MEG GEOTECHNICAL ENGINEERING REPORT

Proposed
GBIC Industrial Park Naranjo Road and Enterprise Drive

Brownsville, Cameron County, Texas

Geotechnical Engineering • Construction Materials Engineering & Testing Environmental • Consulting • Forensics

GEOTECHNICAL ENGINEERING REPORT
Pavement Recommendations
Proposed GBIC Industrial Park Naranjo Road and Enterprise Drive
Brownsville, Cameron County, Texas

Prepared For
Ms. Nadia Lopez,
Halff Associates

MEG Report No. 02-25-29130

October 22, 2025

October 22, 2025

Nadia Lopez, P.E.
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Subject: **Geotechnical Engineering Report**
MEG Report No. 02-25-29130
Pavement Recommendations
Proposed GBIC Industrial Park Naranjo Road and Enterprise Drive
Brownsville, Cameron County, Texas

Dear Ms. Nadia Lopez:

Millennium Engineers Group, Inc. is pleased to submit the enclosed geotechnical engineering report that was prepared for the above subject project. This report addresses the procedures and findings of our geotechnical engineering study. Our recommendations should be incorporated into the design and construction documents for the proposed development.

We want to emphasize the importance that all our recommendations presented in this report and/or addendums to this report be followed. We look forward to continuing our involvement in the project by providing construction monitoring in accordance with the report recommendations and materials testing services during construction. We strongly recommend that we be a part of the preconstruction meeting to address any specific issues that are pertinent to this project.

Thank you for the opportunity to be of service to you in this phase of the project and we would like the opportunity to assist you in the upcoming phases of the project. If you have any questions, please contact our office at the address, telephone, fax or electronic address listed below.

Cordially,
Millennium Engineers Group, Inc.
TBPE Firm No. F-3913

Amos Emerson, P.E.
Geotechnical Department Manager

Quyet Thang Pham, Ph.D., P.E.
Geotechnical Engineer

The seal appearing on this document was authorized by Quyet Thang Pham, P.E. 131836 on October 22, 2025. Alteration of a sealed document without proper notification to the responsible engineer is an offence under the Texas Engineering Practice Act

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1.0 INTRODUCTION

Millennium Engineers Group, Inc. (MEG) has completed and is pleased to submit this document that presents our findings as a result of a geotechnical engineering study of this project to our client. The project site is located within a developing industrial park in Brownsville, Texas, approximately 5,000 feet west of the Paredes Line Road and Texas Highway 550. Enterprise Drive extends south for approximately 3,000 feet, while Naranjo Road runs perpendicular to Enterprise Drive for approximately 3,100 feet. The project location is shown on the Project Location Map, found in the Appendix section of this report. This report briefly describes the procedures utilized during this study and presents our findings along with our recommendation for pavement design and construction considerations.

Our scope of services for the project was outlined in the standard subcontract between Millennium Engineers, Inc. and Halff Associates, Inc. for Subsurface Services executed August 07, 2025.

2.0 PROJECT DESCRIPTION

The site will accommodate the construction of rigid pavement that will serve for heavy-duty traffic. The rigid pavement types are viable and the selection on the type to be used will depend on the specific needs and criteria of this project site.

3.0 REVIEW OF PREVIOUS STUDIES

MEG has reviewed a previously performed Geotechnical Engineering Study within the project site prior to conducting out geotechnical study of this project. The previous study was done by Millennium Engineers Group, Inc. (MEG) Project No. 02-23-29128 dated November 1, 2023.

4.0 SCOPE AND LIMITATIONS OF STUDY

This engineering report has been prepared in accordance with accepted geotechnical engineering practices currently exercised by geotechnical engineers in this area. No warranty, expressed or implied, is made or intended. This report is intended for the exclusive use by the client and client's authorized project team for use in preparing design and construction documents for this project only. This report may only be reproduced in its entirety for inclusion in construction documents. This report in its entirety shall not be reproduced or used for any other purposes without the written consent of our firm. 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 presented in this report are based on data obtained from the soil

borings drilled at this site and our understanding of the project information provided to us by our client and other project team members, and the assumption that site grading will result in only minor changes in the existing topography. Subsurface soil conditions have been observed and interpreted at the boring locations only.

This report may not reflect the actual variations of the subsurface conditions across the subject site. It is important to understand that variations may occur due to real geologic conditions or previous uses of the site. The nature and extent of variations across the subject site may not become evident until specific design locations are identified and/or construction commences. The construction process itself may also alter subsurface conditions. If variations appear evident at the time during the design phase and/or construction phase, we should be notified immediately to determine if our opinions, conclusions and recommendations need to be reevaluated. It may be necessary to perform additional field and laboratory tests and engineering analyses to establish the engineering impact of such variations. These services are additional and are not a part of our project scope.

The engineering report was conducted for the proposed project site described in this report. The conclusions and recommendations contained in this report are not valid for any other project sites. If the project information described in this report is incorrect, is altered, or if new information becomes available, we should be retained to review and modify our recommendations. These services are additional and are not a part of our project scope.

Our scope of services was limited to the proposed work described in this report, and did not address other items or areas. The scope of our geotechnical engineering study does not include environmental assessment of the air, soil, rock or water conditions on or adjacent to the site. No environmental opinions are presented in this report. If the client is concerned with environmental risk at this project site, the client should perform an environmental site assessment.

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

5.0 FIELD EXPLORATION PROCEDURES

Subsurface conditions at the subject site were evaluated by five (5) 10-foot soil borings for the planned road additions. The Borings were drilled at the locations shown on the Borings Location Map, found in the Appendix section of this report. This location is approximate and distances were measured using a measuring wheel, tape, angles, and/or pacing from existing references. The structural soil borings were drilled in general accordance with American Society of Testing Materials (ASTM) D 420 procedures.

As part of our sampling procedures, the samples were collected in general conformance with

ASTM D 1586 procedures. Representative portions of the samples were sealed in containers to reduce moisture loss, identified, packaged, and transported to our laboratory for subsequent testing. In the laboratory, each sample was evaluated and visually classified by a member of our Geotechnical Engineering staff. The geotechnical engineering properties of the strata were evaluated by a series of laboratory tests. The results of the laboratory and field-testing are tabulated on the boring logs and Summary of Soil Sample Analyses which are found in the Attachments section of this report.

Standard penetration test results are noted on the boring logs as blows per 12 inches of penetration. Three 6 inch increments are performed for each standard penetration test. The sum of the blows for the final two 6 inch increments is considered the "standard penetration resistance value" or "N-value." Where hard or very dense materials were encountered, the tests are terminated as follows: (1) when a total of 50 blows have been applied in any of the 6 inch increments, or (2) when a total of 100 blows have been applied, or (3) when there is no observed advance of the sampler in the application of 10 successive blows. The boring logs in the case of hard or very dense materials will be noted as follows: 50/3", where 50 is the number of blows applied in 3 inches of penetration, or 100/7½" where 100 is the number of blows applied in a total of 7 ½ inches of penetration, or 10/0", where 10 is the number of blows applied in 0 inches of penetration.

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.

6.0 GENERAL SITE CONDITIONS

6.1 Site Description

The project site is located within a developing industrial park in Brownsville, Texas, approximately 5,000 feet west of the Paredes Line Road and Texas Highway 550. Enterprise Drive extends south for approximately 3,000 feet, while Naranjo Road runs perpendicular to Enterprise Drive for approximately 3,100 feet. The project location is shown on the Project Location Map, found in the Appendix section of this report. At the time of our field operations, the subject site can be described as developing tract of land. The general topography of the site is relatively flat sloping to the east with a visually estimated vertical relief of less than two (2) feet. Surface drainage is visually estimated to be poor to fair.

6.2 Subsurface Conditions

On the basis of our borings, one (1) generalized strata that possess similar physical and engineering characteristics can describe the subsurface stratigraphy at this site. Table 5.1 Approximate Subsurface Stratigraphy Depths summarizes the approximate strata range in our boring logs. These were prepared by visual classification and were aided by laboratory analyses of selected soil samples. The lines designating the interfaces between strata on the

boring logs represent approximate boundaries. Transitions between strata may be gradual details for each of the borings can be found on the boring logs in the appendix of this report.

