

February 13, 2023

City of Prattville, Alabama  
101 West Main Street  
Prattville, Alabama 36067

**RE: Newton Park Tennis Complex Improvements  
EOS Project No. PV-2111**

**ADDENDUM No. 1**

The changes, modifications and / or additions covered by and set forth in this Addendum No. 1 shall become part of and be incorporated into the Specifications, Contract Documents, and Bid Documents for the above referenced project.

**GENERAL**

1. The Owner has determined that this project is NOT tax exempt with the exception of the wastewater materials as outlined in the attached Pre-Bid Meeting Minutes.
2. Pre-Bid Meeting Minutes & Sign-in attached.
3. Report of Geotechnical Explorations attached.

**SPECIFICATIONS**

Replace the following Specification Sections:

SECTION 00 42 22 – UNIT PRICES FORM  
SECTION 00 42 24 – BASIS OF PAYMENT

SECTION 00 01 00 – TABLE OF CONTENTS

1. Delete reference to DIVISION 3 and its sub entities entirely

**PLANS**

Dwg No 00-C-03:

1. General Notes #13 – Clarification: The Contractor shall be responsible for the application fee of the ADEM NPDES Stormwater Permit application (confirm amount with ADEM) and the Engineer shall prepare the application and perform all inspections. The permit shall be in the General Contractor's name. The General Contractor shall be responsible for installing, maintaining and correcting all BMPs necessary to maintain compliance with the NPDES Stormwater permit.

Dwg No C4.0:

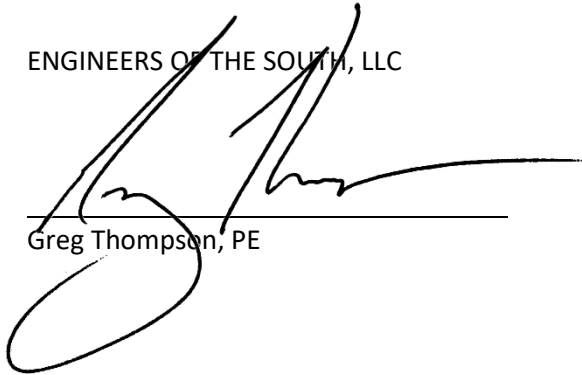
1. Delete in its entirety and replace with the attached.

Dwg No C6.1:

1. Delete in its entirety and replace with the attached.

This Addendum No. 1 shall be attached to the front of your set of Specifications and made a part of the Specifications and Contract Documents. Acknowledgement of Receipt of Addendum No. 1 shall be returned via facsimile or email to our office.

ENGINEERS OF THE SOUTH, LLC



Greg Thompson, PE

**SECTION 00 43 22 – UNIT PRICES FORM**

**CITY OF PRATTVILLE, AL  
NEWTON PARK TENNIS COMPLEX IMPROVEMENTS**

**BID TABLE**

Item	Description	Qty	Unit	Unit Price	Total
1	Mobilization, Bonds & Insurance	1	LS	-	\$150,000
2	Newton Park Tennis Complex Improvements	1	LS	-	
2a	Newton Park Playground Allowance	1	LS	-	\$50,000
3	Allowance for Owner/Engineer Selected Items	1	LS	-	\$75,000
3a	Allowance for Prattville Water Works Board fees	1	LS	-	\$30,000
4	Restoration, Start-up, Testing, and Return of Completed Facilities to Operation	1	LS	-	\$100,000

**Sub Total #1:** \_\_\_\_\_

**EXTRA UNIT PRICES**

**(Note: See Basis of Payment for explanation)**

Item	Description	Qty	Unit	Unit Price	Total
5	Excavation and Haul-Off of Unsuitable Soils	100	CY		
6	Replacement with Crushed Stone (825B or #57)	100	TON		
7	Replacement with Offsite Suitable Material	100	CY		
8	Surge Material (ALDOT #1 Stone)	50	TON		

9	Topsoil	10	CY		
10	Sod	10	SY		
11	Pine Straw Bales	10	EA		

**Sub Total #2:** \_\_\_\_\_

**Total Base Bid (Sub Total #1 + Sub Total #2):** \_\_\_\_\_

**ALTERNATE BID ITEMS**

2b	Windscreen at Tennis & Pickleball Courts (Existing and New)	1	LS		
2c	Restroom Building Roof Extension	1	LS		
2d	Skate Park Paving	1	LS		
2e	Omit Playground Allowance	1	LS	-\$50,000	-\$50,000
2f	Omit Asphalt Paving and Replace With 825 / 8910 Gravel Paving		SY		

**Total Alternate Bid** \_\_\_\_\_

(Total Base Bid plus Items 2b, 2c, 2d, 2e & 2f)

## **SECTION 00 43 24 - BASIS OF PAYMENT**

### **CITY OF PRATTVILLE, AL NEWTON PARK TENNIS COMPLEX IMPROVEMENTS**

The following sections summarize the intent of the bid documents for providing a basis of payment for all work required to complete the project. Descriptions correspond to the numbering in the Unit Prices Form. Any misinterpretations of these descriptions evident in the Contractor's proposal as an "unbalanced" bid shall be basis for considering the bid unresponsive. As described in the Instructions to Bidders Section, the Owner reserves the right to reduce quantities and/or completely remove bid items from the work. The estimates of work listed in the Unit Prices Form are to be considered only approximate quantities of items and are to be used as a basis for comparing bids. The Owner does not guarantee that the approximate quantities or allowances given will hold in the construction of the work. Final Payment will be made for actual quantities of the work performed as approved by the Engineers, at the contract prices bid. Should the quantities of the pay items be more or less than the quantities estimated, the contract unit prices bid in the Proposal will prevail.

#### **BASE BID ITEMS**

##### **ITEM 1 - MOBILIZATION, BONDS, & INSURANCE**

The Contract Lump Sum Price shall be the cost allowed by the Owner for mobilization of Contractor's forces, bonding the Project, and providing the specified Project insurance. The cost includes portions or the entire Contractor's cost for setting up of Contractor's forces, acceptance by Engineer and Owner of schedule of payment values, and equipment and personnel movement. The price established by the Owner is an allowance for the Contractor and will be paid upon completion of mobilization. Any costs the Contractor may have above the allowances to complete these Items shall be evenly distributed and included in the remaining Bid Items. Payment for this item shall not exceed the original contract amount bid regardless of the fact that the Contractor may have, for any reason, shut down his work on the project, moved equipment away from the project and then back again, or for additional quantities or items of work added to the contract.

##### **ITEM 2 – NEWTON PARK TENNIS COMPLEX IMPROVEMENTS**

The Contract Lump Sum Price shall be the furnishing of all labor, materials, and equipment necessary to complete the Newton Park Tennis Complex Improvements excluding the work and materials listed in all other items. This includes, but is by no means limited to, excavation, crushed stone foundation, manholes, valve vault, water meter, backfill, compaction, piping, valves, concrete paving, asphalt paving, fencing, gates, all gravity sewer, all manholes, all storm pipes, all storm inlets, all storm headwalls, pipe bedding, pressure testing, air testing, water service (including all Prattville Water Works fees and charges), landscaping, electrical, Restroom Building, tennis courts, renovation of existing tennis courts, pickleball courts, skate park, playground equipment, sports field lighting (materials provided by Owner), HVAC, plumbing, site lighting, excluding items to be provided by the Owner, to the extent shown on the Plans and required to construct a complete and properly functioning improvements project in complete accordance with the Plans, Specifications and Contract Documents.

### **ITEM 2a – NEWTON PARK PLAYGROUND ALLOWANCE**

The Contract Lump Sum Allowance shall be for the furnishing and installation of Owner specified playground equipment by the Owner selected vendor. The Owner will pay the Contractor and the Contractor shall issue a purchase order to the specified vendor or supplier. Payment procedures shall be the same as for all other equipment and materials supplied by the Contractor. The price written in for this item represents an allowance that is used by all Contractors bidding the project. The Contractor shall include any charges for handling these purchases, coordination, submittals, storage, and completing these contract requirements in Bid Item 2. Note: This is in addition to, and does not include, any allowances established elsewhere in these Bid Documents or on the Plans.

### **ITEM 3 – ALLOWANCE FOR OWNER/ENGINEER SELECTED ITEMS**

The Contract Lump Sum Allowance shall be for the furnishing of Owner specified services, equipment, or materials. The Owner will pay the Contractor and the Contractor shall issue a purchase order to the specified vendor or supplier. Payment procedures shall be the same as for all other equipment and materials supplied by the Contractor. The price written in for this item represents an allowance that is used by all Contractors bidding the project. The Contractor shall include any charges for handling these purchases, coordination, submittals, storage, and completing these contract requirements in Bid Item 2 or 3. Note: This is in addition to, and does not include, any allowances established elsewhere in these Bid Documents or on the Plans.

