Goodwyn Mills Cawood
1906 E Three Notch Street
Andalusia, Alabama 36421
T 334.222.2699
F 334.222.3573

TRANSMITTAL COVER SHEET

DATE: **APRIL 5, 2024**

TO: **ALL PLAN HOLDERS**

FROM: **PATSY STINSON**

PROJECT: **T-HANGAR BUILDING (REBID)**
BIBB COUNTY AIRPORT
FEMA PROJECT NO.: 435093
GMC PROJECT NO.: TBHM220024

RE: **ADDENDUM #1**

PLEASE COMPLETE BELOW AND RETURN IMMEDIATELY VIA EMAIL to:

PATSY STINSON
Email: patsy.stinson@gmcnetwork.com

I, the undersigned, hereby acknowledge receipt of this Addendum #1.

_____ _____
Authorized Representative Date

_____
Company Name

GMC

ADDENDUM NUMBER 1

T-HANGAR BUILDING (REBID)
BIBB COUNTY AIRPORT
FEMA PROJECT NO.: 435093
GMC PROJECT NO.: TBHM220024

I. General

- The following clarifications, revisions, additions are hereby made a part of same, and shall be incorporated in the Project Manual, Drawings, and Work of the Contract the same as if originally included in the Bid and Construction Documents.

- Bidders shall acknowledge receipt of this Addendum in writing, as provided on the Transmittal Cover Sheet and the Proposal Form.

- When a revision and/or addition is called for to the Drawings or Project Manual, they shall be fully coordinated with and carried through all applicable Drawings and portions of the Project Manual, including in part, all related Civil, Landscaping, Architectural, Structural, Electrical, and other Documents.

II. Contractor Questions (with response):

General

Question: I'm reviewing the plans and I noticed note 507 on sheet C4.01 it mentions radios. Typically, we do not use radios to communicate. Please confirm if this is a mandated requirement. If not, would cell phones be acceptable? If cell phones are acceptable, would intrinsically safe covers be needed to prevent interruption with air traffic control?
Response: Cell phone communication between personnel is acceptable. Intrinsically safe covers are not required. The foreman/superintendent will be required to have a radio on-site for communication with aircraft if necessary (see response below for additional information).

Question: What type of Radio would be required for our superintendent if cell phone use is permissible?
Response: Cell phones and common radios are permissible for contractor communication. However, the superintendent is required to have a commercially available radio capable of transmitting frequencies between 108 and 137 MHz (Airband). Please note that normal radio communications between contractor personnel will not be allowed on the Unicom control (123.075) or any other FAA frequency.

Question: Heavy & Rail Road Classification - Please confirm mandatory requirement for work on taxi lane.

Response: Waiting on confirmation from Alabama Licensing Board. Previous response from board listed below:
"If the building itself is 51% or more of the project, then a BC classification would work. I did notice some taxiway work in the plans, be sure to have properly licensed folks performing that work."

Question: Is ProAm Steel an acceptable building supplier?
Response: Any provider that can meet project specifications is acceptable.

Proposal A

Question: Fire Extinguishers- Do they need to be type K?
Response: Provide fire extinguishers complying with UL 711 and NFPA 10. Multi-purpose dry chemical type, UL 299, cast steel tank, Class 2A:10B:C, 10-pound nominal capacity. Provide mounting hardware as required.

Question: Construction Fees - Please clarify required.
Response: Contractor will be responsible for all construction fees associated with H-100 specification items.

Question: Clear Height on Door- Please clarify.
Response: 12'-0".

Question: The existing haul road is a graded dirt road is that what is expected once the project is complete or do we have to gravel pave the entirety of the road?
Response: Existing condition (or better) is expected once the project is complete.

Question: Can we dispose of the spoils on site, there seems to be an area where they are currently constructing building a pad or parking area near the existing hanger.
Response: Yes. On-site location and grading requirements will be specified by Owner/Engineer.

Question: Verify that the hanger doors are bi-parting manual doors
Response: T-Hangar building will have rolling (sliding) doors.

Question: What is the eve height of the T hanger
Response: 14'-4".

Question: Are the fire extinguishers required to be Purple K type?
Response: See previous response.

Question: The existing asphalt has a rolled edge, are we to notch back into it to tie in the concrete driveways?
Response: Yes. Refer to Detail "B" on plan sheet C5.01.

GMC

Question: If the existing asphalt is damaged due to truck traffic crossing, can it be replaced with concrete?
Response: Potentially. Concrete paving section would need to be approved by Owner/Engineer.

Question: Are the roof panels for the hangar building to be Galvalume or color painted? If color painted, what type of coating, Silicone Polyester or Kynar?
Response: Galvalume

Question: Request to clarify T-Hangar eave height.
Response: See previous response.

Question: Request to clarify metal sheeting on T-Hangar. (*26 ga galv PBR screw-down roof? 26 ga painted PBR walls?)*
Response: Correct. See Section H-100, Paragraph L, M, and Q, of the specifications.

Question: Will the T-Hangar specify gutters and downspouts?
Response: No.

Question: Are the interior partition walls in the T-Hangar going to be sheeted on one side only? Do the partition walls call for insulation? What is the metal panel spec for the partition walls?
Response: Interior partitions sheeted on one side only, 26 ga PBR. No insulation.
See Section H-100, Paragraph M and Q, of the specifications.

Question: The drawings call for R-19 insulation in the roof of the T-Hangar. R-19 is not suggested for a screw down roof, rather an R-9 thru R-13. (3-inch to 4-inch VRR insulation)
Response: Provide minimum R-13 insulation for roof.

Question: Is there a paint spec on the building and doors, or is it shop primer only?
Response: See Section H-100, Paragraph Q, of the specifications for paint spec information.

Proposal B

Question: Request to clarify metal sheeting specifications on hydraulic door and existing hangar building.
Response: See Section H-100, Paragraph U, of the specifications. Specifications and installation in accordance with door manufacturer's recommendation.

Question: Will drawings for the existing hangar building be made available in order to verify existing slab and building dimensions?
Response: No historic drawings available.

Question: Is Powerlift Hydraulic Doors an approved equal?
Response: Provided Powerlift Hydraulic Doors can meet plan requirements and specifications. See response below for structural requirements. Formal approval will be contingent upon review of shop drawing submittal.

Question: In regard to the hydraulic door, is there an option to determine appropriate protocol as to whether it should be a stand-alone door OR if the existing building structure can be utilized if suitable to handle proper loads and reactions?
Response: No. Will need to be bid as stand-alone door with structural support independent of the existing building.

Proposal C (Base Bid)

Question: Can you clarify the type, size and layout of the project trailer? Example is it a job office type of trailer or a Connex or 18-wheeler trailer?
Response: Job office/project type. Open layout. Approximately 12'x40' (min).

Question: Are there any MEP requirements?
Response: Electrical only.

Question: Are the existing trailers, airplane, & vehicles going to be removed by the owner prior to construction?
Response: Yes.

Proposal C (Alt #1)

Question: Is this to be a PEMB?
Response: Yes.

Question: What is the eve height?
Response: 14'-0".

Question: What is the roof pitch?
Response: 1/12.

Question: Is the roof going to be screw down like the hanger or standing seam?
Response: Screw down.

GMC

Question: Is the roof to be painted or galvalume?
Response: Galvalume.

Question: What size is the overhead roll up door and is it to be manual or motorized?
Response: 12'x12' motorized.

Question: Are there going to be any MEP requirements?
Response: Electrical only.

Question: How far is it to set off of the existing building?
Response: 50' minimum. Exact location to be determined by Owner/Engineer.

Question: Is it to be priced per standard wind load or the alt 130mph wind load?
Response: Standard wind load.

Question: Specs for Metal Building/Trailers - Please provide so we are bidding based on same info.
Response: Specifications and installation in accordance with manufacturer's recommendation.

III. **Clarification**

- If the Successful bidder plans to subcontract a portion of the project, the bidder must submit to the Owner evidence of the affirmative steps taken to utilize small, minority and women's businesses.

Affirmative Socioeconomic
"If subcontracts are to be let, the prime contractor is required to take all necessary steps identified in 2 C.F.R. § 200.321(b)(1)-(5) to ensure that small and minority businesses, women's business enterprises, and labor surplus area firms are used when possible."

§ 200.321 Contracting with small and minority businesses, women's business enterprises, and labor surplus area firms. (a) The Non-Federal entity must take all necessary affirmative steps to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible. (b) Affirmative steps must include:

(1) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;

(2) Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;

(3) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;

(4) Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises;

(5) Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce; and

(6) Requiring the prime contractor, if subcontracts are to be let, to take the affirmative steps listed in paragraphs (1) through (5) of this section.

Documentation of these solicitation efforts must be detailed in order to allow for satisfactory review. Such documentation might include copies of solicitation letter/emails. The proposed prime contractor is strongly encouraged to follow up each written, or email solicitation with at least 1 logged phone call.

IV. Changes to Project Manual

- Added Report of Geotechnical Exploration.

V. Changes to Plans

- Revised plan sheet A1.01 "T-Hangar Building Layout".

VI. Conclusion

- This is the end of Addendum Number 1

Centreville Airport 2022 Taxiway Construction

Centreville, Bibb County, Alabama

May 16, 2022

REPORT OF GEOTECHNICAL EXPLORATION

Prepared By

Goodwyn Mills Cawood, LLC
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GMC PROJECT NUMBER: GMGM220020

Goodwyn Mills Cawood

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May 16, 2022

Taylor Bone, PE
Goodwyn Mills Cawood, LLC
2400 5th Avenue South
Suite 200
Birmingham, Alabama 35233

RE: REPORT OF GEOTECHNICAL EXPLORATION
CENTREVILLE AIRPORT 2022 TAXIWAY CONSTRUCTION
CENTREVILLE, BIBB COUNTY, ALABAMA
GMC PROJECT GMGM220020

Dear Mr. Bone,

Goodwyn Mills Cawood, LLC (Geotechnical & Construction Services Division) is pleased to provide this report of geotechnical exploration performed for the above referenced project. This report includes the results of field and laboratory testing and pavement recommendations.

We appreciate the opportunity to perform this study on this phase of the project for you and look forward to continued participation during the construction phase of this project. If you have any questions pertaining to this report, or if we may be of further service, please do not hesitate to call.

Sincerely,
GOODWYN MILLS CAWOOD, LLC

Matthew Gonzales
Staff Geotechnical Professional

Michael J. McNeill, PE
Senior Geotechnical Engineer
Licensed Alabama 26331

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APPENDIX:

1.0 PROJECT INFORMATION AND SCOPE OF WORK

1.1 Project Information

A geotechnical exploration has been conducted for the proposed Centreville Airport Taxiway Construction project to be located at the Bibb County Airport in Centreville, Bibb County, Alabama. At the time of this study, the land was currently cleared. The area had been previously developed with a T-hangar and gravel taxiway. The structures had been demolished and some debris remained across the site.