Table 6.1 Approximate Subsurface Stratigraphy Depths

Stratum	Range in Depth, ft	Stratum Description
1	0.0 - 10.0	Fat Clay to Fat Clay with Sand, CH, Dark Brown - Brown, Dry to Wet, Med. Stiff to Stiff

6.3 Groundwater Conditions

The dry auger drilling technique was used to complete the soil borings in an attempt to observe the presence of subsurface water. During our drilling operations we did not encounter the groundwater table. The moisture content test exhibited high moisture content at a depth of four (4) feet below natural ground elevation. Table 5.2 Approximate Subsurface Stratigraphy Depths summarizes the approximate groundwater and cave in depths measured in our explorations. It should be noted that the groundwater level measurements recorded are accurate only for the specific dates on which measurement were obtained and does not show fluctuations throughout the year.

Fluctuations in Groundwater levels are influenced by variations in rainfall and surface water run-off from season to season. The construction process itself may also cause variations in the groundwater level. If the subsurface water elevation is critical to the construction process the contractor should check the subsurface water conditions just prior to construction excavation activities.

Table 6.2 Approximate Subsurface Stratigraphy Depths

Boring No.	Depth to Subsurface Water, (Ft)	Depth to Cave-In, (Ft)
	Time of Drilling	Time of Drilling
R-1	None	10.0
R-2	None	10.0
R-3	None	10.0
R-4	None	10.0
R-5	None	6.0

Based on the findings in our borings and on our experience in this region, we believe that groundwater seepage **may be** encountered during site earthwork activities. If groundwater seepage is encountered during site earthwork activities, it may be controlled using temporary earthen berms and/or conventional sump-and-pump dewatering methods.

7.0 PAVEMENT SECTIONS RECOMMENDATIONS

7.1 General Information

The study was performed to determine recommendations for the construction of a rigid pavements, and the recommendations are presented in this report. The pavement recommendations are limited to samples taken from the existing soils within the roadway areas present at the site. The pavement design implemented for this project should be evaluated by the civil engineer based on a traffic and design analysis for this project.

Recommendations for rigid pavements are presented in this report for further evaluation by the project civil engineer. Both pavement types flexible and rigid are viable and the selection on the type to be used will depend on the specific needs and criteria of this project site. Generally, flexible pavements have a lower initial construction cost when compared to rigid pavements. On the other hand, a rigid pavement has lower maintenance cost throughout the life of the pavement structure as compared to flexible pavements. Flexible pavements generally require more frequent repairs and overlays at intervals from 6 to 10 years to meet the structural and functional requirements of the pavement during the design life. All pavements are very dependent on the condition of the soil platform on which they are supported and thus moisture conditions will play an important role in the performance of the pavement during its structure life. Proper consideration to drainage of the pavement structure and the surrounding areas is essential to the successful performance of a pavement structure. After proof rolling and repairing deep subgrade deficiencies, the entire subgrade should be scarified and developed as recommended in the Site Preparation section of this report to provide a uniform subgrade for pavement construction. Areas that appear severely desiccated following site stripping may require further undercutting and moisture conditioning. If a significant precipitation event occurs after the evaluation or if the surface becomes disturbed, the subgrade should be reviewed by qualified personnel immediately prior to paving. The subgrade should be in its finished form at the time of the final review.

7.2 Sulfate Content of Existing Soils

Sulfate testing was performed in accordance with TxDOT Tex-145-E as indicated below. A summary of these results are as follows:

Table 7.1 Sulfate Content in Parts Per Million

Bore No.	Sample Start Depth, (ft)	Sample End Depth, (ft)	Sulfate Content, (PPM)
R-1	0.5	2.0	1120.0
R-2	0.5	2.0	780.0
R-3	0.5	2.0	4800.0
R-4	0.5	2.0	460.0
R-5	0.5	2.0	8000.0+

Below are listed general exposure levels of potential harm to concrete structures exposed to soils containing sulfates. These levels fall into three ranges based on Sulfate Concentration (SC) in the soil.

- Level 1 - Mild: SC < 3,000 ppm
- Level 2 - Moderate: 3,000 < SC < 8,000 ppm
- Level 3 - Severe: SC > 8,000 ppm

Laboratory test results indicate that the existing soils should be categorized as **Level 1 to Level 3** and contain a **mild to severe** concentration of sulfates in the soils. Therefore, according to TxDOT policy, lime/cement treatment **may not** be used for stabilization of the pavement subgrade for the levels indicated. We also want to point out that results obtained are only for the locations indicated. Sulfate concentrations may change significantly at other locations within the project site. We also want to point out that when the proposed grading requires excavation and/or fill of the site we recommend that additional testing be performed when the site has been brought to final grade at the subgrade level to determine sulfate concentration in the soils and determine appropriate subgrade stabilization. The civil engineer should evaluate the sulfate levels to appropriately make recommendations for mitigating sulfate and lime/cement reactions producing expansive by products. We recommend following the TxDOT policies for subgrade treatment for soils containing sulfates. These policies can be found on the TxDOT Construction Division website entitled “Guidelines for Treatment of Sulfate-Rich Soils and Bases in Pavement Structures” September 2005.

7.3 Soil Stabilization Recommendations

The plasticity index of the surface soils at this site is approximately forty-nine (49) to sixty-one (61) percent. The existing subgrade soils require lime stabilization to mitigate soil shrink and swell but **due to the severe level of sulfate content throughout the site we recommend the use of geogrid to reduce but not eliminate the soil shrink and swell mitigate.** We recommend that the existing soils be tested after the pavement areas have been excavated or filled to the top of the subgrade elevation to verify the soil stabilization requirements. The natural ground should then be prepared as stated in the Site Preparation Recommendations

of the pavement section. Proper consideration to drainage of the pavement structure and the surrounding areas is essential to the successful performance of a pavement structure.

7.4 Design Methodology and Traffic Information

Our engineering analysis of the pavement type considered the information obtained from our soil borings, the field and laboratory testing, our past experience with similar soils and site conditions. Design of new pavements for the project has been based on the procedures outlined in the 1993 Guide for Design of Pavement Structures by the American Association of State Highway and Transportation Officials (AASHTO). **The client did not provide projected ESALs.** We recommend that the project Civil Engineer or a Traffic Engineer review the project for the appropriate traffic levels and design periods to ensure that they are appropriate and consistent with the specific project site requirements. The assumptions for traffic used in the pavement design analysis are as follows:

Table 7.2 Rigid Pavement Traffic Criteria Utilized

Criteria	Value
Reliability Level	95%
Standard Deviation	0.35
Initial Serviceability level	4.0
Terminal Serviceability level	2.0

7.5 Recommended Pavement Sections

The proposed pavement section for entrances, drives and parking areas may be chosen from one of the following options in the tables below.

The selection process of the appropriate pavement option should consider the following:

- The client should consider the options presented as minimum pavement sections for the appropriate use and expected traffic levels. The civil engineer of record should evaluate the minimum pavement sections recommended with the appropriate class of pavement required for this project. The local government requirements should be met when they are more stringent than the minimum pavement sections recommended in our report.

Stabilization of the subgrade may be necessary and may include the use of Tensar Geogrids (BX1200, HX5.5 or TX7 or equivalent polypropylene welded grid) in lieu of lime. The use of geogrid is recommended for subgrade stabilization and is not meant to increase the allowable ESALs for pavement design for this project. The geogrid should be placed according to manufacturer's recommendations, typically with a minimum of 2 to 3 feet of overlap along their sides and ends. With the installation of geogrid, the aggregate base course is required on top of the geogrid. Depending upon the severity of the instability, additional thickness of aggregate base course and filter fabric, may be required. The aggregate base course should

be moisture conditioned to optimum content, plus or minus two (2) percent, prior to its placement on the geogrid. **It is critical that when the aggregate base course is moisture-conditioned in place, care should be taken not to damage the underlying geogrid.** The aggregate base course material should be in accordance with untreated caliche base section of this report. **The first lift of aggregate base course should be placed full thickness prior to operating equipment over the geogrid.** Native soil should not be used as fill above geogrid. **It is critical to provide and maintain positive drainage within the aggregate base course material in order to minimize the potential for moisture infiltration and subsequent saturation of the underlying subgrade soils.** Below are alternate pavement sections with the use of geogrid meeting the appropriate manufacturer requirements. The pavement design and geogrid requirements may be found in the appendix of this report.

For mechanical subgrade stabilization and base reinforcement applications the geogrid should be placed at the bottom of the base for aggregate layers less than 12 in. If a geotextile is to be used for separation of the subgrade and base materials, the geotextile should be placed directly on top of the subgrade. The reinforcement geogrid is then placed directly on top of the separation geotextile for aggregate layers less than 12 in. For pavements with a design base thickness greater than or equal to 12 in., the geogrid should be placed in the middle of the base course layer. Regardless of the placement location of the geogrid, the separation geotextile is always placed at the subgrade-base interface.

