

**LATHAN · McKEE**  
ARCHITECTS

300 CHASE PARK SOUTH • SUITE 200 • HOOVER, ALABAMA 35244  
205-988-9112

**ADDENDUM NO. 1**  
**NEW BUS SHOP FOR BLOUNT COUNTY SCHOOLS**  
Architect Job No. 25-46  
February 18, 2026  
DCM #2026084

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**BIDS DUE:**

Thursday, March 19, 2026, until  
2:00 p.m., local time, held at  
Blount County Board of Education  
415 5<sup>th</sup> Ave. E.  
Oneonta, AL 35121

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The Plans and Specifications are hereby amended. The following supersedes all contrary and/or conflicting information and is made part of the contract documents.

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**GENERAL**

1. **PROPOSAL FORM ATTACHMENT – UNIT PRICES: REVISED IN ITS ENTIRETY.** The attached forms to be used in lieu of previous version.

**SPECIFICATIONS**

1. **SECTION 01030 – SPECIAL PROJECT REQUIREMENTS: ADD GEOTECHNICAL REPORT.**

BLOUNT COUNTY BUS SHOP  
PROJECT #25-46  
GEOTECHNICAL ENGINEERING REPORT  
CLEVELAND, ALABAMA  
TERRACON PROJECT NO. E5255081

2. **SECTION 02300 – EARTHWORK: REVISED IN ITS ENTIRETY.**

**DRAWINGS**

1. **SHEET S1.0 – GENERAL NOTES: REVISED TO INCORPORATE GEOTECHNICAL REPORT.**  
See clouded for revisions.

## PROPOSAL FORM

To: Blount County Board of Education Date: \_\_\_\_\_

In compliance with your Advertisement for Bids and subject to all the conditions thereof, the undersigned,

\_\_\_\_\_  
(Legal name of Bidder)

hereby proposes to furnish all labor and materials and perform all work required for the construction of

**WORK:** New Bus Shop for Blount County Schools, in accordance with Drawings and Specifications,

dated, January 16, 2026, prepared by Lathan Associates Architects, P.C., dba Lathan McKee Architects,

300 Chase Park South, Suite 200, Hoover, AL 35244, Architect. The Bidder, which is organized and existing

under the laws of the State of \_\_\_\_\_, having its principal offices in the City of \_\_\_\_\_,

is: \_\_\_\_\_ a Corporation \_\_\_\_\_ a Partnership \_\_\_\_\_ an individual \_\_\_\_\_ (other) \_\_\_\_\_,

**LISTING OF PARTNERS OR OFFICERS:** If Bidder is a Partnership, list all partners and their addresses; if

Bidder is a Corporation, list the names, titles and business addresses of its Officers:

\_\_\_\_\_  
\_\_\_\_\_  
**BIDDER'S REPRESENTATION:** The Bidder declares that it has examined the site of the Work, having become fully informed regarding all pertinent conditions, and that it has examined the Drawings and Specifications (including all Addenda received) for the Work and the other Bid and Contract Documents relative thereto; and that it has satisfied itself relative to the Work to be performed.

**ADDENDA:** The Bidder acknowledges receipt of Addenda Nos. \_\_\_\_\_ through \_\_\_\_\_ inclusively.

**ALLOWANCES:** The Bidder acknowledges by initials \_\_\_\_\_ that he/she has read Specification Section 01020 - Allowances and has included cost of same in bid.

**ALABAMA IMMIGRATION LAW COMPLIANCE:** The Bidder acknowledges by initials \_\_\_\_\_ that he/she will comply with H.B. 56 - Alabama Immigration Law Compliance.

**BASE BID:** For construction complete as shown and specified, the sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_)

**ALTERNATES:** If alternates as set forth in the Bid Documents are accepted, the following adjustments are to be made to the Base Bid: N/A

**UNIT PRICES:** See Attachment

**BID SECURITY:** The undersigned agrees to enter into a Construction Contract and furnish the prescribed Performance and Payment Bonds and evidence of insurance within fifteen calendar days, or such other period stated in the Bid Documents, after the contract forms have been presented for signature, provided such presentation is made within 30 calendar days after the opening of bids, or such other period stated in the Bid Documents. As security for this condition, the undersigned further agrees that the funds represented by the Bid Bond (or cashier's check) attached hereto may be called and paid into the account of the Awarding Authority as liquidated damages for failure to comply.

Attached hereto is a: *(Mark the appropriate space and provide the applicable information.)*

\_\_\_\_ Bid Bond, executed by \_\_\_\_\_ as Surety,  
\_\_\_\_ cashier's check on the \_\_\_\_\_ Bank of \_\_\_\_\_,  
for the sum of \_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_) made payable to the Awarding Authority.

**BIDDER'S ALABAMA LICENSE:**

State License for General Contracting: \_\_\_\_\_  
License Number Bid Limit Type(s) of Work

**CERTIFICATIONS:** The undersigned certifies that he or she is authorized to execute contracts on behalf of the Bidder as legally named, that this proposal is submitted in good faith without fraud or collusion with any other bidder, that the information indicated in this document is true and complete, and that the bid is made in full accord with State law. Notice of acceptance may be sent to the undersigned at the address set forth below.

The Bidder also declares that a list of all proposed major subcontractors and suppliers will be submitted at a time subsequent to the receipt of bids as established by the Architect in the Bid Documents but in no event shall this time exceed twenty-four (24) hours after receipt of bids.

**Legal Name of Bidder** \_\_\_\_\_

Mailing Address \_\_\_\_\_

\* **By (Legal Signature)** \_\_\_\_\_ (Seal)

\* Name & Title ( print) \_\_\_\_\_

Telephone Number \_\_\_\_\_

Email Address \_\_\_\_\_

\* If other than an individual proprietor, or an above named member of the Partnership, or the above named president, vice-president, or secretary of the Corporation, attach written authority to bind the Bidder. Any modification to a bid shall be over the initials of the person signing the bid, or of an authorized representative.

**Note:** A completed DCM Form C-3A: Accounting of Sales Tax must be submitted with DCM Form C-3: Proposal Form. Submission of DCM Form C-3A is required, it is not optional. A proposal shall be rendered non-responsive if an Accounting of Sales Tax is not provided.

**PROPOSAL FORM ATTACHMENT**

**UNIT PRICES**

For certain items of **credit or extra work**, if required, the undersigned proposes UNIT PRICES as follows:

<u>EARTH EXCAVATION</u>	General	\$ _____/per cu.yd.
	In Trenches	\$ _____/per cu. yd.
<u>EARTH FILL</u>	General	\$ _____/per cu. yd.
<u>UNDERCUTTING &amp; REPLACEMENT OF UNSUITABLE SOILS</u>		\$ _____/per cu. yd.
<u>LEAN CONCRETE</u>		\$ _____/per cu. yd.

Note: All grading shown on the drawings shall be included in the Base Bid as Unclassified to required subgrade elevations. This Base Bid grading shall include the required cutting and filling of the existing grade to the proposed subgrade elevation. Onsite Geotechnical engineer shall determine if unsuitable soils are present.

Refer to SECTION 02300 - EARTHWORK for additional information regarding undercut & replacement of unsuitable soils and associated quantity allowance.

Note: Costs for profit and overhead shall be included in Unit Prices.

Note: Unit Prices are provided for the addition to or deletion from the contract Base Bid.

BIDDER (to be signed by an Officer of the Company)

\_\_\_\_\_ by \_\_\_\_\_  
(Name/Title) (Legal Signature)

WITNESS (to the above signature)

\_\_\_\_\_ by \_\_\_\_\_  
(Name/Title) (Legal Signature)

## ACCOUNTING OF SALES TAX

### Attachment to DCM Form C-3: Proposal Form

**To:** Blount County Board of Education **Date:** \_\_\_\_\_

(Awarding Authority)

**NAME OF PROJECT:** New Bus Shop For Blount County Schools

#### **SALES TAX ACCOUNTING**

Pursuant to Act 2013-205, Section 1(g) the Contractor accounts for the sales tax NOT included in the bid proposal form as follows:

ESTIMATED SALES TAX AMOUNT

BASE BID: \$ \_\_\_\_\_

**Failure to provide an accounting of sales tax shall render the bid non-responsive. Other than determining responsiveness, sales tax accounting shall not affect the bid pricing nor be considered in the determination of the lowest responsible and responsive bidder.**

Legal Name of Bidder \_\_\_\_\_

Mailing Address \_\_\_\_\_

\* By (Legal Signature) \_\_\_\_\_

\* Name (type or print) \_\_\_\_\_

\* Title \_\_\_\_\_

*(Seal)*

Telephone Number \_\_\_\_\_

Email Address \_\_\_\_\_

Note: A completed DCM Form C-3A: Accounting of Sales Tax must be submitted with DCM Form C-3: Proposal Form. Submission of DCM Form C-3A with DCM Form C-3 is required, it is not optional. A proposal shall be rendered non-responsive if an Accounting of Sales Tax is not provided.

1.0 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. Geotechnical Report by Terracon Consultants, Inc. **Terracon Project No. E5255081, dated February 13, 2026.** Copies can be obtained from Terracon at (205) 942-1289.

1.2 SUMMARY

- A. This Section includes grading (excavating and filling) as indicated on drawings to required lines, dimensions, contours, and elevations for proposed improvements, and the following:
  - 1. Removal of existing improvements in conflict with proposed improvements.
  - 2. Stripping and stockpiling of topsoil. Remove any excess topsoil from the site upon final stabilization.
  - 3. Scarifying, moisture conditioning, compaction, and testing of previously graded areas to ensure proper preparation and acceptance.
  - 4. Excavation and embankment placement to required lines, grades, and elevations.
  - 5. Importing of off-site borrow material suitable for structural fill as well as exporting any excess material.
  - 6. Remove materials from grading operations that are determined unsuitable by the Geotechnical Engineer from site and dispose of off-site.
  - 7. Preparation of areas to receive fill and preparation of excavation areas.
  - 8. Undercutting and replacing soft, unsuitable material like "fat" clays, old fill, organic materials, etc. with compacted engineer fill obtained from an off-site source meeting the project specifications.
  - 9. Over-excavation of low consistency soils below footings and backfill with flowable fill or lean concrete.
  - 10. Preparing subgrades for slabs-on-grade, walks, pavements, lawns, and plantings.
  - 11. Excavating and backfilling trenches for buried utilities and pits for buried utility structures.
- B. Related Sections include the following:
  - 1. Division 1 Section "Unit Prices" for a schedule of unit prices.
  - 2. Division 1 Section "Construction Facilities and Temporary Controls."

1.3 UNIT PRICES

- A. All excavation shall be unclassified.

- B. However, all stabilization and undercut & replacement will be handled with a quantity allowance with unit price being provided on the bid proposal form to be included in the base bid. The bid proposal form will have unit prices for the undercutting of unsuitable soils and replacing with compacted structural fill. The quantity allowance breakdown is as follows:

**Unsuitable soils and replacing with compacted structural fill: 2200 CY**

The unit price for "undercutting" shall include all cost associated with removing unsuitable soil from below the established subgrade elevation, off-site disposal and replacing with off-site material conforming to the project specifications and compacted to project requirement. Unsuitable material refers to material that is not suitable for building or pavement support for reasons associated with material properties, such as highly plastic soils, "fat" clays, and old fill. Material, which is otherwise suitable, but above the optimum moisture and requires moisture conditioning prior to use as engineered fill shall not be considered as "unsuitable". Note the unit prices are being provided for the addition to and deletion from the contract base bid as required by changing field conditions during construction.

- C. The measurement process for unsuitable soil amounts shall be the initial responsibility of the contractor. The basis for measurement will be based on a before and after cross-section survey of the area in question performed by a licensed surveyor. No truck counts will be allowed. Measurements will be verified by the Owner's on-site Geotechnical Engineer.

1.4 DEFINITIONS

- A. Backfill: Soil materials used to fill an excavation.
1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
  2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Base Course: Layer placed between the subbase course and asphalt paving.
- C. Bedding Course: Layer placed over the excavated subgrade in a trench before laying pipe.
- D. Borrow: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Cut line: Elevations, lines, and final cut subgrades in cut over excavated areas.
- F. Drainage Course: Layer supporting slab-on-grade used to minimize capillary flow of pore water.
- G. Excavation: Removal of material encountered above subgrade elevations.
1. Additional Excavation: Excavation below subgrade elevations or "cut line" as directed by Architect. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
  2. Bulk Excavation: Excavations more than 10 feet in width and pits more than 30 feet in either length or width.

3. Unauthorized Excavation: Excavation below subgrade elevations or "cut line" or beyond indicated dimensions without direction by Geotechnical engineer and Architect. Unauthorized excavation, as well as remedial work directed by Geotechnical Engineer and Architect, shall be without additional compensation.
- H. Structural Fill: Systematically compacted soil materials used to raise existing grades.
- I. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- J. Subbase Course: Layer placed between the subgrade and base course for asphalt paving, or layer placed between the subgrade and a concrete pavement or walk.
- K. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- L. Unsuitable material:
  1. Fills: Topsoil; Frozen materials; construction materials; clods of clay and stones larger than 4" (unless otherwise specified); organic material, including silts; and inorganic material including silts which are to wet to be stable, or other materials identified by the Geotechnical Engineer.
  2. Existing subgrade: Same materials as listed in paragraph 1 above that are not capable of direct support of slabs, pavement and similar items with the possible exception of improvement by compaction, proof rolling, or similar methods as directed and approved by the Geotechnical Engineer.
  3. Unsuitable materials identified by the geotechnical report and drawings shall be anticipated and included in the base bid. See 1.3B Unit Prices for additional information.
- M. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

#### 1.5 SUBMITTALS

- A. Submit per conditions of contract and Division 1.
- B. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
  1. Classification according to ASTM D 2487 of each on-site or borrow soil material proposed for fill and backfill.
  2. Laboratory compaction curve according to ASTM D 698 for each on-site or borrow soil material proposed for fill and backfill.

1.6 QUALITY ASSURANCE

- A. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548. (To be employed by the owner).

1.7 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect and/or the Engineer and then only after arranging to provide temporary utility services according to requirements indicated:
1. Notify Architect not less than two days in advance of proposed utility interruptions.
  2. Do not proceed with utility interruptions without Architect's written permission.
  3. Contact utility-locator service for area where Project is located before excavating.
  4. Existing utilities shown on the drawings are from a combination of field locations, and utility company records. It is the Contractor's responsibility to field verify existing utilities prior to excavation.
- B. Demolish and completely remove from site existing underground utilities indicated to be removed or implied to be removed by new construction and not noted to remain. Coordinate with utility companies to shut off services if lines are active.
- C. Contours and existing topography shown on the drawings are believed to be reasonably correct. It shall be the Contractor's responsibility to determine any discrepancies which would affect his work, to make allowance for such discrepancies in the contract sum and notify the Architect in writing of such discrepancies and allowances made.

1.8 REFERENCE STANDARDS

- A. Follow most current publications from part of this specification to the extent indicated by references thereto.
- B. American Association of State Highway and Transportation Officials Standard Specifications (AASHTO).
- C. American Society for Testing and Material (ASTM):
1. D 422 Method for Particle Size Analysis of Soil.
  2. D 698 Tests for Moisture-Density Relations of Soils, Using 5.5 lb. (2.5 Kg) Rammer and 12-inch (304.8 mm) Drop (Standard Proctor)
  3. D 1556 Test for Density of Soil in Place by the Sand Cone Method.
  4. D 1557 Test for Moisture-Density Relations of Soils Using 10-lb. (4.5 Kg) Rammer and 18-inch (457 mm) Drop (Modified Proctor)
  5. D 1559 Test Method for Resistance to Plastic Flow of Bituminous Mixtures using Marshall Apparatus.
  6. D 2167 Test for Density of Soil in Place by the Rubber Balloon Method.
  7. D 2216 Laboratory Determination of Moisture Content of Soil.
  8. D 2487 Classification for Soils for Engineering Purpose.

- 9. D 2922 Test for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- 10. D 3017 Test for Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- 11. D 4318 Test Plastic Limit, Liquid Limit and Plasticity Index of Soils.
- 12. C 25 Chemical Analysis of Limestone, Quicklime and Hydrated Lime.
- 13. C 110 Physical Testing for Quicklime and Hydrated Lime, Wet Sieve Method.
- 14. C 618 Specification for Fly Ash and Raw of Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.
- 15. C 977 Quicklime and Hydrated Lime for Soil Stabilization.