### **ITEM 3a – ALLOWANCE FOR PRATTVILLE WATER WORKS BOARD FEES**

The Contract Lump Sum Allowance shall be for any and all fees, costs, materials, etc. charged by the Prattville Water Works Board for new water services or relocation of existing water services. Payment procedures shall be the same as for all other equipment and materials supplied by the Contractor. The price written in for this item represents an allowance that is used by all Contractors bidding the project. The Contractor shall include any charges for handling these purchases, coordination, submittals, storage, and completing these contract requirements in Bid Item 2. Note: This is in addition to, and does not include, any allowances established elsewhere in these Bid Documents or on the Plans.

### **ITEM 4 – RESTORATION, START-UP, TESTING, AND RETURN OF COMPLETED FACILITIES TO OPERATION**

The Contract Lump Sum Price shall be paid for furnishing the Owner an operable and completed Newton Park in which all improvements included in the project have successfully passed all start-up requirements and tests as specified. The renovated and new facilities shall have been approved by all authorities for use by the Owner as intended and is put into service. The price in this item represents an allowance that is established by the Owner and used by all Contractors bidding the project. The amount of money written in this item will be paid to the Contractor when the plant is in satisfactory service since the project's components are an integral part of the entire water system project needed by the Owner. Partial payment will not be allowed on this item.

### **EXTRA UNIT PRICES**

The following items of work are anticipated during construction of this contract; however the exact quantity of each work item may not be determinable prior to bidding. The Contractor, shall therefore, include in his Lump Sum Base and / or Alternates Bid (as applicable), an allowance for the following items in the quantities indicated: Allowance Unit Prices include all charges for labor, materials and equipment, shoring, layout, supervision (field and home office), general expenses, taxes, insurances, overhead and profit, but not limited to, for accomplishment of the Allowance item(s). Where quantities of same items of work are defined and are quantified in the bid documents, the allowance quantities indicated hereinafter shall be in addition to those which are indicated. (Example: If the site grading plan indicates new and existing grades, the bidder shall compute the quantity of earthwork required and include that quantity of work in the bid the same as if no "allowance quantity were specified. If an additional allowance quantity of earthwork is stipulated, that stipulated allowance quantity of work shall also be included in addition to the quantity computed from the bidders earthwork "takeoff").

The following Unit Prices Quoted are for increases or decreases in the above quantities included in the Lump Sum Base and/or Alternate Bids. These Unit Prices include all charges for labor, materials and equipment, fee, layout, supervision (field and home office), general expenses, taxes, insurances, overhead and profit, but not limited to, for accomplishment of the Unit Price item(s).

Clarification Note: The Unit Prices quoted by the Contractor shall apply to increases (additive change orders) and to decreases (deductive change orders). This requirement shall supplement the requirements of the General Conditions, and Instructions to Bidders. Changes in the contract amount which are computed using the Stated Allowances and Unit Prices shall be figured at the same unit price whether additive or deductive.

#### **ITEM 5 – EXCAVATION AND HAUL-OFF OF UNSUITABLE SOILS**

The Contract Unit Price per CY shall be payment in full for the furnishing of all labor, materials and equipment, and all incidentals necessary to remove unsatisfactory foundation materials to construct a foundation from engineering fill meeting the requirements of the plans and specifications as determined by the Engineer. This item shall include all costs for excavation, hauling, etc. for removal of all unsuitable materials. This includes, but is not limited to, removing and handling the onsite materials, in accordance with the Contract requirements. This item includes only undercut below the limits of excavation under proposed structures or paved areas and as required by the Engineer during construction for Foundation Construction. Limits of undercut shall be established by the Engineer during construction. There shall be no payment under this item for over excavation or undercut not requested by the Engineer. Overcutting horizontally or vertically for the Contractor's needs or working requirements shall not be paid under this item but should be included in other bid items. This item is for excavation only. Placement of materials shall be paid under Item 6 or Item 7 as determined by the Engineer during construction. The price shall be calculated on final in place material after specified compaction requirements are met with the limits as shown on the Plans or reestablished by actual field conditions.

#### **ITEM 6 – REPLACEMENT WITH CRUSHED STONE (825B OR #57)**

The Contract Unit Price per ton in place shall be payment in full for furnishing of all labor, materials, equipment and all incidentals necessary to complete the installation of crushed stone as required by the Engineer during construction. This item shall cover #57 stone and ALDOT 825B and the use of each shall be determined solely by the Engineer. This item does not include rip-rap or gravel shown or inferred from the Plans or included as part of the Contractor's BMP installation and maintenance or replacement of existing gravel areas disturbed during construction; the cost of these items shall be included in other items. Crushed stone placement paid under this item shall include only extra

crushed stone placed during construction as required by the Engineer. This shall include but not be limited to supplying and placing the crushed stone and all necessary excavation. Tonnage shall be measured from certified invoices from the material supplier.

#### **ITEM 7 – REPLACEMENT WITH OFFSITE SUITABLE MATERIAL**

The Contract Unit Price per cubic yard in place shall be payment in full for utilizing soil excavated from offsite borrow pits as engineered fill material. Offsite borrow areas shall be identified by the Contractor during construction, approved by the Owner / Engineer and may only be utilized to replace unsuitable soils excavated from the foundation undercut footprint (structure plus ten feet). Determination of unsuitable soil to be replaced will be made by the Engineer during construction. Offsite borrow material shall be placed in accordance with the geotechnical report and as required by the geotechnical engineer during construction. Payment will be made based on in place, compacted, engineered fill only. No payment will be made for over excavation from the borrow area. Payment shall include all costs associated with clearing and grubbing, soil segregation, moisture conditioning, hauling, placing, compacting, etc. All borrow areas shall be graded and grassed following construction such that they cause no drainage, access or operational problems.

#### **ITEM 8 – SURGE MATERIAL (ALDOT #1 STONE)**

The Contract Unit Price per ton in place shall be payment in full for furnishing of all labor, materials, equipment and all incidentals necessary to complete the installation of surge stone / material as required by the Engineer during construction. Gradations covered under this item shall be from Class 5 to Class 1 rip-rap and shall be determined solely by the Engineer. This item does not include rip-rap or gravel shown or inferred from the Plans or included as part of the Contractor's BMP installation and maintenance or replacement of existing gravel areas disturbed during construction; the cost of these items shall be included in other items. Crushed stone placement paid under this item shall include only extra crushed stone placed during construction as required by the Engineer. This shall include but not be limited to supplying and placing the crushed stone and all necessary excavation. Tonnage shall be measured from certified invoices from the material supplier.

#### **ITEM 9 – TOPSOIL**

The Contract Unit Price per cubic yard in place shall be payment in full for furnishing all labor, materials, equipment and incidentals necessary to complete the installation of one (1) cubic yard of imported topsoil. Topsoil material shall be placed in accordance with the landscape architecture plans, specifications and directions and only as required and directed by the Engineer or landscape architect during construction. Payment will be made based on in place topsoil only. No payment will be made for over excavation from the borrow area or from Contractor's failure to stockpile and reuse the existing onsite topsoil material. Payment shall include all costs associated with clearing and grubbing, soil segregation, moisture conditioning, hauling, placing, etc. All disturbed areas shall be graded and grassed following construction such that they cause no drainage, access or operational problems.

#### **ITEM 10 – SOD**

The Contract Unit Price per square yard shall be payment in full for furnishing of all labor, materials, equipment and all incidentals necessary to complete the installation of one (1) square yard of



sod as required by the Engineer during construction. This item does not include sod or other landscaping shown or inferred from the Plans or included as part of the Contractor's landscaping installation and maintenance or replacement of installed sod disturbed during construction; the cost of these items shall be included in other items. Sod installation paid under this item shall include only extra sod installed (or deleted) during construction as required by the Engineer. This shall include but not be limited to supplying and installing one (1) square yard of sod.

#### **ITEM 11 – PINE STRAW BALES**

The Contract Unit Price per each in place shall be payment in full for furnishing of all labor, materials, equipment and all incidentals necessary to complete the installation and spreading of one (1) pine straw bale as required by the Engineer during construction. This item does not include pine straw bales or other landscaping shown or inferred from the Plans or included as part of the Contractor's landscaping installation and maintenance or replacement of spread pine straw disturbed during construction; the cost of these items shall be included in other items. Pine straw installation paid under this item shall include only extra pine straw installed and spread (or deleted) during construction as required by the Engineer. This shall include but not be limited to supplying, installing and spreading one (1) pine straw bale.

#### **ALTERNATE BID ITEMS**

#### **ITEM 2b – WINDSCREEN AT TENNIS & PICKLEBALL COURTS (EXISTING AND NEW)**

The Contract Unit Price shall be for the furnishing of all labor, materials, and equipment necessary to complete one (1) complete windscreen on the fence and gates as detailed on the Plans and Specifications for the existing tennis courts, new tennis courts and new pickleball courts. Note that this is an additive alternate and may or may not be accepted by the Owner.

