GEOTECHNICAL ENGINEERING
DRILLING & SAMPLING
FOUNDATION DESIGN

HOLT
ENGINEERING, INC.

CONSTRUCTION INSPECTION
LABORATORY TESTING
MATERIALS TESTING

1 December 2025

Timmerman Commercial Development
501 Vale Street
Austin, Texas 78746

Attn: Ms. Paige Bacon, Director of Operations

Re: Addendum to Soils Report
Manor Commercial Development
US Highway 290 and Greenbury Drive
Manor, Texas

File No.: 08-20525

Dear Ms. Bacon:

As per the request of Mr. Luis Leyva, EIT with Hollingsworth Pack, in an email dated 21 November 2025, we are providing additional pier recommendations including L-PILE design criteria for the proposed project. It should be noted our firm provided an initial investigation and report in August 2025 (Ref. Subsurface Investigation and Foundation Recommendations; Holt File No. 08-20525).

As mentioned above, it is our understanding piers are planned for the proposed project and additional pier recommendations including L-Pile design criteria are needed. Based on the soils encountered in our original borings, we recommend the following L-PILE design criteria for the proposed piers. The following soil engineering parameters given in Table 1 below are recommended for use with the L PILE pier design program or other similar program for lateral load analysis for reinforced concrete pier design. Please note these values have no safety factors. It should also be noted some of these values have been averaged based on lab test results, layer thicknesses and similar soil data for other projects in the area. The (γ) given in the table below is the effective unit weight of the soil/rock in pounds per cubic foot (lbs/ft^3). The (C) given in the table below is the undrained cohesion in pounds per square feet (lbs/ft^2). The $\varepsilon 50$ is the strain at 50% of maximum stress in in/in. It should be noted the values provided below are based on laboratory data we have obtained for this project as well as other laboratory data we have obtained on similar soils samples from the same geologic formation. We reserve the right to use our experience and judgment in providing design criteria.

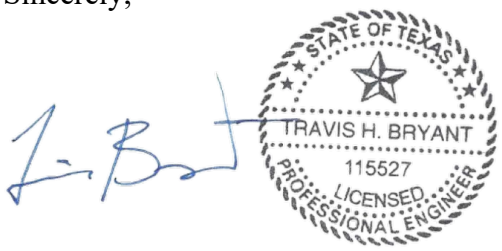
TABLE 1 – SOIL DESIGN PARAMETERS

Layer	Model, Soil Type	Depth (ft) (Approximate)	γ (lbs/ft3)	C (lbs/ft2)	ε50 (in/in)
1	Brown Fat Clay (Soft Clay)	0.0 – 6.0	90	500*	0.020*
2	Tan and Light Brown Lean Clay (Stiff Clay)	6.0 - 11.0	105	1,750	0.010
3	Tan and Gray Fat Clay (Stiff Clay)	11.0 - 30.0	100	2,000	0.010

*Note: Due to the possibility of disturbance and the shrink/swell potential of the clays, the above design parameters should be omitted in the top 4 feet.

If you have any questions or if we can be of further service, please do not hesitate to call.

Sincerely,



Travis H. Bryant, P.E.
Principal Engineer
Holt Engineering, Inc.
TBPE Firm Registration No. F-430

SUBSURFACE INVESTIGATION

AND

FOUNDATION AND PAVEMENT RECOMMENDATIONS

FOR

MANOR COMMERCIAL DEVELOPMENT

US HIGHWAY 290 WEST AND GREENBURY DRIVE

MANOR, TEXAS

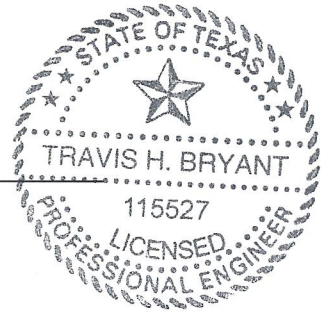
REPORT FOR:

TIMMERMANN COMMERCIAL INVESTMENTS, LP

501 VALE STREET

AUSTIN, TEXAS 78746

PREPARED BY:



TRAVIS H. BRYANT, P.E.
PRINCIPAL ENGINEER

HOLT ENGINEERING, INC.
TBPE FIRM REGISTRATION NO. F-430

FILE NO. 08-20525
27 AUGUST 2025

TABLE OF CONTENTS

APPENDIX

SUBSURFACE INVESTIGATION
AND
FOUNDATION AND PAVEMENT RECOMMENDATIONS
FOR
MANOR COMMERCIAL DEVELOPMENT
US HIGHWAY 290 WEST AND GREENBURY DRIVE
MANOR, TEXAS

INTRODUCTION

An exploration of subsurface soil conditions was performed for the proposed commercial development to be located off US Highway 290 West and Greenbury Drive in Manor, Texas. The investigation was authorized by Ms. Paige Bacon, Director of Operations for Timmermann Commercial Investments, LP, on 7 July 2025 in accordance with our proposal dated 30 June 2025. The purpose of this investigation was to determine subsurface conditions and materials at the site and to establish design and construction recommendations for the project's foundation system and pavement design recommendations for the associated parking and driveway areas.

SCOPE

Our investigation consisted of the following:

A. Laying out and drilling six soil borings to a depth of 25 feet to 35 feet each below existing grade and nine soil borings to a depth of 10 feet each below existing grade.

   Logging the borings in the field and a visual reconnaissance of the area's terrain.

C. Taking samples of selected subsurface soils for laboratory tests.

D. Performing field tests.

E. Providing foundation and pavement thickness recommendations based on engineering analysis of field notes and laboratory test results.

HOLT ENGINEERING, INC. 2220 Barton Skyway – Austin, Texas – 78704 – Ph. (512) 447-8166 – Fax (512) 447-0852

SITE DESCRIPTION

The proposed Manor Commercial Development is to be located off US Highway 290 West and Greenbury Drive in Manor, Texas. The property consists of an undeveloped tract of land covered in native grasses. The terrain is relatively level with some slight undulations.

LABORATORY TESTS

The following laboratory tests were run on selected samples:

1. Moisture Content (ASTM D2216)
2. Minus 200-Mesh Sieve (ASTM D422)
3. Atterberg Limits (ASTM D4318)

These tests were performed together with visually inspecting and classifying the soils in general accordance with ASTM D2487 and described as recommended in ASTM D2488. Results of these tests were used to determine the foundation design criteria such as bearing capacity and the potential for settlement or heave.

SUBSURFACE CONDITIONS

Based on the "*Geological Atlas of Texas, Austin Sheet*," published by the Bureau of Economic Geology, the site is located in the Taylor Group geological formation. The Taylor Formation (Knt) formation consists of brown and tan and gray montmorillonitic clay. These soils are high in plasticity and will undergo large volume changes with changes in soil moisture from wet and dry periods. These soils can also develop high swell pressures. The soils encountered in our boring generally correspond with the above geological description. A general description of the soil conditions is given below. A detailed description of the soil conditions is given in the Logs of Borings found in the Appendix. The approximate locations of the borings are shown in the attached Generalized Boring Location Plan.

In general, brown fat clay is found on the surface that extends to depths ranging from 4.5 feet to 7 feet and overlies tan and light brown lean clay. The tan and light brown lean clay extends to depths ranging from 10 feet to 11 feet and overlies tan and gray fat clay (Taylor Formation). In borings P-01 through P-09, the tan and light brown lean clay extends to a depth of 10 each below existing grade. The tan and gray fat clay (Taylor Formation) extends to the termination of the borings at depths ranging from 25 feet to 35 feet each below existing grade.

HOLT ENGINEERING, INC. 2220 Barton Skyway – Austin, Texas – 78704 – Ph. (512) 447-8166 – Fax (512) 447-0852

The brown fat clay is highly plasticity with P.I.'s ranging from 37 to 47 and soft. The tan and light brown lean clay is low to moderate in plasticity with P.I.'s ranging from 21 to 30 and contains sand. The tan and gray fat clay (Taylor Formation) is highly plasticity with P.I.'s ranging from 56 to 58 and contains calcareous and ferrous deposits.

Groundwater was not encountered in our borings; however, moist layers were encountered in the upper portions of all borings to a depth of approximately 5 feet. Water migrates through the fine-grained soils and some groundwater seepage may be expected in below grade cuts after heavy rains. The amount of seepage will be highly dependent on rainfall conditions in the weeks and months prior to construction.