D. Alabama Department of Transportation (ALDOT) Standard Specifications for Highway Construction, latest Edition.

E. State, City, or County Standards and Specifications, or other requirements.

## 2.0 - PRODUCTS

### 2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Topsoil:

1. Materials considered useful for topsoil by the Architect shall be stockpiled at his direction at locations shown on the Drawings or as directed in the field. Topsoil shall be kept free from sub-soil, clay lumps, brush, objectionable weeds, litter, stones larger than 1/2 inches in diameter, stumps, roots, and other materials that would interfere with planting and maintenance operations.
2. All topsoil shall be stored on the site by Contractor in a location approved by the Architect. The Contractor shall use such topsoil for the purpose of fulfilling the topsoil requirements specified in this Contract. Protect stockpile by immediately compacting, dressing down and seeding with annual rye for temporary cover. Provide a silt fence around the base of topsoil pile, after completing storage, to control erosion.
3. Use topsoil stockpiles on site as necessary to complete landscape work indicated on Drawings and in accordance with specifications for landscaping.

C. Satisfactory Soils: ASTM D 2487 soil classification groups GW, GP, GM, GC, SC, SW, SP, SM, MH, ML, CL, **and some select CH** or a combination of these group symbols; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter. Soils that exhibit a **liquid limit less than 60 and a plasticity index of less than 35**.

D. Unsatisfactory Soils: ASTM D 2487 soil classification groups CH, OL, OH, and PT, or a combination of these group symbols.

1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

E. Backfill and Fill: Satisfactory soil materials.

- F. Subbase: At least 90 percent passing a 1-1/2 inch passing a No. 200 sieve.
- G. Base: ASTM D2940; with at least 95 percent passing a 1-1/2 inch sieve and not more than 8 percent passing a No. 200 sieve.
- H. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
- I. Bedding: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.
- J. Drainage Fill: Washed, narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2- inch sieve and 0 to 5 percent passing a No. 8 sieve.
- K. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch sieve and 0 to 5 percent passing a No. 4 sieve.
- L. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

## 2.2 ACCESSORIES

- A. Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored as follows:
- B. Detectable Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, minimum 6 inches wide and 4 mils thick, continuously inscribed with a description of utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:
  - 1. Red: Electric.
  - 2. Yellow: Gas, oil, steam, and dangerous materials.
  - 3. Orange: Telephone and other communications.
  - 4. Blue: Water systems.
  - 5. Green: Sewer systems.

## 3.0 - EXECUTION

### 3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

- B. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.
- C. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
  - 1. Erosion control is the responsibility of the Contractor. Items shown on the Drawings are considered the minimum acceptable; however, as site conditions change, additional measures may be required to control sediment.
  - 2. The Contractor shall indemnify and hold harmless the Owner, Architect, Engineer, Owner's representatives, and their agents and employees from any claim from their work.

### 3.2 DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
  - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
  - 2. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

### 3.3 EXPLOSIVES

- A. No explosives will be allowed.

### 3.4 EXCAVATION, GENERAL

- A. All excavation on this project is unclassified regardless of the character of surface and subsurface conditions encountered, including rock, soil materials, and obstructions.
- B. Material encountered in grading operation that, in the opinion of the Geotechnical Engineer or Owner, is unsuitable or undesirable shall be as follows:
  - 1. The removal of unsuitable material will be directed by the Geotechnical Engineer or his field representative. All unsuitable material that is removed by the Contractor shall become the property of the Contractor and be disposed of off site or in a manner satisfactory to the Owner at no additional cost. All undercut shall be included in the Base Bid. See section 1.3 B. unit prices for quantity allowances.
  - 2. Back fill for these areas will be with material approved by the Geotechnical Engineer, with layers of acceptable material compacted to the requirements set forth in these specifications.

- C. Undercutting and replacement of unsuitable soils may be required to the underlying stiff soils. All undercut and replacement shall be handled in accordance with 1.3B Unit Prices above.

### 3.5 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 0.1 feet. Extend excavations a minimum of 10' in distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
  - 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
  - 2. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 0.10 ft. Do not disturb bottom of excavations intended for bearing surface.
- B. Where unsuitable soils are encountered, the soils shall be completely removed to underlying stiff material per 1.3B Unit Prices above.

### 3.6 EXCAVATION FOR WALKS AND PAVEMENT

- A. Excavate surfaces under walks and pavements to indicated cross sections, elevations, and grades, to a distance of 8' beyond the edge of these walks and pavements.
- B. Where unsuitable soils are encountered, the soils shall be completely removed to underlying stiff material per 1.3B Unit Prices above.

### 3.7 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
  - 1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.
- B. Excavate trenches to uniform widths to provide a working clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.
  - 1. Clearance: 12 inches on each side of pipe or conduit.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.
  - 1. For pipe sizes 30" and below, the "cut line" shall be 4" below the bottom of the pipe and material replaced with 4" No. 57 stone bedding unless otherwise noted.

2. For pipe sizes larger than 30", the "cut line" shall be 6" below the bottom of the pipe and material replaced with 6" no. 57 stone bedding unless otherwise noted.

### 3.8 APPROVAL OF SUBGRADE

- A. Notify Architect when excavations have reached required subgrade.
- B. If Architect determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
- C. Proof roll subgrade with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof roll wet or saturated subgrades. Areas exhibiting soil that deflects excessively during proof rolling should be excavated and replaced with compacted backfill, mechanically stabilized by moisture conditioning and compaction, or stabilization with a geosynthetic covered by appropriate compacted backfill. The appropriate method of subgrade stabilization shall be determined by the Owner's on-site geotechnical engineer.
- D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect.

### 3.9 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill may be used when approved by Architect.
  1. Fill unauthorized excavations under other construction or utility pipe as directed by Architect.

### 3.10 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow materials and satisfactory excavated soil materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
  1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

### 3.11 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
  1. Construction below finish grade including, where applicable, damp-proofing, waterproofing, and perimeter insulation.
  2. Surveying locations of underground utilities for record documents.
  3. Inspecting and testing underground utilities.
  4. Removing concrete formwork.
  5. Removing trash and debris.
  6. Removing temporary shoring and bracing, and sheeting.
  7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

### 3.12 UTILITY TRENCH BACKFILL

- A. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- B. Backfill trenches excavated under footings and within 18 inches of bottom of footings; fill with lean concrete to elevation of bottom of footings.
- C. Provide 4-inch-thick, concrete-base slab support for piping or conduit less than 30 inches below surface of roadways. After installing and testing, completely encase piping or conduit in a minimum of 4 inches of concrete before backfilling or placing roadway subbase.
- D. Place and compact initial backfill of subbase material, free of particles larger than 1 inch, to a height of 12 inches over the utility pipe or conduit.
  - 1. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of utility system.
  - 2. If ALDOT #57 stone is utilized, then the backfill shall be vibro-compacted with a minimum of 6 passes of a vibratory plate compactor. Dense graded gravel, #8910 or equal, shall be compacted to a minimum compaction requirement of 98% Modified Proctor maximum dry density.
- E. Utility trenches penetrating beneath the building shall be effectively sealed to restrict water intrusion and flow through the trenches. Provide a trench plug that extends at least 5 feet from the face of the building exterior. The plug material shall consist of cementitious flowable fill or low permeability clay. The trench plug material shall be placed to surround the utility line. If used, the clay plug material shall be placed and compacted to comply with water content and compaction requirements for structural fill.
- F. Coordinate backfilling with utilities testing.
- G. Fill voids with approved backfill materials while shoring and bracing, and as sheeting is removed.
- H. Place and compact final backfill of satisfactory soil material to final subgrade.
- I. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

### 3.13 FILL

- A. Preparation: Remove vegetation, topsoil, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface before placing fills.
- B. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- C. Off-site borrow materials may be used as fill within the building and pavement areas provided that their **plasticity index (PI) less than 35**. Material shall have a minimum dry density of 100 pcf.

- D. High plasticity (fat clays) soils should not be used as engineered fill **unless approved by the geotechnical engineer.**
- E. Keying in/benching of proposed fill slopes into the existing/natural grade is required to a minimum 10' horizontal distance as measured from the proposed toe of slope back to natural grade.
- F. Fill slopes shall be constructed from the bottom up in horizontal lifts, overfilled and then cut back to the planned slope limits so that the entire slope mass (including the slope face) is uniformly compacted with a consistent, uniform slope face.
- G. Place and compact fill material in layers to required elevations as follows:
  - 1. Under grass and planted areas, use satisfactory soil material.
  - 2. Under walks and pavements, use satisfactory soil material.
  - 3. Under steps and ramps, use engineered fill.
  - 4. Under building slabs, use engineered fill.
  - 5. Under footings and foundations, use engineered fill.

### 3.14 MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within -2 percent to +3 percent of optimum moisture content.
  - 1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
  - 2. Remove and replace, or scarify and air-dry, otherwise satisfactory soil material that exceeds optimum moisture content by 3 percent and is too wet to compact to specified dry unit weight. This work will be at the Contractor's expense.

### 3.15 COMPACTION OF BACKFILLS AND FILLS

- A. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure. Fill to extend 5' outside of the proposed building footprint.
- C. Compact soil to not less than the following percentages of maximum dry unit weight according to ASTM D 698 (standard proctor).
  - 1. Under structures, building slabs, steps, and pavements, scarify and re-compact top 8 inches of existing subgrade and each layer of backfill or fill material at 98 percent.
  - 2. Under walkways, scarify and re-compact top 8 inches below subgrade and compact each layer of backfill or fill material at 98 percent.
  - 3. Under lawn or unpaved areas, scarify and re-compact top 8 inches below subgrade and compact each layer of backfill or fill material at 98 percent.

### 3.16 GRADING

- A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
  - 1. Provide a smooth transition between adjacent existing grades and new grades.
  - 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
  - 1. Lawn or Unpaved Areas: Plus or minus 0.17 ft.
  - 2. Walks: Plus or minus 0.10 ft.
  - 3. Pavements: Plus or minus 0.10 ft.
- C. Grading inside Building Lines: Finish subgrade to a tolerance of 0.08 ft. when tested with a 10-foot straightedge.

### 3.17 SUBSURFACE DRAINAGE

- A. Drainage Piping: Drainage pipe is specified in Division 2 Section "Foundation Drainage Systems."
- B. Subsurface Drain: Place a layer of drainage fabric around perimeter of drainage trench as indicated. Place a 6-inch course of filter material on drainage fabric to support drainage pipe. Encase drainage pipe in a minimum of 12 inches of filter material and wrap in drainage fabric, overlapping sides and ends at least 6 inches.
  - 1. Compact each course of filter material to 95 percent of maximum dry unit weight according to ASTM D 698.
- C. Drainage Backfill: Place and compact filter material over subsurface drain, in width indicated, to within 12 inches of final subgrade. Overlay drainage backfill with one layer of drainage fabric, overlapping sides and ends at least 6 inches.
  - 1. Compact each course of filter material to 98 percent of maximum dry density according to ASTM D 698.
  - 2. Place and compact impervious fill material over drainage backfill to final subgrade.

### 3.18 SUBBASE AND BASE COURSES

- A. Under pavements and walks, place subbase course on prepared subgrade and as follows:
  - 1. Place base course material over subbase.
  - 2. Compact subbase and base courses at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 98 percent of maximum dry unit weight according to ASTM D 698.
  - 3. Shape subbase and base to required crown elevations and cross-slope grades.

4. When thickness of compacted subbase or base course is 6 inches or less, place materials in a single layer.
  5. When thickness of compacted subbase or base course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.
- B. Pavement Shoulders: Place shoulders along edges of subbase and base course to prevent lateral movement. Construct shoulders, at least 12 inches wide, of satisfactory soil materials and compact simultaneously with each subbase and base layer to not less than 98 percent of maximum dry unit weight according to ASTM D 698.

### 3.19 DRAINAGE COURSE

- A. Under slabs-on-grade, place drainage course on prepared subgrade and as follows:
1. Compact drainage course to required cross sections and thickness to not less than 98 percent of maximum dry unit weight according to ASTM D 698.
  2. When compacted thickness of drainage course is 6 inches or less, place materials in a single layer.
  3. When compacted thickness of drainage course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.

### 3.20 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.
- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.
- C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.
- D. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 1000 sq. ft. or less of paved area or building slab, but in no case fewer than three tests.
  2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for each 100 feet or less of wall length, but no fewer than two tests.
  3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for each 150 feet or less of trench length, but no fewer than two tests.
- E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and

replace soil to depth required; recompact and retest until specified compaction is obtained.

3.21 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
  - 1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
  - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

3.22 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 02300

# Blount County Bus Shop – Project #25-46

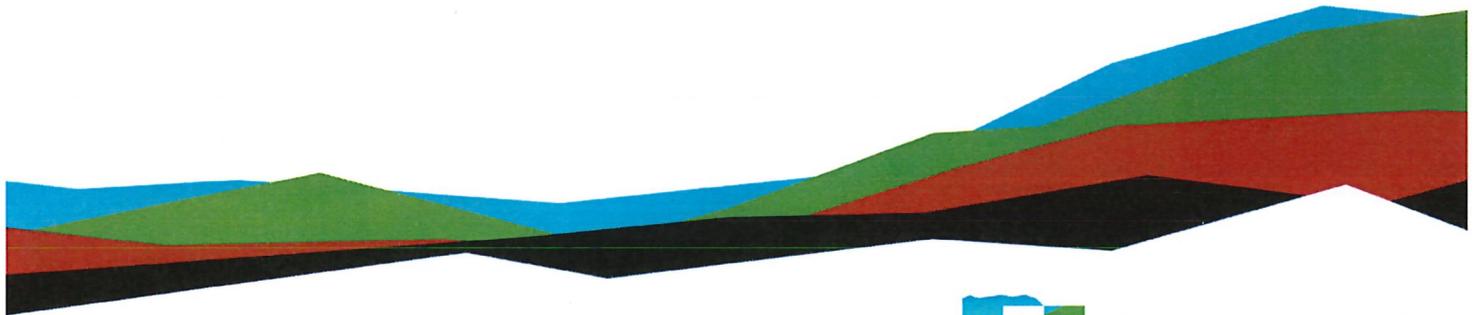
Geotechnical Engineering Report

Cleveland, Alabama

February 13, 2026 | Terracon Project No. E5255081

**Prepared for:**

Blount County Board of Education  
415 5th Ave East  
Oneonta, AL 35121



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February 13, 2026

Blount County Board of Education  
415 5th Ave East  
Oneonta, AL 35121

**Attn:** Rodney Green, Blount County Schools Superintendent  
P: (205) 775-1950  
E: Rgreen@blountboe.com

Re: Geotechnical Engineering Report  
Blount County Bus Shop – Project #25-46  
Cleveland, Blount County, AL  
Terracon Project No. E5255081

Dear Mr. Green:

We have completed the scope of Geotechnical Engineering services for the above referenced project in general accordance with Terracon Proposal No. PE5255081 dated November 17, 2025. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations and slabs for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,

**Terracon**

*Clifton Braxton*

Clifton Braxton, E.I.

Staff Engineer

*Frank Whitman*

Frank Whitman, P.E.

Senior Engineer



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**Exploration and Testing Procedures**

**Site Location and Exploration Plans**

**Exploration and Laboratory Results**

**Supporting Information**

**Geotechnical Engineering Report**

Blount County Bus Shop – Project #25-46 | Cleveland, Blount County, AL  
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**Note:** This report was originally delivered in a web-based format. **Blue Bold** text in the report indicates a referenced section heading. The PDF version also includes hyperlinks which direct the reader to that section and clicking on the  Terracon logo will bring you back to this page. For more interactive features, please view your project online at [client.terracon.com](https://client.terracon.com).

Refer to each individual Attachment for a listing of contents.

## Introduction

This report presents the results of our subsurface exploration and Geotechnical Engineering services performed for the proposed bus shop to be located at Swann Bridge Road in Cleveland, Blount County, AL. The purpose of these services was to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil (and rock) conditions
- Groundwater conditions
- Seismic site classification per IBC
- Site preparation and earthwork
- Foundation design and construction
- Slab design and construction

The geotechnical engineering Scope of Services for this project included the advancement of test borings, laboratory testing, engineering analysis, and preparation of this report.

