



**ALLIANCE
ENGINEERING
GROUP, INC.**

- GEOTECHNICAL ENGINEERING
- ENVIRONMENTAL CONSULTING
- CONSTRUCTION MATERIALS ENGINEERING
- CONSTRUCTION MATERIALS TESTING

**Subsurface Exploration and
Geotechnical Evaluation**

**New Life Church Building
2701 N. Austin Avenue
Georgetown, Texas**

Prepared for:

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**Alliance Engineering Group Project # AE24-0702
TBPE Firm No. 11290**

September 5, 2024



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**NEW LIFE CHURCH BUILDING
2701 N. AUSTIN AVENUE
GEORGETOWN, TEXAS**

**ALLIANCE ENGINEERING GROUP, INC.
PROJECT # AE24-0702**

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SCOPE

This report presents the results of a subsurface investigation and geotechnical evaluation for the planned new church building, along with associated parking and drive lanes and a detention pond. The subject site is located on the east side of N. Austin Avenue approximately six hundred and fifty feet (650') south of the intersection of NE Inner Loop with N. Austin Avenue in Georgetown, Texas. We understand the project is to include soil-related foundation design recommendations for the construction of a single-story, free-standing structure and a currently unknown amount of pavement for parking and drive lanes. The site location is shown in Figure 1.

This study was performed to evaluate subsurface conditions and provide soil-related foundation and pavement design criteria. Alliance Engineering Group performed this subsurface exploration and geotechnical evaluation in general accordance with our proposal # P24-0607E dated June 28th, 2024.

The scope of services for this study included the determination of subsurface conditions through field and laboratory testing, an evaluation of the subsurface conditions relative to the proposed construction, and the preparation of a geotechnical report. This report includes results, evaluations, and recommendations concerning earthwork, foundations, groundwater, quality control testing, pavement design, detention pond recommendations, and other geotechnical related aspects of the project. A summary of our conclusions is presented in the following section of this report.

The scope of services did not include an environmental assessment for the presence or absence of wetland or hazardous or toxic materials in the soil, air, surface water, or groundwater at this site. Alliance Engineering Group can perform a *Phase 1 Environmental Site Assessment (ESA)* or an *EPA All Appropriate Inquiry (AAI)* under separate contract.

SUMMARY

Subsurface conditions, geotechnical engineering evaluations and recommendations are summarized in the following paragraphs. This summary should not be considered apart from the entire text of this report. This report should be read and evaluated prior to using our engineering recommendations for the preparation of design or construction documents. Details of our findings and recommendations are provided in subsequent sections of this report and in the attached figures.

1. Two (2) exploratory borings were drilled to auger refusal in limestone depths of ten (10) feet below existing grade in the building area. Five (5) exploratory borings for the pavement/drive lanes areas were drilled to depths of six (6) feet below existing grades.
2. The subsurface profile consists of hard, dry, fat clay over dry, hard, lean clay and/or gravelly lean clay over soft to moderately hard (rock basis), dry, yellowish brown severely weathered and weathered limestone. The fat clay layers were noted at the surface in Borings B-1, B-2, P-1, P-2 and P-5. Approximate boring locations are shown in **Figure 2**.
3. Groundwater seepage was not observed in any of our borings during drilling.
4. Based on the available soil information, proposed construction, and assumed structural loads, the building may be constructed on ground-supported grade beams/footing and slabs on a modified subgrade, to reduce potential soil movements. Drilled shafts may be used to support heavier loads, if needed.
5. Surface drainage must be designed to provide rapid removal of water runoff away from the structures because the soils are sensitive to changes in moisture content.

SITE LOCATION AND CONDITIONS

The site is located on the east side of N. Austin Avenue approximately six hundred and fifty feet (650') south of the intersection of NE Inner Loop with N. Austin Avenue in Georgetown, Texas. The site currently contains the existing New Life Church facility in the south corner of the site. The New Life Church facility consists of two single-story buildings and asphalt/gravel paving areas. The remainder of the site is undeveloped.

The site generally grades downward toward N. Austin Avenue. Site vegetation consists primarily of native grasses with trees lining the north property line.

PROPOSED DEVELOPMENT AND CONSTRUCTION

We understand the project will include the construction of a new church building, along with associated parking and drive lanes and a detention pond. The planned building will be a single-story, free-standing structure. The detention pond is planned along N. Austin Avenue. A drive loop/fire lane around the building and about ninety (90) parking spaces are planned.

GEOLOGY MAPPING INFORMATION

According to available geologic mapping information by the U.T. Bureau of Economic Geology, the site is located within the Terrace Deposits of the San Gabriel River over the Del Rio Clay and Georgetown, undivided, Formation. The Terrace deposits may consist of varying amounts of clay, sand, and gravel. Groundwater is also common within Terrace Deposits.

The Del Rio and Georgetown, undivided, geologic formation is generally comprised mainly of highly expansive clay over marl, shale and limestone. Gravel or gravelly seams/layers may also be present. A geology map is provided as Figure 3.

FIELD EXPLORATION

Two (2) exploratory borings were drilled to auger refusal in limestone to depths of approximately ten (10) feet below existing grade in the building area. Five (5) exploratory borings were drilled to depths of approximately six (6) feet below existing grade for the pavement/drive lanes areas. Approximate boring locations are provided as **Figure 2**.

The borings were drilled on August 5th, 2024. Truck-mounted rotary drilling rig, equipped with 4-inch diameter continuous flight solid stem augers and Shelby tube samplers were used for this investigation. The soil samples were delivered to our laboratory where they were visually classified and select samples were subjected to appropriate laboratory testing. Detailed boring logs are provided as **Figures 4** through **10**. *Standard Reference Notes for Boring Logs* is presented as **Figure 11**.

LABORATORY TESTING

Representative soil samples were selected and tested to assist the visual classifications and to determine pertinent engineering and physical characteristics. Tests were performed in general accordance with applicable ASTM standards. Testing to determine the presence of chemicals in soil samples (e.g., sulfates, chlorides) was not requested. Laboratory testing included ASTM D2488 (*Standard Practice for Description and Identification of Soils*), ASTM D2216 (*Standard Test Methods for Laboratory Determination of Moisture Content of Soil and Rock by Mass*), ASTM C117 (*Materials Finer than 75 μ (No. 200) Sieve in Mineral Aggregates by Washing*), ASTM D2166 (*Standard Test Method for Compressive Strength of Cohesive Soils*), ASTM D422 (*Standard Test Method for Particle Size Analysis*), ASTM D4546 (*Standard Test Methods for One-Dimensional Swell or Collapse of Soils*), ASTM D4318 (*Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils*). ASTM D4546-14e (*Standard Test Methods for One-Dimensional Swell or Collapse of Soils*).

Results of the testing are provided on the boring logs and Figures 12 – 14. Soil samples not consumed during testing will be retained and stored for 2 months, after which time, they will be discarded unless we receive instructions on their disposition.

SUBSURFACE CONDITIONS

Information from the exploratory borings indicates that the soil stratigraphy may generally consist of three distinguishable strata. The characteristics of these strata are summarized in the following paragraphs.

DARK REDDISH BROWN AND YELLOWISH BROWN FAT CLAY (CH): Dry, hard, dark reddish brown and yellowish brown fat clay (CH) was encountered from existing grade and continued to depths of two (2) to four (4) feet below existing grade in Borings B-1, B-2, P-1, P-2 and P-5. The soils contained varying amounts of calcareous deposits and gravel/limestone fragments. The laboratory test results for the fat clay soils are shown in **Table 1:**

Table 1:

Test Results for FAT CLAY (CH)

Test Performed	Value(s)	
Atterberg Limits	Liquid Limit: 52 - 70	Plasticity Index: 31 – 45
Material Passing #200 Sieve (%)	58 – 85	
Moisture Content (%)	15 – 22	
Pocket Penetrometer Readings (tsf)	4.5+	

REDDISH BROWN, YELLOWISH BROWN, YELLOWISH RED AND PINK LEAN CLAY (CL) AND GRAVELLY LEAN CLAY (CLG): Dry, very stiff to hard, reddish brown, yellowish brown, yellowish red and pink lean clay (CL) and gravelly lean clay (CLG) was encountered from existing grade to depths of four (4) feet below existing grade and continued to depths of two (2) to seven and a half (7½) feet below existing grade. Lean clay and gravelly lean clay were not encountered in Boring P-5. The soils contained varying amounts of calcareous deposits and gravel/limestone fragments. The laboratory test results for the fat clay soils are shown in **Table 2:**

Table 2:

Test Results for LEAN CLAY (CL) AND GRAVELLY LEAN CLAY (CLG)

Test Performed	Value(s)
Atterberg Limits	Liquid Limit: 23 - 46 Plasticity Index: 3 - 26
Material Passing #200 Sieve (%)	32 - 82
Moisture Content (%)	8 - 13
Unit Weight (pcf)	121.2
Swell Test (%)	3.07
Pocket Penetrometer Readings (tsf)	3.5 - 4.5+

YELLOWISH BROWN SEVERELY WEATHERED LIMESTONE (SWLS) AND WEATHERED LIMESTONE (WLS):

Dry, soft to moderately hard (rock basis), yellowish brown severely weathered limestone (SWLS) and weathered limestone (WLS) was encountered below the soils at depths of two (2) to seven and a half (7½) feet below existing grade and continued to the maximum depth of the borings ten (10) feet below existing grade. The laboratory test results for the severely weathered limestone and weathered limestone are shown in **Table 3:**

Table 3:

Test Results for SEVERELY WEATHERED LIMESTONE (SWLS) AND WEATHERED LIMESTONE (WLS)

Test Performed	Value(s)
Moisture Content (%)	8 - 13
Material Passing #200 Sieve (%)	26 - 65
Pocket Penetrometer Readings (tsf)	4.5+

The above descriptions are of a generalized nature to highlight the major subsurface stratification features and soil characteristics. The boring logs provided in the Appendix should be reviewed for specific information at each location. The stratification of the soil represents our interpretation of the subsurface conditions at the boring locations based on observations by a Geotechnical Engineer of the soil samples.

