ARKANSAS DEPARTMENT OF TRANSPORTATION

SUBSURFACE INVESTIGATION

STATE JOB NO. **110800**

FEDERAL AID PROJECT NO. **9990**

I-40 TRUCK PARKING EXPANSION PROJECT (PH.I)(WEST MEMPHIS)(S)

STATE HIGHWAY **I-40** **SECTION** **52**

IN **CRITTENDEN** **COUNTY**

The information contained herein was obtained by the Department for design and estimating purposes only. It is being furnished with the express understanding that said information does not constitute a part of the Proposal or Contract and represents only the best knowledge of the Department as to the location, character and depth of the materials encountered. The information is only included and made available so that bidders may have access to subsurface information obtained by the Department and is not intended to be a substitute for personal investigation, interpretation and judgment of the bidder. The bidder should be cognizant of the possibility that conditions affecting the cost and/or quantities of work to be performed may differ from those indicated herein.

ARKANSAS DEPARTMENT OF TRANSPORTATION
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MATERIALS DIVISION
11301 West Baseline Road | P.O. Box 2261 | Little Rock, AR 72203-2261 | Phone: 501.569.2185 | Fax: 501.569.2368

April 20, 2021

TO: Mr. Trinity Smith, Engineer of Roadway Design

SUBJECT: Foundation Recommendations
Buildings and Highmast Lighting Poles
Job No. 110800
I-40 Truck Parking Expansion Project (West Memphis) (S)
Crittenden County

Submitted herein are final foundation recommendations for the Public Restroom and AHP Substation buildings. A site grading plan provided by Roadway Design on February 22, 2021 indicates Finish Floor Elevation (FFE) for the Public Restroom building is planned at Elevation 214.42 with approximately 3.5 feet of fill to be placed. For the AHP Substation building FFE is planned at Elevation 214.27 with approximately 3 feet of fill placement. The site grading plan is included as Attachment A. Foundation loads and floor loads are not provided but these loads are anticipated to be light to very light. Preliminary recommendations were provided on January 12, 2021. No revision has been made in foundation recommendations since the January 12, 2021 submittal with the exception that lab data was added to some logs.

Recommendations for the two (2) 100-foot highmast light poles are also included in this report. These light poles are expected to be supported on drilled shafts. Foundation loads for these highmast light poles are not provided but some lateral loads are expected. There are also three (3) shorter light poles planned around the buildings. It is our understanding that those shorter light poles will be constructed based on Standard Drawings.

Public Restroom and AHP Substation Buildings

Seismic Conditions. Based on the results of the borings and test pits and the surface geology of the area, a Seismic Site Class D (Stiff Soil Profile) is considered suitable for the site in accordance with the criterial of the 2012 International Building Code. The liquefaction potential of the predominantly clayey soils encountered within the exploration depths of the borings and test pits is considered low.

Subsurface Conditions. Boring and test pit logs are included as Attachment B. A Plan of Borings and Test Pits, showing the approximate locations of these borings and test pits, are also included in Attachment B. The borings and test pit performed in the building areas (Borings B-1, B-2, B-2A, P-2, and P-4, and Test Pit 4) indicate the surface and near-surface soils are generally comprised of loose silty fine sand to fine sand or silty fine sand / fine sand with clay pockets. The loose silty fine sand to fine sand contains variable amounts of concrete debris and typically extends to 3- to 5-ft depth. This soil is considered to be on-site fill. Locally, the silty fine sand fill extends to more than 10-ft depth

(see Boring B-2) and refusal was encountered in a buried concrete slab. The surface sandy fill exhibits low relative density and is relatively permeable. In addition, the silty fine sand to fine sand is moisture sensitive and will become unstable under elevated moisture content and / or when disturbed.

The silty fine sand to fine sand fill is underlain by natural, soft to medium stiff high-plasticity clay. The clay is volumetrically unstable and expansive with increase in water content. This soil exhibits high potential for shrink-swell activity. The clay has low to moderate shear strength.

Shallow Footings. A shallow footing foundation system is suitable to support the light to very light structural loads of the Public Restroom and AHP Substation Buildings. As described above, the soils under the building footprints are comprised of relatively permeable silty fine sand to fine sand (fill) overlying high-plasticity, expansive clay. These soils exhibit low relative density and low to moderate shear strength. In addition, the upper silty fine sand to fine sand fill is moisture-sensitive while the lower clay has high heave potential. These on-site soils are not suitable to support building footings. Consequently, we recommend the foundation loads of the buildings be supported on continuous or individual footings founded in imported select fill.

Footings should be underlain by a minimum of 18 inches of compacted, imported fill. In light of the plan to place 3 to 3.5 feet of fill in the building areas, the requirements of minimum 18 inches of imported fill under the footings are generally satisfied with adequate surface stripping. However, some mass undercut may be required to accommodate the minimum thickness of compacted fill below footings, depending on footing depth, site terrain, and seasonal site conditions.

If seasonal site conditions warrant mass undercut, mass undercuts should extend at least 5 feet outside the building limits or to the extent possible. All the construction debris exposed during stripping and / or undercut should be completely removed and properly backfilled.

Imported borrow for fill or undercut backfill should consist of an approved low-plasticity clayey sand (SC), sandy clay (CL), or clayey gravel (GC) with a plasticity index (PI) between 5 and 20 or an approved alternative. We recommend all fill and backfill under the building footprints and at least 5 feet outside the building perimeter be composed of imported borrow.