Drawings showing the site and boring locations are shown on the [Site Location](#) and [Exploration Plan](#), respectively. The results of the laboratory testing performed on soil samples obtained from the site during our field exploration are included on the boring logs and as separate graphs in the [Exploration Results](#) section.

## Project Description

Our initial understanding of the project was provided in our initial quote and was discussed during project planning. A period of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
<b>Information Provided</b>	The site plan was provided by Peter Phelps of Lathan McKee Architects on 11/12/2025.
<b>Project Description</b>	The project involves constructing a new 13,200-SF single maintenance building and a 2,200-SF apron with capacity to service 10 school buses. The facility will also include office and storage spaces.
<b>Building Construction</b>	<ul style="list-style-type: none"><li>■ Pre-engineered Metal Building (PEMB)</li><li>■ Slab-on-grade</li><li>■ Shallow soil-supported foundations</li></ul>

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Item	Description
<b>Finished Floor Elevation</b>	Assumed to be at or near present grades
<b>Maximum Loads</b>	<ul style="list-style-type: none"><li>■ Column loads: 150 kips</li><li>■ Wall loads: 7 kips per linear foot (klf)</li><li>■ Slab loads: 150 psf</li></ul>
<b>Grading/Slopes</b>	No new slopes taller than 5 feet or steeper than 3:1 (H:V)
<b>Below-Grade Structures</b>	A below-grade bus service pit is planned within the shop area.  Per Peter Fittro of Structural Design Group, the footings will be 6 feet below final floor elevation. Typical service pits are about 4 to 5 feet below final grade.
<b>Building Code</b>	2018 IBC

Terracon should be notified if any of the above information is inconsistent with the planned construction, especially the grading limits, as modifications to our recommendations may be necessary.

## Site Conditions

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic maps.

Item	Description
<b>Parcel Information</b>	The project is located at Swann Bridge Road in Cleveland, Blount County, AL. GPS: 33.9940, -86.5791 See <a href="#">Site Location</a>
<b>Existing Improvements</b>	The site was developed to service and park school buses.
<b>Current Ground Cover</b>	The site is mostly covered with asphalt pavements and three small single-story structures.
<b>Existing Topography</b>	Generally, the site is flat, with an approximate elevation of 542±1 foot mean sea level (MSL).
<b>USGS Bedrock Geology</b>	The site is underlain by sandstone and shale from the lower Pottsville Formation.

## Geotechnical Characterization

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of the site. Conditions observed at each exploration point are indicated on the individual logs. The individual logs can be found in the **Exploration Results** and the GeoModel can be found in the **Figures** attachment of this report.

As part of our analyses, we identified the following model layers within the subsurface profile. For a more detailed view of the model layer depths at each boring location, refer to the GeoModel.

Model Layer	Layer Name	General Description
1	<b>Unsuitable Clays</b>	Typically dark tan to tan and/or gray in color, soft to medium stiff in consistency.
2	<b>Lean Clays</b>	Typically tan, red, and/or gray in color, stiff to hard in consistency, with varying sand and gravel content.
3	<b>Weathered Sandstone</b>	Sandstone, weathered in place, was penetrated with difficulty with soil auger.

Groundwater was observed within 3 feet of present grades at boring location B-5 during drilling, likely perched water from the shallow soil/rock interface. the maximum drilling depth at the time of our field exploration. Groundwater conditions may be different at the time of construction. Mapping by the Natural Resources Conservation Service (NRCS) indicates seasonal groundwater levels of 2-3 feet below present grades.

Groundwater conditions may change because of seasonal variations in rainfall, runoff, and other conditions not apparent at the time of drilling. Long-term groundwater monitoring was outside the scope of services for this project.

## Seismic Site Class

The seismic design requirements for buildings and other structures are based on Seismic Design Category. Site Classification is required to determine the Seismic Design Category for a structure. The Site Classification is based on the upper 100 feet of the site profile defined by a weighted average value of either shear wave velocity, standard penetration resistance, or undrained shear strength in accordance with Section 20.4 of ASCE 7 and the International Building Code (IBC). Based on the soil properties observed

at the site and as described on the exploration logs and results, our professional opinion is for that a **Seismic Site Classification of C** be considered for the project. Subsurface explorations at this site were extended to a maximum depth of 7 feet. The site properties below the boring depth to 100 feet were estimated based on local experience.

## Corrosivity

Mapping by the NRCS includes qualitative severity of corrosion to concrete and steel. Based on this source, the near-surface materials are rated “Moderate” for corrosion to concrete and “High” for corrosion of steel.

## Geotechnical Overview

The site appears suitable for the proposed construction based upon geotechnical conditions encountered in the test borings, provided that the recommendations provided in this report are implemented in the design and construction phases of this project.

The area was previously developed for pavement support. However, the upper soils are not adequate for building foundation and slab support.

About 3 feet of Silty Clays or soft Lean Clays (GeoModel layer 1) were found below the surface at each boring site. Below this, Lean Clay with varying sand content (GeoModel layer 2) extended to auger refusal depths of 4–7 feet, where Weathered Sandstone (GeoModel layer 3) was encountered.

Prior to placing approved engineered fill, GeoModel Layer 1 should be completely removed. Based on exploration results, this material is anticipated to average approximately 3 feet below present grades. The exposed subgrade should then be scarified and compacted, then evaluated by proofrolling alongside a Geotechnical Engineer or other qualified personnel. If the subgrade is observed to be stable while proofrolling, engineered fill may be placed up to the final soil subgrade elevation.

In areas where foundations encounter non-uniform bearing conditions—such as sandstone, shale, or soil—either the sandstone may be excavated an additional 12 inches and replaced with compacted clay backfill, or the soil may be over-excavated and backfilled with lean concrete up to the planned foundation bearing elevation.

The proposed structures may use continuous or spread footings, with a 3,000 psf bearing capacity for soil foundations and 5,000 psf for those on weathered sandstone.

The recommendations contained in this report are based upon the results of field and laboratory testing (presented in the [Exploration Results](#)), engineering analyses, and

our current understanding of the proposed project. The **General Comments** section provides an understanding of the report limitations.

## Earthwork

Earthwork is anticipated to include excavations and engineered fill placement. The following sections provide recommendations for use in the preparation of specifications for the work. Recommendations include critical quality criteria, as necessary, to render the site in the state considered in our geotechnical engineering evaluation for foundations and floor slabs.

### Site Preparation

Terracon has recommended a program of undercut, likely averaging about 3 feet in depth. Undercut should extend horizontally at least 5 feet beyond the outer edge of the footings. Although no evidence of underground facilities (such as septic tanks, cesspools, basements, and utilities) was observed during the exploration and site reconnaissance, such features could be encountered during construction. If unexpected underground facilities are encountered, such features should be removed, and the excavation thoroughly cleaned prior to backfill placement and/or construction.

### Subgrade Preparation

Following undercut, we recommend that the base of the undercut be evaluated by proofrolling under the observation of a Geotechnical Engineer, or representative after moisture-conditioning and compaction. If this material is excessively deflecting under the proofroll, it should be delineated and subsequently addressed by the Geotechnical Engineer. Structural fill placed beneath the entire footprint of the foundations should extend horizontally a minimum distance of 5 feet beyond the outside edge of footings.

The subgrade should be proofrolled with an adequately loaded vehicle such as a fully-loaded tandem-axle dump truck. The proofrolling should be performed under the observation of the Geotechnical Engineer or representative. Areas excessively deflecting under the proofroll should be delineated and subsequently addressed by the Geotechnical Engineer. Excessively wet or dry material should either be removed or moisture conditioned and recompact.

All exposed areas which will receive fill, once properly cleared and benched where necessary, should be scarified to a minimum depth of 10 inches, moisture conditioned as necessary, and compacted per the compaction requirements in this report. Compacted structural fill soils should then be placed to the proposed design grade and the moisture

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content and compaction of subgrade soils should be maintained until foundation or slab construction.

Based upon the subsurface conditions determined from the geotechnical exploration, subgrade soils exposed at the base of undercut are anticipated to be relatively workable; however, the workability of the subgrade may be affected by precipitation, repetitive construction traffic or other factors. If unworkable conditions develop, workability may be improved by scarifying and drying.

**Excavation**

Rock excavation could possibly be required for the service pit, or for utilities. The bottom of excavations should be thoroughly cleaned of loose soils and disturbed materials prior to backfill placement and/or construction.

Based on the encountered subsurface conditions, we believe heavy-duty construction equipment, such as a hoe ram, a heavy dozer equipped with a ripper, a rock saw or jack hammer or with rock trenching equipment, is likely suitable for grading, shallow excavations, and utility trench excavations.

**Fill Material Types**

Fill required to achieve design grade should be classified as structural fill. Structural fill is material used below, or within 5 feet of structures.

**Reuse of On-Site Soil:** The on Lean Clays and Weathered Sandstone, GeoModel layers 2 and 3, can be reused as structural fill, with evaluation during construction. Otherwise, new engineered fill is recommended for on-site grading.

Material property requirements for on-site soil for use as structural fill are noted in the table below:

Property	Structural Fill
Composition	Free of deleterious material
Maximum particle size	4 inches

Property	Structural Fill
Plasticity	Liquid Limit less than 60 Plasticity index less than 35 The shrink/swell potential of CH (high plasticity clays) soils should not exceed 2%
GeoModel Layer Expected to be Suitable <sup>1</sup>	2,3

**Imported Fill Materials:** Imported fill materials should meet the following material property requirements. Regardless of its source, compacted fill should consist of approved materials that are free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade.

Soil Type <sup>1</sup>	USCS Classification	Acceptable Parameters (for Structural Fill)
Low to Moderate Plasticity Cohesive	CL, and some select CH	Liquid Limit less than 60 Plasticity index less than 35 The shrink/swell potential of CH (high plasticity clays) soils should not exceed 2%
Granular	GW, GP, GM, GC, SW, SP, SM, SC	Less than 50% passing No. 200 sieve

1. Structural fill should consist of approved materials free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade. A sample of each material type should be submitted to the Geotechnical Engineer for evaluation prior to use on this site. Additional geotechnical consultation should be provided prior to use of uniformly graded gravel on the site.

### Fill Placement and Compaction Requirements

Structural fill should meet the following compaction requirements.

Item	Structural Fill
<b>Maximum Lift Thickness</b>	9 inches or less in loose thickness when heavy, self-propelled compaction equipment is used 4 inches in loose thickness when hand-guided equipment (i.e. jumping jack or plate compactor) is used

Item	Structural Fill
<b>Minimum Compaction Requirements</b> <sup>1,2,</sup>	98% of maximum standard Proctor density at all locations and elevations
<b>Water Content Range</b> <sup>1</sup>	Low plasticity cohesive: -2% to +3% of optimum Granular: -3% to +3% of optimum

### Utility Trench Backfill

Any soft or unsuitable materials encountered at the bottom of utility trench excavations should be removed and replaced with structural fill or bedding material in accordance with public works specifications for the utility to be supported. This recommendation is particularly applicable to utility work requiring grade control and/or in areas where subsequent grade raising could cause settlement in the subgrade supporting the utility. Trench excavation should not be conducted below a downward 1:1 projection from existing foundations without engineering review of shoring requirements and geotechnical observation during construction.

On-site materials are considered suitable for backfill of utility and pipe trenches from 1 foot above the top of the pipe to the final ground surface, provided the material is free of organic matter and deleterious substances.

Trench backfill should be mechanically placed and compacted as discussed earlier in this report. Compaction of initial lifts should be accomplished with hand-operated tampers or other lightweight compactors. Where trenches are placed beneath slabs or footings, the backfill should satisfy the gradation and expansion index requirements of engineered fill discussed in this report. Flooding or jetting for placement and compaction of backfill is not recommended.

For low permeability subgrades, utility trenches are a common source of water infiltration and migration. Utility trenches penetrating beneath the building should be effectively sealed to restrict water intrusion and flow through the trenches, which could migrate below the building. The trench should provide an effective trench plug that extends at least 5 feet from the face of the building exterior. The plug material should consist of cementitious flowable fill or low permeability clay. The trench plug material should be placed to surround the utility line. If used, the clay trench plug material should be placed and compacted to comply with the water content and compaction recommendations for structural fill stated previously in this report.

## Grading and Drainage

All grades must provide effective drainage away from the building during and after construction and should be maintained throughout the life of the structure. Water retained next to the building can result in soil movements greater than those discussed in this report. Greater movements can result in unacceptable differential floor slab and/or foundation movements, cracked slabs and walls, and roof leaks. The roof should have gutters/drains with downspouts that discharge onto splash blocks at a distance of at least 10 feet from the building.

Exposed ground should be sloped and maintained at a minimum 5% away from the building for at least 10 feet beyond the perimeter of the building. Locally, flatter grades may be necessary to transition ADA access requirements for flatwork. After building construction and landscaping have been completed, final grades should be verified to document effective drainage has been achieved. Grades around the structure should also be periodically inspected and adjusted, as necessary, as part of the structure's maintenance program. Where paving or flatwork abuts the structure, a maintenance program should be established to effectively seal and maintain joints and prevent surface water infiltration.

## Earthwork Construction Considerations

Shallow excavations for the proposed structure are anticipated to be accomplished with conventional construction equipment. Upon completion of filling and grading, care should be taken to maintain the subgrade water content prior to construction of grade-supported improvements such as floor slabs. Construction traffic over the completed subgrades should be avoided. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. Water collecting over or adjacent to construction areas should be removed. If the subgrade freezes, desiccates, saturates, or is disturbed, the affected material should be removed, or the materials should be scarified, moisture conditioned, and recompacted prior to floor slab construction.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, "Excavations" and its appendices, and in accordance with any applicable local and/or state regulations.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety or the contractor's activities; such responsibility shall neither be implied nor inferred.

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Excavations or other activities resulting in ground disturbance have the potential to affect adjoining properties and structures. Our scope of services does not include review of available final grading information or consider potential temporary grading performed by the contractor for potential effects such as ground movement beyond the project limits. A preconstruction/ precondition survey should be conducted to document nearby property/infrastructure prior to any site development activity. Excavation or ground disturbance activities adjacent or near property lines should be monitored or instrumented for potential ground movements that could negatively affect adjoining property and/or structures.

### Construction Observation and Testing

The earthwork efforts should be observed by the Geotechnical Engineer (or others under their direction). Observation should include documentation of adequate removal of surficial materials (vegetation, topsoil, and necessary gravel pavements), evaluation and remediation of existing fill materials, as well as proofrolling and mitigation of unsuitable areas delineated by the proofroll.

Each lift of compacted fill should be tested, evaluated, and reworked, as necessary, as recommended by the Geotechnical Engineer prior to placement of additional lifts. Each lift of fill should be tested for density and water content at a frequency of at least 4 tests per lift. Where not specified by local ordinance, one density and water content test should be performed for every 100 linear feet of compacted utility trench backfill and a minimum of one test performed for every 12 vertical inches of compacted backfill.

In areas of foundation excavations, the bearing subgrade should be evaluated by the Geotechnical Engineer. If unanticipated conditions are observed, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer's evaluation of subsurface conditions, including assessing variations and associated design changes.

### Shallow Foundations

If the site has been prepared in accordance with the requirements noted in [Earthwork](#), the following design parameters are applicable for shallow foundations.