Variations from the conditions shown on the boring logs could occur in areas in between borings or in areas around the borings. The stratification lines shown in the boring logs represent approximate boundaries between soil types and condition, and the transitions may be gradual rather than distinct. It is

sometimes difficult to identify changes in stratification within narrow limits. It may also be difficult to distinguish between fill and discolored natural soil deposits if foreign substances are not present so the limits of the fill are not indicated on the logs although they can be inferred.

GROUNDWATER

Groundwater seepage was not observed in any of our borings during drilling. Groundwater can be temporary instead of perennial, it may be found within the more granular or calcareous layers, so water levels at later dates could be different from those observed during the subsurface investigation. Even though groundwater was not encountered in our borings during the drilling and sampling operation, our experience requires us to emphasize that groundwater can still appear later (e.g. during construction), so the architect, the General Contractor, and the site Civil Engineer should not be surprised if groundwater appears in a localized area and requires the installation of a permanent collection and removal system.

Groundwater may develop after periods of rain and can develop after construction in response to landscaping irrigation. Groundwater levels may fluctuate seasonally in the project area due to variations in precipitation, runoff, evaporation, groundwater pumping, and other factors that affect groundwater recharge.

POTENTIAL MOVEMENT OF THE CLAY SOILS

The fat clays and lean clays can both potentially experience moderate soil movements. These movements are affected by changes in environmental conditions (rainfall quantities and frequency, temperature, evaporation, tree roots, etc.) or man-made conditions (leaking water lines, landscape irrigation, or poor drainage) that affect the moisture content of the clay soils. The clay soil may harden, shrink, and crack when subjected to drying, swell when subjected to wetting, and soften when subjected to saturation.

The TxDOT Potential Vertical Rise (PVR) (Tex-124-E) considering existing conditions and existing overburden pressure was calculated to be less than 1 to 1¼ inches at the surface, depending on the depth of the fat clays. The soils were modeled to be in an initially “dry” moisture condition as defined by the method at the time of construction and the thickness of the active zone was assumed to be about 8 feet. Note that the TxDOT PVR method assumes limited wetting occurs and should only be used as an index tool. The TxDOT PVR value represents season moisture variance and does not consider extreme weather conditions such as extended drought. It should not be considered an accurate estimate of maximum potential vertical heave.

In addition to the TXDOT PVR calculations, two field samples were tested for measured swell in the laboratory. Based on the **Table 4** values, no additional potential soil movement is anticipated.

Table 4:

Swell Test Results

Boring	Depth	Material	Initial Moisture Content	Final Moisture Content	Unit Weight	Swell
B-2	2 – 4	Fat Clay	12.3	16.5	121.2	3.07%

The amount of total and differential heave or shrinkage is impossible to accurately predict because it will depend on the extent of impervious cover around the building, seasonal changes in climate conditions, drainage conditions, presence of leaking water supply pipes or sewer pipes, groundwater conditions, landscape watering on adjacent properties, varying thickness of the clay layer(s) and physical characteristics and mineralogy of the clay soils.

FOUNDATION RECOMMENDATIONS

Based on the available soil information, proposed construction, and assumed structural loads, the building may be supported on ground-supported grade beams/footing and slabs on a modified subgrade, to reduce potential soil movements. Drilled shaft may be used to support heavier loads, if needed.

Ground-Supported Slabs and Grade Beams

A net allowable bearing pressure of 3,000 psf can be used to design the beams on the select fill modified subgrade. Grade beams should extend at least 24 inches below final adjacent exterior grades and have a minimum width of 10 inches.

The select fill pad will help reduce the potential for settlement and provide a subgrade that can maintain a near-vertical excavation for the beam. The excavation for the select fill pad should extend a minimum of 3 feet beyond the building perimeter or adjacent sidewalks. The upper 18 inches of the fill outside the building perimeter shall consist of a clay material to prevent moisture from entering the select fill pad.

The onsite fat and lean clays may be utilized for the cap material. The clay cap shall be placed in horizontal loose lifts of not more than eight (8) inches in thickness and compacted to six (6) inches in thickness per the requirements shown in **Table 10**.

The depth, width and reinforcing steel requirements of the grade beams will be determined by the project Structural Engineer. Recommendations and construction details for the slabs on a modified subgrade are presented in the tables below and in the next section "SITE PREPARATION, SUBGRADE PREPARATION AND EARTHWORK".

The parameter values in Tables 5 and 6 are recommended for use when designing a conventionally reinforced stiffened slab using traditional BRAB or WRI guidelines or a post-tensioned slab using PTI guidelines.

Table 5:

BRAB and WRI Soil-Related Parameter Values

Building Subgrade Conditions *	Design PVR	Design PI	BRAB Climate Rating – C_w	BRAB Support Index – C	1-C	WRI Cantilever Length – l_c
3-Foot Removed/Replaced Select Fill Modified	About 1 inch or less	20	18	0.95	0.05	3.25 feet

Subgrade Preparation and Earthwork Section Guidelines for the design of post-tensioned slab-on-grade. This can be found in the PTI manual *Design of Post-tensioned Slabs-on-ground, 3rd Edition*.

Table 6:

PTI Design Soil-Related Parameter Values

Building Subgrade Conditions *	Design PVR	PTI Differential Movement (y_m)		Edge Moisture Variation Distance (e_m)	
		Center Lift	Edge Lift	Center Lift	Edge Lift
3-Foot Removed/Replaced Select Fill Modified	About 1 inch or less	0.41 inch	0.76 inch	9.0 feet	4.8 feet

Drilled Shaft Foundations

Drilled shaft foundations may be designed to support the loads of the building. The drilled shafts will support both downward loads and resist uplift and lateral loading conditions. **Drilled shafts founded in the bearing material may be designed based upon the values provided in Table 7.**

Foundations proportioned in accordance with the values presented in **Table 7** will have a minimum factor of safety of three and will experience negligible settlement after construction. The weight of the shafts below final grade may be neglected in determining the design loads. The drilled shafts will be subjected to uplift pressures created by expansive movements within the surrounding soils. These forces will be resisted by weight of the drilled shaft and skin friction within the minimum shaft penetration. For the ease of the design, we recommend approximating uplift pressures as 500-psf acting over the perimeter of the upper 4 feet of each shaft. Accordingly, shafts should be steel reinforced over their full depth to counteract these forces.

Table 7:

Vertical Load Design Parameters

Shaft Type:	Straight Shaft
Bearing Stratum:	Pale Yellow SEVERELY WEATHERED LIMESTONE AND WEATHERED LIMESTONE
Approximate Depth to Bearing:	7 to 7½ feet
Groundwater Depths:	N/A
Minimum Shaft Diameter:	18 inches
Minimum Penetration	3 feet
Net Allowable End Bearing Pressure:	12,000 psf (Below Minimum Penetration)
Net Allowable Side Friction (Upwards and Downwards)	1,200 psf (Below Minimum Penetration)

Drilled Shaft Foundation Construction Considerations

Due to the nature of the soils present at the site, we recommend drilled shaft construction be monitored by the Geotechnical Engineer, or his qualified representative, to observe installation of the shafts to make field adjustments if needed. Drilled shaft construction should also be monitored by a representative of the geotechnical engineer to observe the following:

1. Proper identification of the bearing stratum;
2. Adequate depth of excavation is provided;
3. The base and sides of the excavation are clean and free of loose cuttings; and
4. If seepage is encountered, whether it requires the use of pumps to remove the water or install temporary casing to stop the flow of water and ensure sidewalls do not slough;

Precautions should be taken during the placement of reinforcing steel and concrete to prevent loose, excavated soil from falling into the excavation. Concrete should be placed as soon as practical after completion of the drilling, cleaning and inspection. Excavations should be filled with concrete before the end of the workday, thus preventing excessive deterioration of the bearing material. If the excavated shafts cannot be completed prior to the end of the work-day, the reinforcing steel should not be installed and they should be backfilled with excavated soils to eliminate the safety hazards of open excavations, minimize any reduction of calculated skin friction values and to help prevent sloughing of the sidewalls.

If groundwater is encountered, we anticipate the use of pumps will be adequate to remove relatively small amounts of water accumulated in the bottom of drilled shafts, prior to placement of concrete. If significant groundwater flow is encountered, the contractor should be prepared to immediately place concrete after pumping each shaft dry.