POTENTIAL VERTICAL RISE

The potential vertical rise (PVR) of the underlying natural soils at this site has been estimated using the general guidelines presented in the Texas Department of Transportation (TxDOT) Designation TEX-124-E. This designation defines PVR as the "potential of soils to swell in the vertical direction when exposed to capillary ground or surface water, and therefore increases the elevation of its upper surface, along with anything resting on it." This procedure utilizes the liquid limits and plasticity indices for soils in the seasonally active zone, estimated to be about 15 feet in the project area.

The estimated PVR value provided is based on the proposed floor system applying a sustained surcharge load of approximately 1.0 lb. per square inch on the subgrade materials. The PVR of the soils encountered was estimated to be on the order of approximately 4-½ inches for dry soil conditions. The PVR values are based on the current site grades. Higher PVR values than the above-mentioned value will occur in areas where water is allowed to pond for extended periods.

DISCUSSION AND RECOMMENDATIONS

It is our understanding a new restaurant building approximately 8,425 SF in size is planned for the site with accompanying driveways and parking areas. It is our understanding the building will be wood frame with masonry veneer. The finished floor elevation and existing site grades have not been provided at the time of this report; however, based on the

HOLT ENGINEERING, INC. 2220 Barton Skyway – Austin, Texas – 78704 – Ph. (512) 447-8166 – Fax (512) 447-0852

planned provided, we expect less than two feet of fill material will be needed to level the building pad.

The primary concern for the building foundation is the deeply deposited highly plastic fat clay encountered in all borings to depths ranging from 10 feet to 11 feet and the underlying highly plastic fat clay soils (Taylor Group Formation). These soils are highly expansive and will undergo large volume changes with changes in soil moisture from seasonal rainfall conditions. As mentioned above, we expect movement on the order of 4-½ inches with a shallow foundation system. The amount of differential uplift on a shallow foundation would be considered, in our opinion, unacceptable. We are, therefore, recommending the building foundation system consist of drilled piers with a suspended structural floor system. This type of foundation is necessary to ensure the floor slab and beams are not subjected to the high uplift pressures of the clay soils.

We recommend all structural loads be supported on drilled under-reamed (belled) piers seated into the tan and gray fat clay at a minimum depth of 22 feet below existing grade and sized for an allowable bearing value of 6,500 PSF. All piers should be inspected full-time by the Geotechnical Engineer or qualified technician during the drilling operation to verify seating depth, proper bearing strata, reinforcement, concrete placement, plumbness, cleanliness of hole, and proper belling. Groundwater was not encountered in our borings; however, the borings were not monitored over an extended period. Perched water may be found in the clay formation or seasonal seepage may be found in below grade cuts or pier holes. Provisions for pumping of pier holes should be included in the bid documents. If excessive sloughing occurs, then casing of pier holes will be necessary.

The building is supported on a reinforced concrete suspended structural floor supported on piers. The reinforced concrete suspended structural floor and beams should be voided from grade a minimum of 8 inches. Concrete perimeter beams must be hard formed. Cardboard cartons may be used but must be inspected for collapsing. Concrete or other approved retainers must be used to prevent encroachment of soil below beams. Trapezoidal cardboard forms in lieu of retainers are not acceptable. Soil retainers should be concrete block or other engineer approved products. Retainers should extend 8 inches above the voids. Void cartons should be inspected by the engineer prior to reinforcement placement. Cartons should not be placed in trenches with standing water or wet or damp soils. Beam trenches must be well drained. Any

HOLT ENGINEERING, INC. 2220 Barton Skyway – Austin, Texas – 78704 – Ph. (512) 447-8166 – Fax (512) 447-0852

cartons that become wet must be removed and replaced prior to concrete placement. Cartons must fit tight to beam trenches. Overspill beside cartons is not acceptable. The contractor should verify cardboard carton forms will support the perimeter beam loads during placement.

Careful consideration must be given to designing sidewalks, porches, patios and all flat work. All entities supported on grade must be completely separated from the structural framing system supported by piers. Concrete flat work should be designed for differential movement of approximately 4-½ inches. Flexibility must also be allowed for all utility penetrations. Particular attention must be given to plumbing, water and wastewater lines as well as gas lines. Utility lines in the void space should be hung with a minimum of 8 inches of ground clearance. Penetration through concrete beams should be sleeved or run under the void space below the beam with a minimum of 8 inches of clearance below the beam.

A suspended structural floor system may not be economically feasible for the project. If some floor slab movement is acceptable to the owner, we recommend as an alternative, a foundation consisting of drilled under-reamed (belled) piers with a soil supported floor slab. The perimeter grade beam should be void of grade and supported on piers as described above.

In order to minimize floor slab movement, we recommend the building pad be prepared by removing a portion of the existing brown fat clay and replacing with a well graded, low P.I. (P.I. 3 to 18) Select Fill (See attached Select Fill Specifications). There should be a minimum of 4 feet of Select Fill below the floor slab. Larger amounts of removal of the brown fat clay and underlying tan and light brown lean clay will result in lower potential for expansion of the subgrade soils. The estimated potential vertical rise per total depth of Select Fill is shown in Table 1, below. Movement of the floor slab will not be eliminated but the potential will be reduced to a tolerable level for restaurant use, in our opinion. The building pad should extend a minimum of 3 feet beyond the edge of the building and include flat work around the building. The top 8 inches of the exposed subgrade and all Select Fill should be compacted in 8-inch lifts to 95% of the optimum dry weight in accordance with TxDOT test method TEX-114-E. Select Fill and subgrade moisture should be within 3% of optimum.

Intermediate stiffening beams are highly recommended and will help stiffen the floor slab and reduce differential movement in the floor slab. Differential slab movement will range from approximately one inch to two inches depending on the total depth of removal and

HOLT ENGINEERING, INC. 2220 Barton Skyway – Austin, Texas – 78704 – Ph. (512) 447-8166 – Fax (512) 447-0852

replacement of existing expansive soils with Select Fill (See Table 1 below). A soil supported floor slab will be susceptible to minor differential movement which may result in minor cracking of the interior partition drywall, floor slab, and may cause sticking of interior doors.

If some movement in the structure and floor slab is acceptable to the owner, we recommend as a third alternative, a shallow foundation consisting of continuous wall footings (perimeter beams) with a soil supported floor slab. Perimeter beams should be seated 24 inches into the compacted Select Fill and sized for an allowable bearing value of 1,500 PSF. In order to minimize floor slab movement, we recommend the building pad be prepared by removing a portion of the existing brown fat clay and replacing with a well graded, low P.I. (P.I. 3 to 18) Select Fill (See attached Select Fill Specifications). There should be a minimum of 4 feet of Select Fill below the floor slab. Larger amounts of removal of the brown fat clay and underlying tan and light brown lean clay will result in lower potential for expansion of the subgrade soils. The estimated potential vertical rise per total depth of Select Fill is shown in Table 1, below. The building pad should extend a minimum of 3 feet beyond the edge of the building and include flat work around the building. The top 8 inches of the exposed subgrade and all Select Fill should be compacted in 8-inch lifts to 95% of the optimum dry weight in accordance with TxDOT test method TEX-114-E. Select Fill and subgrade moisture should be within 3% of optimum.

The floor slab should be poured monolithically with perimeter beams. Intermediate stiffening beams are highly recommended and will help stiffen the floor slab and reduce differential movement in the floor slab. We recommend a minimum perimeter beam depth of 36 inches and minimum slab thickness of 5 inches. Differential slab movement will range from approximately 1.5 inches to 2 inches depending on the total depth of removal and replacement of existing expansive soils with Select Fill (See Table 1 below). Some minor cracking in floor slab, drywall and veneer should be expected.

The estimated PVR for this type of foundation will be on the order of one inch to two inches. Table 1 below presents the potential vertical rise (PVR) for increasing depths of Select Fill below the slab.

HOLT ENGINEERING, INC. 2220 Barton Skyway – Austin, Texas – 78704 – Ph. (512) 447-8166 – Fax (512) 447-0852

Table 1 – Potential Vertical Rise of Floor Slab Subgrade

Total Depth of Select Fill (ft)	Estimated Potential Vertical Rise (PVR) (in)
4	2.0
6	1.5

We recommend the building pad construction be continuously inspected and tested by the soils testing laboratory. It is important that a well-graded Select Fill material be used, and compaction be monitored.