## Design Parameters – Compressive Loads

Item	Description
<b>Maximum Net Allowable Bearing Pressure</b> <sup>1, 2</sup>	3,000 psf for soil bearing foundations 5,000 psf for rock bearing foundations
<b>Required Bearing Stratum</b> <sup>3</sup>	structural fill, stiff or better native soils, or weathered sandstone
<b>Minimum Foundation Dimensions</b>	Spread footings: 24 inches Wall Footings: 18 inches
<b>Ultimate Passive Resistance</b> <sup>4</sup> (equivalent fluid pressures)	330 pcf (cohesive backfill) 420 pcf (granular backfill)
<b>Sliding Resistance</b> <sup>5</sup>	0.30 (On-site soils) 0.35 (granular material)
<b>Minimum Embedment below Finished Grade</b> <sup>6</sup>	Exterior footings: 18 inches Interior footings: 12 inches
<b>Estimated Total Settlement from Structural Loads</b> <sup>2</sup>	Less than about 1/2 inch
<b>Estimated Differential Settlement</b> <sup>2, 7</sup>	About 3/4 of total settlement

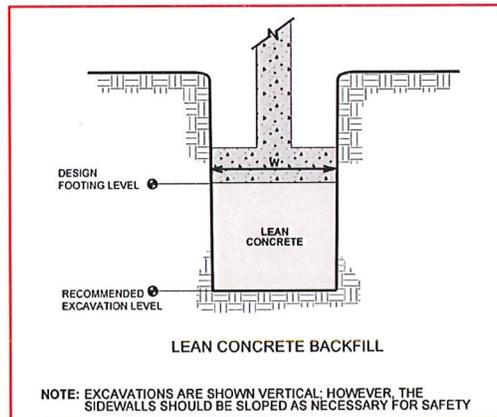
1. The maximum net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. Values assume that exterior grades are no steeper than 20% within 10 feet of structure.
2. Values provided are for maximum loads noted in **Project Description**. Additional geotechnical consultation will be necessary if higher loads are anticipated.
3. Unsuitable or soft soils should be overexcavated and replaced per the recommendations presented in **Earthwork**.
4. Use of passive earth pressures require the sides of the excavation for the spread footing foundation to be nearly vertical and the concrete placed neat against these vertical faces or that the footing forms be removed and compacted structural fill be placed against the vertical footing face. Assumes no hydrostatic pressure.
5. Can be used to compute sliding resistance where foundations are placed on suitable soil/materials. Frictional resistance for granular materials is dependent on the bearing pressure which may vary due to load combinations. For fine-grained materials, lateral resistance using cohesion should not exceed 1/2 the dead load.
6. Embedment necessary to minimize the effects of frost and/or seasonal water content variations. For sloping ground, maintain depth below the lowest adjacent exterior grade within 5 horizontal feet of the structure.
7. Differential settlements are noted for equivalent-loaded foundations and bearing elevation as measured over a span of 50 feet.

## Foundation Construction Considerations

As noted in **Earthwork**, the footing excavations should be evaluated under the observation of the Geotechnical Engineer. The base of all foundation excavations should be free of water and loose soil, prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance. Care should be taken to prevent wetting or drying of the bearing materials during construction. Excessively wet or dry material or any loose/disturbed material in the bottom of the footing excavations should be removed/reconditioned before foundation concrete is placed.

Sensitive soils exposed at the surface of footing excavations may require surficial compaction with hand-held dynamic compaction equipment prior to placing structural fill, steel, and/or concrete. Should surficial compaction not be adequate, construction of a working surface consisting of either crushed stone or a lean concrete mud mat may be required prior to the placement of reinforcing steel and construction of foundations.

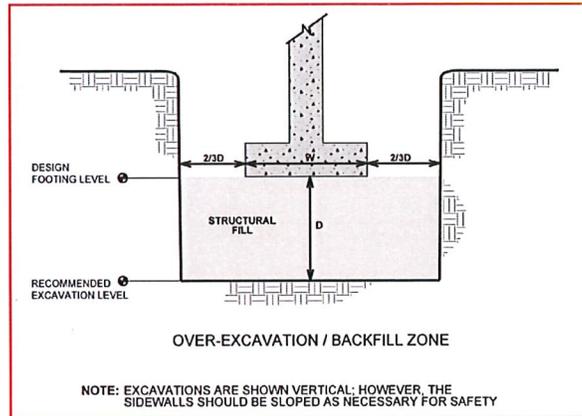
If unsuitable bearing soils are observed at the base of the planned footing excavation, the excavation should be extended deeper to suitable soils, and the footings could bear directly on these soils at the lower level or on lean concrete backfill placed in the excavations. The lean concrete replacement zone is illustrated on the sketch below.



Overexcavation for structural fill placement below footings should be conducted as shown below. The overexcavation should be backfilled up to the footing base elevation, with describe soil type placed, as recommended in the **Earthwork** section.

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## Floor Slabs

Design parameters for floor slabs assume the requirements for **Earthwork** have been followed. Specific attention should be given to positive drainage away from the structure and positive drainage of the aggregate base beneath the floor slab.

Depending upon the finished floor elevation, unsuitable, weak, and/or soft to medium stiff soils may be observed at the floor slab subgrade level. These soils should be replaced with structural fill so the floor slab is supported on at least 2 feet of compacted suitable natural soils or structural fill.

### Floor Slab Design Parameters

Item	Description
<b>Floor Slab Support<sup>1</sup></b>	Minimum 4 inches of free-draining crushed aggregate compacted to at least 95% of ASTM D 698 <sup>3</sup>
<b>Estimated Modulus of Subgrade Reaction<sup>2</sup></b>	100 pounds per square inch per inch (psi/in) for point loads

1. Floor slabs should be structurally independent of building footings or walls to reduce the possibility of floor slab cracking caused by differential movements between the slab and foundation.
2. Modulus of subgrade reaction is an estimated value based upon our experience with the subgrade condition, the requirements noted in **Earthwork**, and the floor slab support as noted in this table. It is provided for point loads. For large area loads the modulus of subgrade reaction would be lower.

Item	Description
3.	Free-draining granular material should have less than 5% fines (material passing the No. 200 sieve). Other design considerations such as cold temperatures and condensation development could warrant more extensive design provisions.

The use of a vapor retarder should be considered beneath concrete slabs on grade covered with wood, tile, carpet, or other moisture sensitive or impervious coverings, when the project includes humidity-controlled areas, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer should refer to ACI 302 and/or ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder.

Saw-cut contraction joints should be placed in the slab to help control the location and extent of cracking. For additional recommendations, refer to the ACI Design Manual. Joints or cracks should be sealed with a waterproof, non-extruding compressible compound specifically recommended for heavy duty concrete pavement and wet environments.

Where floor slabs are tied to perimeter walls or turn-down slabs to meet structural or other construction objectives, our experience indicates differential movement between the walls and slabs will likely be observed in adjacent slab expansion joints or floor slab cracks beyond the length of the structural dowels. The Structural Engineer should account for potential differential settlement through use of sufficient control joints, appropriate reinforcing or other means.

### Floor Slab Construction Considerations

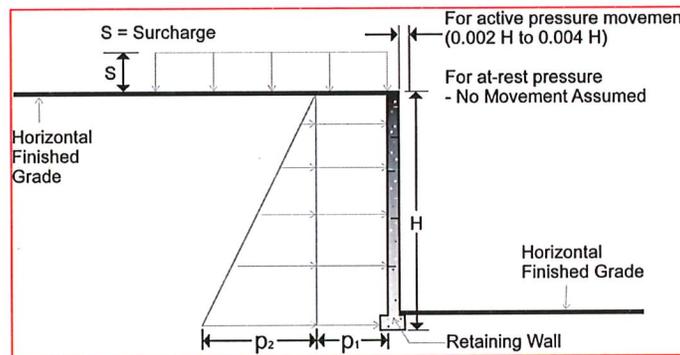
Finished subgrade, within and for at least 10 feet beyond the floor slab, should be protected from traffic, rutting, or other disturbance and maintained in a relatively moist condition until floor slabs are constructed. If the subgrade should become damaged or desiccated prior to construction of floor slabs, the affected material should be removed, and structural fill should be added to replace the resulting excavation. Final conditioning of the finished subgrade should be performed immediately prior to placement of the floor slab support course.

The Geotechnical Engineer should observe the condition of the floor slab subgrades immediately prior to placement of the floor slab support course, reinforcing steel, and concrete. Attention should be paid to high traffic areas that were rutted and disturbed earlier, and to areas where backfilled trenches are located.

# Lateral Earth Pressures

## Design Parameters

Structures with unbalanced backfill levels on opposite sides should be designed for earth pressures at least equal to values indicated in the following table. Earth pressures will be influenced by structural design of the walls, conditions of wall restraint, methods of construction, and/or compaction and the strength of the materials being restrained. Two wall restraint conditions are shown in the diagram below. Active earth pressure is commonly used for design of free-standing cantilever retaining walls and assumes wall movement. The “at-rest” condition assumes no wall movement and is commonly used for basement walls, loading dock walls, or other walls restrained at the top. The recommended design lateral earth pressures do not include a factor of safety and do not provide for possible hydrostatic pressure on the walls (unless stated).



**Lateral Earth Pressure Design Parameters**

Earth Pressure Condition <sup>1</sup>	Coefficient for Backfill Type <sup>2</sup>	Surcharge Pressure <sup>3</sup> p <sub>1</sub> (psf)	Equivalent Fluid Pressures (psf) <sup>2,4</sup>	
			Unsaturated <sup>5</sup>	Submerged <sup>5</sup>
Active (K <sub>a</sub> )	Granular - 0.25	(0.25)S	(25)H	(75)H
	Fine Grained - 0.38	(0.38)S	(45)H	(85)H
At-Rest (K <sub>o</sub> )	Granular - 0.40	(0.40)S	(40)H	(80)H
	Fine Grained - 0.55	(0.55)S	(65)H	(95)H

1. For active earth pressure, wall must rotate about base, with top lateral movements 0.002 H to 0.004 H, where H is wall height. For passive earth pressure, wall must move horizontally to mobilize resistance. Fat clay not meeting requirement of structural fill or other expansive soils should not be used as backfill behind the wall.
2. Uniform, horizontal backfill.
3. Uniform surcharge, where S is surcharge pressure.

**Lateral Earth Pressure Design Parameters**

Earth Pressure Condition <sup>1</sup>	Coefficient for Backfill Type <sup>2</sup>	Surcharge Pressure <sup>3</sup> p <sub>1</sub> (psf)	Equivalent Fluid Pressures (psf) <sup>2,4</sup>	
			Unsaturated <sup>5</sup>	Submerged <sup>5</sup>

- 4. Loading from heavy compaction equipment is not included.
- 5. To achieve “Unsaturated” conditions, follow guidelines in **Subsurface Drainage for Below-Grade Walls** below. “Submerged” conditions are recommended when drainage behind walls is not incorporated into the design.

Backfill placed against structures should consist of granular soils or cohesive soils meeting the requirement for structural fill. For the granular values to be valid, the granular backfill must extend out and up from the base of the wall at an angle of at least 45 degrees from vertical for the active case.

Footings, floor slabs or other loads bearing on backfill behind walls may have a significant influence on the lateral earth pressure. Placing footings within wall backfill and in the zone of active soil influence on the wall should be avoided unless structural analyses indicate the wall can safely withstand the increased pressure.

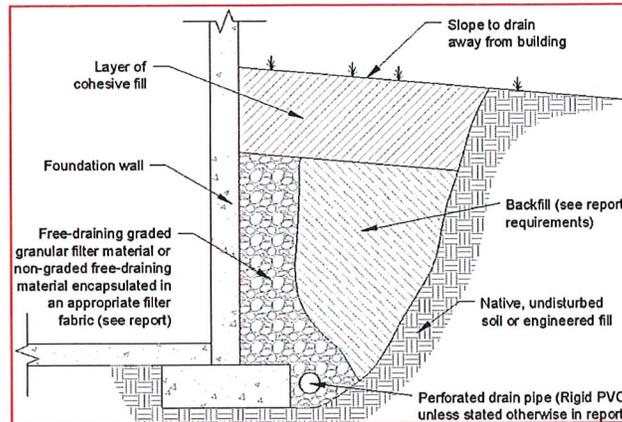
The lateral earth pressure recommendations given in this section are applicable to the design of rigid retaining walls subject to slight rotation, such as cantilever, or gravity type concrete walls. These recommendations are not applicable to the design of modular block - geogrid reinforced backfill walls (also termed MSE walls). Recommendations covering these types of wall systems are beyond the scope of services for this assignment. However, we would be pleased to develop a proposal for evaluation and design of such wall systems upon request.

**Subsurface Drainage for Below-Grade Walls**

A perforated rigid plastic drain line installed behind the base of walls and extends below adjacent grade is recommended to prevent hydrostatic loading on the walls. The invert of a drain line around a below-grade building area or exterior retaining wall should be placed near foundation bearing level. The drain line should be sloped to provide positive gravity drainage to daylight or to a sump pit and pump. The drain line should be surrounded by clean, free-draining granular material having less than 5% passing the No. 200 sieve, such as No. 57 aggregate. The free-draining aggregate should be encapsulated in a filter fabric. The granular fill should extend to within 2 feet of final grade, where it should be capped with compacted cohesive fill to reduce infiltration of surface water into the drain system.

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As an alternative to free-draining granular fill, a prefabricated drainage structure may be used. A prefabricated drainage structure is a plastic drainage core or mesh which is covered with filter fabric to prevent soil intrusion and is fastened to the wall prior to placing backfill.

## General Comments

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our

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client. Reliance upon the services and any work product is limited to our client and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly affect excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety and cost estimating including excavation support and dewatering requirements/design are the responsibility of others. Construction and site development have the potential to affect adjacent properties. Such impacts can include damages due to vibration, modification of groundwater/surface water flow during construction, foundation movement due to undermining or subsidence from excavation, as well as noise or air quality concerns. Evaluation of these items on nearby properties are commonly associated with contractor means and methods and are not addressed in this report. The owner and contractor should consider a preconstruction/precondition survey of surrounding development. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

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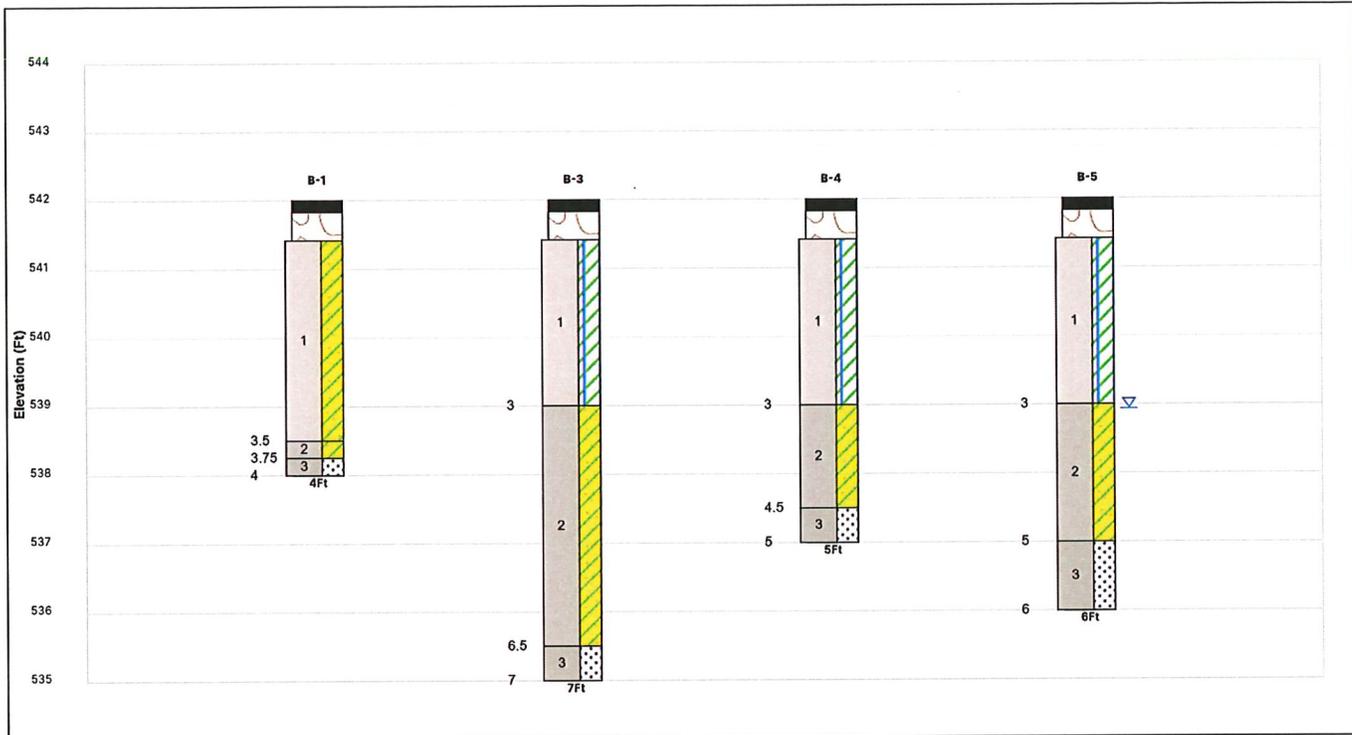


## Figures

**Contents:**

GeoModel

### GeoModel



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions

#	Layer Name	General Description
1	Unsuitable Clays	Typically dark tan to tan and/or gray in color, soft to medium stiff in consistency.
2	Lean Clays	Typically tan, red, and/or gray in color, stiff to hard in consistency, with varying sand and gravel content.
3	Weathered Sandstone	Sandstone, weathered in place, was penetrated with difficulty with soil auger.