1.2 Scope of Work

The purpose of this exploration was to perform a general evaluation of the subsurface soil conditions along the proposed taxiway alignment and to provide site work and pavement recommendations. The scope of the exploration and evaluation included a site reconnaissance, field and laboratory testing, and an engineering evaluation of the foundation materials.

The scope of services for the geotechnical study did not include any environmental assessment for the presence or absence of wetlands or hazardous or toxic materials in the soil, surface water, groundwater, or air, on or below or around this site. Any statements in this report or on the test pit records regarding odors, colors, or unusual or suspicious items or conditions are strictly for the information of the client.

2.0 SITE AND SUBSURFACE CONDITIONS

2.1 Site Geology

Published geologic information indicates the site is underlain by alluvial, coastal and low terrace deposits, which consist of interbedded sands, clays, and quartz gravels. These soils consist of fine to course quartz sand with clay lenses and varying amounts of shell fragments. Gravel composed of quartz and chert pebbles and assorted metamorphic and igneous rock fragments in streams near the Piedmont. In areas of the Valley and Ridge province gravel composed of angular to subrounded chert, quartz, and quartzite pebbles. Coastal deposits include fine to medium quartz sand with shell fragments and accessory heavy minerals along Gulf beaches and fine to medium quartz sand, silt, clay, peat, mud and ooze in the Mississippi Sound, Little Lagoon, bays, lakes, streams, and estuaries.

2.2 General

The site was explored with four (4) soil test borings located in the proposed taxiway. The locations were selected and located in the field by GMC personnel. The approximate locations of the borings are presented on the Boring Location Plan included in the Appendix. Field-testing employed by GMC was in general accordance with ASTM standards or generally accepted methods.

The borings were performed on April 6, 2022, using a Mobile B47 trailer-mounted drill rig equipped with a rotary head and hollow stem augers (HSA). Soils were sampled using a two-inch outside diameter split barrel sampler driven with a manual hammer in general accordance with the procedures for "Penetration Test and Split-Barrel Sampling of Soils" (ASTM 1586). All samples were identified according to project number, boring number and depth, and were placed in polyethylene plastic wrapping to protect against moisture loss.

2.3 Subsurface Conditions

Four (4) soil test borings were performed along the proposed taxiway alignment. Approximately 2 to 3 inches of organic laden material was encountered across the site. Below the organic laden material, silty sand, clayey sand, and clayey sand with gravel (Unified Soil Classification System group symbol SM, SC) was encountered to boring termination depth of 5.5 feet each. Standard Penetration Test (SPT) N-values in the sands and clays ranged from 7 to over 100 blows per foot (bpf).

The subsurface descriptions contained herein are of a generalized nature to highlight the major soil stratification features and soil characteristics. The boring records included in the Appendix should be reviewed for specific information as to individual boring locations. The stratification shown on the boring records represents conditions only at the actual boring locations. Variations may occur and should be expected between boring locations. The stratifications represent the approximate boundary between subsurface materials, and the transition may be gradual.

2.4 Groundwater Information

Groundwater was not encountered in the borings at the time of exploration. The borings were backfilled prior to leaving and therefore no long-term groundwater levels were recorded. It is important to note that the groundwater levels may not have stabilized in the test pits. Furthermore, groundwater levels may vary due to seasonal conditions, proximity to bodies of water, and recent rainfall. Groundwater may interfere with shallow excavations; also, zones of "perched" water may be encountered during wetter portions of the year above less permeable soils. Groundwater depths at individual test pits can also be found in the boring records in the Appendix.

2.5 Laboratory Analyses

The laboratory testing program included visual classification of all soil samples and laboratory testing of selected samples. Atterberg limits, grain size analysis, and natural moisture content tests were performed on selected samples. The laboratory testing program was conducted in general accordance with applicable ASTM standards and the results are summarized in the Appendix.

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 Site Preparation

Site preparation should begin with the stripping and removal of all unsuitable materials from the site. This will include, but not be limited to, surface vegetation, pavement materials, organic laden material, gravel, and any root mat. Deeper areas of unsuitable soils may be present in other areas of the site. We anticipate that 4 inches of stripping should remove most of the organics. Oftentimes the upper root mat can be stripped, leaving little organic matter, requiring only raking of the soil to remove additional organics, followed by recompaction in-place. In addition, scattered debris remaining from the demolition of the previous structures was observed on the ground surface across the site. Foundations, utilities, and other buried debris may be encountered at the site. If encountered, these should be removed from within the structural areas.

Any areas that are at final subgrade elevation (currently or as a result of cut), or areas that are to receive fill, should be observed and evaluated by the Geotechnical Engineer. After stripping and excavation to the proposed subgrade level and prior to any fill placement, the area should be proofrolled with a loaded tandem axle dump

truck. Soils that are observed to rut or deflect excessively under the moving load should be undercut and replaced with properly compacted fill. The proofrolling, undercutting, and filling activities should be witnessed by a qualified representative of the geotechnical engineer and should be performed during a period of dry weather.

The amount of undercutting will heavily depend on the season, prevailing weather conditions, and/or rainfall at or just before sitework takes place. During the wet season, the amount of undercutting may be greater, whereas in drier weather, lesser amounts of undercutting may be necessary, if recompaction or stabilization of soils left in place can be achieved. Undercut soils can likely be moisture conditioned and reused as fill, if drying conditions are favorable.

Additional undercutting and/or stabilization will likely be required if proper site maintenance, protection from surface water, and equipment traffic control are not implemented. At the end of each day, the grading contractor should "weatherproof" exposed soil subgrades, and provide positive drainage for surface water flow if inclement weather is expected. The contractor should have water trucks available to wet subgrades exposed to prolonged dry periods. Twisting and turning of construction equipment over exposed soils, especially during and after rain events, should be minimized, or otherwise degradation of the prepared subgrade soils will occur.

3.2 Time of Year Site Preparation Considerations

The time of the year that the sitework begins can affect the project considerably. In this area, the "wet" season is generally between the months of November to April, and the "dry" season from May to October. There are many considerations that need to be addressed prior to bidding a project that could affect the budget based on the time of year a project starts earthwork activities. The time of the year that the test pits were performed can provide a false sense of actual near surface conditions depending on the time of year and weather conditions. Below are considerations that should be addressed based on the time of the year earthwork is started.

"Wet" Season

During the "wet" season, the amount of undercutting may be greater, therefore resulting in greater excavation costs. The soils are typically proofrolled to determine their suitability for the placement of new fill or subgrade support. During the wet season, the surface soils have a higher moisture content and will tend to pump, therefore, hindering the placement of new fill. In addition, the drying time, time period between rain events, and temperature is not conducive to scarify soils, allow to dry, and recompact. At this time, the decision should be made by the owner to try either scarify/dry/compact the in-place soils, which could take time, or undercut and replace with suitable material, which could increase the sitework costs. Based on our experience, the amount of undercut could be an additional 1 to 2 feet (or greater in localized areas), whereas in drier weather, lesser amounts of undercutting may be necessary, if recompaction or stabilization of soils left in place can be achieved.

Some undercut soils are not always "unsuitable" soil and can be moisture conditioned and reused as fill in the deep areas, if drying conditions are favorable.

"Dry" Season

During the "dry" season, the surface soils have a lower moisture content and will tend to "bridge" or "crust" softer underlying soils. They will generally allow the placement of new fill, but the crust can break down if repeated passes with heavily loaded equipment is persistent. In addition, new fill from cuts or other sources may need to be moisture conditioned prior to compaction. The soils can dry significantly, requiring the addition of water for

proper compaction. Water trucks should be used, as necessary, by the contractor to condition the soils within the required specifications.

Contractor Responsibility

The grading contractors have the option of performing their own evaluation of the site conditions to assess the excavation considerations based on the time of year a project is bid. We strongly suggest that the grading contractors conduct their own exploration and evaluation of the site conditions and material management requirements to cost effectively develop the site.

Typically, due to the movement of heavy equipment and weather conditions, the subgrade becomes disturbed during construction. As a result, fine grained clayey soils have a tendency to lose shear strength and support capability. Therefore, additional effort on the Contractor's part will be required to reduce traffic and limit disturbance of soils. It is essential that the subgrade be restored to a properly compacted condition based on optimum moisture and density requirements. Restoration of the subgrade should be addressed in the project specifications.

3.3 Compacted Fill

All fill materials should be placed in loose lifts not exceeding 8-inches in thickness for larger compacting equipment and in 4-inch loose lifts for hand operated equipment with a maximum particle size of 3 inches. The following table summarizes the compacted fill requirements:

3.3.1 Compaction Requirements

Location	Test Method	Compaction Required (minimum)	Moisture Content
Subgrade Soils Below Base Material	ASTM D698 (Standard Proctor)	Upper 12 inches - 98% Below 12 inches – 95%	-/+3 percentage points of optimum moisture
Crushed Aggregate Base Course (P-209)	ASTM D1557 (Modified Proctor)	100%	-/+2 percentage points of optimum moisture

Select fill materials should meet the following characteristics:

3.3.2 Structural Fill Requirements

Property	Requirement
Organic Material	≤ 5%
Liquid Limit	‹ 50%
Plasticity Index	≤ 30%
Maximum Dry Density	≥ 95 lb/ft^3
Maximum Particle Size	3 inches or less
California Bearing Ratio	≥ 8.0

Samples of the proposed fill materials, either from on-site or borrow, should be provided to the geotechnical engineer for Proctor testing and evaluation prior to placement. The onsite and proposed borrow location soils are suitable for use as fill. Density tests should be performed to document compaction and moisture content of any earthwork involving soils and other applicable materials. Density tests should be performed frequently, with a recommended minimum of one test per 5,000 square feet per lift of fill. Fill material must meet the specified density and moisture requirements to be considered acceptable.

3.4 Weather and Construction Related Concerns

The clayey and silty soils encountered at this site are relatively sensitive to disturbances caused by construction traffic and changes in moisture content. During wet weather periods, increases in the moisture content of the soil can cause a significant reduction in the soil strength and support capabilities. In addition, soils that become wet may be slow to dry and thus significantly retard the progress of grading and compaction activities. It will be advantageous to perform earthwork construction activities during periods of low precipitation or when drying conditions are favorable.

4.0 PAVEMENT RECOMMENDATIONS

4.1 Traffic Information

Aircraft traffic information was provided by Matt Thomason with Goodwyn, Mills & Cawood, Inc (GMC). The table below indicates the generic aircraft (aircraft utilized in FAARFIELD), gross takeoff weight, and the annual departures with a 0.0% annual growth. If the aircraft traffic or departures change, the life of the pavement will be affected. If the traffic information changes, we request to review the design for compliance. The pavement design was performed utilizing FAARFIELD (v2.0) Airport Pavement Design software is attached in the Appendix.