Landscaping and drainage conditions must also be given careful consideration. The yard should be sloped for positive drainage away from the foundation. Sprinkler systems near the foundation should be avoided. Gutters and downspouts should be installed where necessary to prevent ponding near the foundation. Maintaining the soil moisture around the foundation to uniform moisture condition is essential for a stable foundation system.

Groundwater was not encountered in our borings; however, the borings were not monitored over an extended period. Perched water or seasonal seepage may be found in below grade cuts or pier holes after heavy rains. Provisions for pumping of pier holes should be included in the bid documents. If excessive sloughing occurs, then casing of pier holes will be necessary.

We request to review the final grading plan and foundation drawings to verify our recommendations are properly interpreted and to make suggestions for changes and improvements if necessary.

We are providing three foundation recommendations: (A) Drilled Piers with a Voided Structural Floor Slab, (B) Drilled Piers with a Soil Supported Floor Slab and, (C) Shallow Foundation System. Recommendation "A" is the preferred foundation and is structurally superior. Recommendation "B" has some risk of differential movement in the floor slab that may result in some floor slab, interior drywall cracking, and sticking of interior doors. Recommendations "C" has the most risk of differential movement in the structure and floor slab that may result in cracking of drywall, cracking in exterior veneer, and movement in the floor slab.

HOLT ENGINEERING, INC. 2220 Barton Skyway – Austin, Texas – 78704 – Ph. (512) 447-8166 – Fax (512) 447-0852

SPECIFIC FOUNDATION RECOMMENDATIONS

A. Drilled Piers with Suspended Structural Floor System:

This foundation system consists of all foundation loads supported on drilled under-reamed (belled) concrete piers. Perimeter beams are voided of grade. The floor system is a reinforced concrete suspended structural floor slab formed on void cartons.

1. Allowable Bearing and Seating Depth – Drilled under-reamed piers should be seated into the tan and gray fat clay at a minimum depth of 22 feet below existing grade and sized for an allowable bearing value of 6,500 PSF.
2. Pier Construction – Reinforcing steel should be a minimum of 1.5% of shaft area and cage steel should have spacers to provide proper sidewall clearance. Piers should be poured the same day they are drilled.
3. Pier Hole Inspection – All pier holes should be inspected full-time by the Geotechnical Engineer or qualified technician to verify seating depth, bearing strata, plumbness, reinforcement placement, concrete placement, cleanliness of hole, and proper belling.
4. Casing – Groundwater was not encountered in our borings; however, water may be encountered during pier drilling. Pumping of pier holes may be necessary. If sloughing is excessive, then casing of the pier holes will be required. Provisions for pumping and casing should be in the bid documents.
5. Voided Structural Floor and Beam – The reinforced concrete suspended structural floor and beams should be voided from grade a minimum of 8 inches. Concrete perimeter beams must be hard formed. Cardboard cartons may be used but must be inspected for collapsing. Concrete or other approved retainers must be used to prevent encroachment of soil below beams. Trapezoidal cardboard forms in lieu of retainers are not acceptable. Soil retainers should be concrete block or other engineer approved products. Retainers should extend 8 inches above the voids. Void cartons should be inspected by the

HOLT ENGINEERING, INC. 2220 Barton Skyway – Austin, Texas – 78704 – Ph. (512) 447-8166 – Fax (512) 447-0852

engineer prior to reinforcement placement. Cartons should not be placed in trenches with standing water or wet or damp soils. Beam trenches must be well drained. Any cartons that become wet must be removed and replaced prior to concrete placement. Cartons must fit tight to beam trenches. Overspill beside cartons is not acceptable. The contractor should verify cardboard carton forms will support the perimeter beam loads during placement.

6. Flexibility – All building entities unsupported by piers such as walks, porches, stairs, planters, etc. should not be directly attached to the building. Flexibility should be provided for all utility penetration points. Particular attention must be given to plumbing, water and wastewater lines as well as gas lines. Utility lines in the void space should be hung with a minimum of 8 inches of ground clearance. Penetration through concrete beams should be sleeved or run under the void space below the beam with a minimum of 8 inches of clearance below the beam.

7. Landscaping and Drainage – Landscaping should be accomplished to provide positive drainage away from the building foundation (minimum 6-inch drop in first 5 feet from building). Gutters and downspouts should be installed where necessary to prevent ponding near the foundation. Where possible, downspouts should drain into a subsurface drainage system. Void spaces should have adequate drainage or under-drains to prevent standing water. Sprinkler systems near the foundation should be avoided.

B. Drilled Piers with a Soil Supported Floor System:

This foundation system consists of all foundation loads supported on drilled under-reamed (belled) concrete piers. Perimeter beams are voided of grade. The floor system is soil supported.

1. Allowable Bearing and Seating Depth – Drilled under-reamed piers should be seated into the tan and gray fat clay at a minimum depth of 22 feet below existing grade and sized for an allowable bearing value of 6,500 PSF.

HOLT ENGINEERING, INC. 2220 Barton Skyway – Austin, Texas – 78704 – Ph. (512) 447-8166 – Fax (512) 447-0852

2. Pier Construction – Reinforcing steel should be a minimum of 1.5% of shaft area and cage steel should have spacers to provide proper sidewall clearance. Piers should be poured the same day they are drilled.

3. Pier Hole Inspection – All pier holes should be inspected full-time by the Geotechnical Engineer or qualified technician to verify seating depth, bearing strata, plumbness, reinforcement placement, concrete placement, cleanliness of hole, and proper belling.

4. Casing – Groundwater was not encountered in our borings; however, water may be encountered during pier drilling. Pumping of pier holes may be necessary. If sloughing is excessive, then casing of the pier holes will be required. Provisions for pumping and casing should be in the bid documents.

5. Building Pad – Remove the top 4 feet to 6 feet of brown fat clay and tan and light brown lean clay and replace with a low P.I. (P.I. 3 to 18) Select Fill (see attached Select Fill Specifications) in accordance with Table 1 for the associated estimated PVR. There should be a minimum of 4 feet of Select Fill below the floor slab. The building pad should extend 3 feet beyond the building perimeter and the building pad Select Fill should extend at least 24 inches beyond the edge of any flat work around the building to help minimize movement. Compact the exposed subgrade and all fill to a minimum of 95% of the optimum dry weight in accordance with TxDOT test method TEX-113-E. Compaction moisture should be within 3% of optimum. Place a 10 mil (or heavier) vapor barrier between foundation and base material. Building pad moisture should be maintained in a uniform condition.

6. Voided Grade Beam – The beams should be voided from grade a minimum of 8 inches. Cardboard cartons may be used but must be inspected for collapsing. Concrete or other approved retainers must be

HOLT ENGINEERING, INC. 2220 Barton Skyway – Austin, Texas – 78704 – Ph. (512) 447-8166 – Fax (512) 447-0852

used to prevent encroachment of soil below beams. Trapezoidal cardboard forms in lieu of retainers are not acceptable. Soil retainers should be concrete block or other engineer approved products. Retainers should extend 8 inches above the voids. Void cartons should be inspected by the engineer prior to reinforcement placement. Cartons should not be placed in trenches with standing water or wet or damp soils. Beam trenches must be well drained. Any cartons that become wet must be removed and replaced prior to concrete placement. Cartons must fit tight to beam trenches. Overspill beside cartons is not acceptable. The contractor should verify cardboard carton forms will support the perimeter beam loads during placement.

7. Flexibility – All building entities unsupported by piers such as walks, porches, stairs, planters, etc. should not be directly attached to the building. Flexibility should be provided for all utility penetration points. Particular attention must be given to plumbing, water and wastewater lines as well as gas lines. Penetration through concrete beams should be sleeved or run under the void space below the beam with a minimum of 8 inches of clearance below the beam.

8. Landscaping and Drainage – Landscaping should be accomplished to provide positive drainage away from the building foundation (minimum 6-inch drop in first 5 feet from building). Gutters and downspouts should be installed where necessary to prevent ponding near the foundation. Where possible, downspouts should drain into a subsurface drainage system. Void spaces should have adequate drainage or under-drains to prevent standing water. Sprinkler systems near the foundation should be avoided.

C. Shallow Foundation Option:

This foundation system consists of continuous reinforced concrete spread footings (perimeter beams) with a soil supported floor slab. Intermediate stiffening beams are highly

recommended. Depending on the total removal and replacement of existing soils with Select Fill, this foundation option will be susceptible to differential movement of approximately one inch to two inches (See Table 1 above).