#### **ITEM 2c – RESTROOM BUILDING ROOF EXTENSION**

The Contract Lump Sum Price shall be for the furnishing of all labor, materials, and equipment necessary to complete one (1) complete Restroom Building Roof Extension as detailed on the Plans and Specifications. Note that this is an additive alternate and may or may not be accepted by the Owner.

#### **ITEM 2d – SKATE PARK PAVING**

The Contract Lump Sum Price shall be for the furnishing of all labor, materials, and equipment necessary to complete one (1) complete Skate Park Paving as detailed on the Plans and Specifications. Note that this is an additive alternate and may or may not be accepted by the Owner.

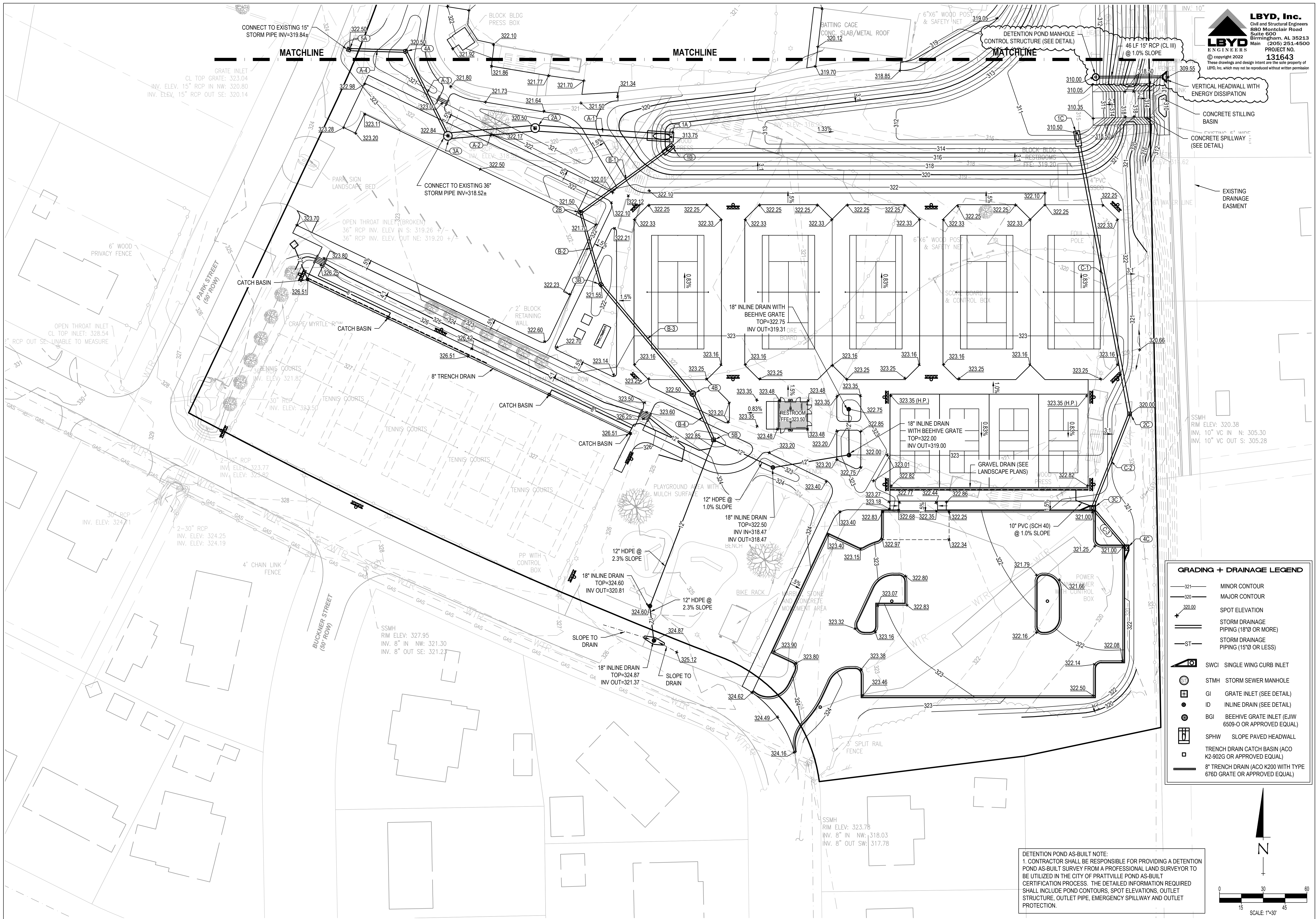
#### **ITEM 2e – OMIT PAYGROUND ALLOWANCE**

The Contract Lump Sum Price shall be for the omission of Pay Item 2a – Playground Allowance. Note that this is a deductive alternate and may or may not be accepted by the Owner.

**ITEM 2f – OMIT ASPHALT PAVING & REPLACE WITH 825 / 8910 GRAVEL PAVING**

The Contract Unit Price shall be for the furnishing of all labor, materials, and equipment necessary to complete one (1) square yard of omitting asphalt paving and replacing with either 825 or 8910 compacted crushed stone as detailed on the Plans and Specifications. No striping will be required if the Owner elects to award this item. Note that this is a deductive alternate and may or may not be accepted by the Owner.

END SECTION 00 43 24



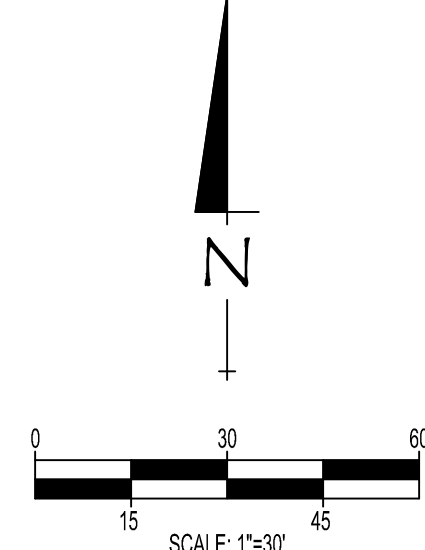
REVISIONS	
NO	DESCRIPTION
01	12/01/22 100% OWNER REVIEW
02	1/10/23 BID SET
03	2/13/23 ADDENDUM #1

FOR REVIEW AND COMMENT  
 AS-BID  
 AS-BUILT  
 CONSTRUCTION REVISIONS

**GRADING + DRAINAGE LEGEND**

	MINOR CONTOUR
	MAJOR CONTOUR
	SPOT ELEVATION
	STORM DRAINAGE PIPING (18" OR MORE)
	STORM DRAINAGE PIPING (15" OR LESS)
	SWCI SINGLE WING CURB INLET
	STMH STORM SEWER MANHOLE
	GI GRATE INLET (SEE DETAIL)
	ID INLINE DRAIN (SEE DETAIL)
	BGI BEEHIVE GRATE INLET (EJIW 6509-O OR APPROVED EQUAL)
	SPHW SLOPE PAVED HEADWALL
	TRENCH DRAIN CATCH BASIN (ACO K2-902G OR APPROVED EQUAL)
	8" TRENCH DRAIN (ACO K200 WITH TYPE 676D GRATE OR APPROVED EQUAL)

**DETENTION POND AS-BUILT NOTE:**  
1. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A DETENTION POND AS-BUILT SURVEY FROM A PROFESSIONAL LAND SURVEYOR TO BE UTILIZED IN THE CITY OF PRATTVILLE POND AS-BUILT CERTIFICATION PROCESS. THE DETAILED INFORMATION REQUIRED SHALL INCLUDE POND CONTOURS, SPOT ELEVATIONS, OUTLET STRUCTURE, OUTLET PIPE, EMERGENCY SPILLWAY AND OUTLET PROTECTION.



**CITY OF PRATTVILLE, AL  
PARKS & RECREATION DEPARTMENT**

**NEWTON PARK TENNIS COMPLEX  
IMPROVEMENTS**

**GRADING AND  
DRAINAGE PLAN -  
SOUTH**

**BOX IS 2 IN WIDE  
AT FULL SCALE**

JOB NO: PV-2111  
DATE: 01/2023  
DESIGNED BY: WCW  
DRAWN BY: WCW  
DWG: C4.0  
SHEET NUMBER **13**





CITY OF PRATTVILLE, ALABAMA  
NEWTON PARK TENNIS COMPLEX IMPROVEMENTS

PRE-BID CONFERENCE – MINUTES  
FEBRUARY 9, 2023 – 2:00 pm

1. Introductions

- City of Prattville, Alabama  
Kellie Cook – Director of Parks & Rec  
Russ Sanders – Assistant Director  
Paula Barlow – City Clerk
- Engineers of the South  
Greg Thompson – Sr Project Manager  
Lawson Smith – Project Engineer

2. Sign-In Sheet – Please sign in before leaving. Attendance is mandatory for General Contractors. See attached.

3. Project Includes:

- Five (5) new tennis courts
- Four (4) new pickleball courts
- Renovation of five (5) existing tennis courts
- One (1) new Restroom Building
- Field and site lighting
- Playground
- Skate Park area paving
- Connections to Existing Sewers
- Asphalt Paving
- Grassing and Clean Up

4. Engineer's Estimate = \$3,200,000

5. Bid Opening

- Thursday, February, 16, 2023 at 1:00 pm in the City of Prattville's City Hall Council Chambers (different location than Pre-Bid).

