials at these sites.

Select fill should be placed in loose lifts **not** exceeding 8 in. in thickness and compacted to at least 98 percent of maximum dry density as determined by ASTM D698. The moisture content of the fill should be maintained within the range of two percentage points below the optimum moisture content to two percentage points above the optimum moisture content until the final lift of fill is permanently covered.

The select fill should be properly compacted in accordance with these recommendations and tested by **RKCI** personnel for compaction as specified.

WOVEN GEOTEXTILE

The woven geotextile should be MIRAFI® HP 270 or approved equivalent, consisting of polypropylene yarns, which are woven into a network such that the yarns retain their relative position. The woven geotextile shall be inert to biological degradation and resistant to naturally encountered chemicals, alkalis, acids, and ultraviolet light exposure.

FLEXIBLE BASE COURSE

The flexible base course should consist of material conforming to TxDOT 2014 Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, Item 247, Flexible Base, Type A through Type E, Grades 1, 2, 3, and 5.

The flexible base course should be placed in lifts with a maximum compacted thickness of 8 in. and compacted to a minimum of 95 percent of the maximum dry density as determined by ASTM D1557. The moisture content of the base course materials should be maintained within the range of three percentage points below the optimum moisture content to three percentage points above the optimum moisture content until permanently covered.

If the existing asphaltic concrete surface course and flexible base materials are being considered to be reused as flexible base materials, such materials should be processed and treated in such a way as to comply with the TxDOT 2014 Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, Item 251, Reworking Base Courses.

ASPHALTIC CONCRETE SURFACE COURSE

The asphaltic concrete surface course should conform to TxDOT 2014 Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, Item 341, Dense-Graded Hot-Mix Asphalt, Type D. The asphaltic concrete should be compacted to a minimum of 92 percent of the maximum theoretical specific gravity (Rice) of the mixture determined according to Test Method Tex-227-F. Pavement specimens, which shall be either cores or sections of asphaltic pavement, will be tested according to Test Method Tex-207-F. The nuclear-density gauge or other methods which correlate satisfactorily with results obtained from project roadway specimens may be used when approved by the Engineer. Unless otherwise shown on the plans, the Contractor shall be responsible for obtaining the required roadway specimens at their expense and in a manner and at locations selected by the Engineer.

PORTLAND CEMENT CONCRETE

The Portland cement concrete pavement should be air entrained to result in a 4 percent plus/minus 1 percent air, should have a maximum slump of 5 inches, and should have a minimum 28-day compressive strength of 3,500 psi. A liquid membrane-forming curing compound should be applied as soon as practical after broom finishing the concrete surface. The curing compound will help reduce the loss of water from the concrete. The reduction in the rapid loss in water will help reduce shrinkage cracking of the concrete.

EXCAVATION SLOPING AND BENCHING

Excavations that extend to or below a depth of 5 ft below construction grade shall require the General Contractor to develop a trench safety plan to protect personnel entering the trench or trench vicinity. The collection of specific geotechnical data and the development of such a plan, which could include designs for sloping and benching or various types of temporary shoring, is beyond the scope of the current study. Any such designs and safety plans shall be developed in accordance with current Occupational Safety and Health Administration (OSHA) guidelines and other applicable industry standards.

EXCAVATION EQUIPMENT

Our boring logs are not intended for use in determining construction means and methods and may therefore be misleading if used for that purpose. We recommend that General Contractors and their subcontractors interested in bidding on the work perform their own tests in the form of test pits to determine the quantities of the different materials to be excavated, as well as the preferred excavation methods and equipment for these sites.

CONSTRUCTION RELATED SERVICES

CONSTRUCTION MATERIALS ENGINEERING AND TESTING SERVICES

As presented in the attachment to this report, *Important Information About Your Geotechnical Engineering Report*, subsurface conditions can vary across a project site. The conditions described in this report are based on interpolations derived from a limited number of data points. Variations will be encountered during construction, and only the geotechnical design engineer will be able to determine if these conditions are different than those assumed for design.

Construction problems resulting from variations or anomalies in subsurface conditions are among the most prevalent on construction projects and often lead to delays, changes, cost overruns, and disputes. These variations and anomalies can best be addressed if the geotechnical engineer of record, **RABA KISTNER**, is retained to perform the construction materials engineering and testing services during the construction of the project. This is because:

- **RKCI** has an intimate understanding of the geotechnical engineering report's findings and recommendations. **RKCI** understands how the report should be interpreted and can provide such interpretations on site, on the CLIENT's behalf.
- **RKCI** knows what subsurface conditions are anticipated at these sites.
- **RKCI** is familiar with the goals of the CLIENT and the project's design professionals, having worked with them in the development of the project's geotechnical workscope. This enables **RKCI** to suggest remedial measures (when needed) which help meet others' requirements.
- **RKCI** has a vested interest in client satisfaction, and thus assigns qualified personnel whose principal concern is client satisfaction. This concern is exhibited by the manner in which contractors' work is tested, evaluated and reported, and in selection of alternative approaches when such may become necessary.

- **RKCI** cannot be held accountable for problems which result due to misinterpretation of our findings or recommendations when we are not on hand to provide the interpretation which is required.

BUDGETING FOR CONSTRUCTION TESTING

Appropriate budgets need to be developed for the required construction materials engineering and testing services. At the appropriate time before construction, we advise that **RKCI** and the project designers meet and jointly develop the testing budgets, as well as review the testing specifications as it pertains to this project.

Once the construction testing budget and scope of work are finalized, we encourage a preconstruction meeting with the selected General Contractor to review the scope of work to make sure it is consistent with the construction means and methods proposed by the contractor. **RKCI** looks forward to the opportunity to provide continued support on this project, and would welcome the opportunity to meet with the Project Team to develop both a scope and budget for these services.

* * * * * * * * * * * * * * * * * *

The following figures are attached and complete this report:

Figures 1A and 1B	Boring Location Maps
Figures 2 through 6	Logs of Borings
Figure 7	Key to Terms and Symbols
Figure 8	Results of Soil Sample Analyses
Figure 9	MIRAFI® HP 270 Mechanical Properties

ATTACHMENTS

O:\Active Projects\McAllen\2018\AMA18\AMA18-057-00 Prop. Pavement Rehab.-La Villa H.S. & Jose Bernabe E.S\Drawings\Figure 1A.dwg

RABA KISTNER CONSULTANTS

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BORING LOCATION MAP PROPOSED PAVEMENT REHABILITATION PROJECTS

LA VILLA ISD HIGH SCHOOL &
J.B. MUÑOZ ELEMENTARY SCHOOL CAMPUSES
LA VILLA, HIDALGO COUNTY, TEXAS

REVISIONS:

No.	DATE	DESCRIPTION

PROJECT No.: AMA18-057-00

ISSUE DATE:	1-08-19
DRAWN BY:	DV
CHECKED BY:	SC
REVIEWED BY:	KML
FIGURE:	1A

O:\Active Projects\McAllen\2018\AMA18\AMA18-057-00 Prop. Pavement Rehab.-La Villa H.S. & Jose Bernabe E.S\Drawings\Figure 1B.dwg

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BORING LOCATION MAP PROPOSED PAVEMENT REHABILITATION PROJECTS

LA VILLA ISD HIGH SCHOOL &
J.B. MUÑOZ ELEMENTARY SCHOOL CAMPUSES
LA VILLA, HIDALGO COUNTY, TEXAS

REVISIONS:

No.	DATE	DESCRIPTION

PROJECT No.:	AMA18-057-00
ISSUE DATE:	1-08-19
DRAWN BY:	DV
CHECKED BY:	SC
REVIEWED BY:	KML
FIGURE:	1B

LOG OF BORING NO. P-1

Prop. Pavement Rehabilitation Projects
La Villa ISD High School & J. B. Muñoz Elementary School Campuses
La Villa, Hidalgo County, Texas

TBPE Firm Registration No. F-3257

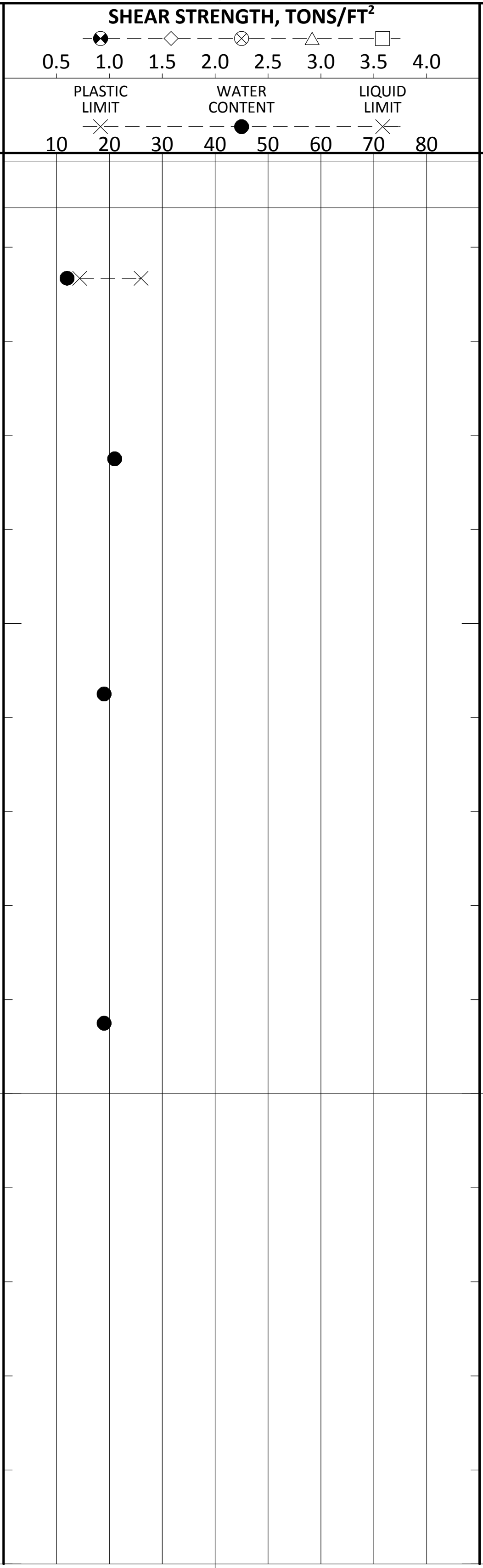
DRILLING METHOD: Straight Flight Auger

LOCATION: See Figure 1

SURFACE ELEVATION: Existing Grade, ft

DEPTH, FT	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	PLASTICITY INDEX	% -200
	Hot-Mix Asphaltic Concrete (HMAC) - 1 in.				
	Flexible Base Material (FBM) - 6 in.				
	SANDY LEAN CLAY (CL) firm to stiff, dark brown	6		12	
		7			56
5	- becomes brown in color below a depth of about 5 ft	6			
	- becomes light grayish-brown in color below a depth of about 7-1/2 ft				
		12			
10	Boring terminated at a depth of about 10 ft.				