Legend		
	Asphalt	
	Sandstone	
	Aggregate Base Course	
	Silty Clay	
	Sandy Lean Clay	

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time.  
 Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

**Notes:**

Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project.  
 Numbers adjacent to soil column indicate depth below ground surface.

- First Water Observation
- Second Water Observation
- Third Water Observation

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## **Attachments**

# Exploration and Testing Procedures

## Field Exploration

Borings	Approximate Boring Depth (feet)	Location
4 <sup>1</sup>	4 to 7 feet (refusal)	Planned Building Pad Area
1. Boring location B-2 was not drilled due to its proximity to underground utilities.		

**Boring Layout and Elevations:** Terracon personnel provided the boring layout using handheld GPS equipment (estimated horizontal accuracy of about ±10 feet) and referencing existing site features. Approximate ground surface elevations were obtained by interpolation from the client provided topographical site survey. If elevations and a more precise boring layout are desired, we recommend borings be surveyed.

**Subsurface Exploration Procedures:** We advanced the borings with an ATV-mounted rotary drill rig using continuous flight augers (hollow stem). Four samples were obtained in the upper 10 feet of each boring and at intervals of 5 feet thereafter. In the split-barrel sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon was driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths.

The sampling depths, penetration distances, and other sampling information was recorded on the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory for testing and classification by a Geotechnical Engineer. Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials observed during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. The final boring logs represent the Geotechnical Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

## Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests. The laboratory testing program included the following types of tests:



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- Moisture Content
- Atterberg Limits

The laboratory testing program often included examination of soil samples by an engineer. Based on the results of our field and laboratory programs, we described and classified the soil samples in accordance with the Unified Soil Classification System.

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## **Site Location and Exploration Plans**

**Contents:**

Site Location Plan  
Exploration Plan

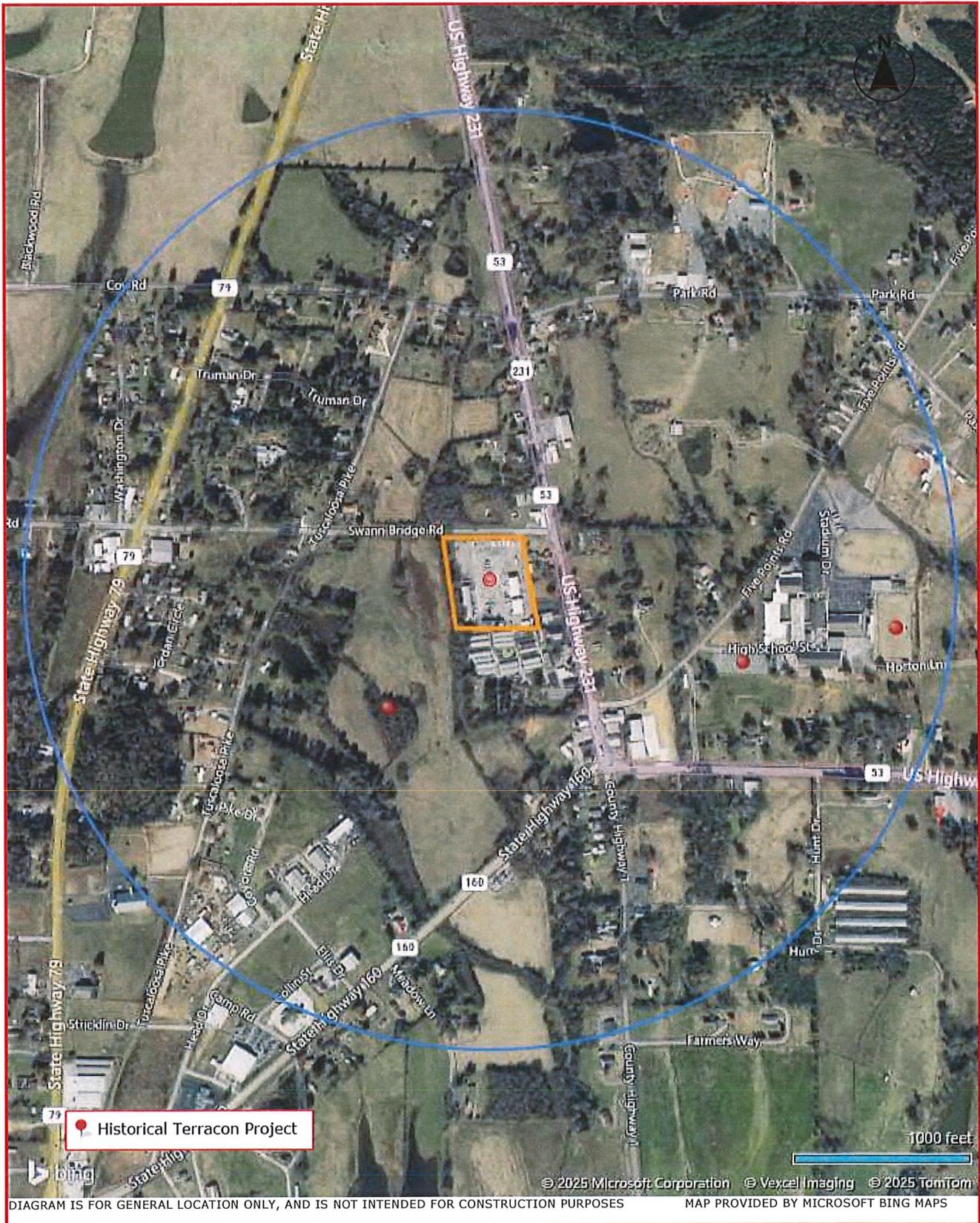
Note: All attachments are one page unless noted above.

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**Site Location**

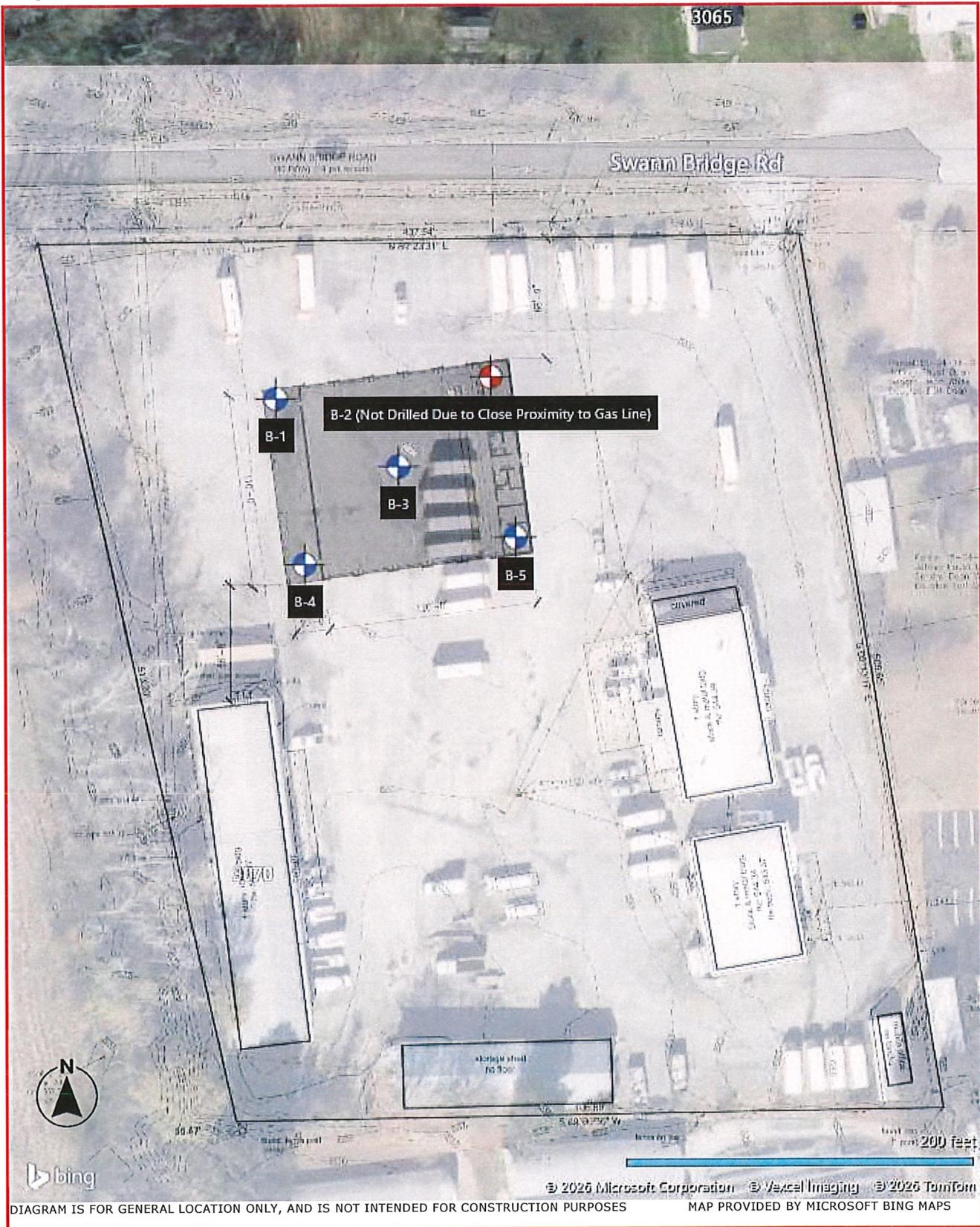


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**Exploration Plan**



# Exploration and Laboratory Results

## **Contents:**

Boring Logs (B-1 through B-5)

Note: All attachments are one page unless noted above.



### BORING LOG NO. B-1

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Field Test Results	Water Content (%)
		0.2	<u>ASPHALT</u>	542.0				
		0.6	<u>AGGREGATE BASE COURSE</u>	541.4				
1			<u>SANDY LEAN CLAY (CL)</u> , tan, wet, soft				3-2-2 N = 4	25
2		3.5	<u>SANDY LEAN CLAY (CL)</u> , red, tan, gray, moist, stiff	538.5				
3		3.8	<u>SANDSTONE</u> , completely weathered	538.3			11-50/1" N = 50	
			Boring Refusal at 4 Ft					

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).  
 See Supporting Information for explanation of symbols and abbreviations.

Notes

Advancement Method  
 0-4 FT. Hollow Stem Auger

Abandonment Method  
 Boring backfilled with auger cuttings upon completion.

Drill Rig  
 Subcontractor - Diedrich D-50

Hammer Type  
 Automatic

Driller  
 South Bros. Drilling Inc

Logged By  
 Cliff Braxton

Boring Started  
 02/05/2026



## BORING LOG NO. B-3

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Field Test Results	Water Content (%)
		0.2	<b>ASPHALT</b>		542.0			
		0.6	<b>AGGREGATE BASE COURSE</b>		541.4			
1			<b>SILTY CLAY (CL-ML)</b> , gray, moist, medium stiff			X	5-3-3 N = 6	15
		3.0	<b>SANDY LEAN CLAY (CL)</b> , red, tan & gray, moist, very stiff		539.0			
2				5		X	6-8-13 N = 21	20
		6.5	<b>SANDSTONE</b> , completely weathered		535.5	X	16-50/4" N = 50	18
3			Boring Refusal at 7 Ft					

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).  
 See Supporting Information for explanation of symbols and abbreviations.

**Notes**

**Advancement Method**  
 0-7 Ft. Hollow Stem Auger

**Abandonment Method**  
 Boring backfilled with auger cuttings upon completion.

**Drill Rig**  
 Subcontractor - Diedrich D-50

**Hammer Type**  
 Automatic

**Driller**  
 South Bros. Drilling Inc

**Logged By**  
 Cliff Braxton

**Boring Started**  
 02/05/2026



## BORING LOG NO. B-4

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Field Test Results	Water Content (%)
		0.2	<b>ASPHALT</b>	542.0				
		0.6	<b>AGGREGATE BASE COURSE</b>	541.4				
1		3.0	<b>SILTY CLAY (CL-ML)</b> , dark gray, medium stiff			X	2-3-3 N = 6	19
2		4.5	<b>SANDY LEAN CLAY (CL)</b> , red, tan, & gray, moist, stiff	539.0				
3			<b>SANDSTONE</b> , completely weathered	537.5		X	5-8-50/4" N = 50	22
Boring Refusal at 5 Ft								

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).  
 See Supporting Information for explanation of symbols and abbreviations.

Notes

Advancement Method  
 0-5 Ft. Hollow Stem Auger

Abandonment Method  
 Boring backfilled with auger cuttings upon completion.

Drill Rig  
 Subcontractor - Diedrich D-50

Hammer Type  
 Automatic

Driller  
 South Bros. Drilling Inc

Logged By  
 Cliff Braxton

Boring Started  
 02/05/2026



### BORING LOG NO. B-5

Model Layer	Graphic Log	Lithology Depth (Ft.)	Material Description	Depth (Ft.)	Elevation (Ft.)	Sample Type	Water Level Observations	Field Test Results	Water Content (%)	Atterberg Limits		
										LL	PL	PI
		0.2	<b>ASPHALT</b>		542.0							
		0.4	<b>AGGREGATE BASE COURSE</b>		541.8							
		0.6	<b>SILTY CLAY (CL-ML)</b> , dark gray, moist, soft		541.4							
1								4-2-2 N = 4	38			
		3.0	<b>SANDY LEAN CLAY (CL)</b> , tan & gray, moist, medium stiff		539.0							
2								3-2-4 N = 6		40	26	14
		5.0	<b>SANDSTONE</b> , completely weathered	5	537.0							
3								50/3" N = 50				
			<b>Boring Refusal at 6 Ft</b>									

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).  
 See Supporting Information for explanation of symbols and abbreviations.

Notes

**Water Level Observations**

3 Ft. While drilling

**Advancement Method**

0-6 Ft. Hollow Stem Auger

**Abandonment Method**

Boring backfilled with auger cuttings upon completion.

Drill Rig  
 Subcontractor - Diedrich D-50

Hammer Type  
 Automatic

Driller  
 South Bros. Drilling Inc

Logged By  
 Cliff Braxton

Boring Started  
 02/05/2026

## Supporting Information

### **Contents:**

General Notes  
Unified Soil Classification System

Note: All attachments are one page unless noted above.

## General Notes

Sampling			Water Level		Field Tests	
Auger Cuttings	Modified California Ring Sampler	Rock Core		Water Initially Encountered	N	Standard Penetration Test Resistance (Blows/Ft.)
Dynamic Cone Penetrometer	Modified Dames & Moore Ring Sampler	Dual Sampler SPT		Water Level After a Specified Period of Time	(HP)	Hand Penetrometer
Grab Sample	GeoProbe Macro Core or Large Bore	No Recovery		Water Level After a Specified Period of Time	(T)	Torvane
Ring Sampler	Shelby Tube	Standard Penetration Test		Cave In Encountered	(DCP)	Dynamic Cone Penetrometer
Split Spoon	Texas Cone Penetrometer	Vane Shear	Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.		UC	Unconfined Compressive Strength
					(PID)	Photo-Ionization Detector
					(OVA)	Organic Vapor Analyzer

### Descriptive Soil Classification

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

### Location And Elevation Notes

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

### Strength Terms

Relative Density of Coarse-Grained Soils (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		Consistency of Fine-Grained Soils (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
Relative Density	Standard Penetration or N-Value (Blows/Ft.)	Consistency	Unconfined Compressive Strength Qu (tsf)	Standard Penetration or N-Value (Blows/Ft.)
Very Loose	0 - 3	Very Soft	less than 0.25	0 - 1
Loose	4 - 9	Soft	0.25 to 0.50	2 - 4
Medium Dense	10 - 29	Medium Stiff	0.50 to 1.00	5 - 8
Dense	30 - 50	Stiff	1.00 to 2.00	9 - 15
Very Dense	> 50	Very Stiff	2.00 to 4.00	16 - 30
		Hard	> 4.00	> 30

### Relevance of Exploration and Laboratory Test Results

Exploration/field results and/or laboratory test data contained within this document are intended for application to the project as described in this document. Use of such exploration/field results and/or laboratory test data should not be used independently of this document.