4.1.1 Design Traffic

Generic Aircraft (As Modeled in FAARFIELD)	Gross Takeoff Weight (lbs)	Annual Departures
Single Wheel 2	2,400	3
S-3	3,260	4
S-5	6,025	2
S-10	10,950	42
S-12.5	11,575	1
D-15	17,110	7

4.2 Pavement Design

The pavement design is based on the traffic information provided and the proposed CBR of 8.0 or greater (Resilient Modulus of 12,000 psi). Site grading should be directed toward providing at least 12 inches of well-compacted fill (with CBR ≥ 8.0) below the subgrade level in pavement areas of the site.

4.2.1 Pavement Table – Recommended Pavement Section

Pavement Section	Thickness (in.)
424A-361 Superpave Bituminous Concrete Wearing Surface Layer, 3/4" Maximum Aggregate Size Mix, ESAL Range C/D	2.00
405-000 Tack Coat	--
424B-650 Superpave Bituminous Concrete Upper Binder Layer, 3/4" Maximum Aggregate Size Mix, ESAL Range C/D	2.00
401A-000 Bituminous Treatment A	--
301A-012 Crushed Aggregate Base Course, Type B, Plant Mixed, 6" Compacted Thickness	6.00
Structural Fill (CBR ≥ 8.0)	12.0
Proposed Total Thickness	**22.0**

The above pavement sections represent minimum recommended thickness for a pavement section designed for a 20-year life. However, periodic maintenance should be anticipated over the pavement design life. All pavement materials and construction procedures should conform to the *FAA Standards for Specifying Construction of Airports (Advisory Circular AC 150/5370-10H, or Latest Revision)* or the *State of Alabama Department of Transportation Standard Specifications for Highway Construction, Latest Edition.*

4.3 Construction Services

Field observations, monitoring, and quality assurance testing during earthwork and foundation installation are an extension of the geotechnical design. We recommend that Goodwyn, Mills, and Cawood, Inc. be allowed to continue our involvement in the project through these phases of construction. Quality assurance observations and testing related to earthwork should be performed by competent personnel under the general administrative supervision of a geotechnical engineer familiar with the design requirements and considerations of this project. We recommend that qualified geotechnical personnel observe proofrolling and associated undercutting, as required, foundation excavations and subgrades, evaluate the materials to be used as fill, and test the compaction of all fill and backfill.

5.0 LIMITATIONS OF REPORT

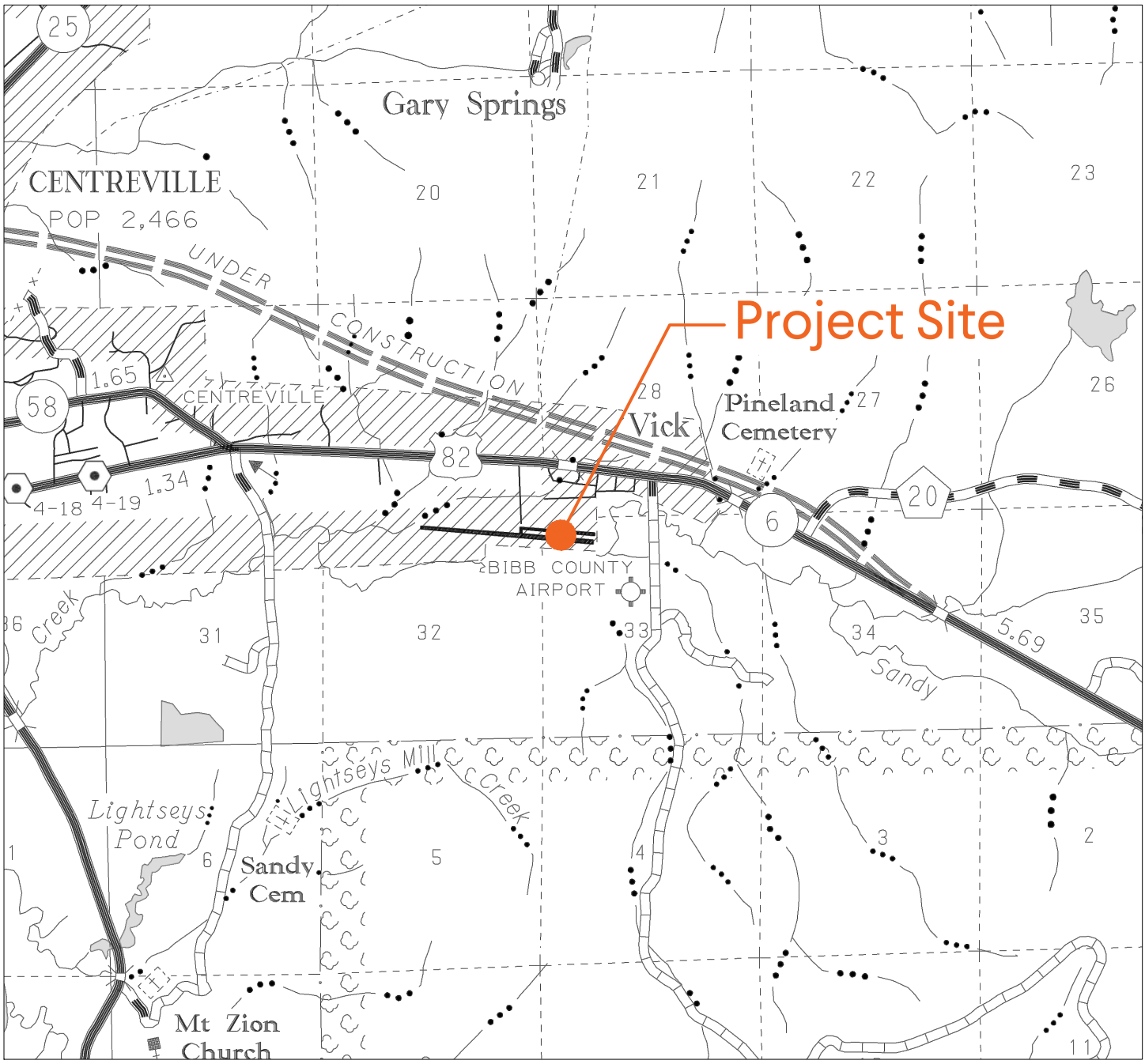
The recommendations submitted are based on the available soil information obtained by GMC and design details furnished by GMC for the proposed project. If there are any revisions to the plans for this project or if deviations from the subsurface conditions noted in this report are encountered during construction, we should be notified immediately to determine if changes in the foundation, or other, recommendations are required. If GMC is not retained to perform these functions, GMC cannot be responsible for the impact of those conditions on the performance of the project.

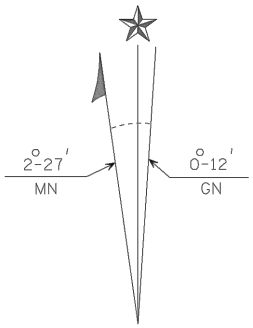
The geotechnical engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

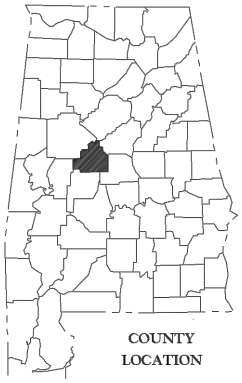
We emphasize that this report was prepared for design and informational purposes only and may not be sufficient to prepare an accurate construction budget. Contractors reviewing this report should acknowledge that the recommendations contained herein are for design and informational purposes only. A more comprehensive exploration and testing program would be required to assist the contractor in preparing the final building pad preparation, grading, and foundation construction budgets. In no case should this report be utilized as a substitute for development of specific earthwork specifications.

APPENDIX

Figure 1 – Highway Location Map
Figure 2 – Site Geology
Figure 3 – USGS Site Plan
Figure 4 – Boring Location Plan
Soil Classification Chart
Boring Records
Subsurface Diagram
Summary of Laboratory Results
FAARFIELD Pavement Design
Field and Laboratory Procedures







