ARKANSAS DEPARTMENT OF TRANSPORTATION

SUBSURFACE INVESTIGATION

STATE JOB NO. CA0604

FEDERAL AID PROJECT NO. ACNHPP-9222(14)

MAIN ST. – VANDENBERG BLVD. (WIDENING) (JACKSONVILLE) (F)

STATE HIGHWAY 67 **SECTION** 10

IN PULASKI **COUNTY**

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Highway 67 Widening Main Street to Vandenberg Boulevard Bridge Geotechnical Report

Job CA0604

Pulaski County, Arkansas
November 8, 2016

HDR | ICA

November 8, 2016

Glynn Fulmer, PE
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Dear Mr. Fulmer,

We have completed the Bridge Geotechnical Report for the Highway 67 Widening from Main Street to Vandenberg Boulevard in Pulaski County, Arkansas. This report and discussion reflects the latest geotechnical data as it relates to the latest layouts for the three (3) bridges on this project. A separate roadway report for the rest of the project will be provided under separate cover.

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,

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1 Introduction

The new Highway 67 widening project is proposed from Main Street to Vandenberg Boulevard in Jacksonville, Pulaski County. The proposed Highway 67 project will require replacing the existing James Street Bridge over Highway 67, constructing a new bridge for Gregory Street over Highway 67, and constructing twin bridges replacing the existing Highway 67 Bridge over Vandenberg Boulevard. A separate geotechnical roadway report will be submitted for the proposed roadway widening from Main Street to Vandenberg Boulevard. In general, Standard Penetration Test (SPT), Shelby tube, and bulk sample borings were advanced and collected soil samples were delivered to the HDR | ICA Engineering laboratory for testing. Geotechnical parameters and recommendations are provided in this report, resulting from the evaluation of the soil conditions at the bridge sites, including an evaluation of the associated Mechanically Stabilized Earth (MSE) walls.

2 Geology

The proposed Highway 67 widening and interchange improvements are located immediately southeast of the physiographic boundary between the Ouachita Mountains Province and Mississippi River Alluvial Plain (Major Physiographic Provinces Map of Arkansas, Arkansas Geological Commission). The proposed alignment generally passes over Alluvial Plain sediments overlying Ouachita Mountain rock. Topographic mapping for the corridor (McAlmont Quadrangle, Jacksonville Quadrangle and Cabot Quadrangle, 7.5 minute Series, USGS, 2011) indicate elevations ranging from approximately 240+ feet, near the beginning of the subject alignment, to 270± feet at the Gregory Street interchange, to 330± feet near the end of the project.

General soil/rock profiles at the bridge sites and associated MSE wall sites include various combinations of the following: silty to clayey sand, sandy to gravelly clay with cohesive characteristics interpreted as roadway and parking lot fill; silty to finely sandy, low and high plasticity clay interpreted as Quaternary alluvium; clayey to silty fine grain sands and finely sandy clay of the undifferentiated Wilcox group; clayey fine grain sand, sandy fat clay, sandy clay, finely sandy elastic silt - all exhibiting medium to high plasticity interpreted as undifferentiated Midway Group; claystone, limestone beds and clay beds also of the undifferentiated Midway Group and silty shale and sandstone of the Pennsylvanian lower Atoka Formation. Regional structural formation dip for Wilcox Group strata and Midway Group strata trends southeastward at very low gradients while dip for Pennsylvanian strata (lower Atoka Formation) is northeast to northward into an east-west trending thrust fault as indicated on the Arkansas State Geologic Map (Haley, et. al., 1993) and in the on-line Surface Geology Map (AGS - 2016). Faulting is not indicated on published mapping within the limits of the subject project corridor, however, thrust faulting associated with the Ouachita Mountains lies immediately west. Examination of rock core recovered from the advanced core borings located within the bridge footprints did not reveal slickensides or other evidence of faulting.

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 1,000 years) is equal to 0.236 g and the horizontal response spectral acceleration value at a 1.0 second period is equal to 0.240 g. These values were provided by the United States Geology Survey (USGS) based on a Site Class D and a Seismic Zone of 2.

Analysis of liquefaction potential of the subsurface soils is also appropriate for this project. The types of soils most susceptible to liquefaction are clay-free deposits of sands and silts, to depths of fifty (50) feet. Soils that are deeper than fifty (50) feet generally do not liquefy due to high confining pressures. For soils to become liquefiable, the material must generally contain less than 15% of 0.005 mm sizes, the liquid limit must be less than 35%, and the natural moisture content must be greater than 90% of the liquid limit. Based on the criteria discussed, it is our opinion that the soils encountered within the project site have a low potential for liquefaction, since none of the materials encountered in the borings met the three (3) criterions for liquefaction.

4 Discussion of Field and Laboratory Procedures

Bridge and retaining wall borings at the bridge ends were advanced utilizing CME 55 and CME 45-C tracked mounted drill rigs and a halyard ATV drill rig using hollow stem auger, rotary wash, 3” casing advancement, and NQ2 wireline rock core tooling. Standard penetration testing (ASTM D1586), Shelby tube sampling (ASTM D1587), and rock coring were performed in each of the bridge borings. Boring logs for the proposed bridge and retaining wall structures are shown in Appendix A.

Laboratory testing included natural moisture content, liquid limit, plastic limit, grain size analysis, Unified and AASHTO soil classification, unconsolidated undrained triaxial soil testing, consolidated undrained triaxial soil testing, one-dimensional consolidation, and unconfined compression testing on both soil and rock samples. Advanced core borings recorded core recovery (REC) ranging from 52% to 100% and rock quality designation (RQD) ranging from 0% to 98%. Detailed core descriptions can be found in the boring logs attached as Appendix A and within the geology descriptions of this report. Laboratory test results for the project (testing performed on both roadway and bridge soil samples) are attached as Appendix B.

5 Summary of Subsurface Conditions

Twenty-eight (28) borings, designated for bridge and retaining wall investigations at the bridge ends, were advanced to determine subsurface conditions for the proposed bridge bent and MSE locations; borings are presented in Table 5-1.

Table 5-1. Bridge and End Bent Retaining Wall Boring Summary

Boring No.	Alignment/Wall No.	Stationing	Offset Distance (ft)	Ground Surface Elevation (ft)	Total Boring Depth (ft)	Core Depth (ft)
James Street over Highway 67						
B-116	James Street	206+73	51' LT	296.4	56.5	24.9
B-117	James Street	207+38	19' RT	304.0	81.0	21.6
B-118	James Street	207+89	45' LT	285.5	69.8	18.8
B-120	James Street	208+82	51' LT	286.1	74.0	20.0
B-121	James Street	209+47	34' RT	292.3	48.0	21.8
B-141	James Street/MSE Wall B1	627+61	69' RT	289.3	26.7	-
B-142	Hwy. 67/MSE Wall B2	629+57	63' LT	282.5	50.0	-
B-143	James Street/MSE Wall B1	630+39	66' RT	295.4	41.5	-
B-144	Hwy. 67/MSE Wall B2	631+96	61' LT	293.3	10.0	-
Highway 67 over Vandenberg Boulevard						
B-122	Hwy.67	684+64	59' LT	274.2	48.0	20.0
B-123	Hwy.67	684+64	80' RT	293.9	79.7	28.0
B-124	Hwy.67	685+46	50' LT	276.7	49.8	20.0
B-126	Hwy.67	685+67	80' RT	279.0	64.2	27.5
B-127	Hwy.67	686+59	50' LT	279.9	49.4	23.2
B-129	Hwy.67	686+70	80' RT	298.2	73.5	20.0
B-130	Hwy.67	687+34	59' LT	280.8	53.8	29.0
B-131	Hwy.67	687+34	80' RT	298.2	78.4	25.0
B-158	Hwy.67/MSE Wall B5	683+77	120' LT	274.0	40.0	-
B-159	Hwy.67/MSE Wall B5	684+84	122' RT	275.4	29.6	-
Gregory Street over Highway 67						
B-163	Gregory Street	807+20	17' RT	291.4	57.8	25.1
B-164	Gregory Street	808+91	18' LT	291.3	70.4	21.0
B-165	Gregory Street	810+17	17' RT	286.1	65.9	26.6
B-166	Gregory Street	804+29	65' RT	298.1	32.7	-
B-167	Gregory Street/MSE Wall B-3	805+20	59' LT	295.7	32.9	-
B-168	Gregory Street/MSE Wall B-3	807+09	72' RT	292.4	33.5	-
B-169	Gregory Street/MSE Wall B-3	807+36	87' LT	291.8	21.3	-

Table 5-1. Bridge and End Bent Retaining Wall Boring Summary

Boring No.	Alignment/Wall No.	Stationing	Offset Distance (ft)	Ground Surface Elevation (ft)	Total Boring Depth (ft)	Core Depth (ft)
B-170	Gregory Street/MSE Wall B-4	812+69	26' RT	290.4	20.7	-
B-171	Hwy.67/MSE Wall B-4	662+39	117' RT	281.3	11.2	-

Samples were obtained through SPT drives, Shelby tube advancement, and rock coring. The proposed bridge sites are underlain by accumulations, varying from site to site, of existing roadway embankment/parking lot fill, alluvium, Wilcox Group sediments, Midway Group sediments, and lower Atoka Formation shale and sandstone. Individual bridge and retaining wall sites are discussed in Sections 5.1 through 5.3 of this report.

5.1 James Street Bridge over Highway 67

Soils interpreted as roadway embankment/base materials, Wilcox Group sediments, and Midway Group sediments were penetrated by five (5) advanced investigation borings. The Roadway embankment materials consisted of clayey, fine grain sand and asphalt intercepted within borings B-117 and B-118. Total thickness of intercepted embankment materials ranged from 0.7 feet to 5.4 feet. Wilcox Group sediments consisted of loose to medium dense, clayey to silty, fine grain sands extending to depths of 13.3 feet, 18.2 feet, and 6.6 feet within borings B-116, B-117, and B-121, respectively, resulting in a total penetrated thickness ranging from 6.6 feet to 13.2 feet. The Midway Group sediments were composed of loose to dense, clayey to silty, fine grain sand exhibiting low to high plasticity; high plasticity, sandy fat clay exhibiting stiff to hard consistency, finely sandy silt exhibiting firm to stiff consistency, finely sandy elastic silt exhibiting medium to high plasticity, and semi-lithified claystone, limestone, and sandy fossil fragment beds described within the cored rock discussion below. These soils were penetrated within the five (5) borings to depths of 56.5 feet, 81.0 feet, 64.8 feet, 65.0 feet, and 48.0 feet within borings B-116, B-117, B-118, B-120, and B-121, respectively, prior to boring termination or interception of shale. Total penetrated Midway Group thickness, both SPT/Shelby tube sampled and cored, ranged from 41.4 feet to 65.0 feet.

Core investigations were advanced for the five (5) bridge borings upon SPT refusal, casing advance refusal, or auger refusal. Recovered rock core was described as calcareous, fossiliferous claystone with very fine to fine sandy rippled laminae exhibiting slight to moderate weathering with severely weathered seams and thin to thick bedding (Tertiary-Midway Group); beds of vuggy fossiliferous limestone exhibiting moderate to severe weathering and very thin to thin bedding (Tertiary-Midway Group); silty in part, finely micaceous, fissile in part, very thin bedded shale typically exhibiting severe weathering grading to slight weathering and interbedded fine grain sandstone beds and laminae (Pennsylvanian Lower Atoka Formation). In addition to the dominant lithologies rare beds, 1 foot to 2 feet thick, of poorly cemented, fine to coarse grain, fossil fragments (Tertiary-Midway Group) were recovered. The base of Midway Group sediments/Top of lower Atoka Shale is interpreted at elevations 220.7 feet within B-118 and 221.1 feet within B-120. Total thickness of the Atoka Formation recovered ranged from 5.0 feet to

9.0 feet. Core recovery ranged from 92% to 100% while RQD values ranged from 16% to 98%. Recovered claystone and in some cases limestone, broke along bedding planes during inspection, handling and during desiccation while exposed in the laboratory, therefore RQD values may not reflect reported values as time progresses. Unconfined testing was performed on selected representative claystone (7), limestone (2) and shale (1) specimens. Claystone specimen results indicate 206 psi to 342 psi compressive strength; limestone specimen results indicate 857 psi to 2,403 psi compressive strength while the shale specimen indicates 2,445 psi compressive strength. Borings B-116 and B-121 were terminated at elevations of 239.9 feet and 244.3 feet, respectively, within Midway Group claystone; boring B-117 was terminated at an elevation of 223.0 feet within a Midway Group limestone bed and borings B-118 and B-120 were terminated at elevations of 215.7 feet and 212.1 feet within shale of the lower Atoka Formation.

5.1.1 James Street over Highway 67 MSE Walls

Soils interpreted as Wilcox Group and Midway Group sediments were penetrated by four (4) advanced investigation borings. Wilcox Group sediments consisted of medium dense, clayey to silty, fine grain sand extending to depths of 7.8 feet and 6.8 feet within borings B-143 and B-144, respectively. The Midway Group sediments were composed of loose to medium dense, silty to clayey, fine grain sand exhibiting medium plasticity; sandy fat clay exhibiting very stiff to hard consistency and medium plasticity, finely sandy silt exhibiting hard consistency. These soils were penetrated within the four (4) borings to depths of 26.7 feet, 50.0 feet, 41.5 feet, and 10.0 feet prior to auger refusal (B-141) or SPT refusal (B-142) on semi-lithified Midway Group sediments or boring termination (B-143 and B-144) within Midway Group sediments. Total penetrated Midway Group thickness ranged from 3.2 feet to 50.0 feet.

5.2 Gregory Street Bridge over Highway 67

Soils interpreted as roadway embankment, Quaternary alluvium, sediments from the Tertiary Wilcox Group and Midway Group and rock of the lower Atoka Formation (Pennsylvanian) were penetrated by three (3) advanced investigation borings. Embankment materials, consisting of silty clayey gravel with sand, were intercepted within B-164 to a depth of 4.9 feet. Alluvial sediments consisted of low plasticity, sandy silty clay. Alluvium was intercepted within B-165 with Shelby tube testing revealing very soft consistency. Alluvial sediments were penetrated from existing grade to a depth of 10.4 feet. Wilcox Group sediments, consisting of finely sandy clay, were intercepted to a depth of 5.4 feet within boring B-163. Wilcox sediments exhibited firm consistency and medium plasticity characteristics. Midway Group sediments consisted of soft to stiff finely sandy clay exhibiting medium to high plasticity; medium dense, silty to clayey fine grain sand exhibiting medium to high plasticity; very stiff to hard, sandy clay exhibiting high plasticity characteristics and finely sandy silt exhibiting high plasticity when penetrated by SPT drives. Midway sediments recovered during coring operations, below auger or SPT refusal are discussed below. Midway sediments underlie Wilcox sediments (B-163), embankment materials (B-164) or alluvium (B-165). Midway sediments were penetrated to depths of 57.8 feet, 66.8 feet, and 60.9 feet prior to boring termination or interception of lower Atoka Formation shale resulting in a total investigated thickness range of 26.2 feet to 61.9 feet.

Core investigations were advanced for the three (3) bridge investigation borings upon SPT or auger refusal. Recovered rock was described as calcareous, fossiliferous claystone with very thin limestone beds and very fine to fine sandy rippled laminae exhibiting slight to severe weathering and thin to thick bedding (Tertiary-Midway Group); vuggy, fossiliferous limestone exhibiting moderate to severe weathering, inclusive laminations to very thin beds of claystone and thin conglomerate beds (Tertiary-Midway Group) and silty, finely micaceous, thin bedded shale typically exhibiting fresh to slight weathering (Pennsylvanian Lower Atoka Formation). The base of Midway Group sediments/Top of lower Atoka Formation shale is interpreted at elevations 224.5 feet within B-164 and 225.2 feet within B-165. Total thickness of the Atoka Formation recovered ranged from 3.6 feet to 5.0 feet. Core recovery ranged from 85% to 100% while RQD values ranged from 0% to 98%. Recovered claystone and in some cases limestone, broke along bedding planes during inspection, handling and during desiccation while exposed in the laboratory therefore, RQD values may not reflect reported values as time progresses. Unconfined testing was performed on selected representative claystone (3) and shale (2) specimens. The claystone specimen results indicated 288 psi to 382 psi compressive strength while shale specimens indicate 79 psi to 672 psi compressive strength. The 79 psi result appeared to reflect failure along bedding planes within the shale. Advanced bridge borings were terminated at elevations ranging from 233.6 feet to 220.2 feet within claystone (B-163) or shale of the lower Atoka Formation (B-164 and B-165).

5.2.1 Gregory Street over Highway 67 MSE Walls

Soils interpreted as parking lot fill and Midway Group sediments were penetrated by seven (7) advanced investigation borings. Parking lot fill was penetrated prior to the first SPT drive within borings B-166, B-167 and B-169 but a visual description of silty clay; gravel and clay and clay were presented on driller's logs. Additionally a Shelby tube was pushed within interpreted fill in B-166 with classification of silty sand and laboratory testing suggesting dense relative density. Parking lot fill thickness is interpreted as 4.5 feet (B-166), 4.8 feet (B-169), and 8.0 feet (B-166). Midway Group sediments were composed of loose to dense fine grain clayey sand, occasionally with gravel; firm to very stiff fat clay with sand and stiff to hard finely sandy elastic silt. These sediments were penetrated to depths ranging from 21.3 feet to 33.5 feet. Auger refusal was encountered within borings B-167 at 32.9 feet and B-168 at 33.5 feet on semi-lithified Midway Group sediments while borings B-166, B-169, B-170, and B-171 were terminated at 32.7 feet, 21.3 feet, 20.7 feet, and 11.2 feet, respectively.

5.3 Highway 67 Bridge over Vandenberg Boulevard

Soils interpreted as roadway embankment/base materials, sediments from the Tertiary Midway Group and rock of the lower Atoka Formation (Pennsylvanian) were penetrated by eight (8) advanced investigation borings. Materials interpreted as roadway embankment were penetrated to depths of 21.3 feet, 18.1 feet, and 17.3 feet within borings B-123, B-129, and B-131, respectively. These materials were reported to be composed of loose to medium dense, clayey fine grain sand; soft to firm sandy fat clay and soft to firm finely sandy clay. Midway Group sediments consisted of stiff to hard finely sandy clay exhibiting high plasticity; firm to stiff, finely sandy clay exhibiting

medium plasticity characteristics, firm to hard, sandy fat clay exhibiting high plasticity characteristics; stiff sandy silt exhibiting low plasticity; very stiff, sandy elastic silt exhibiting high plasticity and very dense, clayey sand with gravel exhibiting high plasticity when penetrated by SPT drives. Midway sediments recovered during coring operations, below auger or SPT refusal are discussed below. Midway sediments underlie embankment materials within borings B-123, B-129, and B-131. Midway sediments were penetrated to depths ranging from 41.5 feet to 77.4 feet prior to boring termination or interception of lower Atoka Formation rock. Total thickness of Midway sediments, both SPT/Shelby tube sampled and cored, ranged from 40.9 feet to 58.0 feet.

Core investigations were advanced for the eight (8) bridge borings upon SPT or auger refusal. Recovered rock was described as calcareous in parts, fossiliferous claystone with very thin to thin fossiliferous limestone and conglomerate beds, very fine to fine fossiliferous sand laminations and fossil fragment beds all exhibiting slight to moderate weathering with severely to completely weathered seams and thin to thick bedding (Tertiary-Midway Group); vuggy, fossiliferous limestone exhibiting moderate to severe weathering with inclusive laminations to very thin beds of claystone and very thin conglomerate beds (Tertiary-Midway Group); soft, slightly calcareous clay containing traces of fine mica and fine pyrite grains (Tertiary-Midway Group); silty, finely micaceous, thin bedded shale with some fine grain sandstone laminations to beds typically exhibiting severe grading to moderate weathering (Pennsylvanian Lower Atoka Formation). The base of Midway Group sediments/Top of lower Atoka Shale is interpreted at elevations ranging from 234.3 feet to 221.0. Total thickness of the Atoka Formation recovered ranged from 1.0 foot to 7.8 feet. Core recovery ranged from 52% to 100% while RQD values ranged from 0% to 92%. Recovered claystone and in some cases limestone, broke along bedding planes during inspection, handling and during desiccation while exposed in the laboratory, therefore RQD values may not reflect reported values as time progresses. Unconfined testing was performed on selected representative claystone (7), limestone (2), clay (4), and shale (4) specimens. The claystone specimen results indicated 380 psi to 519 psi compressive strength; limestone specimen results indicated 2,860 psi to 3590 psi compressive strength; clay specimen results indicated 78 psi to 185 psi compressive strength, while shale specimens indicate 260 psi to 1,897 psi compressive strength. Advanced bridge borings were terminated at elevations ranging from 230.5 feet to 214.2 feet within clay or shale of the lower Atoka Formation (B-122, B-123, B-124, B-126, B-127, B-129, B-130, and B-131).

5.3.1 Highway 67 over Vandenberg Boulevard MSE Walls

Soils interpreted as embankment/base materials and Midway Group sediments were penetrated by two (2) advanced investigation borings near the MSE Wall Number B5 position. Embankment fill was penetrated from existing grade to a depth of 21.3 feet within boring B-123. Embankment fill was composed of loose, clayey, fine grain sand and soft to medium stiff, sandy fat clay. Interception of Midway sediments within B-122 (at existing grade) and B-123 (underlying embankment) was encountered below the base elevation for MSE Wall Number B5. Midway sediments that were encountered within these borings suggest medium stiff to stiff, finely sandy clay exhibiting high plasticity; soft to stiff, finely sandy clay exhibiting medium plasticity characteristics, claystone exhibiting moderate to severe weathering and soft to low hardness and limestone beds exhibiting moderate hardness when penetrated by SPT drives or recovered within core runs.

Midway sediments were penetrated to depths of 41.5 feet and 71.9 feet in borings B-122 and B-123. Continued boring advancement penetrated lower Atoka Formation shale in B-122 and B-123 at elevations of 232.7 and 222.0 respectively. Shale was described as severely weathered grading to slightly weathered and soft grading to moderately hard. Borings B-122 and B-123 were terminated within lower Atoka Formation shale at depths of 48.0 feet and 79.7 feet respectively.

Soils interpreted as embankment/base materials and Midway Group sediments were penetrated by four (4) advanced investigation borings near the MSE Wall Number B6 position. Embankment fill was penetrated from existing grade to depths of 18.1 feet, 0.6 foot and 17.3 feet within borings B-129, B-130 and B-131. Embankment fill was composed of loose to medium dense, clayey fine grain sand and soft to stiff sandy clay. Interception of Midway sediments occurred within B-127 (at existing grade) and underlying embankment fill in B-129, B-130 and B-131 at or immediately above the base elevation for MSE Wall Number B6. Midway sediments that were encountered within these borings suggest medium stiff to very stiff, finely sandy to silty clay with scattered gravel exhibiting medium plasticity immediately underlying the base of MSE Wall Number B6. Additional deeper Midway sediments included stiff to hard, sandy fat clay, medium dense, silty to clayey sand, stiff, sandy lean clay, very dense clayey sand with gravel, claystone exhibiting slight to moderate weathering and low hardness, limestone beds exhibiting moderate hardness and soft seams of clay when penetrated by SPT drives or recovered within core runs. Midway sediments were penetrated to depths of 45.6 feet, 73.5 feet, 47.8 feet and 77.4 feet in borings B-127, B-129, B-130 and B-131 respectively. Boring B-129 was terminated within Midway sediments at a depth of 73.5 feet. Continued boring advancement penetrated lower Atoka Formation shale in B-127, B-130 and B-131 at elevations of 234.3, 233.0 and 220.8 respectively. Shale was described as severely weathered grading to moderately weathered and soft grading to medium hard. Borings B-127, B-130 and B-131 were terminated within lower Atoka Formation shale at depths of 49.4 feet, 53.8 feet and 78.4 feet respectively.

5.4 Ground Water Conditions

Observed static (24 hour) ground water levels (2 recorded observations) at the James Street bridge site vary from 10.0 feet to 21.0 feet below existing grade. These depths equate to an elevation range of 286.4 feet to 283.0 feet (MSL).

Observed immediate groundwater levels (6 observations) at the Vandenberg Boulevard bridge site vary from 16.6 feet to 46.1 feet below existing grade equating to an elevation range of 273.2 feet to 247.8 feet (MSL). Observed water levels (4 recorded observations) vary from 2.0 feet to 35.0 feet after a 24 hour stabilization interval. These depths equate to an elevation range of 277.9 feet to 258.9 feet (MSL).

One (1) observed immediate groundwater level observation was recorded in boring B-167 (Gregory Street MSE walls) at a depth of 28.2 feet below existing grade. This depth equates to an elevation of 267.5 (MSL).

One (1) observed immediate groundwater level observation was recorded in boring B-159 (Vandenberg Bridge MSE walls) at a depth of 17.0 feet below existing grade. This depth equates to an elevation of 258.4 (MSL).

Seasonal variation in rainfall and position of borings along the project corridor are likely to change these observations over time.

6 Recommendations

The following recommendations included herein consist of foundation type recommendations, critical elevations pertaining to foundations, slope stability analyses, MSE wall recommendations (where applicable), and any miscellaneous information for each of the proposed structures. Slope stability and settlement analyses are presented at the end of this section for all three (3) bridges.

6.1 General Pile Recommendations

The recommendations within this section apply to all bents that will be constructed using HP 12x53 piles on each of the three (3) bridges. Specific recommendations for each structure will follow in subsequent sections of this report.

Piles shall be driven to practical refusal on bedrock. The available factored capacity of piles is based on the structural capacity of the pile due to severe driving conditions (0.5 resistance factor), the consideration of downdrag effects, and construction sequencing. Factored resistances are shown in Table 6-5 within this report. The factored resistance is predicated on use of piles with minimum yield strength of 50 ksi. Pile points are recommended for tip protection as the piles are advanced through the embankment fill as well as to assist with pile penetration and seating into bedrock (typically claystone, limestone, or shale). The piles shall be installed in accordance with the AHTD Standard Specifications for Highway Construction.

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. 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, and the minimum tip elevation has been satisfied. 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 newly placed embankment materials at the end bents, rock fill and/or soil material containing boulders or large stones shall not be placed at the bridge abutments.

6.2 James Street over Highway 67 Foundation Recommendations

The proposed structure for James Street over Highway 67 will consist of two (2) spans with end bents and the interior bent supported on steel 12X53 H Piles. For each bent, pile tip elevations have been set to embed within existing soils a minimum of ten (10) feet below bottom of leveling pad (BLP), bottom of footing elevations (BFE), or existing

ground line, whichever is lowest. For all bents, piles will be driven to rock, where the rock line is deeper than ten (10) feet below these referenced elevations.

An initial factored capacity of 194 tons is considered the factored structural capacity of the 12X53 H-piles driven to rock without consideration of downdrag or embankment loading. Subsurface soils consist of silty sands, elastic silts, and clayey sands at each end bent. Maximum fill heights at End Bent 1 may cause downdrag on the piles at the outer left extent of the proposed structure where fill heights are expected to be on the order of twenty (20) feet. A waiting period for piles within this new embankment area has been recommended in order to mitigate the potential effects of downdrag. For End Bent 3 maximum fill heights on the order of 20 feet are present on the left and right outer extents of the structure. Thus, a waiting period along with wick drains has been recommended in order to mitigate expected downdrag.

In order to further mitigate downdrag loading at each end bent, it is recommended to drive piles after the MSE wall has been constructed by placing cylinders in the MSE wall reinforced area and driving piles through the cans after the settlement has been completed. Wick drains are also recommended to decrease the time of consolidation from approximately 250 days to approximately 50 days at End Bent 3. If the longer waiting period is acceptable, then wick drains could be eliminated. It should be noted, waiting periods discussed herein are estimates and settlement monitoring is recommended to affirm waiting periods. Waiting periods shall begin after the MSE wall is placed and shall be exhausted prior to pile driving operations or placement of pavement commencing. Further details on settlement monitoring recommendations can be found in Section 6.9 of this report.

Based on the subsurface conditions encountered in the investigation borings, variable rock lines are present for this bridge, creating probable erratic pile tip elevations. The rock type is claystone and it is suspected that during drilling operations SPT sampling was successful in weaker seams of claystone, whereas other borings required rock coring to penetrate claystone. Thus, in Table 6-1, pile tip elevations are designated as right (R) and left (L) for each side of the abutment, facing up station.

Based on the subsurface conditions encountered, Steel 12x53 H-piles are recommended for Bent 1 through Bent 3. A driving system capable of an energy range between 41 to 74 kip-ft is recommended, based on a factored structural load of 95 tons. A summary of recommendations is shown in Table 6-1.

Table 6-1. James Street Summary of Recommendations

Bent Number	Foundation Type	BLP, BFE, or Existing Ground line Elev. (ft)	Minimum Pile Tip Elev. (ft)
End Bent 1	HP 12x53 Steel Piles	281.4*	264.8 (L) 244.6 (R)
Interior Bent 2	HP 12x53 Steel Piles	280.3	234.5
End Bent 3	HP 12x53 Steel Piles	284.5*	232.1 (L) 266.1 (R)
*Note: BLP elevations are approximate. Variable BLP elevations present throughout wall profile.			

6.3 James Street over Highway 67 MSE Wall Recommendations

A MSE retaining wall arrangement will be utilized at End Bent 1 (referred to as Wall No. 1) and End Bent 3 (referred to as Wall No. 2) to retain the proposed embankment slopes at the bridge abutments. The proposed MSE walls have a maximum height of approximately 23 feet and an estimated length of approximately 277.5 feet at End Bent 1 (Wall No. 1) and a maximum height of approximately 21 feet and an estimated length of approximately 236.5 feet at End Bent 3 (Wall No. 2). For MSE wall analyses a minimum two (2) feet of embedment was assumed for the proposed leveling pads. The inclusions for these walls shall typically consist of steel strip reinforcements. For a plan view of these walls, see Appendix C.

The reinforced soil that will be used for the MSE wall shall meet the minimum requirements set forth in the Special Provision provided herein. In general, these requirements state that the material shall be granular with no cohesion, and possess a minimum angle of internal friction greater than 32 degrees. Aggregate Base Course (Class 7) or Selected Material (SM-1) meets this minimum requirement. Regardless of the material selected for the reinforcement zone, the Contractor shall produce test results that prove the design material parameters, utilized by the selected wall designer, are obtained. These values are typically higher than the minimum requirements set forth in the Special Provision. All fill material shall be placed and compacted in accordance with the minimum requirements defined in the AHTD Standard Specifications for Highway Construction. Furthermore, a 1-foot wedge of porous crushed stone backfill shall be placed immediately behind the wall along with a 4-inch pipe underdrain and Type II filter fabric to ensure positive drainage and prevent additional hydrostatic pressures on the retaining wall system.

Along the proposed MSE wall alignments, the subsurface soils generally consists of loose to medium dense clayey sand and loose to medium dense silty sand at End Bent 1 (Wall No. 1) and loose to medium dense silty sand, loose to medium dense clayey sand, stiff to very stiff elastic silt, and very stiff to hard fat clay at End Bent 3 (Wall No. 2). These soils are indicated on nearby boring logs provided in Appendix A.

Based on the external stability analysis performed on the critical wall profile, a minimum strap length ratio of 0.95 is required for the End Bent 1 wall (Wall No. 1) and a minimum strap length ratio of 0.9 is required for End Bent 3 wall (Wall No. 2). These values were determined based on the wall height of 23 feet at End Bent 1 and 21 feet at End Bent 3.

The factored bearing resistance of the foundation soil was calculated to be approximately 6,600 PSF at End Bent 1 (Wall No. 1) and at End Bent 3 (Wall No. 2), based on a resistance factor of 0.65. However, these estimated factored bearing resistances are provided for informational purposes only. The factored bearing pressure reported is based on the reported wall heights and strap length ratios discussed in previous text. The required factored bearing resistance and strap lengths will be determined by the wall designer based on the final wall design.

6.4 Gregory Street over Highway 67 Foundation Recommendations

The proposed bridge structure for Gregory Street over Highway 67 will consist of two (2) spans with end bents and the interior bent supported on steel 12X53 H-Piles. For each bent, pile tip elevations have been set to embed within existing soils a minimum of ten (10) feet below bottom of leveling pad (BLP), bottom of footing elevations (BFE), or existing ground line, whichever is lowest. For all bents, piles will be driven to rock, where the rock line is deeper than ten (10) feet below these referenced elevations.

An initial factored capacity of 194 tons is considered the structural capacity of the 12X53 H-piles driven to rock, without consideration to downdrag or embankment loading. The presence of clay like soils is significant for the end bents, and consolidation of these soils is expected to be significant. Due to the consolidation of soils, piles at each end bent will endure downdrag loading, if left unmitigated. In order to mitigate downdrag loading, it is recommended to drive piles after the MSE wall has been constructed by placing cylinders in the MSE wall reinforced area and driving piles through the cans after settlement has been completed at each end bent. Wick drains are also recommended to decrease the estimated time of consolidation from approximately 250 days to approximately 60 days at End Bent 1 and from approximately 250 days to approximately 45 days at End Bent 3. If the longer waiting periods are acceptable, then wick drains could be eliminated. Waiting periods shall begin after the MSE wall is placed and shall be exhausted prior to pile driving operations or pavement placement commencing. It should be noted, waiting periods discussed are estimates and settlement monitoring is recommended to affirm waiting periods. Further details on settlement monitoring recommendations can be found in Section 6.9 of this report.

Based on the subsurface conditions encountered, Steel HP 12x53 piles are recommended for Bent 1 through Bent 3. A driving system capable of an energy range between 40 to 83 kip-ft is recommended for loading approximately equal to 95 tons. A summary of recommendations is shown in Table 6-2.

Table 6-2. Gregory Street Summary of Recommendations

Bent Number	Foundation Type	BLP, BFE, or Existing Ground line Elev. (ft)	Minimum Pile Tip Elev. (ft)
End Bent 1	HP 12x53 Steel Piles	287.0*	258.7
Interior Bent 2	HP 12x53 Steel Piles	286.0	241.9
End Bent 3	HP 12x53 Steel Piles	276.6*	246.8
*Note: BLP elevations are approximate. Variable BLP elevations present throughout wall profile.			

6.5 Gregory Street over Highway 67 MSE Wall Recommendations

A MSE retaining wall arrangement will be utilized at End Bent 1 and End Bent 3 to retain the proposed embankment slopes near the bridge abutments. At End Bent 1 (referred to as Wall No. 3), a MSE wall will be utilized to retain the proposed embankment slopes at

the bridge abutment and approach embankment. At End Bent 3 (referred to as Wall No. 4) a MSE wall is also proposed. A minimum embedment of two (2) feet for the leveling pad has been assumed for MSE wall analysis. For a plan view of the walls, see Appendix C.

Due to the total amount of settlement expected for the MSE walls located at End Bent 1 (Wall No. 3) and End Bent 3 (Wall No. 4), two phase MSE wall construction methods will be required. Settlement monitoring devices will be required at these locations to determine the time at which the second-phase construction can begin. Details and specifications outlining the two phase MSE wall construction are provided in the Retaining Walls Special Provision.

The proposed MSE walls have a maximum height of approximately 20 feet and an estimated length of approximately 659.75 feet at End Bent 1 (Wall No. 3) and a maximum height of approximately 30 feet and an estimated length of approximately 423.9 feet at End Bent 3 (Wall No. 4). The inclusions for these walls shall typically consist of steel strip reinforcements.

The reinforced soil that will be used for the MSE wall shall meet the minimum requirements set forth in the Special Provision provided herein. In general, these requirements state that the material shall be granular with no cohesion, and possess a minimum angle of internal friction greater than 32 degrees. Aggregate Base Course (Class 7) or Selected Material (SM-1) meets this minimum requirement. Regardless of the material selected for the reinforcement zone, the Contractor shall produce test results that prove the design material parameters, utilized by the selected wall designer, are obtained. These values are typically higher than the minimum requirements set forth in the Special Provision. All fill material shall be placed and compacted in accordance with the minimum requirements defined in the AHTD Standard Specifications for Highway Construction. Furthermore, a 1-foot wedge of porous crushed stone backfill shall be placed immediately behind the wall along with a 4-inch pipe underdrain and Type II filter fabric to ensure positive drainage and prevent additional hydrostatic pressures on the retaining wall system.

Along the proposed MSE wall alignment at End Bent 1 (Wall No. 3), the immediate subsurface soils consist of medium dense silty sand, medium stiff sandy lean clay, loose clayey sand, medium dense clayey sand, and medium stiff sandy fat clay.

Due to the presence of fat clay in boring B-168 and high liquid limit values within this area, it is recommended to undercut and backfill two (2) feet below bottom of leveling pad elevations to avoid potential swell of expansive soils for the MSE wall at End Bent 1 (Wall No. 3). The undercut and backfill shall extend from wall station 1+00 until wall station 3+50. The undercut shall extend the entire strap length of the wall within the undercut/backfill station range. The backfill shall consist of stone backfill, in accordance with Section 207 of the Standard Specifications.

Along the proposed MSE wall alignment at End Bent 3 (Wall No. 4), the immediate subsurface soils consist of stiff sandy lean clay, soft silty clay, and loose clayey sand.

Due to the presence of soft clays encountered in B-165, it is recommended to undercut six (6) feet below bottom of leveling pad elevations for the End Bent 3 wall (Wall No. B4). The backfill shall consist of stone backfill, in accordance with Section 207 of the Standard Specifications. The undercut and backfill shall extend from wall station 1+00

until wall station 3+50. The undercut and backfill shall extend for the entire strap length of the wall within the undercut/backfill station range.

Based on the external stability analysis performed on the critical wall profile / cross section, a minimum strap length ratio of 1.1 is required for the End Bent 1 wall (Wall No. 3), and a minimum strap length ratio of 1.2 is required for the End Bent 3 wall (Wall No. 4). These values were determined based on the wall height of 20 feet at End Bent 1 (Wall No. 3) and 30 feet at End Bent 3 (Wall No. 4).

The calculated factored bearing resistance of the foundation soil is 6,300 psf within the MSE Walls for End Bent 1 (Wall No. 3) and End Bent 3 (Wall No. 4), based on a resistance factor of 0.65. The factored bearing pressures reported are based on the reported wall heights and strap length ratios discussed in previous text. However, this estimated factored bearing resistance is provided for informational purposes only. The required factored bearing resistance and strap lengths will be determined by the wall designer based on the final wall design.

6.6 Highway 67 over Vandenberg Boulevard Foundation Recommendations

The proposed bridge structure for Highway 67 over Vandenberg Boulevard will consist of two (2) spans with end bents and interior bent supported on steel 12X53 H-Piles. The proposed structure consists of twin bridges (Bridge A and Bridge B) where Bridge A is located within a fill area and Bridge B is located within a cut area. An MSE wall is proposed at End Bent 1 and End Bent 3 of the bridges. For each bent, pile tip elevations have been set to embed within existing soils a minimum of ten (10) feet below bottom of leveling pad (BLP), bottom of footing elevations (BFE), or existing ground line, whichever is lowest. For all bents, piles will be driven to rock, where the rock line is deeper than ten (10) feet below these referenced elevations.

An initial factored capacity of 194 tons is considered the structural capacity of the 12X53 H-piles driven to rock. The presence of clay like soils is significant for the End Bent 1 and End Bent 3 of Bridge A, and consolidation of these soils is expected to be significant. Due to the consolidation of soils, piles at each end bent of Bridge A will endure downdrag loading, if left unmitigated. In order to mitigate downdrag loading it is recommended to drive piles after the MSE walls have been constructed by placing cylinders in the MSE wall reinforced area and driving piles through the cans after settlement is completed at End Bent 1 and End Bent 3 of Bridge A. Wick drains are also recommended at End Bent 1 and End Bent 3 of Bridge A to decrease the time of consolidation from approximately 150 days to approximately 40 days. If the longer waiting period is acceptable, then wick drains could be eliminated. It should be noted, waiting periods discussed are estimates and settlement monitoring is recommended to affirm waiting periods. Waiting periods shall begin after the MSE wall is placed and shall be exhausted prior to pile driving operations or placement of pavement commencing. Further details on settlement monitoring recommendations can be found in Section 6.9 of this report.