Footings founded as recommended may be designed based on maximum net allowable bearing pressures of 1500 and 2000 psf for continuous and individual footings, respectively. These recommended allowable bearing pressures include a minimum factor of safety of 2.5. Total settlement of footings founded as recommended should be less than 1 inch. Differential settlement may be estimated as about one-half of the total settlement value.

Uplift of footings will be resisted by the weight of the structure and the foundation units. Resistance to lateral forces will be mobilized by sliding resistance at the footing bottom. Resistance to sliding may be evaluated using an ultimate friction ($\tan\delta$) value of 0.35 for concrete footings on compacted fill bearing stratum.

Continuous footings should have a minimum width of 18 inches. Individual footings should have a minimum dimension of 24 inches. A minimum footing depth of 18 inches below lowest adjacent grade is recommended for frost protection.

Floor Slabs. Slab-on-grade construction will be suitable for the building floor slabs. Subgrade preparation must include thorough proof-rolling of the subgrade. We recommend the floor slabs be supported on a 6-inch-thick clean crushed stone or gravel layer placed on a properly prepared subgrade. Suitable materials for this use include Mineral Aggregate (Class 3) complying with 2014 ARDOT Standard Specifications Sub-Section 403.01 or Coarse Aggregate complying with Sub-Section 802.02(c) for Class S concrete. The granular layer should be densified with vibrating equipment prior to floor slab construction. Impervious sheeting should be placed between the slabs and granular layer to act as a moisture barrier.

Shrink/Swell Potential. As noted, the highly-plastic clay is predominant across the site and will become volumetrically unstable with change in soil water content. To reduce seasonal changes in soil water content and therefore reduce the potential for accompanying movement, we recommend the following:

- Site grading should consider to design the ground surface to slope away from building perimeter to prevent water ponding around the buildings.
- Surface and roof runoff should be directed away from the building.
- Deep-rooted shrubs or trees that can have an impact on soil water content should not be planted adjacent to the buildings.

Site Grading. A stripping depth on the order of 6 to 9 inches is expected adequate in the building areas. After stripping and performing any undercut, and prior to fill placement, the subgrade should be proof-rolled with a loaded tandem-wheel dump truck or similar equipment. Areas identified to be soft or unstable should be compacted or otherwise undercut and replaced with select fill. The on-site silty fine sand to fine sand is moisture-sensitive. Consequently, the potential for undercut will increase significantly during wet seasons and if positive surface drainage is not maintained during the work.

The on-site soils are not suitable for fill and backfill in the building areas. Imported fill should be comprised of the soils recommended above in the Shallow Footings section. Fill, backfill, and re-compacted soils should be compacted to a minimum of 98 percent of the laboratory-determined maximum dry density near optimum moisture content. Suitable Proctor method should be selected utilizing the criteria specified in 2014 ARDOT Standard Specifications Sub-Section 210.10. Fill and backfill should be placed in horizontal,

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nominal 6- to 8-inch-thick loose lifts. Density and moisture of each lift of backfill and fill should be tested (minimum one test per lift) and approved prior to placing subsequent lifts.

100-Foot Highmast Light Pole Foundations

Seismic Conditions. Borings B-A and B-B were drilled at or near the locations of the two (2) 100-foot highmast light poles. Logs of these two (2) borings are also included in Attachment B. Results of laboratory triaxial test performed on undisturbed samples are included as Attachment 3. In light of the results of field SPT tests and laboratory triaxial test results, a Seismic Site Class D (Stiff Soil Profile) is determined suitable in accordance with 8th Edition of AASHTO LRFD Bridge Design Specifications.

Drilled Shafts. Based on the results of these borings, we recommend the foundation loads of these two (2) highmast poles be supported on drilled shaft founded in the natural medium stiff gray clay. For drilled shafts founded in gray clay as recommended, a maximum nominal side resistance (q_s) of 550 psf is recommended. Tip resistance of the drilled shafts can be determined utilizing a maximum nominal tip resistance (q_p) of 9000 psf. A resistance factor (φ_{stat}) of 0.45 and 0.40 is recommended for drilled shaft side resistance and tip resistance, respectively. The top 5 feet of the shaft side resistance should be ignored in determining total compressive resistance. Settlement of properly installed drilled shaft foundations founded as recommended should be less than 0.5 inch.

Detailed lateral load analyses are not included in the scope of work. Geotechnical input parameters for lateral load analysis may be selected based on correlated properties utilizing an undained shear strength value (Su) of 1000 psf. Specific input parameters can be provided upon request.