## Unified Soil Classification System

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests <sup>A</sup>				Soil Classification	
				Group Symbol	Group Name <sup>B</sup>
<b>Coarse-Grained Soils:</b> More than 50% retained on No. 200 sieve	<b>Gravels:</b> More than 50% of coarse fraction retained on No. 4 sieve	<b>Clean Gravels:</b> Less than 5% fines <sup>C</sup>	$Cu \geq 4$ and $1 \leq Cc \leq 3$ <sup>E</sup>	GW	Well-graded gravel <sup>F</sup>
		<b>Gravels with Fines:</b> More than 12% fines <sup>C</sup>	$Cu < 4$ and/or $[Cc < 1 \text{ or } Cc > 3.0]$ <sup>E</sup>	GP	Poorly graded gravel <sup>F</sup>
			Fines classify as ML or MH	GM	Silty gravel <sup>F, G, H</sup>
	<b>Sands:</b> 50% or more of coarse fraction passes No. 4 sieve	<b>Clean Sands:</b> Less than 5% fines <sup>D</sup>	$Cu \geq 6$ and $1 \leq Cc \leq 3$ <sup>E</sup>	SW	Well-graded sand <sup>I</sup>
			$Cu < 6$ and/or $[Cc < 1 \text{ or } Cc > 3.0]$ <sup>E</sup>	SP	Poorly graded sand <sup>I</sup>
		<b>Sands with Fines:</b> More than 12% fines <sup>D</sup>	Fines classify as ML or MH	SM	Silty sand <sup>G, H, I</sup>
Fines classify as CL or CH	SC		Clayey sand <sup>G, H, I</sup>		
<b>Fine-Grained Soils:</b> 50% or more passes the No. 200 sieve	<b>Silts and Clays:</b> Liquid limit less than 50	<b>Inorganic:</b>	$PI > 7$ and plots above "A" line <sup>J</sup>	CL	Lean clay <sup>K, L, M</sup>
			$PI < 4$ or plots below "A" line <sup>J</sup>	ML	Silt <sup>K, L, M</sup>
	<b>Silts and Clays:</b> Liquid limit 50 or more	<b>Organic:</b>	$\frac{LL \text{ oven dried}}{LL \text{ not dried}} < 0.75$	OL	Organic clay <sup>K, L, M, N</sup> Organic silt <sup>K, L, M, O</sup>
			$PI$ plots on or above "A" line	CH	Fat clay <sup>K, L, M</sup>
			$PI$ plots below "A" line	MH	Elastic silt <sup>K, L, M</sup>
			$\frac{LL \text{ oven dried}}{LL \text{ not dried}} < 0.75$	OH	Organic clay <sup>K, L, M, P</sup> Organic silt <sup>K, L, M, Q</sup>
<b>Highly organic soils:</b>	Primarily organic matter, dark in color, and organic odor		PT	Peat	

<sup>A</sup> Based on the material passing the 3-inch (75-mm) sieve.

<sup>B</sup> If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

<sup>C</sup> Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

<sup>D</sup> Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

<sup>E</sup>  $Cu = D_{60}/D_{10}$      $Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$

<sup>F</sup> If soil contains  $\geq 15\%$  sand, add "with sand" to group name.

<sup>G</sup> If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

<sup>H</sup> If fines are organic, add "with organic fines" to group name.

<sup>I</sup> If soil contains  $\geq 15\%$  gravel, add "with gravel" to group name.

<sup>J</sup> If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

<sup>K</sup> If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

<sup>L</sup> If soil contains  $\geq 30\%$  plus No. 200 predominantly sand, add "sandy" to group name.

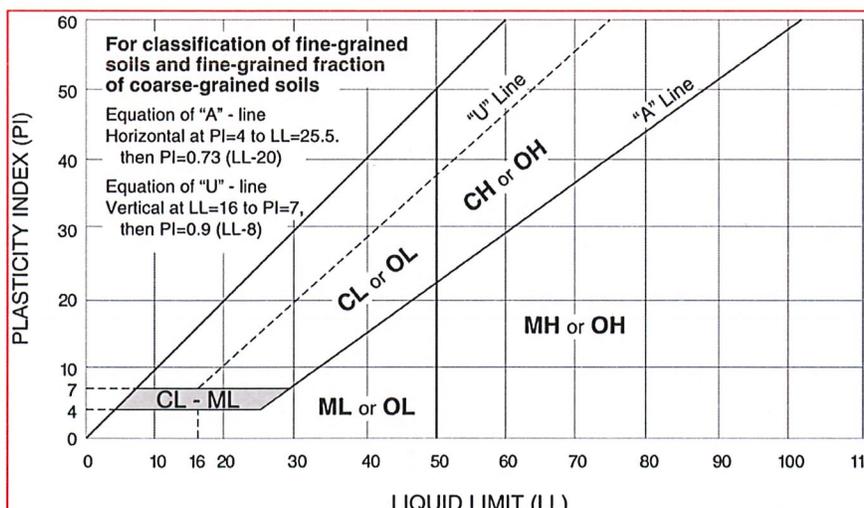
<sup>M</sup> If soil contains  $\geq 30\%$  plus No. 200, predominantly gravel, add "gravelly" to group name.

<sup>N</sup>  $PI \geq 4$  and plots on or above "A" line.

<sup>O</sup>  $PI < 4$  or plots below "A" line.

<sup>P</sup>  $PI$  plots on or above "A" line.

<sup>Q</sup>  $PI$  plots below "A" line.





## GENERAL NOTES

### 1.0 DESIGN CRITERIA

- 1.1 CODES AND SPECIFICATIONS:
- A. GENERAL BUILDING CODE:  
INTERNATIONAL BUILDING CODE, 2021 EDITION.
  - B. CONCRETE:  
BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318-19)
  - C. STRUCTURAL STEEL:  
SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, AMERICAN INSTITUTE OF STEEL CONSTRUCTION (ANSI/AISC 360-16)
  - D. OPEN WEB STEEL JOISTS:  
STANDARD SPECIFICATIONS AND LOAD TABLES FOR STEEL JOISTS AND JOIST GIRDERS, STEEL JOIST INSTITUTE, LATEST EDITION
  - E. STEEL DECK:  
STEEL DECK INSTITUTE DESIGN MANUALS FOR COMPOSITE DECKS, NON-COMPOSITE DECKS, AND ROOF DECKS, LATEST EDITIONS
  - F. MASONRY  
SPECIFICATIONS FOR MASONRY STRUCTURES (TMS 602-16).  
BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES (ACI 402-16).
- NATIONAL CONCRETE MASONRY ASSOCIATION'S STANDARD PRACTICES AND "SPECIFICATION FOR THE DESIGN AND CONSTRUCTION OF LOAD BEARING CONCRETE MASONRY", LATEST EDITION
- G. COLD-FORMED STEEL FRAMING: AISI NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS, AMERICAN IRON AND STEEL INSTITUTE (AISI S100-16(2020) W/S2-20)
- OTHER APPLICABLE AISI STANDARDS, AMERICAN IRON AND STEEL INSTITUTE, LATEST EDITION
- H. (PREFABRICATED) METAL BUILDING  
MBMA'S (METAL BUILDING MANUFACTURERS ASSOCIATION'S) METAL BUILDING SYSTEMS MANUAL, LATEST EDITION  
MBMA'S METAL ROOFING SYSTEMS DESIGN MANUAL, LATEST EDITION

- 1.2 DESIGN GRAVITY LOADS (PSF):
- A. DEAD LOADS:  
ANY CHANGES IN CONSTRUCTION MATERIALS FROM THOSE SHOWN ON THE ARCHITECTURAL OR STRUCTURAL DRAWINGS SHALL BE REPORTED BY THE GENERAL CONTRACTOR TO THE STRUCTURAL ENGINEER FOR VERIFICATION OF LOAD-CARRYING CAPACITY OF THE STRUCTURE.
  - B. FLOOR LIVE LOADS:  
NON-REDUCIBLE PARTITION LIVE LOAD OF 20 PSF HAS BEEN INCLUDED PER IBC SECTION 1607.5.  
  
LIVE LOAD REDUCTIONS AS DETERMINED BY IBC SECTION 1607.12 HAVE BEEN TAKEN WHERE PERMITTED.
- |                           |     |
|---------------------------|-----|
| FLOOR (REDUCIBLE)-----    | 100 |
| STAIRS & EXITWAYS-----    | 100 |
| STORAGE-----              | 125 |
| MECHANICAL MEZZANINE----- | 125 |
- C. ROOF LIVE LOADS:  
WHERE PERMITTED ROOF LIVE LOADS ARE REDUCED FROM THE BASE VALUE SHOWN BELOW IN ACCORDANCE WITH IBC SECTION 1607.14
- |           |    |
|-----------|----|
| ROOF----- | 20 |
|-----------|----|
- D. ROOF SNOW LOADS:  
GROUND SNOW LOAD (Pg)-----10.0  
IMPORTANCE FACTOR (I)-----1.0  
EXPOSURE FACTOR (Ce)-----1.0  
THERMAL FACTOR (Ct)-----1.0

- 1.3 DESIGN LATERAL LOADS:
- A. WIND LOADS:  
OCCUPANCY CATEGORY II  
BASIC WIND SPEED (3-SECOND GUST)-----107MPH  
WIND IMPORTANCE FACTOR (I)-----1.0  
WIND EXPOSURE CATEGORY-----C  
INTERNAL PRESSURE COEFFICIENTS----- +/- 0.18  
SEE TYPICAL DETAILS FOR COMPONENT AND CLADDING LOADS
  - B. SEISMIC LOADS:  
OCCUPANCY CATEGORY II  
SEISMIC IMPORTANCE FACTOR-----1.0  
MAPPED SPECTRAL RESPONSE ACCELERATIONS:  
S<sub>1</sub>-----0.261  
S<sub>1</sub>-----0.104  
SITE CLASS-----D  
SPECTRAL RESPONSE COEFFICIENTS:  
SDS-----0.277  
SDI-----0.166
- SEISMIC DESIGN CATEGORY-----C
- BASIC SEISMIC-FORCE-RESISTING SYSTEM: (MEZZANINE)  
INTERMEDIATE REINFORCED MASONRY SHEAR WALLS  
DESIGN BASE SHEAR-----19kIPS  
SEISMIC RESPONSE COEFFICIENT, CS-----0.079  
RESPONSE MODIFICATION FACTOR-----3.5  
ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE PROCEDURE
- THE FOLLOWING INFORMATION SHALL BE PROVIDED BY THE METAL BUILDING MANUFACTURER:
- BASIC SEISMIC FORCE RESISTING SYSTEM  
DESIGN BASE SHEAR  
SEISMIC RESPONSE COEFFICIENT, CS  
RESPONSE MODIFICATION FACTOR, R  
ANALYSIS PROCEDURE  
IMPORTANCE FACTOR, I

### 2.0 GENERAL CONDITIONS

- 2.1 THE STRUCTURAL DRAWINGS AND SPECIFICATIONS ARE A PORTION OF THE CONSTRUCTION DOCUMENTS. THE GENERAL CONTRACTOR AND SUBCONTRACTORS SHALL REFERENCE AND COORDINATE WITH OTHER DISCIPLINE'S DRAWINGS. ANY DISCREPANCIES OR OMISSIONS SHALL BE IMMEDIATELY REPORTED TO THE ARCHITECT AND STRUCTURAL DESIGN GROUP.
- 2.2 ALL REPORTS, PLANS, SPECIFICATIONS, COMPUTER FILES, FIELD DATA, NOTES, AND OTHER DOCUMENTS AND INSTRUMENTS PREPARED BY STRUCTURAL DESIGN GROUP AS INSTRUMENTS OF SERVICE SHALL REMAIN THE PROPERTY OF STRUCTURAL DESIGN GROUP. STRUCTURAL DESIGN GROUP SHALL RETAIN ALL COMMON LAW, STATUTORY, AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THEREON.

- 2.3 WHERE SHOP DRAWINGS, CALCULATIONS, OR SUBMITTALS ARE CALLED FOR IN THE PROJECT DOCUMENTS (DRAWINGS AND SPECIFICATIONS) AND ARE NOT PROVIDED BY THE CONTRACTOR, THE CONTRACTOR ASSUMES TOTAL RESPONSIBILITY FOR THE DESIGN AND ASSOCIATED WORK.
- 2.4 ENGINEER'S SHOP DRAWING REVIEW IS LIMITED TO REVIEW FOR GENERAL CONFORMANCE WITH THE DESIGN INTENT REFLECTED IN THE STRUCTURAL PORTION OF THE CONTRACT DOCUMENTS. THIS REVIEW DOES NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE DRAWINGS, SPECIFICATIONS OR OTHER PROJECT CONTRACT DOCUMENTS. NO RESPONSIBILITY IS ASSUMED OR IMPLIED FOR THE CORRECTNESS OF DIMENSIONS OR DETAILS. THIS REVIEW DOES NOT AUTHORIZE CHANGES TO THE CONTRACT SUM UNLESS STATED IN A SEPARATE WRITTEN FORM OR CHANGE ORDER. CONTRACTOR SHALL CONFIRM AND CORRELATE ALL QUANTITIES AND DIMENSIONS, SELECT FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION, COORDINATE HIS WORK WITH THAT OF OTHER TRADES, AND PERFORM HIS WORK IN A SAFE AND SATISFACTORY MANNER. CONTRACTOR SHALL ALSO REFER TO THE REQUIREMENTS OF THE GENERAL AND SUPPLEMENTARY GENERAL CONDITIONS.
- 2.5 ALL DETAILS SHOWN ARE TYPICAL. SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS, UNLESS NOTED.
- 2.6 VERIFY ALL DIMENSIONS AND DETAILS SHOWN ON THESE DRAWINGS. ANY DISCREPANCIES OR OMISSIONS FOUND SHALL BE REPORTED TO THE ENGINEER AND OTHER DESIGN PROFESSIONALS AS APPROPRIATE FOR RESOLUTION PRIOR TO PROCEEDING WITH ANY RELATED WORK.
- 2.7 THESE DRAWINGS DO NOT INCLUDE PROVISIONS TO SATISFY JOB SITE SAFETY REQUIREMENTS. CONTRACTOR IS SOLELY RESPONSIBLE FOR ENSURING SAFETY DURING CONSTRUCTION, AND FOR CONFORMANCE TO ALL APPLICABLE OSHA STANDARDS. JOBSITE VISITS BY ENGINEER SHALL NOT CONSTITUTE APPROVAL, AWARENESS OR LIABILITY FOR ANY HAZARDOUS CONDITIONS.
- 2.8 STRUCTURAL DESIGN GROUP IS NOT RESPONSIBLE FOR CONSTRUCTION MEANS AND METHODS, SAFETY PROCEDURES, CONSTRUCTION SUPERVISION OR SITE SAFETY, AND DOES NOT HAVE THE AUTHORITY TO STOP WORK FOR THESE ITEMS.
- 2.9 STRUCTURAL OBSERVATION IS VISUAL OBSERVATION OF THE IN PLACE STRUCTURE FOR GENERAL CONFORMANCE TO THE APPROVED CONSTRUCTION DOCUMENTS AT THE TIME OF THE OBSERVATION AND SHALL NOT BE CONSTRUED AS INSPECTION OR APPROVAL OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING TESTING AND SPECIAL INSPECTIONS PER THE REQUIREMENTS IN THE PROJECT MANUAL.
- 2.10 THE CONTRACTOR IS SOLELY RESPONSIBLE FOR BRACING AND SHORING ALL EXCAVATIONS, DEWATERING OF EXCAVATION FROM EITHER SURFACE WATER, GROUND WATER OR SEEPAGE, TEMPORARY AND EXISTING STRUCTURES, AND PARTIALLY EXISTING PORTIONS OF THE WORK TO ASSURE THE SAFETY OF ANY PERSON COMING IN CONTACT WITH THE WORK.
- 2.11 OBSERVATION BY THE ENGINEER OF RECORD'S OFFICE DOES NOT REPLACE INSPECTIONS AND TESTING BY THE TESTING AGENCY OR SPECIAL INSPECTOR.
- 2.12 ALL SUBMITTALS: IF THERE ARE QUESTIONS, CLARIFICATIONS, MODIFICATIONS, OR ITEMS WHERE INFORMATION, A RESPONSE, OR APPROVAL IS REQUESTED, SUCH ITEMS SHALL BE WRITTEN ON THE TRANSMITTAL OR COVER SHEET. INDICATING SUCH ITEMS ON THE SHOP DRAWINGS, WITHIN ANY CALCULATIONS, OR PRODUCT DATA IS NOT SUFFICIENT. WHERE SUCH ITEMS ARE NOT SPECIFICALLY LISTED ON THE TRANSMITTAL OR COVER SHEET IN ACCORDANCE WITH THESE GENERAL NOTES AND THE SPECIFICATIONS, SUCH ITEMS ARE NOT TO BE CONSIDERED APPROVED OR CONSIDERED. IF A QUESTION, CLARIFICATION, MODIFICATION, OR REQUEST FOR INFORMATION IS MADE AND NOT SPECIFICALLY RESPONDED TO BY STRUCTURAL DESIGN GROUP, NO APPROVAL OR CONSENT SHALL BE ASSUMED. THE CONTRACTOR SHALL ASSUME TOTAL LIABILITY AND RESPONSIBILITY IN ALL CASES WHERE SPECIFIC WRITTEN RESPONSE FROM STRUCTURAL DESIGN GROUP IS NOT OBTAINED, REGARDLESS OF ANY OTHER ACTIONS TAKEN BY STRUCTURAL DESIGN GROUP.