Table 7.3.a Rigid Concrete Pavement Option

Materials	Heavy Duty
Reinforced Concrete Pavement (In)	11.0
Limestone Base (In)	4.0
Geogrid Type	Tensar NX750
Limestone Base (In)	4.0
Geogrid Type	Tensar NX750
Moisture Conditioned Subgrade (In)	12

Heavy Duty Rigid Pavement option (ESALs = 2000000)

It is recommended that concrete pavements be reinforced. At a minimum, the reinforcing bars should be placed as follows:

Table 7.4 Longitudinal Drives and Entrances

Thickness (in)	Bar Size	Longitudinal Spacing (in)	Transverse Spacing (in)
<= 10.0	6.0	9.5	19.0
<= 12.0	6.0	8.0	16.0

Table 7.5 Parking Areas

Thickness (in)	Bar Size	Longitudinal Spacing (in)	Transverse Spacing (in)
<= 10.0	6.0	12.0	12.0
<= 12.0	6.0	10.5	10.5

Longitudinal reinforcement should be placed at ½ the slab depth +/- ½ inch from the surface. At a longitudinal edge, the first two spacing's for longitudinal reinforcement shall be at ½ the normal longitudinal spacing. At transverse construction joints, additional longitudinal reinforcement shall be placed at a spacing one half the normal longitudinal spacing for a length of 42 inches. At transverse joints, the first two spacing's for transverse reinforcement shall be at ½ the normal transverse spacing. All reinforcement should be specified as deformed steel meeting the requirement of ASTM A-615 (Grade 60) or ASTM A-616 (Grade 60). Splices should be a minimum of 33 nominal bar diameters. Reinforcing should not extend across longitudinal and expansion joints. Dowels across longitudinal and expansion joints are recommended to be 7/8 inch diameter, smooth bars with a length of 42 inches and spaced at a maximum 24 inches on center.

Longitudinal and transverse joints are recommended at a maximum spacing of 10 feet for pavements with a thickness of less than 6 inches and at a maximum spacing of 15 feet for pavements with a thickness of 6 inches or greater. The longitudinal and transverse joints should be formed or saw cut to a depth of 1/3 of the slab depth for concrete containing siliceous coarse aggregate and ¼ of the slab depth for limestone aggregate. Sawing of joints should begin as soon as the concrete will not chip and ravel. It is recommended that longitudinal and expansion joints be doweled to promote load transfer. Expansion joint spacings are not to exceed a maximum of 75 feet and no expansion or contraction joints should be located within a swale or drainage collection area. Expansion joints are also needed to separate the concrete slab from fixed objects such as inlets, light standards and buildings.

It is recommended that the concrete pavement surface have a minimum slope of 0.015 ft/ft to provide adequate surface drainage. It is recommended that the concrete pavement should cure a minimum 7 days before allowing any traffic provided that adequate concrete strength has been attained as determined by the project Civil Engineer.

The curb shall be constructed in lengths equal to the adjoining pavement slab lengths, and expansion joints shall be provided in the curb opposite each transverse expansion joint in the pavement. Expansion joint material shall be of the same thickness, type and quality as specified for the pavement and shall be of the section as shown for the curb. All expansion joints shall be carried through the curb. Transverse contraction joints shall be sawed across the curb at the same time as sawing of the transverse contraction joints in the pavement are sawed. The curb shall be placed monolithically with the pavement for edge support and reinforced with a minimum one (1) #5 rebar. A finish coat of mortar shall be applied on the exposed surfaces of monolithic curbs.

7.6 Garbage Dumpster Considerations

Within flexible pavement areas, it is recommended that reinforced concrete pads be provided in front of and beneath garbage dumpsters. Concrete paving is also recommended in areas where the dumpster trucks make turns with small radii to access the dumpsters. The pads should be a thickened concrete slab and reinforced similar to the concrete pavement recommendations or a minimum 10 inches thick.

8.0 PAVEMENT MATERIAL SPECIFICATIONS

8.1 Pavement Preparation Recommendations

Pavement areas should be stripped of all vegetation and organic topsoil up to a minimum of four (4) feet beyond the pavement perimeters. After stripping, remove at least six (6) inches of on-site soil as measured from existing grade when excavation of existing subgrade is not recommended in other sections of this report. The excavated material, if free of organic and/or deleterious material, may be stockpiled for use in the non-pavement areas of the site. Where excavation of the subgrade is recommended in this report, the bottom of the excavation will extend at least four (4) feet beyond the limits of the planned pavement perimeter including canopies and sidewalks. However, for limestone placement, the prepared base should extend a minimum of two (2) feet beyond the pavement perimeter including canopies and sidewalks. Exposed subgrades should be thoroughly proof rolled in order to locate and compact any weak, compressible and soft spots. Proof rolling shall be in accordance with TxDOT 2024 Specification Item 216. Proof rolling operations should be observed by the Geotechnical Engineer or his representative to document subgrade condition and preparation. Weak or soft areas identified during proof rolling or areas where large tree roots have been removed within the limits of excavation should be removed and replaced with a suitable, compacted fill in accordance with the recommendations presented in TxDOT 2024 Specification Item 132 for density control and material requirements for Types A and B. If the fill is a clay it shall meet USCS Classification CL. Proof rolling operations and any excavation/backfill activities should be observed by MEG representatives to document subgrade preparation.

The exposed subgrade shall then be prepared based on what option is selected from the pavement recommendations. The soil should be worked in accordance with the recommendations and tested by MEG personnel for compaction as specified.

8.2 Reinforced Concrete

Concrete shall meet a minimum 28-day compressive strength of 3200 psi for light-duty pavements and 4000 psi for medium and heavy-duty pavements and a maximum water/cement ratio of 0.45. The concrete for concrete paving shall meet the requirements for Class P Concrete of TxDOT 2024 Specification Items 360 and 421. Aggregates used in the concrete design should meet the requirements of TxDOT 2014 Specification Item 421 or ASTM C33.

8.3 Limestone Base

The limestone base shall meet the requirements of TxDOT 2024 Specification Item 247 Type A, Grade 1 or 2. The flexible base shall be compacted to a minimum 98 percent of the maximum dry density as determined by the standard moisture density relation (ASTM D 698) at moisture contents ranging between minus two (-2) and plus two (+2) percentage points of the optimum moisture content. The base shall be placed in loose lifts not to exceed 8 inches (6 inches compacted) and not less than 5 ½ inches (4 inches compacted).

8.4 Tensar Geogrid Tensar NX750

Geogrid shall meet the minimum requirements of the Tensar NX750 specifications or equivalent that may be found in the Appendix of this report for the types specified. Installation shall be in accordance with the manufacturer's installation specifications.

8.5 Moisture Conditioned Subgrade

The subgrade shall be scarified to a depth of eight (8) inches and moisture conditioned to within the range of plus two (+2) percentage points above optimum to plus four (+4) percentage points above the optimum moisture content. The subgrade shall be compacted to a minimum 98 percent of the maximum dry density determined in accordance with ASTM D 698.

9.0 OTHER CONSIDERATIONS

9.1 Drainage

Adequate perimeter drainage is essential for long-term performance of any pavement structure. Infiltration of surface water from unpaved areas surrounding the pavement should be minimized. We do not recommend the placement of landscape beds on the paved areas.

Such design features provide a potential for water to enter into the pavement section and the underlying soil subgrade. This is especially true with time in paved areas that have limited traffic and lead to accelerated asphalt oxidation and thus cracking. Water intrusion will result in the deterioration of the pavement materials with time as vehicular traffic passes over affected areas. Above grade planter boxes with drainage discharge onto the top of the pavement or directed into storm sewers should be considered if landscape features are to be used.

9.2 Curb & Gutters

Base material under curb and gutters and curbs shall be compacted to the same requirements as other areas. It is recommended that the base shall be placed below the curb & gutter and extended past the back of the curb & gutter a minimum of one and a half (1 ½) feet. The thickness of the base below the curb & gutter shall be the required pavement base thickness less six (6) inches. An adequate seal should be provided at all concrete- asphalt interfaces. It is recommended that a crack sealant compatible to both asphalt and concrete be used.

9.3 Maintenance

A maintenance plan is recommended for the long-term performance of the paved areas. Asphaltic pavements have a tendency to strip and become oxidized with exposure to the elements. Thus cracks may become present in the pavement. It is recommended that a maintenance schedule of crack sealing, fog seals and overlays be used over the life of the pavement.