- General Contractors who bid must purchase bid documents from QuestCDN.
- Submit the following items: Bid Security Form, Proposal Form, Unit Prices Form, Proposed Products Form, and Proposed Subcontractors Form.

#### 6. Contract Time = 240 consecutive Calendar Days

- Award of Contract is expected at the first City Council Meeting in March.
- We will coordinate the start date based on material availability and contractor schedule through the Notice to Proceed process at the PreConstruction Conference.
- Discussion of Project sequence:
  - Build all new courts while keeping existing courts in operation and available to the public
  - Complete new courts and open to the public for use
  - Project Goal: A minimum of five (5) courts available at all times for use by the general public

#### 7. Owner's Bidding Rights

- The Owner reserves the right to reject any or all bids, to waive irregularities in the bids, and bidding deemed not to be in the best interest of the Owner.
- The Owner reserves the right to reject non-conforming, non-responsive, obviously unbalanced or conditional bids.

#### 8. Interpretations

- Only Addendums can modify the Contract Documents.
- Acknowledgement – Reply to e-mail.
- Pending Addendum Items:
  - Stormwater outlet structure detail

#### 9. Contract

- Performance Bond is required for 100% of the contract award amount.
- Payment Bond is required for 50% of the contract award amount.
- Bid Bond is to be 5% of the total bid amount, but in no event more than \$10,000.

#### 10. Coordination

- Contractor shall coordinate any disruptions in water or sewer service with the Owner.
- No City street may be closed without Owner approval

#### 11. Staking

- Contractor shall be responsible for construction staking.

#### 12. Permits

- ADEM Stormwater Permit – Contractor's responsibility. EOS is available for these services, if desired.

#### 13. Safety

- Safety is the responsibility of the Contractor.
- See Section 00 72 00 – General Conditions Article 8.

#### 14. Digital Plan Room

- QuestCDN Project #8366671. All documents (Plan Holder List, Meeting Minutes, Addenda, Bid Tab, etc.) will be issued through the digital plan room.

#### 15. Discussion

- It is the opinion of City of Prattville that sales tax will not be required on materials purchased for the sewer portion of this project because they are believed to fall under Alabama Administrative Rule 810-6-3-.46 entitled "Air and Water Pollution Control Exemption". However, it is the Contractor's responsibility to verify this and follow all applicable sales tax laws.
- The Alabama Department of Revenue confirmed that Form ST: EXC-01 Application for Sales and Use Tax Certificate of Exemption for Government Entity Project will be valid for City of Prattville wastewater projects. The Contractor will be responsible for:
  - Submission of the form
  - Issuing a Certificate to all Vendors and Subcontractors
  - Maintain a list of Certificate Holders
  - Keep Monthly Billing Records of Tax-Exempt Purchases

#### 16. Questions

- All questions shall be received by e-mail to Greg Thompson at [Greg@EngineersoftheSouth.com](mailto:Greg@EngineersoftheSouth.com)
  - Cutoff for questions is 24 hours prior to bid.
- Will construction water be available? Note that the Prattville Water Works Board (PWVB) is a separate entity from the City. It is our (EOS) experience that the Prattville Water Works Board (PWVB) works well with contractors on City projects and will provide a meter at a nearby hydrant. It is also our understanding that they may not charge for this water on City projects – please contact them directly to confirm this prior to bidding.
- Since part of park will be open to the public during construction, is temporary site fencing required? The Plans do not specify the temporary fencing but do specify that safety is the responsibility of the contractor. The contractor shall be responsible for taking any and all measures deemed necessary to protect the site and protect the public.
- Is there a way to cover PWVB fees? EOS will provide an updated Unit Prices Form and Basis of Payment via addendum to provide an allowance for any fees from the PWVB related to the new 2" water meter and the relocation of the existing 2" water meter.
- Is this project tax exempt? It is the City's opinion that this project is not tax exempt with the exception of the wastewater materials as outlined by the Alabama Department of Revenue:
  - [Sales & Use Tax Incentives - Alabama Department of Revenue](#)
  - [Section 40-23-4 \(state.al.us\)](#)
  - [Section 40-23-62 \(state.al.us\)](#).

EST. 1839

# PRATTVILLE

*Parks and Recreation*

## PRATTVILLE, AL NEWTON PARK TENNIS COMPLEX IMPROVEMENTS

### PREBID MEETING – SIGN-IN SHEET FEBRUARY 9, 2023 – 2:00 pm

NAME	COMPANY
<i>Gina Thompson</i>	<i>Engineers of the South</i>
<i>Lawson Smith</i>	<i>Engineers of the South</i>
<i>Paul G. Barclay</i>	<i>City of Prattville</i>
<b>RICHARD SEPANJIN</b>	<b>RIVER REGION SPORTS FIELDS</b>
<i>Dale Gervais</i>	<i>Webb Builders, Inc.</i>
<i>Kenan Boswell</i>	<i>Coburn Contractors, LLC</i>
<i>Jonathan Funnigan</i>	<i>Citizen</i>
<i>Kim McBryde</i>	<i>River Region Sports Fields</i>
<i>Steve Taylor</i>	<i>Garner Electric</i>
<i>Kellie Cook</i>	<i>City of Prattville</i>
<i>Danny Webb</i>	<i>Webb Builders Inc</i>
<i>Wayne Majors</i>	<i>Kyser Const.</i>
<i>Justin Dean</i>	<i>Clements Dean Building Co.</i>
<i>Iris Korthauer</i>	<i>Citizen</i>
<i>Heath Seelbinder</i>	<i>Clements Dean Building Co.</i>







EST. 1839

# PRATTVILLE

*Parks and Recreation*

*Newton Park Tennis Complex  
Improvements*

## REPORT OF GEOTECHNICAL EXPLORATIONS

*City of Prattville's Park & Recreation  
Department*

Prepared by:



**ENGINEERS  
OF THE SOUTH**

August 1, 2022

**To:** City of Prattville  
Attention: Kellie Cook, Parks and Recreation Director  
424 South Northington Street  
Prattville, AL 36067

**Project Number:** PV-20110

**RE:** Report of Geotechnical Exploration  
Newton Park Improvements  
Prattville, Alabama

Gentlemen:

The attached geotechnical exploration report presents a review of the project information, a description of the site and subsurface conditions encountered, and a summary of our foundation and earthwork recommendations for the proposed Newton Park Improvements in Prattville, Alabama. The Appendix contains the boring location plan and the results of our field testing.

Please contact us if you have any questions regarding the information presented.

Sincerely,  
Engineers of the South, LLC



Richard Bourquard, P.E.

Attachments

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APPENDIX	

1. PURPOSE AND SCOPE OF EXPLORATION

The purpose of this exploration was to obtain specific subsurface data at the site, review available geologic information, and to develop foundation, and site preparation recommendations for the proposed project.

The scope of our field activities included drilling 11 soil test borings to obtain subsurface information. The borings were drilled to depths of 10 feet. The laboratory testing program included moisture content, Atterberg Limit and sieve analysis.

At the conclusion of the field testing program, the geotechnical analysis was conducted. This report includes the test results and recommendations for foundation design and construction.

2. PROJECT INFORMATION

The major improvements to Newton Park will include the construction of new hard surface tennis courts and pickleball courts, and the renovation of the existing tennis courts. Also planned is the construction of a skate park and a new parking lot. Sidewalks, concrete paved corridors and concrete plazas are planned as well as playground improvements. A new restroom facility, gravel walking trails, and improved landscaping is planned.

No major grade changes are planned and the intent is to use the general slope of the site as is.

3. EXPLORATORY FINDINGS

3.1. SURFACE CONDITIONS

The project is located near the intersection of Walker Street and Till Street in Prattville, Alabama. Existing ball fields and tennis courts presently occupy the site. An aerial photo of the site is shown below:



### 3.2.SITE GEOLOGY

Published geological information indicates the site is underlain by the Eutaw Formation. The Eutaw consists of light-greenish-gray to yellowish-gray cross-bedded, well-sorted, micaceous, fine to medium quartz sand that is fossiliferous and glauconitic in part and contains beds of greenish-gray micaceous, silty clay and medium-dark-gray carbonaceous clay.

### 3.3. SUBSURFACE CONDITIONS

The subsurface conditions were explored with 11 soil test borings drilled according to the procedures presented in the Appendix. The boring locations and depths were selected by Engineers of the South.