Shafts should be filled with concrete before the end of the workday to prevent excessive deterioration of the bearing material. **If concrete cannot be placed, the shafts should be backfilled with native soil to prevent deterioration and/or sloughing as well as for safety measures.** No more than three inches of water should be present at the bottom of the shaft when concrete placement begins. Loose soil or debris should not be present at the bottom of the shaft when concrete placement begins. Poor cleaning of compressible cuttings at the bottom can lead to significant settlement.

To reduce the potential for arching within the shaft, Alliance recommends using a concrete mix with a slump range of five (5) inches to seven (7) inches. A tremie pipe should be utilized to place concrete to prevent segregation and to prevent movement of the reinforcing steel cage. A free-fall method might allow the concrete to strike reinforcing steel, casing, or shaft sidewalls, causing segregation and undesirable

concrete strength properties. A free-fall method is acceptable if the concrete is directed through a hopper or an inverted chute and falls down the center of the shaft without striking the sides of the shaft or the reinforcing steel cage.

If the concrete has a slump less than or equal to seven (7) inches, the upper five (5) feet of concrete should be vibrated to assure proper consolidation in that region. If the slump is greater than seven (7) inches, the concrete should not be vibrated because of the potential to segregate cement and aggregates.

Concrete material should be sampled and tested for compressive strength and placement operations should be monitored to record concrete slump, temperature, and age at time of placement. Concrete batch tickets should be provided by the supplier so water-cement ratios and cement content can be checked and documented.

Lateral Load Design Parameters

For laterally loaded piers, the required soil input data is listed in the following table. These values may be used in the program LPILE by ENSOFT, Inc. **Table 8** presents approximate soil thicknesses and soil properties for each soil/rock stratum.

Table 8:

LPILE SOIL DESIGN PARAMETERS

SOIL STRATA FROM SOILS BORINGS	Select Fill/Clay Soils (0 to 8 feet)	Limestone (8+ feet)
LPILE SOIL P-Y CURVE MODEL	Stiff clay w/o free water	Stiff clay w/o free water
EFFECTIVE UNIT WEIGHT (pcf)	115	130
UN-DRAINED COHESION, c (psf)	500	1,000
FRICTION ANGLE (degree)	N/A	N/A
STRAIN FACTOR, ϵ_{50} (in/in)	Use LPILE Default Value	Use LPILE Default Value

PAVEMENT SYSTEM

The untreated subgrade clay soils at the site are generally considered poor subgrade materials for support of pavements and have a moderate to high shrink-swell potential. Based on the soil types encountered in the borings and previous experience with materials of this type, a modulus of subgrade reaction value of 100 pci shall be used in design of rigid pavements. Recommended pavement sections are provided in **Table 9**.

Table 9:

Recommended Pavement Sections

Traffic Conditions	Pavement Section (from top to the subgrade)
Parking Areas	<ul style="list-style-type: none"> • 5" Portland Cement Concrete* • 6" Flexible Base • 6" Scarified/Moisture Conditioned Subgrade
	<ul style="list-style-type: none"> • 2" Hot-Mix Asphalt Concrete (2" TxDOT Item 340 Type D) • 10" Flexible Base • 6" Scarified/Moisture Conditioned Subgrade
Fire Apparatus Lanes / Passenger Vehicle Main Drive Lanes	<ul style="list-style-type: none"> • 5½" Portland Cement Concrete* • 6" Flexible Base • 6" Scarified/Moisture Conditioned Subgrade
	<ul style="list-style-type: none"> • 2½" Hot-Mix Asphalt Concrete (2½" TxDOT Item 340 Type D) • 10" Flexible Base • 6" Scarified/Moisture Conditioned Subgrade
Dumpster Pad Area (if present)	<ul style="list-style-type: none"> • 6" Portland Cement Concrete* • 6" Flexible Base • 6" Scarified/Moisture Conditioned Subgrade

* The Flexible Base may be substituted for 1 additional inch of concrete thickness over a moisture-conditioned subgrade

The flexible base should consist of crushed limestone and generally conform to TxDOT Item 247 Type A, Grade 1-2 or "City Base" type crushed limestone. The moisture will be adjusted in the subgrade and compacted prior to the installation of the flexible base. The compaction and moisture requirements for both materials are presented in **Table 10**.

Concrete should have a minimum flexural strength of 600 psi at 28 days that corresponds to roughly 3,600-psi compressive strength. Concrete should be steel reinforced and include joints to control the formation of temperature and shrinkage related cracks.

Concrete should include air entrainment to increase the resistance to temperature effects. As a general guide, the air entrainment should vary from 3 to 6 percent. We recommend reinforcing concrete paving with grade 60, #4 deformed bars spaced at 18 inches on center each way. We recommend a maximum joint spacing of 20' x 20'. Sawcut joints should be cut to a depth of ¼ the thickness of the paving. Saw cutting should be conducted within 4 to 12 hours of initial set.

DETENTION EXCAVATIONS AND UTILITY EXCAVATIONS

Excavations for the detention pond are anticipated to be a combination of fat clay and soft to moderately (rock basis) severely weathered limestone and weathered limestone. These soils and rock can be excavated using normal-duty excavators; however, the production speed of the limestone excavation may be slow. The use of rock buckets and hoe-rams or heavy-duty excavation equipment may increase production speed. The slopes of the pond should be cut to a slope of 3 horizontal to 1 vertical or flatter in clay soils and limestones.

The depth of the limestone varied across the site; therefore, utility excavations are anticipated to encounter weathered limestone at depths as shallow as two (2) feet below existing grade. The earthwork contractor shall be prepared for these excavation conditions.

SITE PREPARATION AND EARTHWORK

All of the topsoil (soil with high organic content, e.g., >4%), tree roots, vegetation, wet soils, and any soft or loose soils must be removed from the proposed buildings and pavement areas. The stripped materials may either be wasted or stockpiled for later use in landscaping.

Prior to the addition of fill in building or parking areas, the stripped or excavated subgrade shall be proof-rolled and observed by a representative of Alliance Engineering Group. The proof roll shall be performed with equipment capable of providing a minimum of a 20-ton wheel load, typically, a fully loaded 12-yard tandem axle dump truck or a fully-loaded 2,000 gallon water truck. The entire fill area shall be rolled to check soft and/or pumping soils. If soft or pumping areas are observed, these areas shall be excavated to firm subgrade and replaced with compacted and testing dry soil.

Alliance Engineering Group, Inc. recommends that select fill and backfill be placed in horizontal loose lifts of not more than 8 inches in thickness. Re-use of existing material may require some wetting or drying to produce the necessary moisture content at the time of compaction. Appropriate laboratory tests such as Proctor moisture-density tests should be performed on samples of fill material. Field moisture-density tests and visual observation of lift thickness and material types should be performed during compaction operations to verify that the construction satisfies material and compaction requirements. Appropriate compaction testing methods and recommended density and moisture contents for material are presented below.

Fill materials should not be placed on soils that have been recently subjected to precipitation or saturation. **If soils that have been previously found to meet project specifications for moisture and density are exposed to measurable rainfall, all wet soils should be removed, replaced and retested or allowed to dry, reworked and retested prior to continuation of fill placement operations.** All wet soils should be removed or allowed to dry prior to continuation of fill placement operations. Imported fill materials should not contain wet materials at the time of placement. If any problems are encountered during the earthwork operations, or if site conditions differ from those encountered during our subsurface exploration, the Geotechnical Engineer should be notified immediately to determine the effect on recommendations expressed in this report. Fill compaction parameters are provided in **Table 10**.

Table 10:

Fill Compaction Parameters

Material/Use		Proctor Standard	Percent Compaction	Moisture Content
Building	Select Fill	Standard (ASTM D698)	95+	-2 to +2
	Moisture-Conditioned Subgrade/Clay Cap	Standard (ASTM D698)	92 - 98	+2 to +6
Paving	Flexible Base	Modified (ASTM D1557)	95+	-2 to +2
		TEX 113	100+	
	Moisture-Conditioned Subgrade	Standard (ASTM D698)	92 - 98	+2 to +6
	General/Utility Fill	Standard (ASTM D698)	95+	Optimum +
Non-Structural	Backfill	Standard Proctor (ASTM D698)	90	-2 to +2

Select fill that is imported to the site should be classified according to the Unified Soil Classification System (USCS) as SM, SC, GM, or GC, and should meet the following criteria:

- Percent passing the No. 4 sieve*: 50% to 80% (20% to 50% gravel)
- Percent passing the No. 200 sieve: 20% to 50%
- PI of soil passing the No. 40 sieve: 4 to 20
- Maximum size of gravel or rock fragments: 3 inches in any dimension

*The use of smooth river gravel within the select fill is not recommended.

CONSTRUCTION QUALITY CONTROL

Alliance Engineering Group has provided **Table 11** below as a recommendation for quality control during the construction of new and existing structures.