NOTES:
Upon completion of the drilling operations, the boring was observed dry.



NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

DEPTH DRILLED: 10.0 ft
DATE DRILLED: 12/7/2018
DEPTH TO WATER: DRY
DATE MEASURED: 12/7/2018
PROJ. No.: AMA18-057-00
FIGURE: 2

LOG OF BORING NO. P-2

Prop. Pavement Rehabilitation Projects
La Villa ISD High School & J. B. Muñoz Elementary School Campuses
La Villa, Hidalgo County, Texas

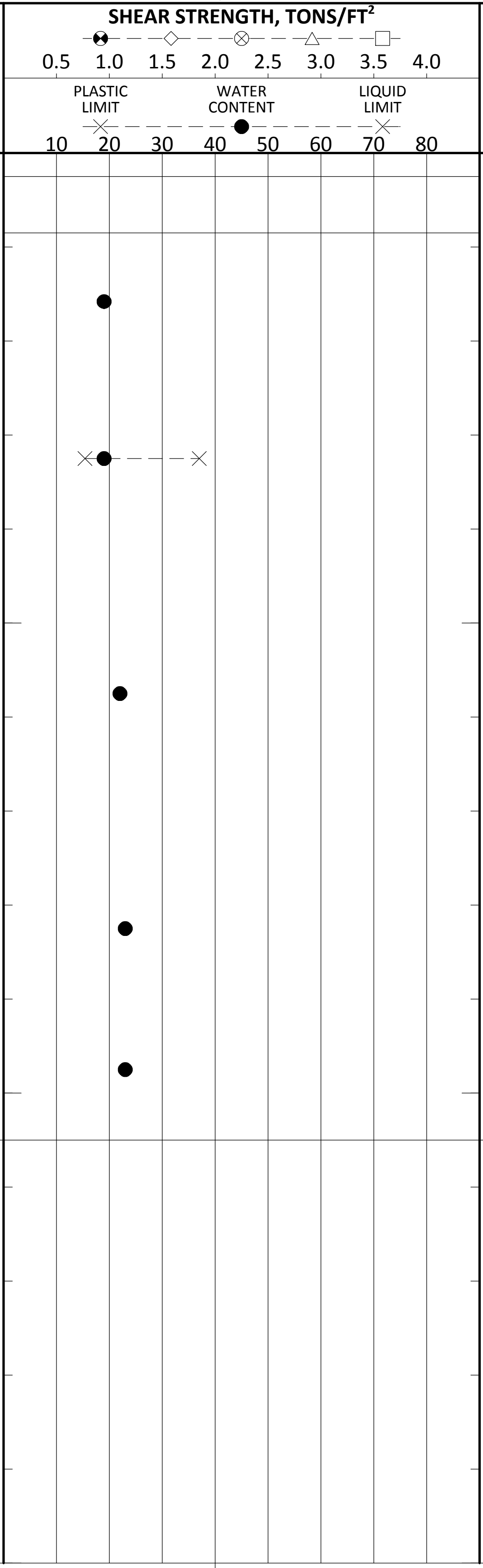
RABA KISTNER
TBPE Firm Registration No. F-3257

DRILLING METHOD: Straight Flight Auger

LOCATION: See Figure 1

SURFACE ELEVATION: Existing Grade, ft

DEPTH, FT	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	PLASTICITY INDEX	% -200
	Hot-Mix Asphaltic Concrete (HMAC) - 3 in.				
	Flexible Base Material (FBM) - 7 in.				
	SANDY LEAN CLAY (CL) firm to soft, dark brown				
		7			
	- becomes brown in color below a depth of about 2-1/2 ft				
		4		22	
5	- becomes light grayish-brown in color below a depth of about 5 ft				
		2			
		2			
		3			
10					
	Boring terminated at a depth of about 10.5 ft.				
	NOTES: Upon completion of the drilling operations, the boring was observed dry.				



NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

DEPTH DRILLED: 10.5 ft
DATE DRILLED: 12/7/2018
DEPTH TO WATER: DRY
DATE MEASURED: 12/7/2018
PROJ. No.: AMA18-057-00
FIGURE: 3

LOG OF BORING NO. P-3

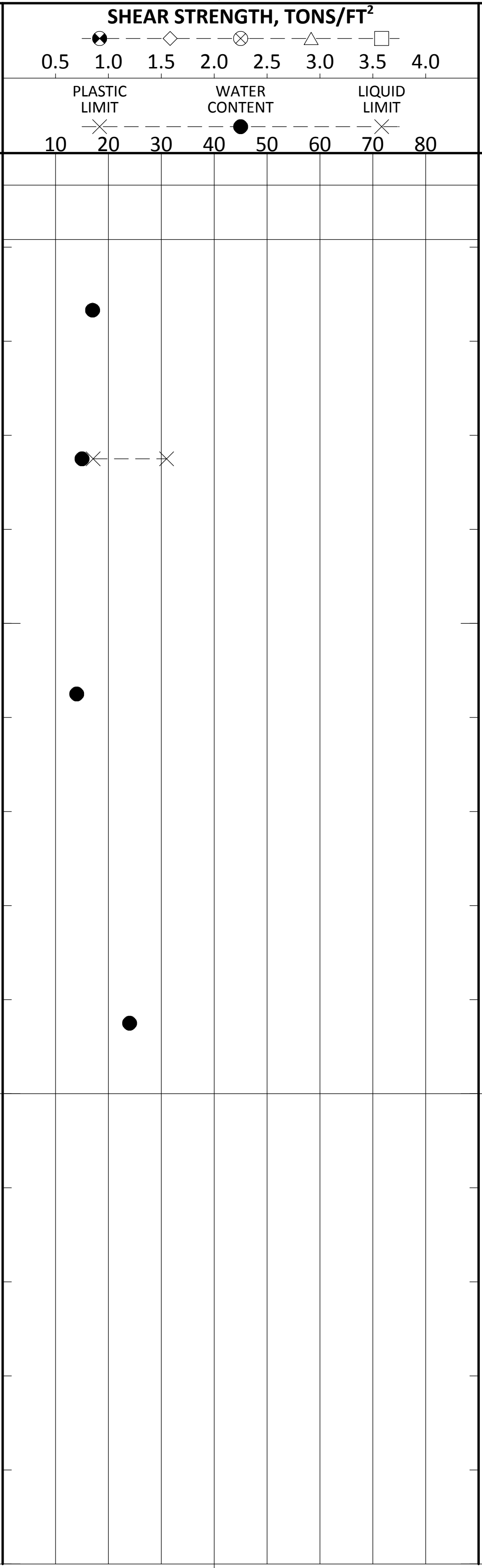
Prop. Pavement Rehabilitation Projects
La Villa ISD High School & J. B. Muñoz Elementary School Campuses
La Villa, Hidalgo County, Texas

RABA KISTNER
TBPE Firm Registration No. F-3257

DRILLING METHOD: Straight Flight Auger

LOCATION: See Figure 1

DEPTH, FT	DESCRIPTION OF MATERIAL SURFACE ELEVATION: Existing Grade, ft	BLOWS PER FT	UNIT DRY WEIGHT, pcf	PLASTICITY INDEX	% -200
	Hot-Mix Asphaltic Concrete (HMAC) - 4 in.				
	Flexible Base Material (FBM) - 7 in.				
	SANDY LEAN CLAY (CL) firm to soft, dark brown	7			52
		7		14	
5	- becomes brown in color below a depth of about 5 ft	2			
		4			
10	Boring terminated at a depth of about 10 ft.				



NOTES:
Upon completion of the drilling operations, the boring was observed dry.

DEPTH DRILLED: 10.0 ft
DATE DRILLED: 12/7/2018
DEPTH TO WATER: DRY
DATE MEASURED: 12/7/2018
PROJ. No.: AMA18-057-00
FIGURE: 4

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

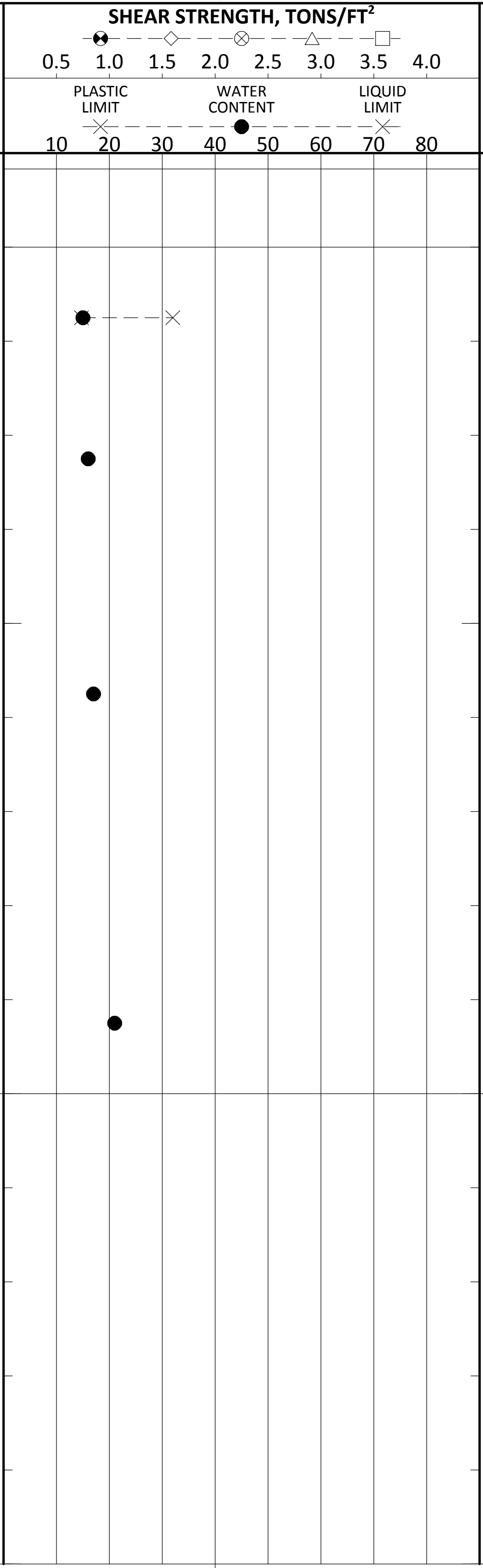
LOG OF BORING NO. P-4

Prop. Pavement Rehabilitation Projects
La Villa ISD High School & J. B. Muñoz Elementary School Campuses
La Villa, Hidalgo County, Texas

RABA KISTNER
TBPE Firm Registration No. F-3257

DRILLING METHOD: Straight Flight Auger **LOCATION:** See Figure 1

DEPTH, FT	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	PLASTICITY INDEX	% -200
	SURFACE ELEVATION: Existing Grade, ft				
	Hot-Mix Asphaltic Concrete (HMAC) - 2 in.				
	Flexible Base Material (FBM) - 10 in.				
	SANDY LEAN CLAY (CL) soft to firm, dark brown	3		17	
		5			
5	- becomes brown in color below a depth of about 5 ft	4			
		7			
10	Boring terminated at a depth of about 10 ft.				
	NOTES: Upon completion of the drilling operations, the boring was observed dry.				



NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

DEPTH DRILLED: 10.0 ft	**DEPTH TO WATER:** DRY	**PROJ. No.:** AMA18-057-00	
DATE DRILLED: 12/7/2018	**DATE MEASURED:** 12/7/2018	**FIGURE:** 5	

LOG OF BORING NO. P-5

Prop. Pavement Rehabilitation Projects
La Villa ISD High School & J. B. Muñoz Elementary School Campuses
La Villa, Hidalgo County, Texas

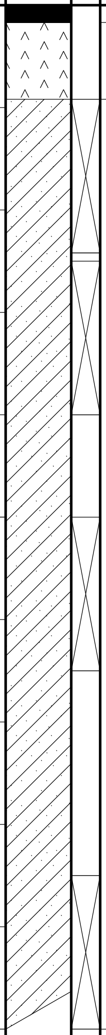
RABA KISTNER
TBPE Firm Registration No. F-3257

DRILLING METHOD: Straight Flight Auger **LOCATION:** See Figure 1

SURFACE ELEVATION: Existing Grade, ft

SHEAR STRENGTH, TONS/FT^2
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0

PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT
10 20 30 40 50 60 70 80



DEPTH, FT	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	PLASTICITY INDEX	% -200
	Hot-Mix Asphaltic Concrete (HMAC) - 2 in.				
	Flexible Base Material (FBM) - 9 in.				
	SANDY LEAN CLAY (CL) firm, dark brown	5			
	- becomes brown in color below a depth of about 2-1/2 ft	5			
5		4			
		5			
10	Boring terminated at a depth of about 10 ft.				

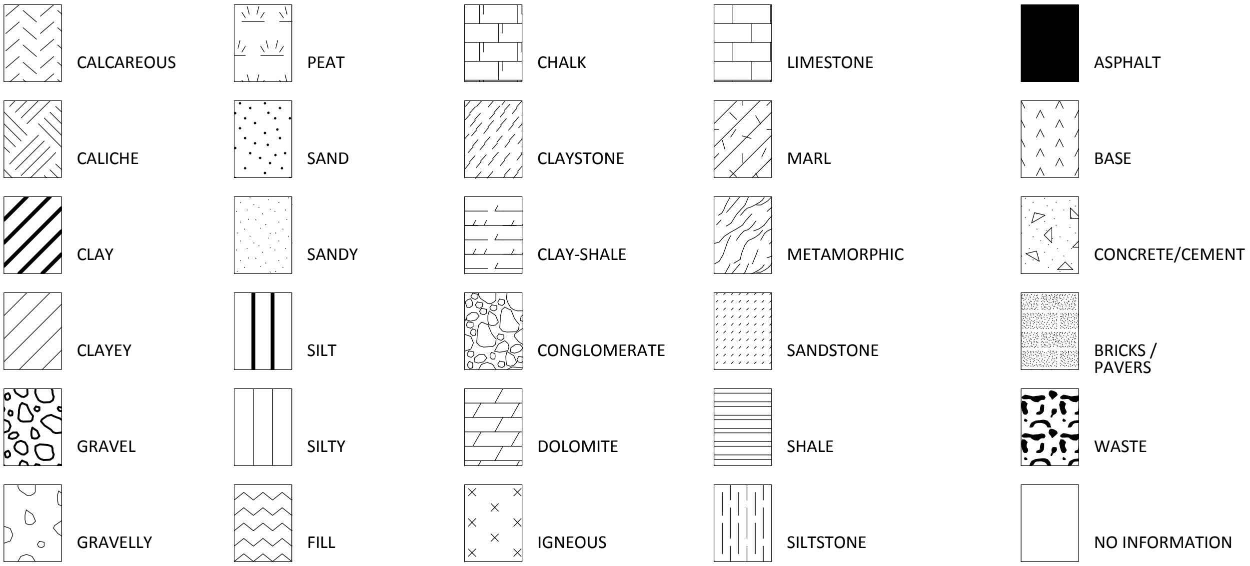
NOTES:
Upon completion of the drilling operations, the boring was observed dry.

DEPTH DRILLED: 10.0 ft
DATE DRILLED: 12/7/2018
DEPTH TO WATER: DRY
DATE MEASURED: 12/7/2018
PROJ. No.: AMA18-057-00
FIGURE: 6

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

KEY TO TERMS AND SYMBOLS

MATERIAL TYPES



SOIL TERMS

- CALCAREOUS
- CALICHE
- CLAY
- CLAYEY
- GRAVEL
- GRAVELLY
- PEAT
- SAND
- SANDY
- SILT
- SILTY
- FILL

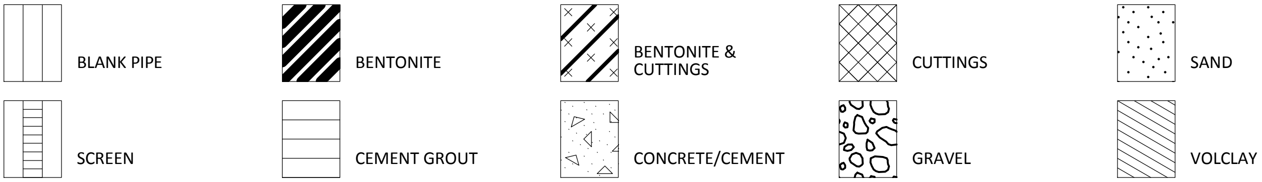
ROCK TERMS

- CHALK
- CLAYSTONE
- CLAY-SHALE
- CONGLOMERATE
- DOLOMITE
- IGNEOUS
- LIMESTONE
- MARL
- METAMORPHIC
- SANDSTONE
- SHALE
- SILTSTONE

OTHER

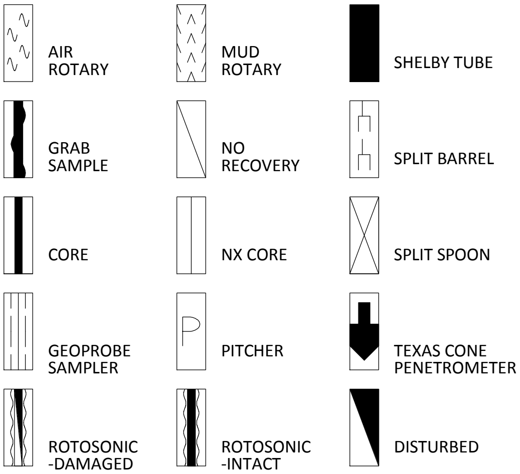
- ASPHALT
- BASE
- CONCRETE/CEMENT
- BRICKS / PAVERS
- WASTE
- NO INFORMATION

WELL CONSTRUCTION AND PLUGGING MATERIALS



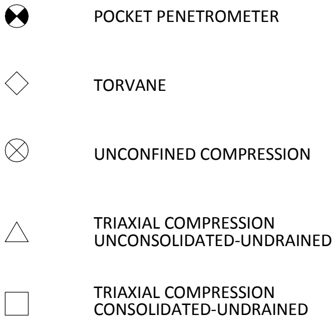
- BLANK PIPE
- SCREEN
- BENTONITE
- CEMENT GROUT
- BENTONITE & CUTTINGS
- CONCRETE/CEMENT
- CUTTINGS
- GRAVEL
- SAND
- VOLCLAY

SAMPLE TYPES



- AIR ROTARY
- GRAB SAMPLE
- CORE
- GEOPROBE SAMPLER
- ROTOSONIC -DAMAGED
- MUD ROTARY
- NO RECOVERY
- NX CORE
- PITCHER
- ROTOSONIC -INTACT
- SHELBY TUBE
- SPLIT BARREL
- SPLIT SPOON
- TEXAS CONE PENETROMETER
- DISTURBED

STRENGTH TEST TYPES



- POCKET PENETROMETER
- TORVANE
- UNCONFINED COMPRESSION
- TRIAXIAL COMPRESSION UNCONSOLIDATED-UNDRAINED
- TRIAXIAL COMPRESSION CONSOLIDATED-UNDRAINED

NOTE: VALUES SYMBOLIZED ON BORING LOGS REPRESENT SHEAR STRENGTHS UNLESS OTHERWISE NOTED

PROJECT NO. AMA18-057-00

REVISED 04/2012

FIGURE 7a

KEY TO TERMS AND SYMBOLS (CONT'D)

TERMINOLOGY

Terms used in this report to describe soils with regard to their consistency or conditions are in general accordance with the discussion presented in Article 45 of SOILS MECHANICS IN ENGINEERING PRACTICE, Terzaghi and Peck, John Wiley & Sons, Inc., 1967, using the most reliable information available from the field and laboratory investigations. Terms used for describing soils according to their texture or grain size distribution are in accordance with the UNIFIED SOIL CLASSIFICATION SYSTEM, as described in American Society for Testing and Materials D2487-06 and D2488-00, Volume 04.08, Soil and Rock; Dimension Stone; Geosynthetics; 2005.

The depths shown on the boring logs are not exact, and have been estimated to the nearest half-foot. Depth measurements may be presented in a manner that implies greater precision in depth measurement, i.e 6.71 meters. The reader should understand and interpret this information only within the stated half-foot tolerance on depth measurements.