The subsurface conditions encountered at the test boring locations are shown on the Test Boring Records in the Appendix. These Test Boring Records represent our interpretation of the subsurface conditions based on the field logs and visual examination of field

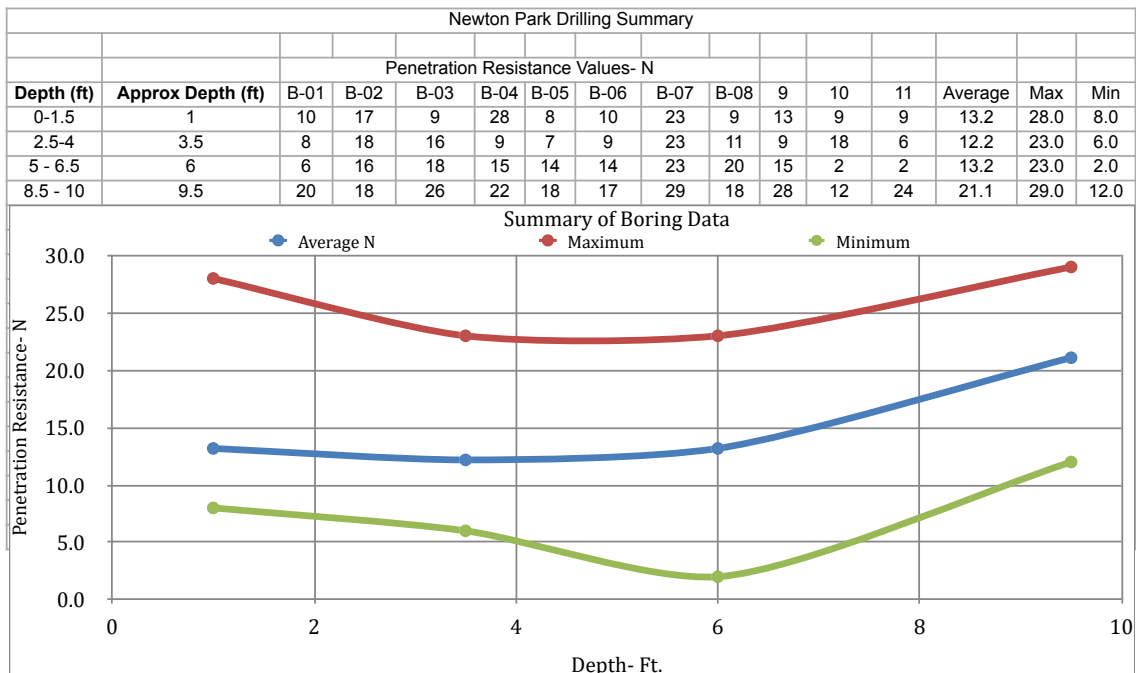
samples by an engineer. The interface between various strata on the Test Boring Records represents the approximate interface location. The transition between strata may be gradual. Water levels shown on the Test Boring Records represent the conditions only at the time of our exploration, or as noted on the boring records.

The surface conditions at the time of drilling included grassed athletic fields and various pavements. The site is relatively level so fill material is likely present on the site. Items such as tree debris or thick organic topsoil layers were not encountered at the boring locations.

Below the surface, the soil conditions found in the borings typically consisted of medium dense clayey sand and stiff sandy lean clay. Penetration resistance values (N) ranged from about 8 to 29, except in Borings B-10 and B-11. In those borings, located in the northern part of the site where future tennis courts are planned, very loose sand deposits were encountered at depths of about 3 to 7 feet. N-values in the loose sands were as low as 2.

Auger refusal was not found in the borings, which were drilled to a depth of 10 feet. Water was not found in the borings at the time of drilling. Ground water levels may vary from those measured at the time of our field activities.

A graph of N-value versus depth is shown below:



The testing program included moisture content, Atterberg limit and sieve analysis. The results are summarized below:

Boring	Sample Depth- Ft.	Natural Moisture Content- %	Liquid Limit	Plasticity Index	% Passing # 200 sieve	USCS
B-1	6.5 - 8	14.7	33	15	50.7	CL
B-3	0 - 1.5	11.2			50.1	
B-3	2.5 - 4	16.2				
B-6	0 - 1.5	20.4	26	10	45.0	SC
B-6	2.5-4	14.7				
B-10	0-1.5	10.8				
B-10	2.5-4	12.0				
B-10	6.5-8	16.4			54.9	

### 3.4. SEISMIC SITE CHARACTERIZATION

The 2012 edition of the *International Building Code* was reviewed to determine the seismic site classification. Based on our review of published geologic data and our experience in the site vicinity we believe that our boring data is representative of the typical soil profile to a depth of approximately 100 feet. Based on these assumptions, the conditions encountered in our borings and our experience, the site corresponds to a Site Class D.

#### 3.4.1. Regional Seismicity

A review of the *Seismic Map* for the United States, published on the USGS indicates the following seismic design parameters:

$$S_S = 0.15g, S_{MS} = 0.24g, S_{DS} = 0.16g, S_1 = 0.076g, S_{M1} = 0.184g, S_{D1} = 0.122g$$

A summary seismic report is provided in the Appendix.

#### 4. GEOTECHNICAL EVALUATION

Based on the subsurface conditions encountered in our borings, our analyses, and our experience, it is our opinion that the site is suitable for construction of the proposed project. The primary foundation concern is the presence of loose sand strata found in Borings B-10 and 11. These materials are possibly old fill deposits. Indications of these loose soil conditions were not obvious at the surface and a review of historical aerial photos shows that the site was used as a park since at least 1998.

#### 5. GEOTECHNICAL RECOMMENDATIONS

##### 5.1. FOUNDATIONS

We recommend the proposed building structures be supported by conventional shallow spread footings or mats bearing on stiff, native soil or properly compacted soil fill. Foundations bearing on these materials may be sized for a maximum allowable net bearing pressure of 2,000 pounds per square foot (psf). We estimate that settlement of the restrooms or any other lightly loaded buildings will be less than one inch.

Recommended design geotechnical parameters for the project, including light poles, are provided below

Recommended Geotechnical Design Parameters

<b>Soil Stratum</b>	<b>Net Allowable Bearing Capacity (psf)</b>	<b>Undrained Shear Strength-Cohesion (psf)</b>	<b>Undrained Angle of Internal Friction-(degrees)</b>	<b>Unit Weight (pcf)</b>
Stratum A-0 to 7 feet depth	2000	1500	0	120
Stratum B-7 to 10 feet depth	2500	2000	0	125

**Note: Loose sand strata were encountered from depths of about 3 to 7 feet in Borings B-10 and B-11 (located in northern part of site). Future tennis courts are presently planned in this area. Additional evaluations should be performed if any future buildings are planned in this area.**



## 5.2 GROUND WATER CONTROL

Ground water was not found in the borings at the time of drilling. However, seasonal fluctuations should be anticipated. Typically, ground water encroaching upon construction excavations can be removed by placing a sump near the source of seepage and then pumping from the sump.

Surface water runoff should be prevented from running down into any excavations by placing a small berm of soil or ditch around the perimeter at the top of the excavation.

## 5.3 EARTHWORK RECOMMENDATIONS

After planned demolition and site grading, we recommend proofrolling the exposed subgrade to detect unstable conditions. The proofroll should be performed with a loaded dump truck or similar equipment (judged acceptable by the geotechnical engineer) after a suitable period of dry weather to avoid degrading the subgrade. Make several passes over each section with the proofrolling equipment. Remove and replace soft, organic, or highly plastic soil, or old unstable fill with properly compacted fill. Stabilization methods (geotextile and/or granular material) may be used to reduce undercutting depths.

Prior to beginning fill construction, we recommend representative samples of the proposed fill materials be collected and tested to determine their laboratory compaction characteristics, plasticity, and natural moisture content. These tests are needed to determine if the proposed fill material is acceptable and for quality control during compaction.

The following criteria are recommended for structural fill construction:

- Limit the fill materials to a Plasticity Index less than 25, Liquid Limit less than 50, a maximum particle size of 3 inches, and less than 3 percent by weight fibrous, organic matter. Except for infrequent zones of high plasticity soil, the on-site material is suitable for use as fill.
- Construct compacted fill by spreading suitable soil in maximum 8 inch-thick loose lifts.
- Compact the fill within structural areas to at least 95 percent of the standard maximum dry density (ASTM D698).
- Maintain the moisture content of the fill soils to within  $\pm 2$  percentage points of the soils' optimum moisture content.

- Perform one in-place density test in every 10,000 square feet for each one foot-thick fill layer.
- Maintain positive surface drainage to prevent water from ponding on the surface during all earthwork operations.