10.0 PROJECT REVIEW AND QUALITY CONTROL

Each project site is unique and it is important that the appropriate design data, construction drawings, specifications, change orders and related documents be reviewed by the respective design and construction professionals participating in this project. The performance of foundations, construction building pads and/or parking areas for this project will depend on correct interpretation of our geotechnical engineering report and proper compliance of and adherence to our geotechnical recommendations and to the construction drawings and specifications.

It is important that MEG be provided the opportunity to review the final design and construction documents to check that our geotechnical recommendations are properly interpreted and incorporated in the design and construction documents. We cannot be responsible for misinterpretations of our geotechnical recommendations if we have not had the opportunity to review these documents. This review is an additional service and not part of our project scope.

MEG should be retained to provide construction materials testing and observation services during all phases of the construction process of this project. As the Geotechnical Engineer of Record, it is important to let our technical personnel provide these services to make certain that our recommendations are interpreted properly and to ensure that actual field conditions are those described in our geotechnical report. Since our personnel are familiar with this project, MEG's participation during the construction phase of this project would help mitigate any problems resulting from variations or anomalies in subsurface conditions, which are among the most prevalent on construction projects and often lead to delays, changes, costs overruns, and disputes. If the client does not follow all of our recommendations presented in this report and/or addendums to this report, the client assumes the responsibility and liability of such actions and will hold our firm harmless and without responsibility and liability for client's actions.

A construction testing frequency plan and budget needs to be developed for the required construction materials engineering and testing services for this project. Before construction, we recommend that MEG, the project design team members and the project general contractor meet and jointly develop the testing plan and budget, as well as review the testing specifications as it pertains to this project. A failure to implement a complete testing plan will negate the recommendations provided in this report.

MEG looks forward to the opportunity to provide continued support on this project.

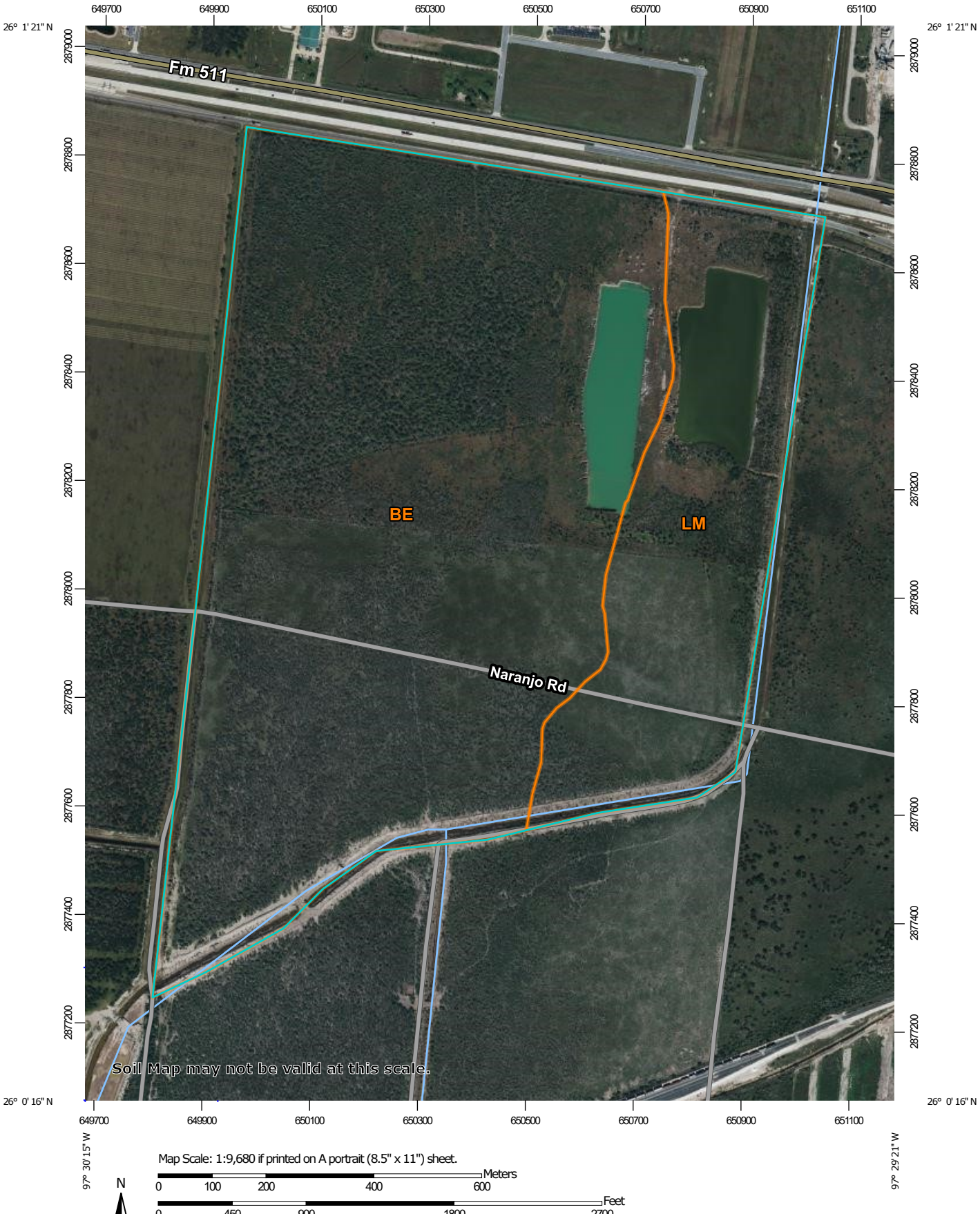
APPENDIX A
WEB SOIL SURVEY

MEG ENGINEERS Strong Leaders!

Geotechnical | Environmental | Testing

30745 E. Expressways 83 ■ San Benito, TX 78586 ■ Tel: 956-300-2500 ■ Dispatch 956-702-8501

Soil Map—Cameron County, Texas
(02-25-29130 GBIP Naranjo Road and Enterprise Drive)



Map Scale: 1:9,680 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 100 200 400 600

Feet
0 450 900 1800 2700

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cameron County, Texas
Survey Area Data: Version 22, Sep 4, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 21, 2021—Mar 2, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BE	Benito clay, ponded	254.9	76.1%
LM	Lomalta clay, 0 to 1 percent slopes, occasionally ponded	80.2	23.9%
Totals for Area of Interest		**335.1**	**100.0%**

APPENDIX B
PROJECT LOCATION, TOPOGRAPHIC AND BOREHOLE LOCATION MAPS

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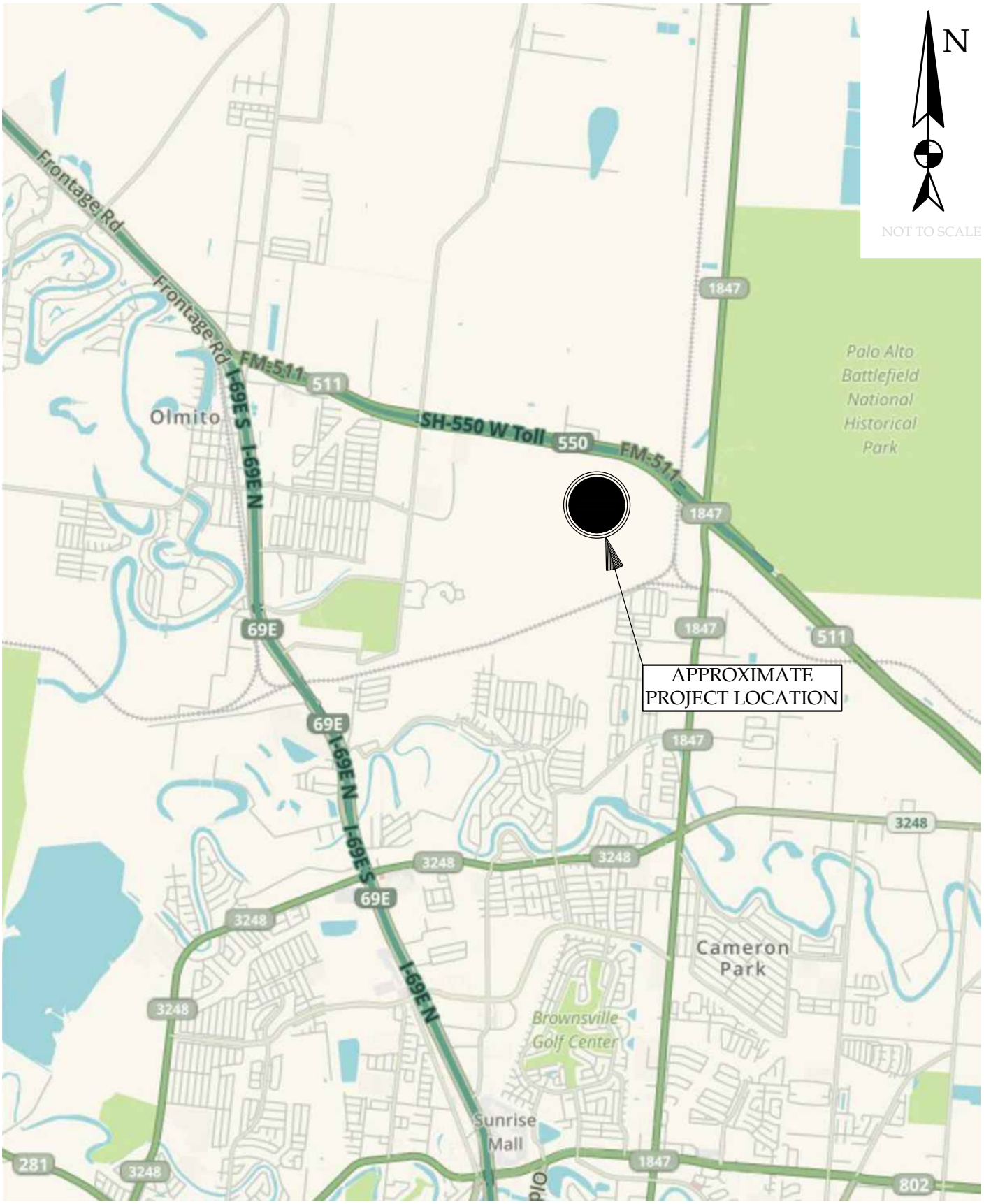