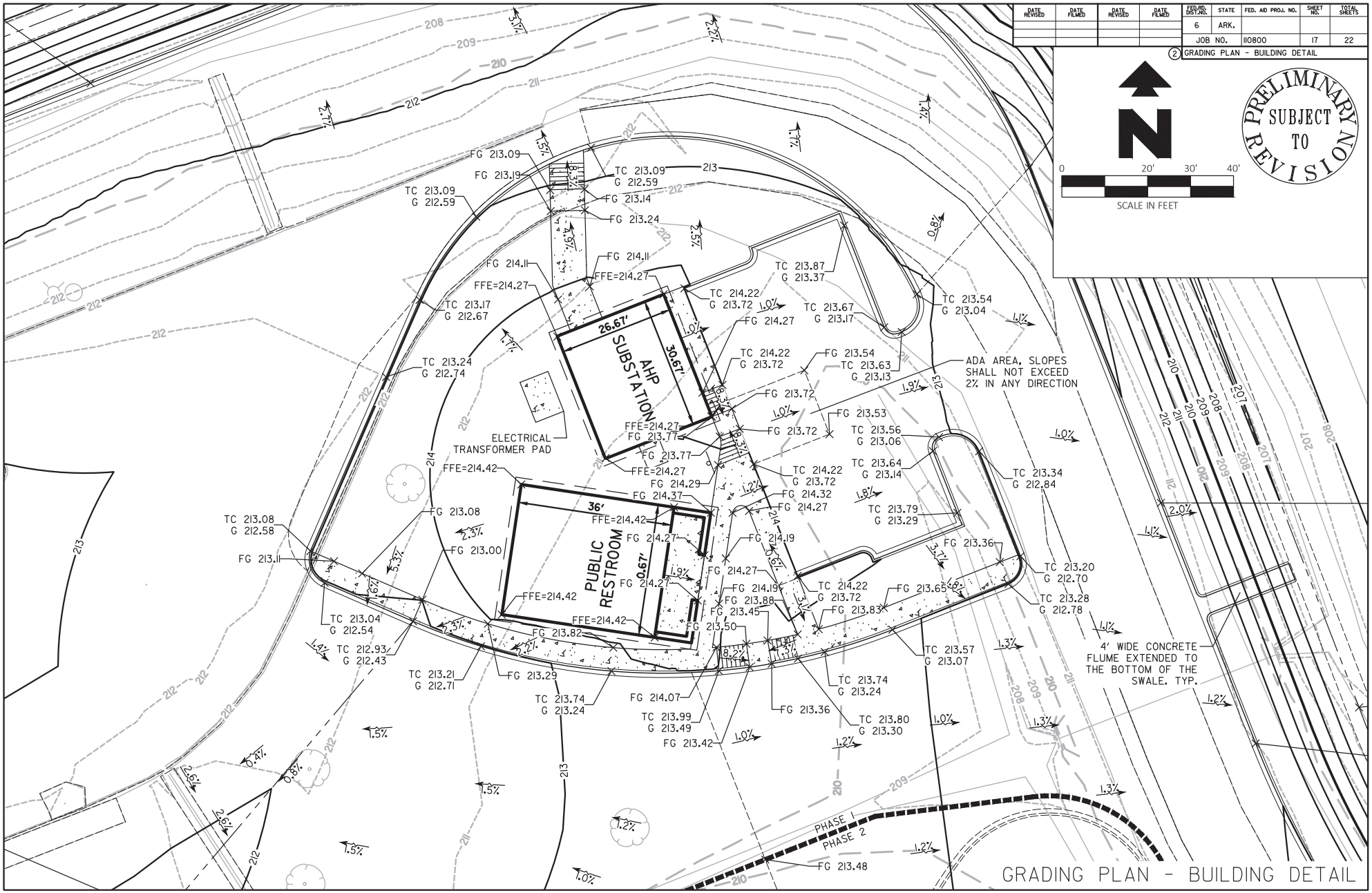
Jonathan A. Annable
Materials Engineer

JAA:yz:mlg:pjt
Attachment
cc: Facilities Management
System Information and Research
Radio
G. C. File