## 6. BASIS FOR RECOMMENDATIONS

Regardless of the thoroughness of a geotechnical exploration, there is always a possibility that conditions between borings will be different from those at specific boring locations and that conditions will not be as anticipated by the designers or contractors. In addition, the construction process may itself alter soil conditions. Therefore, experienced geotechnical personnel should observe and document the construction procedures used and the conditions encountered. Unanticipated conditions and inadequate procedures should be reported to the design team along with timely recommendations to solve the problems created.

The assessment of site environmental conditions or the presence of contaminants in the soil, rock, surface water or ground water of the site was beyond the scope of this exploration.

## APPENDIX:

Boring Location Plan

Boring Logs

Field Testing Procedures

Key to Symbols and Descriptions

NO	DATE	DESCRIPTION	FOR REVIEW AND COMMENT	AS-BID	CONSTRUCTION REVISIONS	AS-BUILT
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

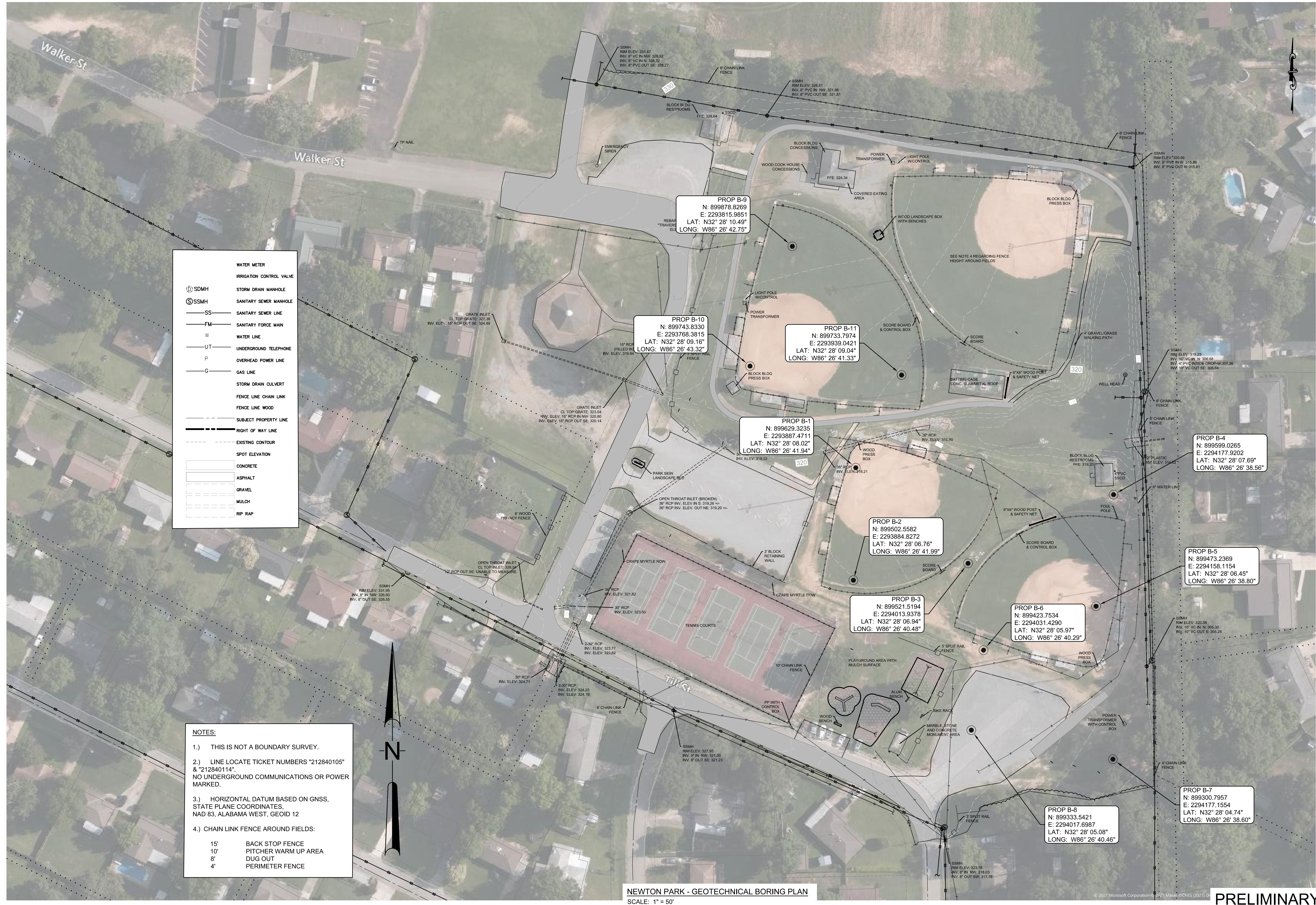
CITY OF PRATTVILLE, ALABAMA  
PARKS & RECREATION DEPARTMENT  
NEWTON PARK IMPROVEMENTS

GEOTECHNICAL BORING PLAN

BOX IS 2 IN WIDE AT FULL SCALE

JOB NO: PV-2111  
DATE: 03/2022  
DESIGNED BY: GST  
DRAWN BY: GST  
DWG: 10-C-12

SHEET NUMBER XX



⊕	WATER METER
⊕	IRRIGATION CONTROL VALVE
⊕	STORM DRAIN MANHOLE
⊕	SANITARY SEWER MANHOLE
SS	SANITARY SEWER LINE
FM	SANITARY FORCE MAIN
W	WATER LINE
UT	UNDERGROUND TELEPHONE
P	OVERHEAD POWER LINE
G	GAS LINE
---	STORM DRAIN CULVERT
---	FENCE LINE CHAIN LINK
---	FENCE LINE WOOD
---	SUBJECT PROPERTY LINE
---	RIGHT OF WAY LINE
---	EXISTING CONTOUR
•	SPOT ELEVATION
□	CONCRETE
□	ASPHALT
□	GRAVEL
□	MULCH
□	RIP RAP

**NOTES:**

- THIS IS NOT A BOUNDARY SURVEY.
- LINE LOCATE TICKET NUMBERS "212840105" & "212840114". NO UNDERGROUND COMMUNICATIONS OR POWER MARKED.
- HORIZONTAL DATUM BASED ON GNSS, STATE PLANE COORDINATES, NAD 83, ALABAMA WEST, GEOID 12
- CHAIN LINK FENCE AROUND FIELDS:
  - 15' BACK STOP FENCE
  - 10' PITCHER WARM UP AREA
  - 8' DUG OUT
  - 4' PERIMETER FENCE

NEWTON PARK - GEOTECHNICAL BORING PLAN  
SCALE: 1" = 50'

PRELIMINARY

JOB NO: PV-2111

PROJECT: Newton Park Improvements

BORING NO: B-1

DATE: July 8/9, 2022

LOCATION: Middle of Site- near tennis courts

PAGE 1 OF 1


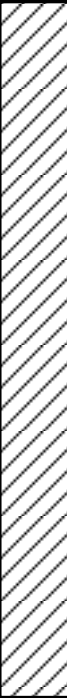
CREW: B&E

SURFACE EL.

METHOD: H.S.A.

GW @TOB Dry

GW @ 24 hr

Depth (feet)	Sym	Description	"N"	PP tsf	Notes
		Silty Gravel- Medium dense, orange red- GM Possible Fill	4-4-6		
		Sandy Lean Clay- Medium stiff, brown to yellow red - CL	3-4-4		
5			1-3-3		
		- Very stiff, red	5-9-11		
10		Boring Terminated at 10 feet			
		No ground water at time of boring			
15					
20					

JOB NO: PV-2111

PROJECT: Newton Park Improvements

BORING NO: B-2

DATE: July 8/9, 2022

LOCATION: Middle of Site- near playground

PAGE 1 OF 1



CREW: B&E

SURFACE EL.

METHOD: H.S.A.

GW @ TOB Dry

GW @ 24 hr

Depth (feet)	Sym	Description	"N"	PP tsf	Notes	
		Clayey Sand- Medium dense, dark red to red- SC	8-8-9			
				6-7-11		
5					4-7-9	
		Lean Clay- Very stiff, yellow brown - CL	5-7-11			
10						
		Boring Terminated at 10 feet				
			No ground water at time of boring			
15						
20						

JOB NO: PV-2111

PROJECT: Newton Park Improvements

BORING NO: B-3

DATE: July 8/9, 2022

LOCATION: SE part of Site- near tennis courts

PAGE 1 OF 1


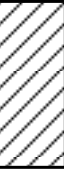
CREW: B&E

SURFACE EL.

METHOD: H.S.A.

GW @TOB Dry

GW @ 24 hr

Depth (feet)	Sym	Description	"N"	PP tsf	Notes
		Clayey Sand- Medium dense, dark red to red- SC/CL	6-4-5		
			3-6-10		
5			5-8-10		
		Lean Clay- Very stiff, red brown - CL	7-11-15		
10					
		Boring Terminated at 10 feet			
		No ground water at time of boring			
15					
20					

JOB NO: PV-2111

PROJECT: Newton Park Improvements

BORING NO: B-4

DATE: July 8/9, 2022

LOCATION: E part of Site- near tennis courts

PAGE 1 OF 1





CREW: B&E

SURFACE EL.

