# ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT



# SUBSURFACE INVESTIGATION

STATE JOB NO		CA0605	
FEDERAL AID PROJEC	CT NO	ACNHPP-6043(2)	
V	ANDENBERG	BLVD. – HWY. 5 (WIDENIN	IG) (S)
STATE HIGHWAY	67	SECTION	10 & 11
IN	F	PULASKI & LONOKE	COUNTY
LETTING OF		DECEMBER 7, 2016	

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July 17, 2015

Final Roadway Geotechnical Report

Hwy. 67 Widening from Vandenberg Blvd. To Hwy. 5

Pulaski and Lonoke Counties, Arkansas

Job No. CA0605

# Prepared For:









July 17, 2015

Mr. Glynn Fulmer, PE Deputy Project Manager – Engineering Connecting Arkansas Program Garver, LLC 4701 Northshore Drive North Little Rock, Arkansas 72118

**Subject:** Final Roadway Geotechnical Report

Highway 67 Widening from Vandenberg Blvd. to Highway 5 (Segment 2)

Pulaski and Lonoke Counties, Arkansas

Job No. CA0605

Dear Mr. Fulmer:

We have completed the Final Roadway Geotechnical Report for the Widening of Hwy. 67 from Vandenberg Blvd. to Hwy. 5. This report and discussion reflects the latest geotechnical data as it relates to the current alignment geometry.

Thank you for the opportunity to provide geotechnical services to the Arkansas State Highway and Transportation Department. Please call at your convenience if you have questions or comments.

Sincerely,

ICA ENGINEERING, INC.

Rom & Chittenden

Devin L. Chittenden, P.E. Senior Project Engineer

Anil K. Varri, P.E. Project Engineer

V. Auilas

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#### 1. INTRODUCTION

This report defines subsurface conditions and provides geotechnical recommendations for the design and construction of the proposed widening of Highway 67 from Vandenberg Boulevard to Highway 5 in Pulaski and Lonoke Counties, Arkansas. Standard Penetration Test (SPT), Shelby tube, and bulk sample borings were advanced; collected soil samples were delivered to the ICA Engineering laboratory for testing. Geotechnical parameters are provided in this report, resulting from the evaluation of the soil conditions along the proposed roadway alignment. Stability of cut/fill slopes and settlements of the proposed embankments are discussed. Recommendations for problematic areas along the alignment are included.

#### 2. PROJECT DESCRIPTION

This roadway report includes discussion and recommendations for the widening of Highway 67 from Vandenberg Boulevard to Highway 5. The project also involves replacing the dual bridges over Jack's Bayou. The recommendations for these structures are included under separate cover.

The project corridor crosses terrain described as gently rolling with low relief hills, wide stream drainage floodplains (bayous) compared to stream channel width, and meandering stream channels. The existing alignment passes through areas containing subdivisions and commercial retail/service establishments, with the exception of the wide floodplain associated with Jack's Bayou.

## 3. FIELD AND LABORATORY PROCEDURES

ICA Engineering performed test borings in order to evaluate the subsurface conditions and analyze the proposed slopes for stability and settlement. Nine (9) roadway borings were advanced along the mainline, where SPT (ASTM D1586) and Shelby tube (ASTM D1587) samples were obtained. Forty-five (45) bulk sample borings were also performed along the mainline, spaced approximately every 500 feet. The borings were advanced to depths ranging from 5.0 feet to 25.0 feet. Two (2) CME 45-C track mounted drill rigs were utilized to advance the borings using 3¼" I.D. hollow stem augers. Auger refusal was encountered within five (5) advanced borings at depths ranging from 1.2 feet to 24.2 feet, although the 1.2 feet refusal is interpreted to be on a concrete box culvert. Typical soils include lean clay with sand, sandy silty clay, lean clay, and silty to clayey sand, exhibiting variable fine to coarse grain fractions and occasionally with small gravel fractions. Boring Logs are presented in Appendix I.

Collected samples were delivered to the ICA Engineering laboratory for further testing and analysis. Laboratory tests performed on representative samples included natural moisture content, liquid limit, plastic limit, grain size analysis, California Bearing Ratio, moisture-density relationship (proctor), consolidation, unconfined compression, and triaxial compression. Selected soil samples were tested to determine the AASHTO and Unified Soil Classification. Results of the laboratory testing are presented in Appendix II.

The soil groups encountered during the field investigation consist of a wide variety of AASHTO Classifications. Table 1 is a brief summary of the soil classifications within the roadway borings:

Table 1 - Summary of Soil Classifications and Descriptions

A-2-4 (0), SM and SC-SM	Silty sand, silty clayey sand with gravel; Liquid Limit range NP to 23; Plasticity Index range NP to 6.
A-2-7 (2), SC	Clayey sand; Liquid Limit 42; Plasticity Index 20.
A-4 (0-2, 4-8, and 10), SC, SM, SC-SM, CL, ML, CL-ML	Sandy lean clay, silty sand, sandy silty clay, silty clay with sand, sandy silty clay with gravel, clayey sand with gravel, sandy lean clay, lean clay with sand, silty clayey sand with gravel, lean clay, silty clay, sandy silt, silty clayey sand; Liquid Limit range 15 to 33; Plasticity Index range 1 to 10.
A-6 (0 ,2 ,3, 5, 8, 9, 12 ,14, 16, 17, 18 ), SC and CL	Lean clay with sand, sandy lean clay, clayey sand, and lean clay; Liquid Limit range 25 to 40; Plasticity Index range 11 to 19.
A-7-6 (16-18, 27), CL and CH	Lean clay, fat clay, lean clay with sand; Liquid Limit range 41 to 51; Plasticity Index range 20 to 24.

# 4. SITE CONDITIONS

# 4.1 Geology

The Highway 67 widening alignment is located along the physiographic boundary between the Ouachita Mountains Province and Mississippi Embayment Province. The alignment crosses over into the Ouachita Mountains Province between borings B-544 and B-545 (approximate Station 900+00). Topographic mapping indicates elevations ranging from approximately 330 feet near the beginning of the subject alignment to approximately 250 feet at the Jack's Bayou crossing to approximately 300 feet near the end of the project.

Underlying the typically fine grain, cohesive to occasionally sandy roadway fill, alluvial, and residual soils, are sandstone and shale of the Pennsylvanian Atoka Formation at widely varying depths depending upon location along the alignment. Borings back station from Station 900+00 intercepted Atoka at approximately 32 feet to 45 feet (bridge over Jack's Bayou), while borings up station from Station 900+00 intercepted Atoka as shallow as 1.6 feet. Regional structural formation dip for Tertiary strata (Midway Group and Wilcox Group) trends southeastward at near flat gradients while dip for Pennsylvanian strata (Atoka Formation) is northwestward, westward, or southwestward (depending upon location along the alignment) into the axis of a west plunging syncline as indicated on the *Arkansas State Geologic Map* (Haley, et. al., 1993), *Geologic Map of the McAlmont Quadrangle* (Stone, Haley and Bush, 2002) and on pertinent unpublished geologist's proofs (Stone - 1968, Haley & Stone - 1968). Faulting is not indicated within the limits of the subject project alignment. However, examination of rock core recovered from the bridge located within the alignment corridor suggested faulting within Atoka strata.

Soils interpreted as roadway fill, alluvium (Quaternary), and residual soils developed upon the Wilcox Group Eocene) sediments, Midway Group (Paleocene) sediments, and Atoka Formation strata were penetrated by the advanced borings. Existing roadway fill is composed primarily of low plasticity clay with small to nearly equal fractions of sand, or fine to coarse grain sand and gravel with silt and clay. Interpreted thickness, based upon sample examination and cross section data, suggests 1.0 feet to 5.0 feet of thickness dependent upon where along the existing ditch slope the investigation boring was drilled. Borings B-521, B-522, and B-549 were terminated within interpreted roadway fill. Boring B-514 penetrated roadway fill to refusal termination at 1.2 feet on the top of a concrete box culvert. Numerous borings did not intercept roadway fill.

Alluvium, deposited within the floodplain of Jack's Bayou and underlying roadway fill, consisted of low plasticity clay, low plasticity clay with some to equal fractions of fine grain sand, and fine grain sand with equal fractions of clay. Where intercepted in SPT borings, consistency was very soft to medium stiff. Alluvial sediments were penetrated to depths between 5.0 feet and 9.6 feet, reflecting a thickness range of 5.1 feet to 6.6 feet. However, bridge borings suggest alluvial sediment thickness of up to 27.9 feet. Alluvial deposits are interpreted to extend from Station 767+00 to Station 813+00.

Residual soils, developed upon Wilcox Group sediments, are indicated on published mapping topping hills at elevations above 295 feet surrounding the proposed corridor. Interception of these sediments within advanced borings occurred between Station 829+00 and Station 843+00. Interpreted Wilcox sediments were penetrated to 5.0

feet in depth within borings B-531, B-532, and B-533 with no auger refusal. Wilcox sediments consisted of low plasticity sandy, silty clay with traces of gravel and fine grain to coarse grain sand, and gravel with silt and clay. Interpreted Wilcox sediments were not intercepted within SPT borings. Published mapping suggests Wilcox Group thickness of up to 30.0' surrounding the project corridor.

Residual soils developed upon Midway Group sediments were intercepted within a majority of borings throughout the proposed widening alignment. Midway sediments are interpreted to underlie roadway fill, alluvium within the previous limits described, and Wilcox sediments within the previous limits described. Midway sediments may also appear at the existing ground surface. Midway sediments consisted of low plasticity clay with some to equal fractions of fine grain sand, low plasticity sandy silty clay, low plasticity silty clay with some to nearly equal fractions of fine grain sand, medium plasticity clay, clay and fine grain sand in roughly equal fractions, and clayey to silty fine grain sand. Where intercepted in SPT borings, consistency was very soft to stiff, with a persistence of stiff conditions for dominantly cohesive sediments, and loose to medium dense conditions for significantly less common granular sediments. Laboratory results indicate granular sediments typically contain sufficient clay/silt fractions to exhibit plasticity. Midway sediments were penetrated to depths up to 25.7 feet, reflecting a minimum thickness range of 6.4 feet to 22.2 feet. However, bridge borings suggest Midway Group sediment thickness of up to 26.7 feet. Midway sediments were penetrated to termination elevations ranging from 271.5 feet to 235.8 feet. Midway Group deposits are interpreted to extend throughout the proposed alignment from Beginning of Project to Station 900+00.

Residual soils, developed upon Atoka Formation sandstone and shale, are indicated on published mapping extending from Station 900+00 to End of Project. Penetration of these soils within advanced borings revealed auger and/or SPT refusal at depths of 1.6 feet to 24.2 feet. Recovered samples included low to medium plasticity silty clay with trace to small fractions of fine to coarse grain sand and fine to coarse grain clayey sand with gravel. Thickness of Atoka residual soils ranges from 1.6 feet to 10.5 feet. Residual Atoka soils were penetrated to 7.3 feet and 10.5 feet in depth within borings B-508 and B-509 prior to encountering weathered rock based upon SPT penetration of less than 0.5 feet per 50 blows. Recovered samples interpreted as weathered rock consisted of fragments of shale and sandstone with evidence of clay seams. Weathered rock thickness appears to vary from 0.4 feet to 16.9 feet based upon advanced roadway borings. Estimated top of rock elevation within the borings where Atoka Formation was encountered ranges from 285.7 feet to 258.4 feet. Core borings were not advanced for the roadway

investigation. Auger refusal or SPT refusal was intercepted within borings B-508, B-509, B-545, B-551, and B-554, at depths of 13.9 feet, 24.2 feet, 1.6 feet, 3.4 feet, and 2.3 feet, respectively, all within the interval described above where Atoka Formation outcrops.

The review of the driller's logs and notes suggest that borehole conditions, immediately upon completion of moisture/bulk sampling and SPT sampling, were dry. Seasonal variation in rainfall and position of borings within the Jack's Bayou floodplain are likely to change those observations from dry to groundwater near the existing ground surface. The presence of sandy layers within predominately cohesive sediments will likely lead to perched water levels which may create seepage problems for cut intervals and excavations during construction.

#### 4.2 Soil and Groundwater Conditions

The soil stratigraphy along the roadway alignment suggest fine grained cohesive and granular soils are present, as indicated by the soil boring logs. Advanced borings encountered 1 feet to 5 feet of roadway fill underlain by silty sands, silty clayey sand with gravel, clayey sand, sandy lean clay, silty sand, sandy silty clay, silty clay with sand, sandy silty clay with gravel, clayey sand with gravel, silt, silt with sand, silty clay, lean clay, lean clay with sand, silty clayey sand with gravel, sandy silt, silty clayey sand, clayey sand, lean clay with sand, sandy lean clay, lean clay, clayey sand with gravel, lean clay, fat clay, and lean clay with sand. For the clay soils, plasticity index ranges from 8 to 22, indicating low to medium plasticity. Natural moisture content in these soils, are higher on average, than the optimum moisture contents. For the sand and gravel soils, plasticity index ranges from NP to 8 and the natural moisture contents are higher, on average, than the optimum moisture contents. Strength characteristics generally increased with depth as indicated by standard penetration tests with blow counts of 1 to 100+ BPF in the clayey, sandy and gravelly soils.

Table 2 - Summary of Laboratory Test Results

SOIL TYPE	PLASTICITY INDEX	NATURAL MOISTURE (%)	OPTIMUM MOISTURE (%)	MAX DRY UNIT WEIGHT (pcf)	C. B. R. VALUES
Lean clays	10-20	19-29	-	-	-
Lean clays with sand	9-22	14-23	13.6-18.3	106.7-114.3	4-5
Sandy lean clays	8-16	12-24	13.6	116.6	7
Fat clay	24	26	-	-	-
Clayey sand with gravel	8	17	-	-	-
Silty clayey sand with gravel	6	17	11-13.2	117.1-122.6	8-11
Sandy silts	2	14-15	-	-	-
Sandy silty clays	6-7	22-24	13.6	117.6	6

Table 2 - Summary of Laboratory Test Results

Sandy silty clay with gravel	6	8	-	-	-
Silty clay	6	24	-	-	-
Silty clay with sand	5-7	20-24	-	-	-
Silty sand	NP-1	7-13	-	-	-

The observed ground water levels discussed in the Geology Section above indicated dry conditions at the time of drilling. Water levels may vary widely within the alignment corridor, seemingly dependent upon climatic conditions. Indications of possible perched groundwater levels are evidenced by sandy layers with predominately cohesive sediments. Overall, the area suggests a moderate potential for groundwater seepage if these soils are encountered. Design of newly constructed embankments may require consideration of "near the surface" groundwater levels for consolidation, potential rapid drawdown during flooding, and long term slope stability. In addition, low wet areas and embankment construction may require additional stabilization techniques discussed below. Recommendations included within this report along with other possible remedial solutions shall be utilized as directed by the Engineer to ensure the long term success and stability of the slopes on this project.

#### 4.3 Seismic Conditions

Earthquake hazards are considered to be significant in portions of Arkansas and seismic ground motion is a design factor. For this project, the proposed peak ground acceleration (PGA) having a 7% probability of exceedance in 75 years (or mean return period of approximately 1000 years) is equal to 0.158g and the horizontal response spectral acceleration value at a 1.0 second period is equal to 0.101g. These values were provided by the United States Geology Survey (USGS). Based on a Site Class D for this project, the PGA value is then multiplied by the site factor of 1.48 using Table 3.10.3.2-1 in the AASHTO 6<sup>th</sup> Edition with 2012 Interims LRFD Bridge Design Specifications. Similarly, the horizontal response spectral acceleration value is multiplied by the site factor of 2.40 as shown in Table 3.10.3.2-3 for a Site Class D. This gives the peak seismic ground acceleration value of 0.234g and a Seismic Zone of 2.

## 5. ENGINEERING ANALYSIS AND RECOMMENDATIONS

#### **5.1 General Discussion**

The native soils encountered during drilling operations along the alignment primarily consist of silty to clayey sand and fat and lean clay with gravel and sand. These soils have low to moderate plasticity. However, some

volumes of highly plastic materials may be encountered within and along the project corridor. Highly plastic soils tend to shrink and swell with changes in moisture content, can be problematic during compaction, and could pose significant long term stability issues if placed within embankments. Therefore, we recommend any highly plastic soils *not be utilized* for embankment construction, irregardless of the source. Any highly plastic materials excavated from cuts shall be used for final dressing of slopes or be wasted. We recommend all embankment construction be performed in accordance with the Special Provision "Embankment Construction." In general, the Special Provision requires material placement in embankment areas shall have a plasticity index (PI) of 15 or less, or a cherty clay material with a minimum of 55 percent retained on the No. 4 sieve prior to compaction will be allowed. This requirement shall be imposed for all embankments, except where select material is specified. The embankment stability appears acceptable when parameters for these materials are applied for the analysis. Specific analysis and recommendations are discussed below. Furthermore, muck and poor quality soils from pond/wet area stabilization *shall not be utilized* within embankment limits and shall be used for final dressing of slopes or be wasted.

Rock fill or soil material containing boulders, iron oxide chunks, cemented layers, and other similar bulky particles shall not be placed at the bridge abutments due to proposed pile foundations. Proposed fill materials shall be limited to a maximum size of Class 7 aggregate or smaller where pile foundations are recommended.

California Bearing Ratio (CBR) testing values performed on the bulk soil samples ranged from 3.8 and 11 and a resilient modulus of 2,600 psi and R-value (California) of 5 were selected for the pavement designs on this project. We recommend all borrow material meet these minimum requirements as well as the requirements set forth in the Standard Specifications for Highway Construction. In addition, the borrow material must meet the requirement that the Maximum Plasticity Index cannot be greater than 15 to ensure the integrity and long term stability of the embankments, as indicated in the Special Provision, excluding the areas where Select Materials are specified. We suggest the higher plasticity soils be wasted first, allowing the lower plasticity materials that meet the Maximum Plasticity Index less than 15 criteria to be utilized for embankment construction.

The natural moisture content of the cohesive samples along the project corridor was typically above optimum values. The majority of earthwork operations will likely require drying of these materials to achieve the required compaction. However, wetting operations may be required when non-cohesive and cohesive soils are encountered which contain lower-than-optimum moisture contents.

At the writing of this report, preliminary estimates of earthwork material available from cuts and material required for embankments were not available.

#### 5.2 Cut/Embankment Slopes

The roadway design cross sections indicate some small amounts of excavation and fill are required to construct this project. Cut slopes are less than 5 feet in depth and embankment slopes are as high as 6 feet. Individual recommendations are depicted on the attached critical cross sections. In general, soil cut slopes of 2H:1V or flatter have been utilized to develop roadway cross sections.

#### Highway 67 Station 725+00 to Station 948+00

For embankment and cut slopes, we recommend soil slopes be constructed with 2H:1V or flatter slopes. The embankment stability analyses are based upon construction of the fills using the minimum embankment material requirements and other recommendations within this report. It is imperative these requirements be utilized to provide long term embankment stability as well as to reduce construction difficulties. If slopes steeper than 2H:1V are necessary in areas other than those specifically outlined in this report, ICA Engineering shall be contacted to determine the slope stability on a case-by-case basis.

The cut and embankment slopes discussed herein have acceptable factors of safety for stability. The calculated short term, long term, and seismic factors of safety for the analyzed sections are listed in Table 3 and are depicted on the stability cross sections in Appendix III. We further recommend suitable vegetation and/or erosion control measures be employed on final slopes as soon as practical during construction, as many of the soil horizons within project limits are susceptible to erosion. Appropriate erosion control procedures, roadway and drainage excavation as well as embankment benching shall be performed in accordance with the Standard Specifications for Highway Construction.

Table 3 – Factors of Safety for Slope Stability

	Tubic C Tuctors of a	Tuble 2 Tuctors of Surety for Brope Building									
Location	Short Term	Long Term	Pseudo-Static								
Mainline 736+00	>3.0	>3.0	>3.0								
Mainline 747+00	3.0	2.3	1.6								
Mainline 822+00	>3.0	>3.0	2.1								
Mainline 870+00	2.6	2.5	1.3								
Mainline 885+00	>3.0	>3.0	>3.0								
Mainline 903+00	2.9	2.5	1.5								

#### **5.3 Settlement**

Subsurface conditions indicate potential settlement for new embankment construction within the analyzed areas (stability sections) could range from 1.7" to 3.2". Cohesive soils are present beneath the alignment; however, the noncohesive materials layered or laminated within the cohesive soils should allow the majority of this settlement to dissipate during the construction period. Overall, the non-cohesive material bodies contained within the cohesive soils should improve pore pressure dissipation and allow pore water drainage to occur during the construction period.

#### 5.4 Ponds/Low wet areas

The project corridor is mostly excluded from ponds and low lying areas. However, Jack's Bayou floodplain (Station 767+00 to Station 813+00) may be susceptible to periodic flooding during wet seasons. During climatic seasons, the potential for wet conditions will exist. Undercutting and stabilization of soils that become saturated during such events may be required as determined by the Engineer. For these areas, we recommend the saturated soft soils be undercut and replaced with rock fill comprised of durable stone. Type I granular material meeting the size requirement range of 1.5" to 30", or other approved materials, specified in the Standard Specifications for Highway Construction are also permissible. This undercut shall typically extend 3' below the surface, unless additional excavation is directed by the Engineer. The replacement rock material shall be overlain with 6" of choke stone or geotextile fabric to prevent the migration of fines. The muck and poor quality soils removed during this undercut process *shall not be used* within embankment limits and shall be used as final dressing on slopes or be wasted. Grading operations in this area shall promote positive drainage away from embankment slopes and insure ponding water does not re-occur within ROW limits. Where undercut operations and the drainage layer mentioned above are required by the Engineer, the undercut shall be in addition to the drainage layer requirement.



					NG NO.: : 1 of 1	B-501					
JOB N STATI LOCA	JOB NO.: 11206-04 JOB NAME: Hwy 67 Widening from Vandenberg Blvd. to Hwy 5 STATION: 736+00 LOCATION: 70' Rt. LATITUDE: 34.89564 ° LONGITUDE: 92.09374 °			DATE: 10/14/2014 TYPE OF DRILLING: HSA/SPT EQUIPMENT: CME 45C LOGGED BY: C. Banning							
COMI	PLETION I	DEPTH:	16.0 ft.	GROUNI		R @ Dry	,			I	
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 260.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Brown & tan, med. stiff, silty clay with sand.		14	20.0	19				
10.0			Brown, stiff, sandy lean clay.	.8'	15	15.9	26				
15.0			Brown & gray, stiff, lean clay with sand.  No Auger Refusal & Boring Terminated @ 16.0' (Elev.		20	18.6	34		2,4,6		
20.0			244.5).								
30.0											
35.0											
40.0											
45.0											

	Engineering		NG NO.:	B-502							
STATION: 747+00 LOCATION: 60' Rt. LATITUDE: 34.89782	JOB NO.: 11206-04  JOB NAME: Hwy 67 Widening from Vandenberg Blvd. to Hwy 5  STATION: 747+00  LOCATION: 60' Rt.  LATITUDE: 34.89782 ° LONGITUDE: 92.09112 °			DATE: 10/14/2014  TYPE OF DRILLING: HSA/SPT  EQUIPMENT: CME 45C  LOGGED BY: C. Banning							
D   S   S   E   Y   A   A   P   M   M   M   T   B   P   H   O   L   (ft.)   L   E   S	DESCRIPTION OF MATERIALS  SURFACE ELEVATION: 261.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE @	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD		
5.0	Brown, tan & gray, soft, lean clay with sand.	7.5	18	22.3	31		1,2,2				
10.0	Tan & gray, stiff, lean clay.	2.5	21	23.8	40						
15.0	Gray & tan, v. stiff, lean clay with sand.	7.5	21	14.8	32		3,7,8				
25.0	Brown & gray, very stiff, lean clay.  No Auger Refusal & Boring Terminated @ 25.7' (Elev. 235.8).	5.7	22	18.8	42		3,7,9				
30.0											
40.0											
45.0											

				BORIN	NG NO.:	B-503							
			Engineering	PAGE	1 of 1								
JOB N	IOB NO.: 11206-04 IOB NAME: Hwy 67 Widening from Vandenberg Blvd. to Hwy 5 STATION: 802+00				DATE: 10/14/2014								
1						LLING:		PT					
1	TION: 8027 TION: 60					CME 4 C. Banı							
LATI	ΓUDE: 34	.91135°	LONGITUDE: 92.08311 °										
COMI	PLETION I	DEPTH:	16.1 ft.	GROUNI		R @ Dry	7						
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 257.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD		
		S	Brown, medium stiff, lean clay.	S	Ь	%		(I)	<u> </u>	%	6		
_													
5,0					23	28.8	33						
			Brown & gray, stiff, fat clay.										
10.0		$\geq$			27	25.5	51		1,3,6				
			Brown & tan, stiff, silty clay.	1									
15.0			16.		19	23.5	25						
			No Auger Refusal & Boring Terminated @ 16.1' (Elev. 241.2)										
20.0													
25.0													
30.0													
-													
35.0													
40.0													
45.0													
50.0	1		<u> </u>	1		<u> </u>	<u> </u>						

				BORIN	NG NO.:	B-504						
			Engineering	PAGE	1 of 1							
JOB N	DB NO.: 11206-04				DATE: 10/14/2014							
	DB NAME: Hwy 67 Widening from Vandenberg Blvd. to Hwy 5					LLING:		PT				
	'ATION: 822+00 OCATION: 60' Rt.					CME 4 C. Banı						
			LONGITUDE: 92.08236°	Lodd	ED D1.	C. Dain	iiiig					
	PLETION 1			GROUNI	OWATE	R @ Dry	7					
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 276.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD	
			Brown & gray, very soft, sandy lean clay.									
5.0			72.	21	16	16.9	26		1,0,1			
10.0			Brown & tan, very stiff, sandy silt.  Brown & gray, medium dense, silty sand.		13	13.6	15		10,11,6			
			Tan, med. stiff, sandy silt.	6								
15.0					14	15.3	16					
			No Auger Refusal & Boring Terminated @ 16.0' (Elev. 260.0).	01								
20.0												
25.0												
30.0												
35.0												
40.0												
45.0												
50.0												

			Engineering			NG NO.: 1 of 1	B-505					
JOB N STAT LOCA LATI	JOB NO.: 11206-04  JOB NAME: Hwy 67 Widening from Vandenberg Blvd. to Hwy 5  STATION: 863+00  LOCATION: 110' Lt.  LATITUDE: 34.92805 ° LONGITUDE: 92.08138 °  COMPLETION DEPTH: 21.0 ft.			DATE: 10/19/2014  TYPE OF DRILLING: HSA/SPT  EQUIPMENT: CME 45C  LOGGED BY: S. Berry								
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 292.5		SOIL GROUP	PLASTIC LIMIT NO	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Tan & gray, medium dense, clayey sand.			22	15.8	42		5,5,12 3,6,8		
15.0			Brown, tan & gray, stiff to very stiff, sandy lean clay.  Tan & gray, medium dense, clayey sand.	7.8		21	21.2	37		7,9,12		
25.0 30.0 35.0 40.0 45.0 50.0			No Auger Refusal & Boring Terminated @ 21.0' (Elev. 271.5).									

JOB NO.: 11206-04 JOB NAME: Hwy 67 Widening from Vandenberg Blvd. to Hwy 5 STATION: 870+00 LOCATION: 60' Lt. LATITUDE: 34.92995 ° LONGITUDE: 92.08095 ° COMPLETION DEPTH: 21.3 ft.	BORING NO.: B-506 PAGE: 1 of 1  DATE: 10/19/2014 TYPE OF DRILLING: HSA/SPT EQUIPMENT: CME 45C LOGGED BY: M. Morgan  GROUNDWATER @
D         S         S           E         Y         A           P         M         M           T         B         P           H         O         L           (ft.)         L         E           S         SURFACE ELEVATION: 277.0	SOIL GROUP PLASTIC LIMIT % MOISTURE LIQUID LIMIT (lbs. per cu. ft.) NO. OF BLOWS PER 0.5 ft. % SCR
Gray & tan, soft, sandy lean clay.  Gray & orange, very loose to medium dense, silt sand.  Gray, stiff, sandy, silty clay.  No Auger Refusal & Boring Terminated @ 21.3' 255.7).	23.4 1,2,2  17 23.7 30 0,1,3  Clayey  17 16.7 23  17 16.3 24 3,5,6

Engineering	PAGE:							
JOB NO.: 11206-04  JOB NAME: Hwy 67 Widening from Vandenberg Blvd. to Hwy 5  STATION: 885+00  LOCATION: 60'Lt.  LATITUDE: 34.93396 ° LONGITUDE: 92.07961 °	TYPE EQUIP	MENT:	2014 LLING: CME 4 M. Moi	5C	PT			
COMPLETION DEPTH: 16.2 ft.	GROUNI	DWATE.	R @					
D         S         S           E         Y         A           P         M         M           T         B         P           H         O         L           (ft.)         L         E           S         SURFACE ELEVATION: 271.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
Gray & brown, medium stiff, silty clay with sand.	)	19	24.3	26		5,4,3		
Tan & gray, stiff, lean clay.  Gray & brown, stiff, lean clay with sand.		21	22.9	39				
No Auger Refusal & Boring Terminated @ 16.2' (Elev.	2	20	18.6	42		5,8,7		
255.0).  250.  250.  300.  350.  400.  450.  500.								

			BORI	NG NO.:	B-508					
		Engineering	PAGE	: 1 of 1						
JOB NO.: 112	06-04			: 10/19/						
		idening from Vandenberg Blvd. to Hwy 5			LLING:		PT			
STATION: 90 LOCATION:					CME 4 M. Mor					
1		C LONGITUDE: 92.07694 °	Logo	ED D1.	IVI. IVIOI	gan				
COMPLETION			GROUNI	OWATE	R @					
D S E Y P M T B H O	S A M P L	DESCRIPTION OF MATERIALS	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
(ft.) L	E S	SURFACE ELEVATION: 272.3	OS	PL.	1%	ΣÏ	DR (lbs	NC	%	%
5.0		Gray & brown, soft, lean clay with sand.	0	21	13.8	41		0,1,2		
10.0		Brown & gray, very stiff, sandy, silty clay with gravel.  Gray, very dense, silty sand.		22	8.2	28		6,10,9		
15.0		Weathered Sandstone	) /	NP	7.2	NP_		50/0.4		
20.0  20.0  25.0  30.0  35.0  40.0  45.0  50.0		No Auger Refusal & Boring Terminated @ 13.9' (Elev. 258.4).								

					NG NO.:	B-509					
JOB N STAT LOCA LATIT	ION: 934+ ΔΤΙΟΝ: 11. ΓUDE: 34	ry 67 Wi -00 5' Lt. .94465 °		DATE TYPE EQUIF LOGG	: 10/19/ OF DRI PMENT: ED BY:	LLING: CME 4 M. Moi	5C	PT			
D E P T H (ft.)	S Y M B O L	S A M P L E S	24.2 ft.  DESCRIPTION OF MATERIALS  SURFACE ELEVATION: 309.9	SOIL GROUP	PLASTIC LIMIT AND	% MOISTURE (®)	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Brown & red, dense to very dense, clayey sand with gravel.	3'	23	17.4	31		6,20,20		
10.0	+ + + + + + + + + + + + + + + + + + + +		Weathered Shale & Sandstone w/clay seams.		22	11.9	30		50/0.3		
20.0	+ + + + + + + + + + + + + + + + + + +				22	6.2	30		50/0.2		
25.0	+ + + + + + + + + + + + + + + + + + + +		Auger Refusal & Boring Terminated @ 24.2' (Elev. 285.7).	22		4.4			50/0.2		
30.0											
40.0											
45.0											

					NG NO.:	B-510					
			Engineering	PAGE:	1 of 1						
JOB N	VO.: 11206	5-04		DATE:	: 10/19/	2014					
JOB N	NAME: Hw	vy 67 Wi	idening from Vandenberg Blvd. to Hwy 5	TYPE	OF DRI	LLING:	HSA				
	ION: 725+					CME 4					
	TION: 60			LOGG	ED BY:	C. Ban	ning				
	ΓUDE: 34										
	PLETION I		5.0 ft.	GROUNDWATER @ Dry  LIMIT OOUP STORY  TO THE							
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 269.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Red, lean clay with sand.	5.0							
			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 264.4).	3.0							
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

					NG NO.:	B-511					
			Engineering	TTIGE							
JOB N STAT LOCA	NO.: 11206 NAME: Hw ION: 730+ ATION: 60' TUDE: 34	y 67 Wi -00 Rt.	dening from Vandenberg Blvd. to Hwy 5  LONGITUDE: 92.09541 °	TYPE EQUIP	: 10/14/. OF DRI PMENT: ED BY:	LLING: CME 4	5C				
COMI	PLETION I	DEPTH:	5.0 ft.	GROUNI	DWATE:	R @ Dry	/		_		
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 265.8	SOIL GROUP SOIL GROUP G % MOISTURE LIQUID LIMIT DRY WEIGHT (lbs. per cu. ft.) NO. OF BLOWS PER 0.5 ft.						% SCR	% RQD
5.0			Brown, lean clay with sand.	5.01	15	19.1	24				
			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 260.8).	5.0							
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

	Engineering	BORIN PAGE:	NG NO.: 1 of 1	B-512					
JOB NO.: 11206-04  JOB NAME: Hwy 67 Wide  STATION: 736+00  LOCATION: 60' Lt.  LATITUDE: 34.89593 °	ning from Vandenberg Blvd. to Hwy 5  LONGITUDE: 92.09400 °	TYPE (	MENT:	2014 LLING: CME 4 C. Bann	5C				
COMPLETION DEPTH: 5.	0 ft.	GROUNE	)WATE	R @ Dry	7				
D S S S A P M M M T B P H O L (ft.) L E S S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 261.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0 F	Brown, lean clay with sand.	0							
	No Auger Refusal & Boring Terminated @ 5.0' (Elev. 256.5).	0							

	Engineering		NG NO.:	B-513					
JOB NO.: 11206-04 JOB NAME: Hwy 67 W STATION: 740+00 LOCATION: 60' Rt. LATITUDE: 34.89637	idening from Vandenberg Blvd. to Hwy 5	TYPE EQUIP	MENT:	2014 LLING: CME 4 C. Ban	5C				
COMPLETION DEPTH:	5.0 ft.	GROUNI	OWATE	R @ Dry	7				
D S S S A A A A M M M T B P H O L (ft.) L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 261.1	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0	Brown, lean clay with sand.	5.01							
10.0 115.0 20.0 25.0 30.0 35.0 40.0 45.0	No Auger Refusal & Boring Terminated @ 5.0' (Elev. 256.1).	5.0							

Γ		1							
		BORIN	NG NO.:	B-514					
	Engineering	PAGE	: 1 of 1						
JOB NO.: 11206-04 JOB NAME: Hwy 67 W STATION: 746+00 LOCATION: 60' Lt. LATITUDE: 34.89780	idening from Vandenberg Blvd. to Hwy 5	TYPE EQUIF	: 10/19/ OF DRI PMENT: EED BY:	LLING: CME 4	5C				
COMPLETION DEPTH	: 1,2 ft.	GROUNI	OWATE	R @ Dry	<b>y</b>	1			
D S S A A A A A A A A A A A A A A A A A	DESCRIPTION OF MATERIALS  SURFACE ELEVATION: 260.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
	Brown, lean clay with sand.	2'							
5.0	Auger Refusal & Boring Terminated @ 1.2' (Elev. 258.8).								

		Engineering	BORIN PAGE:	NG NO.: 1 of 1	B-515					
JOB NO.: 11206 JOB NAME: Hv STATION: 751- LOCATION: 60 LATITUDE: 34	vy 67 Wi ⊦00 ' Rt.	idening from Vandenberg Blvd. to Hwy 5	TYPE EQUIP	MENT:	2014 LLING: CME 4 C. Ban	5C				
COMPLETION			GROUNI	)WATE	R @ Dry	7				
D S E Y P M T B H O (ft.) L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 262.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0		Brown, sandy, silty clay.	. of							
10.0 15.0 20.0 25.0		No Auger Refusal & Boring Terminated @ 5.0' (Elev. 257.5).								
30.0 30.0 35.0 40.0 45.0 50.0										

				BORIN	NG NO.:	B-516					
			Engineering	PAGE	1 of 1						
IODA	JO.: 11206	- 04	Engineering	DATE	: 10/14/2	2014					
1			idening from Vandenberg Blvd. to Hwy 5		OF DRI		HSA				
	ION: 756+		and the state of t		MENT:						
	TION: 60				ED BY:						
LATI	ΓUDE: 34	.89992 °	LONGITUDE: 92.08950 °								
COM	PLETION I	DEPTH:	5.0 ft.	GROUNI	DWATE:	R @ Dry	7				
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 265.9	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
		S	Brown, sandy, silty clay.	<u> </u>	<u> </u>	0		ПО	24	0	0
5.0			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 260.9).	5.0							
10.0											
_											
15.0											
13.0											
_											
20.0											
25.0											
30.0											
_											
35.0											
<u> </u>											
40.0											
45.0											
50.0											

				BORIN	IG NO.:	B-517					
				PAGE:							
			Engineering	11102.							
	O.: 11206				10/19/2						
			dening from Vandenberg Blvd. to Hwy 5		OF DRII						
	ON: 761+				MENT:						
	TION: 60'			LOGG	ED BY:	C. Banı	ning				
	UDE: 34 LETION I			GROUNE	MATEI	De De	,				
			3.0 it.	JKOUNL		X (W DI)			80		
D E	S Y	S A		UP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.		
P T	M B	M P	DESCRIPTION OF MATERIALS	SOIL GROUP		IST	DLI	VEI(	F BI 5 ft.		$\sim$
H (ft.)	O L	L			AST	MO]		ξΥ V s. pe	). OJ	% SCR	% RQD
(11.)	L	E S	SURFACE ELEVATION: 266.4	SC	PL	%	TI	DF (B	NG PE	%	%
			Brown, sandy, silty clay.								
5.0			5.0	of							
			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 261.4).								
			201.4).								
10.0											
-10.0											
15.0											
15.0											
20.0											
25.0											
_											
30.0											
-											
35.0											
_											
40.0											
45.0											
43.0											
-											
50.0											
50.0			I	1	I		I	I	l l		

					NG NO.:	B-518					
			Engineering	FAGE.	. 1 01 1						
JOB N		vy 67 Wi	idening from Vandenberg Blvd. to Hwy 5	TYPE	: 10/19/2 OF DRI	LLING:					
1	ION: 766+				MENT:						
1	TION: 60		1 ONCUTURE 02 00011 0	LOGG	ED BY:	C. Banı	nıng				
	FUDE: 34 PLETION I			CDOLINI	MATE	D @ Des	,				
			5.0 ft.	GROUNDWATER @ Dry  LIW HE HE O							
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 260.9	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Brown, sandy, silty clay.	5.00							
			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 255.9).								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

Engineering					BORING NO.: B-519 PAGE: 1 of 1									
JOB NO.: 11206-04  JOB NAME: Hwy 67 Widening from Vandenberg Blvd. to Hwy 5  STATION: 771+00  LOCATION: 60' Rt.  LATITUDE: 34.90344 ° LONGITUDE: 92.08691 °			DATE: 10/14/2014 TYPE OF DRILLING: HSA EQUIPMENT: CME 45C LOGGED BY: C. Banning											
	LETION I		5.0 ft.	GROUNDWATER @ Dry										
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 256.7	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD			
			Brown, sandy, lean clay.											
5.0			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 251.7).	5.0										
15.0														
20.0														
25.0														
30.0														
35.0														
40.0														
45.0														
50.0														

	Engineering		NG NO.: : 1 of 1	B-520								
JOB NO.: 11206-04  JOB NAME: Hwy 67 Widening from Vandenberg Blvd. to Hwy 5  STATION: 776+00  LOCATION: 60' Lt.  LATITUDE: 34.90478 ° LONGITUDE: 92.08638 °  COMPLETION DEPTH: 5.0 ft.			DATE: 10/19/2014  TYPE OF DRILLING: HSA  EQUIPMENT: CME 45C  LOGGED BY: C. Banning  GROUNDWATER @ Dry									
D S S S E Y A M M M T B P H O L (ft.) L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 257.1	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD			
	No Auger Refusal & Boring Terminated @ 5.0' (Elev. 252.1).	5.0										

				BORING NO.: B-521 PAGE: 1 of 1									
	Engineering												
JOB NO.: 11206-04  JOB NAME: Hwy 67 Widening from Vandenberg Blvd. to Hwy 5  STATION: 781+00  LOCATION: 60' Rt.  LATITUDE: 34.90581 ° LONGITUDE: 92.08520 °			DATE: 10/14/2014  TYPE OF DRILLING: HSA  EQUIPMENT: CME 45C  LOGGED BY: C. Banning										
	PLETION I			GROUNDWATER @ Dry									
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 257.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD		
5,0			Dark brown, sandy, lean clay.	5.01									
			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 252.4).	5.0									
15.0													
25.0													
30.0													
35.0													
40.0													
45.0													
50.0													

-											
	BORING NO.: B-522 PAGE: 1 of 1										
JOB NO.: 11206-04 JOB NAME: Hwy 67 Widening from Vandenberg Blvd. to Hwy 5 STATION: 786+00 LOCATION: 60' Rt.			DATE: 10/16/2014 TYPE OF DRILLING: HSA EQUIPMENT: CME 45C LOGGED BY: F. Woodard								
LATITUDE: 34.90707 COMPLETION DEPTH:		GROUNDWATER @ Dry									
D   S   S   S   E   Y   A   A   P   M   M   M   T   B   P   H   O   L   (ft.)   L   E   S	DESCRIPTION OF MATERIALS  SURFACE ELEVATION: 258.1	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD		
50	Brown, sandy, lean clay.	5.01									
10.0 15.0 20.0 25.0 30.0 35.0 40.0 45.0 50.0	No Auger Refusal & Boring Terminated @ 5.0' (Elev. 253.1).										

					NG NO.:	B-523					
			Engineering	r AGE.	. 1 01 1						
JOB N	NO.: 11206 NAME: Hw ION: 791+	y 67 Wi	dening from Vandenberg Blvd. to Hwy 5	TYPE	: 10/19/2 OF DRI PMENT:	LLING:					
1	TION: 60				ED BY:						
1	ΓUDE: 34		LONGITUDE: 92.08428 °	2000	22 21.	C. Buil	5				
	PLETION I			GROUNI	OWATE	R @ Dry	7				
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 257.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0		٥	Brown, lean clay with sand.	5.0							
			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 252.0).								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

			Engineering		NG NO.:	B-524						
JOB N STATI LOCA	IO.: 11206 IAME: Hw ION: 796+ TION: 60'	y 67 W 00 Lt.	idening from Vandenberg Blvd. to Hwy 5	TYPE EQUII	E: 10/19/ OF DRI PMENT: GED BY:	LLING: CME 4	5C					
COMF	PLETION I	DEPTH:	5.0 ft.	GROUNDWATER @ Dry								
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 256.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD	
5.0			Brown, sandy, lean clay.	5.0								
10.0			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 251.4).									
15.0												
20.0												
25.0												
30.0												
35.0												
40.0												
45.0												
50.0												

					NG NO.:	B-525					
			Engineering	I AGE.	. 1 01 1						
JOB N		y 67 Wi	dening from Vandenberg Blvd. to Hwy 5	TYPE		LLING:					
	ION: 801+					CME 4					
1	TION: 60		LONGITUDE: 92.08315°	LOGG	ED BY:	C. Banı	nıng				
	FUDE: 34 PLETION I			GROUNI	)WATE	R @ Drs	7				
			5.0 ft.	GROONI		K W DIS	<u> </u>		<b>(A)</b>		
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 257.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Brown, sandy, lean clay.	5.01							
			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 252.0).	3.0							
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

		BORIN PAGE:	NG NO.: 1 of 1	B-526					
STATION: 806+00 LOCATION: 60' Rt.	Engineering idening from Vandenberg Blvd. to Hwy 5	TYPE EQUIP	MENT:	2014 LLING: CME 4 C. Ban	5C				
LATITUDE: 34.91244 COMPLETION DEPTH:		GROUNI	)WATE	R @ Drs	7				
D S S S P M M M T B P H O L (ft.) L E S	DESCRIPTION OF MATERIALS  SURFACE ELEVATION: 257.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
	Brown, sandy, lean clay.								
15.0 20.0 25.0 30.0 35.0 40.0	No Auger Refusal & Boring Terminated @ 5.0' (Elev. 252.5).								

				1							
				BORIN	IG NO.:	B-527					
			Engineering	PAGE:	1 of 1						
JOB N	ION: 811+	⁄y 67 Wi -00	dening from Vandenberg Blvd. to Hwy 5	TYPE EQUIP	MENT:	LLING: CME 4	5C				
	TION: 60'		LONGITUDE. 02 00217 0	LOGG	ED BY:	C. Banı	nıng				
	TUDE: 34 PLETION I			 GROUNE	WATE	D @ Drs	7				
			3.0 ft.	IKOUNI		K W DIS			S		
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 259.1	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIMIT DIUĢI	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Brown, clayey sand.	D)							
10.0			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 254.1).								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

					NG NO.:	B-528					
			Engineering	PAGE	1 of 1						
JOB N	NO.: 11206 NAME: Hw TON: 816+	y 67 Wi	dening from Vandenberg Blvd. to Hwy 5	TYPE	: 10/19/. OF DRI PMENT:	LLING:					
	ATION: 60'				ED BY:						
1	гиот. 00 гиde: 34		LONGITUDE: 92.08298 °	Logo	LD D1.	C. Buin	ııııg				
	PLETION I			GROUNI	DWATE:	R @ Dry	7				
D E	S Y	S A		UP	LIMIT	URE	IMIT	GHT . ft.)	SWO		
P T H (ft.)	M B O L	M P L E	DESCRIPTION OF MATERIALS	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
()		E S	SURFACE ELEVATION: 262.6	SC	PI	%		⊒≅	N N	%	%
5.0			No Auger Refusal & Boring Terminated @ 5.0' (Elev.	5.01							
			257.6).								
10.0	-										
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0	-										
50.0											

			>								
				BORIN	IG NO.:	B-529					
			Engineering	PAGE:	1 of 1						
JOB N	IO.: 11206	-04		DATE:	10/19/2	2014					
			dening from Vandenberg Blvd. to Hwy 5			LLING:					
	ION: 821+					CME 4					
	TION: 60'			LOGG	ED BY:	C. Banı	ning				
	TUDE: 34 PLETION I			GROUNE	MATE	D @ D==					
			3.0 it.	IKOUNL		K (W DI)			S		
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 273.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
		S	Brown, clayey sand.	<u> </u>	_ д	6			Z P	•	0
5.0			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 268.2).								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

			Engineering		NG NO.:	B-530					
JOB N STATI LOCA	IO.: 11206 IAME: Hw ION: 826+ TION: 60' TUDE: 34.	y 67 Wi 00 Rt.	dening from Vandenberg Blvd. to Hwy 5	TYPE EQUIF	: 10/14/ OF DRI PMENT: ED BY:	LLING: CME 4	5C				
COMF	PLETION I	DEPTH:	5.0 ft.	GROUNI		R @ Dry	/				
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 288.1	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Brown, clayey sand.		14	16.4	25				
_	000000000000000000000000000000000000000		No Auger Refusal & Boring Terminated @ 5.0' (Elev. 283.1).	5.0							
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

BORING NO.: B-531   PAGE: 1 of 1				_								
DATE: 10/19/2014   DATE: 10/19/2014   JOB NOAME: Hwy 67 Wildening from Vandenberg Blvd. to Hwy 5   TYPE OF DRILLING: HSA   EQUIPMENT: CME 45C   LOGGED BY: C. Banning   LATITUDE: 34/91930°   LONGITUDE: 92/08/242°   LONGIT					BORI	NG NO.:	B-531					
JOB NO.: 11206-04   JOB NAME: Hwy 67 Widening from Vandenberg Blvd. to Hwy 5   TYPE OF DRILLING: HSA   EQUIPMENT: CME 45C   LOCATION: 631+00   LONGITUDE: 92.08242 °				Engineering	PAGE	: 1 of 1						
STATION: 831+00	JOB N	O.: 11206	5-04		DATE	E: 10/19/	2014					
LOCATION: 60' Lt	JOB N	AME: Hw	y 67 Wi	dening from Vandenberg Blvd. to Hwy 5	TYPE	OF DRI	LLING:	HSA				
LATITUDE: 34.91930 ° LONGITUDE: 92.08242 °   COMPLETION DEPTH: 5.0 ft.   GROUNDWATER @ Dry												
D   S   S   S   P   M   M   M   DESCRIPTION OF MATERIALS   Mail of the control					LOGO	GED BY:	C. Ban	ning				
D   S   S   S   N   N   N   N   N   N   N					CPOLINI	DWATE	D @ Des	7				
Red & brown, sandy, silty clay.  No Auger Refusal & Boring Terminated @ 5.0' (Elev. 295.2).  No Auger Refusal & Boring Terminated @ 5.0' (Elev. 295.2).				5.0 II.	GROUN	1	K @ DIY			S		
Red & brown, sandy, silty clay.  No Auger Refusal & Boring Terminated @ 5.0' (Elev. 295.2).  No Auger Refusal & Boring Terminated @ 5.0' (Elev. 295.2).	E P T H	Y M B O	A M P L		SOIL GROUP	PLASTIC LIMI	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOW! PER 0.5 ft.	% SCR	% RQD
No Auger Refusal & Boring Terminated @ 5.0' (Elev. 295.2).    100	5.0		٥		5.01							
				No Auger Refusal & Boring Terminated @ 5.0' (Elev.								
20.0 20.0 25.0 25.0 30.0												
20.0 20.0 25.0 25.0 30.0												
	15.0											
	20.0											
	25.0											
	_											
	20.0											
	_											
	25.0											
	33.0											
40.0	40.0											
	40.0											
45.0	45.0											
	73.0											
50.0	50.0											

				BORIN	NG NO.:	B-532					
			Engineering	PAGE:	1 of 1						
JOB N	IO.: 11206	5-04		DATE:	: 10/19/2	2014					
JOB N	NAME: Hw	vy 67 Wi	idening from Vandenberg Blvd. to Hwy 5	TYPE	OF DRI	LLING:	HSA				
STAT	ION: 836+	-00		EQUIP	MENT:	CME 4	5C				
1	TION: 60			LOGG	ED BY:	C. Banı	ning				
	ΓUDE: 34										
COMI	PLETION I		5.0 ft.	GROUNI		R @ Dry	7				
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 305.6	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Red & brown, sandy, silty clay.	5.0							
			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 300.6).	5.0							
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

				BORIN	NG NO.:	B-533					
					: 1 of 1						
			Engineering								
l	O.: 11206				: 10/14/2						
l			dening from Vandenberg Blvd. to Hwy 5		OF DRI						
l	ON: 841+				PMENT:						
l	TION: 60'			LOGG	ED BY:	C. Ban	ning				
	CUDE: 34 PLETION I			 GROUNI	NATE:	D @ Des	7				
			5.0 ft.	JKOUNI		K @ DIY			8		
D E	S Y	S A			PLASTIC LIMIT	IRE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.		
P T	M B	M P	DESCRIPTION OF MATERIALS	SOIL GROUP	IC I	% MOISTURE	DLI	VEIC r cu.	F BL 5 ft.		
H (ft.)	O L	L		100	AST	MOI		ky w	). OF	% SCR	% RQD
(11.)	L	E S	SURFACE ELEVATION: 301.2	SC	PL	%	Ξ	D.F.	PE	%	%
_			Red, silty, clayey sand with gravel.								
5.0			5	.0'							
l —			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 296.2).								
			270.2).								
10.0											
15.0											
15.0											
-											
20.0											
20.0											
l —											
25.0											
30.0											
35.0											
35.0											
40.0											
45.0											
50.0											
50.0			1			1					

				BORIN	NG NO.:	B-534					
			Engineering	PAGE:	1 of 1						
JOB N	IO.: 11206	5-04		DATE:	: 10/14/	2014					
1			dening from Vandenberg Blvd. to Hwy 5			LLING:	HSA				
STAT	ION: 846+	-00		EQUIP	MENT:	CME 4	5C				
LOCA	TION: 60	Rt.		LOGG	ED BY:	C. Ban	ning				
	ΓUDE: 34										
COMI	PLETION I	DEPTH:	5.0 ft.	GROUNI		R @ Dry	7	I	<u> </u>		
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 288.6	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
		~	Brown, sandy, lean clay.		14	18.1	23				
5.0			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 283.6).	5.01							
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
40.0											
45.0											
50.0											

			Engineering		NG NO.:	B-535					
JOB N STATI LOCA	O.: 11206 AME: Hw ION: 851+ TION: 60 TUDE: 34	vy 67 Wi -00 ' Lt.	idening from Vandenberg Blvd. to Hwy 5	TYPE EQUIF	MENT:	2014 LLING: CME 4 C. Ban	5C				
	LETION I			GROUNI	OWATE	R @ Dry	7				
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 278.7	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Brown, lean clay with sand.	5.0							
10.0			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 273.7).								
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

				T							
				BORIN	IG NO.:	B-536					
				PAGE:							
			Engineering	TAGE.	1 01 1						
JOB N	O.: 11206	-04		DATE:	10/19/2	2014					
JOB N	AME: Hw	y 67 Wi	dening from Vandenberg Blvd. to Hwy 5	TYPE	OF DRI	LLING:	HSA				
STAT	ION: 856+	-00		EQUIP	MENT:	CME 4	5C				
LOCA	TION: 60'	Lt.		LOGG	ED BY:	C. Banı	ning				
	TUDE: 34										
COME	PLETION I	DEPTH:	5.0 ft.	GROUNI		R @ Dry	/ 	I			
D E	S Y	S A			PLASTIC LIMIT	3E	AIT.	ff.)	NO. OF BLOWS PER 0.5 ft.		
P	M	M	DESCRIPTION OF MATERIALS	300	CLI	TUI		EIG cu. 1	BL(		
T H	B O	P L		SOIL GROUP	STI	% MOISTURE	LIQUID LIMIT	Y W	OF 10.5	CR	% RQD
(ft.)	L	E S	SURFACE ELEVATION: 282.0	SOI	PL.	√ N	LIQ	DRY WEIGHT (lbs. per cu. ft.)	NO. PER	% SCR	% R
			Red, silty, clayey sand with gravel.								
5,0	3130331010331313131		No Auger Refusal & Boring Terminated @ 5.0' (Elev.	0							
_			277.0).								
10.0											
10.0											
15.0											
20.0											
25.0											
30.0											
25.0											
35.0											
40.0											
45.0											
_											
50.0											

				1							
					NG NO.:	B-537					
			Engineering	FAGE.	. 1 01 1						
JOB N		vy 67 Wi	idening from Vandenberg Blvd. to Hwy 5		: 10/19/2 OF DRI	2014 LLING:	HSA				
STAT	ION: 861+	-00		EQUIP	MENT:	CME 4	5C				
	TION: 60			LOGG	ED BY:	C. Banı	ning				
	ΓUDE: 34										
COMI	PLETION I	DEPTH:	5.0 ft.	GROUNI	DWATE.	R @ Dry	7	ı	T		
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 285.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Brown, lean clay with sand.	5.0							
			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 280.2).								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

				BORIN	NG NO.:	B-538					
				PAGE:	1 of 1						
	· · · · · · · · · · · · · · · · · · ·		Engineering		40/40/						
1	IO.: 11206		dening from Vandenberg Blvd. to Hwy 5		: 10/19/	2014 LLING:	ше л				
1	ION: 866+		defining from vandenderg blvd. to riwy 3			CME 4					
1	TION: 60					C. Ban					
1	ГUDE: 34		LONGITUDE: 92.08071 °				8				
COMI	PLETION I	DEPTH:	5.0 ft.	GROUNI	OWATE	R @ Dry	7				
D	S	S			ЛТ	ш	E	T.	WS		
E P	Y M	A M	DESCRIPTION OF MATERIALS	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	IGH	3LO'		
T H	B O	P L	DESCRIPTION OF WATERIALS	GR	STIC	SIO		wE ber 6	OF I	8	ďζ
(ft.)	L	E S	SURFACE ELEVATION: 280.9	SOII	PLA	W %	LIQI	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
_			Red, lean clay with sand.								
5.0											
5.0			No Auger Refusal & Boring Terminated @ 5.0' (Elev.	5.0							
_			275.9).								
10.0											
_											
15.0											
15.0											
-											
20.0											
25.0											
30.0											
35.0											
_											
40.0											
-											
45.0											
50.0											

			Engineering		NG NO.:	B-539					
JOB N STATI LOCA	IO.: 11206 IAME: Hw ION: 871+ TION: 60'	y 67 W 00 Lt.	idening from Vandenberg Blvd. to Hwy 5	TYPE EQUII	E: 10/19/ OF DRI PMENT: GED BY:	LLING: CME 4	5C				
COM	PLETION I	DEPTH:	5.0 ft.	GROUN	DWATE	R @			1		
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 276.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Brown, sandy, lean clay.	5.0							
10.0			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 271.3).								
15.0											
20.0											
25.0											
35.0											
40.0											
45.0											
50.0											

				ı							
					NG NO.: 1 of 1	B-540					
			Engineering	I AGE.	1 01 1						
JOB N	NO.: 11206 NAME: Hw ION: 876+	y 67 Wi	dening from Vandenberg Blvd. to Hwy 5	TYPE		2014 LLING: CME 4					
LOCA	ATION: 60	Lt.		LOGG	ED BY:	M. Moi	rgan				
LATI	ΓUDE: 34	.93159 °	LONGITUDE: 92.08056 °								
COM	PLETION I	DEPTH:	5.0 ft.	GROUNI	)WATE	R @					
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 273.9	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Brown, sandy, lean clay.	5.01							
_ _ _			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 268.9).								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0	-										
50.0											

BORING NO.: B-541     PAGE: 1 of 1												
DB NO: 11206-04   DATE: 10/19/2014   TYPE OF DRILLING: HSA   STATION: 881+00   EQUIPMENT: CME 45C   LOGGED BY: C. Banning					BORIN	IG NO.:	B-541					
JOB NO: 11206-04				Engineering	PAGE:	1 of 1						
STATION: 881+00 LOCATION: 60 Rt.  LATITUDE: 34 93281 ° LONGITUDE: 92.07971 °  COMPLETION DEPTH: 5.0 ft.  GROUNDWATER @ Dry  D S Y A P M M M P H O L L E S SURFACE ELEVATION: 269.8  Gray, silty, clayey sand with gravel.  No Auger Refusal & Boring Terminated @ 5.0' (Elev.  No Auger Refusal & Boring Terminated @ 5.0' (Elev.  No Auger Refusal & Boring Terminated @ 5.0' (Elev.  150  200  150  150  150  150  150  150	JOB N	IO.: 11206	-04		DATE:	10/19/2	2014					
LOCATION: 60' Rt	JOB N	IAME: Hw	y 67 Wi	dening from Vandenberg Blvd. to Hwy 5	TYPE	OF DRI	LLING:	HSA				
LATITUDE: 34.93281 ° LONGITUDE: 92.07971 °   COMPLETION DEPTH: 5.0 ft.   GROUNDWATER @ Dry	STATI	ION: 881+	-00		EQUIP	MENT:	CME 4	5C				
D	LOCA	TION: 60'	Rt.		LOGG	ED BY:	C. Banı	ning				
D   S   S   N   N   N   N   N   N   N   N												
Gray, silty, clayey sand with gravel.  No Auger Refusal & Boring Terminated @ 5.0' (Elev.  264.8).  No Auger Refusal & Boring Terminated @ 5.0' (Elev.  250  250  250  3	COMF	PLETION I	DEPTH:	5.0 ft.	GROUNI		R @ Dry	,				
Gray, silty, clayey sand with gravel.  No Auger Refusal & Boring Terminated @ 5.0' (Elev. 264.8).  No Auger Refusal & Boring Terminated @ 5.0' (Elev. 264.8).	E P T H	M B O	A M P L		OIL GROUP	LASTIC LIMIT	% MOISTURE	JQUID LIMIT	ORY WEIGHT lbs. per cu. ft.)	VO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0  No Auger Refusal & Boring Terminated @ 5.0' (Elev.  264.8).  150  200  250  250			3		01	<u> </u>	0`			7 H	o`	0`
15.0 15.0 20.0 20.0 25.0 25.0	5.0			No Auger Refusal & Boring Terminated @ 5.0' (Elev.	D'							
15.0 15.0 20.0 20.0 25.0 25.0												
	10.0											
	15.0											
	20.0											
30.0	25.0											
30.0												
30.0												
	30.0											
35.0	35.0											
40.0	40.0											
	$\mid \; \dashv$											
45.0	<u>45.0</u>											
50.0	50.0											

			Engineering		NG NO.:	B-542					
JOB N STATI LOCA	IO.: 11206 NAME: Hw ION: 886+ TION: 60 TUDE: 34	vy 67 Wi -00 ' Rt.	idening from Vandenberg Blvd. to Hwy 5	TYPE EQUIP	MENT:	2014 LLING: CME 4 C. Ban	5C				
COMI	PLETION I	DEPTH:	5.0 ft.	GROUNI	OWATE	R @ Dry	7				
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 270.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Gray, silty, clayey sand with gravel.  No Auger Refusal & Boring Terminated @ 5.0' (Elev.	5.0							
10.0			265.2).								
15.0											
25.0											
30.0											
35.0											
45.0											
50.0											

					NG NO.:	B-543					
			Engineering	PAGE	. 1 01 1						
JOB N	IO.: 11206	5-04		DATE	: 10/19/	2014					
JOB N	NAME: Hw	vy 67 Wi	idening from Vandenberg Blvd. to Hwy 5	TYPE	OF DRI	LLING:	HSA				
STAT	ION: 891+	-00		EQUIF	MENT:	CME 4	5C				
LOCA	TION: 60	Lt.		LOGG	ED BY:	M. Mo	rgan				
	ΓUDE: 34										
COM	PLETION I	DEPTH:	5.0 ft.	GROUNI		R @			I		
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 273.6	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Red & brown, sandy, silty clay.	5.01	16	19.5	22				
			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 268.6).	5.0							
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

				BORI	NG NO.:	B-544					
			Engineering	PAGE	1 of 1						
JOB NA STATIC LOCAT LATITU	ON: 896+ TION: 60' JDE: 34	ry 67 W 00 Lt. 93668	idening from Vandenberg Blvd. to Hwy 5  LONGITUDE: 92.07800°	TYPE EQUIF LOGG	: 10/19/ OF DRI PMENT: EED BY:	LLING: CME 4 M. Mo	5C				
COMPL	LETION I	DEPTH:	5.0 ft.	GROUNI	1	R @			I	1	
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 273.7	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Dark brown, lean clay with sand.	5.01	22	23.2	38				
			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 268.7).	3.0							
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

				BORIN	IG NO.:	B-545					
			Engineering	PAGE:	1 of 1						
JOB N	O.: 11206	-04	-	DATE:	10/19/2	2014					
JOB N	AME: Hw	y 67 Wi	dening from Vandenberg Blvd. to Hwy 5	TYPE	OF DRII	LLING:	HSA				
	ON: 901+				MENT:						
	TION: 60'			LOGG	ED BY:	C. Banı	ning				
	UDE: 34										
COMP	LETION I	DEPTH:	1.6 ft.	ROUNE		R @ Dry	7				
D E	S Y	S A		UP	[]MI	JRE	MIT	GHT .ft.)	OWS		
P T	M B	M P	DESCRIPTION OF MATERIALS	GRO	IIC I	IST	DLI	WEI(	F BI .5 ft.	~	Ω
H (ft.)	O L	L E S	SURFACE ELEVATION: 271.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Brown, sandy, lean clay.								
	1111		Auger Refusal & Boring Terminated @ 1.6' (Elev. 269.6).								
5.0											
3.0											
-											
10.0											
15.0											
15.0											
-											
20.0											
20.0											
_											
25.0											
23.0											
30.0											
30.0											
35.0											
40.0											
40.0											
45.0											
TJ.U											
50.0											
JU.U			ı								

			Engineering		NG NO.:	B-546					
JOB N STATI LOCA	O.: 11206 AME: Hw ION: 906+ TION: 60 TUDE: 34	vy 67 Wi -00 ' Rt.	idening from Vandenberg Blvd. to Hwy 5	TYPE EQUIF	MENT:	2014 LLING: CME 4 C. Ban	5C				
	PLETION I			GROUNI	OWATE	R @ Dry	7				
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 270.1	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Brown, sandy, lean clay.	5.01							
10.0			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 265.1).								
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

			Engineering		NG NO.:	B-547							
JOB N STATI LOCA	IO.: 11206 IAME: Hw ION: 911+ TION: 60'	y 67 W 00 Lt.	idening from Vandenberg Blvd. to Hwy 5	DATE: 10/19/2014  TYPE OF DRILLING: HSA  EQUIPMENT: CME 45C  LOGGED BY: M. Morgan									
COMI	PLETION I	DEPTH:	5.0 ft.	GROUN	DWATE	R @	1	1	T	1			
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 271.8	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD		
5.0			Brown, sandy, silty clay.	5.0									
			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 266.8).	3.0									
10.0													
15.0													
20.0													
25.0													
30.0													
35.0													
40.0													
45.0													
50.0													

					NG NO.:	B-548						
			Engineering	TTIGE	. 1 01 1							
JOB N STAT LOCA	NO.: 11206 NAME: Hw ION: 916+ NTION: 60' TUDE: 34	vy 67 Wi -00 ' Lt.	dening from Vandenberg Blvd. to Hwy 5  LONGITUDE: 92.07408 °	DATE: 10/19/2014 TYPE OF DRILLING: HSA EQUIPMENT: CME 45C LOGGED BY: M. Morgan								
COMI	PLETION I	DEPTH:	5.0 ft.	GROUNI	DWATE:	R @			_			
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 271.1	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD	
5.0			Brown, sandy, silty clay.	5.01								
			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 266.1).	5.0								
10.0												
15.0												
20.0												
25.0												
30.0												
35.0												
40.0												
45.0												
50.0												

			Engineering		NG NO.:	B-549						
JOB N STATI LOCA	IO.: 11206 IAME: Hw ION: 921+ TION: 60 TUDE: 34	vy 67 Wi -00 ' Rt.	idening from Vandenberg Blvd. to Hwy 5	DATE: 10/19/2014  TYPE OF DRILLING: HSA  EQUIPMENT: CME 45C  LOGGED BY: C. Banning								
	PLETION I			GROUNI	OWATE	R @ Dry	/					
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 273.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD	
5.0			Red & gray, sandy lean clay.	5.01								
10.0			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 268.2).									
15.0												
20.0												
25.0												
30.0												
35.0												
40.0												
45.0												

				BORI	NG NO.:	B-550							
			Engineering	PAGE	: 1 of 1								
JOB N STATI LOCA	IO.: 11206 IAME: Hw ION: 926+ TION: 60 TUDE: 34	vy 67 W -00 ' Lt.	idening from Vandenberg Blvd. to Hwy 5	DATE: 10/19/2014 TYPE OF DRILLING: HSA EQUIPMENT: CME 45C LOGGED BY: M. Morgan									
	PLETION I			GROUNI	DWATE	R @							
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 285.6	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD		
5.0			Brown, silty, clayey sand with gravel.		17	10.7	23						
			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 280.6).	5.01									
10.0													
15.0													
20.0													
25.0													
30.0													
35.0													
40.0													
45.0													
43.0													
50.0													

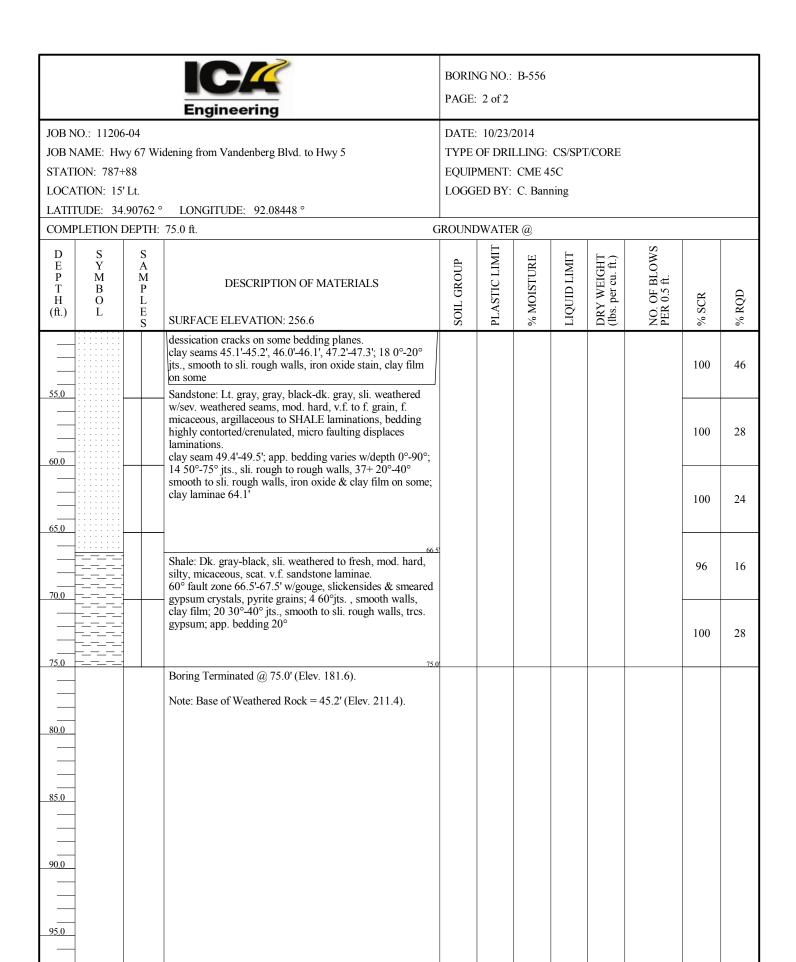
				BORIN	IG NO.:	B-551							
			Engineering	PAGE:	1 of 1								
JOB N	O.: 11206	-04		DATE:	10/19/2	2014							
JOB N	AME: Hw	y 67 Wi	dening from Vandenberg Blvd. to Hwy 5	TYPE OF DRILLING: HSA									
STATI	ON: 931+	-00		EQUIPMENT: CME 45C									
	TION: 60'			LOGGED BY: C. Banning									
	TUDE: 34												
COMP	PLETION I	3.4 ft.	ROUNE		R @ Dry	<i>'</i>							
D E P T	S Y M B	S A M P	DESCRIPTION OF MATERIALS	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	~	0		
H (ft.)	O L	L E S	SURFACE ELEVATION: 296.3	SOIL	PLAS	ОМ %	INÒIT	DRY V (lbs. pe	NO. O	% SCR	% RQD		
_			Brown, silty, clayey sand with gravel.										
5.0			Auger Refusal & Boring Terminated @ 3.4' (Elev. 292.9).										
10.0													
15.0													
20.0													
25.0													
30.0													
35.0													
40.0													
45.0													
50.0													

			Engineering	BORING NO.: B-552 PAGE: 1 of 1									
JOB N STAT LOCA	NO.: 11206 NAME: Hw TON: 936+ NTION: 60' TUDE: 34	/y 67 W -00 ' Rt.	idening from Vandenberg Blvd. to Hwy 5	DATE: 10/19/2014 TYPE OF DRILLING: HSA EQUIPMENT: CME 45C LOGGED BY: C. Banning									
COM	PLETION I	DEPTH:	5.0 ft.	GROU	NDWATE	ER @ Dry	y						
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 298.7	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD		
5.0			Brown, silty, clayey sand with gravel.										
10.0			No Auger Refusal & Boring Terminated @ 5.0' (Elev. 293.7).	5.01									
30.0 35.0 35.0 40.0 45.0													
50.0													

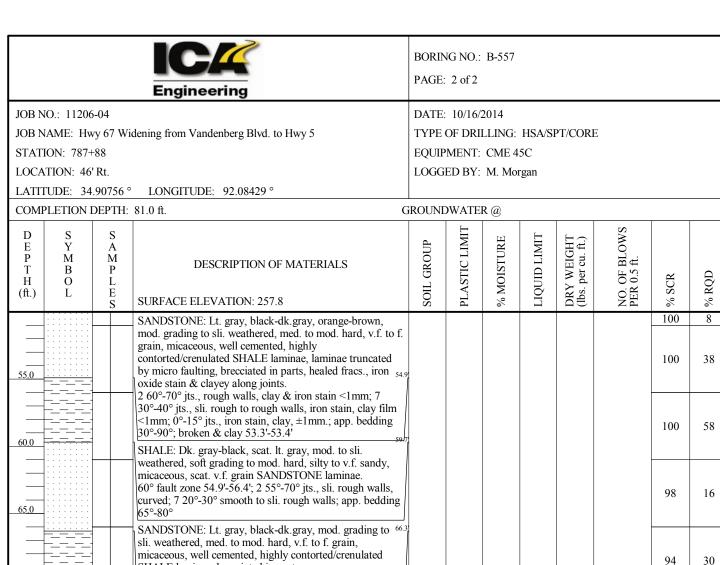
				BORIN	NG NO.:	B-553							
					1 of 1	<b>B</b> 555							
			Engineering	FAGE.	. 1 01 1								
JOB N	IO.: 11206	5-04		DATE:	10/13/2	2014							
JOB N	IAME: Hw	vy 67 Wi	idening from Vandenberg Blvd. to Hwy 5	TYPE OF DRILLING: HSA									
STAT	ION: 941+	-00		EQUIPMENT: CME 45C									
LOCA	TION: 60	Lt.		LOGGED BY: M. Morgan									
LATI	ΓUDE: 34	.94586 °	LONGITUDE: 92.06803 °										
COM	COMPLETION DEPTH: 5.0 ft.				DWATE.	R @ Dry	7						
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 292.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD		
			Brown & red, silty, clayey sand with gravel.		6	11.1	23		-				
5.0			No Auger Refusal & Boring Terminated @ 5.0' (Elev.	0									
			287.3).										
10.0													
15.0													
_													
20.0													
-													
25.0													
30.0													
35.0													
-													
40.0													
40.0													
-													
45.0													
45.0													
50.0													
50.0				1			L						

	Engineering	BORING NO.: B-554 PAGE: 1 of 1									
STATION: 946+00 LOCATION: 60' Rt. LATITUDE: 34.94657	Videning from Vandenberg Blvd. to Hwy 5  LONGITUDE: 92.06655°	DATE: 10/19/2014  TYPE OF DRILLING: HSA  EQUIPMENT: CME 45C  LOGGED BY: C. Banning									
COMPLETION DEPTH  D S S E Y A P M M T B P H O L (ft.) L E S	DESCRIPTION OF MATERIALS  SURFACE ELEVATION: 282.7	SOIL GROUP	PLASTIC LIMIT AND STANDARD	W MOISTURE (®) Dry	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD		
	Brown, silty, clayey sand with gravel.  Auger Refusal & Boring Terminated @ 2.3' (Elev. 280.4).	3									

	Engineering	BORING NO.: B-556 PAGE: 1 of 2										
JOB NO.: 11206-04 JOB NAME: Hwy 67 STATION: 787+88 LOCATION: 15'Lt. LATITUDE: 34.9076 COMPLETION DEPT	Widening from Vandenberg Blvd. to Hwy 5  2° LONGITUDE: 92.08448°	DATE: 10/23/2014 TYPE OF DRILLING: CS/SPT/CORE EQUIPMENT: CME 45C LOGGED BY: C. Banning										
	H: /5.0 ft.	GROUNDWATER @										
D S S A A P M M M T B P H O L L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 256.6	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	ГІОПІР БІМІТ	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD			
5.0	Brown & gray, soft to very stiff, silt.			28.6			1,1,2					
10.0				22.9			0,1,4					
15.0	Brown, stiff, lean clay.	18.1'	18	21.1	20		8,8,8					
25.0	Brown & gray, medium stiff, silt.	23.3	21	22.2	37							
30.0	Orange & gray, medium stiff, lean clay with sand.	28.1		20.8			3,3,5					
	Brown & gray, soft to medium stiff, sandy, silty clay.	33.1	17	23.3	30							
35.0			16	22.7	22		1,1,3					
40.0				22.3			1,2,3					
45.0	Weathered Shale.  Auger Refusal @ 45.0', Begin Coring in Shale.  Shale: Black-dk. gray, scat. orange-brown, sli. to mod. weathered w/sev. weathered seams, mod. hard, silty,	44.8 45.2 47.8		8.3			50/0.2	100	8			

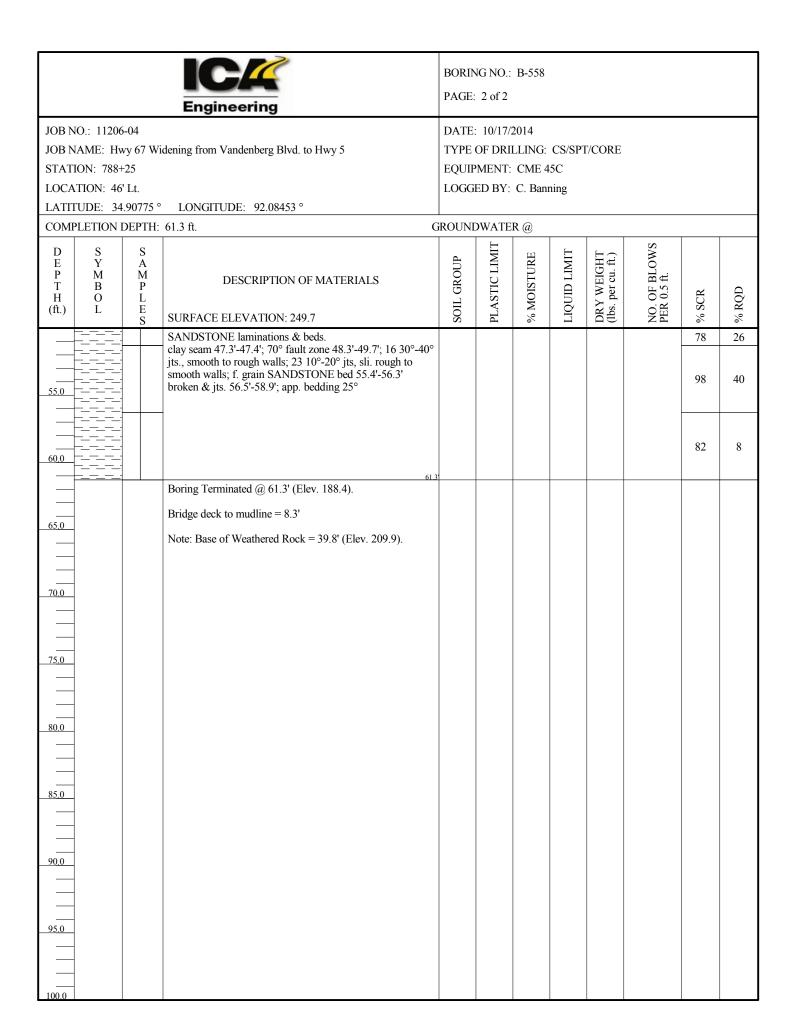


			Engineering		NG NO.: : 1 of 2	B-557							
JOB N. STATIC LOCA  LATIT	O.: 11206  AME: Hw  ON: 787+  TION: 46'  TUDE: 34.	y 67 Wi 88 Rt. 90756°		DATE: 10/16/2014  TYPE OF DRILLING: HSA/SPT/CORE  EQUIPMENT: CME 45C  LOGGED BY: M. Morgan  GROUNDWATER @									
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 257.8	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD		
5.0			Brown & black, soft, lean clay.		21	22.9	30		1,2,2				
10.0			Gray, soft, lean clay.  Brown & gray, v. stiff, silt.	. <u>.7</u>		26.2			1,1,1				
20.0			Gray & orange, stiff, lean clay.	6	21	19.5	34						
25.0			Tan, gray, black & brown, medium stiff to stiff, lean clay.	7!	23	20.3	39		4,6,7				
30.0			Tan, brown & black, medium stiff, lean clay.	7:		23.6			1,2,3				
35.0			Brown & tan, silty, v. loose, clayey sand.	. <del>7</del>	20	24.8	28		2,3,3				
45.0			Brown & tan, black, loose sand w/gravel & silt.  44  Weathered Shale.			2.3			50/0.2	93	0		
50.0			Auger Refusal @ 44.6', Begin Coring in Shale. SHALE: Olive gray-dk. gray, orange-brown, mod. to sev. weathered, med. hard, v.f. sandy, iron oxide stain, part. healed fracs. w/clay.							100	8		

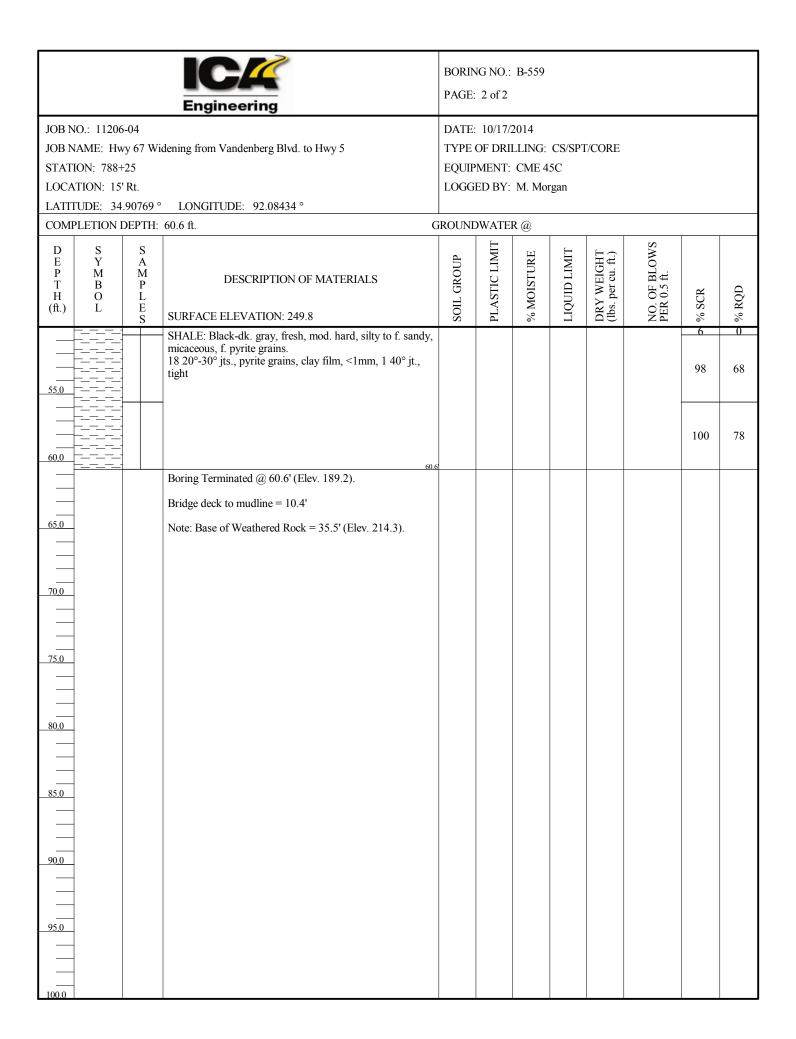


55.0		contorted/crenulated SHALE laminae, laminae truncated by micro faulting, brecciated in parts, healed fracs., iron oxide stain & clayey along joints.				100	38
60.0		2 60°-70° jts., rough walls, clay & iron stain <1mm; 7 30°-40° jts., sli. rough to rough walls, iron stain, clay film <1mm; 0°-15° jts., iron stain, clay, ±1mm.; app. bedding 30°-90°; broken & clay 53.3'-53.4'				100	58
65.0	-	SHALE: Dk. gray-black, scat. lt. gray, mod. to sli. weathered, soft grading to mod. hard, silty to v.f. sandy, micaceous, scat. v.f. grain SANDSTONE laminae. 60° fault zone 54.9'-56.4'; 2 55°-70° jts., sli. rough walls, curved; 7 20°-30° smooth to sli. rough walls; app. bedding 65°-80°				98	16
70.0		SANDSTONE: Lt. gray, black-dk.gray, mod. grading to 663 sli. weathered, med. to mod. hard, v.f. to f. grain, micaceous, well cemented, highly contorted/crenulated SHALE laminae, brecciated in parts. 10 30°-40° jts., sli. rough, tight; 23 0°-20° jts., sli. rough to smooth walls, tight; app. bedding 20°-70°; broken & clay				94	30
75.0		SHALE: Dk. gray to black, lt. gray, sev. weathered to fresh, med. to mod. hard w/soft seams, silty to v.f. sandy, v.f. grain SANDSTONE laminae & beds, micaceous, clay seams, folded.				98	46
80.0		broken 66.6'-67.1'; clay seams 66.3'-66.4', 67.9'-68.0', 69.7', 70.1'-70.6', 71.9'; sandstone bed 73.0'-73.5', 74.7'-75.2'; 8 60°-85° jts., sli. rough to rough walls, tight; 2 40° jts., smooth walls, tight; 44 0°-20° jts., smooth walls, <1mm				100	58
-		Boring Terminated @ 81.0' (Elev. 176.8).					
85.0		Note: Base of Weathered Rock = 44.8' (Elev. 213.0).					
-							
90.0	]						
-	-						
	1						
95.0	1						
_	-						
100.0							

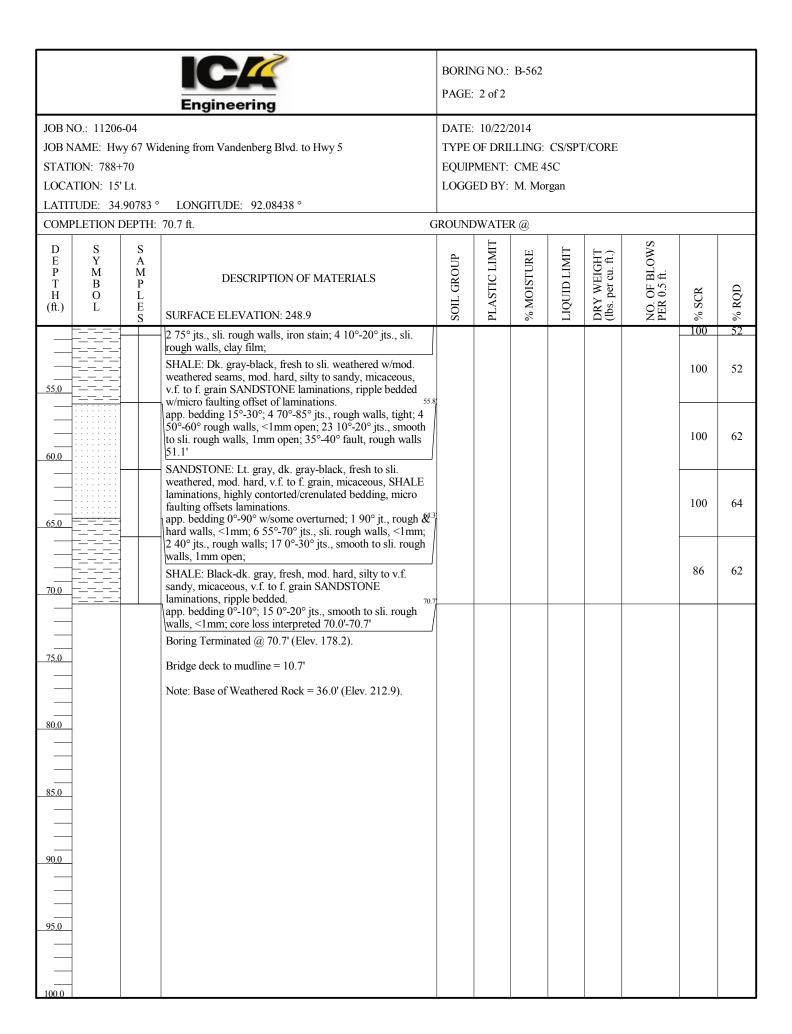
		Engineering	BORING NO.: B-558 PAGE: 1 of 2										
STATION: 788 LOCATION: 4	Iwy 67 W 8+25 6' Lt. 34.90775 °	idening from Vandenberg Blvd. to Hwy 5  LONGITUDE: 92.08453 °	DATE: 10/17/2014  TYPE OF DRILLING: CS/SPT/CORE  EQUIPMENT: CME 45C  LOGGED BY: C. Banning  GROUNDWATER @										
D S E Y P M T B H O (ft.) L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 249.7	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD			
		Brown & gray, hard, silt.		23	22.4	26		4,13,21					
5.0		Brown & gray, stiff to very stiff, lean clay.	4.4		19.8			6,8,9					
				23	22.3	40		2,3,6					
15.0		Brown & tan, v. stiff, lean clay with sand.	1.4	15	19.0	25							
20.0		Brown & dark brown, medium stiff, sandy, silty clay.	9.5°		24.1			2,2,3					
25.0		Brown & tan, soft, sandy lean clay.	4.4	17	21.6	26							
30.0		Brown & gray, soft, sandy, silty clay.	<del>9.4</del> '	16	22.0	21		1,1,2					
35.0	•	Weathered Shale.	5.1' 5.3'		10.8			50/0.2					
40.0	- - - - - -	Auger Refusal @ 36.3', Begin Coring in Interbedded Sandstone & Shale. Interbedded SANDSTONE & SHALE: Lt. gray, dk. gray-black, orange-brown, mod. to sev. weathered, mod.							68	0			
45.0	•] •] •]	hard w/soft seams, v.f. to f. grain, well cemented, argillaceous, laminated, clay seams, iron xoide stain. heavily fractured, 30° to 90° jts. observed w/iron oxide stain							34	0			
50.0	- - - - -	SHALE: Black-dk. gray, scattered lt. gray, fresh to sli. weathered w/seams sev. weathered, mod. hard w/soft seams, f. micaceous, silty to v.f. sandy in parts, scat.	7.1						78	26			



	Engineering		NG NO.: 1 of 2	B-559								
JOB NO.: 11206-04 JOB NAME: Hwy 6' STATION: 788+25 LOCATION: 15'Rt. LATITUDE: 34.907 COMPLETION DEP		DATE: 10/17/2014  TYPE OF DRILLING: CS/SPT/CORE  EQUIPMENT: CME 45C  LOGGED BY: M. Morgan  GROUNDWATER @										
D S S S S S S S S S S S S S S S S S S S	DESCRIPTION OF MATERIALS	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD			
5.0	Brown & tan, stiff, silt.		20	20.9	23		3,5,5					
15.0	Tan, brown & gray, v. stiff, lean clay with sand.		17	19.5	27		6,6,4					
20.0	Brown, tan & gray, medium stiff, sandy lean clay.		20	22.1	36		2,3,3					
25.0	Brown, tan & black, med. stiff, sandy lean clay.		16	19.8	24							
30.0	Brown, tan & gray, very stiff to very hard, sandy, lean clay.  Weathered Shale w/clay seams.			19.2			7,8,11					
35.0 + + + + + + + + + + + + + + + + + + +	Auger Refusal @ 34.7', Begin Coring in Interlayered Clay <sup>85.5</sup> & Shale.  SHALE: Black-dk. gray, lt. gray, orange-brown, mod. to sli. weathered, med. hard, silty to f. sandy, SANDSTONE laminations & thin beds, micaceous, iron oxide stain on discontinuities.						50/0.0	94	54			
45.0	app. bedding 25°; sandstone bed 37.4'-38.0'; 16 20°-30° bed. jts. w/iron stain & clay to 1mm; 5 intersecting 40°-76 <sup>26</sup> jts. w/clay to 1mm  Interbedded SANDSTONE & SHALE: Dk. gray-black, sli. weathered, med. to mod. hard, v. f. grain sandstone, silty 455							96	26			
50.0	shale, micaceous, bedding & laminations offset by micro faults.  app. bedding 25°; 12 20°-40° jts. w/clay film, sli. rough; 2 70° jts. w/clay film, rough							6	0			



	Engineering		NG NO.: : 1 of 2	B-562								
JOB NO.: 11206-04 JOB NAME: Hwy 67 W STATION: 788+70 LOCATION: 15' Lt. LATITUDE: 34.90783 COMPLETION DEPTH:		DATE: 10/22/2014  TYPE OF DRILLING: CS/SPT/CORE  EQUIPMENT: CME 45C  LOGGED BY: M. Morgan  GROUNDWATER @										
D   S   S   S   E   Y   A   A   P   M   M   M   T   B   P   H   O   L   (ft.)   L   E   S	DESCRIPTION OF MATERIALS  SURFACE ELEVATION: 248.9	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD			
10.0	Light brown, stiff, silty clay.  Gray, orange & tan, stiff, lean clay.  Brown, medium stiff, silty clay.		19	19.4 22.5 20.8	36		3,3,10 2,3,5					
25.0	Brown, very stiff to very hard, sandy lean clay.	31	18	21.3	25		3,4,5					
30.0	35. Washing d Chala 36	5	18	16.5	26		11,19,26 22,50/0.2					
40.0	Auger Refusal @ 35.7', Begin Coring in Shale.  SHALE: Olive gray, brown-orange, dk. gray-black, mod. to sev. weathered, soft to med. hard, clayey, iron oxide stain, clay seams.  8 0°-20° jts., smooth walls, iron stain & clay film; 2 70° jts. w/clay to 2mm; clay seams 37.0'-37.1', 38.1', 38.8'  SHALE: Dk. gray-black, brown-orange seams, sli. to mod.	7						100	22			
45.0	weathered, med. to mod. hard, silty, f. micaceous, iron oxide stain in seams.  16 0°-20° jts., smooth walls, clay film, 1mm±  SANDSTONE: Lt. gray, gray, sli. weathered, mod. hard, v.f. to f. grain, SHALE laminations & partings, ripple to contorted bedding, iron oxide on jt. walls.	\$						100	52			



			Engineering	BORING NO.: B-563 PAGE: 1 of 2										
JOB NO.: 112 JOB NAME: F STATION: 78 LOCATION: 4 LATITUDE:	Hwy 67 8+70 46' Rt. 34.907	78°		DATE: 10/16/2014  TYPE OF DRILLING: CS/SPT/CORE  EQUIPMENT: CME 45C  LOGGED BY: C. Banning  GROUNDWATER @										
D S E Y P M T B H O (ft.) L	S A M P L E	l I	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 249.8	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD			
5.0			Gray & orange, stiff, silt.		20	20.5	21							
10.0			Brown & gray, stiff, lean clay.		22	23.2	35		3,4,7					
15.0			Brown, medium stiff, sandy lean clay.		17	21.4	25		3,2,4					
20.0		<	Brown & gray, soft, lean clay.		20	24.7	28		1,2,2					
25.0			Brown, medium stiff, sandy silt.		19	19.1	23							
30.0			Brown, medium dense to very dense, clayey sand.		17	15.9	30		3,7,6					
33333333			Wyoth and Cholo & Conditions 34.5			10.1			50/0.4					
35.0 + + + + + + + + + + + + + + + + + + +	+  + + - - - - -		Weathered Shale & Sandstone  Auger Refusal @ 34.5', Begin Coring in Shale.  SHALE: Olive gray, orange-brown, mod. to sev.  weathered, med. hard w/soft seams, silty, clay laminae & seams, iron oxide stain, micaceous.  abund. jts. w/iron stain			33.1			20.0.1	90	0			
45.0			SHALE: Olive gray, green-gray, orange-brown, grades to dk. gray, mod. weathered w/sev. weathered seams, med. to mod. hard, silty to f. sandy in parts, iron oxide stain, micaceous.							98	18			
10.0			19 30°-40° jts., some w/clay or iron oxide <1-2mm; 6+ 0° <sup>44.7</sup> jts. w/partial iron stain; 3 70°-90° jts., heavy iron oxide stain, clay film to 1mm, rough walls; broken & sev. weathered 43.7'-44.7'  Interlaminated SANDSTONE & SHALE: Lt. gray, black,							94	0			

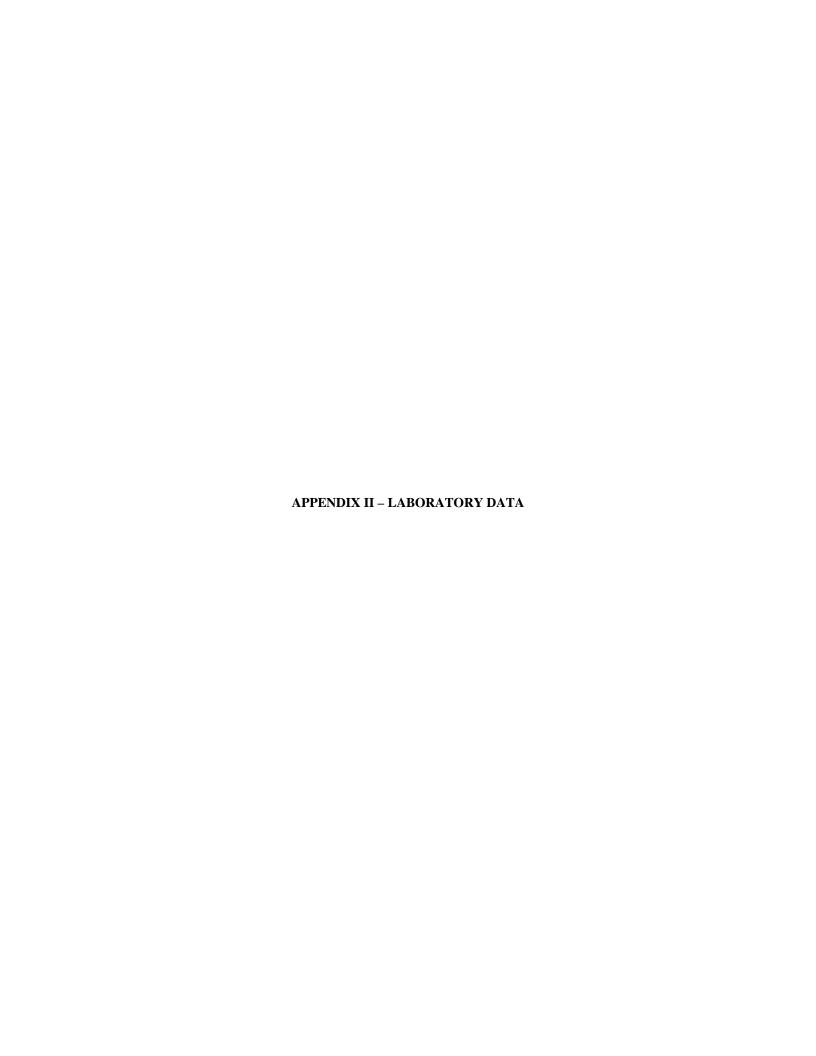
			Engineering	BORING NO.: B-563 PAGE: 2 of 2									
JOB N STAT LOCA	NO.: 11206 NAME: Hw TION: 788+ ATION: 46 TUDE: 34	yy 67 Wi -70 Rt.	idening from Vandenberg Blvd. to Hwy 5  LONGITUDE: 92.08419 °	DATE: 10/16/2014  TYPE OF DRILLING: CS/SPT/CORE  EQUIPMENT: CME 45C  LOGGED BY: C. Banning									
COM	PLETION I	DEPTH:	74.5 ft.	GROUNDWATER @									
D E P T H (ft.)	S Y M B O L	S A M P L S	DESCRIPTION OF MATERIALS  SURFACE ELEVATION: 249.8	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD		
			orange-brown, sli. to mod. weathered, mod. hard, v.f. to f. grain & silty, ripple bedded in parts, iron oxide stain on jts. 3+70°-90° jts. w/iron oxide stain, rough walls, numerous additional jts.; app. bedding 25°							98 98	8		
55.0			SHALE: Black-dk. gray, lt. gray, sli. to mod. weathered w/seams sev. weathered, med. hard w/soft seams, silty w/f. grain sandstone laminations, micaceous, scat. pyrite grains. broken & weathered seam 48.5'-49.2'; clay seam 51.0-51.1'; app. bedding 15°-20°; clay seams 55.6'-55.8',							98	34		
65.0			56.2'; sandstone bed 58.3'-58.5'; clay seam w/frags.; 58.7'-59.1'; sandstone bed 61.0'-61.2'; 3 85°-90° jts., rough walls, pyrite grains; 70+ 10°-20° jts., clay film/slickensides on some; app. bedding 30°; increased sandstone laminations 67.5'-70.4'							100	50		
70.0										100	60		
75.0			74.5							100	82		
80.0 			Boring Terminated @ 74.5' (Elev. 175.3).  Note: Base of Weathered Rock = 36.3' (Elev. 213.5).										