Reference: General Highway Map of Butler County, ALDOT, 2008

Centreville Airport 2022 Taxiway Construction
Centreville, Bibb County, Alabama

Highway Location Map

Figure 1

SUPPLEMENTAL DRAWING

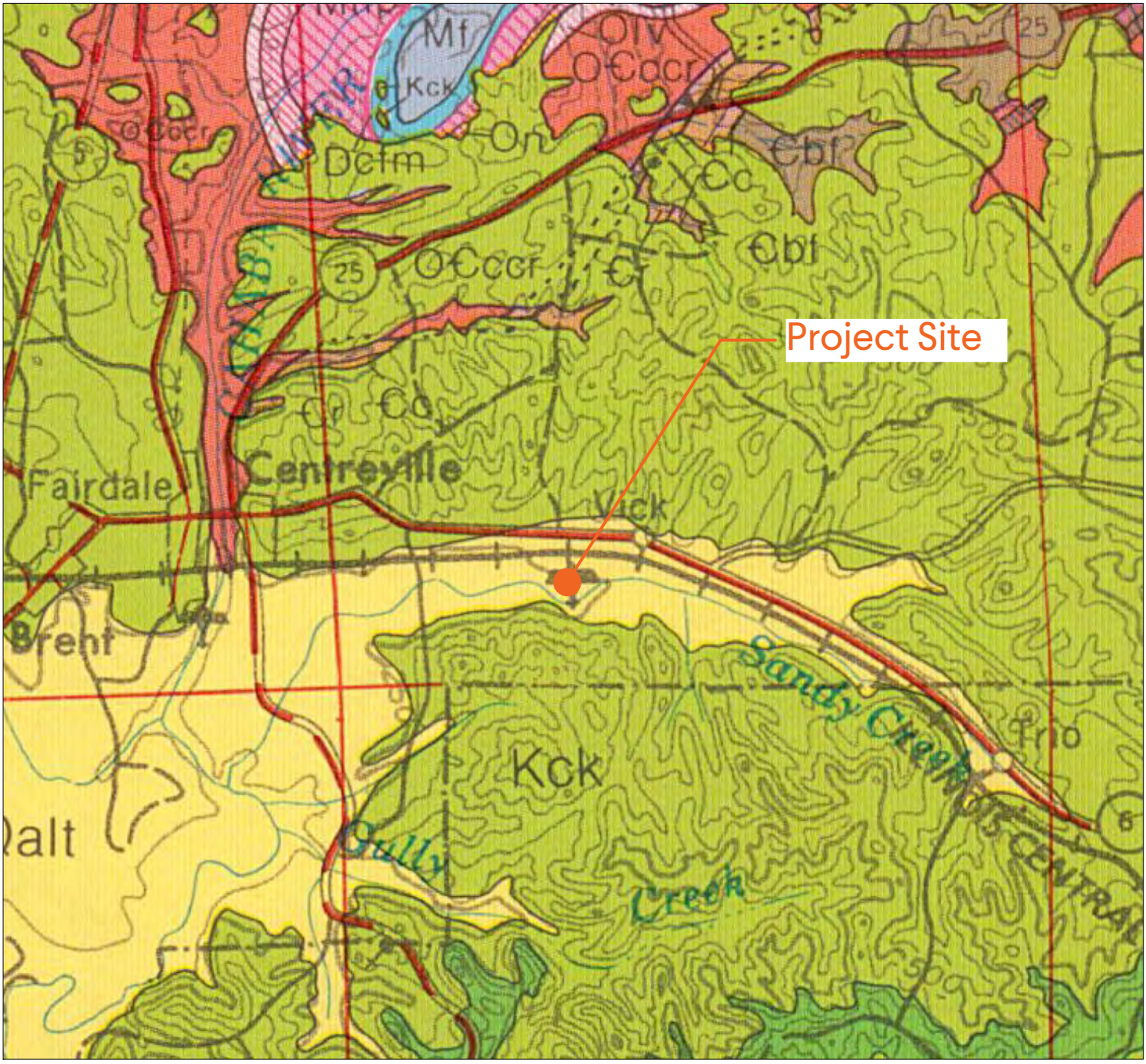
GMC # GMGM220020

4/21/2022

DRAWN BY: MG

2660 East Chase Lane, Suite 200
Montgomery, AL 36117
T 334.271.3200
GMCNETWORK.COM

GMC



Qalt

Alluvial, Coastal, and Low Terrace Deposits - Varicolored fine to coarse quartz sand containing clay lenses and gravel in places. Gravel composed of quartz and chert pebbles and assorted metmorphic and igneous rock fragments in streams near the Piedmont. In areas of the Valley and Ridge province gravel composed of angular to subrounded chert, quartz, and quartzite pebbles. Coastal deposits include fine to medium quartz sand with shell fragments and accessory heavy minerals along Gulf beaches and fine to medium quartz sand, silt, clay, peat, mud and ooze in the Mississippi Sound, Little Lagoon, bays, lakes, streams, and estuaries.

Reference: Szabo, M.W., Osborne, E.W., Copeland, C.W. Jr., and Neathery, T.L., 1988, Geologic Map of Alabama, Geological Survey of Alabama Special Map 220

Centreville Airport 2022 Taxiway Construction
Centreville, Bibb County, Alabama

Site Geology

Figure 2

SUPPLEMENTAL DRAWING

GMC # GMGM220020

4/21/2022

DRAWN BY: MG

2660 East Chase Lane, Suite 200
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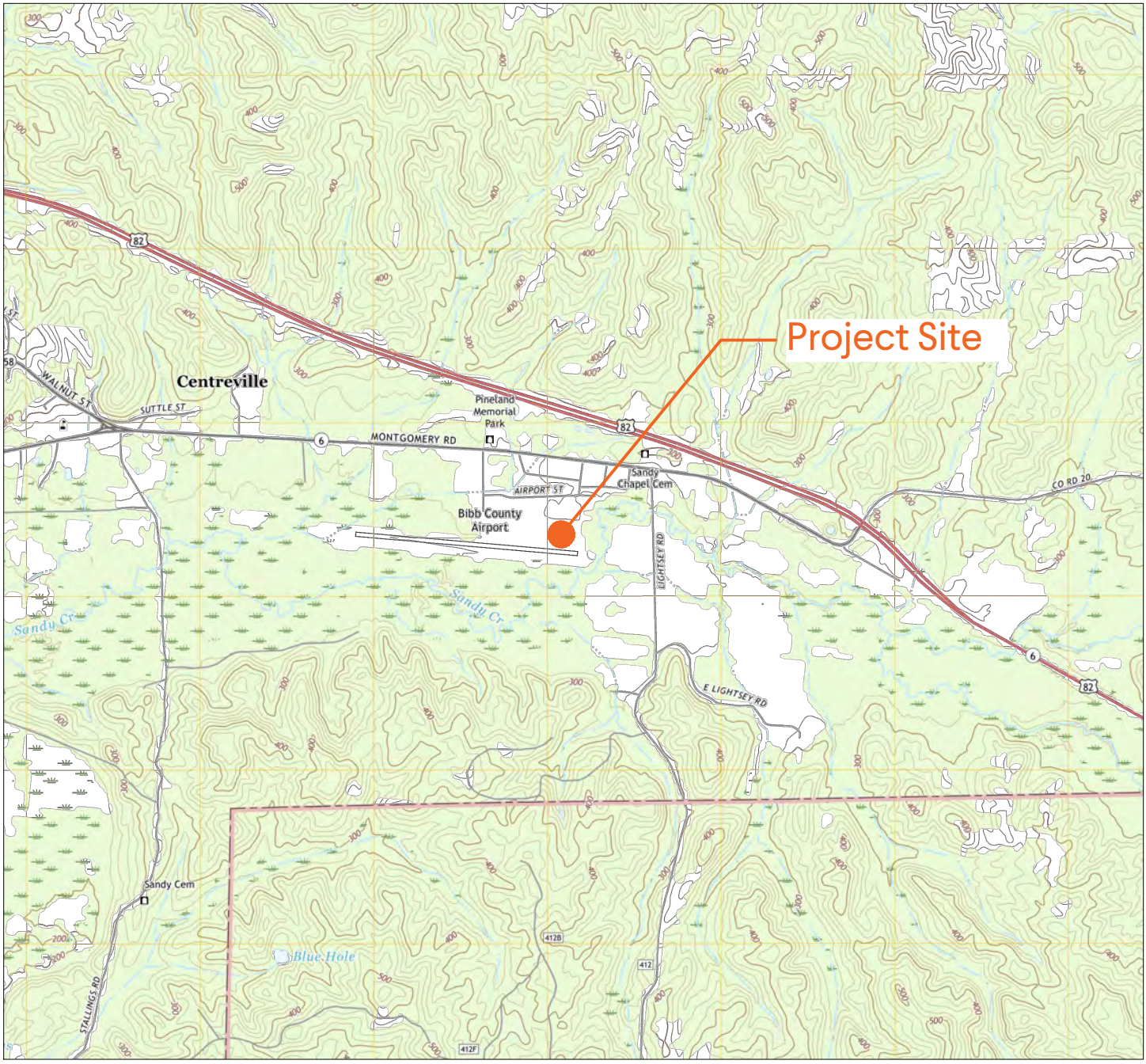
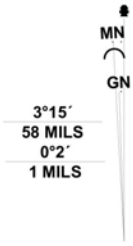
GMCNETWORK.COM

GMC





UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

QUADRANGLE LOCATION

Reference: USGS Quadrangles 7.5 Minute Series (Topographic)

Centreville Airport 2022 Taxiway Construction
Centreville, Bibb County, Alabama

Centreville East, AL (2021)

Figure 3

SUPPLEMENTAL DRAWING

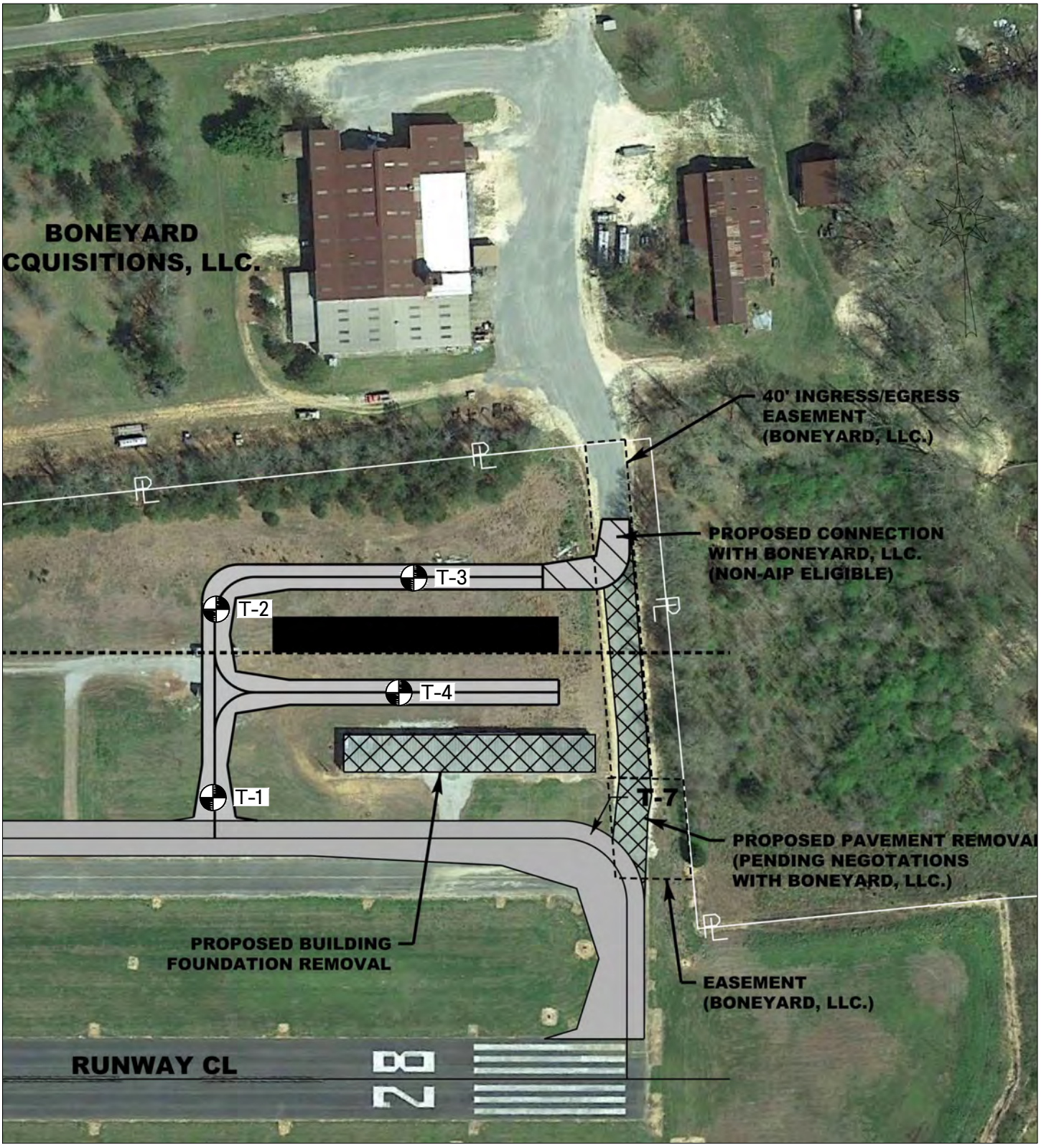
GMC # GMGM220020

4/21/2022

DRAWN BY: MG

2660 East Chase Lane, Suite 200
Montgomery, AL 36117
T 334.271.3200
GMCNETWORK.COM

GMC



Approximate Boring Location

Reference: GMC drawing adapted from T-Hanger Concept Plan.