RELATIVE DENSITY

Penetration Resistance Blows per ft	Relative Density
0 - 4	Very Loose
4 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
> 50	Very Dense

COHESIVE STRENGTH

Resistance Blows per ft	Consistency	Cohesion TSF
0 - 2	Very Soft	0 - 0.125
2 - 4	Soft	0.125 - 0.25
4 - 8	Firm	0.25 - 0.5
8 - 15	Stiff	0.5 - 1.0
15 - 30	Very Stiff	1.0 - 2.0
> 30	Hard	> 2.0

PLASTICITY

Plasticity Index	Degree of Plasticity
0 - 5	None
5 - 10	Low
10 - 20	Moderate
20 - 40	Plastic
> 40	Highly Plastic

ABBREVIATIONS

B = Benzene
T = Toluene
E = Ethylbenzene
X = Total Xylenes
BTEX = Total BTEX
TPH = Total Petroleum Hydrocarbons
ND = Not Detected
NA = Not Analyzed
NR = Not Recorded/No Recovery
OVA = Organic Vapor Analyzer
ppm = Parts Per Million

Qam, Qas, Qal = Quaternary Alluvium
Qat = Low Terrace Deposits
Qbc = Beaumont Formation
Qt = Fluviatile Terrace Deposits
Qao = Seymour Formation
Qle = Leona Formation
Q-Tu = Uvalde Gravel
Ewi = Wilcox Formation
Emi = Midway Group
Mc = Catahoula Formation
El = Laredo Formation
Kknm = Navarro Group and Marlbrook Marl
Kpg = Pecan Gap Chalk
Kau = Austin Chalk

Kef = Eagle Ford Shale
Kbu = Buda Limestone
Kdr = Del Rio Clay
Kft = Fort Terrett Member
Kgt = Georgetown Formation
Kep = Person Formation
Kek = Kainer Formation
Kes = Escondido Formation
Kew = Walnut Formation
Kgr = Glen Rose Formation
Kgru = Upper Glen Rose Formation
Kgrl = Lower Glen Rose Formation
Kh = Hensell Sand

KEY TO TERMS AND SYMBOLS (CONT'D)

TERMINOLOGY

SOIL STRUCTURE

Slickensided	Having planes of weakness that appear slick and glossy.
Fissured	Containing shrinkage or relief cracks, often filled with fine sand or silt; usually more or less vertical.
Pocket	Inclusion of material of different texture that is smaller than the diameter of the sample.
Parting	Inclusion less than 1/8 inch thick extending through the sample.
Seam	Inclusion 1/8 inch to 3 inches thick extending through the sample.
Layer	Inclusion greater than 3 inches thick extending through the sample.
Laminated	Soil sample composed of alternating partings or seams of different soil type.
Interlayered	Soil sample composed of alternating layers of different soil type.
Intermixed	Soil sample composed of pockets of different soil type and layered or laminated structure is not evident.
Calcareous	Having appreciable quantities of carbonate.
Carbonate	Having more than 50% carbonate content.

SAMPLING METHODS

RELATIVELY UNDISTURBED SAMPLING

Cohesive soil samples are to be collected using three-inch thin-walled tubes in general accordance with the Standard Practice for Thin-Walled Tube Sampling of Soils (ASTM D1587) and granular soil samples are to be collected using two-inch split-barrel samplers in general accordance with the Standard Method for Penetration Test and Split-Barrel Sampling of Soils (ASTM D1586). Cohesive soil samples may be extruded on-site when appropriate handling and storage techniques maintain sample integrity and moisture content.

STANDARD PENETRATION TEST (SPT)

A 2-in.-OD, 1-3/8-in.-ID split spoon sampler is driven 1.5 ft into undisturbed soil with a 140-pound hammer free falling 30 in. After the sampler is seated 6 in. into undisturbed soil, the number of blows required to drive the sampler the last 12 in. is the Standard Penetration Resistance or "N" value, which is recorded as blows per foot as described below.

SPLIT-BARREL SAMPLER DRIVING RECORD

Blows Per Foot	Description
25	25 blows drove sampler 12 inches, after initial 6 inches of seating.
50/7"	50 blows drove sampler 7 inches, after initial 6 inches of seating.
Ref/3"	50 blows drove sampler 3 inches during initial 6-inch seating interval.

NOTE: To avoid damage to sampling tools, driving is limited to 50 blows during or after seating interval.

RESULTS OF SOIL SAMPLE ANALYSES

PROJECT NAME: Prop. Pavement Rehabilitation Projects
La Villa ISD High School & J. B. Muñoz Elementary School Campuses
La Villa, Hidalgo County, Texas

FILE NAME: AMA18-057-00.GPJ 12/26/2018

Boring No.	Sample Depth (ft)	Blows per ft	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	USCS	Dry Unit Weight (pcf)	% -200 Sieve	Shear Strength (tsf)	Strength Test
P-1	0.6 to 2.1	6	12	26	14	12	CL				
	2.5 to 4.0	7	21						56		
	5.0 to 6.5	6	19								
	8.5 to 10.0	12	19								
P-2	0.8 to 2.3	7	19								
	2.5 to 4.0	4	19	37	15	22	CL				
	5.0 to 6.5	2	22								
	7.5 to 9.0	2	23								
	9.0 to 10.5	3	23								
P-3	0.9 to 2.4	7	17						52		
	2.5 to 4.0	7	15	31	17	14	CL				
	5.0 to 6.5	2	14								
	8.5 to 10.0	4	24								
P-4	1.0 to 2.5	3	15	32	15	17	CL				
	2.5 to 4.0	5	16								
	5.0 to 6.5	4	17								
	8.5 to 10.0	7	21								
P-5	0.9 to 2.4	5									
	2.5 to 4.0	5									
	5.0 to 6.5	4									
	8.5 to 10.0	5									

PP = Pocket Penetrometer TV = Torvane UC = Unconfined Compression FV = Field Vane UU = Unconsolidated Undrained Triaxial

CU = Consolidated Undrained Triaxial CNBD = Cound Not Be Determined NP = Non-Plastic

Mirafi® HP270

FILTRATION SEPARATION SOIL REINFORCEMENT

Mirafi® HP270 geotextile is composed of high-tenacity polypropylene yarns, which are woven into a network such that the yarns retain their relative position. Mirafi® HP270 geotextile is inert to biological degradation and resistant to naturally encountered chemicals, alkalis, and acids.

TenCate Geosynthetics Americas Laboratories are accredited by Geosynthetic Accreditation Institute – Laboratory Accreditation Program (GAI-LAP). NTPEP Listed

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	**CD**
Tensile Strength (at ultimate)	ASTM D4595	lbs/ft (kN/m)	2640 (38.5)	2460 (35.9)
Tensile Strength (at 2% strain)	ASTM D4595	lbs/ft (kN/m)	504 (7.4)	600 (8.8)
Tensile Strength (at 5% strain)	ASTM D4595	lbs/ft (kN/m)	1272 (18.6)	1440 (21.0)
			Minimum Roll Value	
Flow Rate	ASTM D4491	gal/min/ft^2 (l/min/m^2)	40 (1630)	
Permittivity	ASTM D4491	sec^{-1}	0.6	
			Maximum Opening Size	
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	30 (0.60)	
			Typical Test Value	
Pore Size 0_{95}[1]	ASTM D6767	microns	386	
Pore Size 0_{50}[1]	ASTM D6767	microns	295	
			Minimum Test Value	
Factory Sewn Seam	ASTM D4884	lbs/ft (kN/m)	1260 (18.4)	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	80	

[1] Based on Third Party Testing

Physical Properties	Unit	Roll Size	
Roll Dimensions (width x length)	ft (m)	15 x 300 (4.5 x 91)	17 x 375 (5.2 x 114)
Roll Area	yd^2 (m^2)	500 (418)	708 (592)

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical- engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply this report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by*: the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold- prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical- engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you GBC-Member geotechnical engineer for more information.

GBC GEOTECHNICAL BUSINESS COUNCIL
of the Geoprofessional Business Association

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@geoprofessional.org www.geoprofessional.org

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RABAKISTNER

SECTION 00310
BID PROPOSAL FORM (UNIT PRICES)

A. In case of additions or deletions to the Work from the Work shown in the Contract Documents, the following Unit Prices shall be used in adjusting the Contract Price. All Unit Prices shall remain in effect until completion of the Project. All Unit Prices shall be the total cost for material, labor, tax if applicable insurance mark-ups, overhead and profit.

ITEM	ADD	DEDUCT
1. 6 ' high chain link fence fabric with line posts and barbed wire as specified material and labor	**$ /L.F.**	**$ /L.F.**
2. 4" Concrete sidewalk	***$ /S.F.***	***$ /S.F.***
3. Multi-purpose wall outlet – empty box, blank cover plate. Include 10 ft. ¾" conduit, empty.	***$ /each***	***$ /each***
4. Light Switch, in wall -Empty wall box, cover plate. Include 10 ft of ½" C and No. 12 wires.(assume new circuit is not required).	***$ /each***	***$ /each***
5. Water hose bib (exterior) with 50 ft. of 3" copper line including tee and 2 els. 24" deep trench.	***$ /each***	***$ /each***
6. Masonry walls, materials and labor: ***a) 8"x 8" x 16" CMU installed with mortar, reinforcement & grouting as noted on drawings and specifications.***	***$ /S.F.***	***$ /S.F.***
7. Metal wall panels "PBR" with R-19 insulation liner system as noted on drawings and specified. materials and labor:	***$ /S.F.***	***$ /S.F.***
8. Hollow metal door, frame and hardware 3'-0"x 7'-0" material and labor:	***$ /each***	***$ /each***
9. Hollow metal door, frame and hardware pair of 3'-0"x 7'-0" material and labor. :	***$ /each***	***$ /each***
10. Overhead rolling door 10' x 10' as noted on drawings and specified material and labor:	***$ /each***	***$ /each***
11. Screen door pair of 5'-0"x 10'-0" as noted on drawings material and labor:	***$ /each***	***$ /each***

Respectfully Submitted:

By:

Date:

Business Address Complete:

Seal, If Bid is by a Corporation.

SECTION 01020
ALLOWANCES

PART 1: GENERAL:

A. Include in the Contract Sum the following allowances and cause the work so covered to be performed in accordance with the Contract Documents.

B. Refer to Conditions of the Contract for general requirements with regard to allowances. Allowance sum covers materials delivered to the job site only, unless otherwise indicated.

C. Allowance money may, if required, be returned to the Owner by Change Order for purpose of payment for materials or services specified.

D. Where allowance is indicated as a cost, this is to establish the quality of material, and Contractor shall be responsible for ascertaining the total quantity required, including waste, necessary to complete the installation.

E. The amount of each allowance includes:
   1. The cost of the Contractor of materials and equipment delivered to the site.
   2. All required taxes, unless exempt from State sales tax.
   3. Labor required under the allowance, only when labor is specified to be included in the allowance.
   4. Respective overhead and profit per Section 00811, Paragraph 7.3.10.

F. In addition to the amount of each allowance, include in the Contract sum an amount of 6% of the Allowance as Contractor's cost for:
   1. Handling at the Site; including unloading, uncrating, and storage.
   2. Labor for installation and finishing, except where labor is specified to be a part of the Allowance.
   3. Protection from the elements and from damage.
   4. Other expenses contemplated or required for stated allowance.
   5. Contractor's overhead and profit per Section 00811 paragraph 7.3.10.2.