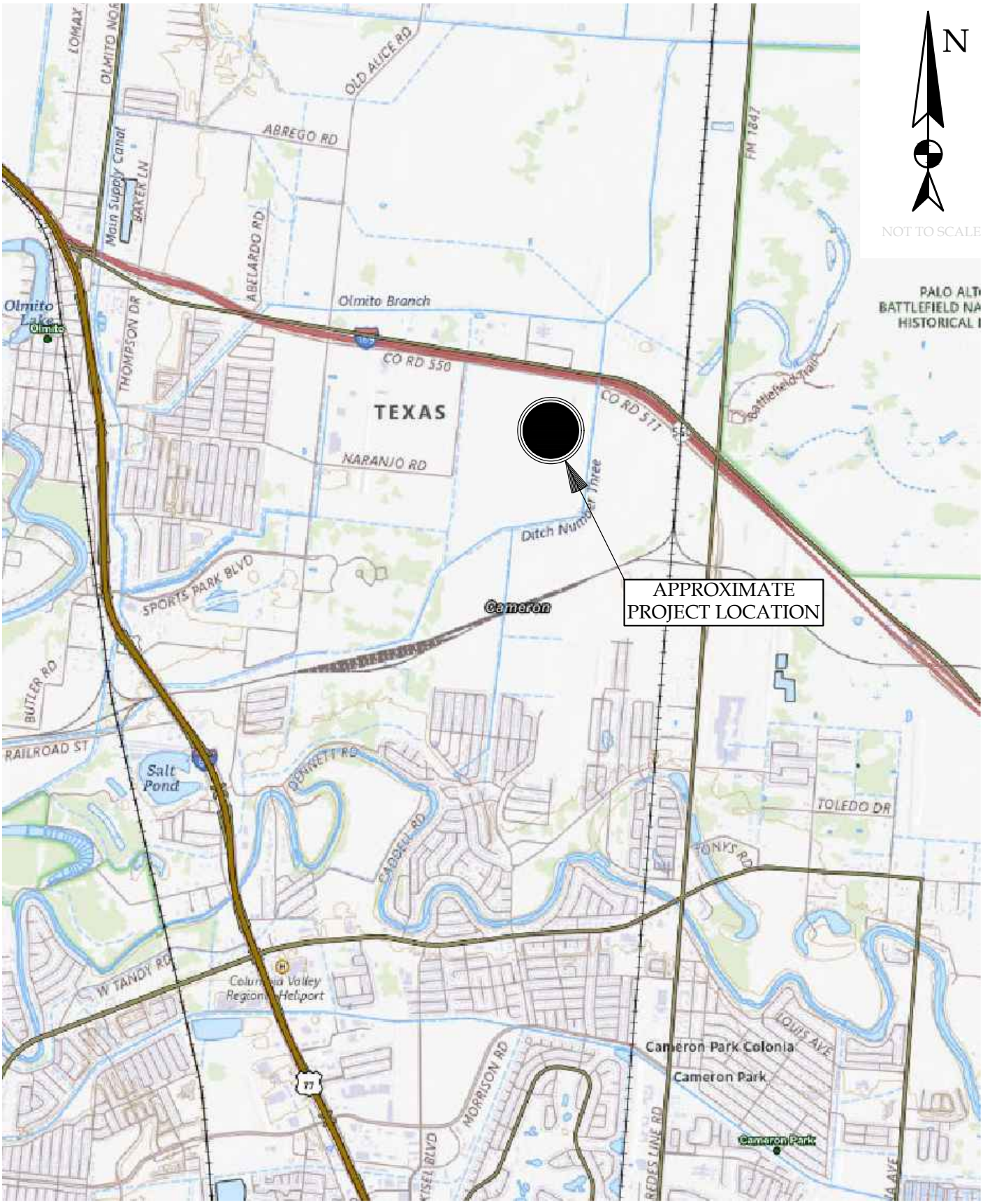
MEG PROJECT: 02-25-29130 / DATE: 10/10/2025 / APPROVED BY: A. PALMA / DRAWN BY: J. CRUZ

PROJECT SITE LOCATION MAP

PROPOSED GBIC NARANJO ROAD AND
ENTERPRISE DRIVE

BROWNSVILLE, CAMERON COUNTY, TEXAS

MILLENNIUM ENGINEERS GROUP, INC.
30745 E EXPRESSWAY 83
SAN BENITO, TEXAS 78586
WWW.MEGENGINEERS.COM
TEL: 956-300-2500
FAX: 956-702-8140



MEG PROJECT: 02-25-29130 / DATE: 10/10/2025 / APPROVED BY: A. PALMA / DRAWN BY: J. CRUZ

PROJECT TOPOGRAPHY MAP

PROPOSED GBIC NARANJO ROAD AND ENTERPRISE DRIVE

BROWNSVILLE, CAMERON COUNTY, TEXAS

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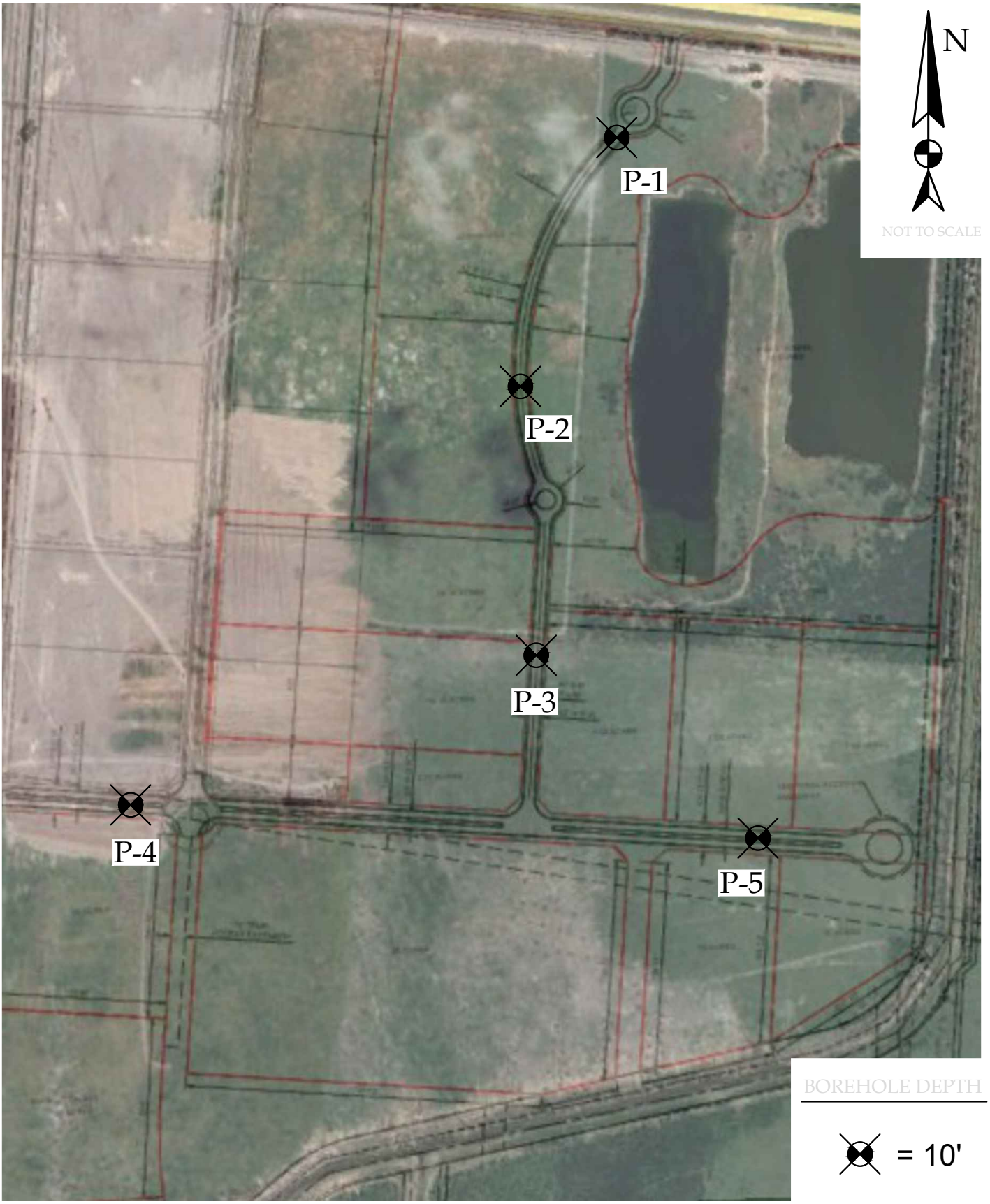