Attachment A

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110800	17	22

(2) GRADING PLAN - BUILDING DETAIL



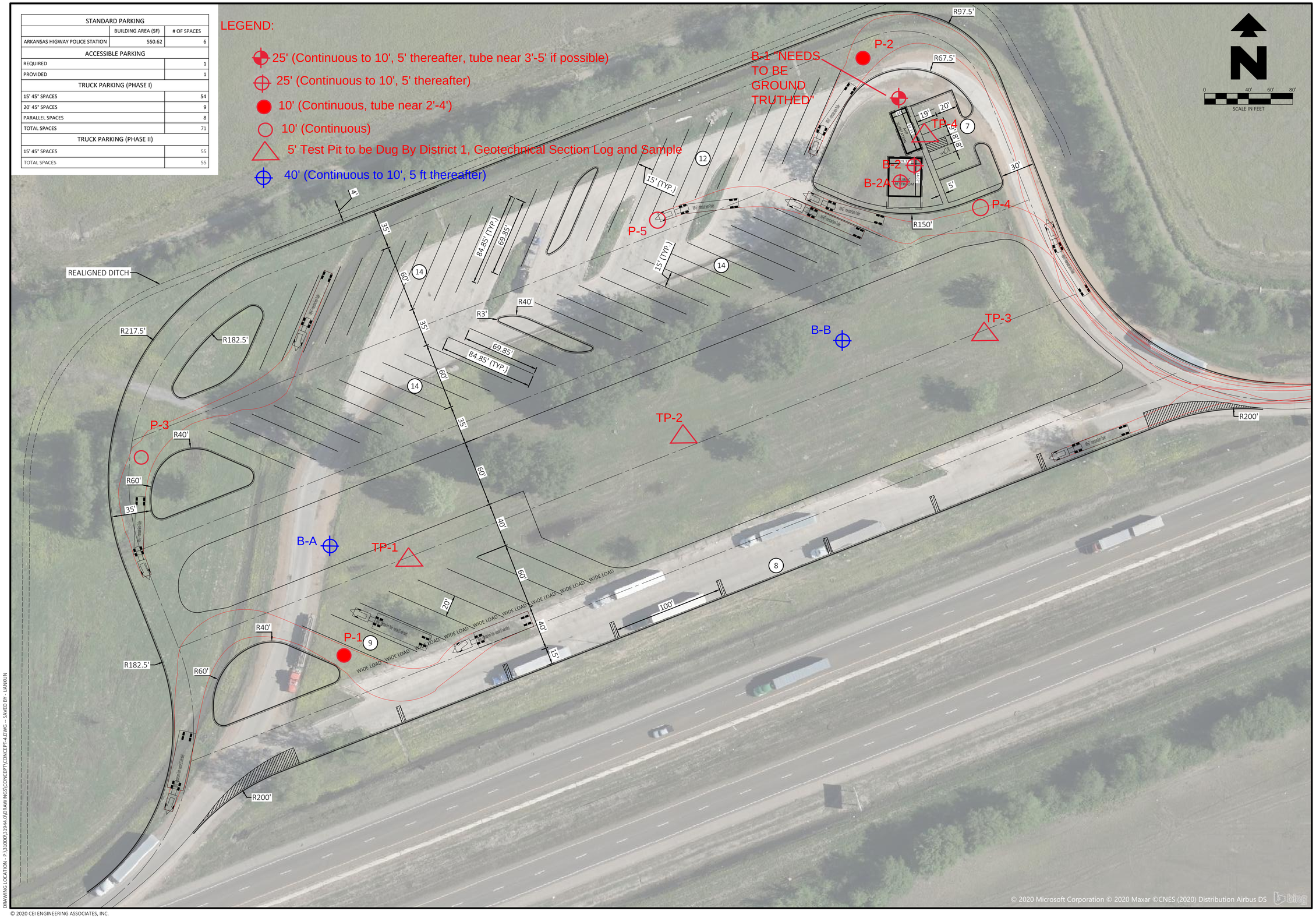
GRADING PLAN - BUILDING DETAIL

2/19/2021

31944 - GP.dgn

Attachment B

STANDARD PARKING		
	BUILDING AREA (SF)	# OF SPACES
ARKANSAS HIGWAY POLICE STATION	550.62	6
ACCESSIBLE PARKING		
REQUIRED		1
PROVIDED		1
TRUCK PARKING (PHASE I)		
15' 45° SPACES		54
20' 45° SPACES		9
PARALLEL SPACES		8
TOTAL SPACES		71
TRUCK PARKING (PHASE II)		
15' 45° SPACES		55
TOTAL SPACES		55



ARKANSAS DEPARTMENT OF TRANSPORTATION
TRUCK REST STOP
US HIGHWAY 63
WEST MEMPHIS, ARKANSAS

PRELIMINARY
NOT FOR
CONSTRUCTION

PROFESSIONAL OF RECORD	BLM
PROJECT MANAGER	AJK
DESIGNER	JCR
CEI PROJECT NUMBER	31944
DATE	11/19/2020
REVISION	30%

CONCEPT 4 - PHASE I
SHEET TITLE

SHEET NUMBER
1

DRAWING LOCATION: P:\31000\31944.01\DRAWINGS\CONCEPT\CONCEPT-4.DWG - SAVED BY: JANKUN

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BORING NO. B-A
PAGE 1 OF 1

JOB NO. 110800 Crittenden County
JOB NAME: I-40 Truck Parking Expansion Project (West Memphis) (S)
STATION: 112+10
LOCATION: 35.156097671, -90.242342637
LOGGED BY: Matt Green

DATE: December 14, 2020
TYPE OF DRILLING: Hollow Stem Auger
EQUIPMENT: CME 75
HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 34.9

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	Percent Passing No. 200 Sieve	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			Moist, Medium Dense, Dark Gray to Light Brown Clayey Fine Sand with Some Gravel	-		34%		27	5 / 7-8		
				-							
				-		39%		88	2 / 2-3		
6				-							
				-		32%		98	2 / 3-4		
			Moist, Medium Stiff, Gray Clay	-							
				-		36%		92	2 / 3-3		
12				-							
				-		39%		86	1 / 1-2		
				-							
18			Moist, Soft, Gray Clay								
				-		47%		99	1 / 2-2		
				-							
24				-		40%		94	1 / 2-4		
				-							
			Moist, Medium Stiff, Gray Clay								
30				-		46%		91	2 / 3-3		
				-							
			Wet, Loose, Gray Poorly Graded Fine Sand*	SP	NP	19%		3	1 / 3-4		
36			Boring Terminated	-							
42											

REMARKS: * No samples could be collected deeper than 35.0' below ground level due to saturated sand.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. B-B
PAGE 1 OF 1

JOB NO. 110800 Crittenden County
JOB NAME: I-40 Truck Parking Expansion Project (West Memphis) (S)
STATION: 104+46
LOCATION: 35.156504239, -90.240918621
LOGGED BY: Paul Tierney

DATE: December 15, 2020
TYPE OF DRILLING: Hollow Stem Auger
EQUIPMENT: CME 75
HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 36