Table 11:
Recommendations for Quality Control

TYPE OF WORK	ITEM	SAMPLE FREQUENCY	SAMPLE SIZE	MINIMUM TESTING
General Earthwork, Subgrade and Fill	Soil Material	1 per soil type	75 lbs.	Sieve Analysis Atterberg Limits (PI) Proctor
	Compaction	1 Per 2,500 square feet per lift or, a minimum of 3 tests per lift		Field Density Test
Flexible Base Course	Flexible Base Material	1 per material type & for each 1,000 yd ³	150 lbs.	Sieve Analysis Atterberg Limits (PI) Proctor
	Compaction	1 Per 5,000 square feet or, a minimum of 3 per lift		Field Density Test
Hot Mixed Asphaltic Paving	Job Mix Formula (JMF)	1 per HMAC Type		Review and Approval
	Aggregate Testing	Weekly	50 lbs.	Sieve Analysis, Sand Equivalent and FM
	Uncompacted	3 Per Day	40 lbs.	Extraction, Gradation,
	Mix			Density, Stability, Rice Gravity
	Compacted Mix on the Job	1 core per uncompacted mix sample		Laboratory testing for Core Thickness and Core Density

SURFACE DRAINAGE

Performance of foundation slabs and flatwork is influenced by changes in subgrade moisture conditions. Carefully planned and maintained surface grading can reduce the risk of wetting of the foundation soils. We recommend the following precautions be implemented and maintained during construction and throughout the life of the structure:

- A. Excessive drying or wetting of clays in the open grade beam trench excavations must be avoided and no standing water is to be present. Bottoms of the beams shall be clean, firm and have no soft areas at the time of concrete placement.

- B. Utility structures connecting to the building should be designed to be flexible enough to tolerate some differential movement. Water supply pipes beneath the slabs should be placed in long sections with as few joints as possible and should be of durable size and material. The structures should be designed to be relatively flexible to limit the effects of differential movement.
- C. The ground surface around the building should be sloped to provide positive drainage away from the building. We recommend a minimum constructed and maintained slope of 12 inches along the first 10 feet from the edge of the foundation slab if practical. Water must not be allowed to pond adjacent to the foundation slab.
- D. If roof gutters are to be installed, the roof drain downspouts should be designed and placed to discharge stormwater at least 5 feet away from the edge of the building and should be concentrated on the downslope side of the foundation.
- E. Downspouts must also extend horizontally beyond the width of perimeter beam backfill so that water does not seep down directly into the backfill. Downspout extensions, splash blocks, and buried outlets must be maintained by the owner.
- F. Large tree species or bushes should not be planted or allowed to exist near the foundations within a horizontal distance equal to half of their mature height because of the root penetration and moisture demand that will dry underlying clay soils and cause shrinkage settlement, particularly under the perimeter beam.
- G. If an exterior sprinkler system is installed to water landscaping, the sprinkler lines should not be placed within 5 feet of the edge of the foundation. Instead, the lines should be placed so that sprinkler heads with sufficient capacity are used and direct water toward the structure from 5 feet away. It is the owner's responsibility to maintain constant moisture conditions in the soils around the foundation slab. Excessive watering can cause swelling of clay soils underneath the foundation slab.

IBC SITE CLASSIFICATION

It is assumed that the foundation will be developed using the 2021 International Building Code. Based on the site-specific undrained soil strengths values using Table 20.3.1 of ASCE 7, Site Class C should be used. Note that the site classification is based on the upper 100 feet of the subgrade. Although the borings for this project were not advanced to this depth, our knowledge of the local geologic formations have been considered based on the results of the borings.

LIMITATIONS

Borings were spaced to obtain a reasonable indication of subsurface conditions. The data from the borings is only accurate at the exact boring locations. Variations in the subsurface conditions not indicated by our borings are possible. The recommendations in this report were developed considering conditions exposed in the exploratory borings and our understanding of the type of structures planned.

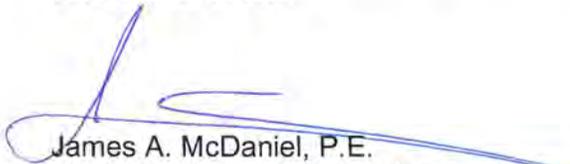
This report does not reflect any variations that may occur around the borings. In the performance of the subsurface exploration, specific information is obtained at specific locations at specific times. However, it is a well known fact that variations in soil conditions exist on most sites between boring locations, and conditions such as groundwater levels vary from time to time. The nature and extent of variations may not become evident until the course of construction. If variations then appear evident, after allowing Alliance Engineering Group to perform on-site observations during the construction period and note characteristics and variations, a re-evaluation of the recommendations in this report will be necessary.

We believe that the geotechnical services for this project were performed with a level of skill and care ordinarily used by geotechnical engineers practicing in this area at this time. No warranty, express or implied, is made. The performance of foundations is primarily controlled by the quality of the construction. To prevent misinterpretation of our recommendations, and to document proper construction, Alliance Engineering Group should be retained to perform full time quality control testing, inspection, and documentation during construction of the foundations.

We appreciate the opportunity to serve as your geotechnical consultant for this project. If you have any questions, comments, or suggestions regarding the information presented herein, please contact our offices at your convenience.

Respectfully,

ALLIANCE ENGINEERING GROUP, INC.
TBPE Firm No. 11290


James A. McDaniel, P.E.
VP Geotechnical Engineering Services

JAM/ck

Dist:: New Life Ministry – Pastor Jimmy Hernandez

cc: File

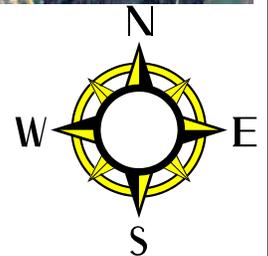
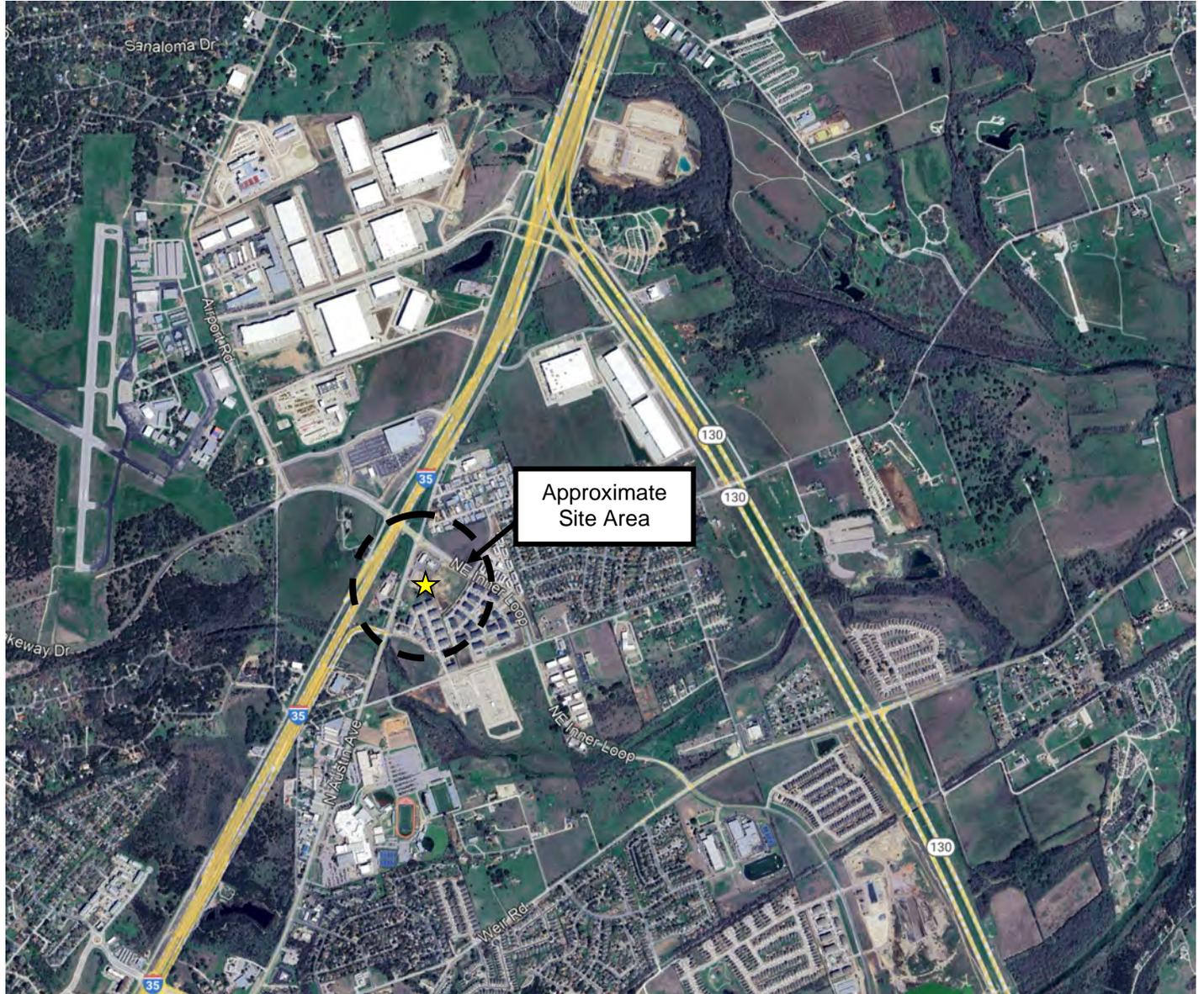
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NEW LIFE BUILDING
GEORGETOWN, TEXAS
ALLIANCE ENGINEERING GROUP, INC. PROJECT # AE24-0702