Engineering		BORING NO.: B-564 PAGE: 1 of 2									
JOB NO.: 11206-04  JOB NAME: Hwy 67 Widening from Vandenberg Blvd. to Hwy 5  STATION: 789+05  LOCATION: 46' Lt.  LATITUDE: 34.90795 ° LONGITUDE: 92.08444 °  COMPLETION DEPTH: 58.2 ft.	DATE: 10/18/2014 TYPE OF DRILLING: CS/SPT/CORE EQUIPMENT: CME 45C LOGGED BY: H. Morris GROUNDWATER @										
D         S         S           E         Y         A           P         M         M           T         B         P           H         O         L           (ft.)         L         E           S         SURFACE ELEVATION: 256.0		SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD		
Gray & tan, medium stiff to stiff, silt.			22	22.8	28		0,1,5 5,5,5				
Gray & black, v. stiff, lean clay.  Gray & tan, medium stiff to stiff, silt.	12.9		19	21.7	38		4,6,8				
Brown, v. loose, clayey sand.	27.9			26.7			0,2,3				
Gray & tan, medium dense, silty, clayey sand with gra	32.6 vel.		19 17	21.6	<ul><li>27</li><li>22</li></ul>		5,9,13				
Gray & tan, very dense, clayey sand with gravel.  Weathered Shale & Sandstone	37.99 40.6 40.8 42.2		19	16.2	30		7,9,50/0.2	40	0		
Auger Refusal @ 40.8', Begin Coring in Weathered Fragments.  Weathered Fragments: Black, lt. olive gray, orange-brown SHALE & SANDSTONE frags. w/clay.  SHALE: Black-dk. gray, brown-orange, mod. weathered gray.	own,							96	42		
fresh w/some sev. weathered seams & jt. walls, med. to mod. hard, clayey to silty, f. micaceous, iron oxide stail some jts.	0							100	90		

	T								
	BORING NO.: B-564								
Engineering	PAGE	2 of 2							
JOB NO.: 11206-04  JOB NAME: Hwy 67 Widening from Vandenberg Blvd. to Hwy 5  STATION: 789+05  LOCATION: 46' Lt.  LATITUDE: 34.90795 ° LONGITUDE: 92.08444 °	DATE: 10/18/2014 TYPE OF DRILLING: CS/SPT/CORE EQUIPMENT: CME 45C LOGGED BY: H. Morris								
COMPLETION DEPTH: 58.2 ft.	GROUNI	OWATE	R @						
D         S         S           E         Y         A           P         M         M           T         B         P           H         O         L           (ft.)         L         E           S         SURFACE ELEVATION: 256.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD	
5 50°-65° jts., sli. rough walls, clay film; 6 30°-40° jts., sli. rough walls, iron oxide stain; 19 0°-20° jts., sli. rough to							100	90	
rough walls, iron stain on some; 2 70°-85° faults, smooth, slickenside walls, scat. pyrite, 49.5'-50.8'; sev. weathered 52.1'-55.1'; clay seam 56.6'-57.1'							79	0	
							62	42	
Boring Terminated @ 58.2' (Elev. 197.8).	.21								
Bridge deck to ground = 5.5'									
Note: Base of Weathered Rock = 42.2' (Elev. 213.8).									
65.0									
70.0									
75.0									
80.0									
85.0									
90.0									
95.0									
100.0									

	Engineering		NG NO.: 1 of 2	B-565								
STATION: 789+05 LOCATION: 15' Rt. LATITUDE: 34.90790 °		DATE: 10/17/2014  TYPE OF DRILLING: CS/SPT/CORE  EQUIPMENT: CME 45C  LOGGED BY: S. Berry  GROUNDWATER @										
D   S   S   E   Y   A   P   M   M   T   B   P   H   O   L   E   S   S   COMPLETION DEPTH:	DESCRIPTION OF MATERIALS  SURFACE ELEVATION: 256.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD			
10.0	Tan, medium stiff to stiff, lean clay.		22	24.3	38		5,3,3 4,7,8 2,4,5					
20.0	Gray, tan & brown, medium stiff, lean clay.		19	19.6	28							
25.0	Tan, medium stiff, silt with sand.	5	18	20.3	20		3,3,4					
30.0	Tan & brown, medium stiff, silty clay with sand.	5'	18	21.4	23		3,3,3					
35.0	Brown & gray, v. loose, silty sand.	5	22	21.1	22							
40.0	Brown, very hard, silt with sand.  Weathered Shale  Auger Refusal @ 40.4', Begin Coring in Shale & Clay. SHALE & CLAY Seams: Dk. gray, olive gray, orange-brown, sli. to mod weathered SHALE frags. w/abundant CLAY seams, iron oxide stain.			12.8			50/0.2	58	0			
50.0	Interbedded SHALE & SANDSTONE: Dk. gray-black, lt. gray, orange-brown, sli. weathered w/seams mod. & sev. weathered, med. to mod. hard, silty to f. sandy SHALE, v.f. to f. grain SANDSTONE, pred. laminated bedding.							100	8			

	Engineering	BORING NO.: B-565 PAGE: 2 of 2									
JOB NO.: 11206-04 JOB NAME: Hwy 67 V STATION: 789+05 LOCATION: 15' Rt. LATITUDE: 34.90790	Widening from Vandenberg Blvd. to Hwy 5	DATE: 10/17/2014  TYPE OF DRILLING: CS/SPT/CORE  EQUIPMENT: CME 45C  LOGGED BY: S. Berry									
COMPLETION DEPTI		GROUNDWATER @									
D S S S E Y A A P M M T B P H O L (ft.) L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 256.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD		
55.0	app. bedding varies 5°-30°; 1 60° jt., rough walls, iron stain; 5 40°-45° jts., rough walls, iron stain; 1 70° jt. part. healed, iron stain; clay seam 47.8'-47.9'; 35+ 10°-25° jts., sli. rough to rough walls, iron stain  SHALE: Black-dk. gray, sli. to mod weathered w/sev.							100	42		
60.0	weathered seams, med. to mod. hard w/seams soft, silty to f. sandy, intervals claystone, scat. v.f. to f. grain sandstone laminae, clay seams. clay seams 50.5'-50.6', 51.0'-51.1', 51.5'-51.6', 52.4'-52.5'; 3 80°-85° jts., sli. rough walls, clay film; 2 50°-60° jts., smooth walls; 72+0°-10° jts., smooth walls, some w/clay							98	16		
65.0	to 1mm; clay seam 66.1'-66.2'; clay seam 69.5'-69.7'; sandstone bed 70.2'-70.4'							94	52		
70.0	70.4							98	64		
	Boring Terminated @ 70.4' (Elev. 185.6).  Bridge deck to ground = 4.6'										
75.0	Note: Base of Weathered Rock = 43.5' (Elev. 212.5).										
80.0											
85.0											
90.0											
95.0											
100.0											



Natural



Project Name: Highway 67 Widening Location: Pułaski County, Arkansas

Job Number: 11206-04

### Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

	iumber: I							Natural
		: 11206-04						Moisture
Soil	_		Sample	_				Content
No.	No.	Station & Offset	No.		pth		H	(%)
50	B-501		ST-1	4.5		Brown & Tan Silty Clay with Sand		20.0
51			ST-2	9.5		Brown Sandy Lean Clay	$\dashv$	15.9
1			SS-1	14.5	16.0	Brown & Gray Lean Clay with Sand	$\rightarrow$	18.6
							$\dashv$	
2	B-502		SS-1	4.2		Brown, Tan & Gray Lean Clay with Sand	_	22.3
52			ST-1	9.2		Tan & Gray Lean Clay		23.8
2			SS-2	14.2		Brown & Gray Lean Clay with Sand		14.8
53			ST-2	19.2		Gray & Tan Lean Clay with Sand		18.9
3			SS-3	24.2	25.7	Brown & Gray Lean Clay		18.8
54	B-503		ST-1	4.1	5.1	Brown Lean Clay		28.8
4			SS-1	9.1		Brown & Gray Fat Clay		25.5
55			ST-2	14.1	15.8	Brown & Tan Silty Clay		23.5
5	B-504		SS-1	4.0	5.5	Brown & Gray Sandy Lean Clay		16.9
56			ST-1	9.0		Brown & Tan Sandy Silt		13.6
6			SS-2	9.6		Brown & Gray Silty Sand		12.7
57			ST-2	14.0		Tan Sandy Silt		15.3
7	B-505	MINI	SS-1	4.5	6.0	Tan & Gray Clayey Sand	一十	15.8
7			SS-2	9.5		Tan & Gray Clayey Sand		23.6
58			ST-1	14.5		Brown, Tan & Gray Sandy Lean Clay	$\neg$	21.2
7			SS-3	19.5		Tan & Gray Clayey Sand	一	29.2
<u> </u>			1000		21.0	Tanto Only Only		
8	B-506		SS-I	4.8	6.3	Gray & Tan Sandy Lean Clay	$\neg$	23.4
8	Boo		SS-2	9.8		Gray Sandy Lean Clay	$\dashv$	23.7
59			ST-1	14.8	16.3	Gray & Orange Silty, Clayey Sand	一	16.7
9	-		SS-3	19.8		Gray Sandy Silty Clay		16.3
			00.0	17.0	21.0	Oldy Olliny Olly	-+	10.5
10	B-507	- MANAGEMENT - MAN	SS-1	4.7	62	Gray & Brown Silty Clay with Sand	$\dashv$	24.3
60	D-307		ST-1	9.7		Tan & Gray Lean Clay	$\dashv$	22.9
11			SS-2	14.7		Gray & Brown Lean Clay with Sand	$\dashv$	18.6
A 4	<del>  -</del>		0,0-2	14.7	10.2	Olay & Blown Exam City War Sund	$\dashv$	10.0
12	B-508		SS-1	4.7	6.2	Gray & Brown Lean Clay with Sand	$\dashv$	13.8
13	D-300		SS-2	9.7		Brown & Gray Sandy Silty Clay with Gravel	$\dashv$	8.2
14			SS-3	13.5		Gray Silty Sand	$\dashv$	7.2
14			33-3	15.5	13.9	Otay Siky Sailu	$\dashv$	7.2
15	B-509		SS-1	4.0	5.5	Brown & Red Clayey Sand with Gravel	$\dashv$	17.4
15	D-309		SS-2	9.0	9.3	Brown Clayey Sand with Gravel		11.9
16			SS-3	14.0		Brown Sandy Lean Clay	$\dashv$	11.6
				40.0	10.0		-	6.2
16			SS-4 SS-5	19.0		Brown Sandy Lean Clay Brown Sandy Lean Clay	$\dashv$	4.4
16	-	11111	99-9	24.0	24.2	DIOWII Sandy Lean Clay	-	4.4
- 12	D C10		11/0:	0.0	6.0	Ded Lease Classical Const	$\dashv$	
43	B-510		MC-1	0.0	5.0	Red Lean Clay with Sand		
- 12	D. 6111		<del> </del>			Day I are Oleveride Cond	$\dashv$	10.1
43	B-511		Bag-1	0.0	5.0	Brown Lean Clay with Sand		19.1
	73.615			0.0				
43	B-512		Bag-15	0.0	5.0	Brown Lean Clay with Sand	$\rightarrow$	
			1				_	
43	B-513		MC-1	0.0	5.0	Brown Lean Clay with Sand	<b>→</b>	
43	B-514		MC-1	0.0	5.0	Brown Lean Clay with Sand		
49	B-515		Bag-2	0.0	5.0	Brown Sandy Silty Clay		
49	B-516		MC-1	0.0	5.0	Brown Sandy Silty Clay		
				I			Г	

Project Name: Highway 67 Widening Location: Pulaski County, Arkansas Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

Job Number: 11206-04
Project Job No.: 11206-04
Soil Boring

Natural Moisture

Soil	Boring		Sample					Content
No.	No.	Station & Offset	No.	De	pth	Description of Soil	pН	(%)
49	B-517		MC-1	0.0	5.0	Brown Sandy Silty Clay		
49	B-518		Bag-16	0.0	5.0	Brown Sandy Silty Clay		
47	B-519		Bag-3	0.0	5.0	Brown Sandy Lean Clay		
48	B-520		Bag-17	0.0	5.0	Brown Clayey Sand		
47	B-521		Bag-4	0.0	5.0	Dark Brown Sandy Lean Clay		
47	B-522		MC-1	0.0	5.0	Brown Sandy Lean Clay		
43	B-523		Bag-18	0.0	5.0	Brown Lean Clay with Sand		
47	B-524		Bag-19	0.0	5.0	Brown Sandy Lean Clay		
47	B-525		Bag-5	0.0	5.0	Brown Sandy Lean Clay		
47	B-526		MC-1	0.0	5.0	Brown Sandy Lean Clay		
48	B-527		Bag-20	0.0	5.0	Brown Clayey Sand		
48	B-528		MC-1	0.0	5.0	Brown Clayey Sand		
48	B-529	, , , , , , , , , , , , , , , , , , , ,	MC-1	0.0	5.0	Brown Clayey Sand		
48	B-530		Bag-6	0.0	5.0	Brown Clayey Sand		16.4
49	B-531		Bag-21	0.0	5.0	Red & Brown Sandy Silty Clay		
49	B-532		MC-1	0.0	5.0	Red & Brown Sandy Silty Clay		
45	B-533		Bag-7	0.0	5.0	Red Silty, Clayey Sand with Gravel		
47	B-534		Bag-8	0.0	5.0	Brown Sandy Lean Clay		18.1
43	B-535		Bag-22	0.0	5.0	Brown Lean Clay with Sand		
45	B-536		Bag-23	0.0	5.0	Red Silty, Clayey Sand with Gravel		
43	B-537		Bag-9	0.0	5.0	Brown Lean Clay with Sand		
46	B-538		Bag-10	0.0	5.0	Red Lean Clay with Sand		
47	B-539		MC-1	0.0	5.0	Brown Sandy Lean Clay		
47	B-540		Bag-31	0.0	5.0	Brown Sandy Lean Clay		
45	B-541		Bag-11	0.0	5.0	Gray Silty, Clayey Sand with Gravel		
45	B-542		MC-1	0.0	5.0	Gray Silty, Clayey Sand with Gravel		
49	B-543		Bag-30	0.0	5.0	Red & Brown Sandy Silty Clay		19.5
46	B-544		Bag-29	0.0		Dark Brown Lean Clay with Sand		23.2
47	B-545		MC-1	0.0		Brown Sandy Lean Clay		
47	B-546		Bag-12	0.0	5.0	Brown Sandy Lean Clay		
49	B-547		MC-1	0.0	5.0	Brown Sandy Silty Clay		
_	· · · · · · · · · · · · · · · · · · ·							

Natural

24.7

### Moisture Data

Location: Pulaski County, Arkansas Job Number: 11206-04 Project Job No.: 11206-04

23

Project Name: Highway 67 Widening

(AASHTO T255-T265 / ASTM C566-D2216)

	vuiiiber i g ect Joh No	: 11206-04						Natural Moisture
	Boring	1 11200-04	Sample					Content
No.	No.	Station & Offset	No.	Da	pth	Description of Soil	рH	(%)
49	B-548		Bag-27			Brown Sandy Silty Clay	PIT	( /0 )
47	B-549		Bag-13	0.0	5.0	Red & Gray Sandy Lean Clay		
44	B-550		Bag-26	0.0	5.0	Brown Silty, Clayey Sand with Gravel		10.7
44	B-551		Bag-14	0.0	5.0	Brown Silty, Clayey Sand with Gravel		
44	B-552		MC-1	0.0	5.0	Brown Silty, Clayey Sand with Gravel		
15	D 440							
45	B-553		Bag-25	0.0	5.0	Brown & Red Silty, Clayey Sand with Gravel		11.1
4.4	D 664		100.1	0.0		D 011 01 0 1 11 0 1		
44	B-554		MC-1	0.0	2.3	Brown Silty, Clayey Sand with Gravel	$\longrightarrow$	
28	D 556		00.1	4.0	-	D 014		
28	B-556		SS-1	4.8		Brown Silt		28.6
28			SS-2 SS-3	9.8		Brown & Gray Silt		22.9
61			ST-1	14.8 19.8		Brown & Gray Silt Brown Lean Clay		21.1
28			SS-4	24.8		Brown & Gray Silt		22.2
62	<del>                                     </del>		ST-2	29.8		Orange & Gray Lean Clay with Sand		20.8
29	<del>  </del>		SS-5	34.8		Brown Sandy Silty Clay		23.3
29	<del>                                     </del>		SS-6	39.8		Brown & Gray Sandy Silty Clay		22.7
30	<del> </del>		SS-7	44.8		Gray Silt with Sand		8.3
			100-7	77.0	43.0	Oldy Sir With Saild		0.5
33	B-557		SS-1	4.4	59	Brown & Black Lean Clay		22.9
34	2007		SS-2	9.4		Gray Lean Clay		26.2
63			ST-1	14.4		Brown & Gray Silt		19.5
64			ST-2	19.4		Gray & Orange Lean Clay		22.6
34			SS-3	24.4		Tan, Gray & Black Lean Clay		20.3
34			SS-4	29.4		Tan, Brown & Black Lean Clay	1	23.6
35			SS-5	34.4		Tan, Brown & Black Lean Clay	1	24.8
65			ST-3	39.4	40.4	Brown & Tan Silty, Clayey Sand		14.0
36			SS-6	44.4		Dark Gray & Black Silt with Sand		2.3
17	B-558		SS-1	1.1		Brown & Gray Silt		22.4
18			SS-2	6.1		Brown & Gray Lean Clay		19.8
18			SS-3	11.1		Brown & Gray Lean Clay		22.3
66			ST-1	16.1	17.9	Brown & Tan Lean Clay with Sand		19.0
19			SS-4	21.6		Brown & Dark Brown Sandy Silty Clay		24.1
67			ST-2	26.1	27.6	Brown & Tan Sandy Lean Clay		21.6
19			SS-5	31.1	32.6	Brown & Gray Sandy Silty Clay		22.0
20	ļ		SS-6	35.9	36.1	Gray Silty Sand with Gravel		10.8
27	D 660		00.1	47		D 6 T 074		20.0
37 37	B-559		SS-1	4.7		Brown & Tan Silt Brown & Tan Silt		20.9
68			SS-2 ST-1	9.7 14.7				19.5
38			S1-1 SS-3			Tan, Brown & Gray Lean Clay with Sand		18.4
69	<del>                                     </del>		SS-3 ST-2	19.7 24.7		Brown, Tan & Gray Sandy Lean Clay		22.1 19.8
38			S1-2 SS-4	29.7		Brown, Tan & Black Sandy Lean Clay Brown, Tan & Gray Sandy Lean Clay		19.8
20			33-4	47.1	31.2	Diown, Tau & Oray Sandy Lean Clay		17.2
31	B-562		SS-1	5.0	6.5	Light Brown Silty Clay		19.4
70	D-504		ST-1	10.0		Gray, Orange & Tan Lean Clay		22.5
31	<del> </del>		SS-2	15.0		Brown Silty Clay	-+	20.8
31			SS-3	20.0		Brown Silty Clay		21.3
32			SS-4	25.0		Brown Sandy Lean Clay		20.4
32			SS-5	30.0		Brown Sandy Lean Clay		16.5
32			SS-6	35.0		Brown Sandy Lean Clay		11.6
			1 20 0	22.0	23.7	and and and	<del></del>	
71	B-563		ST-1	4.1	5.4	Gray & Orange Silt		20.5
21			SS-1	9.1		Brown & Gray Lean Clay		23.2
22	<b></b>		SS-2	14.1		Brown Sandy Lean Clay		21,4
	<del></del>		<del>                                     </del>		<del>- : : </del>		<del>[</del>	

SS-3 19.1 20.6 Brown & Gray Lean Clay

Project Name: Highway 67 Widening Location: Pulaski County, Arkansas

Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

Job Number: 1	11206-04
Project Job No.	: 11206-04

Natural

Proje	ct Job No.	: 11206-04					1	Moisture
Soil	Boring		Sample					Content
No.	No.	Station & Offset	No.	De	pth	Description of Soil p	Н	(%)
72			ST-2	24.i		Brown Sandy Silt		19.1
24			SS-4	29.1	30.6	Brown Clayey Sand		15.9
24			SS-5	34.1	34.5	Brown Clayey Sand		10.1
25	B-564		SS-1	4.6	6.1	Constitution of the consti		22.8
25	D-304		SS-2	9.6		Gray Silt Gray & Tan Silt		22.9
73			ST-1	14.6	16.1	Tan, Gray & Black Lean Clay		21.7
25			SS-3	19.6		Gray & Tan Silt	$\top$	20.5
25			SS-4	24.6	26.1	Gray & Tan Silt		26.7
74			ST-2	29.6	30.6	Brown Clayey Sand		21.6
26			SS-5	34.6	36.1	Gray & Tan Silty, Clayey Sand with Gravel		15.8
27			SS-6	39.6	40.8	Gray & Tan Clayey Sand with Gravel		16.2
39	B-565		SS-1	5.2	6.7	Tan Lean Clay	+	24.3
39	D 505		SS-2	10.2	11.7	Tan Lean Clay	$\dashv$	20.1
39			SS-3	15.2		Tan Lean Clay		22.4
75			ST-1	20.2	21.9	Gray, Tan & Brown Lean Clay		19.6
40			SS-4	25.2		Tan Silt with Sand		20.3
41			SS-5	30.2		Tan & Brown Silty Clay with Sand		21.4
76			ST-2	35.2		Brown & Gray Silty Sand		21,1
42			SS-6	40.2	40.4	Brown Silt with Sand		12.8



% Passing

Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Brown & Gray Lean Clay with Sand

Sample No. : \$S-1

Sample Loc. : Boring No. B-501 Sample Depth : 14.5' to 16.0' Date Tested : 10/24/14

Date Reported: 10/31/14

#### AASHTÓ T27:

No.10

				% Passing
4	in.	101.6	mm	
3.5	lin.	88.9	nım	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	. , ,
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	nım	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	

mm

100.0

					70 1 assnig
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	99.2
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	,
	No.200		0.075	mm	74.0
	No.270		0.053	mm	
	Hyd. Rd.	# 1	•	mm	
	Hyd. Rd.	#2		mm	
AASHIO 188	Hyd. Rd.	#3		mm	
HIC	Hyd. Rd.	# 4		mm	
3	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd, Rd.	#7		mm	
'n	0			•	,

 $D_{50} = 0.0088 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 18.6

Dry Dens.: NA Liquid Limit (AASHTO T89): 34 Opt. Moist.: NA Plastic Limit (AASHTO T90): 20

Plasticity Index : 14

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10): 0.0

Liquidity Index: -0.09

Activity: NA

Coarse Sand (-No.10 + No.40) : 0.8 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200) : 25.2 AASHTO Classification: M145 : A-6 (9) Silt + Clay (-No.200) : 74.0 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0
Fine Gravel (-3/4in. + No.4): 0.0
Coarse Sand (-No.4 + No.10): 0.0
Medium Sand (-No.10 + No.40): 0.8
Fine Sand (-No.40 + No.200): 25.2
Silt + Clay (-No.200): 74.0

Approved By:	J.S.	Soil No	1	
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% Passing

Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown, Tan & Gray Lean Clay with Sand

Sample No. : SS-1

Sample Loc. : Boring No. B-502

Sample Depth: 4.2' to 5.7'

Date Tested : 10/24/14

Date Reported: 11/03/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
_ 2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3,35	mm	
No.10		2	mm	99.8

İ	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	95.1
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	,
	No.200		0.075	mm	81.2
	No.270		0.053	mm	
ĺ	Hyd. Rd.	# 1		mm	,
	Hyd. Rd.	#2		mm	
	Hyd. Rd.	#3		mm	
	Hyd. Rd.	#4		mm	
1	Hyd. Rd.	# 5		mm	

mm

mm

 $D_{50} = 0.0059 \text{ mm}$ 

CBR : NA Natural Moisture (%) (AASHTO T265): 22.3

#6

Dry Dens. : NA Liquid Limit (AASHTO T89) : 31

Opt. Moist.: NA Plastic Limit (AASHTO T90): 18

Plasticity Index: 13

Hyd. Rd.

Hyd. Rd.

Liquidity Index: 0.30 AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10): 0.2 Activity: NA Coarse Sand (-No.10 + No.40): 4.7 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200): 13.9 AASHTO Classification: M145 : A-6 (9)

Silt + Clay(-No.200): 81.2ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0

Coarse Sand (-No.4 + No.10): 0.2

Medium Sand (-No.10 + No.40): 4.7 Fine Sand (-No.40 + No.200): 13.9

Silt + Clay (-No.200) : 81.2

Approved By: J.S. Soil No. 2



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown & Gray Lean Clay

Sample No. : SS-3

Sample Loc. : Boring No. B-502 Sample Depth : 24.2' to 25.7'

Date Tested : 10/25/14

Date Reported: 11/03/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in,	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	nım	
2	in.	50.8	mm	
1 3/4	in.	45	mm	7 110 110
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.9

<u>%</u>	P	ass	ing
_	,		_

					70 1 4001115
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	99.5
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	87.6
	No.270		0.053	mm	,
	Hyd. Rd.	#1	•	mm	_
	Hyd. Rd.	#2		mm	
2	Hyd. Rd.	# 3		mm	
AASHTO 188	Hyd. Rd.	#4		mm	
ş.	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	

 $D_{50} = 0.0044 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 18.8

Dry Dens. : NA Liquid Limit (AASHTO T89) : 42

Opt. Moist.: NA Plastic Limit (AASHTO T90) : 22

Plasticity Index: 20 AASHTO Composition of Total Sample: M145 Liquidity Index : -0.16

Gravel (3in. + No.10): 0.1 Activity: NA

Coarse Sand (-No.10 + No.40): 0.4 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200): 11.9 AASHTO Classification: M145 : A-7-6 (18)

Silt + Clay (-No.200): 87.6 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand (-No.4 + No.10): 0.1 Medium Sand (-No.10 + No.40): 0.4 Fine Sand (-No.40 + No.200): 11.9 Silt + Clay (-No.200): 87.6

Approved By: J.S. Soil No.



Project Name: Highway 67 Widening

Project No.: 11206-04

in.

in.

in.

lin.

in.

in.

lin.

in.

in.

in.

in.

3.5

3

2,5

2

1 3/4

1 1/2

1

3/4

1/2

3/8

1/4

No.4

No.6

No.10

1 1/4 | in.

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown & Gray Fat Clay

101.6

88.9

76.2

63.5

50.8

45

38.1

31.5

25

19

12.5

9.5

6.3

4.75

3.35

2

nım

mm

Sample No. : SS-1

Sample Loc. : Boring No. B-503

Sample Depth: 9.1' to 10.6' Date Tested: 10/24/14

Date Reported: 11/03/14

#### AASHTO T27:

% Passing mm

100.0

99.9

99.7

	No.16
	No.30
	No.40
	No.50
	No.60
	No.80
	No.100
	No.200
	No.270
	Hyd. Rd.
	Hyd. Rd.
25	Hyd. Rd.
AASHTO	Hyd. Rd.
AAS	Hyd. Rd.
	Hyd. Rd.

	190.10		1.18	l min l	
	No.30		0.6	mm	
	No.40		0.425	mm	98.6
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	·
	No.100		0.15	mm	
	No.200		0.075	mm	96.3
	No.270		0.053	mm	
	Hyd. Rd,	#1		mm	
	Hyd. Rd.	#2		mm	• 1
T38	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	#4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd, Rd.	#7		mm	
เกว	1				

 $D_{50} = 0.0031 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 25.5

Dry Dens. : NA Liquid Limit (AASHTO T89) : 51 Opt. Moist.: NA Plastic Limit (AASHTO T90): 27

> Plasticity Index: 24 Liquidity Index : -0.05

AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10): 0.3 Activity: NA

Coarse Sand (-No.10 + No.40): 1.1 Sp. Gr. (AASHTO T100) ; NA

Fine Sand (-No.40 + No.200): 2.3 AASHTO Classification: M145 : A-7-6 (27)

Silt + Clay (-No.200): 96.3 ASTM Classification: D2487 : CH

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.1 Coarse Sand (-No.4 + No.10): 0.2 Medium Sand (-No.10 + No.40): 1.1 Fine Sand (-No.40 + No.200) : 2.3 Silt + Clay (-No.200): 96.3

Approved By:	J.S.	Soil No.	1
Approved by .	J.O.	2011 INO.	4



Project Name: Highway 67 Widening

Project No.: 11206-04 Sample No.: \$\$-1

Project County: Pulaski Sample Loc.: Boring No. B-504
Project State: Arkansas Sample Depth: 4.0' to 5.5'
Laboratory No.: 11206-04 Date Tested: 10/24/14

Laboratory No.: 11206-04 Date Tested: 10/24/14
Submitted By: ICA Engineering Date Reported: 11/03/14

Soil Type: Tan & Gray Sandy Lean Clay

#### AASHTO T27:

Ω,	n	•
V/~	Pas	cını

 		% Passing
1.18	mm	

4	in.	101.6	mm	·
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	ınm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	• '
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.2
No.6		3.35	mm	
No.10		2	ınm	95.8

	No.16		1.18	mm	
	No.30		0.6	mm	
İ	No.40		0.425	mm	89.5
ļ	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	53.1
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
AASHTO T88	Hyd. Rd.	#3		mm	
FF.	Hyd. Rd.	# 4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
۸5	1 mm				

 $D_{50} = 0.051 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 15.8

Dry Dens.: NA Liquid Limit (AASHTO T89): 26
Opt. Moist.: NA Plastic Limit (AASHTO T90): 16

Plasticity Index : 10

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.03

Gravel (3in. + No.10): 4.2 Activity: NA Sand (-No.10 + No.40): 6.3 Sp. Gr. (AASHTO T100): NA

Coarse Sand (-No.10 + No.40) : 6.3 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200) : 36.4 AASHTO Classification: M145 : A-4 (2)

Silt + Clay (-No.200): 53.1 ASTM Classification: D2487: CL

#### ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 0.8 Coarse Sand (-No.4 + No.10) : 3.4 Medium Sand (-No.10 + No.40) : 6.3 Fine Sand (-No.40 + No.200) : 36.4 Silt + Clay (-No.200) : 53.1

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Approved By: J.S.	Soil No.	5
ADDIOYCU DY . J.S.	00h 110.	9



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown & Gray Silty Sand

Sample No. : SS-2

Sample Loc. : Boring No. B-504

Sample Depth: 9.6' to 11.1' Date Tested: 10/24/14

Date Reported: 11/03/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	Ì
3.5	in.	88.9	mm	,
3	in.	76.2	mm	
2.5	in.	63.5	mm	·
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	,
1 1/4	in.	31.5	mm	•
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.0
No.6		3.35	mm	
No.10		2	mm	97.3

					% Passing
	No.16		1.18	mm	
	No.30		0.6	ınm	
	No.40		0.425	mm	92.1
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	49.1
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
881	Hyd. Rd.	#3		mm	
AASHIO 188	Hyd. Rd.	#4		mm	
Ş	Hyd. Rd.	# 5	,	mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	

 $D_{50} = 0.0778 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 12.7

Dry Dens.: NA Liquid Limit (AASHTO T89): 15 Opt. Moist.: NA Plastic Limit (AASHTO T90): 14

Plasticity Index : 1

AASHTO Composition of Total Sample: M145 Liquidity Index : -1.35

Gravel (3in. + No.10): 2.7 Activity: NA
Coarse Sand (-No.10 + No.40): 5.2 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200) : 43.0 AASHTO Classification: M145 : A-4 (0)

Silt + Clay (-No.200): 49.1 ASTM Classification: D2487: SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 1.0 Coarse Sand (-No.4 + No.10) : 1.7 Medium Sand (-No.10 + No.40) : 5.2 Fine Sand (-No.40 + No.200) : 43.0 Silt + Clay (-No.200) : 49.1

Approved By: J.S. Soil No. 6



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Sample No.: SS-2

Sample Loc. : Boring No. B-505

Sample Depth: 9.5' to 11.0' Date Tested : 10/24/14

Date Reported: 11/03/14

AASHTO T27:

No.4

No.6

No.10

Soil Type: Tan & Gray Clayey Sand

% Passino

100.0

99.5

mm

mm

mm

% Passino

				70 I dooning
4	in.	101.6	mm	
3.5	ın.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	ınm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	

4.75

3,35

					70 Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	93.6
	No.50		0.3	mm	'
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200	ì	0.075	mm	33.1
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
188	Hyd. Rd.	#3		mm	
AASHIO 188	Hyd. Rd.	# 4		mm	
Ş	Hyd. Rd.	# 5	•	mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
١,	0				

 $\overline{D_{50}} = 0.1218 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 23.6

Dry Dens. : NA Liquid Limit (AASHTO T89) : 42

Opt. Moist.: NA Plastic Limit (AASHTO T90) : 22

Plasticity Index: 20 AASHTO Composition of Total Sample: M145 Liquidity Index: 0.10

Activity: NA Gravel (3in. + No.10): 0.5 Coarse Sand (-No.10 + No.40): 5.9 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200): 60.5 AASHTO Classification: M145 : A-2-7 (2)

ASTM Classification: D2487 : SC Silt + Clay(-No.200) : 33.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand (-No.4 + No.10): 0.5 Medium Sand (-No.10 + No.40): 5.9 Fine Sand (-No.40 + No.200): 60.5 Silt + Clay (-No.200): 33.1

Approved By:	J.S.	Soil No.	7
Approved DJ.	3,0,	5011 110.	,



Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Gray Sandy Lean Clay

Sample No.: SS-2

Sample Loc. : Boring No. B-506

Sample Depth: 9.8' to 11.3'

Date Tested: 10/24/14

Date Reported: 11/03/14

AASHTO T27:

0/ Dogging

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	nım	
1 3/4	in.	45	mm	•
1 1/2	in,	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.4
No.6		3.35	mm	
No.10		2	mm	97.3

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	ınm	93.5
	No.50		0.3	mm	
	No.60		0,25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	60.0
	No.270		0.053	mm	
	Hyd. Rd.	# 1	•	mm	
	Hyd. Rd.	#2		nım	
138	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	# 4		mm	
	Hyd, Rd,	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
าวส่	0				

 $D_{50} = 0.0249 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 23.7

Dry Dens. : NA Liquid Limit (AASHTO T89) : 30

Plastic Limit (AASHTO T90): 17 Opt. Moist.: NA

Plasticity Index: 13

AASHTO Composition of Total Sample: M145 Liquidity Index: 0.53 Gravel (3in. + No.10): 2.7 Activity: NA

Coarse Sand (-No.10 + No.40): 3.8 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200): 33.5 AASHTO Classification: M145 : A-6 (5)

Silt + Clay(-No.200) : 60.0ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.6 Coarse Sand ( -No.4 + No.10 ) : 2.1 Medium Sand (-No.10 + No.40): 3.8 Fine Sand (-No.40 + No.200): 33.5

Approved By: J.S.

Silt + Clay (-No.200): 60.0

Soil No.

Strengthening America's Infrastructure®



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Gray Sandy Silty Clay

Sample No.: SS-3

Sample Loc. : Boring No. B-506 Sample Depth : 19.8' to 21.3'

Date Tested: 10/24/14

Date Reported : 10/31/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	·
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.8

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40	,	0.425	mm	99.5
No.50	,	0.3	mm	
No.60		0.25	mm	
No.80	,	0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	50.6
No.270		0.053	mm	
Hyd. Rd.	#1		mm	
Hyd. Rd.	#2		mm	
Hyd. Rd.	#3		mm	
Hyd. Rd.	#4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	#6		mm	
Hyd. Rd.	#7		mm	

 $D_{50} = 0.0693 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 16.3

Dry Dens.: NA Liquid Limit (AASHTO T89): 24
Opt. Moist.: NA Plastic Limit (AASHTO T90): 17

Plasticity Index : 7

AASHTO Composition of Total Sample: M145 Liquidity Index : -0.08

Gravel (3in. + No.10): 0.2 Activity: NA

Silt + Clay (-No.200): 50.6 ASTM Classification: D2487: CL-ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 0.0 Coarse Sand (-No.4 + No.10) : 0.2 Medium Sand (-No.10 + No.40) : 0.3 Fine Sand (-No.40 + No.200) : 48.9 Silt + Clay (-No.200) : 50.6

Approved By:	J.S.	Soil No.	9



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Gray & Brown Silty Clay with Sand

Sample No.: \$S-1

Sample Loc. : Boring No. B-507

Sample Depth: 4.7' to 6.2' Date Tested: 10/24/14

Date Reported: 10/31/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38,1	mm	
1 1/4	in,	31.5	mm	,
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9,5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.6
No.6		3.35	mm	
No.10		2	mm	98.6

					% Passing
	No.16		1.18	mm	,
	No.30		0.6	mm	
	No.40		0.425	mm	96.7
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
-	No.100		0.15	mm	
	No.200		0.075	mm	80.2
	No.270		0.053	ınm	
	Hyd. Rd.	#1	•	mm	
	Hyd. Rd.	#2		mm	·
	Hyd. Rd.	#3		mm	
	Hyd. Rd.	#4		mm	,
!	Hyd. Rd.	# 5		min	
	Hyd, Rd.	#6		mm	
	Hyd. Rd.	#7		mm	

 $D_{50} = 0.0062 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 24.3

Dry Dens. : NA Liquid Limit (AASHTO T89) : 26

Opt. Moist.: NA Plastic Limit (AASHTO T90): 19

Plasticity Index: 7

Liquidity Index: 0.80 AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10): 1.4 Activity: NA

Coarse Sand (-No.10 + No.40): 1.9 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200): 16.5 AASHTO Classification: M145 : A-4 (4)

Silt + Clay (-No.200): 80.2 ASTM Classification: D2487 : CL-ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0 Fine Gravel (-3/4in. + No.4): 0.4 Coarse Sand (-No.4 + No.10): 1.0 Medium Sand (-No.10 + No.40) : 1.9 Fine Sand (-No.40 + No.200): 16.5

Approved By: J.S.

Siit + Clay(-No.200) : 80.2

Soil No.



Project Name: Highway 67 Widening

Project No. : 11206-04

Project County : Pulaski
Project State : Arkansas
Laboratory No. : 11206-04

Submitted By: ICA Engineering

Soil Type: Gray & Brown Lean Clay with Sand

Sample No.: SS-2

Sample Loc. : Boring No. B-507

Sample Depth : 14.7' to 16.2'
Date Tested : 10/24/14

Date Reported: 11/03/14

AASHTO T27:

% Passing

% Passing

4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	·
1	in.	25	mm	•
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	-
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	99.5

					7 0 1 40011118
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40	•	0.425	mm	98.9
	No.50		0.3	mm	•
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100	Í	0.15	mm	
	No.200		0.075	mm	79.8
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
188	Hyd. Rd.	# 3		mm	
AASHTO T88	Hyd. Rd.	#4		mm	•
	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
ስስና	3 mm				

 $D_{50} = 0.0063 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 18.6

Dry Dens.: NA Liquid Limit (AASHTO T89): 42 Opt. Moist.: NA Plastic Limit (AASHTO T90): 20

Plasticity Index : 22

AASHTO Composition of Total Sample: M145 Liquidity Index : -0.05 Gravel (3in. + No.10) : 0.5 Activity : NA

Coarse Sand (-No.10 + No.40): 0.6 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200): 19.1 AASHTO Classification: M145: A-7-6 (17)

Silt + Clay (-No.200): 79.8 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 0.1 Coarse Sand (-No.4 + No.10) : 0.4 Medium Sand (-No.10 + No.40) : 0.6 Fine Sand (-No.40 + No.200) : 19.1 Silt + Clay (-No.200) : 79.8

Approved By: J.S.	Soil No.	11



Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski
Project State: Arkansas

Laboratory No.: 11206-04
Submitted By: ICA Engineering

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3.5

2.5

2

1 3/4

1 1/2

1 1/4

1

3/4

1/2

3/8

1/4

No.4

No.6

No.10

Soil Type: Gray & Brown Lean Clay with Sand

101.6

88.9

76.2

63.5

50.8

45

38.1

31.5

25

19

12.5

9.5

6.3

4.75

3.35

2

Sample No.: SS-1

Sample Loc. : Boring No. B-508

Sample Depth: 4.7' to 6.2'

Date Tested : 10/24/14

Date Reported: 10/31/14

### AASHTO T27:

% Passing

mm

mm

mm

mm

mm

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mm

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mm

issing	
·	
0.00	
8.4	
4.7	
	•

				% Passing
No.16	·	1.18	mm	
No.30		0.6	mm	
No.40		0.425	ınm	93.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	81.9
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	#3		mm	
Hyd. Rd.	#4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	

 $D_{50} = 0.0057 \text{ mm}$ 

**4ASHTO T88** 

CBR: NA Natural Moisture (%) (AASHTO T265): 13.8

#7

Dry Dens.: NA Liquid Limit (AASHTO T89): 41

Opt. Moist.: NA Plastic Limit (AASHTO T90): 21

Hyd, Rd,

Plasticity Index : 20

mm

AASHTO Composition of Total Sample: M145 Liquidity Index: -0.36 Gravel (3in. + No.10): 5.3 Activity: NA

Coarse Sand (-No.10 + No.40): 1.7 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200): 11.1 AASHTO Classification: M145: A-7-6 (16)

Silt + Clay (-No.200): 81.9 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Silt + Clay(-No.200) : 81.9

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 1.6 Coarse Sand (-No.4 + No.10) : 3.7 Medium Sand (-No.10 + No.40) : 1.7 Fine Sand (-No.40 + No.200) : 11.1

Approved By: J.S. Soil No. 12



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown & Gray Sandy Silty Clay with Gravel

Sample No. : SS-2

Sample Loc. : Boring No. B-508

Sample Depth: 9.7' to 11.2' Date Tested : 10/24/14

Date Reported: 10/31/14

#### AASHTO T27:

			% Passing
in.	101.6	mm	

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	•
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	89.4
1/4		6.3	mm	
No.4		4.75	mm	83.1
No.6		3.35	mm	
No.10		2	mm	78.9
				D

% Passing

					70 I assing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	72.9
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	٠.
	No.100		0.15	mm	
	No.200		0.075	mm	51.0
	No.270		0.053	mm	•
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
3	Hyd. Rd.	#3		mm	
001 0111077	Hyd. Rd.	# 4		mm	
3	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	

 $D_{50} = 0.0659 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 8.2

Dry Dens. : NA Liquid Limit (AASHTO T89) : 28 Opt. Moist.: NA Plastic Limit (AASHTO T90) : 22

> Plasticity Index: 6 Liquidity Index: -2.23

AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10): 21.1 Activity: NA

Coarse Sand (-No.10 + No.40): 6.0 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200) : 21.9 AASHTO Classification: M145 : A-4 (1)

ASTM Classification: D2487 : CL-ML Silt + Clay (-No.200): 51.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 16.9 Coarse Sand (-No.4 + No.10) : 4.2 Medium Sand (-No.10 + No.40) : 6.0 Fine Sand (-No.40 + No.200): 21.9 Silt + Clay (-No.200): 51.0

Approved By:	J.S.		Soil No.	13



% Deceina

Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type : Gray Silty Sand

Sample No. : SS-3

Sample Loc. : Boring No. B-508 Sample Depth : 13.5' to 13.9' Date Tested : 10/24/14

Date Reported: 10/31/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.0
No.6		3,35	mm	
No.10		2	mm	94.1

					70 Passing
	No.16		1.18	mm	
	No.30		0.6	mm	•
	No.40		0.425	mm	73.4
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	21.6
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
738	Hyd, Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	# 4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6	·	mm	
	Hyd. Rd.	#7		mm	

 $D_{50} = 0.1941 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 7.2

Dry Dens.: NA Liquid Limit (AASHTO T89): NP

Opt. Moist.: NA Plastic Limit (AASHTO T90): NP

AASHTO Composition of Total Sample: M145

Plasticity Index : NP
Liquidity Index : NA

Gravel (3in. + No.10): 5.9 Activity: NA

Coarse Sand (-No.10 + No.40 ) : 20.7 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200 ) : 51.8 AASHTO Classification: M145 : A-2-4 (0)

Silt + Clay (-No.200): 21.6 ASTM Classification: D2487: SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 2.0 Coarse Sand (-No.4 + No.10) : 3.9 Medium Sand (-No.10 + No.40) : 20.7 Fine Sand (-No.40 + No.200) : 51.8 Silt + Clay (-No.200) : 21.6

Approved By: J.S. Soil No. 14



% Passing

Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski
Project State: Arkansas

Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Brown & Red Clayey Sand with Gravel

% Passing

88.4

81.6

72.9

mm

mm

mm

mm

mm

Sample No. : SS-1

Sample Loc. : Boring No. B-509

Sample Depth: 4.0' to 5.5'

Date Tested : 10/24/14

Date Reported: 10/31/14

#### AASHTÓ T27:

3/8

1/4

No.4

No.6

No.10

lin.

101.6 in. mm 3.5 in. 88.9 mm 76.2 in. mm 2,5 in. 63.5 mm 50.8 2 in. mm 1 3/4 45 ļin. mm 1 1/2 lin. 38.1 mm 1 1/4 lin. 31.5 mm 1 in. 25 mm 100.0 19 3/4 95.3 in. mm 1/2 12.5 in. mm

9.5

6.3

4.75

3.35

2

	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	63.0
	No.50		0.3	mm	
	No.60	Ţ	0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	39.7
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	,
	Hyd. Rd.	#2		mm	
199	Hyd. Rd.	#3		mm	
Sings	Hyd. Rd.	# 4		mm	
3	Hyd. Rd.	# 5		mm	

mm

mm

 $D_{50} = 0.1615 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 17.4

#6

Dry Dens.: NA Liquid Limit (AASHTO T89): 31

Hyd. Rd.

Hyd. Rd.

Opt. Moist.: NA Plastic Limit (AASHTO T90): 23

AASHTO Composition of Total Sample: M145 Plasticity Index : 8
Liquidity Index : -0.65

Gravel (3in. + No.10) : 27.1 Activity : NA

Coarse Sand (-No.10 + No.40): 9.9 Sp. Gr. (AASHTO T100): NA Fine Sand (-No.40 + No.200): 23.3 AASHTO Classification: M145: A-4 (0)

Silt + Clay (-No.200): 39.7 ASTM Classification: D2487: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 4.7 Fine Gravel (-3/4in. + No.4): 13.7 Coarse Sand (-No.4 + No.10): 8.7 Medium Sand (-No.10 + No.40): 9.9 Fine Sand (-No.40 + No.200): 23.3

Silt + Clay (-No.200): 39.7

Approved By: J.S. Soil No. 15



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown Sandy Lean Clay

Sample No. : SS-3

Sample Loc. : Boring No. B-509

Sample Depth : 14.0' to 14.9' Date Tested : 10/24/14

Date Reported: 10/31/14

AASHTO T27:

% Deceina

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	94.7
No.6		3.35	mm	
No.10		2	mm	81.8

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	66.5
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	•
	No.100		0.15	mm	
1	No.200	,	0.075	mm	50.2
	No.270	•	0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	# 2		mm	
138	Hyd. Rd.	#3		mm	
AASHTO 188	Hyd. Rd.	#4		mm	
A S	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
_ 2					

 $D_{50} = 0.073 \text{ mm}$ 

Natural Moisture (%) (AASHTO T265): 11.6 CBR: NA

Liquid Limit (AASHTO T89) : 30 Dry Dens. : NA

Opt. Moist.: NA Plastic Limit (AASHTO T90) : 22

Plasticity Index: 8 Liquidity Index : -1.24

AASHTO Composition of Total Sample: M145 Activity: NA Gravel (3in. + No.10): 18.2

Sp. Gr. (AASHTO T100) : NA Coarse Sand (-No.10 + No.40): 15.3

AASHTO Classification: M145 : A-4 (2) Fine Sand (-No.40 + No.200) : 16.3

ASTM Classification: D2487 : CL Silt + Clay(-No.200) : 50.2

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4 ):5.3Coarse Sand (-No.4 + No.10): 12.9 Medium Sand (-No.10 + No.40): 15.3 Fine Sand (-No.40 + No.200): 16.3

Silt + Clay(-No.200) : 50.2

Soil No.\_\_\_

Approved By: J.S.



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Sample Loc. : Boring No. B-558

Sample Depth: 1.1' to 2.6' Project State: Arkansas Date Tested : 10/24/14 Laboratory No.: 11206-04 Submitted By: ICA Engineering Date Reported: 10/31/14

Soil Type: Brown & Gray Silt

101.6

88.9

76.2

63.5

50.8

45

38.1

31.5

25

19

12.5

9.5

6.3

4.75

3.35

2

mm

9

### AASHTO T27:

3.5

3

2.5

2

1 3/4

1 1/2

3/4

1/2

3/8

1/4

No.4

No.6

No.10

in.

in.

in.

in.

in.

in. 1 1/4 | in.

in.

lin.

lin.

in.

%	Passing	

ssing	
0.0	
9.8	
8.4	
	l

% Passing

					70 rassing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	94.6
	No.50		0.3	mm	
	No.60		0.25	mm	
l	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	88.2
	No.270		0.053	mm	
100	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	# 2		mm	
	Hyd. Rd.	#3		mm	
201110	Hyd. Rd.	#4		mm	
3	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
	_				

Sample No. : SS-1

 $D_{50} = 0.004\overline{3} \text{ mm}$ 

Natural Moisture (%) (AASHTO T265): 22.4 CBR: NA

Dry Dens. : NA Liquid Limit (AASHTO T89) : 26

Plastic Limit (AASHTO T90) : 23 Opt. Moist.: NA

> Plasticity Index : 3 Liquidity Index: -0.24

AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10): 1.6 Activity: NA

Coarse Sand ( -No.10 + No.40 ) : 3.8 Sp. Gr. (AASHTO T100) : NA

AASHTO Classification: M145 : A-4 (2) Fine Sand (-No.40 + No.200): 6.4 ASTM Classification: D2487 : ML Silt + Clay (-No.200): 88.2

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.2 Coarse Sand (-No.4 + No.10): 1.4 Medium Sand (-No.10 + No.40) : 3.8 Fine Sand (-No.40 + No.200) : 6.4 Silt + Clay(-No.200): 88.2

Approved By:	J.S.	Soil No.	17
11 -			



% Passing

99.0

93.5

Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Brown & Gray Lean Clay

Sample No.: SS-3

Sample Loc. : Boring No. B-558 Sample Depth : 11.1' to 12.6' Date Tested : 10/24/14

mm

mm

Date Reported: 10/31/14

#### AASHTO T27:

% Passing

	No.16		1.18	mm	
	No.30		0.6	nım	
	No.40		0.425	mm	
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm.	
4ASHTO T88	No.200		0.075	mm	
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
	Hyd. Rd.	#3		mm	
	Hyd. Rd.	#4		mm	
Ş	Hyd. Rd.	# 5		mm	

4	1:	101.6		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mım	
2.5	in.	63,5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	Ť
3/8	in.	9,5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.6

 $D_{50} = 0.0034 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 22.3

#6

#7

Dry Dens.: NA Liquid Limit (AASHTO T89): 40

Hyd. Rd.

Hyd. Rd.

Opt. Moist.: NA Plastic Limit (AASHTO T90): 23

AASHTO Composition of Total Sample: M145

Plasticity Index: 17

Liquidity Index: -0.05

Gravel (3in. + No.10): 0.4 Activity: NA

Coarse Sand (-No.10 + No.40): 0.6 Sp. Gr. (AASHTO T100): NA Fine Sand (-No.40 + No.200): 5.5 AASHTO Classification: M145: A-6 (17)

Silt + Clay (-No.200): 93.5 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.4
Medium Sand (-No.10 + No.40) : 0.6
Fine Sand (-No.40 + No.200) : 5.5
Silt + Clay (-No.200) : 93.5

Approved By:	J.S.	Soil No.	18



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown & Gray Sandy Silty Clay

Sample No.: SS-5

Sample Loc. : Boring No. B-558 Sample Depth : 31.1' to 32.6'

Date Tested: 10/24/14 Date Reported: 11/03/14

AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in,	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	ınm	100.0
No.6		3.35	mm	
No.10		2	mm	99.8

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	99.2
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	65.1
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
T88	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	# 4		mm	
	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	

 $D_{50} = 0.0162 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 22

Dry Dens. : NA Liquid Limit (AASHTO T89) : 21 Plastic Limit (AASHTO T90): 16 Opt. Moist.: NA

Plasticity Index: 5 AASHTO Composition of Total Sample: M145 Liquidity Index: 1.12

Gravel (3in. + No.10): 0.2 Activity: NA

Coarse Sand (-No.10 + No.40): 0.6 Sp. Gr. (AASHTO T100): NA Fine Sand (-No.40 + No.200): 34.1 AASHTO Classification: M145 : A-4 (1) Silt + Clay (-No.200): 65.1 ASTM Classification: D2487 : CL-ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand ( -No.4 + No.10 ) : 0.2 Medium Sand (-No.10 + No.40): 0.6 Fine Sand (-No.40 + No.200) : 34.1 Silt + Clay (-No.200): 65.1

Approved By:	J.S.	Soil No.	19



% Passing

Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Gray Silty Sand with Gravel

Sample No.: SS-6

Sample Loc. : Boring No. B-558 Sample Depth : 35.9' to 36.1' Date Tested : 10/24/14

Date Reported: 10/31/14

#### AASHTO T27:

No.6

No.10

4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	93.7
1/4		6.3	mm	
No.4		4.75	mm	69.0

3.35

mm

mm

48.7

% Passing

					70 1 0331115
	No.16		1.18	mm	
	No.30		0.6	mm	
-	No.40		0.425	mm	28.8
-	No.50		0.3	mm	
-	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	21.5
	No.270		0.053	mm	
	Hyd. Rd.	# 1	•	mm	
	Hyd. Rd.	#2		mm	
-	Hyd. Rd.	#3		mm	
	Hyd. Rd.	#4		mm	
	Hyd. Rd.	# 5		mm	
	Hud Rd	# 6		mm	

mm

 $D_{50} = 2.1139 \text{ mm}$ 

VASHTO T88

CBR : NA Natural Moisture (%) (AASHTO T265): 10.8

Liquid Limit (AASHTO T89) : NA Dry Dens. : NA

Hyd. Rd.

Plastic Limit (AASHTO T90) : NA Opt. Moist.: NA

Plasticity Index: NA Liquidity Index: NA AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10): 51.3 Activity: NA

Sp. Gr. (AASHTO T100) : NA Coarse Sand (-No.10 + No.40): 19.9

AASHTO Classification: M145 : A-1-b (0) \* Fine Sand (-No.40 + No.200): 7.3

Silt + Clay (-No.200): 21.5 ASTM Classification: D2487 : SM \*

\* Visual Classification

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0 Fine Gravel (-3/4in. + No.4) : 31.0 Coarse Sand (-No.4 + No.10) : 20.3 Medium Sand (-No.10 + No.40): 19.9 Fine Sand (-No.40 + No.200): 7.3 Silt + Clay (-No.200): 21.5

Approved By:	J.S.	Soil No.	20	
I.L.				_



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04

Submitted By: ICA Engineering
Soil Type: Brown & Gray Lean Clay

Sample No.: \$S-1

Sample Loc. : Boring No. B-563

Sample Depth: 9.1' to 10.6' Date Tested: 10/24/14

Date Reported: 10/31/14

AASHTO T27:

% Passing

% Passing

				70 1 assing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mın	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mın	100.0
No.6		3.35	mm	
No.10		2	mm	99.8

					70 1 assing
ſ	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	98.5
1	No.50	,	0.3	mm	
	No.60		0.25	mm	·
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200	<b>V</b>	0.075	mm	91.0
1	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
100	Hyd. Rd.	# 3		mm	
001 O 1200	Hyd. Rd.	#4		mm	
3	Hyd. Rd.	# 5	,	mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
ิว	0 mm				

 $D_{50} = 0.0038 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 23.2

Dry Dens.: NA Liquid Limit (AASHTO T89): 35

Opt. Moist.: NA Plastic Limit (AASHTO T90): 22

AASHTO Composition of Total Sample: M145

Plasticity Index: 13
Liquidity Index: 0.12

Gravel (3in. + No.10): 0.2 Activity: NA

Coarse Sand (-No.10 + No.40): 1.3 Sp. Gr. (AASHTO T100): NA Fine Sand (-No.40 + No.200): 7.5 AASHTO Classification: M145: A-6 (12)

Silt + Clay (-No.200): 91.0 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0
Fine Gravel (-3/4in. + No.4): 0.0
Coarse Sand (-No.4 + No.10): 0.2
Medium Sand (-No.10 + No.40): 1.3
Fine Sand (-No.40 + No.200): 7.5
Silt + Clay (-No.200): 91.0

Approved By: J.S. Soil No. 21



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Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Brown Sandy Lean Clay

Sample No.: SS-2

Sample Loc. : Boring No. B-563 Sample Depth : 14.1' to 15.6' Date Tested : 10/24/14

Date Reported: 10/31/14

#### AASHTO T27:

No.4

No.6

No.10

4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	

4.75

3.35

% Passing

99.8

99.2

mm

mm

mm

					% Passing
N	o.16		1.18	mm	
N	o.30		0.6	mm	, , , , , , , , , , , , , , , , , , , ,
N	0.40		0.425	mm	95.2
N	0.50		0.3	mm	,
N	0.60		0.25	mm	
N	0.80		0.18	mm	
No	0.100		0.15	mm	
No	5.200		0.075	mm	60.9
No	.270		0.053	mm	
Ну	d. Rd.	#1		mm	
Ну	d, Rd.	# 2		mm	
Ну	d. Rd.	# 3		mm	•
Ну	d. Rd.	# 4		mm	
Ну	d. Rd.	# 5		mm	
Ну	d. Rd.	# 6		mm	
Ну	d. Rd.	#7		mm	
~					

 $D_{50} = 0.0229 \text{ mm}$ 

AASHTO T88

CBR: NA Natural Moisture (%) (AASHTO T265): 21.4

Dry Dens.: NA Liquid Limit (AASHTO T89): 25
Opt. Moist.: NA Plastic Limit (AASHTO T90): 17

Plasticity Index: 8

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.61

Gravel (3in. + No.10): 0.8 Activity: NA

Coarse Sand (-No.10 + No.40) : 4.0 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200) : 34.3 AASHTO Classification: M145 : A-4 (2)

Silt + Clay (-No.200): 60.9 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 0.2 Coarse Sand (-No.4 + No.10) : 0.6 Medium Sand (-No.10 + No.40) : 4.0 Fine Sand (-No.40 + No.200) : 34.3 Silt + Clay (-No.200) : 60.9

Approved By:	LS	Soil No.	22
i ippio iva Dj.	3.0.		



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown & Gray Lean Clay

Sample No. : \$S-3

Sample Loc. : Boring No. B-563 Sample Depth : 19.1' to 20.6'

Date Tested: 10/24/14

Date Reported: 10/31/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in,	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	nım	·
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	100.0

% Passing

					70 1 033111g
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	99.6
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	87.7
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
2	Hyd. Rd.	# 3	-	mm	
AASH TO 188	Hyd. Rd.	#4		mm	*
Ş	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
น	4 mm				

 $D_{50} = 0.0044 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 24.7

Dry Dens.: NA Liquid Limit (AASHTO T89): 28 Opt. Moist.: NA Plastic Limit (AASHTO T90): 20

Plasticity Index : 8

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10): 0.0

Liquidity Index: 0.57

Activity: NA

Coarse Sand (-No.10 + No.40): 0.4 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200): 11.9 AASHTO Classification: M145: A-4 (6)

Silt + Clay (-No.200): 87.7 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 0.0 Coarse Sand (-No.4 + No.10) : 0.0 Medium Sand (-No.10 + No.40) : 0.4 Fine Sand (-No.40 + No.200) : 11.9 Silt + Clay (-No.200) : 87.7

Approved By: J.S. Soil No. 23



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown Clayey Sand

Sample No.: SS-4

Sample Loc. : Boring No. B-563

Sample Depth : 29.1' to 30.6'

Date Tested: 10/24/14

Date Reported: 10/31/14

#### AASHTO T27:

% Passing

% Passing

				70 I assing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	•
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	•
No.4		4.75	mm	88.6
No.6		3.35	mm	
No.10		2	mm	63.0
				D

	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	32.8
	No.50		0.3	mm	,
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100	·	0.15	mm	
	No.200		0.075	mm	19.0
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
188	Hyd. Rd.	#3		mm	
ASHTO T88	Hyd. Rd.	# 4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	·
26	8 inm		•		

 $D_{50} = 1.0268 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 15.9

Liquid Limit (AASHTO T89) : 30 Dry Dens.: NA Plastic Limit (AASHTO T90): 17

Opt. Moist.: NA

Plasticity Index: 13 Liquidity Index: -0.07

AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10): 37.0 Activity: NA

Sp. Gr. (AASHTO T100) : NA Coarse Sand (-No.10 + No.40): 30.2

Fine Sand (-No.40 + No.200): 13.8 AASHTO Classification: M145 : A-2-6 (1)

ASTM Classification: D2487 : SC Silt + Clay(-No.200) : 19.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in, +3/4in.): 0.0 Fine Gravel (-3/4in. + No.4): 11.4 Coarse Sand (-No.4 + No.10) : 25.6 Medium Sand (-No.10 + No.40): 30.2 Fine Sand (-No.40 + No.200): 13.8 Silt + Clay(-No.200) : 19.0

i in .	TO	Coll No	2.4
Approved By:	J.S.	Soil No.	Z4
ippiviva Dji	• 10 .		



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Gray & Tan Silt

Sample No.: SS-2

Sample Loc. : Boring No. B-564

Sample Depth: 9.6' to 11.1' Date Tested: 10/24/14

Date Reported: 10/31/14

#### AASHTO T27:

% Passing

% Passing

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	,
3/8	in.	9.5	nım	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.9
			,	n.

	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	98.7
	No.50		0.3	mm	
į	No.60	,	0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	92.9
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	,
	Hyd. Rd.	# 2		mm	
200	Hyd. Rd.	# 3		mm	
AASHIO 198	Hyd. Rd.	#4		mm	
£	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6	,	mm	
	Hyd. Rd.	#7		mm	
13	5 mm				

 $D_{50} = 0.0035 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 22.9

Liquid Limit (AASHTO T89) : 28 Dry Dens. : NA Plastic Limit (AASHTO T90) : 22 Opt. Moist.: NA

Plasticity Index: 6

Liquidity Index : 0.22 AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10): 0.1 Activity: NA

Sp. Gr. (AASHTO T100): NA Coarse Sand (-No.10 + No.40): 1.2 Fine Sand (-No.40 + No.200): 5.8 AASHTO Classification: M145 : A-4 (5)

Silt + Clay (-No.200): 92.9 ASTM Classification: D2487 : ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in, +3/4in.): 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand (-No.4 + No.10): 0.1 Medium Sand (-No.10 + No.40): 1.2 Fine Sand (-No.40 + No.200) : 5.8 Silt + Clay (-No.200): 92.9

Approved By:	J.S.	Soil No.	25	



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Gray & Tan Silty, Clayey Sand with Gravel

Sample No.: SS-5

Sample Loc. : Boring No. B-564 Sample Depth : 34.6' to 36.1' Date Tested : 10/24/14

Date Reported : 10/31/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3,5	in.	88.9	mm	
3	in.	76.2	nım	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mın	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mın	96.1
1/4		6.3	mm	
No.4		4.75	mm	83.4
No.6		3.35	mm	
No.10		2	mm	58.5

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	39.4
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	20.2
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	# 2		ınm	
201	Hyd. Rd.	#3		mm	
001 0110000	Hyd, Rd.	#4		mm	
Š	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	

 $D_{50} = 1.0039 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 15.8

Dry Dens.: NA Liquid Limit (AASHTO T89): 22

Opt. Moist.: NA Plastic Limit (AASHTO T90): 17

Plasticity Index: 5
Liquidity Index: -0.28

AASHTO Composition of Total Sample: M145 Liquidity Index : -0.28 Gravel (3in. + No.10) : 41.5 Activity : NA

Fine Sand (-No.40 + No.200): 19.2 AASHTO Classification: M145: A-1-b (0) Silt + Clay (-No.200): 20.2 ASTM Classification: D2487: SC-SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 16.6 Coarse Sand (-No.4 + No.10) : 24.9 Medium Sand (-No.10 + No.40) : 19.1 Fine Sand (-No.40 + No.200) : 19.2 Silt + Clay (-No.200) : 20.2

Approved By:	J.S.	Soil No.	26	



Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Gray & Tan Clayey Sand with Gravel

Sample No.: \$S-6

Sample Loc. : Boring No. B-564 Sample Depth : 39.6' to 41.1' Date Tested : 10/24/14

Date Reported: 10/31/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	,
2	in.	50.8	nım	
1 3/4	in.	45	mm	,
1 1/2	in.	38.1	min	100.0
1 1/4	in,	31.5	mm	
1	in,	25	mm	90.2
3/4	in.	19	mm	90.2
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	90.2
1/4		6.3	mm	
No.4		4.75	mm	84.2
No.6		3.35	mm	
No.10		2	mm	66.9

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	49.1
No.50		0.3	mm	,
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	35.7
No.270		0.053	mm	
Hyd. Rd.	#1		mm	
Hyd. Rd.	#2		mm	
Hyd. Rd.	#3		mm	
Hyd. Rd.	#4		mm	
Hyd. Rd.	# 5		mm	
Hyd, Rd,	#6		mm	
Hyd. Rd.	#7		mm	

 $D_{50} = 0.4596 \text{ mm}$ 

AASHTO T88

CBR: NA Natural Moisture (%) (AASHTO T265): 16.2

Dry Dens.: NA Liquid Limit (AASHTO T89): 30 Opt. Moist.: NA Plastic Limit (AASHTO T90): 19

Plasticity Index : 11

AASHTO Composition of Total Sample: M145 Liquidity Index: -0.24 Gravel (3in. + No.10): 33.1 Activity: NA

Coarse Sand (-No.10 + No.40) : 17.8 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200) : 13.4 AASHTO Classification: M145 : A-6 (0)

Silt + Clay (-No.200): 35.7 ASTM Classification: D2487: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 9.8 Fine Gravel (-3/4in. + No.4) : 6.0 Coarse Sand (-No.4 + No.10) : 17.3 Medium Sand (-No.10 + No.40) : 17.8 Fine Sand (-No.40 + No.200) : 13.4 Silt + Clay (-No.200) : 35.7

Approved By:	J.S.	Soil No.	27



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

in.

in.

in.

lin.

lin.

lin.

in.

lin.

lin,

lin.

in.

3.5

3

2.5

2

1 3/4

1 1/2

1 1/4 in.

3/4

1/2

3/8

1/4

No.4

No.6

No.10

Soil Type: Brown & Gray Silt

101.6

88.9

76.2

63.5

50.8

45

38.1

31.5

25

19

12.5

9.5

6.3

4.75

3.35

2

mm

100.

99.

Sample No.: \$S-3

Sample Loc. : Boring No. B-556

Sample Depth : 14.8' to 16.3' Date Tested : 10/30/14

Date Reported: 11/04/14

#### AASHTO T27:

% Passing

sing	
silig	
	ĺ
.0	
9	

% Passing

					70 Passing
	No.16		1.18	mm	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	No.30		0.6	mm	
	No.40		0.425	mm	99.4
	No.50	•	0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200	,	0.075	mm	91.3
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
2	Hyd. Rd.	#3		mm	
?	Hyd. Rd.	#4		mm	
	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		ınm	
	Hyd. Rd.	#7		mm	
	No.200 No.270 Hyd. Rd. Hyd. Rd. Hyd. Rd. Hyd. Rd. Hyd. Rd. Hyd. Rd.	#2 #3 #4 #5	0.075	mm mm mm mm mm mm	91.3

 $D_{50} = 0.0038 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 21.1

Dry Dens.: NA Liquid Limit (AASHTO T89): 20
Opt. Moist.: NA Plastic Limit (AASHTO T90): 18

Plasticity Index : 2

AASHTO Composition of Total Sample: M145 Liquidity Index : 1.35

Gravel (3in. + No.10): 0.1 Activity: NA sand (-No.10 + No.40): 0.5 Sp. Gr. (AASHTO T100): NA

Coarse Sand (-No.10 + No.40) : 0.5 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200) : 8.1 AASHTO Classification: M145 : A-4 (0)

Silt + Clay (-No.200): 91.3 ASTM Classification: D2487: ML

ASTM Composition of Total Sample: D2487

Silt + Clay (-No.200): 91.3

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 0.0 Coarse Sand (-No.4 + No.10) : 0.1 Medium Sand (-No.10 + No.40) : 0.5 Fine Sand (-No.40 + No.200) : 8.1

Approved By: J.S.

Soil No. 28



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By: ICA Engineering

Sample No.: SS-5

Sample Loc. : Boring No. B-556 Sample Depth : 34.8' to 36.3'

Date Tested : 10/29/14 Date Reported: 11/04/14

Soil Type: Brown Sandy Silty Clay

AASHTO T27:

% Passing

% Passing

in.	101.6	mm	
in.	88.9	mm	
in.	76.2	mm	
in.	63.5	mın	
in.	50.8	mm	
in.	45	mm	
in.	38.1	mm	
in.	31.5	mm	Ì
in.	25	mm	
in.	19	mm	
in.	12.5	mm	
in.	9.5	mm	
	6.3	mm	
	4.75	min	100.0
	3,35	ınm	
	2	mm	99.8
	in. in. in. in. in. in. in. in. in.	in. 88.9 in. 76.2 in. 63.5 in. 50.8 in. 45 in. 38.1 in. 31.5 in. 25 in. 19 in. 12.5 in. 9.5 6.3 4.75 3.35	in. 88.9 mm in. 76.2 mm in. 63.5 mm in. 50.8 mm in. 45 mm in. 38.1 mm in. 31.5 mm in. 25 mm in. 19 mm in. 12.5 mm in. 9.5 mm 4.75 mm 3.35 mm

				, , , , , , , , , , , , , , , , , , , ,
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	93.9
No.50	, ,	0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	60.5
No.270		0.053	nım	•
Hyd. Rd.	# 1		mm	
Hyd. Rd.	#2		mm	
Hyd. Rd. Hyd. Rd. Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4	,	mm	
Hyd, Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	#7		mm	
38 mm			,	

 $D_{50} = 0.0238$  inm

CBR: NA Natural Moisture (%) (AASHTO T265): 22.7

Dry Dens. : NA Liquid Limit (AASHTO T89) : 22 Plastic Limit (AASHTO T90): 16 Opt, Moist, : NA

Plasticity Index: 6

Liquidity Index: 1.16 AASHTO Composition of Total Sample: M145

Activity: NA Gravel (3in. + No.10): 0.2

Coarse Sand (-No.10 + No.40) : 5.9 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200) : 33.4 AASHTO Classification: M145 : A-4 (1)

Silt + Clay (-No.200): 60.5 ASTM Classification: D2487 : CL-ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand (-No.4 + No.10) : 0.2 Medium Sand (-No.10 + No.40): 5.9 Fine Sand (-No.40 + No.200) : 33.4 Silt + Clay(-No.200) : 60.5

Approved By:	J.:	S.	Soil No	29	



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Gray Silt with Sand

Sample No. : SS-7 Sample Loc. : Boring No. B-556

Sample Depth : 44.8' to 45.0' Date Tested : 10/29/14

Date Reported: 11/04/14

#### AASHTO T27:

No.6

No.10

% Passing

				70 1 40011115
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	nım	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	nım	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	95.0

3.35

2

mm

mm

89.0

% Passing

					70 1 4331118
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	80.8
	No.50		0.3	mm	
	No.60		0.25	ınm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	77.6
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
138	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	# 4		mm	
AAS	Hyd, Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
				, , , , , ,	

 $D_{50} = 0.0071 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 8.3

Dry Dens. : NA Liquid Limit (AASHTO T89) : NA

Plastic Limit (AASHTO T90) : NA Opt. Moist.: NA

Plasticity Index: NA

AASHTO Composition of Total Sample: M145 Liquidity Index: NA

Gravel (3in. + No.10): 11.0 Activity: NA

Coarse Sand (-No.10 + No.40): 8.2 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200): 3.2 AASHTO Classification: M145 : A-4 (0) \* Silt + Clay (-No.200): 77.6

ASTM Classification: D2487 : ML \* \* Visual Classification

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 5.0

Coarse Sand (-No.4 + No.10): 6.0 Medium Sand (-No.10 + No.40): 8.2

Fine Sand (-No.40 + No.200): 3.2

Silt + Clay (-No.200): 77.6

Approved By: J.S. Soil No. 30



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown Silty Clay

Sample No.: SS-2

Sample Loc. : Boring No. B-562 Sample Depth : 15.0' to 16.5'

Date Tested : 10/29/14

Date Reported: 11/04/14

AASHTO T27:

				% Passing
. 4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mın	
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	99.7

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	99.1
ĺ	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	85.9
	No.270		0.053	mm	
	Hyd, Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
738	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	#4		mm	
A&	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
າດ4	7 mm				

 $D_{50} = 0.0047 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 20.8

Dry Dens. : NA Liquid Limit (AASHTO T89) : 25 Opt. Moist.: NA Plastic Limit (AASHTO T90): 18

Plasticity Index: 7

Liquidity Index: 0.35 AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.3Activity: NA Coarse Sand (-No.10 + No.40): 0.6 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200): 13.2 AASHTO Classification: M145 : A-4 (4)

Silt + Clay (-No.200): 85.9 ASTM Classification: D2487 : CL-ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.1 Coarse Sand (-No.4 + No.10): 0.2 Medium Sand (-No.10 + No.40): 0.6 Fine Sand (-No.40 + No.200): 13.2

Silt + Clay (-No.200): 85.9

Soil No. 31 Approved By: J.S.



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By : ICA Engineering

Sample No. : SS-5

Sample Loc. : Boring No. B-562 Sample Depth : 30.0' to 31.5' Date Tested : 10/29/14

Date Reported: 11/04/14

Soil Type: Brown Sandy Lean Clay

AASHTO T27:

% Passing

% Passing

				70 Passing
4	in.	101.6	mm	
3.5	in.	88,9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
i	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	98.1
1/4		6.3	mm	
No.4		4.75	mm	91.9
No.6		3.35	mm	
No.10		2	mm	79.3
				D

					70 1 4001116
	No.16		1.18	mm	
	No.30	Í	0.6	mm	
	No.40		0.425	mm	66.2
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	55.0
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
738	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	#4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
141	1				

 $D_{50} = 0.0411 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 16.5

Dry Dens. : NA Liquid Limit (AASHTO T89) : 26 Opt. Moist.: NA Plastic Limit (AASHTO T90): 18

Plasticity Index: 8

AASHTO Composition of Total Sample: M145 Liquidity Index: -0.25 Activity: NA

Gravel (3in. + No.10): 20.7 Sp. Gr. (AASHTO T100) : NA Coarse Sand ( -No.10 + No.40 ) : 13.1

Fine Sand (-No.40 + No.200): 11.2 AASHTO Classification: M145 : A-4 (2)

ASTM Classification: D2487 : CL Silt + Clay(-No.200) : 55.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4 ) : 8.1. Coarse Sand (-No.4 + No.10): 12.6 Medium Sand (-No.10 + No.40): 13.1 Fine Sand (-No.40 + No.200): 11.2 Silt + Clay(-No.200) : 55.0

Approved By:	J.S.		Soil No.	32



Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown & Black Lean Clay

Sample No.: SS-1

Sample Loc. : Boring No. B-557

Sample Depth: 4.4' to 5.9'

Date Tested : 10/29/14

Date Reported: 11/04/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mın	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.5

			% Passing
No.16	1.18	mm	
No.30	0.6	mın	
No.40	0.425		07.0

					70 I assing
	No.16		1.18	mm	
	No.30		0.6	mın	
i	No.40		0.425	mm	97.9
	No.50		0.3	ınm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	96.0
	No.270		0.053	ınnı	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	# 2		mm	
T88	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	# 4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
ากว	1				

 $D_{50} = 0.0031 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 22.9

Dry Dens. : NA Liquid Limit (AASHTO T89) : 30 Opt. Moist.: NA Plastic Limit (AASHTO T90) : 21

Plasticity Index: 9

AASHTO Composition of Total Sample: M145 Liquidity Index: 0.24

Gravel (3in. + No.10): 0.5 Activity: NA

Coarse Sand (-No.10 + No.40): 1.6 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200): 1.9 AASHTO Classification: M145 : A-4 (8)

Silt + Clay (-No.200): 96.0 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand (-No.4 + No.10): 0.5 Medium Sand (-No.10 + No.40): 1.6 Fine Sand (-No.40 + No.200): 1.9

Approved By: J.S.

Silt + Clay ( -No.200 ) : 96.0

Soil No.

Strengthening America's Infrastructure®



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Tan, Gray & Black Lean Clay

Sample No.: SS-3

Sample Loc. : Boring No. B-557

Sample Depth : 24.4' to 25.9'
Date Tested : 10/29/14

Date Reported: 11/04/14

#### AASHTO T27:

% Passing

% Passing

				% Passing						% Pas
4	in.	101.6	mm			No.16		1.18	mm	·
3.5	in.	88.9	mm			No.30		0.6	mm	
3	in.	76.2	mm		]	No.40		0.425	mm	99
2.5	in.	63.5	mm			No.50		0.3	mm	,
2	in.	50.8	nım			No.60		0.25	mm	
1 3/4	in.	45	mm			No.80		0.18	mm	
1 1/2	in.	38.1	nım			No.100		0.15	mm	
1 1/4	in,	31.5	mm	,	]	No.200		0.075	mm	92
1	in.	25	mm	,	]	No.270		0.053	mm	
3/4	in.	19	mm		]	Hyd. Rd.	#1		mm	
1/2	in.	12.5	mm			Hyd. Rd.	#2		mm	
3/8	in.	9.5	mm		25	Hyd. Rd.	#3		mm	
1/4		6.3	mm		АЅНТО	Hyd. Rd.	# 4		mm	
No.4		4.75	nım	100.0	AAS.	Hyd. Rd.	# 5		mm	
No.6		3.35	mm	,		Hyd. Rd.	#6		mm	
No.10		2	mm	100.0		Hyd. Rd.	#7		mm	•
				'n	- 0.003	6 mm				-

 $D_{50} = 0.0036 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 20.3

Dry Dens.: NA Liquid Limit (AASHTO T89): 39
Opt. Moist.: NA Plastic Limit (AASHTO T90): 23

Plasticity Index: 16

AASHTO Composition of Total Sample: M145

Liquidity Index: -0.20

Gravel (3in. + No.10): 0.0 Activity: NA
Coarse Sand (-No.10 + No.40): 1.0 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200) : 6.5 AASHTO Classification: M145 : A-6 (16)

Silt + Clay (-No.200): 92.5 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.0
Medium Sand (-No.10 + No.40) : 1.0
Fine Sand (-No.40 + No.200) : 6.5
Silt + Clay (-No.200) : 92.5

Approved By: J.S. Soil No. 34



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By : ICA Engineering

Soil Type : Tan, Brown & Black Lean Clay

Sample No.: SS-5

Sample Loc. : Boring No. B-557

Sample Depth : 34.4' to 35.9' Date Tested : 10/29/14

Date Reported: 11/04/14

#### AASHTO T27:

% Passing

101.6 mmin. 3.5 in. 88.9 mm 76.2 3 in. mm 2.5 63.5 in. mm 2 50.8 in. mm 1 3/4 in. 45 mm 38.1 1 1/2 in. mm 1 1/4 in. 31.5 mm 1 in. 25 mm 3/4 19 in. mm 12.5 1/2 lin. mm 3/8 in. 9.5 mm 1/4 6.3 mm No.4 4.75 100.0 mm No.6 3.35 mm 100.0 No.10 2 mm

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	The state of the s
No.40		0.425	mm	99.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	96.0
No.270		0.053	mm	
Hyd. Rd.	#1		mm	
Hyd. Rd.	#2		mm	
Hyd. Rd.	#3		mm	
Hyd. Rd.	#4		mm	
Hyd. Rd.	# 5		mm	
Hyd Rd	# 6		mm	

mm

 $D_{50} = 0.0031$  mm

CBR: NA Natural Moisture (%) (AASHTO T265): 24.8

Dry Dens. : NA Liquid Limit (AASHTO T89) : 28 Opt. Moist.: NA Plastic Limit (AASHTO T90): 20

Hyd, Rd,

Plasticity Index: 8

AASHTO Composition of Total Sample: M145 Liquidity Index: 0.62 Gravel (3in. + No.10) : 0.0Activity: NA

Coarse Sand (-No.10 + No.40): 1.0 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200): 3.0 AASHTO Classification: M145: A-4 (7)

Silt + Clay (-No.200): 96.0 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4 ) : 0.0 Coarse Sand (-No.4 + No.10): 0.0 Medium Sand (-No.10 + No.40): 1.0 Fine Sand (-No.40 + No.200) : 3.0 Silt + Clay(-No.200) : 96.0

Approved By: J.S. Soil No. 35



Project Name: Highway 67 Widening

Project No. : 11206-04

Project County : Pulaski Project State : Arkansas Laboratory No. : 11206-04

Submitted By: ICA Engineering

Soil Type: Dark Gray & Black Silt with Sand

Sample No.: SS-6

Sample Loc. : Boring No. B-557

Sample Depth : 44.4' to 44.6' Date Tested : 10/29/14

Date Reported: 11/04/14

AASHTO T27:

% Passing

% Passing

	_			70 Fassing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	ınm	
3/8	in.	9.5	mm	97.7
1/4		6.3	mm	
No.4		4.75	mm	92.8
No.6		3.35	mm	
No.10		2	mm	87.3
				D

					70 Tassing
-	No.16		1.18	mm	
	No.30	, , , , , , ,	0.6	mm	
-	No.40		0.425	mm	81.5
	No.50		0.3	mm	Í
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	_
	No.200		0.075	mm	79.2
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
ĺ	Hyd. Rd.	#2		mm	
100	Hyd. Rd.	#3		mm	
100	Hyd. Rd.	#4		mm	
3	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
ċ	5 mm				

 $D_{50} = 0.0065 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 2.3

Dry Dens.: NA Liquid Limit (AASHTO T89): NA

Opt. Moist.: NA Plastic Limit (AASHTO T90): NA

Plasticity Index: NA
AASHTO Composition of Total Sample: M145
Liquidity Index: NA

Gravel (3in. + No.10): 12.7 Equitory fixex: NA

Coarse Sand (-No.10 + No.40 ) : 5.8 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200) : 2.3 AASHTO Classification: M145 : A-4 (0) \*

Silt + Clay (-No.200): 79.2 ASTM Classification: D2487: ML \*

\* Visual Classification

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 7.2 Coarse Sand (-No.4 + No.10) : 5.5 Medium Sand (-No.10 + No.40) : 5.8 Fine Sand (-No.40 + No.200) : 2.3

Silt + Clay (-No.200): 79.2

Approved By: J.S. Soil No. 36



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown & Tan Silt

Sample No.: SS-1

Sample Loc. : Boring No. B-559

Sample Depth: 4.7' to 6.2'

Date Tested : 10/29/14

Date Reported: 11/04/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	ınm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	,
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	ınm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	100.0

					% Passing
	No.16		1.18	mm	,
	No.30		0.6	mm	
	No.40		0.425	mm	99.6
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	95.0
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
138	Hyd. Rd.	# 3		mm	
AASHTO T88	Hyd. Rd.	# 4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
'			•		

 $D_{50} = 0.0033 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 20.9

Dry Dens. : NA Liquid Limit (AASHTO T89) : 23

Opt. Moist.: NA Plastic Limit (AASHTO T90): 20 Plasticity Index : 3

AASHTO Composition of Total Sample: M145 Liquidity Index: 0.41

Gravel (3in. + No.10): 0.0 Activity: NA

Coarse Sand (-No.10 + No.40): 0.4 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200): 4.6 AASHTO Classification: M145 : A-4 (1)

Silt + Clay (-No.200): 95.0 ASTM Classification: D2487 : ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand (-No.4 + No.10): 0.0 Medium Sand (-No.10 + No.40): 0.4 Fine Sand (-No.40 + No.200) : 4.6

Silt + Clay(-No.200) : 95.0

Approved By: J.S. Soil No. 37



% Passing

Project Name: Highway 67 Widening

Project No.: 11206-04 Sample No.: SS-3

Project County: Pulaski Sample Loc.: Boring No. B-559
Project State: Arkansas Sample Depth: 19.7' to 21.2'
Laboratory No.: 11206-04 Date Tested: 10/29/14
Submitted By: ICA Engineering Date Reported: 11/04/14

Soil Type: Brown, Tan & Gray Sandy Lean Clay

#### AASHTO T27:

% Passing

	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	66.1
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	61.1
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
201	Hyd. Rd.	# 3		mm	
O THE O	Hyd. Rd.	# 4		mm	
Š	Hvd. Rd.	# 5		mm	

				70 Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	·
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.7
No.6		3.35	mm	
No.10		2	mm	80.8

 $D_{50} = 0.0225 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 22.1

#6

Dry Dens.: NA Liquid Limit (AASHTO T89): 36 Opt. Moist.: NA Plastic Limit (AASHTO T90): 20

Hyd. Rd.

Hyd. Rd.

Plasticity Index: 16
Liquidity Index: 0.13

mm mm

AASHTO Composition of Total Sample: M145 Liquidity Index: 0.13 Gravel (3in. + No.10): 19.2 Activity: NA

Coarse Sand (-No.10 + No.40 ): 14.7 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200) : 5.0 AASHTO Classification: M145 : A-6 (8)

Silt + Clay (-No.200): 61.1 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 2.3 Coarse Sand (-No.4 + No.10) : 16.9 Medium Sand (-No.10 + No.40) : 14.7 Fine Sand (-No.40 + No.200) : 5.0 Silt + Clay (-No.200) : 61.1

Approved By: J.S. Soil No. 38



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Tan Lean Clay

## **SOIL CLASSIFICATION**

0/ Dogging

Sample No.: SS-3

Sample Loc. : Boring No. B-565 Sample Depth : 15.2' to 16.7'

Date Tested : 10/29/14

Date Reported: 11/04/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mın	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12,5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	ınm	
No.10		2	mm	99.7

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	98.3
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	92.6
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mın	
	Hyd. Rd.	#2		mm	
138	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	# 4		mm	
δĄ	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mnı	
	Hyd. Rd.	#7		mm	

 $D_{50} = 0.0036 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 22.4

Dry Dens.: NA Liquid Limit (AASHTO T89) : 38

Opt. Moist.: NA Plastic Limit (AASHTO T90) : 22 Plasticity Index: 16

AASHTO Composition of Total Sample: M145 Liquidity Index: 0.04

Gravel (3in. + No.10): 0.3 Activity: NA

Coarse Sand (-No.10 + No.40): 1.4 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200): 5.7 AASHTO Classification: M145 : A-6 (16)

Silt + Clay (-No.200): 92.6 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand ( -No.4 + No.10 ) : 0.3 Medium Sand (-No.10 + No.40): 1.4 Fine Sand (-No.40 + No.200) : 5.7 Silt + Clay (-No.200): 92.6

Approved By: J.S. Soil No. 39



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Tan Silt with Sand

Sample No.: SS-4

Sample Loc. : Boring No. B-565

Sample Depth : 25.2' to 26.7' Date Tested: 10/29/14

Date Reported: 11/04/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88,9	mm	
3	in.	76.2	mm	
2,5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.7

% Passing

					70 1 4331115
	No.16		1.18	mnı	
	No.30		0.6	mm	
	No.40		0.425	mm	98.3
	No.50		0.3	mm	-
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	A
	No.200		0.075	mm	82.7
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
138	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	#4		mm	
Ş.	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
<u>ነ</u> በና	5 mm				

 $D_{50} = 0.0055 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 20.3

Liquid Limit (AASHTO T89) : 20 Dry Dens. : NA

Plastic Limit (AASHTO T90): 18 Opt, Moist.: NA Plasticity Index : 2

Liquidity Index: 1.15 AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10): 0.3 Activity: NA

Sp. Gr. (AASHTO T100) : NA Coarse Sand (-No.10 + No.40): 1.4 AASHTO Classification: M145 : A-4 (0) Fine Sand (-No.40 + No.200): 15.6

ASTM Classification: D2487 : ML Silt + Clay(-No.200) : 82.7

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0 Fine Gravel (-3/4in. + No.4) : 0.0 Coarse Sand (-No.4 + No.10): 0.3 Medium Sand (-No.10 + No.40): 1.4 Fine Sand (-No.40 + No.200): 15.6 Silt + Clay (-No.200): 82.7

Soil No. 40 Approved By: J.S.



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Tan & Brown Silty Clay with Sand

Sample No.: SS-5

Sample Loc. : Boring No. B-565 Sample Depth : 30.2' to 31.7'

Date Tested: 10/29/14 Date Reported: 11/04/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	98.6

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	95.8
	No.50		0,3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	74.7
	No.270		0.053	mm	
	Hyđ. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
AASHTO T88	Hyd. Rd.	#3		mm	
H	Hyd. Rd.	# 4		mm	
₹	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd, Rd.	#7		mm	

 $D_{50} = 0.0084 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 21.4

Dry Dens.: NA Liquid Limit (AASHTO T89): 23
Opt. Moist.: NA Plastic Limit (AASHTO T90): 18

Plasticity Index: 5
Liquidity Index: 0.67

AASHTO Composition of Total Sample: M145 Liquidity Index: 0.67 Gravel (3in. + No.10): 1.4 Activity: NA

Coarse Sand (-No.10 + No.40) : 2.8 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200) : 21.1 AASHTO Classification: M145 : A-4 (2)

Silt + Clay (-No.200): 74.7 ASTM Classification: D2487: CL-ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 0.0 Coarse Sand (-No.4 + No.10) : 1.4 Medium Sand (-No.10 + No.40) : 2.8 Fine Sand (-No.40 + No.200) : 21.1 Silt + Clay (-No.200) : 74.7

Approved By:	J.S.	Soil No.	41
ippicion Dj i	*1.5.		



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Brown Silt with Sand

Sample No.: SS-6

Sample Loc. : Boring No. B-565

Sample Depth : 40.2' to 40.4'

Date Tested : 10/29/14

Date Reported: 11/04/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9,5	mm	99.0
1/4		6.3	mm	
No.4		4.75	mm	93.3
No.6		3.35	mm	
No.10		2	mm	86.5
				**

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	79.6
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mn	76.0
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	# 2		mm	
3	Hyd. Rd.	#3		mm	
	Hyd. Rd.	#4		nım	
3	Hyd. Rd,	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	

 $D_{50} = 0.0078 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 12.8

Dry Dens.: NA Liquid Limit (AASHTO T89): NA

Opt. Moist.: NA Plastic Limit (AASHTO T90): NA

Plasticity Index : NA

AASHTO Composition of Total Sample: M145

Liquidity Index: NA

Gravel (3in. + No.10): 13.5 Activity: NA
Coarse Sand (-No.10 + No.40): 6.9 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200) : 3.6 AASHTO Classification: M145 : A-4 (0) \*

Silt + Clay (-No.200): 76.0 ASTM Classification: D2487: ML\*

\* Visual Classification

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 6.7 Coarse Sand (-No.4 + No.10) : 6.8

Medium Sand (-No.10 + No.40): 6.9

Fine Sand (-No.40 + No.200): 3.6 Silt + Clay (-No.200): 76.0

Approved By: J.S. Soil No. 42



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By: ICA Engineering

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in.

3.5

3

2.5

2

1 3/4

1 1/2

1 1/4

3/4

1/2

3/8

1/4

No.4

No.6

No.10

Soil Type: Brown Lean Clay with Sand

101.6

88.9

76.2

63.5

50.8

45

38.1

31.5

25

19

12.5

9.5

6.3

4.75

3.35

2

Sample No. : Bag-1

Sample Loc. : Boring No. B-511

Sample Depth: 0.0' to 5.0' Date Tested : 10/24/14

Date Reported: 11/10/14

AASHTO T27:

% Passing

mm

- 1			
ı	i		
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i			
_			
-	!		
- 1			
_ :			
_			
_			
_			
- 1			
_			
- 3			

100.0	
99.1	
97.3	

% Passing

_					
Ĩ	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	95.9
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
N	lo.100		0.15	mm	
N	lo.200		0.075	mm	72.9
N	lo.270		0.053	mm	
H	lyd. Rd.	# 1		mm	
Н	lyd, Rd,	#2		mm	
H	lyd. Rd,	#3		mm	
E	Iyd. Rd.	#4		mm	
H	lyd. Rd.	# 5		mm	
Н	lyd. Rd.	# 6		mm	
H	lyd. Rd,	#7		mm	
~_					

 $D_{50} = 0.0094 \text{ mm}$ 

CBR (AASHTO: T-193): 3.8 Natural Moisture (%) (AASHTO T265): 19.1

Dry Dens. (AASHTO: T-99; Method (C)): 114.3 pcf Liquid Limit (AASHTO T89) : 24

Opt. Moist. (AASHTO: T-99; Method (C)) : 13.6 % Plastic Limit (AASHTO T90): 15

Plasticity Index: 9 AASHTO Composition of Total Sample: M145 Liquidity Index: 0.42

Gravel (3in. + No.10): 2.7 Activity: NA

Coarse Sand (-No.10 + No.40): 1.4 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200): 23.0 AASHTO Classification: M145 : A-4 (4)

Silt + Clay (-No.200): 72.9 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0 Fine Gravel (-3/4in. + No.4): 0.9 Coarse Sand (-No.4 + No.10): 1.8 Medium Sand (-No.10 + No.40): 1.4

Fine Sand (-No.40 + No.200) : 23.0

Silt + Clay (-No.200): 72.9

Approved By: J.S. Soil No. 43



## MOISTURE-DENSITY RELATIONSHIP

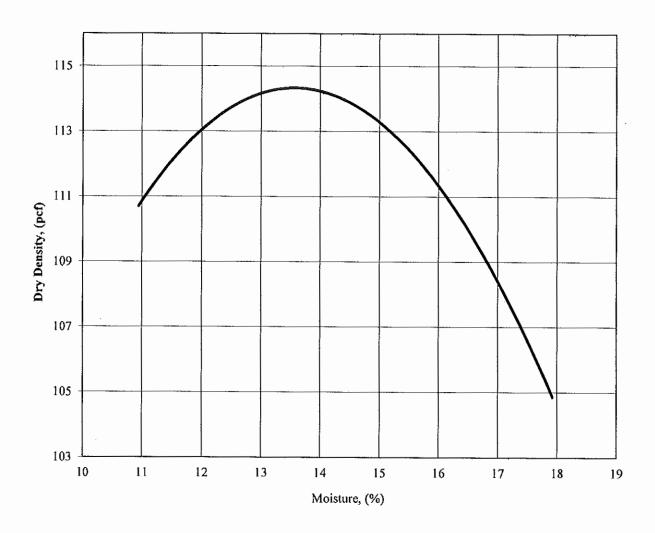
Project Name: Highway 67 Widening

Project No.: 11206-04 Sample No.: Bag-1

Project County: Pulaski Sample Loc.: Boring No. B-511

Project State : Arkansas Sample Depth : 0.0' to 5.0'
Laboratory No. : 11206-04 Date Tested : 10/24/14
Submitted By : ICA Engineering Date Reported : 11/10/14

Soil Type: Brown Lean Clay with Sand



MAXIMUM DENSITY: 114.3 pcf

**OPTIMUM MOISTURE: 13.6%** 

COMMENTS: AASHTO: T-99; Method (C)

APPROVED BY: J.S.



### **CALIFORNIA BEARING RATIO**

Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown Lean Clay with Sand

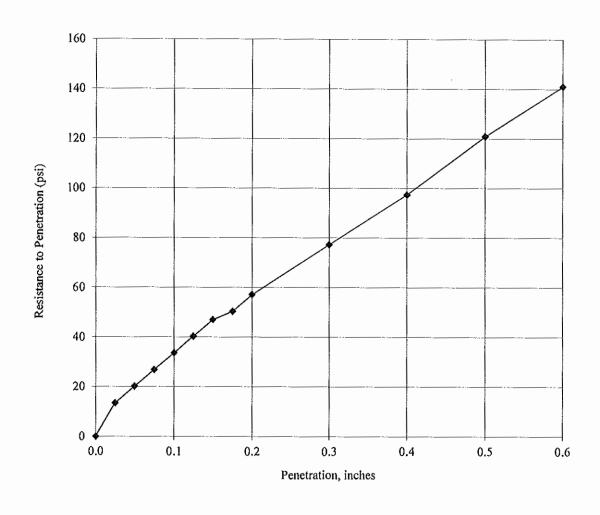
Sample No. : Bag-1

Sample Loc. : Boring No. B-511

Sample Depth: 0.0' to 5.0'

Date Tested: 10/24/14

Date Reported: 11/10/14



Compaction Effort = 35 Blows per layer Percent Compacted = 99.4

Percent Swell = 0.28

C.B.R. @ 0.1 In. = 3.4 C.B.R. @ 0.2 In. = 3.8\*

COMMENTS: AASHTO: T-193

APPROVED BY: JS

COMMENTS:



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By: ICA Engineering

Sample No. : Bag-26

Sample Loc. : Boring No. B-550

Sample Depth: 0.0' to 5.0' Date Tested : 10/24/14

Date Reported: 11/10/14

AASHTO T27:

Soil Type: Brown Silty, Clayey Sand with Gravel

% Pagging

	in.	101.6		
3.5			mm	
	in.	88.9	mm	
3	in.	76.2	mm	
	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	,
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	93.9
1/4		6.3	mm	""
No.4		4.75	mm	84.3
No.6		3.35	mm	
No.10		2	mm	73.9

					70 Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	65.0
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	37.0
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
001 01 100	Hyd, Rd.	#3		mm	
2	Hyd. Rd.	#4		mm	
ξ	Hyd. Rd.	# 5		inm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	

 $D_{50} = 0.1678 \text{ mm}$ 

CBR (AASHTO: T-193): 11.0 Natural Moisture (%) (AASHTO T265): 10.7

Dry Dens. (AASHTO: T-99; Method (C)) : 122.6 pcf Liquid Limit (AASHTO T89) : 23

Opt. Moist. (AASHTO: T-99; Method (C)) : 10.4 % Plastic Limit (AASHTO T90): 17 Plasticity Index: 6

AASHTO Composition of Total Sample: M145 Liquidity Index : -1.01 Gravel (3in. + No.10): 26.1 Activity: NA

Coarse Sand (-No.10 + No.40) : 8.9 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200) : 28.0 AASHTO Classification: M145 : A-4 (0)

Silt + Clay(-No.200) : 37.0ASTM Classification: D2487 : SC-SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0 Fine Gravel (-3/4in. + No.4): 15.7 Coarse Sand (-No.4 + No.10): 10.4 Medium Sand (-No.10 + No.40): 8.9 Fine Sand (-No.40 + No.200) : 28.0 Silt + Clay (-No.200): 37.0

Soil No.\_\_ Approved By: J.S.