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	Percent Passing No. 200 Sieve	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			Moist, Loose, Brown Fine Sandy Silt	ML	NP	37%		59	1 / 4-2		
				-							
			Moist, Medium Dense, Brown Fine Silty Sand	SM	NP	28%		33	4 / 5-6		
				-		36%		95			
6			Moist, Stiff, Gray Clay	-		38%		98	3 / 4-6		
				-							
				-		37%		98	1 / 4-5		
				-							
12			Moist, Medium Stiff, Gray Clay	-		37%		96	1 / 3-5		
				-							
18			Wet, Medium Stiff, Gray Silty Clay with Organic Matter	-		30%		96	1 / 2-4		
				-							
24			Wet, Medium Stiff, Lean Clay	CL	22	31%	35	92	1 / 2-3		
				-							
30			Moist, Medium Stiff, Gray Clay	-		45%		98	2 / 3-4		
				-		44%		94	1 / 4-3		
				-							
36			Wet, Loose, Gray Poorly Graded Fine Sand*	SP	NP	23%		3	1 / 3-5		
42			Boring Terminated								

REMARKS: * No samples could be collected deeper than 36.0' below ground level due to saturated sand.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. B-1
PAGE 1 OF 1

JOB NO. 110800 Crittenden County
JOB NAME: I-40 Truck Parking Expansion Project (West Memphis) (S)
STATION: 100+62
LOCATION: 35.157092314, -90.24072796
LOGGED BY: Paul Tierney

DATE: December 15, 2020
TYPE OF DRILLING: Hollow Stem Auger
EQUIPMENT: CME 75
HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 25.5

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	Percent Passing No. 200 Sieve	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			Moist, Medium Stiff, Brown Fine Sandy Clay	-		32%		65	3 / 3-4		
5			Moist, Brown Silty Fine Sand	SM		17%					
			Wet, Medium Stiff, Brown and Gray Clay with Fine Sand	-		29%		81	1 / 4-4		
			Moist, Stiff, Gray Clay	-		33%		98	2 / 8-7		
				-							
10				-		36%		95	3 / 4-7		
				-							
15			Moist, Medium Stiff, Gray Clay	-		42%		99	3 / 4-4		
				-							
20				-		38%		97	2 / 3-3		
				-							
25				-		49%		99	1 / 3-3		
			Boring Terminated								
30											
35											

REMARKS:

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. B-2
PAGE 1 OF 1

JOB NO. 110800 Crittenden County
JOB NAME: I-40 Truck Parking Expansion Project (West Memphis) (S)
STATION: 101+09
LOCATION: 35.156945547, -90.24065585
LOGGED BY: Paul Tierney

DATE: December 15, 2020
TYPE OF DRILLING: Hollow Stem Auger
EQUIPMENT: CME 75
HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 11

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	Percent Passing No. 200 Sieve	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			Wet, Loose, Brown and Gray Poorly Graded Fine Sand with Silt	SP-SM	NP	14%		14	6 4-6		
			Wet, Medium Dense, Brown and Gray Poorly Graded Fine Sand	SP	NP	23%		1	5 6-5		
5			Wet, Very Loose, Brown Poorly Graded Fine Sand with Silt*	SP-SM	NP	21%		9	0 1-1		
			Wet, Very Loose, Brown Silty Fine Sand	SM	NP	19%		23	0 0-1 (1)		
10			Wet, Very Loose Brown Poorly Graded Fine Sand With Silt	SP-SM	NP	22%		8	0 0-1		
			Concrete/Buried Construction Material*	-							
			Boring Terminated								
15											
20											
25											
30											
35											

REMARKS: * This boring was terminated prematurely due to an obstruction encountered at approximatley 10.5' below ground level. This was likely concrete from a pr-existing structure.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. B-2A
PAGE 1 OF 1

JOB NO. 110800 Crittenden County
JOB NAME: I-40 Truck Parking Expansion Project (West Memphis) (S)
STATION: 101+44
LOCATION: 35.156880552, -90.24068876
LOGGED BY: Paul Tierney

DATE: December 15, 2020
TYPE OF DRILLING: Hollow Stem Auger
EQUIPMENT: CME 75
HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 26

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	Percent Passing No. 200 Sieve	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			Moist, Medium Stiff, Brown Fine Sandy Clay			33%		63	3 / 3-4		
			Moist, Medium Stiff, Brown and Gray Fine Sandy Clay			39%		87	2 / 3-4		
5				-		39%		80	0 / 2-3		
			Moist, Soft, Gray Clay with Fine Sand	-		41%		84	1 / 2-2		
10			Moist, Medium Stiff, Gray Clay with Fine Sand	-		33%		82	0 / 2-3		
				-							
15			Moist, Soft, Gray Clay			34%		98	1 / 2-2		
				-							
20			Wet, Soft, Gray Clay			40%		98	1 / 1-3		
				-							
25			Wet, Medium Stiff, Gray Clay			50%		99	1 / 2-3		
			Boring Terminated								
30											
35											

REMARKS:

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. P-1
PAGE 1 OF 1

JOB NO. 110800 Crittenden County
JOB NAME: I-40 Truck Parking Expansion Project (West Memphis) (S)
STATION: 113+14
LOCATION: 35.15574208, -90.242415716
LOGGED BY: Matt Green

DATE: December 14, 2020
TYPE OF DRILLING: Hollow Stem Auger
EQUIPMENT: CME 75
HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 11.5