Wayne A. Eddins
Project Manager

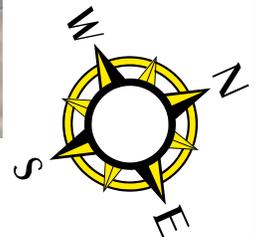
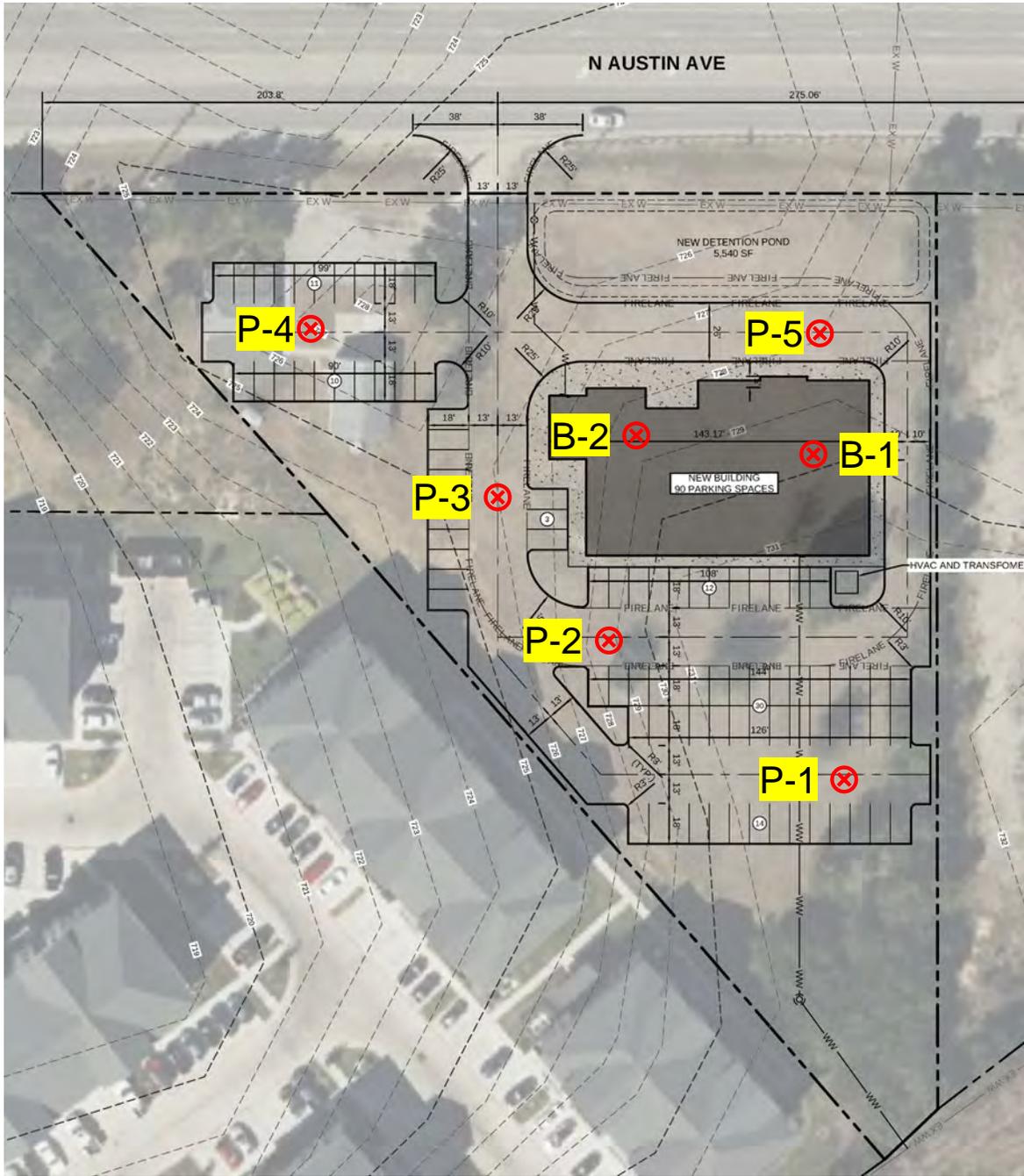


Vicinity Map

**New Life Church Building
2701 N. Austin Avenue
Georgetown, Texas**



Prepared By: JAM	Scale: NTS	Project #: AE24-0702
Site Plan from: Google	Date: September, 2024	Figure #: 1

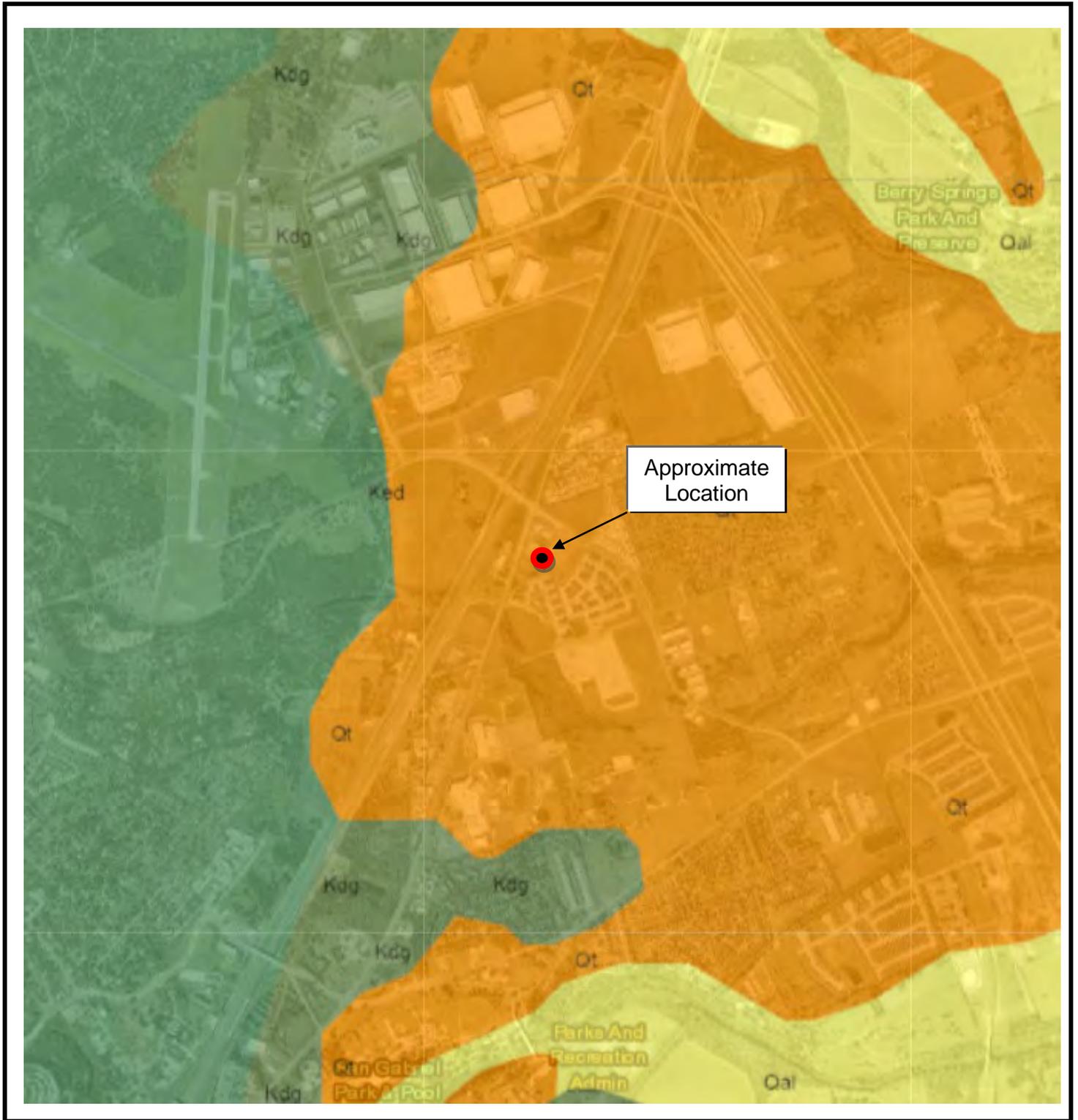


Approximate Locations of Borings

**New Life Church Building
2701 N. Austin Avenue
Georgetown, Texas**



Prepared By: JAM	Scale: NTS	Project #: AE24-0702
Site Plan from: HPE	Date: September, 2024	Figure #: 2



Geology Map

**New Life Church Building
2701 N. Austin Avenue
Georgetown, Texas**

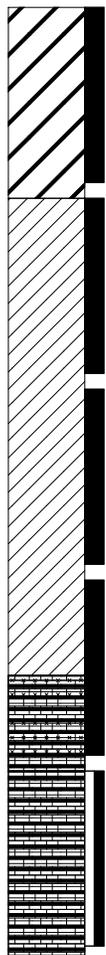


Prepared By: JAM	Scale: NTS	Project #: AE24-0702
Map By: U.T. Bureau of Econ. G.	Date: September, 2024	Figure #: 3

LOG OF BORING B-1

Project: **New Life Church Building - 2701 N. Austin Avenue**
 Date: **8/4/2024** Elev.: **729**
 Groundwater Observations: **N/A**
 Logged by: **In field by driller, final log by J.M.**
 Drilled by: **404 Partners**