Furthermore, it is understood that Vandenberg Boulevard structures will be constructed in two stages, with Bridge A being the first to be constructed. The effects of downdrag on piles in place at Bridge A due to the later construction at Bridge B is anticipated to be

marginal due to small fill heights at Bridge B (less than 5 feet), with the majority of soils at Bridge B being cut material.

Based on the subsurface conditions encountered, Steel HP 12x53 piles are recommended for Bent 1 through Bent 4. A driving system capable of an energy range between 40 to 75 kip-ft is recommended, based on a factored structural load of 95 tons. A summary of recommendations is shown in Table 6-3.

Table 6-3. Vandenberg Boulevard Summary of Recommendations

Bent Number	Foundation Type	BLP, BFE, or Existing Ground line Elev. (ft)	Minimum Pile Tip Elev. (ft)
End Bent 1	HP 12x53 Steel Piles	270.8*	246.2 (A) 242.2 (B)
Interior Bent 2	HP 12x53 Steel Piles	272.5	246.9 (A) 242.3 (B)
End Bent 3	HP 12x53 Steel Piles	273.3*	256.0 (A) 244.8 (B)
*Note: BLP elevations are approximate. Variable BLP elevations present throughout wall profile.			

6.7 Highway 67 over Vandenberg Boulevard MSE Wall Recommendations

An MSE retaining wall arrangement will be utilized at End Bent 1 and End Bent 3 to retain the proposed embankment slopes at the bridge abutments. It should be noted that Bridge B of the twin bridge configuration will require cut of existing embankment, while Bridge A will require new embankment fill. The proposed MSE wall at End Bent 1 (referred to as Wall No. 5) has a maximum height of approximately 29 feet and an approximate length of 273 feet. The proposed MSE wall at End Bent 3 (referred to as Wall No. 6) has a maximum height of approximately 30 feet and an approximate length of 297 feet. The analyzed heights of the wall are measured from the portion of the wall extending into the fill area (Bridge A) of the dual bridges. A minimum embedment of two (2) feet has been assumed for MSE wall analysis. The inclusions for these walls shall typically consist of steel strip reinforcements.

Due to the total amount of settlement expected for the MSE walls located at End Bent 1A, two phase MSE wall construction methods will be required. Settlement monitoring devices will be required at this location to determine the time at which the second-phase construction can begin. Details and specifications outlining the two phase MSE wall construction are provided in the Retaining Walls Special Provision.

The reinforced soil that will be used for the MSE wall shall meet the minimum requirements set forth in the Special Provision provided herein. In general, these requirements state that the material shall be granular with no cohesion, and possess a minimum angle of internal friction greater than 32 degrees. Aggregate Base Course (Class 7) or Selected Material (SM-1) meets this minimum requirement. Regardless of the material selected for the reinforcement zone, the Contractor shall produce test results that prove the design material parameters, utilized by the selected wall designer, are obtained. These values are typically higher than the minimum requirements set forth in

the Special Provision. All fill material shall be placed and compacted in accordance with the minimum requirements defined in the AHTD Standard Specifications for Highway Construction. Furthermore, a 1-foot wedge of porous crushed stone backfill shall be placed immediately behind the wall along with a 4-inch pipe underdrain and Type II filter fabric to ensure positive drainage and prevent additional hydrostatic pressures on the retaining wall system.

Along the proposed MSE wall alignment, the immediate subsurface soils consist of medium stiff lean clay with sand, stiff lean clay, loose clayey sand, and very stiff lean clay as indicated on nearby boring logs. Boring logs are provided in Appendix A.

Based on the external stability analysis performed on the critical wall profile / cross section, a minimum strap length ratio of 1.0 is required at the End Bent 1 wall (Wall No. 5) and at the End Bent 3 wall (Wall No. 6). This value was determined based on the wall height of 29 feet at End Bent 1 and 30 feet at End Bent 3.

The calculated factored bearing resistance of the foundation soils along the End Bent 1 wall (Wall No. B5) and End Bent 3 wall (Wall No. B6) is approximately 6,600 psf, based on the resistance factor of 0.65. The factored bearing pressure reported is based on the reported wall heights and strap length ratios discussed in previous text. However, this estimated factored bearing resistance is provided for informational purposes only. The required factored bearing resistance and strap lengths will be determined by the wall designer based on the final wall design.

6.8 Slope Stability for Bridges and MSE Walls

Slope stability was performed along the bridge profiles and nearby cross sections. Cross section analyses are discussed in the Geotechnical Roadway Report for this project. Stability analyses discussed herein were performed for the proposed MSE walls at each of the abutments for the three bridge sites. Borings shown on the bridge plans were used in the development of a generalized subsurface profile shown on sheets in Appendix C. Stability analyses were performed for short term, long term, intermediate term (Bridge B Vandenberg Boulevard, since the bridge is within a proposed cut area), 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, 0.236g.

For pseudo-static conditions a minimum factor of safety of 1.0 is typically utilized as 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 6-4 and are depicted on the bridge profile sheet in Appendix C.

Table 6-4. Factors of Safety for Slope Stability

Bridge	Location	Selection Type	Short/ Intermediate Term	Long Term	Pseudo-Static Seismic
James Street	End Bent 1	MSE Wall	2.1	2.1	1.3
James Street	End Bent 3	MSE Wall	2.2	2.1	1.4

Table 6-4. Factors of Safety for Slope Stability

Bridge	Location	Selection Type	Short/ Intermediate Term	Long Term	Pseudo-Static Seismic
Gregory Street	End Bent 1	MSE Wall	2.9	2.2	1.9
Gregory Street	End Bent 3	MSE Wall	2.6	2.6	1.5
Vandenberg Boulevard (Bridge A)	End Bent 1	MSE Wall	>3.0	2.5	2.5
Vandenberg Boulevard (Bridge A)	End Bent 3	MSE Wall	2.7	2.1	1.8
Vandenberg Boulevard (Bridge B)*	End Bent 1	MSE Wall	1.8	2.1	1.1
Vandenberg Boulevard (Bridge B)*	End Bent 3	MSE Wall	2.3	2.0	1.7
*Vandenberg Boulevard Bridge B is a cut of existing embankment.					

We recommend 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.

6.9 Settlement for Bridges and MSE Walls

Settlement recommendations included herein are limited to portions of fill impacting end bents. Refer to the roadway report for general settlement recommendations outside of this area.

Subsurface conditions indicate potential settlement within the analyzed areas of the proposed abutments could range from 1.5 inches to 11.0 inches. Settlement at the interior bents is expected to be marginal due to lack of fill and foundations supported on rock.

As discussed previously, the effect on pile capacity due to downdrag is significant for several end bents due to the presence of clay like soils deep within the borings and the presence of MSE walls. Downdrag impacts are controlled by a neutral axis threshold, which is determined by the point in which 0.4 inches of settlement is remaining around the embedded piles. Recommendations included herein are for all bridge MSE walls located at the end bents, excluding End Bent 1 and End Bent 3 of Bridge B at Vandenberg Boulevard due to cut conditions of soil.

Two (2) constructability options are recommended to optimize pile design and MSE wall construction. Table 6-5 shows available factored capacity remaining and associated waiting periods for each option. Table 6-6 shows the total settlement expected at each end bent of each bridge. The details of the two (2) constructability options are as follows:

Option 1- Construction Sequence: MSE walls constructed, piles are driven after settlement has been completed.

The major advantage to driving piles after MSE walls are constructed is to eliminate the effects of immediate (elastic) settlement on downdrag loading. It is assumed that immediate settlement will take place within a few days after MSE wall placement, ridding the possibility of downdrag due to elastic soils since this settlement will have already occurred by the time piles are driven. However, at most of the MSE walls, the deeper subsurface soils will behave in a clay-like manor, creating consolidation of soils. Therefore, a waiting period is also required in order to eliminate downdrag loading. The waiting periods for Option 1 are shown on Table 6-5, next to the resulting available factored capacity.

Two phase construction methods are recommended for MSE walls No. 3 and No.4 located at End Bent 1 and End Bent 3 of the Gregory Street over Highway 67 Bridge, as well as MSE wall No. 5 located at End Bent 1 of the Highway 67 over Vandenberg Boulevard Bridge. The two phase construction method allows the anticipated settlement to occur prior to construction of the leveling pad and permanent wall facing.

Option 2-Construction Sequence: Wick drains installed, MSE Wall constructed, piles driven after settlement has been completed.

MSE walls being placed prior to pile driving will induce immediate settlement and begin consolidation. However, in some cases the waiting period is lengthy before consolidation of soils has reached the desired level. Thus, in order to decrease the time of consolidation, wick drains at four (4) foot spacing were analyzed. Other intervals of wick drain spacing can be analyzed upon Department request. Wick drain end elevations shown in Table 6-5 can range based on variable claystone elevations present within the wick drain locations. Elevations below are based on the lowest claystone elevation encountered in nearby borings. Wick drains can be terminated above elevation shown below in the event refusal occurs during installation.

Two phase construction methods are recommended for MSE walls No. 3 and No.4 located at End Bent 1 and End Bent 3 of the Gregory Street over Highway 67 Bridge, as well as MSE wall No. 5 located at End Bent 1A of the Highway 67 over Vandenberg Boulevard Bridge. The two phase construction method allows the anticipated settlement to occur prior to construction of the leveling pad and permanent wall facing.

The alternative of accounting for downdrag loading (from consolidation only) within pile capacities is not feasible due to consolidation of soils due to the deep presence of clay like soils. The advantages and disadvantages of each option are shown in Table 6-5.

Table 6-5. Downdrag Mitigation Alternatives

Bridge	Location	Option 1 and Option 2 Avail. Factored Capacity (tons)*	Option 1 Waiting Period (days)*	Option 2 Waiting Period (4 ft o.c. spacing)*	Estimated Wick Drain End Elevation (ft)**
James Street	End Bent 1 (Left)	194	40	40	Not Required

Bridge	Location	Option 1 and Option 2 Avail. Factored Capacity (tons)*	Option 1 Waiting Period (days)*	Option 2 Waiting Period (4 ft o.c. spacing)*	Estimated Wick Drain End Elevation (ft)**
James Street	End Bent 3	194	250	50	+234 (left), +266 (right), or refusal
Gregory Street	End Bent 1	194	250	60	+260 or refusal
Gregory Street	End Bent 3	194	250	45	+250 or refusal
Vandenberg Boulevard (Bridge A)	End Bent 1	194	120	40	+246 or refusal
Vandenberg Boulevard (Bridge A)	End Bent 3	194	150	40	+255 or refusal

*Waiting periods begin after MSE Wall is constructed and shall be exhausted prior to pile driving operations and placement of pavement.
**It should be noted that final wick drain tip elevations may be highly variable due to subsurface conditions encountered in the investigation borings and refusal conditions may be encountered prior to the estimated elevations provided herein.

Wick drains shall be placed from five (5) feet beyond the face of MSE walls extending until the end of the wall straps for all MSE walls where wick drains are required. Wick drains shall be three (3) inches in diameter placed at four (4) foot spacing in a triangular grid formation. A drainage layer shall be placed at the top two (2) feet of the wick drains consisting of Class 7 aggregate material in accordance with AHTD Standard Specifications. Refer to the special provision for Prefabricated Vertical Wick Drains attached in the appendix for further detail on wick drains.

Settlement monitoring at each end bent and/or MSE wall location will be required to accurately acknowledge waiting periods to commence pile driving and pavement operations. A special provision regarding the installation and use of pipe riser settlement monitoring devices is included in Appendix D for further instruction. Two (2) to five (5) settlement plates have been designated for each end bent/MSE wall where settlement monitoring has been recommended. Table 6-6 below shows approximate settlement monitoring location where a plate riser shall be installed and monitored. At all locations the settlement monitoring plate risers shall be installed within the MSE wall footprint as station and offsets below are approximate measurements of wall location.

Table 6-6. Settlement Monitoring Locations

Bridge	Bent Number	Station	Offset
James Street	MSE Wall at EB 3	208+80	50’ LT
James Street	MSE Wall at EB 3	209+55	20’ RT
Gregory Street	MSE Wall at EB 1	807+35	85’ LT
Gregory Street	MSE Wall at EB 1	807+05	70’ RT

Table 6-6. Settlement Monitoring Locations

Bridge	Bent Number	Station	Offset
Gregory Street	MSE Wall at EB 1	807+20	15' RT
Gregory Street	MSE Wall at EB 1	804+25	65' RT
Gregory Street	MSE Wall at EB 1	805+20	60' LT
Gregory Street	MSE Wall at EB 3	810+05	25' RT
Gregory Street	MSE Wall at EB 3	810+85	100' LT
Gregory Street	MSE Wall at EB 3	812+70	25' RT
Vandenberg Boulevard Bridge A	MSE Wall at EB 1	684+64	59' LT
Vandenberg Boulevard Bridge A	MSE Wall at EB1	683+75	59' LT
Vandenberg Boulevard Bridge A	MSE Wall at EB3	686+60	60' LT
Vandenberg Boulevard Bridge A	MSE Wall at EB3	687+35	60' LT

Table 6-7. Settlement Summary

Bridge	Bent Number	Estimated Elastic Settlement (inches)	Estimated Consolidation (inches)
James Street	MSE Wall at EB 1	1.5 or less	1.5 or less
James Street	MSE Wall at EB 3	2.1	2.9
Gregory Street	MSE Wall at EB 1	<1.0	11
Gregory Street	MSE Wall at EB 3	<1.0	10
Vandenberg Boulevard Bridge A	MSE Wall at EB 1	<1.0	10.9
Vandenberg Boulevard Bridge A	MSE Wall at EB 3	<1.0	5.5

Add the following notes to plans according to whether wick drains are utilized or not:

OPTION 1 NOTES:

JAMES STREET

A WAITING PERIOD OF 40 DAYS IS REQUIRED AFTER THE CONSTRUCTION OF MECHANICALY STABILIZED EARTH WALL PRIOR TO COMMENCING PILE DRIVING OPERATIONS OR PLACEMENT OF PAVEMENT FOR END BENT 1 ON JAMES STREET OVER HIGHWAY 67.

A WAITING PERIOD OF 250 DAYS IS REQUIRED AFTER THE CONSTRUCTION OF MECHANICALY STABILIZED EARTH WALL PRIOR TO COMMENCING PILE DRIVING OPERATIONS OR PLACEMENT OF PAVEMENT FOR END BENT 3 ON JAMES STREET OVER HIGHWAY 67.

SETTLEMENT MONITORING DEVICES SHALL BE INSTALLED AT END BENT 3 OF JAMES STREET NEAR THE FOLLOWING LOCATIONS, WITHIN THE MSE WALL FOOTPRINT.

LOCATION	STATION	OFFSET
JAMES STREET EB3 MSE WALL	208+80	50’ LT
JAMES STREET EB3 MSE WALL	209+55	20’ RT

GREGORY STREET

A WAITING PERIOD OF 250 DAYS IS REQUIRED AFTER THE CONSTRUCTION OF PHASE 1 OF THE MECHANICALLY STABILIZED EARTH WALL AND PRIOR TO COMMENCING PILE DRIVING OPERATIONS. AFTER THE DETERMINED SETTLEMENT AND WAITING PERIOD HAS OCCURRED, PHASE 2 OF THE MECHANICALLY STABILIZED EARTH WALL MAY BEGIN. PLACEMENTS OF PAVEMENT FOR END BENT 1 AND END BENT 3 ON GREGORY STREET OVER HIGHWAY 67 MAY BEGIN AFTER THE WAITING PERIOD.

SETTLEMENT MONITORING DEVICES SHALL BE INSTALLED AT END BENT 1 AND END BENT 3 OF GREGORY STREET NEAR THE FOLLOWING LOCATIONS, WITHIN THE MSE WALL FOOTPRINT.

LOCATION	STATION	OFFSET
GREGORY ST. MSE WALL at EB 1	807+35	85’ LT
GREGORY ST. MSE WALL at EB 1	807+05	70’ RT
GREGORY ST. MSE WALL at EB 1	807+20	15’ RT
GREGORY ST. MSE WALL at EB 1	804+25	65’ RT
GREGORY ST. MSE WALL at EB 1	805+20	60’ LT
GREGORY ST. MSE WALL at EB 3	810+05	25’ RT
GREGORY ST. MSE WALL at EB 3	810+85	100’ LT
GREGORY ST. MSE WALL at EB 3	812+70	25’ RT

VANDENBERG BOULEVARD (BRIDGE A)

A WAITING PERIOD OF 120 DAYS IS REQUIRED AFTER THE CONSTRUCTION OF PHASE 1 OF THE MECHANICALY STABILIZED EARTH WALL AND PRIOR TO COMMENCING PILE DRIVING OPERATIONS. AFTER THE DETERMINED SETTLEMENT AND WAITING PERIOD HAS OCCURRED, PHASE 2 OF THE MECHANICALLY STABILIZED EARTH WALL MAY BEGIN. PLACEMENT OF PAVEMENT FOR END BENT 1 OF BRIDGE A ON HIGHWAY 67 OVER VANDENBERG BOULEVARD MAY BEGIN AFTER THE WAITING PERIOD.

A WAITING PERIOD OF 150 DAYS IS REQUIRED AFTER THE CONSTRUCTION OF MECHANICALY STABILIZED EARTH WALL PRIOR TO COMMENCING PILE DRIVING OPERATIONS OR PLACEMENT OF PAVEMENT FOR END BENT 3 OF BRIDGE A ON HIGHWAY 67 OVER VANDENBERG BOULEVARD.

THE CONTRACTOR SHALL COMPLETE THE MSE WALL CONSTRUCTION AND MONITOR THE SETTLEMENT OF THE FOUNDATION SOILS FOR THE MINIMUM WAITING PERIODS ESTABLISHED FOR EACH END BENT OF EACH BRIDGE PRIOR TO DRIVING PILES. THE WAITING PERIODS ARE AS FOLLOWS:

BRIDGE	LOCATION	WAITING PERIOD
JAMES STREET	END BENT 3	250 DAYS
GREGORY STREET	END BENT 1	250 DAYS
GREGORY STREET	END BENT 3	250 DAYS
VANDENBERG BOULEVARD (BRIDGE A)	END BENT 1	120 DAYS
VANDENBERG BOULEVARD (BRIDGE A)	END BENT 3	150 DAYS

THE ENGINEER SHALL DETERMINE WHEN PILE DRIVING MAY BEGIN. MONITORING FOR SETTLEMENT SHALL BE ACCOMPLISHED IN A MANNER ACCEPTABLE TO THE ENGINEER AND NO DIRECT PAYMENT WILL BE MADE FOR THIS WORK.

SETTLEMENT MONITORING DEVICES SHALL BE INSTALLED AT END BENT 1 AND END BENT 3 OF BRIDGE A AT VANDENBERG BOULEVARD NEAR THE FOLLOWING LOCATIONS, WITHIN THE MSE WALL FOOTPRINT.

LOCATION	STATION	OFFSET
Vandenberg Boulevard Bridge A	684+64	59’ LT
Vandenberg Boulevard Bridge A	683+75	59’ LT
Vandenberg Boulevard Bridge A	686+60	60’ LT
Vandenberg Boulevard Bridge A	687+35	60’ LT

OPTION 2 NOTES:

JAMES STREET

A WAITING PERIOD OF 40 DAYS IS REQUIRED AFTER THE CONSTRUCTION OF MECHANICALY STABILIZED EARTH WALL PRIOR TO COMMENCING PILE DRIVING OPERATIONS OR PLACEMENT OF PAVEMENT FOR END BENT 1 ON JAMES STREET OVER HIGHWAY 67.

A WAITING PERIOD OF 50 DAYS IS REQUIRED AFTER THE CONSTRUCTION OF MECHANICALY STABILIZED EARTH WALL AND PLACEMENT OF WICK DRAINS AT FOUR (4) FOOT SPACING, PRIOR TO COMMENCING PILE DRIVING OPERATIONS OR PLACEMENT OF PAVEMENT FOR END BENT 3 ON JAMES STREET OVER HIGHWAY 67. WICK DRAINS SHALL BE INSTALLED PRIOR TO ANY FILL PLACEMENT.

WICK DRAINS SHALL BE INSTALLED TO A MINIMUM ELEVATION OF 234.0 FEET (LEFT FACING UP STATION) AND 266 FEET (RIGHT FACING UP STATION) ON END BENT 3 FOR JAMES STREET OVER HIGHWAY 67.

SETTLEMENT MONITORING DEVICES SHALL BE INSTALLED AT END BENT 3 OF JAMES STREET NEAR THE FOLLOWING LOCATIONS, WITHIN THE MSE WALL FOOTPRINT.

LOCATION	STATION	OFFSET
JAMES STREET EB3 MSE WALL	208+80	50’ LT
JAMES STREET EB3 MSE WALL	208+55	20’ RT

GREGORY STREET

A WAITING PERIOD OF 60 DAYS IS REQUIRED AT END BENT 1 ON GREGORY STREET OVER HIGHWAY 67. WAITING PERIOD BEGINS AFTER THE PLACEMENT OF WICK DRAINS AT FOUR (4) FOOT SPACING AND CONSTRUCTION OF PHASE 1 OF THE MECHANICALLY STABILIZED EARTH WALL. WICK DRAINS SHALL BE INSTALLED PRIOR TO ANY FILL PLACEMENT. WAITING PERIOD SHALL BE EXHAUSTED PRIOR TO PILE DRIVING OPERATIONS COMMENCING. AFTER THE DETERMINED SETTLEMENT AND WAITING PERIOD HAS OCCURRED, PHASE 2 OF THE MECHANICALLY STABILIZED EARTH WALL MAY BEGIN.

A WAITING PERIOD OF 45 DAYS IS REQUIRED AT END BENT 3 ON GREGORY STREET OVER HIGHWAY 67. WAITING PERIOD BEGINS AFTER THE PLACEMENT OF WICK DRAINS AT FOUR (4) FOOT SPACING AND CONSTRUCTION OF PHASE 1 OF THE MECHANICALLY STABILIZED EARTH WALL. WICK DRAINS SHALL BE INSTALLED PRIOR TO ANY FILL PLACEMENT. WAITING PERIOD SHALL BE EXHAUSTED PRIOR TO PILE DRIVING OPERATIONS COMMENCING. AFTER THE DETERMINED SETTLEMENT AND WAITING PERIOD HAS OCCURRED, PHASE 2 OF THE MECHANICALLY STABILIZED EARTH WALL MAY BEGIN.

WICK DRAINS SHALL BE INSTALLED TO A MINIMUM ELEVATION OF 260 FEET ON END BENT 1 FOR GREGORY STREET OVER HIGHWAY 67.

WICK DRAINS SHALL BE INSTALLED TO A MINIMUM ELEVATION OF 250 FEET ON END BENT 3 FOR GREGORY STREET OVER HIGHWAY 67.

SETTLEMENT MONITORING DEVICES SHALL BE INSTALLED AT END BENT 1 AND END BENT 3 OF GREGORY STREET NEAR THE FOLLOWING LOCATIONS, WITHIN THE MSE WALL FOOTPRINT.

LOCATION	STATION	OFFSET
GREGORY ST. MSE WALL at EB 1	807+35	85’ LT
GREGORY ST. MSE WALL at EB 1	807+05	70’ RT
GREGORY ST. MSE WALL at EB 1	807+20	15’ RT
GREGORY ST. MSE WALL at EB 1	804+25	65’ RT
GREGORY ST. MSE WALL at EB 1	805+20	60’ LT
GREGORY ST. MSE WALL at EB 3	810+05	25’ RT
GREGORY ST. MSE WALL at EB 3	810+85	100’ LT
GREGORY ST. MSE WALL at EB 3	812+70	25’ RT

VANDENBERG BOULEVARD (BRIDGE A)

A WAITING PERIOD OF 40 DAYS IS REQUIRED AT END BENT 1 OF BRIDGE A ON HIGHWAY 67 OVER VANDENBERG BOULEVARD. WAITING PERIOD BEGINS AFTER THE PLACEMENT OF WICK DRAINS AT FOUR (4) FOOT SPACING AND CONSTRUCTION OF PHASE 1 OF THE MECHANICALLY STABILIZED EARTH WALL. WICK DRAINS SHALL BE INSTALLED PRIOR TO ANY FILL PLACEMENT. WAITING PERIOD SHALL BE EXHAUSTED PRIOR TO PILE DRIVING OPERATIONS COMMENCING. AFTER THE DETERMINED SETTLEMENT AND WAITING PERIOD HAS OCCURRED, PHASE 2 OF THE MECHANICALLY STABILIZED EARTH WALL MAY BEGIN.

A WAITING PERIOD OF 40 DAYS IS REQUIRED AFTER THE CONSTRUCTION OF MECHANICALY STABILIZED EARTH WALL AND PLACEMENT OF WICK DRAINS AT FOUR (4) FOOT SPACING, PRIOR TO COMMENCING PILE DRIVING OPERATIONS OR PLACEMENT OF PAVEMENT FOR END BENT 3 OF BRIDGE A ON HIGHWAY 67 OVER VANDENBERG BOULEVARD. WICK DRAINS SHALL BE INSTALLED PRIOR TO ANY FILL PLACEMENT.

WICK DRAINS SHALL BE INSTALLED TO A MINIMUM ELEVATION OF 246 FEET ON END BENT 1 FOR HIGHWAY 67 OVER VAN DENBERG BOULEVARD.

WICK DRAINS SHALL BE INSTALLED TO A MINIMUM ELEVATION OF 255 FEET ON END BENT 3 FOR HIGHWAY 67 OVER VAN DENBERG BOULEVARD.

THE CONTRACTOR SHALL COMPLETE THE MSE WALL CONSTRUCTION AND MONITOR THE SETTLEMENT OF THE FOUNDATION SOILS FOR THE MINIMUM WAITING PERIODS ESTABLISHED FOR EACH END BENT OF EACH BRIDGE PRIOR TO DRIVING PILES. THE WAITING PERIODS ARE AS FOLLOWS:

BRIDGE	LOCATION	WAITING PERIOD
JAMES STREET	END BENT 3	50 DAYS
GREGORY STREET	END BENT 1	60 DAYS
GREGORY STREET	END BENT 3	45 DAYS
VANDENBERG BOULEVARD (BRIDGE A)	END BENT 1	40 DAYS
VANDENBERG BOULEVARD	END BENT 3	40 DAYS

(BRIDGE A)		

THE ENGINEER SHALL DETERMINE WHEN PILE DRIVING MAY BEGIN. MONITORING FOR SETTLEMENT SHALL BE ACCOMPLISHED IN A MANNER ACCEPTABLE TO THE ENGINEER AND NO DIRECT PAYMENT WILL BE MADE FOR THIS WORK.

SETTLEMENT MONITORING DEVICES SHALL BE INSTALLED AT END BENT 1 AND END BENT 3 OF BRIDGE A AT VANDENBERG BOULEVARD NEAR THE FOLLOWING LOCATIONS, WITHIN THE MSE WALL FOOTPRINT.

LOCATION	STATION	OFFSET
Vandenberg Boulevard Bridge A	684+64	59’ LT
Vandenberg Boulevard Bridge A	683+75	59’ LT
Vandenberg Boulevard Bridge A	686+60	60’ LT
Vandenberg Boulevard Bridge A	687+35	60’ LT

7 Limitations

This report has been prepared for Arkansas State Highway and Transportation Department with specific application to the proposed project in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made as the professional advice included herein. The conclusions and recommendations do not reflect variations in subsurface conditions which could exist beyond the limits of this report. Should such variations become apparent during the proposed construction, it will be necessary to re-evaluate the conclusions and recommendations based upon on-site observations of the conditions.

In the event that changes are made in the proposed design or location of the structures or alignments, the recommendations presented in the report shall not be considered valid unless the changes are reviewed by the geotechnical engineer of record and conclusions of this report modified and/or verified in writing. Further review is generally warranted to insure that the recommendations and comments provided herein have been understood and properly implemented.

Appendix A. SITE VICINITY MAP AND BORING LOGS

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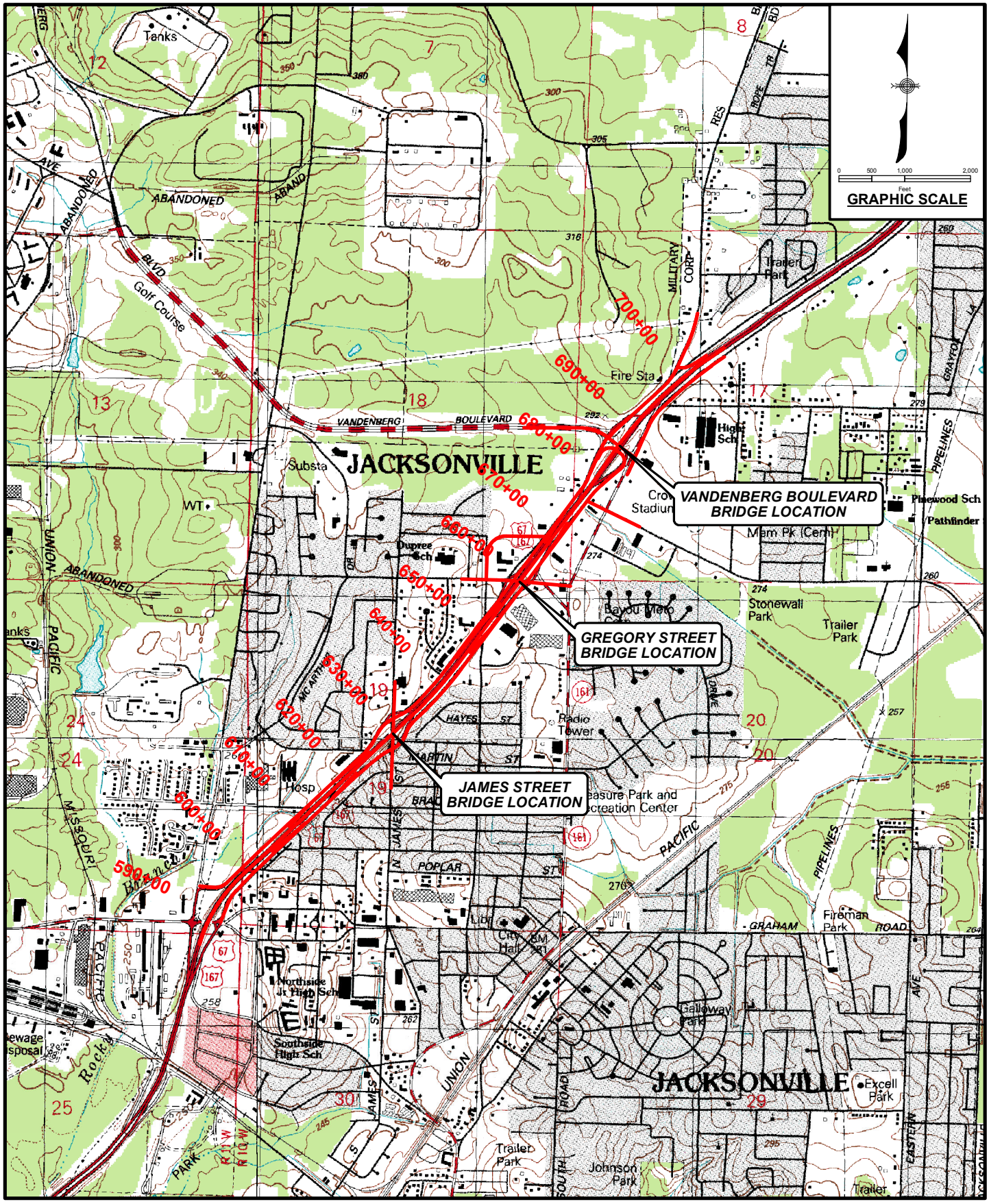
Subsurface Investigation



McALMONT, JACKSONVILLE & CABOT QUADRANGLES
7.5 MINUTE SERIES (TOPOGRAPHIC)
ARKANSAS - PULASKI COUNTY

Highway 67 Widening
Job CA0604

HDR | ICA

BORING NO.: B-100

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 602+00 105' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87019 ° LONGITUDE: 92.12544 °

DATE: 5/10/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 268.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Loose to very dense, red, silty sand.						9,11,14		
10.0					24	28.6	33		5,5,5		
15.0									10,50/0.5		
20.0			16.8' Very dense, red, silty sand with gravel. 20.0'						30,27,25		
25.0			No Refusal & Boring Terminated @ 20.0' (Elev. 248.0).								
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-101

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 611+00 100' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87188 ° LONGITUDE: 92.12324 °

DATE: 5/10/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 25.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 263.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Soft to stiff, brown, sandy lean clay.								
5.0									5,4,5		
10.0									1,1,1		
			11.8'								
			Very stiff, brown, lean clay with sand.								
15.0									7,14,15		
20.0					17	21.9	37		4,6,11		
			21.8'								
			Medium dense, brown, silty sand.								
25.0			25.0'						7,10,13		
			No Refusal & Boring Terminated @ 25.0' (Elev. 238.4).								
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-102

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 647+00 110' Rt.

LOCATION: Hwy 67

LATITUDE: 34.87853 ° LONGITUDE: 92.11432 °

DATE: 5/13/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 306.8	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Very stiff, red, sandy lean clay.		18	25.3	37		4,10,15		
			6.8'								
10.0			Loose to medium dense, red, silty sand.						4,5,4		
15.0									3,6,6		
20.0			20.0'		24	33.8	34		3,7,10		
			No Refusal & Boring Terminated @ 20.0' (Elev. 286.8).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-103

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 675+00 95' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88472 ° LONGITUDE: 92.10877 °

DATE: 5/13/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 30.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 273.2								
			Soft, red, sandy lean clay.								
5.0									2,2,2		
			6.8'								
			Soft, red, lean clay with sand.								
10.0									1,1,2		
			11.8'								
			Medium dense, brown, clayey sand.								
15.0									4,6,6		
			16.8'								
			Stiff, brown, sandy lean clay.								
20.0					16	17.0	28		4,5,5		
			21.8'								
			Medium dense, brown, clayey sand.								
25.0									3,4,7		
30.0									4,6,8		
			30.0'								
			No Refusal & Boring Terminated @ 30.0' (Elev. 243.2).								
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-104

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 683+00 60' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88678 ° LONGITUDE: 92.10768 °

DATE: 5/10/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 38.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			Soft, brown, sandy lean clay.						2,1,2		
5.0			5.5'								
			Very loose to medium dense, gray, clayey sand.		22	25.7	32	98.3			
			8.3'								
			Stiff, brown, sandy, fat clay.						4,6,8		
10.0			11.8'								
			Very stiff, brown, lean clay with sand.						6,5,11		
15.0			16.8'								
			Very stiff, brown, sandy, fat clay.						5,9,12		
20.0			21.8'								
			Medium dense, brown, silty sand.						6,11,10		
25.0			26.8'								
			Very stiff, brown, sandy fat clay.		32	31.8	82		6,10,13		
30.0											
									7,11,15		
35.0			38.0'								
			Auger Refusal & Boring Terminated @ 38.0' (Elev. 235.2).								
40.0											
45.0											
50.0											

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BORING NO.: B-105

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 702+00 110' Lt.

LOCATION: Hwy 67

LATITUDE: 34.89072 ° LONGITUDE: 92.10343 °

DATE: 5/11/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 289.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Medium stiff to stiff, brown, lean clay with sand.								
5.0									2,2,3		
10.0									2,4,6		
			11.8'								
			Dense, brown, silty sand.								
15.0									10,17,19		
			16.8'								
			Very stiff, brown, sandy lean clay.								
20.0			20.0'						6,12,16		
			No Refusal & Boring Terminated @ 20.0' (Elev. 269.0).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-106

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 117+00 100' Lt.

LOCATION: Vandenberg Blvd.

LATITUDE: 34.88727 ° LONGITUDE: 92.10623 °

DATE: 5/11/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 25.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 278.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Very stiff, red, lean clay with sand.								
5.0									6,8,11		
			6.8'								
			Medium dense, red, clayey sand.								
10.0									4,6,8		
15.0									9,11,15		
			16.8'								
			Very stiff, red, lean clay with sand.								
20.0									8,12,17		
			21.8'								
			Hard, red, sandy, fay clay.								
25.0			25.0'						10,15,25		
			No Refusal & Boring Terminated @ 25.0' (Elev. 253.3).								
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-107

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 210+50 25' Rt.

LOCATION: James Street

LATITUDE: 34.87590 ° LONGITUDE: 92.11823 °

DATE: 5/11/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 25.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 302.8								
			Medium stiff to stiff, red, lean clay with sand.								
									2,2,3		
5.0											
									2,3,7		
10.0											
			11.8'								
			Stiff, brown, sandy lean clay.								
									4,4,7		
15.0											
			16.8'								
			Medium dense, brown, clayey sand.								
									6,7,9		
20.0											
					23	31.6	39		4,7,10		
25.0			25.0'								
			No Refusal & Boring Terminated @ 25.0' (Elev. 277.8).								
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-108

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 603+00 60' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87029 ° LONGITUDE: 92.12509 °

DATE: 5/10/2016

TYPE OF DRILLING: HSA

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 267.7	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.		16	19.1	29	117.8			
5.0			5.0'								
			No Refusal & Boring Terminated @ 5.0' (Elev. 262.7). Bulk sample collected from 0'-5'.								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-109

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 618+00 50' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87310 ° LONGITUDE: 92.12143 °

DATE: 5/10/2016

TYPE OF DRILLING: HSA

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 273.4	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.		19	21.3	36	115.1			
5.0			5.0'								
			No Refusal & Boring Terminated @ 5.0' (Elev. 268.4). Bulk sample collected from 0'-5'.								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-110

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 633+00 40' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87591 ° LONGITUDE: 92.11777 °

DATE: 6/4/2016

TYPE OF DRILLING: HSA

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @ Dry (Immediate)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 295.7	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 0.6'								
			Brown, sandy, silty clay.		16	17.1	23	112.1			
5.0			5.0'								
			No Refusal & Boring Terminated @ 5.0' (Elev. 290.7).								
			Bulk & MC samples collected from 0.6'-5'.								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-111

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 648+00 60' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87903 ° LONGITUDE: 92.11457 °

DATE: 6/4/2016

TYPE OF DRILLING: HSA

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @ Dry (Immediate)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 317.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 0.4'								
			Brown, clayey sand.		26	27.1	43	110.7			
5.0			5.0'								
			No Refusal & Boring Terminated @ 5.0' (Elev. 312.3).								
			Bulk & MC samples collected from 0.4'-5'.								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-112

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 663+50 60' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88225 ° LONGITUDE: 92.11116 °

DATE: 5/12/2016

TYPE OF DRILLING: HSA

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 281.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Red, sandy lean clay.		17	21.2	33	113.2			
5.0			5.0'								
			No Refusal & Boring Terminated @ 5.0' (Elev. 276.0). Bulk sample collected from 0'-5'.								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-113

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 678+00 42' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88561 ° LONGITUDE: 92.10855 °

DATE: 5/12/2016

TYPE OF DRILLING: HSA

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 274.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Red, sandy lean clay.		18	20.4	27	113.7			
5.0			5.0'								
			No Refusal & Boring Terminated @ 5.0' (Elev. 269.0). Bulk sample collected from 0'-5'.								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-114

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 693+00 80' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88868 ° LONGITUDE: 92.10524 °

DATE: 5/12/2016

TYPE OF DRILLING: HSA

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 295.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Red, sandy, fat clay.		25	21.5	53	109.3			
5.0			5.0'								
			No Refusal & Boring Terminated @ 5.0' (Elev. 290.4). Bulk sample collected from 0'-5'.								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-115

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 703+00 55' Rt.

LOCATION: Hwy 67

LATITUDE: 34.89053 ° LONGITUDE: 92.10283 °

DATE: 5/12/2016

TYPE OF DRILLING: HSA

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 292.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Red, clayey sand.		20	13.8	43	112.9			
5.0			5.0'								
			No Refusal & Boring Terminated @ 5.0' (Elev. 287.2). Bulk sample collected from 0'-5'.								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-116

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 206+73 51' Lt.