# MOISTURE-DENSITY RELATIONSHIP

Project Name: Highway 67 Widening

Project No.: 11206-04 Sample No.: Bag-26

Project County: Pulaski Sample Loc.: Boring No. B-550

Project State: Arkansas

Laboratory No.: 11206-04

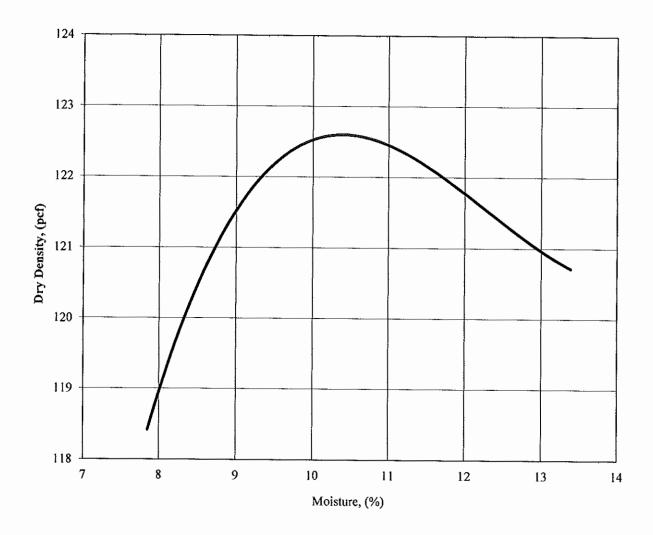
Submitted By: ICA Engineering

Sample Depth: 0.0' to 5.0'

Date Tested: 10/24/14

Date Reported: 11/10/14

Soil Type : Brown Silty, Clayey Sand with Gravel



MAXIMUM DENSITY: 122.6 pcf OPTIMUM MOISTURE: 10.4 %

COMMENTS: AASHTO: T-99; Method (C)

APPROVED BY: J.S.



### CALIFORNIA BEARING RATIO

Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

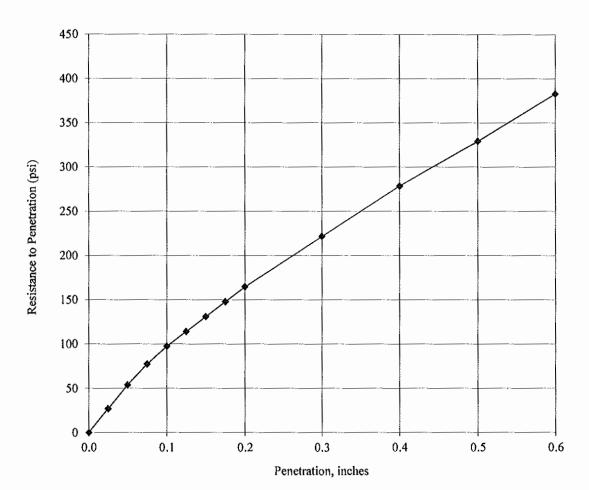
Soil Type: Brown Silty, Clayey Sand with Gravel

Sample No.: Bag-26

Sample Loc. : Boring No. B-550

Sample Depth: 0.0' to 5.0' Date Tested: 10/24/14

Date Reported: 11/10/14



Compaction Effort = 35 Blows per layer

Percent Compacted = 99 Percent Swell = 0.11 C.B.R. @ 0.1 In, = 9.7 C.B.R. @ 0.2 In, = 11\*

COMMENTS: AASHTO: T-193

APPROVED BY: JS

COMMENTS:



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown & Red Silty, Clayey Sand with Gravel

Sample No. : Bag-25

Sample Loc. : Boring No. B-553

Sample Depth: 0.0' to 5.0'

Date Tested: 10/24/14 Date Reported: 11/10/14

AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in,	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	92.1
3/4	in.	19	mm	92.1
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	85.3
1/4		6.3	mm	
No.4		4.75	mm	70.0
No.6		3.35	mm	
No.10		2	mm	52.9

% Passing

	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	43.3
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	28.2
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
001 OTUGO	Hyd, Rd.	# 3		mm	
2	Hyd. Rd.	#4		mm	
ş	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	,
	Hyd. Rd.	#7		mm	
^	~				

 $D_{50} = 1.2527 \text{ mm}$ 

CBR (AASHTO: T-193): 8.1 Natural Moisture (%) (AASHTO T265): 11.1

Dry Dens. (AASHTO: T-99; Method (C)): 117.1 pcf Liquid Limit (AASHTO T89) : 23 Opt. Moist. (AASHTO: T-99; Method (C)) : 13.2 % Plastic Limit (AASHTO T90): 17

Plasticity Index: 6 AASHTO Composition of Total Sample: M145 Liquidity Index: -0.96

Gravel (3in. + No.10): 47.1 Activity: NA

Coarse Sand (-No.10 + No.40): 9.6 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200): 15.1 AASHTO Classification: M145 : A-2-4 (0) Silt + Clay(-No.200) : 28.2ASTM Classification: D2487 : SC-SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 7.9 Fine Gravel (-3/4in. + No.4): 22.1 Coarse Sand (-No.4 + No.10): 17.1 Medium Sand (-No.10 + No.40): 9.6 Fine Sand (-No.40 + No.200): 15.1 Silt + Clay (~No.200): 28.2

Approved By: J.S. Soil No. 45



## MOISTURE-DENSITY RELATIONSHIP

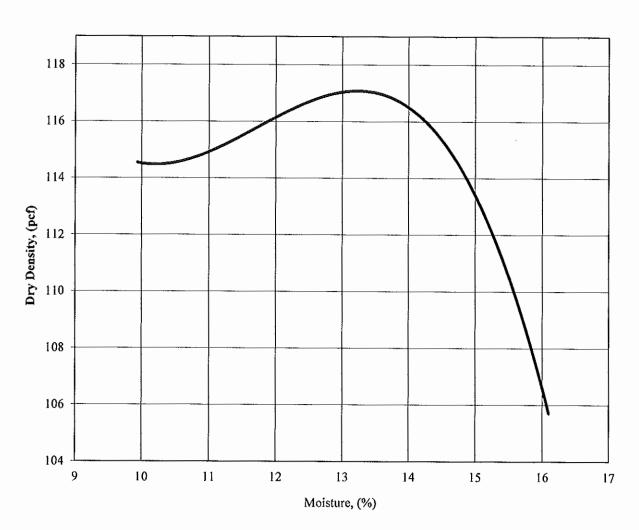
Project Name: Highway 67 Widening

Project No.: 11206-04 Sample No.: Bag-25

Project County: Pulaski Sample Loc.: Boring No. B-553

Project State : Arkansas Sample Depth : 0.0' to 5.0'
Laboratory No. : 11206-04 Date Tested : 10/24/14
Submitted By : ICA Engineering Date Reported : 11/10/14

Soil Type : Brown & Red Silty, Clayey Sand with Gravel



MAXIMUM DENSITY: 117.1 pcf OPTIMUM MOISTURE: 13.2 %

COMMENTS: AASHTO: T-99; Method (C)

APPROVED BY: J.S.



### **CALIFORNIA BEARING RATIO**

Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown & Red Silty, Clayey Sand with Gravel

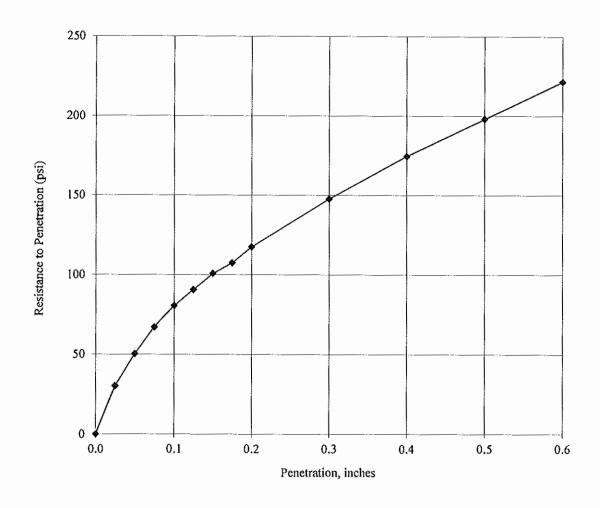
Sample No.: Bag-25

Sample Loc.: Boring No. B-553

Sample Depth: 0.0' to 5.0'

Date Tested: 10/24/14

Date Reported: 11/10/14



Compaction Effort = 35 Blows per layer

Percent Compacted = 98.5

Percent Swell = 0.11

C.B.R. @ 0.1 In. = 8.1\*

C.B.R. @ 0.2 In. = 7.8

COMMENTS: AASHTO: T-193

APPROVED BY:

COMMENTS:



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By : ICA Engineering

Soil Type: Dark Brown Lean Clay with Sand

Sample No. : Bag-29

Sample Loc. : Boring No. B-544

Sample Depth: 0.0' to 5.0'

Date Tested : 10/24/14

Date Reported: 11/10/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	ının	
1 1/4	in.	31.5	ınm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.2
No.6		3.35	mm	
No.10		2	mm	98.2

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	96.6
No.50		0.3	mm	,
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	84.6
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	#3		mm	
Hyd. Rd.	#4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	#6		mm	

mm

 $D_{50} = 0.005 \text{ mm}$ 

CBR (AASHTO: T-193): 5.4 Natural Moisture (%) (AASHTO T265): 23.2

Hyd. Rd.

#7

Dry Dens. (AASHTO: T-99; Method (C)): 106.7 pcf Liquid Limit (AASHTO T89) : 38

Opt. Moist. (AASHTO: T-99; Method (C)) : 18.3 % Plastic Limit (AASHTO T90) : 22

Plasticity Index: 16 AASHTO Composition of Total Sample: M145 Liquidity Index: 0.08

Gravel (3in. + No.10): 1.8 Activity: NA

Coarse Sand (-No.10 + No.40) : 1.6 Sp. Gr. (AASHTO T100): NA Fine Sand (-No.40 + No.200): 12.0 AASHTO Classification: M145 : A-6 (14)

Silt + Clay (-No.200): 84.6 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0 Fine Gravel (-3/4in. + No.4 ): 0.8Coarse Sand (-No.4 + No.10): 1.0 Medium Sand (-No.10 + No.40): 1.6 Fine Sand (-No.40 + No.200): 12.0 Silt + Clay (-No.200): 84.6

Soil No. \_\_\_ Approved By: J.S. 46



# MOISTURE-DENSITY RELATIONSHIP

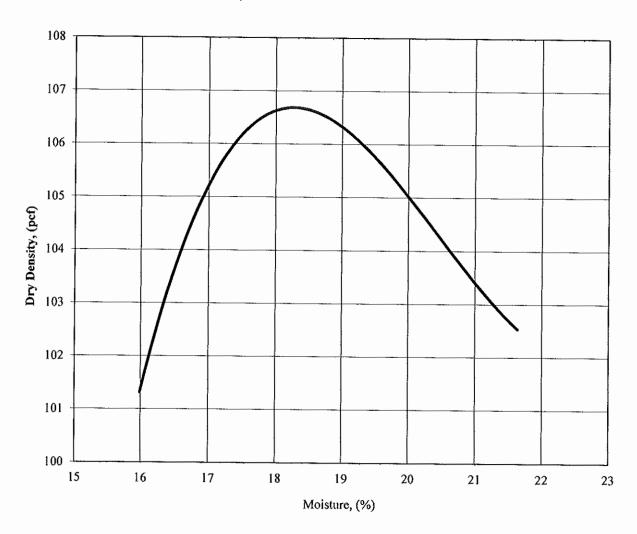
Project Name: Highway 67 Widening

Project No.: 11206-04 Sample No.: Bag-29

Project County: Pulaski Sample Loc.: Boring No. B-544

Project State : Arkansas Sample Depth : 0.0' to 5.0'
Laboratory No. : 11206-04 Date Tested : 10/24/14
Submitted By : ICA Engineering Date Reported : 11/10/14

Soil Type: Dark Brown Lean Clay with Sand



MAXIMUM DENSITY: 106.7 pcf

**OPTIMUM MOISTURE: 18.3 %** 

COMMENTS: AASHTO: T-99; Method (C)

APPROVED BY: J.S.



## **CALIFORNIA BEARING RATIO**

Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04

Submitted By : ICA Engineering

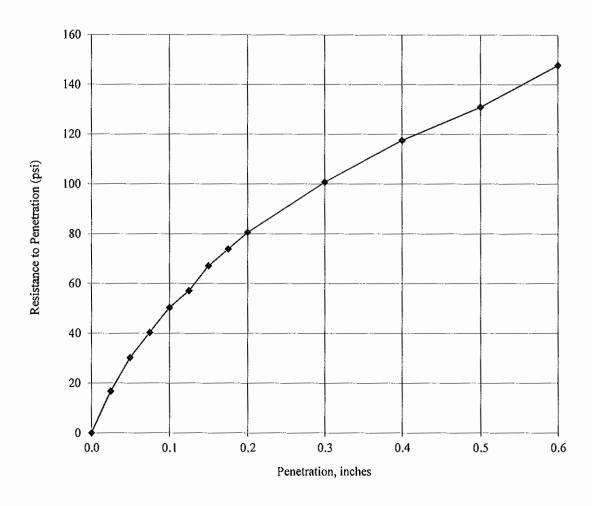
Soil Type: Dark Brown Lean Clay with Sand

Sample No.: Bag-29

Sample Loc.: Boring No. B-544

Sample Depth: 0.0' to 5.0' Date Tested: 10/24/14

Date Reported: 11/10/14



Compaction Effort = 35 Blows per layer

Percent Compacted = 97.6

Percent Swell = 2.88

C.B.R. @ 0.1 In. = 5

C.B.R. @  $0.2 \ln = 5.4*$ 

COMMENTS: AASHTO: T-193

APPROVED BY: JS

S

COMMENTS:



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown Sandy Lean Clay

Sample No. : Bag-8

Sample Loc. : Boring No. B-534

Sample Depth : 0.0' to 5.0'

Date Tested: 10/24/14

Date Reported: 11/10/14

#### AASHTO T27:

% Passing

ing % Passing

				70 1 0001115
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.8
No.6		3.35	mm	
No.10		2	mm	98.8

					70 1 0001118
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	96.5
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	57.4
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
AASHTO T88	Hyd. Rd.	#3		mm	
5	Hyd. Rd.	#4		mm	
Ą	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
31	9 mm				

 $D_{50} = 0.0319 \text{ mm}$ 

CBR (AASHTO: T-193) : 6.9 Natural Moisture (%) (AASHTO T265) : 18.1

Dry Dens. (AASHTO: T-99; Method (C)) : 116.6 pcf Liquid Limit (AASHTO T89) : 23 Opt. Moist. (AASHTO: T-99; Method (C)) : 13.6 % Plastic Limit (AASHTO T90) : 14

pt. Moist. (AASH1O: 1-99; Method (C)): 13.6 % Plastic Limit (AASH1O 190): 14

Plasticity Index: 9

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.48

Gravel (3in. + No.10): 1.2 Activity: NA

Coarse Sand (-No.10 + No.40) : 2.3 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200) : 39.1 AASHTO Classification: M145 : A-4 (2)

Silt + Clay (-No.200): 57.4 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0

Fine Gravel (-3/4in. + No.4): 0.2

Coarse Sand (-No.4 + No.10): 1.0

Medium Sand (-No.10 + No.40): 2.3

Fine Sand (-No.40 + No.200) : 39.1

Silt + Clay(-No.200) : 57.4

Approved By: J.S. Soil No. 47



## MOISTURE-DENSITY RELATIONSHIP

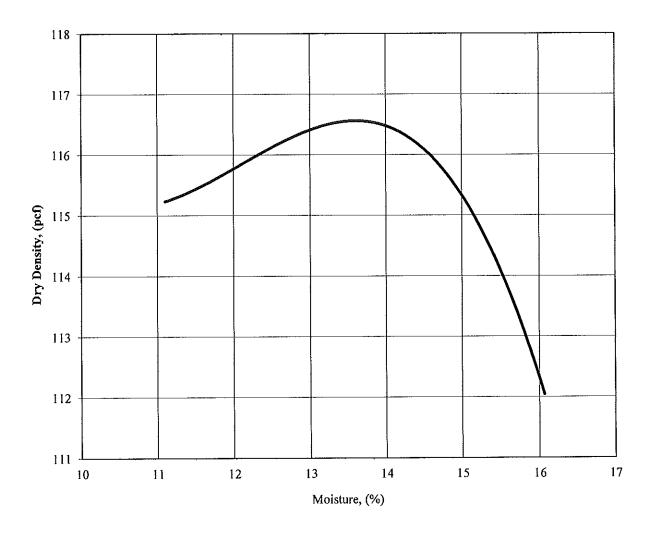
Project Name: Highway 67 Widening

Project No.: 11206-04 Sample No.: Bag-8

Project County: Pulaski Sample Loc.: Boring No. B-534

Project State : Arkansas Sample Depth : 0.0' to 5.0'
Laboratory No. : 11206-04 Date Tested : 10/24/14
Submitted By : ICA Engineering Date Reported : 11/10/14

Soil Type: Brown Sandy Lean Clay



MAXIMUM DENSITY: 116.6 pcf OPTIMUM MOISTURE: 13.6 %

COMMENTS: AASHTO: T-99; Method (C)

APPROVED BY: J.S.



## CALIFORNIA BEARING RATIO

Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown Sandy Lean Clay

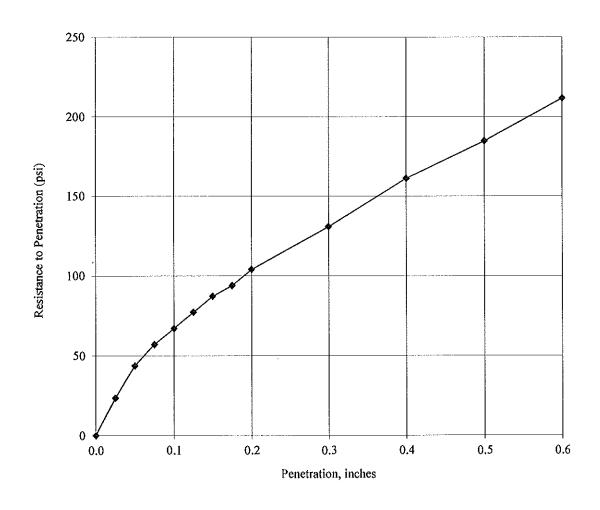
Sample No.: Bag-8

Sample Loc.: Boring No. B-534

Sample Depth: 0.0' to 5.0'

Date Tested: 10/24/14

Date Reported: 11/10/14



Compaction Effort = 35 Blows per layer Percent Compacted = 97.6 Percent Swell = 0.44

C.B.R. @ 0.1 ln. = 6.7 C.B.R. @ 0.2 ln. = 6.9\*

COMMENTS: AASHTO: T-193

APPROVED BY: JS

COMMENTS:



Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski Sample Loc.: Boring No. B-530

Project State: Arkansas Sample Depth: 0.0' to 5.0'
Laboratory No.: 11206-04 Date Tested: 10/24/14
Submitted By: ICA Engineering Date Reported: 11/10/14

Soil Type: Brown Clayey Sand

### AASHTO T27:

				% Passing
. 4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
I	in.	25	mın	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	99.5
1/4		6.3	mm	,
No.4		4.75	mm	98.9
No.6		3.35	mm	
No.10		2	mm	98.2

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	93.8
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100	,	0.15	mm	
No.200		0.075	ınm	49.2
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	#2		mm	
Hyd. Rd.	#3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	#7		mm	

Sample No. : Bag-6

 $\overline{D_{50}} = 0.0774 \text{ mm}$ 

CBR (AASHTO: T-193) : 5.4 Natural Moisture (%) (AASHTO T265) : 16.4

Dry Dens. (AASHTO: T-99; Method (C)) : 118.1 pcf Liquid Limit (AASHTO T89) : 25 Opt. Moist. (AASHTO: T-99; Method (C)) : 13.3 % Plastic Limit (AASHTO T90) : 14

Plasticity Index : 11

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10): 1.8

Liquidity Index: 0.20

Activity: NA

Coarse Sand (-No.10 + No.40): 4.4 Sp. Gr. (AASHTO T100): NA Fine Sand (-No.40 + No.200): 44.6 AASHTO Classification: M145: A-6 (2)

Silt + Clay (-No.200): 49.2 ASTM Classification: D2487: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 1.1
Coarse Sand (-No.4 + No.10) : 0.7
Medium Sand (-No.10 + No.40) : 4.4
Fine Sand (-No.40 + No.200) : 44.6
Silt + Clay (-No.200) : 49.2



# MOISTURE-DENSITY RELATIONSHIP

Project Name: Highway 67 Widening

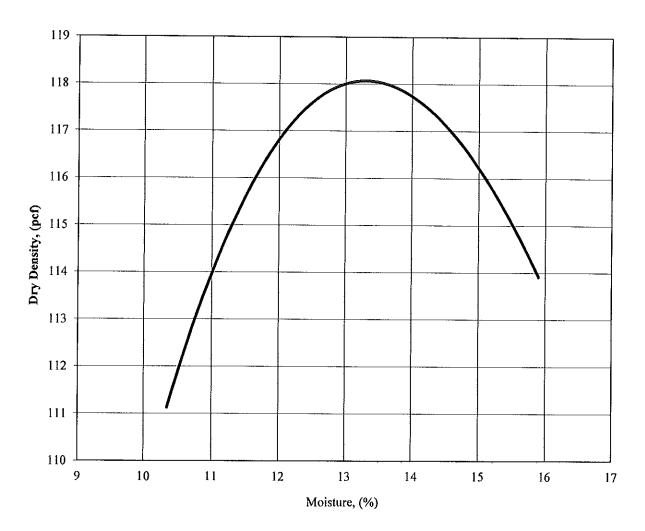
Project No.: 11206-04 Sample No.: Bag-6

Project County: Pulaski

Sample Loc.: Boring No. B-530

Project State : Arkansas Sample Depth : 0.0' to 5.0'
Laboratory No. : 11206-04 Date Tested : 10/24/14
Submitted By : ICA Engineering Date Reported : 11/10/14

Soil Type: Brown Clayey Sand



MAXIMUM DENSITY: 118.1 pcf OPTIMUM MOISTURE: 13.3 %

COMMENTS: AASHTO: T-99; Method (C)

APPROVED BY: J.S.



### CALIFORNIA BEARING RATIO

Project Name: Highway 67 Widening

Project No.: 11206-04 Project County: Pulaski

Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

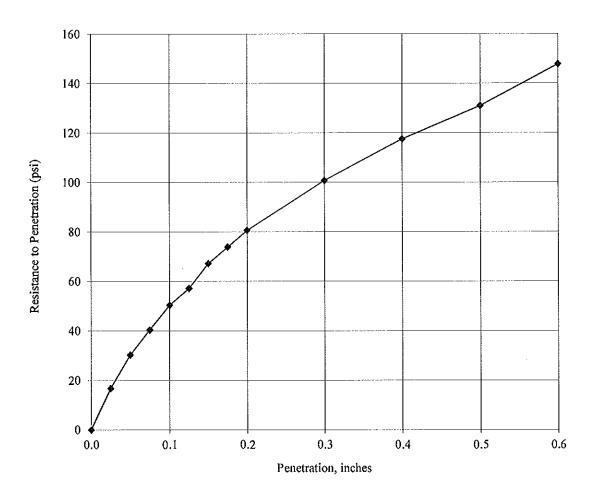
Soil Type: Brown Clayey Sand

Sample No. : Bag-6

Sample Loc. : Boring No. B-530

Sample Depth: 0.0' to 5.0' Date Tested: 10/24/14

Date Reported: 11/10/14



Compaction Effort = 35 Blows per layer

Percent Compacted = 98.2 Percent Swell = 0.31 C.B.R. @ 0.1 In. = 5 C.B.R. @ 0.2 In. = 5.4\*

COMMENTS: AASHTO: T-193

APPROVED BY: JS

COMMENTS:



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Sample Loc.: Boring No. B-543

Project State : Arkansas Sample Depth : 0.0' to 5.0'
Laboratory No. : 11206-04 Date Tested : 10/24/14
Submitted By : ICA Engineering Date Reported : 11/10/14

Soil Type: Red & Brown Sandy Silty Clay

### AASHTO T27:

0.7	-	•	
0/2	Pο	ssin	n
70	1 0	JULI	~

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in,	63.5	mm	
2	in.	50.8	mm	,
1 3/4	in.	45	mm	•
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	nım	
1	in.	25	mm	
3/4	in.	19	mın	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	98.2
1/4		6.3	mm	
No.4		4.75	mm	95.9
No.6		3.35	mm	
No.10		2	mm	94.4

% Passing

	No.16		1.18	mm	,
	No.30		0.6	mm	
	No.40		0.425	mm	91.2
	No.50		0.3	mm	·
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	68.0
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
188	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	#4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd, Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
. 1 -	`				

Sample No. : Bag-30

 $D_{50} = 0.013 \text{ mm}$ 

CBR (AASHTO: T-193): 6.0 Natural Moisture (%) (AASHTO T265): 19.5

Dry Dens. (AASHTO: T-99; Method (C)) : 117.6 pcf Liquid Limit (AASHTO T89) : 22 Opt. Moist. (AASHTO: T-99; Method (C)) : 12.6 % Plastic Limit (AASHTO T90) : 16

Plasticity Index : 6

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.63 Gravel (3in. + No.10) : 5.6 Activity : NA

Coarse Sand (-No.10 + No.40) : 3.2 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200) : 23.2 AASHTO Classification: M145 : A-4 (2)

Silt + Clay (-No.200): 68.0 ASTM Classification: D2487: CL-ML

### ASTM Composition of Total Sample: D2487

Coarse Gravel (3in, +3/4in.): 0.0 Fine Gravel (-3/4in. + No.4): 4.1 Coarse Sand (-No.4 + No.10): 1.5 Medium Sand (-No.10 + No.40): 3.2 Fine Sand (-No.40 + No.200): 23.2

Silt + Clay(-No.200) : 68.0



## MOISTURE-DENSITY RELATIONSHIP

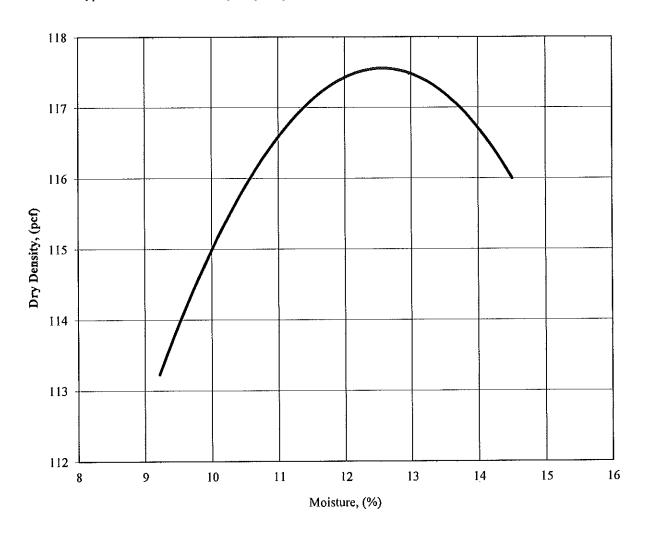
Project Name: Highway 67 Widening

Project No. : 11206-04 Sample No. : Bag-30

Project County: Pulaski Sample Loc.: Boring No. B-543

Project State: Arkansas Sample Depth: 0.0' to 5.0'
Laboratory No.: 11206-04 Date Tested: 10/24/14
Submitted By: ICA Engineering Date Reported: 11/10/14

Soil Type: Red & Brown Sandy Silty Clay



MAXIMUM DENSITY: 117.6 pcf OPTIMUM MOISTURE: 12.6 %

COMMENTS: AASHTO: T-99; Method (C) APPROVED BY: J.S.



### **CALIFORNIA BEARING RATIO**

Project Name: Highway 67 Widening

Project No.: 11206-04 Project County: Pulaski

Project State : Arkansas
Laboratory No. : 11206-04

Submitted By: ICA Engineering

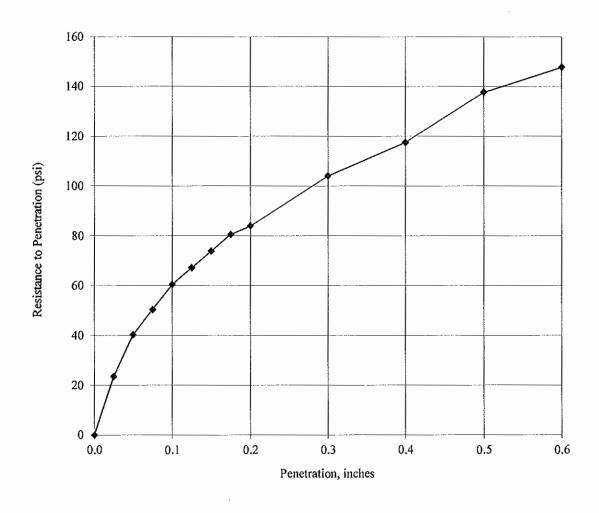
Soil Type: Red & Brown Sandy Silty Clay

Sample No.: Bag-30

Sample Loc. : Boring No. B-543

Sample Depth: 0.0' to 5.0' Date Tested: 10/24/14

Date Reported: 11/10/14



Compaction Effort = 35 Blows per layer Percent Compacted = 97.7

Percent Compacted = 97
Percent Swell = 0.89

C.B.R. @ 0.1 In. = 6\* C.B.R. @ 0.2 In. = 5.6

COMMENTS: AASHTO: T-193

APPROVED BY: \_\_\_\_\_ JS

COMMENTS:



0/ Dogging

Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown & Tan Silty Clay with Sand

Sample No. : ST-1

Sample Loc. : Boring No. B-501

Sample Depth : 4.5' to 6.0'

Date Tested: 10/29/14

Date Reported: 11/04/14

### AASHTO T27:

				% Passing
4	in.	101.6	mm	,
3.5	in.	88.9	nun	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4	,	6.3	mm	
No.4		4.75	mm	99.2
No.6		3.35	mm	•
No.10		2	mm	98.8

				% Passing
No.16		1,18	mm	
No.30		0.6	mm	,
No.40		0.425	mm	97.8
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	75.5
No.270		0.053	mm	
Hyd. Rd.	#1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	#4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	#6		mm	

mm

 $D_{50} = 0.008 \text{ mm}$ 

AASHTO T88

CBR: NA Natural Moisture (%) (AASHTO T265): 20

Dry Dens.: NA Liquid Limit (AASHTO T89): 19

Opt. Moist.: NA Plastic Limit (AASHTO T90): 14

Plasticity Index : 5
AASHTO Composition of Total Sample: M145
Liquidity Index : 1.25

Hyd. Rd.

Gravel (3in. + No.10): 1.2 Activity: NA

Silt + Clay (-No.200): 75.5 ASTM Classification: D2487: CL-ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0 Fine Gravel (-3/4in. + No.4): 0.8 Coarse Sand (-No.4 + No.10): 0.4 Medium Sand (-No.10 + No.40): 1.0

Fine Sand (-No.40 + No.200) : 22.3

Silt + Clay (-No.200): 75.5



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown & Gray Sandy Lean Clay

Sample No.: ST-2

Sample Loc. : Boring No. B-501

Sample Depth: 9.5' to 10.7'

Date Tested : 10/29/14

Date Reported: 11/04/14

AASHTO T27:

% Passing

### % Passing

				70 1 assing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
. 3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.9

					70 Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	97.5
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	54.0
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		ınm	
AASHTO T88	Hyd. Rd.	# 3		mm	
ET4	Hyd. Rd.	# 4		mm	
AAS	Hyd, Rd.	# 5		mm	***************************************
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	# 7		mm	
4 6	0				

 $D_{50} = 0.0459 \text{ mm}$ 

CBR : NA Natural Moisture (%) (AASHTO T265): 18.6

Dry Dens. : NA Liquid Limit (AASHTO T89) : 26

Opt. Moist.: NA Plastic Limit (AASHTO T90): 15

Plasticity Index: 11

Liquidity Index: 0.37 AASHTO Composition of Total Sample; M145

Activity: NA Gravel (3in. + No.10): 0.1 Coarse Sand (-No.10 + No.40) : 2.4 Sp. Gr. (AASHTO T100) : NA

AASHTO Classification: M145 : A-6 (3) Fine Sand (-No.40 + No.200): 43.5

Silt + Clay (-No.200): 54.0 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0

Coarse Sand (-No.4 + No.10): 0.1 Medium Sand (-No.10 + No.40): 2.4

Fine Sand (-No.40 + No.200): 43.5

Silt + Clay (-No.200): 54.0



Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski Sample Loc.: Boring No. B-502
Project State: Arkansas Sample Depth: 9.2' to 10.7'
Laboratory No.: 11206-04 Date Tested: 10/29/14

Submitted By: ICA Engineering

Date Reported: 11/04/14

Soil Type: Tan & Gray Lean Clay

### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	·
1/4		6.3	mm	·
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.9

%	Passing
70	I HOUSINE

					70 I dosning
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	98.6
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	,
	No.200		0.075	mm	88.1
	No.270		0.053	mm	•
	Hyd. Rd.	#1		nım	
	Hyd, Rd.	#2		mm	
188	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	#4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	

Sample No.: ST-1

 $D_{50} = 0.0043 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 23.8

Dry Dens.: NA Liquid Limit (AASHTO T89): 40
Opt. Moist.: NA Plastic Limit (AASHTO T90): 21

Plasticity Index : 19 Liquidity Index : 0.14

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10): 0.1

Liquidity Index: 0.14
Activity: NA

Coarse Sand (-No.10 + No.40 ) : 1.3 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200 ) : 10.5 AASHTO Classification: M145 : A-6 (17)

Silt + Clay (-No.200): 88.1 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 0.0 Coarse Sand (-No.4 + No.10) : 0.1 Medium Sand (-No.10 + No.40) : 1.3 Fine Sand (-No.40 + No.200) : 10.5 Silt + Clay (-No.200) : 88.1



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Gray & Tan Lean Clay with Sand

Sample No.: ST-2

Sample Loc. : Boring No. B-502 Sample Depth : 19.2' to 20.4' Date Tested: 10/29/14

Date Reported: 11/04/14

### AASHTO T27:

%	P	assing	

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	,
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.4

% Passing

					7 0 1 40011118
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	97.2
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	ınm	
	No.100		0.15	mm	
	No.200		0.075	mm	84.1
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
AASHTO T88	Hyd. Rd.	# 3		mm	
옱	Hyd. Rd.	# 4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
05	1				

 $D_{50} = 0.0051 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 18.9

Dry Dens. : NA Liquid Limit (AASHTO T89) : 32

Opt. Moist.: NA Plastic Limit (AASHTO T90) : 21

Plasticity Index: 11

AASHTO Composition of Total Sample: M145 Liquidity Index: -0.18

Activity: NA Gravel (3in. + No.10): 0.6

Coarse Sand (-No.10 + No.40) : 2.2 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200): 13.1 AASHTO Classification: M145 : A-6 (9)

ASTM Classification: D2487 : CL Silt + Clay (-No.200): 84.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in, + No.4): 0.0 Coarse Sand (-No.4 + No.10): 0.6 Medium Sand (-No.10 + No.40): 2.2 Fine Sand (-No.40 + No.200): 13.1 Silt + Clay (-No.200): 84.1



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Brown Lean Clay

Sample No. : ST-1

Sample Loc. : Boring No. B-503

Sample Depth: 4.1' to 5.1'

Date Tested : 10/30/14

Date Reported: 11/04/14

### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.8
No.6		3.35	mm	
No.10		2	mm	99.2

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	96.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	93.2
No.270	,	0.053	mm	
Hyd. Rd.	#1		mm	
Hyd. Rd.	#2	,	mm	
Hyd. Rd.	#3		mm	
Hyd. Rd.	#4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	#6		mm	
Hyd. Rd.	#7		mm	

 $D_{50} = 0.0035 \text{ mm}$ 

AASHTO T88

CBR: NA Natural Moisture (%) (AASHTO T265): 28.8

Dry Dens.: NA Liquid Limit (AASHTO T89): 33 Opt. Moist.: NA Plastic Limit (AASHTO T90): 23

Plasticity Index : 10

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.60 Gravel (3in. + No.10) : 0.8 Activity : NA

Coarse Sand (-No.10 + No.40 ) : 2.5 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200) : 3.5 AASHTO Classification: M145 : A-4 (10)

Silt + Clay (-No.200): 93.2 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0
Fine Gravel (-3/4in. + No.4): 0.2
Coarse Sand (-No.4 + No.10): 0.6
Medium Sand (-No.10 + No.40): 2.5
Fine Sand (-No.40 + No.200): 3.5
Silt + Clay (-No.200): 93.2



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown & Tan Silty Clay

% Passino

Sample No. : ST-2

Sample Loc. : Boring No. B-503 Sample Depth: 14.1' to 15.8' Date Tested : 10/29/14

Date Reported: 11/04/14

### AASHTO T27:

No.6

No.10

				70 Fassing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	nım	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	,
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0

3.35

mm

mm

99.4

%	Passi	ng
---	-------	----

:	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	96.3
:	No.50		0.3	mm	
:	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	90.0
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	•
AASHTO T88	Hyd. Rd.	# 3		mm	
몵	Hyd. Rd.	#4		mm	
Ş	Hyđ. Rd.	# 5		mm	•
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
	4	-	•		·

 $D_{50} = 0.004 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 23.5

Dry Dens. : NA Liquid Limit (AASHTO T89) : 25

Plastic Limit (AASHTO T90): 19 Opt. Moist.: NA Plasticity Index: 6

AASHTO Composition of Total Sample: M145 Liquidity Index: 0.80

Gravel (3in. + No.10): 0.6 Activity: NA Coarse Sand (-No.10 + No.40): 3.1 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200) : 6.3 AASHTO Classification: M145 : A-4 (4)

ASTM Classification: D2487 : CL-ML Silt + Clay(-No.200) : 90.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand (-No.4 + No.10): 0.6 Medium Sand (-No.10 + No.40): 3.1 Fine Sand (-No.40 + No.200) : 6.3 Silt + Clay(-No.200) : 90.0



0/ Dessine

Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown & Tan Sandy Silt

Sample No. : ST-1

Sample Loc. : Boring No. B-504

Sample Depth: 9.0' to 9.3'

Date Tested : 10/29/14

Date Reported: 11/04/14

### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.3
No.6		3.35	mm	
No.10		2	mm	96.0

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	90.6
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
ĺ	No.100		0.15	ınm	
	No.200		0.075	mm	63.0
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	# 2		mm	
001 0111000	Hyd. Rd.	#3		mm	
	Hyd. Rd.	# 4		mm	
ξ	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd,	#7		mm	
o	1 mm				

 $D_{50} = 0.0191 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 13.6

Dry Dens.: NA Liquid Limit (AASHTO T89): 15

Opt. Moist.: NA Plastic Limit (AASHTO T90): 13
Plasticity Index: 2

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.16

Gravel (3in. + No.10): 4.0 Activity: NA

Coarse Sand (-No.10 + No.40) : 5.4 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200) : 27.6 AASHTO Classification: M145 : A-4 (0)

Silt + Clay (-No.200): 63.0 ASTM Classification: D2487: ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0 Fine Gravel (-3/4in. + No.4): 1.7 Coarse Sand (-No.4 + No.10): 2.3 Medium Sand (-No.10 + No.40): 5.4 Fine Sand (-No.40 + No.200): 27.6

Silt + Clay (-No.200): 63.0



Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering Soil Type: Tan Sandy Silt

Sample No. : ST-2

Sample Loc. : Boring No. B-504 Sample Depth : 14.0' to 15.0'

Date Tested : 10/30/14

Date Reported: 11/04/14

### AASHTO T27:

% Passing

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
Î 1/2	in.	38.1	mm	•
1 1/4	in.	31.5	ınm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	99.2
1/4		6.3	mm	
No.4		4.75	mm	98.0
No.6		3.35	mm	
No.10		2	mm	97.1

% Passing
-----------

					7 4 - 118
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	93.8
	No.50		0.3	mm	,
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	56.0
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
138	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	# 4		mm	
Ą	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
26	Ω				

 $D_{50} = 0.0369 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 15.3

Dry Dens. : NA Liquid Limit (AASHTO T89): 16

Opt. Moist.: NA Plastic Limit (AASHTO T90): 14

Plasticity Index: 2

AASHTO Composition of Total Sample: M145 Liquidity Index: 0.58

Gravel (3in. + No.10): 2.9 Activity: NA Coarse Sand (-No.10 + No.40): 3.3 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200): 37.8 AASHTO Classification: M145 : A-4 (0)

Silt + Clay(-No.200) : 56.0ASTM Classification: D2487 : ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 2.0 Coarse Sand (-No.4 + No.10): 0.9 Medium Sand (-No.10 + No.40): 3.3 Fine Sand (-No.40 + No.200): 37.8 Silt + Clay (-No.200) : 56.0

Soil No.\_\_\_\_ Approved By: J.S.



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type : Brown, Tan & Gray Sandy Lean Clay

Sample No. : ST-1

Sample Loc. : Boring No. B-505 Sample Depth : 14.5' to 16.0' Date Tested : 10/29/14

Date Reported: 11/04/14

### AASHTO T27:

	%	Passing
m		

				% Passing
4	in.	101.6	mm	
3.5	in,	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.9
				D,

% Passing

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	95.3
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	61.2
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
138	Hyd. Rd.	#3		mm	
AASHTO T38	Hyd. Rd.	# 4		ınnı	
AAS	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
100	2				

 $D_{50} = 0.0223 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 21.2

Dry Dens. : NA Liquid Limit (AASHTO T89) : 37 Opt. Moist.: NA Plastic Limit (AASHTO T90): 21

Plasticity Index: 16

Liquidity Index: 0.04 AASHTO Composition of Total Sample: M145 Activity: NA Gravel (3in. + No.10): 0.1

Coarse Sand (-No.10 + No.40): 4.6 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200): 34.1 AASHTO Classification: M145 : A-6 (8)

ASTM Classification: D2487 : CL Silt + Clay (-No.200): 61.2

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand (-No.4 + No.10): 0.1 Medium Sand (-No.10 + No.40): 4.6 Fine Sand (-No.40 + No.200): 34.1 Silt + Clay (-No.200): 61.2

Approved By:	J.S.	Soil No.	58
11			



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Gray & Orange Silty, Clayey Sand

Sample No. : ST-1

Sample Loc. : Boring No. B-506

Sample Depth : 14.8' to 16.3'
Date Tested : 10/30/14

Date Reported: 11/04/14

% Passing

### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	nım	•
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6,3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.9

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	99.7
	No.50	,	0.3	mm	
	No.60		0.25	mm	
Γ	No.80		0.18	mm	
	No.100		0.15	mm <sup>3</sup>	
ī	No.200		0.075	mm	43.1
ĺ	No.270		0.053	mm	
]	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	·
3	Hyd. Rd.	#3		mm	
	Hyd. Rd.	#4		mm	
	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd, Rd.	#7		mm	

 $D_{50} = 0.0927 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 16.7

Dry Dens.: NA Liquid Limit (AASHTO T89): 23

Opt. Moist.: NA Plastic Limit (AASHTO T90): 17
Plasticity Index: 6

AASHTO Composition of Total Sample: M145 Liquidity Index : -0.05

Gravel (3in. + No.10): 0.1 Activity: NA and (-No.10 + No.40): 0.2 Sp. Gr. (AASHTO T100): NA

Coarse Sand (-No.10 + No.40): 0.2 Sp. Gr. (AASHTO T100): NA Fine Sand (-No.40 + No.200): 56.6 AASHTO Classification: M145: A-4 (0)

Silt + Clay (-No.200): 43.1 ASTM Classification: D2487: SC-SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 0.0 Coarse Sand (-No.4 + No.10) : 0.1 Medium Sand (-No.10 + No.40) : 0.2 Fine Sand (-No.40 + No.200) : 56.6 Silt + Clay (-No.200) : 43.1

Approved By:	J.S.	Soil No.	59



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Sample Loc. : Boring No. B-507 Project State: Arkansas Sample Depth: 9.7' to 10.7' Laboratory No.: 11206-04 Date Tested : 10/30/14 Submitted By: ICA Engineering Date Reported: 11/04/14

% Passing

Soil Type: Tan & Gray Lean Clay

### AASHTO T27:

3.5

3

2.5

2

1 3/4

1 1/2

1 1/4

3/4

1/2

3/8

1/4

No.4

No.6

No.10

lin.

in.

in.

lin.

lin.

in.

in. in.

in.

in.

in.

12.5

9.5

6.3

4.75

3.35

101.6	mm	
88.9	nım	
76.2	mm	
63.5	mm	
50.8	mm	
45	mm	
38.1	mm	
31.5	mm	
25	mm	
19	mm	

mın

mm

mm

mm

mm

mm

100.0	
99.9	
99.8	

100.

% Passing

	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	99.1
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	86.4
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
AASHTO T88	Hyd. Rd.	#3		mm	
Ĕ.	Hyd. Rd.	# 4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
` .	_				

Sample No.: ST-1

 $D_{50} = 0.0046 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 22.9

Dry Dens. : NA Liquid Limit (AASHTO T89) : 39 Opt. Moist.: NA Plastic Limit (AASHTO T90) : 21

Plasticity Index: 18

AASHTO Composition of Total Sample: M145 Liquidity Index: 0.12

Gravel (3in. + No.10): 0.2 Activity: NA

Coarse Sand (-No.10 + No.40): 0.7 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200): 12.7 AASHTO Classification: M145 : A-6 (16)

Silt + Clay (-No.200): 86.4 ASTM Classification; D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0 Fine Gravel (-3/4in. + No.4): 0.1 Coarse Sand (-No.4 + No.10): 0.1 Medium Sand (-No.10 + No.40): 0.7 Fine Sand (-No.40 + No.200): 12.7 Silt + Clay (-No.200): 86.4

Approved By: J.S. Soil No. 60				
	Approved By:	J.S.	Soil No.	60



O/ Danaina

Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown Lean Clay

Sample No. : ST-1

Sample Loc. : Boring No. B-556

Sample Depth: 19.8' to 21.8'

Date Tested : 10/30/14

Date Reported: 11/04/14

### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	min	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.7

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	,
No.40		0.425	mm	97.1
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	ınm	
No.200		0.075	mm	88.6
No.270		0.053	mm	
Hyd. Rd.	#1		mm	
Hyd. Rd.	#2		mm	
Hyd. Rd.	#3		mm	
Hyd. Rd.	#4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	

mm

 $D_{50} = 0.0042 \text{ mm}$ 

AASHTO T88

CBR: NA Natural Moisture (%) (AASHTO T265): 22.2

#7

Dry Dens. : NA Liquid Limit (AASHTO T89) : 37

Opt. Moist.: NA Plastic Limit (AASHTO T90): 21

Plasticity Index : 16

Hyd. Rd.

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.10 Gravel (3in. + No.10) : 0.3 Activity : NA

Gravel (3in. + No.10): 0.3 Activity: NA
Coarse Sand (-No.10 + No.40): 2.6 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200) : 8.5 AASHTO Classification: M145 : A-6 (14)

Silt + Clay (-No.200) : 88.6 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.3
Medium Sand (-No.10 + No.40) : 2.6
Fine Sand (-No.40 + No.200) : 8.5
Silt + Clay (-No.200) : 88.6

Approved By:	J.S.	Soil No.	61	



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04

lin.

lin.

in.

lin.

lin.

in.

lin.

lin.

in.

in.

lin.

lin.

3.5

3

2.5

2

1 3/4

1 1/2

1 1/4

1

3/4

1/2

3/8

1/4

No.4

No.6

No.10

Submitted By : ICA Engineering

101.6

88.9

76.2

63.5

50.8

45

38.1

31.5

25

19

12.5

9.5

6.3

4.75

3.35

2

Soil Type: Orange & Gray Lean Clay with Sand

mm

Sample No.: ST-2

Sample Loc. : Boring No. B-556 Sample Depth : 29.8' to 31.3'

mm

76.3

Date Tested : 10/29/14

Date Reported: 11/04/14

### AASHTO T27:

% Passing

100.0

96.4

95.8

93.9

 % Passing

 No.16
 1.18
 mm

 No.30
 0.6
 mm

 No.40
 0.425
 mm
 89.0

0.3

0.25

No.80 0.18 No.100 0.15 No.200 0.075 No.270 0.053 Hyd. Rd. | # 1 #2 Hyd. Rd. Hyd. Rd. #3 Hyd, Rd. #4 Hyd. Rd. # 5 Hyd. Rd. # 6 #7 Hyd. Rd.

No.50

No.60

 $D_{50} = 0.0077 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 23.3

Dry Dens.: NA Liquid Limit (AASHTO T89): 30

Opt. Moist.: NA Plastic Limit (AASHTO T90): 17
Plasticity Index: 13

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.46

Gravel (3in. + No.10): 6.1 Activity: NA

Coarse Sand (-No.10 + No.40): 4.9 Sp. Gr. (AASHTO T100): NA Fine Sand (-No.40 + No.200): 12.7 AASHTO Classification: M145: A-6 (8)

Silt + Clay (-No.200): 76.3 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 4.2 Coarse Sand (-No.4 + No.10) : 1.9 Medium Sand (-No.10 + No.40) : 4.9 Fine Sand (-No.40 + No.200) : 12.7

Silt + Clay (-No.200) : 76.3



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown & Gray Silt

Sample No.: ST-1

Sample Loc.: Boring No. B-557

Sample Depth : 14.4' to 15.7' Date Tested : 10/29/14

Date Reported: 11/04/14

### AASHTO T27:

% Passing

	 		% Passing
5.16	1.18	mm	, , , , , , , , , , , , , , , , , , , ,
30	0.6	nım	

4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	,
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in,	31.5	mm	
1	in.	25	mm	
3/4	in,	19	ınm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99,9

	No.16		1.18	mm	, ,
	No.30		0.6	nım	
	No.40		0.425	mm	98.8
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	92.7
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	# 2		mm	
T83	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	# 4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd, Rd.	#6	,	mm	
	Hyd. Rd.	#7		mm	

 $D_{50} = 0.0036 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 19.5

Dry Dens. : NA Liquid Limit (AASHTO T89) : 22 Opt. Moist. ; NA Plastic Limit (AASHTO T90): 21

Plasticity Index: 1

AASHTO Composition of Total Sample: M145 Liquidity Index: -1.23

Gravel (3in. + No.10): 0.1 Activity: NA Coarse Sand (-No.10 + No.40): 1.1 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200) : 6.1 AASHTO Classification: M145 : A-4 (0)

Silt + Clay (-No.200): 92.7 ASTM Classification: D2487 : ML

### ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand (-No.4 + No.10): 0.1 Medium Sand (-No.10 + No.40): 1.1 Fine Sand (-No.40 + No.200) : 6.1 Silt + Clay(-No.200) : 92.7

Soil No.\_\_\_\_ Approved By: J.S.



Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Gray & Orange Lean Clay

Sample No.: ST-2

Sample Loc. : Boring No. B-557 Sample Depth : 19.4' to 20.9'

Date Tested: 10/30/14

Date Reported: 11/04/14

### AASHTO T27:

% Passing

% Passing

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
Ż	in,	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	nım	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	100.0
•				Τ.

					70 1 assing
	No.16	,	1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	99.5
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	,
	No.100		0.15	mm	
	No.200		0.075	mm	93.6
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
8	Hyd. Rd.	#3		mm	
AASHIO 188	Hyd. Rd.	# 4		mm	
3	Hyd. Rd.	# 5		mm	,
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
า	4				

 $D_{50} = 0.0034 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 22.6

Dry Dens.: NA Liquid Limit (AASHTO T89): 34 Opt. Moist.: NA Plastic Limit (AASHTO T90): 21

pr. Moist.: NA Plastic Limit (AASH1O 190): 21

Plasticity Index : 13
AASHTO Composition of Total Sample: M145
Liquidity Index : 0.16

Gravel (3in, + No.10): 0.0 Activity: NA

Coarse Sand (-No.10 + No.40): 0.5 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200): 5.9 AASHTO Classification; M145: A-6 (12)

Silt + Clay (-No.200): 93.6 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 0.0 Coarse Sand (-No.4 + No.10) : 0.0 Medium Sand (-No.10 + No.40) : 0.5 Fine Sand (-No.40 + No.200) : 5.9 Silt + Clay (-No.200) : 93.6



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown & Tan Silty, Clayey Sand

Sample No. : ST-3

Sample Loc. : Boring No. B-557 Sample Depth : 39.4' to 40.4'

Date Tested : 10/30/14

Date Reported: 11/04/14

### AASHTO T27:

	ssing

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mın	
3/8	in.	9.5	mm	97.6
1/4		6.3	mm	, ,
No.4		4.75	mm	86.3
No.6		3.35	mm	
No.10		2	mm	67.7

% Passing

					7 0 1 00000118
	No.16		1.18	mın	·
	No.30		0.6	mm	
	No.40		0.425	mm	43.0
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	18.3
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
201	Hyd. Rd.	# 3		mm	
901 011197	Hyd. Rd.	# 4		mm	
ξ.	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		ının	·
	Hyd. Rd.	#7		mm	
^	^				

 $D_{50} = 0.6592 \text{ mm}$ 

CBR : NA Natural Moisture (%) (AASHTO T265): 14

Dry Dens.: NA Liquid Limit (AASHTO T89) : 24 Opt. Moist.: NA Plastic Limit (AASHTO T90): 18

Plasticity Index: 6

Liquidity Index: -0.63 AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10): 32.3

Coarse Sand (-No.10 + No.40): 24.7

Fine Sand (-No.40 + No.200): 24.7

Silt + Clay (-No.200): 18.3

Activity: NA

Sp. Gr. (AASHTO T100) : NA

AASHTO Classification: M145 : A-1-b (0)

ASTM Classification: D2487 : SC-SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 13.7 Coarse Sand (-No.4 + No.10): 18.6 Medium Sand (-No.10 + No.40): 24.7 Fine Sand (-No.40 + No.200): 24.7 Silt + Clay (-No.200): 18.3

Approved By:	J.S.	Soil No.	65
		_	



Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown & Tan Lean Clay with Sand

Sample No. : ST-1

Sample Loc. : Boring No. B-558

Sample Depth : 16.1' to 17.9'

Date Tested : 10/29/14

Date Reported: 11/04/14

### AASHTO T27:

% Passing

% Passing

				70 F assing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	ının	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	ınm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3,35	mm	
No.10		2	mm	99.6

					70 Fassing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	95.7
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	nım	
	No.100		0.15	mm	
	No.200		0.075	mm	81.1
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
138	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	#4		mm	
	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
۸5	0				

 $D_{50} = 0.0059 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 19

Dry Dens.: NA Liquid Limit (AASHTO T89): 25 Opt. Moist.: NA Plastic Limit (AASHTO T90): 15

Plasticity Index : 10

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.41

Gravel (3in. + No.10): 0.4 Activity: NA and (-No.10 + No.40): 3.9 Sp. Gr. (AASHTO T100): NA

Coarse Sand (-No.10 + No.40): 3.9 Sp. Gr. (AASHTO T100): NA Fine Sand (-No.40 + No.200): 14.6 AASHTO Classification: M145: A-4 (6)

Silt + Clay (-No.200): 81.1 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0
Fine Gravel (-3/4in. + No.4): 0.0
Coarse Sand (-No.4 + No.10): 0.4
Medium Sand (-No.10 + No.40): 3.9
Fine Sand (-No.40 + No.200): 14.6
Silt + Clay (-No.200): 81.1



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County : Pulaski Project State : Arkansas Laboratory No. : 11206-04

Submitted By: ICA Engineering

Soil Type: Brown & Tan Sandy Lean Clay

Sample No.: ST-2

Sample Loc. : Boring No. B-558

Sample Depth : 26.1' to 27.6' Date Tested : 10/30/14

Date Reported: 11/04/14

### AASHTO T27:

% Passing

% Passing

				70 I (33111g
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31,5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	0.001
No.6		3.35	mm	
No.10		2	mm	99.7
				D

	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	94.9
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		81.0	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	51.6
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	_`
	Hyd. Rd.	# 2		mm	
88	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	#4		mm	
δ.	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
<i>c</i> 1	1				

 $D_{50} = 0.0611 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 21.6

Dry Dens.: NA Liquid Limit (AASHTO T89): 26

Opt. Moist.: NA Plastic Limit (AASHTO T90): 17

AASHTO Composition of Total Sample: M145 Plasticity Index : 9
Liquidity Index : 0.49

Gravel (3in. + No.10): 0.3 Activity: NA

Coarse Sand ( -No.10 + No.40 ) : 4.8 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200) : 43.3 AASHTO Classification: M145 : A-4 (2)

Silt + Clay (-No.200): 51.6 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.3
Medium Sand (-No.10 + No.40) : 4.8
Fine Sand (-No.40 + No.200) : 43.3
Silt + Clay (-No.200) : 51.6



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Tan, Brown & Gray Lean Clay with Sand

Sample No.: ST-1

Sample Loc. : Boring No. B-559 Sample Depth : 14.7' to 16.2' Date Tested : 10/29/14

Date Reported: 11/04/14

AASHTO T27:

% Passing		% Passin

				70 x 433111g
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	·mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.2
No.6		3.35	mm	
No.10		Ž	mm	97.8

					70 Fassing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	94.9
	No.50		0.3	mm	
	No.60		0,25	mm	
	No.80	·	0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	78.2
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	, and the second
138	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	# 4		mm	
₽¥S	Hyd. Rd.	# 5		mm	
	Hyd, Rd.	#6		mm	
	Hyd. Rd.	#7	·	mm	
1	0				

 $D_{50} = 0.0069 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 18.4

Dry Dens. : NA Liquid Limit (AASHTO T89) : 27

Plastic Limit (AASHTO T90): 17 Opt. Moist.: NA

Plasticity Index: 10 Liquidity Index: 0.12

AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10): 2.2 Activity: NA

Coarse Sand (-No.10 + No.40): 2.9 Sp. Gr. (AASHTO T100) : NA

AASHTO Classification: M145 : A-4 (6) Fine Sand (-No.40 + No.200): 16.7

ASTM Classification: D2487 : CL Silt + Clay (-No.200): 78.2

ASTM Composition of Total Sample: D2487

Silt + Clay (-No.200): 78.2

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.8 Coarse Sand (-No.4 + No.10): 1.4 Medium Sand (-No.10 + No.40): 2.9 Fine Sand (-No.40 + No.200): 16.7

Approved By:	J.S.	Soil No.	68
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Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

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in.

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in.

in.

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in.

3.5

3

2.5

2

1 3/4

1 1/2

3/4

1/2

3/8

1/4

No.4

No.6

No.10

1 1/4 lin.

Soil Type: Brown, Tan & Black Sandy Lean Clay

Sample No.: ST-2

Sample Loc. : Boring No. B-559 Sample Depth : 24.7' to 26.3'

Date Tested: 10/30/14

Date Reported: 11/04/14

AASHTO T27:

% Passing

101.6 mm 88.9 mm 76.2 mm 63.5 mm 50.8 mm 45 mm 38.1 mm 31.5 mm 25 mm 19 mm 12.5 mm 100.0 9.5 mm 6.3 mm 4.75 99.9 mm 3.35 mm 99.4 mm

			% Passing
No.16	1.18	mm	
No.30	0.6	mm	

	No.30		0.6	mm	
	No.40		0.425	mm	96.5
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
į	No.100		0.15	mm	
ı	No.200		0.075	mm	61.3
ı	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
İ	Hyd. Rd.	#2		mm	
AASHTO 188	Hyd. Rd.	#3		mm	
	Hyd. Rd.	# 4		mm	
Ş	Hyd. Rd.	# 5		mm	
	Hyd, Rd.	#6		mm	
	Hyd. Rd.	#7		mm	

 $D_{50} = 0.0221 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 19.8

Liquid Limit (AASHTO T89) : 24 Dry Dens.: NA Opt. Moist.: NA Plastic Limit (AASHTO T90) : 16

Plasticity Index: 8

AASHTO Composition of Total Sample: M145 Liquidity Index: 0.47 Gravel (3in. + No.10): 0.6 Activity: NA

Coarse Sand (-No.10 + No.40) : 2.9 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200): 35.2 AASHTO Classification: M145 : A-4 (2)

Silt + Clay (-No.200): 61.3 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.1 Coarse Sand (-No.4 + No.10): 0.5 Medium Sand (-No.10 + No.40) : 2.9 Fine Sand (-No.40 + No.200): 35.2 Silt + Clay (-No.200): 61.3

Approved By:	J.S.	Soil No.	. 69	
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Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Sample Loc.: Boring No. B-562
Project State: Arkansas Sample Depth: 10.0' to 11.5'
Laboratory No.: 11206-04 Date Tested: 10/30/14
Submitted By: ICA Engineering Date Reported: 11/04/14

Soil Type: Gray, Orange & Tan Lean Clay

### AASHTO T27:

% Passing

			% Passing
	1.18	mm	
	0.6	122122	

Sample No.: ST-1

4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	ınm	
No.4		4.75	mm	99.9
No.6		3,35	mm	
No.10		2	mm	99.7

	No.16		1.18	mnı	
	No.30		0.6	mm	·
	No.40		0.425	mm	98.8
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	ınm	
	No.100		0.15	mm	
	No.200		0.075	mm	94.3
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
T88	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	# 4		mm	
AAS	Hyd, Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd, Rd.	#7		mm	

 $D_{50} = 0.0033 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 22.5

Dry Dens.: NA Liquid Limit (AASHTO T89): 36 Opt. Moist.: NA Plastic Limit (AASHTO T90): 19

Plasticity Index: 17
Liquidity Index: 0.20

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.20 Gravel (3in. + No.10) : 0.3 Activity : NA

Coarse Sand (-No.10 + No.40) : 0.9 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200) : 4.5 AASHTO Classification: M145 : A-6 (16) Silt + Clay (-No.200) : 94.3 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.1
Coarse Sand (-No.4 + No.10) : 0.2
Medium Sand (-No.10 + No.40) : 0.9
Fine Sand (-No.40 + No.200) : 4.5
Silt + Clay (-No.200) : 94.3

Approved By:	J.S.	Soil No.	70
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Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Gray & Orange Silt

Sample No. : \$T-1

Sample Loc. : Boring No. B-563

Sample Depth: 4.1' to 5.4' Date Tested : 10/29/14

Date Reported: 11/04/14

AASHTO T27:

% Passing

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	,
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	, ,,,
1 1/4	in.	31.5	mm	,
1	in.	25	mm	
3/4	in.	19	mm	,
1/2	in,	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.9

					70 1 assing
	No.16		1.18	mm	
ı	No.30	,	0.6	mm	
	No.40		0.425	mm	99.4
	No.50		0.3	mm	
	No.60	,	0.25	mm	
	No.80		0.18	mm	, ,
	No.100		0.15	mm	
	No.200		0.075	mm	92.2
	No.270		0.053	mm	·
	Hyd. Rd.	# 1		ının	
	Hyd. Rd.	# 2		mm	
201	Hyd. Rd.	#3		ınm	
AASHIO 188	Hyd. Rd.	# 4		mm	
3	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
· ^	_				

 $D_{50} = 0.0036 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 20.5

Dry Dens.: NA Liquid Limit (AASHTO T89) : 21

Opt. Moist.: NA Plastic Limit (AASHTO T90): 20

Plasticity Index : 1 Liquidity Index: 0.81 AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10): 0.1 Activity: NA

Coarse Sand (-No.10 + No.40): 0.5 Sp. Gr. (AASHTO T100) : NA AASHTO Classification: M145 : A-4 (0) Fine Sand (-No.40 + No.200): 7.2

Silt + Clay (-No.200): 92.2 ASTM Classification: D2487 : ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand (-No.4 + No.10): 0.1 Medium Sand (-No.10 + No.40): 0.5 Fine Sand (-No.40 + No.200): 7.2 Silt + Clay (-No.200): 92.2

Approved By:	J.S.	Soil No.	71
Approved by .	3,0,	OOH ING.	/ 1



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type : Brown Sandy Silt

Sample No. : \$T-2

Sample Loc. : Boring No. B-563 Sample Depth : 24.1' to 25.6' Date Tested : 10/29/14

Date Reported: 11/04/14

### AASHTO T27:

	%	Passing
mm		

				70 Fassing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	97.2
1/4		6.3	mm	
No.4		4.75	ınm	95.3
No.6		3.35	mm	
No.10		2	mm	93.0

% Paccina

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	85.6
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	55.6
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
AASHTO T88	Hyd, Rd,	#3		mm	
	Hyd. Rd.	# 4		mm	
Ş.	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
20	5 mm				

 $D_{50} = 0.0385 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 19.1

Dry Dens. : NA Liquid Limit (AASHTO T89) : 23 Opt. Moist.: NA Plastic Limit (AASHTO T90) : 19

Plasticity Index: 4 Liquidity Index : -0.02

AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10): 7.0 Activity: NA

Coarse Sand (-No.10 + No.40): 7.4 Sp. Gr. (AASHTO T100) : NA AASHTO Classification: M145 : A-4 (0) Fine Sand (-No.40 + No.200): 30.0

Silt + Clay(-No.200) : 55.6ASTM Classification: D2487 : ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 4.7 Coarse Sand (-No.4 + No.10): 2.3 Medium Sand (-No.10 + No.40): 7.4 Fine Sand (-No.40 + No.200): 30.0 Silt + Clay (-No.200): 55.6

Approved By:	J.S.	Soil No.	72



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Tan, Gray & Black Lean Clay

Sample No. : ST-1

Sample Loc. : Boring No. B-564 Sample Depth : 14.6' to 16.1' Date Tested : 10/29/14

Date Reported : 11/04/14

AASHTO T27:

SH10 127:

% Passing % Passing

4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in,	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	·
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3,35	mm	V-10-11-11-11-11-11-11-11-11-11-11-11-11-
No.10		2	mm	99.6

					7 7 7 110 0 711 0
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	97.5
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	nıın	92.3
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	, .
AASHTO T88	Hyd. Rd.	#3		mm	
Ě	Hyd. Rd.	#4		mm	
₹	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
2	<i>6</i>				

 $D_{50} = 0.0036 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 21.7

Dry Dens.: NA Liquid Limit (AASHTO T89): 38 Opt. Moist.: NA Plastic Limit (AASHTO T90): 19

Plasticity Index : 19

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.13

Gravel (3in. + No.10): 0.4 Activity: NA

Silt + Clay (-No.200): 92.3 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 0.0 Coarse Sand (-No.4 + No.10) : 0.4 Medium Sand (-No.10 + No.40) : 2.1 Fine Sand (-No.40 + No.200) : 5.2 Silt + Clay (-No.200) : 92.3

Approved By:	J.S.	Soil No.	73	
11				



Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Brown Clayey Sand

Sample No. : ST-2

Sample Loc. : Boring No. B-564 Sample Depth : 29.6' to 30.6' Date Tested : 10/29/14

Date Reported: 11/04/14

### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	•
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	nım	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mın	98.8
No.6		3.35	mm	
No.10		2	ınm	94.6

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	60.5
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	•
No.200		0.075	mm	46.7
No.270		0.053	mm	
Hyd. Rd.	#1		mm	
Hyd. Rd.	#2		mm	
Hyd, Rd.	#3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5	•	mm	
Hyd. Rd.	#6		mm	
Hvd. Rd.	#7		mm	

 $D_{50} = 0.1136 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 21.6

Dry Dens.: NA Liquid Limit (AASHTO T89): 27 Opt. Moist.: NA Plastic Limit (AASHTO T90): 19

Plasticity Index : 8

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.26 Gravel (3in. + No.10) : 5.4 Activity : NA

Coarse Sand (-No.10 + No.40 ) : 34.1 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200): 13.8 AASHTO Classification: M145: A-4 (1) Silt + Clay (-No.200): 46.7 ASTM Classification: D2487: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 1.2 Coarse Sand (-No.4 + No.10) : 4.2 Medium Sand (-No.10 + No.40) : 34.1 Fine Sand (-No.40 + No.200) : 13.8 Silt + Clay (-No.200) : 46.7

Approved By: J.S. So	oil No.	74
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O/ Dansina

Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Gray, Tan & Brown Lean Clay

Sample No. : ST-1

Sample Loc. : Boring No. B-565 Sample Depth : 20.2' to 21.9'

Date Tested: 10/30/14

Date Reported: 11/04/14

#### AASHTO T27:

				% Passing
4	in.	101.6	nım	
3.5	in.	88.9	mm	
3	in.	76,2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	ınm	
1 1/2	in.	38.1	nım	
1 1/4	in.	31.5	mm	
i	in.	25	ınm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3,35	mm	
No.10		2	mm	99.8

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	97.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	85.6
No.270		0.053	mm	
Hyd. Rd.	#1		mm	
Hyd. Rd.	#2		mm	
Hyd. Rd.	#3		mm	
Hyd. Rd.	#4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	#6		mm	
Hyd. Rd.	#7		mm	

 $D_{50} = 0.0048 \text{ mm}$ 

4ASHTO T88

CBR: NA Natural Moisture (%) (AASHTO T265): 19.6

Dry Dens.: NA Liquid Limit (AASHTO T89): 28

Opt. Moist.: NA Plastic Limit (AASHTO T90): 19

AASHTO Composition of Total Sample: M145

Plasticity Index : 9
Liquidity Index : 0.06

Gravel (3in. + No.10): 0.2 Activity: NA

Coarse Sand (-No.10 + No.40) : 2.1 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200) : 12.1 AASHTO Classification: M145 : A-4 (6)

Silt + Clay (-No.200): 85.6 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.2
Medium Sand (-No.10 + No.40) : 2.1
Fine Sand (-No.40 + No.200) : 12.1
Silt + Clay (-No.200) : 85.6



Project Name: Highway 67 Widening

Project No.: 11206-04

Sample Loc. : Boring No. B-565 Project County: Pulaski Sample Depth : 35.2' to 36.7' Project State: Arkansas Laboratory No.: 11206-04 Date Tested: 10/30/14 Submitted By: ICA Engineering Date Reported: 11/04/14

Soil Type: Brown & Gray Silty Sand

### AASHTO T27:

Pac	

% Passing

				% Passing
4	in.	101.6	mm	
3.5	in,	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	ınnı	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.8
No.6		3.35	mm	
No.10		2	mm	99.0

					70 1 033111 <u>5</u>
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	85.5
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	34.2
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
3	Hyd. Rd.	# 3		mm	
	Hyd. Rd.	# 4		mm	
	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
٠.					

Sample No. : ST-2

 $D_{50} = 0.128 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 21.1

Liquid Limit (AASHTO T89) : 22 Dry Dens, : NA Plastic Limit (AASHTO T90) : 22 Opt. Moist.: NA

Plasticity Index: NP Liquidity Index: NA AASHTO Composition of Total Sample: M145

Activity: NA Gravel (3in. + No.I0): 1.0

Sp. Gr. (AASHTO T100) : NA Coarse Sand (-No.10 + No.40): 13.5

AASHTO Classification: M145 : A-2-4 (0) Fine Sand (-No.40 + No.200): 51.3

Silt + Clay (-No.200): 34.2 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.2 Coarse Sand (-No.4 + No.10) : 0.8 Medium Sand (-No.10 + No.40): I3.5 Fine Sand (-No.40 + No.200): 51.3 Silt + Clay (-No.200): 34.2

Apr	roved By:	J.S.	Soil No.	76



14

157.7

0.05

3.7

3.41

## UNCONFINED COMPRESSION TEST

				AASHT	O: T-208		Page 1 of 2
Project Name : I	lighway	67 Widening					
Project # : 1	1206-04			Sample #:	ST-2		
Project County: F	Project County: Pulaski				Boring No.	B-501	
Project State: Arkansas				Sample Depth:			
Laboratory # : 1	Laboratory # : 11206-04				10/28/14		
Submitted By: ICA Engineering				Date Reported:	11/04/14		
Soil Type: Brown & Gray Sandy L			ean Clay				
Wet Density:	136.1	pcf		Initial Height :	5.96	in	
Dry Density:	117.3	pcf		Initial Diameter :		in	
Moisture:	15.9	%		Proving Ring:			
RESULTS:	Axial	Corrected	Unit				
	Load	Area	Strain	Stress			
<u>#</u>	<u>lbs</u>	<u>sf</u>	%	Ksf			
1	0.0	0.04	0.0	0.00			
2	39.4	0.04	0.3	0.88			
3	67.3	0.04	0.5	1.50			
4	89.5	0.04	0.8	1.99			
5	110.6	0.05	1.0	2.46			
6	131.8	0.05	1.3	2.92			
7	144.3	0.05	1.5	3.19			
8	152.9	0.05	1.8	3.37			
9	157.7	0.05	2.0	3.47			
10	162.6	0.05	2.3	3.56			
11	163.5	0.05	2.7	3.57			
12	163.5	0.05	3.0	3.56			
13	161.6	0.05	3.4	3.50			



Date Reported: 11/04/14

Page 2 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Sample #: ST-2 Project County: Pulaski Sample Loc. : Boring No. B-501 Project State : Arkansas Sample Depth: 9.7' to 10.2' Laboratory # : 11206-04 Date Tested: 10/28/14

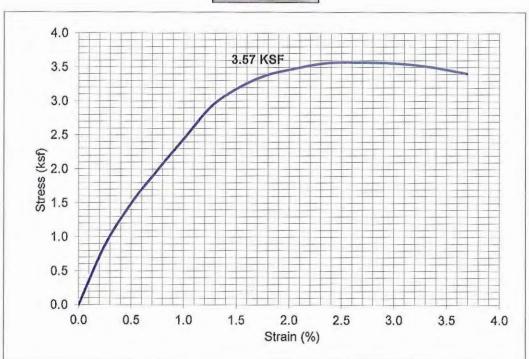
Submitted By: ICA Engineering

Soil Type: Brown & Gray Sandy Lean Clay

Wet Density: 136.1 pcf Initial Height: 5.96 in Dry Density: 117.3 pcf Initial Diameter: 2.86 in Moisture: 15.9 % Proving Ring: #22734 Deg. of Sat. : NA

Comments: AASHTO: T-208







				AASHTO: T-208 Page 1	of 2
Project Name: H	lighway	67 Widening	·		
Project # : 1	1206-04			Sample # : ST-1	
Project County: F	Pulaski			Sample Loc. : Boring No. B-502	
Project State: A	Arkansas			Sample Depth: 9.2' to 9.7'	
Laboratory # : 1	1206-04			Date Tested: 10/24/14	
Submitted By: I	CA Engi	neering		Date Reported: 11/04/14	
Soil Type : T	`an & Gr	ay Lean Clay			
Wet Density:	125.1	pcf		Initial Height: 6.02 in	
Dry Density:	101.0	pcf		Initial Diameter: 2.87 in	
Moisture:	23.8	_%		Proving Ring: #22734	
RESULTS:	Axial	Corrected	Unit		
	Load	Area	Strain	Stress	
<u>#</u>	<u>1bs</u>	<u>sf</u>	<u>%</u>	<u>Ksf</u>	
1	0.0	0.04	0.0	0.00	
2	51.0	0.04	0.2	1.13	
3	78.9	0.05	0.5	1.75	
4	89.5	0.05	0.7	1.98	
5	92.3	0.05	1.0	2.04	
6	93.3	0.05	1.2	2.06	
7	92.3	0.05	1.5	2.03	
8	88.5	0.05	1.7	1.94	



Page 2 of 2

Project Name: Highway 67 Widening

Project #: 11206-04

Sample #: ST-1 Project County: Pulaski Sample Loc. : Boring No. B-502

Project State: Arkansas Sample Depth: 9.2' to 9.7' Laboratory # : 11206-04 Date Tested: 10/24/14 Submitted By: ICA Engineering Date Reported: 11/04/14

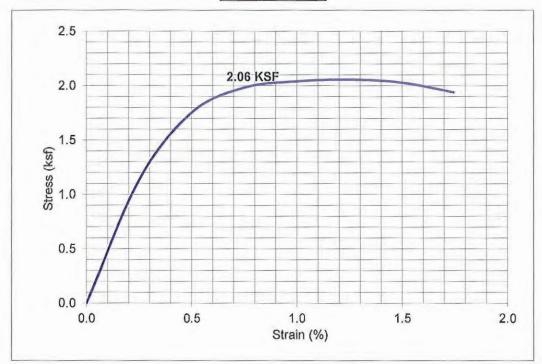
Soil Type: Tan & Gray Lean Clay

Wet Density: 125.1 pcf Initial Height: 6.02 in Dry Density: 101.0 pcf Initial Diameter: 2.87 in Moisture: 23.8 % Proving Ring: #22734

NA Deg. of Sat.:

Comments: AASHTO: T-208





APPROVED BY: frame Solv



27

28

84.6

76.0

# UNCONFINED COMPRESSION TEST

				AASHTO	D: T-208		Page 1 of 2
Project Name: I							
Project # : 1				Sample #:			
Project County: I				Sample Loc. :		B-503	
Project State:				Sample Depth:			
Laboratory # : 1			Date Tested:				
Submitted By : I	CA Engi	neering	Date Reported:	11/04/14			
Soil Type: I							
Wet Density:	121.5	pcf		Initial Height:	5.87	in	
Dry Density:	94.4	pcf		Initial Diameter:	2.85	in	
Moisture :	28.8	%		Proving Ring:	#22734		
RESULTS:	Axial	Corrected	Unit				
	Load	Area	Strain	Stress			
<u>#</u> 1	lbs	<u>sf</u>	%	Ksf			
	0.0	0.04	0.0	0.00			
2	4.8	0.04	0.3	0.11			
3	16.4	0.04	0.5	0.37			
4	25.0	0.04	0.8	0.56			
5	33.7	0.04	1.0	0.75			
6	39.4	0.04	1.3	0.88			
7	43.3	0.05	1.5	0.96			
8	47.1	0.05	1.8	1.04			
9	50.0	0.05	2.0	1.10			
10	54.8	0.05	2.4	1.21			
11	56.8	0.05	2.7	1.24			
12	60.6	0.05	3.1	1.32			
13	63.5	0.05	3.4	1.38			
14	65.4	0.05	3.7	1.42			
15	68.3	0.05	4.1	1.48			
16	71.2	0.05	4.4	1.53			
17	72.1	0.05	4.8	1.55			
18	74.1	0.05	5.1	1.58			
19	76.9	0.05	5.5	1.64			
20	78.9	0.05	6.0	1.67			
21	80.8	0.05	6.4	1.70			
22	81.8	0.05	6.8	1.72			
23	83.7	0.05	7.2	1.75			
24	85.6	0.05	7.7	1.78			
25	86.6	0.05	8.1	1.79			
26	86.6	0.05	8.5	1.78			
27	011	0.05	0 .	1 =0			

9.4

10.2

0.05

0.05

1.73

1.54



Page 2 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Sample #: ST-1 Project County: Pulaski Sample Loc. : Boring No. B-503 Project State: Arkansas Sample Depth: 4.1' to 4.6'

Laboratory # : 11206-04 Date Tested: 10/28/14 Submitted By: ICA Engineering Date Reported: 11/04/14

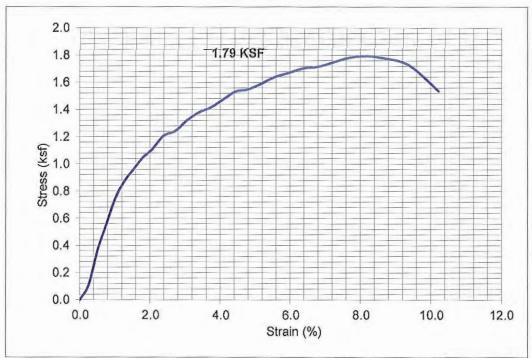
Soil Type: Brown Lean Clay

Wet Density: 121.5 pcf Initial Height: 5.87 in Dry Density: 94.4 pcf Initial Diameter: 2.85 in Moisture: 28.8 % Proving Ring: #22734

Deg. of Sat. : NA

Comments: AASHTO: T-208





APPROVED BY: Jeeny Solo



AASHTO: T-208

Page 1 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Project County : Pulaski

Project State: Arkansas Laboratory #: 11206-04

Submitted By: ICA Engineering

12

13

Sample #: ST-1

Sample Loc.: Boring No. B-506

Sample Depth: 15.8' to 16.3'

Date Tested: 10/28/14

Date Reported: 11/04/14

Soil Type: Gray & Orange Silty, Clayey Sand

Wet Density: 132.3 pcf Dry Density: 113.3 pcf Initial Height: Initial Diameter: Proving Ring: 5.92

2.88 in #22734

in

ry Density: 113.3 pcf Moisture: 16.7 %

RESULTS: Axial Corrected Unit Stress Load Area Strain # lbs  $\underline{sf}$ % Ksf 1 0.0 0.05 0.0 0.00 2 10.6 0.05 0.3 0.23 3 22.1 0.05 0.5 0.49 4 35.6 0.05 0.8 0.78 5 49.1 0.05 1.0 1.08 6 62.5 0.05 1.3 1.37 7 76.9 1.5 0.05 1.68 8 87.5 0.05 1.8 1.90 9 96.2 0.05 2.0 2.09 10 104.8 0.05 2.4 2.27 11 104.8 0.05 2.7 2.26

102.0

95.2

0.05

0.05

3.0

3.4

2.19

2.04



Page 2 of 2

Project Name: Highway 67 Widening

Project # : 11206-04 Sample # : ST-1

Project County: Pulaski Sample Loc.: Boring No. B-506
Project State: Arkansas Sample Depth: 15.8' to 16.3'
Laboratory #: 11206-04 Date Tested: 10/28/14
Submitted By: ICA Engineering Date Reported: 11/04/14

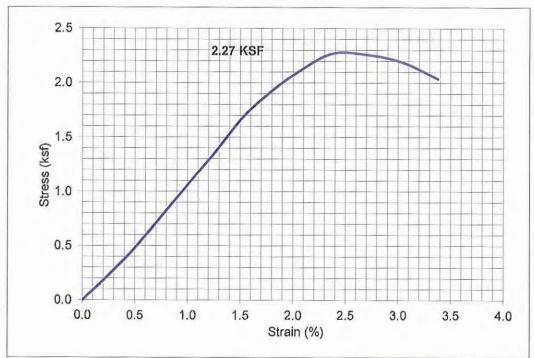
Soil Type: Gray & Orange Silty, Clayey Sand

Wet Density: 132.3 pcf Initial Height: 5.92 in Dry Density: 113.3 pcf Initial Diameter: 2.88 in Moisture: 16.7 % Proving Ring: #22734

Deg. of Sat.: NA

Comments: AASHTO: T-208





APPROVED BY: fremy Salo



21

22

23

24

25

26

27

28

29

30

31

53.9

58.7

60.6

64.4

67.3

69.3

75.0

77.9

80.8

79.8

75.0

0.05

0.05

0.05

0.05

0.05

0.05

0.05

0.05

0.05

0.05

0.05

6.4

6.8

7.2

7.6

8.1

8.5

9.3

10.2

11.0

11.9

12.7

1.16

1.26

1.30

1.37

1.43

1.46

1.57

1.62

1.66

1.62

1.51

## **UNCONFINED COMPRESSION TEST**

	AASHTC	Page 1 of 2					
Project Name: High Project #: 1120	,		Sample # : S				
Project County: Pulas	ski		Sample Loc. : Boring No. B-504				
Project State: Arka	nsas		Sample Depth: 1				
Laboratory # : 1120	6-04		Date Tested: 1	0/28/14			
Submitted By: ICA	Engineering		Date Reported : 1	1/04/14			
Soil Type: Tan S	Sandy Silt						
Wet Density: 14	1.7 pcf		Initial Height:	5.89	in		
Dry Density: 12	2.9 pcf		Initial Diameter:	2.82	in		
Moisture: 15	5.3 %		Proving Ring:	#22734			
RESULTS: A	xial Corrected	Unit					
	oad Area	Strain	Stress				
# <u>ll</u> 1 0	bs sf	<u>%</u>	Ksf				
	.0 0.04	0.0	0.00				
	.8 0.04	0.3	0.09				
3 5	.8 0.04	0.5	0.13				
4 7	.7 0.04	0.8	0.18				
5 9	.6 0.04	1.0	0.22				
6 11	1.5 0.04	1.3	0.26				
7 13	3.5 0.04	1.5	0.31				
8 15	5.4 0.04	1.8	0.35				
9 18	3.3 0.04	2.0	0.41				
10 21	1.2 0.04	2.4	0.48				
11 23	3.1 0.04	2.7	0.52				
12 20	5.9 0.04	3.1	0.60				
13 29	0.04	3.4	0.67				
14 32	2.7 0.04	3.7	0.73				
	5.6 0.05	4.1	0.79				
16 38	3.5 0.05	4.4	0.85				
17 41	1.4 0.05	4.8	0.91				
18 44	1.2 0.05	5.1	0.97				
19 48	3.1 0.05	5.5	1.05				
20 51	0.05	5.9	1.13				



Sample Loc. : Boring No. B-504

Page 2 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Project County: Pulaski

Project State: Arkansas Laboratory # : 11206-04

Submitted By: ICA Engineering

Soil Type: Tan Sandy Silt

Wet Density: 141.7 pcf Dry Density: 122.9 pcf

Moisture: 15.3 %

Deg. of Sat. : NA

Initial Height:

Initial Diameter:

Proving Ring:

Sample #: ST-2

Sample Depth: 14.0' to 14.5'

Date Tested: 10/28/14

Date Reported: 11/04/14

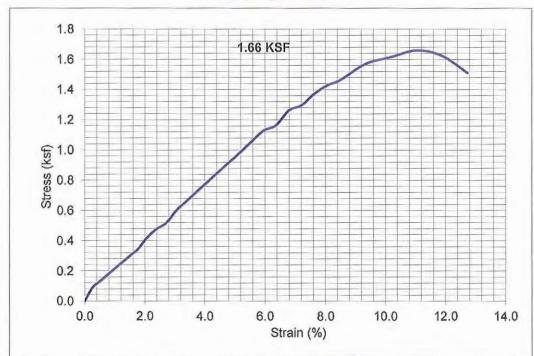
2.82 in

5.89 in

#22734

Comments: AASHTO: T-208







13

134.7

0.05

3.4

2.85

# UNCONFINED COMPRESSION TEST

				AASHTO	): T-208		Page 1 of 2		
Project Name: Froject #: 1 Project County: Froject State: Froject State: Froject State: Froject Submitted By: Froject Submitted By: Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject   Froject Name   Froject   Froject   Froject Name   Froject   Froject Name   Froject   Froject Name   Froj	1206-04 Pulaski Arkansas 11206-04			Sample #: ST-1 Sample Loc.: Boring No. B-507 Sample Depth: 9.7' to 10.2' Date Tested: 10/28/14 Date Reported: 11/04/14					
Soil Type: 7 Wet Density: Dry Density: Moisture:	Tan & Gr 125.0 101.8 22.9	ay Lean Clay pcf pcf %		Initial Height: Initial Diameter: Proving Ring:	5.86 2.89 #22734	in in			
RESULTS:	Axial	Corrected	Unit						
	Load	Area	Strain	Stress					
<u>#</u> 1	lbs	<u>sf</u>	<u>%</u>	<u>Ksf</u>					
	0.0	0.05	0.0	0.00					
2	30.8	0.05	0.3	0.67					
3	60.6	0.05	0.5	1.32					
4	84.6	0.05	0.8	1.84					
5	104.8	0.05	1.0	2.27					
6	119.3	0.05	1.3	2.58					
7	127.0	0.05	1.5	2.74					
8	136.6	0.05	1.8	2.94					
9	139.5	0.05	2.0	2.99					
10	139.5	0.05	2.4	2.98					
11	138.5	0.05	2.7	2.95					
12	136.6	0.05	3.1	2.90					



Page 2 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Project County: Pulaski

Project State : Arkansas

Laboratory # : 11206-04

Submitted By: ICA Engineering Soil Type: Tan & Gray Lean Clay

Wet Density:

125.0 pcf

101.8 pcf

Dry Density: Moisture:

22.9 %

Deg. of Sat. :

NA Comments: AASHTO: T-208 Sample #: ST-1

Sample Loc. : Boring No. B-507

Sample Depth: 9.7' to 10.2'

Date Tested: 10/28/14

Date Reported: 11/04/14

Initial Height:

5.86 in

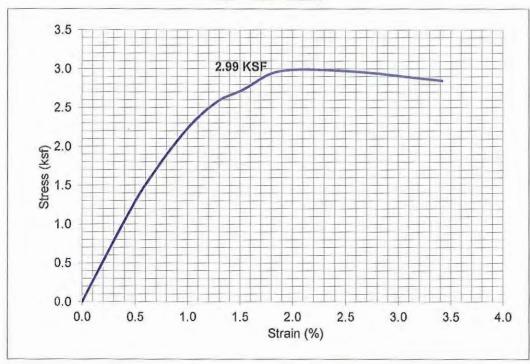
Initial Diameter:

2.89 in

Proving Ring:

#22734







17

124.1

0.05

4.7

2.65

## UNCONFINED COMPRESSION TEST

				AASHTO	): T-208		Page 1 of 2
Project Name : 1							
Project # :	11206-04			Sample # : 5	ST-1		
Project County: 1	Pulaski			Sample Loc. : 1	Boring No.	B-556	
Project State : A	Arkansas			Sample Depth:	20.3' to 20.	8'	
Laboratory # :	11206-04			Date Tested:	10/28/14		
Submitted By : 1	CA Engi	neering		Date Reported :	11/04/14		
Soil Type : I	Brown Le	an Clay					
Wet Density:	129.3	pcf		Initial Height:	5.93	in	
Dry Density:	105.8	pcf		Initial Diameter:	2.86	in	
Moisture:	22.2	%		Proving Ring:	#22734		
RESULTS:	Axial	Corrected	Unit				
	Load	Area	Strain	Stress			
<u>#</u> 1	Ibs	<u>sf</u>	%	Ksf			
1	0.0	0.04	0.0	0.00			
2	2.9	0.04	0.3	0.06			
3	9.6	0.04	0.5	0.21			
4	18.3	0.05	0.8	0.41			
5	27.9	0.05	1.0	0.62			
6	40.4	0.05	1.3	0.89			
7	53.9	0.05	1.5	1.19			
8	68.3	0.05	1.8	1.50			
9	83.7	0.05	2.0	1.83			
10	103.9	0.05	2.4	2.27			
11	119.3	0.05	2.7	2.60			
12	130.8	0.05	3.0	2.84			
13	136.6	0.05	3.4	2.95			
14	139.5	0.05	3.7	3.01			
15	139.5	0.05	4.0	2.99			
16	134.7	0.05	4.4	2.88			



Page 2 of 2

Project Name: Highway 67 Widening

Project #: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory #: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown Lean Clay

Wet Density: 129.3 pcf
Dry Density: 105.8 pcf
Moisture: 22.2 %

Deg. of Sat. : NA

Comments: AASHTO: T-208

Sample #: ST-1

Sample Loc.: Boring No. B-556 Sample Depth: 20.3' to 20.8' Date Tested: 10/28/14

Date Reported: 11/04/14

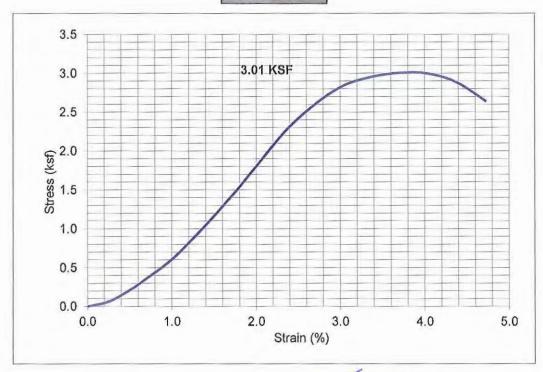
Initial Height:

5.93 in 2.86 in

Initial Diameter:
Proving Ring:

#22734





APPROVED BY: July Solo



### **UNCONFINED COMPRESSION TEST** AASHTO: T-208

Page 1 of 2

Project Name: Highway 6	7 Widening		

Project # : 11206-04 Sample #: ST-2

Project County: Pulaski Sample Loc. : Boring No. B-557 Project State : Arkansas Sample Depth: 19.4' to 19.9' Laboratory # : 11206-04 Date Tested: 10/28/14

Submitted By: ICA Engineering Date Reported: 11/04/14

Soil Type: Gray & Orange Lean Clay

	Wet Density: Dry Density:	128.1 104.4	pcf pcf		Initial Height: Initial Diameter:	5.82 2.86	in in
	Moisture:	22.6	%		Proving Ring:	#22734	
RESULTS:		Axial	Corrected	Unit			
	a.	Load	Area	Strain	Stress		
	<u>#</u>	lbs	<u>sf</u>	<u>%</u>	Ksf		
	1	0.0	0.04	0.0	0.00		
	2	6.7	0.04	0.3	0.15		
	3	13.5	0.04	0.5	0.30		
	4	18.3	0.05	0.8	0.41		
	5	24.0	0.05	1.0	0.53		
	6	30.8	0.05	1.3	0.68		
	7	36.6	0.05	1.5	0.80		
	8	43.3	0.05	1.8	0.95		
	9	48.1	0.05	2.1	1.05		
	10	55.8	0.05	2.4	1.22		
	11	64.4	0.05	2.8	1.40		
	12	74.1	0.05	3.1	1.60		
	13	82.7	0.05	3.4	1.78		
	14	89.5	0.05	3.8	1.92		
	15	96.2	0.05	4.1	2.06		
	16	102.0	0.05	4.5	2.18		
	17	107.7	0.05	4.8	2.29		
	18	112.5	0.05	5.2	2.38		
	19	117.3	0.05	5.6	2.48		
	20	122.2	0.05	6.0	2.57		
	21	127.0	0.05	6.4	2.65		
	22	131.8	0.05	6.9	2.74		
	23	136.6	0.05	7.3	2.83		
	24	139.5	0.05	7.7	2.87		
	25	143.3	0.05	8.2	2.94		
	26	145.2	0.05	8.6	2.97		
	27	152.0	0.05	9.5	3.07		
	28	157.7	0.05	10.3	3.16		
	29	159.7	0.05	11.2	3.17		
	30	160.6	0.05	12.0	3.16		
	31	159.7	0.05	12.9	3.11		
	32	156.8	0.05	13.8	3.02		



Page 2 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Project County: Pulaski Project State: Arkansas Laboratory # : 11206-04

Submitted By: ICA Engineering

Soil Type: Gray & Orange Lean Clay

Wet Density: 128.1 pcf Dry Density: 104.4 pcf Moisture: 22.6 %

Deg. of Sat. : NA Sample #: ST-2

Sample Loc. : Boring No. B-557 Sample Depth: 19.4' to 19.9' Date Tested: 10/28/14

Date Reported: 11/04/14

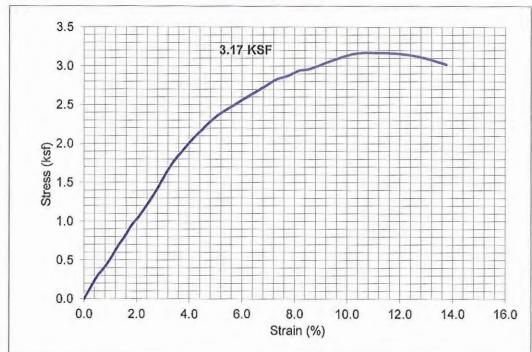
Initial Height: 5.82 in Initial Diameter:

2.86 in Proving Ring:

#22734

Comments: AASHTO: T-208





APPROVED BY: Jeany Sale



#### UNCONFINED COMPRESSION TEST AASHTO: T-208

Page 1 of 2

Project Name: Highway 67 Widening Sample #: ST-3 Project #: 11206-04 Project County: Pulaski Sample Loc. : Boring No. B-557 Project State : Arkansas Sample Depth: 39.9' to 40.4' Laboratory # : 11206-04 Date Tested: 10/28/14 Submitted By: ICA Engineering Date Reported: 11/04/14

Soil Type: Brown & Tan Silty, Clayey Sand

Wet Density: 136.6 pcf Initial Height: 5.95 in Dry Density: 119.8 pcf Initial Diameter: 2.89 in

	Moisture:	14.0	%		Proving Ring:	#22734
RESULTS:		Axial	Corrected	Unit		
		Load	Area	Strain	Stress	
	#	1bs	<u>sf</u>	%	Ksf	
	1	0.0	0.05	0.0	0.00	
	2	8.7	0.05	0.3	0.19	
	3	13.5	0.05	0.5	0.29	
	4	19.2	0.05	0.8	0.42	
	5	25.0	0.05	1.0	0.54	
	6	30.8	0.05	1.3	0.67	
	7	34.6	0.05	1.5	0.75	
	8	39.4	0.05	1.8	0.85	
	9	42.3	0.05	2.0	0.91	
	10	43.3	0.05	2.4	0.93	
	11	43.3	0.05	2.7	0.93	
	12	41.4	0.05	3.0	0.88	
	13	36.6	0.05	3.4	0.78	



Page 2 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Sample #: ST-3 Project County: Pulaski Sample Loc. : Boring No. B-557 Project State: Arkansas Sample Depth: 39.9' to 40.4' Laboratory # : 11206-04 Date Tested: 10/28/14 Date Reported: 11/04/14

Submitted By: ICA Engineering

Soil Type: Brown & Tan Silty, Clayey Sand

Wet Density: 136.6 pcf Dry Density: 119.8 pcf Moisture: 14.0 %

Comments: AASHTO: T-208

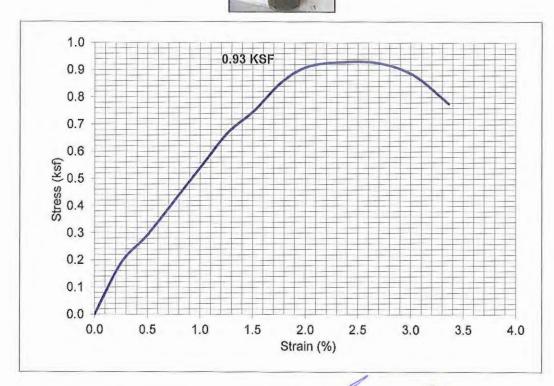
Deg. of Sat. : NA

Initial Height: Initial Diameter:

5.95 in 2.89 in

Proving Ring:

#22734





#### **UNCONFINED COMPRESSION TEST** AASHTO: T-208

in

Page 1 of 2

Project Name: Highway 67 Widening	
Project # + 11206-04	Sample # · ST-2

Project # : 11206-04 Sample #: ST-2 Sample Loc. : Boring No. B-558 Project County: Pulaski Project State: Arkansas Sample Depth: 26.1' to 26.6' Date Tested: 10/28/14 Laboratory # : 11206-04

Submitted By: ICA Engineering Date Reported: 11/04/14

Soil Type: Brown & Tan Sandy Lean Clay Wet Density: 131.4 pcf Initial Height: 5.87

Dry Density: 108.1 pcf Initial Diameter: 2.83 in

	Moisture:	21.6	%		Proving Ring:	#22734
RESULTS:		Axial	Corrected	Unit		
		Load	Area	Strain	Stress	
	<u>#</u>	<u>lbs</u>	<u>sf</u>	<u>%</u>	Ksf	
	1	0.0	0.04	0.0	0.00	
	2	3.8	0.04	0.3	0.09	
	3	9.6	0.04	0.5	0.22	
	4	13.5	0.04	0.8	0.31	
	5	19.2	0.04	1.0	0.44	
	6	25.0	0.04	1.3	0.57	
	7	28.9	0.04	1.5	0.65	
	8	34.6	0.04	1.8	0.78	
	9	36.6	0.04	2.0	0.82	
	10	40.4	0.04	2.4	0.90	
	11	40.4	0.04	2.7	0.90	
	12	39.4	0.05	3.1	0.88	
	13	37.5	0.05	3.4	0.83	
	14	35.6	0.05	3.7	0.78	



Page 2 of 2

Project Name: Highway 67 Widening

Project #: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory #: 11206-04

Submitted By: ICA Engineering

Soil Type ; Brown & Tan Sandy Lean Clay

Wet Density: 131.4 pcf
Dry Density: 108.1 pcf
Moisture: 21.6 %

Deg. of Sat.: NA

Comments: AASHTO: T-208

Sample #: ST-2

Sample Loc.: Boring No. B-558 Sample Depth: 26.1' to 26.6' Date Tested: 10/28/14

Date Reported: 11/04/14

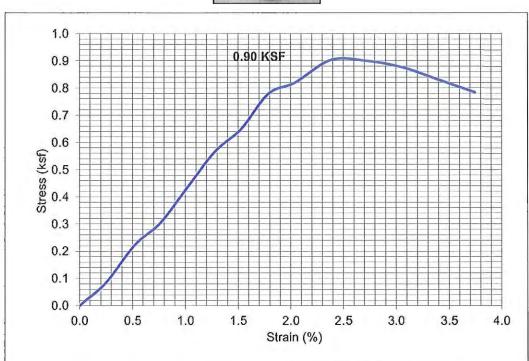
Initial Height:

5.87 in 2.83 in

Initial Diameter: Proving Ring:

#22734







#### UNCONFINED COMPRESSION TEST

			UNCONFINED COMIT RES					
					AASHTO	: T-208		Page 1 of 2
Project Name: F	Iighway	67 Widening						
Project # : 1					Sample # : S			
Project County: P					Sample Loc. : E			
Project State: A	rkansas				Sample Depth: 2	4.7' to 25.2	2'	
Laboratory # : 1	Laboratory # : 11206-04					0/28/14		
Submitted By: I	CA Engi	neering			Date Reported: 1	1/04/14		
Soil Type : E	Brown, T	an & Black Sa	ındy Lean (	Clay				
Wet Density:	129.6	pcf			Initial Height:	5.85	in	
Dry Density:	108.1	pcf		Ir	itial Diameter :	2.86	in	
Moisture:	19.8	%			Proving Ring:	#22734		
RESULTS:	Axial	Corrected	Unit					
	Load	Area	Strain	Stress				
<u>#</u>	<u>lbs</u>	<u>sf</u>	<u>%</u>	<u>Ksf</u>				
1	0.0	0.04	0.0	0.00				
2	4.8	0.04	0.3	0.11				
3	9.6	0.04	0.5	0.21				
4	14.4	0.04	8.0	0.32				
5	18.3	0.05	1.0	0.41				
6	25.0	0.05	1.3	0.55				
7	30.8	0.05	1.5	0.68				
8	37.5	0.05	1.8	0.83				
9	42.3	0.05	2.1	0.93				
10	49.1	0.05	2.4	1.07				
11	54.8	0.05	2.7	1.20				
12	59,6	0.05	3.1	1.30				
13	63.5	0.05	3.4	1.37				
14	65.4	0.05	3.8	1.41				
15	67.3	0.05	4.1	1.45				
16	67.3	0.05	4.4	1.44				
17	66.4	0.05	4.8	1.42				
18	63.5	0.05	5.1	1.35				



Page 2 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Sample #: ST-2 Project County: Pulaski Sample Loc. : Boring No. B-559 Project State: Arkansas Sample Depth: 24.7' to 25.2' Laboratory # : 11206-04 Date Tested: 10/28/14 Submitted By: ICA Engineering Date Reported: 11/04/14

Soil Type: Brown, Tan & Black Sandy Lean Clay

Wet Density: 129.6 pcf Dry Density: 108.1 pcf Moisture: 19.8 % Deg. of Sat. :

NA

Initial Height:

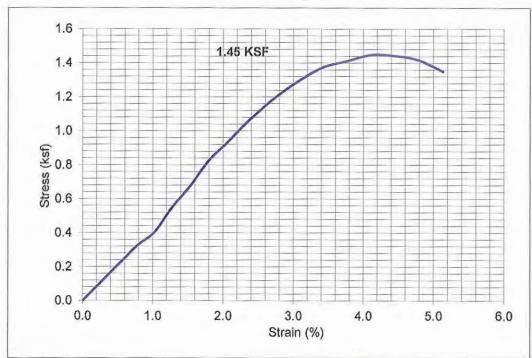
5.85 in 2.86 in

Initial Diameter: Proving Ring:

#22734

Comments: AASHTO: T-208





APPROVED BY:

Juny Sdr



AASHTO: T-208

Page 1 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Project County: Pulaski

Project State: Arkansas Laboratory # : 11206-04 Sample #: ST-1

Sample Loc. : Boring No. B-562 Sample Depth: 10.0' to 10.5'

Date Tested: 10/28/14

Date Reported: 11/04/14

Submitted By: ICA Engineering

Soil Type: Gray, Orange & Tan Lean Clay

Wet Density: 128.2 pcf Dry Density: 104.6 pcf

Initial Height: Initial Diameter:

Proving Ring:

5.90

in 2.87 in #22734

Moisture: 22.5 %

	worsture,	22,3	70		
RESULTS:		Axial	Corrected	Unit	
		Load	Area	Strain	Stress
	<u>#</u>	<u>lbs</u>	$\underline{\mathbf{sf}}$	<u>%</u>	Ksf
	# 1	0.0	0.04	0.0	0.00
	2	5.8	0.04	0.3	0.13
	3	12.5	0.05	0.5	0.28
	4	19.2	0.05	0.8	0.43
	5	25.0	0.05	1.0	0.55
	6	29.8	0.05	1.3	0.66
	7	35.6	0.05	1.5	0.78
	8	40.4	0.05	1.8	0.89
	9	45.2	0.05	2.0	0.99
	10	51.9	0.05	2.4	1.13
	11	58.7	0.05	2.7	1.27
	12	66.4	0.05	3.1	1.44
	13	72.1	0.05	3.4	1.56
	14	79.8	0.05	3.7	1.72
	1.5	86.6	0.05	4.1	1.85
	16	92.3	0.05	4.4	1.97
	17	99.1	0.05	4.7	2.11
	18	103.9	0.05	5.1	2.20
	19	108.7	0.05	5.5	2.29
	20	113.5	0.05	5.9	2.38
	21	110.6	0.05	6.4	2.31
	22	109.7	0.05	6.8	2.28



Page 2 of 2

Project Name: Highway 67 Widening

Project # : 11206-04 Sample # : ST-1

Project County: Pulaski Sample Loc.: Boring No. B-562
Project State: Arkansas Sample Depth: 10.0' to 10.5'
Laboratory#: 11206-04 Date Tested: 10/28/14
Submitted By: ICA Engineering Date Reported: 11/04/14

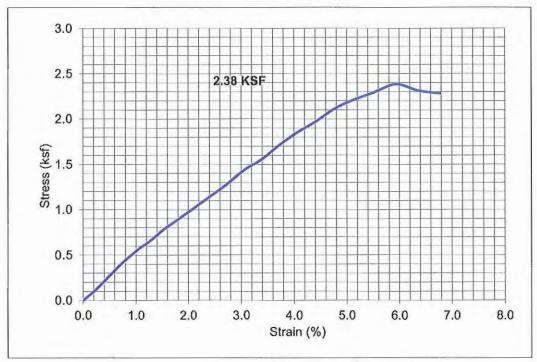
Soil Type: Gray, Orange & Tan Lean Clay

Wet Density: 128.2 pcf Initial Height: 5.90 in Dry Density: 104.6 pcf Initial Diameter: 2.87 in Moisture: 22.5 % Proving Ring: #22734

Deg. of Sat.: NA

Comments: AASHTO: T-208





APPROVED BY:

freery Solo



				AASH	TO: T-208		Page 1 of 2	
Project Name : I	lighway	67 Widening						
Project # : 1	1206-04			Sample #	: ST-2			
Project County: F	Pulaski			Sample Loc. : Boring No. B-564				
Project State : A	Arkansas			Sample Depth: 30.1' to 30.6'				
Laboratory # : 1	1206-04			Date Tested: 10/27/14				
Submitted By: I	CA Engi	neering	Date Reported: 11/04/14					
Soil Type : F	Brown Cl	ayey Sand						
Wet Density:	129.1	pcf		Initial Height	: 5.88	in		
Dry Density:	106.2	pcf		Initial Diameter	: 2.81	in		
Moisture:	21.6	%		Proving Ring	: #22734			
RESULTS:	Axial	Corrected	Unit					
	Load	Area	Strain	Stress				
<u>#</u>	<u>lbs</u>	<u>sf</u>	%	Ksf				
1	0.0	0.04	0.0	0.00				
2	7.7	0.04	0.3	0.18				
3	14.4	0.04	0.5	0.33				
4	21.2	0.04	0.8	0.49				
5 6 7	24.0	0.04	1.0	0.55				
	25.0	0.04	1.3	0.57				
	22.1	0.04	1.5	0.50				
8	18.3	0.04	1.8	0.42				

14.4

0.04

2.0

0.33



Page 2 of 2

Project Name: Highway 67 Widening

Project #: 11206-04 Sample #: ST-2

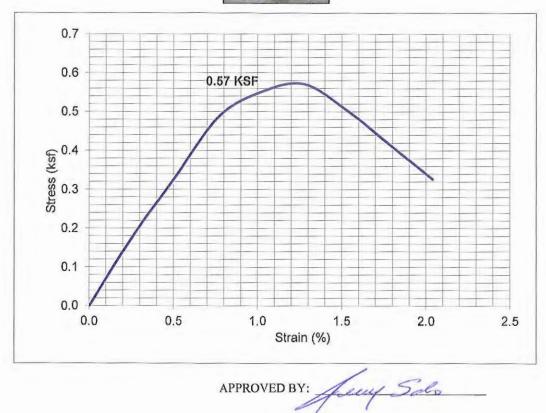
Project County: Pulaski Sample Loc. : Boring No. B-564 Project State: Arkansas Sample Depth: 30.1' to 30.6' Laboratory # : 11206-04 Date Tested: 10/27/14 Submitted By: ICA Engineering Date Reported: 11/04/14

Soil Type: Brown Clayey Sand

Wet Density: 129.1 pcf Initial Height: 5.88 in Dry Density: 106.2 pcf Initial Diameter: 2.81 in 21.6 % Moisture: Proving Ring: #22734 Deg. of Sat. : NA

Comments: AASHTO: T-208







AASHTO: T-208

Page 1 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory #: 11206-04
Submitted By: ICA Engineering

Sample # : ST-1 Sample Loc. : Borir

Sample Loc.: Boring No. B-565 Sample Depth: 20.4' to 20.9' Date Tested: 10/28/14

Date Reported: 11/04/14

Soil Type: Gray, Tan & Brown Lean Clay

Wet Density: 132.9 pcf Dry Density: 111.1 pcf Initial Height: Initial Diameter:

5.87 in 2.85 in

	Moisture :	19.6	%		Proving Ring:	#22734	1111
RESULTS		Axial	Corrected	Unit			
		Load	Area	Strain	Stress		
	<u>#</u>	<u>lbs</u>	<u>sf</u>	<u>%</u>	<u>Ksf</u>		
	# 1	0.0	0.04	0.0	0.00		
	2	2.9	0.04	0.3	0.07		
	3	5.8	0.04	0.5	0.13		
	4	10.6	0.04	0.8	0.24		
	5	16.4	0.04	1.0	0.37		
	6	21.2	0.04	1.3	0.47		
	7	26.0	0.04	1.5	0.58		
	8	32.7	0.04	1.8	0.73		
	9	38.5	0.05	2.0	0.85		
	10	46.2	0.05	2.4	1.02		
	11	54.8	0.05	2.7	1.21		
	12	62.5	0.05	3.1	1.37		
	13	70.2	0.05	3.4	1.54		
	14	75.0	0.05	3.7	1.64		
	15	79.8	0.05	4.1	1.73		
	16	82.7	0.05	4.4	1.79		
	17	86.6	0.05	4.8	1.87		
	18	88.5	0.05	5.1	1.90		
	19	90.4	0.05	5.5	1.93		
	20	91.4	0.05	6.0	1.95		
	21	91.4	0.05	6.4	1.94		
	22	91.4	0.05	6.8	1.93		
	23	90.4	0.05	7.2	1.90		
	24	89.5	0.05	7.7	1.87		



Page 2 of 2

Project Name: Highway 67 Widening

Project #: 11206-04

Project County: Pulaski

Project State: Arkansas Laboratory # : 11206-04

Submitted By: ICA Engineering

Soil Type: Gray, Tan & Brown Lean Clay

Wet Density: 132.9 pcf 111.1 pcf Dry Density: Moisture: 19.6 %

NA Deg. of Sat.:

Comments: AASHTO: T-208

Sample #: ST-1

Sample Loc. : Boring No. B-565

Sample Depth: 20.4' to 20.9' Date Tested: 10/28/14

Date Reported: 11/04/14

Initial Height:

5.87 in

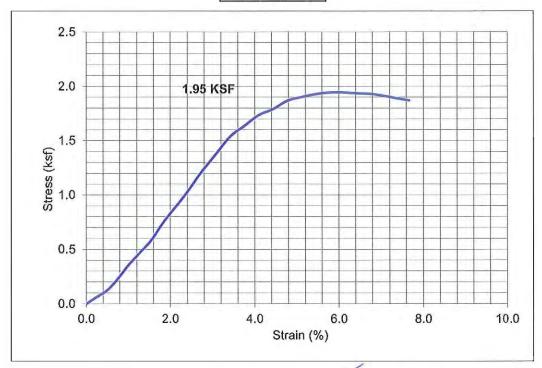
Initial Diameter:

2.85 in

Proving Ring:

#22734







AASHTO: T-208

Page 1 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Project County: Pulaski

Project State: Arkansas Laboratory # : 11206-04

Submitted By: ICA Engineering

Sample #: ST-2

Sample Loc.: Boring No. B-565

Sample Depth: 35.2' to 35.7'

Date Tested: 10/28/14

Date Reported: 11/04/14

Soil Type: Brown & Gray Silty Sand

20.2

Wet Density: 125.4 Dry Density:

103.6 pcf

%

pcf Initial Height:

0.45

Initial Diameter: Proving Ring: 5.84 2.83

#22734

in in

Moisture: 21.1

13

RESULTS: Axial Corrected Unit Load Area Strain Stress # lbs  $\underline{sf}$ % Ksf 1 0.0 0.04 0.0 0.00 2 3.8 0.04 0.09 0.3 3 5.8 0.04 0.5 0.13 4 9.6 0.04 0.8 0.22 5 0.04 0.28 12.5 1.0 6 15.4 0.04 1.3 0.35 7 0.04 0.43 19.2 1.5 8 21.2 0.04 1.8 0.47 9 22.1 0.04 2.1 0.49 10 23.1 0.04 2.4 0.51 11 22.1 0.05 2.7 0.49 0.05 0.47 12 21.2 3.1

0.05

3.4



Page 2 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Sample #: ST-2 Project County: Pulaski Sample Loc. : Boring No. B-565 Sample Depth: 35.2' to 35.7' Project State: Arkansas Laboratory # : 11206-04 Date Tested: 10/28/14

Submitted By: ICA Engineering Date Reported: 11/04/14

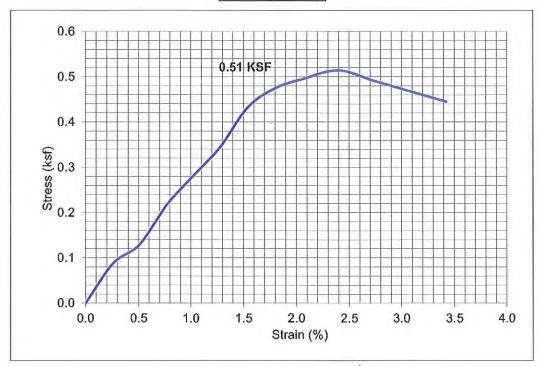
Soil Type: Brown & Gray Silty Sand

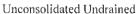
Wet Density: 125.4 pcf Initial Height: 5.84 in Dry Density: 103.6 pcf Initial Diameter: 2.83 in Moisture: 21.1 % Proving Ring: #22734

NA Deg. of Sat. :

Comments: AASHTO: T-208









#### TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening	Page 1 of 3

PROJECT # : 11206-04 POINT # : 1
PROJECT COUNTY : Pulaski SAMPLE LOC. : B-501
PROJECT STATE : Arkansas SAMPLE DEPTH : 4.5' to 5.0'
LABORATORY # : 11206-04 DATE TESTED : 10/27/14
SUBMITTED BY : ICA Engineering DATE REPORTEE: 11/04/14

SOIL TYPE : Brown & Tan Silty Clay with Sand

WET DENSITY : 133.21 pcf DELTA HEIGHT : 0.45 cm INITIAL HEIGHT : 15.13 cm DRY DENSITY : 111.02 pcf DELTA VOLUME : NA INITIAL DIAMETER: 7.19 cm

MOISTURE : 19.99 % CHAMBER PRES. : 4.65 psi COMMENTS : AASHTO T-296

RESULTS:

			•	
	<b>E</b> a	σ 3 (psi)	O 1 (psi)	$\sigma_{1}/\sigma_{3}$
1	0.00	4.65	4.65	1.00
2	0.09	4.65	4.87	1.05
3	0.17	4.65	5.08	1.09
4	0.26	4.65	5.08	1.09
5	0.35	4.65	5.08	1.09
6	0.43	4.65	5.3	1.14
7	0.52	4.65	5.3	1.14
8	1.04	4.65	6.15	1.32
9	1.56	4.65	6.78	1.46
10	2.08	4.65	7.4	1.59
11	2.60	4.65	8.02	1.72
12	3.11	4.65	8.63	1.85
13	3.46	4.65	9.03	1.94
14	4.33	4.65	10.02	2.15
15	5.19	4.65	11	2.36
16	6.06	4.65	11.55	2.48
17	6.92	4.65	12.09	2.6
18	7.79	4.65	12.61	2.71
19	8.65	4.65	13.13	2.82
20	9.52	4.65	13.64	2.93
21	10,38	4.65	14.13	3.04
22	11.25	4.65	14.42	3.1
23	12.11	4.65	14.87	3.2
24	12.98	4.65	15.32	3.29
25	13.84	4.65	15.39	3.31
26	14.71	4.65	15.82	3.4
27	15.57	4.65	16.06	3.45
28	16.44	4.65	16.3	3.5
29	17.30	4.65	16.52	3.55
30	18.17	4.65	16.57	3.56
31	19.04	4.65	16.95	3.64
32	19.90	4.65	16.99	3.65



#### Unconsolidated Undrained

Page 2 of 3

#### TRIAXIAL COMPRESSION TEST

PROJECT NAME

: Highway 67 Widening

PROJECT#

: 11206-04

PROJECT COUNTY PROJECT STATE

: Pulaski : Arkansas

LABORATORY # SUBMITTED BY : 11206-04 : ICA Engineering

FINAL MOISTUR : 19.99 %

FINAL HEIGHT

: 11.76 cm

FINAL DIAMETE: 8 cm

EFF. CONS. STRESS: 4.65 psi SPECIFIC GRAVITY: NA

POINT#

COMMENTS

: AASHTO T-296

: 1

SAMPLE LOC. : B-501

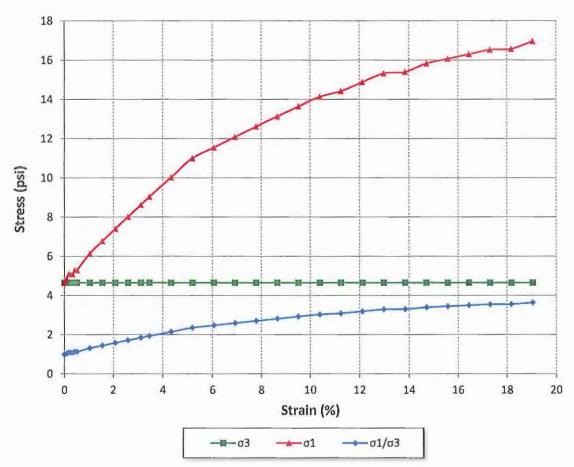
SAMPLE DEPTH: 4.5' to 5.0'

DATE TESTED : 10/27/14

DATE REPORTEE: 11/04/14

RESULTS:







#### Unconsolidated Undrained

#### TRIAXIAL COMPRESSION TEST

PROJECT NAME

: Highway 67 Widening

Page 3 of 3

PROJECT#

: 11206-04

COMMENTS : AASHTO T-296

PROJECT COUNTY

: Pulaski

SAMPLE LOC. : B-501

PROJECT STATE LABORATORY#

: Arkansas

SAMPLE DEPTH: 4.5' to 5.0'

SUBMITTED BY

: 11206-04

DATE TESTED : 10/27/14

: ICA Engineering

DATE REPORTED: 11/04/14

# COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test

1

Lateral 4.65 psi Total 15.9 psi Compressive Strength =

1620 psf

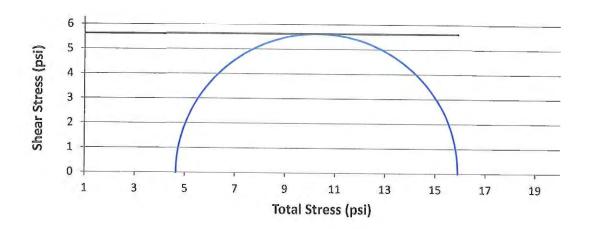
Cohesion = Phi = 810 psf 0 deg

Tan (Phi) =

# At Maximum Deviator Stress 15%

# Triaxial Mohr's Circles

# **Unconsolidated Undrained Triaxial Test**







#### TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening	Page	e 1 of 3

PROJECT # : 11206-04 POINT # : 1
PROJECT COUNTY : Pulaski SAMPLE LOC. : B-502
PROJECT STATE : Arkansas SAMPLE DEPTH : 19.9' to 20.4'
LABORATORY # : 11206-04 DATE TESTED : 10/24/14
SUBMITTED BY : ICA Engineering DATE REPORTEE: 11/04/14

SOIL TYPE : Gray & Tan Lean Clay with Sand

WET DENSITY : 132.79 pcf DELTA HEIGHT : 0.45 cm INITIAL HEIGHT : 14.91 cm DRY DENSITY : 111.69 pcf DELTA VOLUME : NA INITIAL DIAMETER: 7.27 cm

MOISTURE : 18.9 % CHAMBER PRES. : 14.32 psi COMMENTS : AASHTO T-296

RESULTS:

	8 a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	14.32	14.32	1.00
2	0.09	14.32	18.32	1.28
3	0.18	14.32	21.05	1.47
4	0.26	14.32	23.36	1.63
5	0,35	14.32	25.44	1.78
6	0.44	14.32	27.26	1.9
7	0.53	14.32	28.88	2.02
8	1.05	14.32	37.89	2.65
9	1.58	14.32	44.81	3.13
10	2.11	14.32	49.29	3.44
11	2.64	14.32	51.87	3,62
12	3.16	14.32	54,21	3.79
13	3.51	14.32	55.56	3.88
14	4.39	14.32	58.05	4.05
15	5.27	14.32	59.35	4.15
16	6.15	14.32	60.11	4.2
17	7.03	14.32	60.65	4.24
18	7.91	14.32	61.1	4.27
19	8.79	14.32	61.19	4.27
20	9.66	14.32	61.08	4.27
21	10.54	14.32	60.8	4.25
22	11.42	14.32	60.34	4.22
23	12.30	14.32	59.89	4.18
24	13.18	14.32	59,43	4.15
25	14.06	14.32	58.48	4.08
26	14.94	14.32	58.03	4.05
27	15.81	14.32	57.57	4.02
28	16.69	14.32	56.96	3.98



Page 2 of 3



#### TRIAXIAL COMPRESSION TEST

PROJECT NAME : Highway 67 Widening

PROJECT # : 11206-04
PROJECT COUNTY : Pulaski
PROJECT STATE : Arkansas
LABORATORY # : 11206-04
SUBMITTED BY : ICA Engineering

FINAL MOISTUR : 18.9 % FINAL HEIGHT : 11.53 cm FINAL DIAMETE : 8.11 cm

RESULTS:

POINT # : 1

SAMPLE LOC. : B-502 SAMPLE DEPTH : 19.9' to 20.4'

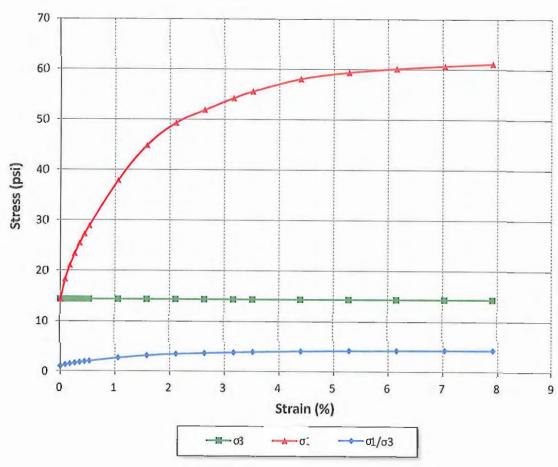
DATE TESTED : 10/24/14

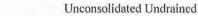
DATE REPORTEC: 11/04/14

EFF. CONS. STRESS: 14.32 psi SPECIFIC GRAVITY: NA

COMMENTS : AASHTO T-296









#### TRIAXIAL COMPRESSION TEST

PROJECT NAME

: Highway 67 Widening

Page 3 of 3

PROJECT#

: 11206-04

COMMENTS

: AASHTO T-296

PROJECT COUNTY PROJECT STATE

: Pulaski : Arkansas

SAMPLE LOC. : B-502 SAMPLE DEPTH: 19.9' to 20.4'

LABORATORY #

: 11206-04

DATE TESTED : 10/24/14

SUBMITTED BY

: ICA Engineering

DATE REPORTEE: 11/04/14

#### COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test

Lateral 14.32 psi

Total 61.19 psi Compressive Strength = 6749 psf

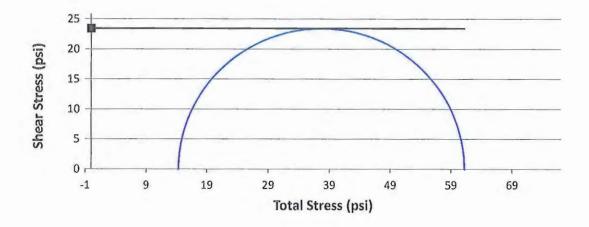
Cohesion = 3375 psf Phi = 0 deg

Tan (Phi) =

## **Maximum Deviator Stress**

# **Triaxial Mohr's Circles**

# **Unconsolidated Undrained Triaxial Test**







#### TRIAXIAL COMPRESSION TEST

PROJECT # : 11206-04 POINT # : 1
PROJECT COUNTY : Pulaski SAMPLE LOC. : B-503
PROJECT STATE : Arkansas SAMPLE DEPTH : 14.3' to 14.8'
LABORATORY # : 11206-04 DATE TESTED : 10/27/14
SUBMITTED BY : ICA Engineering DATE REPORTEE: 11/04/14

SOIL TYPE : Brown & Tan Silty Clay

WET DENSITY : 127.25 pcf DELTA HEIGHT : 0.45 cm INITIAL HEIGHT : 14.96 cm DRY DENSITY : 102.99 pcf DELTA VOLUME : NA INITIAL DIAMETER : 7.24 cm

MOISTURE : 23.55 % CHAMBER PRES. : 11.03 psi COMMENTS : AASHTO T-296

RESULTS:

	Еа	σ 3 (psi)	σ 1 (psi)	$\sigma_{1}/\sigma_{3}$
1	0.00	11.03	11.03	1.00
2	0.09	11.03	12.73	1.15
3	0.18	11.03	13.37	1.21
4	0.26	11.03	14.43	1.31
5	0.35	11.03	14.85	1.35
6	0.44	11.03	15.27	1.38
7	0.53	11.03	16,11	1.46
8	1.05	11.03	18.62	1.69
9	1.58	11.03	21.09	1.91
10	2.10	11.03	22.87	2.07
11	2.63	11.03	24.22	2.2
12	3.15	11.03	25.15	2.28
13	3.50	11.03	25.7	2.33
14	4.38	11.03	26.75	2.43
15	5.25	11.03	27.59	2.5
16	6.13	11.03	28,21	2.56
17	7.00	11.03	28.63	2.6
18	7.88	11.03	28.65	2.6
19	8.75	11.03	29,24	2.65
20	9.63	11.03	29,44	2.67
21	10.50	11.03	29.63	2.69
22	11.38	11.03	29.63	2.69
23	12.25	11.03	30.03	2.72
24	13.13	11.03	30.22	2.74
25	14.00	11.03	30.21	2.74
26	14.88	11.03	30.2	2.74
27	15.75	11.03	30.37	2.75
28	16.63	11.03	30,54	2.77
29	17.50	11.03	30.51	2.77
30	18.38	11.03	30.49	2.76
31	19.26	11.03	30.63	2.78
32	20.13	11.03	30.59	2,77





PROJECT NAME : Highway 67 Widening

: 11206-04 PROJECT # PROJECT COUNTY : Pulaski : Arkansas PROJECT STATE LABORATORY # : 11206-04 SUBMITTED BY : ICA Engineering

FINAL MOISTUR : 23.55 % : 11.59 cm

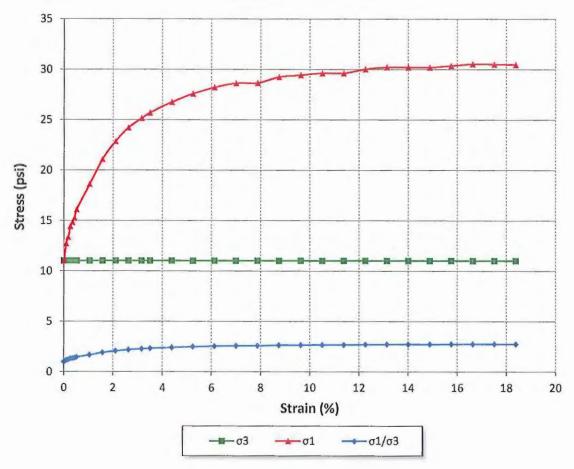
FINAL HEIGHT FINAL DIAMETE: 8.07 cm Page 2 of 3

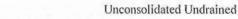
POINT# : 1 SAMPLE LOC. : B-503 SAMPLE DEPTH: 14.3' to 14.8' DATE TESTED : 10/27/14 DATE REPORTEE: 11/04/14

EFF. CONS. STRESS: 11.03 psi SPECIFIC GRAVITY: NA

COMMENTS : AASHTO T-296









PROJECT NAME : Highway 67 Widening Page 3 of 3

PROJECT # : 11206-04 COMMENTS : AASHTO T-296

PROJECT COUNTY: Pulaski SAMPLE LOC.: B-503

PROJECT STATE: Arkansas: SAMPLE DEPTH: 14.3' to 14.8'

LABORATORY #: 11206-04: DATE TESTED: 10/27/14

SUBMITTED BY: ICA Engineering: DATE REPORTEC: 11/04/14

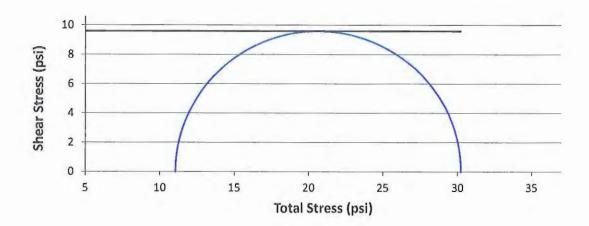
### COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total	Compressive Strength =	2764 psf
1	11.03 psi	30.23 psi	Cohesion =	1382 psf
			Phi =	0 deg
			Tan (Phi) =	0

# At Maximum Deviator Stress 15%

# **Triaxial Mohr's Circles**

# **Unconsolidated Undrained Triaxial Test**



Approved By: Jeeny Solo





PROJECT NAME : Highway 67 Widening Page 1 of 3

: 11206-04 PROJECT# POINT# : 1 PROJECT COUNTY : Pulaski SAMPLE LOC. : B-505 PROJECT STATE : Arkansas SAMPLE DEPTH: 14.5' to 15.0' LABORATORY # : 11206-04 DATE TESTED : 10/27/14 SUBMITTED BY : ICA Engineering DATE REPORTEE: 11/04/14

SOIL TYPE : Brown & Tan Silty Clay

WET DENSITY : 119.71 pcf DELTA HEIGHT : 0.45 cm INITIAL HEIGHT : 14.84 cm DRY DENSITY : 93.74 pcf DELTA VOLUME : NA INITIAL DIAMETER : 7.32 cm

MOISTURE : 27.7 % CHAMBER PRES. : 10.33 psi COMMENTS : AASHTO T-296

			1	
	Е а	σ 3 (psi)	σ 1 (psi)	$\sigma_{1}/\sigma_{3}$
1	0.00	10.33	10.33	1.00
2	0.09	10.33	12.2	1.18
3	0.18	10.33	13.44	1.3
4	0.26	10.33	14.48	1.4
5	0.35	10.33	15.51	1.5
6	0.44	10,33	16.33	1.58
7	0.53	10.33	17.36	1.68
8	1.06	10.33	21.61	2.09
9	1.59	10.33	25.13	2.43
10	2.12	10.33	27.82	2.69
11	2.65	10.33	30.49	2.95
12	3.18	10.33	33.07	3.2
13	3.53	10.33	34.22	3.31
14	4.41	10.33	36.66	3.55
15	5.30	10.33	38.04	3.68
16	6.18	10.33	38.78	3.75
17	7.06	10.33	39.31	3.8
18	7.95	10.33	39.68	3.84
19	8.83	10.33	39.72	3.84
20	9.71	10.33	39.59	3.83
21	10.59	10.33	39.46	3.82
22	11.48	10.33	39.33	3.81
23	12.36	10.33	39,35	3,81
24	13.24	10.33	39.21	3.79
25	14.13	10.33	39.06	3.78
26	15.01	10.33	38.92	3.77
27	15.89	10.33	38.77	3.75
28	16.77	10.33	38.61	3.74
29	17.66	10.33	38.46	3.72
30	18.54	10.33	38.44	3.72
31	19.42	10.33	38.42	3.72
32	20.31	10.33	38.11	3.69



Page 2 of 3



## TRIAXIAL COMPRESSION TEST

PROJECT NAME : Highway 67 Widening

PROJECT# : 11206-04 PROJECT COUNTY : Pulaski : Arkansas PROJECT STATE LABORATORY # : 11206-04 SUBMITTED BY : ICA Engineering

FINAL MOISTUR : 27.7 % : 11.46 cm

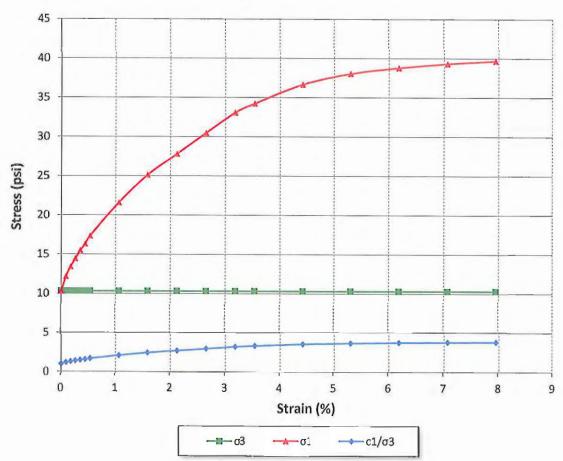
FINAL HEIGHT FINAL DIAMETE : 8.17 cm POINT# : 1

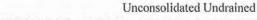
SAMPLE LOC. : B-505 SAMPLE DEPTH: 14.5' to 15.0' DATE TESTED : 10/27/14 DATE REPORTED: 11/04/14

EFF. CONS. STRESS: 10.33 psi SPECIFIC GRAVITY: NA

**COMMENTS** : AASHTO T-296









PROJECT NAME

: Highway 67 Widening

Page 3 of 3

PROJECT#

: 11206-04

COMMENTS

: AASHTO T-296

PROJECT COUNTY

: Pulaski

SAMPLE LOC. : B-505

PROJECT STATE LABORATORY# : Arkansas : 11206-04 SAMPLE DEPTH: 14.5' to 15.0'

DATE TESTED : 10/27/14

SUBMITTED BY

: ICA Engineering

DATE REPORTEC: 11/04/14

### COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test

Lateral

Total

Compressive Strength = 4232 psf

10.33 psi

39.72 psi

Cohesion = 2116 psf

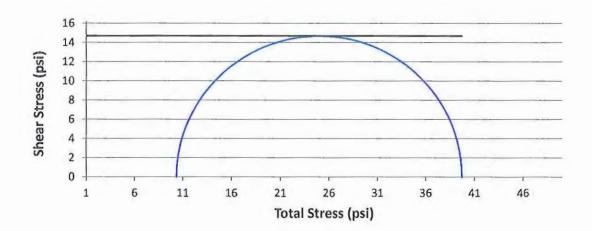
Phi = Tan (Phi) =

0 deg

# Maximum Deviator Stress

# Triaxial Mohr's Circles

## **Unconsolidated Undrained Triaxial Test**







PROJECT NAME : Highway 67 Widening Page 1 of 3

: 11206-04 PROJECT # POINT# : 1 PROJECT COUNTY : Pulaski SAMPLE LOC. : B-556 PROJECT STATE : Arkansas SAMPLE DEPTH: 29.8' to 30.3' LABORATORY # : 11206-04 DATE TESTED : 10/27/14 SUBMITTED BY : ICA Engineering DATE REPORTED: 11/04/14

SOIL TYPE : Orange & Gray Lean Clay with Sand

WET DENSITY : 132.25 pcf DELTA HEIGHT : 0.45 cm INITIAL HEIGHT : 14.96 cm DRY DENSITY : 107.23 pcf DELTA VOLUME : NA INITIAL DIAMETER : 7.18 cm

MOISTURE : 23.33 % CHAMBER PRES. : 19 psi COMMENTS : AASHTO T-296

	€ a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	19.00	19.00	1.00
2	0.09	19	19.43	1.02
3	0.18	19	19.65	1.03
4	0.26	19	19.86	1,05
5	0.35	19	19.86	1.05
6	0.44	19	20.07	1.06
7	0.53	19	20.29	1.07
8	1.05	19	21.14	1.11
9	1.58	19	21.76	1.15
10	2.10	19	22.6	1.19
11	2.63	19	23	1.21
12	3.15	19	23.6	1.24
13	3.50	19	24	1.26
14	4.38	19	24,58	1.29
15	5.25	19	25.35	1.33
16	6.13	19	25.69	1.35
17	7.00	19	26.03	1.37
18	7.88	19	26.17	1.38
19	8.75	19	26.69	1.4
20	9.63	19	26.81	1.41
21	10.50	19	27.12	1.43
22	11.38	19	27.24	1,43
23	12.25	19	27.34	1.44
24	13.13	19	27.64	1.45
25	14.00	19	27.73	1.46
26	14.88	19	27.83	1.46
27	15.75	19	27.92	1.47
28	16.63	19	28.01	1.47
29	17.50	19	28.09	1.48
30	18.38	19	27.99	1.47
31	19.25	19	28.06	1.48
32	20.13	19	28.13	1.48



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## TRIAXIAL COMPRESSION TEST

: 1

PROJECT NAME : Highway 67 Widening

PROJECT # : 11206-04 PROJECT COUNTY : Pulaski : Arkansas PROJECT STATE LABORATORY# : 11206-04 SUBMITTED BY : ICA Engineering

FINAL MOISTUR : 23.33 % FINAL HEIGHT : 11.59 cm FINAL DIAMETE: 8.01 cm

DATE REPORTED: 11/04/14 EFF. CONS. STRESS: 19 psi SPECIFIC GRAVITY: NA

> COMMENTS : AASHTO T-296

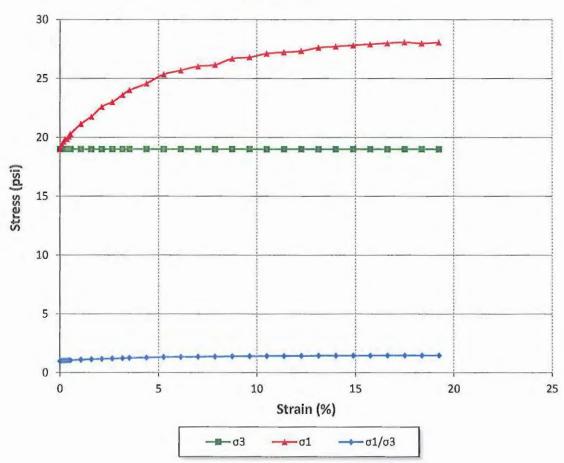
SAMPLE LOC. : B-556

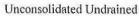
DATE TESTED : 10/27/14

SAMPLE DEPTH: 29.8' to 30.3'

POINT#







Page 3 of 3



### TRIAXIAL COMPRESSION TEST

PROJECT NAME : Highway 67 Widening

COMMENTS : AASHTO T-296

PROJECT # : 11 PROJECT COUNTY : Pa

: 11206-04 : Pulaski

SAMPLE LOC. : B-556 SAMPLE DEPTH : 29,8' to 30.3'

PROJECT STATE LABORATORY # : Arkansas : 11206-04

DATE TESTED : 10/27/14

SUBMITTED BY : ICA Engineering

DATE REPORTED: 11/04/14

### COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test Lateral Total Compress
1 19 psi 27.84 psi

Compressive Strength = 1274 psf

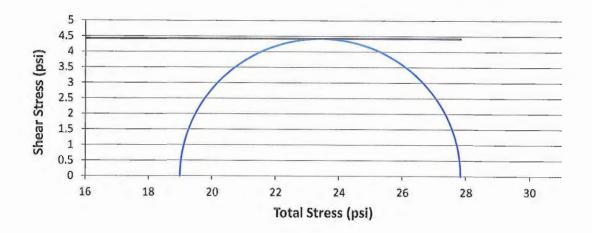
Cohesion = 637 psf

Phi = 0 deg Tan (Phi) = 0

At Maximum Deviator Stress 15%

# **Triaxial Mohr's Circles**

## **Unconsolidated Undrained Triaxial Test**



Approved By:





PROJECT NAME	: Highway 67 Widening	Page 1 of 3
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PROJECT # : 11206-04 POINT # : 1
PROJECT COUNTY : Pulaski SAMPLE LOC. : B-557
PROJECT STATE : Arkansas SAMPLE DEPTH : 15.2' to 15.7'
LABORATORY # : 11206-04 DATE TESTED : 10/27/14
SUBMITTED BY : ICA Engineering DATE REPORTEE: 11/04/14

SOIL TYPE : Brown & Gray Silt

WET DENSITY : 130.93 pcf DELTA HEIGHT : 0.45 cm INITIAL HEIGHT : 14.86 cm DRY DENSITY : 109.59 pcf DELTA VOLUME : NA INITIAL DIAMETER : 7.28 cm

MOISTURE : 19.47 % CHAMBER PRES. : 11.83 psi COMMENTS : AASHTO T-296

	<b>8</b> a	<b>σ</b> 3 (psi)	<b>σ</b> 1 (psi)	$\sigma_{1}/\sigma_{3}$
1	0.00	11.83	11.83	1.00
2	0.09	11.83	13.3	1.12
3	0.18	11.83	14.98	1.27
4	0.26	11.83	16.44	1.39
5	0.35	11.83	17.49	1.48
6	0.44	11.83	18.32	1.55
7	0.53	11.83	19.36	1.64
8	1.06	11.83	24.86	2.1
9	1.59	11.83	30.22	2.56
10	2,12	11.83	35.09	2.97
11	2.64	11.83	39.17	3.31
12	3.17	11.83	43.06	3.64
13	3.53	11.83	45	3.81
14	4.41	11.83	49.28	4.17
15	5.29	11.83	53.84	4.55
16	6.17	11.83	56.61	4.79
17	7.05	11.83	58.57	4.95
18	7.93	11.83	59.54	5.03
19	8.81	11.83	59.96	5.07
20	9.69	11.83	60.19	5.09
21	10.58	11.83	60.23	5.09
22	11.46	11.83	59.76	5.05
23	12.34	11.83	59.79	5.06
24	13.22	11.83	59.64	5.04
25	14.10	11.83	59.48	5.03
26	14.98	11.83	59.32	5.02
27	15.86	11.83	59.48	5,03
28	16.74	11.83	59.3	5.01
29	17.63	11.83	58.95	4.99
30	18.51	11.83	58.6	4.96
31	19.39	11.83	58.72	4.97
32	20.27	11.83	58.51	4.95





PROJECT NAME : Highway 67 Widening

PROJECT# : 11206-04 PROJECT COUNTY : Pulaski PROJECT STATE : Arkansas LABORATORY# : 11206-04 SUBMITTED BY : ICA Engineering

FINAL MOISTUR : 19.47 % : 11.49 cm FINAL HEIGHT

FINAL DIAMETE: 8.12 cm

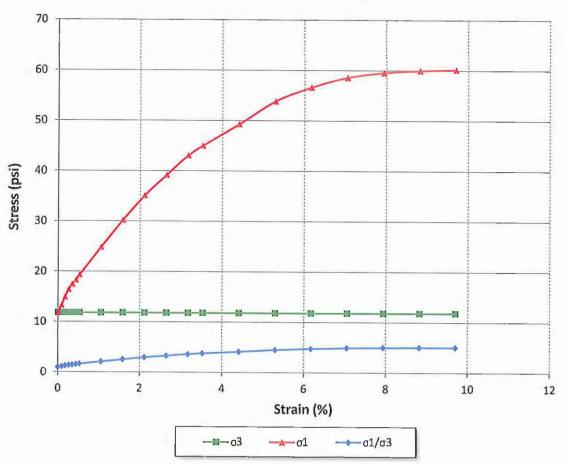
Page 2 of 3

POINT# : 1 SAMPLE LOC. : B-557 SAMPLE DEPTH: 15.2' to 15.7' DATE TESTED : 10/27/14 DATE REPORTEE: 11/04/14

EFF, CONS. STRESS: 11.83 psi SPECIFIC GRAVITY: NA

COMMENTS : AASHTO T-296







1

### TRIAXIAL COMPRESSION TEST

PROJECT NAME : Highway 67 Widening Page 3 of 3

PROJECT # : 11206-04 COMMENTS : AASHTO T-296

PROJECT COUNTY: Pulaski SAMPLE LOC.: B-557

PROJECT STATE: Arkansas: SAMPLE DEPTH: 15.2' to 15.7'

LABORATORY #: 11206-04: DATE TESTED: 10/27/14

SUBMITTED BY: ICA Engineering: DATE REPORTED: 11/04/14

COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test Lateral Total Compressive Strength = 6971 psf

11.83 psi 60.23 psi Cohesion = 3485 psf

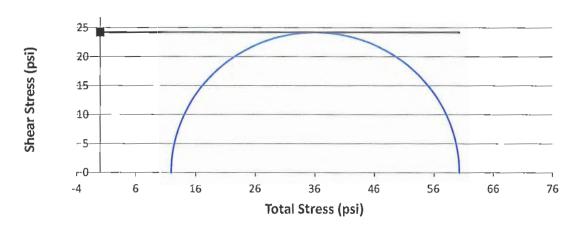
Phi = 0 deg

Tan (Phi) = 0

# Maximum Deviator Stress

# **Triaxial Mohr's Circles**

## **Unconsolidated Undrained Triaxial Test**



Approved By: July Solo



### TRIAXIAL COMPRESSION TEST

PROJECT NAME : Highway 67 Widening Page 1 of 3

PROJECT# : 11206-04 POINT# : 1 PROJECT COUNTY : Pulaski SAMPLE LOC. : B-558 : Arkansas PROJECT STATE SAMPLE DEPTH: 16.4' to 16.9' LABORATORY # : 11206-04 DATE TESTED : 10/27/14 SUBMITTED BY : ICA Engineering DATE REPORTED: 11/04/14

SOIL TYPE : Brown & Tan Lean Clay with Sand

WET DENSITY : 131.55 pcf DELTA HEIGHT : 0.45 cm INITIAL HEIGHT : 15.06 cm DRY DENSITY : 110.3 pcf DELTA VOLUME : NA INITIAL DIAMETER: 7.29 cm

MOISTURE : 19.27 % CHAMBER PRES. : 8.14 psi COMMENTS : AASHTO T-296

	E a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	8.14	8.14	1.00
2	0.09	8.14	8.98	1.1
3	0.17	8.14	11.07	1.36
4	0.26	8.14	12.54	1.54
5	0.35	8.14	13,58	1.67
6	0.43	8.14	14.41	1.77
7	0.52	8.14	15.45	1.9
8	1.04	8.14	20.95	2.57
9	1.57	8.14	26.9	3.31
10	2.09	8.14	30.73	3.78
11	2.61	8.14	32.92	4.04
12	3,13	8.14	34.04	4.18
13	3.48	8.14	34.79	4.27
14	4.35	8.14	35.99	4.42
15	5.22	8.14	37.17	4.57
16	6.09	8.14	38.38	4.72
17	6.96	8.14	38.92	4.78
18	7.83	8.14	39.61	4.87
19	8.70	8.14	40.29	4.95
20	9.57	8.14	40.62	4.99
21	10.44	8.14	41.1	5.05
22	11.30	8.14	41.25	5.07
23	12.17	8.14	41.39	5.09
24	13.04	8.14	41.68	5.12
25	13.91	8.14	41.8	5.14
26	14.78	8.14	42.06	5.17
27	15.65	8.14	42.33	5.2
28	16.52	8.14	42.62	5.24
29	17.39	8.14	42.57	5.23
30	18.26	8.14	42.84	5.26
31	19.13	8.14	43.01	5.28
32	20.00	8.14	43.02	5.29

Page 2 of 3

## TRIAXIAL COMPRESSION TEST

PROJECT NAME : Highway 67 Widening

PROJECT # : 11206-04
PROJECT COUNTY : Pulaski
PROJECT STATE : Arkansas
LABORATORY # : 11206-04
SUBMITTED BY : ICA Engineering

FINAL MOISTUR : 19.27 % FINAL HEIGHT : 11.68 cm FINAL DIAMETE : 8.12 cm

RESULTS:

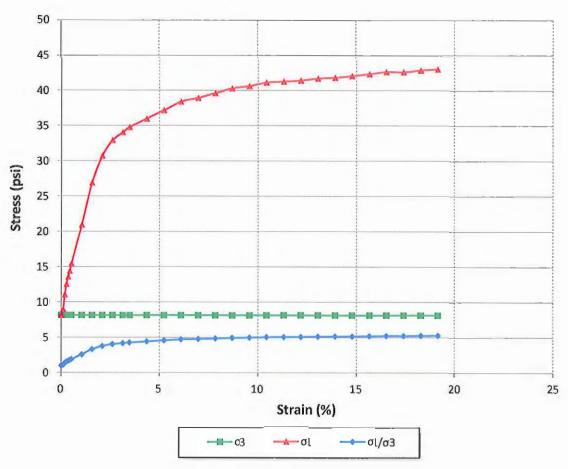
POINT#:1

SAMPLE LOC. : B-558 SAMPLE DEPTH : 16.4' to 16.9' DATE TESTED : 10/27/14 DATE REPORTEE: 11/04/14

EFF. CONS. STRESS: 8.14 psi SPECIFIC GRAVITY: NA

COMMENTS : AASHTO T-296







### TRIAXIAL COMPRESSION TEST

PROJECT NAME

: Highway 67 Widening

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PROJECT#

: 11206-04

COMMENTS

: AASHTO T-296

PROJECT COUNTY

: Pulaski

SAMPLE LOC. : B-558

SAMPLE DEPTH: 16.4' to 16.9'

PROJECT STATE LABORATORY#

: Arkansas : 11206-04

SUBMITTED BY

: ICA Engineering

DATE TESTED : 10/27/14

DATE REPORTEE: 11/04/14

### COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test

Lateral

Total

Compressive Strength = 4895 psf

1 8.14 psi

42.13 psi

Cohesion = 2447 psf

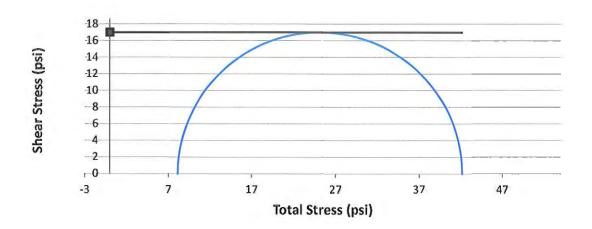
Phi = 0 deg

Tan (Phi) =

# At Maximum Deviator Stress 15%

# **Triaxial Mohr's Circles**

# **Unconsolidated Undrained Triaxial Test**



Approved By:





PROJECT NAME : Highway 67 Widening Page 1 of 3

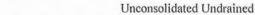
: 11206-04 PROJECT# POINT# : 1 PROJECT COUNTY : Pulaski SAMPLE LOC. : B-559 : Arkansas PROJECT STATE SAMPLE DEPTH: 15.7' to 16.2' LABORATORY # : 11206-04 DATE TESTED : 10/27/14 SUBMITTED BY : ICA Engineering DATE REPORTED: 11/04/14

SOIL TYPE : Tan, Brown & Gray Lean Clay with Sand

WET DENSITY : 133.17 pcf DELTA HEIGHT : 0.45 cm INITIAL HEIGHT : 14.87 cm DRY DENSITY : 112.48 pcf DELTA VOLUME : NA INITIAL DIAMETER: 7.28 cm

MOISTURE : 18.39 % CHAMBER PRES. : 8.04 psi COMMENTS : AASHTO T-296

			_	
	<b>8</b> a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	8.04	8.04	1.00
2	0.09	8.04	9.3	1.16
3	0.18	8.04	10.56	1.31
4	0.26	8.04	11.61	1.44
5	0.35	8.04	12.65	1.57
6	0.44	8.04	13.48	1.68
7	0.53	8.04	14.31	1.78
8	1.06	8.04	19.45	2.42
9	1.59	8.04	24.01	2.99
10	2.11	8.04	27.33	3.4
11	2.64	8.04	29.06	3.61
12	3.17	8.04	30.41	3.78
13	3.52	8.04	31.37	3.9
14	4.41	8.04	33.02	4.11
15	5.29	8.04	34.22	4.26
16	6.17	8.04	35.4	4.4
17	7.05	8.04	35.95	4.47
18	7.93	8.04	36.48	4.54
19	8.81	8.04	36.8	4.58
20	9.69	8.04	37	4.6
21	10.57	8.04	37.04	4.61
22	11.45	8.04	37.22	4.63
23	12.34	8.04	37.09	4.61
24	13.22	8.04	37.26	4.63
25	14.10	8.04	37.26	4.63
26	14.98	8.04	37.27	4.63
27	15.86	8.04	37.11	4.62
28	16.74	8.04	37.25	4.63
29	17.62	8.04	37.23	4.63
30	18.50	8.04	37.21	4.63
31	19.39	8.04	37.04	4.61
32	20.27	8.04	36.72	4.57



Page 2 of 3



## TRIAXIAL COMPRESSION TEST

PROJECT NAME : Highway 67 Widening

: 11206-04 PROJECT# : Pulaski PROJECT COUNTY PROJECT STATE : Arkansas LABORATORY # : 11206-04 SUBMITTED BY : ICA Engineering

FINAL MOISTUR: 18.39 % FINAL HEIGHT : 11.49 cm

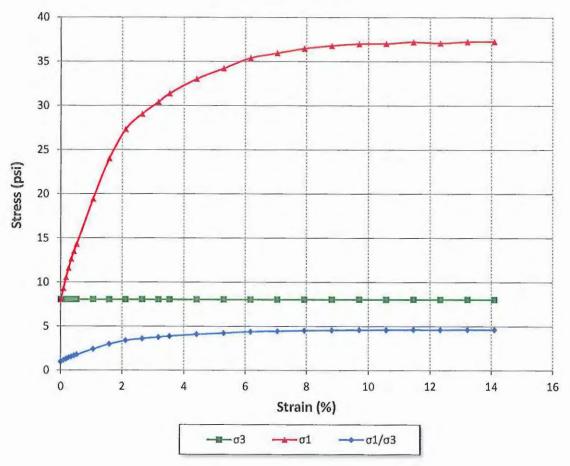
FINAL DIAMETE: 8.12 cm

POINT# : 1 SAMPLE LOC. : B-559 SAMPLE DEPTH: 15.7' to 16.2' DATE TESTED : 10/27/14 DATE REPORTED: 11/04/14

EFF. CONS. STRESS: 8.04 psi SPECIFIC GRAVITY: NA

COMMENTS : AASHTO T-296









PROJECT NAME

: Highway 67 Widening

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PROJECT #

: 11206-04

: Pulaski

PROJECT COUNTY PROJECT STATE LABORATORY #

: Arkansas

SUBMITTED BY

: 11206-04

: ICA Engineering

COMMENTS

: AASHTO T-296

SAMPLE LOC. : B-559

SAMPLE DEPTH: 15.7' to 16.2'

DATE TESTED : 10/27/14

DATE REPORTED: 11/04/14

#### COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test

1

Lateral 8.04 psi

Total 37.27 psi Compressive Strength = 4208 psf

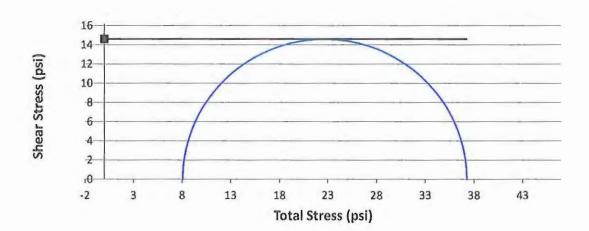
Cohesion = 2104 psf Phi = 0 deg

Tan (Phi) =

# **Maximum Deviator Stress**

# **Triaxial Mohr's Circles**

## **Unconsolidated Undrained Triaxial Test**



Approved By:



## TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening	Page 1 of 3
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PROJECT # : 11206-04 POINT # : 1
PROJECT COUNTY : Pulaski SAMPLE LOC. : B-563
PROJECT STATE : Arkansas SAMPLE DEPTH : 4.4' to 4.9'
LABORATORY # : 11206-04 DATE TESTED : 10/27/14
SUBMITTED BY : ICA Engineering DATE REPORTEE: 11/04/14

SOIL TYPE : Gray & Orange Silt

WET DENSITY : 129.7 pcf DELTA HEIGHT : 0.45 cm INITIAL HEIGHT : 14.92 cm DRY DENSITY : 107.61 pcf DELTA VOLUME : NA INITIAL DIAMETER : 7.22 cm

MOISTURE : 20.53 % CHAMBER PRES. : 4.45 psi COMMENTS : AASHTO T-296

	E a	C 2 (noi)	<b>5</b> 1 (mail)	G1/G2
1	0.00	σ 3 (psi)	σ 1 (psi)	σ1/σ3
2		4.45	4.45	1.00
	0.09	4.45	5.73	1.29
3	0.18	4.45	6.37	1.43
4	0.26	4.45	7.01	1.57
5	0.35	4.45	7.65	1.72
6	0.44	4.45	8.07	1.81
7	0.53	4.45	8.7	1.95
8	1.05	4.45	12.06	2.71
9	1.58	4.45	14.55	3.27
10	2.11	4.45	16.33	3.67
11	2.63	4.45	17.48	3.93
12	3.16	4.45	18.22	4.09
13	3.51	4.45	18.77	4.21
14	4.39	4.45	19.03	4.27
15	5.27	4.45	19.69	4.42
16	6,14	4.45	19.93	4.48
17	7.02	4.45	19.98	4.49
18	7.90	4.45	20.03	4.5
19	8,78	4.45	20.64	4.63
20	9.66	4.45	20.67	4.64
21	10.53	4.45	20.88	4.69
22	11.41	4,45	21.09	4.73
23	12.29	4.45	21.47	4.82
24	13.17	4.45	21.84	4.9
25	14.04	4,45	22.2	4.98
26	14.92	4.45	22.74	5.11
27	15.80	4.45	23.11	5.19
28	16.68	4.45	23.47	5.27
29	17.56	4.45	23.63	5,31
30	18.43	4.45	24.14	5.42
31	19.31	4.45	24.64	5.53
32	20.19	4,45	24.59	5.52



Page 2 of 3



## TRIAXIAL COMPRESSION TEST

PROJECT NAME : Highway 67 Widening

PROJECT # : 11206-04
PROJECT COUNTY : Pulaski
PROJECT STATE : Arkansas
LABORATORY # : 11206-04
SUBMITTED BY : ICA Engineering

FINAL MOISTUR : 20.53 % FINAL HEIGHT : 11.55 cm FINAL DIAMETE : 8.06 cm

RESULTS:

POINT#:1

SAMPLE LOC. : B-563

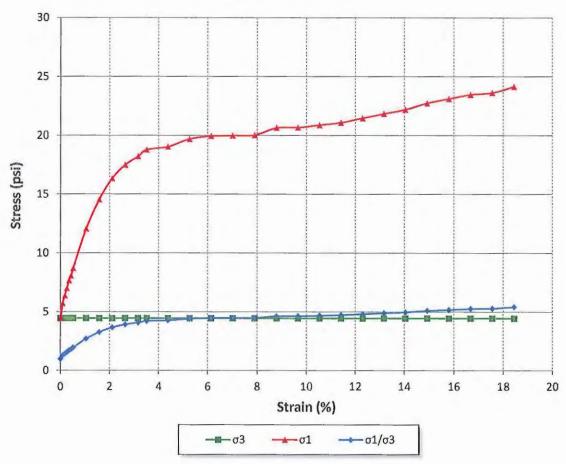
SAMPLE DEPTH: 4.4' to 4.9' DATE TESTED: 10/27/14

DATE REPORTED: 11/04/14

EFF. CONS. STRESS: 4.45 psi SPECIFIC GRAVITY: NA

COMMENTS : AASHTO T-296









PROJECT NAME : Highway 67 Widening Page 3 of 3

PROJECT # : 11206-04 COMMENTS : AASHTO T-296

PROJECT COUNTY: Pulaski SAMPLE LOC.: B-563
PROJECT STATE: Arkansas: SAMPLE DEPTH: 4.4' to 4.9'
LABORATORY: 11206-04: DATE TESTED: 10/27/14
SUBMITTED BY: ICA Engineering: DATE REPORTEE: 11/04/14

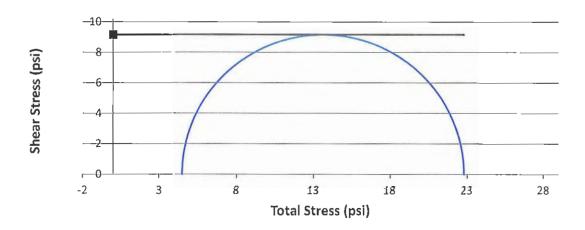
### COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test Lateral Total Compressive Strength = 2639 psf1 4.45 psi 22.78 psi Cohesion = 1319 psfPhi = 0 degTan (Phi) = 0

## At Maximum Deviator Stress 15%

# **Triaxial Mohr's Circles**

# **Unconsolidated Undrained Triaxial Test**



Approved By:





PROJECT NAME : Highway 67 Widening Page 1 of 3

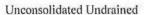
: 11206-04 PROJECT# POINT# : 1 PROJECT COUNTY : Pulaski SAMPLE LOC. : B-563 PROJECT STATE : Arkansas SAMPLE DEPTH: 24.1' to 24.6' LABORATORY # : 11206-04 DATE TESTED : 10/24/14 SUBMITTED BY : ICA Engineering DATE REPORTED: 11/04/14

SOIL TYPE : Brown Sandy Silt

WET DENSITY : 138.12 pcf DELTA HEIGHT : 0.45 cm INITIAL HEIGHT : 14.61 cm DRY DENSITY : 115.98 pcf DELTA VOLUME : NA INITIAL DIAMETER : 7.17 cm

MOISTURE : 19.09 % CHAMBER PRES. : 12.92 psi COMMENTS : AASHTO T-296

	_			
	E a	<b>σ</b> 3 (psi)	<b>σ</b> 1 (psi)	$\sigma_1/\sigma_3$
1	0.00	12.92	12.92	1.00
2	0.09	12.92	13.57	1.05
3	0.18	12.92	13.79	1.07
4	0.27	12.92	14	1.08
5	0.36	12.92	14.43	1.12
6	0.45	12.92	14.65	1.13
7	0.54	12.92	14.86	1.15
8	1.08	12.92	16.35	1.27
9	1.61	12.92	17.82	1.38
10	2.15	12.92	19.07	1.48
11	2.69	12.92	20.3	1.57
12	3.23	12.92	21.52	1.67
13	3.59	12.92	22.11	1.71
14	4.48	12.92	23.47	1.82
15	5.38	12.92	24.56	1.9
16	6.28	12.92	25.44	1.97
17	7.17	12.92	26.3	2.04
18	8.07	12.92	27.14	2.1
19	8.97	12.92	27.38	2.12
20	9.87	12.92	27.81	2.15
21	10.76	12.92	28.41	2.2
22	11.66	12.92	28.81	2.23
23	12.56	12.92	29.2	2,26
24	13.45	12.92	29.58	2.29
25	14.35	12.92	29,77	2.3
26	15.25	12.92	30.13	2.33
27	16.14	12.92	30.12	2.33
28	17.04	12.92	30.29	2.34
29	17.94	12.92	30.45	2.36
30	18.83	12.92	30.44	2.36
31	19.73	12.92	30.6	2.37
32	20.63	12,92	30.76	2.38
				-





: Highway 67 Widening PROJECT NAME

: 11206-04

: 11206-04 PROJECT# PROJECT COUNTY : Pulaski : Arkansas PROJECT STATE

SUBMITTED BY : ICA Engineering

FINAL MOISTUR : 19.09 % FINAL HEIGHT : 11.24 cm

FINAL DIAMETE: 8.02 cm

Page 2 of 3

POINT# : 1 SAMPLE LOC. : B-563 SAMPLE DEPTH: 24.1' to 24.6' DATE TESTED : 10/24/14 DATE REPORTEC: 11/04/14

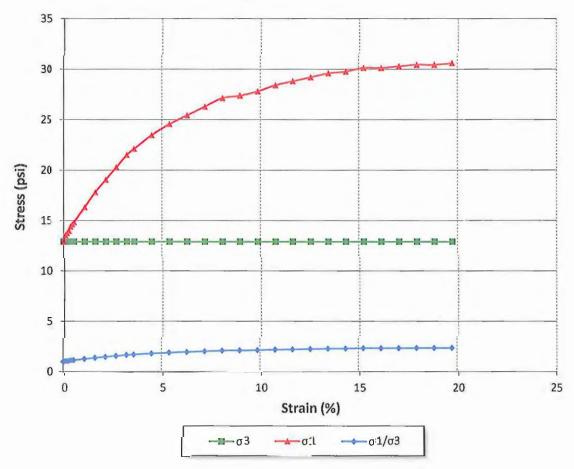
EFF. CONS. STRESS: 12.92 psi SPECIFIC GRAVITY: NA

COMMENTS : AASHTO T-296

#### RESULTS:

LABORATORY #







PROJECT NAME : Highway 67 Widening Page 3 of 3

PROJECT # : 11206-04 COMMENTS : AASHTO T-296

PROJECT COUNTY: Pulaski SAMPLE LOC.: B-563
PROJECT STATE: Arkansas: SAMPLE DEPTH: 24.1' to 24.6'
LABORATORY #: 11206-04: DATE TESTED: 10/24/14
SUBMITTED BY: ICA Engineering: DATE REPORTED: 11/04/14

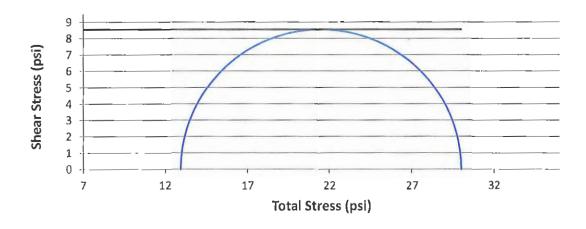
### COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test Lateral Total Compressive Strength = 2464 psf1 12.92 psi 30.03 psi Cohesion = 1232 psfPhi = 0 deg Tan (Phi) = 0

At Maximum Deviator Stress 15%

# **Triaxial Mohr's Circles**

# **Unconsolidated Undrained Triaxial Test**



Approved By: Jeeny Solo



### TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening	Page 1 of 3
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PROJECT # : 11206-04 POINT # : 1
PROJECT COUNTY : Pulaski SAMPLE LOC. : B-564
PROJECT STATE : Arkansas SAMPLE DEPTH : 15.6' to 16.1'
LABORATORY # : 11206-04 DATE TESTED : 10/24/14
SUBMITTED BY : ICA Engineering DATE REPORTEE: 11/04/14

SOIL TYPE : Tan, Gray & Black Lean Clay

WET DENSITY : 129.54 pcf DELTA HEIGHT : 0.45 cm INITIAL HEIGHT : 14.93 cm DRY DENSITY : 106.46 pcf DELTA VOLUME : NA INITIAL DIAMETER: 7.29 cm

MOISTURE : 21.69 % CHAMBER PRES. : 11.83 psi COMMENTS : AASHTO T-296

	0.5	<b>7</b> 2 (i)	<b>7</b> 1 (m)	<b>-1</b> (-2
	E a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0,00	11.83	11.83	1.00
2	0.09	11.83	14.55	1.23
3	0.18	11.83	16.43	1.39
4	0.26	11.83	18.1	1.53
5	0,35	11.83	19.77	1.67
6	0.44	11.83	21.01	1.78
7	0.53	11.83	22,26	1.88
8	1.05	11.83	27.85	2.35
9	1.58	11.83	31.57	2.67
10	2.11	11.83	33.75	2.85
11	2.63	11.83	35.11	2.97
12	3.16	11.83	36.24	3.06
13	3.51	11.83	36.77	3.11
14	4.39	11.83	37.58	3.18
15	5.26	11.83	38.36	3,24
16	6.14	11.83	39.13	3.31
17	7.02	11.83	39.47	3.34
18	7.90	11,83	39.81	3,37
19	8.77	11.83	40.13	3.39
20	9.65	11.83	40.41	3.42
21	10.53	11.83	40.61	3.43
22	11.41	11.83	40.8	3.45
23	12.28	11.83	40.82	3.45
24	13.16	11.83	40.84	3.45
25	14.04	11.83	40.85	3.45
26	14.92	11.83	40.7	3.44
27	15.79	11.83	40.85	3.45
28	16.67	11.83	40,99	3.47
29	17.55	11.83	40.83	3,45
30	18.43	11.83	40.81	3.45
31	19.30	11.83	40.78	3,45
32	20.18	11.83	40.89	3,46
	<del>-</del>			21.0



## TRIAXIAL COMPRESSION TEST

PROJECT NAME

: Highway 67 Widening

Page 2 of 3

PROJECT#

: 11206-04

: Pulaski PROJECT COUNTY PROJECT STATE

: Arkansas

: 11206-04 LABORATORY #

SUBMITTED BY : ICA Engineering

FINAL MOISTUR: 21.69 % FINAL HEIGHT : 11.55 cm

FINAL DIAMETE: : 8.13 cm

POINT# : 1 SAMPLE LOC. : B-564 SAMPLE DEPTH: 15.6' to 16.1'

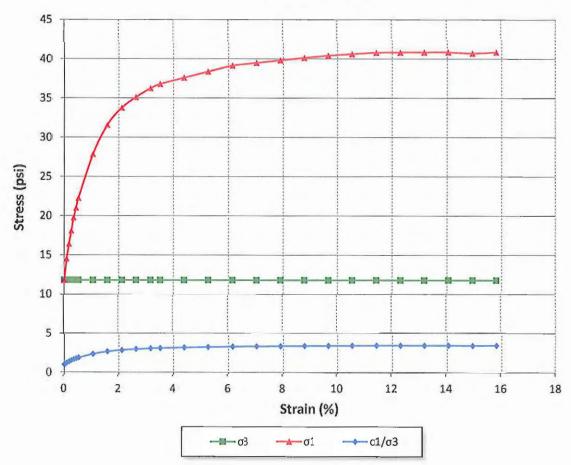
DATE TESTED : 10/24/14 DATE REPORTED: 11/04/14

EFF. CONS. STRESS: 11.83 psi

SPECIFIC GRAVITY: NA

COMMENTS : AASHTO T-296





### TRIAXIAL COMPRESSION TEST

PROJECT NAME

: Highway 67 Widening

Page 3 of 3

PROJECT #

: 11206-04

: AASHTO T-296

PROJECT COUNTY

: Pulaski

SAMPLE LOC. : B-564

PROJECT STATE LABORATORY #

: Arkansas : 11206-04 SAMPLE DEPTH: 15.6' to 16.1'

SUBMITTED BY

: ICA Engineering

DATE TESTED : 10/24/14

DATE REPORTED: 11/04/14

### COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test

Lateral

Total

Compressive Strength = 4160 psf

COMMENTS

11.83 psi 1

40.71 psi

Cohesion = 2080 psf

Phi =

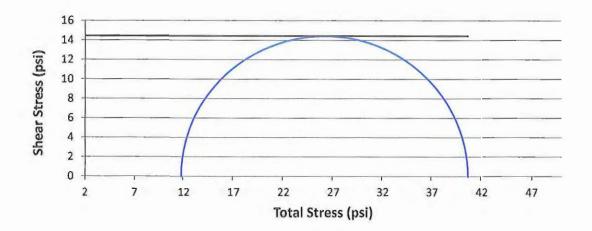
Tan (Phi) =

0 deg

# At Maximum Deviator Stress 15%

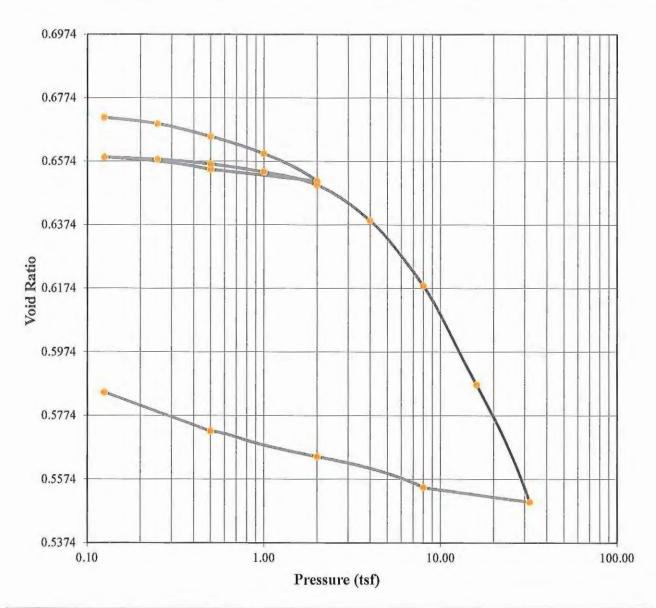
# Triaxial Mohr's Circles

## **Unconsolidated Undrained Triaxial Test**



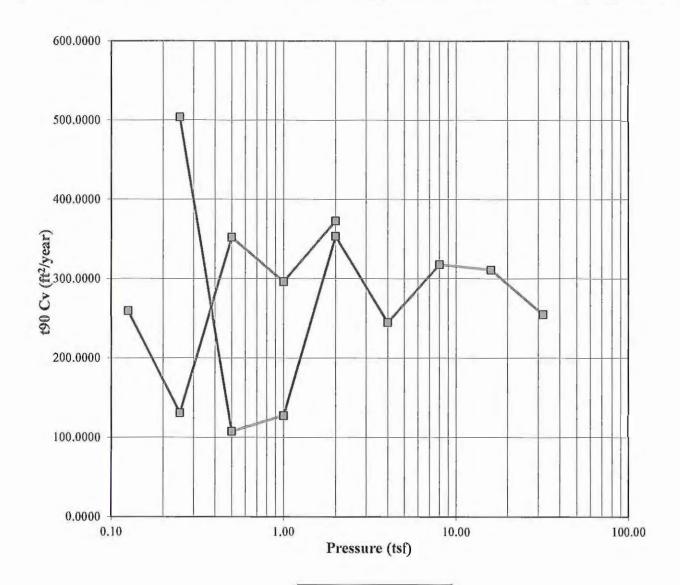
Approved By:





	Summa	ary of Consolidation Test R	esults	Test Date: 10/28/14		
Overburden Press. (tsf)	0.35	Compression	on Index, C <sub>e</sub>	0.10		
Preconsol. Press., Pe (tsf)	4.20	Rebound In	Rebound Index, Cr			
Over Consolidation Ratio	12.17	7				
Soil Description:	Brown & Tan S	ilty Clay with Sand				
Project Number:	11206-04	Depth: 5.5'-6.0'	Remarks:			
Sample Number:	ST-1	Boring Number: B-501				
Project: Highway 67	Widening					
Client:						
Location: B-501 ST-1	5.5-6.0		0			





		Before	After	Liquid Limits:	19	Test Date:	10/28/14
Moisture (%):		24.42	17.79	Plastic Limits:	14		
Dry Density (p	cf):	102.08	116.06	Plasticity Index (%):	5		
Saturation (%)	):	99.07	102.95				
Void Ratio:		0.6727	0.5379	Specific Gravity:	2.739	Measured	
Soil Description	n:	Brown & Tan	Silty Clay w	ith Sand			
Project Numbe	er:	11206-04		Depth: 5.5'-6.0'	Remarks:		
Sample Numbe	er:	ST-1	Bori	ng Number: B-501			
Project:	Highway 67	Widening					
Client:							
Location:	B-501 ST-1	5.5-6.0					

Page 2 of 4





### **Test Summary**

Project: Highway 67 Widening Location: B-501 ST-1 5.5-6.0

Project Number: 11206-04

Job Number: 11206-04

Sample Description:

Sample Number: ST-1 Boring Number: B-501 Depth: 5.5'-6.0'

Sample Type: Undisturbed

Brown & Tan Silty Clay with Sand

Remarks:

Test Number:

Test Date: 10/28/14

Index	Load Sequence	Change in Height	Specimen Height	Height of Void	Vertical Strain	Void Ratio	190 Fitting Time	t50 Fitting Time	190 Cy	150 Cv
	(tsf)	(in)	(in)	(in)	(%)		(min)	(min)	(fl2/year)	(ft2/year)
0	0.000	0.0000	1.0050	0.4040	0.00	0.6721	0.000	0.000	0.000	0.000
1	0.125	0.0006	1.0044	0.4034	0.06	0.6711	3.011	* 1.6728	259.259	108.410
2	0.250	0.0018	1.0032	0.4022	0.18	0.6692	5.945	* 3.3026	131.002	54.780
3	0.500	0.0042	1.0008	0.3998	0.42	0.6652	2.202	* 1.2231	352.025	147.208
4	1.000	0.0074	0.9976	0.3966	0.74	0.6598	2.599	* 1.4439	296.299	123,901
5	2.000	0.0126	0.9924	0.3914	1.25	0.6512	2.044	* 1.1356	372.834	155,900
6	0.500	0.0104	0.9946	0.3936	1.03	0.6548	0.000	0.000	0.000	0.000
7	0.125	0.0081	0.9969	0.3959	0.81	0.6587	0.000	0.000	0.000	0.000
8	0.250	0.0085	0.9965	0.3955	0.85	0.6580	1.525	* 0.8473	503.835	210,677
9	0.500	0.0094	0.9956	0.3946	0.94	0.6565	7.128	* 3.9602	107.598	44.994
10	1.000	0.0109	0.9941	0.3931	1.08	0.6540	6,001	* 3.3339	127.429	53.285
11	2.000	0.0134	0.9916	0.3906	1.33	0.6499	2.152	* 1.1955	353.576	147.850
12	4.000	0.0201	0.9849	0.3839	2.00	0.6387	3.068	* 1.7045	244.652	102,303
13	8.000	0.0324	0.9726	0.3716	3.22	0.6182	2.303	* 1.2792	317.908	132.932
14	16.000	0.0511	0.9539	0.3529	5.08	0.5871	2.263	* 1.2571	311.160	130,117
15	32.000	0.0733	0.9317	0.3307	7.29	0.5502	2.637	* 1.4650	254.727	106,516
16	8,000	0.0705	0.9345	0.3335	7.01	0.5548	0.000	0.000	0.000	0.000
17	2.000	0.0647	0.9403	0.3393	6.44	0.5645	0.000	0.000	0.000	0.000
18	0.500	0.0599	0.9451	0.3441	5.96	0.5725	0.000	0.000	0,000	0.000
19	0.125	0.0810	0.9240	0.3230	5.26	0.5847	0.000	0.000	0.000	0.000

Predicted value indicated with \*



## CONSOLIDATION TEST

11206-04

### **Consolidation Specimen Information**

Project: Highway 67 Widening

hway 67 Widening Project Number:

Location: B-501 ST-1 5.5-6.0

Job Number: 11206-04 Test Date: 10/28/14

Sample Number: ST-1 Sample Description:

Boring Number: B-501 Brown & Tan Silty Clay with Sand

Depth: 5.5'-6.0' Remarks:

Sample Type: Undisturbed

Test Number:

Liquid Limit: 19.0000 Initial Void Ratio: 0.6727 Initial Height (in): 1.0050
Plastic Limit: 14.0000 Plasticity Index (%): 5.0000 Initial Diameter (in): 2.4983

Plastic Limit: 14.0000 Plasticity Index (%): 5.0000 Initial Diameter (in): 2.49
Specific Gravity: 2.7390 Weight of Ring (g): 109.6600

Measured

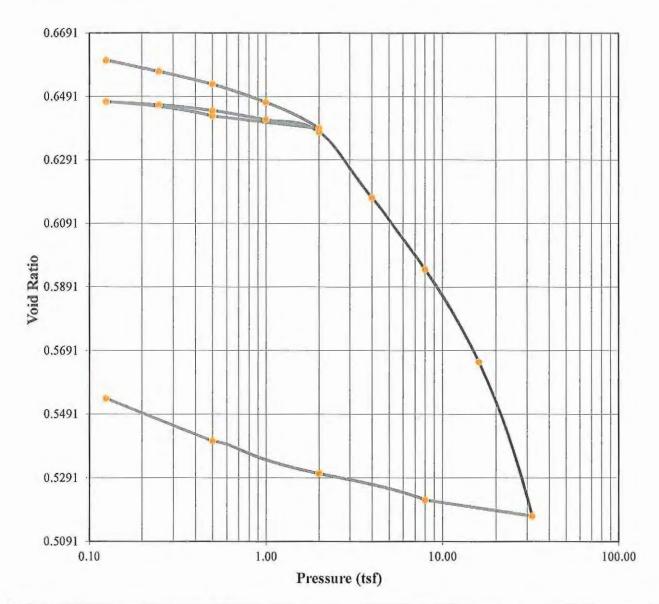
Parameters	Initial Specimen	Final Specimen	
Moist Weight + Container (g)	410.07	221.64	
Dry Soil + Container (g)	341.10	197.20	
Weight of Container (g)	58.70	59.80	
Moisture Content (%)	24.42	17.79	
Void Ratio	0.6727	0.5379	
Saturation (%)	99.07	102.95	
Dry Density (pcf)	102.08	116.06	

Tested By:

Josephn Bowler

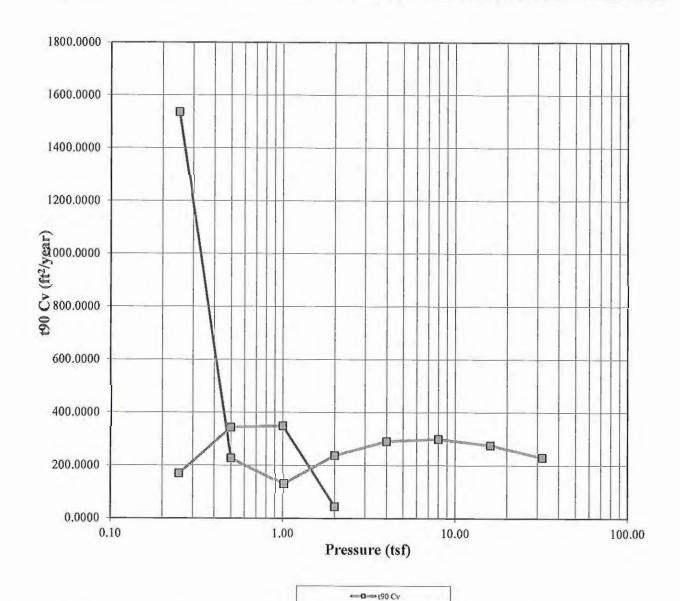
Cheeked Ry





		Summary	of Consolidation Test Re	sults	Test Date:	10/28/2014
		0.87	Compression	Index, C <sub>e</sub>		0.09
		2.10	Rebound Index, Cr		0.01	
Over Consolida	ation Ratio	2.41			-	
Soil Description	n:	Brown & Gray Silt				
Project Numbe	r:	11206-04	Depth: 14.4'-14.7'	Remarks:		
Sample Numbe	r:	ST-1	Boring Number: B-557			
Project:	Highway 67	Widening				
Client:						
Location:	B-557 ST-1	14.4-14.7				





Before After **Liquid Limits:** 22 Test Date: 10/28/2014 Moisture (%): 20.46 19.78 Plastic Limits: 21 Dry Density (pcf): 101.78 112.48 Plasticity Index (%): 1 Saturation (%): 83.40 105.79 Void Ratio: 0.5111 Specific Gravity: 0.6657 2.717 Measured Soil Description: Brown & Gray Silt Project Number: 11206-04 Depth: 14.4'-14.7' Remarks: Sample Number: Boring Number: B-557 ST-1 Project: Highway 67 Widening Client: Location: B-557 ST-1 14.4-14.7





### **Test Summary**

Project: Highway 67 Widening Location: B-557 ST-1 14.4-14.7

Job Number: 11206-04

Project Number:

11206-04

Sample Number: ST-1

Sample Description: Brown & Gray Silt

Remarks:

Test Number:

Test Date: 10/28/2014

Boring Number: B-557
Depth: 14.4'-14.7'
Sample Type: Undisturbed

	Load	Change in	Specimen	Height of	Vertical		t90 Fitting	t50 Fitting		
Index	Sequence	Height	Height	Void	Strain	Void Ratio	Time	Time	t90 Cv	t50 Cv
	(tsf)	(in)	(in)	(in)	(%)		(min)	(min)	(ft2/year)	(ft2/year)
0	0.000	0.0000	0.9955	0.3971	0.00	0.6635	0.000	0.000	0.000	0.000
1	0.125	0.0018	0.9937	0.3953	0.18	0.6605	0.000	0.000	0.000	0.000
2	0.250	0.0039	0.9916	0.3932	0.39	0.6570	4.484	* 2.4913	169.672	70.949
3	0.500	0.0063	0.9892	0.3908	0.63	0.6530	2.204	* 1.2242	343.629	143.686
4	1.000	0.0097	0.9858	0.3874	0.97	0.6473	2.152	* 1.1955	349.451	146.126
5	2.000	0.0146	0.9809	0.3825	1.47	0.6391	16.492	* 9.1620	45.146	18.878
6	0.500	0.0123	0.9832	0.3848	1.24	0.6430	0.000	0.000	0.000	0.000
7	0.125	0.0096	0.9859	0.3875	0.96	0.6475	0.000	0.000	0.000	0.000
8	0.250	0.0102	0.9853	0.3869	1.02	0.6465	0.489	* 0.2717	1536.190	642.313
9	0.500	0.0113	0.9842	0.3858	1.14	0.6447	3.302	* 1.8347	226.967	94.908
10	1.000	0.0130	0.9825	0.3841	1.31	0.6418	5.778	* 3.2102	129,267	54.055
11	2.000	0.0153	0.9802	0.3818	1.54	0.6380	3.125	* 1.7360	237.924	99,490
12	4.000	0.0277	0.9678	0.3694	2.78	0.6173	2.489	* 1.3829	291.169	121.753
13	8.000	0.0412	0.9543	0.3559	4.14	0.5947	2.350	* 1.3056	299.869	125.389
14	16.000	0.0586	0.9369	0.3385	5.89	0.5656	2.462	* 1,3677	275.893	115.370
15	32.000	0.0876	0.9079	0.3095	8.80	0.5172	2.773	* 1.5406	230.002	96.180
16	8.000	0.0846	0.9109	0.3125	8.50	0.5222	0.000	0.000	0.000	0.000
17	2.000	0.0796	0.9159	0.3175	8.00	0.5305	0.000	0.000	0.000	0.000
18	0.500	0.0735	0.9220	0.3236	7.38	0.5407	0.000	0.000	0.000	0.000
19	0.125	0.0924	0.9031	0.3047	6.70	0.5541	0.000	0.000	0.000	0.000

Predicted value indicated with \*



## CONSOLIDATION TEST

### **Consolidation Specimen Information**

Project: Highway 67 Widening

B-557 ST-1 14.4-14.7

Location: Job Number:

11206-04

Project Number:

11206-04

Test Date: 10/28/2014

Sample Number:

ST-1 B-557 Sample Description: Brown & Gray Silt

Boring Number: Depth:

14.4'-14.7'

Remarks:

Sample Type:

Undisturbed

Test Number:

Liquid Limit: Plastic Limit: 22.0000

Initial Void Ratio: Plasticity Index (%): 0.6657 1.0000 Initial Height (in):

0.9955

Specific Gravity:

21.0000 2.7170

Weight of Ring (g):

109.2800

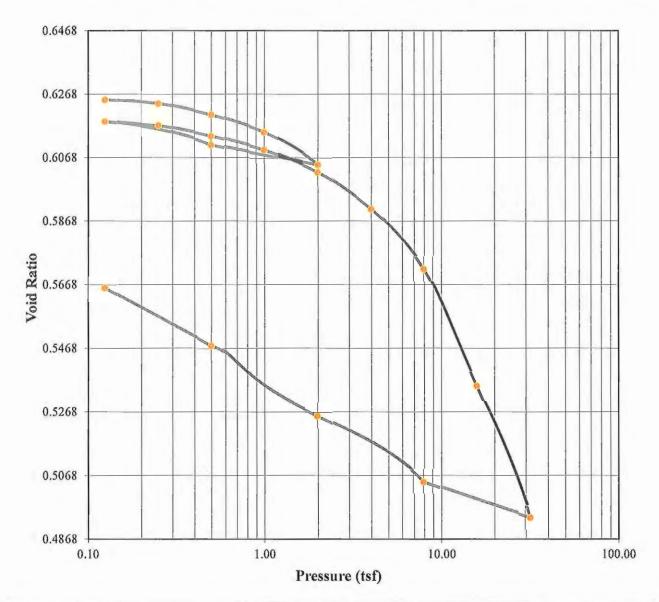
Initial Diameter (in): 2.4955

Measured

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	262.16	214.56
Dry Soil + Container (g)	227.50	188.80
Weight of Container (g)	58.10	58.55
Moisture Content (%)	20.46	19.78
Void Ratio	0.6657	0.5111
Saturation (%)	83.40	105.79
Dry Density (pcf)	101.78	112.48

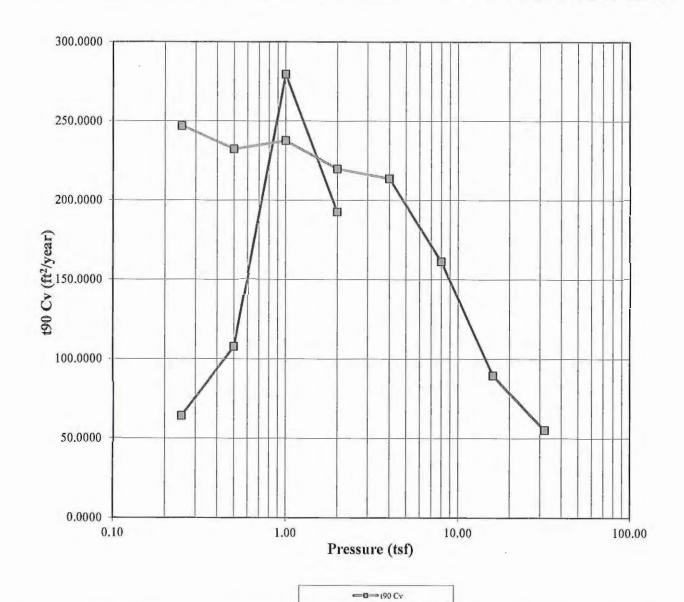
Tested By:





		Summ	ary of Consc	olidation Test Re	sults	Test Date:	10/29/2014
Overburden Press. (tsf)		0.92		Compression	Index, C <sub>e</sub>	0.12 0.01	
Preconsol. Pres	s., Pe (tsf)	4.80	)	Rebound Index, Cr			
Over Consolidation Ratio		5.21					
Soil Description	1:	Tan, Gray & Bl	lack Lean Clay				
<b>Project Numbe</b>	r:	1120604		Depth: 15.1-15.6	Remarks:		
Sample Numbe	r:	ST-1	Boring N	Number: B-564			
Project:	Highway 67	Widening					
Client:							
Location:	B-564 ST-1	15.1-15.6					





		Before	After	Liquid Limits:	38	Test Date:	10/29/2014
Moisture (%	):	21.42	27.97	Plastic Limits:	19		
<b>Dry Density</b>	(pcf):	105.71	109.44	Plasticity Index (%):	19		
Saturation (	%):	93.90	134.49				
Void Ratio:		0.6276	0.4878	Specific Gravity:	2.759	Assumed	
Soil Descript	ion:	Tan, Gray & I	Black Lean C	lay			
<b>Project Num</b>	ber:	1120604		Depth: 15.1-15.6	Remarks:		
Sample Num	ber:	ST-1	Bori	ng Number: B-564			
Project:	Highway 67	Widening					
Client:							
Location:	B-564 ST-1	15.1 15.6					



Project Number:



#### **Test Summary**

Project: Highway 67 Widening Location: B-564 ST-1 15.1-15.6

Depth: 15.1-15.6 Sample Type: Undisturbed

Job Number: 1120604

Sample Number; ST-1 Boring Number: B-564

Sample Description:

Tan, Gray & Black Lean Clay

Remarks:

Test Number:

Test Date: 10/29/2014

1120604

Index	Load Sequence	Change in Height	Specimen Height	Height of Void	Vertical Strain	Void Ratio	t90 Fitting Time	150 Fitting Time	190 Cv	150 Cv
	(tsf)	(in)	(in)	(in)	(%)		(min)	(min)	(ft2/year)	(ft2/year)
0	0.000	0.0000	1.0015	0.3857	0.00	0.6265	0.000	0.000	0.000	0.000
1	0.125	0.0009	1.0006	0.3848	0.09	0.6250	0.000	0.000	0.000	0.000
2	0.250	0.0016	0.9999	0.3841	0.16	0.6239	12.044	* 6.6911	64.235	26.861
3	0.500	0.0037	0.9978	0.3820	0.37	0.6204	7.143	* 3.9685	107.848	45.098
4	1.000	0.0071	0.9944	0.3786	0.71	0.6149	2.736	* 1.5200	279.655	116.944
5	2,000	0,0134	0.9881	0.3723	1.34	0.6047	3.922	* 2.1788	192.636	80.553
6	0.500	0.0095	0.9920	0.3762	0.95	0.6110	0.000	0.000	0.000	0.000
7	0.125	0.0050	0.9965	0.3807	0.50	0.6183	0.000	0.000	0.000	0.000
8	0.250	0.0058	0.9957	0.3799	0.58	0.6170	3.106	* 1.7254	247.014	103.292
9	0.500	0.0078	0.9937	0.3779	0.78	0.6138	3.289	* 1.8274	232.289	97.135
10	1.000	0.0105	0.9910	0.3752	1.05	0.6094	3.199	* 1.7770	237.588	99.348
11	2.000	0.0149	0.9866	0.3708	1.49	0.6023	3.426	* 1.9032	219.862	91.938
12	4,000	0.0220	0.9795	0,3637	2.20	0,5907	3.474	* 1.9298	213.724	89.371
13	8.000	0.0336	0.9679	0,3521	3.35	0.5719	4.493	* 2.4959	161.355	67.473
14	16,000	0.0562	0.9453	0.3295	5.61	0.5352	7.721	* 4.2895	89.554	37,448
15	32,000	0.0817	0.9198	0.3040	8.16	0.4938	11.859	* 6.5884	55.203	23,084
16	8.000	0.0748	0.9267	0.3109	7.47	0.5050	0.000	0.000	0.000	0.000
17	2.000	0.0621	0.9394	0.3236	6.20	0.5256	0.000	0.000	0.000	0.000
18	0.500	0.0485	0.9530	0.3372	4.84	0.5477	0.000	0.000	0.000	0,000
19	0.125	0.0860	0.9155	0.2997	3.79	0.5658	0.000	0.000	0.000	0.000

Predicted value indicated with \*



#### CONSOLIDATION TEST

#### **Consolidation Specimen Information**

Project:

Highway 67 Widening

Location: B-564 ST-1 15.1-15.6

Job Number:

1120604

Project Number:

1120604

Test Date: 10/29/2014

Sample Number:

ST-1

Sample Description:

**Boring Number:** 

B-564

Tan, Gray & Black Lean Clay

Depth:

15.1-15.6 Undisturbed Remarks:

Sample Type:

**Parameters** 

Test Number:

Liquid Limit:

38.0000

Initial Void Ratio:

0.6276

Initial Height (in):

1.0015

Plastic Limit:

19.0000 2.7590

Plasticity Index (%):

19.0000

Initial Diameter (in):

2.4953

Specific Gravity:

Assumed

Weight of Ring (g):

110.8600

Final Specimen

Moist Weight + Container (g)	289.77	233.11
Dry Soil + Container (g)	249.00	195.09
Weight of Container (g)	58.70	59.17
Moisture Content (%)	21.42	27.97
Void Ratio	0.6276	0.4878
Saturation (%)	93.90	134.49
Dry Density (pcf)	105.71	109.44

Initial Specimen

Tested By:



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04

PROJECT COUNTY: Pulaski

PROJECT STATE: Arkansas

LABORATORY NO.: 11206-04

SUBMITTED BY: ICA Engineering Inc.

SAMPLE NO.: RS-1

SAMPLE LOC.: B-562

SAMPLE DEPTH: 37.7' to 38.0'

DATE TESTED: 11/10/14

OCK DESCRIPTION: Shale: silty, f. micaceous, mod. wthd.

Diameter: 1.98 in
Height: 4.15 in

RESULTS:

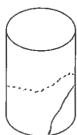
Moisture Air-Dry: NA

Air-Dry Density: 153.3 lbs/ft.3

Maximum Stress: 344 psi Elapsed Time: 1:43 min. Rate of Loading: 10 lb/sec

Area:

Volume:



3.08 in<sup>2</sup>

0.00741 ft<sup>3</sup>

----- Fracture developed during sample trimming

Comments:

Approved By: Juny Solo



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04 PROJECT COUNTY: Pulaski

PROJECT STATE: Arkansas

LABORATORY NO.: 11206-04

SUBMITTED BY: ICA Engineering Inc.

SAMPLE NO.: RS-2

SAMPLE LOC. : B-562

SAMPLE DEPTH: 40.7' to 41.1'

DATE TESTED: 11/10/14

DATE REPORTED: 11/10/14

OCK DESCRIPTION: Shale: silty, f. micaceous, sli. wthd.

Diameter:

1.97 in

4.05 in Height:

Area:

3.06 in<sup>2</sup>

Volume: 0.00717 ft<sup>3</sup>

RESULTS:

Moisture Air-Dry: NA

Air-Dry Density: 162.95 lbs/ft.3

Maximum Stress:

810

psi

Elapsed Time: 4:58 min. Rate of Loading: 10 lb/sec



Comments:

Approved By:



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04 SAMPLE NO.: RS-3

PROJECT COUNTY: Pulaski SAMPLE LOC.: B-562

PROJECT STATE: Arkansas SAMPLE DEPTH: 43.6' to 43.9'
LABORATORY NO.: 11206-04 DATE TESTED: 11/10/14

SUBMITTED BY: ICA Engineering Inc. DATE REPORTED: 11/10/14

OCK DESCRIPTION: Sandstone w/Shale: v.f. to f. grain, laminated, ripple to contorted bedding, sli. wthd.

Diameter: 1.98 in Area: 3.09 in<sup>2</sup>

Height: 4.16 in Volume: 0.00744 ft<sup>3</sup>

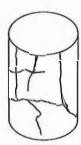
RESULTS:

Moisture Air-Dry: NA

Air-Dry Density: 164.97 lbs/ft.3

Maximum Stress: 5270 psi

Elapsed Time: 14:29 min.
Rate of Loading: 10 lb/sec



Comments:

Approved 3y:



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04

PROJECT COUNTY: Pulaski

PROJECT STATE: Arkansas

LABORATORY NO.: 11206-04

SUBMITTED BY: ICA Engineering Inc.

SAMPLE NO.: RS-4

SAMPLE LOC. : B-557

SAMPLE DEPTH : 47.1' to 47.4'

DATE TESTED : 11/10/14

DATE REPORTED : 11/10/14

OCK DESCRIPTION: Sandstone: v.f to f. grain w/crenulated bedding & healed jts., mod. wthd.

Diameter: Height:

1.98 in

4.04 in

Area:

3.08 in<sup>2</sup>

Volume: 0.00719 ft3

RESULTS:

Moisture Air-Dry: NA

Air-Dry Density: 156.42 lbs/ft.3

Maximum Stress: Elapsed Time: 1914

40

psi min.