1. Building Pad – Remove the top 4 feet to 11 feet of brown fat clay and tan and light brown lean clay and replace with a low P.I. (P.I. 3 to 18) Select Fill (see attached Select Fill Specifications) in accordance with Table 1 for the associated estimated PVR. There should be a minimum of 4 feet of Select Fill below the floor slab. The building pad should extend 3 feet beyond the building perimeter and the building pad Select Fill should extend at least 24 inches beyond the edge of any flat work around the building to help minimize movement. Compact the exposed subgrade and all fill to a minimum of 95% of the optimum dry weight in accordance with TxDOT test method TEX-113-E. Compaction moisture should be within 3% of optimum.
2. Beams and Floor Slab – Trench for perimeter beams (wall footings) and stiffening beams. Place a 10 mil (or heavier) vapor barrier between foundation and base material. Immediately after placing reinforcing steel, pour beams and floor slab monolithically. Building pad moisture should be maintained in a uniform condition.
3. Soil Bearing Pressure and Seating Depths – Perimeter beams should be seated 24 inches into compacted Select Fill and sized for an allowable bearing value of 1,500 PSF. Heavy column loads should be carried on widened grade beams.
4. Inspection – Subgrade and each 8-inch lift of fill material should be tested by the testing laboratory for proper compaction and moisture content. All perimeter beams or footings should be inspected by the Geotechnical Engineer to verify proper seating depth and bearing strata prior to concrete placement.
5. Drainage – Slope grounds away from foundation to provide rapid drainage.

SEISMIC DESIGN

The building should be designed and constructed to resist the effects of earthquake motions in accordance with the International Building Code (IBC). Based on our test borings, we recommend seismic site soil classification "D". Based on this site classification and building risk category II, we recommend the following values for spectral response acceleration from Section 11.4 "Seismic Ground Motion Values" of ASCE 7-16. The values below were computed from the SEAOC and OSHPD Seismic Design Maps website. SEAOC and OSHPD developed this web interface that uses the USGS web services and retrieve the seismic design data and presents it in a report format. A summary of the calculations is presented in Table II below, and additional information is provided in the Appendix.

Table II – Seismic Parameters

S_S =	0.055	S_{MS} =	0.088	S_{DS} =	0.059
S_1 =	0.033	S_{M1} =	0.080	S_{D1} =	0.054

Seismic Design Category – Based on the above response acceleration values the more severe design category was determined in accordance with Table 11.6-1 or 11.6-2. Therefore, the Seismic Design Category is "A". We are providing this soil design classification and the seismic design parameters as a courtesy to the design structural engineer based on the sources stated above. The structural engineer is ultimately responsible for verifying these values are consistent with the seismic data for the area in question and also for the adequacy of the spectral response calculations.

PAVEMENT DESIGN SECTION

It is our understanding new driveway and parking areas will also be constructed as part of this project. The pavement section will consist of asphalt or reinforced concrete paving. The design is based on light vehicular traffic (passenger vehicles) with light delivery truck traffic, as well as the occasional 80,000-pound emergency vehicle (Fire/Garbage Truck). Below are the recommended paving thicknesses and construction considerations.

HOLT ENGINEERING, INC. 2220 Barton Skyway – Austin, Texas – 78704 – Ph. (512) 447-8166 – Fax (512) 447-0852

Driveway and Parking Areas – Light Vehicular with Light Delivery Truck Traffic

A. Asphalt Option

Material	Thickness
Lime Stabilized Subgrade	8.0 inches
Crushed Limestone Base	10.0 inches
Hot Mix Asphaltic Concrete	2.0 inches

B. Reinforced Concrete Option

Material	Thickness
Lime Stabilized Subgrade	8.0 inches
Crushed Limestone Base	6.0 inches*
Reinforced Concrete	5.0 inches

*Note: Base may be omitted if concrete is increased to 6.0 inches. If base is omitted, additional distress and cracking in the pavement section and curb should be expected.

PAVEMENT CONSTRUCTION CONSIDERATIONS

Pavement should be constructed and tested to meet the following requirements:

1. Reinforced Concrete – Concrete shall have a minimum compressive strength of 4,000 PSI at 28 days using 5 sacks of cement per cubic yard. Slump shall not exceed 6 inches. Contraction joints should be spaced a maximum of 12.5 feet on center for 5-inch-thick concrete and 15 feet on center for 6-inch-thick concrete or greater. Isolation joints should be used around lighting standards, area drains, and curb inlets, between pavement and sidewalks, and between buildings. Expansion (isolation) joints are not required except at fixed objects or structures and unsymmetrical areas where joint grids are difficult. Reinforcing steel should consist of No. 3 bars on 16-inch centers or an equivalent wire mesh. The reinforcing steel will help to hold edges of uncontrolled cracks together. Saw cut contraction joints should be at

least ¼ of the slab depth or 1 inch deep when using early entry saws and cut as soon as concrete is hardened. For unsealed joints, the width is 1/10 inch to 1/8 inch. Joint sealant manufacturers' recommendations should be followed for the depth and width of sealed joints. For more information on concrete pavement and joint design please refer to ACI 330R-01 "Guide for Design and Construction of Concrete Parking Lots".

2. Hot Mix Asphaltic Concrete (Type D) – All materials and placement of asphalt shall conform to all specifications and test methods outlined in TxDOT Standard Specifications for Construction and Maintenance of Highways, Street and Bridges (TxDOT) Item No. 340 Dense-Graded Hot-Mix Asphalt. Asphalt (Type D) shall be compacted to a minimum of 91% and a maximum of 96% in accordance with TxDOT test method TEX-207-F/TEX-227-F.

3. Crushed Limestone Base – The crushed limestone base shall conform to TxDOT Item 247 "Flexible Base". The base material shall be Type A, Grade 1-2 or Grade 5 and shall be obtained from an approved source and shall be free of all deleterious materials. The crushed stone base shall be compacted to at least 100% of the maximum dry density as determined by TxDOT test method TEX-113-E. Soil moisture should be within 3% of optimum. The maximum lift shall not exceed 6 inches. The base material should extend at least 36 inches behind the curb line.

4. Compacted Subgrade – The parking lot subgrade should be prepared by removing the top 18 inches of brown fat clay and compacting the subgrade with a heavy vibratory roller. The top 12 inches of the exposed subgrade and all fill material should be compacted in 8-inch lifts to 95% of the maximum dry density in accordance with TxDOT TEX-114-E test method. Soil moisture should be within 3% of

optimum.

5. Lime Stabilized Subgrade – The lime treated subgrade should be prepared by removing a minimum of the top 8 inches of expansive brown fat clays. The upper 8 inches of exposed subgrade shall be lime stabilized with hydrated lime and thoroughly mixed with the clay soil. The hydrated lime should be thoroughly mixed into subgrade soils with a pulverizer/mixer to a minimum depth of 8 inches. In order to determine the exact amount of lime to be placed, a lime series curve should be developed prior to placement. For bid purposes, we recommend a minimum quantity of 7% hydrated lime by weight. All lime shall be placed and tested in accordance with TxDOT Items 260, Lime Treatment (Road-Mixed). The lime-stabilized subgrade should extend a minimum of 36 inches behind the curb. Lime treated material should be a minimum of 95% of the maximum dry density at minus 1% and plus 2% above optimum moisture content.

6. Sulfate Tests – Sulfate tests were run on selected samples and the results of these tests are presented in the Appendix. These test results are considered to be a low sulfate concentration and should not affect lime absorption; however, sulfate levels may vary at various depths and locations across the site. Additional sulfate tests should be run on the exposed subgrade. If high sulfates are found then additional treatment and curing methods may be required. This may include additional mixing, additional mixing water, blending with low sulfate soils and extending the curing time. The contractor should include sulfate testing as part of the subgrade preparation.

7. Testing – All subgrade preparation and base compaction should be inspected and tested by an Engineering/Testing Laboratory. The minimum testing frequency for subgrade and base densities is one test per 2,000 square feet or a minimum of 3 tests per site visit per lift.

HOLT ENGINEERING, INC. 2220 Barton Skyway – Austin, Texas – 78704 – Ph. (512) 447-8166 – Fax (512) 447-0852

Grab samples of all asphalt laid shall be taken by the testing laboratory for extraction, gradation and mix compliance. Cores of the asphalt shall be taken as directed by the laboratory to determine the thickness and density. Slump tests, temperature measurement, air content and cylinders made for compressive strengths tests should be made during concrete placement.