### 3.0 FOUNDATIONS

- 3.1 GEOTECHNICAL REPORT: FOUNDATION DESIGN IS BASED ON THE GEOTECHNICAL REPORT BY TERRACON, TITLED "BLOUNT COUNTY BUS SHOP PROJECT NO.E5255081" ALONG WITH ANY SUPPLEMENTAL CORRESPONDENCE. THE GENERAL CONTRACTOR SHALL OBTAIN A COPY OF THE GEOTECHNICAL REPORT FROM THE OWNER AND FOLLOW ALL REQUIREMENTS AND RECOMMENDATIONS. GEOTECHNICAL RECOMMENDATIONS SHALL TAKE PRECEDENCE OVER THE ITEMS THAT FOLLOW IN THIS SECTION OF THE STRUCTURAL GENERAL NOTES.
- 3.2 MAXIMUM ALLOWABLE BEARING PRESSURE PER GEOTECHNICAL REPORT:
- |                         |          |
|-------------------------|----------|
| A. BEARING ON SOIL----- | 3000 PSF |
| B. BEARING ON ROCK----- | 5000 PSF |
- NOTE: ALL FOOTING BEARING ELEVATIONS SHALL BE BEARING IN SIMILAR MATERIAL (NATIVE SOILS OR CATHETERED BEDROCK). EXTEND FOOTINGS AS NECESSARY WITH LEAN CONCRETE OR FLOWABLE FILL
- 3.3 ALL FOUNDATION BEARING SURFACES SHALL BE REVIEWED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING CONCRETE TO ENSURE THEIR COMPLIANCE WITH PRESSURES NOTED. ALL FOOTING ELEVATIONS ARE ESTIMATED AND MAY BE ADJUSTED IN THE FIELD BY THE GEOTECHNICAL ENGINEER.
- 3.4 SUBGRADE AND GRANULAR FILL SUPPORTING SLABS ON GRADE SHALL BE AS RECOMMENDED BY THE GEOTECHNICAL REPORT AND COMPACTED UNDER THE DIRECT SUPERVISION OF THE GEOTECHNICAL ENGINEER OR HIS APPROVED REPRESENTATIVE. SEE SPECIFICATIONS FOR VAPOR RETARDER BENEATH SLABS ON GRADE
- 3.5 GRANULAR FILL BENEATH SLABS, UNLESS NOTED OTHERWISE, SHALL BE 4" COMPACTED #57 STONE.
- 3.6 NO EXCAVATION SHALL BE CLOSER THAN AT A SLOPE OF 2:1 (TWO HORIZONTAL TO ONE VERTICAL) TO A FOOTING.
- 3.7 PROVIDE A MINIMUM OF 4" OF #57 STONE GRANULAR FILL SUPPORTING SLABS ON GRADE. THE BUILDING FLOOR SLAB SUBGRADE SHALL BE INSTALLED UNDER THE DIRECT SUPERVISION OF THE GEOTECHNICAL ENGINEER OR HIS APPROVED REPRESENTATIVE. THE SUBGRADE SHALL BE INSTALLED TO A MINIMUM MODULUS OF SUBGRADE REACTION OF 100PSI. THE GEOTECHNICAL ENGINEER AND CONTRACTOR SHALL PERFORM EARTHWORK AS REQUIRED TO MEET THIS SPECIFICATION.
- 3.8 SOIL INSPECTION AND TESTING SHALL BE PERIODIC.

- A. VERIFY BEARING CAPACITY OF SOILS BENEATH FOOTINGS IS IN ACCORDANCE WITH THE APPROVED PROJECT SOILS REPORT.
- B. VERIFY ASSUMED BEARING CAPACITIES (AS NOTED ON THE DRAWINGS, RECOMMENDED BY THE GEOTECHNICAL ENGINEER) AND DETERMINE THE SETTLEMENTS OF SOILS BENEATH FOOTINGS AND BUILDING PAD.
- C. VERIFY SITE PREPARATION PRIOR TO BEGINNING FILL PLACEMENT. VERIFY FILL MATERIAL TYPE, PLACEMENT METHOD, LIFT THICKNESS, AND COMPACTION OF FILL MATERIAL. VERIFY IN-PLACE DENSITY OF COMPACTED FILL.

### 4.0 CONCRETE

- 4.1 CONCRETING OPERATIONS SHALL COMPLY WITH ACI STANDARDS.
- 4.2 CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS (PSI), TYPE OF CONCRETE, MAXIMUM WATER/CEMENTITIOUS RATIO, AIR CONTENT, SLUMP, AND CONCRETE USE:
- | STRENGTH | TYPE       | MAX W/C | AIR  | SLUMP    | USE                 |
|----------|------------|---------|------|----------|---------------------|
| 3000     | NORMAL WT. | 0.57    | ---- | 3" TO 5" | FOOTINGS            |
| 3500     | NORMAL WT. | 0.50    | ---- | 3" TO 5" | SLABS ON GRADE      |
| 3000     | NORMAL WT. | 0.50    | ---- | 3" TO 5" | SLABS ON METAL DECK |
| 4000     | NORMAL WT. | 0.45    | 4-6% | 3" TO 5" | UNLESS NOTED        |
- 4.3 REINFORCING BARS: ASTM A615 GRADE 60.
- 4.4 REINFORCING STEEL SHOWN IN SECTIONS AND DETAILS ARE A SCHEMATIC INDICATION THAT REINFORCING EXISTS. SEE SCHEDULES, SECTION NOTES AND GENERAL NOTES FOR ACTUAL REINFORCING REQUIRED.
- 4.5 REINFORCING BAR PLACING ACCESSORIES IN ACCORDANCE WITH ACI MANUAL OF STANDARD PRACTICES. WHERE CONCRETE IS EXPOSED IN FINISHED BUILDING, PROVIDE ACCESSORIES WITH RUSTPROOF LEGS. WHERE CONCRETE IS SAND-BLASTED OR BUSH-HAMMERED, USE ACCESSORIES OF STAINLESS STEEL.
- 4.6 DETAIL REINFORCEMENT IN ACCORDANCE WITH ACI 315. REINFORCEMENT SHALL NOT BE WELDED UNLESS NOTED OR APPROVED BY THE ENGINEER.
- 4.7 ALL SPLICES SHALL BE CLASS "B" TENSION LAP SPLICE, UNLESS NOTED.
- 4.8 ALL REINFORCING MARKED "CONT." INDICATES REINFORCING SHALL BE "CONTINUOUS" SHALL BE SPLICED WITH CLASS "B" TENSION LAP SPLICE, UNLESS NOTED.
- 4.9 PROVIDE CORNER BARS AT ALL CORNERS OF CONTINUOUS REINFORCING IN FOOTINGS, SLABS, OR WALLS. CORNER BARS SHALL BE LONG ENOUGH TO PROVIDE A CLASS "B" LAP SPLICE OF REINFORCING BARS.
- 4.10 CONCRETE COVERAGE OF REINFORCEMENT, UNLESS NOTED:
- |   |                            |
|---|----------------------------|
| FOOTINGS-----                                   | 2" TOP & 3" BOTTOM & SIDES |
| COLUMNS & PEDESTALS-----                        | 1-1/2" CLEAR OF TIES       |
| SLAB FACES NOT EXPOSED TO WEATHER OR EARTH----- | 3/4"                       |
| SLAB FACES EXPOSED TO WEATHER-----              | 1-1/2"                     |
| A. #5 AND LESS-----                             | 1-1/2"                     |
| B. #6 AND GREATER-----                          | 2"                         |
- NOTE: SLAB ON GRADE W/R OR REINFORCEMENT EACH WAY SHALL BE 2" CLEAR FROM TOP OF SLAB. SEE EARTH SUPPORTED SLABS SECTION BELOW.
- 4.11 COLUMN, PEDESTAL AND WALL VERTICAL REINFORCING: DOWEL TO FOUNDATION WITH HOOKED BARS OF SAME SIZE AND SPACING AS VERTICAL REINFORCING.
- 4.12 WELDED WIRE REINFORCEMENT (WWR): ASTM A1064. MINIMUM LAP AND EMBEDMENT TO BE THE GREATER OF ONE CROSS WIRE SPACING PLUS 2 INCHES OR 6 INCHES.
- 4.13 EARTH SUPPORTED SLABS:

- 4" THICK, REINFORCED WITH 6X6 W2.9/W2.9 WWR FLAT SHEETS SUPPORTED 2" CLEAR OF TOP OF SLAB, UNLESS NOTED. WWR TO BE CHAIRED AT 36 INCHES EACH WAY MINIMUM. SEE FOUNDATION NOTES FOR SUBGRADE REQUIREMENTS.
- 6" THICK SLAB IN BUS SHOP AREA REINFORCED WITH #4@2 EACH WAY CHAIRED 2" CLEAR OF TOP OF SLAB WITH PLASTIC CHAIRS WITH LARGE DIA BASE AT 36" ON CENTER.
- PROVIDE CONTROL AND CONSTRUCTION JOINTS AT MAXIMUM OF 3-4 TIMES SLAB THICKNESS IN FEET OR AS REQUIRED TO PREVENT UNCONTROLLED CRACKING PER ACI RECOMMENDATIONS. AS AN EXAMPLE, FOR A 4" THICK SLAB, PROVIDE JOINTS SPACED 12 - 16 FEET MAXIMUM. PANELS TO BE RECTANGULAR WITH LONG SIDE NOT TO EXCEED 1-1/2X SHORT SIDE. CUTTING SHOULD BE STARTED AS SOON AS CONCRETE HAS HARDENED SUFFICIENTLY TO PREVENT AGGREGATE FROM BEING DISLODGE. CONTRACTOR SUBMIT PLAN SHOWING LOCATION OF CONSTRUCTION AND CONTROL JOINTS.
- FLOOR DESIGN AND CONSTRUCTION BASIS IS ACI 302 AND 360, AND IT IS UNREALISTIC TO EXPECT CRACK-FREE OR CURL-FREE FLOORS. IT IS NORMAL TO EXPECT SOME AMOUNT OF CRACKING AND CURLING IN THE SLAB ON GRADE, AND SUCH OCCURRENCE DOES NOT NECESSARILY REFLECT ADVERSELY ON EITHER THE ADEQUACY OF THE FLOOR DESIGN OR THE QUALITY OF ITS CONSTRUCTION.
- EARTH SUPPORTED SLABS SHALL BE MOIST CURED FOR A MINIMUM OF SEVEN DAYS. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION. CURING COMPOUNDS, UNLESS NOTED, SHALL BE A MINIMUM OF CLEAR, WATERBORNE, MEMBRANE-FORMING CURING COMPOUND MEETING ASTM C 309, TYPE 1, CLASS B, SELF-DISPERSING, CERTIFIED BY CURING COMPOUND MANUFACTURER TO NOT INTERFERE WITH BONDING OF FLOOR COVERING.
- WHERE CONTROL JOINTS TERMINATE INTO NON-PARALLEL CONTROL JOINTS PROVIDE 2#4 X 6'-0" BARS MID DEPTH OF SLAB PERPENDICULAR TO TERMINAL CONTROL JOINT.
- PROVIDE 2#4 X 6'-0" BARS MID DEPTH OF SLAB AT REENRANT CORNERS.

- 4.14 CAST IN PLACE ALL SLEEVES AND INSERTS.
- 4.15 NO CONDUIT OR PIPE SHALL BE CAST IN THE SLAB ON GRADE WITHOUT THE WRITTEN APPROVAL OF STRUCTURAL DESIGN GROUP.

### 5.0 STRUCTURAL STEEL

- 5.1 FABRICATE AND ERECT ALL STRUCTURAL STEEL IN ACCORDANCE WITH AISC "SPECIFICATION FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
- 5.2 THE STEEL FRAME IS "NON-SELF-SUPPORTING". ADEQUATE TEMPORARY SUPPORT MUST BE PROVIDED BY THE CONTRACTOR UNTIL REQUIRED CONNECTIONS OR ELEMENTS ARE IN PLACE.
- 5.3 STRUCTURAL STEEL: ASTM A992 FOR WIDE FLANGE BEAMS AND COLUMNS; ASTM A36 FOR CHANNELS, STIFFENER PLATES, BASE PLATES, COLUMN CAP PLATES, BEAM CONNECTION PLATES AND STEEL ANGLES.

- 5.4 WELDED CONNECTIONS: E70XX ELECTRODES, MINIMUM SIZE FILLET WELD 3/16". WELDING QUALIFICATION, PROCEDURES AND PERSONNEL SHALL BE CERTIFIED ACCORDING TO AWS D1.1. THE STRUCTURAL WELDING CODE - STEEL.
- 5.5 THREADED AND PLAIN STEEL RODS: ASTM A36
- 5.6 ANCHOR RODS: ASTM F1554 GRADE 36 ANCHOR AND HEAVY HEX NUT OR ASTM F1554 GRADE 35 ANCHOR AND HEAVY HEX NUT WITH SUPPLEMENTARY REQUIREMENT S1, UNLESS OTHERWISE INDICATED.
- 5.7 ALL STRUCTURAL STEEL, INCLUDING EXPOSED BOLTS, NUTS, WASHERS OR ANCHOR RODS, EXPOSED TO WEATHER IN THE FINAL CONFIGURATION OF THE STRUCTURE SHALL BE HOT-DIP GALVANIZED, UNLESS NOTED, PER ASTM A 123/A 123M. VENT HOLES SHALL BE FILLED AND GROUND SMOOTH AFTER GALVANIZING. DAMAGE TO GALVANIZING SHALL BE PAINTED WITH GALVANIZING REPAIR PAINT, SSPC-PAINT 20. SEE 05120 SPECIFICATION FOR PAINT REQUIREMENTS FOR STEEL THAT IS GALVANIZED AND PAINTED.
- 5.8 ALL STEEL EXPOSED TO WEATHER, INCLUDING STEEL LINTELS FOR MASONRY OPENINGS, EXCEPT WHERE FABRICATED OF APPROVED CORROSION-RESISTANT STEEL OR OF STEEL HAVING A CORROSION RESISTANT OR OTHER APPROVED COATING, SHALL BE PROTECTED AGAINST CORROSION WITH AN APPROVED COAT OF PAINT, ENAMEL, OR OTHER APPROVED PROTECTION.
- 5.9 STEEL STAIRS AND ASSOCIATED EMBEDS NOT SPECIFICALLY DETAILED ON THE DRAWINGS SHALL BE DESIGNED TO RESIST THE PROJECT DESIGN LOADS INDICATED ABOVE, BY THE CONTRACTOR, UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED. STAIRS SHALL BE DESIGNED IN ACCORDANCE WITH THE NAAMM METAL STAIR MANUAL AND AISI AND AS TESTED BE AS TESTED. ALL STAIRS SHALL BEAR THE SEAL OF THE PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED AND SHALL BE INCLUDED WITH THE STAIR SHOP DRAWINGS. STAIR SHOP DRAWINGS THAT DO NOT CONTAIN DESIGN CALCULATIONS (MEMBERS, CONNECTIONS, ANCHORAGE, ETC.) WILL BE RETURNED UNCHECKED AS AN INCOMPLETE SUBMITTAL.