Rate of Loading:

3:36

lb/sec



Comments:

Approved By:



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04

PROJECT COUNTY: Pulaski

PROJECT STATE : Arkansas

LABORATORY NO.: 11206-04

SUBMITTED BY: ICA Engineering Inc.

SAMPLE NO.: RS-5

SAMPLE LOC. : B-557

SAMPLE DEPTH: 51.9' to 52.3'

DATE TESTED: 11/10/14

DATE REPORTED: 11/10/14

OCK DESCRIPTION: Sandstone: v.f. to f. grain w/healed jts., sli. wthd.

Diameter:

1.98 in

4.05 in Height:

Area:

3.09 in<sup>2</sup>

Volume: 0.00723 ft3

RESULTS:

Moisture Air-Dry: NA

Air-Dry Density:

159.99 lbs/ft.3

Maximum Stress:

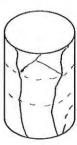
1546 psi

Elapsed Time:

6:33

Rate of Loading:

min. 10 lb/sec





----- Existing Healed Joints w/ Clay

Comments:

Approved By : July Sol



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04

PROJECT COUNTY: Pulaski

PROJECT STATE: Arkansas

LABORATORY NO.: 11206-04

SUBMITTED BY: ICA Engineering Inc.

SAMPLE NO.: RS-6

SAMPLE LOC. : B-558

SAMPLE DEPTH: 50.1' to 50.5'

DATE TESTED: 11/10/14

DATE REPORTED: 11/10/14

OCK DESCRIPTION: Shale: silty, sli. wthd.

Diameter:

1.99 in

Height: 4.02 in Area:

3.10 in<sup>2</sup>

Volume:

0.0072 ft3

RESULTS:

Moisture Air-Dry: NA

Air-Dry Density:

166.26 lbs/ft.3

Maximum Stress:

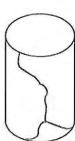
1899

10:55 min.

Elapsed Time: Rate of Loading:

10 lb/sec

psi



Comments:

Approved By: July 5ds



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04

PROJECT COUNTY: Pulaski

PROJECT STATE: Arkansas

SAMPLE NO.: RS-7

SAMPLE LOC.: B-558

SAMPLE DEPTH: 46.6' to 47.0'

LABORATORY NO. : 11206-04 DATE TESTED : 11/10/14

SUBMITTED BY: ICA Engineering Inc. DATE REPORTED: 11/10/14

OCK DESCRIPTION: Sandstone w/Shale: v.f. to f. grain interlaminated w/silty, sli. wthd.

Diameter: 1.99 in Area:  $3.11 \text{ in}^2$ Height: 4.07 in Volume:  $0.00731 \text{ ft}^3$ 

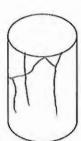
RESULTS:

Moisture Air-Dry: NA

Air-Dry Density: 168.63 lbs/ft.3

Maximum Stress: 9543 psi Elapsed Time: 12:33 min.

Rate of Loading: 50 lb/sec



Comments:

Approved By: freey Sol



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04

PROJECT COUNTY: Pulaski

PROJECT STATE: Arkansas

LABORATORY NO. : 11206-04

SUBMITTED BY: ICA Engineering Inc.

SAMPLE NO.: RS-8

SAMPLE LOC. : B-563

SAMPLE DEPTH : 61.2' to 61.6'

DATE TESTED : 11/10/14

DATE REPORTED: 11/10/14

OCK DESCRIPTION: Shale: silty to v.f. sandy, sli. wthd.

Diameter:

1.99 in

Height: 4.23 in

Area:

3.09 in<sup>2</sup>

Volume: 0.00757 ft<sup>3</sup>

RESULTS:

Moisture Air-Dry: NA

Air-Dry Density: 165.09 lbs/ft.3

Maximum Stress:
Elapsed Time:

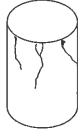
5464

psi min.

lb/sec

Rate of Loading:

14:35 10



Comments:

Approved By: Jeery Solo



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04

PROJECT COUNTY: Pulaski

PROJECT STATE: Arkansas

LABORATORY NO.: 11206-04

SUBMITTED BY: ICA Engineering Inc.

SAMPLE NO.: RS-9

SAMPLE LOC. : B-563

SAMPLE DEPTH : 57.2' to 57.6'

DATE TESTED: 11/10/14

DATE REPORTED: 11/10/14

OCK DESCRIPTION: Shale: clayey, sli. wthd.

Diameter:

1.98 in

4.00 in Height:

Area:

3.09 in<sup>2</sup>

Volume: 0.00714 ft<sup>3</sup>

RESULTS:

Moisture Air-Dry: NA

Air-Dry Density: 165.25 lbs/ft,3

Maximum Stress:

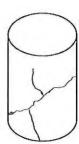
1889

Elapsed Time: 10:25

Rate of Loading:

psi min.

10 1b/sec



Comments:

Approved By:



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04

PROJECT COUNTY: Pulaski

PROJECT STATE: Arkansas

LABORATORY NO.: 11206-04

SUBMITTED BY: ICA Engineering Inc.

SAMPLE NO. : RS-10

SAMPLE LOC. : B-559

SAMPLE DEPTH : 41.6' to 42.0'

**DATE TESTED** : 11/10/14

DATE REPORTED: 11/10/14

OCK DESCRIPTION: Shale w/Sandstone: silty w/v.f. grain laminations, sli. wthd.

Diameter: Height: 1.98 in

3.99 in

Area:

3.09 in<sup>2</sup>

Volume: 0.00714 ft3

RESULTS:

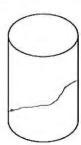
Moisture Air-Dry: NA

Air-Dry Density: 163.52 lbs/ft.3

Maximum Stress: 899

Elapsed Time: 4:12 min. Rate of Loading: 10 lb/sec

psi



Comments:

Approved By: freey Solo



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04

PROJECT COUNTY: Pulaski

PROJECT STATE: Arkansas

SAMPLE LOC.: B-559

PROJECT STATE: Arkansas

SAMPLE DEPTH: 36.6' to 37.0'

LABORATORY NO.: 11206-04

SUBMITTED BY: ICA Engineering Inc.

DATE REPORTED: 11/10/14

OCK DESCRIPTION: Shale: silty to f. sandy, mod. wthd.

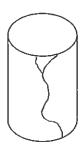
Diameter: 1.98 in Area: 3.07 in<sup>2</sup>
Height: 4.00 in Volume: 0.00711 ft<sup>3</sup>

**RESULTS:** 

Moisture Air-Dry: NA

Air-Dry Density: 159.67 lbs/ft.<sup>3</sup>

Maximum Stress: 863 psi
Elapsed Time: 2:10 min.
Rate of Loading: 20 lb/sec



Comments:

Approved By: Jeny Sh



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04

PROJECT COUNTY: Pulaski

PROJECT STATE : Arkansas

LABORATORY NO.: 11206-04

SUBMITTED BY: ICA Engineering Inc.

SAMPLE NO.: RS-12

SAMPLE LOC. : B-564

SAMPLE DEPTH : 44.1' to 44.5'

DATE TESTED: 11/10/14

DATE REPORTED: 11/10/14

OCK DESCRIPTION: Shale: clayey to silty, mod. wthd.

Diameter:

1.97 in

Height: 4.00 in

Area:

3.06 in<sup>2</sup>

Volume: 0.00708 ft3

RESULTS:

Moisture Air-Dry: NA

Air-Dry Density: 163.15 lbs/ft.3

Maximum Stress:

402

10

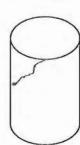
Elapsed Time:

2:13 min.

Rate of Loading:

lb/sec

psi



Comments:

Approved By : fremy 5 ds



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04 SAMPLE NO.: RS-13
PROJECT COUNTY: Pulaski SAMPLE LOC.: B-565

PROJECT STATE: Arkansas

LABORATORY NO.: 11206-04

SAMPLE DEPTH: 52.0' to 52.3'

DATE TESTED: 11/10/14

SUBMITTED BY: ICA Engineering Inc. DATE REPORTED: 11/10/14

OCK DESCRIPTION: Shale w/Sandstone: silty to clayey w/v.f to f. grain laminations, fresh

Diameter: 1.98 in Area: 3.09 in<sup>2</sup>
Height: 3.99 in Volume: 0.00714 ft<sup>3</sup>

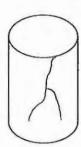
RESULTS:

Moisture Air-Dry: NA

Air-Dry Density: 162.56 lbs/ft.3

Maximum Stress: 1836 psi Elapsed Time: 7:50 min.

Rate of Loading: 10 lb/sec



Comments:

Approved By: freely Sd.



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04 SAMPLE NO.: RS-14
PROJECT COUNTY: Pulaski SAMPLE LOC.: B-556

PROJECT STATE: Arkansas SAMPLE DEPTH: 50.8' to 51.1'
LABORATORY NO.: 11206-04 DATE TESTED: 11/10/14

SUBMITTED BY: ICA Engineering Inc. DATE REPORTED: 11/10/14

OCK DESCRIPTION: Shale: w/folded laminations, sli. wthd.

Diameter: 1.98 in Area: 3.07 in<sup>2</sup>
Height: 4.04 in Volume: 0.00718 ft<sup>3</sup>

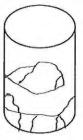
RESULTS:

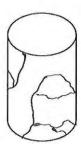
Moisture Air-Dry: NA

Air-Dry Density: 163.66 lbs/ft.3

Maximum Stress: 2873 psi Elapsed Time: 6:26 min.

Rate of Loading: 30 lb/sec

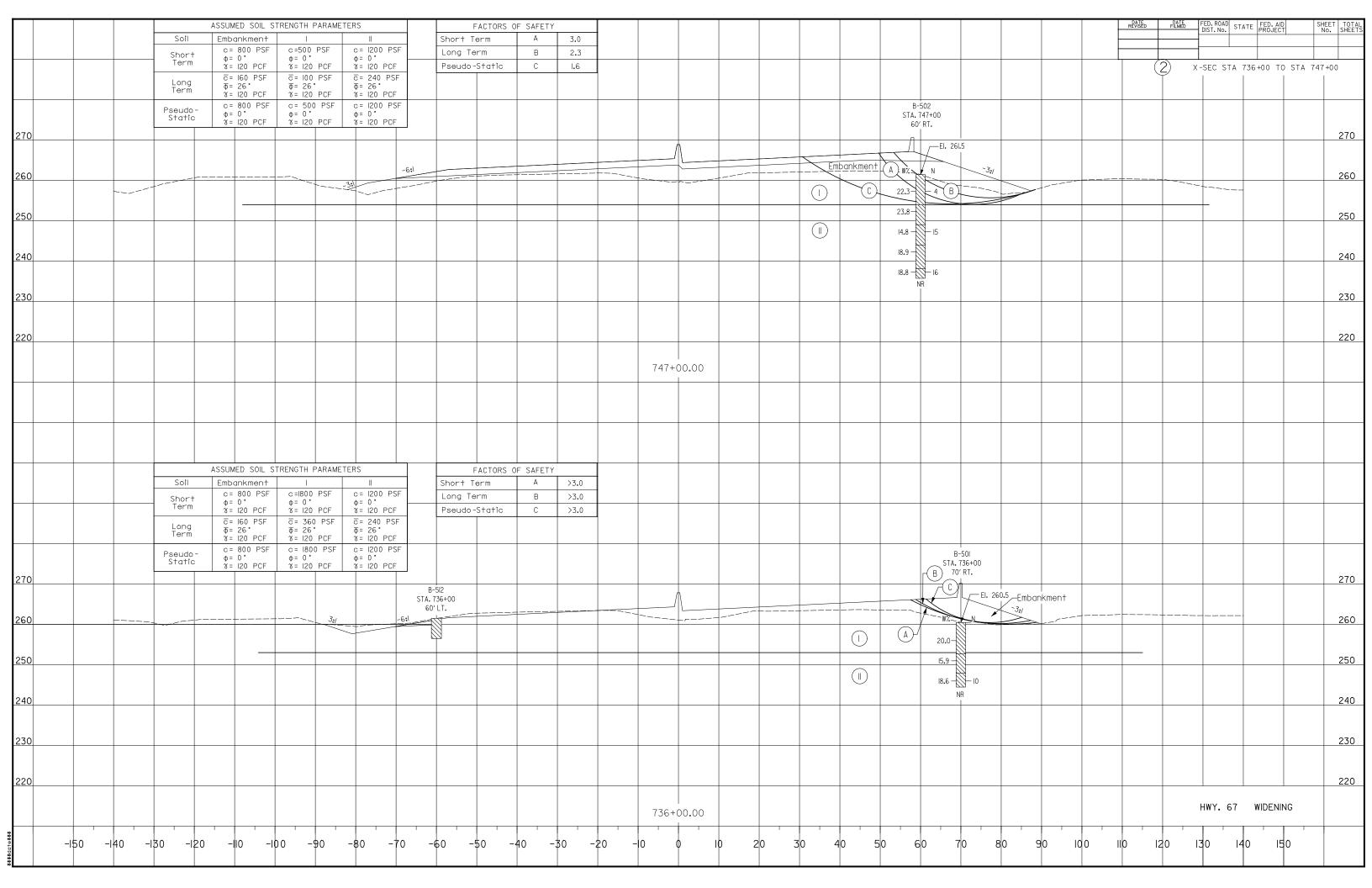


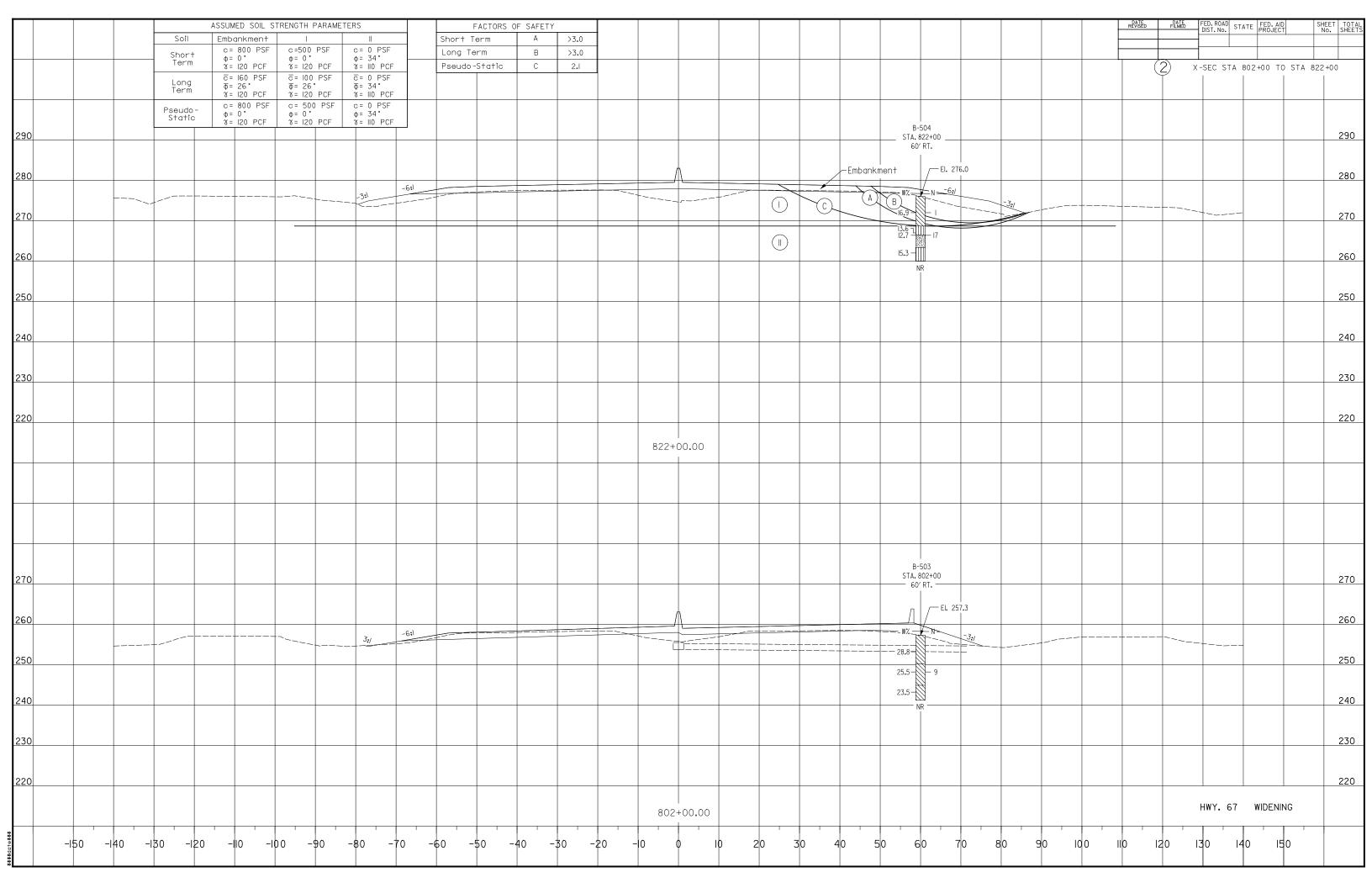


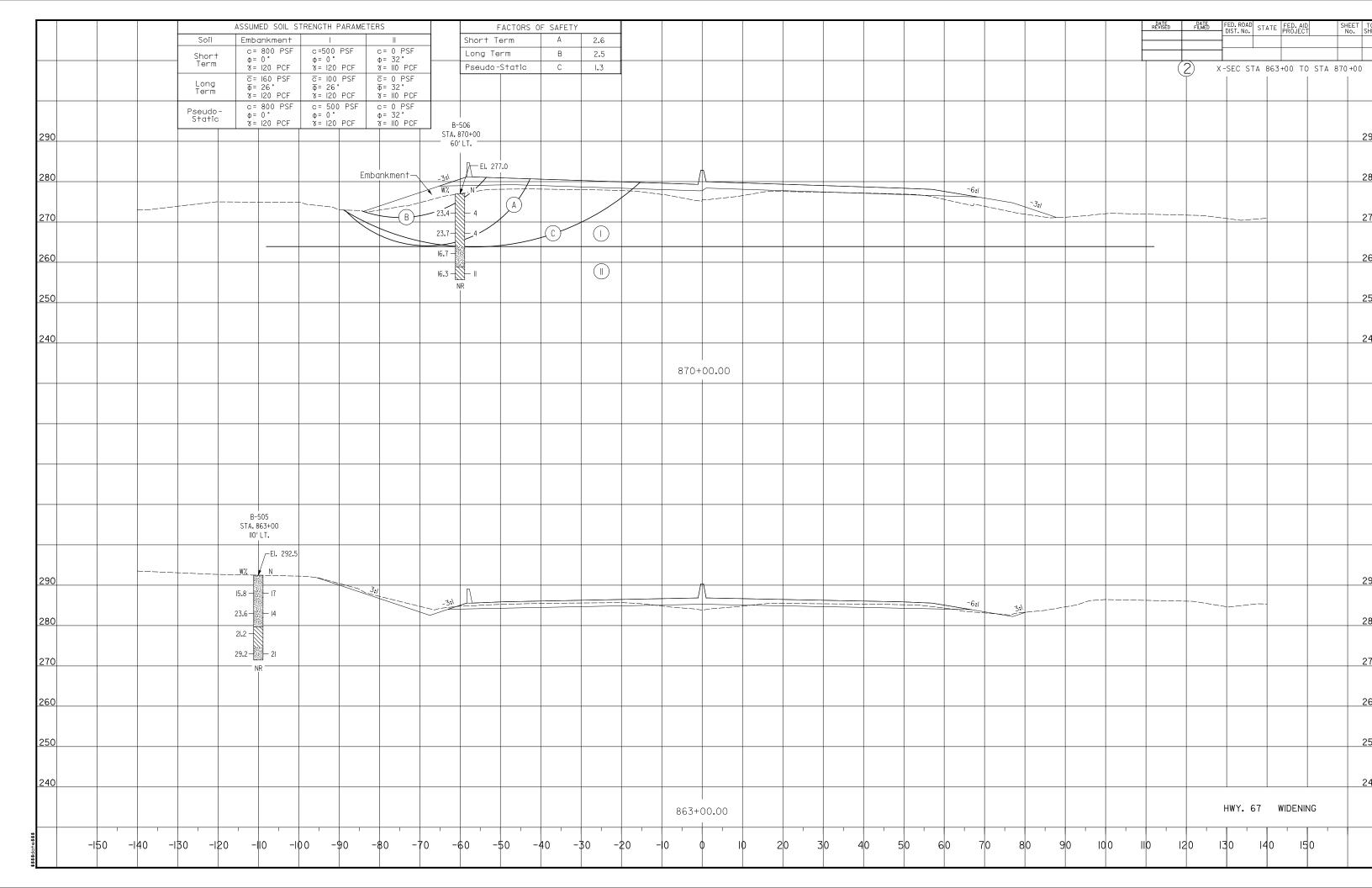
Comments:

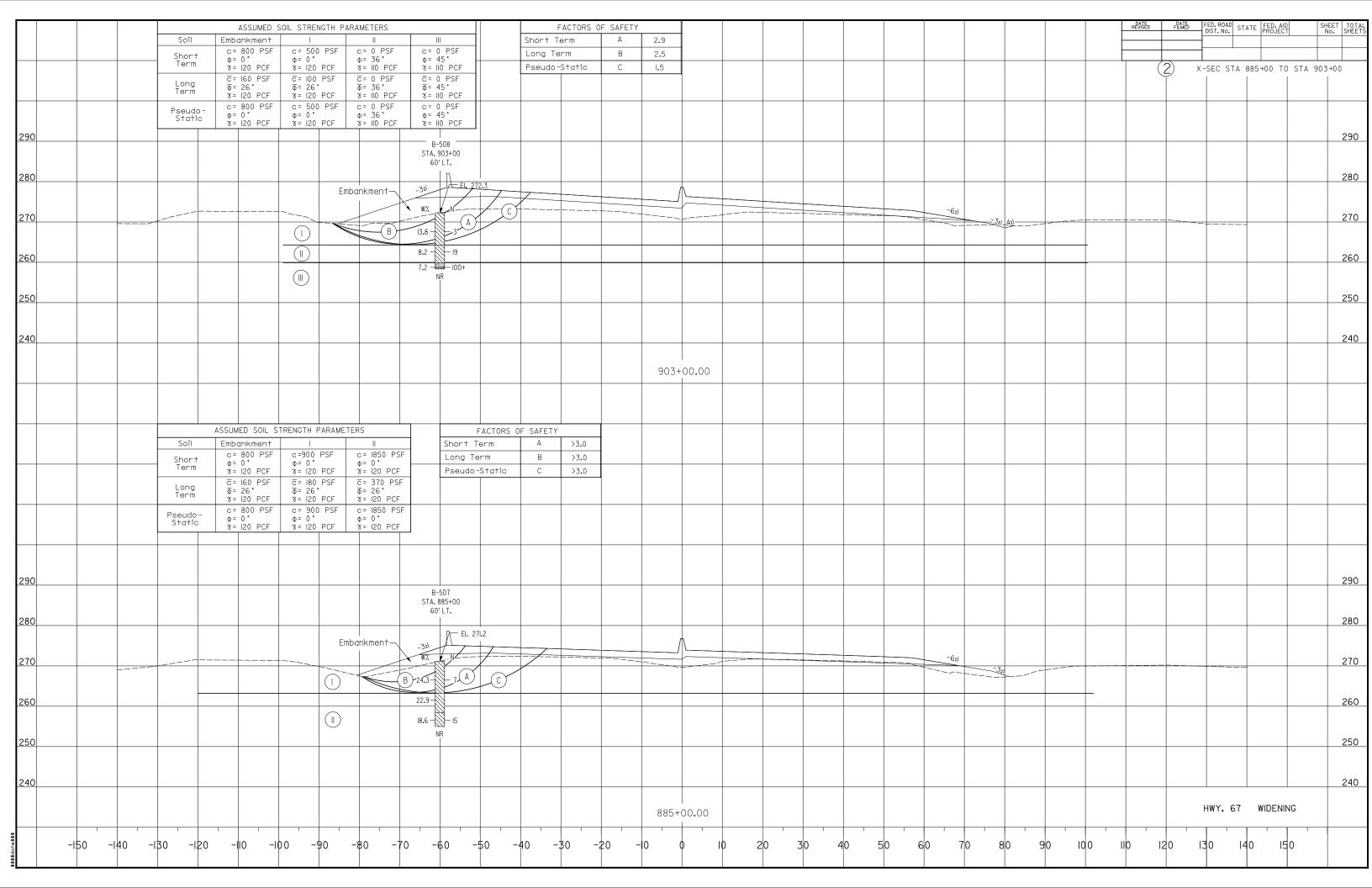
Approved By: July Solo

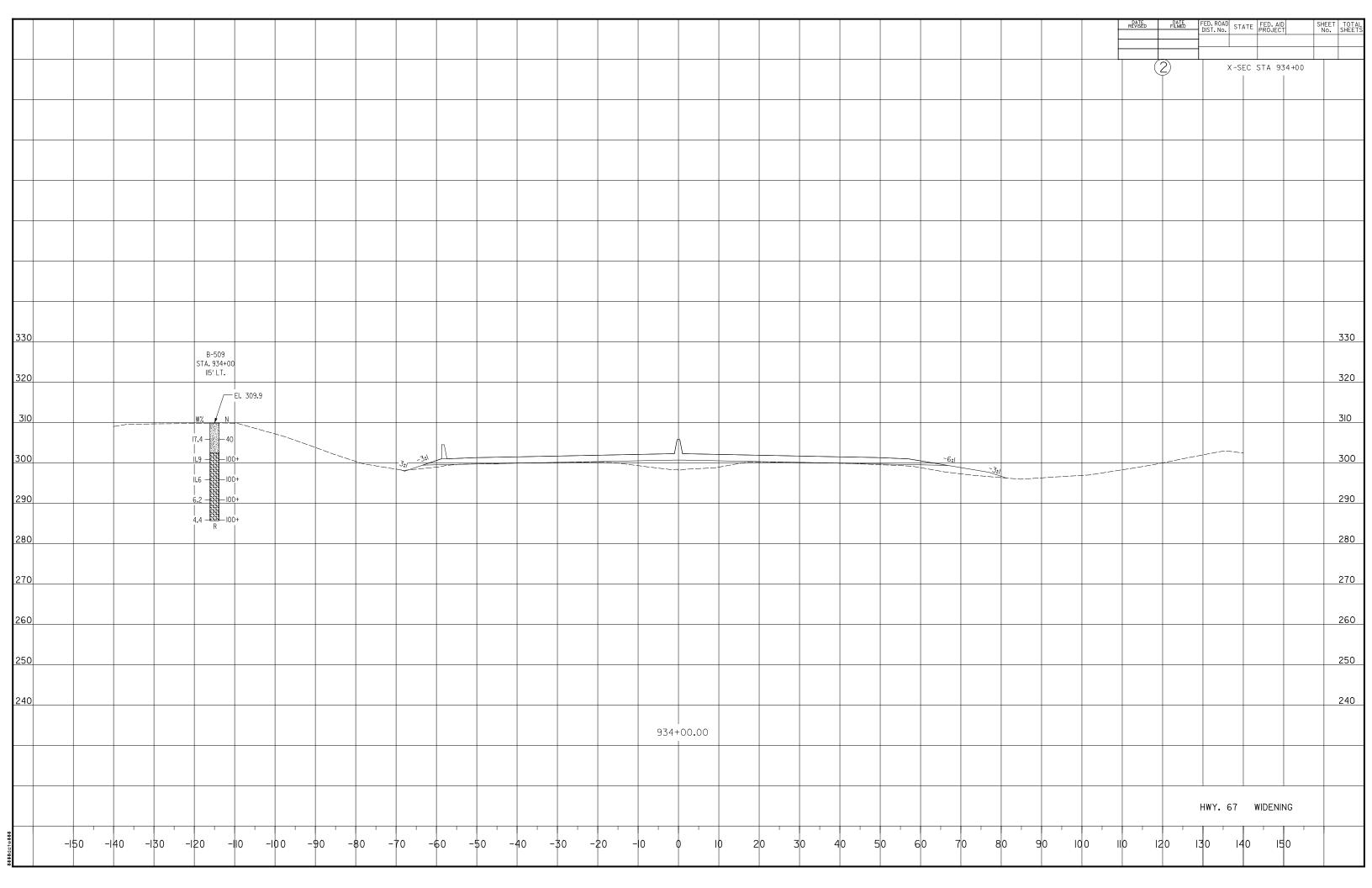














2550 Irvin Cobb Drive Paducah, KY 42003 Phone: 270.444.9691 Fax: 270.443.3943

icaeng.com



July 17, 2015

Final Bridge Geotechnical Report

Hwy. 67 over Jack's Bayou

Pulaski County, Arkansas

Job No. CA0605

# **Prepared For:**









July 17, 2015

Mr. Glynn Fulmer, PE
Deputy Project Manager-Engineering
Connecting Arkansas Program
Garver, LLC
4701 Northshore Drive
North Little Rock, Arkansas 72118

**Subject:** Final Bridge Geotechnical Report

Highway 67 over Jack's Bayou Pulaski County, Arkansas

Job No. CA0605

Dear Mr. Fulmer:

We have completed the Final Bridge Report for the referenced project. This report and discussion reflects the latest geotechnical data as it relates to the bridge layout of Highway 67 over the Jack's Bayou.

Thank you for the opportunity to provide geotechnical services to the Arkansas State Highway and Transportation Department. Please call at your convenience if you have questions or comments.

Sincerely,

ICA ENGINEERING, INC.

Rein & Chittorden

Devin L. Chittenden, P.E. Senior Project Engineer

Anil K. Varri, P.E. Project Engineer

V. Acillers

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7.	LIMITATIONS	
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APPE	NDIX III:	BRIDGE LAYOUT AND PROFILE SHEET

#### 1. INTRODUCTION

The proposed widening of Highway 67 from Vandenberg Boulevard to Highway 5 will require new twin three (3) span bridges over Jack's Bayou. The new bridges will replace the existing structures in the same location. This report provides foundation recommendations for proposed structures. A separate roadway report has been prepared for the widened roadway within the Vandenberg Boulevard to Highway 5 project, which includes the additional information with regard to the proposed approaches on each side of Jack's Bayou.

#### 2. GEOLOGY

The Highway 67 widening alignment is located along the physiographic boundary between the Ouachita Mountains Province and Mississippi Embayment Province. The proposed bridge and approach abutments are situated immediately east of this shared boundary (*Geologic Map of Arkansas, B. R. Haley, et. al., 1993* and *unpublished geologist's proof of the Cabot Quadrangle, Stone - 1968*). Topographic mapping (*USGS Cabot Quadrangle, 2011*) indicates elevations ranging from 260 feet at the edges of the Jack's Bayou floodplain to 250 feet at the Jack's Bayou bridge site.

Unconsolidated Quaternary alluvium and Tertiary (Paleocene) sediments overlie sandstone and shale of the Pennsylvanian Atoka Formation at the proposed bridge site. Regional structural formation dip, at the proposed bridge site, for Tertiary strata (Midway Group) trends southeastward at near flat gradients while dip for Pennsylvanian strata (Atoka Formation) is northwestward into the axis of a west plunging syncline as indicated on the published mapping referenced above. Faulting is not indicated within the limits of the subject bridge footprint. However, examination of rock core recovered from the bridge borings suggested high angle faulting within Atoka strata.

#### 3. SEISMIC CONDITIONS

Earthquake hazards are considered to be significant in portions of Arkansas and seismic ground motion is a design factor. For this project, the proposed peak ground acceleration (PGA) having a 7% probability of exceedance in 75 years (or mean return period of approximately 1000 years) is equal to 0.158g and the horizontal response spectral acceleration value at a 1.0 second period is equal to 0.101g. These values were provided by the United

States Geology Survey (USGS). Based on a Site Class D for this project, the PGA value is then multiplied by the site factor of 1.48 using Table 3.10.3.2-1 in the AASHTO 6<sup>th</sup> Edition with 2012 Interims LRFD Bridge Design Specifications. Similarly, the horizontal response spectral acceleration value is multiplied by the site factor of 2.40 as shown in Table 3.10.3.2-3 for a Site Class D. This gives the peak seismic ground acceleration value of 0.234g and a Seismic Zone of 2.

#### 4. DISCUSSION OF FIELD AND LABORATORY PROCEDURES

Bridge borings were advanced utilizing CME 45-C tracked mounted drill rig using 3" casing advancement and NQ2 wireline rock core tooling. Standard penetration testing (ASTM D1586), Shelby tube sampling (ASTM D1587), and rock sampling were performed in each of the borings. Laboratory testing included natural moisture content, liquid limit, plastic limit, grain size analysis, Unified and AASHTO soil classification, unconsolidated undrained triaxial soil testing, one-dimensional consolidation, and unconfined compression testing on both soil and rock. Advanced core borings recorded core recovery (REC) ranging from 6% to 100% and rock quality designation (RQD) ranging from 0% to 90%. Detailed core descriptions can be found in the boring logs attached as Appendix I and within the Geology section above. Laboratory test results for the project (testing performed on both roadway and bridge soil samples) are attached as Appendix II.

#### 5. SUMMARY OF SUBSURFACE CONDITIONS

Eight (8) borings, designated as B-556 thru B-559 and B-562 thru B-565 were advanced to determine subsurface conditions for the proposed bridge bent locations. Samples were obtained through SPT drives, Shelby tube advancement, and rock coring. The proposed bridge sites are underlain by accumulations of alluvium, Midway Group sediments, weathered rock, and Atoka Formation shale and sandstone.

The alluvium consisted of interlayered low plasticity silt, medium plasticity clay, and low plasticity silty clay. Consistency varied from soft to very stiff with SPT values ranging from 2 to 34 blows per foot. The alluvium is interpreted from the ground surface down to elevations ranging from 238.5 to 225.6

Midway sediments, underlying the alluvium, consisted of interbedded low plasticity silt, medium plasticity clay, low plasticity clay, and silty and/or clayey fine to coarse grain sand with gravel. Coarser, granular sediments typically occurred in the lower Midway, immediately above weathered rock from the Atoka Formation. Consistency

for cohesive sediments was soft to stiff, while conditions for granular sediments ranged from very loose to medium dense. SPT values ranged from 5 to 45 blows per foot. Laboratory results indicate granular sediments typically contain sufficient clay/silt fractions to exhibit plasticity, however non-plastic characteristics were observed. Midway sediments extended down to elevations ranging from 217.5 to 208.8.

Weathered rock was intercepted under the Midway sediments and composed of shale and sandstone fragments with clay seams and/or inter-particle clay. Recovered samples suggest thickness ranging from 0.4' to 3.7' combining the SPT and core samples recovered. SPT values were greater than 100 blows per foot. These thicknesses place the base of weathered rock at elevations ranging from 214.3 to 209.9.

Underlying the weathered rock is the Atoka Formation consisting of shale and sandstone. The fresh to moderately weathered strata contains seams of clay within the upper intervals of the recovered core. Widely variable apparent bedding dips, numerous discontinuities, and relatively poor RQD characterized the interbedded shale and sandstone formation. Recovered rock core exhibited various discontinuity types including fracturing (joints) with orientations of 0°-20°, 30°-40°, 50°-75° and 85°-90° and faulting with 35°-40°, 60°, 70° orientations. Fault walls and some joint walls in shale exhibited slickensides. Rock core sample recovery varied from 6% to 100% with 78% of the values within a range of 90% to 100%. Rock quality designation (RQD) values for the same sampled intervals ranged from 0% to 90% with 71% of the values within a range of 0% to 50%. Unconfined compression tests resulted shale strengths ranging from 344 to 5,464 psi and sandstone strengths ranging from 1,546 to 9,543 psi. Detailed descriptions of the recovered rock are presented on boring logs in the Appendix I. Termination elevations for borings ranged from 196.0 to 172.7.

#### 6. **RECOMMENDATIONS**

Based on the subsurface conditions encountered, we recommend Bents 1 through 4 be supported with Steel HP 12x53 piles driven to practical refusal on bedrock. We recommend a factored resistance of 190 tons using a resistance factor of 0.50 for severe driving conditions. The factored resistance is predicated on use of piles with a minimum yield strength of 50 ksi. Pile points are recommended for tip protection as the piles are advanced through the embankment fill, gravelly alluvium and to assist with pile penetration and seating into bedrock (typically shale and/or sandstone). The compressive strengths resulting from laboratory testing near the top of the rock line were used as a comparison to the structural capacity of the pile, which is the limiting factor in the resistance design of the

pile. The piles shall be installed in accordance with the AHTD Standard Specifications for Highway Construction.

The estimated pile tip elevations are provided below in Table 1.

Table 1  Summary of Recommendations  HP 12 v 52 Piles on Highway (7 Pridge even Legh's Person								
Bent Number Foundation Type Elevation  HP 12 x 53 Piles on Highway 67 Bridge over Jack's Bayou  Estimated Pile Tip Elevation								
1	HP 12x53 Steel Piles	211' (Left Side) 213' (Right Side)						
2	HP 12x53 Steel Piles	213' (Left Side) 215' (Right Side)						
3	HP 12x53 Steel Piles	213' (Left Side) 215' (Right Side)						
4	HP 12x53 Steel Piles	215' (Left Side) 215' (Right Side)						

Pile advancement will require hard driving through very dense soils and weathered rock materials near the estimated pile tip elevations. We recommend the pile hammer be sized adequately to attain the required resistance without overstressing the piles. A driving system capable of an energy range between 45 to 65 kip-ft is recommended. The pile tip elevations and the factored pile resistance calculations are based upon the boring data, and each pile shall be driven until the required design resistance has been obtained. Pile logging shall be performed for the full depth of the pile penetration and a Saximeter is recommended to record the blow counts.

To ensure the successful advancement of piles through embankment areas at the end bents, rock fill and/or soil material containing boulders or large stones shall not be placed at the bridge abutments. Proposed fill materials within pile foundation areas shall consist of particles no larger than the Class 7 size in accordance with the AHTD Standard Specifications for Highway Construction.

Stability analyses were performed for the proposed 2H:1V slopes at each of the abutments. Boring logs indicate uniform soil conditions between the northbound and southbound profiles and a critical section was selected for the analysis. Stability analyses were performed for short term, long term, and pseudo static (Seismic) loading conditions. The abutment slopes discussed herein have achieved the minimum required factors of safety for slope stability. Stability analyses for the pseudo-static loading condition were performed using the full PGA value, 0.234g. For pseudo-static conditions a factor of safety of 1.0 is typically utilized recommended by the FERC and other Departments of Transportation (i.e. CALTRANS). The calculated short term, long term, and seismic factors of

safety for the analyzed abutment sections are listed in Table 2 and are depicted on the bridge profile sheet in Appendix III.

Table 2								
Factor of Safety for Slope Stability								
Location	Section Type	Short Term	Long Term	Pseudo-Static Seismic				
Bent 1	2H:1V Abutment	1.7	1.4	1.0				
Bent 4	2H:1V Abutment	1.7	1.5	1.0				

We recommended that suitable vegetation and/or erosion control measures be employed on final slopes as soon as practical during construction, as many of the soil horizons within project limits are susceptible to erosion. Appropriate erosion control procedures, roadway and drainage excavation, as well as embankment benching shall be performed in accordance with the AHTD Standard Specifications for Highway Construction.

Subsurface conditions indicate potential settlement within the analyzed areas of the proposed abutments could range from 2 inches to 4 inches. To minimize downdrag loading potential we recommend a waiting period of sixty (60) days prior to commencing pile driving operations. The waiting period is estimated to be sufficient time for 90 percent of the primary settlement to occur with the remaining settlement being less than 0.4 inches.

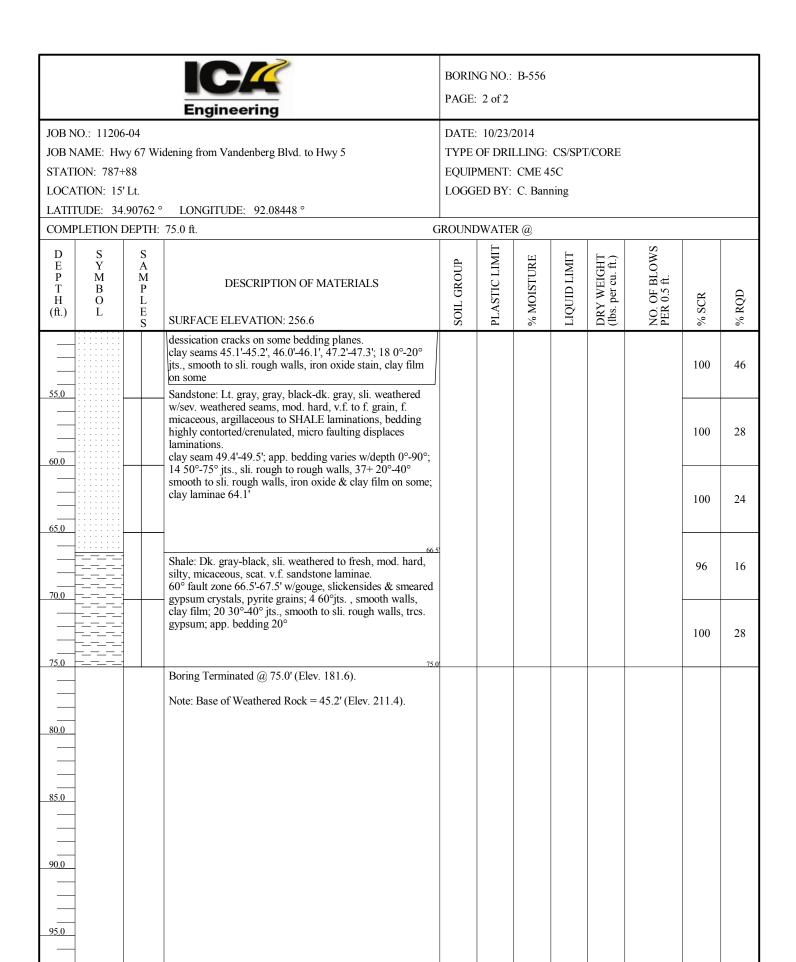
Due to the introduction of water into the advanced borings during coring operations and/or ground surface (mudline) below water level, static groundwater level measurements were not recorded. Apparent groundwater levels appear relatively shallow within the Jack's Bayou floodplain and are considered seasonal dependent. We anticipate groundwater levels at the surface could occur if construction is staged during wet winter and spring months or during prolonged rain events. Any excavation below the existing groundline may encounter seepage water.

#### 7. LIMITATIONS

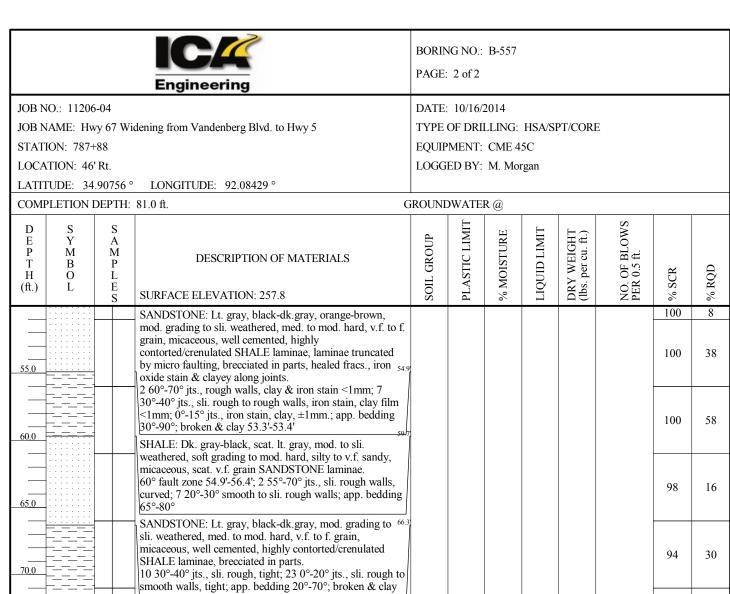
Soil descriptions, indicated boundaries and groundwater levels discussed and depicted herein are based upon engineering and geological interpretation of available subsurface information obtained at selected locations and may not necessarily reflect the actual variations in subsurface conditions between borings and samples. Adjustments to the estimated elevations listed above may be required during construction to ensure the bridge foundations are seated in competent materials.



	Engineering		NG NO.:	B-556					
JOB NO.: 11206-04 JOB NAME: Hwy 67 STATION: 787+88 LOCATION: 15'Lt. LATITUDE: 34.9076 COMPLETION DEPT	DATE: 10/23/2014 TYPE OF DRILLING: CS/SPT/CORE EQUIPMENT: CME 45C LOGGED BY: C. Banning GROUNDWATER @								
	H: /5.0 ft.	GROUN	_	K ( <i>a</i> )					
D S S A A P M M M T B P H O L L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 256.6	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	ГІОПІР БІМІТ	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0	Brown & gray, soft to very stiff, silt.			28.6			1,1,2		
10.0				22.9			0,1,4		
15.0	Brown, stiff, lean clay.	18.1'	18	21.1	20		8,8,8		
25.0	Brown & gray, medium stiff, silt.	23.3	21	22.2	37				
30.0	Orange & gray, medium stiff, lean clay with sand.	28.1		20.8			3,3,5		
	Brown & gray, soft to medium stiff, sandy, silty clay.	33.1	17	23.3	30				
35.0			16	22.7	22		1,1,3		
40.0				22.3			1,2,3		
45.0	Weathered Shale.  Auger Refusal @ 45.0', Begin Coring in Shale.  Shale: Black-dk. gray, scat. orange-brown, sli. to mod. weathered w/sev. weathered seams, mod. hard, silty,	44.8 45.2 47.8		8.3			50/0.2	100	8

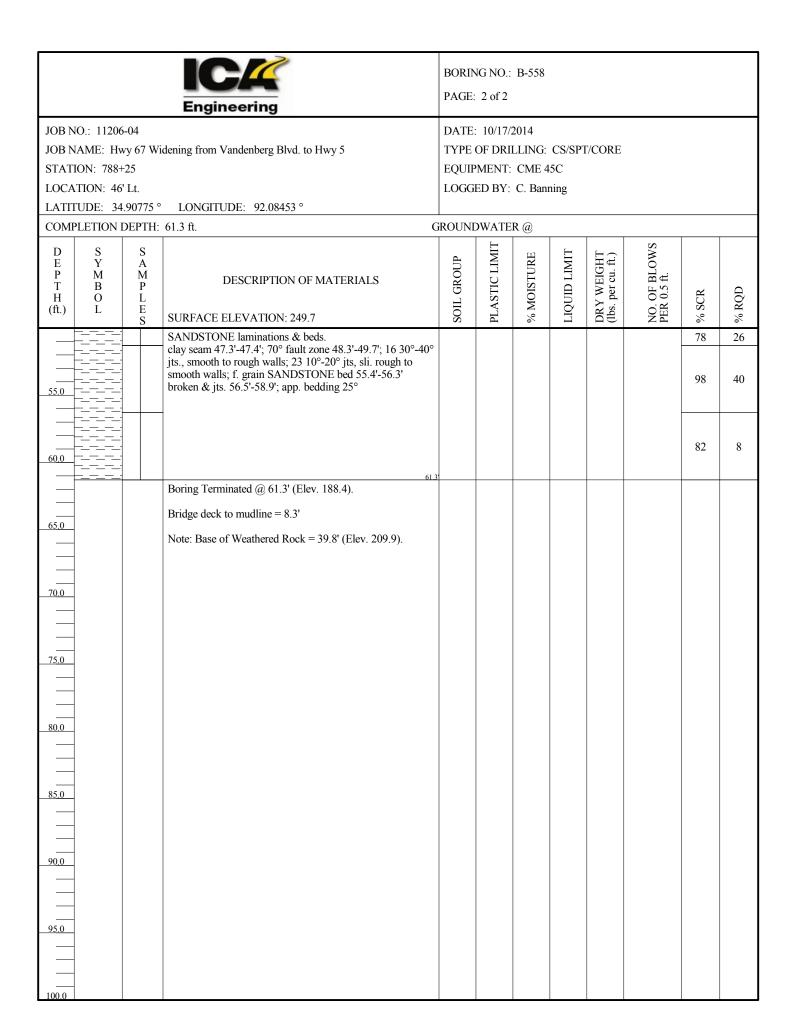


			Engineering		NG NO.: : 1 of 2	B-557					
JOB NO.: 11206-04  JOB NAME: Hwy 67 Widening from Vandenberg Blvd. to Hwy 5  STATION: 787+88  LOCATION: 46' Rt.  LATITUDE: 34.90756 ° LONGITUDE: 92.08429 °			DATE: 10/16/2014  TYPE OF DRILLING: HSA/SPT/CORE  EQUIPMENT: CME 45C  LOGGED BY: M. Morgan  GROUNDWATER @								
D E P T H (ft.)	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 257.8	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Brown & black, soft, lean clay.		21	22.9	30		1,2,2		
10.0			Gray, soft, lean clay.  Brown & gray, v. stiff, silt.	. <del>7</del>		26.2			1,1,1		
20.0			Gray & orange, stiff, lean clay.	6	21	19.5	34				
25.0			Tan, gray, black & brown, medium stiff to stiff, lean clay.	7!	23	20.3	39		4,6,7		
30.0			Tan, brown & black, medium stiff, lean clay.	7:		23.6			1,2,3		
35.0			Brown & tan, silty, v. loose, clayey sand.	. <del>7</del>	20	24.8	28		2,3,3		
45.0			Brown & tan, black, loose sand w/gravel & silt.  44  Weathered Shale.			2.3			50/0.2	93	0
50.0			Auger Refusal @ 44.6', Begin Coring in Shale. SHALE: Olive gray-dk. gray, orange-brown, mod. to sev. weathered, med. hard, v.f. sandy, iron oxide stain, part. healed fracs. w/clay.							100	8

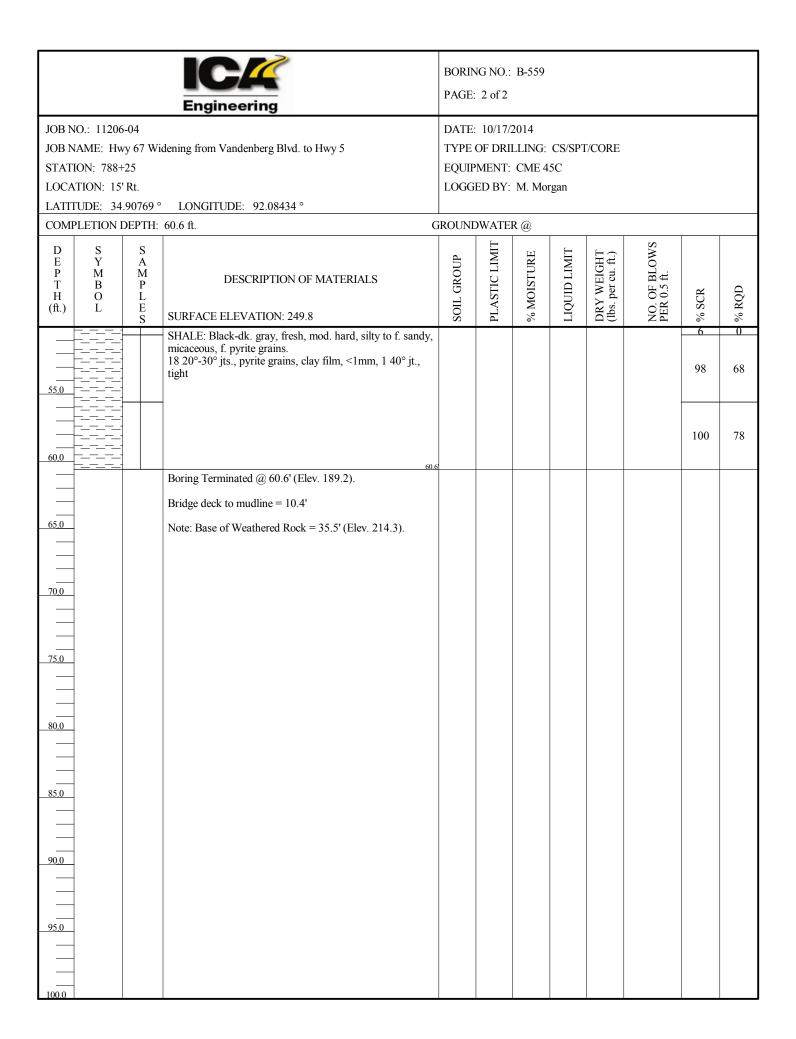


60.0	oxide stain & clayey along joints.  2 60°-70° jts., rough walls, clay & iron stain <1 mm; 7 30°-40° jts., sli. rough to rough walls, iron stain, clay film <1 mm; 0°-15° jts., iron stain, clay, ±1 mm.; app. bedding 30°-90°; broken & clay 53.3'-53.4'  SHALE: Dk. gray-black, scat. lt. gray, mod. to sli.			100	58
65.0	weathered, soft grading to mod. hard, silty to v.f. sandy, micaceous, scat. v.f. grain SANDSTONE laminae. 60° fault zone 54.9'-56.4'; 2 55°-70° jts., sli. rough walls, curved; 7 20°-30° smooth to sli. rough walls; app. bedding 65°-80°			98	16
70.0	SANDSTONE: Lt. gray, black-dk.gray, mod. grading to sli. weathered, med. to mod. hard, v.f. to f. grain, micaceous, well cemented, highly contorted/crenulated SHALE laminae, brecciated in parts. 10 30°-40° jts., sli. rough, tight; 23 0°-20° jts., sli. rough to smooth walls, tight; app. bedding 20°-70°; broken & clay 64.7'-65.0'			94	30
75.0	SHALE: Dk. gray to black, lt. gray, sev. weathered to fresh, med. to mod. hard w/soft seams, silty to v.f. sandy, v.f. grain SANDSTONE laminae & beds, micaceous, clay seams, folded.			98	46
80.0	broken 66.6'-67.1'; clay seams 66.3'-66.4', 67.9'-68.0', 69.7', 70.1'-70.6', 71.9'; sandstone bed 73.0'-73.5', 74.7'-75.2'; 8 60°-85° jts., sli. rough to rough walls, tight; 2 40° jts., smooth walls, tight; 44 0°-20° jts., smooth walls, <1mm			100	58
90.0	Boring Terminated @ 81.0' (Elev. 176.8).  Note: Base of Weathered Rock = 44.8' (Elev. 213.0).				

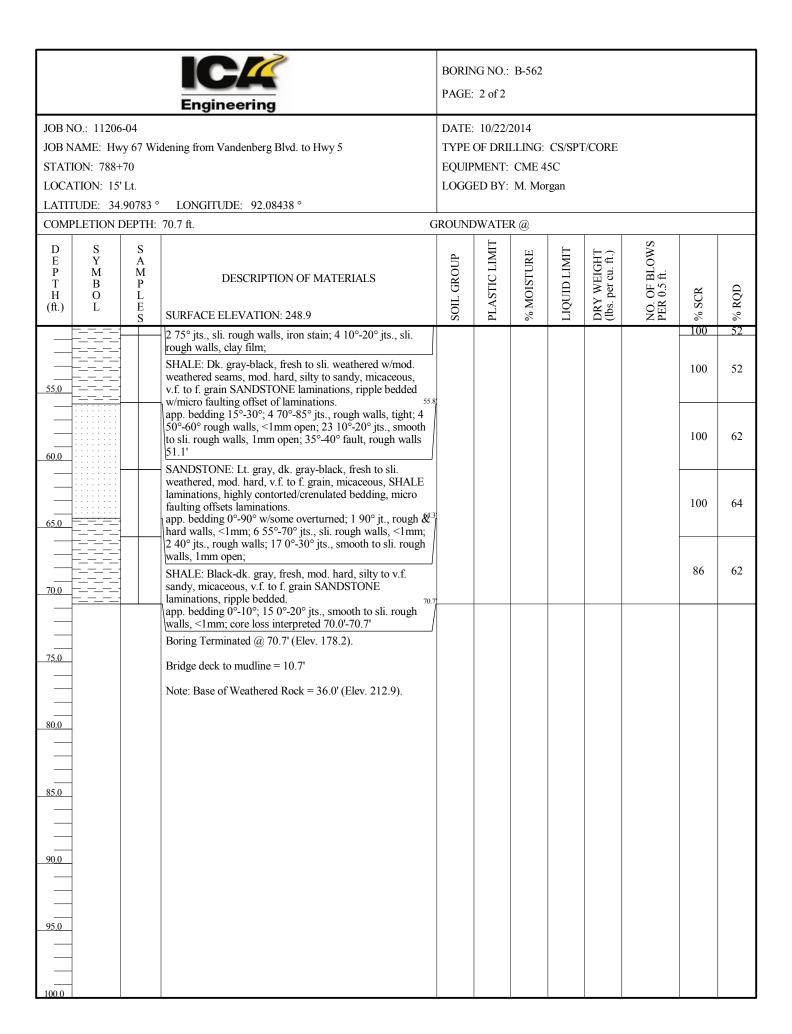
		Engineering	BORING NO.: B-558 PAGE: 1 of 2										
STATION: 788 LOCATION: 4	Iwy 67 W 8+25 6' Lt. 34.90775 °	idening from Vandenberg Blvd. to Hwy 5  LONGITUDE: 92.08453 °	DATE: 10/17/2014  TYPE OF DRILLING: CS/SPT/CORE  EQUIPMENT: CME 45C  LOGGED BY: C. Banning  GROUNDWATER @										
D S E Y P M T B H O (ft.) L	S A M P L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 249.7	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD			
		Brown & gray, hard, silt.		23	22.4	26		4,13,21					
5.0		Brown & gray, stiff to very stiff, lean clay.	4.4		19.8			6,8,9					
				23	22.3	40		2,3,6					
15.0		Brown & tan, v. stiff, lean clay with sand.	1.4	15	19.0	25							
20.0		Brown & dark brown, medium stiff, sandy, silty clay.	9.5°		24.1			2,2,3					
25.0		Brown & tan, soft, sandy lean clay.	4.4	17	21.6	26							
30.0		Brown & gray, soft, sandy, silty clay.	<del>9.4</del> '	16	22.0	21		1,1,2					
35.0	•	Weathered Shale.	5.1' 5.3'		10.8			50/0.2					
40.0	- - - - - -	Auger Refusal @ 36.3', Begin Coring in Interbedded Sandstone & Shale. Interbedded SANDSTONE & SHALE: Lt. gray, dk. gray-black, orange-brown, mod. to sev. weathered, mod.							68	0			
45.0	•] •] •]	hard w/soft seams, v.f. to f. grain, well cemented, argillaceous, laminated, clay seams, iron xoide stain. heavily fractured, 30° to 90° jts. observed w/iron oxide stain							34	0			
50.0	- - - - -	SHALE: Black-dk. gray, scattered lt. gray, fresh to sli. weathered w/seams sev. weathered, mod. hard w/soft seams, f. micaceous, silty to v.f. sandy in parts, scat.	7.1						78	26			



	Engineering		NG NO.: 1 of 2	B-559								
JOB NO.: 11206-04 JOB NAME: Hwy 6' STATION: 788+25 LOCATION: 15'Rt. LATITUDE: 34.907 COMPLETION DEP		DATE: 10/17/2014  TYPE OF DRILLING: CS/SPT/CORE  EQUIPMENT: CME 45C  LOGGED BY: M. Morgan  GROUNDWATER @										
D S S S S S S S S S S S S S S S S S S S	DESCRIPTION OF MATERIALS	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD			
5.0	Brown & tan, stiff, silt.		20	20.9	23		3,5,5					
15.0	Tan, brown & gray, v. stiff, lean clay with sand.		17	19.5	27		6,6,4					
20.0	Brown, tan & gray, medium stiff, sandy lean clay.		20	22.1	36		2,3,3					
25.0	Brown, tan & black, med. stiff, sandy lean clay.		16	19.8	24							
30.0	Brown, tan & gray, very stiff to very hard, sandy, lean clay.  Weathered Shale w/clay seams.			19.2			7,8,11					
35.0 + + + + + + + + + + + + + + + + + + +	Auger Refusal @ 34.7', Begin Coring in Interlayered Clay <sup>85.5</sup> & Shale.  SHALE: Black-dk. gray, lt. gray, orange-brown, mod. to sli. weathered, med. hard, silty to f. sandy, SANDSTONE laminations & thin beds, micaceous, iron oxide stain on discontinuities.						50/0.0	94	54			
45.0	app. bedding 25°; sandstone bed 37.4'-38.0'; 16 20°-30° bed. jts. w/iron stain & clay to 1mm; 5 intersecting 40°-76 <sup>26</sup> jts. w/clay to 1mm  Interbedded SANDSTONE & SHALE: Dk. gray-black, sli. weathered, med. to mod. hard, v. f. grain sandstone, silty 455							96	26			
50.0	shale, micaceous, bedding & laminations offset by micro faults.  app. bedding 25°; 12 20°-40° jts. w/clay film, sli. rough; 2 70° jts. w/clay film, rough							6	0			



	Engineering		NG NO.: : 1 of 2	B-562								
JOB NO.: 11206-04 JOB NAME: Hwy 67 W STATION: 788+70 LOCATION: 15' Lt. LATITUDE: 34.90783 COMPLETION DEPTH:		DATE: 10/22/2014  TYPE OF DRILLING: CS/SPT/CORE  EQUIPMENT: CME 45C  LOGGED BY: M. Morgan  GROUNDWATER @										
D   S   S   S   E   Y   A   A   P   M   M   M   T   B   P   H   O   L   (ft.)   L   E   S	DESCRIPTION OF MATERIALS  SURFACE ELEVATION: 248.9	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD			
10.0	Light brown, stiff, silty clay.  Gray, orange & tan, stiff, lean clay.  Brown, medium stiff, silty clay.		19	19.4 22.5 20.8	36		3,3,10 2,3,5					
25.0	Brown, very stiff to very hard, sandy lean clay.	31	18	21.3	25		3,4,5					
30.0	35. Washing d Chala 36	5	18	16.5	26		11,19,26 22,50/0.2					
40.0	Auger Refusal @ 35.7', Begin Coring in Shale.  SHALE: Olive gray, brown-orange, dk. gray-black, mod. to sev. weathered, soft to med. hard, clayey, iron oxide stain, clay seams.  8 0°-20° jts., smooth walls, iron stain & clay film; 2 70° jts. w/clay to 2mm; clay seams 37.0'-37.1', 38.1', 38.8'  SHALE: Dk. gray-black, brown-orange seams, sli. to mod.	7						100	22			
45.0	weathered, med. to mod. hard, silty, f. micaceous, iron oxide stain in seams.  16 0°-20° jts., smooth walls, clay film, 1mm±  SANDSTONE: Lt. gray, gray, sli. weathered, mod. hard, v.f. to f. grain, SHALE laminations & partings, ripple to contorted bedding, iron oxide on jt. walls.	\$						100	52			



			Engineering	BORING NO.: B-563 PAGE: 1 of 2										
JOB NO.: 112 JOB NAME: F STATION: 78 LOCATION: 4 LATITUDE:	Hwy 67 8+70 46' Rt. 34.907	78°		DATE: 10/16/2014  TYPE OF DRILLING: CS/SPT/CORE  EQUIPMENT: CME 45C  LOGGED BY: C. Banning  GROUNDWATER @										
D S E Y P M T B H O (ft.) L	S A M P L E	l I	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 249.8	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD			
5.0			Gray & orange, stiff, silt.		20	20.5	21							
10.0			Brown & gray, stiff, lean clay.		22	23.2	35		3,4,7					
15.0			Brown, medium stiff, sandy lean clay.		17	21.4	25		3,2,4					
20.0		<	Brown & gray, soft, lean clay.		20	24.7	28		1,2,2					
25.0			Brown, medium stiff, sandy silt.		19	19.1	23							
30.0			Brown, medium dense to very dense, clayey sand.		17	15.9	30		3,7,6					
33333333			Wyoth and Cholo & Conditions 34.5			10.1			50/0.4					
35.0 + + + + + + + + + + + + + + + + + + +	+  + + - - - - -		Weathered Shale & Sandstone  Auger Refusal @ 34.5', Begin Coring in Shale.  SHALE: Olive gray, orange-brown, mod. to sev.  weathered, med. hard w/soft seams, silty, clay laminae & seams, iron oxide stain, micaceous.  abund. jts. w/iron stain			33.1			20.0.1	90	0			
45.0			SHALE: Olive gray, green-gray, orange-brown, grades to dk. gray, mod. weathered w/sev. weathered seams, med. to mod. hard, silty to f. sandy in parts, iron oxide stain, micaceous.							98	18			
10.0			19 30°-40° jts., some w/clay or iron oxide <1-2mm; 6+ 0° <sup>44.7</sup> jts. w/partial iron stain; 3 70°-90° jts., heavy iron oxide stain, clay film to 1mm, rough walls; broken & sev. weathered 43.7'-44.7'  Interlaminated SANDSTONE & SHALE: Lt. gray, black,							94	0			

			Engineering	BORING NO.: B-563 PAGE: 2 of 2									
JOB N STAT LOCA	NO.: 11206 NAME: Hw TION: 788+ ATION: 46 TUDE: 34	yy 67 Wi -70 Rt.	idening from Vandenberg Blvd. to Hwy 5  LONGITUDE: 92.08419 °	DATE: 10/16/2014  TYPE OF DRILLING: CS/SPT/CORE  EQUIPMENT: CME 45C  LOGGED BY: C. Banning									
COM	PLETION I	DEPTH:	74.5 ft.	GROUNDWATER @									
D E P T H (ft.)	S Y M B O L	S A M P L S	DESCRIPTION OF MATERIALS  SURFACE ELEVATION: 249.8	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD		
			orange-brown, sli. to mod. weathered, mod. hard, v.f. to f. grain & silty, ripple bedded in parts, iron oxide stain on jts. 3+70°-90° jts. w/iron oxide stain, rough walls, numerous additional jts.; app. bedding 25°							98 98	8		
55.0			SHALE: Black-dk. gray, lt. gray, sli. to mod. weathered w/seams sev. weathered, med. hard w/soft seams, silty w/f. grain sandstone laminations, micaceous, scat. pyrite grains. broken & weathered seam 48.5'-49.2'; clay seam 51.0-51.1'; app. bedding 15°-20°; clay seams 55.6'-55.8',							98	34		
65.0			56.2'; sandstone bed 58.3'-58.5'; clay seam w/frags.; 58.7'-59.1'; sandstone bed 61.0'-61.2'; 3 85°-90° jts., rough walls, pyrite grains; 70+ 10°-20° jts., clay film/slickensides on some; app. bedding 30°; increased sandstone laminations 67.5'-70.4'							100	50		
70.0										100	60		
75.0			74.5							100	82		
80.0 			Boring Terminated @ 74.5' (Elev. 175.3).  Note: Base of Weathered Rock = 36.3' (Elev. 213.5).										

Engineering		BORING NO.: B-564 PAGE: 1 of 2									
JOB NO.: 11206-04  JOB NAME: Hwy 67 Widening from Vandenberg Blvd. to Hwy 5  STATION: 789+05  LOCATION: 46' Lt.  LATITUDE: 34.90795 ° LONGITUDE: 92.08444 °  COMPLETION DEPTH: 58.2 ft.	DATE: 10/18/2014 TYPE OF DRILLING: CS/SPT/CORE EQUIPMENT: CME 45C LOGGED BY: H. Morris GROUNDWATER @										
D         S         S           E         Y         A           P         M         M           T         B         P           H         O         L           (ft.)         L         E           S         SURFACE ELEVATION: 256.0		SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD		
Gray & tan, medium stiff to stiff, silt.			22	22.8	28		0,1,5 5,5,5				
Gray & black, v. stiff, lean clay.  Gray & tan, medium stiff to stiff, silt.	12.9		19	21.7	38		4,6,8				
Brown, v. loose, clayey sand.	27.9			26.7			0,2,3				
Gray & tan, medium dense, silty, clayey sand with gra	32.6 vel.		19 17	21.6	<ul><li>27</li><li>22</li></ul>		5,9,13				
Gray & tan, very dense, clayey sand with gravel.  Weathered Shale & Sandstone	37.99 40.6 40.8 42.2		19	16.2	30		7,9,50/0.2	40	0		
Auger Refusal @ 40.8', Begin Coring in Weathered Fragments.  Weathered Fragments: Black, lt. olive gray, orange-brown SHALE & SANDSTONE frags. w/clay.  SHALE: Black-dk. gray, brown-orange, mod. weathered gray.	own,							96	42		
fresh w/some sev. weathered seams & jt. walls, med. to mod. hard, clayey to silty, f. micaceous, iron oxide stail some jts.	0							100	90		

	T								
	BORING NO.: B-564								
Engineering	PAGE	2 of 2							
JOB NO.: 11206-04  JOB NAME: Hwy 67 Widening from Vandenberg Blvd. to Hwy 5  STATION: 789+05  LOCATION: 46' Lt.  LATITUDE: 34.90795 ° LONGITUDE: 92.08444 °	DATE: 10/18/2014 TYPE OF DRILLING: CS/SPT/CORE EQUIPMENT: CME 45C LOGGED BY: H. Morris								
COMPLETION DEPTH: 58.2 ft.	GROUNI	OWATE	R @						
D         S         S           E         Y         A           P         M         M           T         B         P           H         O         L           (ft.)         L         E           S         SURFACE ELEVATION: 256.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD	
5 50°-65° jts., sli. rough walls, clay film; 6 30°-40° jts., sli. rough walls, iron oxide stain; 19 0°-20° jts., sli. rough to							100	90	
rough walls, iron stain on some; 2 70°-85° faults, smooth, slickenside walls, scat. pyrite, 49.5'-50.8'; sev. weathered 52.1'-55.1'; clay seam 56.6'-57.1'							79	0	
							62	42	
Boring Terminated @ 58.2' (Elev. 197.8).	.21								
Bridge deck to ground = 5.5'									
Note: Base of Weathered Rock = 42.2' (Elev. 213.8).									
65.0									
70.0									
75.0									
80.0									
85.0									
90.0									
95.0									
100.0									

	Engineering		NG NO.: 1 of 2	B-565								
STATION: 789+05 LOCATION: 15' Rt. LATITUDE: 34.90790 °		DATE: 10/17/2014  TYPE OF DRILLING: CS/SPT/CORE  EQUIPMENT: CME 45C  LOGGED BY: S. Berry  GROUNDWATER @										
D   S   S   E   Y   A   P   M   M   T   B   P   H   O   L   E   S   S   COMPLETION DEPTH:	DESCRIPTION OF MATERIALS  SURFACE ELEVATION: 256.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD			
10.0	Tan, medium stiff to stiff, lean clay.		22	24.3	38		5,3,3 4,7,8 2,4,5					
20.0	Gray, tan & brown, medium stiff, lean clay.		19	19.6	28							
25.0	Tan, medium stiff, silt with sand.	5	18	20.3	20		3,3,4					
30.0	Tan & brown, medium stiff, silty clay with sand.	5'	18	21.4	23		3,3,3					
35.0	Brown & gray, v. loose, silty sand.	5	22	21.1	22							
40.0	Brown, very hard, silt with sand.  Weathered Shale  Auger Refusal @ 40.4', Begin Coring in Shale & Clay. SHALE & CLAY Seams: Dk. gray, olive gray, orange-brown, sli. to mod weathered SHALE frags. w/abundant CLAY seams, iron oxide stain.			12.8			50/0.2	58	0			
50.0	Interbedded SHALE & SANDSTONE: Dk. gray-black, lt. gray, orange-brown, sli. weathered w/seams mod. & sev. weathered, med. to mod. hard, silty to f. sandy SHALE, v.f. to f. grain SANDSTONE, pred. laminated bedding.							100	8			

	Engineering	BORING NO.: B-565 PAGE: 2 of 2									
JOB NO.: 11206-04 JOB NAME: Hwy 67 V STATION: 789+05 LOCATION: 15' Rt. LATITUDE: 34.90790	Widening from Vandenberg Blvd. to Hwy 5	DATE: 10/17/2014  TYPE OF DRILLING: CS/SPT/CORE  EQUIPMENT: CME 45C  LOGGED BY: S. Berry									
COMPLETION DEPTI		GROUNDWATER @									
D S S S E Y A A P M M T B P H O L (ft.) L E S	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 256.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD		
55.0	app. bedding varies 5°-30°; 1 60° jt., rough walls, iron stain; 5 40°-45° jts., rough walls, iron stain; 1 70° jt. part. healed, iron stain; clay seam 47.8'-47.9'; 35+ 10°-25° jts., sli. rough to rough walls, iron stain  SHALE: Black-dk. gray, sli. to mod weathered w/sev.							100	42		
60.0	weathered seams, med. to mod. hard w/seams soft, silty to f. sandy, intervals claystone, scat. v.f. to f. grain sandstone laminae, clay seams. clay seams 50.5'-50.6', 51.0'-51.1', 51.5'-51.6', 52.4'-52.5'; 3 80°-85° jts., sli. rough walls, clay film; 2 50°-60° jts., smooth walls; 72+0°-10° jts., smooth walls, some w/clay							98	16		
65.0	to 1mm; clay seam 66.1'-66.2'; clay seam 69.5'-69.7'; sandstone bed 70.2'-70.4'							94	52		
70.0	70.4							98	64		
	Boring Terminated @ 70.4' (Elev. 185.6).  Bridge deck to ground = 4.6'										
75.0	Note: Base of Weathered Rock = 43.5' (Elev. 212.5).										
80.0											
85.0											
90.0											
95.0											
100.0											



Natural



Project Name: Highway 67 Widening Location: Pułaski County, Arkansas

Job Number: 11206-04

### Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

	iumber: I							Natural
		: 11206-04						Moisture
Soil	_		Sample	_				Content
No.	No.	Station & Offset	No.		pth		H	(%)
50	B-501		ST-1	4.5		Brown & Tan Silty Clay with Sand		20.0
51			ST-2	9.5		Brown Sandy Lean Clay	$\dashv$	15.9
1			SS-1	14.5	16.0	Brown & Gray Lean Clay with Sand	$\rightarrow$	18.6
							$\dashv$	
2	B-502		SS-1	4.2		Brown, Tan & Gray Lean Clay with Sand	_	22.3
52			ST-1	9.2		Tan & Gray Lean Clay		23.8
2			SS-2	14.2		Brown & Gray Lean Clay with Sand		14.8
53			ST-2	19.2		Gray & Tan Lean Clay with Sand		18.9
3			SS-3	24.2	25.7	Brown & Gray Lean Clay		18.8
54	B-503		ST-1	4.1	5.1	Brown Lean Clay		28.8
4			SS-1	9.1		Brown & Gray Fat Clay		25.5
55			ST-2	14.1	15.8	Brown & Tan Silty Clay		23.5
5	B-504		SS-1	4.0	5.5	Brown & Gray Sandy Lean Clay		16.9
56			ST-1	9.0		Brown & Tan Sandy Silt		13.6
6			SS-2	9.6		Brown & Gray Silty Sand		12.7
57			ST-2	14.0		Tan Sandy Silt		15.3
7	B-505	MINI	SS-1	4.5	6.0	Tan & Gray Clayey Sand	一十	15.8
7			SS-2	9.5		Tan & Gray Clayey Sand		23.6
58			ST-1	14.5		Brown, Tan & Gray Sandy Lean Clay	$\neg$	21.2
7			SS-3	19.5		Tan & Gray Clayey Sand	一	29.2
<u> </u>			1000		21.0	Tanto Only Only		
8	B-506		SS-I	4.8	6.3	Gray & Tan Sandy Lean Clay	$\neg$	23.4
8	Boo		SS-2	9.8		Gray Sandy Lean Clay	$\dashv$	23.7
59			ST-1	14.8	16.3	Gray & Orange Silty, Clayey Sand	一	16.7
9	-		SS-3	19.8		Gray Sandy Silty Clay		16.3
			00.0	17.0	21.0	Oldy Olliny Olly	-+	10.5
10	B-507	- MANAGEMENT - MAN	SS-1	4.7	62	Gray & Brown Silty Clay with Sand	$\dashv$	24.3
60	D-307		ST-1	9.7		Tan & Gray Lean Clay	$\dashv$	22.9
11			SS-2	14.7		Gray & Brown Lean Clay with Sand	$\dashv$	18.6
A 4	<del>  -</del>		0,0-2	14.7	10.2	Olay & Blown Exam City War Sund	$\dashv$	10.0
12	B-508		SS-1	4.7	6.2	Gray & Brown Lean Clay with Sand	$\dashv$	13.8
13	D-300		SS-2	9.7		Brown & Gray Sandy Silty Clay with Gravel	$\dashv$	8.2
14			SS-3	13.5		Gray Silty Sand	$\dashv$	7.2
14			33-3	15.5	13.9	Otay Siky Sailu	$\dashv$	7.2
15	B-509		SS-1	4.0	5.5	Brown & Red Clayey Sand with Gravel	$\dashv$	17.4
15	D-309		SS-2	9.0	9.3	Brown Clayey Sand with Gravel		11.9
16			SS-3	14.0		Brown Sandy Lean Clay	$\dashv$	11.6
				40.0	10.0		-	6.2
16			SS-4 SS-5	19.0		Brown Sandy Lean Clay Brown Sandy Lean Clay	$\dashv$	4.4
16	-	11111	99-9	24.0	24.2	DIOWII Sandy Lean Clay	-	4.4
- 12	D C10		11/0:	0.0	6.0	Ded Lease Classical Const	$\dashv$	
43	B-510		MC-1	0.0	5.0	Red Lean Clay with Sand		
- 12	D. 6111		<del> </del>			Day I are Oleveride Cond	$\dashv$	10.1
43	B-511		Bag-1	0.0	5.0	Brown Lean Clay with Sand		19.1
	73.615			0.0				
43	B-512		Bag-15	0.0	5.0	Brown Lean Clay with Sand	$\rightarrow$	
			1				_	
43	B-513		MC-1	0.0	5.0	Brown Lean Clay with Sand	<b>→</b>	
43	B-514		MC-1	0.0	5.0	Brown Lean Clay with Sand		
49	B-515		Bag-2	0.0	5.0	Brown Sandy Silty Clay		
49	B-516		MC-1	0.0	5.0	Brown Sandy Silty Clay		
				I			Г	

Project Name: Highway 67 Widening Location: Pulaski County, Arkansas Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

Job Number: 11206-04
Project Job No.: 11206-04
Soil Boring

Natural Moisture

Soil	Boring		Sample					Content
No.	No.	Station & Offset	No.	De	pth	Description of Soil	pН	(%)
49	B-517		MC-1	0.0	5.0	Brown Sandy Silty Clay		
49	B-518		Bag-16	0.0	5.0	Brown Sandy Silty Clay		
47	B-519		Bag-3	0.0	5.0	Brown Sandy Lean Clay		
48	B-520		Bag-17	0.0	5.0	Brown Clayey Sand		
47	B-521		Bag-4	0.0	5.0	Dark Brown Sandy Lean Clay		
47	B-522		MC-1	0.0	5.0	Brown Sandy Lean Clay		
43	B-523		Bag-18	0.0	5.0	Brown Lean Clay with Sand		
47	B-524		Bag-19	0.0	5.0	Brown Sandy Lean Clay		
47	B-525		Bag-5	0.0	5.0	Brown Sandy Lean Clay		
47	B-526		MC-1	0.0	5.0	Brown Sandy Lean Clay		
48	B-527		Bag-20	0.0	5.0	Brown Clayey Sand		
48	B-528		MC-1	0.0	5.0	Brown Clayey Sand		
48	B-529	, , , , , , , , , , , , , , , , , , , ,	MC-1	0.0	5.0	Brown Clayey Sand		
48	B-530		Bag-6	0.0	5.0	Brown Clayey Sand		16.4
49	B-531		Bag-21	0.0	5.0	Red & Brown Sandy Silty Clay		
49	B-532		MC-1	0.0	5.0	Red & Brown Sandy Silty Clay		
45	B-533		Bag-7	0.0	5.0	Red Silty, Clayey Sand with Gravel		
47	B-534		Bag-8	0.0	5.0	Brown Sandy Lean Clay		18.1
43	B-535		Bag-22	0.0	5.0	Brown Lean Clay with Sand		
45	B-536		Bag-23	0.0	5.0	Red Silty, Clayey Sand with Gravel		
43	B-537		Bag-9	0.0	5.0	Brown Lean Clay with Sand		
46	B-538		Bag-10	0.0	5.0	Red Lean Clay with Sand		
47	B-539		MC-1	0.0	5.0	Brown Sandy Lean Clay		
47	B-540		Bag-31	0.0	5.0	Brown Sandy Lean Clay		
45	B-541		Bag-11	0.0	5.0	Gray Silty, Clayey Sand with Gravel		
45	B-542		MC-1	0.0	5.0	Gray Silty, Clayey Sand with Gravel		
49	B-543		Bag-30	0.0	5.0	Red & Brown Sandy Silty Clay		19.5
46	B-544		Bag-29	0.0		Dark Brown Lean Clay with Sand		23.2
47	B-545		MC-1	0.0		Brown Sandy Lean Clay		
47	B-546		Bag-12	0.0	5.0	Brown Sandy Lean Clay		
49	B-547		MC-1	0.0	5.0	Brown Sandy Silty Clay		
_	· · · · · · · · · · · · · · · · · · ·							

Natural

24.7

### Moisture Data

Location: Pulaski County, Arkansas Job Number: 11206-04 Project Job No.: 11206-04

23

Project Name: Highway 67 Widening

(AASHTO T255-T265 / ASTM C566-D2216)

	vuiiiber i g ect Joh No	: 11206-04						Natural Moisture
	Boring	1 11200-04	Sample					Content
No.	No.	Station & Offset	No.	Da	pth	Description of Soil	рH	(%)
49	B-548		Bag-27			Brown Sandy Silty Clay	PIT	( /0 )
47	B-549		Bag-13	0.0	5.0	Red & Gray Sandy Lean Clay		
44	B-550		Bag-26	0.0	5.0	Brown Silty, Clayey Sand with Gravel		10.7
44	B-551		Bag-14	0.0	5.0	Brown Silty, Clayey Sand with Gravel		
44	B-552		MC-1	0.0	5.0	Brown Silty, Clayey Sand with Gravel		
15	D 440							
45	B-553		Bag-25	0.0	5.0	Brown & Red Silty, Clayey Sand with Gravel		11.1
4.4	D 664		100.1	0.0		D 011 01 0 1 11 0 1		
44	B-554		MC-1	0.0	2.3	Brown Silty, Clayey Sand with Gravel	$\longrightarrow$	
28	D 556		00.1	4.0	-	D 014		
28	B-556		SS-1	4.8		Brown Silt		28.6
28			SS-2 SS-3	9.8		Brown & Gray Silt		22.9
61			ST-1	14.8 19.8		Brown & Gray Silt Brown Lean Clay		21.1
28			SS-4	24.8		Brown & Gray Silt		22.2
62	<del>                                     </del>		ST-2	29.8		Orange & Gray Lean Clay with Sand		20.8
29	<del>  </del>		SS-5	34.8		Brown Sandy Silty Clay		23.3
29	<del>                                     </del>		SS-6	39.8		Brown & Gray Sandy Silty Clay		22.7
30	<del> </del>		SS-7	44.8		Gray Silt with Sand		8.3
			100-7	77.0	43.0	Oldy Sir With Saild		0.5
33	B-557		SS-1	4.4	59	Brown & Black Lean Clay		22.9
34	2007		SS-2	9.4		Gray Lean Clay		26.2
63			ST-1	14.4		Brown & Gray Silt		19.5
64			ST-2	19.4		Gray & Orange Lean Clay		22.6
34			SS-3	24.4		Tan, Gray & Black Lean Clay		20.3
34			SS-4	29.4		Tan, Brown & Black Lean Clay	1	23.6
35			SS-5	34.4		Tan, Brown & Black Lean Clay	1	24.8
65			ST-3	39.4	40.4	Brown & Tan Silty, Clayey Sand		14.0
36			SS-6	44.4		Dark Gray & Black Silt with Sand		2.3
17	B-558		SS-1	1.1		Brown & Gray Silt		22.4
18			SS-2	6.1		Brown & Gray Lean Clay		19.8
18			SS-3	11.1		Brown & Gray Lean Clay		22.3
66			ST-1	16.1	17.9	Brown & Tan Lean Clay with Sand		19.0
19			SS-4	21.6		Brown & Dark Brown Sandy Silty Clay		24.1
67			ST-2	26.1	27.6	Brown & Tan Sandy Lean Clay		21.6
19			SS-5	31.1	32.6	Brown & Gray Sandy Silty Clay		22.0
20	ļ		SS-6	35.9	36.1	Gray Silty Sand with Gravel		10.8
27	D 660		00.1	47		D 6 T 074		20.0
37 37	B-559		SS-1	4.7		Brown & Tan Silt Brown & Tan Silt		20.9
68			SS-2 ST-1	9.7 14.7				19.5
38			S1-1 SS-3			Tan, Brown & Gray Lean Clay with Sand		18.4
69	<del>                                     </del>		SS-3 ST-2	19.7 24.7		Brown, Tan & Gray Sandy Lean Clay		22.1 19.8
38			S1-2 SS-4	29.7		Brown, Tan & Black Sandy Lean Clay Brown, Tan & Gray Sandy Lean Clay		19.8
20			33-4	47.1	31.2	Diown, Tau & Oray Sandy Lean Clay		17.2
31	B-562		SS-1	5.0	6.5	Light Brown Silty Clay		19.4
70	D-504		ST-1	10.0		Gray, Orange & Tan Lean Clay		22.5
31	<del> </del>		SS-2	15.0		Brown Silty Clay	-+	20.8
31			SS-3	20.0		Brown Silty Clay		21.3
32			SS-4	25.0		Brown Sandy Lean Clay		20.4
32			SS-5	30.0		Brown Sandy Lean Clay		16.5
32			SS-6	35.0		Brown Sandy Lean Clay		11.6
			1 20 0	22.0	23.7	and and and	<del></del>	
71	B-563		ST-1	4.1	5.4	Gray & Orange Silt		20.5
21			SS-1	9.1		Brown & Gray Lean Clay		23.2
22	<b></b>		SS-2	14.1		Brown Sandy Lean Clay		21,4
	<del></del>		<del>                                     </del>		<del>- : : </del>		<del>[</del>	

SS-3 19.1 20.6 Brown & Gray Lean Clay

Project Name: Highway 67 Widening Location: Pulaski County, Arkansas

Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

Job Number: 1	11206-04
Project Job No.	: 11206-04

Natural

Proje	ct Job No.	: 11206-04					1	Moisture
Soil	Boring		Sample					Content
No.	No.	Station & Offset	No.	De	pth	Description of Soil p	Н	(%)
72			ST-2	24.i		Brown Sandy Silt		19.1
24			SS-4	29.1	30.6	Brown Clayey Sand		15.9
24			SS-5	34.1	34.5	Brown Clayey Sand		10.1
25	B-564		SS-1	4.6	6.1	Constitution of the consti		22.8
25	D-304		SS-2	9.6		Gray Silt Gray & Tan Silt		22.9
73			ST-1	14.6	16.1	Tan, Gray & Black Lean Clay		21.7
25			SS-3	19.6		Gray & Tan Silt	$\top$	20.5
25			SS-4	24.6	26.1	Gray & Tan Silt		26.7
74			ST-2	29.6	30.6	Brown Clayey Sand		21.6
26			SS-5	34.6	36.1	Gray & Tan Silty, Clayey Sand with Gravel		15.8
27			SS-6	39.6	40.8	Gray & Tan Clayey Sand with Gravel		16.2
39	B-565		SS-1	5.2	6.7	Tan Lean Clay	+	24.3
39	D 505		SS-2	10.2	11.7	Tan Lean Clay	$\dashv$	20.1
39			SS-3	15.2		Tan Lean Clay		22.4
75			ST-1	20.2	21.9	Gray, Tan & Brown Lean Clay		19.6
40			SS-4	25.2		Tan Silt with Sand		20.3
41			SS-5	30.2		Tan & Brown Silty Clay with Sand		21.4
76			ST-2	35.2		Brown & Gray Silty Sand		21,1
42			SS-6	40.2	40.4	Brown Silt with Sand		12.8



% Passing

Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Brown & Gray Lean Clay with Sand

Sample No. : \$S-1

Sample Loc. : Boring No. B-501 Sample Depth : 14.5' to 16.0' Date Tested : 10/24/14

Date Reported: 10/31/14

#### AASHTÓ T27:

No.10

				% Passing
4	in.	101.6	mm	
3.5	lin.	88.9	nım	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	. , ,
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	nım	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	

mm

100.0

					70 1 assnig
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	99.2
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	,
	No.200		0.075	mm	74.0
	No.270		0.053	mm	
	Hyd. Rd.	# 1	•	mm	
	Hyd. Rd.	#2		mm	
AASHIO 188	Hyd. Rd.	#3		mm	
HIC	Hyd. Rd.	# 4		mm	
3	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd, Rd.	#7		mm	
'n	0			•	,

 $D_{50} = 0.0088 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 18.6

Dry Dens.: NA Liquid Limit (AASHTO T89): 34 Opt. Moist.: NA Plastic Limit (AASHTO T90): 20

Plasticity Index : 14

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10): 0.0

Liquidity Index: -0.09

Activity: NA

Coarse Sand (-No.10 + No.40) : 0.8 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200) : 25.2 AASHTO Classification: M145 : A-6 (9) Silt + Clay (-No.200) : 74.0 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0
Fine Gravel (-3/4in. + No.4): 0.0
Coarse Sand (-No.4 + No.10): 0.0
Medium Sand (-No.10 + No.40): 0.8
Fine Sand (-No.40 + No.200): 25.2
Silt + Clay (-No.200): 74.0

Approved By:	J.S.	Soil No	1	
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% Passing

Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown, Tan & Gray Lean Clay with Sand

Sample No. : SS-1

Sample Loc. : Boring No. B-502

Sample Depth: 4.2' to 5.7'

Date Tested : 10/24/14

Date Reported: 11/03/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
_ 2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3,35	mm	
No.10		2	mm	99.8

İ	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	95.1
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	,
	No.200		0.075	mm	81.2
	No.270		0.053	mm	
ĺ	Hyd. Rd.	# 1		mm	,
	Hyd. Rd.	#2		mm	
	Hyd. Rd.	#3		mm	
	Hyd. Rd.	#4		mm	
1	Hyd. Rd.	# 5		mm	

mm

mm

 $D_{50} = 0.0059 \text{ mm}$ 

CBR : NA Natural Moisture (%) (AASHTO T265): 22.3

#6

Dry Dens. : NA Liquid Limit (AASHTO T89) : 31

Opt. Moist.: NA Plastic Limit (AASHTO T90): 18

Plasticity Index: 13

Hyd. Rd.

Hyd. Rd.

Liquidity Index: 0.30 AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10): 0.2 Activity: NA Coarse Sand (-No.10 + No.40): 4.7 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200): 13.9 AASHTO Classification: M145 : A-6 (9)

Silt + Clay(-No.200): 81.2ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0

Coarse Sand (-No.4 + No.10): 0.2

Medium Sand (-No.10 + No.40): 4.7 Fine Sand (-No.40 + No.200): 13.9

Silt + Clay (-No.200) : 81.2

Approved By: J.S. Soil No. 2



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown & Gray Lean Clay

Sample No. : SS-3

Sample Loc. : Boring No. B-502 Sample Depth : 24.2' to 25.7'

Date Tested : 10/25/14

Date Reported: 11/03/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in,	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	nım	
2	in.	50.8	mm	
1 3/4	in.	45	mm	7 110 110
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.9

<u>%</u>	P	ass	ing
_	,		_

					70 1 4001115
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	99.5
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	87.6
	No.270		0.053	mm	,
	Hyd. Rd.	#1	•	mm	_
	Hyd. Rd.	#2		mm	
2	Hyd. Rd.	# 3		mm	
AASHTO 188	Hyd. Rd.	#4		mm	
ş.	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	

 $D_{50} = 0.0044 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 18.8

Dry Dens. : NA Liquid Limit (AASHTO T89) : 42

Opt. Moist.: NA Plastic Limit (AASHTO T90) : 22

Plasticity Index: 20 AASHTO Composition of Total Sample: M145 Liquidity Index : -0.16

Gravel (3in. + No.10): 0.1 Activity: NA

Coarse Sand (-No.10 + No.40): 0.4 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200): 11.9 AASHTO Classification: M145 : A-7-6 (18)

Silt + Clay (-No.200): 87.6 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand (-No.4 + No.10): 0.1 Medium Sand (-No.10 + No.40): 0.4 Fine Sand (-No.40 + No.200): 11.9 Silt + Clay (-No.200): 87.6

Approved By: J.S. Soil No.



Project Name: Highway 67 Widening

Project No.: 11206-04

in.

in.

in.

lin.

in.

in.

lin.

in.

in.

in.

in.

3.5

3

2,5

2

1 3/4

1 1/2

1

3/4

1/2

3/8

1/4

No.4

No.6

No.10

1 1/4 | in.

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown & Gray Fat Clay

101.6

88.9

76.2

63.5

50.8

45

38.1

31.5

25

19

12.5

9.5

6.3

4.75

3.35

2

nım

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

Sample No. : SS-1

Sample Loc. : Boring No. B-503

Sample Depth: 9.1' to 10.6' Date Tested: 10/24/14

Date Reported: 11/03/14

#### AASHTO T27:

% Passing mm

100.0

99.9

99.7

	No.16
	No.30
	No.40
	No.50
	No.60
	No.80
	No.100
	No.200
	No.270
	Hyd. Rd.
	Hyd. Rd.
25	Hyd. Rd.
AASHTO	Hyd. Rd.
AAS	Hyd. Rd.
	Hyd. Rd.

	190.10		1.18	l min l	
	No.30		0.6	mm	
	No.40		0.425	mm	98.6
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	·
	No.100		0.15	mm	
	No.200		0.075	mm	96.3
	No.270		0.053	mm	
	Hyd. Rd,	#1		mm	
	Hyd. Rd.	#2		mm	• 1
T38	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	#4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd, Rd.	#7		mm	
เกว	1				

 $D_{50} = 0.0031 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 25.5

Dry Dens. : NA Liquid Limit (AASHTO T89) : 51 Opt. Moist.: NA Plastic Limit (AASHTO T90): 27

> Plasticity Index: 24 Liquidity Index : -0.05

AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10): 0.3 Activity: NA

Coarse Sand (-No.10 + No.40): 1.1 Sp. Gr. (AASHTO T100) ; NA

Fine Sand (-No.40 + No.200): 2.3 AASHTO Classification: M145 : A-7-6 (27)

Silt + Clay (-No.200): 96.3 ASTM Classification: D2487 : CH

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.1 Coarse Sand (-No.4 + No.10): 0.2 Medium Sand (-No.10 + No.40): 1.1 Fine Sand (-No.40 + No.200) : 2.3 Silt + Clay (-No.200): 96.3

Approved By:	J.S.	Soil No.	1
Approved by .	J.O.	2011 INO.	4



Project Name: Highway 67 Widening

Project No.: 11206-04 Sample No.: \$\$-1

Project County: Pulaski Sample Loc.: Boring No. B-504
Project State: Arkansas Sample Depth: 4.0' to 5.5'
Laboratory No.: 11206-04 Date Tested: 10/24/14

Laboratory No.: 11206-04 Date Tested: 10/24/14
Submitted By: ICA Engineering Date Reported: 11/03/14

Soil Type: Tan & Gray Sandy Lean Clay

#### AASHTO T27:

Ω,	n	•
V/~	Pas	cını

 		% Passing
1.18	mm	

4	in.	101.6	mm	·
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	ınm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	• '
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.2
No.6		3.35	mm	
No.10		2	ınm	95.8

	No.16		1.18	mm	
	No.30		0.6	mm	
İ	No.40		0.425	mm	89.5
ļ	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	53.1
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
AASHTO T88	Hyd. Rd.	#3		mm	
FF.	Hyd. Rd.	# 4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
۸5	1 mm				

 $D_{50} = 0.051 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 15.8

Dry Dens.: NA Liquid Limit (AASHTO T89): 26
Opt. Moist.: NA Plastic Limit (AASHTO T90): 16

Plasticity Index : 10

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.03

Gravel (3in. + No.10): 4.2 Activity: NA Sand (-No.10 + No.40): 6.3 Sp. Gr. (AASHTO T100): NA

Coarse Sand (-No.10 + No.40) : 6.3 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200) : 36.4 AASHTO Classification: M145 : A-4 (2)

Silt + Clay (-No.200): 53.1 ASTM Classification: D2487: CL

#### ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 0.8 Coarse Sand (-No.4 + No.10) : 3.4 Medium Sand (-No.10 + No.40) : 6.3 Fine Sand (-No.40 + No.200) : 36.4 Silt + Clay (-No.200) : 53.1

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Approved By: J.S.	Soil No.	5
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Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown & Gray Silty Sand

Sample No. : SS-2

Sample Loc. : Boring No. B-504

Sample Depth: 9.6' to 11.1' Date Tested: 10/24/14

Date Reported: 11/03/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	Ì
3.5	in.	88.9	mm	,
3	in.	76.2	mm	
2.5	in.	63.5	mm	·
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	,
1 1/4	in.	31.5	mm	•
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.0
No.6		3.35	mm	
No.10		2	mm	97.3

					% Passing
	No.16		1.18	mm	
	No.30		0.6	ınm	
	No.40		0.425	mm	92.1
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	49.1
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
881	Hyd. Rd.	#3		mm	
AASHIO 188	Hyd. Rd.	#4		mm	
Ş	Hyd. Rd.	# 5	,	mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	

 $D_{50} = 0.0778 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 12.7

Dry Dens.: NA Liquid Limit (AASHTO T89): 15 Opt. Moist.: NA Plastic Limit (AASHTO T90): 14

Plasticity Index : 1

AASHTO Composition of Total Sample: M145 Liquidity Index : -1.35

Gravel (3in. + No.10): 2.7 Activity: NA
Coarse Sand (-No.10 + No.40): 5.2 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200) : 43.0 AASHTO Classification: M145 : A-4 (0)

Silt + Clay (-No.200): 49.1 ASTM Classification: D2487: SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 1.0 Coarse Sand (-No.4 + No.10) : 1.7 Medium Sand (-No.10 + No.40) : 5.2 Fine Sand (-No.40 + No.200) : 43.0 Silt + Clay (-No.200) : 49.1

Approved By: J.S. Soil No. 6



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Sample No.: SS-2

Sample Loc. : Boring No. B-505

Sample Depth: 9.5' to 11.0' Date Tested : 10/24/14

Date Reported: 11/03/14

AASHTO T27:

No.4

No.6

No.10

Soil Type: Tan & Gray Clayey Sand

% Passino

100.0

99.5

mm

mm

mm

% Passino

				70 I dooning
4	in.	101.6	mm	
3.5	ın.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	ınm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	

4.75

3,35

					70 Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	93.6
	No.50		0.3	mm	'
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200	ì	0.075	mm	33.1
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
188	Hyd. Rd.	#3		mm	
AASHIO 188	Hyd. Rd.	# 4		mm	
Ş	Hyd. Rd.	# 5	•	mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
١,	0				

 $\overline{D_{50}} = 0.1218 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 23.6

Dry Dens. : NA Liquid Limit (AASHTO T89) : 42

Opt. Moist.: NA Plastic Limit (AASHTO T90) : 22

Plasticity Index: 20 AASHTO Composition of Total Sample: M145 Liquidity Index: 0.10

Activity: NA Gravel (3in. + No.10): 0.5 Coarse Sand (-No.10 + No.40): 5.9 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200): 60.5 AASHTO Classification: M145 : A-2-7 (2)

ASTM Classification: D2487 : SC Silt + Clay(-No.200) : 33.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand (-No.4 + No.10): 0.5 Medium Sand (-No.10 + No.40): 5.9 Fine Sand (-No.40 + No.200): 60.5 Silt + Clay (-No.200): 33.1

Approved By:	J.S.	Soil No.	7
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Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Gray Sandy Lean Clay

Sample No.: SS-2

Sample Loc. : Boring No. B-506

Sample Depth: 9.8' to 11.3'

Date Tested: 10/24/14

Date Reported: 11/03/14

AASHTO T27:

0/ Dogging

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	nım	
1 3/4	in.	45	mm	•
1 1/2	in,	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.4
No.6		3.35	mm	
No.10		2	mm	97.3

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	ınm	93.5
	No.50		0.3	mm	
	No.60		0,25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	60.0
	No.270		0.053	mm	
	Hyd. Rd.	# 1	•	mm	
	Hyd. Rd.	#2		nım	
138	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	# 4		mm	
	Hyd, Rd,	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
าวส่	0				

 $D_{50} = 0.0249 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 23.7

Dry Dens. : NA Liquid Limit (AASHTO T89) : 30

Plastic Limit (AASHTO T90): 17 Opt. Moist.: NA

Plasticity Index: 13

AASHTO Composition of Total Sample: M145 Liquidity Index: 0.53 Gravel (3in. + No.10): 2.7 Activity: NA

Coarse Sand (-No.10 + No.40): 3.8 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200): 33.5 AASHTO Classification: M145 : A-6 (5)

Silt + Clay(-No.200) : 60.0ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.6 Coarse Sand ( -No.4 + No.10 ) : 2.1 Medium Sand (-No.10 + No.40): 3.8 Fine Sand (-No.40 + No.200): 33.5

Approved By: J.S.