8. Drainage – The parking lot shall be sloped or crowned for good drainage.

DUMPSTER PADS

We recommend that reinforced concrete pads be provided in front of and beneath the trash receptacles. Dumpster trucks should be parked entirely on the rigid pavement when receptacles are lifted. Additionally, the dumpster pads should be large enough to facilitate the dumpster truck while maneuvering into position to lift the dumpsters. The dumpster pads should be a minimum of 6 inches of reinforced concrete constructed on a minimum of 6 inches of compacted crushed limestone base material over prepared subgrade as described above.

QUALITY CONTROL PROGRAM

We recommend a Quality Control Program be implemented by the Owner or Architect to inspect the construction of the foundation and framing to verify all work is being performed in accordance with the approved engineered drawings and specifications. The inspections should include (but not limited to) preparation of the building pad subgrade and placement and compaction of all fill material to verify proper density and moisture content. Inspections should be conducted on all foundation beams, piers and footings to verify proper bearing and seating depth and voiding of beams when recommended. Where drilled piers are used, then full-time inspection is recommended to verify proper bearing capacity is achieved. Pre-pour inspections should be made in order to verify proper placement of the reinforcement. All concrete should be inspected during placement for proper slump, air-content and temperature.

HOLT ENGINEERING, INC. 2220 Barton Skyway – Austin, Texas – 78704 – Ph. (512) 447-8166 – Fax (512) 447-0852

Test cylinders should be made to verify compressive strength. All plumbing should be leak tested both before slab is poured and after concrete is placed. Under-drains and basement wall drains should be inspected prior to backfilling. Framing should be inspected to verify all floor trusses and roof members (trusses) are placed in accordance with the approved drawings. Anchor bolts and wind bracing should also be inspected. Welding and bolting on structural steel framing and connections should be inspected by a certified welding inspector. Reports of all inspections and tests should be forwarded to the Owner, Architect, Engineer, and Contractor. We can provide these services upon request.

LIMITATIONS

This geotechnical report has been prepared for the exclusive use of our client and the client's authorized design team in preparing the appropriate design and construction documents for this project. It is not intended for any other person's benefit. This report is based on specific project information provided by the client and/or design team as described herein. Any changes in the structure, loadings, building footprint, configuration, finished floor elevations or grades should be brought to our attention so that we may determine what impact the change may have on our conclusions and recommendations. No site grading plan was provided at the time of this report was prepared. We expect to review the final grading plan and structural drawings to verify our recommendations are properly interpreted.

Our analyses and recommendations are based on subsurface conditions encountered in our borings. Variations in soil conditions may occur between borings. If during construction the soil strata are found to differ from that reported here, we should be notified immediately. This report contains soil-boring logs which are for the purpose of arriving at foundation criteria and are not to be used by the excavation and/or pier drilling contractor in arriving at rock.

This report is based on conditions that exist on the site at the time of our investigation. Changes to the project, the building site or adjacent properties may affect the reliability of our report. We expect the structure addressed in our report to be started or substantially completed within approximately 24 months of the issuance of our report. The geotechnical report and specific recommendations will need to be re-evaluated if building

construction is delayed by more than 24 months from the time of our report. Our report should not be used if the elapsed time of substantial completion exceeds 5 years without review or written consent from Holt Engineering, Inc.

The procedures, tests and recommendations of this investigation and report have been conducted and furnished in accordance with generally accepted professional engineering practices in the field of foundations, engineering soil mechanics and engineering geology. No other warranty is either expressed or implied.

HOLT ENGINEERING, INC. 2220 Barton Skyway – Austin, Texas – 78704 – Ph. (512) 447-8166 – Fax (512) 447-0852

APPENDIX

ITEM 1

SELECT FILL SPECIFICATIONS

SELECT FILL

Select fill as called for on the plans shall meet one of the following requirements (% Passing or % Retained) as verified by the Engineer when properly slaked and tested by standard laboratory methods:

	% Retained	Or	% Passing
2 ½" Screen	0%		100%
1 ½" Screen	0% - 25%		75% - 100%
7/8" Screen	15% - 55%		45% - 85%
No. 4 Sieve	45% - 75%		25% - 55%
No. 40 Sieve	60% - 90%		10% - 40%

Material passing the No. 40 sieve shall have a minimum plasticity index of 3 and shall not have a plasticity index of greater than 18.

COMPACTION OF FILL

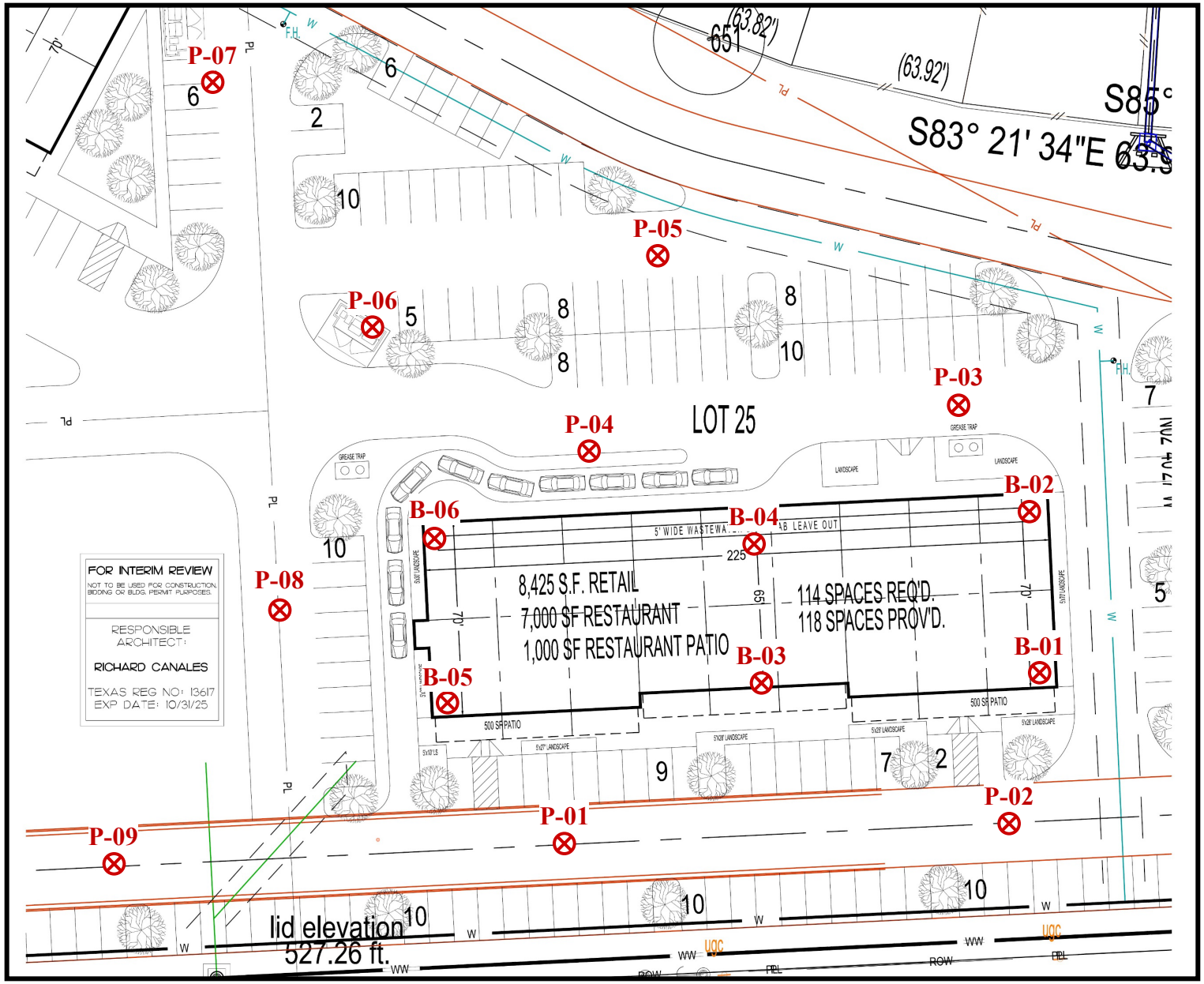
Select fill shall be placed in lifts not to exceed 8 inches loose measure and compacted to 95% or greater of the maximum dry density as determined in accordance with TxDOT test method TEX 113E. Field densities shall be checked in accordance with ASTM D-6938 (Nuclear Gauge) to ensure compliance with project specifications.