Project #: **AE24-0702**
 Location: **Georgetown, Texas**
 Longitude: **-97.663768**
 Latitude: **30.671344**

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS & FIELD TEST DATA	DESCRIPTION	MC %	LL %	PL %	PI	-200 %	D.D. pcf	P.PEN tsf	UNCON. ksf
729 0		FAT CLAY, dry, hard, dark reddish brown and yellowish brown (CH)	20				87		4.5+	
728 1										
727 2		LEAN CLAY, dry, hard, yellowish red, with calcareous deposits (CL)	12					121.2	4.5+	
726 3										
725 4				13	43	17	26	82	4.5+	
724 5										
723 6		- with light red to pink calcareous clay seams	12				81	4.5+		
722 7		SEVERELY WEATHERED LIMESTONE, dry, soft (rock basis), yellowish brown (SWLS)								
721 8		WEATHERED LIMESTONE, dry, moderately hard (rock basis) yellowish brown (WLS)								
720 9										
719 10		Boring terminated at 10'								
718 11										
717 12										
716 13										
715 14										

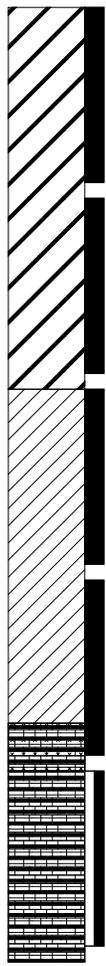
Notes: Boring dry at completion. Elevations based on available topographic maps.

Figure 4

LOG OF BORING B-2

Project: **New Life Church Building - 2701 N. Austin Avenue**
 Date: **8/4/2024** Elev.: **728**
 Groundwater Observations: **N/A**
 Logged by: **In field by driller, final log by J.M.**
 Drilled by: **404 Partners**

Project #: **AE24-0702**
 Location: **Georgetown, Texas**
 Longitude: **-97.663855**
 Latitude: **30.671132**

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS & FIELD TEST DATA	DESCRIPTION	MC %	LL %	PL %	PI	-200 %	D.D. pcf	P.PEN tsf	UNCON. ksf
728 - 0		FAT CLAY, dry, hard, dark reddish brown and yellowish brown (CH)	19				76		4.5+	
727 - 1										
726 - 2		- with calcareous deposits	15	52	21	31	66		4.5+	
725 - 3										
724 - 4		LEAN CLAY, dry, hard, yellowish red, with calcareous deposits (CL)	13						4.5+	
723 - 5										
722 - 6		- with light red to pink calcareous clay seams	8				60		4.5+	
721 - 7										
720 - 8		SEVERELY WEATHERED LIMESTONE, dry, soft (rock basis), yellowish brown (SWLS)								
719 - 9		WEATHERED LIMESTONE, dry, moderately hard (rock basis) yellowish brown (WLS)								
718 - 10		Boring terminated at 10'								
717 - 11										
716 - 12										
715 - 13										
714 - 14										

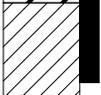
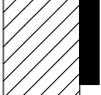
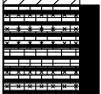
Notes: Boring dry at completion. Elevations based on available topographic maps.

Figure 5

LOG OF BORING P-1

Project: **New Life Church Building - 2701 N. Austin Avenue**
 Date: **8/4/2024** Elev.: **732**
 Groundwater Observations: **N/A**
 Logged by: **In field by driller, final log by J.M.**
 Drilled by: **404 Partners**

Project #: **AE24-0702**
 Location: **Georgetown, Texas**
 Longitude: **-97.663290**
 Latitude: **30.671243**

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS & FIELD TEST DATA	DESCRIPTION	MC %	LL %	PL %	PI	-200 %	D.D. pcf	P.PEN tsf	UNCON. ksf
732 - 0		FAT CLAY, dry, hard, dark reddish brown and yellowish brown (CH)	16				60		4.5+	
731 - 1		LEAN CLAY, dry, hard, yellowish red, with calcareous deposits (CL)								
730 - 2			13	23	20	3	46		4.5+	
729 - 3										
728 - 4		SEVERELY WEATHERED LIMESTONE, dry, soft (rock basis), yellowish brown (SWLS)	8				26		4.5+	
727 - 5										
726 - 6		Boring terminated at 6'								
725 - 7										
724 - 8										
723 - 9										
722 - 10										
721 - 11										
720 - 12										
719 - 13										
718 - 14										

Notes: Boring dry at completion. Elevations based on available topographic maps.

Figure 6

LOG OF BORING P-2

Project: **New Life Church Building - 2701 N. Austin Avenue**

Project #: **AE24-0702**

Date: **8/4/2024** Elev.: **728**

Location: **Georgetown, Texas**

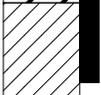
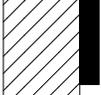
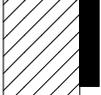
Groundwater Observations: **N/A**

Logged by: **In field by driller, final log by J.M.**

Longitude: **-97.663614**

Drilled by: **404 Partners**

Latitude: **30.671010**

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS & FIELD TEST DATA	DESCRIPTION	MC %	LL %	PL %	PI	-200 %	D.D. pcf	P.PEN tsf	UNCON. ksf
728 - 0		FAT CLAY, dry, hard, dark reddish brown and yellowish brown (CH)	14				58		4.5+	
727 - 1		LEAN CLAY, dry, hard, yellowish red, with calcareous deposits (CL)								
726 - 2		- with limestone fragments	12	46	20	26	48		4.5+	
725 - 3										
724 - 4		- very stiff, with light red to pink calcareous clay seams	11				38		3.5	
723 - 5										
722 - 6		Boring terminated at 6'								
721 - 7										
720 - 8										
719 - 9										
718 - 10										
717 - 11										
716 - 12										
715 - 13										
714 - 14										

Notes: Boring dry at completion. Elevations based on available topographic maps.

Figure 7

LOG OF BORING P-3

Project: **New Life Church Building - 2701 N. Austin Avenue**

Project #: **AE24-0702**

Date: **8/4/2024** Elev.: **726**

Location: **Georgetown, Texas**

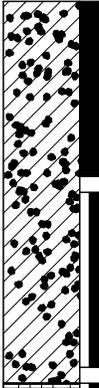
Groundwater Observations: **N/A**

Logged by: **In field by driller, final log by J.M.**

Longitude: **-97.663853**

Drilled by: **404 Partners**

Latitude: **30.670950**

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS & FIELD TEST DATA	DESCRIPTION	MC %	LL %	PL %	PI	-200 %	D.D. pcf	P.PEN tsf	UNCON. ksf
726 0		GRAVELLY LEAN CLAY, dry, hard, dark reddish brown and yellowish brown, with limestone fragments (CLG)							4.5+	
725 1										
724 2		- with abundant limestone fragments								
723 3										
722 4		SEVERELY WEATHERED LIMESTONE/ CALCAREOUS CLAY, dry, soft (rock basis), yellowish brown (SWLS/CL)								
721 5										
720 6		Boring terminated at 6'								
719 7										
718 8										
717 9										
716 10										
715 11										
714 12										
713 13										
712 14										

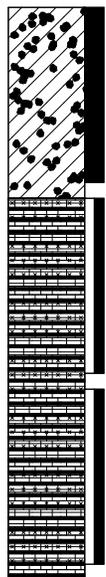
Notes: Boring dry at completion. Elevations based on available topographic maps.

Figure 8

LOG OF BORING P-4

Project: **New Life Church Building - 2701 N. Austin Avenue**
 Date: **8/4/2024** Elev.: **727**
 Groundwater Observations: **N/A**
 Logged by: **In field by driller, final log by J.M.**
 Drilled by: **404 Partners**

Project #: **AE24-0702**
 Location: **Georgetown, Texas**
 Longitude: **-97.664164**
 Latitude: **30.670819**

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS & FIELD TEST DATA	DESCRIPTION	MC %	LL %	PL %	PI	-200 %	D.D. pcf	P.PEN tsf	UNCON. ksf
727 - 0		GRAVELLY LEAN CLAY, dry, hard, dark reddish brown and yellowish brown, with limestone fragments (CLG)	12				32		4.5+	
726 - 1										
725 - 2		SEVERELY WEATHERED LIMESTONE CALCAREOUS CLAY, dry, soft (rock basis), yellowish brown (SWLS)/(CL)	12				65			
724 - 3										
723 - 4			13				65			
722 - 5										
721 - 6		Boring terminated at 6'								
720 - 7										
719 - 8										
718 - 9										
717 - 10										
716 - 11										
715 - 12										
714 - 13										
713 - 14										

Notes: Boring dry at completion. Elevations based on available topographic maps.