- A. STAIR FRAMING SHALL BE CAPABLE OF WITHSTANDING STRESSES RESULTING FROM RAILING LOADS IN ADDITION TO LOADS SPECIFIED ABOVE.
  - B. LIFT DEFLECTION OF TREADS, PLATFORMS, AND FRAMING MEMBERS TO 1/360 OR 1/4 INCH, WHICHEVER IS LESS.
  - C. DESIGN OF STAIR FRAMING SHALL ALSO COMPLY WITH AISC'S "STEEL DESIGN GUIDE SERIES 11: FLOOR VIBRATIONS DUE TO HUMAN ACTIVITY."
- 5.10 ALL HANDRAILS, GUARDRAILS, AND EMBEDS NOT SPECIFICALLY DETAILED ON THE DRAWINGS SHALL BE DESIGNED IN ACCORDANCE WITH THE APPLICABLE BUILDING CODE NOTED ABOVE, BY THE CONTRACTOR, UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED. CALCULATIONS SHALL BEAR THE SEAL OF THE PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED AND SHALL BE SUBMITTED FOR THE FILES OF THE ARCHITECT AND SHALL BE INCLUDED WITH THE SHOP DRAWINGS.

### 6.0 STEEL JOISTS

- 6.1 DESIGN, FABRICATE, AND ERECT STEEL JOISTS IN ACCORDANCE WITH THE STEEL JOIST INSTITUTE (SJI).
- 6.2 PROVIDE A MINIMUM END BEARING ON STEEL SUPPORTS AS REQUIRED BY SJI. STAGGER THE ENDS OF JOIST IF NECESSARY. GENERAL CONTRACTOR COORDINATE METAL DECK SPLICE LOCATION TO CENTER OVER JOIST.
- 6.3 PROVIDE HORIZONTAL AND DIAGONAL BRIDGING IN ACCORDANCE WITH SJI TO PROVIDE ADEQUATE JOIST CHORD BRACING.
- 6.4 AT JOIST PARALLEL TO MASONRY WALL, WELD EACH BRIDGING ROW TOP AND BOTTOM TO AN ANGLE 3X3X3/16X0'-6". ANCHOR ANGLE WITH TWO 3/8" DIAMETER SLEEVE ANCHORS WITH TWO-INCH EMBEDMENT INTO WALL.
- 6.5 AT JOISTS PARALLEL TO BEAMS, ANCHOR BRIDGING ROWS BY WELDING TO BEAMS.
- 6.6 DESIGN ROOF JOISTS TO RESIST THE WIND UPLIFT LOADING FROM THE COMPONENTS AND CLADDING WIND LOAD TABLE PROVIDED IN THE TYPICAL DETAILS.
- 6.7 IN ADDITION TO THE LOADS INDICATED IN THE STRUCTURAL DRAWINGS, JOISTS SHALL BE DESIGNED FOR CONCENTRATED LOADS IN EXCESS OF 100 LB HUNG FROM OR SUPPORTED BY JOISTS. REFER TO MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS AND SPECIFICATIONS FOR LOADING INFORMATION AND LOCATION. LOADING AS REQUIRED BY OTHER SUBCONTRACTORS, SUCH AS FIRE PROTECTION, SHALL BE COORDINATED BY THE GENERAL CONTRACTOR.
- 6.8 JOIST SEATS FOR JOIST BEARING ON BEAMS OR WALLS IN LINE WITH LATERAL FRAMES OR SHEAR WALLS SHALL BE DESIGNED FOR A ROLLOVER FORCE EQUAL TO 30% OF THE DEAD LOAD OF THE JOIST REACTION, UNLESS NOTED OTHERWISE. IN NO CASE SHALL THE ROLLOVER FORCE BE LESS THAN 200 PLF PERPENDICULAR TO THE JOIST SEAT.
- 6.9 JOISTS AND JOIST SEATS SHALL BE DESIGNED FOR AXIAL LOADS WHERE INDICATED IN THE STRUCTURAL DRAWINGS.
- 6.10 DESIGN CALCULATIONS SHALL BE SUBMITTED FOR THE FILES OF THE ARCHITECT AND STRUCTURAL ENGINEER FOR JOISTS WITH CANTILEVERS OR CONCENTRATED LOADS AND FOR JOIST SIZES FOR WHICH STANDARD SJI LOAD TABLES ARE NOT APPLICABLE. CALCULATIONS SHALL BEAR THE SEAL OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED. SHOP DRAWINGS CONTAINING JOISTS FOR WHICH CALCULATIONS HAVE NOT BEEN RECEIVED WILL BE RETURNED UNCHECKED AS AN INCOMPLETE SUBMITTAL.
- 6.11 LIGHT GAUGE METAL FRAMING, SUSPENDED CEILING, LIGHT FIXTURES, DUCTS, PIPING OR OTHER UTILITIES SHALL NOT BE SUPPORTED BY THE JOIST BRIDGING.

### 7.0 STEEL DECK

- 7.1 DECK PROPERTIES AND ATTACHMENTS SHALL BE IN ACCORDANCE WITH THE STEEL DECK INSTITUTE (SDI).
- 7.2 DECK SHALL BE CONTINUOUS OVER THREE OR MORE SPANS. WHERE DECK SPANS LESS THAN THREE SPANS ARE REQUIRED, THEY SHOULD BE CLEARLY MARKED ON THE SHOP DRAWINGS.
- 7.3 DESIGN ROOF DECK TO RESIST THE WIND UPLIFT LOADING FROM THE COMPONENTS AND CLADDING WIND LOAD TABLE PROVIDED IN THE TYPICAL DETAILS.
- 7.4 FORM DECK: 3/7/16" THICK CONCRETE SLAB ON NON-COMPOSITE STEEL FORM DECK, 26 GAGE, 9/16" DEEP WITH 6X6 W2.1/W2.1 WWR AT MID DEPTH OF SLAB (4" TOTAL). DECK SHALL BE CONNECTED TO SUPPORTING STRUCTURE WITH 5/8" DIAMETER PIDDLE WELDS [WITH WELD WASHERS FOR DECKS THINNER THAN 22 GAGE] OR #12 TEK SCREWS SPACED AT 10" ON CENTER.

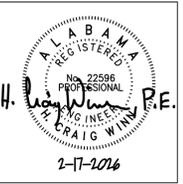
- 7.5 CONTRACTOR OPTION TO USE HILTI S-SLC 02 M HWH IN LIEU OF #10 SIDELAP SCREWS AND HILTI FASTENERS IN LIEU OF #12 TEK SCREWS AS FOLLOWS: HILTI S-MD 12-24x1-5/8 HWH SCREWS FOR STUDS, JOISTS AND BEAMS WITH 1/6 GA ≤ tF ≤ 1/4"; HILTI X-HEN 24 PINS FOR JOISTS AND BEAMS WITH 1/8" ≤ tF ≤ 3/8"; & HILTI X-ENP 19 L15 PINS FOR BEAMS WITH tF ≥ 1/4".
- 7.6 WELDED CONNECTIONS: E60XX ELECTRODES. WELDING QUALIFICATION, PROCEDURES AND PERSONNEL SHALL BE CERTIFIED ACCORDING TO AWS D1.3, THE STRUCTURAL WELDING CODE - SHEET STEEL.
- 7.7 NO CONDUIT OR PIPE SHALL BE CAST IN THE SLAB WITHOUT THE WRITTEN APPROVAL OF STRUCTURAL DESIGN GROUP. CONDUIT SHALL NOT BE PLACED IN SLABS REQUIRING A FIRE RESISTANCE RATING OR UL RATING.
- CONDUIT AND PIPES SHALL HAVE A MINIMUM OF 18" CLEAR BETWEEN THE CONDUIT/PIPES.
- OUTER LIMITS OF CONDUIT, CROSSING CONDUIT, AND COUPLERS SHALL BE T/3 MAXIMUM AND LOCATED WITHIN THE MIDDLE THIRD OF THE SLAB (WHERE T IS THE SLAB THICKNESS).
- THE CONTRACTOR SHALL COORDINATE WITH THE ARCHITECT AND ELECTRICAL ENGINEER AS REQUIRED TO ENSURE PANEL LAYOUTS AND ELECTRICAL ROOMS ARE LARGE ENOUGH TO ACCOMMODATE CONDUIT CLEARANCE AND SPACING REQUIREMENTS WHERE CONDUITS TURN UP AND OUT OF THE SLAB.
- CONDUIT SHALL NOT BE PLACED WITHIN 24" OF THE EDGE OF A BEAM.
- CONDUIT SHALL BE SO FABRICATED AND INSTALLED THAT CUTTING, BENDING OR DISPLACEMENT OF REINFORCEMENT FROM ITS PROPER LOCATION WILL NOT BE REQUIRED.
- ADDITIONAL SLAB REINFORCING CONSISTING OF #3@10, #4@18 OR 4X4 W4.0/W4.0 WWR ABOVE AND BELOW THE CONDUIT, EXTENDING 2'-0" BEYOND THE CONDUIT EACH WAY, SHALL BE PLACED AT CONDUIT LOCATIONS, IN ADDITION TO THE SCHEDULED SLAB REINFORCING.

### 8.0 MASONRY

- 8.1 MASONRY CONSTRUCTION SHALL CONFORM TO TMS 602-16 SPECIFICATION.
- 8.2 ALL MASONRY MATERIALS AND CONSTRUCTION SHALL COMPLY WITH THE RECOMMENDATIONS OF BRICK INSTITUTE OF AMERICA (BIA) AND NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA) AND MINIMUM REQUIREMENTS ESTABLISHED BY THE LOCAL BUILDING CODE.
- 8.3 MINIMUM COMPRESSIVE STRENGTH OF CONCRETE MASONRY UNIT (F'm) SHALL BE 2000 PSI AT 28 DAYS.
- 8.4 NET COMPRESSIVE STRENGTH FOR EACH CMU UNIT SHALL MEET OR EXCEED 2000 PSI AT 28 DAYS. FOR TYPE N MORTAR, NET COMPRESSIVE STRENGTH FOR BLOCK SHALL BE GREATER THAN 2650 PSI.
- 8.5 ALL MASONRY SHALL BE NORMAL WEIGHT IN ACCORDANCE WITH ASTM C90.
- 8.6 GROUT COMPRESSIVE STRENGTH SHALL BE 2500 PSI AT 28 DAYS. GROUT SHALL ADDITIONALLY COMPLY WITH TABLE 7 OF ACI 530.1/ASCE 6/TMS 602 FOR DIMENSIONS OF GROUT SPACES AND POUR HEIGHTS. COURSE GROUT SHALL BE USED WHERE POSSIBLE.
- 8.7 MORTAR SHALL BE TYPE S OR M. TYPE N MORTAR ALLOWED ONLY IF CMU NET COMPRESSIVE STRENGTH GREATER THAN 2650 PSI.
- 8.8 ALL MASONRY SHALL BE RUNNING BOND, UNLESS NOTED.
- 8.9 ALL BLOCK CELLS AND CAVITIES BELOW GRADE SHALL BE FILLED WITH CONCRETE OR GROUT.
- 8.10 MASONRY REINFORCING LAP SPLICE LENGTHS PER SCHEDULE. SEE MASONRY LAP SPLICE LENGTHS TYPICAL DETAIL.
- 8.11 THE CONTRACTOR SHALL PROVIDE DETAILED SHOP DRAWINGS OF THE CMU REINFORCEMENT.
- A. SHOP DRAWINGS SHALL INCLUDE AN ELEVATION VIEW OF EACH REINFORCED WALL WITH ALL VERTICAL AND HORIZONTAL REINFORCING AS WELL AS WALL OPENINGS/PENETRATIONS SHOWN. REINFORCING SHOP DRAWINGS NOT CONTAINING THESE ELEVATION DRAWINGS WILL BE RETURNED AS AN INCOMPLETE SUBMITTAL.
- 8.12 MODIFY CMU BLOCKS AS REQUIRED TO INSTALL REINFORCING AS NOTED/SHOWN.
- 8.13 MASONRY CONTROL JOINTS SHALL BE AS INDICATED ON THE ARCHITECTURAL DRAWINGS. FOR ADDITIONAL INFORMATION ON CONTROL JOINTS SEE TYPICAL DETAILS.
- 8.14 WHEN REINFORCING IS SPECIFIED, PROVIDE AT EACH SIDE OF CONTROL JOINTS, OPENINGS AND WALL ENDS.
- 8.15 EXTEND REBAR AT WALL OPENINGS A MINIMUM OF 2'-0" PAST THE OPENING AT ALL CORNERS, UNLESS NOTED. AT WINDOWS PROVIDE A MINIMUM OF #4 BARS AT THE SILL OF THE WINDOWS.
- 8.16 AT CMU PARTITIONS OVER 8'-0" TALL, SUPPORTED BY SLAB ON GRADE, PROVIDE THICKENED SLAB PER TYPICAL DETAILS.
- 8.17 PROVIDE WALL TOP SUPPORT AT 8'-0" OC FOR ALL INTERIOR NON-LOAD BEARING CMU WALLS WHERE CONTINUOUS WALL SPAN BETWEEN PERPENDICULAR BRACING WALLS EXCEEDS 20'-0".
- 8.18 GROUT SHALL COMPLY WITH TABLE 7 OF ACI 530.1/ASCE 6/TMS 602 FOR DIMENSIONS OF GROUT SPACES AND POUR HEIGHTS.
- 8.19 PROVIDE HORIZONTAL JOINT REINFORCING IN REINFORCED MASONRY WALLS AS DIRECTED BY THE ARCHITECT. AT WALL CORNERS AND INTERSECTIONS, PROVIDE PREFABRICATED T AND L SHAPES. FIELD BENDING IS NOT PERMITTED. MINIMUM OF LADDER TYPE ZINC COATED CONFORMING TO ASTM A82 HORMANN & BARNARD 220 LADDER-MESH OR EQUIVALENT AT EVERY OTHER BLOCK COURSE ABOVE FOOTING. REINFORCEMENT SHOULD CONSIST OF TWO OR MORE LONGITUDINAL WIRES, NO. 9 GAUGE OR LARGER, WELDED WITH NO. 9 GAUGE OR LARGER CROSS WIRES. LAP SPLICE HORIZONTAL JOINT REINFORCING A MINIMUM OF 12".
- 8.20 PROVIDE DOVETAIL ANCHORS AT 16" O/C, UNLESS NOTED OTHERWISE, WHERE MASONRY WALLS ABUT CONCRETE SURFACES.
- 8.21 PROVIDE GROUT FILLED U-BLOCK AT TOP OF ALL CMU WALLS REINFORCED WITH 2 # 4 BARS CONTINUOUS, UNLESS NOTED.
- 8.22 WHERE MASONRY WALLS SUPPORT EARTH ON BOTH SIDES, BACKFILL EACH SIDE SIMULTANEOUSLY.

NEW BUS SHOP FOR  
BLOUNT COUNTY SCHOOLS  
3070 SWANN BRIDGE ROAD, CLEVELAND, ALABAMA 35049  
BLOUNT COUNTY BOARD OF EDUCATION

SHEET TITLE:  
GENERAL NOTES



PROJ. MGR.:	HCW
DRAWN:	ABS
DATE:	01-16-2026
REVISIONS	
△	ADDENDUM NO.1 02-17-2026

JOB NO. 25-46  
SHEET NO:  
**S1.0**  
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