METHOD: H.S.A.

GW @ TOB Dry

GW @ 24 hr

Depth (feet)	Sym	Description	"N"	PP tsf	Notes
		Clayey Sand- Dense, dark red - SC	13-16-12		
		Sandy Lean Clay- Stiff, red - CL	2-4-5		
5		Clayey Sand- Medium dense, red brown - SC	3-6-9		
		Lean Clay- Very stiff, yellow red - CL	6-9-13		
10		Boring Terminated at 10 feet No ground water at time of boring			
15					
20					



JOB NO: PV-2111

PROJECT: Newton Park Improvements

BORING NO: B-5

DATE: July 8/9, 2022

LOCATION: SE part of Site- near pickleball courts

PAGE 1 OF 1

CREW: B&E

SURFACE EL.

METHOD: H.S.A.

GW @TOB Dry

GW @ 24 hr

Depth (feet)	Sym	Description	"N"	PP tsf	Notes
	•••••	Clayey Sand- Medium dense, dark red to red- SC	6-4-4		
		- Loose	2-2-5		
5				2-5-9	
		- Yellow brown		6-8-10	
10		Boring Terminated at 10 feet No ground water at time of boring			
15					
20					

JOB NO: PV-2111

PROJECT: Newton Park Improvements

BORING NO: B-6

DATE: July 8/9, 2022

LOCATION: SE part of Site- near pickleball courts

PAGE 1 OF 1

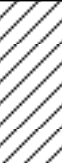

CREW: B&E

SURFACE EL.

METHOD: H.S.A.

GW @TOB Dry

GW @ 24 hr

Depth (feet)	Sym	Description	"N"	PP tsf	Notes
			4-5-5		
		Clayey Sand- Medium dense, dark red - SC	4-4-5		
5			3-6-8		
		- Yellow brown	5-7-10		
10		Boring Terminated at 10 feet No ground water at time of boring			
15					
20					

JOB NO: PV-2111

PROJECT: Newton Park Improvements

BORING NO: B-7

DATE: July 8/9, 2022

LOCATION: SE part of Site- near parking lot

PAGE 1 OF 1

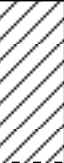

CREW: B&E

SURFACE EL.

METHOD: H.S.A.

GW @TOB Dry

GW @ 24 hr

Depth (feet)	Sym	Description	"N"	PP tsf	Notes
		Lean Clay- Very stiff, dark red - CL	9-11-12		
		Clayey Sand- Medium dense, dark red to red- SC	5-10-13		
5			5-10-13		
		- Yellow brown	7-12-17		
10		Boring Terminated at 10 feet			
		No ground water at time of boring			
15					
20					

JOB NO: PV-2111

PROJECT: Newton Park Improvements

BORING NO: B-8

DATE: July 8/9, 2022

LOCATION: S part of site- near parking lot

PAGE 1 OF 1

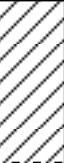

CREW: B&E

SURFACE EL.

METHOD: H.S.A.

GW @TOB Dry

GW @ 24 hr

Depth (feet)	Sym	Description	"N"	PP tsf	Notes
		Sandy Lean Clay- Stiff, brown - CL	6-4-5		
		Clayey Sand- Medium dense, dark red to red- SC	3-5-6		
5			4-8-12		
10			5-8-10		
		Boring Terminated at 10 feet No ground water at time of boring			
15					
20					

JOB NO: PV-2111

PROJECT: Newton Park Improvements

BORING NO: B-9

DATE: July 8/9, 2022

LOCATION: N part of Site- near tennis courts

PAGE 1 OF 1


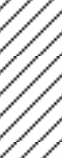

CREW: B&E

SURFACE EL.

METHOD: H.S.A.

GW @ TOB Dry

GW @ 24 hr

Depth (feet)	Sym	Description	"N"	PP tsf	Notes
		Clayey Sand- Medium dense, dark red to yellow red- SC	2-6-7		
			2-3-6		
5		Sandy Lean Clay- Very stiff, yellow brown- CL	4-6-9		
		Clayey Sand- Medium dense, red- SC	5-12-16		
10		Boring Terminated at 10 feet No ground water at time of boring			
15					
20					

JOB NO: PV-2111

PROJECT: Newton Park Improvements

BORING NO: B-10

DATE: July 8/9, 2022

LOCATION: N part of Site- near tennis courts

PAGE 1 OF 1

CREW: B&E

SURFACE EL.

METHOD: H.S.A.

GW @ TOB Dry

GW @ 24 hr

Depth (feet)	Sym	Description	"N"	PP tsf	Notes	
	[Patterned]	Clayey Sand- Medium dense, dark red to brown red- SC	3-4-5			
				6-8-10		
5						
			Silty Sand/Lean Clay- Very loose, brown- SM/CL	1-1-1		
10			Clayey Sand- Medium dense, yellow brown- SC	2-5-7		
		Boring Terminated at 10 feet				
		No ground water at time of boring				
15						
20						



## FIELD TESTING PROCEDURES

Field Operations: The general field procedures employed by Engineers of the South are summarized in ASTM D420 which is entitled "Investigating and Sampling Soils and Rocks for Engineering Purposes." This recommended practice lists recognized methods for determining soil and rock distribution and ground water conditions. These methods include geophysical and in situ methods as well as borings.

Borings are drilled to obtain subsurface samples using one of several alternative techniques depending upon the subsurface conditions. These techniques are:

- a. Continuous 2½ or 3¼ inch inside diameter (I.D.) hollow stem augers;
- b. Wash borings using roller cone or drag bits (using drilling mud or water);
- c. Continuous flight augers (ASTM D1425).

These drilling methods are not capable of penetrating through material designated as "refusal materials." Refusal, thus indicated, may result from hard cemented soil, soft weathered rock, coarse gravel or boulders, thin rock seams, or the upper surface of sound continuous rock. Core drilling procedures are required to determine the character and continuity of refusal materials.

The subsurface conditions encountered during drilling are reported on a field test boring record by the chief driller. The record contains information concerning the boring method, samples attempted and recovered, indications of the presence of various materials such as coarse gravel, cobbles, etc., and observations between samples. Therefore, these boring records contain both factual and interpretive information. The field boring records are on file in our office.

The soil and rock samples plus the field boring records are reviewed by a geotechnical engineer. The engineer classifies the soils in general accordance with the procedures outlined in ASTM D2488 and prepares the final boring records which are the basis for all evaluations and recommendations.

The final boring records represent our interpretation of the contents of the field records based on the results of the engineering examinations and tests of the field samples. These records depict subsurface conditions at the specific locations and at the particular time when drilled. Soil conditions at other locations may differ from conditions occurring at these boring locations. Also, the passage of time may result in a change in the subsurface soil and ground water conditions at these boring locations. The lines designating the interface between soil or refusal materials on the records and on profiles represent approximate boundaries. The transition between materials may be gradual. The final boring records are included with this report.

The detailed data collection methods used during this exploration are discussed below.

Soil Test Borings: Soil test borings were made at the site at locations shown on the attached Boring Plan. Soil sampling and penetration testing were performed in accordance with ASTM D1586.

The borings were made by mechanically twisting a hollow stem steel auger into the soil. At regular intervals, the drilling tools were removed and soil samples obtained with a standard 1.4 inch I.D., 2 inch outside diameter (O.D.), split tube sampler. The sampler was first seated 6 inches to penetrate any loose cuttings, then driven an additional foot with blows of a 140 pound hammer free falling (automatic hammer) 30 inches. The number of hammer blows required to drive the sampler the final foot was recorded and is designated the "penetration resistance". The penetration resistance, when properly evaluated, is an index to the soil strength and foundation supporting capability.



Representative portions of the soil samples, thus obtained, were placed in glass jars and transported to the laboratory. In the laboratory, the samples were examined to verify the driller's field classifications. Test Boring Records are attached which graphically show the soil descriptions and penetration resistances.

Water Level Readings: Water table readings are normally taken in conjunction with borings and are recorded on the "Test Boring Records". These readings indicate the approximate location of the hydrostatic water table at the time of our field investigation. Where impervious (more clayey) soils are encountered the amount of water seepage into the boring is small, and it is generally not possible to establish the location of the hydrostatic water table through water level readings. The ground water table may also be dependent upon the amount of precipitation at the site during a particular period of time. Fluctuations in the water table should be expected with variations in precipitation, surface runoff, evaporation and other factors.