Select fill should be processed and moisture conditioned as needed to meet requirements of project moisture specifications.

Samples of fill shall be furnished to the testing laboratory seven days prior to installation to permit time for specification compliance, inspection, and approval.

APPENDIX

ITEM 2



N

Not to Scale

GENERALIZED BORING LOCATION PLAN
MANOR COMMERCIAL DEVELOPMENT
HIGHWAY 290 & GREENBURY DRIVE
MANOR, TEXAS

File No. 08-20525

APPENDIX

ITEM 3

MANOR COMMERCIAL DEVELOPMENT
HIGHWAY 290 & GREENBURY DRIVE
MANOR, TEXAS

LOG OF BORING B-01

NOTES : Hole dry upon completion of drilling operations

DATE DRILLED : 07-28-25 | BORING DEPTH : 30.0 FEET

DRILLER : John Webb | WATER LEVEL :

ELEVATION :

DRILLING METHOD : 4" Flight Augers | LAT.: | LONG.:

DEPTH (feet)	SOIL DESCRIPTION	BLOWS PER FOOT	UCC STR. (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT(%)	PLASTICITY INDEX	% PASSING #200 SIEVE
	FAT CLAY (CH), brown, becoming lighter w/ depth, soft, moist	4		28.3		69	47	87.7
5		6		27.6		64	43	88.3
	LEAN CLAY (CL), tan & light brown, sandy, becoming lighter w/ depth, firm	14		13.9		44	26	76.8
10								
	FAT CLAY (CH), tan & gray, w/ calcareous & ferrous deposits, stiff, blocky			28.9		82	58	98.6
15								
		11						
20								
25								
		18						
30	Terminated @ 30 feet							
35								
40								

LOG OF BORING 08-20525 - MANOR COMMERCIAL DEVELOPMENT, HWY 290 & GREENBURY DR., MANOR, TX.GPJ HOLT ENGINEERING.GDT 8/27/25

MANOR COMMERCIAL DEVELOPMENT
HIGHWAY 290 & GREENBURY DRIVE
MANOR, TEXAS

LOG OF BORING B-02

NOTES : Hole dry upon completion of drilling operations

DATE DRILLED : 07-29-25 | BORING DEPTH : 35.0 FEET

DRILLER : John Webb | WATER LEVEL : | ELEVATION :

DRILLING METHOD : 4" Flight Augers | LAT.: | LONG.:

DEPTH (feet)	SOIL DESCRIPTION	BLOWS PER FOOT	UCC STR. (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT(%)	PLASTICITY INDEX	% PASSING #200 SIEVE
0	FAT CLAY (CH), brown, becoming lighter w/ depth, soft, moist	5						
5		7		26.9		65	44	87.8
	LEAN CLAY (CL), tan & light brown, sandy, becoming lighter w/ depth, firm							
10		12		15.7		46	28	81.8
	FAT CLAY (CH), tan & gray, w/ calcareous & ferrous deposits, firm to stiff, blocky							
15								
20								
25		18						
30								
35		19						
	Terminated @ 35 feet							
40								

LOG OF BORING 08-20525 - MANOR COMMERCIAL DEVELOPMENT, HWY 290 & GREENBURY DR., MANOR, TX.GPJ HOLT ENGINEERING.GDT 8/27/25

MANOR COMMERCIAL DEVELOPMENT
HIGHWAY 290 & GREENBURY DRIVE
MANOR, TEXAS

LOG OF BORING B-03

NOTES : Hole dry upon completion of drilling operations

DATE DRILLED : 07-28-25 | BORING DEPTH : 25.0 FEET

DRILLER : John Webb | WATER LEVEL : | ELEVATION :

DRILLING METHOD : 4" Flight Augers | LAT.: | LONG.:

DEPTH (feet)	SOIL DESCRIPTION	BLOWS PER FOOT	UCC STR. (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT(%)	PLASTICITY INDEX	% PASSING #200 SIEVE
0	FAT CLAY (CH), brown, becoming lighter w/ depth, soft, moist	5		28.1		67	46	89.7
5		8						
	LEAN CLAY (CL), tan & light brown, sandy, becoming lighter w/ depth, firm to stiff	16						
10								
	FAT CLAY (CH), tan & gray, w/ calcareous & ferrous deposits, firm to stiff, blocky			28.9		80	56	98.6
15								
20								
		18						
25	Terminated @ 25 feet							
30								
35								
40								

LOG OF BORING 08-20525 - MANOR COMMERCIAL DEVELOPMENT, HWY 290 & GREENBURY DR., MANOR, TX.GPJ HOLT ENGINEERING.GDT 8/27/25

MANOR COMMERCIAL DEVELOPMENT
HIGHWAY 290 & GREENBURY DRIVE
MANOR, TEXAS

LOG OF BORING B-04

NOTES : Hole dry upon completion of drilling operations

DATE DRILLED : 07-28-25 | BORING DEPTH : 30.0 FEET

DRILLER : John Webb | WATER LEVEL :

ELEVATION :

DRILLING METHOD : 4" Flight Augers | LAT.: | LONG.:

DEPTH (feet)	SOIL DESCRIPTION	BLOWS PER FOOT	UCC STR. (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT(%)	PLASTICITY INDEX	% PASSING #200 SIEVE
	FAT CLAY (CH), brown, becoming lighter w/ depth, soft, moist	3		28.0		62	41	91.7
5		7						
	LEAN CLAY (CL), tan & light brown, sandy, becoming lighter w/ depth, firm	14		13.4		38	21	67.0
10								
	FAT CLAY (CH), tan & gray, w/ calcareous & ferrous deposits, firm to stiff, blocky			29.7		82	58	96.7
15								
		13						
20								
25								
		19						
30	Terminated @ 30 feet							
35								
40								

LOG OF BORING 08-20525 - MANOR COMMERCIAL DEVELOPMENT, HWY 290 & GREENBURY DR., MANOR, TX.GPJ HOLT ENGINEERING.GDT 8/27/25

Holt Engineering Inc.
TBPE Firm Registration No. F-430

MANOR COMMERCIAL DEVELOPMENT
HIGHWAY 290 & GREENBURY DRIVE
MANOR, TEXAS

LOG OF BORING B-05

NOTES : Hole dry upon completion of drilling operations

DATE DRILLED : 07-29-25 | BORING DEPTH : 25.0 FEET

DRILLER : John Webb | WATER LEVEL :

ELEVATION :

DRILLING METHOD : 4" Flight Augers | LAT.: | LONG.:

DEPTH (feet)	GRAPHIC LOG	SAMPLE	SOIL DESCRIPTION	BLOWS PER FOOT	UCC STR. (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT(%)	PLASTICITY INDEX	% PASSING #200 SIEVE
			FAT CLAY (CH), brown, becoming lighter w/ depth, soft, moist	4		27.1		63	42	89.4
5				7						
			LEAN CLAY (CL), tan & light brown, sandy, becoming lighter w/ depth, firm			16.7		49	30	87.6
				13						
10			FAT CLAY (CH), tan & gray, w/ calcareous & ferrous deposits, firm to stiff, blocky							
15										
20										
				17						
25			Terminated @ 25 feet							
30										
35										
40										

LOG OF BORING 08-20525 - MANOR COMMERCIAL DEVELOPMENT, HWY 290 & GREENBURY DR., MANOR, TX.GPJ HOLT ENGINEERING.GDT 8/27/25

Holt Engineering Inc.
TBPE Firm Registration No. F-430

MANOR COMMERCIAL DEVELOPMENT
HIGHWAY 290 & GREENBURY DRIVE
MANOR, TEXAS

LOG OF BORING B-06

NOTES : Hole dry upon completion of drilling operations

DATE DRILLED : 07-28-25 | BORING DEPTH : 30.0 FEET

DRILLER : John Webb | WATER LEVEL :

ELEVATION :

DRILLING METHOD : 4" Flight Augers | LAT.: | LONG.:

DEPTH (feet)	SOIL DESCRIPTION	BLOWS PER FOOT	UCC STR. (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT(%)	PLASTICITY INDEX	% PASSING #200 SIEVE
	FAT CLAY (CH), brown, becoming lighter w/ depth, soft, moist	3						
5		12						
	LEAN CLAY (CL), tan & light brown, sandy, becoming lighter w/ depth, firm	14						
10								
	FAT CLAY (CH), tan & gray, w/ calcareous & ferrous deposits, firm to stiff, blocky			29.7		82	58	98.1
15		15						
20								
25								
		17						
30	Terminated @ 30 feet							
35								
40								