PROJECT BOREHOLE LOCATION MAP

PROPOSED GBIC NARANJO ROAD AND
ENTERPRISE DRIVE

BROWNSVILLE, CAMERON COUNTY, TEXAS

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MEG PROJECT: 02-25-29130 / DATE: 10/10/2025 / APPROVED BY: A. PALMA / DRAWN BY: J. CRUZ

APPENDIX C
PROJECT BORING LOGS AND PROFILE

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Project: **Proposed GBIC Industrial Park Naranjo Road and Enterprise Drive** Project Location: **Brownsville, Cameron County, Texas** Project Number: **02-25-29130**	Log of Boring R-1 **Sheet 1 of 1**

Date(s) Drilled **10/6/2025**	Logged By **Gabriel G.**	Checked By **Raul Palma**
Drilling Method **Straight Flight**	Drill Bit Size/Type **4" soil bit**	Total Depth of Borehole **10 feet bgs**
Drill Rig Type **Simco 2800**	Drilling Contractor **MEG Drilling**	Approximate Surface Elevation
Groundwater Level and Date Measured **Not Encountered**	Sampling Method(s) **SPT**	Hammer Data **140 lb., 30 in. drop, auto trip**
Borehole Backfill **Subgrade Cuttings**	Location **See Boring Location Map**	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	LL, %	PI, %	Percent Fines	REMARKS AND OTHER TESTS
	0				CH		Fat Clay to Fat Clay with Sand, Brown to Brown, Dry to Wet, Med. Stiff to Stiff					
			1	7				32				Sulfate Content = 1120 ppm
			2	8				32				
	5		3	7				28	72	47		
			4	6				24			89	
			5	8				20	38	21		
	10						BORE TERMINATION					
	15											

Project: **Proposed GBIC Industrial Park Naranjo Road and Enterprise Drive** Project Location: **Brownsville, Cameron County, Texas** Project Number: **02-25-29130**	Log of Boring R-2 **Sheet 1 of 1**

Date(s) Drilled **10/6/2025**	Logged By **Gabriel G.**	Checked By **Raul Palma**
Drilling Method **Straight Flight**	Drill Bit Size/Type **4" soil bit**	Total Depth of Borehole **10 feet bgs**
Drill Rig Type **Simco 2800**	Drilling Contractor **MEG Drilling**	Approximate Surface Elevation
Groundwater Level and Date Measured **Not Encountered**	Sampling Method(s) **SPT**	Hammer Data **140 lb., 30 in. drop, auto trip**
Borehole Backfill **Subgrade Cuttings**	Location **See Boring Location Map**	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	LL, %	PI, %	Percent Fines	REMARKS AND OTHER TESTS
	0				CH		Fat Clay to Fat Clay with Sand, Brown to Brown, Dry to Wet, Med. Stiff to Stiff					
			1	12				26				Sulfate Content = 780 ppm
			2	7				32	92	63		
	5		3	11				26				
			4	11				24	69	49		
			5	8				24			81	
	10						BORE TERMINATION					
	15											

Project: **Proposed GBIC Industrial Park Naranjo Road and Enterprise Drive** Project Location: **Brownsville, Cameron County, Texas** Project Number: **02-25-29130**	Log of Boring R-3 **Sheet 1 of 1**

Date(s) Drilled **10/6/2025**	Logged By **Gabriel G.**	Checked By **Raul Palma**
Drilling Method **Straight Flight**	Drill Bit Size/Type **4" soil bit**	Total Depth of Borehole **10 feet bgs**
Drill Rig Type **Simco 2800**	Drilling Contractor **MEG Drilling**	Approximate Surface Elevation
Groundwater Level and Date Measured **Not Encountered**	Sampling Method(s) **SPT**	Hammer Data **140 lb., 30 in. drop, auto trip**
Borehole Backfill **Subgrade Cuttings**	Location **See Boring Location Map**	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	LL, %	PI, %	Percent Fines	REMARKS AND OTHER TESTS
	0				CH		Fat Clay to Fat Clay with Sand, Brown to Brown, Dry to Wet, Med. Stiff to Stiff					
			1	12				32	84	61		Sulfate Content = 4800 ppm
			2	8				32			94	
	5		3	10				28				
			4	7				30	79	52		
			5	9				35				
	10						BORE TERMINATION					
	15											

Project: **Proposed GBIC Industrial Park Naranjo Road and Enterprise Drive** Project Location: **Brownsville, Cameron County, Texas** Project Number: **02-25-29130**	Log of Boring R-4 **Sheet 1 of 1**

Date(s) Drilled **10/6/2025**	Logged By **Gabriel G.**	Checked By **Raul Palma**
Drilling Method **Straight Flight**	Drill Bit Size/Type **4" soil bit**	Total Depth of Borehole **10 feet bgs**
Drill Rig Type **Simco 2800**	Drilling Contractor **MEG Drilling**	Approximate Surface Elevation
Groundwater Level and Date Measured **Not Encountered**	Sampling Method(s) **SPT**	Hammer Data **140 lb., 30 in. drop, auto trip**
Borehole Backfill **Subgrade Cuttings**	Location **See Boring Location Map**	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	LL, %	PI, %	Percent Fines	REMARKS AND OTHER TESTS
	0				CH		Fat Clay to Fat Clay with Sand, Brown to Brown, Dry to Wet, Med. Stiff to Stiff					
			1	3				32			99	Sulfate Content = 460 ppm
			2	7				33	78	49		
	5		3	5				28				
			4	7				29				
			5	9				26	68	42		
	10						BORE TERMINATION					
	15											

Project: **Proposed GBIC Industrial Park Naranjo Road and Enterprise Drive** Project Location: **Brownsville, Cameron County, Texas** Project Number: **02-25-29130**	Log of Boring R-5 **Sheet 1 of 1**

Date(s) Drilled **10/6/2025**	Logged By **Gabriel G.**	Checked By **Raul Palma**
Drilling Method **Straight Flight**	Drill Bit Size/Type **4" soil bit**	Total Depth of Borehole **10 feet bgs**
Drill Rig Type **Simco 2800**	Drilling Contractor **MEG Drilling**	Approximate Surface Elevation
Groundwater Level and Date Measured **Not Encountered**	Sampling Method(s) **SPT**	Hammer Data **140 lb., 30 in. drop, auto trip**
Borehole Backfill **Subgrade Cuttings**	Location **See Boring Location Map**	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	LL, %	PI, %	Percent Fines	REMARKS AND OTHER TESTS
	0				CH		Fat Clay to Fat Clay with Sand, Brown to Brown, Dry to Wet, Med. Stiff to Stiff					
			1	10				34				Sulfate Content = 8000+ ppm
			2	9				34			97	
	5		3	10				35				
			4	12				31	72	44		
			5	11				25	69	42		
	10						BORE TERMINATION					
	15											