Silt + Clay (-No.200): 60.0

Soil No.

Strengthening America's Infrastructure®



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Gray Sandy Silty Clay

Sample No.: SS-3

Sample Loc. : Boring No. B-506 Sample Depth : 19.8' to 21.3'

Date Tested: 10/24/14

Date Reported : 10/31/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	·
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.8

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40	,	0.425	mm	99.5
No.50	,	0.3	mm	
No.60		0.25	mm	
No.80	,	0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	50.6
No.270		0.053	mm	
Hyd. Rd.	#1		mm	
Hyd. Rd.	#2		mm	
Hyd. Rd.	#3		mm	
Hyd. Rd.	#4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	#6		mm	
Hyd. Rd.	#7		mm	

 $D_{50} = 0.0693 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 16.3

Dry Dens.: NA Liquid Limit (AASHTO T89): 24
Opt. Moist.: NA Plastic Limit (AASHTO T90): 17

Plasticity Index : 7

AASHTO Composition of Total Sample: M145 Liquidity Index : -0.08

Gravel (3in. + No.10): 0.2 Activity: NA

Silt + Clay (-No.200): 50.6 ASTM Classification: D2487: CL-ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 0.0 Coarse Sand (-No.4 + No.10) : 0.2 Medium Sand (-No.10 + No.40) : 0.3 Fine Sand (-No.40 + No.200) : 48.9 Silt + Clay (-No.200) : 50.6

Approved By:	J.S.	Soil No.	9



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Gray & Brown Silty Clay with Sand

Sample No.: \$S-1

Sample Loc. : Boring No. B-507

Sample Depth: 4.7' to 6.2' Date Tested: 10/24/14

Date Reported: 10/31/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38,1	mm	
1 1/4	in,	31.5	mm	,
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9,5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.6
No.6		3.35	mm	
No.10		2	mm	98.6

					% Passing
	No.16		1.18	mm	,
	No.30		0.6	mm	
	No.40		0.425	mm	96.7
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
-	No.100		0.15	mm	
	No.200		0.075	mm	80.2
	No.270		0.053	ınm	
	Hyd. Rd.	#1	•	mm	
	Hyd. Rd.	#2		mm	·
	Hyd. Rd.	#3		mm	
	Hyd. Rd.	#4		mm	,
!	Hyd. Rd.	# 5		min	
	Hyd, Rd.	#6		mm	
	Hyd. Rd.	#7		mm	

 $D_{50} = 0.0062 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 24.3

Dry Dens. : NA Liquid Limit (AASHTO T89) : 26

Opt. Moist.: NA Plastic Limit (AASHTO T90): 19

Plasticity Index: 7

Liquidity Index: 0.80 AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10): 1.4 Activity: NA

Coarse Sand (-No.10 + No.40): 1.9 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200): 16.5 AASHTO Classification: M145 : A-4 (4)

Silt + Clay (-No.200): 80.2 ASTM Classification: D2487 : CL-ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0 Fine Gravel (-3/4in. + No.4): 0.4 Coarse Sand (-No.4 + No.10): 1.0 Medium Sand (-No.10 + No.40) : 1.9 Fine Sand (-No.40 + No.200): 16.5

Approved By: J.S.

Siit + Clay(-No.200) : 80.2

Soil No.



Project Name: Highway 67 Widening

Project No. : 11206-04

Project County : Pulaski
Project State : Arkansas
Laboratory No. : 11206-04

Submitted By: ICA Engineering

Soil Type: Gray & Brown Lean Clay with Sand

Sample No.: SS-2

Sample Loc. : Boring No. B-507

Sample Depth : 14.7' to 16.2'
Date Tested : 10/24/14

Date Reported: 11/03/14

AASHTO T27:

% Passing

% Passing

4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	·
1	in.	25	mm	•
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	-
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	99.5

					7 0 1 40011118
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40	•	0.425	mm	98.9
	No.50		0.3	mm	•
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100	Í	0.15	mm	
	No.200		0.075	mm	79.8
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
188	Hyd. Rd.	# 3		mm	
AASHTO T88	Hyd. Rd.	#4		mm	•
	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
ስስና	3 mm				

 $D_{50} = 0.0063 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 18.6

Dry Dens.: NA Liquid Limit (AASHTO T89): 42 Opt. Moist.: NA Plastic Limit (AASHTO T90): 20

Plasticity Index : 22

AASHTO Composition of Total Sample: M145 Liquidity Index : -0.05 Gravel (3in. + No.10) : 0.5 Activity : NA

Coarse Sand (-No.10 + No.40): 0.6 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200): 19.1 AASHTO Classification: M145: A-7-6 (17)

Silt + Clay (-No.200): 79.8 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 0.1 Coarse Sand (-No.4 + No.10) : 0.4 Medium Sand (-No.10 + No.40) : 0.6 Fine Sand (-No.40 + No.200) : 19.1 Silt + Clay (-No.200) : 79.8

Approved By: J.S.	Soil No.	11



Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski
Project State: Arkansas

Laboratory No.: 11206-04
Submitted By: ICA Engineering

lin.

in.

in.

lin,

lin.

in.

lin.

in.

in.

in.

in.

in,

3.5

2.5

2

1 3/4

1 1/2

1 1/4

1

3/4

1/2

3/8

1/4

No.4

No.6

No.10

Soil Type: Gray & Brown Lean Clay with Sand

101.6

88.9

76.2

63.5

50.8

45

38.1

31.5

25

19

12.5

9.5

6.3

4.75

3.35

2

Sample No.: SS-1

Sample Loc. : Boring No. B-508

Sample Depth: 4.7' to 6.2'

Date Tested : 10/24/14

Date Reported: 10/31/14

### AASHTO T27:

% Passing

mm

mm

mm

mm

mm

mım

mm

mm

mm

mm

mm

mm

mın

mm

mm

mm

issing	
·	
0.00	
8.4	
4.7	
	•

				% Passing
No.16	·	1.18	mm	
No.30		0.6	mm	
No.40		0.425	ınm	93.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	81.9
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	#3		mm	
Hyd. Rd.	#4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	

 $D_{50} = 0.0057 \text{ mm}$ 

**4ASHTO T88** 

CBR: NA Natural Moisture (%) (AASHTO T265): 13.8

#7

Dry Dens.: NA Liquid Limit (AASHTO T89): 41

Opt. Moist.: NA Plastic Limit (AASHTO T90): 21

Hyd, Rd,

Plasticity Index : 20

mm

AASHTO Composition of Total Sample: M145 Liquidity Index: -0.36 Gravel (3in. + No.10): 5.3 Activity: NA

Coarse Sand (-No.10 + No.40): 1.7 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200): 11.1 AASHTO Classification: M145: A-7-6 (16)

Silt + Clay (-No.200): 81.9 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Silt + Clay(-No.200) : 81.9

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 1.6 Coarse Sand (-No.4 + No.10) : 3.7 Medium Sand (-No.10 + No.40) : 1.7 Fine Sand (-No.40 + No.200) : 11.1

Approved By: J.S. Soil No. 12



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown & Gray Sandy Silty Clay with Gravel

Sample No. : SS-2

Sample Loc. : Boring No. B-508

Sample Depth: 9.7' to 11.2' Date Tested : 10/24/14

Date Reported: 10/31/14

#### AASHTO T27:

			% Passing
in.	101.6	mm	

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	•
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	89.4
1/4		6.3	mm	
No.4		4.75	mm	83.1
No.6		3.35	mm	
No.10		2	mm	78.9
				D

% Passing

					70 I assing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	72.9
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	٠.
	No.100		0.15	mm	
	No.200		0.075	mm	51.0
	No.270		0.053	mm	•
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
3	Hyd. Rd.	#3		mm	
001 0111077	Hyd. Rd.	# 4		mm	
3	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	

 $D_{50} = 0.0659 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 8.2

Dry Dens. : NA Liquid Limit (AASHTO T89) : 28 Opt. Moist.: NA Plastic Limit (AASHTO T90) : 22

> Plasticity Index: 6 Liquidity Index: -2.23

AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10): 21.1 Activity: NA

Coarse Sand (-No.10 + No.40): 6.0 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200) : 21.9 AASHTO Classification: M145 : A-4 (1)

ASTM Classification: D2487 : CL-ML Silt + Clay (-No.200): 51.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 16.9 Coarse Sand (-No.4 + No.10) : 4.2 Medium Sand (-No.10 + No.40) : 6.0 Fine Sand (-No.40 + No.200): 21.9 Silt + Clay (-No.200): 51.0

Approved By:	J.S.		Soil No.	13



% Deceina

Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type : Gray Silty Sand

Sample No. : SS-3

Sample Loc. : Boring No. B-508 Sample Depth : 13.5' to 13.9' Date Tested : 10/24/14

Date Reported: 10/31/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.0
No.6		3,35	mm	
No.10		2	mm	94.1

					70 Passing
	No.16		1.18	mm	
	No.30		0.6	mm	•
	No.40		0.425	mm	73.4
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	21.6
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
738	Hyd, Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	# 4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6	·	mm	
	Hyd. Rd.	#7		mm	

 $D_{50} = 0.1941 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 7.2

Dry Dens.: NA Liquid Limit (AASHTO T89): NP

Opt. Moist.: NA Plastic Limit (AASHTO T90): NP

AASHTO Composition of Total Sample: M145

Plasticity Index : NP
Liquidity Index : NA

Gravel (3in. + No.10): 5.9 Activity: NA

Coarse Sand (-No.10 + No.40 ) : 20.7 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200 ) : 51.8 AASHTO Classification: M145 : A-2-4 (0)

Silt + Clay (-No.200): 21.6 ASTM Classification: D2487: SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 2.0 Coarse Sand (-No.4 + No.10) : 3.9 Medium Sand (-No.10 + No.40) : 20.7 Fine Sand (-No.40 + No.200) : 51.8 Silt + Clay (-No.200) : 21.6

Approved By: J.S. Soil No. 14



% Passing

Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski
Project State: Arkansas

Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Brown & Red Clayey Sand with Gravel

% Passing

88.4

81.6

72.9

mm

mm

mm

mm

mm

Sample No. : SS-1

Sample Loc. : Boring No. B-509

Sample Depth: 4.0' to 5.5'

Date Tested : 10/24/14

Date Reported: 10/31/14

#### AASHTÓ T27:

3/8

1/4

No.4

No.6

No.10

lin.

101.6 in. mm 3.5 in. 88.9 mm 76.2 in. mm 2,5 in. 63.5 mm 50.8 2 in. mm 1 3/4 45 ļin. mm 1 1/2 lin. 38.1 mm 1 1/4 lin. 31.5 mm 1 in. 25 mm 100.0 19 3/4 95.3 in. mm 1/2 12.5 in. mm

9.5

6.3

4.75

3.35

2

	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	63.0
	No.50		0.3	mm	
	No.60	Ţ	0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	39.7
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	,
	Hyd. Rd.	#2		mm	
199	Hyd. Rd.	#3		mm	
Sings	Hyd. Rd.	# 4		mm	
3	Hyd. Rd.	# 5		mm	

mm

mm

 $D_{50} = 0.1615 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 17.4

#6

Dry Dens.: NA Liquid Limit (AASHTO T89): 31

Hyd. Rd.

Hyd. Rd.

Opt. Moist.: NA Plastic Limit (AASHTO T90): 23

AASHTO Composition of Total Sample: M145 Plasticity Index : 8
Liquidity Index : -0.65

Gravel (3in. + No.10) : 27.1 Activity : NA

Coarse Sand (-No.10 + No.40): 9.9 Sp. Gr. (AASHTO T100): NA Fine Sand (-No.40 + No.200): 23.3 AASHTO Classification: M145: A-4 (0)

Silt + Clay (-No.200): 39.7 ASTM Classification: D2487: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 4.7 Fine Gravel (-3/4in. + No.4): 13.7 Coarse Sand (-No.4 + No.10): 8.7 Medium Sand (-No.10 + No.40): 9.9 Fine Sand (-No.40 + No.200): 23.3

Silt + Clay (-No.200): 39.7

Approved By: J.S. Soil No. 15



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown Sandy Lean Clay

Sample No. : SS-3

Sample Loc. : Boring No. B-509

Sample Depth : 14.0' to 14.9' Date Tested : 10/24/14

Date Reported: 10/31/14

AASHTO T27:

% Deceina

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	94.7
No.6		3.35	mm	
No.10		2	mm	81.8

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	66.5
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	•
	No.100		0.15	mm	
1	No.200	,	0.075	mm	50.2
	No.270	•	0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	# 2		mm	
138	Hyd. Rd.	#3		mm	
AASHTO 188	Hyd. Rd.	#4		mm	
A S	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
_ 2					

 $D_{50} = 0.073 \text{ mm}$ 

Natural Moisture (%) (AASHTO T265): 11.6 CBR: NA

Liquid Limit (AASHTO T89) : 30 Dry Dens. : NA

Opt. Moist.: NA Plastic Limit (AASHTO T90) : 22

Plasticity Index: 8 Liquidity Index : -1.24

AASHTO Composition of Total Sample: M145 Activity: NA Gravel (3in. + No.10): 18.2

Sp. Gr. (AASHTO T100) : NA Coarse Sand (-No.10 + No.40): 15.3

AASHTO Classification: M145 : A-4 (2) Fine Sand (-No.40 + No.200) : 16.3

ASTM Classification: D2487 : CL Silt + Clay(-No.200) : 50.2

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4 ):5.3Coarse Sand (-No.4 + No.10): 12.9 Medium Sand (-No.10 + No.40): 15.3 Fine Sand (-No.40 + No.200): 16.3

Silt + Clay(-No.200) : 50.2

Soil No.\_\_\_

Approved By: J.S.



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Sample Loc. : Boring No. B-558

Sample Depth: 1.1' to 2.6' Project State: Arkansas Date Tested : 10/24/14 Laboratory No.: 11206-04 Submitted By: ICA Engineering Date Reported: 10/31/14

Soil Type: Brown & Gray Silt

101.6

88.9

76.2

63.5

50.8

45

38.1

31.5

25

19

12.5

9.5

6.3

4.75

3.35

2

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

9

### AASHTO T27:

3.5

3

2.5

2

1 3/4

1 1/2

3/4

1/2

3/8

1/4

No.4

No.6

No.10

in.

in.

in.

in.

in.

in. 1 1/4 | in.

in.

lin.

lin.

in.

%	Passing	

ssing	
0.0	
9.8	
8.4	
	l

% Passing

					70 rassing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	94.6
	No.50		0.3	mm	
	No.60		0.25	mm	
l	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	88.2
	No.270		0.053	mm	
100	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	# 2		mm	
	Hyd. Rd.	#3		mm	
201110	Hyd. Rd.	#4		mm	
3	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
	_				

Sample No. : SS-1

 $D_{50} = 0.004\overline{3} \text{ mm}$ 

Natural Moisture (%) (AASHTO T265): 22.4 CBR: NA

Dry Dens. : NA Liquid Limit (AASHTO T89) : 26

Plastic Limit (AASHTO T90) : 23 Opt. Moist.: NA

> Plasticity Index : 3 Liquidity Index: -0.24

AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10): 1.6 Activity: NA

Coarse Sand ( -No.10 + No.40 ) : 3.8 Sp. Gr. (AASHTO T100) : NA

AASHTO Classification: M145 : A-4 (2) Fine Sand (-No.40 + No.200): 6.4 ASTM Classification: D2487 : ML Silt + Clay (-No.200): 88.2

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.2 Coarse Sand (-No.4 + No.10): 1.4 Medium Sand (-No.10 + No.40) : 3.8 Fine Sand (-No.40 + No.200) : 6.4 Silt + Clay(-No.200): 88.2

Approved By:	J.S.	Soil No.	17
11 -			



% Passing

99.0

93.5

Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Brown & Gray Lean Clay

Sample No.: SS-3

Sample Loc. : Boring No. B-558 Sample Depth : 11.1' to 12.6' Date Tested : 10/24/14

mm

mm

Date Reported: 10/31/14

#### AASHTO T27:

% Passing

	No.16		1.18	mm	
	No.30		0.6	nım	
	No.40		0.425	mm	
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm.	
4ASHTO T88	No.200		0.075	mm	
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
	Hyd. Rd.	#3		mm	
	Hyd. Rd.	#4		mm	
Ş	Hyd. Rd.	# 5		mm	

4	1:	101.6		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mım	
2.5	in.	63,5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	Ť
3/8	in.	9,5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.6

 $D_{50} = 0.0034 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 22.3

#6

#7

Dry Dens.: NA Liquid Limit (AASHTO T89): 40

Hyd. Rd.

Hyd. Rd.

Opt. Moist.: NA Plastic Limit (AASHTO T90): 23

AASHTO Composition of Total Sample: M145

Plasticity Index: 17

Liquidity Index: -0.05

Gravel (3in. + No.10): 0.4 Activity: NA

Coarse Sand (-No.10 + No.40): 0.6 Sp. Gr. (AASHTO T100): NA Fine Sand (-No.40 + No.200): 5.5 AASHTO Classification: M145: A-6 (17)

Silt + Clay (-No.200): 93.5 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.4
Medium Sand (-No.10 + No.40) : 0.6
Fine Sand (-No.40 + No.200) : 5.5
Silt + Clay (-No.200) : 93.5

Approved By:	J.S.	Soil No.	18



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown & Gray Sandy Silty Clay

Sample No.: SS-5

Sample Loc. : Boring No. B-558 Sample Depth : 31.1' to 32.6'

Date Tested: 10/24/14 Date Reported: 11/03/14

AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in,	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	ınm	100.0
No.6		3.35	mm	
No.10		2	mm	99.8

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	99.2
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	65.1
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
T88	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	# 4		mm	
	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	

 $D_{50} = 0.0162 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 22

Dry Dens. : NA Liquid Limit (AASHTO T89) : 21 Plastic Limit (AASHTO T90): 16 Opt. Moist.: NA

Plasticity Index: 5 AASHTO Composition of Total Sample: M145 Liquidity Index: 1.12

Gravel (3in. + No.10): 0.2 Activity: NA

Coarse Sand (-No.10 + No.40): 0.6 Sp. Gr. (AASHTO T100): NA Fine Sand (-No.40 + No.200): 34.1 AASHTO Classification: M145 : A-4 (1) Silt + Clay (-No.200): 65.1 ASTM Classification: D2487 : CL-ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand ( -No.4 + No.10 ) : 0.2 Medium Sand (-No.10 + No.40): 0.6 Fine Sand (-No.40 + No.200) : 34.1 Silt + Clay (-No.200): 65.1

Approved By:	J.S.	Soil No.	19



% Passing

Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Gray Silty Sand with Gravel

Sample No.: SS-6

Sample Loc. : Boring No. B-558 Sample Depth : 35.9' to 36.1' Date Tested : 10/24/14

Date Reported: 10/31/14

#### AASHTO T27:

No.6

No.10

4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	93.7
1/4		6.3	mm	
No.4		4.75	mm	69.0

3.35

mm

mm

48.7

% Passing

					70 1 0331115
	No.16		1.18	mm	
	No.30		0.6	mm	
-	No.40		0.425	mm	28.8
-	No.50		0.3	mm	
-	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	21.5
	No.270		0.053	mm	
	Hyd. Rd.	# 1	•	mm	
	Hyd. Rd.	#2		mm	
-	Hyd. Rd.	#3		mm	
	Hyd. Rd.	#4		mm	
	Hyd. Rd.	# 5		mm	
	Hud Rd	# 6		mm	

mm

 $D_{50} = 2.1139 \text{ mm}$ 

VASHTO T88

CBR : NA Natural Moisture (%) (AASHTO T265): 10.8

Liquid Limit (AASHTO T89) : NA Dry Dens. : NA

Hyd. Rd.

Plastic Limit (AASHTO T90) : NA Opt. Moist.: NA

Plasticity Index: NA Liquidity Index: NA AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10): 51.3 Activity: NA

Sp. Gr. (AASHTO T100) : NA Coarse Sand (-No.10 + No.40): 19.9

AASHTO Classification: M145 : A-1-b (0) \* Fine Sand (-No.40 + No.200): 7.3

Silt + Clay (-No.200): 21.5 ASTM Classification: D2487 : SM \*

\* Visual Classification

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0 Fine Gravel (-3/4in. + No.4) : 31.0 Coarse Sand (-No.4 + No.10) : 20.3 Medium Sand (-No.10 + No.40): 19.9 Fine Sand (-No.40 + No.200): 7.3 Silt + Clay (-No.200): 21.5

Approved By:	J.S.	Soil No.	20	
I.L.				_



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04

Submitted By: ICA Engineering
Soil Type: Brown & Gray Lean Clay

Sample No.: \$S-1

Sample Loc. : Boring No. B-563

Sample Depth: 9.1' to 10.6' Date Tested: 10/24/14

Date Reported: 10/31/14

AASHTO T27:

% Passing

% Passing

				70 1 assing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mın	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mın	100.0
No.6		3.35	mm	
No.10		2	mm	99.8

					70 1 assing
ſ	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	98.5
1	No.50	,	0.3	mm	
	No.60		0.25	mm	·
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200	<b>V</b>	0.075	mm	91.0
1	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
100	Hyd. Rd.	# 3		mm	
001 O 1200	Hyd. Rd.	#4		mm	
3	Hyd. Rd.	# 5	,	mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
ิว	0 mm				

 $D_{50} = 0.0038 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 23.2

Dry Dens.: NA Liquid Limit (AASHTO T89): 35

Opt. Moist.: NA Plastic Limit (AASHTO T90): 22

AASHTO Composition of Total Sample: M145

Plasticity Index: 13
Liquidity Index: 0.12

Gravel (3in. + No.10): 0.2 Activity: NA

Coarse Sand (-No.10 + No.40): 1.3 Sp. Gr. (AASHTO T100): NA Fine Sand (-No.40 + No.200): 7.5 AASHTO Classification: M145: A-6 (12)

Silt + Clay (-No.200): 91.0 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0
Fine Gravel (-3/4in. + No.4): 0.0
Coarse Sand (-No.4 + No.10): 0.2
Medium Sand (-No.10 + No.40): 1.3
Fine Sand (-No.40 + No.200): 7.5
Silt + Clay (-No.200): 91.0

Approved By: J.S. Soil No. 21



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Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Brown Sandy Lean Clay

Sample No.: SS-2

Sample Loc. : Boring No. B-563 Sample Depth : 14.1' to 15.6' Date Tested : 10/24/14

Date Reported: 10/31/14

#### AASHTO T27:

No.4

No.6

No.10

4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	

4.75

3.35

% Passing

99.8

99.2

mm

mm

mm

					% Passing
N	o.16		1.18	mm	
N	o.30		0.6	mm	, , , , , , , , , , , , , , , , , , , ,
N	0.40		0.425	mm	95.2
N	0.50		0.3	mm	,
N	0.60		0.25	mm	
N	0.80		0.18	mm	
No	0.100		0.15	mm	
No	5.200		0.075	mm	60.9
No	.270		0.053	mm	
Ну	d. Rd.	#1		mm	
Ну	d, Rd.	# 2		mm	
Ну	d. Rd.	# 3		mm	•
Ну	d. Rd.	# 4		mm	
Ну	d. Rd.	# 5		mm	
Ну	d. Rd.	# 6		mm	
Ну	d. Rd.	#7		mm	
~					

 $D_{50} = 0.0229 \text{ mm}$ 

AASHTO T88

CBR: NA Natural Moisture (%) (AASHTO T265): 21.4

Dry Dens.: NA Liquid Limit (AASHTO T89): 25
Opt. Moist.: NA Plastic Limit (AASHTO T90): 17

Plasticity Index: 8

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.61

Gravel (3in. + No.10): 0.8 Activity: NA

Coarse Sand (-No.10 + No.40) : 4.0 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200) : 34.3 AASHTO Classification: M145 : A-4 (2)

Silt + Clay (-No.200): 60.9 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 0.2 Coarse Sand (-No.4 + No.10) : 0.6 Medium Sand (-No.10 + No.40) : 4.0 Fine Sand (-No.40 + No.200) : 34.3 Silt + Clay (-No.200) : 60.9

Approved By:	LS	Soil No.	22
i ippio iva Dj.	3.0.		



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown & Gray Lean Clay

Sample No. : \$S-3

Sample Loc. : Boring No. B-563 Sample Depth : 19.1' to 20.6'

Date Tested: 10/24/14

Date Reported: 10/31/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in,	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	nım	·
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	100.0

% Passing

					70 1 033111g
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	99.6
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	87.7
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
2	Hyd. Rd.	# 3	-	mm	
AASH TO 188	Hyd. Rd.	#4		mm	*
Ş	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
น	4 mm				

 $D_{50} = 0.0044 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 24.7

Dry Dens.: NA Liquid Limit (AASHTO T89): 28 Opt. Moist.: NA Plastic Limit (AASHTO T90): 20

Plasticity Index : 8

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10): 0.0

Liquidity Index: 0.57

Activity: NA

Coarse Sand (-No.10 + No.40): 0.4 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200): 11.9 AASHTO Classification: M145: A-4 (6)

Silt + Clay (-No.200): 87.7 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 0.0 Coarse Sand (-No.4 + No.10) : 0.0 Medium Sand (-No.10 + No.40) : 0.4 Fine Sand (-No.40 + No.200) : 11.9 Silt + Clay (-No.200) : 87.7

Approved By: J.S. Soil No. 23



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown Clayey Sand

Sample No.: SS-4

Sample Loc. : Boring No. B-563

Sample Depth : 29.1' to 30.6'

Date Tested: 10/24/14

Date Reported: 10/31/14

#### AASHTO T27:

% Passing

% Passing

				70 I assing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	•
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	•
No.4		4.75	mm	88.6
No.6		3.35	mm	
No.10		2	mm	63.0
				D

	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	32.8
	No.50		0.3	mm	,
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100	·	0.15	mm	
	No.200		0.075	mm	19.0
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
188	Hyd. Rd.	#3		mm	
ASHTO T88	Hyd. Rd.	# 4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	·
26	8 inm		•		

 $D_{50} = 1.0268 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 15.9

Liquid Limit (AASHTO T89) : 30 Dry Dens.: NA Plastic Limit (AASHTO T90): 17

Opt. Moist.: NA

Plasticity Index: 13 Liquidity Index: -0.07

AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10): 37.0 Activity: NA

Sp. Gr. (AASHTO T100) : NA Coarse Sand (-No.10 + No.40): 30.2

Fine Sand (-No.40 + No.200): 13.8 AASHTO Classification: M145 : A-2-6 (1)

ASTM Classification: D2487 : SC Silt + Clay(-No.200) : 19.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in, +3/4in.): 0.0 Fine Gravel (-3/4in. + No.4): 11.4 Coarse Sand (-No.4 + No.10) : 25.6 Medium Sand (-No.10 + No.40): 30.2 Fine Sand (-No.40 + No.200): 13.8 Silt + Clay(-No.200) : 19.0

i in .	TO	Coll No	2.4
Approved By:	J.S.	Soil No.	Z4
ippiviva Dji	• 10 .		



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Gray & Tan Silt

Sample No.: SS-2

Sample Loc. : Boring No. B-564

Sample Depth: 9.6' to 11.1' Date Tested: 10/24/14

Date Reported: 10/31/14

#### AASHTO T27:

% Passing

% Passing

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	,
3/8	in.	9.5	nım	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.9
			,	n.

	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	98.7
	No.50		0.3	mm	
į	No.60	,	0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	92.9
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	,
	Hyd. Rd.	# 2		mm	
200	Hyd. Rd.	# 3		mm	
AASHIO 198	Hyd. Rd.	#4		mm	
£	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6	,	mm	
	Hyd. Rd.	#7		mm	
13	5 mm				

 $D_{50} = 0.0035 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 22.9

Liquid Limit (AASHTO T89) : 28 Dry Dens. : NA Plastic Limit (AASHTO T90) : 22 Opt. Moist.: NA

Plasticity Index: 6

Liquidity Index : 0.22 AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10): 0.1 Activity: NA

Sp. Gr. (AASHTO T100): NA Coarse Sand (-No.10 + No.40): 1.2 Fine Sand (-No.40 + No.200): 5.8 AASHTO Classification: M145 : A-4 (5)

Silt + Clay (-No.200): 92.9 ASTM Classification: D2487 : ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in, +3/4in.): 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand (-No.4 + No.10): 0.1 Medium Sand (-No.10 + No.40): 1.2 Fine Sand (-No.40 + No.200) : 5.8 Silt + Clay (-No.200): 92.9

Approved By:	J.S.	Soil No.	25	



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Gray & Tan Silty, Clayey Sand with Gravel

Sample No.: SS-5

Sample Loc. : Boring No. B-564 Sample Depth : 34.6' to 36.1' Date Tested : 10/24/14

Date Reported : 10/31/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3,5	in.	88.9	mm	
3	in.	76.2	nım	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mın	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mın	96.1
1/4		6.3	mm	
No.4		4.75	mm	83.4
No.6		3.35	mm	
No.10		2	mm	58.5

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	39.4
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	20.2
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	# 2		ınm	
201	Hyd. Rd.	#3		mm	
001 0110000	Hyd, Rd.	#4		mm	
Š	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	

 $D_{50} = 1.0039 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 15.8

Dry Dens.: NA Liquid Limit (AASHTO T89): 22

Opt. Moist.: NA Plastic Limit (AASHTO T90): 17

Plasticity Index: 5
Liquidity Index: -0.28

AASHTO Composition of Total Sample: M145 Liquidity Index : -0.28 Gravel (3in. + No.10) : 41.5 Activity : NA

Fine Sand (-No.40 + No.200): 19.2 AASHTO Classification: M145: A-1-b (0) Silt + Clay (-No.200): 20.2 ASTM Classification: D2487: SC-SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 16.6 Coarse Sand (-No.4 + No.10) : 24.9 Medium Sand (-No.10 + No.40) : 19.1 Fine Sand (-No.40 + No.200) : 19.2 Silt + Clay (-No.200) : 20.2

Approved By:	J.S.	Soil No.	26	



Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Gray & Tan Clayey Sand with Gravel

Sample No.: \$S-6

Sample Loc. : Boring No. B-564 Sample Depth : 39.6' to 41.1' Date Tested : 10/24/14

Date Reported: 10/31/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	,
2	in.	50.8	nım	
1 3/4	in.	45	mm	,
1 1/2	in.	38.1	min	100.0
1 1/4	in,	31.5	mm	
1	in,	25	mm	90.2
3/4	in.	19	mm	90.2
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	90.2
1/4		6.3	mm	
No.4		4.75	mm	84.2
No.6		3.35	mm	
No.10		2	mm	66.9

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	49.1
No.50		0.3	mm	,
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	35.7
No.270		0.053	mm	
Hyd. Rd.	#1		mm	
Hyd. Rd.	#2		mm	
Hyd. Rd.	#3		mm	
Hyd. Rd.	#4		mm	
Hyd. Rd.	# 5		mm	
Hyd, Rd,	#6		mm	
Hyd. Rd.	#7		mm	

 $D_{50} = 0.4596 \text{ mm}$ 

AASHTO T88

CBR: NA Natural Moisture (%) (AASHTO T265): 16.2

Dry Dens.: NA Liquid Limit (AASHTO T89): 30 Opt. Moist.: NA Plastic Limit (AASHTO T90): 19

Plasticity Index : 11

AASHTO Composition of Total Sample: M145 Liquidity Index: -0.24 Gravel (3in. + No.10): 33.1 Activity: NA

Coarse Sand (-No.10 + No.40) : 17.8 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200) : 13.4 AASHTO Classification: M145 : A-6 (0)

Silt + Clay (-No.200): 35.7 ASTM Classification: D2487: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 9.8 Fine Gravel (-3/4in. + No.4) : 6.0 Coarse Sand (-No.4 + No.10) : 17.3 Medium Sand (-No.10 + No.40) : 17.8 Fine Sand (-No.40 + No.200) : 13.4 Silt + Clay (-No.200) : 35.7

Approved By:	J.S.	Soil No.	27



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

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3.5

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2

1 3/4

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1 1/4 in.

3/4

1/2

3/8

1/4

No.4

No.6

No.10

Soil Type: Brown & Gray Silt

101.6

88.9

76.2

63.5

50.8

45

38.1

31.5

25

19

12.5

9.5

6.3

4.75

3.35

2

mm

mm

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100.

99.

Sample No.: \$S-3

Sample Loc. : Boring No. B-556

Sample Depth : 14.8' to 16.3' Date Tested : 10/30/14

Date Reported: 11/04/14

#### AASHTO T27:

% Passing

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.0	
9	

% Passing

					70 Passing
	No.16		1.18	mm	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	No.30		0.6	mm	
	No.40		0.425	mm	99.4
	No.50	•	0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200	,	0.075	mm	91.3
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
2	Hyd. Rd.	#3		mm	
?	Hyd. Rd.	#4		mm	
	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		ınm	
	Hyd. Rd.	#7		mm	
	No.200 No.270 Hyd. Rd. Hyd. Rd. Hyd. Rd. Hyd. Rd. Hyd. Rd. Hyd. Rd.	#2 #3 #4 #5	0.075	mm mm mm mm mm mm	91.3

 $D_{50} = 0.0038 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 21.1

Dry Dens.: NA Liquid Limit (AASHTO T89): 20
Opt. Moist.: NA Plastic Limit (AASHTO T90): 18

Plasticity Index : 2

AASHTO Composition of Total Sample: M145 Liquidity Index : 1.35

Gravel (3in. + No.10): 0.1 Activity: NA sand (-No.10 + No.40): 0.5 Sp. Gr. (AASHTO T100): NA

Coarse Sand (-No.10 + No.40) : 0.5 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200) : 8.1 AASHTO Classification: M145 : A-4 (0)

Silt + Clay (-No.200): 91.3 ASTM Classification: D2487: ML

ASTM Composition of Total Sample: D2487

Silt + Clay (-No.200): 91.3

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 0.0 Coarse Sand (-No.4 + No.10) : 0.1 Medium Sand (-No.10 + No.40) : 0.5 Fine Sand (-No.40 + No.200) : 8.1

Approved By: J.S.

Soil No. 28



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By: ICA Engineering

Sample No.: SS-5

Sample Loc. : Boring No. B-556 Sample Depth : 34.8' to 36.3'

Date Tested : 10/29/14 Date Reported: 11/04/14

Soil Type: Brown Sandy Silty Clay

AASHTO T27:

% Passing

% Passing

in.	101.6	mm	
in.	88.9	mm	
in.	76.2	mm	
in.	63.5	mın	
in.	50.8	mm	
in.	45	mm	
in.	38.1	mm	
in.	31.5	mm	Ì
in.	25	mm	
in.	19	mm	
in.	12.5	mm	
in.	9.5	mm	
	6.3	mm	
	4.75	min	100.0
	3,35	ınm	
	2	mm	99.8
	in. in. in. in. in. in. in. in. in.	in. 88.9 in. 76.2 in. 63.5 in. 50.8 in. 45 in. 38.1 in. 31.5 in. 25 in. 19 in. 12.5 in. 9.5 6.3 4.75 3.35	in. 88.9 mm in. 76.2 mm in. 63.5 mm in. 50.8 mm in. 45 mm in. 38.1 mm in. 31.5 mm in. 25 mm in. 19 mm in. 12.5 mm in. 9.5 mm 4.75 mm 3.35 mm

				, , , , , , , , , , , , , , , , , , , ,
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	93.9
No.50	, ,	0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	60.5
No.270		0.053	nım	•
Hyd. Rd.	# 1		mm	
Hyd. Rd.	#2		mm	
Hyd. Rd. Hyd. Rd. Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4	,	mm	
Hyd, Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	#7		mm	
38 mm			,	

 $D_{50} = 0.0238$  inm

CBR: NA Natural Moisture (%) (AASHTO T265): 22.7

Dry Dens. : NA Liquid Limit (AASHTO T89) : 22 Plastic Limit (AASHTO T90): 16 Opt, Moist, : NA

Plasticity Index: 6

Liquidity Index: 1.16 AASHTO Composition of Total Sample: M145

Activity: NA Gravel (3in. + No.10): 0.2

Coarse Sand (-No.10 + No.40) : 5.9 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200) : 33.4 AASHTO Classification: M145 : A-4 (1)

Silt + Clay (-No.200): 60.5 ASTM Classification: D2487 : CL-ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand (-No.4 + No.10) : 0.2 Medium Sand (-No.10 + No.40): 5.9 Fine Sand (-No.40 + No.200) : 33.4 Silt + Clay(-No.200) : 60.5

Approved By:	J.:	S.	Soil No	29	



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Gray Silt with Sand

Sample No. : SS-7 Sample Loc. : Boring No. B-556

Sample Depth : 44.8' to 45.0' Date Tested : 10/29/14

Date Reported: 11/04/14

#### AASHTO T27:

No.6

No.10

% Passing

				70 1 40011115
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	nım	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	nım	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	95.0

3.35

2

mm

mm

89.0

% Passing

					70 1 4331118
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	80.8
	No.50		0.3	mm	
	No.60		0.25	ınm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	77.6
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
138	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	# 4		mm	
AAS	Hyd, Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
				, , , , , ,	

 $D_{50} = 0.0071 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 8.3

Dry Dens. : NA Liquid Limit (AASHTO T89) : NA

Plastic Limit (AASHTO T90) : NA Opt. Moist.: NA

Plasticity Index: NA

AASHTO Composition of Total Sample: M145 Liquidity Index: NA

Gravel (3in. + No.10): 11.0 Activity: NA

Coarse Sand (-No.10 + No.40): 8.2 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200): 3.2 AASHTO Classification: M145 : A-4 (0) \* Silt + Clay (-No.200): 77.6

ASTM Classification: D2487 : ML \* \* Visual Classification

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 5.0

Coarse Sand (-No.4 + No.10): 6.0 Medium Sand (-No.10 + No.40): 8.2

Fine Sand (-No.40 + No.200): 3.2

Silt + Clay (-No.200): 77.6

Approved By: J.S. Soil No. 30



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown Silty Clay

Sample No.: SS-2

Sample Loc. : Boring No. B-562 Sample Depth : 15.0' to 16.5'

Date Tested : 10/29/14

Date Reported: 11/04/14

AASHTO T27:

				% Passing
. 4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mın	
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	99.7

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	99.1
ĺ	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	85.9
	No.270		0.053	mm	
	Hyd, Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
738	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	#4		mm	
A&	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
າດ4	7 mm				

 $D_{50} = 0.0047 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 20.8

Dry Dens. : NA Liquid Limit (AASHTO T89) : 25 Opt. Moist.: NA Plastic Limit (AASHTO T90): 18

Plasticity Index: 7

Liquidity Index: 0.35 AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.3Activity: NA Coarse Sand (-No.10 + No.40): 0.6 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200): 13.2 AASHTO Classification: M145 : A-4 (4)

Silt + Clay (-No.200): 85.9 ASTM Classification: D2487 : CL-ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.1 Coarse Sand (-No.4 + No.10): 0.2 Medium Sand (-No.10 + No.40): 0.6 Fine Sand (-No.40 + No.200): 13.2

Silt + Clay (-No.200): 85.9

Soil No. 31 Approved By: J.S.



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By : ICA Engineering

Sample No. : SS-5

Sample Loc. : Boring No. B-562 Sample Depth : 30.0' to 31.5' Date Tested : 10/29/14

Date Reported: 11/04/14

Soil Type: Brown Sandy Lean Clay

AASHTO T27:

% Passing

% Passing

				70 Passing
4	in.	101.6	mm	
3.5	in.	88,9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
i	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	98.1
1/4		6.3	mm	
No.4		4.75	mm	91.9
No.6		3.35	mm	
No.10		2	mm	79.3
				D

					70 1 4001116
	No.16		1.18	mm	
	No.30	Í	0.6	mm	
	No.40		0.425	mm	66.2
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	55.0
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
738	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	#4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
141	1				

 $D_{50} = 0.0411 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 16.5

Dry Dens. : NA Liquid Limit (AASHTO T89) : 26 Opt. Moist.: NA Plastic Limit (AASHTO T90): 18

Plasticity Index: 8

AASHTO Composition of Total Sample: M145 Liquidity Index: -0.25 Activity: NA

Gravel (3in. + No.10): 20.7 Sp. Gr. (AASHTO T100) : NA Coarse Sand ( -No.10 + No.40 ) : 13.1

Fine Sand (-No.40 + No.200): 11.2 AASHTO Classification: M145 : A-4 (2)

ASTM Classification: D2487 : CL Silt + Clay(-No.200) : 55.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4 ) : 8.1. Coarse Sand (-No.4 + No.10): 12.6 Medium Sand (-No.10 + No.40): 13.1 Fine Sand (-No.40 + No.200): 11.2 Silt + Clay(-No.200) : 55.0

Approved By:	J.S.		Soil No.	32



Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown & Black Lean Clay

Sample No.: SS-1

Sample Loc. : Boring No. B-557

Sample Depth: 4.4' to 5.9'

Date Tested : 10/29/14

Date Reported: 11/04/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mın	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.5

			% Passing
No.16	1.18	mm	
No.30	0.6	mın	
No.40	0.425		07.0

					70 I assing
	No.16		1.18	mm	
	No.30		0.6	mın	
i	No.40		0.425	mm	97.9
	No.50		0.3	ınm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	96.0
	No.270		0.053	ınnı	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	# 2		mm	
T88	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	# 4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
ากว	1				

 $D_{50} = 0.0031 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 22.9

Dry Dens. : NA Liquid Limit (AASHTO T89) : 30 Opt. Moist.: NA Plastic Limit (AASHTO T90) : 21

Plasticity Index: 9

AASHTO Composition of Total Sample: M145 Liquidity Index: 0.24

Gravel (3in. + No.10): 0.5 Activity: NA

Coarse Sand (-No.10 + No.40): 1.6 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200): 1.9 AASHTO Classification: M145 : A-4 (8)

Silt + Clay (-No.200): 96.0 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand (-No.4 + No.10): 0.5 Medium Sand (-No.10 + No.40): 1.6 Fine Sand (-No.40 + No.200): 1.9

Approved By: J.S.

Silt + Clay ( -No.200 ) : 96.0

Soil No.

Strengthening America's Infrastructure®



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Tan, Gray & Black Lean Clay

Sample No.: SS-3

Sample Loc. : Boring No. B-557

Sample Depth : 24.4' to 25.9'
Date Tested : 10/29/14

Date Reported: 11/04/14

#### AASHTO T27:

% Passing

% Passing

				% Passing						% Pas
4	in.	101.6	mm			No.16		1.18	mm	·
3.5	in.	88.9	mm			No.30		0.6	mm	
3	in.	76.2	mm		]	No.40		0.425	mm	99
2.5	in.	63.5	mm			No.50		0.3	mm	,
2	in.	50.8	nım			No.60		0.25	mm	
1 3/4	in.	45	mm			No.80		0.18	mm	
1 1/2	in.	38.1	nım			No.100		0.15	mm	
1 1/4	in,	31.5	mm	,	]	No.200		0.075	mm	92
1	in.	25	mm	,	]	No.270		0.053	mm	
3/4	in.	19	mm		]	Hyd. Rd.	#1		mm	
1/2	in.	12.5	mm			Hyd. Rd.	#2		mm	
3/8	in.	9.5	mm		25	Hyd. Rd.	#3		mm	
1/4		6.3	mm		АЅНТО	Hyd. Rd.	# 4		mm	
No.4		4.75	nım	100.0	AAS.	Hyd. Rd.	# 5		mm	
No.6		3.35	mm	,		Hyd. Rd.	#6		mm	
No.10		2	mm	100.0		Hyd. Rd.	#7		mm	•
				'n	- 0.003	6 mm				-

 $D_{50} = 0.0036 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 20.3

Dry Dens.: NA Liquid Limit (AASHTO T89): 39
Opt. Moist.: NA Plastic Limit (AASHTO T90): 23

Plasticity Index: 16

AASHTO Composition of Total Sample: M145

Liquidity Index: -0.20

Gravel (3in. + No.10): 0.0 Activity: NA
Coarse Sand (-No.10 + No.40): 1.0 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200) : 6.5 AASHTO Classification: M145 : A-6 (16)

Silt + Clay (-No.200): 92.5 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.0
Medium Sand (-No.10 + No.40) : 1.0
Fine Sand (-No.40 + No.200) : 6.5
Silt + Clay (-No.200) : 92.5

Approved By: J.S. Soil No. 34



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By : ICA Engineering

Soil Type : Tan, Brown & Black Lean Clay

Sample No.: SS-5

Sample Loc. : Boring No. B-557

Sample Depth : 34.4' to 35.9' Date Tested : 10/29/14

Date Reported: 11/04/14

#### AASHTO T27:

% Passing

101.6 mmin. 3.5 in. 88.9 mm 76.2 3 in. mm 2.5 63.5 in. mm 2 50.8 in. mm 1 3/4 in. 45 mm 38.1 1 1/2 in. mm 1 1/4 in. 31.5 mm 1 in. 25 mm 3/4 19 in. mm 12.5 1/2 lin. mm 3/8 in. 9.5 mm 1/4 6.3 mm No.4 4.75 100.0 mm No.6 3.35 mm 100.0 No.10 2 mm

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	The state of the s
No.40		0.425	mm	99.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	96.0
No.270		0.053	mm	
Hyd. Rd.	#1		mm	
Hyd. Rd.	#2		mm	
Hyd. Rd.	#3		mm	
Hyd. Rd.	#4		mm	
Hyd. Rd.	# 5		mm	
Hyd Rd	# 6		mm	

mm

 $D_{50} = 0.0031$  mm

CBR: NA Natural Moisture (%) (AASHTO T265): 24.8

Dry Dens. : NA Liquid Limit (AASHTO T89) : 28 Opt. Moist.: NA Plastic Limit (AASHTO T90): 20

Hyd, Rd,

Plasticity Index: 8

AASHTO Composition of Total Sample: M145 Liquidity Index: 0.62 Gravel (3in. + No.10) : 0.0Activity: NA

Coarse Sand (-No.10 + No.40): 1.0 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200): 3.0 AASHTO Classification: M145: A-4 (7)

Silt + Clay (-No.200): 96.0 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4 ) : 0.0 Coarse Sand (-No.4 + No.10): 0.0 Medium Sand (-No.10 + No.40): 1.0 Fine Sand (-No.40 + No.200) : 3.0 Silt + Clay(-No.200) : 96.0

Approved By: J.S. Soil No. 35



Project Name: Highway 67 Widening

Project No. : 11206-04

Project County : Pulaski Project State : Arkansas Laboratory No. : 11206-04

Submitted By: ICA Engineering

Soil Type: Dark Gray & Black Silt with Sand

Sample No.: SS-6

Sample Loc. : Boring No. B-557

Sample Depth : 44.4' to 44.6' Date Tested : 10/29/14

Date Reported: 11/04/14

AASHTO T27:

% Passing

% Passing

	_			70 Fassing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	ınm	
3/8	in.	9.5	mm	97.7
1/4		6.3	mm	
No.4		4.75	mm	92.8
No.6		3.35	mm	
No.10		2	mm	87.3
				D

					70 Tassing
-	No.16		1.18	mm	
	No.30	, , , , , , ,	0.6	mm	
-	No.40		0.425	mm	81.5
	No.50		0.3	mm	Í
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	_
	No.200		0.075	mm	79.2
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
ĺ	Hyd. Rd.	#2		mm	
100	Hyd. Rd.	#3		mm	
100	Hyd. Rd.	#4		mm	
3	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
ċ	5 mm				

 $D_{50} = 0.0065 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 2.3

Dry Dens.: NA Liquid Limit (AASHTO T89): NA

Opt. Moist.: NA Plastic Limit (AASHTO T90): NA

Plasticity Index: NA
AASHTO Composition of Total Sample: M145
Liquidity Index: NA

Gravel (3in. + No.10): 12.7 Equitory fixex: NA

Coarse Sand (-No.10 + No.40 ) : 5.8 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200) : 2.3 AASHTO Classification: M145 : A-4 (0) \*

Silt + Clay (-No.200): 79.2 ASTM Classification: D2487: ML \*

\* Visual Classification

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 7.2 Coarse Sand (-No.4 + No.10) : 5.5 Medium Sand (-No.10 + No.40) : 5.8 Fine Sand (-No.40 + No.200) : 2.3

Silt + Clay (-No.200): 79.2

Approved By: J.S. Soil No. 36



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown & Tan Silt

Sample No.: SS-1

Sample Loc. : Boring No. B-559

Sample Depth: 4.7' to 6.2'

Date Tested : 10/29/14

Date Reported: 11/04/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	ınm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	,
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	ınm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	100.0

					% Passing
	No.16		1.18	mm	,
	No.30		0.6	mm	
	No.40		0.425	mm	99.6
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	95.0
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
138	Hyd. Rd.	# 3		mm	
AASHTO T88	Hyd. Rd.	# 4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
'			•		

 $D_{50} = 0.0033 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 20.9

Dry Dens. : NA Liquid Limit (AASHTO T89) : 23

Opt. Moist.: NA Plastic Limit (AASHTO T90): 20 Plasticity Index : 3

AASHTO Composition of Total Sample: M145 Liquidity Index: 0.41

Gravel (3in. + No.10): 0.0 Activity: NA

Coarse Sand (-No.10 + No.40): 0.4 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200): 4.6 AASHTO Classification: M145 : A-4 (1)

Silt + Clay (-No.200): 95.0 ASTM Classification: D2487 : ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand (-No.4 + No.10): 0.0 Medium Sand (-No.10 + No.40): 0.4 Fine Sand (-No.40 + No.200) : 4.6

Silt + Clay(-No.200) : 95.0

Approved By: J.S. Soil No. 37



% Passing

Project Name: Highway 67 Widening

Project No.: 11206-04 Sample No.: SS-3

Project County: Pulaski Sample Loc.: Boring No. B-559
Project State: Arkansas Sample Depth: 19.7' to 21.2'
Laboratory No.: 11206-04 Date Tested: 10/29/14
Submitted By: ICA Engineering Date Reported: 11/04/14

Soil Type: Brown, Tan & Gray Sandy Lean Clay

#### AASHTO T27:

% Passing

	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	66.1
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	61.1
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
201	Hyd. Rd.	# 3		mm	
O THE O	Hyd. Rd.	# 4		mm	
Š	Hvd. Rd.	# 5		mm	

				70 Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	·
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.7
No.6		3.35	mm	
No.10		2	mm	80.8

 $D_{50} = 0.0225 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 22.1

#6

Dry Dens.: NA Liquid Limit (AASHTO T89): 36 Opt. Moist.: NA Plastic Limit (AASHTO T90): 20

Hyd. Rd.

Hyd. Rd.

Plasticity Index: 16
Liquidity Index: 0.13

mm mm

AASHTO Composition of Total Sample: M145 Liquidity Index: 0.13 Gravel (3in. + No.10): 19.2 Activity: NA

Coarse Sand (-No.10 + No.40 ): 14.7 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200) : 5.0 AASHTO Classification: M145 : A-6 (8)

Silt + Clay (-No.200): 61.1 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 2.3 Coarse Sand (-No.4 + No.10) : 16.9 Medium Sand (-No.10 + No.40) : 14.7 Fine Sand (-No.40 + No.200) : 5.0 Silt + Clay (-No.200) : 61.1

Approved By: J.S. Soil No. 38



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Tan Lean Clay

## **SOIL CLASSIFICATION**

0/ Dogging

Sample No.: SS-3

Sample Loc. : Boring No. B-565 Sample Depth : 15.2' to 16.7'

Date Tested : 10/29/14

Date Reported: 11/04/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mın	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12,5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	ınm	
No.10		2	mm	99.7

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	98.3
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	92.6
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mın	
	Hyd. Rd.	#2		mm	
138	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	# 4		mm	
δĄ	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mnı	
	Hyd. Rd.	#7		mm	

 $D_{50} = 0.0036 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 22.4

Dry Dens.: NA Liquid Limit (AASHTO T89) : 38

Opt. Moist.: NA Plastic Limit (AASHTO T90) : 22 Plasticity Index: 16

AASHTO Composition of Total Sample: M145 Liquidity Index: 0.04

Gravel (3in. + No.10): 0.3 Activity: NA

Coarse Sand (-No.10 + No.40): 1.4 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200): 5.7 AASHTO Classification: M145 : A-6 (16)

Silt + Clay (-No.200): 92.6 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand ( -No.4 + No.10 ) : 0.3 Medium Sand (-No.10 + No.40): 1.4 Fine Sand (-No.40 + No.200) : 5.7 Silt + Clay (-No.200): 92.6

Approved By: J.S. Soil No. 39



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Tan Silt with Sand

Sample No.: SS-4

Sample Loc. : Boring No. B-565

Sample Depth : 25.2' to 26.7' Date Tested: 10/29/14

Date Reported: 11/04/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88,9	mm	
3	in.	76.2	mm	
2,5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.7

% Passing

					70 1 4331115
	No.16		1.18	mnı	
	No.30		0.6	mm	
	No.40		0.425	mm	98.3
	No.50		0.3	mm	-
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	A
	No.200		0.075	mm	82.7
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
138	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	#4		mm	
Ş.	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
<u>ነ</u> በና	5 mm				

 $D_{50} = 0.0055 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 20.3

Liquid Limit (AASHTO T89) : 20 Dry Dens. : NA

Plastic Limit (AASHTO T90): 18 Opt, Moist.: NA Plasticity Index : 2

Liquidity Index: 1.15 AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10): 0.3 Activity: NA

Sp. Gr. (AASHTO T100) : NA Coarse Sand (-No.10 + No.40): 1.4 AASHTO Classification: M145 : A-4 (0) Fine Sand (-No.40 + No.200): 15.6

ASTM Classification: D2487 : ML Silt + Clay(-No.200) : 82.7

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0 Fine Gravel (-3/4in. + No.4) : 0.0 Coarse Sand (-No.4 + No.10): 0.3 Medium Sand (-No.10 + No.40): 1.4 Fine Sand (-No.40 + No.200): 15.6 Silt + Clay (-No.200): 82.7

Soil No. 40 Approved By: J.S.



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Tan & Brown Silty Clay with Sand

Sample No.: SS-5

Sample Loc. : Boring No. B-565 Sample Depth : 30.2' to 31.7'

Date Tested: 10/29/14 Date Reported: 11/04/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	98.6

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	95.8
	No.50		0,3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	74.7
	No.270		0.053	mm	
	Hyđ. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
AASHTO T88	Hyd. Rd.	#3		mm	
H	Hyd. Rd.	# 4		mm	
₹	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd, Rd.	#7		mm	

 $D_{50} = 0.0084 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 21.4

Dry Dens.: NA Liquid Limit (AASHTO T89): 23
Opt. Moist.: NA Plastic Limit (AASHTO T90): 18

Plasticity Index: 5
Liquidity Index: 0.67

AASHTO Composition of Total Sample: M145 Liquidity Index: 0.67 Gravel (3in. + No.10): 1.4 Activity: NA

Coarse Sand (-No.10 + No.40) : 2.8 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200) : 21.1 AASHTO Classification: M145 : A-4 (2)

Silt + Clay (-No.200): 74.7 ASTM Classification: D2487: CL-ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 0.0 Coarse Sand (-No.4 + No.10) : 1.4 Medium Sand (-No.10 + No.40) : 2.8 Fine Sand (-No.40 + No.200) : 21.1 Silt + Clay (-No.200) : 74.7

Approved By:	J.S.	Soil No.	41
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Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Brown Silt with Sand

Sample No.: SS-6

Sample Loc. : Boring No. B-565

Sample Depth : 40.2' to 40.4'

Date Tested : 10/29/14

Date Reported: 11/04/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9,5	mm	99.0
1/4		6.3	mm	
No.4		4.75	mm	93.3
No.6		3.35	mm	
No.10		2	mm	86.5
				**

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	79.6
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mn	76.0
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	# 2		mm	
3	Hyd. Rd.	#3		mm	
	Hyd. Rd.	#4		nım	
3	Hyd. Rd,	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	

 $D_{50} = 0.0078 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 12.8

Dry Dens.: NA Liquid Limit (AASHTO T89): NA

Opt. Moist.: NA Plastic Limit (AASHTO T90): NA

Plasticity Index : NA

AASHTO Composition of Total Sample: M145

Liquidity Index: NA

Gravel (3in. + No.10): 13.5 Activity: NA
Coarse Sand (-No.10 + No.40): 6.9 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200) : 3.6 AASHTO Classification: M145 : A-4 (0) \*

Silt + Clay (-No.200): 76.0 ASTM Classification: D2487: ML\*

\* Visual Classification

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 6.7 Coarse Sand (-No.4 + No.10) : 6.8

Medium Sand (-No.10 + No.40): 6.9

Fine Sand (-No.40 + No.200): 3.6 Silt + Clay (-No.200): 76.0

Approved By: J.S. Soil No. 42



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By: ICA Engineering

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1 3/4

1 1/2

1 1/4

3/4

1/2

3/8

1/4

No.4

No.6

No.10

Soil Type: Brown Lean Clay with Sand

101.6

88.9

76.2

63.5

50.8

45

38.1

31.5

25

19

12.5

9.5

6.3

4.75

3.35

2

Sample No. : Bag-1

Sample Loc. : Boring No. B-511

Sample Depth: 0.0' to 5.0' Date Tested : 10/24/14

Date Reported: 11/10/14

AASHTO T27:

% Passing

mm

mm

mm

mm

mm

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100.0	
99.1	
97.3	

% Passing

_					
Ĩ	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	95.9
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
N	lo.100		0.15	mm	
N	lo.200		0.075	mm	72.9
N	lo.270		0.053	mm	
H	lyd. Rd.	# 1		mm	
Н	lyd, Rd,	#2		mm	
H	lyd. Rd,	#3		mm	
E	Iyd. Rd.	#4		mm	
H	lyd. Rd.	# 5		mm	
Н	lyd. Rd.	# 6		mm	
H	lyd. Rd,	#7		mm	
~_					

 $D_{50} = 0.0094 \text{ mm}$ 

CBR (AASHTO: T-193): 3.8 Natural Moisture (%) (AASHTO T265): 19.1

Dry Dens. (AASHTO: T-99; Method (C)): 114.3 pcf Liquid Limit (AASHTO T89) : 24

Opt. Moist. (AASHTO: T-99; Method (C)) : 13.6 % Plastic Limit (AASHTO T90): 15

Plasticity Index: 9 AASHTO Composition of Total Sample: M145 Liquidity Index: 0.42

Gravel (3in. + No.10): 2.7 Activity: NA

Coarse Sand (-No.10 + No.40): 1.4 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200): 23.0 AASHTO Classification: M145 : A-4 (4)

Silt + Clay (-No.200): 72.9 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0 Fine Gravel (-3/4in. + No.4): 0.9 Coarse Sand (-No.4 + No.10): 1.8 Medium Sand (-No.10 + No.40): 1.4

Fine Sand (-No.40 + No.200) : 23.0

Silt + Clay (-No.200): 72.9

Approved By: J.S. Soil No. 43



## MOISTURE-DENSITY RELATIONSHIP

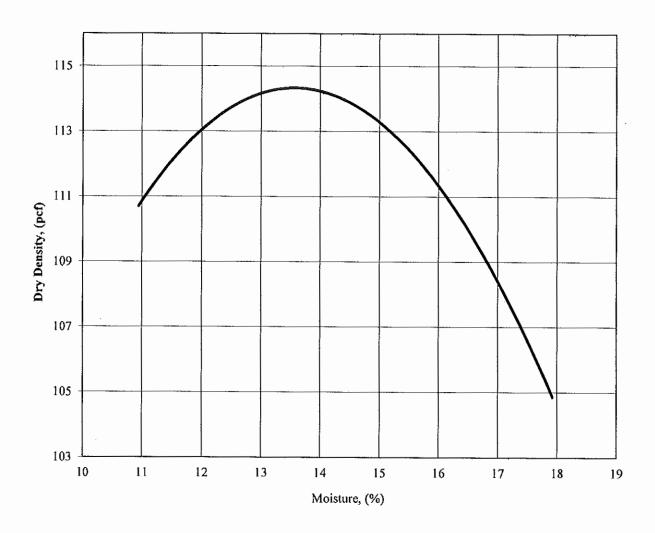
Project Name: Highway 67 Widening

Project No.: 11206-04 Sample No.: Bag-1

Project County: Pulaski Sample Loc.: Boring No. B-511

Project State : Arkansas Sample Depth : 0.0' to 5.0'
Laboratory No. : 11206-04 Date Tested : 10/24/14
Submitted By : ICA Engineering Date Reported : 11/10/14

Soil Type: Brown Lean Clay with Sand



MAXIMUM DENSITY: 114.3 pcf

**OPTIMUM MOISTURE: 13.6%** 

COMMENTS: AASHTO: T-99; Method (C)

APPROVED BY: J.S.



### **CALIFORNIA BEARING RATIO**

Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown Lean Clay with Sand

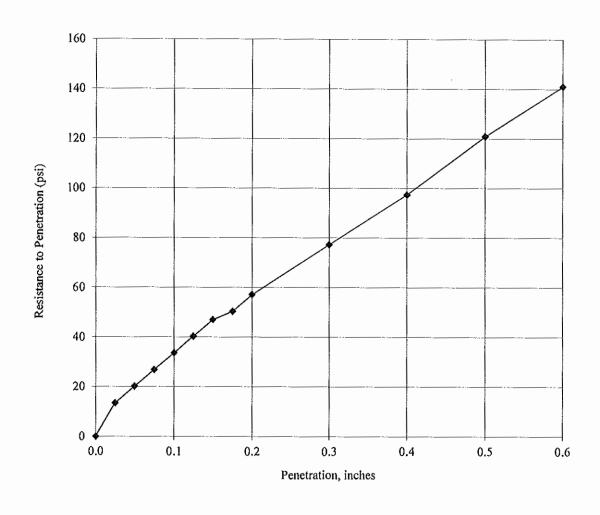
Sample No. : Bag-1

Sample Loc. : Boring No. B-511

Sample Depth: 0.0' to 5.0'

Date Tested: 10/24/14

Date Reported: 11/10/14



Compaction Effort = 35 Blows per layer Percent Compacted = 99.4

Percent Swell = 0.28

C.B.R. @ 0.1 In. = 3.4 C.B.R. @ 0.2 In. = 3.8\*

COMMENTS: AASHTO: T-193

APPROVED BY: JS

COMMENTS:



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By: ICA Engineering

Sample No. : Bag-26

Sample Loc. : Boring No. B-550

Sample Depth: 0.0' to 5.0' Date Tested : 10/24/14

Date Reported: 11/10/14

AASHTO T27:

Soil Type: Brown Silty, Clayey Sand with Gravel

% Pagging

	in.	101.6		
3.5			mm	
	in.	88.9	mm	
3	in.	76.2	mm	
	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	,
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	93.9
1/4		6.3	mm	""
No.4		4.75	mm	84.3
No.6		3.35	mm	
No.10		2	mm	73.9

					70 Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	65.0
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	37.0
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
001 01 100	Hyd, Rd.	#3		mm	
2	Hyd. Rd.	#4		mm	
ξ	Hyd. Rd.	# 5		inm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	

 $D_{50} = 0.1678 \text{ mm}$ 

CBR (AASHTO: T-193): 11.0 Natural Moisture (%) (AASHTO T265): 10.7

Dry Dens. (AASHTO: T-99; Method (C)) : 122.6 pcf Liquid Limit (AASHTO T89) : 23

Opt. Moist. (AASHTO: T-99; Method (C)) : 10.4 % Plastic Limit (AASHTO T90): 17 Plasticity Index: 6

AASHTO Composition of Total Sample: M145 Liquidity Index : -1.01 Gravel (3in. + No.10): 26.1 Activity: NA

Coarse Sand (-No.10 + No.40) : 8.9 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200) : 28.0 AASHTO Classification: M145 : A-4 (0)

Silt + Clay(-No.200) : 37.0ASTM Classification: D2487 : SC-SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0 Fine Gravel (-3/4in. + No.4): 15.7 Coarse Sand (-No.4 + No.10): 10.4 Medium Sand (-No.10 + No.40): 8.9 Fine Sand (-No.40 + No.200) : 28.0 Silt + Clay (-No.200): 37.0

Soil No.\_\_ Approved By: J.S.



# MOISTURE-DENSITY RELATIONSHIP

Project Name: Highway 67 Widening

Project No.: 11206-04 Sample No.: Bag-26

Project County: Pulaski Sample Loc.: Boring No. B-550

Project State: Arkansas

Laboratory No.: 11206-04

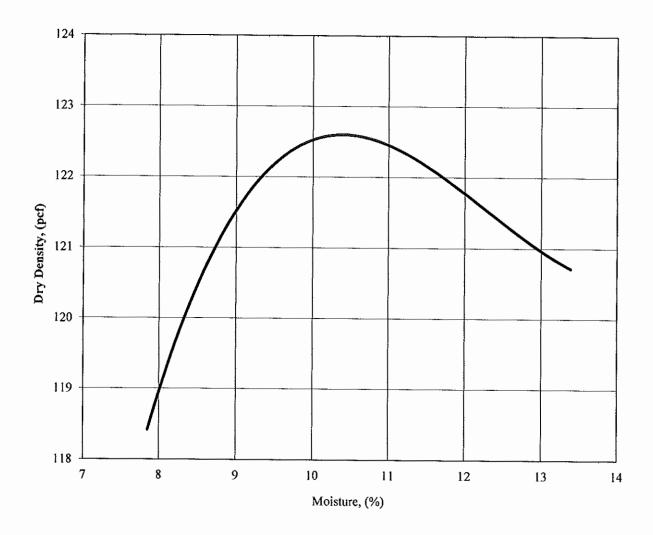
Submitted By: ICA Engineering

Sample Depth: 0.0' to 5.0'

Date Tested: 10/24/14

Date Reported: 11/10/14

Soil Type : Brown Silty, Clayey Sand with Gravel



MAXIMUM DENSITY: 122.6 pcf OPTIMUM MOISTURE: 10.4 %

COMMENTS: AASHTO: T-99; Method (C)

APPROVED BY: J.S.



### CALIFORNIA BEARING RATIO

Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

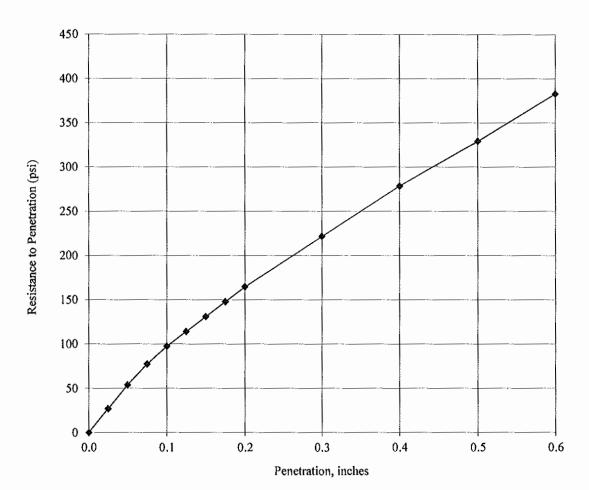
Soil Type: Brown Silty, Clayey Sand with Gravel

Sample No.: Bag-26

Sample Loc. : Boring No. B-550

Sample Depth: 0.0' to 5.0' Date Tested: 10/24/14

Date Reported: 11/10/14



Compaction Effort = 35 Blows per layer

Percent Compacted = 99 Percent Swell = 0.11 C.B.R. @ 0.1 In, = 9.7 C.B.R. @ 0.2 In, = 11\*

COMMENTS: AASHTO: T-193

APPROVED BY: JS

COMMENTS:



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown & Red Silty, Clayey Sand with Gravel

Sample No. : Bag-25

Sample Loc. : Boring No. B-553

Sample Depth: 0.0' to 5.0'

Date Tested: 10/24/14 Date Reported: 11/10/14

AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in,	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	92.1
3/4	in.	19	mm	92.1
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	85.3
1/4		6.3	mm	
No.4		4.75	mm	70.0
No.6		3.35	mm	
No.10		2	mm	52.9

% Passing

	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	43.3
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	28.2
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
001 OTUGO	Hyd, Rd.	# 3		mm	
2	Hyd. Rd.	#4		mm	
ş	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	,
	Hyd. Rd.	#7		mm	
^	~				

 $D_{50} = 1.2527 \text{ mm}$ 

CBR (AASHTO: T-193): 8.1 Natural Moisture (%) (AASHTO T265): 11.1

Dry Dens. (AASHTO: T-99; Method (C)): 117.1 pcf Liquid Limit (AASHTO T89) : 23 Opt. Moist. (AASHTO: T-99; Method (C)) : 13.2 % Plastic Limit (AASHTO T90): 17

Plasticity Index: 6 AASHTO Composition of Total Sample: M145 Liquidity Index: -0.96

Gravel (3in. + No.10): 47.1 Activity: NA

Coarse Sand (-No.10 + No.40): 9.6 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200): 15.1 AASHTO Classification: M145 : A-2-4 (0) Silt + Clay(-No.200) : 28.2ASTM Classification: D2487 : SC-SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 7.9 Fine Gravel (-3/4in. + No.4): 22.1 Coarse Sand (-No.4 + No.10): 17.1 Medium Sand (-No.10 + No.40): 9.6 Fine Sand (-No.40 + No.200): 15.1 Silt + Clay (~No.200): 28.2

Approved By: J.S. Soil No. 45



## MOISTURE-DENSITY RELATIONSHIP

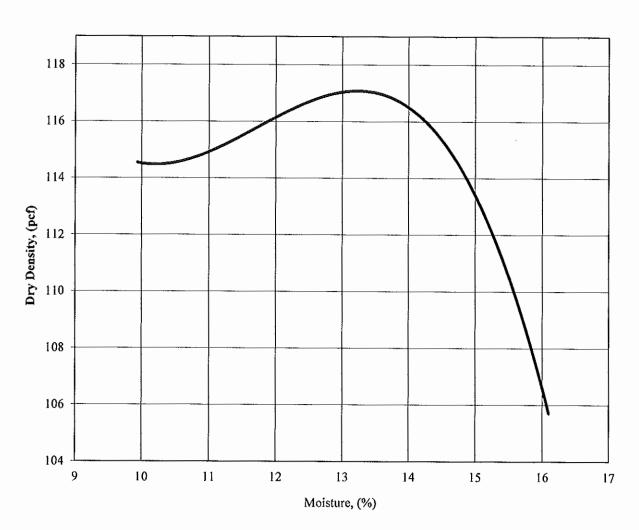
Project Name: Highway 67 Widening

Project No.: 11206-04 Sample No.: Bag-25

Project County: Pulaski Sample Loc.: Boring No. B-553

Project State : Arkansas Sample Depth : 0.0' to 5.0'
Laboratory No. : 11206-04 Date Tested : 10/24/14
Submitted By : ICA Engineering Date Reported : 11/10/14

Soil Type : Brown & Red Silty, Clayey Sand with Gravel



MAXIMUM DENSITY: 117.1 pcf OPTIMUM MOISTURE: 13.2 %

COMMENTS: AASHTO: T-99; Method (C)

APPROVED BY: J.S.



### **CALIFORNIA BEARING RATIO**

Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown & Red Silty, Clayey Sand with Gravel

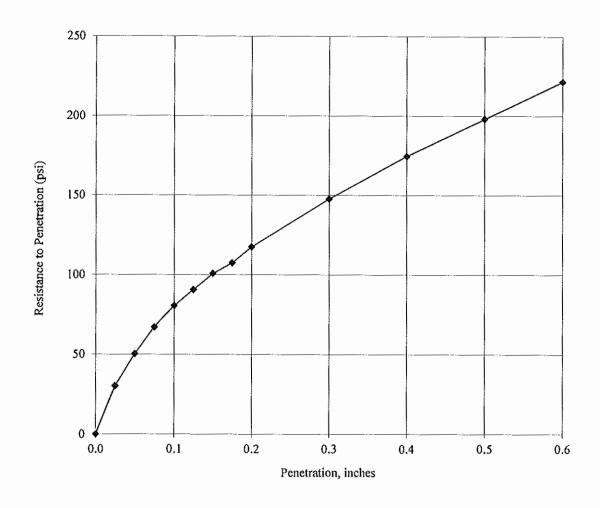
Sample No.: Bag-25

Sample Loc.: Boring No. B-553

Sample Depth: 0.0' to 5.0'

Date Tested: 10/24/14

Date Reported: 11/10/14



Compaction Effort = 35 Blows per layer

Percent Compacted = 98.5

Percent Swell = 0.11

C.B.R. @ 0.1 In. = 8.1\*

C.B.R. @ 0.2 In. = 7.8

COMMENTS: AASHTO: T-193

APPROVED BY:

COMMENTS:



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By : ICA Engineering

Soil Type: Dark Brown Lean Clay with Sand

Sample No. : Bag-29

Sample Loc. : Boring No. B-544

Sample Depth: 0.0' to 5.0'

Date Tested : 10/24/14

Date Reported: 11/10/14

#### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	ının	
1 1/4	in.	31.5	ınm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.2
No.6		3.35	mm	
No.10		2	mm	98.2

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	96.6
No.50		0.3	mm	,
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	84.6
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	#3		mm	
Hyd. Rd.	#4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	#6		mm	

mm

 $D_{50} = 0.005 \text{ mm}$ 

CBR (AASHTO: T-193): 5.4 Natural Moisture (%) (AASHTO T265): 23.2

Hyd. Rd.

#7

Dry Dens. (AASHTO: T-99; Method (C)): 106.7 pcf Liquid Limit (AASHTO T89) : 38

Opt. Moist. (AASHTO: T-99; Method (C)) : 18.3 % Plastic Limit (AASHTO T90) : 22

Plasticity Index: 16 AASHTO Composition of Total Sample: M145 Liquidity Index: 0.08

Gravel (3in. + No.10): 1.8 Activity: NA

Coarse Sand (-No.10 + No.40) : 1.6 Sp. Gr. (AASHTO T100): NA Fine Sand (-No.40 + No.200): 12.0 AASHTO Classification: M145 : A-6 (14)

Silt + Clay (-No.200): 84.6 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0 Fine Gravel (-3/4in. + No.4 ): 0.8Coarse Sand (-No.4 + No.10): 1.0 Medium Sand (-No.10 + No.40): 1.6 Fine Sand (-No.40 + No.200): 12.0 Silt + Clay (-No.200): 84.6

Soil No. \_\_\_ Approved By: J.S. 46



# MOISTURE-DENSITY RELATIONSHIP

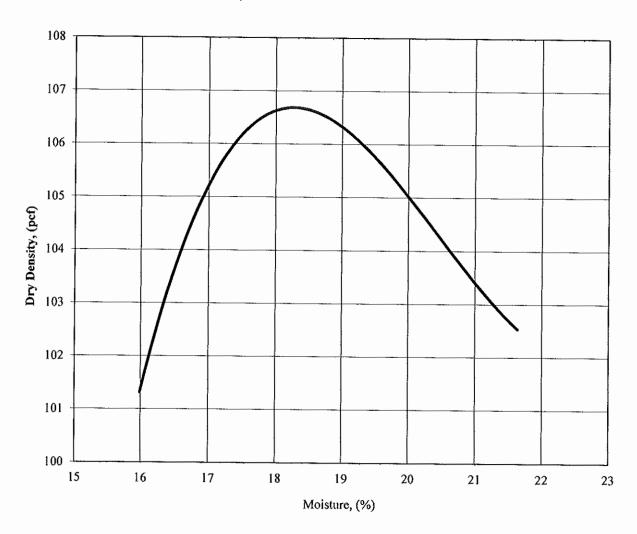
Project Name: Highway 67 Widening

Project No.: 11206-04 Sample No.: Bag-29

Project County: Pulaski Sample Loc.: Boring No. B-544

Project State : Arkansas Sample Depth : 0.0' to 5.0'
Laboratory No. : 11206-04 Date Tested : 10/24/14
Submitted By : ICA Engineering Date Reported : 11/10/14

Soil Type: Dark Brown Lean Clay with Sand



MAXIMUM DENSITY: 106.7 pcf

**OPTIMUM MOISTURE: 18.3 %** 

COMMENTS: AASHTO: T-99; Method (C)

APPROVED BY: J.S.



## **CALIFORNIA BEARING RATIO**

Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04

Submitted By : ICA Engineering

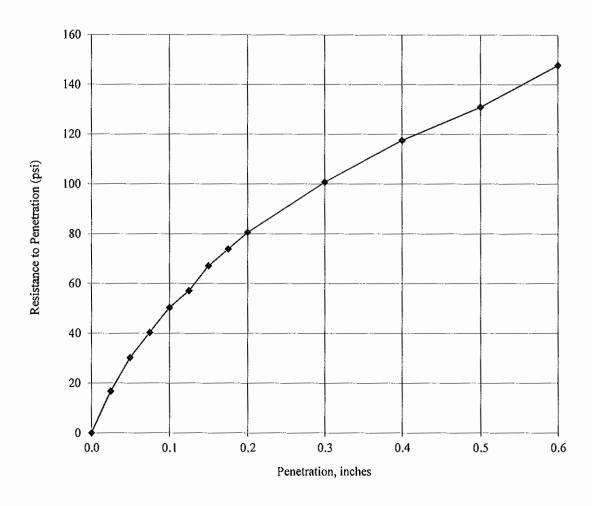
Soil Type: Dark Brown Lean Clay with Sand

Sample No.: Bag-29

Sample Loc.: Boring No. B-544

Sample Depth: 0.0' to 5.0' Date Tested: 10/24/14

Date Reported: 11/10/14



Compaction Effort = 35 Blows per layer

Percent Compacted = 97.6

Percent Swell = 2.88

C.B.R. @ 0.1 In. = 5

C.B.R. @  $0.2 \ln = 5.4*$ 

COMMENTS: AASHTO: T-193

APPROVED BY: JS

S

COMMENTS:



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown Sandy Lean Clay

Sample No. : Bag-8

Sample Loc. : Boring No. B-534

Sample Depth : 0.0' to 5.0'

Date Tested: 10/24/14

Date Reported: 11/10/14

#### AASHTO T27:

% Passing

ing % Passing

				70 1 0001115
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.8
No.6		3.35	mm	
No.10		2	mm	98.8

					70 1 0001118
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	96.5
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	57.4
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
AASHTO T88	Hyd. Rd.	#3		mm	
5	Hyd. Rd.	#4		mm	
Ą	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
31	9 mm				

 $D_{50} = 0.0319 \text{ mm}$ 

CBR (AASHTO: T-193) : 6.9 Natural Moisture (%) (AASHTO T265) : 18.1

Dry Dens. (AASHTO: T-99; Method (C)) : 116.6 pcf Liquid Limit (AASHTO T89) : 23 Opt. Moist. (AASHTO: T-99; Method (C)) : 13.6 % Plastic Limit (AASHTO T90) : 14

pt. Moist. (AASH1O: 1-99; Method (C)): 13.6 % Plastic Limit (AASH1O 190): 14

Plasticity Index: 9

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.48

Gravel (3in. + No.10): 1.2 Activity: NA

Coarse Sand (-No.10 + No.40) : 2.3 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200) : 39.1 AASHTO Classification: M145 : A-4 (2)

Silt + Clay (-No.200): 57.4 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0

Fine Gravel (-3/4in. + No.4): 0.2

Coarse Sand (-No.4 + No.10): 1.0

Medium Sand (-No.10 + No.40): 2.3

Fine Sand (-No.40 + No.200) : 39.1

Silt + Clay(-No.200) : 57.4

Approved By: J.S. Soil No. 47



## MOISTURE-DENSITY RELATIONSHIP

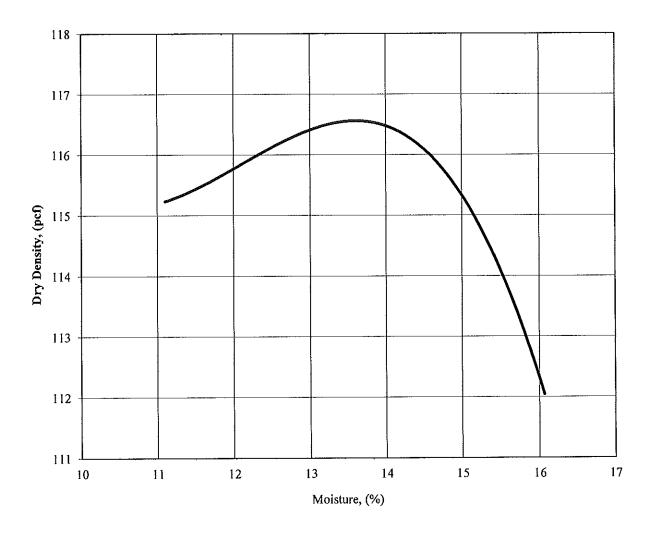
Project Name: Highway 67 Widening

Project No.: 11206-04 Sample No.: Bag-8

Project County: Pulaski Sample Loc.: Boring No. B-534

Project State : Arkansas Sample Depth : 0.0' to 5.0'
Laboratory No. : 11206-04 Date Tested : 10/24/14
Submitted By : ICA Engineering Date Reported : 11/10/14

Soil Type: Brown Sandy Lean Clay



MAXIMUM DENSITY: 116.6 pcf OPTIMUM MOISTURE: 13.6 %

COMMENTS: AASHTO: T-99; Method (C)

APPROVED BY: J.S.



## CALIFORNIA BEARING RATIO

Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown Sandy Lean Clay

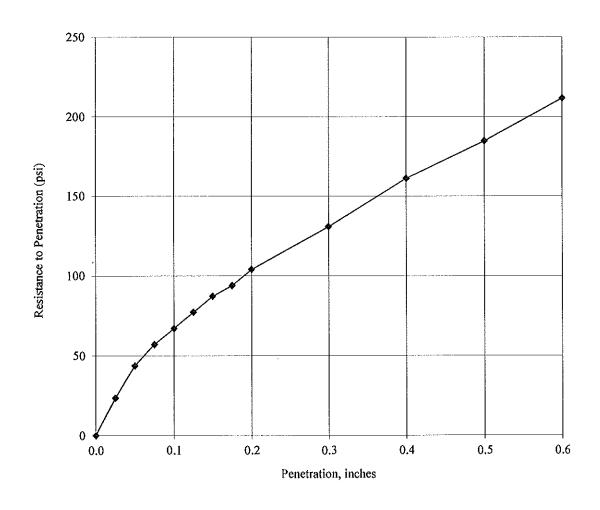
Sample No.: Bag-8

Sample Loc.: Boring No. B-534

Sample Depth: 0.0' to 5.0'

Date Tested: 10/24/14

Date Reported: 11/10/14



Compaction Effort = 35 Blows per layer Percent Compacted = 97.6 Percent Swell = 0.44

C.B.R. @ 0.1 ln. = 6.7 C.B.R. @ 0.2 ln. = 6.9\*

COMMENTS: AASHTO: T-193

APPROVED BY: JS

COMMENTS:



Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski Sample Loc.: Boring No. B-530

Project State: Arkansas Sample Depth: 0.0' to 5.0'
Laboratory No.: 11206-04 Date Tested: 10/24/14
Submitted By: ICA Engineering Date Reported: 11/10/14

Soil Type: Brown Clayey Sand

### AASHTO T27:

				% Passing
. 4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
I	in.	25	mın	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	99.5
1/4		6.3	mm	,
No.4		4.75	mm	98.9
No.6		3.35	mm	
No.10		2	mm	98.2

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	93.8
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100	,	0.15	mm	
No.200		0.075	ınm	49.2
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	#2		mm	
Hyd. Rd.	#3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	#7		mm	

Sample No. : Bag-6

 $\overline{D_{50}} = 0.0774 \text{ mm}$ 

CBR (AASHTO: T-193) : 5.4 Natural Moisture (%) (AASHTO T265) : 16.4

Dry Dens. (AASHTO: T-99; Method (C)) : 118.1 pcf Liquid Limit (AASHTO T89) : 25 Opt. Moist. (AASHTO: T-99; Method (C)) : 13.3 % Plastic Limit (AASHTO T90) : 14

Plasticity Index : 11

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10): 1.8

Liquidity Index: 0.20

Activity: NA

Coarse Sand (-No.10 + No.40): 4.4 Sp. Gr. (AASHTO T100): NA Fine Sand (-No.40 + No.200): 44.6 AASHTO Classification: M145: A-6 (2)

Silt + Clay (-No.200): 49.2 ASTM Classification: D2487: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 1.1
Coarse Sand (-No.4 + No.10) : 0.7
Medium Sand (-No.10 + No.40) : 4.4
Fine Sand (-No.40 + No.200) : 44.6
Silt + Clay (-No.200) : 49.2



# MOISTURE-DENSITY RELATIONSHIP

Project Name: Highway 67 Widening

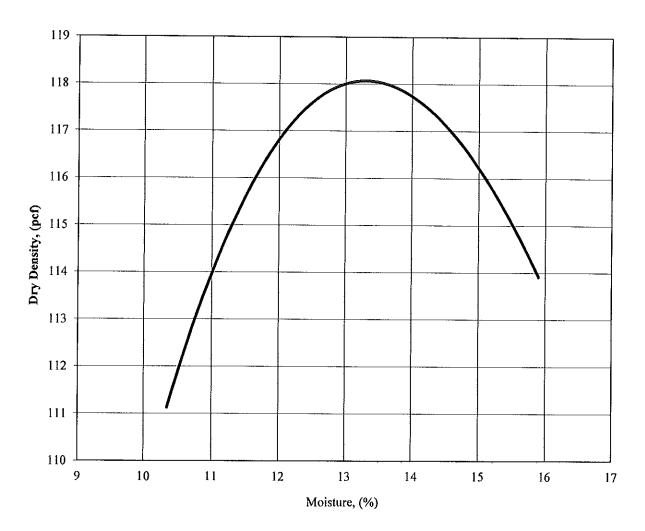
Project No.: 11206-04 Sample No.: Bag-6

Project County: Pulaski

Sample Loc.: Boring No. B-530

Project State : Arkansas Sample Depth : 0.0' to 5.0'
Laboratory No. : 11206-04 Date Tested : 10/24/14
Submitted By : ICA Engineering Date Reported : 11/10/14

Soil Type: Brown Clayey Sand



MAXIMUM DENSITY: 118.1 pcf OPTIMUM MOISTURE: 13.3 %

COMMENTS: AASHTO: T-99; Method (C)

APPROVED BY: J.S.



### CALIFORNIA BEARING RATIO

Project Name: Highway 67 Widening

Project No.: 11206-04 Project County: Pulaski

Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

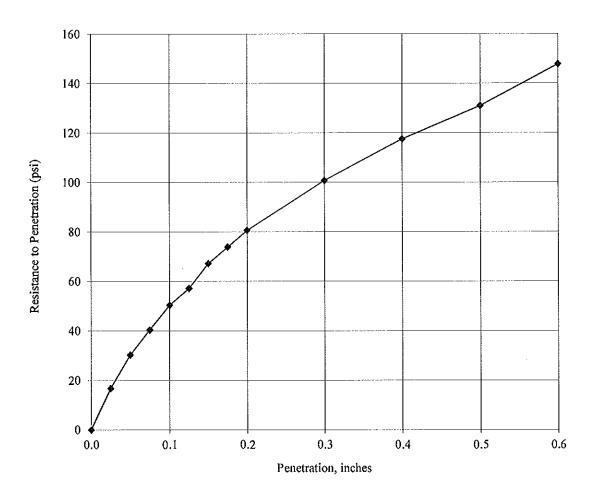
Soil Type: Brown Clayey Sand

Sample No. : Bag-6

Sample Loc. : Boring No. B-530

Sample Depth: 0.0' to 5.0' Date Tested: 10/24/14

Date Reported: 11/10/14



Compaction Effort = 35 Blows per layer

Percent Compacted = 98.2 Percent Swell = 0.31 C.B.R. @ 0.1 In. = 5 C.B.R. @ 0.2 In. = 5.4\*

COMMENTS: AASHTO: T-193

APPROVED BY: JS

COMMENTS:



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Sample Loc.: Boring No. B-543

Project State : Arkansas Sample Depth : 0.0' to 5.0'
Laboratory No. : 11206-04 Date Tested : 10/24/14
Submitted By : ICA Engineering Date Reported : 11/10/14

Soil Type: Red & Brown Sandy Silty Clay

### AASHTO T27:

0.7	-	•	
0/2	Pο	ssin	n
70	1 0	JULI	~

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in,	63.5	mm	
2	in.	50.8	mm	,
1 3/4	in.	45	mm	•
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	nım	
1	in.	25	mm	
3/4	in.	19	mın	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	98.2
1/4		6.3	mm	
No.4		4.75	mm	95.9
No.6		3.35	mm	
No.10		2	mm	94.4

% Passing

	No.16		1.18	mm	,
	No.30		0.6	mm	
	No.40		0.425	mm	91.2
	No.50		0.3	mm	·
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	68.0
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
188	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	#4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd, Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
. 1 -	`				

Sample No. : Bag-30

 $D_{50} = 0.013 \text{ mm}$ 

CBR (AASHTO: T-193): 6.0 Natural Moisture (%) (AASHTO T265): 19.5

Dry Dens. (AASHTO: T-99; Method (C)) : 117.6 pcf Liquid Limit (AASHTO T89) : 22 Opt. Moist. (AASHTO: T-99; Method (C)) : 12.6 % Plastic Limit (AASHTO T90) : 16

Plasticity Index : 6

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.63 Gravel (3in. + No.10) : 5.6 Activity : NA

Coarse Sand (-No.10 + No.40) : 3.2 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200) : 23.2 AASHTO Classification: M145 : A-4 (2)

Silt + Clay (-No.200): 68.0 ASTM Classification: D2487: CL-ML

### ASTM Composition of Total Sample: D2487

Coarse Gravel (3in, +3/4in.): 0.0 Fine Gravel (-3/4in. + No.4): 4.1 Coarse Sand (-No.4 + No.10): 1.5 Medium Sand (-No.10 + No.40): 3.2 Fine Sand (-No.40 + No.200): 23.2

Silt + Clay(-No.200) : 68.0



## MOISTURE-DENSITY RELATIONSHIP

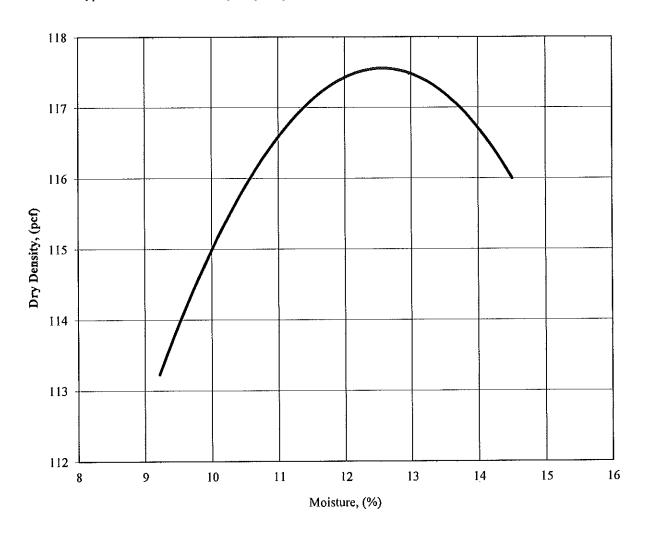
Project Name: Highway 67 Widening

Project No. : 11206-04 Sample No. : Bag-30

Project County: Pulaski Sample Loc.: Boring No. B-543

Project State: Arkansas Sample Depth: 0.0' to 5.0'
Laboratory No.: 11206-04 Date Tested: 10/24/14
Submitted By: ICA Engineering Date Reported: 11/10/14

Soil Type: Red & Brown Sandy Silty Clay



MAXIMUM DENSITY: 117.6 pcf OPTIMUM MOISTURE: 12.6 %

COMMENTS: AASHTO: T-99; Method (C) APPROVED BY: J.S.



### **CALIFORNIA BEARING RATIO**

Project Name: Highway 67 Widening

Project No.: 11206-04 Project County: Pulaski

Project State : Arkansas
Laboratory No. : 11206-04

Submitted By: ICA Engineering

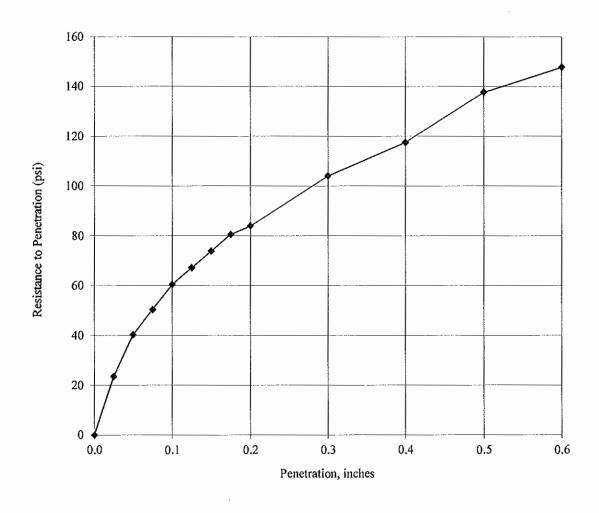
Soil Type: Red & Brown Sandy Silty Clay

Sample No.: Bag-30

Sample Loc. : Boring No. B-543

Sample Depth: 0.0' to 5.0' Date Tested: 10/24/14

Date Reported: 11/10/14



Compaction Effort = 35 Blows per layer Percent Compacted = 97.7

Percent Compacted = 97
Percent Swell = 0.89

C.B.R. @ 0.1 In. = 6\* C.B.R. @ 0.2 In. = 5.6

COMMENTS: AASHTO: T-193

APPROVED BY: \_\_\_\_\_ JS

COMMENTS:



0/ Dogging

Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown & Tan Silty Clay with Sand

Sample No. : ST-1

Sample Loc. : Boring No. B-501

Sample Depth : 4.5' to 6.0'

Date Tested: 10/29/14

Date Reported: 11/04/14

### AASHTO T27:

				% Passing
4	in.	101.6	mm	,
3.5	in.	88.9	nun	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4	,	6.3	mm	
No.4		4.75	mm	99.2
No.6		3.35	mm	•
No.10		2	mm	98.8

				% Passing
No.16		1,18	mm	
No.30		0.6	mm	,
No.40		0.425	mm	97.8
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	75.5
No.270		0.053	mm	
Hyd. Rd.	#1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	#4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	#6		mm	

mm

 $D_{50} = 0.008 \text{ mm}$ 

AASHTO T88

CBR: NA Natural Moisture (%) (AASHTO T265): 20

Dry Dens.: NA Liquid Limit (AASHTO T89): 19

Opt. Moist.: NA Plastic Limit (AASHTO T90): 14

Plasticity Index : 5
AASHTO Composition of Total Sample: M145
Liquidity Index : 1.25

Hyd. Rd.