Centreville Airport 2022 Taxiway Construction
Centreville, Bibb County, Alabama

Figure 4

SUPPLEMENTAL DRAWING

GMC # GMGM220020

4/21/2022

DRAWN BY: MG

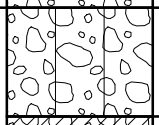
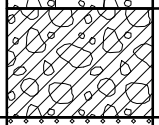
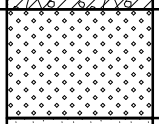
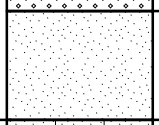
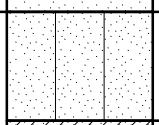
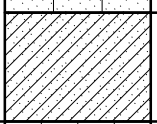
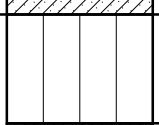
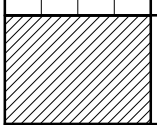
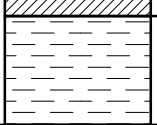
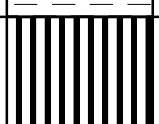
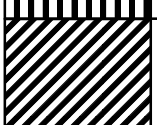
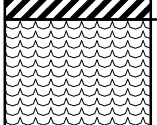
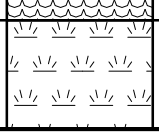
Boring Location Plan

2660 East Chase Lane, Suite 200
Montgomery, AL 36117
T 334.271.3200
GMCNETWORK.COM

GMC

GMC

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

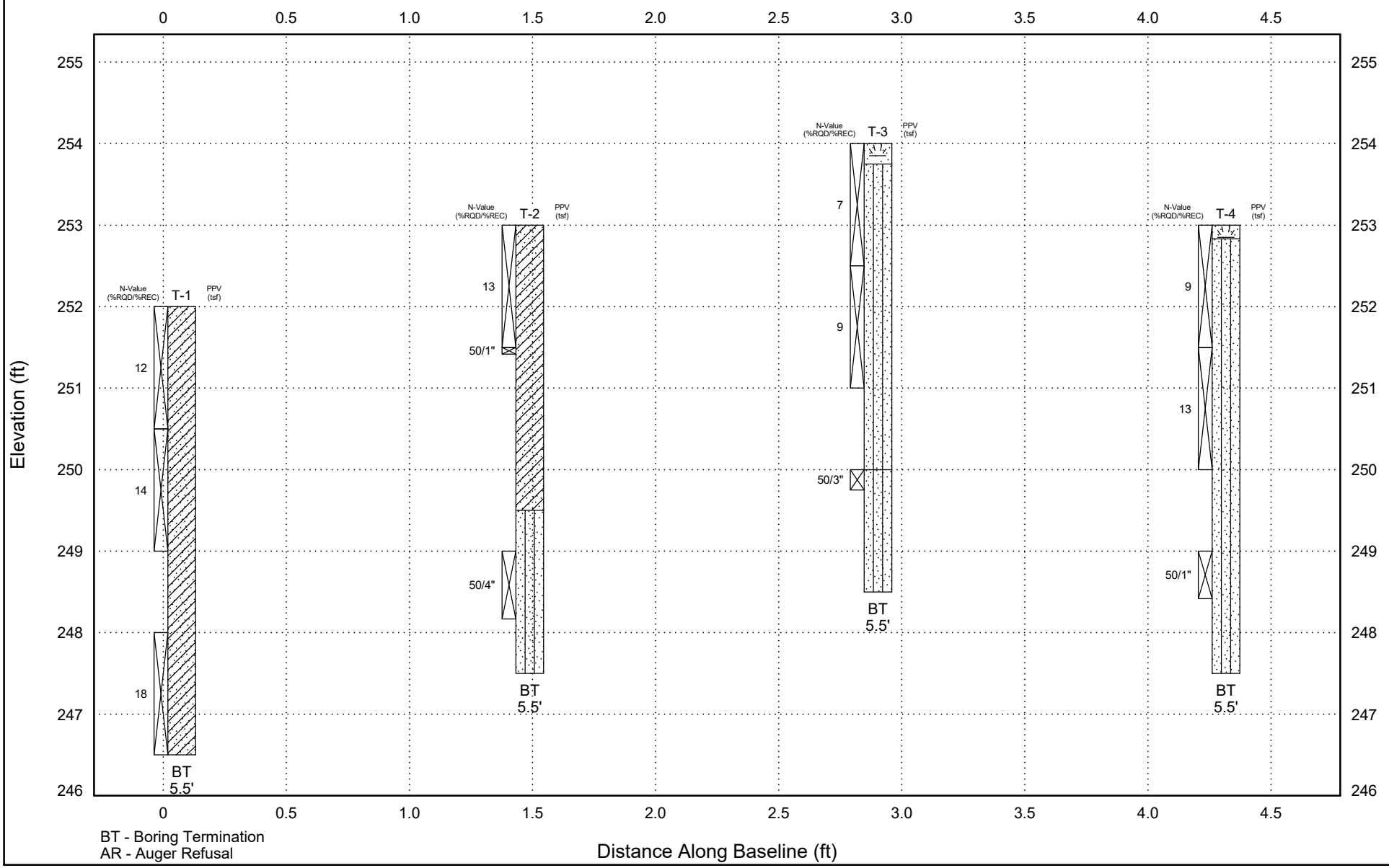
NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

SUBSURFACE DIAGRAM

SC SM TOPSOIL

CLIENT Bibb County **PROJECT NAME** Centreville Airport Taxiway Relocation

PROJECT NUMBER GMGM220010 **PROJECT LOCATION** Centreville, AL



BT-AR DEPTH LOG GMGM220020 CENTREVILLE AIRPORT TAXIWAY.GPJ GMC DATA TEMPLATE.GDT 4/22/22

BORING NUMBER T-1

CLIENT Bibb County
PROJECT NAME Centreville Airport Taxiway Relocation
PROJECT NUMBER GMGM220010
PROJECT LOCATION Centreville, AL
DATE STARTED 4/6/22 **COMPLETED** 4/6/22
GROUND ELEVATION 252 ft **HOLE SIZE** 4"
DRILLING CONTRACTOR Earth Core, LLC
GROUND WATER LEVELS:
DRILLING METHOD Mobile B47 Trailer, Manual-Hammer, HSA with SPT
AT TIME OF DRILLING ---
LOGGED BY M. Lloyd **CHECKED BY**
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
	0		CLAYEY SAND with GRAVEL (SC), reddish-brown, medium	SS		4-5-7 (12)			19	33	16	17	37
250				SS		7-7-7 (14)			16				
	5			SS		7-9-9 (18)			27				
245			Boring was terminated at 5.5 feet.										
	10												
240													
	15												
235													
	20												
230													
	25												
225													
	30												

BORING NUMBER T-2

CLIENT Bibb County
PROJECT NAME Centreville Airport Taxiway Relocation
PROJECT NUMBER GMGM220010
PROJECT LOCATION Centreville, AL
DATE STARTED 4/6/22 **COMPLETED** 4/6/22
GROUND ELEVATION 253 ft **HOLE SIZE** 4"
DRILLING CONTRACTOR Earth Core, LLC
GROUND WATER LEVELS:
DRILLING METHOD Mobile B47 Trailer, Manual-Hammer, HSA with SPT
AT TIME OF DRILLING ---
LOGGED BY M. Lloyd **CHECKED BY**
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
	0		CLAYEY SAND (SC), reddish-brown, medium to very dense	SS		7-7-6 (13)			18				
250				SS		50/1"							
	5		SILTY SAND (SM), brown, gray, reddish-brown, very dense, rock fragments	SS		26-50/4"			10				
			Boring was terminated at 5.5 feet.										
245													
	10												
240													
	15												
235													
	20												
230													
	25												
225													
	30												

BORING NUMBER T-3

CLIENT Bibb County
PROJECT NAME Centreville Airport Taxiway Relocation
PROJECT NUMBER GMGM220010
PROJECT LOCATION Centreville, AL
DATE STARTED 4/6/22 **COMPLETED** 4/6/22
GROUND ELEVATION 254 ft **HOLE SIZE** 4"
DRILLING CONTRACTOR Earth Core, LLC
GROUND WATER LEVELS:
DRILLING METHOD Mobile B47 Trailer, Manual-Hammer, HSA with SPT
AT TIME OF DRILLING ---
LOGGED BY M. Lloyd **CHECKED BY**
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
	0		Organic Laden Material (OLM), 3"										
			SILTY SAND (SM), reddish-brown, loose	SS		4-3-4 (7)			10	NP	NP	NP	21
				SS		4-4-5 (9)			12				
250													
	5		SILTY SAND (SM), light brown, very dense	SS		50/3"			6				
			Boring was terminated at 5.5 feet.										
245													
	10												
240													
	15												
235													
	20												
230													
	25												
225													
	30												

BORING NUMBER T-4

CLIENT Bibb County
PROJECT NAME Centreville Airport Taxiway Relocation
PROJECT NUMBER GMGM220010
PROJECT LOCATION Centreville, AL
DATE STARTED 4/6/22 **COMPLETED** 4/6/22
GROUND ELEVATION 253 ft **HOLE SIZE** 4"
DRILLING CONTRACTOR Earth Core, LLC
GROUND WATER LEVELS:
DRILLING METHOD Mobile B47 Trailer, Manual-Hammer, HSA with SPT
AT TIME OF DRILLING ---
LOGGED BY M. Lloyd **CHECKED BY**
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
	0		Organic Laden Material (OLM), 2"										
			SILTY SAND (SM), reddish-brown, medium to very dense	SS		4-4-5 (9)			13				
250				SS		5-6-7 (13)			10				
	5			SS		26-50/1"			11				
			Boring was terminated at 5.5 feet.										
245													
	10												
240													
	15												
235													
	20												
230													
	25												
225													
	30												