LOCATION: James Street

LATITUDE: 34.87488 ° LONGITUDE: 92.11853 °

DATE: 6/7/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 56.5 ft.

GROUNDWATER @ 10.0 ft. (24hr)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 296.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Loose, red, clayey sand.								
5.0						28.9			2,3,5		
			8.1'								
			Loose to medium dense, red, silty sand.								
10.0					23	27.7	27				
			13.3'								
			Loose to medium dense, brown & gray, clayey sand.								
15.0						30.5			2,5,7		
20.0						30.3			1,3,5		
25.0					25	27.0	41		2,6,7		
30.0						29.9			6,10,15		
			31.6'								
			Auger Refusal @ 31.6', Begin Coring in Claystone. Dark gray-black, gray-lt. brown, brown-orange stain, sli. to mod. weathered w/seam sev. weathered, low hardness, thin to thick bedded, calcareous, fossiliferous, v. f. to f. sandy ripple laminae and v. thin beds, clay grains to pebbles, trcs. vugular texture.							100	18
35.0			very f. to f. sandy, calcareous 31.6'-32.1'; 70° jt. w/iron oxide stain 35.5'; 35° jt. w/soft walls 40.2'; 85° jt. w/smooth, soft walls 41.6'-43.0'; v. f. to f. sandy, calcareous 46.7'-47.1'; sev. weathered 46.5'-47.3'; 30° jt. w/<1mm clay infill & soft walls 48.0'; v. f. to f. sandy, calcareous 51.4'-51.8'; 20° jt. w/soft walls 56.2'							96	52
40.0											
45.0										98	36
										98	52
50.0											

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BORING NO.: B-116

PAGE: 2 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 206+73 51' Lt.

LOCATION: James Street

LATITUDE: 34.87488 ° LONGITUDE: 92.11853 °

DATE: 6/7/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 56.5 ft.

GROUNDWATER @ 10.0 ft. (24hr)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 296.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
										98	52
55.0										100	78
			56.5'								
			Boring Terminated @ 56.5' (Elev. 239.9). RS-18 collected from 38.2'-38.6' RS-19 collected from 51.1'-51.5' NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
60.0											
65.0											
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-117

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 207+38 19' Rt.

LOCATION: James Street

LATITUDE: 34.87505 ° LONGITUDE: 92.11829 °

DATE: 6/7/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 81.0 ft.

GROUNDWATER @ 21.0 ft. (24hr)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 304.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Loose, brown, clayey sand.								
5.0						23.6			2,4,6		
			Interpreted bottom of roadway embankment at 5.4'.								
			8.2'								
			Loose, red & gray, clayey sand.								
10.0					19	29.0	30	92.0			
			13.3'								
			Loose, red & gray, clayey sand.								
15.0					21	32.1	35		3,4,5		
			18.2'								
			Medium dense to dense, brown & gray, silty sand.								
20.0						35.0			3,5,8		
25.0					20	25.6	23		4,11,10		
30.0						26.2			11,28,18		
			33.2'								
			Medium dense, black, brown & gray, clayey sand.								
35.0					19	31.5	40		4,7,9		
40.0						27.1			9,16,13		
45.0						29.4			2,5,7		
			47.9'								
			Dense, black, clayey sand.								
50.0											

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BORING NO.: B-117

PAGE: 2 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 207+38 19' Rt.

LOCATION: James Street

LATITUDE: 34.87505 ° LONGITUDE: 92.11829 °

DATE: 6/7/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 81.0 ft.

GROUNDWATER @ 21.0 ft. (24hr)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 304.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
						30.6			5,13,20		
55.0					24	31.4	51		6,18,21		
			59.4'								
60.0			Auger Refusal @ 59.4', Begin Coring in Claystone. Dark gray-black, gray-lt. brown, sli. to mod. weathered, low hardness, thin to thick bedded, calcareous, fossiliferous, v. f. to f. sandy ripple laminae and v. thin beds, clay grains to pebbles, trcs. vugular texture. 10 0°-10° bedding discontinuities 59.4'-74.3'; 35° jt. w/soft walls 65.5'; 35° jt. w/soft walls 65.5'; fossiliferous sand 74.1'-74.3'							100	94
65.0										100	92
70.0										100	74
			74.3'							100	98
75.0			Limestone: Light gray, dk. gray, mod. weathered to sev. weathered, v. thin to thin bedded, mod. hard w/soft seams, vuggy in parts, fossiliferous w/beds soft, calcareous, fossiliferous Claystone. 15 0°-10° bedding discontinuities 74.3'-81.0'; fossiliferous, calcareous claystone 76.7'-77.5'							100	54
80.0			81.0'								
			Boring Terminated @ 81.0' (Elev. 223.0). Boring relocated due to steep embankment. RS-16 collected from 60.5'-60.9' RS-17 collected from 65.0'-65.4' NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-118

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 207+89 45' Lt.

LOCATION: James Street

LATITUDE: 34.87518 ° LONGITUDE: 92.11850 °

DATE: 6/6/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 69.8 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 285.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Asphalt 0.7'								
			Loose to medium dense, tan, clayey sand.								
5.0						35.2			4,4,10		
10.0					21	31.2	37		3,5,5		
			13.1'								
			Stiff to very hard, tan & gray, sandy, fat clay.								
15.0						29.6			4,6,8		
20.0						27.3			5,11,13		
25.0					30	34.4	68		6,7,11		
30.0						32.5			7,8,12		
35.0						35.7			3,7,10		
40.0						28.2			10,13,16		
45.0						30.4			12,14,18		
50.0											

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BORING NO.: B-118

PAGE: 2 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 207+89 45' Lt.

LOCATION: James Street

LATITUDE: 34.87518 ° LONGITUDE: 92.11850 °

DATE: 6/6/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 69.8 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 285.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			51.0'			28.8			14,40,50/0.2		
			Auger Refusal @ 51.0', Begin Coring in Claystone. Dark gray-black-dk. brown, scat. lt. gray, mod. weathered w/sev. weathered seam, low hardness, thin bedded, calcareous, fossiliferous, v. f. to f. sandy rippled laminae. 54.9' 5 0° bedding discontinuities 51.0'-54.9'; v. f. sandy, calcareous 52.9'-53.3'							100	76
55.0			Limestone: Light gray, gray-tan, dk. gray, mod. to sev. weathered, v. thin to thin bedded, mod. hard w/soft seams, vuggy, fossiliferous w/thin beds soft, calcareous, fossiliferous Claystone. 57.6' 6 0° bedding discontinuities 54.9'-57.6'							92	42
60.0			Claystone: Dark gray-black, lt. gray, trcs. tan, mod. to completely weathered, v. soft to mod. hard, thin bedded, calcareous, fossiliferous w/thin bedded, fossiliferous Limestone beds. 64.8' limestone beds 58.5'-59.2', 60.1'-60.7', 61.4'-62.8'; 18 0° bedding discontinuities 57.6'-64.8'; fossiliferous, clayey, calcareous conglomerate 62.8'-63.1'							94	26
65.0										100	16
70.0			Shale: Black-dk. gray, trcs. lt. gray, sev. grading to sli. weathered, v. thin bedded, soft grading to mod. hard, silty in parts, finely micaceous, fissle in parts, trcs. f. grain Sandstone laminae. 69.8' 22 20°-25° bedding discontinuities; 1 80° jt. w/soft clay infill; mechanical break 68.4'-69.1'								
75.0			Boring Terminated @ 69.8' (Elev. 215.7). RS-14 collected fron 52.0'-52.4' RS-15 collected from 61.7'-62.1' NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
80.0											
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-120

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 208+82 51' Lt.

LOCATION: James Street

LATITUDE: 34.87545 ° LONGITUDE: 92.11851 °

DATE: 6/19/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 74.0 ft.

GROUNDWATER @ 5.0 ft. (24hr)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 286.1	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Loose to medium dense, tan & gray silty sand.								
5.0					24	33.7	28		3,5,7		
10.0						31.2			2,3,4		
15.0						31.1			3,6,9		
			18.3'								
			Stiff to very stiff, gray, sandy, elastic silt.								
20.0					32	33.2	60	91.0			
			23.5'								
			Very stiff, black & gray, sandy, elastic silt.								
25.0					43	33.8	74		7,10,14		
30.0						34.8			7,11,13		
35.0						34.5			6,11,13		
			38.3'								
			Hard, gray, sandy, elastic silt.								
40.0					34	30.6	52		11,16,20		
45.0						30.0			8,16,25		
50.0											

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BORING NO.: B-120

PAGE: 2 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 208+82 51' Lt.

LOCATION: James Street

LATITUDE: 34.87545 ° LONGITUDE: 92.11851 °

DATE: 6/19/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 74.0 ft.

GROUNDWATER @ 5.0 ft. (24hr)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 286.1	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
						25.7			10,20,31		
			54.0'								
55.0			Auger Refusal @ 54.0', Begin Coring in Limestone. Light gray, dk. gray, mod. to sev. weathered, v. thin to thin bedded, mod. hard w/soft seams, vuggy, fossiliferous w/v. thin to thin beds, soft, calcareous, fossiliferous Claystone. 16 0°-20° bedding discontinuities 54.0'-61.5'; claystone bed 56.2'-57.2', 59.0'-59.2', 59.4'-59.5', 60.6'-61.0'							100	80
60.0			61.5'							98	62
65.0			Claystone: Dark gray-black, tan-brown, mod. weathered, low hardness, v. thin bedded, calcareous in most parts, fossiliferous, sandy in parts w/v. thin bedded, fossiliferous, vuggy Limestone beds. 65.0' 9 0°-10° bedding discontinuities 61.5'-65.0'; limestone beds 62.5'-62.7', 63.1'-63.3', 63.9'-64.0'							100	36
70.0			Shale: Dark gray-black, gray, mod. grading to sli. weathered, laminated to thin bedded, mod. hard, interbedded f. grain sandstone w/rippled Shale laminae, f. micaceous. sandstone 65.0'-65.1', 68.6'-69.3'; 40 30° bedding discontinuities 65.0'-74.0'; 5 60°-70° jts. w/sli. rough, hard walls 65.0'-74.0'; apparent bedding dip = 30°; sandstone 74.0' 71.0'-72.9'; 30° bedding discontinuity w/4mm clay infill 73.3'							100	18
75.0			Boring Terminated @ 74.0' (Elev. 212.1).								
80.0			RS-23 collected from 55.5'-55.9' RS-24 collected from 66.2'-66.6'								
85.0			NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
90.0											
95.0											
100.0											

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BORING NO.: B-121

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 209+47 34' Rt.

LOCATION: James Street

LATITUDE: 34.87562 ° LONGITUDE: 92.11822 °

DATE: 6/19/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 48.0 ft.

GROUNDWATER @ 15.0 ft. (24hr)

DEPTH (ft.)	SYMBOL	SAMPLES	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
			Medium dense, red & gray, clayey sand.								
5.0					22	25.9	33		4,6,9		
			6.6'								
			Medium dense, tan, silty sand.								
10.0					24	28.2	30		6,6,8		
			11.6'								
			Loose, tan & gray, clayey sand.								
15.0						34.2			2,4,5		
			16.6'								
			Medium dense, tan & gray, silty sand.								
20.0						28.6			2,4,8		
			21.6'								
			Medium dense, gray & tan, clayey sand.								
25.0						31.9			4,7,10		
			26.2'								
			Auger Refusal @ 26.2', Begin Coring in Claystone.							94	22
30.0			Dark gray-black, brown-orange-red, lt. gray, mod. grading to sli. weathered w/sev. weathered seams, low hardness, thin bedded, calcareous, fossiliferous, v. f. to f. sandy ripple laminae in lower part, v. thin beds fossiliferous Limestone.							96	64
35.0			limestone beds 26.2-26.6'; sev. weathered 26.6'-27.6'; 85° jt. w/iron oxide stain 29.0'-30.4'; 30 0°-15° bedding discontinuities 27.6'-48.0'; 3 30°-40° jts. w/sli. rough, soft walls 27.6'-48.0'; 1 65° jt. w/sli rough walls 27.6'-48.0'; fossiliferous sand & clay bed 37.5'-36.8'; limestone bed 41.5'-42.0'							100	40
40.0										96	56
45.0										98	76
			48.0'								
50.0			Boring Terminated @ 48.0' (Elev. 244.3).								

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BORING NO.: B-121

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 209+47 34' Rt.

LOCATION: James Street

LATITUDE: 34.87562 ° LONGITUDE: 92.11822 °

DATE: 6/19/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 48.0 ft.

GROUNDWATER @ 15.0 ft. (24hr)

DEPTH (ft.)	SYMBOL	SAMPLES	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
			RS-25 collected from 30.5'-30.9' RS-26 collected from 45.2'-45.6' NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
55.0											
60.0											
65.0											
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-122

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 684+64 59' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88715 ° LONGITUDE: 92.10736 °

DATE: 6/3/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 48.0 ft.

GROUNDWATER @ 19.4 ft. (Immediate)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 274.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 0.6'								
			Stiff, tan, sandy lean clay.								
5.0						16.7			2,4,5		
10.0					27	20.4	49		2,4,5		
			12.7'								
			Stiff, tan, fat clay with sand.								
15.0						30.2			4,4,7		
			17.7'								
			Loose to medium dense, tan, silty sand.								
20.0					30	36.7	52				
			22.9'								
			Stiff, tan, fat clay with sand.								
25.0					26	46.7	63		1,4,6		
			28.0'								
30.0			Auger Refusal @ 28.0', Begin Coring in Claystone. Dark gray-black, brown-orange stain, mod. to sev. weathered, low hardness, thin bedded, calcareous, fossiliferous sli. silty in parts w/v. thin to thin bedded, fossiliferous Limestone.							100	30
35.0			limestone bed 28.0'-28.4'; 21+ 0°-10° bedding discontinuities 28.0'-37.8'; limestone bed 35.7'-37.4'							100	34
			37.8'								
40.0			Clay: Light gray, sev. weathered, soft, calcareous, trcs. f. mica, trcs. organic laminae. 14 0°-10° bedding discontinuities 37.8'-41.5'; 60° joint w/soft walls 38.8'							96	12
			41.5'								
45.0			Shale: Black-dk. gray, sev. grading to sli. weathered, v. thin bedded, soft grading to mod. hard, silty, f. micaceous. clayey 41.5'-43.5'; 90° jt. w/rough, hard walls 44.7'-44.8'							100	52
			48.0'								
50.0			Boring Terminated @ 48.0' (Elev. 226.2).								

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BORING NO.: B-122

PAGE: 2 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 684+64 59' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88715 ° LONGITUDE: 92.10736 °

DATE: 6/3/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 48.0 ft.

GROUNDWATER @ 19.4 ft. (Immediate)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 274.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			RS-1 collected from 28.0'-28.4' NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
55.0											
60.0											
65.0											
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-123

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 684+64 80' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88693 ° LONGITUDE: 92.10698 °

DATE: 6/15/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 79.7 ft.

GROUNDWATER @ 35.0 ft. (24hr)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 293.9	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Asphalt 0.3'								
			Loose, brown & gray, clayey sand. Interpreted as roadway embankment.								
5.0					17	20.4	28		2,3,3		
10.0						20.7			2,4,5		
			12.9'								
			Soft to medium stiff, brown & gray, sandy fat clay. Interpreted as roadway embankment.								
15.0					24	29.0	54		2,2,4		
20.0						19.9			1,2,1		
			21.3'								
			Soft to stiff, brown & gray, sandy, lean clay.								
25.0					19	17.5	38	109.2			
			28.1'								
			Medium dense, brown & gray, clayey sand.								
30.0						16.2			0,5,7		
			32.9'								
			Medium dense, brown & gray, sandy fat clay.								
35.0						16.2			3,7,9		
40.0						19.0			1,4,7		
			42.9'								
			Medium stiff to hard, brown & gray, fat clay with sand.								
45.0					30	40.5	68		2,3,5		
50.0											

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BORING NO.: B-123

PAGE: 2 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 684+64 80' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88693 ° LONGITUDE: 92.10698 °

DATE: 6/15/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 79.7 ft.

GROUNDWATER @ 35.0 ft. (24hr)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 293.9	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
						35.1			2,7,31		
			51.7'								
			Auger Refusal @ 51.7', Begin Coring in Claystone. Dark gray-black-dk. brown, tan-brown, trcs. brown-orange stain, mod. to sev. weathered, low hardness, v. thin to thin bedded, calcareous in most parts, fossiliferous, sandy in parts w/v. thin to thin bedded, fossiliferous Limestone & fossil frag. Sandstone bed.							97	43
55.0			marl beds 51.7'-52.1', 52.4'-52.7'; fossiliferous sand/clay 52.7'-53.1'; 36 0° bedding discontinuities; fossiliferous sand/clay 57.8', 58.7'-58.9'; marl bed 59.5'-59.7'; fossiliferous sand 61.6', 61.8', 62.0'-63.7'							98	44
60.0										80	34
65.0										100	90
			69.4'								
70.0			Limestone: Brown, red-orange stain, mod. weathered, thin bedded, mod. hard, vuggy in parts, fossiliferous. 3 0° bedding discontinuities							100	56
			71.9'								
75.0			Shale: Dark gray-black, lt. gray laminae, sev. grading to sli. weathered, v. thin bedded, soft grading to mod. hard, f. grain sandstone laminae, f. micaceous. 3 55°-70° jts. w/rough, hard walls; 3 40° bedding discontinuities; 16+ 20° bedding discontinuities; 3 20°-40° jts. w/rough, hard walls							100	34
			79.7'								
80.0			Boring Terminated @ 79.7' (Elev. 214.2). RS-20 collected from 57.0'-57.4' RS-21 collected from 66.3'-66.7' RS-22 collected from 77.2'-77.6' NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-124

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 685+46 50' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88732 ° LONGITUDE: 92.10718 °

DATE: 5/11/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 49.8 ft.

GROUNDWATER @ 3.0 ft. (24hr)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 276.7	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Stiff to very stiff, brown, fat clay with sand.								
					24	18.3	52		4,7,8		
5.0											
									3,4,6		
10.0											
									4,5,5		
15.0											
									5,10,10		
20.0											
									7,11,9		
25.0											
									7,50/0.1		
30.0			29.8'								
			Auger Refusal @ 29.8', Begin Coring in Claystone. Brown grading to dk. gray, some lt. gray, mod. to sev. weathered, soft to low hardness w/beds mod. hard, thin bedded, calcareous, fossiliferous, sli. silty in parts w/v. thin to thin bedded calcareous, fossiliferous Limestone & Sandstone.							94	0
35.0			limestone beds 29.8'-30.1', 30.4'-30.6', 31.1'-31.4', 31.6'-31.9'; 33+ 0°-10° bedding discontinuities 29.8'-42.4'; 45° jt. w/clay infill <1mm 35.5'; calcareous, fossiliferous Sandstone 38.8'-39.3'; fossiliferous limestone 40.6'-40.9'; calcareous, fossiliferous sandstone 41.2'-42.3'							98	28
40.0			42.4'								
			Clay: Light gray, orange-red stain in lower part, sev. weathered, soft, calcareous, trcs. f. mica, trcs. organic laminae.							98	52
45.0			7 0°-15° bedding discontinuities 42.4'-47.7'								
			47.7'							96	68
50.0			Shale: Black-dk. gray, orange-brown stain, sev. weathered, thin bedded, soft grading to med. hard, silty, f. micaceous 49.8'								

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BORING NO.: B-124

JOB NO.: CA0604
JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.
STATION: 685+46 50' Lt.
LOCATION: Hwy 67
LATITUDE: 34.88732 ° LONGITUDE: 92.10718 °

DATE: 5/11/2016
TYPE OF DRILLING: HSA/SPT
EQUIPMENT: 1980 Hilyard ATV
LOGGED BY: J. Johnson

COMPLETION DEPTH: 49.8 ft.

GROUNDWATER @ 3.0 ft. (24hr)

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 276.7								
			90° jt. w/gravel infill, open 6-8mm; 6 20° bedding discontinuities								
			Boring Terminated @ 49.8' (Elev. 226.9).								
55.0			RS-3 collected from 41.3'-41.7' RS-4 collected from 45.6'46.9'								
60.0			NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
65.0											
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-126

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 685+67 80' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88716 ° LONGITUDE: 92.10679 °

DATE: 6/17/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 64.2 ft.

GROUNDWATER @ 29.4 ft. (Immediate)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 279.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Stiff, brown & gray, sandy lean clay.								
5.0					16	17.6	26		4,4,5		
10.0						18.3			4,5,7		
			12.7'								
			Stiff, gray and brown, sandy, fat clay.								
15.0					17	17.9	50	108.1			
			17.9'								
			Stiff, gray & brown, sandy silt.								
20.0					28	18.2	35		3,5,7		
25.0						22.5			0,5,7		
30.0						28.6			2,5,5		
			32.7'								
			Very stiff, brown & gray, sandy, elastic silt.								
35.0					35	36.1	61		0,6,12		
			36.7'								
			Auger Refusal @ 36.7', Begin Coring in Claystone. Dark gray-dk. brown grading to black-dk. gray,							84	40
40.0			tan-brown-gray, sev. weathered grading to mod. weathered, low hardness to soft w/mod. hard beds & friable beds, v. thin to thin bedded, calcareous in parts, fossiliferous, organic fragments in lower part w/v. thin beds fossiliferous, calcareous Conglomerate, v. thin, calcareous, fossiliferous Limestone, trc. f. crystaline pyrite nodules.							52	0
45.0			sev. weathered 36.7'-44.5'; 24+ 0° bedding discontinuities 36.7'-56.5'; fossiliferous Conglomerate 44.2'-47.6'; clayey, fossiliferous Limestone 48.2'-48.8'							98	52
50.0										96	78

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BORING NO.: B-126

PAGE: 2 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 685+67 80' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88716 ° LONGITUDE: 92.10679 °

DATE: 6/17/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 64.2 ft.

GROUNDWATER @ 29.4 ft. (Immediate)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 279.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
										96	78
55.0											
			56.5' Clay: Lt. gray, sev. weathered, soft, sli. calcareous, trcs. f. mica, trcs. organic laminae.							100	70
			58.0' 70° jt. w/soft walls 57.9'-58.3'								
60.0			Shale: Dark gray-black, sev. weathered grading to mod. weathered, thin bedded, soft grading to med. hard, silty, f. micaceous. 2 20°-30° jts. w/2-6mm clay infill 58.0'-64.2'; 1 10° jt. w/<1mm pyrite grains infill 58.0'-64.2'; 3 0° jts. w/hard walls 58.0'-64.2'							100	66
65.0			64.2' Boring Terminated @ 64.2' (Elev. 214.8). RS-29 collected from 50.0'-50.4' RS-30 collected from 59.9'-60.3' NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-127

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 686+59 50' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88757 ° LONGITUDE: 92.10695 °

DATE: 5/11/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 49.4 ft.

GROUNDWATER @ 2.0 ft. (24hr)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 279.9	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Stiff to very stiff, brown sandy lean clay.						6,7,9		
5.0											
					14	16.1	31		5,5,8		
10.0											
									2,5,9		
15.0			16.8'								
			Very stiff to very hard, brown, fat clay with sand.								
					27	37.7	56		4,6,11		
20.0											
									10,50/0.5		
25.0			26.2'								
			Auger Refusal @ 26.2', Begin Coring in Limestone. Light gray, gray, brown stain, gray-olive gray, mod. weathered w/seams sev. weathered, v. thin to thin bedded, mod. hard w/soft seams, vuggy in parts, fossiliferous w/thin beds, soft, calcareous Claystone.							53	13
30.0			12 0° bedding discontinuities w/sev. weathered walls 26.2'-31.2'; claystone beds: 29.5'-30.2', 30.4'							100	44
			31.2'								
			Claystone: Dark gray-brown, black, trcs. brown-orange stain, mod. weathered w/seams sev. weathered, low hardness w/mod. hard beds, thin bedded, calcareous, fossiliferous, w/v. thin beds fossiliferous, calcareous Sandstone, v. thin to thin bedded, fossiliferous Limestone.							100	10
35.0			35 0°-15° bedding discontinuities w/soft walls 31.2'-41.5'; sandstone: fossiliferous, calcareous beds 35.9'-36.0', 36.8', 38.3'; fossiliferous Limestone beds 37.7'-37.8', 38.5'-38.8', 39.6'-39.8', 39.9'-40.6'							96	66
40.0			41.5'								
			Clay: Light gray, red stain, sev. weathered, soft, calcareous, trcs. f. mica, trcs. organic laminae. 6 0°-20° bedding discontinuities w/soft walls 41.5'-45.6'								
45.0			45.6'								
			Shale: Black-dk. gray-lt. gray mottled, red & orange-brown stain, sev. weathered, thin bedded, soft grading to med. hard, silty, f. micaceous. 9 10°-15° bedding discontinuities; 2 20°-25° discontinuities							98	38
50.0			49.4'								

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BORING NO.: B-127

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 686+59 50' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88757 ° LONGITUDE: 92.10695 °

DATE: 5/11/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 49.4 ft.

GROUNDWATER @ 2.0 ft. (24hr)

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 279.9								
			w/1mm clay infill, soft walls 45.6'-49.4'								
			Boring Terminated @ 49.4' (Elev. 230.5).								
			RS-5 collected from 31.6'-32.0'								
55.0			RS-6 collected from 39.7'-40.1'								
			NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
60.0											
65.0											
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-129

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 686+70 80' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88738 ° LONGITUDE: 92.10658 °

DATE: 6/17/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 73.5 ft.

GROUNDWATER @ 25.0 ft. (Immediate)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 298.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Loose to medium dense, red & brown, clayey sand. Interpreted as roadway embankment.								
5.0						8.0			2,4,6		
10.0					18	19.2	41		4,5,7		
15.0						18.0			3,6,6		
			18.1'								
			Medium stiff to very stiff, brown & gray, sandy lean clay.								
20.0					16	18.4	26		1,3,4		
25.0						18.8			2,6,10		
30.0						26.5			3,5,8		
35.0						35.2			2,4,5		
40.0						23.2			1,5,6		
45.0						38.4			5,7,7		
			48.3'								
50.0			Very dense, brown, clayey sand with gravel.								

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BORING NO.: B-129

PAGE: 2 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 686+70 80' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88738 ° LONGITUDE: 92.10658 °

DATE: 6/17/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 73.5 ft.

GROUNDWATER @ 25.0 ft. (Immediate)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 298.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
					23	30.1	53		5,38,50/0.4		
			53.5'								
55.0			Auger Refusal @ 53.5', Begin Coring in Limestone. Light gray, dk. gray, mod. weathered w/sev. weathered seam, v. thin to thin bedded, mod. hard w/soft seam, scat. vuggy, fossiliferous w/thin beds, soft, calcareous Claystone. sev. weathered w/clay 53.5'-54.3'; claystone 54.6'-54.9'; 5 0°-10° bedding discontinuities 53.5'-55.6'							90	40
55.6'											
60.0			Claystone: Dark gray-dk. brown grading to black-dk. gray, tan-brown-gray, mod. weathered w/seams sev. weathered, low hardness w/mod. hard beds & friable beds, thin bedded, calcareous in parts, fossiliferous, organic fragments in lower part w/v. thin beds fossiliferous, calcareous Conglomerate, v. thin, fossiliferous Limestone. 28 0°-10° bedding discontinuities 55.6'-71.1'; limestone bed 62.0'-62.4'; fossiliferous Conglomerate 63.1'-65.7'; sandy 65.7'-68.1'							92	56
65.0										92	50
70.0										94	72
71.1'			Clay: Light gray, sev. weathered, soft, sli. calcareous, trcs. f. mica, trcs. organic laminae. 2 0° bedding discontinuities 71.1'-73.5'								
73.5'											
75.0			Boring Terminated @ 73.5' (Elev. 224.7). RS-27 collected from 57.0'-57.4' RS-28 collected from 71.9'-72.3' NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
80.0											
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-130

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 687+34 59' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88775 ° LONGITUDE: 92.10682 °

DATE: 6/2/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 53.8 ft.

GROUNDWATER @ 3.0 ft. (24hr)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 280.8	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 0.6'								
			Medium stiff, brown & gray, sandy, lean clay with gravel.								
5.0					16	16.5	28		4,3,4		
			7.9'								
			Stiff, red & tan, sandy fat clay.								
10.0						36.1			3,5,7		
			12.9'								
			Medium dense, red & tan, silty sand.								
15.0					29	38.0	44	81.9			
			18.1'								
			Stiff, tan, sandy, fat clay.								
20.0					26	34.3	50		4,6,9		
25.0			24.8'								
			Auger Refusal @ 24.8', Begin Coring in Limestone. Brown-lt. gray, scat. dk. gray, sev. weathered, v. thin to thin bedded, mod. hard w/scat. soft seams, vuggy, fossiliferous w/laminations to thin beds, soft, calcareous Claystone/Clay.			8.6			50/0.2	65	18
30.0			core loss interpreted as clay seams; 16 0° bedding discontinuities w/clay 24.8'-30.1' 30.1'							100	42
35.0			Claystone: Black-dk. gray-dk. brown, scat. brown-orange stain, mod. weathered w/sev. to completely weathered seams & beds, low hardness w/mod. hard beds, thin bedded, calcareous, fossiliferous, f. micaceous, sli. silty in parts, f. sand laminae w/v. thin to thin bedded, fossiliferous Limestone & fossiliferous, calcareous Sandstone. limestone beds, 30.1'-30.3', 31.6'-32.1', 32.3', 33.0'-33.1', 33.5'-33.8'; 42+ 0° bedding discontinuities 30.1'-47.8'; fossiliferous sandstone beds 34.0', 35.3', 37.1', 38.4'-38.5', 39.8', 40.0'-40.1', 40.8'-40.9', 41.2'-41.3', 43.0'-43.3'; limestone bed 41.3'-43.0'; completely weathered fossiliferous sandstone bed 44.2'-47.8', includes core loss							100	24
40.0										98	40
45.0										60	14
			47.8'								
50.0			Shale: Red-orange-purple-lt. gray mottled grading to black w/lt. gray-red mottling, sev. weathered grading to mod.							86	50

HDR | ICA

BORING NO.: B-130

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 687+34 59' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88775 ° LONGITUDE: 92.10682 °

DATE: 6/2/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 53.8 ft.

GROUNDWATER @ 3.0 ft. (24hr)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 280.8	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			weathered, thin bedded, soft grading to med. hard, silty, f. micaceous. 2 30°-40° jts. w/soft walls 47.8'-53.8'; 2 50° walls w/soft walls 47.8'-53.8'; 4 0°-10° jts. w/soft walls 47.8'-53.8' 53.8'							86	50
55.0			Boring Terminated @ 53.8' (Elev. 227.0). RS-9 collected from 39.1'-39.5' RS-10 collected from 52.3'-52.7' NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
60.0											
65.0											
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

HDR | ICA

BORING NO.: B-131

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 687+34 80' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88752 ° LONGITUDE: 92.10646 °

DATE: 6/17/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 78.4 ft.

GROUNDWATER @ 26.0 ft. (24hr)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 298.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Soft to stiff, brown & gray, sandy, lean clay. Interpreted as roadway embankment.								
5.0						17.7			3,2,4		
10.0					18	18.4	36		2,3,4		
15.0						19.5			1,1,2		
			17.3'								
			Stiff, brown & gray, sandy, silty clay.								
20.0						18.9			3,6,9		
25.0					17	18.6	24	116.6			
			27.5'								
			Medium dense, brown & red, clayey sand.								
30.0					20	18.0	41		2,5,10		
			32.3'								
			Stiff, brown & red, sandy, lean clay.								
35.0					22	21.8	40		0,4,8		
			37.3'								
			Medium dense, brown & gray, clayey sand.								
40.0						33.4			3,6,7		
45.0						33.9			2,3,8		
			47.3'								
			Very dense, brown, clayey sand with gravel.								
50.0					27	20.1	56		26,22,30		

HDR | ICA

BORING NO.: B-131

PAGE: 2 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 687+34 80' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88752 ° LONGITUDE: 92.10646 °

DATE: 6/17/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 78.4 ft.

GROUNDWATER @ 26.0 ft. (24hr)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 298.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			53.4'								
55.0			Auger Refusal @ 53.4', Begin Coring in Limestone. 54.9' Light gray, scat. dk. gray, sli. weathered, v. thin bedded, mod. hard w/soft seam, trc. vuggy, fossiliferous w/thin bed, soft, calcareous Claystone.							100	42
60.0			Claystone: Dark gray-dk. brown grading to black-dk. gray, tan-brown-gray, lt. gray, sli. to mod. weathered w/seams sev. weathered, low hardness w/soft seams & mod. hard beds & friable beds, thin bedded, calcareous in parts, fossiliferous, organic fragments in lower part w/laminations to v. thin beds fossiliferous, calcareous Conglomerate, v. thin, fossiliferous Limestone. 30+ 0° bedding discontinuities 54.9'-72.8'; fossiliferous sand laminations 59.8', 59.9', 59.1'; fossiliferous limestone bed 61.6'-61.9'; fossiliferous sand laminations 62.1', 62.2', 62.3', 62.4', 62.6', 62.9', 63.0'; fossiliferous sand bed 63.3'-65.9'; sandy & fossiliferous 65.9'-68.2'							100	34
65.0										76	22
70.0										100	92
			72.8'								
75.0			Clay: Light gray w/dk. gray mottling in part, mod. weathered, soft, sli. calcareous, trcs. f. mica, trcs. pyrite. 50° jt. w/soft walls 77.2'							100	56
			77.4'								
80.0			Shale: Dark gray, mod. weathered, thin bedded, med. hard, silty, f. micaceous. 78.4' 9 0°-20° jts. w/hard walls 77.4'-78.4'								
85.0			Boring Terminated @ 78.4' (Elev. 219.8). RS-31 collected from 53.4'-53.8' RS-32 collected from 71.0'-71.4' RS-33 collected from 75.9'-76.3'								
90.0			NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
95.0											
100.0											

HDR | ICA

BORING NO.: B-132

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 598+73 109' Lt.

LOCATION: Hwy 67

LATITUDE: 34.86962 ° LONGITUDE: 92.12619 °

DATE: 5/14/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 267.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Dense, red, silty sand with gravel.		17	14.2	21		16,27,18		
			6.8'								
10.0			Very stiff, red, sandy silt.		28	23.7	46		5,8,11		
			11.8'								
15.0			Medium dense, red, silty sand.						6,12,14		
20.0			20.0'						4,7,11		
			No Refusal & Boring Terminated @ 20.0' (Elev. 247.5).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-133

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 600+00 107' Lt.

LOCATION: Hwy 67

LATITUDE: 34.86986 ° LONGITUDE: 92.12588 °

DATE: 5/14/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 272.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Medium dense, red, clayey sand.						6,10,11		
			6.8'								
10.0			Medium dense, red, silty sand with gravel.						5,8,10		
15.0									5,7,9		
20.0			20.0'						4,7,11		
			No Refusal & Boring Terminated @ 20.0' (Elev. 252.2).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-134

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 601+48 105' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87009 ° LONGITUDE: 92.12556 °

DATE: 5/14/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 269.8	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Medium dense, red, clayey sand.		26	29.0	45		5,11,15		
10.0									4,5,8		
			11.8'								
15.0			Medium dense to dense, red, silty sand.						9,8,13		
20.0			20.0'						7,15,16		
			No Refusal & Boring Terminated @ 20.0' (Elev. 249.8).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-135

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 625+00 84' Rt.

LOCATION: Hwy 67

LATITUDE: 34.87415 ° LONGITUDE: 92.11943 °

DATE: 5/13/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 10.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 287.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Very stiff to hard, red, lean clay with sand.		24	22.6	40		11,16,20		
10.0			10.0'						7,11,17		
			No Refusal & Boring Terminated @ 10.0' (Elev. 277.4).								
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-136

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 626+00 79' Rt.

LOCATION: Hwy 67

LATITUDE: 34.87435 ° LONGITUDE: 92.11920 °

DATE: 6/20/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 25.7 ft.

GROUNDWATER @ 15.7 ft. (Immediate)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 287.9	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Medium dense, tan, gray & red, clayey sand.								
5.0					20	22.4	34		3,6,8		
			7.5'								
			Stiff, gray, sandy lean clay.								
10.0					23	25.6	38	85.5			
			12.7'								
			Medium dense, tan & yellow, clayey sand.								
15.0					23	29.5	37		3,4,7		
			17.5'								
			Medium dense, tan & yellow, clayey sand.								
20.0						34.3			2,5,6		
			22.5'								
			Medium dense, tan & yellow, clayey sand.								
25.0						30.6			5,6,9		
			25.7'								
			No Refusal & Boring Terminated @ 25.7' (Elev. 262.2).								
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-137

JOB NO.: CA0604
JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.
STATION: 628+20 119' Rt.
LOCATION: Hwy 67
LATITUDE: 34.87469 ° LONGITUDE: 92.11857 °

DATE: 5/13/2016
TYPE OF DRILLING: HSA/SPT
EQUIPMENT: 1980 Hilyard ATV
LOGGED BY: J. Johnson

COMPLETION DEPTH: 55.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 304.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Medium dense, red, clayey sand with gravel.								
									7,9,15		
5.0											
					27	30.8	50		5,6,10		
10.0											
									3,8,12		
15.0											
			16.8'								
			Medium dense, red, clayey sand.								
									5,9,14		
20.0											
									5,12,17		
25.0											
					8	33.8	31		4,11,12		
30.0											
			31.8'								
			Dense, red, brown & gray, clayey sand.								
									7,14,17		
35.0											
					24	31.5	42		5,15,22		
40.0											
									11,23,27		
45.0											
			46.8'								
			Hard to very hard, gray, fat clay with sand.								
									8,27,32		
50.0											

HDR | ICA

BORING NO.: B-137

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 628+20 119' Rt.

LOCATION: Hwy 67

LATITUDE: 34.87469 ° LONGITUDE: 92.11857 °

DATE: 5/13/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 55.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 304.5								
55.0			55.0'		34	29.1	78		11,31,35		
			No Refusal & Boring Terminated @ 55.0' (Elev. 249.5).								
60.0											
65.0											
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-138

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 628+00 156' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87520 ° LONGITUDE: 92.11925 °

DATE: 5/14/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 35.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 287.5								
			Very loose to medium dense, red & brown, clayey sand.								
5.0									2,2,3		
10.0									1,2,2		
15.0									6,7,8		
20.0					18	34.5	62		4,6,9		
			21.8'								
			Very stiff to hard, gray, sandy fat clay.								
25.0									6,12,20		
30.0									8,11,15		
35.0			35.0'						11,11,13		
			No Refusal & Boring Terminated @ 35.0' (Elev. 252.5).								
40.0											
45.0											
50.0											

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BORING NO.: B-139

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 629+34 193' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87552 ° LONGITUDE: 92.11901 °

DATE: 5/15/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 35.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 291.5								
			Loose to medium dense, red, clayey sand.								
									3,4,7		
5.0											
									4,5,5		
10.0											
									2,3,3		
15.0											
			16.0'								
			Loose, tan & gray, clayey sand.		24	30.3	38	90.8			
			18.8'						3,4,3		
20.0			Loose, red, clayey sand.								
			21.8'								
			Very stiff to hard, gray, sandy fat clay.								
					29	31.9	66		12,17,19		
25.0											
									10,15,21		
30.0											
									8,12,16		
35.0			35.0'								
			No Refusal & Boring Terminated @ 35.0' (Elev. 256.5).								
40.0											
45.0											
50.0											

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BORING NO.: B-140

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 630+73 207' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87581 ° LONGITUDE: 92.11871 °

DATE: 5/15/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 35.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 301.1								
			Loose, brown, clayey sand.								
5.0									2,3,5		
					24	26.6	45		2,3,4		
10.0			11.8'								
			Soft, gray, sandy silt.								
					15	21.9	19		3,2,1		
15.0											
									2,1,3		
20.0			21.8'								
			Stiff to very stiff, gray, sandy fat clay.								
25.0									5,6,9		
									6,7,10		
30.0											
35.0			35.0'						10,12,17		
			No Refusal & Boring Terminated @ 35.0' (Elev. 266.1).								
40.0											
45.0											
50.0											

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BORING NO.: B-141

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 627+61 69' Rt.