LOG OF BORING 08-20525 - MANOR COMMERCIAL DEVELOPMENT, HWY 290 & GREENBURY DR., MANOR, TX.GPJ HOLT ENGINEERING.GDT 8/27/25

MANOR COMMERCIAL DEVELOPMENT
HIGHWAY 290 & GREENBURY DRIVE
MANOR, TEXAS

LOG OF BORING P-01

NOTES : Hole dry upon completion of drilling operations

DATE DRILLED : 07-29-25 | BORING DEPTH : 10.0 FEET

DRILLER : John Webb | WATER LEVEL : | ELEVATION :

DRILLING METHOD : 4" Flight Augers | LAT.: | LONG.:

DEPTH (feet)	SOIL DESCRIPTION	BLOWS PER FOOT	UCC STR. (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT(%)	PLASTICITY INDEX	% PASSING #200 SIEVE
	FAT CLAY (CH), brown, becoming lighter w/ depth, soft, moist							
	-- Pocket penetrometer = 1.0 + tsf			28.3		62	41	88.6
5		7						
	LEAN CLAY (CL), tan & light brown, sandy, becoming lighter w/ depth, soft			15.1		45	27	75.8
		13						
10	Terminated @ 10 feet							
15								
20								
25								
30								
35								
40								

LOG OF BORING 08-20525 - MANOR COMMERCIAL DEVELOPMENT, HWY 290 & GREENBURY DR., MANOR, TX.GPJ HOLT ENGINEERING.GDT 8/27/25

MANOR COMMERCIAL DEVELOPMENT
HIGHWAY 290 & GREENBURY DRIVE
MANOR, TEXAS

LOG OF BORING P-02

NOTES : Hole dry upon completion of drilling operations

DATE DRILLED : 07-30-25 | BORING DEPTH : 10.0 FEET

DRILLER : John Webb | WATER LEVEL :

ELEVATION :

DRILLING METHOD : 4" Flight Augers | LAT.: | LONG.:

DEPTH (feet)	GRAPHIC LOG	SAMPLE	SOIL DESCRIPTION	BLOWS PER FOOT	UCC STR. (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT(%)	PLASTICITY INDEX	% PASSING #200 SIEVE
0			FAT CLAY (CH), brown, sandy, becoming lighter w/ depth, soft, moist							
			-- Pocket penetrometer = 1.0 + tsf							
5			-- 6.0' - 7.0' - w/ small sized gravel	7						
			LEAN CLAY (CL), tan & light brown, sandy, becoming lighter w/ depth, firm	11						
10			Terminated @ 10 feet							
15										
20										
25										
30										
35										
40										

LOG OF BORING 08-20525 - MANOR COMMERCIAL DEVELOPMENT, HWY 290 & GREENBURY DR., MANOR, TX.GPJ HOLT ENGINEERING.GDT 8/27/25

Holt Engineering Inc.
TBPE Firm Registration No. F-430

MANOR COMMERCIAL DEVELOPMENT
HIGHWAY 290 & GREENBURY DRIVE
MANOR, TEXAS

LOG OF BORING P-03

NOTES : Hole dry upon completion of drilling operations

DATE DRILLED : 07-30-25 | BORING DEPTH : 10.0 FEET

DRILLER : John Webb | WATER LEVEL :

ELEVATION :

DRILLING METHOD : 4" Flight Augers | LAT.: | LONG.:

DEPTH (feet)	GRAPHIC LOG	SAMPLE	SOIL DESCRIPTION	BLOWS PER FOOT	UCC STR. (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT(%)	PLASTICITY INDEX	% PASSING #200 SIEVE
0			FAT CLAY (CH), brown, becoming lighter w/ depth, soft, moist			27.6		57	37	89.3
			-- Pocket penetrometer = 1.0 + tsf							
5				5						
			LEAN CLAY (CL), tan & light brown, sandy, becoming lighter w/ depth, soft							
				8						
10			Terminated @ 10 feet							
15										
20										
25										
30										
35										
40										

LOG OF BORING 08-20525 - MANOR COMMERCIAL DEVELOPMENT, HWY 290 & GREENBURY DR., MANOR, TX.GPJ HOLT ENGINEERING.GDT 8/27/25

Holt Engineering Inc.
TBPE Firm Registration No. F-430

MANOR COMMERCIAL DEVELOPMENT
HIGHWAY 290 & GREENBURY DRIVE
MANOR, TEXAS

LOG OF BORING P-04

NOTES : Hole dry upon completion of drilling operations

DATE DRILLED : 07-30-25 | BORING DEPTH : 10.0 FEET

DRILLER : John Webb | WATER LEVEL : | ELEVATION :

DRILLING METHOD : 4" Flight Augers | LAT.: | LONG.:

DEPTH (feet)	GRAPHIC LOG	SAMPLE	SOIL DESCRIPTION	BLOWS PER FOOT	UCC STR. (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT(%)	PLASTICITY INDEX	% PASSING #200 SIEVE
0			FAT CLAY (CH), brown, becoming lighter w/ depth, soft, moist	4						
5				6						
			LEAN CLAY (CL), tan & light brown, sandy, becoming lighter w/ depth, soft to firm	12						
10			Terminated @ 10 feet							
15										
20										
25										
30										
35										
40										

LOG OF BORING 08-20525 - MANOR COMMERCIAL DEVELOPMENT, HWY 290 & GREENBURY DR., MANOR, TX.GPJ HOLT ENGINEERING.GDT 8/27/25

Holt Engineering Inc.
TBPE Firm Registration No. F-430

MANOR COMMERCIAL DEVELOPMENT
HIGHWAY 290 & GREENBURY DRIVE
MANOR, TEXAS

LOG OF BORING P-05

NOTES : Hole dry upon completion of drilling operations

DATE DRILLED : 07-30-25 | BORING DEPTH : 10.0 FEET

DRILLER : John Webb | WATER LEVEL : | ELEVATION :

DRILLING METHOD : 4" Flight Augers | LAT.: | LONG.:

DEPTH (feet)	GRAPHIC LOG	SAMPLE	SOIL DESCRIPTION	BLOWS PER FOOT	UCC STR. (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT(%)	PLASTICITY INDEX	% PASSING #200 SIEVE
0			FAT CLAY (CH), brown, becoming lighter w/ depth, soft, moist	3		28.9		69	47	88.6
5				8						
			LEAN CLAY (CL), tan & light brown, sandy, becoming lighter w/ depth, soft to firm	14						
10			Terminated @ 10 feet							
15										
20										
25										
30										
35										
40										

LOG OF BORING 08-20525 - MANOR COMMERCIAL DEVELOPMENT, HWY 290 & GREENBURY DR., MANOR, TX.GPJ HOLT ENGINEERING.GDT 8/27/25

MANOR COMMERCIAL DEVELOPMENT
HIGHWAY 290 & GREENBURY DRIVE
MANOR, TEXAS

LOG OF BORING P-06

NOTES : Hole dry upon completion of drilling operations

DATE DRILLED : 07-30-25 | BORING DEPTH : 10.0 FEET

DRILLER : John Webb | WATER LEVEL : | ELEVATION :

DRILLING METHOD : 4" Flight Augers | LAT.: | LONG.:

DEPTH (feet)	GRAPHIC LOG	SAMPLE	SOIL DESCRIPTION	BLOWS PER FOOT	UCC STR. (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT(%)	PLASTICITY INDEX	% PASSING #200 SIEVE
			FAT CLAY (CH), brown, becoming lighter w/ depth, soft, moist							
			-- Pocket penetrometer = 1.2 + tsf			28.3		68	46	89.7
5			LEAN CLAY (CL), tan & light brown, sandy, becoming lighter w/ depth, firm	14						
				14						
10			Terminated @ 10 feet							
15										
20										
25										
30										
35										
40										

LOG OF BORING 08-20525 - MANOR COMMERCIAL DEVELOPMENT, HWY 290 & GREENBURY DR., MANOR, TX.GPJ HOLT ENGINEERING.GDT 8/27/25

Holt Engineering Inc.
TBPE Firm Registration No. F-430

MANOR COMMERCIAL DEVELOPMENT
HIGHWAY 290 & GREENBURY DRIVE
MANOR, TEXAS

LOG OF BORING P-07

NOTES : Hole dry upon completion of drilling operations

DATE DRILLED : 07-30-25 | BORING DEPTH : 10.0 FEET

DRILLER : John Webb | WATER LEVEL : | ELEVATION :