Project: **Proposed GBIC Industrial Park Naranjo Road and Enterprise Drive**

Project Location: **Brownsville, Cameron County, Texas**

Project Number: **02-25-29130**

Key to Log of Boring

Sheet 1 of 1

1 Elevation (feet)	2 Depth (feet)	3 Sample Type	4 Sample Number	5 Sampling Resistance, blows/ft	6 Material Type	7 Graphic Log	8 MATERIAL DESCRIPTION	9 Water Content, %	10 LL, %	11 PI, %	12 Percent Fines	13 REMARKS AND OTHER TESTS

COLUMN DESCRIPTIONS

1. Elevation (feet): Elevation (MSL, feet).
2. Depth (feet): Depth in feet below the ground surface.
3. Sample Type: Type of soil sample collected at the depth interval shown.
4. Sample Number: Sample identification number.
5. Sampling Resistance, blows/ft: Number of blows to advance driven sampler one foot (or distance shown) beyond seating interval using the hammer identified on the boring log.
6. Material Type: Type of material encountered.
7. Graphic Log: Graphic depiction of the subsurface material encountered.
8. MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
9. Water Content, %: Water content of the soil sample, expressed as percentage of dry weight of sample.
10. LL, %: Liquid Limit, expressed as a water content.
11. PI, %: Plasticity Index, expressed as a water content.
12. Percent Fines: The percent fines (soil passing the No. 200 Sieve) in the sample. WA indicates a Wash Sieve, SA indicates a Sieve Analysis.
13. REMARKS AND OTHER TESTS: Comments and observations regarding drilling or sampling made by driller or field personnel.

FIELD AND LABORATORY TEST ABBREVIATIONS

CHEM: Chemical tests to assess corrosivity
COMP: Compaction test
CONS: One-dimensional consolidation test
LL: Liquid Limit, percent
PI: Plasticity Index, percent
SA: Sieve analysis (percent passing No. 200 Sieve)
UC: Unconfined compressive strength test, Qu, in ksf
WA: Wash sieve (percent passing No. 200 Sieve)

MATERIAL GRAPHIC SYMBOLS

Fat CLAY, CLAY w/SAND, SANDY CLAY (CH)

TYPICAL SAMPLER GRAPHIC SYMBOLS

- Auger sampler
- Bulk Sample
- 3-inch-OD California w/ brass rings
- CME Sampler
- Grab Sample
- Hand auger sampler
- 2.5-inch-OD Modified California w/ brass liners
- Pitcher Sample
- 2-inch-OD unlined split spoon (SPT)
- Texas Cone Penetrometer
- Shelby Tube (Thin-walled, fixed head)

OTHER GRAPHIC SYMBOLS

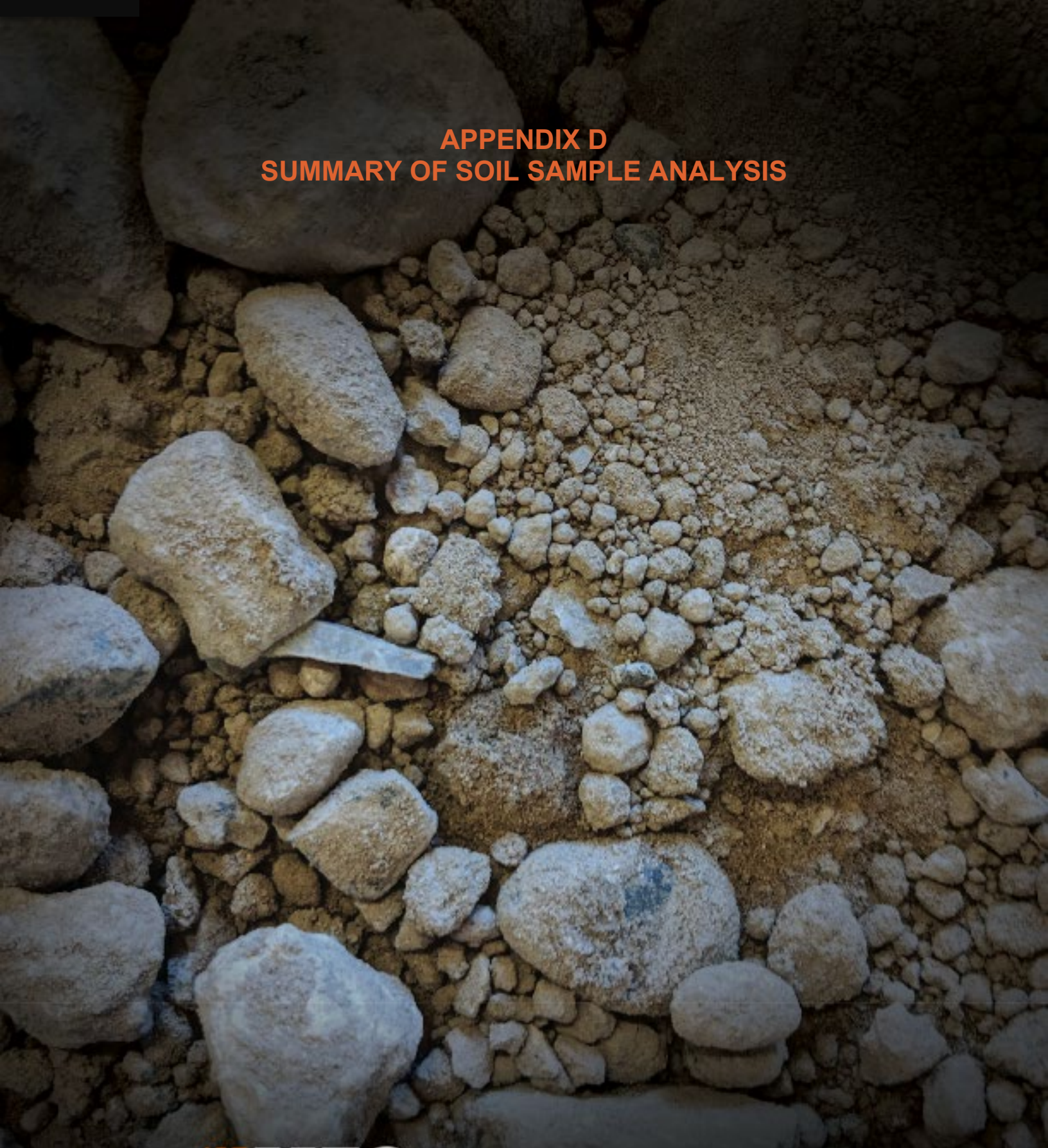
- Water level (at time of drilling, ATD)
- Water level (after waiting, AW)
- Minor change in material properties within a stratum
- Inferred/gradational contact between strata
- Queried contact between strata

GENERAL NOTES

1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

Figure B-1

APPENDIX D
SUMMARY OF SOIL SAMPLE ANALYSIS



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Bore Number R-1

Sample ID	Start Depth (ft)	End Depth (ft)	Blows Per (ft)	Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index	Minus 200	Sulfates (ppm)
Sample 1	0.5	2.0	7.0	32.0					1120.0
Sample 2	2.5	4.0	8.0	32.0					
Sample 3	4.5	6.0	7.0	28.0	72.0	25.0	47.0		
Sample 4	6.5	8.0	6.0	24.0				89.0	
Sample 5	8.5	10.0	8.0	20.0	38.0	17.0	21.0		

Bore Number R-2

Sample ID	Start Depth (ft)	End Depth (ft)	Blows Per (ft)	Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index	Minus 200	Sulfates (ppm)
Sample 1	0.5	2.0	12.0	26.0					780.0
Sample 2	2.5	4.0	7.0	32.0	92.0	29.0	63.0		
Sample 3	4.5	6.0	11.0	26.0					
Sample 4	6.5	8.0	11.0	24.0	69.0	20.0	49.0		
Sample 5	8.5	10.0	8.0	24.0				81.0	

Bore Number R-3

Sample ID	Start Depth (ft)	End Depth (ft)	Blows Per (ft)	Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index	Minus 200	Sulfates (ppm)
Sample 1	0.5	2.0	12.0	32.0	87.0	26.0	61.0		4800.0
Sample 2	2.5	4.0	8.0	32.0				94.0	
Sample 3	4.5	6.0	10.0	28.0					
Sample 4	6.5	8.0	7.0	30.0	79.0	27.0	52.0		
Sample 5	8.5	10.0	9.0	35.0					

Bore Number R-4

Sample ID	Start Depth (ft)	End Depth (ft)	Blows Per (ft)	Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index	Minus 200	Sulfates (ppm)
Sample 1	0.5	2.0	3.0	32.0				99.0	460.0
Sample 2	2.5	4.0	7.0	33.0	78.0	29.0	49.0		
Sample 3	4.5	6.0	5.0	28.0					
Sample 4	6.5	8.0	7.0	29.0					
Sample 5	8.5	10.0	9.0	26.0	68.0	26.0	42.0		

Bore Number R-5

Sample ID	Start Depth (ft)	End Depth (ft)	Blows Per (ft)	Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index	Minus 200	Sulfates (ppm)
Sample 1	0.5	2.0	10.0	34.0					8000.0+
Sample 2	2.5	4.0	9.0	34.0				97.0	
Sample 3	4.5	6.0	10.0	35.0					
Sample 4	6.5	8.0	12.0	31.0	72.0	28.0	44.0		
Sample 5	8.5	10.0	11.0	25.0	69.0	27.0	42.0		

APPENDIX E
LABORATORY AND FIELD PROCEDURES

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Laboratory and Field Test Procedures

Soil Classification Per ASTM D2487-93:

This soil-testing standard was used for classifying soils according to the Unified Soil Classification System. The soil classifications of the earth materials encountered are as noted in the attached boring logs.