SUMMARY OF LABORATORY RESULTS

CLIENT Bibb County **PROJECT NAME** Centreville Airport Taxiway Relocation

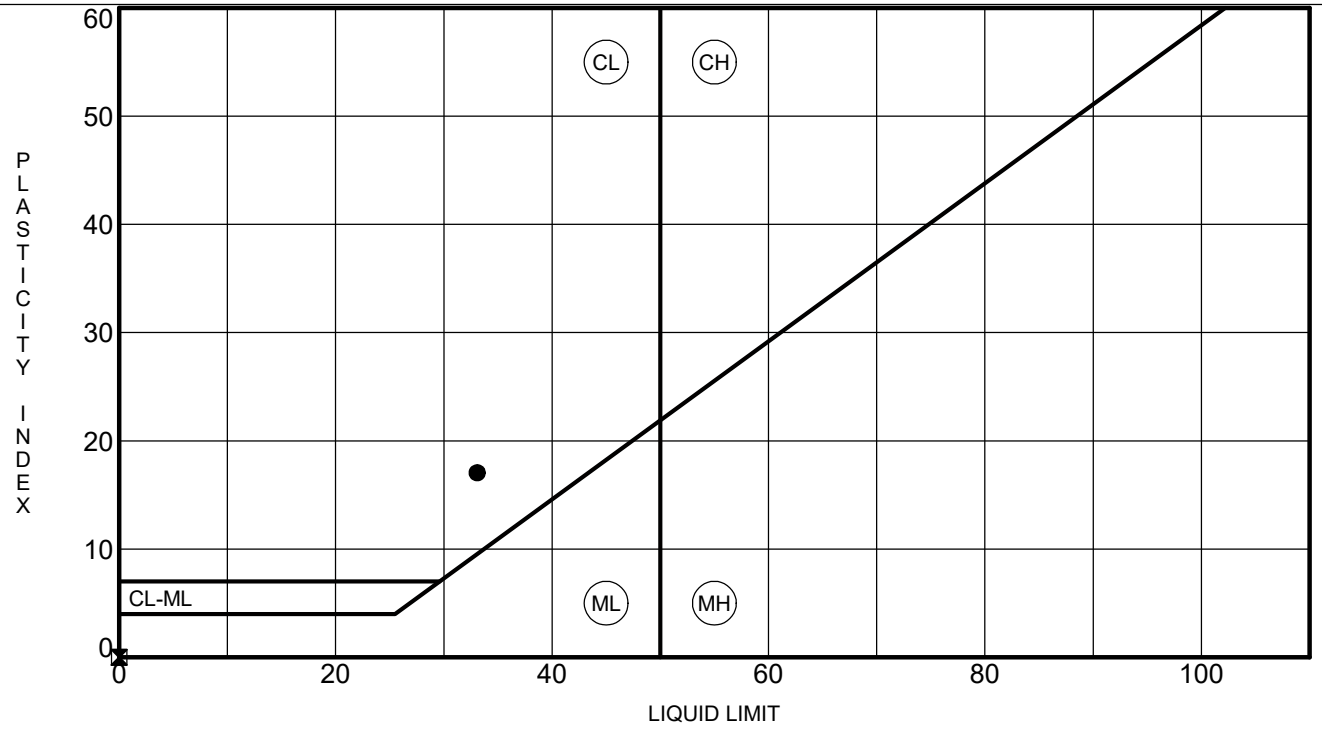
PROJECT NUMBER GMGM220010 **PROJECT LOCATION** Centreville, AL

Borehole	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Max. Sieve Size Tested (mm)	%<#200 Sieve	Natural Moisture (%)	Class-ification	Opt. Moisture Content (%)	Max Dry Density (pcf)	Specific Gravity
T-1	0-1.5	33	16	17	19	37	18.5	SC			
T-1	1.5-3						16.0				
T-1	4-5.5						26.9				
T-2	0-1.5						18.0				
T-2	4-5.5						9.7				
T-3	0-1.5	NP	NP	NP	12.5	21	10.4	SM			
T-3	1.5-3						12.0				
T-3	4-5.5						5.8				
T-4	0-1.5						13.4				
T-4	1.5-3						10.3				
T-4	4-5.5						11.2				

ATTERBERG LIMITS' RESULTS

CLIENT Bibb County **PROJECT NAME** Centreville Airport Taxiway Relocation

PROJECT NUMBER GMGM220010 **PROJECT LOCATION** Centreville, AL

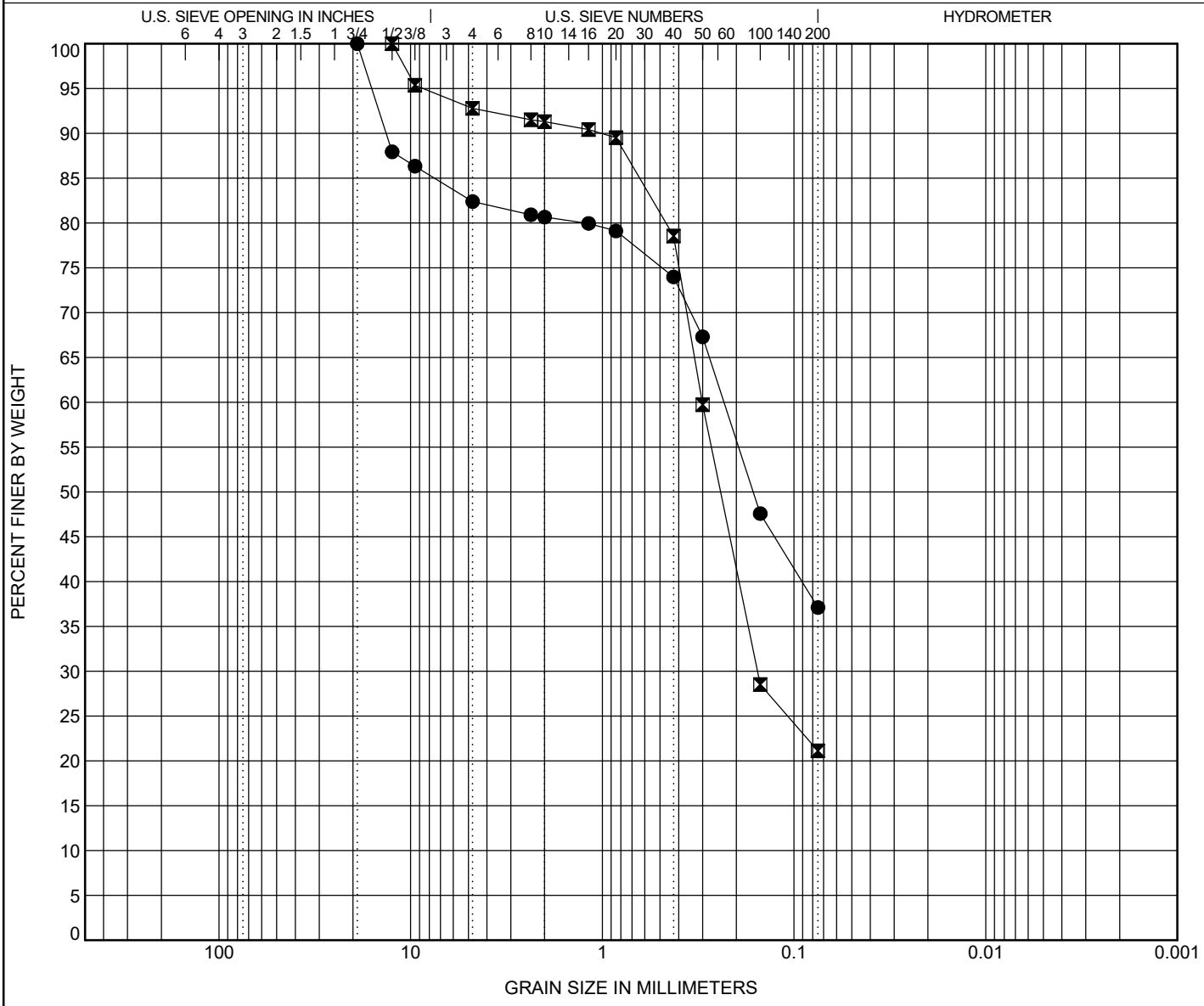


	Specimen Identification		LL	PL	PI	Fines	Classification
●	**T-1**	**0.0-1.5**	**33**	**16**	**17**	**37**	**CLAYEY SAND with GRAVEL(SC)**
⧓	**T-3**	**0.0-1.5**	**NP**	**NP**	**NP**	**21**	**SILTY SAND(SM)**

GRAIN SIZE DISTRIBUTION

CLIENT Bibb County **PROJECT NAME** Centreville Airport Taxiway Relocation

PROJECT NUMBER GMGM220010 **PROJECT LOCATION** Centreville, AL



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**T-1**	**0.0-1.5**	**CLAYEY SAND with GRAVEL(SC)**	**33**	**16**	**17**		
⊠	**T-3**	**0.0-1.5**	**SILTY SAND(SM)**	**NP**	**NP**	**NP**		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**T-1**	**0.0-1.5**	**19**	**0.232**			**17.6**	**45.3**	**37.1**	
⊠	**T-3**	**0.0-1.5**	**12.5**	**0.302**	**0.155**		**7.2**	**71.6**	**21.1**	

Federal Aviation Administration FAARFIELD 2.0 Section Report

FAARFIELD 2.0.7 (Build 09/14/2021)

Job Name: Centreville Airport

Section: Taxiway

Analysis Type: HMA on Aggregate

Last Run: Life Analysis 2022-05-16 09:16:05

Calculated Life = 1312362000.0 Years

Total thickness to the top of the subgrade = 10.0in.

Pavement Structure Information by Layer

No.	Type	Thickness in.	Modulus psi	Poisson's Ratio	Strength R psi
1	P-401/P-403 HMA Surface	4.0	200000	0.35	0
2	P-209 Crushed Aggregate	6.0	40303	0.35	0
3	Subgrade	0	15000	0.35	0

Airplane Information

No.	Name	Gross Wt. lbs	Annual Departures	% Annual Growth
1	SWL-2	2000	3	0
2	S-3	3000	4	0
3	S-5	5000	2	0
4	S-10	10000	42	0
5	S-12.5	12500	1	0
6	D-15	15000	7	0

Additional Airplane Information

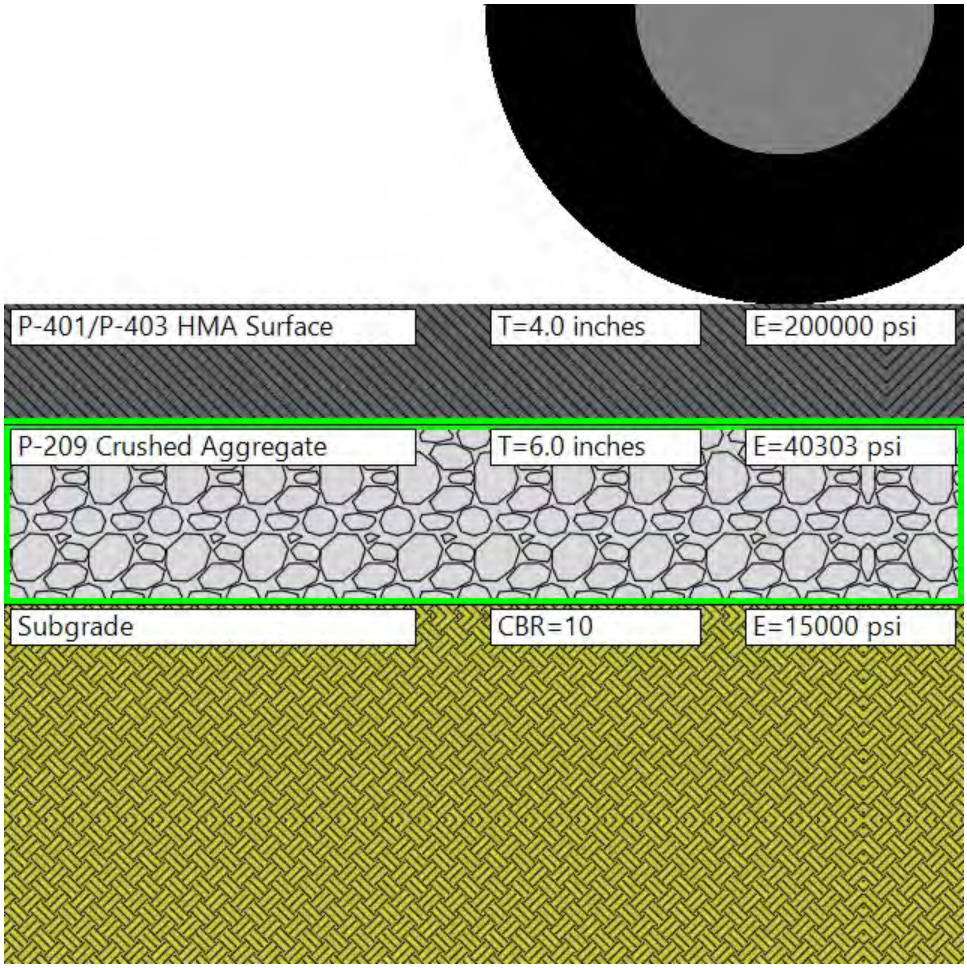
Subgrade CDF

No.	Name	CDF Contribution	CDF Max for Airplane	P/C Ratio
1	SWL-2	0.00	0.00	4.47
2	S-3	0.00	0.00	5.29
3	S-5	0.00	0.00	4.84
4	S-10	0.00	0.00	4.2
5	S-12.5	0.00	0.00	3.99
6	D-15	0.00	0.00	2.84