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	Percent Passing No. 200 Sieve	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			Moist, Medium Dense, Brown Silty Fine Sand	SM	NP	19%		40	3 3-8		
				-							
			Moist, Brown Fine Sand	-		21%					
			Moist, Medium Stiff, Gray Clay					95			
5					NP	41%		61	2 2-4		
			Moist, Loose, Gray Sandy Silt	ML							
				-							
			Moist, Medium Stiff, Gray Clay	-		37%		97	2 3-3		
10				-							
			Moist, Medium Stiff, Gray Clay	-		28%		91	2 3-4		
			Boring Terminated								
15											
20											
25											
30											
35											

REMARKS:

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. P-2
PAGE 1 OF 1

JOB NO. 110800 Crittenden County
JOB NAME: I-40 Truck Parking Expansion Project (West Memphis) (S)
STATION: 100+00
LOCATION: 35.157237647, -90.24085325
LOGGED BY: Paul Tierney

DATE: December 15, 2020
TYPE OF DRILLING: Hollow Stem Auger
EQUIPMENT: CME 75
HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 10.5

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	Percent Passing No. 200 Sieve	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			Moist, Very Stiff, Dark Brown Clay with Gravel	-	NP	23%		29	2		
			Moist, Medium Dense, Brown Silty Fine Sand	SM				29	8-14		
				-							
			Moist, Brown Fine Sand	-							
			Moist, Gray Clay					97			
5			Moist, Loose, Brown Clayey Sand	-		40%		83	2 3-5		
			Moist, Medium Stiff, Gray Clay	-							
				-		34%		98	2 4-5		
			Moist, Stiff, Gray Clay	-							
10				-		31%		96	2 5-5		
			Boring Terminated								
15											
20											
25											
30											
35											

REMARKS:

ARKANSAS DEPARTMENT OF TRANSPORTATION
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BORING NO. P-3
PAGE 1 OF 1

JOB NO. 110800 Crittenden County
JOB NAME: I-40 Truck Parking Expansion Project (West Memphis) (S)
STATION: 115+52
LOCATION: 35.156246107, -90.24296587
LOGGED BY: Paul Tierney

DATE: December 16, 2020
TYPE OF DRILLING: Hollow Stem Auger
EQUIPMENT: CME 75
HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 11

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	Percent Passing No. 200 Sieve	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			Moist, Medium Stiff, Brown Clay with Fine Sand	-		35%		84	3 / 4-4		
				-							
			Moist, Medium Stiff, Brown Clay	-		37%		99	3 / 3-4		
5				-							
			Moist, Stiff, Brown Clay	-		36%		99	3 / 4-5		
				-							
			Moist, Medium Stiff, Gray Clay	-		36%		99	2 / 3-3		
10				-		43%		98	2 / 2-4		
			Boring Terminated								
15											
20											
25											
30											
35											

REMARKS:

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BORING NO. P-4
PAGE 1 OF 1

JOB NO. 110800 Crittenden County
JOB NAME: I-40 Truck Parking Expansion Project (West Memphis) (S)
STATION: 102+11
LOCATION: 35.156828307, -90.240473631
LOGGED BY: Paul Tierney

DATE: December 15, 2020
TYPE OF DRILLING: Hollow Stem Auger
EQUIPMENT: CME 75
HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 10.5

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	Percent Passing No. 200 Sieve	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			Moist, Loose, Brown and Gray Silty Fine Sand	-		33%		30	3 / 6-4		
				-							
			Moist, Stiff, Light Brown and Gray Clay	-		37%		89	3 / 5-6		
5				-		38%		89	4 / 3-6		
				-							
			Moist, Medium Stiff, Gray Clay	-		41%		98	4 / 4-4		
				-							
10				-		44%		97	2 / 3-4		
			Boring Terminated								
15											
20											
25											
30											
35											

REMARKS:

ARKANSAS DEPARTMENT OF TRANSPORTATION
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BORING NO. P-5
PAGE 1 OF 1

JOB NO. 110800 Crittenden County
JOB NAME: I-40 Truck Parking Expansion Project (West Memphis) (S)
STATION: 106+42
LOCATION: 35.15682836, -90.24145813
LOGGED BY: Matt Green

DATE: December 14, 2020
TYPE OF DRILLING: Hollow Stem Auger
EQUIPMENT: CME 75
HAMMER CORRECTION FACTOR: 1.37

COMPLETION DEPTH: 10

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	Percent Passing No. 200 Sieve	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			Concrete	-							
			Moist, Dense, Brown Silty Fine Sand	SM	NP	9%		19	10 18-22		
				-							
5			Moist, Medium Dense, Brown Silty Fine Sand	SM	NP	37%		40	9 10-5		
			Moist, Stiff, Gray Clay	-							
			Moist, Medium Stiff, Gray Clay	-		34%		96	2 3-4		
				-							
10				-		62%		95	2 4-4		
			Boring Terminated								
15											
20											
25											
30											
35											

REMARKS: * No samples could be collected deeper than 36.0' below ground level due to saturated sand.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. TP-1
PAGE 1 OF 1

JOB NO. 110800 Crittenden County
JOB NAME: I-40 Truck Parking Expansion Project (West Memphis) (S)
STATION: 111+15
LOCATION: 35.155987423, -90.242169921
LOGGED BY: Paul Campbell

DATE: December 15, 2020
TYPE OF DRILLING: Backhoe Excavation
EQUIPMENT: CME 75
HAMMER CORRECTION FACTOR:

COMPLETION DEPTH: 7.3

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	Percent Passing No. 200 Sieve	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			Brown Silty Fine Sand	SM	NP			23			
5			Rebar/ Construction Material	-	26		85				
			Gray Fat Clay	CH							
			Test Pit Terminated								
10											
15											
20											
25											
30											
35											

REMARKS: This is a test pit dug with a backhoe.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. TP-2
PAGE 1 OF 1

JOB NO. 110800 Crittenden County
JOB NAME: I-40 Truck Parking Expansion Project (West Memphis) (S)
STATION: 108+39
LOCATION: 35.156296099, -90.241297104
LOGGED BY: Paul Campbell

DATE: December 15, 2020
TYPE OF DRILLING: Backhoe Excavation
EQUIPMENT: CME 75
HAMMER CORRECTION FACTOR:

COMPLETION DEPTH: 7.4

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	Percent Passing No. 200 Sieve	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			Brown Fine Sand								
5			Gray Clay								
			Test Pit Terminated								
10											
15											
20											
25											
30											
35											

REMARKS: This is a test pit dug with a backhoe.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. TP-3
PAGE 1 OF 1

JOB NO. 110800 Crittenden County
JOB NAME: I-40 Truck Parking Expansion Project (West Memphis) (S)
STATION: 103+15
LOCATION: 35.15650447, -90.240468047
LOGGED BY: Paul Campbell

DATE: December 15, 2020
TYPE OF DRILLING: Backhoe Excavation
EQUIPMENT: CME 75
HAMMER CORRECTION FACTOR:

COMPLETION DEPTH: 7.4

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	Percent Passing No. 200 Sieve	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			Brown Fine Sand								
5			Gray Clay								
			Test Pit Terminated								
10											
15											
20											
25											
30											
35											

REMARKS: This is a test pit dug with a backhoe.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. TP-4
PAGE 1 OF 1

JOB NO. 110800 Crittenden County
JOB NAME: I-40 Truck Parking Expansion Project (West Memphis) (S)
STATION: 100+94
LOCATION: 35.157009998, -90.240669195
LOGGED BY: Paul Campbell

DATE: December 15, 2020
TYPE OF DRILLING: Backhoe Excavation
EQUIPMENT: CME 75
HAMMER CORRECTION FACTOR:

COMPLETION DEPTH: 8

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	Percent Passing No. 200 Sieve	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			Brown Clayey Fine Sand	SC				17			
			6" Concrete Pavement	-							
			Brown Silty Fine Sand	SM							
					25		81				
5			Gray Fat Clay	CH							
			Test Pit Terminated								
10											
15											
20											
25											
30											
35											

REMARKS: This is a test pit dug with a backhoe.

Attachment C

Arkansas Highway & Transportation Department

Unconsolidated Undrained Triaxial Test (ASTM D2850)

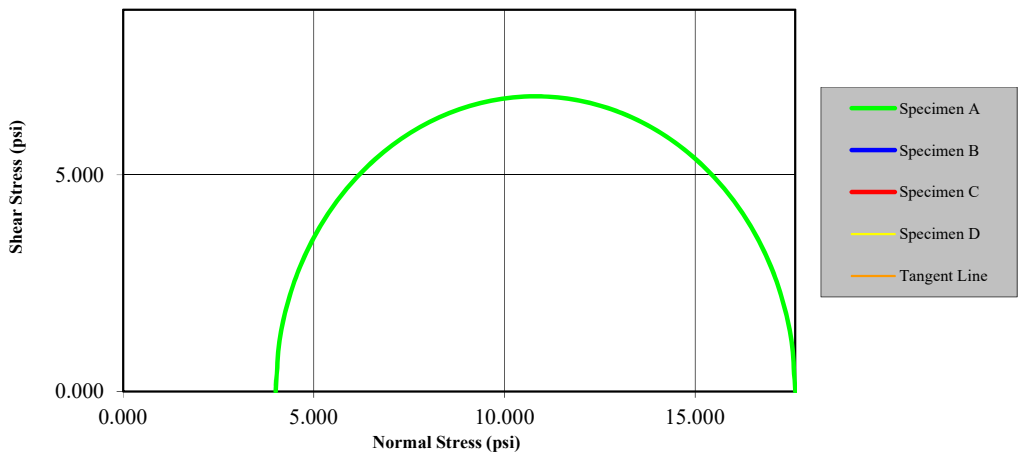
Date:

Checked By:

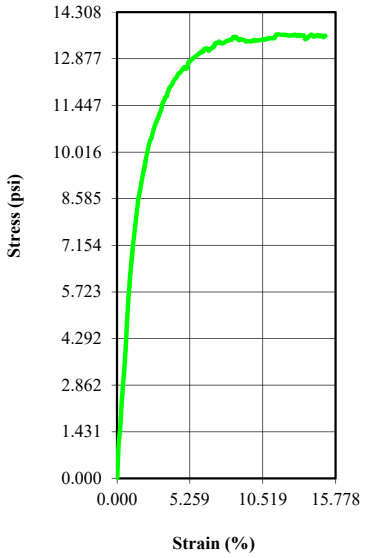
Date:

Tested By:

Mohr Circles



Stress-Strain Curve



Before Test	Specimen A	B	C	D
Water Content (%)	21.38	0.00	0.00	0.00
Dry Density (pcf)	92.98	0.00	0.00	0.00
Saturation (%)	72.71	0.00	0.00	0.00
Void Ratio	0.78	0.00	0.00	0.00
Diameter (in)	2.875	0.000	0.000	0.000
Height (in)	5.233	0.000	0.000	0.000
Liquid Limit				
Plastic Limit				
Specific Gravity	2.650	2.650	2.650	2.650
After Test	**A**	**B**	**C**	**D**
Water Content (%)	38.78	0.00	0.00	0.00
Test Data	**A**	**B**	**C**	**D**
Strain Rate (in/min)	0.03	0.00	0.00	0.00
Peak Deviator Stress (psi)	13.627	0.000	0.000	0.000
Axial Strain @ Failure (%)	11.656	0.000	0.000	0.000
	Cell Pressure			
Cell (psi)	4.0	0.0	0.0	0.0
Back (psi)	n/a	n/a	n/a	n/a
	Principle Stresses at Failure			
σ1 (psi)	17.6	0.0	0.0	0.0
σ3 (psi)	4.0	0.0	0.0	0.0

Mohr-Coulomb Strength Parameters		Sample Description
C (psi)	0.0	2.5-4.0 Brown Sand, 4.0-5.0 Gray Sandy Clay
Friction Angle Ø	0.00	

Project Information			
Project Name:	Hwy 63 Rest Stop		
Project Number:	SF51	Job Number:	110800
Location:		Boring Number:	P-1
Client:	ArDOT	Sample Number:	1
Remarks:			

Arkansas Highway & Transportation Department

Unconsolidated Undrained Triaxial Test (ASTM D2850)

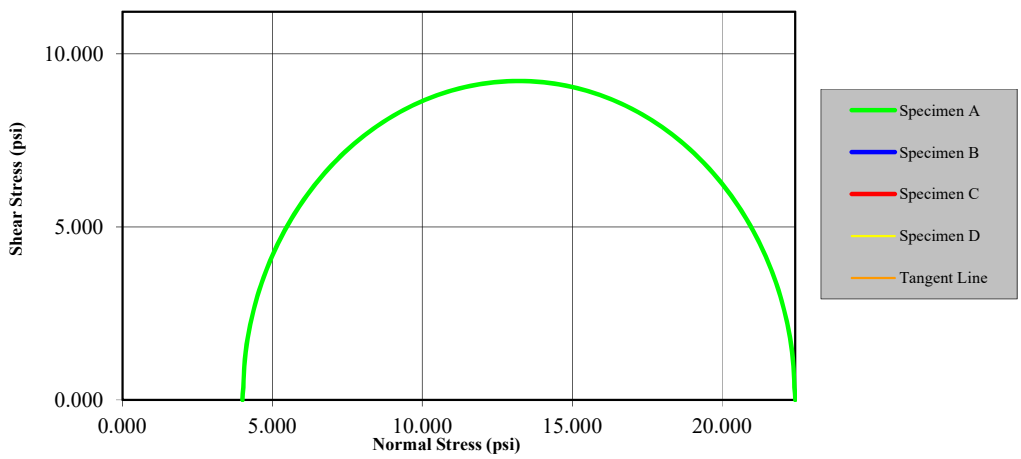
Date:

Checked By:

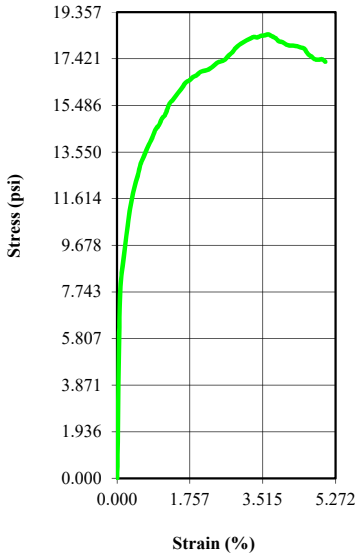
Date:

Tested By:

Mohr Circles



Stress-Strain Curve



Before Test	Specimen A	B	C	D
Water Content (%)	37.98	0.00	0.00	0.00
Dry Density (pcf)	83.25	0.00	0.00	0.00
Saturation (%)	98.33	0.00	0.00	0.00
Void Ratio	1.06	0.00	0.00	0.00
Diameter (in)	2.875	0.000	0.000	0.000
Height (in)	6.017	0.000	0.000	0.000
Liquid Limit				
Plastic Limit				
Specific Gravity	2.750	2.650	2.650	2.650
After Test	**A**	**B**	**C**	**D**
Water Content (%)	38.25	0.00	0.00	0.00
Test Data	**A**	**B**	**C**	**D**
Strain Rate (in/min)	0.03	0.00	0.00	0.00
Peak Deviator Stress (psi)	18.435	0.000	0.000	0.000
Axial Strain @ Failure (%)	3.647	0.000	0.000	0.000
	Cell Pressure			
Cell (psi)	4.0	0.0	0.0	0.0
Back (psi)	n/a	n/a	n/a	n/a
	Principle Stresses at Failure			
σ1 (psi)	22.4	0.0	0.0	0.0
σ3 (psi)	4.0	0.0	0.0	0.0

Mohr-Coulomb Strength Parameters		Sample Description
C (psi)	0.0	Gray clay with sand
Friction Angle Ø	0.00	

Project Information			
Project Name:	Hwy 63 Rest Stop		
Project Number:		Job Number:	110800
Location:		Boring Number:	P2
Client:	ArDOT	Sample Number:	1
Remarks:			