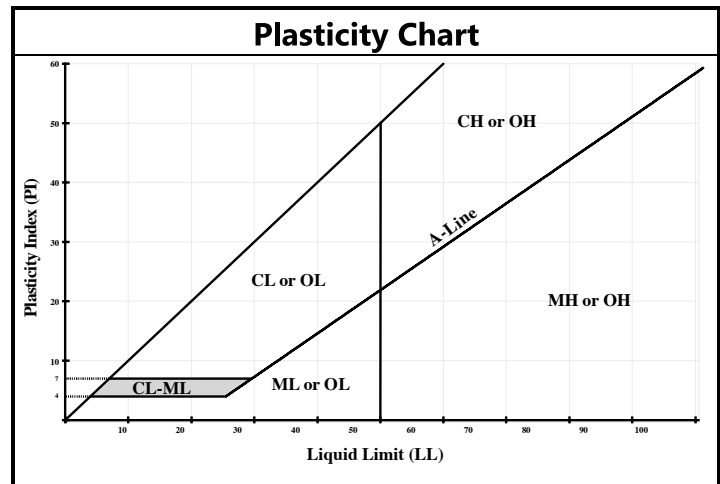
The time of boring, water level reported on the boring records is determined by field crews as the drilling tools are advanced. The time of boring water level is detected by changes in the drilling rate, soil samples obtained, or by measurement after the drilling tools are withdrawn. Additional water table readings may be obtained after the borings are completed. A time lag of 24 hours may allow stabilization of the ground water table which has been disrupted by the drilling operations. The readings are taken by dropping a weighted line down the boring or using an electrical probe to detect the water level surface.

Occasionally, the borings will cavein, preventing water level readings from being obtained or trapping drilling water above the caved-in zone. The cavein depth is also measured and recorded on the boring records.

Soil Classification: Soil classifications provide a general guide to the engineering properties of various soil types and enable the engineer to apply past experience to current situations. 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 "Test Boring Records."

Major Divisions			Symbols		Typical Description	
			Graph	Letter		
<b>Coarse Grained Soils</b>  More than 50% of material is larger than No. 200 sieve size	<b>Gravel and Gravelly Soils</b>  More than 50% of coarse fraction is larger than No. 4 sieve	<b>Clean Gravels</b>  (Little or no fines)		<b>GW</b>	Well-graded gravels, gravel – sand mixtures, little or no fines	
		<b>Gravels with Fines</b>  (Appreciable amount of fines)		<b>GP</b>	Poorly-graded gravels, gravel – sand mixtures, little or no fines	
		<b>Sand and Sandy Soils</b>  More than 50% of coarse fraction is smaller than No. 4 sieve	<b>Clean Sands</b>  (Little or no fines)		<b>SW</b>	Well-graded sands, gravelly sands, little or no fines
			<b>Sands with Fines</b>  (Appreciable amount of fines)		<b>SP</b>	Poorly-graded sands, gravelly sands, little or no fines
	<b>Fine Grained Soil</b>  More than 50% of material is smaller than No. 200 sieve size	<b>Silts and Clays</b>  Liquid Limit less than 50		<b>ML</b>	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silt with slight plasticity	
				<b>CL</b>	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
				<b>OL</b>	Organic silts and organic silty clays of low plasticity	
		<b>Silts and Clays</b>  Liquid Limit greater than 50		<b>MH</b>	Inorganic silts, micaceous or diatomaceous fine sand, or silty soils	
			<b>CH</b>	Inorganic clays of high plasticity		
			<b>OH</b>	Organic clays of medium to high plasticity, organic silts		
<b>Highly Organic Soils</b>				<b>PT</b>	Peat, humus, swamp soils with high organic contents	

Soil Component	Particle Size	U.S. Standard Sieve Size
Boulders	Larger than 300mm	N.A.
Cobbles	300mm to 75mm	N.A.
Gravel	75mm to 4.75mm	3-inch to #4 Sieve
Coarse	75mm to 19mm	3-inch to ¾-inch Sieve
Fine	19mm to 4.75mm	¾-inch to #4 Sieve
Sand	4.75mm to 0.075mm	#4 to #200 Sieve
Coarse	4.75mm to 2mm	#4 to #10 Sieve
Medium	2mm to 0.425mm	#10 to #40 Sieve
Fine	0.425mm to 0.075mm	#40 to #200 Sieve
Fines	Less than 0.075mm	Below #200 Sieve
Silt	Smaller than 5µm	N.A.
Clay	Smaller than 2µm	N.A.



Sands and Nonplastic Silts		Cohesive – Fine Grained Soil		
SPT Penetration (blows / foot)	Relative Density	SPT Penetration (blows / foot)	Estimated Consistency	Estimated Range of Unconfined Compressive Strength (tsf)
< 4	Very Loose	< 2	Very Soft	< 0.25
4 – 10	Loose	2 – 4	Soft	0.25 – 0.50
10 – 30	Medium Dense	4 – 8	Medium Stiff	0.50 – 1.00
30 – 50	Dense	8 – 15	Stiff	1.00 – 2.00
> 50	Very Dense	15 – 30	Very Stiff	2.00 – 4.00
		> 30	Hard	> 4.00

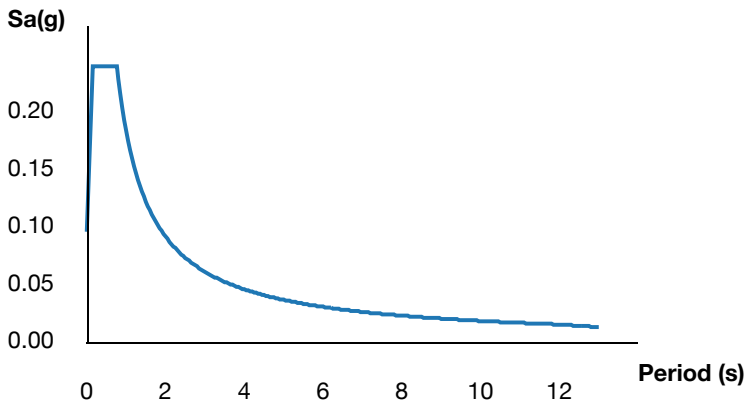
# Soil Classification Chart

### Search Information

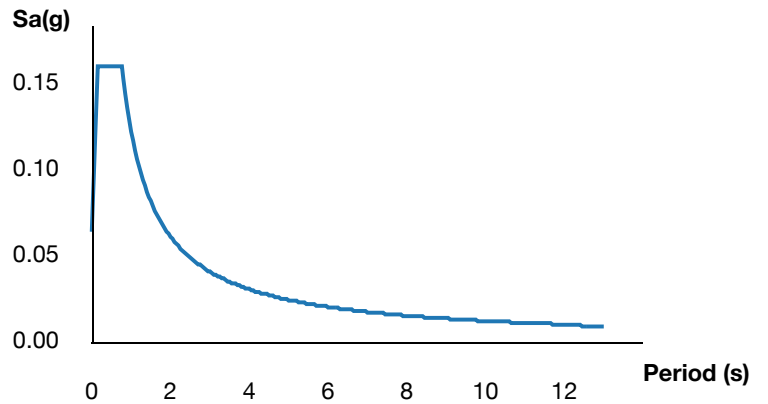
**Coordinates:** 32.46889102198736, -86.44479197644347  
**Elevation:** 321 ft  
**Timestamp:** 2022-07-25T21:33:32.866Z  
**Hazard Type:** Seismic  
**Reference Document:** ASCE7-16  
**Risk Category:** III  
**Site Class:** D



### MCER Horizontal Response Spectrum



### Design Horizontal Response Spectrum



### Basic Parameters

Name	Value	Description
$S_S$	0.15	MCE <sub>R</sub> ground motion (period=0.2s)
$S_1$	0.076	MCE <sub>R</sub> ground motion (period=1.0s)
$S_{MS}$	0.24	Site-modified spectral acceleration value
$S_{M1}$	0.184	Site-modified spectral acceleration value
$S_{DS}$	0.16	Numeric seismic design value at 0.2s SA
$S_{D1}$	0.122	Numeric seismic design value at 1.0s SA

### Additional Information

Name	Value	Description
SDC	B	Seismic design category
$F_a$	1.6	Site amplification factor at 0.2s
$F_v$	2.4	Site amplification factor at 1.0s

CR <sub>S</sub>	0.94	Coefficient of risk (0.2s)
CR <sub>1</sub>	0.889	Coefficient of risk (1.0s)
PGA	0.075	MCE <sub>G</sub> peak ground acceleration
F <sub>PGA</sub>	1.6	Site amplification factor at PGA
PGA <sub>M</sub>	0.12	Site modified peak ground acceleration
T <sub>L</sub>	12	Long-period transition period (s)
SsRT	0.15	Probabilistic risk-targeted ground motion (0.2s)
SsUH	0.159	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	1.5	Factored deterministic acceleration value (0.2s)
S1RT	0.076	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.086	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.6	Factored deterministic acceleration value (1.0s)
PGAd	0.5	Factored deterministic acceleration value (PGA)

*The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.*

## Disclaimer

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