LOCATION: Hwy 67

LATITUDE: 34.87467 ° LONGITUDE: 92.11883 °

DATE: 6/20/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 26.7 ft.

GROUNDWATER @ 19.3 ft. (Immediate)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 289.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Loose, tan & gray, silty sand.								
5.0					23	27.1	26		3,4,6		
			7.6'								
			Loose, tan & gray, silty sand.								
10.0					23	34.1	32		3,3,6		
			12.6'								
			Loose, tan, clayey sand.								
15.0					26	29.8	46	90.6			
			17.8'								
			Loose, tan & gray, silty sand.								
20.0						37.0			3,5,5		
			22.6'								
			Medium dense, tan & gray, silty sand.								
25.0						30.5			4,9,11		
			26.7'								
			No Refusal & Boring Terminated @ 26.7' (Elev. 262.6).								
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-142

JOB NO.: CA0604
JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.
STATION: 629+57 63' Lt.
LOCATION: Hwy 67
LATITUDE: 34.87531 ° LONGITUDE: 92.11866 °

DATE: 5/16/2016
TYPE OF DRILLING: HSA/SPT
EQUIPMENT: 1980 Hilyard ATV
LOGGED BY: J. Johnson

COMPLETION DEPTH: 50.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 282.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Medium dense, brown, clayey sand.								
5.0									4,7,8		
10.0					25	30.6	43		5,6,10		
			11.8'								
			Very stiff to hard, brown & gray, sandy fat clay.								
15.0					27	31.3	60		7,12,15		
20.0									8,16,15		
25.0									9,16,17		
30.0									10,16,18		
			31.8'								
			Hard to very hard, gray, sandy silt.								
35.0									12,26,31		
40.0									10,50/0.5		
45.0					31	27.3	47		9,50/0.5		
50.0			50.0'						12,50/0.5		

HDR | ICA

BORING NO.: B-142

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 629+57 63' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87531 ° LONGITUDE: 92.11866 °

DATE: 5/16/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 50.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 282.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			No Refusal & Boring Terminated @ 50.0' (Elev. 232.5).								
55.0											
60.0											
65.0											
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

HDR | ICA

BORING NO.: B-143

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 630+39 66' Rt.

LOCATION: Hwy 67

LATITUDE: 34.87520 ° LONGITUDE: 92.11816 °

DATE: 6/20/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 41.5 ft.

GROUNDWATER @ 14.5 ft. (Immediate)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 295.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Medium dense, tan & gray, silty sand.								
5.0					23	28.5	26		3,5,6		
			7.8'								
			Medium dense, tan, silty sand.								
10.0					25	27.7	26	94.1			
			13.0'								
			Medium dense, tan, silty sand.								
15.0						28.3			3,5,8		
			17.8'								
			Medium dense, gray, clayey sand.								
20.0					24	26.9	41		4,7,8		
25.0						30.4			5,8,11		
30.0						29.9			8,12,18		
			32.8'								
			Hard, gray, sandy fat clay.								
35.0					29	30.0	69		12,16,25		
40.0						31.5			11,21,26		
			41.5'								
			No Refusal & Boring Terminated @ 41.5' (Elev. 253.9).								
45.0											
50.0											

HDR | ICA

BORING NO.: B-144

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 631+96 61' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87575 ° LONGITUDE: 92.11807 °

DATE: 5/12/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 10.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 293.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Medium dense, red & brown, clayey sand.								
5.0									7,7,8		
10.0			10.0'						6,10,11		
			No Refusal & Boring Terminated @ 10.0' (Elev. 283.3).								
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-145

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 643+00 58' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87793 ° LONGITUDE: 92.11556 °

DATE: 5/15/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 15.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 321.7	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Very stiff, red, sandy, elastic silt.						6,9,18		
10.0									5,10,10		
			11.8'								
15.0			Medium dense, red, clayey sand. 15.0'						5,11,11		
			No Refusal & Boring Terminated @ 15.0' (Elev. 306.7).								
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-146

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 645+00 58' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87837 ° LONGITUDE: 92.11516 °

DATE: 5/15/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 15.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 321.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Stiff, red, sandy, elastic silt.						3,5,8		
			6.8'								
10.0			Medium dense, red, silty sand with gravel.						5,11,13		
			11.8'								
15.0			Very stiff, brown, sandy, elastic silt. 15.0'		29	39.9	51		9,10,14		
			No Refusal & Boring Terminated @ 15.0' (Elev. 306.0).								
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-147

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 647+00 64' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87882 ° LONGITUDE: 92.11478 °

DATE: 5/16/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 317.8	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Medium dense, red, silty sand with gravel.		27	33.4	43		8,11,9		
			6.8'								
10.0			Medium dense, red, clayey sand.						9,11,14		
			11.8'								
15.0			Medium dense, brown, silty sand with gravel.						6,8,11		
			16.8'								
20.0			Medium dense, brown, clayey sand. 20.0'						8,5,10		
25.0			No Refusal & Boring Terminated @ 20.0' (Elev. 297.8).								
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-148

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 649+00 96' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87931 ° LONGITUDE: 92.11447 °

DATE: 5/10/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 317.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Medium dense, red, clayey sand.								
					25	31.3	45		2,8,10		
5.0											
									8,10,11		
10.0											
									7,10,9		
15.0											
			16.8'								
			Medium dense, brown, clayey sand.								
									5,8,12		
20.0			20.0'								
			No Refusal & Boring Terminated @ 20.0' (Elev. 297.0).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-149

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 651+00 96' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87975 ° LONGITUDE: 92.11407 °

DATE: 5/10/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 30.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 315.9	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Very stiff, red, sandy, elastic silt.								
5.0									6,11,14		
10.0									5,9,13		
			11.8'								
			Medium dense to dense, brown, clayey sand.								
15.0									5,13,15		
20.0									7,15,15		
25.0									11,17,15		
30.0			30.0'		24	31.7	38		10,16,18		
			No Refusal & Boring Terminated @ 30.0' (Elev. 285.9).								
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-150

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 653+00 86' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88018 ° LONGITUDE: 92.11364 °

DATE: 6/18/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 41.5 ft.

GROUNDWATER @ 26.5 ft. (Immediate)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 313.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Medium dense, brown, silty sand.								
5.0						23.4			4,6,10		
			8.3'								
			Medium dense, brown & gray, silty sand.								
10.0					26	32.0	30	87.7			
			13.5'								
			Medium dense, gray & tan, silty sand.								
15.0					27	33.6	41		3,4,7		
20.0						33.0			4,7,10		
			23.3'								
			Medium dense, brown & gray, silty sand.								
25.0					24	32.7	34		0,5,6		
30.0						31.8			2,5,8		
			33.3'								
			Medium dense to dense, gray & black, clayey sand.								
35.0					24	29.0	38		4,7,11		
40.0						27.9			11,15,20		
			41.5'								
			No Refusal & Boring Terminated @ 41.5' (Elev. 271.9).								
45.0											
50.0											

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BORING NO.: B-151

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 655+00 80' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88061 ° LONGITUDE: 92.11323 °

DATE: 5/16/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 15.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 303.6	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Medium dense, red, clayey sand.						5,8,11		
10.0									4,9,8		
			11.8'								
15.0			Medium dense, brown, clayey sand. 15.0'						4,13,11		
20.0			No Refusal & Boring Terminated @ 15.0' (Elev. 288.6).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-152

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 659+00 62' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88125 ° LONGITUDE: 92.11205 °

DATE: 5/12/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 15.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 288.6								
			Very stiff, red, sandy, elastic silt.								
5.0									5,8,10		
10.0									6,8,14		
15.0			15.0'						8,7,9		
			No Refusal & Boring Terminated @ 15.0' (Elev. 273.6).								
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-153

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 661+00 61' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88170 ° LONGITUDE: 92.11165 °

DATE: 5/12/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 15.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 285.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Very stiff, red, sandy lean clay.		19	26.5	29		5,7,9		
			6.8'								
10.0			Stiff, red, sandy, elastic silt.						6,6,7		
15.0			15.0'		39	36.4	55		7,7,8		
			No Refusal & Boring Terminated @ 15.0' (Elev. 270.4).								
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-154

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 661+00 73' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88192 ° LONGITUDE: 92.11201 °

DATE: 5/16/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 15.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 289.9	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Medium dense, red, clayey sand.								
5.0									5,8,11		
10.0					22	28.2	46		4,6,8		
			11.8' Very stiff, brown, sandy, fat clay.								
15.0			15.0'		26	36.8	64		7,9,14		
			No Refusal & Boring Terminated @ 15.0' (Elev. 274.9).								
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-155

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 663+00 61' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88214 ° LONGITUDE: 92.11126 °

DATE: 5/12/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 281.7	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Very stiff, red, sandy lean clay.								
5.0									2,8,16		
			6.8'								
			Very stiff, red, sandy elastic silt.								
10.0									5,7,12		
			11.8'								
			Stiff to very stiff, red, sandy fat clay.								
15.0									5,8,8		
20.0			20.0'		35	41.8	109		6,7,8		
			No Refusal & Boring Terminated @ 20.0' (Elev. 261.7).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-156

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 663+00 73' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88236 ° LONGITUDE: 92.11161 °

DATE: 5/17/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 10.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 283.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Medium dense, red, clayey sand.						2,8,9		
10.0			10.0'						3,8,8		
			No Refusal & Boring Terminated @ 10.0' (Elev. 273.5).								
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-157

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 665+00 73' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88280 ° LONGITUDE: 92.11121 °

DATE: 5/17/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 25.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 287.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Very stiff, red, sandy lean clay.								
5.0					26	26.1	49		8,10,12		
									4,13,12		
10.0			11.8'								
			Medium dense to dense, red, clayey sand.								
15.0					19	16.8	30		6,13,13		
									10,20,23		
20.0			21.8'								
			Hard, red, sandy silt.								
25.0			25.0'		NP	34.0	NP		12,22,21		
			No Refusal & Boring Terminated @ 25.0' (Elev. 262.5).								
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-158

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 683+77 120' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88705 ° LONGITUDE: 92.10770 °

DATE: 5/10/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 40.0 ft.

GROUNDWATER @ Dry (Immediate)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 274.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Medium stiff, red, lean clay with sand.								
5.0									2,3,5		
			5.5'								
			Medium stiff, brown & gray, sandy lean clay.		16	21.2	26	109.1			
			8.3'								
10.0			Medium stiff to hard, red & brown, lean clay with sand.		15	21.9	43		4,4,4		
15.0									3,4,5		
20.0									5,8,9		
25.0									5,8,8		
30.0									10,13,20		
			31.8'								
			Very hard, gray, gravelly lean clay with sand.								
35.0									12,50/0.5		
40.0			40.0'		19	30.9	46		16,50/0.4		
			No Refusal & Boring Terminated @ 40.0' (Elev. 234.0).								
45.0											
50.0											

HDR | ICA

BORING NO.: B-159

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 684+84 122 Rt.

LOCATION: Hwy 67

LATITUDE: 34.88691 ° LONGITUDE: 92.10683 °

DATE: 6/18/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 29.6 ft.

GROUNDWATER @ 17.0 ft. (Immediate)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 275.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Stiff, brown & gray, sandy lean clay.								
5.0						24.9			2,4,5		
10.0					17	17.8	42		2,5,5		
			13.3'								
			Stiff, brown & gray, sandy elastic silt.								
15.0					34	25.4	62	84.6			
			18.5'								
			Medium stiff to stiff, gray & brown, sandy, elastic silt.								
20.0					36	33.6	63		3,4,5		
25.0						41.4			2,2,3		
			29.6'								
30.0			No Refusal & Boring Terminated @ 29.6' (Elev. 245.8).								
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-160

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 693+00 68' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88896 ° LONGITUDE: 92.10560 °

DATE: 5/11/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 298.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Very stiff to hard, red, sandy lean clay.								
5.0									7,10,11		
10.0					14	16.2	34		5,11,18		
15.0									10,15,16		
			16.8'								
			Hard, red, sandy fat clay.								
20.0			20.0'						7,15,16		
			No Refusal & Boring Terminated @ 20.0' (Elev. 278.2).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-161

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 694+00 64' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88915 ° LONGITUDE: 92.10535 °

DATE: 5/11/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 298.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Very stiff, brown, sandy fat clay.								
5.0					29	37.6	69		4,7,11		
10.0									6,6,12		
			11.8'								
			Very stiff, gray, sandy fat clay.								
15.0									6,8,11		
20.0			20.0'		29	42.0	69		7,10,9		
			No Refusal & Boring Terminated @ 20.0' (Elev. 278.3).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-162

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 695+00 64' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88935 ° LONGITUDE: 92.10512 °

DATE: 5/11/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 297.8	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Dense, brown, silty sand with gravel.		31	42.5	54		8,19,28		
			6.8'								
10.0			Very stiff, brown, sandy fat clay.						9,15,13		
			11.8'								
15.0			Very stiff, gray, sandy fat clay.						6,14,12		
20.0			20.0'						5,10,16		
			No Refusal & Boring Terminated @ 20.0' (Elev. 277.8).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-163

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 807+20 17' Rt.

LOCATION: Gregory Street

LATITUDE: 34.88165 ° LONGITUDE: 92.11248 °

DATE: 6/4/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 57.8 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 291.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 0.5'								
			Medium stiff, red, sandy lean clay.								
5.0					18	22.4	36		2,4,3		
			8.2'								
			Loose, brown & gray, clayey sand.								
10.0					22	23.6	49				
			13.4'								
			Medium stiff, brown & gray, sandy fat clay.								
15.0						32.5			3,3,5		
			18.2'								
			Medium stiff to stiff, brown & gray, sandy, elastic silt.								
20.0					34	33.5	52	85.2			
			23.4'								
			Stiff, brown & gray, sandy fat clay.								
25.0					32	38.3	79		2,4,8		
30.0						39.3			2,4,7		
			32.7'								
35.0			Auger Refusal @ 32.7', Begin Coring in Claystone. Dark gray-black, brown orange stain, sli. to sev. weathered, low hardness, thin bedded, sli. silty to v. f. sand rippled laminae in parts, calcareous, scattered vuggy texture w/v. thin bedded calcareous Sandstone. sev. weathered 32.7'-34.2'; 21 0°-20° bedding discontinuities w/soft walls 32.7'-50.2'; sandstone bed 45.8'-46.3';							90	26
40.0										100	98
45.0										100	72
50.0										100	66

HDR | ICA

BORING NO.: B-163

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 807+20 17' Rt.

LOCATION: Gregory Street

LATITUDE: 34.88165 ° LONGITUDE: 92.11248 °

DATE: 6/4/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 57.8 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 291.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			50.2'							100	66
55.0			Limestone: Light gray, gray, dk. gray, mod. weathered w/seams sev. weathered, v. thin to thin bedded, mod. hard w/soft seams, vuggy, fossiliferous w/thin beds, soft, calcareous Claystone, v. thin bedded, calcareous Sandstone. 9 0°-10° bedding discontinuities w/rough walls 50.2'-57.8'							94	68
			57.8'							85	60
60.0			Boring Terminated @ 57.8' (Elev. 233.6). Due to very poor quality, weathered, soft limestone at end of 5th core run, advanced boring an additional 2.0 ft. RS-7 collected from 36.3'-36.7' NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
65.0											
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-164

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 808+91 18' Lt.

LOCATION: Gregory Street

LATITUDE: 34.88171 ° LONGITUDE: 92.11190 °

DATE: 6/7/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 70.4 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 291.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Asphalt 0.4'								
			Medium dense, brown, silty, clayey gravel with sand. Interpreted as roadway embankment.								
5.0			4.9'		19	17.1	24		19,6,6		
			Medium stiff to stiff, brown & tan, sandy lean clay.								
10.0					21	24.2	36		2,3,3		
15.0						27.3			3,6,8		
			17.7'								
			Medium dense, brown, silty sand.								
20.0					24	27.8	35		4,5,7		
25.0						31.2			4,6,9		
			27.7'								
			Stiff to very hard, brown, sandy, fat clay.								
30.0						40.4			3,5,6		
35.0						34.2			6,7,8		
40.0					25	30.2	52		6,9,12		
45.0						32.1			14,48,22		
			49.4'								
50.0									50/0.0	90	0

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BORING NO.: B-164

PAGE: 2 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 808+91 18' Lt.

LOCATION: Gregory Street

LATITUDE: 34.88171 ° LONGITUDE: 92.11190 °

DATE: 6/7/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 70.4 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 291.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Auger Refusal @ 49.4', Begin Coring in Limestone.							90	0
			Light gray, gray, dk. gray-black, mod. weathered, v. thin to thin bedded, mod. hard, vuggy, fossiliferous w/laminations to thin beds, soft, calcareous Claystone, v. thin to thin bedded, calcareous Conglomerate & Sandstone.							100	70
55.0			46+ 0°-20° bedding discontinuities w/rough soft walls 49.4'-66.8'; 70° jt. w/faint iron oxide stain 68.2'; 60° bedding discontinuity 59.2'; interbedded conglomerate & sandstone 59.1'-62.5'; 70° jt. 63.4'							100	28
60.0											
										100	36
65.0											
			66.8'								
			Shale: Dark gray-black, sli. weathered, thin bedded, mod. hard, silty, trc. f. micaceous.							100	60
70.0			50° jt. w/rough walls 69.6'								
			70.4'								
			Boring Terminated @ 70.4' (Elev. 220.9).								
			RS-8 collected from 68.5'-68.9'								
			NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-165

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 810+17 17' Rt.

LOCATION: Gregory Street

LATITUDE: 34.88158 ° LONGITUDE: 92.11149 °

DATE: 6/5/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 65.9 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 286.1	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 0.6'								
			Soft, brown, sandy, silty clay.								
5.0					18	38.4	25	102.1			
			8.4'								
			Soft to stiff, brown, sandy lean clay.								
10.0						20.6			WOH,1,2		
15.0					15	31.2	45		2,4,5		
			18.2'								
			Stiff, brown, sandy elastic silt.								
20.0					36	35.6	64	80.1			
			23.4'								
			Stiff to very stiff, brown, sandy fat clay.								
25.0						39.0			2,5,5		
30.0					24	30.3	55		5,9,9		
35.0						35.3			4,5,7		
			39.3'								
40.0			Auger Refusal @ 39.3', Begin Coring in Claystone. Dark gray-black, scat. lt. gray, sli. weathered, low hardness w/med. hard beds, thin bedded, v. f. to f. sandy-rippled laminae in parts, calcareous, w/v. thin bedded calcareous Sandstone seams & beds.							100	94
45.0			3 0°-10° bedding discontinuities 39.3'-44.3'; v. f. sandy 41.3'-41.8'; core loss 44.0'-44.3' 44.3'							94	76
50.0			Limestone: Light gray, gray, dk. gray, mod. to sev. weathered, v. thin to thin bedded, mod. hard w/soft seams, vuggy, fossiliferous w/laminations to thin beds, soft, calcareous Claystone & v. thin to thin bedded, calcareous							100	32

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BORING NO.: B-165

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 810+17 17' Rt.

LOCATION: Gregory Street

LATITUDE: 34.88158 ° LONGITUDE: 92.11149 °

DATE: 6/5/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 65.9 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 286.1	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Sandstone. 50.5'							100	32
			18 0° bedding discontinuities 44.3'-50.5'								
55.0			Claystone: Dark gray-black, scat. brown-gray & lt. gray, trcs. orange stain, sli. to mod. weathered w/thin seams sev. weathered, low hardness w/med. to mod. hard beds, thin bedded, v. f. to f. sandy laminae, w/thin bedded calcareous Limestone.							100	68
60.0			limestone beds 51.1', 51.3'-51.8', 51.9'-52.0', 52.3'-52.5', 52.7'-54.0'; fossiliferous sand beds 54.4'-54.5', 54.7', 55.9'-56.0', 57.6'-57.7', 58.4'; 16 0°-10° bedding discontinuities 50.5'-60.9'; limestone bed 60.0'-60.9' 60.9'							98	86
65.0			Shale: Dark gray-black, sli. weathered to fresh, thin bedded, med. to mod. hard, silty in part, f. micaceous. 2 50° jts. w/smooth, hard walls; 2 40° jts. w/smooth, hard walls; 6 20° jts. w/hard walls 65.9'							100	54
70.0			Boring Terminated @ 65.9' (Elev. 220.2). Boring relocated due to underground storm drain. Due to poor quality rock, cored additional footage. RS-11 collected from 40.9'-41.3' RS-12 collected from 55.0'-55.4' RS-13 collected from 65.5'-65.9' NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-166

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 804+29 65' Rt.

LOCATION: Gregory Street

LATITUDE: 34.88156 ° LONGITUDE: 92.11345 °

DATE: 6/5/2016

TYPE OF DRILLING: CS/SPT

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 32.7 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 298.1	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Concrete 0.6'								
			Medium dense, red & brown, silty sand. Interpreted as roadway embankment.								
5.0					25	30.4	33	90.7			
			8.0'								
			Loose to medium dense, brown & gray, clayey sand.								
10.0					23	31.6	36		3,4,7		
15.0						38.0			2,4,6		
20.0						34.3			3,5,6		
			22.8'								
			Stiff, brown & gray, fat clay with sand.								
25.0						35.5			4,6,7		
30.0					28	35.3	72		4,7,8		
			32.7'								
			Casing Refusal & Boring Terminated @ 32.7' (Elev. 265.4).								
35.0			Boring located in cement driveway of restaurant. 3" casing was used to advance the hole in order to minimize disturbance footprint.								
40.0											
45.0											
50.0											

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BORING NO.: B-167

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 805+20 59' Lt.

LOCATION: Gregory Street

LATITUDE: 34.88189 ° LONGITUDE: 92.11313 °

DATE: 6/4/2016

TYPE OF DRILLING: CS/SPT

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 32.9 ft.

GROUNDWATER @ 28.2 ft. (Immediate)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 295.7	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Asphalt 0.3'								
			Loose, brown & gray, clayey sand.								
5.0			Interpreted bottom of roadway embankment at 4.5'.		13	31.3	33	93.9			
			8.0'								
			Stiff, brown & gray, sandy, fat clay.								
10.0						32.3			3,4,6		
15.0					28	37.0	53		3,5,6		
			17.9'								
			Stiff, brown & gray, sandy, elastic silt.								
20.0					44	35.2	73	82.0			
			23.2'								
			Stiff, brown & gray, sandy, elastic silt.								
25.0						38.9			2,5,5		
30.0					39	37.6	64		2,6,7		
			32.9'								
			Auger Refusal & Boring Terminated @ 32.9' (Elev. 262.8).								
35.0			Boring located in restaurant parking lot. 3" casing was used to advance the hole in order to minimize disturbance footprint.								
40.0											
45.0											
50.0											

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BORING NO.: B-168

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 807+09 72' Rt.

LOCATION: Gregory Street

LATITUDE: 34.88150 ° LONGITUDE: 92.11253 °

DATE: 6/5/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 33.5 ft.

GROUNDWATER @ Dry (Immediate)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 292.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 0.7'								
			Medium stiff, red & gray, sandy fat clay.								
5.0						20.3			1,2,3		
			8.1'								
			Loose, red & gray, clayey sand.								
10.0					22	26.8	57	94.4			
			13.3'								
			Stiff, red & gray, sandy fat clay.								
15.0						33.3			2,4,5		
			18.1'								
			Stiff, brown & gray, fat clay with sand.								
20.0						35.4			2,5,7		
			23.1'								
			Medium dense, brown & gray, clayey sand.								
25.0					29	36.5	73	80.4			
			28.3'								
			Stiff, brown & gray, fat clay with sand.								
30.0					29	37.9	81		3,5,7		
			33.5'								
35.0			Auger Refusal & Boring Terminated @ 33.5' (Elev. 258.9).								
			Boring relocated due to underground storm drain.								
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-169

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 807+36 87' Lt.

LOCATION: Gregory Street

LATITUDE: 34.88193 ° LONGITUDE: 92.11239 °

DATE: 6/16/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 21.3 ft.

GROUNDWATER @ Dry (Immediate)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 291.8	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Medium dense, red & gray, clayey sand.								
5.0			Interpreted bottom of roadway embankment at 4.8'.		24	24.5	47		2,5,6		
			8.1'								
			Medium dense, red & gray, clayey sand.								
10.0					21	30.1	39	90.3			
			13.3'								
			Stiff, brown & gray, sandy lean clay.								
15.0					15	32.4	40		3,5,6		
20.0						36.8			2,5,5		
			21.3'								
			No Auger Refusal & Boring Terminated @ 21.3' (Elev. 270.5). Boring relocated to avoid service road & underground utilities.								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-170

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 812+69 26' Rt.

LOCATION: Gregory Street

LATITUDE: 34.88150 ° LONGITUDE: 92.11066 °

DATE: 6/6/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 20.7 ft.

GROUNDWATER @ 14.0 ft. (24hr)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 290.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 0.4'								
			Very loose to loose, red, clayey sand.								
5.0		X				16.1			1,2,2		
10.0		X				18.4			1,2,3		
			12.5'								
			Loose to medium dense, red, clayey sand.								
15.0		■			18	19.3	31	114.7			
			17.7'								
			Loose, red, clayey sand.								
20.0		X			16	18.0	29		2,4,6		
			20.7'								
			No Refusal & Boring Terminated @ 20.7' (Elev. 269.7).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-171

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 662+39 117' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88191 ° LONGITUDE: 92.11123 °

DATE: 6/6/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 11.2 ft.

GROUNDWATER @ Dry (Immediate)

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 281.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 0.3'								
			Stiff, brown, sandy lean clay.								
5.0					22	21.4	36	103.2			
			8.2'								
			Loose, brown, clayey sand.								
10.0					23	19.2	43		3,4,5		
			11.2'								
			No Auger Refusal & Boring Terminated @ 11.2' (Elev. 270.1).								
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

Appendix B. LABORATORY TESTING

Project Name : Highway 67
Location : Pulaski County, Arkansas
Job Number : 251537

Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	pH	Natural Moisture Content (%)
11	B-100		P-1	3.5	5.0	Red Silty Sand		
11			P-2	8.5	10.0	Red Silty Sand		28.6
11			P-3	14.0	15.0	Red Silty Sand		
12			P-4	18.5	20.0	Red Silty Sand with Gravel		
44	B-101		P-1	3.5	5.0	Brown Sandy Lean Clay		
			P-2	8.5	10.0	No Recovery		
43			P-3	13.5	15.0	Brown Lean Clay with Sand		
43			P-4	18.5	20.0	Brown Lean Clay with Sand		21.9
45			P-5	23.5	25.0	Brown Silty Sand		
40	B-102		P-1	3.5	5.0	Red Sandy Lean Clay		25.3
45			P-2	8.5	10.0	Red Silty Sand		
45			P-3	13.5	15.0	Red Silty Sand		
45			P-4	18.5	20.0	Red Silty Sand		33.8
44	B-103		P-1	3.5	5.0	Red Sandy Lean Clay		
43			P-2	8.5	10.0	Red Lean Clay with Sand		
42			P-3	13.5	15.0	Brown Clayey Sand		
44			P-4	18.5	20.0	Brown Sandy Lean Clay		17.0
42			P-5	23.5	25.0	Brown Clayey Sand		
42			P-6	28.5	30.0	Brown Clayey Sand		
44	B-104		P-1	3.5	5.0	Brown Sandy Lean Clay		
126			ST-1	6.0	8.0	Gray Clayey Sand		25.7
41			P-2	8.5	10.0	Brown Sandy Fat Clay		
43			P-3	13.5	15.0	Brown Lean Clay with Sand		
41			P-4	18.5	20.0	Brown Sandy Fat Clay		
45			P-5	23.5	25.0	Brown Silty Sand		
41			P-6	28.5	30.0	Brown Sandy Fat Clay		31.8
41			P-7	33.5	35.0	Brown Sandy Fat Clay		
43	B-105		P-1	3.5	5.0	Brown Lean Clay with Sand		
43			P-2	8.5	10.0	Brown Lean Clay with Sand		
45			P-3	13.5	15.0	Brown Silty Sand		
44			P-4	18.5	20.0	Brown Sandy Lean Clay		
43	B-106		P-1	3.5	5.0	Red Lean Clay with Sand		
42			P-2	8.5	10.0	Red Clayey Sand		
42			P-3	13.5	15.0	Red Clayey Sand		
43			P-4	18.5	20.0	Red Lean Clay with Sand		
41			P-5	23.5	25.0	Red Sandy Fat Clay		
43	B-107		P-1	3.5	5.0	Red Lean Clay with Sand		
43			P-2	8.5	10.0	Red Lean Clay with Sand		
44			P-3	13.5	15.0	Brown Sandy Lean Clay		
42			P-4	18.5	20.0	Brown Clayey Sand		
42			P-5	23.5	25.0	Brown Clayey Sand		31.6
76	B-108		Bag-1	0.0	5.0	Brown Sandy Lean Clay		19.1
77	B-109		Bag-1	0.0	5.0	Brown Sandy Lean Clay		21.3
74	B-110		Bag-1	0.6	5.0	Brown Sandy Silty Clay		17.1
75	B-111		Bag-1	0.4	5.0	Brown Clayey Sand		27.1

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Project Name : Highway 67
Location : Pulaski County, Arkansas
Job Number : 251537

Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	pH	Natural Moisture Content (%)
78	B-112		Bag-1	0.0	5.0	Red Sandy Lean Clay		21.2
79	B-113		Bag-1	0.0	5.0	Red Sandy Lean Clay		20.4
80	B-114		Bag-1	0.0	5.0	Red Sandy Fat Clay		21.5
81	B-115		Bag-1	0.0	5.0	Red Clayey Sand		13.8
48	B-116		SS-1	4.8	6.3	Red Clayey Sand		28.9
7			ST-1	9.8	11.8	Red Silty Sand		27.7
48			SS-2	14.8	16.3	Brown & Gray Clayey Sand		30.5
48			SS-3	19.8	21.3	Brown & Gray Clayey Sand		30.3
48			SS-4	24.8	26.3	Brown & Gray Clayey Sand		27.0
48			SS-5	29.8	31.3	Brown Clayey Sand		29.9
49	B-117		SS-1	4.9	6.4	Brown Clayey Sand		23.6
10			ST-1	9.9	11.9	Red & Gray Clayey Sand		29.0
49			SS-2	14.9	16.4	Red & Gray Clayey Sand		32.1
50			SS-3	19.9	21.4	Brown & Gray Silty Sand		35.0
50			SS-4	24.9	26.4	Brown & Gray Silty Sand		25.6
50			SS-5	30.0	31.5	Brown & Gray Silty Sand		26.2
51			SS-6	34.9	36.4	Black Clayey Sand		31.5
51			SS-7	39.9	41.4	Brown & Gray Clayey Sand		27.1
51			SS-8	44.4	45.9	Brown & Gray Clayey Sand		29.4
52			SS-9	49.9	54.4	Black Clayey Sand		30.6
52			SS-10	54.9	56.4	Black Clayey Sand		31.4
46	B-118		SS-1	5.0	6.5	Tan Clayey Sand		35.2
46			SS-2	9.8	11.3	Tan Clayey Sand		31.2
47			SS-3	14.8	16.3	Tan Sandy Fat Clay		29.6
47			SS-4	19.8	21.3	Tan Sandy Fat Clay		27.3
47			SS-5	24.8	26.3	Tan Sandy Fat Clay		34.4
47			SS-6	29.8	31.3	Tan Sandy Fat Clay		32.5
47			SS-7	34.8	36.3	Gray Sandy Fat Clay		35.7
47			SS-8	39.8	41.3	Gray Sandy Fat Clay		28.2
47			SS-9	44.8	46.3	Gray Sandy Fat Clay		30.4
47			SS-10	49.8	51.0	Gray Sandy Fat Clay		28.8
100	B-120		SS-1	5.0	6.5	Tan & Gray Silty Sand		33.7
100			SS-2	10.0	11.5	Tan Silty Sand		31.2
100			SS-3	15.0	16.5	Tan & Gray Silty Sand		31.1
127			ST-1	20.0	22.0	Gray Sandy Elastic Silt		33.2
101			SS-4	25.0	26.5	Black Sandy Elastic Silt		33.8
101			SS-5	30.0	31.5	Black Sandy Elastic Silt		34.8
101			SS-6	35.0	36.5	Gray Sandy Elastic Silt		34.5
102			SS-7	40.0	41.5	Gray Sandy Elastic Silt		30.6
102			SS-8	45.0	46.5	Gray Sandy Elastic Silt		30.0
102			SS-9	50.0	51.5	Gray Sandy Elastic Silt		25.7
103	B-121		SS-1	3.3	4.8	Red & Gray Clayey Sand		25.9
104			SS-2	8.3	9.8	Tan Silty Sand		28.2
103			SS-3	13.3	14.8	Tan & Gray Clayey Sand		34.2
104			SS-4	18.3	19.8	Tan & Gray Silty Sand		28.6
103			SS-5	23.3	24.8	Gray & Tan Clayey Sand		31.9
53	B-122		SS-1	4.4	5.9	Tan Sandy Lean Clay		16.7
53			SS-2	9.4	10.9	Tan Sandy Lean Clay		20.4
54			SS-3	14.4	15.9	Tan Fat Clay with Sand		30.2
112			ST-1	19.4	21.4	Tan Silty Sand		36.7
54			SS-4	24.4	25.9	Tan Fat Clay with Sand		46.7
82	B-123		SS-1	4.6	6.1	Brown & Gray Clayey Sand		20.4

Project Name : Highway 67
Location : Pulaski County, Arkansas
Job Number : 251537

Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	pH	Natural Moisture Content (%)
82			SS-2	9.6	11.1	Brown Clayey Sand		20.7
83			SS-3	14.6	16.1	Brown Sandy Fat Clay		29.0
83			SS-4	19.6	21.1	Brown & Gray Sandy Fat Clay		19.9
128			ST-1	24.6	26.6	Brown & Gray Sandy Lean Clay		17.5
82			SS-5	29.6	31.1	Brown & Gray Clayey Sand		16.2
83			SS-6	34.6	36.1	Brown Sandy Fat Clay		16.2
83			SS-7	39.6	41.1	Brown & Gray Sandy Fat Clay		19.0
84			SS-8	44.6	46.1	Brown & Gray Fat Clay with Sand		40.5
84			SS-9	49.6	51.1	Brown & Gray Fat Clay with Sand		35.1
6	B-124		P-1	3.5	5.0	Brown Fat Clay with Sand		18.3
6			P-2	8.5	10.0	Brown Fat Clay with Sand		
6			P-3	13.5	15.0	Brown Fat Clay with Sand		
6			P-4	18.5	20.0	Brown Fat Clay with Sand		
6			P-5	23.5	25.0	Brown Fat Clay with Sand		
6			P-6	28.5	29.1	Brown Fat Clay with Sand		
85	B-126		SS-1	4.4	5.9	Brown & Gray Sandy Lean Clay		17.6
85			SS-2	9.4	10.9	Brown Sandy Lean Clay		18.3
129			ST-1	14.4	16.4	Gray & Brown Sandy Fat Clay		17.9
86			SS-3	19.4	20.9	Gray & Brown Sandy Silt		18.2
86			SS-4	24.4	25.9	Brown Gray Sandy Silt		22.5
86			SS-5	29.4	30.9	Gray & Brown Sandy Silt		28.6
87			SS-6	34.4	35.9	Brown & Gray Sandy Elastic Silt		36.1
8	B-127		P-1	3.5	5.0	Brown Sandy Lean Clay		
8			P-2	8.5	10.0	Brown Sandy Lean Clay		16.1
8			P-3	13.5	15.0	Brown Sandy Lean Clay		
9			P-4	18.5	20.0	Brown Fat Clay with Sand		37.7
9			P-5	23.5	24.5	Brown Fat Clay with Sand		
88	B-129		SS-1	5.0	6.5	Red & Brown Clayey Sand		8.0
88			SS-2	10.0	11.5	Red Clayey Sand		19.2
88			SS-3	15.0	16.5	Brown Clayey Sand		18.0
89			SS-4	20.0	21.5	Brown & Gray Sandy Lean Clay		18.4
89			SS-5	25.0	26.5	Brown Sandy Lean Clay		18.8
89			SS-6	30.0	31.5	Brown & Gray Sandy Lean Clay		26.5
89			SS-7	35.0	36.5	Brown & Gray Sandy Lean Clay		35.2
89			SS-8	40.0	41.5	Brown & Gray Sandy Lean Clay		23.2
89			SS-9	45.0	46.5	Brown Sandy Lean Clay		38.4
90			SS-10	50.0	51.5	Brown Clayey Sand with Gravel		30.1
55	B-130		SS-1	4.6	6.1	Brown & Gray Sandy Lean Clay with Gravel		16.5
56			SS-2	9.6	11.1	Red & Tan Sandy Fat Clay		36.1
113			ST-1	14.6	16.6	Red & Tan Silty Sand		38.0
56			SS-3	19.6	21.1	Tan Sandy Fat Clay		34.3
56			SS-4	24.6	24.8	Tan Sandy Fat Clay		8.6
91	B-131		SS-1	4.0	5.5	Brown Sandy Lean Clay		17.7
91			SS-2	9.0	10.5	Brown Sandy Lean Clay		18.4
91			SS-3	14.0	15.5	Brown & Gray Sandy Lean Clay		19.5
91			SS-4	19.0	20.5	Brown & Gray Sandy Lean Clay		18.9
130			ST-1	24.0	26.0	Brown & Gray Sandy Silty Clay		18.6
92			SS-5	29.0	30.5	Brown & Red Clayey Sand		18.0
93			SS-6	34.0	35.5	Brown & Gray Sandy Lean Clay		21.8
92			SS-7	39.0	40.5	Brown & Gray Clayey Sand		33.4
92			SS-8	44.0	45.5	Brown & Gray Clayey Sand		33.9
94			SS-9	49.0	50.5	Brown Clayey Sand with Gravel		20.1
12	B-132		P-1	3.5	5.0	Red Silty Sand with Gravel		14.2
13			P-2	8.5	10.0	Red Sandy Silt		23.7
11			P-3	13.5	15.0	Red Silty Sand		

Project Name : Highway 67
Location : Pulaski County, Arkansas
Job Number : 251537

Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	pH	Natural Moisture Content (%)
11			P-4	18.5	20.0	Red Silty Sand		
14	B-133		P-1	3.5	5.0	Red Clayey Sand		
12			P-2	8.5	10.0	Red Silty Sand with Gravel		
12			P-3	13.5	15.0	Red Silty Sand with Gravel		
12			P-4	18.5	20.0	Red Silty Sand with Gravel		
14	B-134		P-1	3.5	5.0	Red Clayey Sand		29.0
14			P-2	8.5	10.0	Red Clayey Sand		
11			P-3	13.5	15.0	Red Silty Sand		
11			P-4	18.5	20.0	Red Silty Sand		
1	B-135		P-1	3.5	5.0	Red Lean Clay with Sand		22.6
1			P-2	8.5	10.0	Red Lean Clay with Sand		
105	B-136		SS-1	4.2	5.7	Tan, Gray & Red Clayey Sand		22.4
131			ST-1	9.2	11.2	Gray Sandy Lean Clay		25.6
106			SS-2	14.2	15.7	Tan &Yellow Clayey Sand		29.5
105			SS-3	19.2	20.7	Tan &Yellow Clayey Sand		34.3
106			SS-4	24.2	25.7	Tan & Gray Clayey Sand		30.6
2	B-137		P-1	3.5	5.0	Red Clayey Sand with Gravel		
2			P-2	8.5	10.0	Red Clayey Sand with Gravel		30.8
2			P-3	13.5	15.0	Red Clayey Sand with Gravel		
3			P-4	18.5	20.0	Red Clayey Sand		
3			P-5	23.5	25.0	Red Clayey Sand		
3			P-6	28.5	30.0	Red Clayey Sand		33.8
4			P-7	33.5	35.0	Red Clayey Sand		
4			P-8	38.5	40.0	Brown Clayey Sand		31.5
4			P-9	43.5	45.0	Gray Clayey Sand		
5			P-10	48.5	50.0	Gray Fat Clay with Sand		
5			P-11	53.5	55.0	Gray Fat Clay with Sand		29.1
15	B-138		P-1	3.5	5.0	Red Clayey Sand		
15			P-2	8.5	10.0	Brown Clayey Sand		
15			P-3	13.5	15.0	Brown Clayey Sand		
15			P-4	18.5	20.0	Brown Clayey Sand		34.5
18			P-5	23.5	25.0	Gray Sandy Fat Clay		
18			P-6	28.5	30.0	Gray Sandy Fat Clay		
18			P-7	33.5	35.0	Gray Sandy Fat Clay		
15	B-139		P-1	3.5	5.0	Red Clayey Sand		
15			P-2	8.5	10.0	Red Clayey Sand		
15			P-3	13.5	15.0	Red Clayey Sand		
132			ST-1	17.0	19.0	Tan & Gray Clayey Sand		30.3
15			P-4	18.5	20.0	Red Clayey Sand		
18			P-5	23.5	25.0	Gray Sandy Fat Clay		31.9
18			P-6	28.5	30.0	Gray Sandy Fat Clay		
18			P-7	33.5	35.0	Gray Sandy Fat Clay		
17	B-140		P-1	3.5	5.0	Brown Clayey Sand		
17			P-2	8.5	10.0	Brown Clayey Sand		26.6
16			P-3	13.5	15.0	Gray Sandy Silt		21.9
16			P-4	18.5	20.0	Gray Sandy Silt		
18			P-5	23.5	25.0	Gray Sandy Fat Clay		
18			P-6	28.5	30.0	Gray Sandy Fat Clay		
18			P-7	33.5	35.0	Gray Sandy Fat Clay		
107	B-141		SS-1	4.3	5.8	Tan & Gray Silty Sand		27.1
108			SS-2	9.3	10.8	Tan & Gray Silty Sand		34.1
133			ST-1	14.3	16.3	Tan Clayey Sand		29.8
108			SS-3	19.3	20.8	Tan & Gray Silty Sand		37.0

Project Name : Highway 67
Location : Pulaski County, Arkansas
Job Number : 251537

Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	pH	Natural Moisture Content (%)
107			SS-4	24.3	25.8	Tan & Gray Silty Sand		30.5
19	B-142		P-1	3.5	5.0	Brown Clayey Sand		
19			P-2	8.5	10.0	Brown Clayey Sand		30.6
20			P-3	13.5	15.0	Brown Sandy Fat Clay		31.3
20			P-4	18.5	20.0	Gray Sandy Fat Clay		
20			P-5	23.5	25.0	Gray Sandy Fat Clay		
20			P-6	28.5	30.0	Gray Sandy Fat Clay		
21			P-7	33.5	35.0	Gray Sandy Silt		
21			P-8	38.5	39.5	Gray Sandy Silt		
21			P-9	43.5	44.5	Gray Sandy Silt		27.3
21			P-10	48.5	49.5	Gray Sandy Silt		
109	B-143		SS-1	4.5	6.0	Tan & Gray Silty Sand		28.5
134			ST-1	9.5	11.5	Tan Silty Sand		27.7
109			SS-2	14.5	16.0	Tan Silty Sand		28.3
110			SS-3	19.5	21.0	Gray Clayey Sand		26.9
110			SS-4	24.5	26.0	Gray Clayey Sand		30.4
110			SS-5	29.5	31.0	Gray Clayey Sand		29.9
111			SS-6	34.5	36.0	Gray Sandy Fat Clay		30.0
111			SS-7	39.5	41.0	Gray Sandy Fat Clay		31.5
19	B-144		P-1	3.5	5.0	Red Clayey Sand		
19			P-2	8.5	10.0	Brown Clayey Sand		
22	B-145		P-1	3.5	5.0	Red Sandy Elastic Silt		
22			P-2	8.5	10.0	Red Sandy Elastic Silt		
24			P-3	13.5	15.0	Red Clayey Sand		
22	B-146		P-1	3.5	5.0	Red Sandy Elastic Silt		
23			P-2	8.5	10.0	Red Silty Sand with Gravel		
22			P-3	13.5	15.0	Brown Sandy Elastic Silt		39.9
23	B-147		P-1	3.5	5.0	Red Silty Sand with Gravel		33.4
24			P-2	8.5	10.0	Red Clayey Sand		
23			P-3	13.5	15.0	Brown Silty Sand with Gravel		
25			P-4	18.5	20.0	Brown Clayey Sand		
24	B-148		P-1	3.5	5.0	Red Clayey Sand		31.3
24			P-2	8.5	10.0	Red Clayey Sand		
24			P-3	13.5	15.0	Red Clayey Sand		
25			P-4	18.5	20.0	Brown Clayey Sand		
22	B-149		P-1	3.5	5.0	Red Sandy Elastic Silt		
22			P-2	8.5	10.0	Red Sandy Elastic Silt		
25			P-3	13.5	15.0	Brown Clayey Sand		
25			P-4	18.5	20.0	Brown Clayey Sand		
25			P-5	23.5	25.0	Brown Clayey Sand		
25			P-6	28.5	30.0	Brown Clayey Sand		31.7
97	B-150		SS-1	5.0	6.5	Brown Silty Sand		23.4
135			ST-1	10.0	12.0	Brown & Gray Silty Sand		32.0
97			SS-2	15.0	16.5	Gray & Tan Silty Sand		33.6
97			SS-3	20.0	21.5	Tan Silty Sand		33.0
98			SS-4	25.0	26.5	Brown & Gray Silty Sand		32.7
98			SS-5	30.0	31.5	Brown & Gray Silty Sand		31.8
99			SS-6	35.0	36.5	Gray Clayey Sand		29.0
99			SS-7	40.0	41.5	Black Clayey Sand		27.9
24	B-151		P-1	3.5	5.0	Red Clayey Sand		
24			P-2	8.5	10.0	Red Clayey Sand		
25			P-3	13.5	15.0	Brown Clayey Sand		

Project Name : Highway 67
Location : Pulaski County, Arkansas
Job Number : 251537

Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	pH	Natural Moisture Content (%)
26	B-152		P-1	3.5	5.0	Red Sandy Elastic Silt		
26			P-2	8.5	10.0	Red Sandy Elastic Silt		
26			P-3	13.5	15.0	Red Sandy Elastic Silt		
28	B-153		P-1	3.5	5.0	Red Sandy Lean Clay		26.5
26			P-2	8.5	10.0	Red Sandy Elastic Silt		
26			P-3	13.5	15.0	Red Sandy Elastic Silt		36.4
33	B-154		P-1	3.5	5.0	Red Clayey Sand		
33			P-2	8.5	10.0	Red Clayey Sand		28.2
29			P-3	13.5	15.0	Brown Sandy Fat Clay		36.8
28	B-155		P-1	3.5	5.0	Red Sandy Lean Clay		
26			P-2	8.5	10.0	Red Sandy Elastic Silt		
27			P-3	13.5	15.0	Red Sandy Fat Clay		
27			P-4	18.5	20.0	Red Sandy Fat Clay		41.8
33	B-156		P-1	3.5	5.0	Red Clayey Sand		
33			P-2	8.5	10.0	Red Clayey Sand		
32	B-157		P-1	3.5	5.0	Red Sandy Lean Clay		26.1
32			P-2	8.5	10.0	Red Sandy Lean Clay		
31			P-3	13.5	15.0	Red Clayey Sand		16.8
31			P-4	18.5	20.0	Red Clayey Sand		
30			P-5	23.5	25.0	Red Sandy Silt		34.0
34	B-158		P-1	3.5	5.0	Red Lean Clay with Sand		
136			ST-1	6.0	8.0	Brown & Gray Sandy Lean Clay		21.2
34			P-2	8.5	10.0	Red Lean Clay with Sand		21.9
34			P-3	13.5	15.0	Brown Lean Clay with Sand		
34			P-4	18.5	20.0	Brown Lean Clay with Sand		
34			P-5	23.5	25.0	Brown Lean Clay with Sand		
34			P-6	28.5	30.0	Brown Lean Clay with Sand		
35			P-7	33.5	34.5	Gray Gravelly Lean Clay with Sand		
35			P-8	38.5	39.4	Gray Gravelly Lean Clay with Sand		30.9
95	B-159		SS-1	5.0	6.5	Brown & Gray Sandy Lean Clay		24.9
95			SS-2	10.0	11.5	Gray Sandy Lean Clay		17.8
137			ST-1	15.0	17.0	Brown & Gray Sandy Elastic Silt		
96			SS-3	20.0	21.5	Gray & Brown Sandy Elastic Silt		33.6
96			SS-4	25.0	26.5	Brown Sandy Elastic Silt		41.4
37	B-160		P-1	3.5	5.0	Red Sandy Lean Clay		
37			P-2	8.5	10.0	Red Sandy Lean Clay		16.2
37			P-3	13.5	15.0	Red Sandy Lean Clay		
38			P-4	18.5	20.0	Red Sandy Fat Clay		
38	B-161		P-1	3.5	5.0	Brown Sandy Fat Clay		37.6
38			P-2	8.5	10.0	Brown Sandy Fat Clay		
39			P-3	13.5	15.0	Gray Sandy Fat Clay		
39			P-4	18.5	20.0	Gray Sandy Fat Clay		42.0
36	B-162		P-1	3.5	5.0	Brown Silty Sand with Gravel		42.5
38			P-2	8.5	10.0	Brown Sandy Fat Clay		
39			P-3	13.5	15.0	Brown Sandy Fat Clay		
39			P-4	18.5	20.0	Gray Sandy Fat Clay		
57	B-163		SS-1	4.9	6.4	Red Sandy Lean Clay		22.4
114			ST-1	9.9	11.9	Brown & Gray Clayey Sand		23.6
58			SS-2	14.9	16.4	Brown & Gray Sandy Fat Clay		32.5
115			ST-2	19.9	21.9	Brown & Gray Sandy Elastic Silt		33.5

Project Name : Highway 67
Location : Pulaski County, Arkansas
Job Number : 251537

Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	pH	Natural Moisture Content (%)
58			SS-3	24.9	26.4	Brown & Gray Sandy Fat Clay		38.3
58			SS-4	29.9	31.4	Brown & Gray Sandy Fat Clay		39.3
59	B-164		SS-1	4.4	5.9	Brown Silty, Clayey Gravel with Sand		17.1
60			SS-2	9.4	10.9	Brown Sandy Lean Clay		24.2
60			SS-3	14.4	15.9	Tan Sandy Lean Clay		27.3
61			SS-4	19.4	20.9	Brown Silty Sand		27.8
61			SS-5	24.4	25.9	Brown Silty Sand		31.2
62			SS-6	29.4	30.9	Brown Sandy Fat Clay		40.4
62			SS-7	34.4	35.9	Brown Sandy Fat Clay		34.2
62			SS-8	39.4	40.9	Brown Sandy Fat Clay		30.2
62			SS-9	44.4	45.9	Brown Sandy Fat Clay		32.1
			SS-10	49.5	49.5	No Recovery		
116	B-165		ST-1	4.9	6.9	Brown Sandy Silty Clay		38.4
63			SS-1	9.9	11.4	Brown Sandy Lean Clay		20.6
63			SS-2	14.9	16.4	Brown Sandy Lean Clay		31.2
117			ST-2	19.9	21.9	Brown Sandy Elastic Silt		35.6
64			SS-3	24.9	26.4	Brown Sandy Fat Clay		39.0
64			SS-4	29.9	31.4	Brown Sandy Fat Clay		30.3
64			SS-5	34.9	36.4	Brown Sandy Fat Clay		35.3
124	B-166		ST-1	4.5	6.5	Red & Brown Silty Sand		30.4
65			SS-1	9.5	11.0	Brown & Gray Clayey Sand		31.6
65			SS-2	14.5	16.0	Brown & Gray Clayey Sand		38.0
65			SS-3	19.5	21.0	Brown Clayey Sand		34.3
66			SS-4	24.5	26.0	Brown & Gray Fat Clay with Sand		35.5
66			SS-5	29.5	31.0	Brown & Gray Fat Clay with Sand		35.3
118	B-167		ST-1	4.5	6.5	Brown & Gray Clayey Sand		31.3
67			SS-1	9.5	11.0	Brown & Gray Sandy Fat Clay		32.3
67			SS-2	14.5	16.0	Brown & Gray Sandy Fat Clay		37.0
119			ST-2	19.7	21.7	Brown & Gray Sandy Elastic Silt		35.2
68			SS-3	24.7	26.2	Brown & Gray Sandy Elastic Silt		38.9
68			SS-4	29.7	31.2	Brown & Gray Sandy Elastic Silt		37.6
67	B-168		SS-1	4.8	6.3	Red & Gray Sandy Fat Clay		20.3
125			ST-1	9.8	11.8	Red & Gray Clayey Sand		26.8
67			SS-2	14.8	16.3	Red & Gray Sandy Fat Clay		33.3
69			SS-3	19.8	21.3	Brown & Gray Fat Clay with Sand		35.4
120			ST-2	24.8	26.8	Brown & Gray Clayey Sand		36.5
69			SS-4	29.8	31.3	Brown & Gray Fat Clay with Sand		37.9
70	B-169		SS-1	4.8	6.3	Red & Gray Clayey Sand		24.5
121			ST-1	9.8	11.8	Red & Gray Clayey Sand		30.1
71			SS-2	14.8	16.3	Brown & Gray Sandy Lean Clay		32.4
71			SS-3	19.8	21.3	Brown & Gray Sandy Lean Clay		36.8
72	B-170		SS-1	4.2	5.7	Red Clayey Sand		16.1
72			SS-2	9.2	10.7	Red Clayey Sand		18.4
122			ST-1	14.2	16.2	Red Clayey Sand		19.3
72			SS-3	19.2	20.7	Red Clayey Sand		18.0
123	B-171		ST-1	4.7	6.7	Brown Sandy Lean Clay		21.4
73			SS-1	9.7	11.2	Brown Clayey Sand		19.2

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-135
Project State	: Arkansas	Sample Depth	: 3.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Red Lean Clay with 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
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	mm	
No.100		0.15	mm	
No.200		0.075	mm	76.6
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} = 0.008 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 22.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 40
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 16
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.09
Gravel (3in. + No.10)	: 0.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 0.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 22.2	AASHTO Classification: M145	: A-6 (12)
Silt + Clay (-No.200)	: 76.6	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)	: 0.5
Medium Sand (-No.10 + No.40)	: 0.7
Fine Sand (-No.40 + No.200)	: 22.2
Silt + Clay (-No.200)	: 76.6

Approved By : Kevin E. Walker

Soil No. 1

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-137
Project State	: Arkansas	Sample Depth	: 8.5' to 10.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Red Clayey Sand with Gravel		

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	87.8
1/4		6.3	mm	
No.4		4.75	mm	81.9
No.6		3.35	mm	
No.10		2	mm	75.2

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	71.0
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	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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.095 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 30.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 50
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 27
		Plasticity Index	: 23
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.17
Gravel (3in. + No.10)	: 24.8	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 4.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 24.3	AASHTO Classification: M145	: A-7-6 (7)
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)	: 18.1
Coarse Sand (-No.4 + No.10)	: 6.7
Medium Sand (-No.10 + No.40)	: 4.2
Fine Sand (-No.40 + No.200)	: 24.3
Silt + Clay (-No.200)	: 46.7

Approved By : Kevin E. Walker

Soil No. 2

hdrinc.com

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-6
Project County	: Pulaski	Sample Loc.	: Boring No. B-137
Project State	: Arkansas	Sample Depth	: 28.5' to 30.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Red 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	
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	98.4
No.6		3.35	mm	
No.10		2	mm	92.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	79.3
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	28.3
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} = 0.157 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 33.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 31
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 8
		Plasticity Index	: 23
AASHTO Composition of Total Sample: M145		Liquidity Index	: 1.14
Gravel (3in. + No.10)	: 7.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 13.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 51.0	AASHTO Classification: M145	: A-2-6 (3)
Silt + Clay (-No.200)	: 28.3	ASTM Classification: D2487	: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 1.6
Coarse Sand (-No.4 + No.10)	: 5.5
Medium Sand (-No.10 + No.40)	: 13.6
Fine Sand (-No.40 + No.200)	: 51.0
Silt + Clay (-No.200)	: 28.3

Approved By : Kevin E. Walker

Soil No. 3

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-8
Project County	: Pulaski	Sample Loc.	: Boring No. B-137
Project State	: Arkansas	Sample Depth	: 38.5' to 40.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
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	
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	98.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	87.0
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	43.8
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} = 0.096 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.5
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 42
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 18
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.41
Gravel (3in. + No.10)	: 1.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 11.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 43.2	AASHTO Classification: M145	: A-7-6 (4)
Silt + Clay (-No.200)	: 43.8	ASTM Classification: D2487	: SC

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)	: 1.7
Medium Sand (-No.10 + No.40)	: 11.3
Fine Sand (-No.40 + No.200)	: 43.2
Silt + Clay (-No.200)	: 43.8

Approved By : Kevin E. Walker

Soil No. 4

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-11
Project County	: Pulaski	Sample Loc.	: Boring No. B-137
Project State	: Arkansas	Sample Depth	: 53.5' to 55.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Gray Fat Clay with 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	
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	97.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	87.0
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	71.4
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} = 0.01 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 29.1
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 78
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 34
		Plasticity Index	: 44
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.12
Gravel (3in. + No.10)	: 2.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 10.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 15.6	AASHTO Classification: M145	: A-7-5 (33)
Silt + Clay (-No.200)	: 71.4	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)	: 2.0
Medium Sand (-No.10 + No.40)	: 10.9
Fine Sand (-No.40 + No.200)	: 15.6
Silt + Clay (-No.200)	: 71.4

Approved By : Kevin E. Walker

Soil No. 5

hdrinc.com

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-124
Project State	: Arkansas	Sample Depth	: 3.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Brown Fat Clay with 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	
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	99.7
No.6		3.35	mm	
No.10		2	mm	98.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	93.7
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	82.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.006 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 18.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 52
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 28
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.19
Gravel (3in. + No.10)	: 1.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 4.8	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 11.7	AASHTO Classification: M145	: A-7-6 (24)
Silt + Clay (-No.200)	: 82.0	ASTM Classification: D2487	: CH

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.3
Coarse Sand (-No.4 + No.10)	: 1.2
Medium Sand (-No.10 + No.40)	: 4.8
Fine Sand (-No.40 + No.200)	: 11.7
Silt + Clay (-No.200)	: 82.0

Approved By : Kevin E. Walker

Soil No. 6

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-116
Project State	: Arkansas	Sample Depth	: 11.3' to 11.8'
Laboratory No.	: 11206-03	Date Tested	: 06/23/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Red Silty 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	
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

AASHTO T88

				% Passing
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	12.1
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} = 0.16 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 27.7
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 27
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 23
		Plasticity Index	: 4
AASHTO Composition of Total Sample: M145		Liquidity Index	: 1.26
Gravel (3in. + No.10)	: 0.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 1.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 86.5	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 12.1	ASTM Classification: D2487	: 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)	: 0.0
Medium Sand (-No.10 + No.40)	: 1.4
Fine Sand (-No.40 + No.200)	: 86.5
Silt + Clay (-No.200)	: 12.1

Approved By : Kevin E. Walker

Soil No. 7

hdrinc.com

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-127
Project State	: Arkansas	Sample Depth	: 8.5' to 10.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Brown Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.6
No.6		3.35	mm	
No.10		2	mm	98.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	92.2
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	63.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.019 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 16.1
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 31
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 14
		Plasticity Index	: 17
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.11
Gravel (3in. + No.10)	: 1.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 29.2	AASHTO Classification: M145	: A-6 (8)
Silt + Clay (-No.200)	: 63.0	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.4
Coarse Sand (-No.4 + No.10)	: 1.1
Medium Sand (-No.10 + No.40)	: 6.3
Fine Sand (-No.40 + No.200)	: 29.2
Silt + Clay (-No.200)	: 63.0

Approved By : Kevin E. Walker

Soil No. 8

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-127
Project State	: Arkansas	Sample Depth	: 18.5' to 20.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Brown Fat Clay with 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	
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	98.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	92.6
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	75.7
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} = 0.008 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 37.7
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 56
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 27
		Plasticity Index	: 29
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.36
Gravel (3in. + No.10)	: 1.3	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 16.9	AASHTO Classification: M145	: A-7-6 (23)
Silt + Clay (-No.200)	: 75.7	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)	: 1.2
Medium Sand (-No.10 + No.40)	: 6.1
Fine Sand (-No.40 + No.200)	: 16.9
Silt + Clay (-No.200)	: 75.7

Approved By : Kevin E. Walker

Soil No. 9

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-117
Project State	: Arkansas	Sample Depth	: 10.4' to 10.9'
Laboratory No.	: 11206-03	Date Tested	: 06/22/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Red & Gray 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
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	32.8
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} = 0.124 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 29.0
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	: 0.92
Gravel (3in. + No.10)	: 0.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 7.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 59.3	AASHTO Classification: M145	: A-2-6 (0)
Silt + Clay (-No.200)	: 32.8	ASTM Classification: D2487	: SC

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)	: 7.7
Fine Sand (-No.40 + No.200)	: 59.3
Silt + Clay (-No.200)	: 32.8

Approved By : Kevin E. Walker

Soil No. 10

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-100
Project State	: Arkansas	Sample Depth	: 8.5' to 10.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Red Silty 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	
1	in.	25	mm	
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	98.5

AASHTO T88

				% 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	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} = 0.113 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 28.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 33
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 9
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.55
Gravel (3in. + No.10)	: 1.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 1.8	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 61.0	AASHTO Classification: M145	: A-4 (0)
Silt + Clay (-No.200)	: 35.7	ASTM Classification: D2487	: SM

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)	: 0.4
Medium Sand (-No.10 + No.40)	: 1.8
Fine Sand (-No.40 + No.200)	: 61.0
Silt + Clay (-No.200)	: 35.7

Approved By : Kevin E. Walker

Soil No. 11

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-132
Project State	: Arkansas	Sample Depth	: 3.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Red Silty Sand with Gravel		

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	100.0
1	in.	25	mm	87.9
3/4	in.	19	mm	82.7
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	69.3
1/4		6.3	mm	
No.4		4.75	mm	63.0
No.6		3.35	mm	
No.10		2	mm	58.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	53.8
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	21.2
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} = 0.347 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 14.2
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 21
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 17
		Plasticity Index	: 4
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.66
Gravel (3in. + No.10)	: 41.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 5.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 32.6	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 21.2	ASTM Classification: D2487	: SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 17.3
Fine Gravel (-3/4in. + No.4)	: 19.7
Coarse Sand (-No.4 + No.10)	: 4.1
Medium Sand (-No.10 + No.40)	: 5.1
Fine Sand (-No.40 + No.200)	: 32.6
Silt + Clay (-No.200)	: 21.2

Approved By : Kevin E. Walker

Soil No. 12

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-132
Project State	: Arkansas	Sample Depth	: 8.5' to 10.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Red Sandy Silt		

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	100.0
3/4	in.	19	mm	89.5
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	89.5
1/4		6.3	mm	
No.4		4.75	mm	89.0
No.6		3.35	mm	
No.10		2	mm	88.0

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	81.9
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	57.2
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} = 0.033 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 23.7
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 46
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 28
		Plasticity Index	: 18
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.24
Gravel (3in. + No.10)	: 12.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 24.7	AASHTO Classification: M145	: A-7-6 (8)
Silt + Clay (-No.200)	: 57.2	ASTM Classification: D2487	: ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 10.5
Fine Gravel (-3/4in. + No.4)	: 0.5
Coarse Sand (-No.4 + No.10)	: 1.0
Medium Sand (-No.10 + No.40)	: 6.1
Fine Sand (-No.40 + No.200)	: 24.7
Silt + Clay (-No.200)	: 57.2

Approved By : Kevin E. Walker

Soil No. 13

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-134
Project State	: Arkansas	Sample Depth	: 3.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Red 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	
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	96.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	85.0
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	45.2
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} = 0.092 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 29.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 45
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 26
		Plasticity Index	: 19
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.17
Gravel (3in. + No.10)	: 3.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 11.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 39.8	AASHTO Classification: M145	: A-7-6 (5)
Silt + Clay (-No.200)	: 45.2	ASTM Classification: D2487	: SC

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)	: 3.2
Medium Sand (-No.10 + No.40)	: 11.4
Fine Sand (-No.40 + No.200)	: 39.8
Silt + Clay (-No.200)	: 45.2

Approved By : Kevin E. Walker

Soil No. 14

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-138
Project State	: Arkansas	Sample Depth	: 18.5' to 20.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	88.3
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	46.1
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} = 0.088 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 34.5
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 62
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 18
		Plasticity Index	: 44
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.38
Gravel (3in. + No.10)	: 0.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 11.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 42.2	AASHTO Classification: M145	: A-7-6 (14)
Silt + Clay (-No.200)	: 46.1	ASTM Classification: D2487	: SC

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)	: 11.1
Fine Sand (-No.40 + No.200)	: 42.2
Silt + Clay (-No.200)	: 46.1

Approved By : Kevin E. Walker

Soil No. 15

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-140
Project State	: Arkansas	Sample Depth	: 13.5' to 15.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Gray Sandy Silt		

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	99.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
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	50.2
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} = 0.073 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 21.9
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 19
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 15
		Plasticity Index	: 4
AASHTO Composition of Total Sample: M145		Liquidity Index	: 1.84
Gravel (3in. + No.10)	: 0.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 0.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 48.8	AASHTO Classification: M145	: A-4 (0)
Silt + Clay (-No.200)	: 50.2	ASTM Classification: D2487	: ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.2
Coarse Sand (-No.4 + No.10)	: 0.3
Medium Sand (-No.10 + No.40)	: 0.5
Fine Sand (-No.40 + No.200)	: 48.8
Silt + Clay (-No.200)	: 50.2

Approved By : Kevin E. Walker

Soil No. 16

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-140
Project State	: Arkansas	Sample Depth	: 8.5' to 10.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
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	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	92.3
1/4		6.3	mm	
No.4		4.75	mm	91.5
No.6		3.35	mm	
No.10		2	mm	90.2

AASHTO T88

				% 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	24.2
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} = 0.155 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 26.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 45
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 21
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.11
Gravel (3in. + No.10)	: 9.8	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 4.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 61.4	AASHTO Classification: M145	: A-2-7 (2)
Silt + Clay (-No.200)	: 24.2	ASTM Classification: D2487	: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 8.5
Coarse Sand (-No.4 + No.10)	: 1.3
Medium Sand (-No.10 + No.40)	: 4.6
Fine Sand (-No.40 + No.200)	: 61.4
Silt + Clay (-No.200)	: 24.2

Approved By : Kevin E. Walker

Soil No. 17

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-5
Project County	: Pulaski	Sample Loc.	: Boring No. B-139
Project State	: Arkansas	Sample Depth	: 23.5' to 25.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Gray Sandy Fat 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	99.2

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	89.5
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	65.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.015 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.9
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 66
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 29
		Plasticity Index	: 37
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.07
Gravel (3in. + No.10)	: 0.8	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 9.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 23.6	AASHTO Classification: M145	: A-7-6 (24)
Silt + Clay (-No.200)	: 65.9	ASTM Classification: D2487	: CH

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)	: 0.8
Medium Sand (-No.10 + No.40)	: 9.7
Fine Sand (-No.40 + No.200)	: 23.6
Silt + Clay (-No.200)	: 65.9

Approved By : Kevin E. Walker

Soil No. 18

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-142
Project State	: Arkansas	Sample Depth	: 8.5' to 10.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	94.7
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	32.2
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} = 0.123 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 30.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 43
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 25
		Plasticity Index	: 18
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.33
Gravel (3in. + No.10)	: 0.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 5.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 62.5	AASHTO Classification: M145	: A-2-7 (2)
Silt + Clay (-No.200)	: 32.2	ASTM Classification: D2487	: SC

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)	: 5.3
Fine Sand (-No.40 + No.200)	: 62.5
Silt + Clay (-No.200)	: 32.2

Approved By : Kevin E. Walker

Soil No. 19

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-142
Project State	: Arkansas	Sample Depth	: 13.5' to 15.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Brown Sandy Fat 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	100.0

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	92.6
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	60.7
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} = 0.023 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 60
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 27
		Plasticity Index	: 33
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.12
Gravel (3in. + No.10)	: 0.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 7.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 31.9	AASHTO Classification: M145	: A-7-6 (18)
Silt + Clay (-No.200)	: 60.7	ASTM Classification: D2487	: CH

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)	: 7.4
Fine Sand (-No.40 + No.200)	: 31.9
Silt + Clay (-No.200)	: 60.7

Approved By : Kevin E. Walker

Soil No. 20

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-9
Project County	: Pulaski	Sample Loc.	: Boring No. B-142
Project State	: Arkansas	Sample Depth	: 43.5' to 44.5'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Gray Sandy Silt		

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	99.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	91.8
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	61.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.022 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 27.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 47
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 31
		Plasticity Index	: 16
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.24
Gravel (3in. + No.10)	: 0.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 7.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 30.3	AASHTO Classification: M145	: A-7-5 (9)
Silt + Clay (-No.200)	: 61.5	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)	: 0.5
Medium Sand (-No.10 + No.40)	: 7.7
Fine Sand (-No.40 + No.200)	: 30.3
Silt + Clay (-No.200)	: 61.5

Approved By : Kevin E. Walker

Soil No. 21

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-146
Project State	: Arkansas	Sample Depth	: 13.5' to 15.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Brown Sandy Elastic Silt		

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	99.4

AASHTO T88

				% Passing
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	53.2
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} = 0.05 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 39.9
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 51
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 29
		Plasticity Index	: 22
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.52
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)	: 43.3	AASHTO Classification: M145	: A-7-6 (9)
Silt + Clay (-No.200)	: 53.2	ASTM Classification: D2487	: MH

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)	: 2.9
Fine Sand (-No.40 + No.200)	: 43.3
Silt + Clay (-No.200)	: 53.2

Approved By : Kevin E. Walker

Soil No. 22

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-147
Project State	: Arkansas	Sample Depth	: 3.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Red Silty Sand with Gravel		

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	84.4
1/4		6.3	mm	
No.4		4.75	mm	80.3
No.6		3.35	mm	
No.10		2	mm	75.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	70.5
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	31.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.173 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 33.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 43
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 27
		Plasticity Index	: 16
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.37
Gravel (3in. + No.10)	: 24.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 4.8	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 39.5	AASHTO Classification: M145	: A-2-7 (1)
Silt + Clay (-No.200)	: 31.0	ASTM Classification: D2487	: SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 19.7
Coarse Sand (-No.4 + No.10)	: 5.0
Medium Sand (-No.10 + No.40)	: 4.8
Fine Sand (-No.40 + No.200)	: 39.5
Silt + Clay (-No.200)	: 31.0

Approved By : Kevin E. Walker

Soil No. 23

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-148
Project State	: Arkansas	Sample Depth	: 3.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	95.5
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	39.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.103 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 45
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 25
		Plasticity Index	: 20
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.30
Gravel (3in. + No.10)	: 0.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 4.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 55.6	AASHTO Classification: M145	: A-7-6 (4)
Silt + Clay (-No.200)	: 39.9	ASTM Classification: D2487	: SC

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)	: 4.3
Fine Sand (-No.40 + No.200)	: 55.6
Silt + Clay (-No.200)	: 39.9

Approved By : Kevin E. Walker

Soil No. 24

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-6
Project County	: Pulaski	Sample Loc.	: Boring No. B-149
Project State	: Arkansas	Sample Depth	: 28.5' to 30.0'
Laboratory No.	: 11206-03	Date Tested	: 05/25/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
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	
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

AASHTO T88

				% Passing
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	41.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.096 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.7
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 38
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 14
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.58
Gravel (3in. + No.10)	: 0.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 1.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 56.7	AASHTO Classification: M145	: A-6 (2)
Silt + Clay (-No.200)	: 41.9	ASTM Classification: D2487	: SC

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)	: 1.2
Fine Sand (-No.40 + No.200)	: 56.7
Silt + Clay (-No.200)	: 41.9

Approved By : Kevin E. Walker

Soil No. 25

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-153
Project State	: Arkansas	Sample Depth	: 13.5' to 15.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red Sandy Elastic Silt		

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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	94.4
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	56.8
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} = 0.034 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 36.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 55
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 39
		Plasticity Index	: 16
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.19
Gravel (3in. + No.10)	: 0.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 5.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 37.6	AASHTO Classification: M145	: A-7-5 (9)
Silt + Clay (-No.200)	: 56.8	ASTM Classification: D2487	: MH

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)	: 5.4
Fine Sand (-No.40 + No.200)	: 37.6
Silt + Clay (-No.200)	: 56.8

Approved By : Kevin E. Walker

Soil No. 26

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-155
Project State	: Arkansas	Sample Depth	: 18.5' to 20.0'
Laboratory No.	: 11206-03	Date Tested	: 06/03/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red Sandy Fat 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	99.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	84.0
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	70.2
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} = 0.011 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 41.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 109
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 35
		Plasticity Index	: 74
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.09
Gravel (3in. + No.10)	: 0.4	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 15.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 13.8	AASHTO Classification: M145	: A-7-5 (55)
Silt + Clay (-No.200)	: 70.2	ASTM Classification: D2487	: CH

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)	: 15.6
Fine Sand (-No.40 + No.200)	: 13.8
Silt + Clay (-No.200)	: 70.2

Approved By : Kevin E. Walker

Soil No. 27

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-153
Project State	: Arkansas	Sample Depth	: 3.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red Sandy 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	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	99.3
1/4		6.3	mm	
No.4		4.75	mm	99.0
No.6		3.35	mm	
No.10		2	mm	97.8

AASHTO T88

				% Passing
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	
No.100		0.15	mm	
No.200		0.075	mm	67.3
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} = 0.014 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 26.5
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 29
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 19
		Plasticity Index	: 10
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.76
Gravel (3in. + No.10)	: 2.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 1.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 28.6	AASHTO Classification: M145	: A-4 (5)
Silt + Clay (-No.200)	: 67.3	ASTM Classification: D2487	: CL

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)	: 1.2
Medium Sand (-No.10 + No.40)	: 1.9
Fine Sand (-No.40 + No.200)	: 28.6
Silt + Clay (-No.200)	: 67.3

Approved By : Kevin E. Walker

Soil No. 28

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-154
Project State	: Arkansas	Sample Depth	: 13.5' to 15.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Brown Sandy Fat 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	100.0

AASHTO T88

				% Passing
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	63.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.019 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 36.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 64
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 26
		Plasticity Index	: 38
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.27
Gravel (3in. + No.10)	: 0.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 3.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 33.3	AASHTO Classification: M145	: A-7-6 (22)
Silt + Clay (-No.200)	: 63.0	ASTM Classification: D2487	: CH

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)	: 3.7
Fine Sand (-No.40 + No.200)	: 33.3
Silt + Clay (-No.200)	: 63.0

Approved By : Kevin E. Walker

Soil No. 29

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-5
Project County	: Pulaski	Sample Loc.	: Boring No. B-157
Project State	: Arkansas	Sample Depth	: 23.5' to 25.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red Sandy Silt		

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	91.9
1/4		6.3	mm	
No.4		4.75	mm	87.4
No.6		3.35	mm	
No.10		2	mm	85.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	80.2
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	60.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.023 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 34.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: NP
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: NP
		Plasticity Index	: NP
AASHTO Composition of Total Sample: M145		Liquidity Index	: NA
Gravel (3in. + No.10)	: 14.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 5.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 19.3	AASHTO Classification: M145	: A-4 (0)
Silt + Clay (-No.200)	: 60.9	ASTM Classification: D2487	: ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 12.6
Coarse Sand (-No.4 + No.10)	: 1.9
Medium Sand (-No.10 + No.40)	: 5.3
Fine Sand (-No.40 + No.200)	: 19.3
Silt + Clay (-No.200)	: 60.9

Approved By : Kevin E. Walker

Soil No. 30

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-157
Project State	: Arkansas	Sample Depth	: 13.5' to 15.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	55.8
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	18.6
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} = 0.324 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 16.8
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	: -0.21
Gravel (3in. + No.10)	: 0.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 43.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 37.2	AASHTO Classification: M145	: A-2-6 (0)
Silt + Clay (-No.200)	: 18.6	ASTM Classification: D2487	: SC

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)	: 43.7
Fine Sand (-No.40 + No.200)	: 37.2
Silt + Clay (-No.200)	: 18.6

Approved By : Kevin E. Walker

Soil No. 31

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-157
Project State	: Arkansas	Sample Depth	: 3.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red Sandy 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	99.1

AASHTO T88

				% 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	57.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.033 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 26.1
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 49
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 26
		Plasticity Index	: 23
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.01
Gravel (3in. + No.10)	: 0.9	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 3.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 38.8	AASHTO Classification: M145	: A-7-6 (11)
Silt + Clay (-No.200)	: 57.0	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)	: 0.9
Medium Sand (-No.10 + No.40)	: 3.3
Fine Sand (-No.40 + No.200)	: 38.8
Silt + Clay (-No.200)	: 57.0

Approved By : Kevin E. Walker

Soil No. 32

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-154
Project State	: Arkansas	Sample Depth	: 8.5' to 10.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red 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	
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	99.7
No.6		3.35	mm	
No.10		2	mm	99.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	96.0
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	43.6
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} = 0.093 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 28.2
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 46
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 22
		Plasticity Index	: 24
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.24
Gravel (3in. + No.10)	: 0.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 3.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 52.4	AASHTO Classification: M145	: A-7-6 (6)
Silt + Clay (-No.200)	: 43.6	ASTM Classification: D2487	: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.3
Coarse Sand (-No.4 + No.10)	: 0.2
Medium Sand (-No.10 + No.40)	: 3.5
Fine Sand (-No.40 + No.200)	: 52.4
Silt + Clay (-No.200)	: 43.6

Approved By : Kevin E. Walker

Soil No. 33

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-158
Project State	: Arkansas	Sample Depth	: 8.5' to 10.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red Lean Clay with 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	
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	99.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	96.0
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	72.4
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} = 0.01 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 21.9
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 43
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 15
		Plasticity Index	: 28
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.24
Gravel (3in. + No.10)	: 0.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 3.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 23.6	AASHTO Classification: M145	: A-7-6 (18)
Silt + Clay (-No.200)	: 72.4	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)	: 0.5
Medium Sand (-No.10 + No.40)	: 3.3
Fine Sand (-No.40 + No.200)	: 23.6
Silt + Clay (-No.200)	: 72.4

Approved By : Kevin E. Walker

Soil No. 34

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-8
Project County	: Pulaski	Sample Loc.	: Boring No. B-158
Project State	: Arkansas	Sample Depth	: 38.5' to 39.4'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Gray Gravelly Lean Clay with 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	100.0
1	in.	25	mm	79.7
3/4	in.	19	mm	79.7
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	71.0
1/4		6.3	mm	
No.4		4.75	mm	67.6
No.6		3.35	mm	
No.10		2	mm	62.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	56.1
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	50.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.075 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 30.9
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 46
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 19
		Plasticity Index	: 27
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.45
Gravel (3in. + No.10)	: 37.3	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 6.1	AASHTO Classification: M145	: A-7-6 (9)
Silt + Clay (-No.200)	: 50.0	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 20.3
Fine Gravel (-3/4in. + No.4)	: 12.1
Coarse Sand (-No.4 + No.10)	: 4.9
Medium Sand (-No.10 + No.40)	: 6.6
Fine Sand (-No.40 + No.200)	: 6.1
Silt + Clay (-No.200)	: 50.0

Approved By : Kevin E. Walker

Soil No. 35

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-162
Project State	: Arkansas	Sample Depth	: 3.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Brown Silty Sand with Gravel		