DRILLING METHOD : 4" Flight Augers | LAT.: | LONG.:

DEPTH (feet)	GRAPHIC LOG	SAMPLE	SOIL DESCRIPTION	BLOWS PER FOOT	UCC STR. (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT(%)	PLASTICITY INDEX	% PASSING #200 SIEVE
			FAT CLAY (CH), brown, becoming lighter w/ depth, soft, moist	5		27.6		65	44	88.6
5			LEAN CLAY (CL), tan & light brown, sandy, firm	7						
				13						
10			Terminated @ 10 feet							
15										
20										
25										
30										
35										
40										

LOG OF BORING 08-20525 - MANOR COMMERCIAL DEVELOPMENT, HWY 290 & GREENBURY DR., MANOR, TX.GPJ HOLT ENGINEERING.GDT 8/27/25

Holt Engineering Inc.
TBPE Firm Registration No. F-430

MANOR COMMERCIAL DEVELOPMENT
HIGHWAY 290 & GREENBURY DRIVE
MANOR, TEXAS

LOG OF BORING P-08

NOTES : Hole dry upon completion of drilling operations

DATE DRILLED : 07-29-25 | BORING DEPTH : 10.0 FEET

DRILLER : John Webb | WATER LEVEL :

ELEVATION :

DRILLING METHOD : 4" Flight Augers | LAT.: | LONG.:

DEPTH (feet)	GRAPHIC LOG	SAMPLE	SOIL DESCRIPTION	BLOWS PER FOOT	UCC STR. (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT(%)	PLASTICITY INDEX	% PASSING #200 SIEVE
			FAT CLAY (CH), brown, becoming lighter w/ depth, soft, moist							
			-- Pocket penetrometer = 1.0 + tsf							
5			LEAN CLAY (CL), tan & light brown, sandy, becoming lighter w/ depth, soft to firm	8						
				13						
10			Terminated @ 10 feet							
15										
20										
25										
30										
35										
40										

LOG OF BORING 08-20525 - MANOR COMMERCIAL DEVELOPMENT, HWY 290 & GREENBURY DR., MANOR, TX.GPJ HOLT ENGINEERING.GDT 8/27/25

Holt Engineering Inc.
TBPE Firm Registration No. F-430

MANOR COMMERCIAL DEVELOPMENT
HIGHWAY 290 & GREENBURY DRIVE
MANOR, TEXAS

LOG OF BORING P-09

NOTES : Hole dry upon completion of drilling operations

DATE DRILLED : 07-29-25 | BORING DEPTH : 10.0 FEET

DRILLER : John Webb | WATER LEVEL :

ELEVATION :

DRILLING METHOD : 4" Flight Augers | LAT.: | LONG.:

DEPTH (feet)	GRAPHIC LOG	SAMPLE	SOIL DESCRIPTION	BLOWS PER FOOT	UCC STR. (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT(%)	PLASTICITY INDEX	% PASSING #200 SIEVE
			FAT CLAY (CH), brown, becoming lighter w/ depth, soft, moist	5						
5			LEAN CLAY (CL), tan & light brown, sandy, becoming lighter w/ depth, firm to stiff	14						
				16						
10			Terminated @ 10 feet							
15										
20										
25										
30										
35										
40										

LOG OF BORING 08-20525 - MANOR COMMERCIAL DEVELOPMENT, HWY 290 & GREENBURY DR., MANOR, TX.GPJ HOLT ENGINEERING.GDT 8/27/25

Holt Engineering Inc.
TBPE Firm Registration No. F-430

BORING LOGS – TERMS & SYMBOLS

SOIL TYPES


Silt


Clay


Sand


Silty Clay or Clayey Silt


Silty Sand


Clayey Sand


Gravel


Shale


Limestone


Rock/Fragments


Crushed limestone base


Tan Limestone w/Interbedded Silt Layers


Silty clay w/Gravel


Asphalt


Sandstone


Concrete

SAMPLER TYPES


Standard Penetration Test


Rock Core


Seamless Push Shelby Tube


Grab Sample

PARTICLE SIZE (ASTM D2487)

Boulders	>12 in.	Coarse Sand	5 mm – 2 mm	Silt	0.075 mm – 0.005 mm
Cobbles	12 in. – 3 in.	Medium Sand	2 mm – 0.4 mm	Clay	< 0.005 mm
Gravel	3 in. – 5 mm	Fine Sand	0.4 mm – 0.075 mm		

STRENGTH OF COHESIVE SOILS

CONSISTENCY	COMPRESSIVE STRENGTH (TSF)
Very Soft	**< 0.25**
Soft	**0.25 to 0.50**
Firm	**0.50 to 1.0**
Stiff	**1.0 to 2.0**
Very Stiff	**2.0 to 4.0**
Hard	**> 4.0**

DENSITY OF GRANULAR SOILS

NUMBER OF BLOWS PER FT., N	RELATIVE DENSITY
0 – 4	**Very Loose**
4 – 10	**Loose**
10 – 30	**Medium Dense**
30 – 50	**Dense**
Over 50	**Very Dense**

Structure Description (ASTM D2488)

Stratified	**Alternating layers of varying material or color with layers at least 6 mm thick**
Laminated	**Alternating layers of varying material or color with the layers less than 6 mm thick**
Fissured	**Breaks along definite planes of fracture with little resistance to fracturing**
Slickensided	**Fracture planes appear polished or glossy, sometimes striated**
Blocky	**Cohesive soil that can be broken down into small angular lumps which resist further breakdown**
Lensed	**Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay**
Homogeneous	**Same color and appearance throughout**

Percentages of Sand & Gravel (ASTM D2488)

Trace	**< 5%**
Few	**5% to 10%**
Little	**15% to 25%**
Some	**30% to 45%**
Mostly	**50% to 100%**

Criteria for Describing Moisture Conditions (ASTM D2488)

Dry	**Absence of moisture, dusty, dry to the touch**
Moist	**Damp but no visible water**
Wet	**Visible free water, usually soil is below water table**

HOLT ENGINEERING, INC.
2220 Barton Skyway ■ Austin, Texas 78704 ■ Ph. (512) 447-8166 ■ Fax (512) 447-0852

APPENDIX

ITEM 4

Announcement
ASCE 7-22 is now available.

Manor Commercial Development

Greenbury Dr, Manor, TX 78653, USA

Latitude, Longitude: 30.350156, -97.530074

Date	8/20/2025, 3:27:01 PM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D

Type	Value	Description
S_S	0.055	MCE_R ground motion. (for 0.2 second period)
S_1	0.033	MCE_R ground motion. (for 1.0s period)
S_{MS}	0.088	Site-modified spectral acceleration value
S_{M1}	0.08	Site-modified spectral acceleration value
S_{DS}	0.059	Numeric seismic design value at 0.2 second SA
S_{D1}	0.054	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	A	Seismic design category
F_a	1.6	Site amplification factor at 0.2 second
F_v	2.4	Site amplification factor at 1.0 second
PGA	0.026	MCE_G peak ground acceleration
F_{PGA}	1.6	Site amplification factor at PGA
PGA_M	0.042	Site modified peak ground acceleration
T_L	12	Long-period transition period in seconds
SsRT	0.055	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	0.059	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.033	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.038	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.5	Factored deterministic acceleration value. (Peak Ground Acceleration)
PGA_{UH}	0.026	Uniform-hazard (2% probability of exceedance in 50 years) Peak Ground Acceleration
C_{RS}	0.94	Mapped value of the risk coefficient at short periods
C_{R1}	0.882	Mapped value of the risk coefficient at a period of 1 s
C_V	0.7	Vertical coefficient

DISCLAIMER

While the information presented on this website is believed to be correct, SEAOC /OSHPD and its sponsors and contributors assume no responsibility or liability for its accuracy. The material presented in this web application should not be used or relied upon for any specific application without competent examination and verification of its accuracy, suitability and applicability by engineers or other licensed professionals. SEAOC / OSHPD do not intend that the use of this information replace the sound judgment of such competent professionals, having experience and knowledge in the field of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the results of the seismic data provided by this website. Users of the information from this website assume all liability arising from such use. Use of the output of this website does not imply approval by the governing building code bodies responsible for building code approval and interpretation for the building site described by latitude/longitude location in the search results of this website.