1.01 CONTINGENCY ALLOWANCE:

A. Include in the Contract Sum a lump sum CONTINGENCY ALLOWANCE of ***TWENTY-FIVE THOUSAND*** **($*25,000.00*) DOLLARS** including respective labor.

B. At the closeout of Contract, balance of monies remaining in the CONTINGENCY ALLOWANCE and applicable contractor's cost of 6% of the Contingency Allowance balance will be credited to the Owner by Change Order.

1.02 SITE WORK ALLOWANCE:

A. Include in the Contract Sum a lump sum SITE WORK ALLOWANCE of ***TEN THOUSAND*** **($*10,000.00*) DOLLARS** including respective labor.

B. At the closeout of Contract, balance of monies remaining in the SITE ALLOWANCE and applicable contractor's cost of 6% of the Contingency Allowance balance will be credited to the Owner by Change Order.

1.03 STRUCTURAL ALLOWANCE:

A. Include in the Contract Sum a lump sum STRUCTURAL ALLOWANCE of ***FOURTEEN THOUSAND*** **($*14,000.00*) DOLLARS** including respective labor.

B. At the closeout of Contract, balance of monies remaining in the STRUCTURAL ALLOWANCE and applicable contractor's cost of 6% of the Contingency Allowance balance will be credited to the Owner by Change Order.

1.04 ELECTICAL UTILITY SERVICE ALLOWANCE:

A. Include in the Contract Sum a lump sum ELECTICAL UTILITY SERVICE ALLOWANCE of ***TEN-THOUSAND*** **($*10,000.00*) DOLLARS** including respective labor. Contractor shall use this allowance for all associated electrical utility service and shall submit all invoicing from electrical utility company for architect's review. All electrical conduits, j-boxes, meter base and associated labor shall be part of the base bid as reference on electrical drawings.

B. At the closeout of Contract, balance of monies remaining in the ELECTIAL SERVICE ALLOWANCE and applicable contractor's cost of 6% of the Contingency Allowance balance will be credited to the Owner by Change Order.

END OF SECTION

SECTION 08710
FINISH HARDWARE

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Work under this section comprises of furnishing hardware specified herein and noted on drawings for a complete and operational system, including any electrified hardware components, systems, controls and hardware for aluminum entrance doors. Any door shown on the drawing and not specifically referenced in the hardware sets shall be provided with identical hardware as specified on other similar openings and shall be included in the General Contractor's base bid. All fire rated door shall be provided with fire rated hardware as required by local code Authority as part of the General Contractor's base bid. The hardware supplier shall verify all cylinder types specified for locking devices supplied as part of the door system with the door manufacturer and/or door supplies.

B. The General Contractor shall notify the Architect in writing of any discrepancies (five (5) days prior to bid date) that could and/or would result in hardware being supplied that is none functional, hardware specified and/or hardware that has not been specified that will result in any code violations and any door that is not covered in this specification. Failure of the General Contractor to address any such issue could be considered acceptance of the hardware specified and any and/or all discrepancies could be corrected at the General Contractor's expense.

C. Items include but are not limited to the following:

1. Hinges - Pivots
2. Flush Bolts
3. Exit Devices
4. Locksets and Cylinders
5. Push Plates - Pulls
6. Coordinators
7. Closers
8. Kick, Mop and Protection Plates
9. Stops, Wall Bumpers, Overhead Controls
10. Electrified Hold Open Devices
11. Thresholds, Seals and Door Bottoms
12. Silencers
13. Miscellaneous Trim and Accessories

1.02 RELATED DOCUMENTS, drawings and general provisions of contract, including General and Supplementary Conditions, and Division 1 Specification sections, apply to this section.

1.03 RELATED WORK specified elsewhere that should be examined for its effect upon this section:

A. Section 06 20 00 - Finish Carpentry
B. Section 08 11 13 – Steel Doors and Frames
C. Section 08 14 16 – Flush Wood Doors
D. Sections 08 31 13 – Access Doors
E. Section 08 39 00 – Watertight Doors
E. Section 08 41 13 – Aluminum Entrances, Storefront and Window Framing
F. Sections 08 80 00 – Glass and Glazing
G. Sections 09 91 00 - Painting
H. Division 26 – Electrical
I. Division 28 – Access Control

1.04 REFERENCES SPECIFIED in this section subject to compliance as directed:

A. NFPA-80 - Standard for Fire Doors and Windows
B. NFPA-101 - Life Safety Code
C. ADA - The Americans with Disabilities Act - Title III - Public Accommodations
D. ANSI-A 117.1 - American National Standards Institute - Accessible and Usable Buildings and Facilities
E. ANSI-A 156.5 - American National Standards institute -Auxiliary Locks and Associated Products
F. UFAS - Uniform Federal Accessibility Standards
G. UL - Underwriter's Laboratories
H. WHI - Warnock Hersey International, Testing Services
I. State and Local Codes including Authority Having Jurisdiction
J. UL10C – Positive Pressure
K. IBC-2015 – International Building Code
L. NFPA-70 – International Electrical Code

1.05 SUBMITTALS

A. HARDWARE SCHEDULES submit copies of schedule in accordance with Division 1, General Requirements. Schedule to be in vertical format, listing each door opening, including: handing of opening, all hardware scheduled for opening or otherwise required to allow for proper function of door opening as intended, and finish of hardware. At doors with door closers or door controls include degree of door opening. Supply the schedules all Finish Hardware within two (2) weeks from date purchase order is received by the hardware supplier.

B. Submit manufacturer's cut/catalog sheets on all hardware items and any required special mounting instructions with the hardware schedule.

C. Certification of Compliance:

1. Submit any information necessary to indicate compliance to these specifications as required.
2. Submit a statement from the manufacturer that electronic hardware and systems being supplied comply with the operational descriptions exactly as specified.

D. Submit any samples necessary as required by the Architect.

E. Templates for finish hardware items to be sent to related door and frame suppliers within three (3) working days of receipt of approved hardware schedule.

F. Doors and Frames used in positive pressure opening assemblies shall meet UL10C in areas where this specification includes Seals for smoke door.

1.06 QUALITY ASSURANCE

A. Hardware supplier to be a qualified, Factory Authorized, direct distributor of the products to be furnished. In addition, the supplier to have in their regular employment an AHC or AHC /CDC and/or a person of equivalent experience (minimum fifteen (15) years in the industry) who will be made available at reasonable times to consult with the Architect/Contractor and/or the La Villa ISD Representative regarding any matters affecting the finish hardware on this project.

B. All hardware used in labeled fire or smoke rated openings to be listed for those types of openings and bear the identifying label or mark indicating UL. (Underwriter's Laboratories) approved for fire. Exit devices in non-labeled openings to be listed for panic.

1.07 DELIVERY, HANDLING AND PACKAGING

A. Furnish all hardware with each unit clearly marked and numbered in accordance with the hardware schedule. Include door and item number for each.

B. Pack each item of hardware completes with all necessary parts and fasteners.

C. Properly wrap and cushion each item to prevent scratches and dents during delivery and storage.

1.08 SEQUENCING AND SCHEDULING

Any part of the finish hardware required by the frame or door manufacturers or other suppliers that is needed to produce doors or frames is to be sent to those suppliers in a timely manner, so as not to interrupt job progress.

1.09 WARRANTY

All finish hardware shall be supplied with a one- (1) year warranty against defects in materials and workmanship, commencing with substantial completion of the project except as follows:

1. All Closers shall have a thirty- (30) year written warranty.
2. All Grade 1 "ND" Locksets shall have a ten- (10) year written warranty.
3. All Exit Devices shall have a three (3) year written warranty.
4. All Continuous Hinges shall have a ten-(10) year written warranty.

PART 2 – PRODUCTS

2.01 FASTENERS

A. Furnish with finish hardware all necessary screws, bolts and other fasteners of suitable size and type to anchor the hardware in position for a long life under hard use.

B. Furnish fastenings where necessary with expansion shields, toggle bolts and other anchors designated by the Architect according to the material to which the hardware is to be applied and the recommendations of the hardware manufacturer. All closers and exit devices on labeled wood doors shall be through-bolted if required by the door manufacturer. All thresholds shall be fastened with wood screws and plastic anchors. Where specified in the hardware sets, security type fasteners of the type called for are to be supplied.

C. Design of all fastenings shall harmonize with the hardware as to material and finish.

D. All hardware shall be installed with the Manufacturers standard screws as provided. The use of any other type of fasteners shall not be permitted. The general contractor shall provide wood blocking in all stud walls specified and/or scheduled to receive wall stops, No Exception.

2.02 ENVIRONMENTAL CONCERN FOR PACKAGING

The hardware shall ship to the job site is to be packaged in biodegradable packs such as paper or cardboard boxes and wrapping.

2.03 HINGES

A. All hinges to be of one manufacturer as hereafter listed for continuity and consideration of warranty. Provide one of the following manufacturers Ives, Hager, Mc Kinney or Stanley.

B. Unless otherwise specified provide five-knuckle, heavy-duty, button tip, full mortise template type hinges with non-rising loose pins. Provide non-removable pins for out swinging doors at secured areas or as called for in this specification (Refer to 3.02 Hardware Sets).

C. Provide all out-swinging doors with non-removable pins or security studs as called for in 3.02 Hardware Sets. Furnish three (3) hinges up to 90 inches high and one (1) additional hinge for every 30 inches or fraction thereof.

D. Furnish three (3) hinges up to 90 inches high and one (1) additional hinge for every 30 inches or fraction thereof.

E. Provide size 4½" x 4½" for all 1¾" thick doors up to and including 36 inches wide. Doors over 1¾" through 2¼" thick, use 5" x 5" hinges. Doors over 36 inches use 5" x 4½" unless otherwise noted in 3.02 Hardware Sets.

F. Were required to clear the trim and/or to permit the doors to swing 180 degrees furnish hinges of sufficient throw.

G. Provide heavy weight hinges on all doors over 36 inches in width.

H. At labeled door's steel or stainless steel, bearing-type hinges shall be provided. For all doors equipped with closers provide bearing-type hinges.

2.04 LOCK AND LOCK TRIM

A. All locksets, latch sets, and trim to be of one manufacturer as hereafter listed for continuity of design and consideration of warranty. Locksets specified are Schlage "ND" series with the Rhodes levers and shall be provided as specified or acceptable products manufactured by Falcon (T Series) or Sargent (11 Line). Locks shall match the existing locks being used by the district.

B. Provide metal wrought box strike boxes and curved lip strikes with proper lip length to protect trim of the frame, but not to project more than 1/8 inch beyond frame trim or the inactive leaf of a pair of doors.