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	100.0
1	in.	25	mm	80.9
3/4	in.	19	mm	80.9
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	74.8
1/4		6.3	mm	
No.4		4.75	mm	71.2
No.6		3.35	mm	
No.10		2	mm	67.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	62.8
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	41.8
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} = 0.148 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 42.5
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 54
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 31
		Plasticity Index	: 23
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.51
Gravel (3in. + No.10)	: 32.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 5.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 21.0	AASHTO Classification: M145	: A-7-5 (5)
Silt + Clay (-No.200)	: 41.8	ASTM Classification: D2487	: SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 19.1
Fine Gravel (-3/4in. + No.4)	: 9.7
Coarse Sand (-No.4 + No.10)	: 3.3
Medium Sand (-No.10 + No.40)	: 5.1
Fine Sand (-No.40 + No.200)	: 21.0
Silt + Clay (-No.200)	: 41.8

Approved By : Kevin E. Walker

Soil No. 36

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SOIL CLASSIFICATION

Project Name	:	Main St.-Vandenburg Blvd. (Widening)		
Project No.	:	CA0604	Sample No.	: P-2
Project County	:	Pulaski	Sample Loc.	: Boring No. B-160
Project State	:	Arkansas	Sample Depth	: 8.5' to 10.0'
Laboratory No.	:	11206-03	Date Tested	: 05/27/16
Submitted By	:	HDR|ICA	Date Reported	: 06/17/16
Soil Type	:	Red Sandy 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	99.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	88.4
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	56.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.035 mm

CBR	:	NA	Natural Moisture (%) (AASHTO T265)	: 16.2
Dry Dens.	:	NA	Liquid Limit (AASHTO T89)	: 34
Opt. Moist.	:	NA	Plastic Limit (AASHTO T90)	: 14
			Plasticity Index	: 20
AASHTO Composition of Total Sample: M145			Liquidity Index	: 0.10
Gravel (3in. + No.10)	:	0.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	:	11.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	:	31.9	AASHTO Classification: M145	: A-6 (8)
Silt + Clay (-No.200)	:	56.5	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)	:	0.2
Medium Sand (-No.10 + No.40)	:	11.4
Fine Sand (-No.40 + No.200)	:	31.9
Silt + Clay (-No.200)	:	56.5

Approved By : Kevin E. Walker

Soil No. 37

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-161
Project State	: Arkansas	Sample Depth	: 3.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Brown Sandy Fat 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	97.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	87.0
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	60.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.025 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 37.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 69
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 29
		Plasticity Index	: 40
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.21
Gravel (3in. + No.10)	: 2.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 10.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 27.0	AASHTO Classification: M145	: A-7-6 (22)
Silt + Clay (-No.200)	: 60.0	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)	: 2.0
Medium Sand (-No.10 + No.40)	: 10.9
Fine Sand (-No.40 + No.200)	: 27.0
Silt + Clay (-No.200)	: 60.0

Approved By : Kevin E. Walker

Soil No. 38

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-161
Project State	: Arkansas	Sample Depth	: 18.5' to 20.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Gray Sandy Fat 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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	86.8
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	59.3
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} = 0.027 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 42.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 69
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 29
		Plasticity Index	: 40
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.32
Gravel (3in. + No.10)	: 0.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 13.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 27.5	AASHTO Classification: M145	: A-7-6 (22)
Silt + Clay (-No.200)	: 59.3	ASTM Classification: D2487	: CH

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.0
Coarse Sand (-No.4 + No.10)	: 0.1
Medium Sand (-No.10 + No.40)	: 13.1
Fine Sand (-No.40 + No.200)	: 27.5
Silt + Clay (-No.200)	: 59.3

Approved By : Kevin E. Walker

Soil No. 39

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-102
Project State	: Arkansas	Sample Depth	: 3.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red Sandy 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	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	95.4
1/4		6.3	mm	
No.4		4.75	mm	92.7
No.6		3.35	mm	
No.10		2	mm	91.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	89.6
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	54.6
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} = 0.043 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 25.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 37
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 18
		Plasticity Index	: 19
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.36
Gravel (3in. + No.10)	: 8.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 2.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 35.0	AASHTO Classification: M145	: A-6 (7)
Silt + Clay (-No.200)	: 54.6	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 7.3
Coarse Sand (-No.4 + No.10)	: 0.8
Medium Sand (-No.10 + No.40)	: 2.3
Fine Sand (-No.40 + No.200)	: 35.0
Silt + Clay (-No.200)	: 54.6

Approved By : Kevin E. Walker

Soil No. 40

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-6
Project County	: Pulaski	Sample Loc.	: Boring No. B-104
Project State	: Arkansas	Sample Depth	: 28.5' to 30.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Brown Sandy Fat 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	96.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	72.6
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	52.1
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} = 0.057 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 82
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 32
		Plasticity Index	: 50
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.00
Gravel (3in. + No.10)	: 3.3	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 24.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 20.5	AASHTO Classification: M145	: A-7-5 (22)
Silt + Clay (-No.200)	: 52.1	ASTM Classification: D2487	: CH

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)	: 3.3
Medium Sand (-No.10 + No.40)	: 24.1
Fine Sand (-No.40 + No.200)	: 20.5
Silt + Clay (-No.200)	: 52.1

Approved By : Kevin E. Walker

Soil No. 41

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-5
Project County	: Pulaski	Sample Loc.	: Boring No. B-107
Project State	: Arkansas	Sample Depth	: 23.5' to 25.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
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	
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	99.1

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	87.9
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	27.4
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} = 0.143 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.6
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	: 0.51
Gravel (3in. + No.10)	: 0.9	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 11.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 60.5	AASHTO Classification: M145	: A-2-6 (1)
Silt + Clay (-No.200)	: 27.4	ASTM Classification: D2487	: SC

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)	: 0.9
Medium Sand (-No.10 + No.40)	: 11.2
Fine Sand (-No.40 + No.200)	: 60.5
Silt + Clay (-No.200)	: 27.4

Approved By : Kevin E. Walker

Soil No. 42

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-101
Project State	: Arkansas	Sample Depth	: 18.5' to 20.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Brown Lean Clay with 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	
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	99.0
No.6		3.35	mm	
No.10		2	mm	98.1

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	96.1
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	71.3
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} = 0.01 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 21.9
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 37
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 17
		Plasticity Index	: 20
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.22
Gravel (3in. + No.10)	: 1.9	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 2.0	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 24.8	AASHTO Classification: M145	: A-6 (12)
Silt + Clay (-No.200)	: 71.3	ASTM Classification: D2487	: CL

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)	: 0.9
Medium Sand (-No.10 + No.40)	: 2.0
Fine Sand (-No.40 + No.200)	: 24.8
Silt + Clay (-No.200)	: 71.3

Approved By : Kevin E. Walker

Soil No. 43

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-103
Project State	: Arkansas	Sample Depth	: 18.5' to 20.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Brown Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	99.6

AASHTO T88

				% 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	53.7
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} = 0.048 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 17.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 28
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 16
		Plasticity Index	: 12
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.05
Gravel (3in. + No.10)	: 0.4	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 2.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 43.0	AASHTO Classification: M145	: A-6 (3)
Silt + Clay (-No.200)	: 53.7	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.1
Coarse Sand (-No.4 + No.10)	: 0.3
Medium Sand (-No.10 + No.40)	: 2.9
Fine Sand (-No.40 + No.200)	: 43.0
Silt + Clay (-No.200)	: 53.7

Approved By : Kevin E. Walker

Soil No. 44

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-102
Project State	: Arkansas	Sample Depth	: 18.5' to 20.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red Silty 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	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	99.6
1/4		6.3	mm	
No.4		4.75	mm	98.7
No.6		3.35	mm	
No.10		2	mm	97.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	89.3
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	23.2
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} = 0.152 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 33.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 34
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 10
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.98
Gravel (3in. + No.10)	: 2.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 8.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 66.1	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 23.2	ASTM Classification: D2487	: SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 1.3
Coarse Sand (-No.4 + No.10)	: 1.2
Medium Sand (-No.10 + No.40)	: 8.2
Fine Sand (-No.40 + No.200)	: 66.1
Silt + Clay (-No.200)	: 23.2

Approved By : Kevin E. Walker

Soil No. 45

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-118
Project State	: Arkansas	Sample Depth	: 9.8' to 11.3'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Tan 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	
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	98.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	90.8
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	25.1
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} = 0.145 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.2
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 37
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 21
		Plasticity Index	: 16
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.67
Gravel (3in. + No.10)	: 1.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 8.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 65.7	AASHTO Classification: M145	: A-2-6 (1)
Silt + Clay (-No.200)	: 25.1	ASTM Classification: D2487	: SC

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)	: 1.1
Medium Sand (-No.10 + No.40)	: 8.1
Fine Sand (-No.40 + No.200)	: 65.7
Silt + Clay (-No.200)	: 25.1

Approved By : Kevin E. Walker

Soil No. 46

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-5
Project County	: Pulaski	Sample Loc.	: Boring No. B-118
Project State	: Arkansas	Sample Depth	: 24.8' to 26.3'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Tan Sandy Fat 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	98.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	82.7
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	55.3
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} = 0.04 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 34.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 68
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 30
		Plasticity Index	: 38
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.12
Gravel (3in. + No.10)	: 1.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 15.8	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 27.4	AASHTO Classification: M145	: A-7-6 (18)
Silt + Clay (-No.200)	: 55.3	ASTM Classification: D2487	: CH

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.0
Coarse Sand (-No.4 + No.10)	: 1.5
Medium Sand (-No.10 + No.40)	: 15.8
Fine Sand (-No.40 + No.200)	: 27.4
Silt + Clay (-No.200)	: 55.3

Approved By : Kevin E. Walker

Soil No. 47

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-116
Project State	: Arkansas	Sample Depth	: 24.8' to 26.3'
Laboratory No.	: 11206-03	Date Tested	: 06/16/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Brown & Gray 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	
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	97.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	87.2
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	33.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.128 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 27.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 41
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 25
		Plasticity Index	: 16
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.10
Gravel (3in. + No.10)	: 2.3	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 10.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 53.7	AASHTO Classification: M145	: A-2-7 (1)
Silt + Clay (-No.200)	: 33.5	ASTM Classification: D2487	: SC

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)	: 2.3
Medium Sand (-No.10 + No.40)	: 10.5
Fine Sand (-No.40 + No.200)	: 53.7
Silt + Clay (-No.200)	: 33.5

Approved By : Kevin E. Walker

Soil No. 48

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-117
Project State	: Arkansas	Sample Depth	: 14.9' to 16.4'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Red & Gray 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	91.4
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	39.4
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} = 0.107 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 32.1
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 35
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 21
		Plasticity Index	: 14
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.77
Gravel (3in. + No.10)	: 0.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 8.0	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 52.0	AASHTO Classification: M145	: A-6 (2)
Silt + Clay (-No.200)	: 39.4	ASTM Classification: D2487	: SC

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)	: 8.0
Fine Sand (-No.40 + No.200)	: 52.0
Silt + Clay (-No.200)	: 39.4

Approved By : Kevin E. Walker

Soil No. 49

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-117
Project State	: Arkansas	Sample Depth	: 24.9' to 26.4'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Brown & Gray Silty 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	
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	98.9
No.6		3.35	mm	
No.10		2	mm	96.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	90.7
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	29.7
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} = 0.134 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 25.6
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	: 1.80
Gravel (3in. + No.10)	: 3.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 5.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 61.0	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 29.7	ASTM Classification: D2487	: SM

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)	: 2.6
Medium Sand (-No.10 + No.40)	: 5.6
Fine Sand (-No.40 + No.200)	: 61.0
Silt + Clay (-No.200)	: 29.7

Approved By : Kevin E. Walker

Soil No. 50

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SOIL CLASSIFICATION

Project Name	:	Main St.-Vandenburg Blvd. (Widening)		
Project No.	:	CA0604	Sample No.	: SS-6
Project County	:	Pulaski	Sample Loc.	: Boring No. B-117
Project State	:	Arkansas	Sample Depth	: 34.9' to 36.4'
Laboratory No.	:	11206-03	Date Tested	: 06/14/16
Submitted By	:	HDR|ICA	Date Reported	: 06/21/16
Soil Type	:	Black 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	
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	98.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	90.4
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	49.3
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} = 0.077 mm

CBR	:	NA	Natural Moisture (%) (AASHTO T265)	: 31.5
Dry Dens.	:	NA	Liquid Limit (AASHTO T89)	: 40
Opt. Moist.	:	NA	Plastic Limit (AASHTO T90)	: 19
			Plasticity Index	: 21
AASHTO Composition of Total Sample: M145			Liquidity Index	: 0.58
Gravel (3in. + No.10)	:	1.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	:	8.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	:	41.1	AASHTO Classification: M145	: A-6 (7)
Silt + Clay (-No.200)	:	49.3	ASTM Classification: D2487	: SC

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)	:	1.1
Medium Sand (-No.10 + No.40)	:	8.5
Fine Sand (-No.40 + No.200)	:	41.1
Silt + Clay (-No.200)	:	49.3

Approved By : Kevin E. Walker

Soil No. 51

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-10
Project County	: Pulaski	Sample Loc.	: Boring No. B-117
Project State	: Arkansas	Sample Depth	: 54.9' to 56.4'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Black 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	83.8
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	44.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.097 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 51
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 27
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.26
Gravel (3in. + No.10)	: 1.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 15.0	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 39.8	AASHTO Classification: M145	: A-7-6 (7)
Silt + Clay (-No.200)	: 44.0	ASTM Classification: D2487	: SC

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)	: 15.0
Fine Sand (-No.40 + No.200)	: 39.8
Silt + Clay (-No.200)	: 44.0

Approved By : Kevin E. Walker

Soil No. 52

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-122
Project State	: Arkansas	Sample Depth	: 9.4' to 10.9'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Tan Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	98.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	91.3
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	59.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.026 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 20.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 49
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 27
		Plasticity Index	: 22
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.29
Gravel (3in. + No.10)	: 1.3	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 7.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 31.8	AASHTO Classification: M145	: A-7-6 (11)
Silt + Clay (-No.200)	: 59.5	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.1
Coarse Sand (-No.4 + No.10)	: 1.2
Medium Sand (-No.10 + No.40)	: 7.4
Fine Sand (-No.40 + No.200)	: 31.8
Silt + Clay (-No.200)	: 59.5

Approved By : Kevin E. Walker

Soil No. 53

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SOIL CLASSIFICATION

Project Name	:	Main St.-Vandenburg Blvd. (Widening)		
Project No.	:	CA0604	Sample No.	: SS-4
Project County	:	Pulaski	Sample Loc.	: Boring No. B-122
Project State	:	Arkansas	Sample Depth	: 24.4' to 25.9'
Laboratory No.	:	11206-03	Date Tested	: 06/14/16
Submitted By	:	HDR|ICA	Date Reported	: 06/21/16
Soil Type	:	Tan Fat Clay with 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	
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	99.7
No.6		3.35	mm	
No.10		2	mm	97.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	86.6
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	74.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.009 mm

CBR	:	NA	Natural Moisture (%) (AASHTO T265)	: 46.7
Dry Dens.	:	NA	Liquid Limit (AASHTO T89)	: 63
Opt. Moist.	:	NA	Plastic Limit (AASHTO T90)	: 26
			Plasticity Index	: 37
AASHTO Composition of Total Sample: M145			Liquidity Index	: 0.57
Gravel (3in. + No.10)	:	2.3	Activity	: NA
Coarse Sand (-No.10 + No.40)	:	11.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	:	12.1	AASHTO Classification: M145	: A-7-6 (28)
Silt + Clay (-No.200)	:	74.5	ASTM Classification: D2487	: CH

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	:	0.0
Fine Gravel (-3/4in. + No.4)	:	0.3
Coarse Sand (-No.4 + No.10)	:	2.0
Medium Sand (-No.10 + No.40)	:	11.1
Fine Sand (-No.40 + No.200)	:	12.1
Silt + Clay (-No.200)	:	74.5

Approved By : Kevin E. Walker

Soil No. 54

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-130
Project State	: Arkansas	Sample Depth	: 4.6' to 6.1'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Brown & Gray Sandy Lean Clay with Gravel		

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	100.0
3/4	in.	19	mm	93.4
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	90.3
1/4		6.3	mm	
No.4		4.75	mm	83.5
No.6		3.35	mm	
No.10		2	mm	79.0

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	72.2
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	55.1
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} = 0.041 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 16.5
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 28
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 16
		Plasticity Index	: 12
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.02
Gravel (3in. + No.10)	: 21.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.8	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 17.1	AASHTO Classification: M145	: A-6 (4)
Silt + Clay (-No.200)	: 55.1	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 6.6
Fine Gravel (-3/4in. + No.4)	: 9.9
Coarse Sand (-No.4 + No.10)	: 4.5
Medium Sand (-No.10 + No.40)	: 6.8
Fine Sand (-No.40 + No.200)	: 17.1
Silt + Clay (-No.200)	: 55.1

Approved By : Kevin E. Walker

Soil No. 55

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-130
Project State	: Arkansas	Sample Depth	: 19.6' to 21.1'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Tan Sandy Fat 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	99.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	88.7
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	57.1
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} = 0.033 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 34.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 50
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 26
		Plasticity Index	: 24
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.35
Gravel (3in. + No.10)	: 0.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 10.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 31.6	AASHTO Classification: M145	: A-7-6 (11)
Silt + Clay (-No.200)	: 57.1	ASTM Classification: D2487	: CH

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)	: 0.7
Medium Sand (-No.10 + No.40)	: 10.6
Fine Sand (-No.40 + No.200)	: 31.6
Silt + Clay (-No.200)	: 57.1

Approved By : Kevin E. Walker

Soil No. 56

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-163
Project State	: Arkansas	Sample Depth	: 4.9' to 6.4'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Red Sandy 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	99.8

AASHTO T88

				% 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	60.2
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} = 0.024 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 22.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 36
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 18
		Plasticity Index	: 18
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.23
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)	: 37.5	AASHTO Classification: M145	: A-6 (8)
Silt + Clay (-No.200)	: 60.2	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.0
Coarse Sand (-No.4 + No.10)	: 0.2
Medium Sand (-No.10 + No.40)	: 2.1
Fine Sand (-No.40 + No.200)	: 37.5
Silt + Clay (-No.200)	: 60.2

Approved By : Kevin E. Walker

Soil No. 57

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-163
Project State	: Arkansas	Sample Depth	: 24.9' to 26.4'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Brown & Gray Sandy Fat 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.4
No.6		3.35	mm	
No.10		2	mm	94.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	82.5
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	68.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.013 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 38.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 79
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 32
		Plasticity Index	: 47
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.13
Gravel (3in. + No.10)	: 5.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 11.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 14.5	AASHTO Classification: M145	: A-7-5 (33)
Silt + Clay (-No.200)	: 68.0	ASTM Classification: D2487	: CH

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)	: 5.0
Medium Sand (-No.10 + No.40)	: 11.9
Fine Sand (-No.40 + No.200)	: 14.5
Silt + Clay (-No.200)	: 68.0

Approved By : Kevin E. Walker

Soil No. 58

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-164
Project State	: Arkansas	Sample Depth	: 4.4' to 5.9'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Brown Silty, Clayey Gravel with 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	
1	in.	25	mm	100.0
3/4	in.	19	mm	82.3
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	63.5
1/4		6.3	mm	
No.4		4.75	mm	51.6
No.6		3.35	mm	
No.10		2	mm	44.0

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	37.0
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	19.4
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} = 3.959 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 17.1
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 24
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 19
		Plasticity Index	: 5
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.39
Gravel (3in. + No.10)	: 56.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 7.0	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 17.6	AASHTO Classification: M145	: A-1-b (0)
Silt + Clay (-No.200)	: 19.4	ASTM Classification: D2487	: GC-GM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 17.7
Fine Gravel (-3/4in. + No.4)	: 30.7
Coarse Sand (-No.4 + No.10)	: 7.6
Medium Sand (-No.10 + No.40)	: 7.0
Fine Sand (-No.40 + No.200)	: 17.6
Silt + Clay (-No.200)	: 19.4

Approved By : Kevin E. Walker

Soil No. 59

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-164
Project State	: Arkansas	Sample Depth	: 9.4' to 10.9'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/24/16
Soil Type	: Brown Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.7
No.6		3.35	mm	
No.10		2	mm	95.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	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	60.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.023 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 24.2
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 36
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 21
		Plasticity Index	: 15
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.23
Gravel (3in. + No.10)	: 4.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 2.8	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 32.1	AASHTO Classification: M145	: A-6 (7)
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)	: 1.3
Coarse Sand (-No.4 + No.10)	: 2.9
Medium Sand (-No.10 + No.40)	: 2.8
Fine Sand (-No.40 + No.200)	: 32.1
Silt + Clay (-No.200)	: 60.9

Approved By : Kevin E. Walker

Soil No. 60

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-164
Project State	: Arkansas	Sample Depth	: 19.4' to 20.9'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/24/16
Soil Type	: Brown Silty 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	
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

AASHTO T88

				% Passing
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	25.7
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} = 0.138 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 27.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 35
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 11
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.36
Gravel (3in. + No.10)	: 1.4	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 3.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 69.4	AASHTO Classification: M145	: A-2-6 (0)
Silt + Clay (-No.200)	: 25.7	ASTM Classification: D2487	: 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)	: 1.4
Medium Sand (-No.10 + No.40)	: 3.5
Fine Sand (-No.40 + No.200)	: 69.4
Silt + Clay (-No.200)	: 25.7

Approved By : Kevin E. Walker

Soil No. 61

SOIL CLASSIFICATION

Project Name	:	Main St.-Vandenburg Blvd. (Widening)		
Project No.	:	CA0604	Sample No.	: SS-8
Project County	:	Pulaski	Sample Loc.	: Boring No. B-164
Project State	:	Arkansas	Sample Depth	: 39.4' to 40.9'
Laboratory No.	:	11206-03	Date Tested	: 06/14/16
Submitted By	:	HDR|ICA	Date Reported	: 06/24/16
Soil Type	:	Brown Sandy Fat 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.8
No.6		3.35	mm	
No.10		2	mm	97.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	84.6
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	54.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.046 mm

CBR	:	NA	Natural Moisture (%) (AASHTO T265)	: 30.2
Dry Dens.	:	NA	Liquid Limit (AASHTO T89)	: 52
Opt. Moist.	:	NA	Plastic Limit (AASHTO T90)	: 25
			Plasticity Index	: 27
AASHTO Composition of Total Sample: M145			Liquidity Index	: 0.21
Gravel (3in. + No.10)	:	2.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	:	12.8	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	:	30.6	AASHTO Classification: M145	: A-7-6 (12)
Silt + Clay (-No.200)	:	54.0	ASTM Classification: D2487	: CH

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)	:	2.4
Medium Sand (-No.10 + No.40)	:	12.8
Fine Sand (-No.40 + No.200)	:	30.6
Silt + Clay (-No.200)	:	54.0

Approved By : Kevin E. Walker

Soil No. 62

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-165
Project State	: Arkansas	Sample Depth	: 14.9' to 16.4'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/24/16
Soil Type	: Brown Sandy 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	99.0

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	87.7
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	66.8
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} = 0.014 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.2
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 45
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 15
		Plasticity Index	: 30
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.54
Gravel (3in. + No.10)	: 1.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 11.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 20.9	AASHTO Classification: M145	: A-7-6 (17)
Silt + Clay (-No.200)	: 66.8	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.0
Coarse Sand (-No.4 + No.10)	: 1.0
Medium Sand (-No.10 + No.40)	: 11.3
Fine Sand (-No.40 + No.200)	: 20.9
Silt + Clay (-No.200)	: 66.8

Approved By : Kevin E. Walker

Soil No. 63

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-165
Project State	: Arkansas	Sample Depth	: 29.9' to 31.4'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/24/16
Soil Type	: Brown Sandy Fat 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	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	95.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	82.1
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	57.6
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} = 0.031 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 30.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 55
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 31
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.19
Gravel (3in. + No.10)	: 4.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 13.8	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 24.5	AASHTO Classification: M145	: A-7-6 (15)
Silt + Clay (-No.200)	: 57.6	ASTM Classification: D2487	: CH

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)	: 2.1
Medium Sand (-No.10 + No.40)	: 13.8
Fine Sand (-No.40 + No.200)	: 24.5
Silt + Clay (-No.200)	: 57.6

Approved By : Kevin E. Walker

Soil No. 64

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-166
Project State	: Arkansas	Sample Depth	: 9.5' to 11.0'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/24/16
Soil Type	: Brown & Gray 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	
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	98.7
No.6		3.35	mm	
No.10		2	mm	96.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	89.9
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	37.7
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} = 0.113 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 36
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 23
		Plasticity Index	: 13
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.66
Gravel (3in. + No.10)	: 3.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 52.2	AASHTO Classification: M145	: A-6 (1)
Silt + Clay (-No.200)	: 37.7	ASTM Classification: D2487	: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 1.3
Coarse Sand (-No.4 + No.10)	: 1.9
Medium Sand (-No.10 + No.40)	: 6.9
Fine Sand (-No.40 + No.200)	: 52.2
Silt + Clay (-No.200)	: 37.7

Approved By : Kevin E. Walker

Soil No. 65

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-5
Project County	: Pulaski	Sample Loc.	: Boring No. B-166
Project State	: Arkansas	Sample Depth	: 29.5' to 31.0'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/24/16
Soil Type	: Brown & Gray Fat Clay with 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	
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	98.6
No.6		3.35	mm	
No.10		2	mm	95.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	85.9
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	71.3
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} = 0.01 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 35.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 72
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 28
		Plasticity Index	: 44
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.17
Gravel (3in. + No.10)	: 4.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 9.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 14.6	AASHTO Classification: M145	: A-7-6 (32)
Silt + Clay (-No.200)	: 71.3	ASTM Classification: D2487	: CH

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 1.4
Coarse Sand (-No.4 + No.10)	: 3.1
Medium Sand (-No.10 + No.40)	: 9.6
Fine Sand (-No.40 + No.200)	: 14.6
Silt + Clay (-No.200)	: 71.3

Approved By : Kevin E. Walker

Soil No. 66

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-167
Project State	: Arkansas	Sample Depth	: 14.5' to 16.0'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Brown & Gray Sandy Fat 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.2
No.6		3.35	mm	
No.10		2	mm	94.2

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	80.2
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	59.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.025 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 37.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 53
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 28
		Plasticity Index	: 25
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.34
Gravel (3in. + No.10)	: 5.8	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 14.0	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 20.3	AASHTO Classification: M145	: A-7-6 (13)
Silt + Clay (-No.200)	: 59.9	ASTM Classification: D2487	: CH

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)	: 5.0
Medium Sand (-No.10 + No.40)	: 14.0
Fine Sand (-No.40 + No.200)	: 20.3
Silt + Clay (-No.200)	: 59.9

Approved By : Kevin E. Walker

Soil No. 67

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-167
Project State	: Arkansas	Sample Depth	: 29.7' to 31.2'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Brown & Gray Sandy Elastic Silt		

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	94.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	79.3
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	59.8
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} = 0.025 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 37.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 64
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 39
		Plasticity Index	: 25
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.06
Gravel (3in. + No.10)	: 5.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 15.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 19.5	AASHTO Classification: M145	: A-7-5 (15)
Silt + Clay (-No.200)	: 59.8	ASTM Classification: D2487	: MH

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)	: 5.5
Medium Sand (-No.10 + No.40)	: 15.2
Fine Sand (-No.40 + No.200)	: 19.5
Silt + Clay (-No.200)	: 59.8

Approved By : Kevin E. Walker

Soil No. 68

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-168
Project State	: Arkansas	Sample Depth	: 29.8' to 31.3'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Brown & Gray Fat Clay with 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	
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	99.3
No.6		3.35	mm	
No.10		2	mm	96.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	89.6
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	77.7
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} = 0.007 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 37.9
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 81
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 29
		Plasticity Index	: 52
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.18
Gravel (3in. + No.10)	: 3.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 11.9	AASHTO Classification: M145	: A-7-6 (44)
Silt + Clay (-No.200)	: 77.7	ASTM Classification: D2487	: CH

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.7
Coarse Sand (-No.4 + No.10)	: 2.8
Medium Sand (-No.10 + No.40)	: 6.9
Fine Sand (-No.40 + No.200)	: 11.9
Silt + Clay (-No.200)	: 77.7

Approved By : Kevin E. Walker

Soil No. 69

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-169
Project State	: Arkansas	Sample Depth	: 4.8' to 6.3'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Red & Gray 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	
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	97.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	91.4
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	41.8
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} = 0.1 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 24.5
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 47
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 23
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.04
Gravel (3in. + No.10)	: 2.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 49.6	AASHTO Classification: M145	: A-7-6 (5)
Silt + Clay (-No.200)	: 41.8	ASTM Classification: D2487	: SC

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)	: 2.5
Medium Sand (-No.10 + No.40)	: 6.1
Fine Sand (-No.40 + No.200)	: 49.6
Silt + Clay (-No.200)	: 41.8

Approved By : Kevin E. Walker

Soil No. 70

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-169
Project State	: Arkansas	Sample Depth	: 14.8' to 16.3'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Brown & Gray Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.0

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	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	61.7
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} = 0.021 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 32.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 40
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 15
		Plasticity Index	: 25
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.68
Gravel (3in. + No.10)	: 1.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.0	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 31.3	AASHTO Classification: M145	: A-6 (12)
Silt + Clay (-No.200)	: 61.7	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)	: 1.0
Medium Sand (-No.10 + No.40)	: 6.0
Fine Sand (-No.40 + No.200)	: 31.3
Silt + Clay (-No.200)	: 61.7

Approved By : Kevin E. Walker

Soil No. 71

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-170
Project State	: Arkansas	Sample Depth	: 19.2' to 20.7'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Red 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	93.1
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	35.2
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} = 0.117 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 18.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 29
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 16
		Plasticity Index	: 13
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.12
Gravel (3in. + No.10)	: 0.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 57.9	AASHTO Classification: M145	: A-6 (1)
Silt + Clay (-No.200)	: 35.2	ASTM Classification: D2487	: SC

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)	: 6.9
Fine Sand (-No.40 + No.200)	: 57.9
Silt + Clay (-No.200)	: 35.2

Approved By : Kevin E. Walker

Soil No. 72

HDR | ICA

SOIL CLASSIFICATION

Project Name : Main St.-Vandenburg Blvd. (Widening)
Project No. : CA0604
Project County : Pulaski
Project State : Arkansas
Laboratory No. : 11206-03
Submitted By : HDR | ICA
Soil Type : Brown Clayey Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-171
Sample Depth : 9.7' to 11.2'
Date Tested : 06/14/16
Date Reported : 06/21/16

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	98.1
1/4		6.3	mm	
No.4		4.75	mm	93.9
No.6		3.35	mm	
No.10		2	mm	86.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	80.9
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	48.6
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} = 0.081 mm

CBR : NA
Dry Dens. : NA
Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 19.2
Liquid Limit (AASHTO T89) : 43
Plastic Limit (AASHTO T90) : 23
Plasticity Index : 20
Liquidity Index : -0.21
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-7-6 (6)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 13.3
Coarse Sand (-No.10 + No.40) : 5.8
Fine Sand (-No.40 + No.200) : 32.3
Silt + Clay (-No.200) : 48.6

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 6.1
Coarse Sand (-No.4 + No.10) : 7.2
Medium Sand (-No.10 + No.40) : 5.8
Fine Sand (-No.40 + No.200) : 32.3
Silt + Clay (-No.200) : 48.6

Approved By : Kevin E. Walker

Soil No. 73

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-110
Project State	: Arkansas	Sample Depth	: 0.6' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/27/16
Soil Type	: Brown Sandy Silty 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.5
No.6		3.35	mm	
No.10		2	mm	97.9

AASHTO T88

				% 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	50.2
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} = 0.073 mm

CBR (AASHTO: T-193)	: 2.8	Natural Moisture (%) (AASHTO T265)	: 17.1
Dry Dens. (AASHTO: T-99; Method (C))	: 112.1 pcf	Liquid Limit (AASHTO T89)	: 23
Opt. Moist. (AASHTO: T-99; Method (C))	: 13.6 %	Plastic Limit (AASHTO T90)	: 16
		Plasticity Index	: 7
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.13
Gravel (3in. + No.10)	: 2.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 1.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 46.4	AASHTO Classification: M145	: A-4 (1)
Silt + Clay (-No.200)	: 50.2	ASTM Classification: D2487	: CL-ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.5
Coarse Sand (-No.4 + No.10)	: 1.6
Medium Sand (-No.10 + No.40)	: 1.3
Fine Sand (-No.40 + No.200)	: 46.4
Silt + Clay (-No.200)	: 50.2

Approved By : Kevin E. Walker

Soil No. 74

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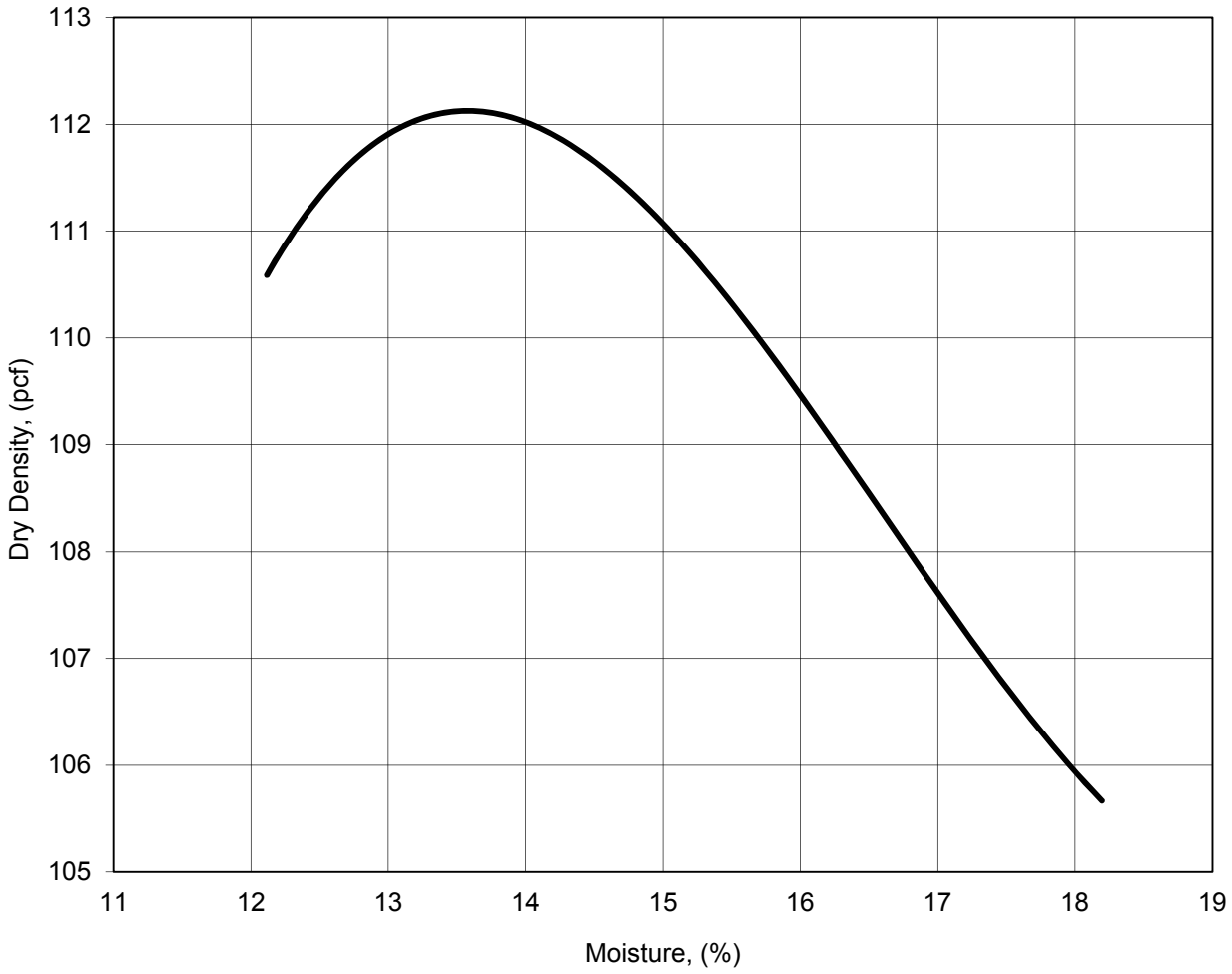
MOISTURE-DENSITY RELATIONSHIP

Project Name	:	Main St.-Vandenburg Blvd. (Widening)			
Project No.	:	CA0604	Sample No.	:	Bag-1
Project County	:	Pulaski	Sample Loc.	:	Boring No. B-110
Project State	:	Arkansas	Sample Depth	:	0.6' to 5.0'
Laboratory No.	:	11206-03	Date Tested	:	06/14/16
Submitted By	:	HDR|ICA	Date Reported	:	06/27/16
Soil Type	:	Brown Sandy Silty Clay			



MAXIMUM DENSITY: 112.1 pcf

OPTIMUM MOISTURE: 13.6 %

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

APPROVED BY: KW

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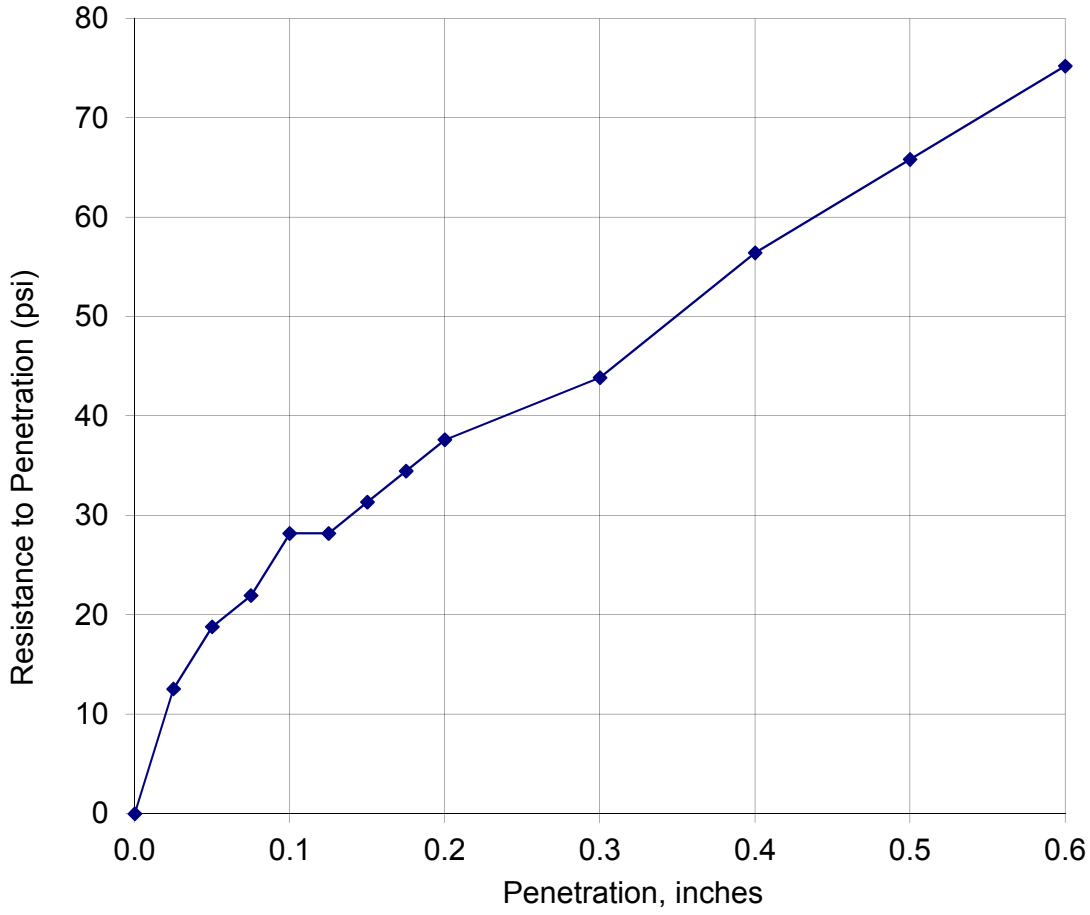
CALIFORNIA BEARING RATIO