Figure 9

LOG OF BORING P-5

Project: **New Life Church Building - 2701 N. Austin Avenue**
 Date: **8/4/2024** Elev.: **728**
 Groundwater Observations: **N/A**
 Logged by: **In field by driller, final log by J.M.**
 Drilled by: **404 Partners**

Project #: **AE24-0702**
 Location: **Georgetown, Texas**
 Longitude: **-97.663925**
 Latitude: **30.671395**

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS & FIELD TEST DATA	DESCRIPTION	MC %	LL %	PL %	PI	-200 %	D.D. pcf	P.PEN tsf	UNCON. ksf
728 - 0		FAT CLAY, dry, hard, dark reddish brown and yellowish brown (CH)	22	70	25	45	85		4.5+	
727 - 1										
726 - 2			16	65	23	42	82			
725 - 3										
724 - 4		SEVERELY WEATHERED LIMESTONE CALCAREOUS CLAY, dry, soft (rock basis), yellowish brown (SWLS)	10				45			
723 - 5										
722 - 6		Boring terminated at 6'								
721 - 7										
720 - 8										
719 - 9										
718 - 10										
717 - 11										
716 - 12										
715 - 13										
714 - 14										

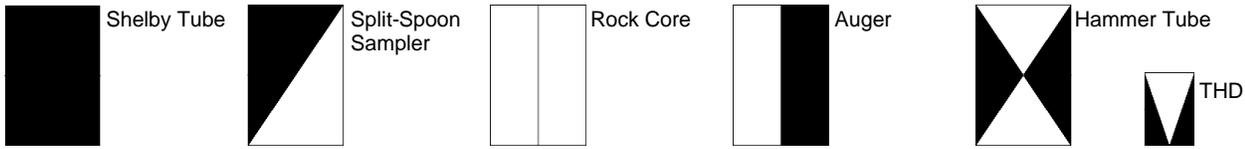
Notes: Boring dry at completion. Elevations based on available topographic maps.

Figure 10

STANDARD REFERENCE NOTES FOR BORING LOG



I. Sampling & Testing Symbols:



II. Correlations of Penetration Resistance to Soil properties:

Relative Density of Sand and Sandy Silt		Consistency of Clay and Clayey Silt		
Relative Density	SPT N-Value	Consistency	SPT N-Value (Qualitative Measure)	Unconfined Compressive Strength (tsf)
Very Loose	0 to 4	Very Soft	0 to 3	Under 0.25
Loose	5 to 10	Soft	4 or 5	0.25 to 0.5
Medium Dense	11 to 30	Medium Stiff	6 to 10	0.5 to 1.0
Dense	31 to 50	Stiff	11 to 15	1.0 to 2.0
Very Dense	>50	Very Stiff	16 to 30	2.0 to 4.0
		Hard	>30	4.0 to 8.0

III. Unified Soil Classification Symbols:

- | | | |
|-------------------------------|------------------------------|------------------------------------|
| GP – Poorly Graded Gravel | SP – Poorly Graded Sand | ML – Low Plasticity Silt |
| GW – Well Graded Gravel | SW – Well Graded Sand | MH – High Plasticity Silt |
| GM – Silty Gravel | SM – Silty Sand | CL – Low to Medium Plasticity Clay |
| GC – Clayey Gravel | SC – Clayey Sand | CH – High Plasticity Clay |
| OH – High Plasticity Organics | OL – Low Plasticity Organics | |

IV. Rock Quality Designation Index (RQD):

RQD:	Description of Rock Quality: (if all natural fractures)
0% to 25%	Very Poor
25% to 50%	Poor
50% to 75%	Fair
75% to 90%	Good
90% to 100%	Excellent

V. Natural Moisture Content:

- “Dry” No apparent moisture, crumbles easily
- “Moist” Damp, but no visible water
- “Wet” Visible Water

VI. Grain Size Terminology:

- Cobble: 3-inches to 12-inches
- Gravel: #4 sieve size (4.75 mm) to 3-inches
- Coarse Sand: #10 to #4 sieve size
- Medium Sand: #40 to #10 sieve size
- Fine Sand: #200 to #40 sieve size
- Silt or Clay: smaller than #200 sieve size

VIII. Descriptive Terms or Symbols:

- “Mottled”: occasional/spotted presence of that color
- “-[...]” : identifies change in soil characteristics
- LL: Liquid Limit (moisture content as % of dry weight)
- PL: Plastic Limit (moisture content as % of dry weight)
- WOH: Weight of Hammer
- “with [...]”: item identified with that sample only

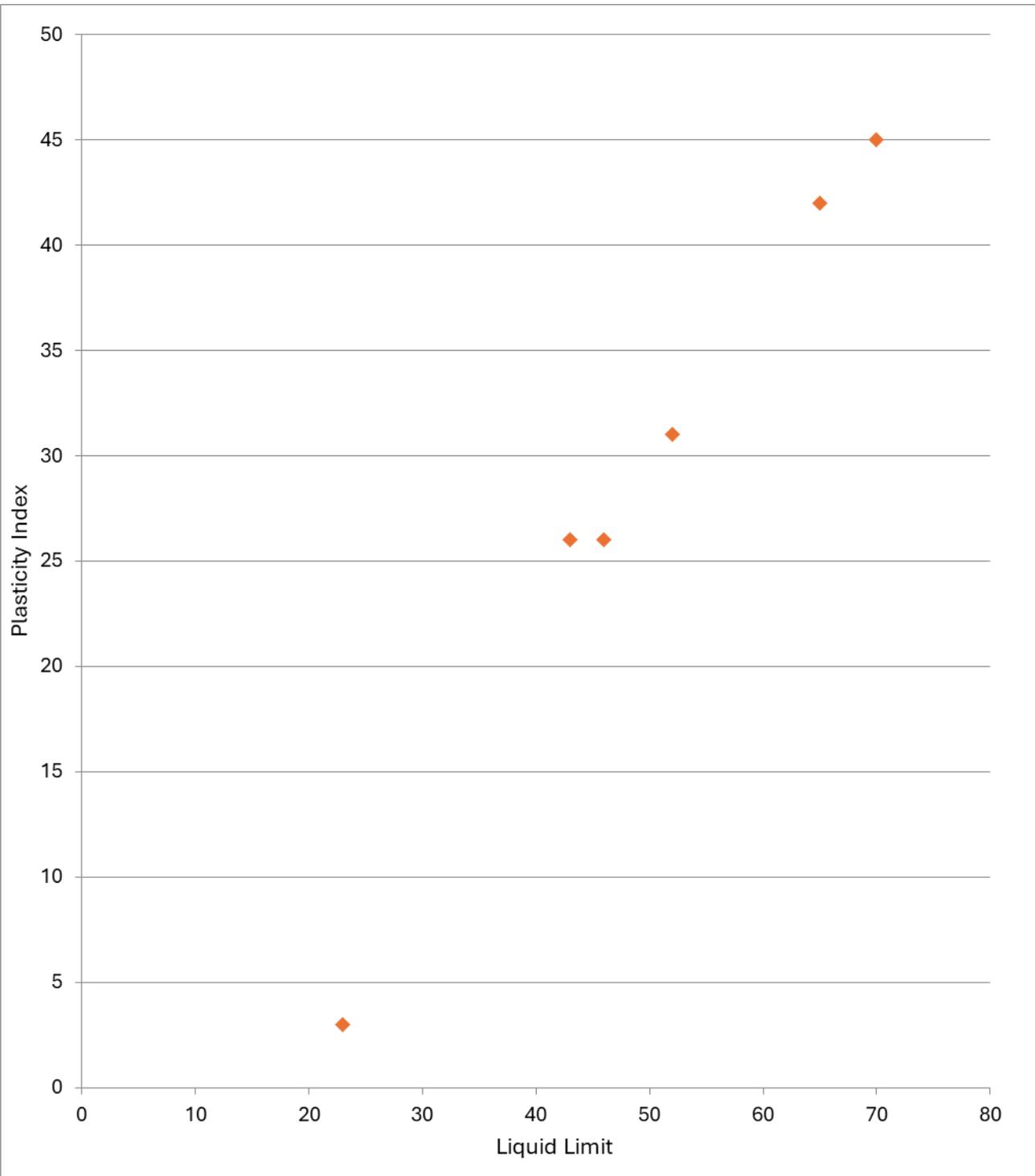
VII. Discriptive Terms for Soil Composition:

- “trace”1% to 9%
- “some”10% to 29%
- with Suffix “-y” (e.g. sandy, clayey).....30% to 49%

IX. Plasticity of Cohesive Soil:

- (function of PI and Clay Mineral Types)
- Plasticity Index (PI): Plasticity:
- 0 to 20 Low
- 20 to 30 Medium
- 30+ High