C. Mechanical Locks shall meet ANSI Operational Grade 1, Series 4000 as specified.

1. Hand of lock is to be field reversible or non-handed.
2. All lever trim is to be through-bolted through the door.

2.05 CYLINDERS AND KEYING

A. Provide all exterior and interior locks or Exit Devices requiring cylinders keyed to the Mater Key System as instructed by the La Villa ISD Representative. Cylinders shall comply with performance requirements of ANSI A156.5. All keys shall be of nickel silver material only. The hardware supplier shall meet with the General Contractor, the Architect and the La Villa ISD Representative at the project jobsite to determine all permanent keying requirements.

B. Cylinders shall be factory keyed and factory maintained as directed by the La Villa ISD Representative and the Architect. Provide two- (2) keys per cylinder and four- (4) master keys per master used.

C. Factory stamp all keys "Do not duplicate" and with key symbol as directed by the La Villa ISD Representative. Visual key control shall be provided on all permanent keys and cylinders.

D. Provide temporary keyed construction cores for the duration of the construction phase if the existing system is an Interchangeable Core System. Provide ten (10) construction keys and two (2) construction control keys. All construction cores shall be returned to the hardware supplier upon installation of permanent cores.

2.06 EXIT DEVICES

A. All exit devices and trim, including electrified items, to be of one manufacturer as hereafter listed and in the hardware sets for continuity of design and consideration of warranty; electrified devices and trim to be the same series and design as mechanical devices and trim.

B. Exit Devices to be "UL" listed for life safety. All exit devices for labeled doors shall have "UL" label for "Fire Exit Hardware". All devices mounted on labeled wood doors are to be through-bolted or per the manufacturer's listing requirements. All devices shall conform to NFPA 80 and NFPA 101 requirements.

C. All exit devices to be of a heavy duty, chassis mounted design, with a one-piece removable cover, eliminating necessity of removing the device from the door for standard maintenance and keying requirements.

D. All trims to be through-bolted to the lock stile case. Lever design to be the same as specified with the lock sets.

E. Exit Devices shall be the modern push rail design. All exit devices shall be mounted with sex bolts and installed with the manufacture's standard screws. Exit Hardware Devices found to be installed with self-drilling and self-tapping screws shall be removed and reinstalled at the installer expenses.

F. All devices shall carry a three- (3) year warranty against manufacturing defects and workmanship.

G. Furnish roller strikes for all rim and surface vertical rod exit devices. Internal springs shall be coil compression type. Furnish security dead latching for all active latch bolts.

H. All Exit Devices shall be field modifiable as incorporate an Electric Latch Retraction Feature without the purchase of new Panic Exit Hardware.

J. Exit Devices shall be the Von Duprin "99" series as specified

2.07 SURFACE MOUNTED DOOR CLOSERS

A. All closers for this project shall be the products of a single manufacturer for continuity of design and consideration of warranty. All door closers shall be mounted as to achieve the maximum degree of opening (trim permitting).

B. All closers to be heavy duty, surface-mounted, fully hydraulic, rack and pinion action with high strength case iron cylinder to provide control throughout the entire door opening and closing cycle.

C. Size all closers in accordance with the manufacturer's recommendations at the factory.

D. All closers to have adjustable spring power sizes 1 or 2 through 4 or 6 and non-critical regulating screw valves for closing speed, latching speed and back-check control as a standard feature unless specified otherwise.

E. Provide closer covers only if provided as a standard part of the door closer package.

F. The hardware supplier shall provide all required brackets, spacers or filler plates as required by the manufacture for a proper and functional installation as part of their base bid.

G. Supply appropriate arm assembly for each closer so that closer body and arm are mounted on non-public side of door opening and on the interior side of exterior openings, except where required otherwise in the hardware sets.

H. Provide drop plates and any additional mounting brackets required for the proper installation of the door closer shall be included in the hardware supplier's base bid.

I. Finish: Baked on Powder Coated finish shall match other hardware.

J. Provide and mount all door closers with sex bolts as provided by the manufacturer.

K. Closers shall be LCN "4040XP" series as specified or acceptable products manufactured by Sargent "281" series.

2.08 DOOR STOPS AND HOLDERS

A. Door stops are to be furnished for every door leaf. Every door is to have a floor, wall, or an overhead stop.

B. Place doorstops in such a position that they permit maximum door swing, but do not present a hazard of obstruction. Furnish floor strikes for floor holders of proper height to engage holders of doors.

C. Where overhead stops and holders are specified, or otherwise required for proper door operation, they are to be heavy duty and of extruded brass, bronze or stainless steel with no plastic parts as specified**.** The General Contractor shall provide wood blocking in all stud walls specified and scheduled to receive wall stops.

D. Finish: Shall match other hardware where available.

E. Acceptable Products

   1. Floor and wall stops as listed in hardware sets. Equivalent products as manufactured by Ives, ABH and Trimco are acceptable.

2.09 PUSH PLATES, DOOR PULLS, AND KICKPLATES

A. All push plates, door pull, kick plates and other miscellaneous hardware as listed in hardware sets. Equivalent products as manufactured by Ives, Hager and Trimco are acceptable.

B. Kick plates to be 10 inches high and Mop plates to be 6 inches high, both by 1-½ inches or 1 inch less than door width (LDW) as specified. They are to be of 16-gauge thick base metal. For door with louvers or narrow bottom rails, kick plate height to be 1 inch less dimension shown from the bottom of the door to the bottom of the louver or glass.

C. Where required armor plates, edge guards and other protective hardware shall be supplied in sizes as scheduled in the hardware sets.

D. Finish: Same as other hardware where available.

2.10 FLUSH BOLTS AND COORDINATORS

A. Provide Flush bolts with Dust Proof Strikes as indicated in the individual hardware sets by Ives, Hager and Trimco are acceptable. Finish shall match the adjacent hardware.

2.11 THRESHOLDS AND SEALS

A. Provide materials and finishes as listed in hardware sets. Zero products have been specified to set a high level of quality, equivalent product by manufactured by National Guard Products and Pemko shall be acceptable. All thresholds must be in accordance with the requirements of the ADA and ANSI A117.1.

B. Provide thresholds with wood screws and plastic anchors. Supply all necessary anchoring devices for weather strip and sound seal.

C. Seals shall comply with requirements of UL10C. All thresholds, door bottoms and weather strip inserts shall be a silicone based product as specified in 3.02 Hardware Sets. Other materials used shall be rejected, unless originally specified.

D. Seals shall comply with the requirements of the Wood Door Manufacturer's certification requirements.

2.12 FINISHES

A. Finishes for all hardware are as required in this specification and the hardware sets.

B. Special care is to be taken to make uniform the finish of all various manufactured items.

2.13 DOOR SILENCERS

A. Provide door silencers at all openings without gasket. Provide two- (2) each at pair of doors and three- (3) or four- (4) each for each single door (coordinate with the frame manufacturer).

2.14 PROPRIETARY PRODUCTS

A. References to specific products are used to establish quality standards of utility and performance. Unless otherwise approved provide only the specified product.

B. All other materials, not specifically described, but required for a complete and proper finish hardware installation, are to be selected by the Contractor, subject to the approval of the Architect and the La Villa ISD Representative.

C. Architect and the La Villa ISD Representative reserve the right to approve all the substitutions proposed for this specification. All requests for substitution to be made prior to bid in accordance with Division 1, General Requirements, and are to be in writing, hand delivered to the Architect. Two (2) copies of the manufacturer's brochures and a physical sample of each item in the appropriate design and finish shall accompany requests for substitution.

PART 3 - EXECUTION

3.01 INSTALLATION AND SERVICE ITEMS OF FINISH HARDWARE

A. All finish hardware shall be installed by an experienced finish hardware installer with at least ten (10) years of experience after a pre-installation meeting between the contractor, hardware Manufacturers representative, the hardware supplier, the hollow metal supplier and the wood door supplier. The finish hardware installer shall be responsible for the proper installation and function of all doors and hardware.

B. The hardware supplier's office and/or warehouse shall be located within a one seventy-five (75) mile radius of the project site as to better service the general contractor and the La Villa ISD Representative during this project.

C. Check hardware against the reviewed hardware schedule upon delivery. Store the hardware in a dry and secure location to protect against loss and damage.

D. Install finish hardware in accordance with approved hardware schedule and manufacturers' printed instructions. Pre-fit hardware before finish is applied to door; remove and reinstall after finish is complete and dry. Install and adjust hardware so that parts operate smoothly, close tightly, and do not rattle.

E. Mortise and cutting to be done neatly, and evidence of cutting to be concealed in the finished work. Protect all Finish hardware from scratching or other damage.

3.02 HARDWARE SETS

SPEXTRA: 475408
HARDWARE GROUP NO. 001
FOR USE ON MARK/DOOR #(S):

A101	A102	A104	A105	A106	A107
A110	A113	A115	A116	A117	A118
A120	A121	A122	A123		

PROVIDE EACH RU DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CYLINDER	AS REQUIRED FOR KEYING		
		BALANCE HARDWARE	PROVIDED BY THE DOOR MFG.		

HARDWARE GROUP NO. 214S

FOR USE ON MARK/DOOR #(S):
A111 A112

PROVIDE EACH PR DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
2	EA	MANUAL FLUSH BOLT	FB458-LENGTH AS REQ	626	IVE
1	EA	DUST PROOF STRIKE	DP1	626	IVE
1	EA	STOREROOM LOCK	ND80LD RHO	626	SCH
1	EA	CYLINDER	AS REQUIRED FOR KEYING		
2	EA	OH STOP	100S	630	GLY
2	EA	ARMOR PLATE	8400 36" X 1 1/2" LDW B-CS	630	IVE
1	EA	GASKETING	8303AA-HEAD & JAMBS	AA	ZER
1	EA	ASTRAGAL	43SP-DOOR HEIGHT (PULL SIDE MTG)	SP	ZER
2	EA	DOOR SWEEP	50MAA-DOOR WIDTH	AA	ZER
1	EA	THRESHOLD	655A - FRAME WIDTH	A	ZER

HARDWARE GROUP NO. 714CM

FOR USE ON MARK/DOOR #(S):
A100

PROVIDE EACH PR DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112XY-DOOR HEIGHT	628	IVE
1	EA	REMOVABLE MULLION	KR4954-B-154	689	VON
1	EA	PANIC HARDWARE	CD-99-DT-SNB	628	VON
1	EA	PANIC HARDWARE	CD-99-NL-SNB	628	VON
1	EA	MULLION STORAGE KIT	MT54	689	VON
4	EA	CYLINDER	AS REQUIRED FOR KEYING		
2	EA	SURFACE CLOSER	4040XP SCUSH TBSRT	689	LCN
2	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	MEETING STILE	328AA-2 PCS DOOR HEIGHT	AA	ZER
1	EA	GASKETING	429A-1 PC FRAME WIDTH	A	ZER
2	EA	DOOR SWEEP	50MAA-DOOR WIDTH	AA	ZER
1	EA	THRESHOLD	655A - FRAME WIDTH	A	ZER
1	EA	RAIN DRIP	142A-FRAME HEAD PLUS 4"	A	ZER
1	EA	MULLION SEAL	8780N HEIGHT AS REQ	BK	ZER