Gravel (3in. + No.10): 1.2 Activity: NA

Silt + Clay (-No.200): 75.5 ASTM Classification: D2487: CL-ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0 Fine Gravel (-3/4in. + No.4): 0.8 Coarse Sand (-No.4 + No.10): 0.4 Medium Sand (-No.10 + No.40): 1.0

Fine Sand (-No.40 + No.200) : 22.3

Silt + Clay (-No.200): 75.5



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown & Gray Sandy Lean Clay

Sample No.: ST-2

Sample Loc. : Boring No. B-501

Sample Depth: 9.5' to 10.7'

Date Tested : 10/29/14

Date Reported: 11/04/14

AASHTO T27:

% Passing

### % Passing

				70 1 assing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
. 3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.9

					70 Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	97.5
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	54.0
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		ınm	
AASHTO T88	Hyd. Rd.	# 3		mm	
ET4	Hyd. Rd.	# 4		mm	
AAS	Hyd, Rd.	# 5		mm	***************************************
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	# 7		mm	
4 6	0				

 $D_{50} = 0.0459 \text{ mm}$ 

CBR : NA Natural Moisture (%) (AASHTO T265): 18.6

Dry Dens. : NA Liquid Limit (AASHTO T89) : 26

Opt. Moist.: NA Plastic Limit (AASHTO T90): 15

Plasticity Index: 11

Liquidity Index: 0.37 AASHTO Composition of Total Sample; M145

Activity: NA Gravel (3in. + No.10): 0.1 Coarse Sand (-No.10 + No.40) : 2.4 Sp. Gr. (AASHTO T100) : NA

AASHTO Classification: M145 : A-6 (3) Fine Sand (-No.40 + No.200): 43.5

Silt + Clay (-No.200): 54.0 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0

Coarse Sand (-No.4 + No.10): 0.1 Medium Sand (-No.10 + No.40): 2.4

Fine Sand (-No.40 + No.200): 43.5

Silt + Clay (-No.200): 54.0



Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski Sample Loc.: Boring No. B-502
Project State: Arkansas Sample Depth: 9.2' to 10.7'
Laboratory No.: 11206-04 Date Tested: 10/29/14

Submitted By: ICA Engineering

Date Reported: 11/04/14

Soil Type: Tan & Gray Lean Clay

### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	·
1/4		6.3	mm	·
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.9

%	Passing
70	I HOUSINE

					70 I dosning
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	98.6
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	,
	No.200		0.075	mm	88.1
	No.270		0.053	mm	•
	Hyd. Rd.	#1		nım	
	Hyd, Rd.	#2		mm	
188	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	#4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	

Sample No.: ST-1

 $D_{50} = 0.0043 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 23.8

Dry Dens.: NA Liquid Limit (AASHTO T89): 40
Opt. Moist.: NA Plastic Limit (AASHTO T90): 21

Plasticity Index : 19 Liquidity Index : 0.14

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10): 0.1

Liquidity Index: 0.14
Activity: NA

Coarse Sand (-No.10 + No.40 ) : 1.3 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200 ) : 10.5 AASHTO Classification: M145 : A-6 (17)

Silt + Clay (-No.200): 88.1 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 0.0 Coarse Sand (-No.4 + No.10) : 0.1 Medium Sand (-No.10 + No.40) : 1.3 Fine Sand (-No.40 + No.200) : 10.5 Silt + Clay (-No.200) : 88.1



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Gray & Tan Lean Clay with Sand

Sample No.: ST-2

Sample Loc. : Boring No. B-502 Sample Depth : 19.2' to 20.4' Date Tested: 10/29/14

Date Reported: 11/04/14

### AASHTO T27:

%	P	assing	

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	,
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.4

% Passing

					7 0 1 40011118
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	97.2
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	ınm	
	No.100		0.15	mm	
	No.200		0.075	mm	84.1
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
AASHTO T88	Hyd. Rd.	# 3		mm	
옱	Hyd. Rd.	# 4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
05	1				

 $D_{50} = 0.0051 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 18.9

Dry Dens. : NA Liquid Limit (AASHTO T89) : 32

Opt. Moist.: NA Plastic Limit (AASHTO T90) : 21

Plasticity Index: 11

AASHTO Composition of Total Sample: M145 Liquidity Index: -0.18

Activity: NA Gravel (3in. + No.10): 0.6

Coarse Sand (-No.10 + No.40) : 2.2 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200): 13.1 AASHTO Classification: M145 : A-6 (9)

ASTM Classification: D2487 : CL Silt + Clay (-No.200): 84.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in, + No.4): 0.0 Coarse Sand (-No.4 + No.10): 0.6 Medium Sand (-No.10 + No.40): 2.2 Fine Sand (-No.40 + No.200): 13.1 Silt + Clay (-No.200): 84.1



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Brown Lean Clay

Sample No. : ST-1

Sample Loc. : Boring No. B-503

Sample Depth: 4.1' to 5.1'

Date Tested : 10/30/14

Date Reported: 11/04/14

### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.8
No.6		3.35	mm	
No.10		2	mm	99.2

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	96.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	93.2
No.270	,	0.053	mm	
Hyd. Rd.	#1		mm	
Hyd. Rd.	#2	,	mm	
Hyd. Rd.	#3		mm	
Hyd. Rd.	#4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	#6		mm	
Hyd. Rd.	#7		mm	

 $D_{50} = 0.0035 \text{ mm}$ 

AASHTO T88

CBR: NA Natural Moisture (%) (AASHTO T265): 28.8

Dry Dens.: NA Liquid Limit (AASHTO T89): 33 Opt. Moist.: NA Plastic Limit (AASHTO T90): 23

Plasticity Index : 10

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.60 Gravel (3in. + No.10) : 0.8 Activity : NA

Coarse Sand (-No.10 + No.40 ) : 2.5 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200) : 3.5 AASHTO Classification: M145 : A-4 (10)

Silt + Clay (-No.200): 93.2 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0
Fine Gravel (-3/4in. + No.4): 0.2
Coarse Sand (-No.4 + No.10): 0.6
Medium Sand (-No.10 + No.40): 2.5
Fine Sand (-No.40 + No.200): 3.5
Silt + Clay (-No.200): 93.2



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown & Tan Silty Clay

% Passino

Sample No. : ST-2

Sample Loc. : Boring No. B-503 Sample Depth: 14.1' to 15.8' Date Tested : 10/29/14

Date Reported: 11/04/14

### AASHTO T27:

No.6

No.10

				70 Fassing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	nım	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	,
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0

3.35

mm

mm

99.4

%	Passi	ng
---	-------	----

:	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	96.3
:	No.50		0.3	mm	
:	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	90.0
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	•
AASHTO T88	Hyd. Rd.	# 3		mm	
몵	Hyd. Rd.	#4		mm	
Ş	Hyđ. Rd.	# 5		mm	•
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
	4	-	•		·

 $D_{50} = 0.004 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 23.5

Dry Dens. : NA Liquid Limit (AASHTO T89) : 25

Plastic Limit (AASHTO T90): 19 Opt. Moist.: NA Plasticity Index: 6

AASHTO Composition of Total Sample: M145 Liquidity Index: 0.80

Gravel (3in. + No.10): 0.6 Activity: NA Coarse Sand (-No.10 + No.40): 3.1 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200) : 6.3 AASHTO Classification: M145 : A-4 (4)

ASTM Classification: D2487 : CL-ML Silt + Clay(-No.200) : 90.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand (-No.4 + No.10): 0.6 Medium Sand (-No.10 + No.40): 3.1 Fine Sand (-No.40 + No.200) : 6.3 Silt + Clay(-No.200) : 90.0



0/ Dessine

Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown & Tan Sandy Silt

Sample No. : ST-1

Sample Loc. : Boring No. B-504

Sample Depth: 9.0' to 9.3'

Date Tested : 10/29/14

Date Reported: 11/04/14

### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.3
No.6		3.35	mm	
No.10		2	mm	96.0

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	90.6
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
ĺ	No.100		0.15	ınm	
	No.200		0.075	mm	63.0
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	# 2		mm	
001 0111000	Hyd. Rd.	#3		mm	
	Hyd. Rd.	# 4		mm	
ξ	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd,	#7		mm	
o	1 mm				

 $D_{50} = 0.0191 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 13.6

Dry Dens.: NA Liquid Limit (AASHTO T89): 15

Opt. Moist.: NA Plastic Limit (AASHTO T90): 13
Plasticity Index: 2

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.16

Gravel (3in. + No.10): 4.0 Activity: NA

Coarse Sand (-No.10 + No.40) : 5.4 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200) : 27.6 AASHTO Classification: M145 : A-4 (0)

Silt + Clay (-No.200): 63.0 ASTM Classification: D2487: ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0 Fine Gravel (-3/4in. + No.4): 1.7 Coarse Sand (-No.4 + No.10): 2.3 Medium Sand (-No.10 + No.40): 5.4 Fine Sand (-No.40 + No.200): 27.6

Silt + Clay (-No.200): 63.0



Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering Soil Type: Tan Sandy Silt

Sample No. : ST-2

Sample Loc. : Boring No. B-504 Sample Depth : 14.0' to 15.0'

Date Tested : 10/30/14

Date Reported: 11/04/14

### AASHTO T27:

% Passing

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
Î 1/2	in.	38.1	mm	•
1 1/4	in.	31.5	ınm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	99.2
1/4		6.3	mm	
No.4		4.75	mm	98.0
No.6		3.35	mm	
No.10		2	mm	97.1

% Passing
-----------

					7 4 - 118
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	93.8
	No.50		0.3	mm	,
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	56.0
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
138	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	# 4		mm	
Ą	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
26	Ω				

 $D_{50} = 0.0369 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 15.3

Dry Dens. : NA Liquid Limit (AASHTO T89): 16

Opt. Moist.: NA Plastic Limit (AASHTO T90): 14

Plasticity Index: 2

AASHTO Composition of Total Sample: M145 Liquidity Index: 0.58

Gravel (3in. + No.10): 2.9 Activity: NA Coarse Sand (-No.10 + No.40): 3.3 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200): 37.8 AASHTO Classification: M145 : A-4 (0)

Silt + Clay(-No.200) : 56.0ASTM Classification: D2487 : ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 2.0 Coarse Sand (-No.4 + No.10): 0.9 Medium Sand (-No.10 + No.40): 3.3 Fine Sand (-No.40 + No.200): 37.8 Silt + Clay (-No.200) : 56.0

Soil No.\_\_\_\_ Approved By: J.S.



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type : Brown, Tan & Gray Sandy Lean Clay

Sample No. : ST-1

Sample Loc. : Boring No. B-505 Sample Depth : 14.5' to 16.0' Date Tested : 10/29/14

Date Reported: 11/04/14

### AASHTO T27:

	%	Passing
m		

				% Passing
4	in.	101.6	mm	
3.5	in,	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.9
				D,

% Passing

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	95.3
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	61.2
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
138	Hyd. Rd.	#3		mm	
AASHTO T38	Hyd. Rd.	# 4		ınnı	
AAS	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
100	2				

 $D_{50} = 0.0223 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 21.2

Dry Dens. : NA Liquid Limit (AASHTO T89) : 37 Opt. Moist.: NA Plastic Limit (AASHTO T90): 21

Plasticity Index: 16

Liquidity Index: 0.04 AASHTO Composition of Total Sample: M145 Activity: NA Gravel (3in. + No.10): 0.1

Coarse Sand (-No.10 + No.40): 4.6 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200): 34.1 AASHTO Classification: M145 : A-6 (8)

ASTM Classification: D2487 : CL Silt + Clay (-No.200): 61.2

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand (-No.4 + No.10): 0.1 Medium Sand (-No.10 + No.40): 4.6 Fine Sand (-No.40 + No.200): 34.1 Silt + Clay (-No.200): 61.2

Approved By:	J.S.	Soil No.	58
11			



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Gray & Orange Silty, Clayey Sand

Sample No. : ST-1

Sample Loc. : Boring No. B-506

Sample Depth : 14.8' to 16.3'
Date Tested : 10/30/14

Date Reported: 11/04/14

% Passing

### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	nım	•
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6,3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.9

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	99.7
	No.50	,	0.3	mm	
	No.60		0.25	mm	
Γ	No.80		0.18	mm	
	No.100		0.15	mm <sup>3</sup>	
ī	No.200		0.075	mm	43.1
ĺ	No.270		0.053	mm	
]	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	·
3	Hyd. Rd.	#3		mm	
	Hyd. Rd.	#4		mm	
	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd, Rd.	#7		mm	

 $D_{50} = 0.0927 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 16.7

Dry Dens.: NA Liquid Limit (AASHTO T89): 23

Opt. Moist.: NA Plastic Limit (AASHTO T90): 17
Plasticity Index: 6

AASHTO Composition of Total Sample: M145 Liquidity Index : -0.05

Gravel (3in. + No.10): 0.1 Activity: NA and (-No.10 + No.40): 0.2 Sp. Gr. (AASHTO T100): NA

Coarse Sand (-No.10 + No.40): 0.2 Sp. Gr. (AASHTO T100): NA Fine Sand (-No.40 + No.200): 56.6 AASHTO Classification: M145: A-4 (0)

Silt + Clay (-No.200): 43.1 ASTM Classification: D2487: SC-SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 0.0 Coarse Sand (-No.4 + No.10) : 0.1 Medium Sand (-No.10 + No.40) : 0.2 Fine Sand (-No.40 + No.200) : 56.6 Silt + Clay (-No.200) : 43.1

Approved By:	J.S.	Soil No.	59



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Sample Loc. : Boring No. B-507 Project State: Arkansas Sample Depth: 9.7' to 10.7' Laboratory No.: 11206-04 Date Tested : 10/30/14 Submitted By: ICA Engineering Date Reported: 11/04/14

% Passing

Soil Type: Tan & Gray Lean Clay

### AASHTO T27:

3.5

3

2.5

2

1 3/4

1 1/2

1 1/4

3/4

1/2

3/8

1/4

No.4

No.6

No.10

lin.

in.

in.

lin.

lin.

in.

in. in.

in.

in.

in.

12.5

9.5

6.3

4.75

3.35

101.6	mm	
88.9	nım	
76.2	mm	
63.5	mm	
50.8	mm	
45	mm	
38.1	mm	
31.5	mm	
25	mm	
19	mm	

mın

mm

mm

mm

mm

mm

100.0	
99.9	
99.8	

100.

% Passing

	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	99.1
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	86.4
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
AASHTO T88	Hyd. Rd.	#3		mm	
Ĕ.	Hyd. Rd.	# 4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
` .	_				

Sample No.: ST-1

 $D_{50} = 0.0046 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 22.9

Dry Dens. : NA Liquid Limit (AASHTO T89) : 39 Opt. Moist.: NA Plastic Limit (AASHTO T90) : 21

Plasticity Index: 18

AASHTO Composition of Total Sample: M145 Liquidity Index: 0.12

Gravel (3in. + No.10): 0.2 Activity: NA

Coarse Sand (-No.10 + No.40): 0.7 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200): 12.7 AASHTO Classification: M145 : A-6 (16)

Silt + Clay (-No.200): 86.4 ASTM Classification; D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0 Fine Gravel (-3/4in. + No.4): 0.1 Coarse Sand (-No.4 + No.10): 0.1 Medium Sand (-No.10 + No.40): 0.7 Fine Sand (-No.40 + No.200): 12.7 Silt + Clay (-No.200): 86.4

Approved By: J.S. Soil No. 60				
	Approved By:	J.S.	Soil No.	60



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Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown Lean Clay

Sample No. : ST-1

Sample Loc. : Boring No. B-556

Sample Depth: 19.8' to 21.8'

Date Tested : 10/30/14

Date Reported: 11/04/14

### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	min	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.7

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	,
No.40		0.425	mm	97.1
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	ınm	
No.200		0.075	mm	88.6
No.270		0.053	mm	
Hyd. Rd.	#1		mm	
Hyd. Rd.	#2		mm	
Hyd. Rd.	#3		mm	
Hyd. Rd.	#4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	

mm

 $D_{50} = 0.0042 \text{ mm}$ 

AASHTO T88

CBR: NA Natural Moisture (%) (AASHTO T265): 22.2

#7

Dry Dens. : NA Liquid Limit (AASHTO T89) : 37

Opt. Moist.: NA Plastic Limit (AASHTO T90): 21

Plasticity Index : 16

Hyd. Rd.

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.10 Gravel (3in. + No.10) : 0.3 Activity : NA

Gravel (3in. + No.10): 0.3 Activity: NA
Coarse Sand (-No.10 + No.40): 2.6 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200) : 8.5 AASHTO Classification: M145 : A-6 (14)

Silt + Clay (-No.200) : 88.6 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.3
Medium Sand (-No.10 + No.40) : 2.6
Fine Sand (-No.40 + No.200) : 8.5
Silt + Clay (-No.200) : 88.6

Approved By:	J.S.	Soil No.	61	



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04

lin.

lin.

in.

lin.

lin.

in.

lin.

lin.

in.

in.

lin.

lin.

3.5

3

2.5

2

1 3/4

1 1/2

1 1/4

1

3/4

1/2

3/8

1/4

No.4

No.6

No.10

Submitted By : ICA Engineering

101.6

88.9

76.2

63.5

50.8

45

38.1

31.5

25

19

12.5

9.5

6.3

4.75

3.35

2

Soil Type: Orange & Gray Lean Clay with Sand

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

Sample No.: ST-2

Sample Loc. : Boring No. B-556 Sample Depth : 29.8' to 31.3'

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

76.3

Date Tested : 10/29/14

Date Reported: 11/04/14

### AASHTO T27:

% Passing

100.0

96.4

95.8

93.9

 % Passing

 No.16
 1.18
 mm

 No.30
 0.6
 mm

 No.40
 0.425
 mm
 89.0

0.3

0.25

No.80 0.18 No.100 0.15 No.200 0.075 No.270 0.053 Hyd. Rd. | # 1 #2 Hyd. Rd. Hyd. Rd. #3 Hyd, Rd. #4 Hyd. Rd. # 5 Hyd. Rd. # 6 #7 Hyd. Rd.

No.50

No.60

 $D_{50} = 0.0077 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 23.3

Dry Dens.: NA Liquid Limit (AASHTO T89): 30

Opt. Moist.: NA Plastic Limit (AASHTO T90): 17
Plasticity Index: 13

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.46

Gravel (3in. + No.10): 6.1 Activity: NA

Coarse Sand (-No.10 + No.40): 4.9 Sp. Gr. (AASHTO T100): NA Fine Sand (-No.40 + No.200): 12.7 AASHTO Classification: M145: A-6 (8)

Silt + Clay (-No.200): 76.3 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 4.2 Coarse Sand (-No.4 + No.10) : 1.9 Medium Sand (-No.10 + No.40) : 4.9 Fine Sand (-No.40 + No.200) : 12.7

Silt + Clay (-No.200) : 76.3



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Brown & Gray Silt

Sample No.: ST-1

Sample Loc.: Boring No. B-557

Sample Depth : 14.4' to 15.7' Date Tested : 10/29/14

Date Reported: 11/04/14

### AASHTO T27:

% Passing

	 		% Passing
5.16	1.18	mm	, , , , , , , , , , , , , , , , , , , ,
30	0.6	nım	

4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	,
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in,	31.5	mm	
1	in.	25	mm	
3/4	in,	19	ınm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99,9

	No.16		1.18	mm	, ,
	No.30		0.6	nım	
	No.40		0.425	mm	98.8
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	92.7
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	# 2		mm	
T83	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	# 4		mm	
AAS	Hyd. Rd.	# 5		mm	
	Hyd, Rd.	#6	,	mm	
	Hyd. Rd.	#7		mm	

 $D_{50} = 0.0036 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 19.5

Dry Dens. : NA Liquid Limit (AASHTO T89) : 22 Opt. Moist. ; NA Plastic Limit (AASHTO T90): 21

Plasticity Index: 1

AASHTO Composition of Total Sample: M145 Liquidity Index: -1.23

Gravel (3in. + No.10): 0.1 Activity: NA Coarse Sand (-No.10 + No.40): 1.1 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200) : 6.1 AASHTO Classification: M145 : A-4 (0)

Silt + Clay (-No.200): 92.7 ASTM Classification: D2487 : ML

### ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand (-No.4 + No.10): 0.1 Medium Sand (-No.10 + No.40): 1.1 Fine Sand (-No.40 + No.200) : 6.1 Silt + Clay(-No.200) : 92.7

Soil No.\_\_\_\_ Approved By: J.S.



Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Gray & Orange Lean Clay

Sample No.: ST-2

Sample Loc. : Boring No. B-557 Sample Depth : 19.4' to 20.9'

Date Tested: 10/30/14

Date Reported: 11/04/14

### AASHTO T27:

% Passing

% Passing

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
Ż	in,	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	nım	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	100.0
•				Τ.

					70 1 assing
	No.16	,	1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	99.5
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	,
	No.100		0.15	mm	
	No.200		0.075	mm	93.6
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
8	Hyd. Rd.	#3		mm	
AASHIO 188	Hyd. Rd.	# 4		mm	
3	Hyd. Rd.	# 5		mm	,
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
า	4				

 $D_{50} = 0.0034 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 22.6

Dry Dens.: NA Liquid Limit (AASHTO T89): 34 Opt. Moist.: NA Plastic Limit (AASHTO T90): 21

pr. Moist.: NA Plastic Limit (AASH1O 190): 21

Plasticity Index : 13
AASHTO Composition of Total Sample: M145
Liquidity Index : 0.16

Gravel (3in, + No.10): 0.0 Activity: NA

Coarse Sand (-No.10 + No.40): 0.5 Sp. Gr. (AASHTO T100): NA

Fine Sand (-No.40 + No.200): 5.9 AASHTO Classification; M145: A-6 (12)

Silt + Clay (-No.200): 93.6 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 0.0 Coarse Sand (-No.4 + No.10) : 0.0 Medium Sand (-No.10 + No.40) : 0.5 Fine Sand (-No.40 + No.200) : 5.9 Silt + Clay (-No.200) : 93.6



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown & Tan Silty, Clayey Sand

Sample No. : ST-3

Sample Loc. : Boring No. B-557 Sample Depth : 39.4' to 40.4'

Date Tested : 10/30/14

Date Reported: 11/04/14

### AASHTO T27:

	ssing

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mın	
3/8	in.	9.5	mm	97.6
1/4		6.3	mm	, ,
No.4		4.75	mm	86.3
No.6		3.35	mm	
No.10		2	mm	67.7

% Passing

					7 0 1 00000118
	No.16		1.18	mın	·
	No.30		0.6	mm	
	No.40		0.425	mm	43.0
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	18.3
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
201	Hyd. Rd.	# 3		mm	
901 011197	Hyd. Rd.	# 4		mm	
ξ.	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		ının	·
	Hyd. Rd.	#7		mm	
^	^				

 $D_{50} = 0.6592 \text{ mm}$ 

CBR : NA Natural Moisture (%) (AASHTO T265): 14

Dry Dens.: NA Liquid Limit (AASHTO T89) : 24 Opt. Moist.: NA Plastic Limit (AASHTO T90): 18

Plasticity Index: 6

Liquidity Index: -0.63 AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10): 32.3

Coarse Sand (-No.10 + No.40): 24.7

Fine Sand (-No.40 + No.200): 24.7

Silt + Clay (-No.200): 18.3

Activity: NA

Sp. Gr. (AASHTO T100) : NA

AASHTO Classification: M145 : A-1-b (0)

ASTM Classification: D2487 : SC-SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 13.7 Coarse Sand (-No.4 + No.10): 18.6 Medium Sand (-No.10 + No.40): 24.7 Fine Sand (-No.40 + No.200): 24.7 Silt + Clay (-No.200): 18.3

Approved By:	J.S.	Soil No.	65
		_	



Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown & Tan Lean Clay with Sand

Sample No. : ST-1

Sample Loc. : Boring No. B-558

Sample Depth : 16.1' to 17.9'

Date Tested : 10/29/14

Date Reported: 11/04/14

### AASHTO T27:

% Passing

% Passing

				70 F assing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	ının	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	ınm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3,35	mm	
No.10		2	mm	99.6

					70 Fassing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	95.7
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	nım	
	No.100		0.15	mm	
	No.200		0.075	mm	81.1
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
138	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	#4		mm	
	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
۸5	0				

 $D_{50} = 0.0059 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 19

Dry Dens.: NA Liquid Limit (AASHTO T89): 25 Opt. Moist.: NA Plastic Limit (AASHTO T90): 15

Plasticity Index : 10

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.41

Gravel (3in. + No.10): 0.4 Activity: NA and (-No.10 + No.40): 3.9 Sp. Gr. (AASHTO T100): NA

Coarse Sand (-No.10 + No.40): 3.9 Sp. Gr. (AASHTO T100): NA Fine Sand (-No.40 + No.200): 14.6 AASHTO Classification: M145: A-4 (6)

Silt + Clay (-No.200): 81.1 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.): 0.0
Fine Gravel (-3/4in. + No.4): 0.0
Coarse Sand (-No.4 + No.10): 0.4
Medium Sand (-No.10 + No.40): 3.9
Fine Sand (-No.40 + No.200): 14.6
Silt + Clay (-No.200): 81.1



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County : Pulaski Project State : Arkansas Laboratory No. : 11206-04

Submitted By: ICA Engineering

Soil Type: Brown & Tan Sandy Lean Clay

Sample No.: ST-2

Sample Loc. : Boring No. B-558

Sample Depth : 26.1' to 27.6' Date Tested : 10/30/14

Date Reported: 11/04/14

### AASHTO T27:

% Passing

% Passing

				70 I (33111g
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31,5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	0.001
No.6		3.35	mm	
No.10		2	mm	99.7
				D

	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	94.9
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		81.0	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	51.6
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	_`
	Hyd. Rd.	# 2		mm	
88	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	#4		mm	
δ.	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
<i>c</i> 1	1				

 $D_{50} = 0.0611 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 21.6

Dry Dens.: NA Liquid Limit (AASHTO T89): 26

Opt. Moist.: NA Plastic Limit (AASHTO T90): 17

AASHTO Composition of Total Sample: M145 Plasticity Index : 9
Liquidity Index : 0.49

Gravel (3in. + No.10): 0.3 Activity: NA

Coarse Sand ( -No.10 + No.40 ) : 4.8 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200) : 43.3 AASHTO Classification: M145 : A-4 (2)

Silt + Clay (-No.200): 51.6 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.3
Medium Sand (-No.10 + No.40) : 4.8
Fine Sand (-No.40 + No.200) : 43.3
Silt + Clay (-No.200) : 51.6



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Tan, Brown & Gray Lean Clay with Sand

Sample No.: ST-1

Sample Loc. : Boring No. B-559 Sample Depth : 14.7' to 16.2' Date Tested : 10/29/14

Date Reported: 11/04/14

AASHTO T27:

% Passing		% Passin

				70 x 433111g
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	·mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.2
No.6		3.35	mm	
No.10		Ž	mm	97.8

					70 Fassing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	94.9
	No.50		0.3	mm	
	No.60		0,25	mm	
	No.80	·	0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	78.2
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	, and the second
138	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	# 4		mm	
₽¥S	Hyd. Rd.	# 5		mm	
	Hyd, Rd.	#6		mm	
	Hyd. Rd.	#7	·	mm	
1	0				

 $D_{50} = 0.0069 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 18.4

Dry Dens. : NA Liquid Limit (AASHTO T89) : 27

Plastic Limit (AASHTO T90): 17 Opt. Moist.: NA

Plasticity Index: 10 Liquidity Index: 0.12

AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10): 2.2 Activity: NA

Coarse Sand (-No.10 + No.40): 2.9 Sp. Gr. (AASHTO T100) : NA

AASHTO Classification: M145 : A-4 (6) Fine Sand (-No.40 + No.200): 16.7

ASTM Classification: D2487 : CL Silt + Clay (-No.200): 78.2

ASTM Composition of Total Sample: D2487

Silt + Clay (-No.200): 78.2

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.8 Coarse Sand (-No.4 + No.10): 1.4 Medium Sand (-No.10 + No.40): 2.9 Fine Sand (-No.40 + No.200): 16.7

Approved By:	J.S.	Soil No.	68
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Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04

Submitted By: ICA Engineering

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in.

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in.

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in.

in.

3.5

3

2.5

2

1 3/4

1 1/2

3/4

1/2

3/8

1/4

No.4

No.6

No.10

1 1/4 lin.

Soil Type: Brown, Tan & Black Sandy Lean Clay

Sample No.: ST-2

Sample Loc. : Boring No. B-559 Sample Depth : 24.7' to 26.3'

Date Tested: 10/30/14

Date Reported: 11/04/14

AASHTO T27:

% Passing

101.6 mm 88.9 mm 76.2 mm 63.5 mm 50.8 mm 45 mm 38.1 mm 31.5 mm 25 mm 19 mm 12.5 mm 100.0 9.5 mm 6.3 mm 4.75 99.9 mm 3.35 mm 99.4 mm

			% Passing
No.16	1.18	mm	
No.30	0.6	mm	

	No.30		0.6	mm	
	No.40		0.425	mm	96.5
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
į	No.100		0.15	mm	
ı	No.200		0.075	mm	61.3
ı	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
İ	Hyd. Rd.	#2		mm	
AASHTO 188	Hyd. Rd.	#3		mm	
	Hyd. Rd.	# 4		mm	
Ş	Hyd. Rd.	# 5		mm	
	Hyd, Rd.	#6		mm	
	Hyd. Rd.	#7		mm	

 $D_{50} = 0.0221 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 19.8

Liquid Limit (AASHTO T89) : 24 Dry Dens.: NA Opt. Moist.: NA Plastic Limit (AASHTO T90) : 16

Plasticity Index: 8

AASHTO Composition of Total Sample: M145 Liquidity Index: 0.47 Gravel (3in. + No.10): 0.6 Activity: NA

Coarse Sand (-No.10 + No.40) : 2.9 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200): 35.2 AASHTO Classification: M145 : A-4 (2)

Silt + Clay (-No.200): 61.3 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.1 Coarse Sand (-No.4 + No.10): 0.5 Medium Sand (-No.10 + No.40) : 2.9 Fine Sand (-No.40 + No.200): 35.2 Silt + Clay (-No.200): 61.3

Approved By:	J.S.	Soil No.	. 69	
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Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Sample Loc.: Boring No. B-562
Project State: Arkansas Sample Depth: 10.0' to 11.5'
Laboratory No.: 11206-04 Date Tested: 10/30/14
Submitted By: ICA Engineering Date Reported: 11/04/14

Soil Type: Gray, Orange & Tan Lean Clay

### AASHTO T27:

% Passing

			% Passing
	1.18	mm	
	0.6	122122	

Sample No.: ST-1

4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	ınm	
No.4		4.75	mm	99.9
No.6		3,35	mm	
No.10		2	mm	99.7

	No.16		1.18	mnı	
	No.30		0.6	mm	·
	No.40		0.425	mm	98.8
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	ınm	
	No.100		0.15	mm	
	No.200		0.075	mm	94.3
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
T88	Hyd. Rd.	#3		mm	
AASHTO T88	Hyd. Rd.	# 4		mm	
AAS	Hyd, Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd, Rd.	#7		mm	

 $D_{50} = 0.0033 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 22.5

Dry Dens.: NA Liquid Limit (AASHTO T89): 36 Opt. Moist.: NA Plastic Limit (AASHTO T90): 19

Plasticity Index: 17
Liquidity Index: 0.20

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.20 Gravel (3in. + No.10) : 0.3 Activity : NA

Coarse Sand (-No.10 + No.40) : 0.9 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200) : 4.5 AASHTO Classification: M145 : A-6 (16) Silt + Clay (-No.200) : 94.3 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.1
Coarse Sand (-No.4 + No.10) : 0.2
Medium Sand (-No.10 + No.40) : 0.9
Fine Sand (-No.40 + No.200) : 4.5
Silt + Clay (-No.200) : 94.3

Approved By:	J.S.	Soil No.	70
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Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas

Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type: Gray & Orange Silt

Sample No. : \$T-1

Sample Loc. : Boring No. B-563

Sample Depth: 4.1' to 5.4' Date Tested : 10/29/14

Date Reported: 11/04/14

AASHTO T27:

% Passing

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	,
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	, ,,,
1 1/4	in.	31.5	mm	,
1	in.	25	mm	
3/4	in.	19	mm	,
1/2	in,	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.9

					70 1 assing
	No.16		1.18	mm	
ı	No.30	,	0.6	mm	
	No.40		0.425	mm	99.4
	No.50		0.3	mm	
	No.60	,	0.25	mm	
	No.80		0.18	mm	, ,
	No.100		0.15	mm	
	No.200		0.075	mm	92.2
	No.270		0.053	mm	·
	Hyd. Rd.	# 1		ının	
	Hyd. Rd.	# 2		mm	
201	Hyd. Rd.	#3		ınm	
AASHIO 188	Hyd. Rd.	# 4		mm	
3	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
· ^	_				

 $D_{50} = 0.0036 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 20.5

Dry Dens.: NA Liquid Limit (AASHTO T89) : 21

Opt. Moist.: NA Plastic Limit (AASHTO T90): 20

Plasticity Index : 1 Liquidity Index: 0.81 AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10): 0.1 Activity: NA

Coarse Sand (-No.10 + No.40): 0.5 Sp. Gr. (AASHTO T100) : NA AASHTO Classification: M145 : A-4 (0) Fine Sand (-No.40 + No.200): 7.2

Silt + Clay (-No.200): 92.2 ASTM Classification: D2487 : ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.0 Coarse Sand (-No.4 + No.10): 0.1 Medium Sand (-No.10 + No.40): 0.5 Fine Sand (-No.40 + No.200): 7.2 Silt + Clay (-No.200): 92.2

Approved By:	J.S.	Soil No.	71
Approved by .	3,0,	OOH ING.	/ 1



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski Project State: Arkansas Laboratory No.: 11206-04 Submitted By: ICA Engineering

Soil Type : Brown Sandy Silt

Sample No. : \$T-2

Sample Loc. : Boring No. B-563 Sample Depth : 24.1' to 25.6' Date Tested : 10/29/14

Date Reported: 11/04/14

### AASHTO T27:

	%	Passing
mm		

				70 Fassing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	97.2
1/4		6.3	mm	
No.4		4.75	ınm	95.3
No.6		3.35	mm	
No.10		2	mm	93.0

% Paccina

					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	85.6
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	55.6
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	
AASHTO T88	Hyd, Rd,	#3		mm	
	Hyd. Rd.	# 4		mm	
Ş.	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
20	5 mm				

 $D_{50} = 0.0385 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 19.1

Dry Dens. : NA Liquid Limit (AASHTO T89) : 23 Opt. Moist.: NA Plastic Limit (AASHTO T90) : 19

Plasticity Index: 4 Liquidity Index : -0.02

AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10): 7.0 Activity: NA

Coarse Sand (-No.10 + No.40): 7.4 Sp. Gr. (AASHTO T100) : NA AASHTO Classification: M145 : A-4 (0) Fine Sand (-No.40 + No.200): 30.0

Silt + Clay(-No.200) : 55.6ASTM Classification: D2487 : ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 4.7 Coarse Sand (-No.4 + No.10): 2.3 Medium Sand (-No.10 + No.40): 7.4 Fine Sand (-No.40 + No.200): 30.0 Silt + Clay (-No.200): 55.6

Approved By:	J.S.	Soil No.	72



Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Tan, Gray & Black Lean Clay

Sample No. : ST-1

Sample Loc. : Boring No. B-564 Sample Depth : 14.6' to 16.1' Date Tested : 10/29/14

Date Reported : 11/04/14

AASHTO T27:

SH10 127:

% Passing % Passing

4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in,	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	·
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3,35	mm	V-10-11-11-11-11-11-11-11-11-11-11-11-11-
No.10		2	mm	99.6

					7 7 7 110 0 711 0
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	97.5
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	nıın	92.3
	No.270		0.053	mm	
	Hyd. Rd.	#1		mm	
	Hyd. Rd.	#2		mm	, .
AASHTO T88	Hyd. Rd.	#3		mm	
Ě	Hyd. Rd.	#4		mm	
₹	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	#6		mm	
	Hyd. Rd.	#7		mm	
2	<i>6</i>				

 $D_{50} = 0.0036 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 21.7

Dry Dens.: NA Liquid Limit (AASHTO T89): 38 Opt. Moist.: NA Plastic Limit (AASHTO T90): 19

Plasticity Index : 19

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.13

Gravel (3in. + No.10): 0.4 Activity: NA

Silt + Clay (-No.200): 92.3 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 0.0 Coarse Sand (-No.4 + No.10) : 0.4 Medium Sand (-No.10 + No.40) : 2.1 Fine Sand (-No.40 + No.200) : 5.2 Silt + Clay (-No.200) : 92.3

Approved By:	J.S.	Soil No.	73	
11				



Project Name: Highway 67 Widening

Project No. : 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04
Submitted By: ICA Engineering

Soil Type: Brown Clayey Sand

Sample No. : ST-2

Sample Loc. : Boring No. B-564 Sample Depth : 29.6' to 30.6' Date Tested : 10/29/14

Date Reported: 11/04/14

### AASHTO T27:

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	•
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	nım	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mın	98.8
No.6		3.35	mm	
No.10		2	ınm	94.6

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	60.5
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	•
No.200		0.075	mm	46.7
No.270		0.053	mm	
Hyd. Rd.	#1		mm	
Hyd. Rd.	#2		mm	
Hyd, Rd.	#3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5	•	mm	
Hyd. Rd.	#6		mm	
Hvd. Rd.	#7		mm	

 $D_{50} = 0.1136 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 21.6

Dry Dens.: NA Liquid Limit (AASHTO T89): 27 Opt. Moist.: NA Plastic Limit (AASHTO T90): 19

Plasticity Index : 8

AASHTO Composition of Total Sample: M145 Liquidity Index : 0.26 Gravel (3in. + No.10) : 5.4 Activity : NA

Coarse Sand (-No.10 + No.40 ) : 34.1 Sp. Gr. (AASHTO T100) : NA

Fine Sand (-No.40 + No.200): 13.8 AASHTO Classification: M145: A-4 (1) Silt + Clay (-No.200): 46.7 ASTM Classification: D2487: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4) : 1.2 Coarse Sand (-No.4 + No.10) : 4.2 Medium Sand (-No.10 + No.40) : 34.1 Fine Sand (-No.40 + No.200) : 13.8 Silt + Clay (-No.200) : 46.7

Approved By: J.S. So	oil No.	74
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O/ Dansina

Project Name: Highway 67 Widening

Project No.: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory No.: 11206-04

Submitted By: ICA Engineering

Soil Type: Gray, Tan & Brown Lean Clay

Sample No. : ST-1

Sample Loc. : Boring No. B-565 Sample Depth : 20.2' to 21.9'

Date Tested: 10/30/14

Date Reported: 11/04/14

#### AASHTO T27:

				% Passing
4	in.	101.6	nım	
3.5	in.	88.9	mm	
3	in.	76,2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	ınm	
1 1/2	in.	38.1	nım	
1 1/4	in.	31.5	mm	
i	in.	25	ınm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3,35	mm	
No.10		2	mm	99.8

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	97.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	85.6
No.270		0.053	mm	
Hyd. Rd.	#1		mm	
Hyd. Rd.	#2		mm	
Hyd. Rd.	#3		mm	
Hyd. Rd.	#4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	#6		mm	
Hyd. Rd.	#7		mm	

 $D_{50} = 0.0048 \text{ mm}$ 

4ASHTO T88

CBR: NA Natural Moisture (%) (AASHTO T265): 19.6

Dry Dens.: NA Liquid Limit (AASHTO T89): 28

Opt. Moist.: NA Plastic Limit (AASHTO T90): 19

AASHTO Composition of Total Sample: M145

Plasticity Index : 9
Liquidity Index : 0.06

Gravel (3in. + No.10): 0.2 Activity: NA

Coarse Sand (-No.10 + No.40) : 2.1 Sp. Gr. (AASHTO T100) : NA Fine Sand (-No.40 + No.200) : 12.1 AASHTO Classification: M145 : A-4 (6)

Silt + Clay (-No.200): 85.6 ASTM Classification: D2487: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.2
Medium Sand (-No.10 + No.40) : 2.1
Fine Sand (-No.40 + No.200) : 12.1
Silt + Clay (-No.200) : 85.6



Project Name: Highway 67 Widening

Project No.: 11206-04

Sample Loc. : Boring No. B-565 Project County: Pulaski Sample Depth : 35.2' to 36.7' Project State: Arkansas Laboratory No.: 11206-04 Date Tested: 10/30/14 Submitted By: ICA Engineering Date Reported: 11/04/14

Soil Type: Brown & Gray Silty Sand

### AASHTO T27:

Pac	

% Passing

				% Passing
4	in.	101.6	mm	
3.5	in,	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	ınnı	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.8
No.6		3.35	mm	
No.10		2	mm	99.0

					70 1 033111 <u>5</u>
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	85.5
	No.50		0.3	mm	
	No.60		0.25	mm	
	No.80		0.18	mm	
	No.100		0.15	mm	
	No.200		0.075	mm	34.2
	No.270		0.053	mm	
	Hyd. Rd.	# 1		mm	
	Hyd. Rd.	#2		mm	
3	Hyd. Rd.	# 3		mm	
	Hyd. Rd.	# 4		mm	
	Hyd. Rd.	# 5		mm	
	Hyd. Rd.	# 6		mm	
	Hyd. Rd.	#7		mm	
٠.					

Sample No. : ST-2

 $D_{50} = 0.128 \text{ mm}$ 

CBR: NA Natural Moisture (%) (AASHTO T265): 21.1

Liquid Limit (AASHTO T89) : 22 Dry Dens, : NA Plastic Limit (AASHTO T90) : 22 Opt. Moist.: NA

Plasticity Index: NP Liquidity Index: NA AASHTO Composition of Total Sample: M145

Activity: NA Gravel (3in. + No.I0): 1.0

Sp. Gr. (AASHTO T100) : NA Coarse Sand (-No.10 + No.40): 13.5

AASHTO Classification: M145 : A-2-4 (0) Fine Sand (-No.40 + No.200): 51.3

Silt + Clay (-No.200): 34.2 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0 Fine Gravel (-3/4in. + No.4): 0.2 Coarse Sand (-No.4 + No.10) : 0.8 Medium Sand (-No.10 + No.40): I3.5 Fine Sand (-No.40 + No.200): 51.3 Silt + Clay (-No.200): 34.2

Apr	roved By:	J.S.	Soil No.	76



14

157.7

0.05

3.7

3.41

## UNCONFINED COMPRESSION TEST

				AASHT	O: T-208		Page 1 of 2
Project Name : I	lighway	67 Widening					
Project # : 1	1206-04			Sample #:	ST-2		
Project County: F	Project County: Pulaski				Boring No.	B-501	
Project State: Arkansas				Sample Depth:			
Laboratory # : 1	Laboratory # : 11206-04				10/28/14		
Submitted By: ICA Engineering				Date Reported:	11/04/14		
Soil Type: Brown & Gray Sandy L			ean Clay				
Wet Density:	136.1	pcf		Initial Height :	5.96	in	
Dry Density:	117.3	pcf		Initial Diameter :		in	
Moisture:	15.9	%		Proving Ring:			
RESULTS:	Axial	Corrected	Unit				
	Load	Area	Strain	Stress			
<u>#</u>	<u>lbs</u>	<u>sf</u>	%	Ksf			
1	0.0	0.04	0.0	0.00			
2	39.4	0.04	0.3	0.88			
3	67.3	0.04	0.5	1.50			
4	89.5	0.04	0.8	1.99			
5	110.6	0.05	1.0	2.46			
6	131.8	0.05	1.3	2.92			
7	144.3	0.05	1.5	3.19			
8	152.9	0.05	1.8	3.37			
9	157.7	0.05	2.0	3.47			
10	162.6	0.05	2.3	3.56			
11	163.5	0.05	2.7	3.57			
12	163.5	0.05	3.0	3.56			
13	161.6	0.05	3.4	3.50			



Date Reported: 11/04/14

Page 2 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Sample #: ST-2 Project County: Pulaski Sample Loc. : Boring No. B-501 Project State : Arkansas Sample Depth: 9.7' to 10.2' Laboratory # : 11206-04 Date Tested: 10/28/14

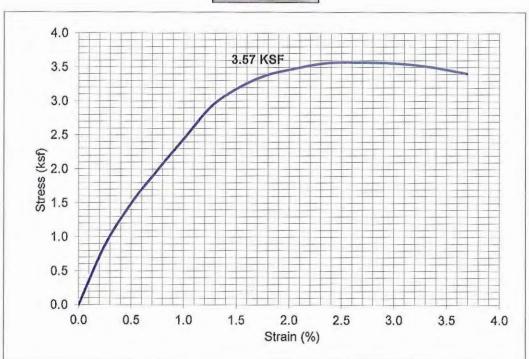
Submitted By: ICA Engineering

Soil Type: Brown & Gray Sandy Lean Clay

Wet Density: 136.1 pcf Initial Height: 5.96 in Dry Density: 117.3 pcf Initial Diameter: 2.86 in Moisture: 15.9 % Proving Ring: #22734 Deg. of Sat. : NA

Comments: AASHTO: T-208







				AASHTO: T-208 Page 1	of 2
Project Name: H	lighway	67 Widening	·		
Project # : 1	1206-04			Sample # : ST-1	
Project County: F	Pulaski			Sample Loc. : Boring No. B-502	
Project State: A	Arkansas			Sample Depth: 9.2' to 9.7'	
Laboratory # : 1	1206-04			Date Tested: 10/24/14	
Submitted By: I	CA Engi	neering		Date Reported: 11/04/14	
Soil Type : T	`an & Gr	ay Lean Clay			
Wet Density:	125.1	pcf		Initial Height: 6.02 in	
Dry Density:	101.0	pcf		Initial Diameter: 2.87 in	
Moisture:	23.8	_%		Proving Ring: #22734	
RESULTS:	Axial	Corrected	Unit		
	Load	Area	Strain	Stress	
<u>#</u>	<u>1bs</u>	<u>sf</u>	<u>%</u>	<u>Ksf</u>	
1	0.0	0.04	0.0	0.00	
2	51.0	0.04	0.2	1.13	
3	78.9	0.05	0.5	1.75	
4	89.5	0.05	0.7	1.98	
5	92.3	0.05	1.0	2.04	
6	93.3	0.05	1.2	2.06	
7	92.3	0.05	1.5	2.03	
8	88.5	0.05	1.7	1.94	



Page 2 of 2

Project Name: Highway 67 Widening

Project #: 11206-04

Sample #: ST-1 Project County: Pulaski Sample Loc. : Boring No. B-502

Project State: Arkansas Sample Depth: 9.2' to 9.7' Laboratory # : 11206-04 Date Tested: 10/24/14 Submitted By: ICA Engineering Date Reported: 11/04/14

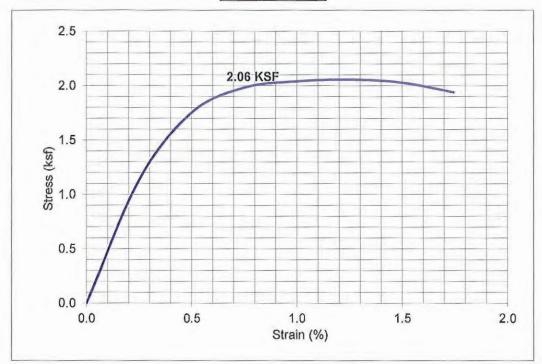
Soil Type: Tan & Gray Lean Clay

Wet Density: 125.1 pcf Initial Height: 6.02 in Dry Density: 101.0 pcf Initial Diameter: 2.87 in Moisture: 23.8 % Proving Ring: #22734

NA Deg. of Sat.:

Comments: AASHTO: T-208





APPROVED BY: frame Solv



27

28

84.6

76.0

# UNCONFINED COMPRESSION TEST

				AASHTO	D: T-208		Page 1 of 2
Project Name: I							
Project # : 1				Sample #:			
Project County: I				Sample Loc. :		B-503	
Project State:				Sample Depth:			
Laboratory # : 1			Date Tested:				
Submitted By : I	CA Engi	neering	Date Reported:	11/04/14			
Soil Type: I							
Wet Density:	121.5	pcf		Initial Height:	5.87	in	
Dry Density:	94.4	pcf		Initial Diameter:	2.85	in	
Moisture :	28.8	%		Proving Ring:	#22734		
RESULTS:	Axial	Corrected	Unit				
	Load	Area	Strain	Stress			
<u>#</u> 1	lbs	<u>sf</u>	%	Ksf			
	0.0	0.04	0.0	0.00			
2	4.8	0.04	0.3	0.11			
3	16.4	0.04	0.5	0.37			
4	25.0	0.04	0.8	0.56			
5	33.7	0.04	1.0	0.75			
6	39.4	0.04	1.3	0.88			
7	43.3	0.05	1.5	0.96			
8	47.1	0.05	1.8	1.04			
9	50.0	0.05	2.0	1.10			
10	54.8	0.05	2.4	1.21			
11	56.8	0.05	2.7	1.24			
12	60.6	0.05	3.1	1.32			
13	63.5	0.05	3.4	1.38			
14	65.4	0.05	3.7	1.42			
15	68.3	0.05	4.1	1.48			
16	71.2	0.05	4.4	1.53			
17	72.1	0.05	4.8	1.55			
18	74.1	0.05	5.1	1.58			
19	76.9	0.05	5.5	1.64			
20	78.9	0.05	6.0	1.67			
21	80.8	0.05	6.4	1.70			
22	81.8	0.05	6.8	1.72			
23	83.7	0.05	7.2	1.75			
24	85.6	0.05	7.7	1.78			
25	86.6	0.05	8.1	1.79			
26	86.6	0.05	8.5	1.78			
27	011	0.05	0 .	1 =0			

9.4

10.2

0.05

0.05

1.73

1.54



Page 2 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Sample #: ST-1 Project County: Pulaski Sample Loc. : Boring No. B-503 Project State: Arkansas Sample Depth: 4.1' to 4.6'

Laboratory # : 11206-04 Date Tested: 10/28/14 Submitted By: ICA Engineering Date Reported: 11/04/14

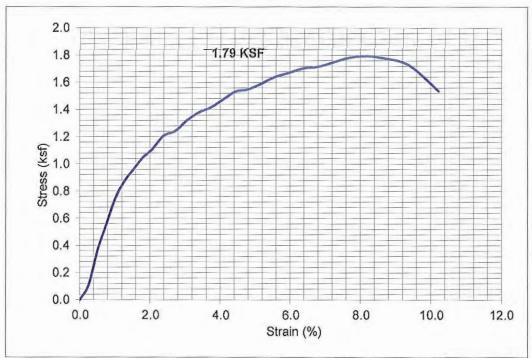
Soil Type: Brown Lean Clay

Wet Density: 121.5 pcf Initial Height: 5.87 in Dry Density: 94.4 pcf Initial Diameter: 2.85 in Moisture: 28.8 % Proving Ring: #22734

Deg. of Sat. : NA

Comments: AASHTO: T-208





APPROVED BY: Jeeny Solo



AASHTO: T-208

Page 1 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Project County : Pulaski

Project State: Arkansas Laboratory #: 11206-04

Submitted By: ICA Engineering

12

13

Sample #: ST-1

Sample Loc.: Boring No. B-506

Sample Depth: 15.8' to 16.3'

Date Tested: 10/28/14

Date Reported: 11/04/14

Soil Type: Gray & Orange Silty, Clayey Sand

Wet Density: 132.3 pcf Dry Density: 113.3 pcf Initial Height: Initial Diameter: Proving Ring: 5.92

2.88 in #22734

in

ry Density: 113.3 pcf Moisture: 16.7 %

RESULTS: Axial Corrected Unit Stress Load Area Strain # lbs  $\underline{sf}$ % Ksf 1 0.0 0.05 0.0 0.00 2 10.6 0.05 0.3 0.23 3 22.1 0.05 0.5 0.49 4 35.6 0.05 0.8 0.78 5 49.1 0.05 1.0 1.08 6 62.5 0.05 1.3 1.37 7 76.9 1.5 0.05 1.68 8 87.5 0.05 1.8 1.90 9 96.2 0.05 2.0 2.09 10 104.8 0.05 2.4 2.27 11 104.8 0.05 2.7 2.26

102.0

95.2

0.05

0.05

3.0

3.4

2.19

2.04



Page 2 of 2

Project Name: Highway 67 Widening

Project # : 11206-04 Sample # : ST-1

Project County: Pulaski Sample Loc.: Boring No. B-506
Project State: Arkansas Sample Depth: 15.8' to 16.3'
Laboratory #: 11206-04 Date Tested: 10/28/14
Submitted By: ICA Engineering Date Reported: 11/04/14

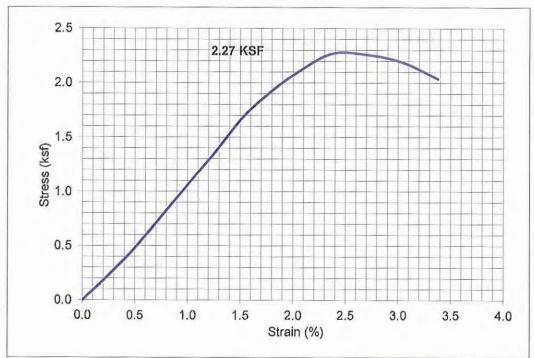
Soil Type: Gray & Orange Silty, Clayey Sand

Wet Density: 132.3 pcf Initial Height: 5.92 in Dry Density: 113.3 pcf Initial Diameter: 2.88 in Moisture: 16.7 % Proving Ring: #22734

Deg. of Sat.: NA

Comments: AASHTO: T-208





APPROVED BY: fremy Salo



21

22

23

24

25

26

27

28

29

30

31

53.9

58.7

60.6

64.4

67.3

69.3

75.0

77.9

80.8

79.8

75.0

0.05

0.05

0.05

0.05

0.05

0.05

0.05

0.05

0.05

0.05

0.05

6.4

6.8

7.2

7.6

8.1

8.5

9.3

10.2

11.0

11.9

12.7

1.16

1.26

1.30

1.37

1.43

1.46

1.57

1.62

1.66

1.62

1.51

## **UNCONFINED COMPRESSION TEST**

	AASHTC	Page 1 of 2					
Project Name: High Project #: 1120	,		Sample # : S				
Project County: Pulas	ski		Sample Loc. : Boring No. B-504				
Project State: Arka	nsas		Sample Depth: 1				
Laboratory # : 1120	6-04		Date Tested: 1	0/28/14			
Submitted By: ICA	Engineering		Date Reported : 1	1/04/14			
Soil Type: Tan S	Sandy Silt						
Wet Density: 14	1.7 pcf		Initial Height:	5.89	in		
Dry Density: 12	2.9 pcf		Initial Diameter:	2.82	in		
Moisture: 15	5.3 %		Proving Ring:	#22734			
RESULTS: A	xial Corrected	Unit					
	oad Area	Strain	Stress				
# <u>ll</u> 1 0	bs sf	<u>%</u>	Ksf				
	.0 0.04	0.0	0.00				
	.8 0.04	0.3	0.09				
3 5	.8 0.04	0.5	0.13				
4 7	.7 0.04	0.8	0.18				
5 9	.6 0.04	1.0	0.22				
6 11	1.5 0.04	1.3	0.26				
7 13	3.5 0.04	1.5	0.31				
8 15	5.4 0.04	1.8	0.35				
9 18	3.3 0.04	2.0	0.41				
10 21	1.2 0.04	2.4	0.48				
11 23	3.1 0.04	2.7	0.52				
12 20	5.9 0.04	3.1	0.60				
13 29	0.04	3.4	0.67				
14 32	2.7 0.04	3.7	0.73				
	5.6 0.05	4.1	0.79				
16 38	3.5 0.05	4.4	0.85				
17 41	1.4 0.05	4.8	0.91				
18 44	1.2 0.05	5.1	0.97				
19 48	3.1 0.05	5.5	1.05				
20 51	0.05	5.9	1.13				



Sample Loc. : Boring No. B-504

Page 2 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Project County: Pulaski

Project State: Arkansas Laboratory # : 11206-04

Submitted By: ICA Engineering

Soil Type: Tan Sandy Silt

Wet Density: 141.7 pcf Dry Density: 122.9 pcf

Moisture: 15.3 %

Deg. of Sat. : NA

Initial Height:

Initial Diameter:

Proving Ring:

Sample #: ST-2

Sample Depth: 14.0' to 14.5'

Date Tested: 10/28/14

Date Reported: 11/04/14

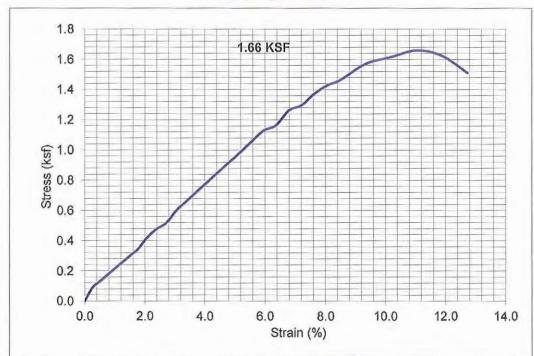
2.82 in

5.89 in

#22734

Comments: AASHTO: T-208







13

134.7

0.05

3.4

2.85

# UNCONFINED COMPRESSION TEST

				AASHTO	): T-208		Page 1 of 2		
Project Name: Froject #: 1 Project County: Froject State: Froject State: Froject State: Froject Submitted By: Froject Submitted By: Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject Name   Froject   Froject Name   Froject   Froject   Froject Name   Froject   Froject Name   Froject   Froject Name   Froj	1206-04 Pulaski Arkansas 11206-04			Sample #: ST-1 Sample Loc.: Boring No. B-507 Sample Depth: 9.7' to 10.2' Date Tested: 10/28/14 Date Reported: 11/04/14					
Soil Type: 7 Wet Density: Dry Density: Moisture:	Tan & Gr 125.0 101.8 22.9	ay Lean Clay pcf pcf %		Initial Height: Initial Diameter: Proving Ring:	5.86 2.89 #22734	in in			
RESULTS:	Axial	Corrected	Unit						
	Load	Area	Strain	Stress					
<u>#</u> 1	lbs	<u>sf</u>	<u>%</u>	<u>Ksf</u>					
	0.0	0.05	0.0	0.00					
2	30.8	0.05	0.3	0.67					
3	60.6	0.05	0.5	1.32					
4	84.6	0.05	0.8	1.84					
5	104.8	0.05	1.0	2.27					
6	119.3	0.05	1.3	2.58					
7	127.0	0.05	1.5	2.74					
8	136.6	0.05	1.8	2.94					
9	139.5	0.05	2.0	2.99					
10	139.5	0.05	2.4	2.98					
11	138.5	0.05	2.7	2.95					
12	136.6	0.05	3.1	2.90					



Page 2 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Project County: Pulaski

Project State : Arkansas

Laboratory # : 11206-04

Submitted By: ICA Engineering Soil Type: Tan & Gray Lean Clay

Wet Density:

125.0 pcf

101.8 pcf

Dry Density: Moisture:

22.9 %

Deg. of Sat. :

NA Comments: AASHTO: T-208 Sample #: ST-1

Sample Loc. : Boring No. B-507

Sample Depth: 9.7' to 10.2'

Date Tested: 10/28/14

Date Reported: 11/04/14

Initial Height:

5.86 in

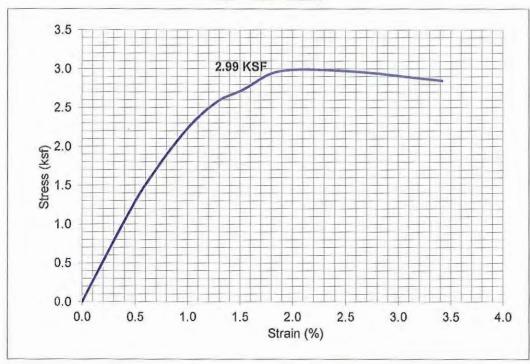
Initial Diameter:

2.89 in

Proving Ring:

#22734







17

124.1

0.05

4.7

2.65

## UNCONFINED COMPRESSION TEST

				AASHTO	): T-208		Page 1 of 2
Project Name : 1							
Project # :	11206-04			Sample # : 5	ST-1		
Project County: 1	Pulaski			Sample Loc. : 1	Boring No.	B-556	
Project State : A	Arkansas			Sample Depth:	20.3' to 20.	8'	
Laboratory # :	11206-04			Date Tested:	10/28/14		
Submitted By : 1	CA Engi	neering		Date Reported :	11/04/14		
Soil Type : I	Brown Le	an Clay					
Wet Density:	129.3	pcf		Initial Height:	5.93	in	
Dry Density:	105.8	pcf		Initial Diameter:	2.86	in	
Moisture:	22.2	%		Proving Ring:	#22734		
RESULTS:	Axial	Corrected	Unit				
	Load	Area	Strain	Stress			
<u>#</u> 1	Ibs	<u>sf</u>	%	Ksf			
1	0.0	0.04	0.0	0.00			
2	2.9	0.04	0.3	0.06			
3	9.6	0.04	0.5	0.21			
4	18.3	0.05	0.8	0.41			
5	27.9	0.05	1.0	0.62			
6	40.4	0.05	1.3	0.89			
7	53.9	0.05	1.5	1.19			
8	68.3	0.05	1.8	1.50			
9	83.7	0.05	2.0	1.83			
10	103.9	0.05	2.4	2.27			
11	119.3	0.05	2.7	2.60			
12	130.8	0.05	3.0	2.84			
13	136.6	0.05	3.4	2.95			
14	139.5	0.05	3.7	3.01			
15	139.5	0.05	4.0	2.99			
16	134.7	0.05	4.4	2.88			



Page 2 of 2

Project Name: Highway 67 Widening

Project #: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory #: 11206-04

Submitted By: ICA Engineering

Soil Type: Brown Lean Clay

Wet Density: 129.3 pcf
Dry Density: 105.8 pcf
Moisture: 22.2 %

Deg. of Sat. : NA

Comments: AASHTO: T-208

Sample #: ST-1

Sample Loc.: Boring No. B-556 Sample Depth: 20.3' to 20.8' Date Tested: 10/28/14

Date Reported: 11/04/14

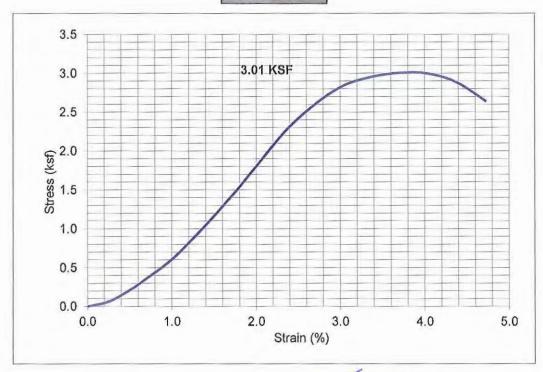
Initial Height:

5.93 in 2.86 in

Initial Diameter:
Proving Ring:

#22734





APPROVED BY: July Solo



### **UNCONFINED COMPRESSION TEST** AASHTO: T-208

Page 1 of 2

Project Name: Highway 6	7 Widening		

Project # : 11206-04 Sample #: ST-2

Project County: Pulaski Sample Loc. : Boring No. B-557 Project State : Arkansas Sample Depth: 19.4' to 19.9' Laboratory # : 11206-04 Date Tested: 10/28/14

Submitted By: ICA Engineering Date Reported: 11/04/14

Soil Type: Gray & Orange Lean Clay

	Wet Density: Dry Density:	128.1 104.4	pcf pcf		Initial Height: Initial Diameter:	5.82 2.86	in in
	Moisture:	22.6	%		Proving Ring:	#22734	
RESULTS:		Axial	Corrected	Unit			
	a.	Load	Area	Strain	Stress		
	<u>#</u>	lbs	<u>sf</u>	<u>%</u>	Ksf		
	1	0.0	0.04	0.0	0.00		
	2	6.7	0.04	0.3	0.15		
	3	13.5	0.04	0.5	0.30		
	4	18.3	0.05	0.8	0.41		
	5	24.0	0.05	1.0	0.53		
	6	30.8	0.05	1.3	0.68		
	7	36.6	0.05	1.5	0.80		
	8	43.3	0.05	1.8	0.95		
	9	48.1	0.05	2.1	1.05		
	10	55.8	0.05	2.4	1.22		
	11	64.4	0.05	2.8	1.40		
	12	74.1	0.05	3.1	1.60		
	13	82.7	0.05	3.4	1.78		
	14	89.5	0.05	3.8	1.92		
	15	96.2	0.05	4.1	2.06		
	16	102.0	0.05	4.5	2.18		
	17	107.7	0.05	4.8	2.29		
	18	112.5	0.05	5.2	2.38		
	19	117.3	0.05	5.6	2.48		
	20	122.2	0.05	6.0	2.57		
	21	127.0	0.05	6.4	2.65		
	22	131.8	0.05	6.9	2.74		
	23	136.6	0.05	7.3	2.83		
	24	139.5	0.05	7.7	2.87		
	25	143.3	0.05	8.2	2.94		
	26	145.2	0.05	8.6	2.97		
	27	152.0	0.05	9.5	3.07		
	28	157.7	0.05	10.3	3.16		
	29	159.7	0.05	11.2	3.17		
	30	160.6	0.05	12.0	3.16		
	31	159.7	0.05	12.9	3.11		
	32	156.8	0.05	13.8	3.02		



Page 2 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Project County: Pulaski Project State: Arkansas Laboratory # : 11206-04

Submitted By: ICA Engineering

Soil Type: Gray & Orange Lean Clay

Wet Density: 128.1 pcf Dry Density: 104.4 pcf Moisture: 22.6 %

Deg. of Sat. : NA Sample #: ST-2

Sample Loc. : Boring No. B-557 Sample Depth: 19.4' to 19.9' Date Tested: 10/28/14

Date Reported: 11/04/14

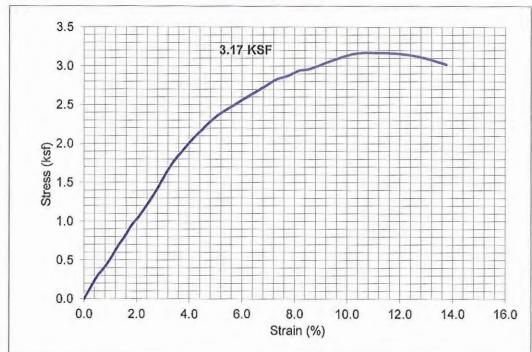
Initial Height: 5.82 in Initial Diameter:

2.86 in Proving Ring:

#22734

Comments: AASHTO: T-208





APPROVED BY: Jeany Sale



#### UNCONFINED COMPRESSION TEST AASHTO: T-208

Page 1 of 2

Project Name: Highway 67 Widening Sample #: ST-3 Project #: 11206-04 Project County: Pulaski Sample Loc. : Boring No. B-557 Project State : Arkansas Sample Depth: 39.9' to 40.4' Laboratory # : 11206-04 Date Tested: 10/28/14 Submitted By: ICA Engineering Date Reported: 11/04/14

Soil Type: Brown & Tan Silty, Clayey Sand

Wet Density: 136.6 pcf Initial Height: 5.95 in Dry Density: 119.8 pcf Initial Diameter: 2.89 in

	Moisture:	14.0	%		Proving Ring:	#22734
RESULTS:		Axial	Corrected	Unit		
		Load	Area	Strain	Stress	
	#	1bs	<u>sf</u>	%	Ksf	
	1	0.0	0.05	0.0	0.00	
	2	8.7	0.05	0.3	0.19	
	3	13.5	0.05	0.5	0.29	
	4	19.2	0.05	0.8	0.42	
	5	25.0	0.05	1.0	0.54	
	6	30.8	0.05	1.3	0.67	
	7	34.6	0.05	1.5	0.75	
	8	39.4	0.05	1.8	0.85	
	9	42.3	0.05	2.0	0.91	
	10	43.3	0.05	2.4	0.93	
	11	43.3	0.05	2.7	0.93	
	12	41.4	0.05	3.0	0.88	
	13	36.6	0.05	3.4	0.78	



Page 2 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Sample #: ST-3 Project County: Pulaski Sample Loc. : Boring No. B-557 Project State: Arkansas Sample Depth: 39.9' to 40.4' Laboratory # : 11206-04 Date Tested: 10/28/14 Date Reported: 11/04/14

Submitted By: ICA Engineering

Soil Type: Brown & Tan Silty, Clayey Sand

Wet Density: 136.6 pcf Dry Density: 119.8 pcf Moisture: 14.0 %

Comments: AASHTO: T-208

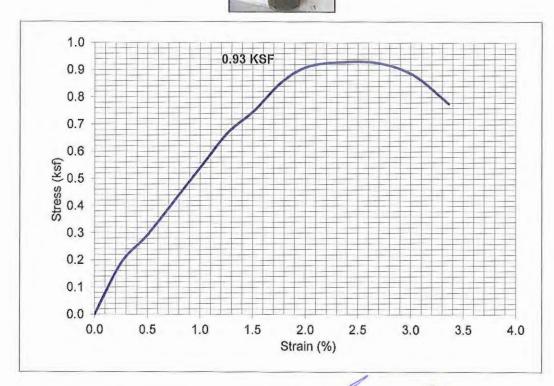
Deg. of Sat. : NA

Initial Height: Initial Diameter:

5.95 in 2.89 in

Proving Ring:

#22734





#### **UNCONFINED COMPRESSION TEST** AASHTO: T-208

in

Page 1 of 2

Project Name: Highway 67 Widening	
Project # + 11206-04	Sample # · ST-2

Project # : 11206-04 Sample #: ST-2 Sample Loc. : Boring No. B-558 Project County: Pulaski Project State: Arkansas Sample Depth: 26.1' to 26.6' Date Tested: 10/28/14 Laboratory # : 11206-04

Submitted By: ICA Engineering Date Reported: 11/04/14

Soil Type: Brown & Tan Sandy Lean Clay Wet Density: 131.4 pcf Initial Height: 5.87

Dry Density: 108.1 pcf Initial Diameter: 2.83 in

	Moisture:	21.6	%		Proving Ring:	#22734
RESULTS:		Axial	Corrected	Unit		
		Load	Area	Strain	Stress	
	<u>#</u>	<u>lbs</u>	<u>sf</u>	<u>%</u>	Ksf	
	1	0.0	0.04	0.0	0.00	
	2	3.8	0.04	0.3	0.09	
	3	9.6	0.04	0.5	0.22	
	4	13.5	0.04	0.8	0.31	
	5	19.2	0.04	1.0	0.44	
	6	25.0	0.04	1.3	0.57	
	7	28.9	0.04	1.5	0.65	
	8	34.6	0.04	1.8	0.78	
	9	36.6	0.04	2.0	0.82	
	10	40.4	0.04	2.4	0.90	
	11	40.4	0.04	2.7	0.90	
	12	39.4	0.05	3.1	0.88	
	13	37.5	0.05	3.4	0.83	
	14	35.6	0.05	3.7	0.78	



Page 2 of 2

Project Name: Highway 67 Widening

Project #: 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory #: 11206-04

Submitted By: ICA Engineering

Soil Type ; Brown & Tan Sandy Lean Clay

Wet Density: 131.4 pcf
Dry Density: 108.1 pcf
Moisture: 21.6 %

Deg. of Sat.: NA

Comments: AASHTO: T-208

Sample #: ST-2

Sample Loc.: Boring No. B-558 Sample Depth: 26.1' to 26.6' Date Tested: 10/28/14

Date Reported: 11/04/14

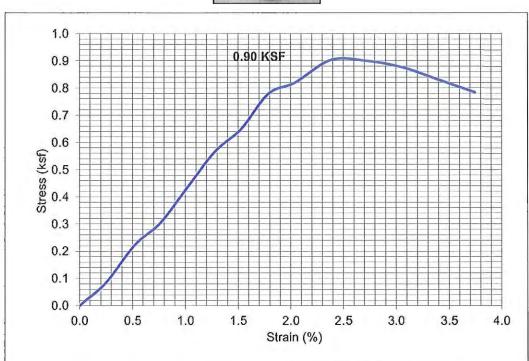
Initial Height:

5.87 in 2.83 in

Initial Diameter: Proving Ring:

#22734







#### UNCONFINED COMPRESSION TEST

			UNCONFINED COMIT RES					
					AASHTO	: T-208		Page 1 of 2
Project Name: F	Iighway	67 Widening						
Project # : 1					Sample # : S			
Project County: P					Sample Loc. : E			
Project State: A	rkansas				Sample Depth: 2	4.7' to 25.2	2'	
Laboratory # : 1	Laboratory # : 11206-04					0/28/14		
Submitted By: I	CA Engi	neering			Date Reported: 1	1/04/14		
Soil Type : E	Brown, T	an & Black Sa	ındy Lean (	Clay				
Wet Density:	129.6	pcf			Initial Height:	5.85	in	
Dry Density:	108.1	pcf		Ir	itial Diameter :	2.86	in	
Moisture:	19.8	%			Proving Ring:	#22734		
RESULTS:	Axial	Corrected	Unit					
	Load	Area	Strain	Stress				
<u>#</u>	<u>lbs</u>	<u>sf</u>	<u>%</u>	<u>Ksf</u>				
1	0.0	0.04	0.0	0.00				
2	4.8	0.04	0.3	0.11				
3	9.6	0.04	0.5	0.21				
4	14.4	0.04	8.0	0.32				
5	18.3	0.05	1.0	0.41				
6	25.0	0.05	1.3	0.55				
7	30.8	0.05	1.5	0.68				
8	37.5	0.05	1.8	0.83				
9	42.3	0.05	2.1	0.93				
10	49.1	0.05	2.4	1.07				
11	54.8	0.05	2.7	1.20				
12	59,6	0.05	3.1	1.30				
13	63.5	0.05	3.4	1.37				
14	65.4	0.05	3.8	1.41				
15	67.3	0.05	4.1	1.45				
16	67.3	0.05	4.4	1.44				
17	66.4	0.05	4.8	1.42				
18	63.5	0.05	5.1	1.35				



Page 2 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Sample #: ST-2 Project County: Pulaski Sample Loc. : Boring No. B-559 Project State: Arkansas Sample Depth: 24.7' to 25.2' Laboratory # : 11206-04 Date Tested: 10/28/14 Submitted By: ICA Engineering Date Reported: 11/04/14

Soil Type: Brown, Tan & Black Sandy Lean Clay

Wet Density: 129.6 pcf Dry Density: 108.1 pcf Moisture: 19.8 % Deg. of Sat. :

NA

Initial Height:

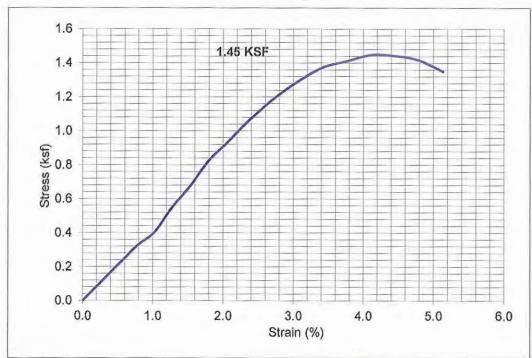
5.85 in 2.86 in

Initial Diameter: Proving Ring:

#22734

Comments: AASHTO: T-208





APPROVED BY:

Juny Sdr



AASHTO: T-208

Page 1 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Project County: Pulaski

Project State: Arkansas Laboratory # : 11206-04 Sample #: ST-1

Sample Loc. : Boring No. B-562 Sample Depth: 10.0' to 10.5'

Date Tested: 10/28/14

Date Reported: 11/04/14

Submitted By: ICA Engineering

Soil Type: Gray, Orange & Tan Lean Clay

Wet Density: 128.2 pcf Dry Density: 104.6 pcf

Initial Height: Initial Diameter:

Proving Ring:

5.90

in 2.87 in #22734

Moisture: 22.5 %

	worsture,	22,3	70		
RESULTS:		Axial	Corrected	Unit	
		Load	Area	Strain	Stress
	<u>#</u>	<u>lbs</u>	$\underline{\mathbf{sf}}$	<u>%</u>	Ksf
	# 1	0.0	0.04	0.0	0.00
	2	5.8	0.04	0.3	0.13
	3	12.5	0.05	0.5	0.28
	4	19.2	0.05	0.8	0.43
	5	25.0	0.05	1.0	0.55
	6	29.8	0.05	1.3	0.66
	7	35.6	0.05	1.5	0.78
	8	40.4	0.05	1.8	0.89
	9	45.2	0.05	2.0	0.99
	10	51.9	0.05	2.4	1.13
	11	58.7	0.05	2.7	1.27
	12	66.4	0.05	3.1	1.44
	13	72.1	0.05	3.4	1.56
	14	79.8	0.05	3.7	1.72
	1.5	86.6	0.05	4.1	1.85
	16	92.3	0.05	4.4	1.97
	17	99.1	0.05	4.7	2.11
	18	103.9	0.05	5.1	2.20
	19	108.7	0.05	5.5	2.29
	20	113.5	0.05	5.9	2.38
	21	110.6	0.05	6.4	2.31
	22	109.7	0.05	6.8	2.28



Page 2 of 2

Project Name: Highway 67 Widening

Project # : 11206-04 Sample # : ST-1

Project County: Pulaski Sample Loc.: Boring No. B-562
Project State: Arkansas Sample Depth: 10.0' to 10.5'
Laboratory#: 11206-04 Date Tested: 10/28/14
Submitted By: ICA Engineering Date Reported: 11/04/14

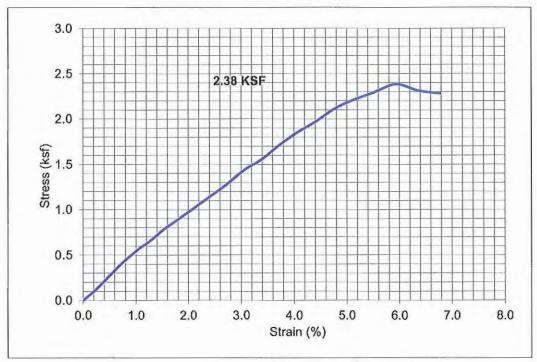
Soil Type: Gray, Orange & Tan Lean Clay

Wet Density: 128.2 pcf Initial Height: 5.90 in Dry Density: 104.6 pcf Initial Diameter: 2.87 in Moisture: 22.5 % Proving Ring: #22734

Deg. of Sat.: NA

Comments: AASHTO: T-208





APPROVED BY:

freery Solo



				AASH	TO: T-208		Page 1 of 2	
Project Name : I	lighway	67 Widening						
Project # : 1	1206-04			Sample #	: ST-2			
Project County: F	Pulaski			Sample Loc. : Boring No. B-564				
Project State : A	Arkansas			Sample Depth: 30.1' to 30.6'				
Laboratory # : 1	1206-04			Date Tested: 10/27/14				
Submitted By: I	CA Engi	neering	Date Reported: 11/04/14					
Soil Type : F	Brown Cl	ayey Sand						
Wet Density:	129.1	pcf		Initial Height	: 5.88	in		
Dry Density:	106.2	pcf		Initial Diameter	: 2.81	in		
Moisture:	21.6	%		Proving Ring	: #22734			
RESULTS:	Axial	Corrected	Unit					
	Load	Area	Strain	Stress				
<u>#</u>	<u>lbs</u>	<u>sf</u>	%	Ksf				
1	0.0	0.04	0.0	0.00				
2	7.7	0.04	0.3	0.18				
3	14.4	0.04	0.5	0.33				
4	21.2	0.04	0.8	0.49				
5 6 7	24.0	0.04	1.0	0.55				
	25.0	0.04	1.3	0.57				
	22.1	0.04	1.5	0.50				
8	18.3	0.04	1.8	0.42				

14.4

0.04

2.0

0.33



Page 2 of 2

Project Name: Highway 67 Widening

Project #: 11206-04 Sample #: ST-2

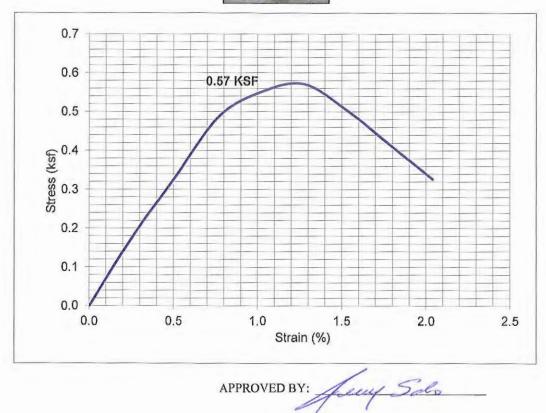
Project County: Pulaski Sample Loc. : Boring No. B-564 Project State: Arkansas Sample Depth: 30.1' to 30.6' Laboratory # : 11206-04 Date Tested: 10/27/14 Submitted By: ICA Engineering Date Reported: 11/04/14

Soil Type: Brown Clayey Sand

Wet Density: 129.1 pcf Initial Height: 5.88 in Dry Density: 106.2 pcf Initial Diameter: 2.81 in 21.6 % Moisture: Proving Ring: #22734 Deg. of Sat. : NA

Comments: AASHTO: T-208







AASHTO: T-208

Page 1 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Project County: Pulaski
Project State: Arkansas
Laboratory #: 11206-04
Submitted By: ICA Engineering

Sample # : ST-1 Sample Loc. : Borir

Sample Loc.: Boring No. B-565 Sample Depth: 20.4' to 20.9' Date Tested: 10/28/14

Date Reported: 11/04/14

Soil Type: Gray, Tan & Brown Lean Clay

Wet Density: 132.9 pcf Dry Density: 111.1 pcf Initial Height: Initial Diameter:

5.87 in 2.85 in

	Moisture :	19.6	%		Proving Ring:	#22734	1111
RESULTS		Axial	Corrected	Unit			
		Load	Area	Strain	Stress		
	<u>#</u>	<u>lbs</u>	<u>sf</u>	<u>%</u>	<u>Ksf</u>		
	# 1	0.0	0.04	0.0	0.00		
	2	2.9	0.04	0.3	0.07		
	3	5.8	0.04	0.5	0.13		
	4	10.6	0.04	0.8	0.24		
	5	16.4	0.04	1.0	0.37		
	6	21.2	0.04	1.3	0.47		
	7	26.0	0.04	1.5	0.58		
	8	32.7	0.04	1.8	0.73		
	9	38.5	0.05	2.0	0.85		
	10	46.2	0.05	2.4	1.02		
	11	54.8	0.05	2.7	1.21		
	12	62.5	0.05	3.1	1.37		
	13	70.2	0.05	3.4	1.54		
	14	75.0	0.05	3.7	1.64		
	15	79.8	0.05	4.1	1.73		
	16	82.7	0.05	4.4	1.79		
	17	86.6	0.05	4.8	1.87		
	18	88.5	0.05	5.1	1.90		
	19	90.4	0.05	5.5	1.93		
	20	91.4	0.05	6.0	1.95		
	21	91.4	0.05	6.4	1.94		
	22	91.4	0.05	6.8	1.93		
	23	90.4	0.05	7.2	1.90		
	24	89.5	0.05	7.7	1.87		



Page 2 of 2

Project Name: Highway 67 Widening

Project #: 11206-04

Project County: Pulaski

Project State: Arkansas Laboratory # : 11206-04

Submitted By: ICA Engineering

Soil Type: Gray, Tan & Brown Lean Clay

Wet Density: 132.9 pcf 111.1 pcf Dry Density: Moisture: 19.6 %

NA Deg. of Sat.:

Comments: AASHTO: T-208

Sample #: ST-1

Sample Loc. : Boring No. B-565

Sample Depth: 20.4' to 20.9' Date Tested: 10/28/14

Date Reported: 11/04/14

Initial Height:

5.87 in

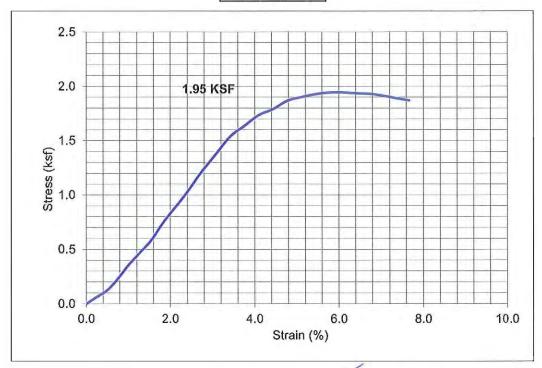
Initial Diameter:

2.85 in

Proving Ring:

#22734







AASHTO: T-208

Page 1 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Project County: Pulaski

Project State: Arkansas Laboratory # : 11206-04

Submitted By: ICA Engineering

Sample #: ST-2

Sample Loc.: Boring No. B-565

Sample Depth: 35.2' to 35.7'

Date Tested: 10/28/14

Date Reported: 11/04/14

Soil Type: Brown & Gray Silty Sand

20.2

Wet Density: 125.4 Dry Density:

103.6 pcf

%

pcf Initial Height:

0.45

Initial Diameter: Proving Ring: 5.84 2.83

#22734

in in

Moisture: 21.1

13

RESULTS: Axial Corrected Unit Load Area Strain Stress # lbs  $\underline{sf}$ % Ksf 1 0.0 0.04 0.0 0.00 2 3.8 0.04 0.09 0.3 3 5.8 0.04 0.5 0.13 4 9.6 0.04 0.8 0.22 5 0.04 0.28 12.5 1.0 6 15.4 0.04 1.3 0.35 7 0.04 0.43 19.2 1.5 8 21.2 0.04 1.8 0.47 9 22.1 0.04 2.1 0.49 10 23.1 0.04 2.4 0.51 11 22.1 0.05 2.7 0.49 0.05 0.47 12 21.2 3.1

0.05

3.4



Page 2 of 2

Project Name: Highway 67 Widening

Project # : 11206-04

Sample #: ST-2 Project County: Pulaski Sample Loc. : Boring No. B-565 Sample Depth: 35.2' to 35.7' Project State: Arkansas Laboratory # : 11206-04 Date Tested: 10/28/14

Submitted By: ICA Engineering Date Reported: 11/04/14

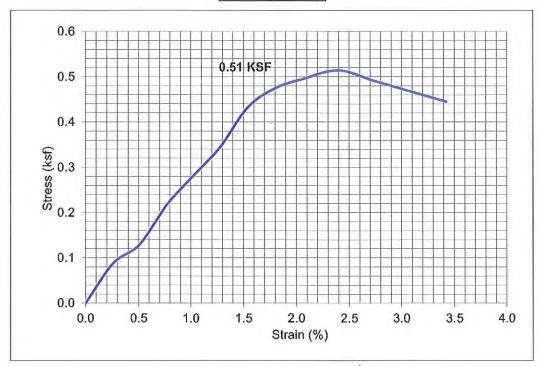
Soil Type: Brown & Gray Silty Sand

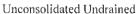
Wet Density: 125.4 pcf Initial Height: 5.84 in Dry Density: 103.6 pcf Initial Diameter: 2.83 in Moisture: 21.1 % Proving Ring: #22734

NA Deg. of Sat. :

Comments: AASHTO: T-208









#### TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening	Page 1 of 3

PROJECT # : 11206-04 POINT # : 1
PROJECT COUNTY : Pulaski SAMPLE LOC. : B-501
PROJECT STATE : Arkansas SAMPLE DEPTH : 4.5' to 5.0'
LABORATORY # : 11206-04 DATE TESTED : 10/27/14
SUBMITTED BY : ICA Engineering DATE REPORTEE: 11/04/14

SOIL TYPE : Brown & Tan Silty Clay with Sand

WET DENSITY : 133.21 pcf DELTA HEIGHT : 0.45 cm INITIAL HEIGHT : 15.13 cm DRY DENSITY : 111.02 pcf DELTA VOLUME : NA INITIAL DIAMETER: 7.19 cm

MOISTURE : 19.99 % CHAMBER PRES. : 4.65 psi COMMENTS : AASHTO T-296

RESULTS:

			•	
	<b>E</b> a	σ 3 (psi)	O 1 (psi)	$\sigma_{1}/\sigma_{3}$
1	0.00	4.65	4.65	1.00
2	0.09	4.65	4.87	1.05
3	0.17	4.65	5.08	1.09
4	0.26	4.65	5.08	1.09
5	0.35	4.65	5.08	1.09
6	0.43	4.65	5.3	1.14
7	0.52	4.65	5.3	1.14
8	1.04	4.65	6.15	1.32
9	1.56	4.65	6.78	1.46
10	2.08	4.65	7.4	1.59
11	2.60	4.65	8.02	1.72
12	3.11	4.65	8.63	1.85
13	3.46	4.65	9.03	1.94
14	4.33	4.65	10.02	2.15
15	5.19	4.65	11	2.36
16	6.06	4.65	11.55	2.48
17	6.92	4.65	12.09	2.6
18	7.79	4.65	12.61	2.71
19	8.65	4.65	13.13	2.82
20	9.52	4.65	13.64	2.93
21	10,38	4.65	14.13	3.04
22	11.25	4.65	14.42	3.1
23	12.11	4.65	14.87	3.2
24	12.98	4.65	15.32	3.29
25	13.84	4.65	15.39	3.31
26	14.71	4.65	15.82	3.4
27	15.57	4.65	16.06	3.45
28	16.44	4.65	16.3	3.5
29	17.30	4.65	16.52	3.55
30	18.17	4.65	16.57	3.56
31	19.04	4.65	16.95	3.64
32	19.90	4.65	16.99	3.65



#### Unconsolidated Undrained

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#### TRIAXIAL COMPRESSION TEST

PROJECT NAME

: Highway 67 Widening

PROJECT#

: 11206-04

PROJECT COUNTY PROJECT STATE

: Pulaski : Arkansas

LABORATORY # SUBMITTED BY : 11206-04 : ICA Engineering

FINAL MOISTUR : 19.99 %

FINAL HEIGHT

: 11.76 cm

FINAL DIAMETE: 8 cm

EFF. CONS. STRESS: 4.65 psi SPECIFIC GRAVITY: NA

POINT#

COMMENTS

: AASHTO T-296

: 1

SAMPLE LOC. : B-501

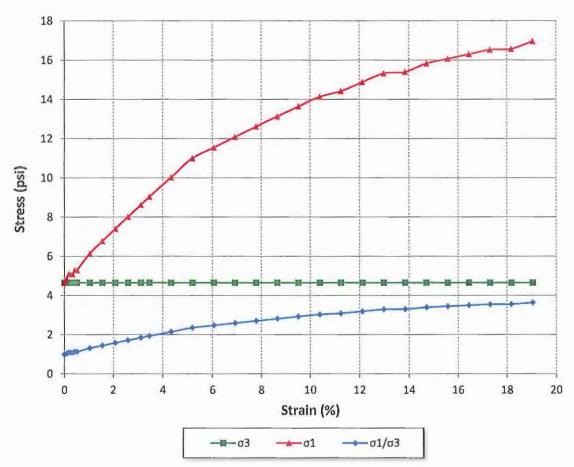
SAMPLE DEPTH: 4.5' to 5.0'

DATE TESTED : 10/27/14

DATE REPORTEE: 11/04/14

RESULTS:







#### Unconsolidated Undrained

#### TRIAXIAL COMPRESSION TEST

PROJECT NAME

: Highway 67 Widening

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PROJECT#

: 11206-04

COMMENTS : AASHTO T-296

PROJECT COUNTY

: Pulaski

SAMPLE LOC. : B-501

PROJECT STATE LABORATORY#

: Arkansas

SAMPLE DEPTH: 4.5' to 5.0'

SUBMITTED BY

: 11206-04

DATE TESTED : 10/27/14

: ICA Engineering

DATE REPORTED: 11/04/14

# COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test

1

Lateral 4.65 psi Total 15.9 psi Compressive Strength =

1620 psf

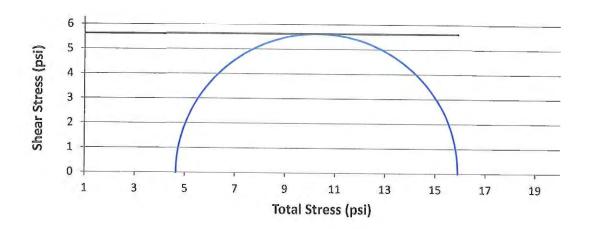
Cohesion = Phi = 810 psf 0 deg

Tan (Phi) =

# At Maximum Deviator Stress 15%

# Triaxial Mohr's Circles

# **Unconsolidated Undrained Triaxial Test**







#### TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening	Page	e 1 of 3

PROJECT # : 11206-04 POINT # : 1
PROJECT COUNTY : Pulaski SAMPLE LOC. : B-502
PROJECT STATE : Arkansas SAMPLE DEPTH : 19.9' to 20.4'
LABORATORY # : 11206-04 DATE TESTED : 10/24/14
SUBMITTED BY : ICA Engineering DATE REPORTEE: 11/04/14

SOIL TYPE : Gray & Tan Lean Clay with Sand

WET DENSITY : 132.79 pcf DELTA HEIGHT : 0.45 cm INITIAL HEIGHT : 14.91 cm DRY DENSITY : 111.69 pcf DELTA VOLUME : NA INITIAL DIAMETER: 7.27 cm

MOISTURE : 18.9 % CHAMBER PRES. : 14.32 psi COMMENTS : AASHTO T-296

RESULTS:

	8 a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	14.32	14.32	1.00
2	0.09	14.32	18.32	1.28
3	0.18	14.32	21.05	1.47
4	0.26	14.32	23.36	1.63
5	0,35	14.32	25.44	1.78
6	0.44	14.32	27.26	1.9
7	0.53	14.32	28.88	2.02
8	1.05	14.32	37.89	2.65
9	1.58	14.32	44.81	3.13
10	2.11	14.32	49.29	3.44
11	2.64	14.32	51.87	3,62
12	3.16	14.32	54,21	3.79
13	3.51	14.32	55.56	3.88
14	4.39	14.32	58.05	4.05
15	5.27	14.32	59.35	4.15
16	6.15	14.32	60.11	4.2
17	7.03	14.32	60.65	4.24
18	7.91	14.32	61.1	4.27
19	8.79	14.32	61.19	4.27
20	9.66	14.32	61.08	4.27
21	10.54	14.32	60.8	4.25
22	11.42	14.32	60.34	4.22
23	12.30	14.32	59.89	4.18
24	13.18	14.32	59,43	4.15
25	14.06	14.32	58.48	4.08
26	14.94	14.32	58.03	4.05
27	15.81	14.32	57.57	4.02
28	16.69	14.32	56.96	3.98



Page 2 of 3



#### TRIAXIAL COMPRESSION TEST

PROJECT NAME : Highway 67 Widening

PROJECT # : 11206-04
PROJECT COUNTY : Pulaski
PROJECT STATE : Arkansas
LABORATORY # : 11206-04
SUBMITTED BY : ICA Engineering

FINAL MOISTUR : 18.9 % FINAL HEIGHT : 11.53 cm FINAL DIAMETE : 8.11 cm

RESULTS:

POINT # : 1

SAMPLE LOC. : B-502 SAMPLE DEPTH : 19.9' to 20.4'

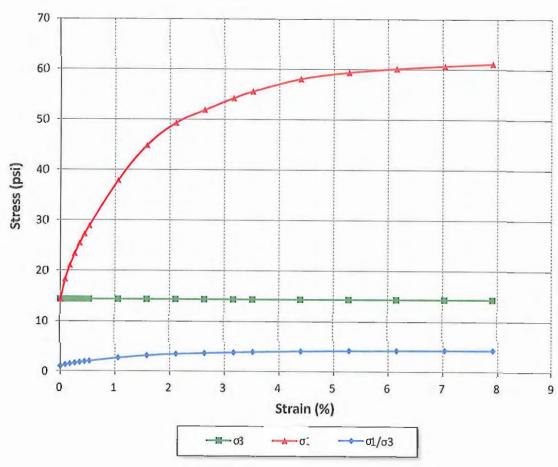
DATE TESTED : 10/24/14

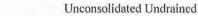
DATE REPORTEC: 11/04/14

EFF. CONS. STRESS: 14.32 psi SPECIFIC GRAVITY: NA

COMMENTS : AASHTO T-296









#### TRIAXIAL COMPRESSION TEST

PROJECT NAME

: Highway 67 Widening

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PROJECT#

: 11206-04

COMMENTS

: AASHTO T-296

PROJECT COUNTY PROJECT STATE

: Pulaski : Arkansas

SAMPLE LOC. : B-502 SAMPLE DEPTH: 19.9' to 20.4'

LABORATORY #

: 11206-04

DATE TESTED : 10/24/14

SUBMITTED BY

: ICA Engineering

DATE REPORTEE: 11/04/14

#### COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test

Lateral 14.32 psi

Total 61.19 psi Compressive Strength = 6749 psf

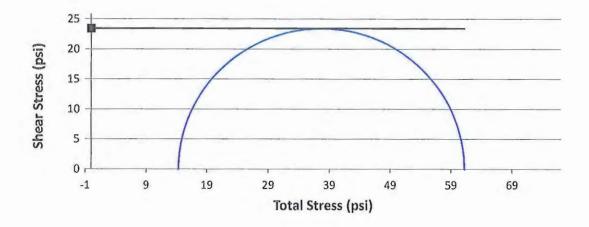
Cohesion = 3375 psf Phi = 0 deg

Tan (Phi) =

## **Maximum Deviator Stress**

# **Triaxial Mohr's Circles**

# **Unconsolidated Undrained Triaxial Test**







#### TRIAXIAL COMPRESSION TEST

PROJECT # : 11206-04 POINT # : 1
PROJECT COUNTY : Pulaski SAMPLE LOC. : B-503
PROJECT STATE : Arkansas SAMPLE DEPTH : 14.3' to 14.8'
LABORATORY # : 11206-04 DATE TESTED : 10/27/14
SUBMITTED BY : ICA Engineering DATE REPORTEE: 11/04/14

SOIL TYPE : Brown & Tan Silty Clay

WET DENSITY : 127.25 pcf DELTA HEIGHT : 0.45 cm INITIAL HEIGHT : 14.96 cm DRY DENSITY : 102.99 pcf DELTA VOLUME : NA INITIAL DIAMETER : 7.24 cm

MOISTURE : 23.55 % CHAMBER PRES. : 11.03 psi COMMENTS : AASHTO T-296

RESULTS:

	Еа	σ 3 (psi)	σ 1 (psi)	$\sigma_{1}/\sigma_{3}$
1	0.00	11.03	11.03	1.00
2	0.09	11.03	12.73	1.15
3	0.18	11.03	13.37	1.21
4	0.26	11.03	14.43	1.31
5	0.35	11.03	14.85	1.35
6	0.44	11.03	15.27	1.38
7	0.53	11.03	16,11	1.46
8	1.05	11.03	18.62	1.69
9	1.58	11.03	21.09	1.91
10	2.10	11.03	22.87	2.07
11	2.63	11.03	24.22	2.2
12	3.15	11.03	25.15	2.28
13	3.50	11.03	25.7	2.33
14	4.38	11.03	26.75	2.43
15	5.25	11.03	27.59	2.5
16	6.13	11.03	28,21	2.56
17	7.00	11.03	28.63	2.6
18	7.88	11.03	28.65	2.6
19	8.75	11.03	29,24	2.65
20	9.63	11.03	29,44	2.67
21	10.50	11.03	29.63	2.69
22	11.38	11.03	29.63	2.69
23	12.25	11.03	30.03	2.72
24	13.13	11.03	30.22	2.74
25	14.00	11.03	30.21	2.74
26	14.88	11.03	30.2	2.74
27	15.75	11.03	30.37	2.75
28	16.63	11.03	30,54	2.77
29	17.50	11.03	30.51	2.77
30	18.38	11.03	30.49	2.76
31	19.26	11.03	30.63	2.78
32	20.13	11.03	30.59	2,77





PROJECT NAME : Highway 67 Widening

: 11206-04 PROJECT # PROJECT COUNTY : Pulaski : Arkansas PROJECT STATE LABORATORY # : 11206-04 SUBMITTED BY : ICA Engineering

FINAL MOISTUR : 23.55 % : 11.59 cm

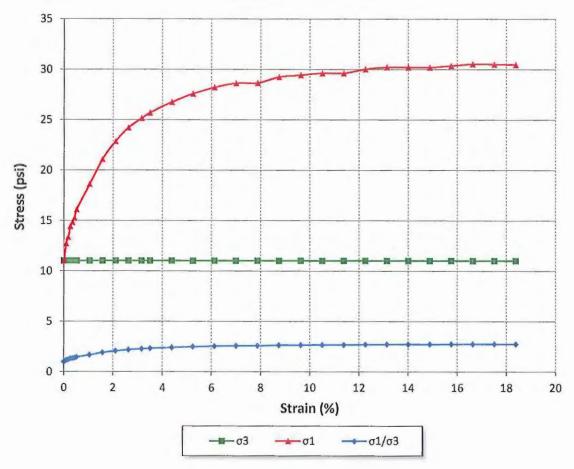
FINAL HEIGHT FINAL DIAMETE: 8.07 cm Page 2 of 3

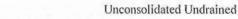
POINT# : 1 SAMPLE LOC. : B-503 SAMPLE DEPTH: 14.3' to 14.8' DATE TESTED : 10/27/14 DATE REPORTEE: 11/04/14

EFF. CONS. STRESS: 11.03 psi SPECIFIC GRAVITY: NA

COMMENTS : AASHTO T-296









PROJECT NAME : Highway 67 Widening Page 3 of 3

PROJECT # : 11206-04 COMMENTS : AASHTO T-296

PROJECT COUNTY: Pulaski SAMPLE LOC.: B-503

PROJECT STATE: Arkansas: SAMPLE DEPTH: 14.3' to 14.8'

LABORATORY #: 11206-04: DATE TESTED: 10/27/14

SUBMITTED BY: ICA Engineering: DATE REPORTEC: 11/04/14

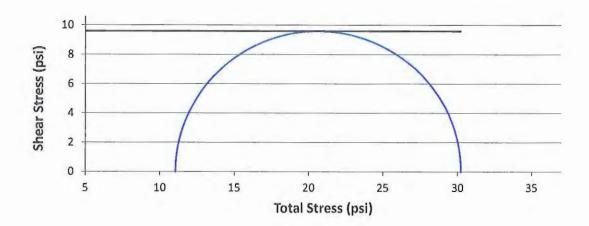
### COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total	Compressive Strength =	2764 psf
1	11.03 psi	30.23 psi	Cohesion =	1382 psf
			Phi =	0 deg
			Tan (Phi) =	0

# At Maximum Deviator Stress 15%

# **Triaxial Mohr's Circles**

# **Unconsolidated Undrained Triaxial Test**



Approved By: Jeeny Solo





PROJECT NAME : Highway 67 Widening Page 1 of 3

: 11206-04 PROJECT# POINT# : 1 PROJECT COUNTY : Pulaski SAMPLE LOC. : B-505 PROJECT STATE : Arkansas SAMPLE DEPTH: 14.5' to 15.0' LABORATORY # : 11206-04 DATE TESTED : 10/27/14 SUBMITTED BY : ICA Engineering DATE REPORTEE: 11/04/14

SOIL TYPE : Brown & Tan Silty Clay

WET DENSITY : 119.71 pcf DELTA HEIGHT : 0.45 cm INITIAL HEIGHT : 14.84 cm DRY DENSITY : 93.74 pcf DELTA VOLUME : NA INITIAL DIAMETER : 7.32 cm

MOISTURE : 27.7 % CHAMBER PRES. : 10.33 psi COMMENTS : AASHTO T-296

			1	
	Е а	σ 3 (psi)	σ 1 (psi)	$\sigma_{1}/\sigma_{3}$
1	0.00	10.33	10.33	1.00
2	0.09	10.33	12.2	1.18
3	0.18	10.33	13.44	1.3
4	0.26	10.33	14.48	1.4
5	0.35	10.33	15.51	1.5
6	0.44	10,33	16.33	1.58
7	0.53	10.33	17.36	1.68
8	1.06	10.33	21.61	2.09
9	1.59	10.33	25.13	2.43
10	2.12	10.33	27.82	2.69
11	2.65	10.33	30.49	2.95
12	3.18	10.33	33.07	3.2
13	3.53	10.33	34.22	3.31
14	4.41	10.33	36.66	3.55
15	5.30	10.33	38.04	3.68
16	6.18	10.33	38.78	3.75
17	7.06	10.33	39.31	3.8
18	7.95	10.33	39.68	3.84
19	8.83	10.33	39.72	3.84
20	9.71	10.33	39.59	3.83
21	10.59	10.33	39.46	3.82
22	11.48	10.33	39.33	3.81
23	12.36	10.33	39,35	3,81
24	13.24	10.33	39.21	3.79
25	14.13	10.33	39.06	3.78
26	15.01	10.33	38.92	3.77
27	15.89	10.33	38.77	3.75
28	16.77	10.33	38.61	3.74
29	17.66	10.33	38.46	3.72
30	18.54	10.33	38.44	3.72
31	19.42	10.33	38.42	3.72
32	20.31	10.33	38.11	3.69