200 Mustang Cove; Taylor, Texas 76574 * Phone (512) 281-4688 * Fax: (512) 281-4191

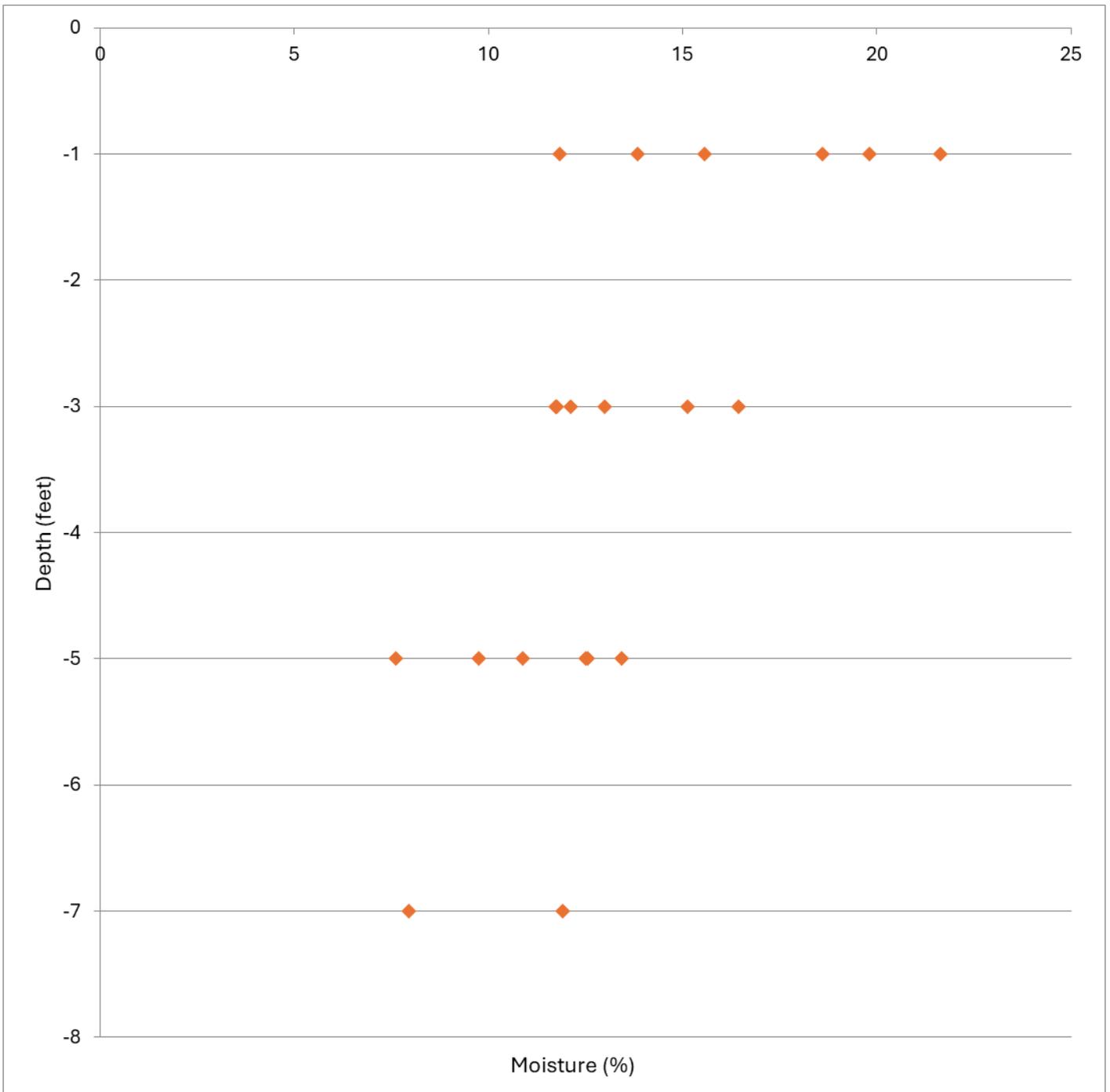


Atterberg Limit Chart

**New Life Church Building
2701 N. Austin Avenue
Georgetown, Texas**



Prepared By: JAM		Project #: AE24-0702
Test Method: ASTM D-4318	Date: September, 2024	Figure #: 12



Moisture Content Chart

**New Life Church Building
2701 N. Austin Avenue
Georgetown, Texas**



Prepared By: JAM		Project #: AE24-0702
Test Method: ASTM D-2216	Date: August, 2024	Figure #: 13

Boring No.	B-2
Depth (ft)	2 – 4
Initial Dry Density (pcf)	121.2
Initial Moisture Content %	12.3
Final Moisture Content %	16.5
Liquid Limit (LL)	N/A
Plasticity Index (PI)	N/A
Initial Penetrometer Reading, tsf	4.5+
Final Penetrometer Reading, tsf	2.75
Overburden Swell Pressure, psf	375
Vertical Swell, %	3.07

Swell Test Results Chart

**New Life Church Building
2701 N. Austin Avenue
Georgetown, Texas**



Prepared By:
JAM

Project #:
AE24-0702

Test Method:
ASTM D-4546

Date:
August, 2024

Figure #:
14

WinPAS

Pavement Thickness Design According to
1993 AASHTO Guide for Design of Pavements Structures
American Concrete Pavement Association

Rigid Design Inputs

Project Name: New Life Church Building
Route:
Location: Georgetown, Texas
Owner/Agency:
Description: Parking Spaces - 20,000 ESAL's

Rigid Pavement Design/Evaluation

Concrete Thickness	3.43 inches	Load Transfer Coefficient	3.20
Total Rigid ESALs	20,000	Modulus of Subgrade Reaction	100 psi/in.
Reliability	85.00 percent	Drainage Coefficient	1.00
Overall Standard Deviation	0.35	Initial Serviceability	4.20
Flexural Strength	600 psi	Terminal Serviceability	2.00
Modulus of Elasticity	4,100,000 psi		

Modulus of Subgrade Reaction (k-value) Determination

Resilient Modulus of the Subgrade	0.0
Unadjusted Modulus of Subgrade Reaction	0
Depth to Rigid Foundation	0.00
Loss of Support Value (0,1,2,3)	0.0

Modulus of Subgrade Reaction	100 psi/in.
------------------------------	-------------

WinPAS

Pavement Thickness Design According to
1993 AASHTO Guide for Design of Pavements Structures
 American Concrete Pavement Association

Flexible Design Inputs

Project Name: New Life Church Building
 Route:
 Location: Georgetown, Texas
 Owner/Agency:
 Description: Parking Spaces - 20,000 ESAL's

Flexible Pavement Design/Evaluation

Structural Number	2.16	Subgrade Resilient Modulus	4,118.20 psi
Total Flexible ESALs	20,000	Initial Serviceability	4.20
Reliability	85.00 percent	Terminal Serviceability	2.00
Overall Standard Deviation	0.45		

Layer Pavement Design/Evaluation

Layer Material	Layer Coefficient	Drainage Coefficient	Layer Thickness	Layer SN
Asphalt Cement Concrete	0.44	1.00	2.00	0.88
Flexible Base	0.16	1.00	10.00	1.60
			Σ SN	2.48

WinPAS

Pavement Thickness Design According to
1993 AASHTO Guide for Design of Pavements Structures
American Concrete Pavement Association

Rigid Design Inputs

Project Name: New Life Church Building
Route:
Location: Georgetown, Texas
Owner/Agency:
Description: Fire / Passenger Drive Lanes - 60,000 ESAL's

Rigid Pavement Design/Evaluation

Concrete Thickness	4.23 inches	Load Transfer Coefficient	3.20
Total Rigid ESALs	60,000	Modulus of Subgrade Reaction	100 psi/in.
Reliability	85.00 percent	Drainage Coefficient	1.00
Overall Standard Deviation	0.35	Initial Serviceability	4.20
Flexural Strength	600 psi	Terminal Serviceability	2.00
Modulus of Elasticity	4,100,000 psi		

Modulus of Subgrade Reaction (k-value) Determination

Resilient Modulus of the Subgrade	0.0
Unadjusted Modulus of Subgrade Reaction	0
Depth to Rigid Foundation	0.00
Loss of Support Value (0,1,2,3)	0.0

Modulus of Subgrade Reaction	100 psi/in.
-------------------------------------	-------------

WinPAS

Pavement Thickness Design According to
1993 AASHTO Guide for Design of Pavements Structures
 American Concrete Pavement Association

Flexible Design Inputs

Project Name: New Life Church Building
 Route:
 Location: Georgetown, Texas
 Owner/Agency:
 Description: Fire / Passenger Drive Lanes - 60,000 ESAL's

Flexible Pavement Design/Evaluation

Structural Number	2.57	Subgrade Resilient Modulus	4,118.20 psi
Total Flexible ESALs	60,000	Initial Serviceability	4.20
Reliability	85.00 percent	Terminal Serviceability	2.00
Overall Standard Deviation	0.45		

Layer Pavement Design/Evaluation

Layer Material	Layer Coefficient	Drainage Coefficient	Layer Thickness	Layer SN
Asphalt Cement Concrete	0.44	1.00	2.50	1.10
Flexible Base	0.16	1.00	10.00	1.60
			Σ SN	2.70

WinPAS

Pavement Thickness Design According to
1993 AASHTO Guide for Design of Pavements Structures
American Concrete Pavement Association

Rigid Design Inputs

Project Name: New Life Church Building
Route:
Location: Georgetown, Texas
Owner/Agency:
Description: Fire / Drive Lanes 100,000 ESAL's

Rigid Pavement Design/Evaluation

Concrete Thickness	4.65 inches	Load Transfer Coefficient	3.20
Total Rigid ESALs	100,000	Modulus of Subgrade Reaction	100 psi/in.
Reliability	85.00 percent	Drainage Coefficient	1.00
Overall Standard Deviation	0.35	Initial Serviceability	4.20
Flexural Strength	600 psi	Terminal Serviceability	2.00
Modulus of Elasticity	4,100,000 psi		

Modulus of Subgrade Reaction (k-value) Determination

Resilient Modulus of the Subgrade 0.0
Unadjusted Modulus of Subgrade Reaction 0
Depth to Rigid Foundation 0.00
Loss of Support Value (0,1,2,3) 0.0

Modulus of Subgrade Reaction	100 psi/in.
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