HARDWARE GROUP NO. 715C

FOR USE ON MARK/DOOR #(S):
A103 A108 A109 A114 A119

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY-DOOR HEIGHT	628	IVE
1	EA	PANIC HARDWARE	CD-99-NL-SNB	628	VON
2	EA	CYLINDER	AS REQUIRED FOR KEYING		
1	EA	SURFACE CLOSER	4040XP SCUSH TBSRT	689	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	MEETING STILE	328AA-2 PCS DOOR HEIGHT	AA	ZER
1	EA	GASKETING	429A-1 PC FRAME WIDTH	A	ZER
1	EA	DOOR SWEEP	50MAA-DOOR WIDTH	AA	ZER
1	EA	THRESHOLD	655A - FRAME WIDTH	A	ZER
1	EA	RAIN DRIP	142A-FRAME HEAD PLUS 4"	A	ZER

HARDWARE GROUP NO. G#2

FOR USE ON MARK/DOOR #(S):
GATE

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	SET	HINGE/CLOSER	MAMMOTH180-ZILV 180-GATE COMBINED (LOCINOX)		
1	EA	PANIC HARDWARE	99-NL-OP-WH-SEC	628	VON
1	EA	CYLINDER	AS REQUIRED FOR KEYING		
1	EA	PANIC HARDWARE PULL TRIM	VR910NL	630	IVE
			REMAINDER OF HARDWARE BY GATE MFR		

GENERAL CONTRACTOR SHALL CONDUCT A COORDINATION MEETING WITH THE HARDWARE SUPPLIER AND GATE/FENCE FABRICATOR PRIOR TO HARDWARE BEING ORDERED - AND FENCE/GATE BEING FABRICATED. MEETING WILL DETERMINE THE EXACT HARDWARE REQUIREMENTS.
PROVIDE MOUNTING ACCESSORIES AS REQUIRED.

END OF SECTION

TRINITY
MEP ENGINEERING

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3/14/2019

LEONARDO MUNOZ
97437

ADDENDUM #1

Architect: ROFA Architects
Project Name: La Villa High School Site Improvements
Project Number: 19.1.3
Date: 3/14/2019

Note: The work shall be carried out in accordance with the following supplemental instructions issued in accordance with the Contract Documents without change in Contract Sum or Contract Time Proceeding with the Work in accordance with these instructions indicates your acknowledgement that there will be no change in the Contract Sum or Contract Time.

I. Specifications:

II. General: N/A

III. Mechanical: N/A

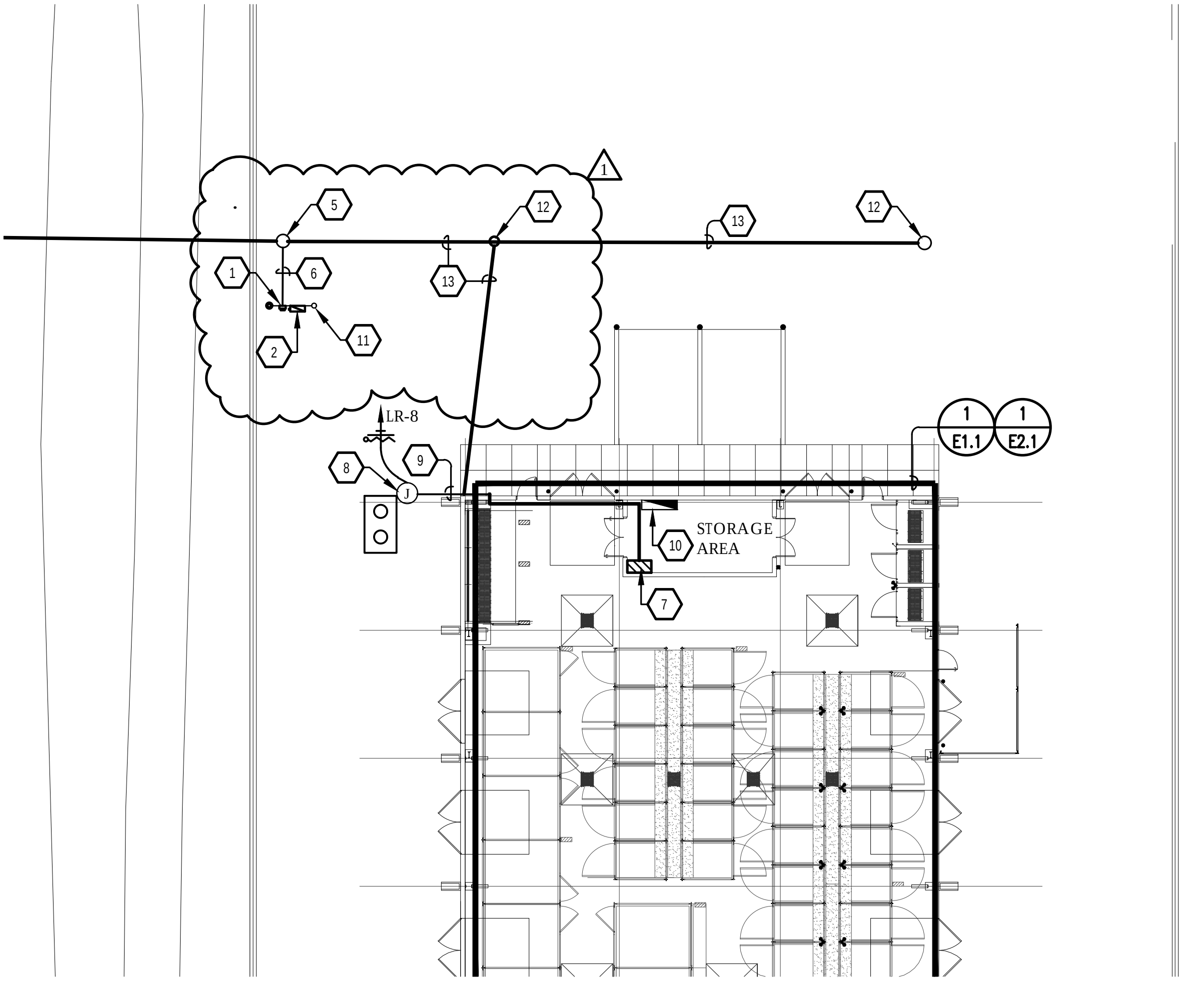
IV. Electrical:

  A. Sheet AES1.1 – Revised electrical service run, refer to attached.

  B. Sheet AES2.1 – Revised gate power and communication items and keyed notes, refer to attached.

V. Plumbing: N/A

VI. Fire Protection: N/A



1 ELECTRICAL SITE PLAN

1"=30'-0"

KEYED NOTES: ELECTRICAL

1. NEW 120/240V, 1Ø, 3W, ELECTRICAL SERVICE METER.
2. NEW BUILDING MAIN SWITCH DISCONNECT 'MS'. PROVIDE WEATHER PROOF LABEL.
3. EXISTING POWER COMPANY POWER POLE TO REMAIN.
4. EXISTING PRIMARY OVERHEAD POWER LINES.
5. NEW POWER COMPANY POWER POLE WITH NEW POLE MOUNTED TRANSFORMER AND DIP POLE RISER. COORDINATE WITH UTILITY ELECTRICAL COMPANY. INCLUDE ALL COST IN BID.
6. CONTRACTOR TO PROVIDE AND INSTALL (1)-4" PVC CONDUIT FROM NEW POWER COMPANY POLE MOUNTED TRANSFORMER TO NEW SERVICE EQUIPMENT . ALL UNDERGROUND WORK SHALL BE ACCORDING TO POWER COMPANY STANDARDS. VERIFY ALL REQUIREMENTS WITH THE POWER COMPANY BEFORE ANY ROUGH-IN. COORDINATE LOCATION, COST, AND INSTALLATION WITH POWER COMPANY PRIOR TO BID.
7. PROVIDE J-BOX FOR SOLIDS INTERCEPTOR SERVICE ALERT PANEL, VERIFY EXACT LOCATION WITH ARCHITECT. VERIFY EXACT ELECTRICAL REQUIREMENTS WITH SOLIDS INTERCEPTOR MANUFACTURER PRIOR TO ANY WORK

1

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03/14/19

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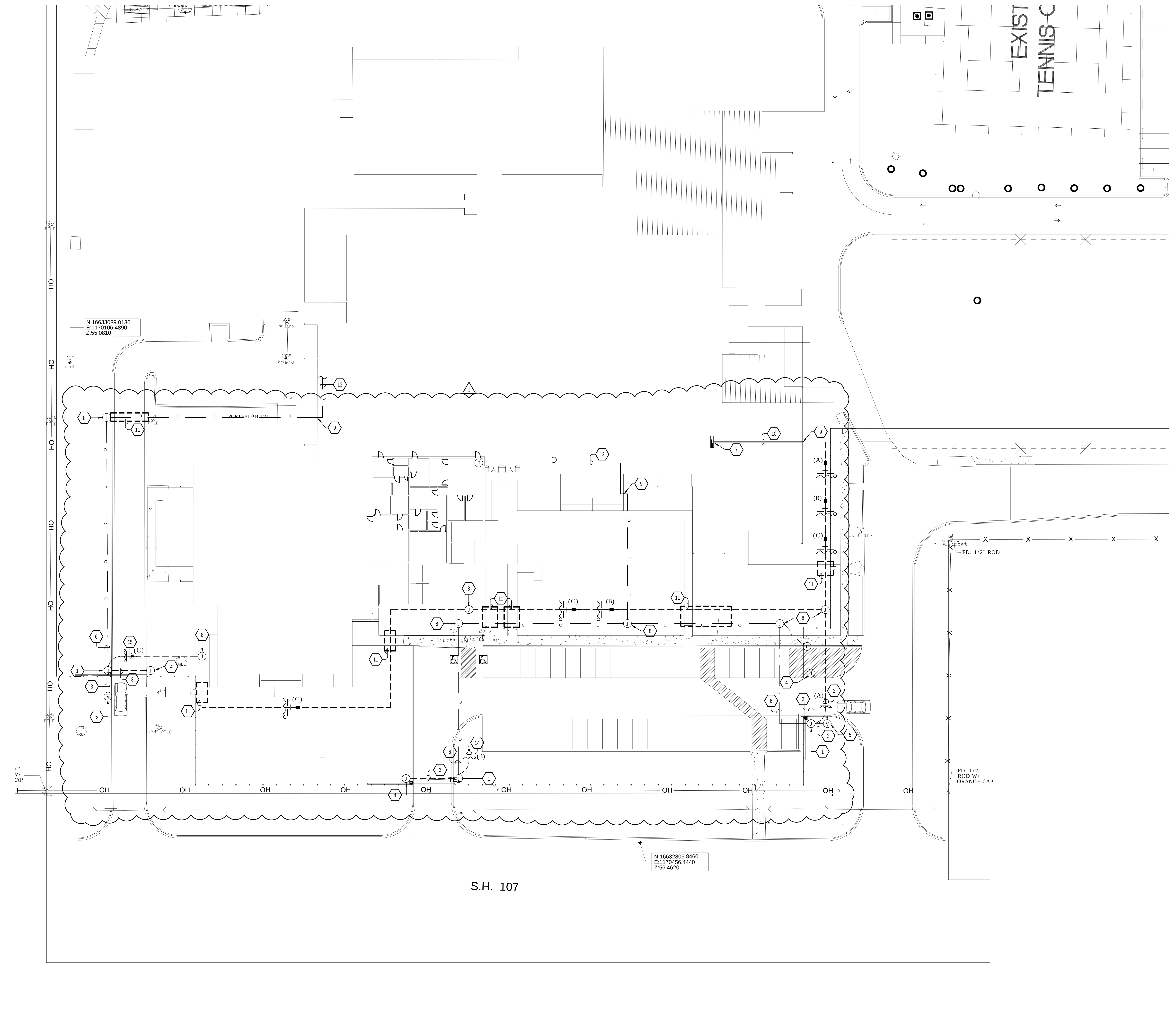
NEW AGRICULTURAL BARN
FOR
LA VILLA INDEPENDENT SCHOOL DISTRICT