HMA CDF

No.	Name	CDF Contribution	CDF Max for Airplane	P/C Ratio
1	SWL-2	0.00	0.00	6.80
2	S-3	0.00	0.00	8.85
3	S-5	0.00	0.00	7.65
4	S-10	0.00	0.00	6.13
5	S-12.5	0.00	0.00	5.68
6	D-15	0.00	0.00	3.56

User Is responsible For checking frost protection requirements.


P-401/P-403 HMA Surface
T=4.0 inches
E=200000 psi
P-209 Crushed Aggregate
T=6.0 inches
E=40303 psi
Subgrade
CBR=10
E=15000 psi

Federal Aviation Administration FAARFIELD 2.0 PCR Report

FAARFIELD 2.0.7 (Build 09/14/2021)

Job Name: Centreville Airport

Section: Taxiway

This file name = PCR Results for Flexible 2022-05-16 09:17:00

Evaluation pavement type is flexible and design program is FAARFIELD.

Section name: Taxiway in job file: Centreville Airport.JOB.xml

Units = US Customary

Analysis Type: HMA on Aggregate

Subgrade Modulus =15000psi (Subgrade Category is B(17k))

Evaluation Pavement Thickness = 10.0 in.

Pass to Traffic Cycle (PtoTC) Ratio = 1.00

Maximum number of wheels per gear = 2

CDF = 0.000

No aircraft have 4 or more wheels per gear.

Results Table 1. Input Traffic Data

No.	Aircraft Name	Gross Weight lbs	Percent Gross Weight	Tire Pressure psi	Annual Departure	20 Years Coverage
1	SWL-2	2000	100.00	30.0	3	9
2	S-3	3000	95.00	50.0	4	9
3	S-5	5000	95.00	50.0	2	5
4	S-10	10000	95.00	50.0	42	137
5	S-12.5	12500	95.00	50.0	1	4
6	D-15	15000	95.00	55.0	7	39

Results Table 2. PCR Value

No.	Aircraft Name	Critical aircraft Total equiv. departures	Max allowable Gross Weight of critical aircraft	ACR Thick at max. MGW (in.)	PCR//F/B
1	S-10	42	84574	14.58	182.6

Results Table 3. HMA on Aggregate ACR at Indicated Gross Weight and Strength

No.	Aircraft Name	Gross Weight lbs	Percent Gross Weight on Main Gear	Tire Pressure psi	ACR Thick (in.)(B)	ACR//B
1	SWL-2	2000	100	30.0	4.6	10.9
2	S-3	3000	95.00	50.0	4.6	10.2
3	S-5	5000	95.00	50.0	4.6	15.1
4	S-10	10000	95.00	50.0	4.6	23.8
5	S-12.5	12500	95.00	50.0	5.1	29.4
6	D-15	15000	95.00	55.0	4.6	22.6

Federal Aviation Administration FAARFIELD 2.0 PCR Graph

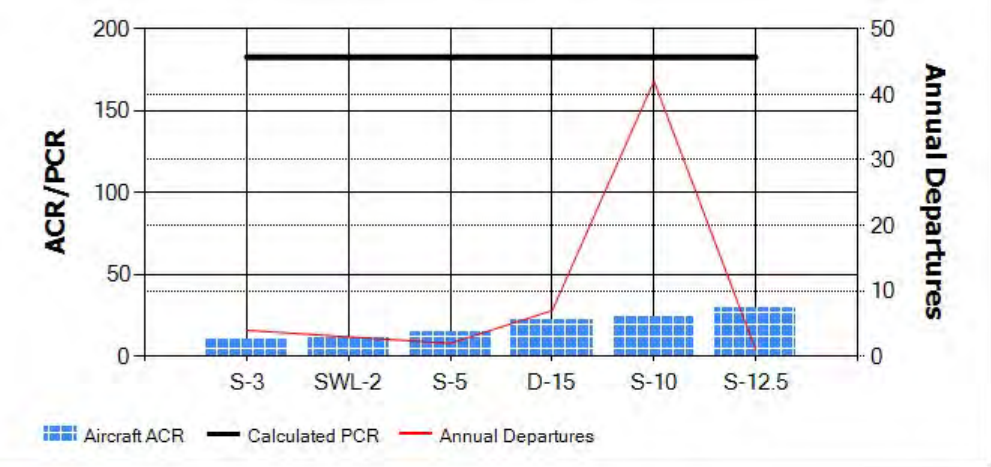
FAARFIELD 2.0.7 (Build 09/14/2021)

Job Name: Centreville Airport

Section: Taxiway

Analysis Type: HMA on Aggregate

-	SWL-2	S-3	S-5	S-10	S-12.5	D-15
Aircraft ACR (Blue Square Bar)	10.9	10.2	15.1	23.8	29.4	22.6
Calculated PCR (Black Line)	-	-	-	182.6	-	-
Annual Departure (Red Line)	3	4	2	42	1	7



Federal Aviation Administration FAARFIELD 2.0 Form 5010

FAARFIELD 2.0.7 (Build 09/14/2021)

RUNWAY DATA

Job Name: Centreville Airport

Section: Taxiway

Gross Weight (In THSDS)

35 S	52
36 D	83
37 2D	147
38 2D/2D2	0

39 PCR	183/F/B/X/T

GMC

FIELD TEST PROCEDURES

General

The general field procedures employed by Goodwyn, Mills and Cawood, Inc. (GMC), are summarized in the American Society for Testing and Materials (ASTM) Standard D420 which is entitled "Investigating and Sampling Soil and Rock". This recommended practice lists recognized methods for determining soil and rock distribution and groundwater conditions. These methods include geophysical and in-situ methods as well as borings.

The detailed collection methods used during this exploration are presented in the following paragraphs.

Standard Drilling Techniques

General: To obtain subsurface samples, borings are drilled using one of several alternate techniques depending upon the subsurface conditions. These techniques are as follows:

In Soils:

a) Continuous hollow stem augers.
b) Rotary borings using roller cone bits or drag bits, and water or drilling mud to flush the hole.
c) "Hand" augers.

In Rock:

a) Core drilling with diamond-faced, double or triple tube core barrels.
b) Core boring with roller cone bits.

Hollow Stem Auger: A hollow stem augers consists of a hollow steel tube with a continuous exterior spiral flange termed a flight. The auger is turned into the ground, returning the cuttings along the flights. The hollow center permits a variety of sampling and testing tools to be used without removing the auger.

Rotary Borings: Rotary drilling involves the use of roller cone or drag type drill bits attached to the end of drill rods. A flushing medium, normally water or bentonite slurry, is pumped through the rods to clear the cuttings from the bit face and flush them to the surface. Casing is sometimes set behind the advancing bit to prevent the hole from collapsing and to restrict the penetration of the drilling fluid into the surrounding soils. Cuttings returned to the surface by the drilling fluid are typically collected in a settling tank, to allow the fluid to be recirculated.

Hand Auger Boring: Hand auger borings are advanced by manually twisting a 4" diameter steel bucket auger into the ground and withdrawing it when filled to observe the sample collected. Posthole diggers are sometimes used in lieu of augers to obtain shallow soil samples. Occasionally these hand auger borings are used for driving 3-inch diameter steel tubes to obtain intact soil samples.

Dynamic Cone Penetrometer (DCP)
Dynamic Cone Penetrometer tests (DCP) is intended to provide data that can be correlated to the standard penetration test (SPT). A 1.5 inch O.D. cone is seated to penetrate any loose cuttings, then driven three, 1-3/4" increments with blows from a 15-pound weight falling 20 inches. The average number of blows required to drive the cone three increments is an index to soil strength and compressibility.

Dual-Mass Dynamic Cone Penetrometer (DCP)
Dual-Mass Dynamic Cone Penetrometer tests (DCP) test is intended to provide data that can be correlated to an in situ California Bearing Ratio test. A 0.79-inch O.D. cone is seated at the test location and driven with a 17.6-pound (or 10.1-pound) weight falling 22.6 inches. The length of penetration is recorded with a given number of blows. The values are then evaluated and correlated with an in situ CBR.

Core Drilling: Soil drilling methods are not normally capable of penetrating through hard cemeted soil, weathered rock, coarse gravel or boulders, thin rock seams, or the upper surface of sound, continuous rock. Material that cannot be penetrated by auger or rotary soil-drilling methods at a reasonable rate is designated as "refusal material". Core drilling procedures are required to penetrate and sample refusal materials.

Prior to coring, casing may be set in the drilled hole through the overburden soils, to keep the hole from caving and to prevent excessive water loss. The refusal materials are then cored according to ASTM D2113 using a diamond studded bit fastened to the end of a hollow, double or triple tube core barrel. This device is rotated at high speeds, and the cuttings are brought to the surface by circulating water. Core samples of the material penetrated are protected and retained in the swivel-mounted inner tube. Upon completion of each drill run, the core barrel is brought to the surface, the core recovery is measured, and the core is placed, in sequence, in boxes for storage and transported to our laboratory.

Sampling and Testing in Boreholes

General: Several techniques are used to obtain samples and data in soils; however, the most common methods in this area are:

a) Standard Penetrating Testing
b) Water Level Readings

These procedures are presented below. Any additional testing techniques employed during this exploration are contained in other sections of the Appendix.

Standard Penetration Testing: At regular intervals, the drilling tools are removed and soil samples obtained with a standard 2-inch diameter split tube sampler connected to an A or N-size rod. The sampler is first seated 6 inches to penetrate any loose cuttings, and then driven an additional 12 inches with blows of a 140-pound safety hammer falling 30 inches. Generally, the number of hammer blows required to drive the sampler the final 12 inches is designated the "penetration resistance" or "N" value, in blows per foot (bpf). The split barrel sampler is designed to retain the soil penetrated, so that it may be returned to the surface for observation. Representative portions of the soil samples obtained from each split barrel sample are placed in jars, sealed and transported to our laboratory.