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## TRIAXIAL COMPRESSION TEST

PROJECT NAME : Highway 67 Widening

PROJECT# : 11206-04 PROJECT COUNTY : Pulaski : Arkansas PROJECT STATE LABORATORY # : 11206-04 SUBMITTED BY : ICA Engineering

FINAL MOISTUR : 27.7 % : 11.46 cm

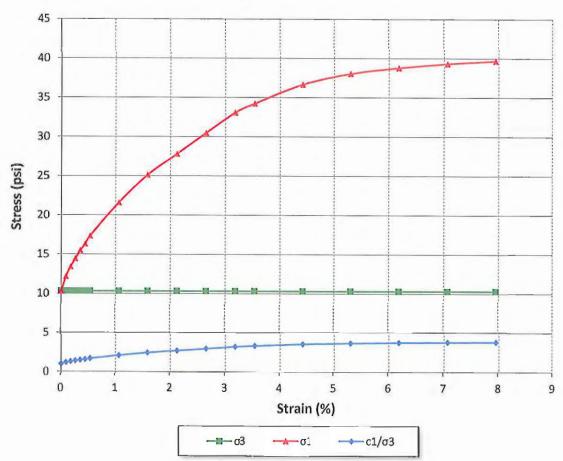
FINAL HEIGHT FINAL DIAMETE : 8.17 cm POINT# : 1

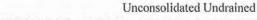
SAMPLE LOC. : B-505 SAMPLE DEPTH: 14.5' to 15.0' DATE TESTED : 10/27/14 DATE REPORTED: 11/04/14

EFF. CONS. STRESS: 10.33 psi SPECIFIC GRAVITY: NA

**COMMENTS** : AASHTO T-296









PROJECT NAME

: Highway 67 Widening

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PROJECT#

: 11206-04

COMMENTS

: AASHTO T-296

PROJECT COUNTY

: Pulaski

SAMPLE LOC. : B-505

PROJECT STATE LABORATORY# : Arkansas : 11206-04 SAMPLE DEPTH: 14.5' to 15.0'

DATE TESTED : 10/27/14

SUBMITTED BY

: ICA Engineering

DATE REPORTEC: 11/04/14

### COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test

Lateral

Total

Compressive Strength = 4232 psf

10.33 psi

39.72 psi

Cohesion = 2116 psf

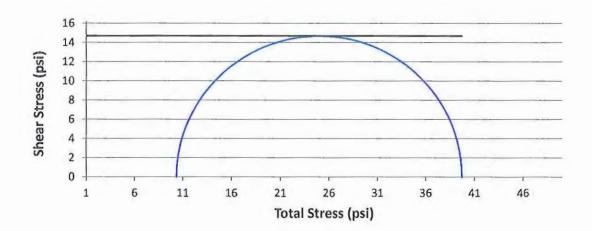
Phi = Tan (Phi) =

0 deg

# Maximum Deviator Stress

# Triaxial Mohr's Circles

## **Unconsolidated Undrained Triaxial Test**







PROJECT NAME : Highway 67 Widening Page 1 of 3

: 11206-04 PROJECT # POINT# : 1 PROJECT COUNTY : Pulaski SAMPLE LOC. : B-556 PROJECT STATE : Arkansas SAMPLE DEPTH: 29.8' to 30.3' LABORATORY # : 11206-04 DATE TESTED : 10/27/14 SUBMITTED BY : ICA Engineering DATE REPORTED: 11/04/14

SOIL TYPE : Orange & Gray Lean Clay with Sand

WET DENSITY : 132.25 pcf DELTA HEIGHT : 0.45 cm INITIAL HEIGHT : 14.96 cm DRY DENSITY : 107.23 pcf DELTA VOLUME : NA INITIAL DIAMETER : 7.18 cm

MOISTURE : 23.33 % CHAMBER PRES. : 19 psi COMMENTS : AASHTO T-296

	€ a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	19.00	19.00	1.00
2	0.09	19	19.43	1.02
3	0.18	19	19.65	1.03
4	0.26	19	19.86	1,05
5	0.35	19	19.86	1.05
6	0.44	19	20.07	1.06
7	0.53	19	20.29	1.07
8	1.05	19	21.14	1.11
9	1.58	19	21.76	1.15
10	2.10	19	22.6	1.19
11	2.63	19	23	1.21
12	3.15	19	23.6	1.24
13	3.50	19	24	1.26
14	4.38	19	24,58	1.29
15	5.25	19	25.35	1.33
16	6.13	19	25.69	1.35
17	7.00	19	26.03	1.37
18	7.88	19	26.17	1.38
19	8.75	19	26.69	1.4
20	9.63	19	26.81	1.41
21	10.50	19	27.12	1.43
22	11.38	19	27.24	1,43
23	12.25	19	27.34	1.44
24	13.13	19	27.64	1.45
25	14.00	19	27.73	1.46
26	14.88	19	27.83	1.46
27	15.75	19	27.92	1.47
28	16.63	19	28.01	1.47
29	17.50	19	28.09	1.48
30	18.38	19	27.99	1.47
31	19.25	19	28.06	1.48
32	20.13	19	28.13	1.48



Page 2 of 3



## TRIAXIAL COMPRESSION TEST

: 1

PROJECT NAME : Highway 67 Widening

PROJECT # : 11206-04 PROJECT COUNTY : Pulaski : Arkansas PROJECT STATE LABORATORY# : 11206-04 SUBMITTED BY : ICA Engineering

FINAL MOISTUR : 23.33 % FINAL HEIGHT : 11.59 cm FINAL DIAMETE: 8.01 cm

DATE REPORTED: 11/04/14 EFF. CONS. STRESS: 19 psi SPECIFIC GRAVITY: NA

> COMMENTS : AASHTO T-296

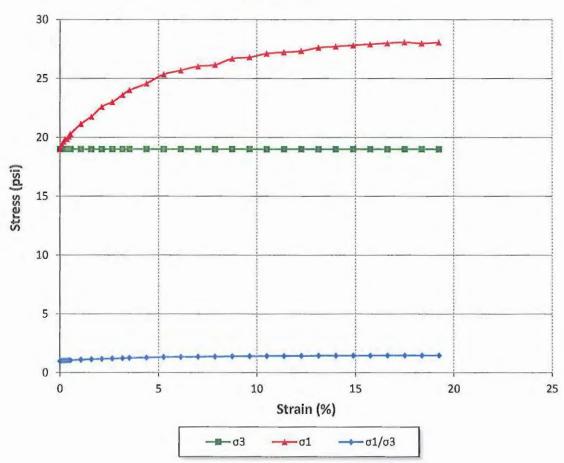
SAMPLE LOC. : B-556

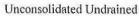
DATE TESTED : 10/27/14

SAMPLE DEPTH: 29.8' to 30.3'

POINT#







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### TRIAXIAL COMPRESSION TEST

PROJECT NAME : Highway 67 Widening

COMMENTS : AASHTO T-296

PROJECT # : 11 PROJECT COUNTY : Pa

: 11206-04 : Pulaski

SAMPLE LOC. : B-556 SAMPLE DEPTH : 29,8' to 30.3'

PROJECT STATE LABORATORY # : Arkansas : 11206-04

DATE TESTED : 10/27/14

SUBMITTED BY : ICA Engineering

DATE REPORTED: 11/04/14

### COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test Lateral Total Compress
1 19 psi 27.84 psi

Compressive Strength = 1274 psf

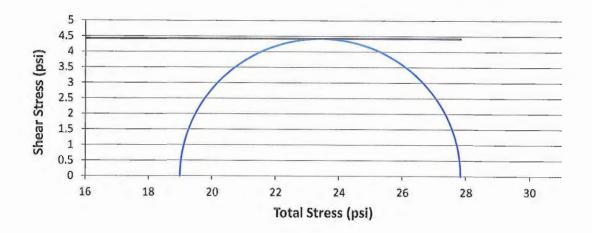
Cohesion = 637 psf

Phi = 0 deg Tan (Phi) = 0

At Maximum Deviator Stress 15%

# **Triaxial Mohr's Circles**

## **Unconsolidated Undrained Triaxial Test**



Approved By:





PROJECT NAME	: Highway 67 Widening	Page 1 of 3
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PROJECT # : 11206-04 POINT # : 1
PROJECT COUNTY : Pulaski SAMPLE LOC. : B-557
PROJECT STATE : Arkansas SAMPLE DEPTH : 15.2' to 15.7'
LABORATORY # : 11206-04 DATE TESTED : 10/27/14
SUBMITTED BY : ICA Engineering DATE REPORTEE: 11/04/14

SOIL TYPE : Brown & Gray Silt

WET DENSITY : 130.93 pcf DELTA HEIGHT : 0.45 cm INITIAL HEIGHT : 14.86 cm DRY DENSITY : 109.59 pcf DELTA VOLUME : NA INITIAL DIAMETER : 7.28 cm

MOISTURE : 19.47 % CHAMBER PRES. : 11.83 psi COMMENTS : AASHTO T-296

	<b>8</b> a	<b>σ</b> 3 (psi)	<b>σ</b> 1 (psi)	$\sigma_{1}/\sigma_{3}$
1	0.00	11.83	11.83	1.00
2	0.09	11.83	13.3	1.12
3	0.18	11.83	14.98	1.27
4	0.26	11.83	16.44	1.39
5	0.35	11.83	17.49	1.48
6	0.44	11.83	18.32	1.55
7	0.53	11.83	19.36	1.64
8	1.06	11.83	24.86	2.1
9	1.59	11.83	30.22	2.56
10	2,12	11.83	35.09	2.97
11	2.64	11.83	39.17	3.31
12	3.17	11.83	43.06	3.64
13	3.53	11.83	45	3.81
14	4.41	11.83	49.28	4.17
15	5.29	11.83	53.84	4.55
16	6.17	11.83	56.61	4.79
17	7.05	11.83	58.57	4.95
18	7.93	11.83	59.54	5.03
19	8.81	11.83	59.96	5.07
20	9.69	11.83	60.19	5.09
21	10.58	11.83	60.23	5.09
22	11.46	11.83	59.76	5.05
23	12.34	11.83	59.79	5.06
24	13.22	11.83	59.64	5.04
25	14.10	11.83	59.48	5.03
26	14.98	11.83	59.32	5.02
27	15.86	11.83	59.48	5,03
28	16.74	11.83	59.3	5.01
29	17.63	11.83	58.95	4.99
30	18.51	11.83	58.6	4.96
31	19.39	11.83	58.72	4.97
32	20.27	11.83	58.51	4.95





PROJECT NAME : Highway 67 Widening

PROJECT# : 11206-04 PROJECT COUNTY : Pulaski PROJECT STATE : Arkansas LABORATORY# : 11206-04 SUBMITTED BY : ICA Engineering

FINAL MOISTUR : 19.47 % : 11.49 cm FINAL HEIGHT

FINAL DIAMETE: 8.12 cm

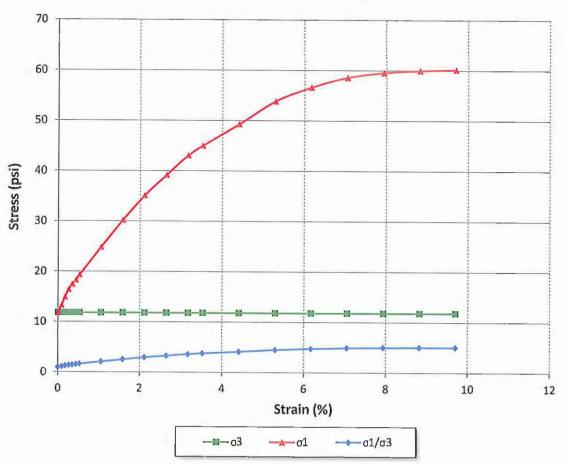
Page 2 of 3

POINT# : 1 SAMPLE LOC. : B-557 SAMPLE DEPTH: 15.2' to 15.7' DATE TESTED : 10/27/14 DATE REPORTEE: 11/04/14

EFF, CONS. STRESS: 11.83 psi SPECIFIC GRAVITY: NA

COMMENTS : AASHTO T-296







1

### TRIAXIAL COMPRESSION TEST

PROJECT NAME : Highway 67 Widening Page 3 of 3

PROJECT # : 11206-04 COMMENTS : AASHTO T-296

PROJECT COUNTY: Pulaski SAMPLE LOC.: B-557

PROJECT STATE: Arkansas: SAMPLE DEPTH: 15.2' to 15.7'

LABORATORY #: 11206-04: DATE TESTED: 10/27/14

SUBMITTED BY: ICA Engineering: DATE REPORTED: 11/04/14

COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test Lateral Total Compressive Strength = 6971 psf

11.83 psi 60.23 psi Cohesion = 3485 psf

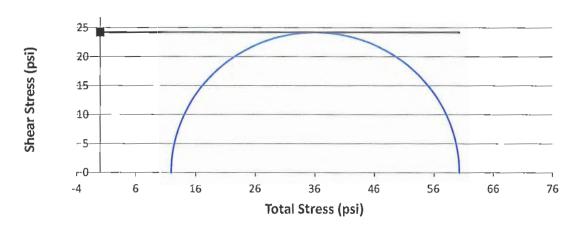
Phi = 0 deg

Tan (Phi) = 0

# Maximum Deviator Stress

# **Triaxial Mohr's Circles**

## **Unconsolidated Undrained Triaxial Test**



Approved By: July Solo



### TRIAXIAL COMPRESSION TEST

PROJECT NAME : Highway 67 Widening Page 1 of 3

PROJECT# : 11206-04 POINT# : 1 PROJECT COUNTY : Pulaski SAMPLE LOC. : B-558 : Arkansas PROJECT STATE SAMPLE DEPTH: 16.4' to 16.9' LABORATORY # : 11206-04 DATE TESTED : 10/27/14 SUBMITTED BY : ICA Engineering DATE REPORTED: 11/04/14

SOIL TYPE : Brown & Tan Lean Clay with Sand

WET DENSITY : 131.55 pcf DELTA HEIGHT : 0.45 cm INITIAL HEIGHT : 15.06 cm DRY DENSITY : 110.3 pcf DELTA VOLUME : NA INITIAL DIAMETER: 7.29 cm

MOISTURE : 19.27 % CHAMBER PRES. : 8.14 psi COMMENTS : AASHTO T-296

	E a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	8.14	8.14	1.00
2	0.09	8.14	8.98	1.1
3	0.17	8.14	11.07	1.36
4	0.26	8.14	12.54	1.54
5	0.35	8.14	13,58	1.67
6	0.43	8.14	14.41	1.77
7	0.52	8.14	15.45	1.9
8	1.04	8.14	20.95	2.57
9	1.57	8.14	26.9	3.31
10	2.09	8.14	30.73	3.78
11	2.61	8.14	32.92	4.04
12	3,13	8.14	34.04	4.18
13	3.48	8.14	34.79	4.27
14	4.35	8.14	35.99	4.42
15	5.22	8.14	37.17	4.57
16	6.09	8.14	38.38	4.72
17	6.96	8.14	38.92	4.78
18	7.83	8.14	39.61	4.87
19	8.70	8.14	40.29	4.95
20	9.57	8.14	40.62	4.99
21	10.44	8.14	41.1	5.05
22	11.30	8.14	41.25	5.07
23	12.17	8.14	41.39	5.09
24	13.04	8.14	41.68	5.12
25	13.91	8.14	41.8	5.14
26	14.78	8.14	42.06	5.17
27	15.65	8.14	42.33	5.2
28	16.52	8.14	42.62	5.24
29	17.39	8.14	42.57	5.23
30	18.26	8.14	42.84	5.26
31	19.13	8.14	43.01	5.28
32	20.00	8.14	43.02	5.29

Page 2 of 3

## TRIAXIAL COMPRESSION TEST

PROJECT NAME : Highway 67 Widening

PROJECT # : 11206-04
PROJECT COUNTY : Pulaski
PROJECT STATE : Arkansas
LABORATORY # : 11206-04
SUBMITTED BY : ICA Engineering

FINAL MOISTUR : 19.27 % FINAL HEIGHT : 11.68 cm FINAL DIAMETE : 8.12 cm

RESULTS:

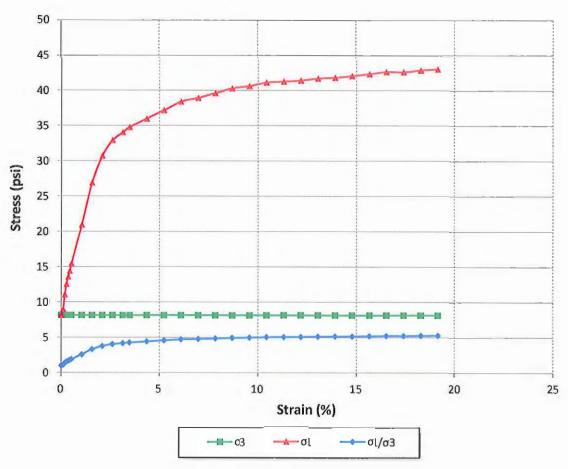
POINT#:1

SAMPLE LOC. : B-558 SAMPLE DEPTH : 16.4' to 16.9' DATE TESTED : 10/27/14 DATE REPORTEE: 11/04/14

EFF. CONS. STRESS: 8.14 psi SPECIFIC GRAVITY: NA

COMMENTS : AASHTO T-296







### TRIAXIAL COMPRESSION TEST

PROJECT NAME

: Highway 67 Widening

Page 3 of 3

PROJECT#

: 11206-04

COMMENTS

: AASHTO T-296

PROJECT COUNTY

: Pulaski

SAMPLE LOC. : B-558

SAMPLE DEPTH: 16.4' to 16.9'

PROJECT STATE LABORATORY#

: Arkansas : 11206-04

SUBMITTED BY

: ICA Engineering

DATE TESTED : 10/27/14

DATE REPORTEE: 11/04/14

### COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test

Lateral

Total

Compressive Strength = 4895 psf

1 8.14 psi

42.13 psi

Cohesion = 2447 psf

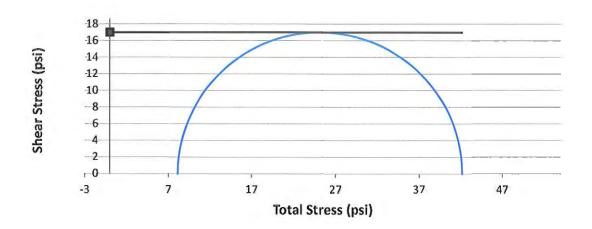
Phi = 0 deg

Tan (Phi) =

# At Maximum Deviator Stress 15%

# **Triaxial Mohr's Circles**

# **Unconsolidated Undrained Triaxial Test**



Approved By:





PROJECT NAME : Highway 67 Widening Page 1 of 3

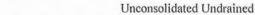
: 11206-04 PROJECT# POINT# : 1 PROJECT COUNTY : Pulaski SAMPLE LOC. : B-559 : Arkansas PROJECT STATE SAMPLE DEPTH: 15.7' to 16.2' LABORATORY # : 11206-04 DATE TESTED : 10/27/14 SUBMITTED BY : ICA Engineering DATE REPORTED: 11/04/14

SOIL TYPE : Tan, Brown & Gray Lean Clay with Sand

WET DENSITY : 133.17 pcf DELTA HEIGHT : 0.45 cm INITIAL HEIGHT : 14.87 cm DRY DENSITY : 112.48 pcf DELTA VOLUME : NA INITIAL DIAMETER: 7.28 cm

MOISTURE : 18.39 % CHAMBER PRES. : 8.04 psi COMMENTS : AASHTO T-296

			_	
	<b>8</b> a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	8.04	8.04	1.00
2	0.09	8.04	9.3	1.16
3	0.18	8.04	10.56	1.31
4	0.26	8.04	11.61	1.44
5	0.35	8.04	12.65	1.57
6	0.44	8.04	13.48	1.68
7	0.53	8.04	14.31	1.78
8	1.06	8.04	19.45	2.42
9	1.59	8.04	24.01	2.99
10	2.11	8.04	27.33	3.4
11	2.64	8.04	29.06	3.61
12	3.17	8.04	30.41	3.78
13	3.52	8.04	31.37	3.9
14	4.41	8.04	33.02	4.11
15	5.29	8.04	34.22	4.26
16	6.17	8.04	35.4	4.4
17	7.05	8.04	35.95	4.47
18	7.93	8.04	36.48	4.54
19	8.81	8.04	36.8	4.58
20	9.69	8.04	37	4.6
21	10.57	8.04	37.04	4.61
22	11.45	8.04	37.22	4.63
23	12.34	8.04	37.09	4.61
24	13.22	8.04	37.26	4.63
25	14.10	8.04	37.26	4.63
26	14.98	8.04	37.27	4.63
27	15.86	8.04	37.11	4.62
28	16.74	8.04	37.25	4.63
29	17.62	8.04	37.23	4.63
30	18.50	8.04	37.21	4.63
31	19.39	8.04	37.04	4.61
32	20.27	8.04	36.72	4.57



Page 2 of 3



## TRIAXIAL COMPRESSION TEST

PROJECT NAME : Highway 67 Widening

: 11206-04 PROJECT# : Pulaski PROJECT COUNTY PROJECT STATE : Arkansas LABORATORY # : 11206-04 SUBMITTED BY : ICA Engineering

FINAL MOISTUR: 18.39 % FINAL HEIGHT : 11.49 cm

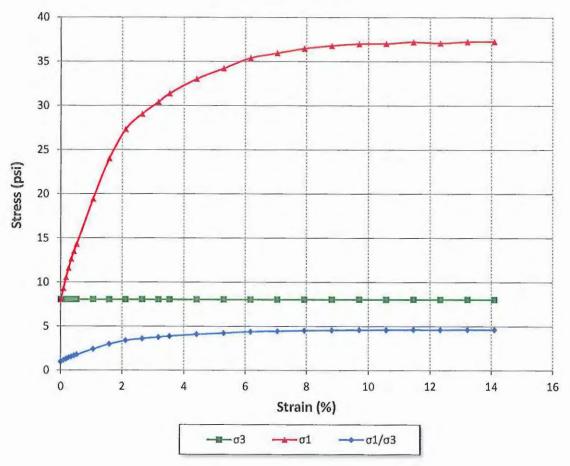
FINAL DIAMETE: 8.12 cm

POINT# : 1 SAMPLE LOC. : B-559 SAMPLE DEPTH: 15.7' to 16.2' DATE TESTED : 10/27/14 DATE REPORTED: 11/04/14

EFF. CONS. STRESS: 8.04 psi SPECIFIC GRAVITY: NA

COMMENTS : AASHTO T-296









PROJECT NAME

: Highway 67 Widening

Page 3 of 3

PROJECT #

: 11206-04

: Pulaski

PROJECT COUNTY PROJECT STATE LABORATORY #

: Arkansas

SUBMITTED BY

: 11206-04

: ICA Engineering

COMMENTS

: AASHTO T-296

SAMPLE LOC. : B-559

SAMPLE DEPTH: 15.7' to 16.2'

DATE TESTED : 10/27/14

DATE REPORTED: 11/04/14

#### COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test

1

Lateral 8.04 psi

Total 37.27 psi Compressive Strength = 4208 psf

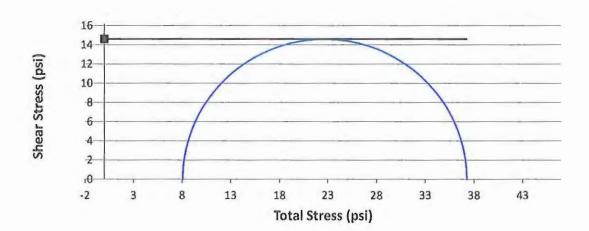
Cohesion = 2104 psf Phi = 0 deg

Tan (Phi) =

# **Maximum Deviator Stress**

# **Triaxial Mohr's Circles**

## **Unconsolidated Undrained Triaxial Test**



Approved By:



## TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening	Page 1 of 3
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PROJECT # : 11206-04 POINT # : 1
PROJECT COUNTY : Pulaski SAMPLE LOC. : B-563
PROJECT STATE : Arkansas SAMPLE DEPTH : 4.4' to 4.9'
LABORATORY # : 11206-04 DATE TESTED : 10/27/14
SUBMITTED BY : ICA Engineering DATE REPORTEE: 11/04/14

SOIL TYPE : Gray & Orange Silt

WET DENSITY : 129.7 pcf DELTA HEIGHT : 0.45 cm INITIAL HEIGHT : 14.92 cm DRY DENSITY : 107.61 pcf DELTA VOLUME : NA INITIAL DIAMETER : 7.22 cm

MOISTURE : 20.53 % CHAMBER PRES. : 4.45 psi COMMENTS : AASHTO T-296

	E a	C 2 (noi)	<b>5</b> 1 (mail)	G1/G2
1	0.00	σ 3 (psi)	σ 1 (psi)	σ1/σ3
2		4.45	4.45	1.00
	0.09	4.45	5.73	1.29
3	0.18	4.45	6.37	1.43
4	0.26	4.45	7.01	1.57
5	0.35	4.45	7.65	1.72
6	0.44	4.45	8.07	1.81
7	0.53	4.45	8.7	1.95
8	1.05	4.45	12.06	2.71
9	1.58	4.45	14.55	3.27
10	2.11	4.45	16.33	3.67
11	2.63	4.45	17.48	3.93
12	3.16	4.45	18.22	4.09
13	3.51	4.45	18.77	4.21
14	4.39	4.45	19.03	4.27
15	5.27	4.45	19.69	4.42
16	6,14	4.45	19.93	4.48
17	7.02	4.45	19.98	4.49
18	7.90	4.45	20.03	4.5
19	8,78	4.45	20.64	4.63
20	9.66	4.45	20.67	4.64
21	10.53	4.45	20.88	4.69
22	11.41	4,45	21.09	4.73
23	12.29	4.45	21.47	4.82
24	13.17	4.45	21.84	4.9
25	14.04	4,45	22.2	4.98
26	14.92	4.45	22.74	5.11
27	15.80	4.45	23.11	5.19
28	16.68	4.45	23.47	5.27
29	17.56	4.45	23.63	5,31
30	18.43	4.45	24.14	5.42
31	19.31	4.45	24.64	5.53
32	20.19	4,45	24.59	5.52



Page 2 of 3



## TRIAXIAL COMPRESSION TEST

PROJECT NAME : Highway 67 Widening

PROJECT # : 11206-04
PROJECT COUNTY : Pulaski
PROJECT STATE : Arkansas
LABORATORY # : 11206-04
SUBMITTED BY : ICA Engineering

FINAL MOISTUR : 20.53 % FINAL HEIGHT : 11.55 cm FINAL DIAMETE : 8.06 cm

RESULTS:

POINT#:1

SAMPLE LOC. : B-563

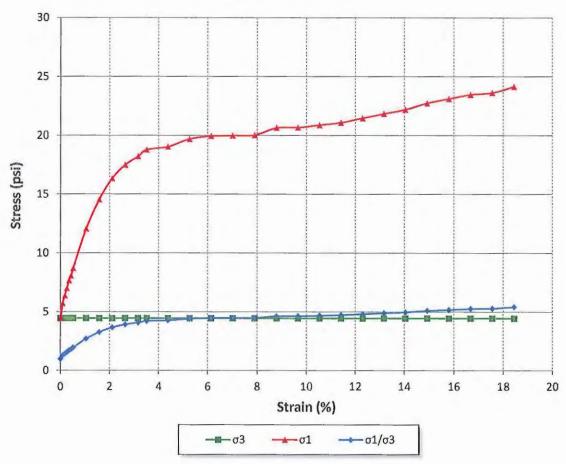
SAMPLE DEPTH: 4.4' to 4.9' DATE TESTED: 10/27/14

DATE REPORTED: 11/04/14

EFF. CONS. STRESS: 4.45 psi SPECIFIC GRAVITY: NA

COMMENTS : AASHTO T-296









PROJECT NAME : Highway 67 Widening Page 3 of 3

PROJECT # : 11206-04 COMMENTS : AASHTO T-296

PROJECT COUNTY: Pulaski SAMPLE LOC.: B-563
PROJECT STATE: Arkansas: SAMPLE DEPTH: 4.4' to 4.9'
LABORATORY: 11206-04: DATE TESTED: 10/27/14
SUBMITTED BY: ICA Engineering: DATE REPORTEE: 11/04/14

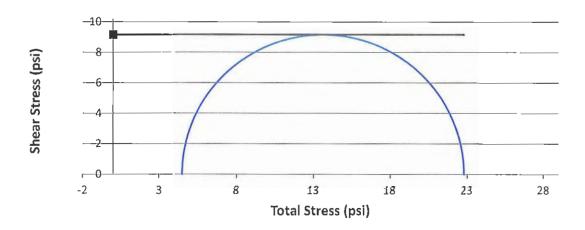
### COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test Lateral Total Compressive Strength = 2639 psf1 4.45 psi 22.78 psi Cohesion = 1319 psfPhi = 0 degTan (Phi) = 0

## At Maximum Deviator Stress 15%

# **Triaxial Mohr's Circles**

# **Unconsolidated Undrained Triaxial Test**



Approved By:





PROJECT NAME : Highway 67 Widening Page 1 of 3

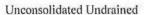
: 11206-04 PROJECT# POINT# : 1 PROJECT COUNTY : Pulaski SAMPLE LOC. : B-563 PROJECT STATE : Arkansas SAMPLE DEPTH: 24.1' to 24.6' LABORATORY # : 11206-04 DATE TESTED : 10/24/14 SUBMITTED BY : ICA Engineering DATE REPORTED: 11/04/14

SOIL TYPE : Brown Sandy Silt

WET DENSITY : 138.12 pcf DELTA HEIGHT : 0.45 cm INITIAL HEIGHT : 14.61 cm DRY DENSITY : 115.98 pcf DELTA VOLUME : NA INITIAL DIAMETER : 7.17 cm

MOISTURE : 19.09 % CHAMBER PRES. : 12.92 psi COMMENTS : AASHTO T-296

	_			
	E a	<b>σ</b> 3 (psi)	<b>σ</b> 1 (psi)	$\sigma_1/\sigma_3$
1	0.00	12.92	12.92	1.00
2	0.09	12.92	13.57	1.05
3	0.18	12.92	13.79	1.07
4	0.27	12.92	14	1.08
5	0.36	12.92	14.43	1.12
6	0.45	12.92	14.65	1.13
7	0.54	12.92	14.86	1.15
8	1.08	12.92	16.35	1.27
9	1.61	12.92	17.82	1.38
10	2.15	12.92	19.07	1.48
11	2.69	12.92	20.3	1.57
12	3.23	12.92	21.52	1.67
13	3.59	12.92	22.11	1.71
14	4.48	12.92	23.47	1.82
15	5.38	12.92	24.56	1.9
16	6.28	12.92	25.44	1.97
17	7.17	12.92	26.3	2.04
18	8.07	12.92	27.14	2.1
19	8.97	12.92	27.38	2.12
20	9.87	12.92	27.81	2.15
21	10.76	12.92	28.41	2.2
22	11.66	12.92	28.81	2.23
23	12.56	12.92	29.2	2,26
24	13.45	12.92	29.58	2.29
25	14.35	12.92	29,77	2.3
26	15.25	12.92	30.13	2.33
27	16.14	12.92	30.12	2.33
28	17.04	12.92	30.29	2.34
29	17.94	12.92	30.45	2.36
30	18.83	12.92	30.44	2.36
31	19.73	12.92	30.6	2.37
32	20.63	12,92	30.76	2.38
				-





: Highway 67 Widening PROJECT NAME

: 11206-04

: 11206-04 PROJECT# PROJECT COUNTY : Pulaski : Arkansas PROJECT STATE

SUBMITTED BY : ICA Engineering

FINAL MOISTUR : 19.09 % FINAL HEIGHT : 11.24 cm

FINAL DIAMETE: 8.02 cm

Page 2 of 3

POINT# : 1 SAMPLE LOC. : B-563 SAMPLE DEPTH: 24.1' to 24.6' DATE TESTED : 10/24/14 DATE REPORTEC: 11/04/14

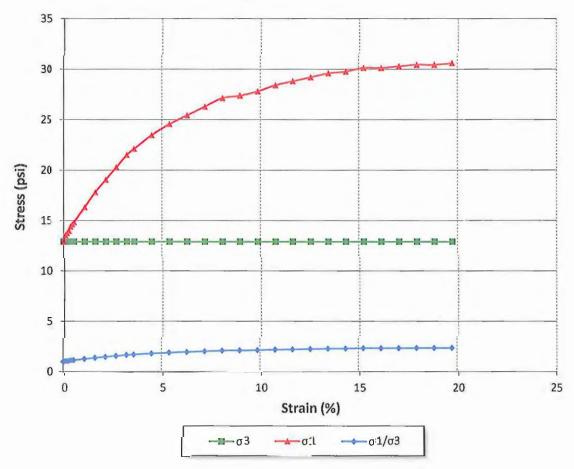
EFF. CONS. STRESS: 12.92 psi SPECIFIC GRAVITY: NA

COMMENTS : AASHTO T-296

#### RESULTS:

LABORATORY #







PROJECT NAME : Highway 67 Widening Page 3 of 3

PROJECT # : 11206-04 COMMENTS : AASHTO T-296

PROJECT COUNTY: Pulaski SAMPLE LOC.: B-563
PROJECT STATE: Arkansas: SAMPLE DEPTH: 24.1' to 24.6'
LABORATORY #: 11206-04: DATE TESTED: 10/24/14
SUBMITTED BY: ICA Engineering: DATE REPORTED: 11/04/14

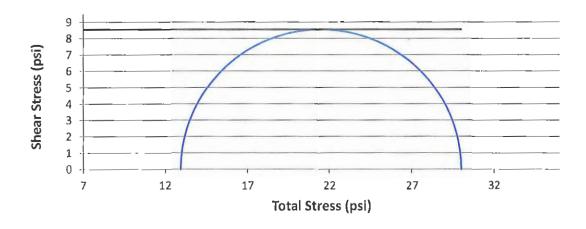
### COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test Lateral Total Compressive Strength = 2464 psf1 12.92 psi 30.03 psi Cohesion = 1232 psfPhi = 0 deg Tan (Phi) = 0

At Maximum Deviator Stress 15%

# **Triaxial Mohr's Circles**

# **Unconsolidated Undrained Triaxial Test**



Approved By: Jeeny Solo



### TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening	Page 1 of 3
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PROJECT # : 11206-04 POINT # : 1
PROJECT COUNTY : Pulaski SAMPLE LOC. : B-564
PROJECT STATE : Arkansas SAMPLE DEPTH : 15.6' to 16.1'
LABORATORY # : 11206-04 DATE TESTED : 10/24/14
SUBMITTED BY : ICA Engineering DATE REPORTEE: 11/04/14

SOIL TYPE : Tan, Gray & Black Lean Clay

WET DENSITY : 129.54 pcf DELTA HEIGHT : 0.45 cm INITIAL HEIGHT : 14.93 cm DRY DENSITY : 106.46 pcf DELTA VOLUME : NA INITIAL DIAMETER: 7.29 cm

MOISTURE : 21.69 % CHAMBER PRES. : 11.83 psi COMMENTS : AASHTO T-296

	0.5	<b>7</b> 2 (i)	<b>7</b> 1 (m)	<b>-1</b> (-2
	E a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0,00	11.83	11.83	1.00
2	0.09	11.83	14.55	1.23
3	0.18	11.83	16.43	1.39
4	0.26	11.83	18.1	1.53
5	0,35	11.83	19.77	1.67
6	0.44	11.83	21.01	1.78
7	0.53	11.83	22,26	1.88
8	1.05	11.83	27.85	2.35
9	1.58	11.83	31.57	2.67
10	2.11	11.83	33.75	2.85
11	2.63	11.83	35.11	2.97
12	3.16	11.83	36.24	3.06
13	3.51	11.83	36.77	3.11
14	4.39	11.83	37.58	3.18
15	5.26	11.83	38.36	3,24
16	6.14	11.83	39.13	3.31
17	7.02	11.83	39.47	3.34
18	7.90	11,83	39.81	3,37
19	8.77	11.83	40.13	3.39
20	9.65	11.83	40.41	3.42
21	10.53	11.83	40.61	3.43
22	11.41	11.83	40.8	3.45
23	12.28	11.83	40.82	3.45
24	13.16	11.83	40.84	3.45
25	14.04	11.83	40.85	3.45
26	14.92	11.83	40.7	3.44
27	15.79	11.83	40.85	3.45
28	16.67	11.83	40,99	3.47
29	17.55	11.83	40.83	3,45
30	18.43	11.83	40.81	3.45
31	19.30	11.83	40.78	3,45
32	20.18	11.83	40.89	3,46
	<del>-</del>			21.0



## TRIAXIAL COMPRESSION TEST

PROJECT NAME

: Highway 67 Widening

Page 2 of 3

PROJECT#

: 11206-04

: Pulaski PROJECT COUNTY PROJECT STATE

: Arkansas

: 11206-04 LABORATORY #

SUBMITTED BY : ICA Engineering

FINAL MOISTUR: 21.69 % FINAL HEIGHT : 11.55 cm

FINAL DIAMETE: : 8.13 cm

POINT# : 1 SAMPLE LOC. : B-564 SAMPLE DEPTH: 15.6' to 16.1'

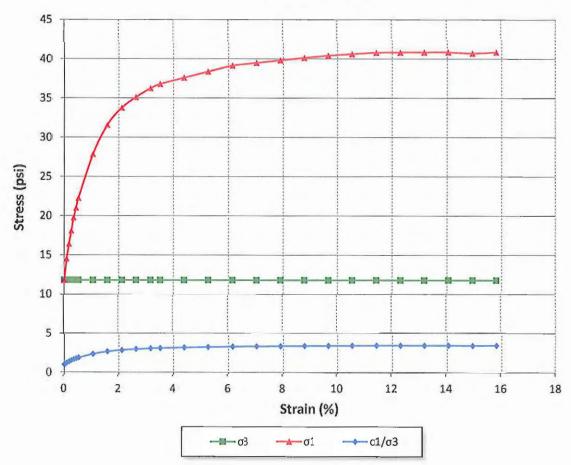
DATE TESTED : 10/24/14 DATE REPORTED: 11/04/14

EFF. CONS. STRESS: 11.83 psi

SPECIFIC GRAVITY: NA

COMMENTS : AASHTO T-296





### TRIAXIAL COMPRESSION TEST

PROJECT NAME

: Highway 67 Widening

Page 3 of 3

PROJECT #

: 11206-04

: AASHTO T-296

PROJECT COUNTY

: Pulaski

SAMPLE LOC. : B-564

PROJECT STATE LABORATORY #

: Arkansas : 11206-04 SAMPLE DEPTH: 15.6' to 16.1'

SUBMITTED BY

: ICA Engineering

DATE TESTED : 10/24/14

DATE REPORTED: 11/04/14

### COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test

Lateral

Total

Compressive Strength = 4160 psf

COMMENTS

11.83 psi 1

40.71 psi

Cohesion = 2080 psf

Phi =

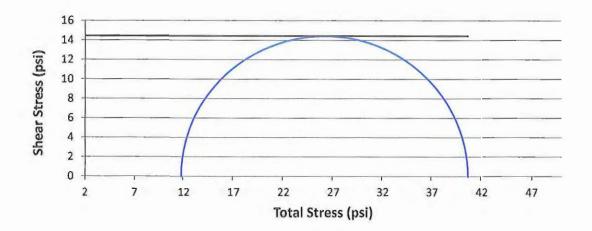
Tan (Phi) =

0 deg

# At Maximum Deviator Stress 15%

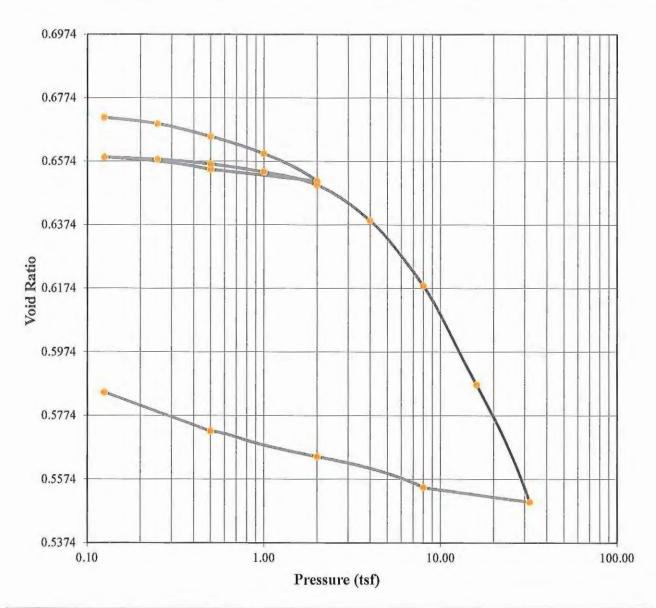
# Triaxial Mohr's Circles

## **Unconsolidated Undrained Triaxial Test**



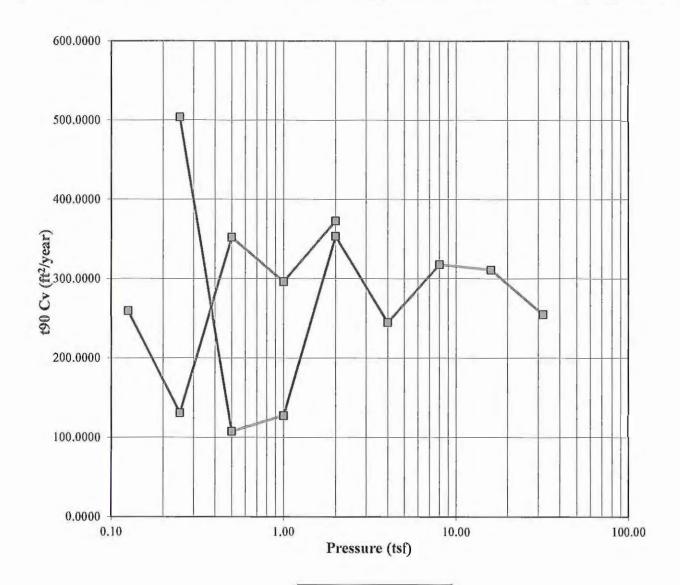
Approved By:





	Summa	ary of Consolidation Test R	esults	Test Date: 10/28/14		
Overburden Press. (tsf)	0.35	Compression	on Index, C <sub>e</sub>	0.10		
Preconsol. Press., Pe (tsf)	4.20	Rebound In	Rebound Index, Cr			
Over Consolidation Ratio	12.17	7				
Soil Description:	Brown & Tan S	ilty Clay with Sand				
Project Number:	11206-04	Depth: 5.5'-6.0'	Remarks:			
Sample Number:	ST-1	Boring Number: B-501				
Project: Highway 67	Widening					
Client:						
Location: B-501 ST-1	5.5-6.0		0			





		Before	After	Liquid Limits:	19	Test Date:	10/28/14
Moisture (%):		24.42	17.79	Plastic Limits:	14		
Dry Density (p	cf):	102.08	116.06	Plasticity Index (%):	5		
Saturation (%)	):	99.07	102.95				
Void Ratio:		0.6727	0.5379	Specific Gravity:	2.739	Measured	
Soil Description	n:	Brown & Tan	Silty Clay w	ith Sand			
Project Numbe	er:	11206-04		Depth: 5.5'-6.0'	Remarks:		
Sample Numbe	er:	ST-1	Bori	ng Number: B-501			
Project:	Highway 67	Widening					
Client:							
Location:	B-501 ST-1	5.5-6.0					

Page 2 of 4





### **Test Summary**

Project: Highway 67 Widening Location: B-501 ST-1 5.5-6.0

Project Number: 11206-04

Job Number: 11206-04

Sample Description:

Sample Number: ST-1 Boring Number: B-501 Depth: 5.5'-6.0'

Sample Type: Undisturbed

Brown & Tan Silty Clay with Sand

Remarks:

Test Number:

Test Date: 10/28/14

Index	Load Sequence	Change in Height	Specimen Height	Height of Void	Vertical Strain	Void Ratio	190 Fitting Time	t50 Fitting Time	190 Cy	150 Cv
	(tsf)	(in)	(in)	(in)	(%)		(min)	(min)	(fl2/year)	(ft2/year)
0	0.000	0.0000	1.0050	0.4040	0.00	0.6721	0.000	0.000	0.000	0.000
1	0.125	0.0006	1.0044	0.4034	0.06	0.6711	3.011	* 1.6728	259.259	108.410
2	0.250	0.0018	1.0032	0.4022	0.18	0.6692	5.945	* 3.3026	131.002	54.780
3	0.500	0.0042	1.0008	0.3998	0.42	0.6652	2.202	* 1.2231	352.025	147.208
4	1.000	0.0074	0.9976	0.3966	0.74	0.6598	2.599	* 1.4439	296.299	123,901
5	2.000	0.0126	0.9924	0.3914	1.25	0.6512	2.044	* 1.1356	372.834	155,900
6	0.500	0.0104	0.9946	0.3936	1.03	0.6548	0.000	0.000	0.000	0.000
7	0.125	0.0081	0.9969	0.3959	0.81	0.6587	0.000	0.000	0.000	0.000
8	0.250	0.0085	0.9965	0.3955	0.85	0.6580	1.525	* 0.8473	503.835	210,677
9	0.500	0.0094	0.9956	0.3946	0.94	0.6565	7.128	* 3.9602	107.598	44.994
10	1.000	0.0109	0.9941	0.3931	1.08	0.6540	6,001	* 3.3339	127.429	53.285
11	2.000	0.0134	0.9916	0.3906	1.33	0.6499	2.152	* 1.1955	353.576	147.850
12	4.000	0.0201	0.9849	0.3839	2.00	0.6387	3.068	* 1.7045	244.652	102,303
13	8.000	0.0324	0.9726	0.3716	3.22	0.6182	2.303	* 1.2792	317.908	132.932
14	16.000	0.0511	0.9539	0.3529	5.08	0.5871	2.263	* 1.2571	311.160	130,117
15	32.000	0.0733	0.9317	0.3307	7.29	0.5502	2.637	* 1.4650	254.727	106,516
16	8,000	0.0705	0.9345	0.3335	7.01	0.5548	0.000	0.000	0.000	0.000
17	2.000	0.0647	0.9403	0.3393	6.44	0.5645	0.000	0.000	0.000	0.000
18	0.500	0.0599	0.9451	0.3441	5.96	0.5725	0.000	0.000	0,000	0.000
19	0.125	0.0810	0.9240	0.3230	5.26	0.5847	0.000	0.000	0.000	0.000

Predicted value indicated with \*



## CONSOLIDATION TEST

11206-04

### **Consolidation Specimen Information**

Project: Highway 67 Widening

hway 67 Widening Project Number:

Location: B-501 ST-1 5.5-6.0

Job Number: 11206-04 Test Date: 10/28/14

Sample Number: ST-1 Sample Description:

Boring Number: B-501 Brown & Tan Silty Clay with Sand

Depth: 5.5'-6.0' Remarks:

Sample Type: Undisturbed

Test Number:

Liquid Limit: 19.0000 Initial Void Ratio: 0.6727 Initial Height (in): 1.0050
Plastic Limit: 14.0000 Plasticity Index (%): 5.0000 Initial Diameter (in): 2.4983

Plastic Limit: 14.0000 Plasticity Index (%): 5.0000 Initial Diameter (in): 2.49
Specific Gravity: 2.7390 Weight of Ring (g): 109.6600

Measured

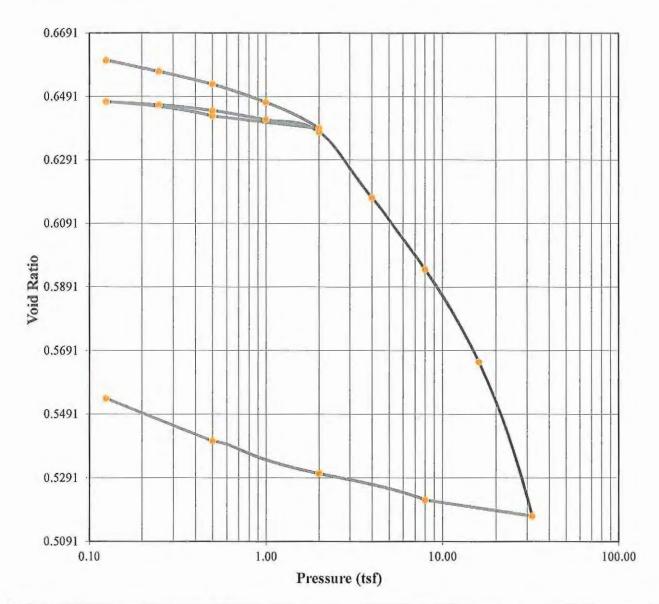
Parameters	Initial Specimen	Final Specimen	
Moist Weight + Container (g)	410.07	221.64	
Dry Soil + Container (g)	341.10	197.20	
Weight of Container (g)	58.70	59.80	
Moisture Content (%)	24.42	17.79	
Void Ratio	0.6727	0.5379	
Saturation (%)	99.07	102.95	
Dry Density (pcf)	102.08	116.06	

Tested By:

Josephn Bowler

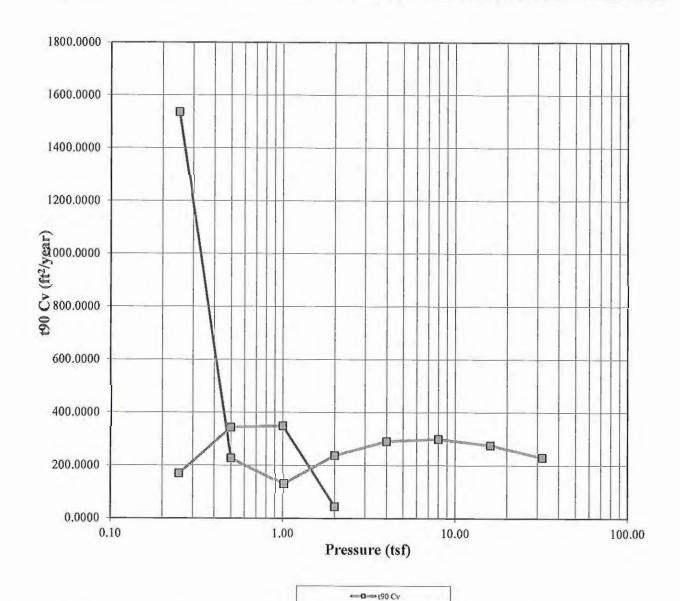
Cheeked Ry





		Summary	of Consolidation Test Re	sults	Test Date:	10/28/2014
		0.87	Compression	Index, C <sub>e</sub>		0.09
		2.10	Rebound Index, Cr		0.01	
Over Consolida	ation Ratio	2.41			-	
Soil Description	n:	Brown & Gray Silt				
Project Numbe	r:	11206-04	Depth: 14.4'-14.7'	Remarks:		
Sample Numbe	r:	ST-1	Boring Number: B-557			
Project:	Highway 67	Widening				
Client:						
Location:	B-557 ST-1	14.4-14.7				





Before After **Liquid Limits:** 22 Test Date: 10/28/2014 Moisture (%): 20.46 19.78 Plastic Limits: 21 Dry Density (pcf): 101.78 112.48 Plasticity Index (%): 1 Saturation (%): 83.40 105.79 Void Ratio: 0.5111 Specific Gravity: 0.6657 2.717 Measured Soil Description: Brown & Gray Silt Project Number: 11206-04 Depth: 14.4'-14.7' Remarks: Sample Number: Boring Number: B-557 ST-1 Project: Highway 67 Widening Client: Location: B-557 ST-1 14.4-14.7





### **Test Summary**

Project: Highway 67 Widening Location: B-557 ST-1 14.4-14.7

Job Number: 11206-04

Project Number:

11206-04

Sample Number: ST-1

Sample Description: Brown & Gray Silt

Remarks:

Test Number:

Test Date: 10/28/2014

Boring Number: B-557
Depth: 14.4'-14.7'
Sample Type: Undisturbed

	Load	Change in	Specimen	Height of	Vertical		t90 Fitting	t50 Fitting		
Index	Sequence	Height	Height	Void	Strain	Void Ratio	Time	Time	t90 Cv	t50 Cv
	(tsf)	(in)	(in)	(in)	(%)		(min)	(min)	(ft2/year)	(ft2/year)
0	0.000	0.0000	0.9955	0.3971	0.00	0.6635	0.000	0.000	0.000	0.000
1	0.125	0.0018	0.9937	0.3953	0.18	0.6605	0.000	0.000	0.000	0.000
2	0.250	0.0039	0.9916	0.3932	0.39	0.6570	4.484	* 2.4913	169.672	70.949
3	0.500	0.0063	0.9892	0.3908	0.63	0.6530	2.204	* 1.2242	343.629	143.686
4	1.000	0.0097	0.9858	0.3874	0.97	0.6473	2.152	* 1.1955	349.451	146.126
5	2.000	0.0146	0.9809	0.3825	1.47	0.6391	16.492	* 9.1620	45.146	18.878
6	0.500	0.0123	0.9832	0.3848	1.24	0.6430	0.000	0.000	0.000	0.000
7	0.125	0.0096	0.9859	0.3875	0.96	0.6475	0.000	0.000	0.000	0.000
8	0.250	0.0102	0.9853	0.3869	1.02	0.6465	0.489	* 0.2717	1536.190	642.313
9	0.500	0.0113	0.9842	0.3858	1.14	0.6447	3.302	* 1.8347	226.967	94.908
10	1.000	0.0130	0.9825	0.3841	1.31	0.6418	5.778	* 3.2102	129,267	54.055
11	2.000	0.0153	0.9802	0.3818	1.54	0.6380	3.125	* 1.7360	237.924	99,490
12	4.000	0.0277	0.9678	0.3694	2.78	0.6173	2.489	* 1.3829	291.169	121.753
13	8.000	0.0412	0.9543	0.3559	4.14	0.5947	2.350	* 1.3056	299.869	125.389
14	16.000	0.0586	0.9369	0.3385	5.89	0.5656	2.462	* 1,3677	275.893	115.370
15	32.000	0.0876	0.9079	0.3095	8.80	0.5172	2.773	* 1.5406	230.002	96.180
16	8.000	0.0846	0.9109	0.3125	8.50	0.5222	0.000	0.000	0.000	0.000
17	2.000	0.0796	0.9159	0.3175	8.00	0.5305	0.000	0.000	0.000	0.000
18	0.500	0.0735	0.9220	0.3236	7.38	0.5407	0.000	0.000	0.000	0.000
19	0.125	0.0924	0.9031	0.3047	6.70	0.5541	0.000	0.000	0.000	0.000

Predicted value indicated with \*



## CONSOLIDATION TEST

### **Consolidation Specimen Information**

Project: Highway 67 Widening

B-557 ST-1 14.4-14.7

Location: Job Number:

11206-04

Project Number:

11206-04

Test Date: 10/28/2014

Sample Number:

ST-1 B-557 Sample Description: Brown & Gray Silt

Boring Number: Depth:

14.4'-14.7'

Remarks:

Sample Type:

Undisturbed

Test Number:

Liquid Limit: Plastic Limit: 22.0000

Initial Void Ratio: Plasticity Index (%): 0.6657 1.0000 Initial Height (in):

0.9955

Specific Gravity:

21.0000 2.7170

Weight of Ring (g):

109.2800

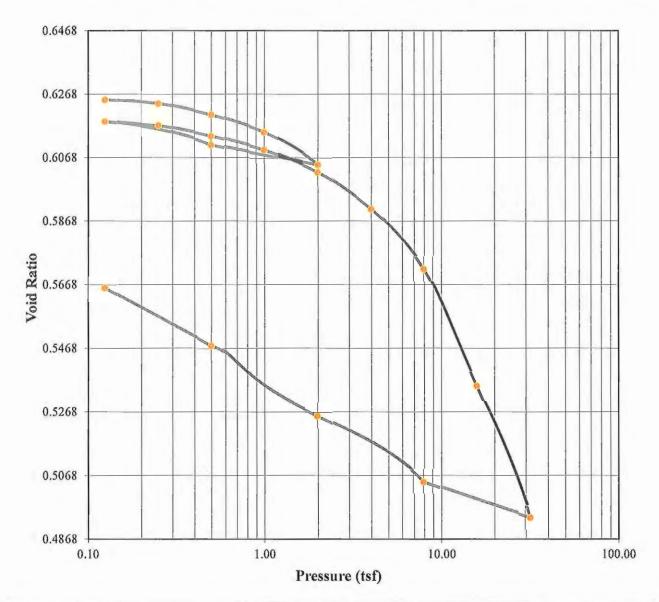
Initial Diameter (in): 2.4955

Measured

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	262.16	214.56
Dry Soil + Container (g)	227.50	188.80
Weight of Container (g)	58.10	58.55
Moisture Content (%)	20.46	19.78
Void Ratio	0.6657	0.5111
Saturation (%)	83.40	105.79
Dry Density (pcf)	101.78	112.48

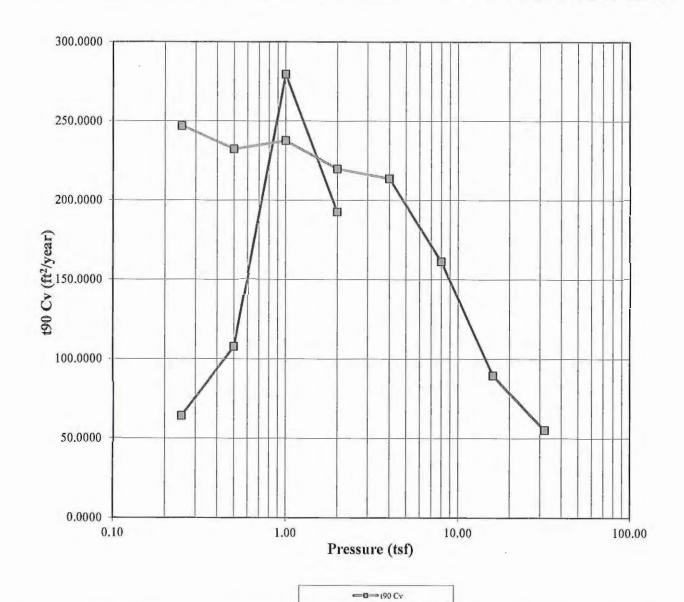
Tested By:





		Summ	ary of Consc	olidation Test Re	sults	Test Date:	10/29/2014
Overburden Press. (tsf)		0.92		Compression	Index, C <sub>e</sub>	0.12 0.01	
Preconsol. Pres	s., Pe (tsf)	4.80	)	Rebound Index, Cr			
Over Consolidation Ratio		5.21					
Soil Description	1:	Tan, Gray & Bl	lack Lean Clay				
<b>Project Numbe</b>	r:	1120604		Depth: 15.1-15.6	Remarks:		
Sample Numbe	r:	ST-1	Boring N	Number: B-564			
Project:	Highway 67	Widening					
Client:							
Location:	B-564 ST-1	15.1-15.6					





		Before	After	Liquid Limits:	38	Test Date:	10/29/2014
Moisture (%	):	21.42	27.97	Plastic Limits:	19		
<b>Dry Density</b>	(pcf):	105.71	109.44	Plasticity Index (%):	19		
Saturation (	%):	93.90	134.49				
Void Ratio:		0.6276	0.4878	Specific Gravity:	2.759	Assumed	
Soil Descript	ion:	Tan, Gray & I	Black Lean C	lay			
<b>Project Num</b>	ber:	1120604		Depth: 15.1-15.6	Remarks:		
Sample Num	ber:	ST-1	Bori	ng Number: B-564			
Project:	Highway 67	Widening					
Client:							
Location:	B-564 ST-1	15.1 15.6					



Project Number:



#### **Test Summary**

Project: Highway 67 Widening Location: B-564 ST-1 15.1-15.6

Depth: 15.1-15.6 Sample Type: Undisturbed

Job Number: 1120604

Sample Number; ST-1 Boring Number: B-564

Sample Description:

Tan, Gray & Black Lean Clay

Remarks:

Test Number:

Test Date: 10/29/2014

1120604

Index	Load Sequence	Change in Height	Specimen Height	Height of Void	Vertical Strain	Void Ratio	t90 Fitting Time	150 Fitting Time	190 Cv	150 Cv
	(tsf)	(in)	(in)	(in)	(%)		(min)	(min)	(ft2/year)	(ft2/year)
0	0.000	0.0000	1.0015	0.3857	0.00	0.6265	0.000	0.000	0.000	0.000
1	0.125	0,0009	1.0006	0.3848	0.09	0.6250	0.000	0.000	0.000	0.000
2	0.250	0.0016	0.9999	0.3841	0.16	0.6239	12.044	* 6.6911	64.235	26.861
3	0.500	0.0037	0.9978	0.3820	0.37	0.6204	7.143	* 3.9685	107.848	45.098
4	1.000	0.0071	0.9944	0.3786	0.71	0.6149	2.736	* 1.5200	279.655	116.944
5	2,000	0,0134	0.9881	0.3723	1.34	0.6047	3.922	* 2.1788	192.636	80.553
6	0.500	0.0095	0.9920	0.3762	0.95	0.6110	0.000	0.000	0.000	0.000
7	0.125	0.0050	0.9965	0.3807	0.50	0.6183	0.000	0.000	0.000	0.000
8	0.250	0.0058	0.9957	0.3799	0.58	0.6170	3.106	* 1.7254	247.014	103.292
9	0.500	0.0078	0.9937	0.3779	0.78	0.6138	3.289	* 1.8274	232.289	97.135
10	1.000	0.0105	0.9910	0.3752	1.05	0.6094	3.199	* 1.7770	237.588	99.348
11	2.000	0.0149	0.9866	0.3708	1.49	0.6023	3.426	* 1.9032	219.862	91.938
12	4,000	0.0220	0.9795	0.3637	2.20	0,5907	3.474	* 1.9298	213.724	89.371
13	8.000	0.0336	0.9679	0,3521	3.35	0.5719	4.493	* 2.4959	161.355	67.473
14	16,000	0.0562	0.9453	0.3295	5.61	0.5352	7.721	* 4.2895	89.554	37,448
15	32,000	0.0817	0.9198	0.3040	8.16	0.4938	11.859	* 6.5884	55.203	23,084
16	8.000	0.0748	0.9267	0.3109	7.47	0.5050	0.000	0.000	0.000	0.000
17	2.000	0.0621	0.9394	0.3236	6.20	0.5256	0.000	0.000	0.000	0.000
18	0.500	0.0485	0.9530	0.3372	4.84	0.5477	0.000	0.000	0.000	0,000
19	0.125	0.0860	0.9155	0.2997	3.79	0.5658	0.000	0.000	0.000	0.000

Predicted value indicated with \*



#### CONSOLIDATION TEST

#### **Consolidation Specimen Information**

Project:

Highway 67 Widening

Location: B-564 ST-1 15.1-15.6

Job Number:

1120604

Project Number:

1120604

Test Date: 10/29/2014

Sample Number:

ST-1

Sample Description:

**Boring Number:** 

B-564

Tan, Gray & Black Lean Clay

Depth:

15.1-15.6 Undisturbed Remarks:

Sample Type:

**Parameters** 

Test Number:

Liquid Limit:

38.0000

Initial Void Ratio:

0.6276

Initial Height (in):

1.0015

Plastic Limit:

19.0000 2.7590

Plasticity Index (%):

19.0000

Initial Diameter (in):

2.4953

Specific Gravity:

Assumed

Weight of Ring (g):

110.8600

Final Specimen

Moist Weight + Container (g)	289.77	233.11
Dry Soil + Container (g)	249.00	195.09
Weight of Container (g)	58.70	59.17
Moisture Content (%)	21,42	27.97
Void Ratio	0.6276	0.4878
Saturation (%)	93.90	134.49
Dry Density (pcf)	105.71	109.44

**Initial Specimen** 

Tested By:



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04

PROJECT COUNTY: Pulaski

PROJECT STATE: Arkansas

LABORATORY NO.: 11206-04

SUBMITTED BY: ICA Engineering Inc.

SAMPLE NO.: RS-1

SAMPLE LOC.: B-562

SAMPLE DEPTH: 37.7' to 38.0'

DATE TESTED: 11/10/14

OCK DESCRIPTION: Shale: silty, f. micaceous, mod. wthd.

Diameter: 1.98 in
Height: 4.15 in

RESULTS:

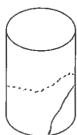
Moisture Air-Dry: NA

Air-Dry Density: 153.3 lbs/ft.3

Maximum Stress: 344 psi Elapsed Time: 1:43 min. Rate of Loading: 10 lb/sec

Area:

Volume:



3.08 in<sup>2</sup>

0.00741 ft<sup>3</sup>

----- Fracture developed during sample trimming

Comments:

Approved By: Juny Solo



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04 PROJECT COUNTY: Pulaski

PROJECT STATE: Arkansas

LABORATORY NO.: 11206-04

SUBMITTED BY: ICA Engineering Inc.

SAMPLE NO.: RS-2

SAMPLE LOC. : B-562

SAMPLE DEPTH: 40.7' to 41.1'

DATE TESTED: 11/10/14

DATE REPORTED: 11/10/14

OCK DESCRIPTION: Shale: silty, f. micaceous, sli. wthd.

Diameter:

1.97 in

4.05 in Height:

Area:

3.06 in<sup>2</sup>

Volume: 0.00717 ft<sup>3</sup>

RESULTS:

Moisture Air-Dry: NA

Air-Dry Density: 162.95 lbs/ft.3

Maximum Stress:

810

psi

Elapsed Time: 4:58 min. Rate of Loading: 10 lb/sec



Comments:

Approved By:



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04 SAMPLE NO.: RS-3

PROJECT COUNTY: Pulaski SAMPLE LOC.: B-562

PROJECT STATE: Arkansas SAMPLE DEPTH: 43.6' to 43.9'
LABORATORY NO.: 11206-04 DATE TESTED: 11/10/14

SUBMITTED BY: ICA Engineering Inc. DATE REPORTED: 11/10/14

OCK DESCRIPTION: Sandstone w/Shale: v.f. to f. grain, laminated, ripple to contorted bedding, sli. wthd.

Diameter: 1.98 in Area: 3.09 in<sup>2</sup>

Height: 4.16 in Volume: 0.00744 ft<sup>3</sup>

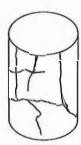
RESULTS:

Moisture Air-Dry: NA

Air-Dry Density: 164.97 lbs/ft.3

Maximum Stress: 5270 psi

Elapsed Time: 14:29 min.
Rate of Loading: 10 lb/sec



Comments:

Approved 3y:



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04

PROJECT COUNTY: Pulaski

PROJECT STATE: Arkansas

LABORATORY NO.: 11206-04

SUBMITTED BY: ICA Engineering Inc.

SAMPLE NO.: RS-4

SAMPLE LOC. : B-557

SAMPLE DEPTH : 47.1' to 47.4'

DATE TESTED : 11/10/14

DATE REPORTED : 11/10/14

OCK DESCRIPTION: Sandstone: v.f to f. grain w/crenulated bedding & healed jts., mod. wthd.

Diameter: Height:

1.98 in

4.04 in

Area:

3.08 in<sup>2</sup>

Volume: 0.00719 ft3

RESULTS:

Moisture Air-Dry: NA

Air-Dry Density: 156.42 lbs/ft.3

Maximum Stress: Elapsed Time: 1914

40

psi min.

Rate of Loading:

3:36

lb/sec



Comments:

Approved By:



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04

PROJECT COUNTY: Pulaski

PROJECT STATE : Arkansas

LABORATORY NO.: 11206-04

SUBMITTED BY: ICA Engineering Inc.

SAMPLE NO.: RS-5

SAMPLE LOC. : B-557

SAMPLE DEPTH: 51.9' to 52.3'

DATE TESTED: 11/10/14

DATE REPORTED: 11/10/14

OCK DESCRIPTION: Sandstone: v.f. to f. grain w/healed jts., sli. wthd.

Diameter:

1.98 in

4.05 in Height:

Area:

3.09 in<sup>2</sup>

Volume: 0.00723 ft3

RESULTS:

Moisture Air-Dry: NA

Air-Dry Density:

159.99 lbs/ft.3

Maximum Stress:

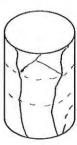
1546 psi

Elapsed Time:

6:33

Rate of Loading:

min. 10 lb/sec





----- Existing Healed Joints w/ Clay

Comments:

Approved By : July Sol



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04

PROJECT COUNTY: Pulaski

PROJECT STATE: Arkansas

LABORATORY NO.: 11206-04

SUBMITTED BY: ICA Engineering Inc.

SAMPLE NO.: RS-6

SAMPLE LOC. : B-558

SAMPLE DEPTH: 50.1' to 50.5'

DATE TESTED: 11/10/14

DATE REPORTED: 11/10/14

OCK DESCRIPTION: Shale: silty, sli. wthd.

Diameter:

1.99 in

Height: 4.02 in Area:

3.10 in<sup>2</sup>

Volume:

0.0072 ft3

RESULTS:

Moisture Air-Dry: NA

Air-Dry Density:

166.26 lbs/ft.3

Maximum Stress:

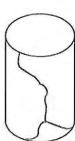
1899

10:55 min.

Elapsed Time: Rate of Loading:

10 lb/sec

psi



Comments:

Approved By: July 5ds



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04

PROJECT COUNTY: Pulaski

PROJECT STATE: Arkansas

SAMPLE NO.: RS-7

SAMPLE LOC.: B-558

SAMPLE DEPTH: 46.6' to 47.0'

LABORATORY NO. : 11206-04 DATE TESTED : 11/10/14

SUBMITTED BY: ICA Engineering Inc. DATE REPORTED: 11/10/14

OCK DESCRIPTION: Sandstone w/Shale: v.f. to f. grain interlaminated w/silty, sli. wthd.

Diameter: 1.99 in Area:  $3.11 \text{ in}^2$ Height: 4.07 in Volume:  $0.00731 \text{ ft}^3$ 

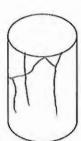
RESULTS:

Moisture Air-Dry: NA

Air-Dry Density: 168.63 lbs/ft.3

Maximum Stress: 9543 psi Elapsed Time: 12:33 min.

Rate of Loading: 50 lb/sec



Comments:

Approved By: freey Sol



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04

PROJECT COUNTY: Pulaski

PROJECT STATE : Arkansas

LABORATORY NO. : 11206-04

SUBMITTED BY: ICA Engineering Inc.

SAMPLE NO.: RS-8

SAMPLE LOC. : B-563

SAMPLE DEPTH : 61.2' to 61.6'

DATE TESTED : 11/10/14

DATE REPORTED: 11/10/14

OCK DESCRIPTION: Shale: silty to v.f. sandy, sli. wthd.

Diameter:

1.99 in

Height: 4.23 in

Area:

3.09 in<sup>2</sup>

Volume: 0.00757 ft<sup>3</sup>

RESULTS:

Moisture Air-Dry: NA

Air-Dry Density: 165.09 lbs/ft.3

Maximum Stress:
Elapsed Time:

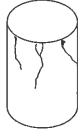
5464

psi min.

lb/sec

Rate of Loading:

14:35 10



Comments:

Approved By: Jeery Solo



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04

PROJECT COUNTY: Pulaski

PROJECT STATE: Arkansas

LABORATORY NO.: 11206-04

SUBMITTED BY: ICA Engineering Inc.

SAMPLE NO.: RS-9

SAMPLE LOC. : B-563

SAMPLE DEPTH : 57.2' to 57.6'

DATE TESTED: 11/10/14

DATE REPORTED: 11/10/14

OCK DESCRIPTION: Shale: clayey, sli. wthd.

Diameter:

1.98 in

4.00 in Height:

Area:

3.09 in<sup>2</sup>

Volume: 0.00714 ft<sup>3</sup>

RESULTS:

Moisture Air-Dry: NA

Air-Dry Density: 165.25 lbs/ft,3

Maximum Stress:

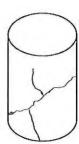
1889

Elapsed Time: 10:25

Rate of Loading:

psi min.

10 1b/sec



Comments:

Approved By:



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04

PROJECT COUNTY: Pulaski

PROJECT STATE: Arkansas

LABORATORY NO.: 11206-04

SUBMITTED BY: ICA Engineering Inc.

SAMPLE NO. : RS-10

SAMPLE LOC. : B-559

SAMPLE DEPTH : 41.6' to 42.0'

**DATE TESTED** : 11/10/14

DATE REPORTED: 11/10/14

OCK DESCRIPTION: Shale w/Sandstone: silty w/v.f. grain laminations, sli. wthd.

Diameter: Height: 1.98 in

3.99 in

Area:

3.09 in<sup>2</sup>

Volume: 0.00714 ft3

RESULTS:

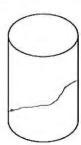
Moisture Air-Dry: NA

Air-Dry Density: 163.52 lbs/ft.3

Maximum Stress: 899

Elapsed Time: 4:12 min. Rate of Loading: 10 lb/sec

psi



Comments:

Approved By: freey Solo



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04

PROJECT COUNTY: Pulaski

PROJECT STATE: Arkansas

SAMPLE LOC.: B-559

PROJECT STATE: Arkansas

SAMPLE DEPTH: 36.6' to 37.0'

LABORATORY NO.: 11206-04

SUBMITTED BY: ICA Engineering Inc.

DATE REPORTED: 11/10/14

OCK DESCRIPTION: Shale: silty to f. sandy, mod. wthd.

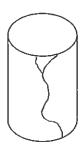
Diameter: 1.98 in Area: 3.07 in<sup>2</sup>
Height: 4.00 in Volume: 0.00711 ft<sup>3</sup>

**RESULTS:** 

Moisture Air-Dry: NA

Air-Dry Density: 159.67 lbs/ft.<sup>3</sup>

Maximum Stress: 863 psi
Elapsed Time: 2:10 min.
Rate of Loading: 20 lb/sec



Comments:

Approved By: Jeny Sh



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04

PROJECT COUNTY: Pulaski

PROJECT STATE : Arkansas

LABORATORY NO.: 11206-04

SUBMITTED BY: ICA Engineering Inc.

SAMPLE NO.: RS-12

SAMPLE LOC. : B-564

SAMPLE DEPTH : 44.1' to 44.5'

DATE TESTED: 11/10/14

DATE REPORTED: 11/10/14

OCK DESCRIPTION: Shale: clayey to silty, mod. wthd.

Diameter:

1.97 in

Height: 4.00 in

Area:

3.06 in<sup>2</sup>

Volume: 0.00708 ft3

RESULTS:

Moisture Air-Dry: NA

Air-Dry Density: 163.15 lbs/ft.3

Maximum Stress:

402

10

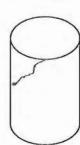
Elapsed Time:

2:13 min.

Rate of Loading:

lb/sec

psi



Comments:

Approved By : fremy 5 ds



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04 SAMPLE NO.: RS-13
PROJECT COUNTY: Pulaski SAMPLE LOC.: B-565

PROJECT STATE: Arkansas

LABORATORY NO.: 11206-04

SAMPLE DEPTH: 52.0' to 52.3'

DATE TESTED: 11/10/14

SUBMITTED BY: ICA Engineering Inc. DATE REPORTED: 11/10/14

OCK DESCRIPTION: Shale w/Sandstone: silty to clayey w/v.f to f. grain laminations, fresh

Diameter: 1.98 in Area: 3.09 in<sup>2</sup>
Height: 3.99 in Volume: 0.00714 ft<sup>3</sup>

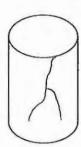
RESULTS:

Moisture Air-Dry: NA

Air-Dry Density: 162.56 lbs/ft.3

Maximum Stress: 1836 psi Elapsed Time: 7:50 min.

Rate of Loading: 10 lb/sec



Comments:

Approved By: freely Sd.



PROJECT NAME: Highway 67 Widening

PROJECT NO.: 11206-04 SAMPLE NO.: RS-14
PROJECT COUNTY: Pulaski SAMPLE LOC.: B-556

PROJECT STATE: Arkansas SAMPLE DEPTH: 50.8' to 51.1'
LABORATORY NO.: 11206-04 DATE TESTED: 11/10/14

SUBMITTED BY: ICA Engineering Inc. DATE REPORTED: 11/10/14

OCK DESCRIPTION: Shale: w/folded laminations, sli. wthd.

Diameter: 1.98 in Area: 3.07 in<sup>2</sup>
Height: 4.04 in Volume: 0.00718 ft<sup>3</sup>

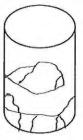
RESULTS:

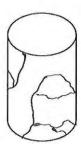
Moisture Air-Dry: NA

Air-Dry Density: 163.66 lbs/ft.3

Maximum Stress: 2873 psi Elapsed Time: 6:26 min.

Rate of Loading: 30 lb/sec



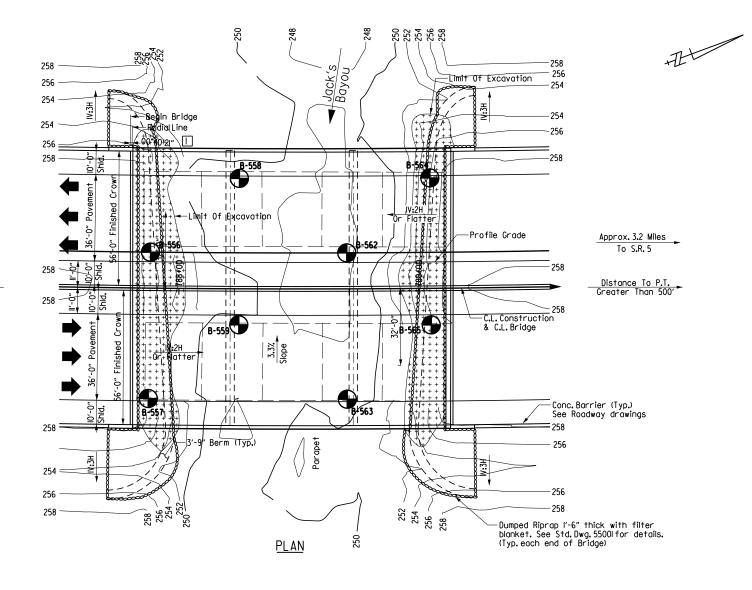


Comments:

Approved By: July Solo



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FEO. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
INCTISED		METISED	į	_				
				6	ARK.			
				JOB N	D <b>.</b>	CA0605		
						LAYOUT		



Approx. I.9 Miles
To S.H. I6I

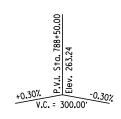
#### HORIZONTAL CURVE DATA

C.L. Median Hwy. 67
PI Sta 790+10.52
PC Sta 777+52.33
PT Sta 802+29.39
R = 5729.58
L = 2477.06

L = 2477.06 T = 1258.19 Delta = 24°46'14" Left D = 1°00'00"

Angle is measured between C.L. Joint and a line radial to C.L. median at Station 787+80.25.

All bents are parallel. See Alignment Sketch.



VERTICAL CURVE DATA
(Along Profile Grade)

Note: Unless noted otherwise, stations and elevations shown are taken along C.L. Bridge.

For Soil Boring Legend, See Dwg. No.

SHEET LOF 3
LAYOUT OF BRIDGE OVER JACK'S BAYOU
VANDENBERG BLVD. - HWY. 5 (WIDENING) (S)
PULASKI & LONOKE COUNTIES
ROUTE 67 SEC. 10 & 11

ARKANSAS STATE HIGHWAY COMMISSION

#### BORING LEGEND

- A Brown & gray, soft to very stiff, silt.
- B Brown, stiff, lean clay.
- C Brown & gray, medium stiff, silt.
- D Orange & gray, medium stiff, lean clay with sand.
- E Brown & gray, soft to medium stiff, sandy, silty clay.
- F Weathered Shale.
- G Brown & black, soft, lean clay.
- H Gray, soft, lean clay.
- I Brown & gray, v. stiff, silt.
- J Gray & orange, stiff, lean clay.
- K Tan, gray, black & brown, medium stiff to stiff, lean clay.
- L Tan, brown & black, medium stiff, lean clay.
- M Brown & tan, v. loose, silty, clayey sand.
- N Brown, tan, black, loose sand w/gravel & silt.
- 0 Weathered Shale.
- P Brown & gray, hard, silt.
- 0 Brown & gray, stiff to very stiff, lean clay.
- R Brown & tan, v. stiff, lean clay with sand.
- S Brown & dark brown, medium stiff, sandy, silty clay.
- T Brown & tan, soft, sandy, lean clay.
- U Brown & gray, soft, sandy, silty clay.
- V Weathered Shale.
- W Brown & tan, stiff, silt.
- X Tan, brown & gray, v. stiff, lean clay with sand.
- Y Brown, tan & gray, medium stiff, sandy, lean clay.
- Z Brown, tan & black, med. stiff, sandy, lean clay.
- AA Brown, tan, gray, very stiff to very hard, sandy, lean clay.
- AB Weathered Shale w/clay seams.
- AC Light brown, stiff, silty clay.
- AD Gray orange & tan, stiff, lean clay.
- AE Brown, medium stiff, silty clay.
- AF Brown, very stiff to very hard, sandy, lean clay.
- AG Weathered Shale.
- AH Gray & orange, stiff, silt.
- Al Brown & gray, stiff, lean clay.
- AJ Brown, medium stiff, sandy, lean clay.
- AK Brown & gray, soft, lean clay.
- AL Brown, medium stiff, sandy silt.
- AM Brown, medium dense to very dense, clayey sand. AN - Weathered Shale & Sandstone.
- AO Gray & tan, medium stiff to stiff, silt.
- AP Gray & black, v. stiff, lean clay.
- AQ Gray & tan. medium stiff to stiff. silt.
- AR Brown, v. loose, clayey sand.
- AS Gray & tan, medium dense, silty, clayey sand with gravel.
- AT Gray & tan, very dense, clayey sand with gravel.
- AU Weathered Shale & Sandstone.
- AV Tan, medium stiff to stiff, lean clay,
- AW Gray, tan & brown, medium stiff, lean clay.
- AX Tan, medium stiff, silt with sand.
- AY Tan & brown, medium stiff, silty clay with sand.
- AZ Brown & gray, v. loose, silty sand.
- BA Brown, very hard, silt with sand.
- BB Weathered Shale.
- BC Shale: Black-dk. gray, scat. orange-brown, slightly to moderately weathered, moderately hard.
- BD Sandstone: Light gray, gray, black-dk. gray, slightly weathered, moderately hard, v.f. to f. grain.
- BE Shale: Dark gray-black, slightly weathered to fresh, moderately hard.
- BF Shale: Olive gray-dk, gray, orange-brown, moderately to severly weathered, med. hard, v.f.
- BG Sandstone: Light gray, black-dk. gray, orange-brown, moderate grading to slightly weathered, med. to mod. hard, v.f. to f. grain.

FACTORS OF SAFETY

Α

В

С

1.7

1.4

1.0

Short Term

Long Term

Seismic

- BH Shale: Dark gray-black, scat. It. gray, moderately to slightly weathered, soft grading to mod. hard.
- BI Sandstone: Light gray, black-dk. gray, moderate grading to slightly weathered, med. to mod. hard, v.f. to f. grain.
- BJ Shale: Dark gray to black, It. gray, severely weathered to fresh, med. to mod. hard.
- BK Sandstone & Shale: Light gray, dk. gray-black, orange-brown, mod. to severly weathered, mod. hard, v.f. to f. grain.
- BL Shale: Black-dk. gray, scattered It. gray, fresh to slightly weathered, mod. hard.
- BM Interlayered Clay & Shale.
- BN Shale: Black-dk. gray, It. gray, orange-brown, mod. to slightly weathered, med. hard.
- BO Sandstone & Shale: Dark gray-black, slightly weathered, med. to mod. hard.
- BP Shale: Black-dk. gray, fresh, mod. hard.
- BO Shale: Olive aray, brown-orange, dk, aray-black, mod, to severly weathered, soft to med, hard.
- BR Shale: Dark gray-black, brown-orange seams, slightly to moderately weathered, med. to mod. hard.
- BS Sandstone: Light gray, gray, slightly weathered, mod. hard, v.f. to f. grain.
- BT Shale: Dark gray-black, fresh to slightly weathered, mod. hard.
- BU Sandstone: Light gray, dk. gray-black, fresh to slightly weathered, mod. hard, v.f. to f. grain.
- BV Shale: Black-dk, aray, fresh, mod, hard.
- BW Shale: Olive gray, orange-brown, mod. to severly weathered, med. hard.
- BX Shale: Olive gray, green-gray, orange-brown, grades to dk. gray, mod. weathered, med. to mod. hard.
- BY Sandstone & Shale: Light gray, black, orange-brown, slightly to moderately weathered, mod. hard, v.f. to f. grain.
- BZ Shale: Black-dk. gray, It. gray, slightly to moderately weathered, med. hard.
- CA Weathered Fragments: Black, It. olive gray, orange-brown.
- CB Shale: Black-dk. gray, brown-orange, mod. weathered to fresh, med. to mod. hard.
- CC Shale & Clay: Dark gray, olive gray, orange-brown, slightly to moderately weathered.
- CD Shale & Sandstone: Dark gray-black, It. gray, orange-brown, slightly weathered, med. to mod. hard.
- CE Shale: Black-dk. gray, slightly to moderately weathered, med. to mod. hard.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FEO. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
ILLVISED	TICHED	NEVISED.		6	ARK.			
				JOB N	0.	CA0605		
<u> </u>						LAYOUT		

VANDENBERG BLVD. - HWY. 5 (WIDENING) (S)

PULASKI & LONOKE COUNTIES

ARKANSAS STATE HIGHWAY COMMISSION

DATE: 06-14 FILENAME:

DRAWING NO.

SCALE: |" = 40'-0"

LITTLE ROCK, ARK.

DATE: 06-14

DATE: 06-14

ROUTE 67

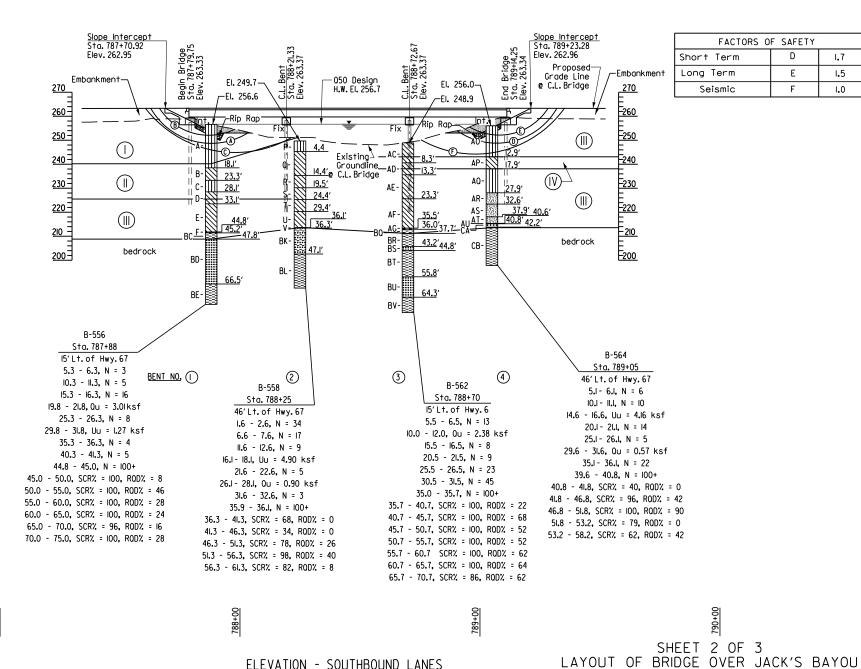
DRAWN BY: DFR

CHECKED BY: SKB

DESIGNED BY: AKV

BRIDGE NO.

ASSUMED SOIL STRENGTH PARAMETERS									
Soil	Embankment	RIP RAP	Į	II	III	IV			
Short Term	c= 800 PSF φ= 0° %= 120 PCF	c= 0 PSF φ= 45° %= 120 PCF	c= 0 PSF φ= 28° γ= 110 PCF	c = 1500 PSF	c= 0 PSF φ= 29° %= 110 PCF	c= 1000 PSF φ= 0* %= 120 PCF			
Long Term	c= 160 PSF φ= 26° γ= 120 PCF	̄̄̄̄̄̄̄̄̄̄̄̄̄̄̄̄̄̄̄̄̄̄̄̄̄̄̄̄̄̄̄̄̄̄̄̄	c= 50 PSF	c= 300 PSF	ē= 50 PSF	c= 200 PSF			



#### DATE REVISED DATE FILMED DATE REVISED DATE FILMED FED. ROAD DIST. NO. STATE FED. AID PROJ. NO. SHEET NO. BORING LEGEND 6 A - Brown & gray, soft to very stiff, silt. JOB NO. CA0605 B - Brown, stiff, lean clay. LAYOUT C - Brown & gray, medium stiff, silt. D - Orange & gray, medium stiff, lean clay with sand. E - Brown & gray, soft to medium stiff, sandy, silty clay. Slope Intercept Sta. 787+70.92 Elev. 262.95 F - Weathered Shale. Slope Intercept Sta. 789+23.28 G - Brown & black, soft, lean clay. Elev. 262.96 H - Gray, soft, lean clay. C.L. Bent Sta. 788+7 Elev. 263.3 I - Brown & gray, v. stiff, silt. Proposed-Grade Line El. 249.8 --050 Design H**.W.** El**.** 256.7 J - Gray & orange, stiff, lean clay. EI. 256.0 -@ C.L. Bridge 270 K - Tan, gray, black & brown, medium stiff to stiff, lean clay. EI. 257.8 -EI. 249.8 L - Tan, brown & black, medium stiff, lean clay. 260 <u> 260</u> M - Brown & tan. v. loose, silty, clayey sand. N - Brown, tan, black, loose sand w/arayel & silt. <u>250</u> = <u>-250</u> 0 - Weathered Shale. P - Brown & gray, hard, silt. 12.7 AH-Existina-240 0 - Brown & gray, stiff to very stiff, lean clay. 17.6 240 Δ1-12.4 22.7 R - Brown & tan, v. stiff, lean clay with sand. @ C.L. Bridge AJ-17.4 23.6 230 S - Brown & dark brown, medium stiff, sandy, silty clay. <del>-230</del> AX- ||||| |28.5' AK- 22.4 T - Brown & tan, soft, sandy, lean clay. 37.7'41.0'44.4' AL- <u>27.4</u> AY- 133.5 220 U - Brown & gray, soft, sandy, silty clay. <u> -220</u> 34.5' 36.3' BB BA-CC 43.5' V - Weathered Shale. BFO N- 44.8' 45.9' W - Brown & tan, stiff, silt. 210 <u> 210</u> вх-BN- 42.2' BO- 45.9' CD-BG-X - Tan, brown & gray, v. stiff, lean clay with sand. BX- 44.7' BY- 47.8' 50.2 54.9 Y - Brown, tan & gray, medium stiff, sandy, lean clay. 200 200 BH- 59.7' Z - Brown, tan & black, med. stiff, sandy, lean clay. BP-CE-BI-66.3 AA - Brown, tan, gray, very stiff to very hard, sandy, lean clay. BZ-AB - Weathered Shale w/clay seams. AC - Light brown, stiff, silty clay. BJ-AD - Gray orange & tan. stiff. lean clay. AE - Brown, medium stiff, silty clay. AF - Brown, very stiff to very hard, sandy, lean clay. AG - Weathered Shale. B-557 AH - Gray & orange, stiff, silt. B-565 Sta. 787+88 Al - Brown & gray, stiff, lean clay. Sta. 789+05 46' Rt. of Hwy. 67 BENT NO. (1) 2 3 (4) AJ - Brown, medium stiff, sandy, lean clay. 15' Rt. of Hwy. 67 4.9 - 5.9. N = 4 AK - Brown & gray, soft, lean clay. 5.7 - 6.7, N = 6 AL - Brown, medium stiff, sandy silt. 9.9 - 10.9, N = 210.7 - II.7. N = 15 14.4 - 16.4, Uu =6.97 ksf AM - Brown, medium dense to very dense, clayey sand. 15.7 - 16.7, N = 9 B-559 B-563 19.4 - 21.4. Ou = 3.17 ksf AN - Weathered Shale & Sandstone. 20.2 - 22.2. Qu = 1.95 ksf Sta. 788+25 Sta. 788+70 AO - Gray & tan, medium stiff to stiff, silt. 24.9 - 25.9. N = 13 25.7 - 26.7, N = 7 15' Rt. of Hwy. 67 46' Rt. of Hwy. 67 AP - Gray & black, v. stiff, lean clay. 29.9 - 30.9. N = 5 30.7 - 31.7, N = 6 5.2 - 6.2, N = 10 4.1 - 6.1. Uu = 2.64 ksf AO - Gray & tan, medium stiff to stiff, silt. 34.9 - 35.9, N = 6 10.2 - II.2. N = 10 9.6 - 10.6, N = II 35.2 - 37.2, Ou 0.5lksf AR - Brown, v. loose, clayey sand. 39.4 - 41.4. Qu = 0.93 ksf 14.7 - 16.7, Uu = 4.21 ksf 40.2 - 40.4, N = 100+ AS - Gray & tan, medium dense, silty, clayey sand with gravel. 14.6 - 15.6. N = 6 44.4 - 44.6. N = 100+ 40.4 - 45.4. SCR% = 58. RQD% = 0 20.2 - 21.2, N = 6 19.6 - 20.6, N = 4 AT - Gray & tan, very dense, clayey sand with gravel. 44.6 - 46.0, SCR% = 93, RQD% = 0 24.7 - 26.7, Qu = 1.45 ksf 24.I - 26.I. Uu = 2.46 ksf 45.4 - 50.4, SCR% = 100, ROD% = 8 AU - Weathered Shale & Sandstone. 46.0 - 51.0, SCR% = 100, RQD% = 8 50.4 - 55.4, SCR% = 100, RQD% = 42 AV - Tan, medium stiff to stiff, lean clay. 30.2 - 31.2. N = 19 29.6 - 30.6, N = 13 51.0 - 56.0, SCR% = 100, RQD% = 38 55.4 - 60.4. SCR% = 98. ROD% = 16 AW - Gray, tan & brown, medium stiff, lean clay. 34.7 - 34.7, N = 100+ 34.1 - 34.5, N = 100+ 56.0 - 61.0, SCR% = 100, RQD% = 58 60.4 - 65.4. SCR% = 94. RQD% = 52 AX - Tan, medium stiff, silt with sand. 34.7 - 35.6. SCR% = 89. ROD% = 0 34.5 - 39.5. SCR% = 90. RQD% = 0 6LO - 66.0. SCR% = 98. ROD% = 16 AY - Tan & brown, medium stiff, silty clay with sand. 65.4 - 70.4. SCRX = 98. RODX = 64 35.6 - 40.6, SCR% = 94, ROD% = 54 39.5 - 44.5, SCR% = 98, RQD% = 18 66.0 - 71.0, SCR% = 94, RQD% = 30 AZ - Brown & gray, v. loose, silty sand. 40.6 - 45.6. SCR% = 96. RQD% = 26 44.5 - 49.5. SCR% = 94. RQD% = 0 71.0 - 76.0, SCR% = 98, RQD% = 46 BA - Brown, very hard, silt with sand. 45.6 - 50.6, SCR% = 6, ROD% = 0 49.5 - 54.5, SCR% = 98, ROD% = 8 76.0 - 81.0, SCR% = 100, RQD% = 58 RB - Weathered Shale. 50.6 - 55.6, SCR% = 98, ROD% = 68 54.5 - 59.5, SCR% = 98, ROD% = 34 BC - Shale: Black-dk. gray, scat. orange-brown, slightly to moderately weathered, moderately hard. 55.6 - 60.6, SCR% = 100, RQD% = 78 59.5 - 64.5, SCR% = 100, ROD% = 50 ${\tt BD - Sandstone: Light\ gray,\ gray,\ black-dk.\ gray,\ slightly\ weathered,\ moderately\ hard,\ v.f.\ to\ f.\ grain.}$ 64.5 - 69.5. SCR% = 100. RQD% = 60 BE - Shale: Dark gray-black, slightly weathered to fresh, moderately hard. 69.5 - 74.5, SCR% = 100, ROD% = 82 BF - Shale: Olive gray-dk. gray, orange-brown, moderately to severly weathered, med. hard, v.f. BG - Sandstone: Light gray, black-dk, gray, orange-brown, moderate grading to slightly weathered, med, to mod, hard, v.f. to f. grain, BH - Shale: Dark gray-black, scat. It. gray, moderately to slightly weathered, soft grading to mod. hard. BI - Sandstone: Light gray, black-dk. gray, moderate grading to slightly weathered, med. to mod. hard, v.f. to f. grain. ELEVATION - NORTHBOUND LANES BJ - Shale: Dark gray to black, It. gray, severely weathered to fresh, med. to mod. hard. BK - Sandstone & Shale: Light gray, dk. gray-black, orange-brown, mod. to severly weathered, mod. hard, v.f. to f. grain. BL - Shale: Black-dk. gray, scattered It. gray, fresh to slightly weathered, mod. hard. BM - Interlayered Clay & Shale. BN - Shale: Black-dk. gray, It. gray, orange-brown, mod. to slightly weathered, med. hard. BO - Sandstone & Shale: Dark gray-black, slightly weathered, med. to mod. hard. BP - Shale: Black-dk. gray, fresh, mod. hard. BO - Shale: Olive gray, brown-orange, dk. gray-black, mod. to severly weathered, soft to med. hard. BR - Shale: Dark gray-black, brown-orange seams, slightly to moderately weathered, med. to mod. hard. BS - Sandstone: Light gray, gray, slightly weathered, mod. hard, v.f. to f. grain. SHEET 3 OF 3 BT - Shale: Dark aray-black, fresh to slightly weathered, mod, hard. LAYOUT OF BRIDGE OVER JACK'S BAYOU BU - Sandstone: Light gray, dk. gray-black, fresh to slightly weathered, mod. hard, v.f. to f. grain. BV - Shale: Black-dk. gray, fresh, mod. hard. VANDENBERG BLVD. - HWY. 5 (WIDENING) (S) BW - Shale: Olive gray, orange-brown, mod. to severly weathered, med. hard. PULASKI & LONOKE COUNTIES BX - Shale: Olive gray, green-gray, orange-brown, grades to dk. gray, mod. weathered, med. to mod. hard. ROUTE 67 BY - Sandstone & Shale: Light gray, black, orange-brown, slightly to moderately weathered, mod. hard, v.f. to f. grain. ARKANSAS STATE HIGHWAY COMMISSION BZ - Shale: Black-dk. gray, It. gray, slightly to moderately weathered, med. hard. LITTLE ROCK, ARK. CA - Weathered Fragments: Black, It. olive gray, orange-brown. CB - Shale: Black-dk. gray, brown-orange, mod. weathered to fresh, med. to mod. hard. DATE: 06-14 FILENAME: DRAWN BY: DFR CC - Shale & Clay: Dark gray, olive gray, orange-brown, slightly to moderately weathered. CHECKED BY: SKB DATE: 06-14 SCALE: |" = 40'-0" CD - Shale & Sandstone: Dark gray-black, It. gray, orange-brown, slightly weathered, med. to mod. hard. DESIGNED BY: AKV DATE: 06-14 CE - Shale: Black-dk. gray, slightly to moderately weathered, med. to mod. hard. BRIDGE NO. DRAWING NO.



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