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-110
Project State	: Arkansas	Sample Depth	: 0.6' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 6/14/16
Submitted By	: HDR|ICA	Date Reported	: 6/27/16
Soil Type	: Brown Sandy Silty Clay		



Compaction Effort = 45 Blows per layer
Percent Compacted = 97.9
Percent Swell = 2.38

C.B.R. @ 0.1 In. = 2.8*
C.B.R. @ 0.2 In. = 2.5

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-111
Project State	: Arkansas	Sample Depth	: 0.4' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/27/16
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	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	99.6
1/4		6.3	mm	
No.4		4.75	mm	97.0
No.6		3.35	mm	
No.10		2	mm	93.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	81.3
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	37.8
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} = 0.122 mm

CBR (AASHTO: T-193)	: 3.4	Natural Moisture (%) (AASHTO T265)	: 27.1
Dry Dens. (AASHTO: T-99; Method (C))	: 110.7 pcf	Liquid Limit (AASHTO T89)	: 43
Opt. Moist. (AASHTO: T-99; Method (C))	: 16.5 %	Plastic Limit (AASHTO T90)	: 26
		Plasticity Index	: 17
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.07
Gravel (3in. + No.10)	: 6.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 12.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 43.5	AASHTO Classification: M145	: A-7-6 (2)
Silt + Clay (-No.200)	: 37.8	ASTM Classification: D2487	: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 3.0
Coarse Sand (-No.4 + No.10)	: 3.5
Medium Sand (-No.10 + No.40)	: 12.2
Fine Sand (-No.40 + No.200)	: 43.5
Silt + Clay (-No.200)	: 37.8

Approved By : Kevin E. Walker

Soil No. 75

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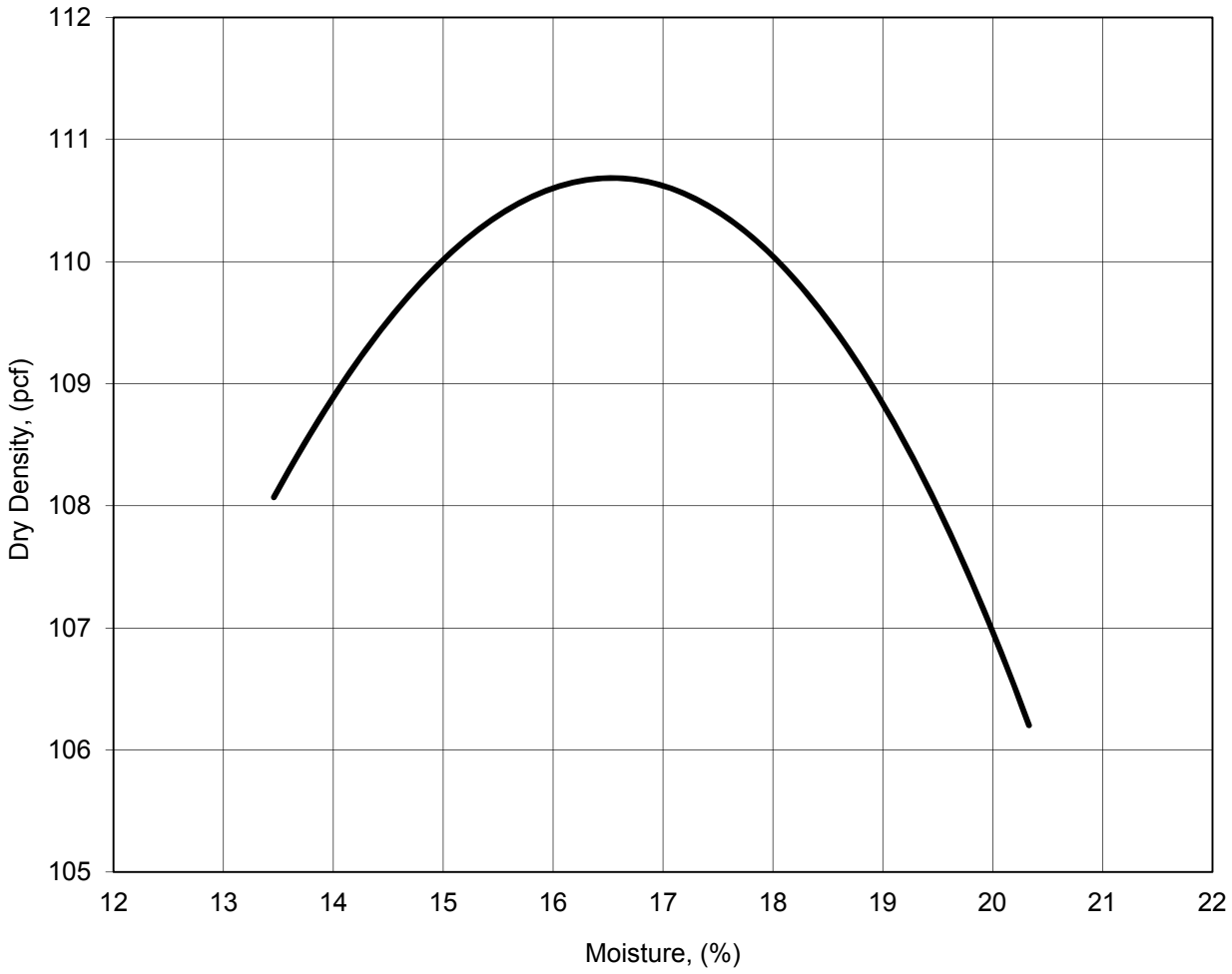
MOISTURE-DENSITY RELATIONSHIP

Project Name	:	Main St.-Vandenburg Blvd. (Widening)			
Project No.	:	CA0604	Sample No.	:	Bag-1
Project County	:	Pulaski	Sample Loc.	:	Boring No. B-111
Project State	:	Arkansas	Sample Depth	:	0.4' to 5.0'
Laboratory No.	:	11206-03	Date Tested	:	06/14/16
Submitted By	:	HDR|ICA	Date Reported	:	06/27/16
Soil Type	:	Brown Clayey Sand			



MAXIMUM DENSITY: 110.7 pcf

OPTIMUM MOISTURE: 16.5 %

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

APPROVED BY: KW

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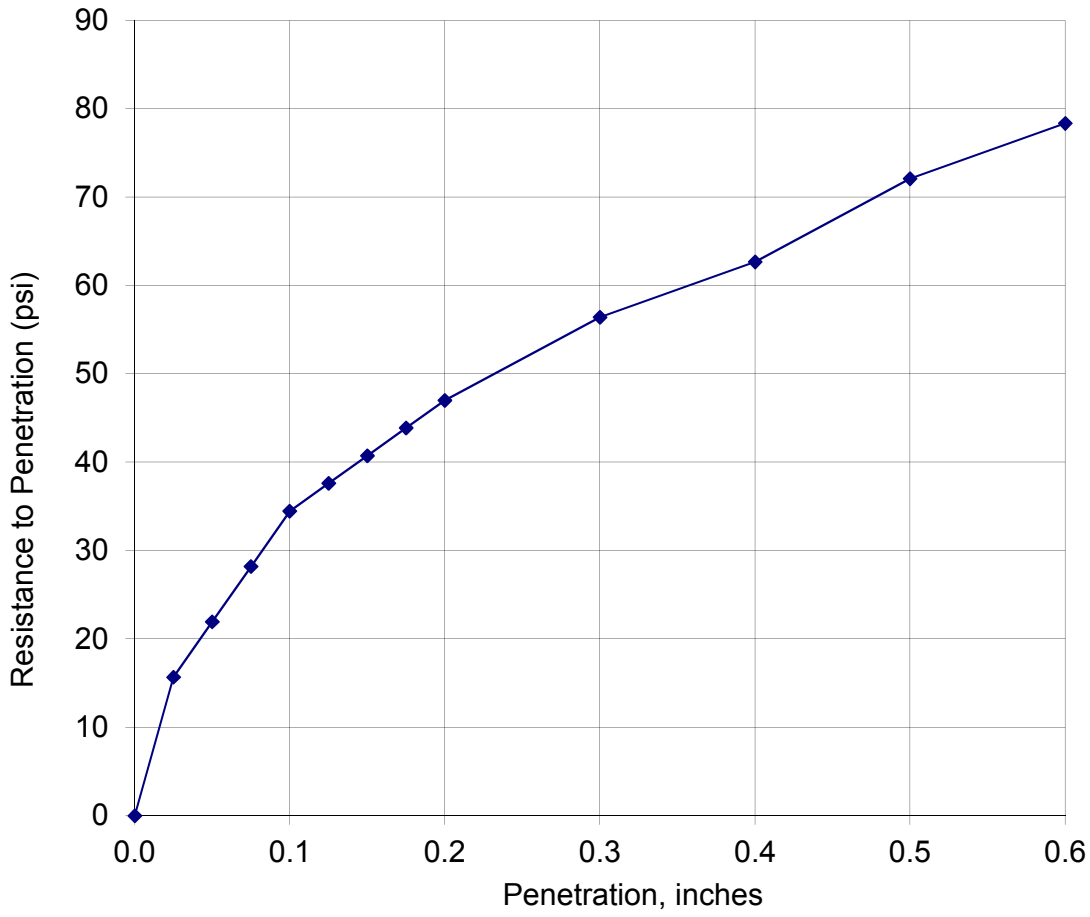
CALIFORNIA BEARING RATIO

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-111
Project State	: Arkansas	Sample Depth	: 0.4' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 6/14/16
Submitted By	: HDR|ICA	Date Reported	: 6/27/16
Soil Type	: Brown Clayey Sand		



Compaction Effort = 40 Blows per layer
Percent Compacted = 98
Percent Swell = 2.53

C.B.R. @ 0.1 In. = 3.4*
C.B.R. @ 0.2 In. = 3.1

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-108
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/27/16
Soil Type	: Brown Sandy 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	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	98.8
1/4		6.3	mm	
No.4		4.75	mm	97.9
No.6		3.35	mm	
No.10		2	mm	97.2

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	95.6
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	57.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.032 mm

CBR (AASHTO: T-193)	: 10.3	Natural Moisture (%) (AASHTO T265)	: 19.1
Dry Dens. (AASHTO: T-99; Method (C))	: 117.8 pcf	Liquid Limit (AASHTO T89)	: 29
Opt. Moist. (AASHTO: T-99; Method (C))	: 12.6 %	Plastic Limit (AASHTO T90)	: 16
		Plasticity Index	: 13
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.22
Gravel (3in. + No.10)	: 2.8	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 1.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 38.1	AASHTO Classification: M145	: A-6 (5)
Silt + Clay (-No.200)	: 57.5	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

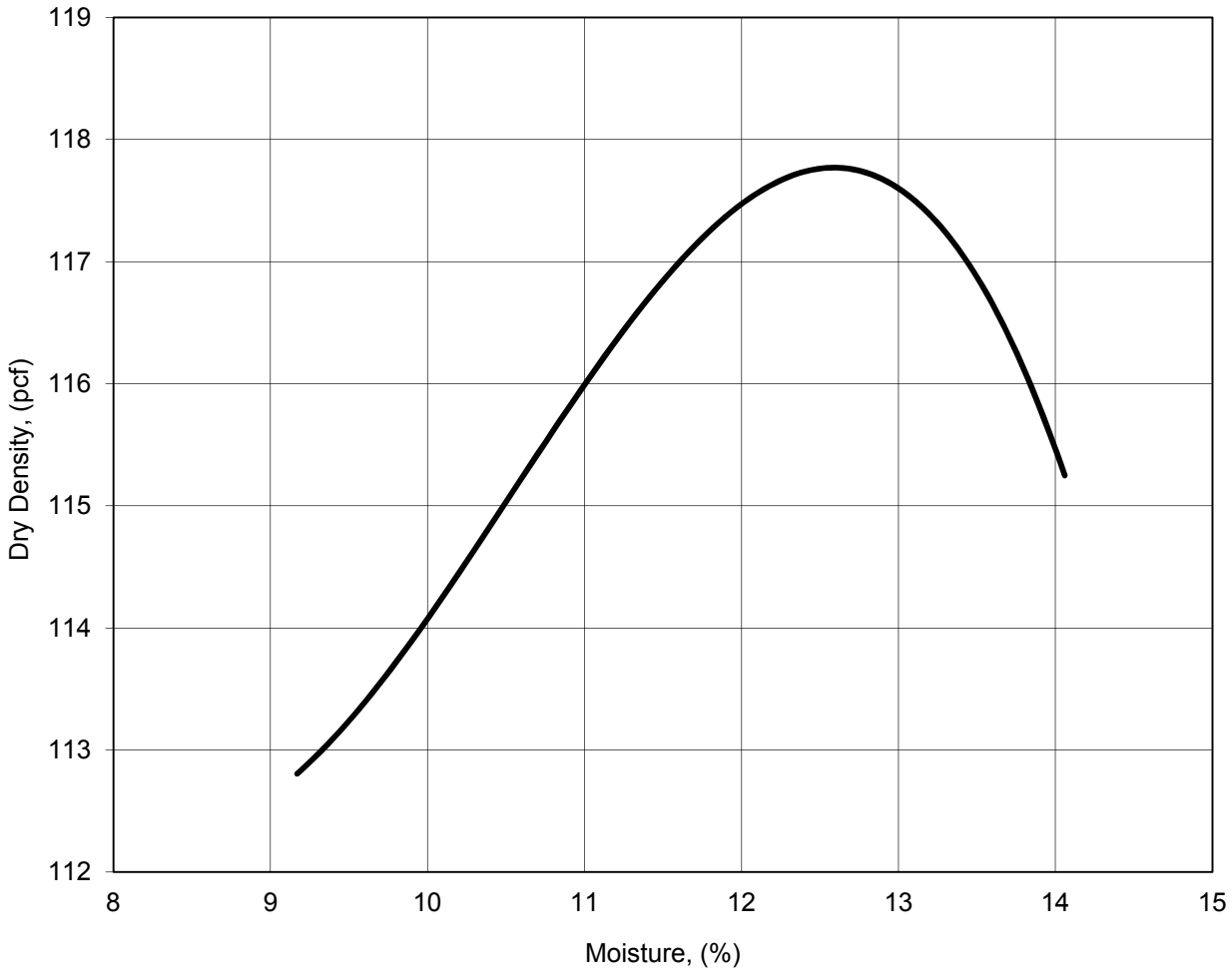
Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 2.1
Coarse Sand (-No.4 + No.10)	: 0.7
Medium Sand (-No.10 + No.40)	: 1.6
Fine Sand (-No.40 + No.200)	: 38.1
Silt + Clay (-No.200)	: 57.5

Approved By : Kevin E. Walker

Soil No. 76

MOISTURE-DENSITY RELATIONSHIP

Project Name	:	Main St.-Vandenburg Blvd. (Widening)			
Project No.	:	CA0604	Sample No.	:	Bag-1
Project County	:	Pulaski	Sample Loc.	:	Boring No. B-108
Project State	:	Arkansas	Sample Depth	:	0.0' to 5.0'
Laboratory No.	:	11206-03	Date Tested	:	05/27/16
Submitted By	:	HDR|ICA	Date Reported	:	06/27/16
Soil Type	:	Brown Sandy Lean Clay			



MAXIMUM DENSITY: 117.8 pcf

OPTIMUM MOISTURE: 12.6 %

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

APPROVED BY: KW

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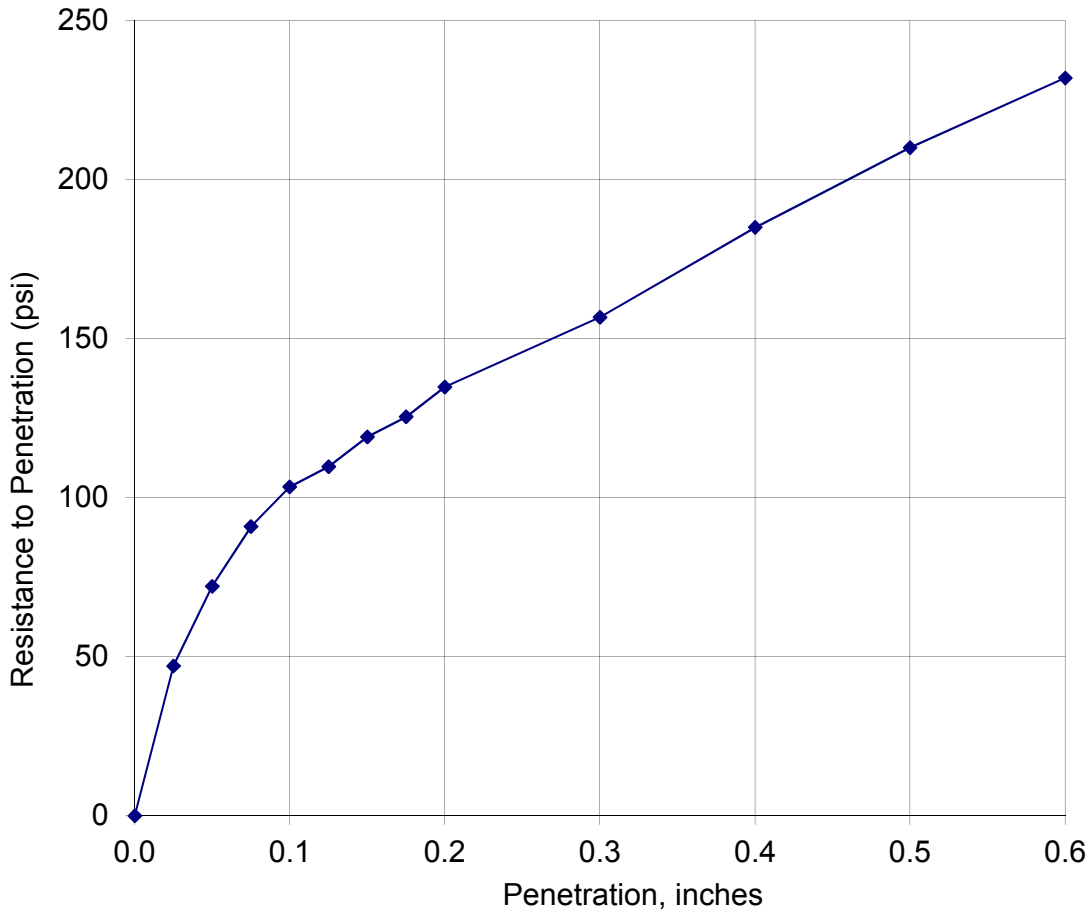
CALIFORNIA BEARING RATIO

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-108
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 5/27/16
Submitted By	: HDR|ICA	Date Reported	: 6/27/16
Soil Type	: Brown Sandy Lean Clay		



Compaction Effort = 45 Blows per layer
Percent Compacted = 98.6
Percent Swell = 0.24

C.B.R. @ 0.1 In. = 10.3*
C.B.R. @ 0.2 In. = 9

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-109
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/27/16
Soil Type	: Brown Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.1
No.6		3.35	mm	
No.10		2	mm	95.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	91.3
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	53.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.052 mm

CBR (AASHTO: T-193)	: 4.1	Natural Moisture (%) (AASHTO T265)	: 21.3
Dry Dens. (AASHTO: T-99; Method (C))	: 115.1 pcf	Liquid Limit (AASHTO T89)	: 36
Opt. Moist. (AASHTO: T-99; Method (C))	: 12 %	Plastic Limit (AASHTO T90)	: 19
		Plasticity Index	: 17
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.16
Gravel (3in. + No.10)	: 4.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 4.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 38.3	AASHTO Classification: M145	: A-6 (6)
Silt + Clay (-No.200)	: 53.0	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 1.9
Coarse Sand (-No.4 + No.10)	: 2.6
Medium Sand (-No.10 + No.40)	: 4.2
Fine Sand (-No.40 + No.200)	: 38.3
Silt + Clay (-No.200)	: 53.0

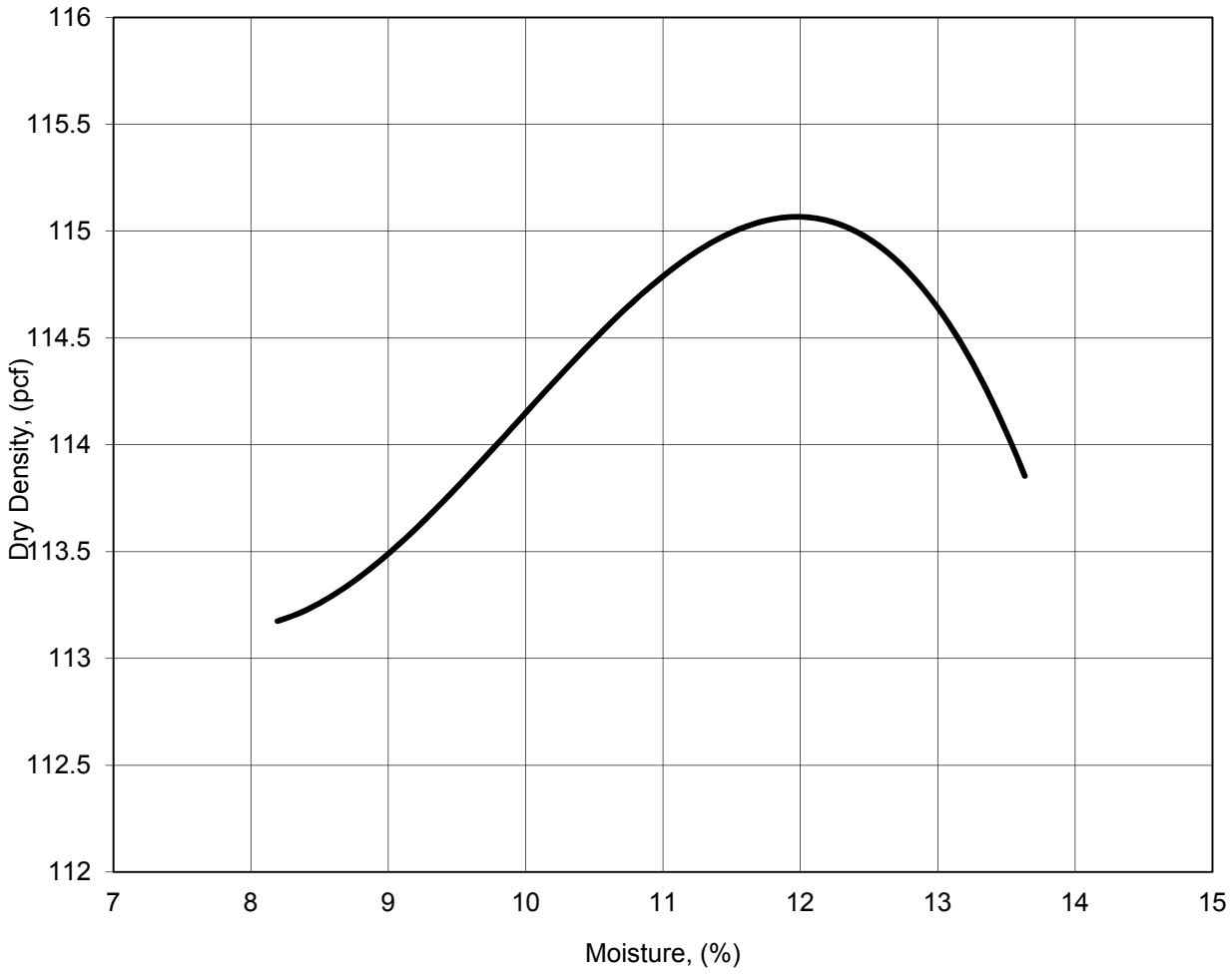
Approved By : Kevin E. Walker

Soil No. 77

MOISTURE-DENSITY RELATIONSHIP

Project Name : Main St.-Vandenburg Blvd. (Widening)
Project No. : CA0604
Project County : Pulaski
Project State : Arkansas
Laboratory No. : 11206-03
Submitted By : HDR | ICA
Soil Type : Brown Sandy Lean Clay

Sample No. : Bag-1
Sample Loc. : Boring No. B-109
Sample Depth : 0.0' to 5.0'
Date Tested : 05/27/16
Date Reported : 06/27/16



MAXIMUM DENSITY: 115.1 pcf

OPTIMUM MOISTURE: 12 %

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

APPROVED BY: KW

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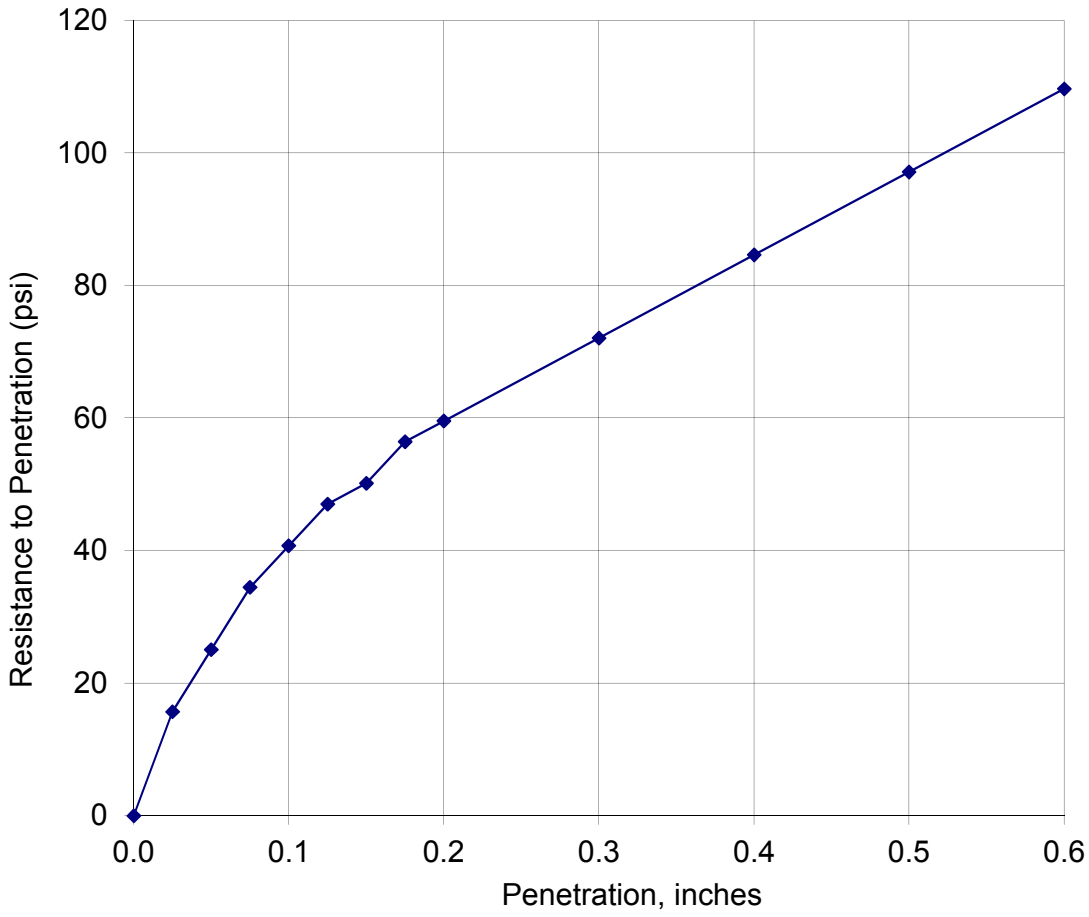
CALIFORNIA BEARING RATIO

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-109
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 5/27/16
Submitted By	: HDR|ICA	Date Reported	: 6/27/16
Soil Type	: Brown Sandy Lean Clay		



Compaction Effort = 45 Blows per layer
Percent Compacted = 92.5
Percent Swell = 2.36

C.B.R. @ 0.1 In. = 4.1*
C.B.R. @ 0.2 In. = 4

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-112
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/27/16
Soil Type	: Red Sandy 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	99.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	92.7
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	59.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.025 mm

CBR (AASHTO: T-193)	: 3.4	Natural Moisture (%) (AASHTO T265)	: 21.2
Dry Dens. (AASHTO: T-99; Method (A))	: 113.2 pcf	Liquid Limit (AASHTO T89)	: 33
Opt. Moist. (AASHTO: T-99; Method (A))	: 12.8 %	Plastic Limit (AASHTO T90)	: 17
		Plasticity Index	: 16
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.23
Gravel (3in. + No.10)	: 0.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 32.8	AASHTO Classification: M145	: A-6 (7)
Silt + Clay (-No.200)	: 59.9	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

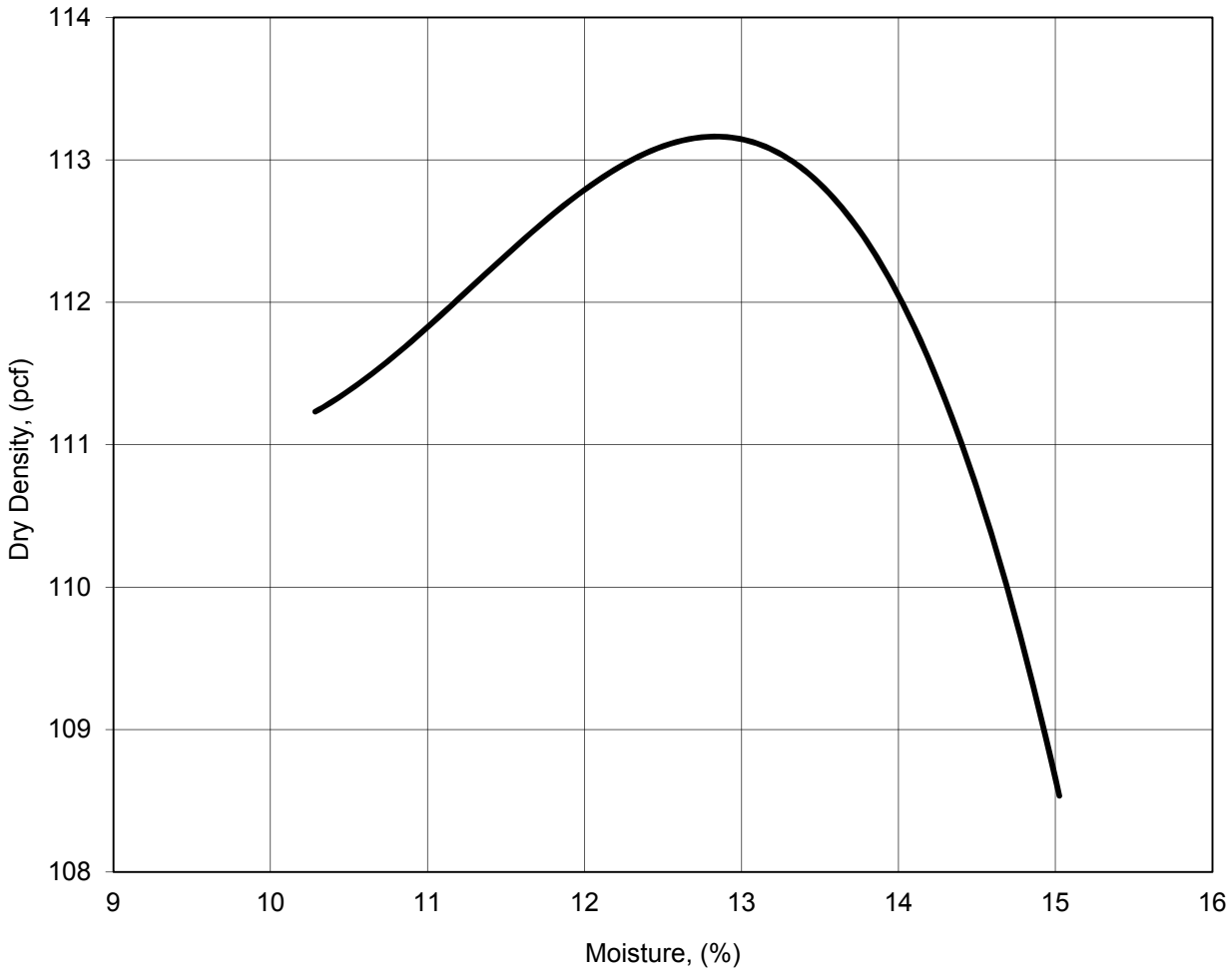
Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.0
Coarse Sand (-No.4 + No.10)	: 0.7
Medium Sand (-No.10 + No.40)	: 6.6
Fine Sand (-No.40 + No.200)	: 32.8
Silt + Clay (-No.200)	: 59.9

Approved By : Kevin E. Walker

Soil No. 78

MOISTURE-DENSITY RELATIONSHIP

Project Name	:	Main St.-Vandenburg Blvd. (Widening)			
Project No.	:	CA0604	Sample No.	:	Bag-1
Project County	:	Pulaski	Sample Loc.	:	Boring No. B-112
Project State	:	Arkansas	Sample Depth	:	0.0' to 5.0'
Laboratory No.	:	11206-03	Date Tested	:	05/27/16
Submitted By	:	HDR|ICA	Date Reported	:	06/27/16
Soil Type	:	Red Sandy Lean Clay			



MAXIMUM DENSITY: 113.2 pcf

OPTIMUM MOISTURE: 12.8 %

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

APPROVED BY: KW

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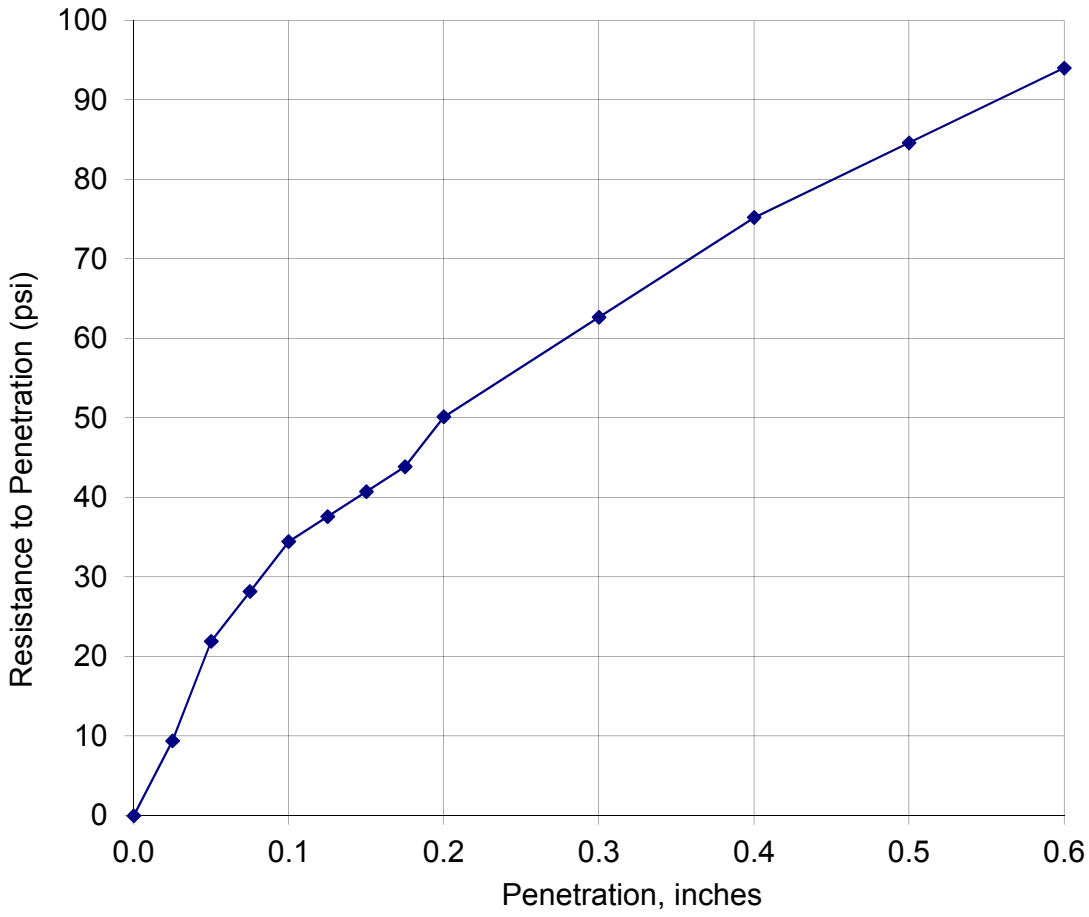
CALIFORNIA BEARING RATIO

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-112
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 5/27/16
Submitted By	: HDR|ICA	Date Reported	: 6/27/16
Soil Type	: Red Sandy Lean Clay		



Compaction Effort = 45 Blows per layer
Percent Compacted = 97
Percent Swell = 2.53

C.B.R. @ 0.1 In. = 3.4*
C.B.R. @ 0.2 In. = 3.3

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-113
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/27/16
Soil Type	: Red Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.3
No.6		3.35	mm	
No.10		2	mm	98.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	94.3
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	67.8
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} = 0.013 mm

CBR (AASHTO: T-193)	: 3.4	Natural Moisture (%) (AASHTO T265)	: 20.4
Dry Dens. (AASHTO: T-99; Method (C))	: 113.7 pcf	Liquid Limit (AASHTO T89)	: 27
Opt. Moist. (AASHTO: T-99; Method (C))	: 11.2 %	Plastic Limit (AASHTO T90)	: 18
		Plasticity Index	: 9
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.29
Gravel (3in. + No.10)	: 1.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 4.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 26.5	AASHTO Classification: M145	: A-4 (4)
Silt + Clay (-No.200)	: 67.8	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.7
Coarse Sand (-No.4 + No.10)	: 0.8
Medium Sand (-No.10 + No.40)	: 4.2
Fine Sand (-No.40 + No.200)	: 26.5
Silt + Clay (-No.200)	: 67.8

Approved By : Kevin E. Walker

Soil No. 79

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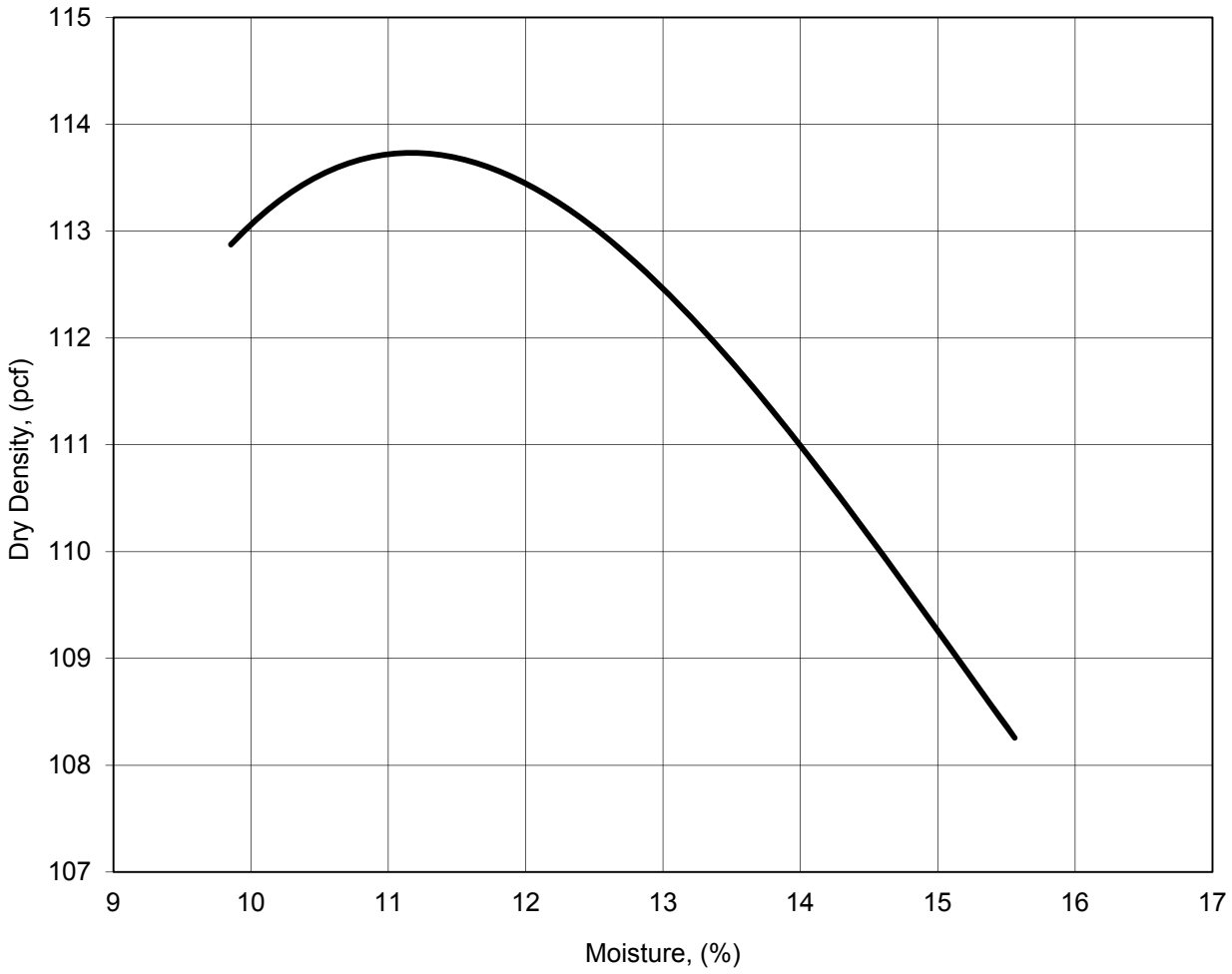
MOISTURE-DENSITY RELATIONSHIP