The standard penetration test, when properly evaluated, provides an indication of the soil strength and compressibility. The tests are conducted according to ASTM Standard D1586. The depths and N-values of standard penetration tests are shown on the Boring Records. Split barrel samples are suitable for visual observation and classification tests but are not sufficiently intact for quantitative laboratory testing.

Water Level Readings: Water table readings are normally taken in the borings and are recorded on the Boring Records. In sandy soils, these readings indicate the approximate location of the hydrostatic water table at the time of our field exploration. In clayey soils, the rate of water seepage into the borings is low and it is generally not possible to establish the location of the hydrostatic water table through short-term water level readings. Also, fluctuation in the water table should be expected with variations in precipitation, surface run-off, evaporation, and other factors. For long-term monitoring of water levels, it is necessary to install piezometers.

The water levels reported on the Boring Records are determined by field crews immediately after the drilling tools are removed, and several hours after the borings are completed, if possible. The time lag is intended to permit stabilization of the groundwater table, which may have been disrupted by the drilling operation.

Occasionally the borings will cave-in, preventing water level readings from being obtained or trapping drilling water above the cave-in zone. The cave-in depth is measured and recorded on the Boring Records.

Boring Records

The subsurface conditions encountered during drilling are reported on a field boring record prepared by the Driller. The record contains information concerning the boring method, samples attempted and recovered, indications of the presence of coarse gravel, cobbles, etc., and observations of ground water. It also contains the driller's interpretation of the soil conditions between samples. Therefore, these boring records contain both factual and interpretive information. The field boring records are kept on file in our office.

After the drilling is completed, a geotechnical professional classifies the soil samples and prepares the final Boring Records, which are the basis for all evaluations and recommendations. The following terms are taken from ASTM D2487 or Deere's Technical Description of Rock Cores for Engineering Purposes, Rock Mechanical Engineering Geology 1, pp. 18-22.

GMC

Relative Density of Cohesionless Soils From Standard Penetration Test	
Very Loose	‹ 4 bpf
Loose	5 - 10 bpf
Medium	11 – 30 bpf
Dense	31 - 50 bpf
Very Dense	› 50 bpf
(bpf = blows per foot, ASTM D 1586)	

Consistency of Cohesive Soils	
Very Soft	‹ 2 bpf
Soft	3 - 4 bpf
Medium	5 - 8 bpf
Stiff	9 - 15 bpf
Very Stiff	16 - 30 bpf
Hard	› 30 bpf

Relative Hardness of Rock
Very Soft Rock disintegrates or easily compresses to touch; can be hard to very hard soil.
Soft Rock may be broken with fingers.
Moderately Soft Rock may be scratched with a nail, corners and edges may be broken with fingers.
Moderately Hard Rock a light blow of hammer is required to break samples.
Hard Rock a hard blow of hammer is required to break sample.

Particle Size Identification	
Boulders	Larger than 12"
Cobbles	3" - 12"
Gravel	
Coarse	3/4" - 3"
Fine	4.76mm - 3/4"
Sand	
Coarse	2.0 - 4.76 mm
Medium	0.42 - 2.00 mm
Fine	0.42 - 0.074 mm
Fines (Silt or Clay)	Smaller than 0.074 mm

Rock Continuity	
RECOVERY = $\frac{\text{Total Length of Core}}{\text{Length of Core Run}}$ x 100 %	
Description	Core Recovery %
Incompetent	Less than 40
Competent	40 - 70
Fairly Continuous	71 - 90
Continuous	91 - 100

Relative Quality of Rocks	
RQD = $\frac{\text{Total core, counting only pieces › 4" long}}{\text{Length of Core Run}}$ x 100 %	
Description	RQD %
Very Poor	0 - 25 %
Poor	25 - 50 %
Fair	50 - 75 %
Good	75 - 90 %
Excellent	90 - 100 %

LABORATORY TESTING

GENERAL

The laboratory testing procedures employed by Goodwyn, Mills and Cawood, Inc. (GMC) are in general accordance with ASTM standard methods and other applicable specifications.

Several test methods, described together with others in this Appendix, were used during the course of this exploration. The Laboratory Data Summary sheet indicates the specific tests performed.

SOIL CLASSIFICATION

Soil classifications provide a general guide to the engineering properties of various soil types and enable the engineer to apply his past experience to current problems. In our investigations, samples obtained during drilling operations are examined in our laboratory and visually classified by an engineer. The soils are classified according to consistency (based on number of blows from standard penetration tests), color and texture. These classification descriptions are included on our "Boring Records".

The classification system discussed above is primarily qualitative and for detailed soil classification two laboratory tests are necessary; grain size tests and plasticity tests. Using these test results the soil can be classified according to the AASHTO or Unified Classification Systems (ASTM D-2487). Each of these classification systems and the in-place physical soil properties provides an index for estimating the soil's behavior. The soil classification and physical properties obtained are presented in this report.

POCKET PENETROMETER TEST

A pocket penetrometer test is performed by pressing the tip of a small, spring-loaded penetrometer with even pressure to a prescribed depth into a soil sample. This test yields a value for unconfined compressive strength, which may be correlated with unconfined compressive strengths obtained by other laboratory methods.

MOISTURE CONTENT

Moisture contents are determined from representative portions of the specimen. The soil is dried to a constant weight in an oven at 100° C and the loss of moisture during the drying process is measured. From this data, the moisture content is computed.

ATTERBERG LIMITS

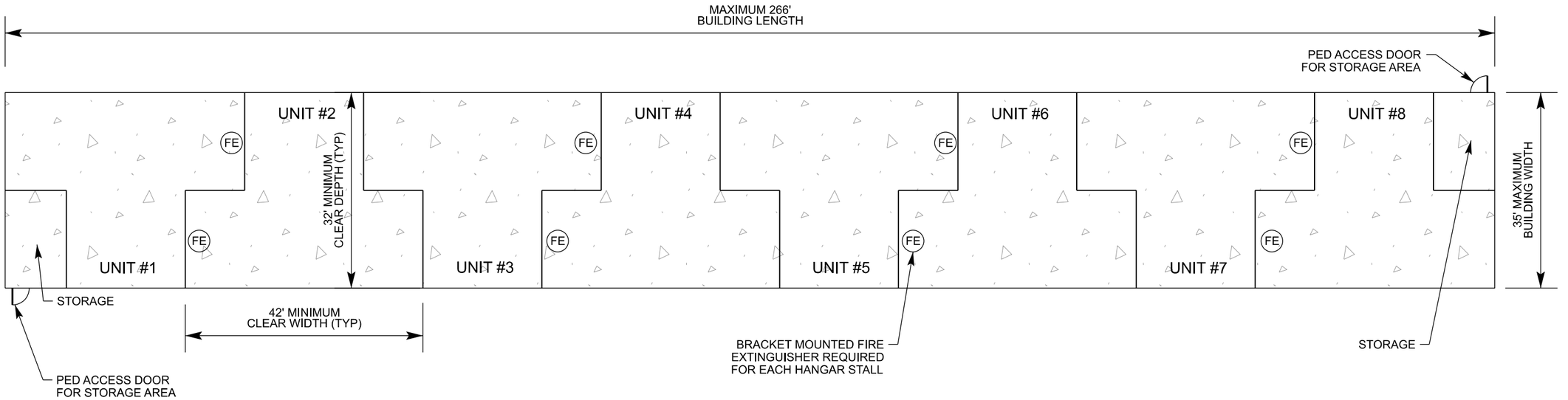
Liquid Limit (LL), Plastic Limit (PL) and Shrinkage Limit (SL) tests are performed to aid in the classification of soils and to determine the plasticity and volume change characteristics of the materials. The Liquid Limit is the minimum moisture content at which a soil will flow as a heavy viscous fluid. The Plastic Limit is the minimum moisture content at which the soil behaves as a plastic material. The Shrinkage Limit is the moisture content below which no further volume change will take place with continued drying. The Plasticity Index (PI) is the numeric difference of Liquid Limit and Plastic Limit and indicates the range of moisture content over which a soil remains plastic. These tests are performed in accordance with ASTM D4318, D4943 and D427.

PARTICLE SIZE DISTRIBUTION

The distribution of soils coarser than the No. 200 (75-mm) sieve is determined by passing a representative specimen through a standard set of nested sieves. The weight of material retained on each sieve is determined and the percentage retained (or passing) is calculated.

A specimen may be washed through only the No. 200 sieve, if the full range of particle sizes is not required. The percentage of material passing the No. 200 sieve is reported.

The distribution of materials finer than the No. 200 sieve is determined by use of a hydrometer. The particle sizes and distribution are computed from the time rate of settlement of the different size particles while suspended in water. These tests are performed in accordance with ASTM D-421, D-422 and D-1140.



NOTES:

1. A STANDARDIZED FOUNDATION PLAN WILL NOT BE PROVIDED FOR THIS BID AS THIS MAY LIMIT THE PROJECT TO CERTAIN BUILDING MODELS AND/OR MANUFACTURERS. IN ORDER TO PROVIDE THE MOST ECONOMICAL PRODUCT FOR THE OWNER, THE CONTRACTOR IS TO PROVIDE A FOUNDATION AND BUILDING DESIGN SUFFICIENT TO OBTAIN THE MINIMUM CLEAR WIDTHS, HEIGHTS, AND DEPTHS AS SPECIFIED IN THE PLAN SET.
2. ITEM "8-UNIT T-HANGAR COMPLETE IN PLACE" IS LUMP SUM AND SHALL INCLUDE ALL ITEMS SHOWN ON PLANS AND SPEC ARE REQUIRED FOR A COMPLETE OPERATIONAL FACILITY WITHOUT ANOTHER SPECIFIC PAY ITEM.
3. PROVIDE VINYL FACED BATT INSULATION AS PER METAL BUILDING MANUFACTURER STANDARDS. ROOF = R-13 (MIN), WALLS = R-19
4. NO WATER OR SEWER WILL BE REQUIRED FOR THE T-HANGAR BUILDING.
5. BUILDING CODE DATE:
   - OCCUPANCY TYPE: S-1 STORAGE, TYPE IIB, UNPROTECTED, UNSPRINKLED
   - MAX ALLOWABLE AREA: 70,000 SQ FT PER IBC
   - MAX TRAVEL DISTANCE: 75 FT PER IBC
6. CLEAR DOOR HEIGHT = 12'-0"
7. EAVE HEIGHT = 14'-4"

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ISSUE | DATE
Addendum 1 | 04/05/2024

drawn by: RLM
checked by: JMR

BIBB COUNTY AIRPORT
T-HANGAR BUILDING (REBID)
CENTREVILLE, ALABAMA

TBHM220024

SCALE: NOT TO SCALE

T-HANGAR BUILDING LAYOUT

A1.01

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