LA VILLA TEXAS

ADDENDUM 1

PROJECT NO.	[redacted]
DRAWN BY	[redacted]
DATE	3/14/2019

PAGE No.
AES1.1
OF ____________



ADDENDUM 1
PROPOSED ELECTRICAL SITE PLAN

1"= 30'-0"

1

GENERAL ELECTRICAL NOTES (TO ALL SHEETS)

A. CONTRACTOR TO VERIFY ALL EXISTING MAIN POWER SERVICES AND COORDINATE WITH POWER COMPANY FOR ALL NEW REQUIREMENTS AND ALL COST ASSOCIATED. CONTRACTOR SHALL INCLUDE ANY COST FOR THE NEW TRANSFORMER AND OTHER ASSOCIATED FEES IN BID. CONTRACTOR IS RESPONSIBLE TO VERIFY ALL FEES WITH POWER COMPANY AND TO INCLUDE IN BID. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH POWER COMPANY AS SOON THE CONTRACT IS AWARDED TO ORDER TRANSFORMER AND THE RELATED ELECTRICAL SERVICE EQUIPMENT AS SOON AS POSSIBLE.

B. CONTRACTOR IS RESPONSIBLE FOR ALL EXCAVATION, TRENCHING AND BACKFILLING. COORDINATE WITH ALL UTILITIES PRIOR TO EXCAVATION.

C. CONTRACTOR TO VERIFY ALL EXISTING MAIN TELEPHONE SERVICES AND COORDINATE WITH TELEPHONE COMPANY FOR ALL REQUIREMENTS AND ALL COST ASSOCIATED. INCLUDE ALL COST IN BID. CONDUIT FROM MAIN TELEPHONE RISER SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR.

D. ALL ELECTRICAL EQUIPMENT OUTDOORS SHALL BE RATED TYPE NEMA 3R UNLESS OTHERWISE NOTED.

E. CONTRACTOR SHALL HAVE A WORKING KNOWLEDGE OF LOCAL CODES AND ORDINANCES. ALL WORK SHALL CONFORM TO NATIONAL ELECTRICAL CODES AND ALL OTHER AUTHORITY HAVING JURISDICTION. OBTAIN PERMITS AND PAY ALL FEES. PERFORM MODIFICATIONS TO MEET CODE AND ORDINANCE REQUIREMENTS AT NO ADDITIONAL COST TO OWNER, ARCHITECT OR ENGINEER. VERIFY PRIOR TO BID DATE.

F. VERIFY AT JOB SITE THE EXACT LOCATIONS OF STRUCTURAL MEMBERS SUCH AS BEAMS, COLUMNS, ETC. TO LOCATE EQUIPMENT CONDUIT, PANELS AND DEVICES. IF DEVIATIONS FROM THE DRAWING ARE NECESSARY TO MEET STRUCTURAL CONDITIONS MAKE DEVIATIONS WITHOUT ADDITIONAL COST, TO OWNER, ARCHITECT, OR ENGINEER.

G. IN COOPERATION WITH OTHER CONTRACTORS, DETERMINE THE EXACT LOCATION OF EQUIPMENT AND DEVICES AND CONNECTIONS THERETO BY REFERENCE TO THE SUBMITTALS AND ROUGH-IN DRAWINGS, AND BY MEASUREMENTS AT THE SITE. REFER TO ALL OTHER TRADES SUBMITTAL FOR ELECTRICAL INFORMATION.

H. GROUND ENTIRE ELECTRICAL SYSTEM IN STRICT ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.

I. VERIFY AT JOB SITE GENERAL WORK TO BE DONE AS SPECIFIED, AS NOTED, OR AS REQUIRED FOR INSTALLATION ELECTRICAL SYSTEMS PRIOR TO SUBMISSION OF BIDS.

J. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND EQUIPMENT TO BE REMOVED AND REPLACED BEFORE SUBMITTING HIS BID.

K. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND SMALL SCALE ONLY. THEY CONVEY THE INTENT OF THE WORK BUT DO NOT SHOW DETAIL SUCH AS JUNCTION AND PULL BOXES REQUIRED BY THE SPECIFICATIONS AND THE NATIONAL ELECTRICAL CODE(NEC). PROVIDE ALL MATERIALS AND METHODS CALLED FOR IN THE SPECIFICATIONS AND AS REQUIRED IN THE NEC TO PROVIDE A COMPLETE INSTALLATION OF ALL WORK.

L. ALL WIRING SHALL BE COPPER.

M. ALL SLEEVES, PENETRATIONS, ETC. SHALL BE SEALED SOLID NON-SHRINKING MATERIAL IMMEDIATELY UPON FILLING OF THE OPENING WITH PIPE OR CONDUIT.

N. ARRANGE FOR SOURCES OF TEMPORARY CONSTRUCTION SERVICES. SUCH SERVICES SHALL BE NOMINALLY 120/240V, 1-PHASE, 3-WIRE FROM WHICH A COMPLETE SYSTEM OF TEMPORARY POWER AND LIGHTING SHALL BE PROVIDED FOR ALL CONSTRUCTION NEEDS.

O. CONTRACTOR IS RESPONSIBLE TO VERIFY AND COORDINATE WITH EXISTING/NEW UNDERGROUND UTILITIES PRIOR TO ANY WORK.

P. CONTRACTOR IS RESPONSIBLE CALL DIG-TESS; 1-1800-DIG-TESS 2-BUSINESS DAYS IN ADVANCE.

KEYED NOTES: ELECTRICAL

1 J-BOX FOR GATE MOTOR. FIELD COORDINATE EXACT LOCATION.

△1

2 GATE MOTOR CIRCUIT (A). ROUTE TO EXISTING PANELBOARD "THL" LOCATION. PROVIDE 1-20AMP 1-POLE BREAKER. CIRCUIT WIRING SHALL BE 2#10, 1#10G, 3/4"C.

3 PROVIDE (1)-1" CONDUIT FOR GATE CONTROLS. FIELD COORDINATE EXACT LOCATION.

4 J-BOX FOR GATE CONTROLS. FIELD COORDINATE EXACT LOCATION.

5 J-BOX FOR PEDESTAL GATE CONTROLS. FIELD COORDINATE EXACT LOCATION.

6 PROVIDE (2)-2" CONDUITS WITH PULLSTRING. FIELD COORDINATE EXACT LOCATION.

7 APPROXIMATE LOCATION OF EXISTING ELECTRICAL PANELBOARD "THL", 120/240V, 1P, 3W, 200AMPS. FIELD VERIFY EXACT LOCATION.

△1

8 PROVIDE IN-GRADE PULLBOX. FIELD VERIFY EXISTING CONDITIONS PRIOR TO ANY WORK.

9 STUB-UP INTO THIS LOCATION. CORE DRILL EXISTING WALL INTO THE SPACE, SEAL CONDUIT OPENING. FIELD VERIFY EXISTING CONDITIONS PRIOR TO ANY WORK.

10 ROUTE CONDUIT ABOVE CEILING LEVEL TO ELECTRICAL PANELBOARD "THL". FIELD VERIFY EXISTING CONDITIONS PRIOR TO ANY WORK.

11 SAW CUT EXISTING SURFACE AND PATCH TO MATCH EXISTING. CONTRACTOR TO FIELD IDENTIFY EXISTING CONDITIONS PRIOR TO ANY WORK.

12 ROUTE CONDUIT ABOVE CEILING LEVEL TO RECEPTION AREA. FIELD VERIFY EXISTING CONDITIONS PRIOR TO ANY WORK.

13 ROUTE CONDUIT ABOVE CEILING LEVEL TO KITCHEN AREA. FIELD VERIFY EXISTING CONDITIONS PRIOR TO ANY WORK.

14 GATE MOTOR CIRCUIT (B). ROUTE TO EXISTING PANELBOARD "THL" LOCATION. PROVIDE 1-20AMP 1-POLE BREAKER. CIRCUIT WIRING SHALL BE 2#10, 1#10G, 3/4"C.

15 GATE MOTOR CIRCUIT (C). ROUTE TO EXISTING PANELBOARD "THL" LOCATION. PROVIDE 1-20AMP 1-POLE BREAKER. CIRCUIT WIRING SHALL BE 2#10, 1#10G, 3/4"C.

LEGEND

Ⓟ	PEDESTRIAN GATE ACCESS
Ⓥ	VEHICLE GATE ACCESS

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CONSULTANTS:

NO.	DATE	DESCRIPTION
△1	3-14-19	ADDENDUM #1

LA VILLA HIGH SCHOOL & ELEMENTARY SCHOOL
SITE IMPROVEMENTS
FOR
LA VILLA INDEPENDENT SCHOOL DISTRICT
LA VILLA, TEXAS

PROJECT NO: 2018.14
DATE:
STARTING DATE: 09.07.18
CK BY: DWN BY:

ALTERNATE NO.1
ELECTRICAL SITE PLAN

AES2.1