Soil Water Content Per ASTM D2216-92:

This test determines the water content of soil or rock expressed as a percentage of the solid mass of the soil. The test results are listed under **MC** in the attached boring logs.

Soil Liquid Limit Per ASTM D4318-93:

The soil Liquid Limit identifies the upper limit soil water content at which the soil changes from a moldable (plastic) physical state to a liquid state. The Liquid Limit water content is expressed as a percentage of the solid mass of the soil. The test results are listed under **LL** in the attached boring logs.

Soil Plastic Limit Per ASTM D4318-93:

The soil Plastic Limit identifies lower limit soil water content at which the soil changes from a moldable (plastic) physical state to a non-moldable (semi-solid) physical state. The Plastic Limit water content is expressed as a percentage of the solid mass of the soil. The test results are listed under **PL** in the attached boring logs.

Plasticity Index Per ASTM D4318-93:

This is the numeric difference between the Liquid Limit and Plastic Limit. This index also defines the range of water content over which the soil-water system acts as a moldable (plastic) material. Higher Plasticity Index (PI) values indicate that the soil has a greater ability to change in soil volume or shrink and swell with lower or higher water contents, respectively. The test results are listed under **PI** in the attached boring logs.

Standard Penetration Test (SPT) and Split Spoon Sampler (SS) per ASTM D 1586:

This is the standard test method for both the penetration test and split-barrel (spoon) sampling of soils. This sampling method is used for soils or rock too hard for sampling using Shelby Tubes. The method involves penetration of a split spoon sampler into the soil or rock through successive blows of a 140-pound hammer in a prescribed manner.

Blow Counts (N) per ASTM D 1586:

This is the number of blows required to drive a Split Spoon Sampler by means of a 140 pound hammer for a distance of 12 inches in accordance with the variables stated in the test procedures.

Shelby Tube (ST) per ASTM D 1587:

This procedure is for using a thin-walled metal tube to recover relatively undisturbed soil samples suitable for laboratory tests of physical properties.

Dry Density (DD) per ASTM D 2937:

This procedure is for the determination of in-place density of soil. The test results are measured in pounds per cubic foot, pcf.

Unconfined Compression Test (Uc) per ASTM D 2166:

This test method covers the determination of the unconfined compressive strength of cohesive soil in the undisturbed, remolded, or compacted condition, using strain-controlled application of the axial load.

Minus No. 200 Sieve per ASTM D 1140:

This test method covers determination of the amount of material finer than a Number 200 sieve by washing. The results are stated as a percent of the total dry weight of the sample.

Pocket Penetrometer (PP):

This test method is an accepted modification of ASTM D 1558 test method for establishing the moisture-penetration resistance relationships of fine-grained soils. The test results are measured in tons per square foot, tsf. The strength values provided by this method should be considered qualitatively.

Rock Quality Designation (RQD):

The measure of the quality of a rock mass defined by adding intact rock core pieces greater than four inches in length by the total length of core advance.

Recovery Ratio (REC):

The Recovery Ratio is equal to the total length of core recovered divided by the total length of core advance.

Boring Logs:

This is a summary of the above-described information at each boring location.

APPENDIX F
GEOGRID SPECIFICATIONS

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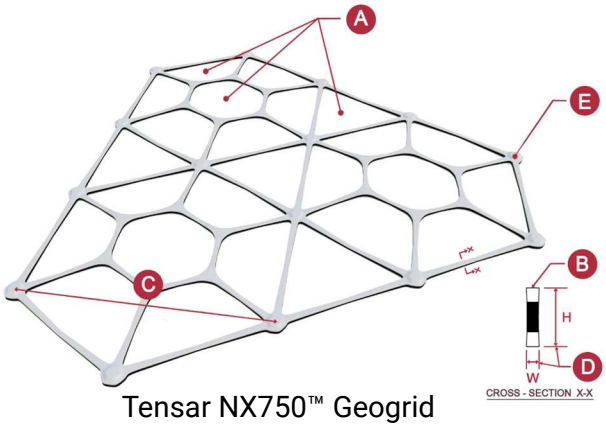
Tensar InterAx®

PRODUCT IDENTIFICATION
DATA SHEET

InterAx™ NX750™ Geogrid



Tensar NX750™ Geogrid
Plan View

GENERAL

1. The geogrid is manufactured from a coextruded, composite polymer sheet, which is then punched and oriented. The resulting structure consists of continuous and non-continuous ribs forming three aperture geometries (hexagon, trapezoid, and triangle) and an unimpeded suspended hexagon.

2. The following properties are intended for product identification:

Identification Properties[1]	General
Structure	Coextruded & Integrally Formed
Aperture Shape - A	Hexagonal, Trapezoidal, & Triangular
Rib Shape - B	Rectangular
Continuous Parallel Rib Pitch[2] - C, in (mm)	3.2 (80)
Rib Aspect Ratio[3] - D	> 1.0
Node Thickness[2] - E, in (mm)	0.14 (3.5)
Color Identification	White/Black/White
Product EPD Certification[4]	EN 15804 +A2:2019
Durability Properties	
Resistance to Chemical Degradation[5]	100%
Resistance to Ultraviolet Light and Weathering[6]	90%

DIMENSIONS AND DELIVERY

1. The geogrid shall be delivered to the jobsite in roll form, each clearly labeled, as shown below:

Property	Standard Width Roll		Wide Width Roll	
Roll Width[2], ft (m)	12.5	(3.8)	15.5	(4.7)
Roll Length[2], ft (m)	197	(60)	262	(80)
Roll Area, sy[2] (m^2)	274	(229)	451	(377)
Roll Diameter[7], in. (mm)	17	(432)	20	(508)
Roll Weight lbs[7]. (Kgs)	154	(70)	255	(116)
Approx. Rolls per Full-Truck	Min: 100	Max: 116	Min: 60	Max: 75

PERFORMANCE COMPARISON

The product properties shown above are intended for product identification, Quality Assurance (QA), and Quality Control (QC) purposes only. These properties are not used in any geogrid mechanical stabilization design methodologies or performance assessment and, as such, should not be evaluated or used in isolation. In order to compare the performance of different types of geogrids, performance validation data from full-scale trafficking testing must be used, as outlined in AASHTO R50-09 and other industry accepted geogrid mechanical stabilization design methodologies.

Tensar reserves the right to change its Product Identification Data Sheet at any time. It is the responsibility of the person specifying the use of this product and of the purchaser to ensure that Product Identification Data Sheet relied upon for procurement purposes are current and that the product is suitable for its intended use in each instance.

NOTES

1. Unless indicated otherwise, values are minimum average roll values in accordance with ASTM D4759-02
2. Nominal dimensions
3. Ratio of the mid-rib height to the mid-rib width
4. Independently verified in accordance with ISO 14025:2006, ISO 14044:2006, and EN 15804:2019+A2.
5. Resistance to loss of load capacity or structural integrity when subjected to chemically aggressive environments in accordance with EPA 9090 immersion testing
6. Resistance to loss of load capacity or structural integrity when subjected to 500 hours of ultraviolet light and aggressive weathering in accordance with ASTM D4355
7. Maximum Average Roll Value (MaxARV)

This product has been tested for quality control purposes in a GAI-LAP accredited laboratory and its EPD has been certified by UL Environment.

GAI-LAP Accreditation No.: GAI –LAP – 72 – 12

UL CERTIFIED ENVIRONMENTAL PRODUCT DECLARATION UL.COM/EPD

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