Project Name	:	Main St.-Vandenburg Blvd. (Widening)			
Project No.	:	CA0604	Sample No.	:	Bag-1
Project County	:	Pulaski	Sample Loc.	:	Boring No. B-113
Project State	:	Arkansas	Sample Depth	:	0.0' to 5.0'
Laboratory No.	:	11206-03	Date Tested	:	05/26/16
Submitted By	:	HDR|ICA	Date Reported	:	06/27/16
Soil Type	:	Red Sandy Lean Clay			



MAXIMUM DENSITY: 113.7 pcf

OPTIMUM MOISTURE: 11.2 %

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

APPROVED BY: KW

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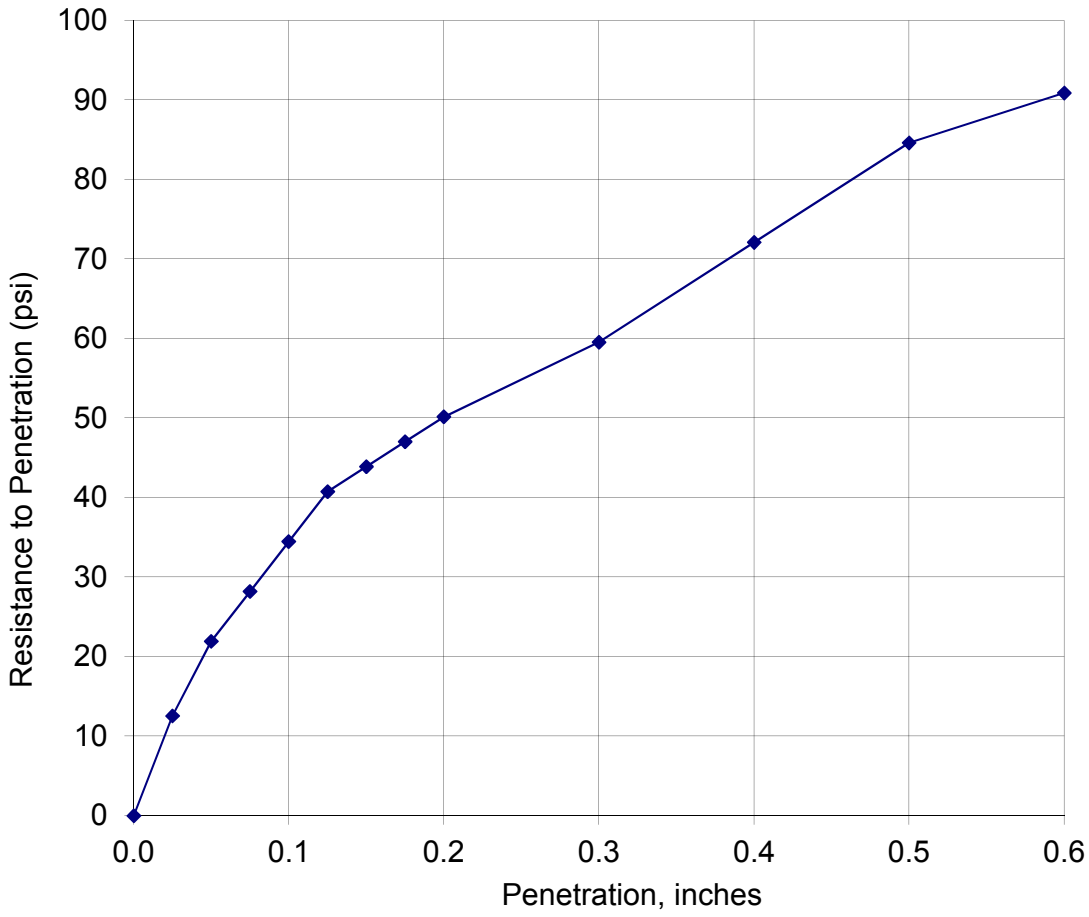
CALIFORNIA BEARING RATIO

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-113
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 5/26/16
Submitted By	: HDR|ICA	Date Reported	: 6/27/16
Soil Type	: Red Sandy Lean Clay		



Compaction Effort = 45 Blows per layer
Percent Compacted = 98.6
Percent Swell = 2.1

C.B.R. @ 0.1 In. = 3.4*
C.B.R. @ 0.2 In. = 3.3

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-114
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red Sandy Fat 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.8
No.6		3.35	mm	
No.10		2	mm	99.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	96.0
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	55.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.037 mm

CBR (AASHTO: T-193)	: 2.5	Natural Moisture (%) (AASHTO T265)	: 21.5
Dry Dens. (AASHTO: T-99; Method (C))	: 109.3 pcf	Liquid Limit (AASHTO T89)	: 53
Opt. Moist. (AASHTO: T-99; Method (C))	: 13.7 %	Plastic Limit (AASHTO T90)	: 25
		Plasticity Index	: 28
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.11
Gravel (3in. + No.10)	: 0.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 3.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 40.1	AASHTO Classification: M145	: A-7-6 (13)
Silt + Clay (-No.200)	: 55.9	ASTM Classification: D2487	: CH

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)	: 0.4
Medium Sand (-No.10 + No.40)	: 3.4
Fine Sand (-No.40 + No.200)	: 40.1
Silt + Clay (-No.200)	: 55.9

Approved By : Kevin E. Walker

Soil No. 80

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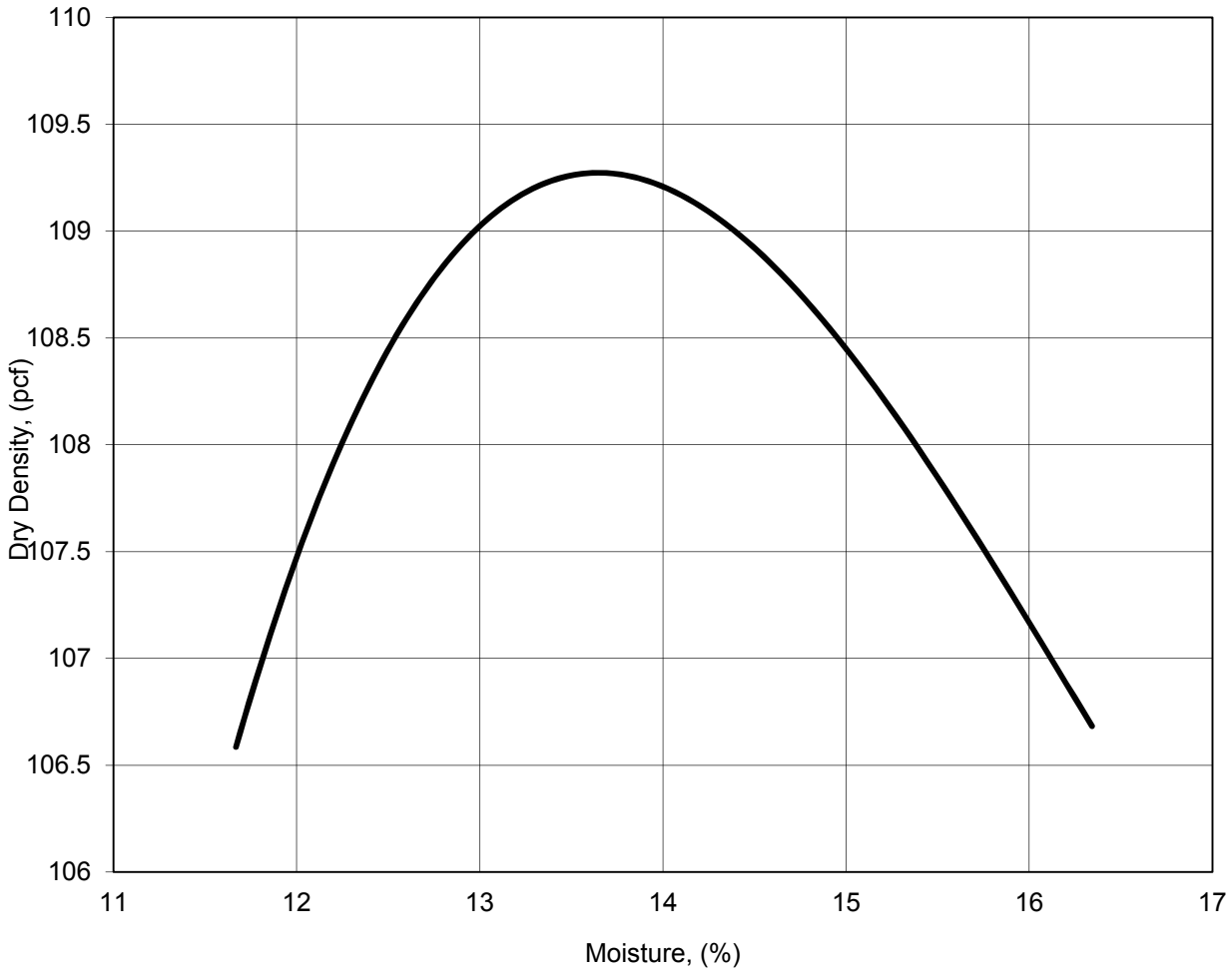
MOISTURE-DENSITY RELATIONSHIP

Project Name	:	Main St.-Vandenburg Blvd. (Widening)			
Project No.	:	CA0604	Sample No.	:	Bag-1
Project County	:	Pulaski	Sample Loc.	:	Boring No. B-114
Project State	:	Arkansas	Sample Depth	:	0.0' to 5.0'
Laboratory No.	:	11206-03	Date Tested	:	05/27/16
Submitted By	:	HDR|ICA	Date Reported	:	06/17/16
Soil Type	:	Red Sandy Fat Clay			



MAXIMUM DENSITY: 109.3 pcf

OPTIMUM MOISTURE: 13.7 %

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

APPROVED BY: KW

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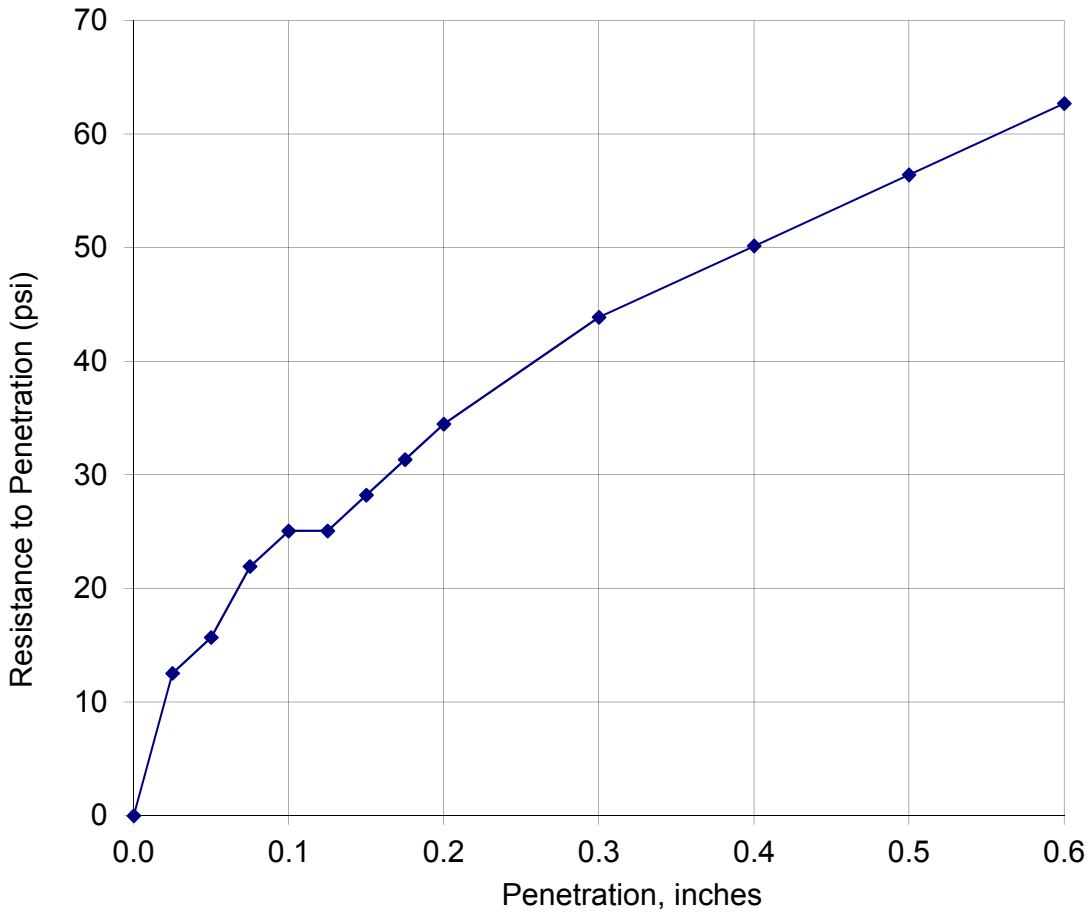
CALIFORNIA BEARING RATIO

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-114
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 5/27/16
Submitted By	: HDR|ICA	Date Reported	: 6/17/16
Soil Type	: Red Sandy Fat Clay		



Compaction Effort = 45 Blows per layer
Percent Compacted = 98.7
Percent Swell = 5.93

C.B.R. @ 0.1 In. = 2.5*
C.B.R. @ 0.2 In. = 2.3

COMMENTS: AASHTO: T-193

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-115
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/27/16
Soil Type	: Red 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	
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	99.7
No.6		3.35	mm	
No.10		2	mm	99.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	92.7
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	47.6
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} = 0.082 mm

CBR (AASHTO: T-193)	: 5.6	Natural Moisture (%) (AASHTO T265)	: 13.8
Dry Dens. (AASHTO: T-99; Method (C))	: 112.9 pcf	Liquid Limit (AASHTO T89)	: 43
Opt. Moist. (AASHTO: T-99; Method (C))	: 12.7 %	Plastic Limit (AASHTO T90)	: 20
		Plasticity Index	: 23
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.27
Gravel (3in. + No.10)	: 0.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.8	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 45.1	AASHTO Classification: M145	: A-7-6 (7)
Silt + Clay (-No.200)	: 47.6	ASTM Classification: D2487	: SC

ASTM Composition of Total Sample: D2487

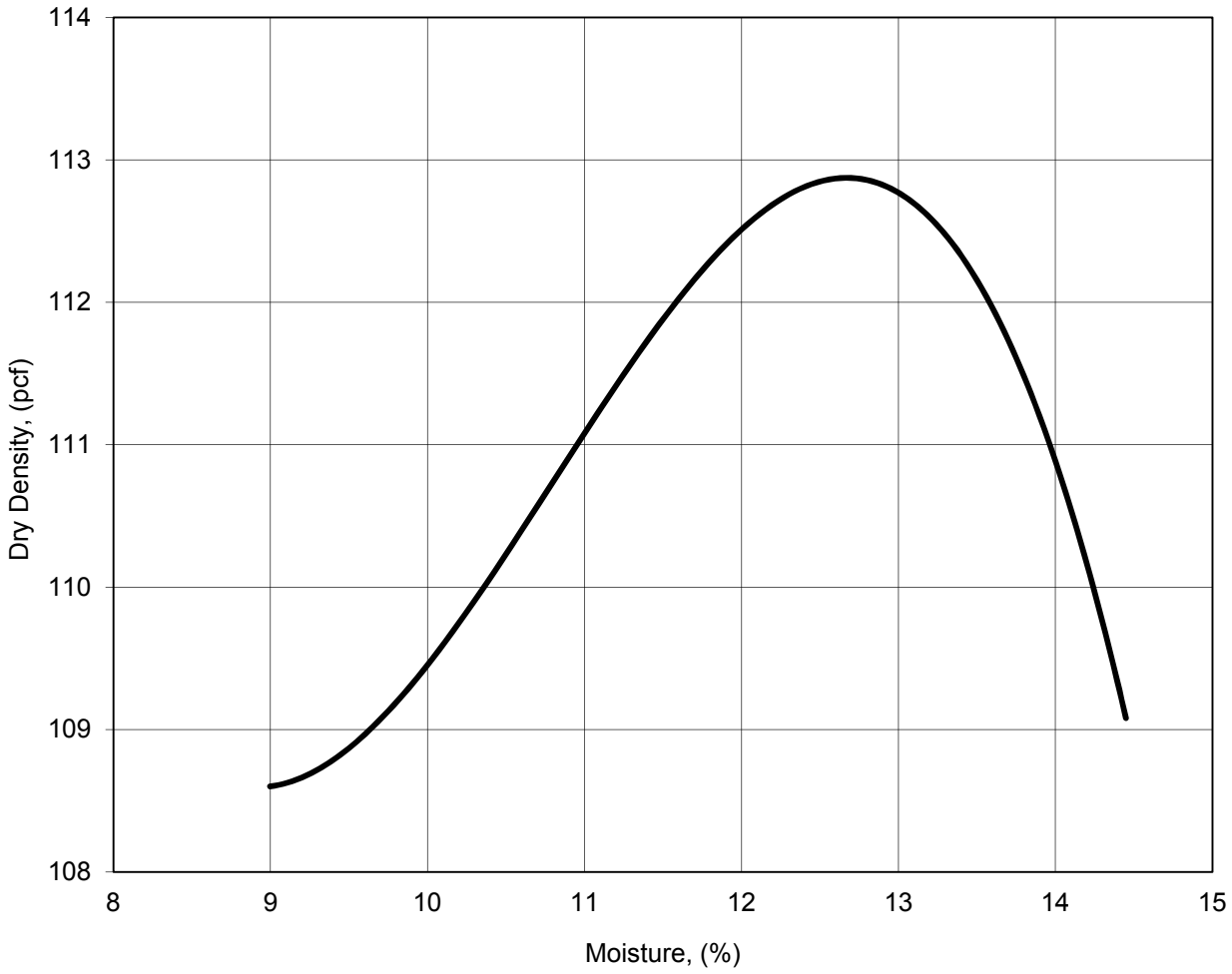
Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.3
Coarse Sand (-No.4 + No.10)	: 0.2
Medium Sand (-No.10 + No.40)	: 6.8
Fine Sand (-No.40 + No.200)	: 45.1
Silt + Clay (-No.200)	: 47.6

Approved By : Kevin E. Walker

Soil No. 81

MOISTURE-DENSITY RELATIONSHIP

Project Name	:	Main St.-Vandenburg Blvd. (Widening)			
Project No.	:	CA0604	Sample No.	:	Bag-1
Project County	:	Pulaski	Sample Loc.	:	Boring No. B-115
Project State	:	Arkansas	Sample Depth	:	0.0' to 5.0'
Laboratory No.	:	11206-03	Date Tested	:	05/27/16
Submitted By	:	HDR|ICA	Date Reported	:	06/27/16
Soil Type	:	Red Clayey Sand			



MAXIMUM DENSITY: 112.9 pcf

OPTIMUM MOISTURE: 12.7 %

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

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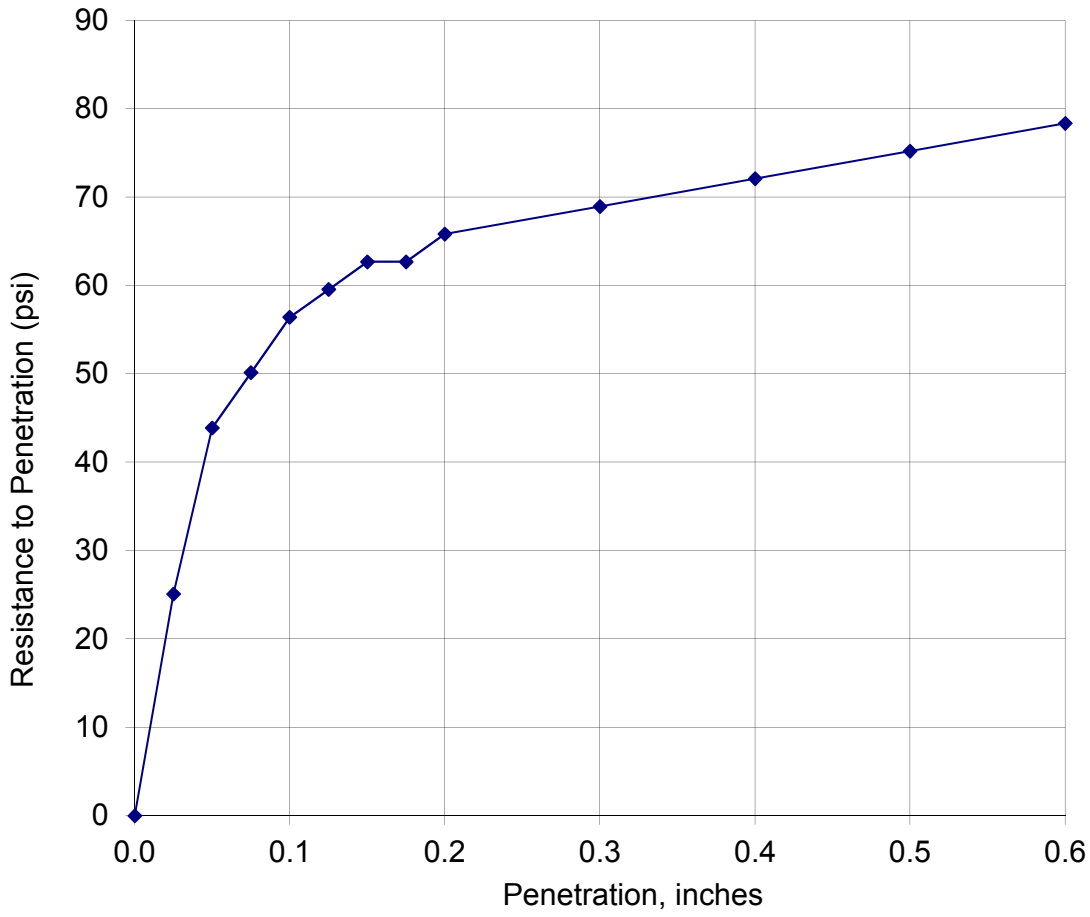
CALIFORNIA BEARING RATIO

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-115
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 5/27/16
Submitted By	: HDR|ICA	Date Reported	: 6/27/16
Soil Type	: Red Clayey Sand		



Compaction Effort = 45 Blows per layer
Percent Compacted = 98.1
Percent Swell = 0.92

C.B.R. @ 0.1 In. = 5.6*
C.B.R. @ 0.2 In. = 4.4

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-123
Project State	: Arkansas	Sample Depth	: 4.6' to 6.1'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Brown & Gray 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	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	96.3
1/4		6.3	mm	
No.4		4.75	mm	94.0
No.6		3.35	mm	
No.10		2	mm	92.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	86.7
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	45.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.089 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 20.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 28
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 17
		Plasticity Index	: 11
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.30
Gravel (3in. + No.10)	: 7.4	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 5.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 40.8	AASHTO Classification: M145	: A-6 (2)
Silt + Clay (-No.200)	: 45.9	ASTM Classification: D2487	: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 6.0
Coarse Sand (-No.4 + No.10)	: 1.4
Medium Sand (-No.10 + No.40)	: 5.9
Fine Sand (-No.40 + No.200)	: 40.8
Silt + Clay (-No.200)	: 45.9

Approved By : Kevin E. Walker

Soil No. 82

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-123
Project State	: Arkansas	Sample Depth	: 14.6' to 16.1'
Laboratory No.	: 11206-03	Date Tested	: 06/29/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Brown Sandy Fat 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.5
No.6		3.35	mm	
No.10		2	mm	94.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	83.1
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	64.2
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} = 0.017 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 29.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 54
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 30
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.16
Gravel (3in. + No.10)	: 5.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 11.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 18.9	AASHTO Classification: M145	: A-7-6 (18)
Silt + Clay (-No.200)	: 64.2	ASTM Classification: D2487	: CH

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.5
Coarse Sand (-No.4 + No.10)	: 5.0
Medium Sand (-No.10 + No.40)	: 11.4
Fine Sand (-No.40 + No.200)	: 18.9
Silt + Clay (-No.200)	: 64.2

Approved By : Kevin E. Walker

Soil No. 83

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SOIL CLASSIFICATION

Project Name	:	Main St.-Vandenburg Blvd. (Widening)		
Project No.	:	CA0604	Sample No.	: SS-8
Project County	:	Pulaski	Sample Loc.	: Boring No. B-123
Project State	:	Arkansas	Sample Depth	: 44.6' to 46.1'
Laboratory No.	:	11206-03	Date Tested	: 06/29/16
Submitted By	:	HDR|ICA	Date Reported	: 07/05/16
Soil Type	:	Brown & Gray Fat Clay with 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	
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	99.7
No.6		3.35	mm	
No.10		2	mm	98.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
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	72.3
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} = 0.01 mm

CBR	:	NA	Natural Moisture (%) (AASHTO T265)	: 40.5
Dry Dens.	:	NA	Liquid Limit (AASHTO T89)	: 68
Opt. Moist.	:	NA	Plastic Limit (AASHTO T90)	: 30
			Plasticity Index	: 38
AASHTO Composition of Total Sample: M145			Liquidity Index	: 0.27
Gravel (3in. + No.10)	:	1.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	:	6.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	:	19.8	AASHTO Classification: M145	: A-7-5 (29)
Silt + Clay (-No.200)	:	72.3	ASTM Classification: D2487	: CH

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	:	0.0
Fine Gravel (-3/4in. + No.4)	:	0.3
Coarse Sand (-No.4 + No.10)	:	0.9
Medium Sand (-No.10 + No.40)	:	6.7
Fine Sand (-No.40 + No.200)	:	19.8
Silt + Clay (-No.200)	:	72.3

Approved By : Kevin E. Walker

Soil No. 84

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-126
Project State	: Arkansas	Sample Depth	: 4.4' to 5.9'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Brown & Gray Sandy 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	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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	94.0
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	64.6
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} = 0.017 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 17.6
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	: 0.21
Gravel (3in. + No.10)	: 0.8	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 5.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 29.4	AASHTO Classification: M145	: A-4 (4)
Silt + Clay (-No.200)	: 64.6	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.2
Coarse Sand (-No.4 + No.10)	: 0.6
Medium Sand (-No.10 + No.40)	: 5.2
Fine Sand (-No.40 + No.200)	: 29.4
Silt + Clay (-No.200)	: 64.6

Approved By : Kevin E. Walker

Soil No. 85

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-126
Project State	: Arkansas	Sample Depth	: 19.4' to 20.9'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Gray & Brown Sandy Silt		

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	99.5
No.6		3.35	mm	
No.10		2	mm	99.1

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	90.9
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	57.3
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} = 0.032 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 18.2
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 35
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 28
		Plasticity Index	: 7
AASHTO Composition of Total Sample: M145		Liquidity Index	: -1.43
Gravel (3in. + No.10)	: 0.9	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 8.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 33.6	AASHTO Classification: M145	: A-4 (3)
Silt + Clay (-No.200)	: 57.3	ASTM Classification: D2487	: ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.5
Coarse Sand (-No.4 + No.10)	: 0.4
Medium Sand (-No.10 + No.40)	: 8.2
Fine Sand (-No.40 + No.200)	: 33.6
Silt + Clay (-No.200)	: 57.3

Approved By : Kevin E. Walker

Soil No. 86

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-6
Project County	: Pulaski	Sample Loc.	: Boring No. B-126
Project State	: Arkansas	Sample Depth	: 34.4' to 35.9'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Brown & Gray Sandy Elastic Silt		

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	97.0
No.6		3.35	mm	
No.10		2	mm	95.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	78.8
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	52.1
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} = 0.057 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 36.1
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 61
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 35
		Plasticity Index	: 26
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.03
Gravel (3in. + No.10)	: 4.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 16.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 26.7	AASHTO Classification: M145	: A-7-5 (11)
Silt + Clay (-No.200)	: 52.1	ASTM Classification: D2487	: MH

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 3.0
Coarse Sand (-No.4 + No.10)	: 1.6
Medium Sand (-No.10 + No.40)	: 16.6
Fine Sand (-No.40 + No.200)	: 26.7
Silt + Clay (-No.200)	: 52.1

Approved By : Kevin E. Walker

Soil No. 87

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-129
Project State	: Arkansas	Sample Depth	: 10.0' to 11.5'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Red 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	
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	99.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	89.7
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	38.6
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} = 0.11 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 19.2
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 41
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 18
		Plasticity Index	: 23
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.07
Gravel (3in. + No.10)	: 0.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 9.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 51.1	AASHTO Classification: M145	: A-7-6 (4)
Silt + Clay (-No.200)	: 38.6	ASTM Classification: D2487	: SC

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)	: 0.6
Medium Sand (-No.10 + No.40)	: 9.6
Fine Sand (-No.40 + No.200)	: 51.1
Silt + Clay (-No.200)	: 38.6

Approved By : Kevin E. Walker

Soil No. 88

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-129
Project State	: Arkansas	Sample Depth	: 20.0' to 21.5'
Laboratory No.	: 11206-03	Date Tested	: 06/29/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Brown & Gray Sandy 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	99.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	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	63.8
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} = 0.018 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 18.4
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	: 0.19
Gravel (3in. + No.10)	: 0.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 29.2	AASHTO Classification: M145	: A-4 (4)
Silt + Clay (-No.200)	: 63.8	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.0
Coarse Sand (-No.4 + No.10)	: 0.5
Medium Sand (-No.10 + No.40)	: 6.5
Fine Sand (-No.40 + No.200)	: 29.2
Silt + Clay (-No.200)	: 63.8

Approved By : Kevin E. Walker

Soil No. 89

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-10
Project County	: Pulaski	Sample Loc.	: Boring No. B-129
Project State	: Arkansas	Sample Depth	: 50.0' to 51.4'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Brown Clayey Sand with Gravel		

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	96.8
1/4		6.3	mm	
No.4		4.75	mm	82.7
No.6		3.35	mm	
No.10		2	mm	66.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	48.0
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	38.7
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} = 0.503 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 30.1
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 53
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 23
		Plasticity Index	: 30
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.23
Gravel (3in. + No.10)	: 33.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 18.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 9.3	AASHTO Classification: M145	: A-7-6 (6)
Silt + Clay (-No.200)	: 38.7	ASTM Classification: D2487	: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 17.3
Coarse Sand (-No.4 + No.10)	: 16.3
Medium Sand (-No.10 + No.40)	: 18.4
Fine Sand (-No.40 + No.200)	: 9.3
Silt + Clay (-No.200)	: 38.7

Approved By : Kevin E. Walker

Soil No. 90

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SOIL CLASSIFICATION

Project Name	:	Main St.-Vandenburg Blvd. (Widening)		
Project No.	:	CA0604	Sample No.	: SS-2
Project County	:	Pulaski	Sample Loc.	: Boring No. B-131
Project State	:	Arkansas	Sample Depth	: 9.0' to 10.5'
Laboratory No.	:	11206-03	Date Tested	: 06/27/16
Submitted By	:	HDR|ICA	Date Reported	: 07/06/16
Soil Type	:	Brown Sandy 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	99.0

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	90.4
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	50.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.075 mm

CBR	:	NA	Natural Moisture (%) (AASHTO T265)	: 18.4
Dry Dens.	:	NA	Liquid Limit (AASHTO T89)	: 36
Opt. Moist.	:	NA	Plastic Limit (AASHTO T90)	: 18
			Plasticity Index	: 18
AASHTO Composition of Total Sample: M145			Liquidity Index	: 0.02
Gravel (3in. + No.10)	:	1.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	:	8.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	:	40.4	AASHTO Classification: M145	: A-6 (5)
Silt + Clay (-No.200)	:	50.0	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)	:	1.0
Medium Sand (-No.10 + No.40)	:	8.6
Fine Sand (-No.40 + No.200)	:	40.4
Silt + Clay (-No.200)	:	50.0

Approved By : Kevin E. Walker

Soil No. 91

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-5
Project County	: Pulaski	Sample Loc.	: Boring No. B-131
Project State	: Arkansas	Sample Depth	: 29.0' to 30.5'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Brown & Red 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	
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	96.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	80.1
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	34.4
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} = 0.136 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 18.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 41
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 20
		Plasticity Index	: 21
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.11
Gravel (3in. + No.10)	: 3.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 16.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 45.7	AASHTO Classification: M145	: A-2-7 (2)
Silt + Clay (-No.200)	: 34.4	ASTM Classification: D2487	: SC

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)	: 1.9
Medium Sand (-No.10 + No.40)	: 16.3
Fine Sand (-No.40 + No.200)	: 45.7
Silt + Clay (-No.200)	: 34.4

Approved By : Kevin E. Walker

Soil No. 92

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-6
Project County	: Pulaski	Sample Loc.	: Boring No. B-131
Project State	: Arkansas	Sample Depth	: 34.0' to 35.5'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Brown & Gray Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	99.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	91.3
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	51.2
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} = 0.064 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 21.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 40
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 22
		Plasticity Index	: 18
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.00
Gravel (3in. + No.10)	: 0.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 8.0	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 40.1	AASHTO Classification: M145	: A-6 (6)
Silt + Clay (-No.200)	: 51.2	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.1
Coarse Sand (-No.4 + No.10)	: 0.6
Medium Sand (-No.10 + No.40)	: 8.0
Fine Sand (-No.40 + No.200)	: 40.1
Silt + Clay (-No.200)	: 51.2

Approved By : Kevin E. Walker

Soil No. 93

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-9
Project County	: Pulaski	Sample Loc.	: Boring No. B-131
Project State	: Arkansas	Sample Depth	: 49.0' to 50.5'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Brown Clayey Sand with Gravel		

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	84.6
1/4		6.3	mm	
No.4		4.75	mm	66.8
No.6		3.35	mm	
No.10		2	mm	47.2

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	26.7
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	20.8
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} = 2.263 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 20.1
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 56
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 27
		Plasticity Index	: 29
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.24
Gravel (3in. + No.10)	: 52.8	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 20.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 5.9	AASHTO Classification: M145	: A-2-7 (4)
Silt + Clay (-No.200)	: 20.8	ASTM Classification: D2487	: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 33.2
Coarse Sand (-No.4 + No.10)	: 19.6
Medium Sand (-No.10 + No.40)	: 20.5
Fine Sand (-No.40 + No.200)	: 5.9
Silt + Clay (-No.200)	: 20.8

Approved By : Kevin E. Walker

Soil No. 94

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-159
Project State	: Arkansas	Sample Depth	: 10.0' to 11.5'
Laboratory No.	: 11206-03	Date Tested	: 06/29/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Gray Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.9
No.6		3.35	mm	
No.10		2	mm	97.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	90.7
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	64.8
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} = 0.017 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 17.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 42
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 17
		Plasticity Index	: 25
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.04
Gravel (3in. + No.10)	: 2.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 25.9	AASHTO Classification: M145	: A-7-6 (14)
Silt + Clay (-No.200)	: 64.8	ASTM Classification: D2487	: CL

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)	: 1.6
Medium Sand (-No.10 + No.40)	: 6.6
Fine Sand (-No.40 + No.200)	: 25.9
Silt + Clay (-No.200)	: 64.8

Approved By : Kevin E. Walker

Soil No. 95

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-159
Project State	: Arkansas	Sample Depth	: 20.0' to 21.5'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Gray & Brown Sandy Elastic Silt		

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	98.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	85.9
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	54.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.043 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 33.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 63
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 36
		Plasticity Index	: 27
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.11
Gravel (3in. + No.10)	: 1.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 12.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 31.4	AASHTO Classification: M145	: A-7-5 (13)
Silt + Clay (-No.200)	: 54.5	ASTM Classification: D2487	: MH

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)	: 1.6
Medium Sand (-No.10 + No.40)	: 12.5
Fine Sand (-No.40 + No.200)	: 31.4
Silt + Clay (-No.200)	: 54.5

Approved By : Kevin E. Walker

Soil No. 96

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-150
Project State	: Arkansas	Sample Depth	: 15.0' to 16.5'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Gray & Tan Silty 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	
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	99.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	88.9
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	20.1
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} = 0.159 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 33.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 41
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 27
		Plasticity Index	: 14
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.48
Gravel (3in. + No.10)	: 0.4	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 10.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 68.8	AASHTO Classification: M145	: A-2-7 (1)
Silt + Clay (-No.200)	: 20.1	ASTM Classification: D2487	: 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)	: 0.4
Medium Sand (-No.10 + No.40)	: 10.7
Fine Sand (-No.40 + No.200)	: 68.8
Silt + Clay (-No.200)	: 20.1

Approved By : Kevin E. Walker

Soil No. 97

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-150
Project State	: Arkansas	Sample Depth	: 25.0' to 26.5'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Brown & Gray Silty 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	95.4
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	23.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.142 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 32.7
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 34
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 10
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.83
Gravel (3in. + No.10)	: 0.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 4.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 71.9	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 23.5	ASTM Classification: D2487	: 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)	: 0.0
Medium Sand (-No.10 + No.40)	: 4.6
Fine Sand (-No.40 + No.200)	: 71.9
Silt + Clay (-No.200)	: 23.5

Approved By : Kevin E. Walker

Soil No. 98

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-6
Project County	: Pulaski	Sample Loc.	: Boring No. B-150
Project State	: Arkansas	Sample Depth	: 35.0' to 36.5'
Laboratory No.	: 11206-03	Date Tested	: 06/29/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Gray 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	
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	99.0

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	92.7
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	46.8
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} = 0.085 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 29.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 38
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 14
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.34
Gravel (3in. + No.10)	: 1.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 45.9	AASHTO Classification: M145	: A-6 (3)
Silt + Clay (-No.200)	: 46.8	ASTM Classification: D2487	: SC

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)	: 1.0
Medium Sand (-No.10 + No.40)	: 6.3
Fine Sand (-No.40 + No.200)	: 45.9
Silt + Clay (-No.200)	: 46.8

Approved By : Kevin E. Walker

Soil No. 99

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-120
Project State	: Arkansas	Sample Depth	: 5.0' to 6.5'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Tan & Gray Silty 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	
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	99.6

AASHTO T88

				% Passing
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	26.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.136 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 33.7
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 28
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 4
AASHTO Composition of Total Sample: M145		Liquidity Index	: 2.34
Gravel (3in. + No.10)	: 0.4	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 4.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 68.4	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 26.5	ASTM Classification: D2487	: 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)	: 0.4
Medium Sand (-No.10 + No.40)	: 4.7
Fine Sand (-No.40 + No.200)	: 68.4
Silt + Clay (-No.200)	: 26.5

Approved By : Kevin E. Walker

Soil No. 100

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-120
Project State	: Arkansas	Sample Depth	: 25.0' to 26.5'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Black Sandy Elastic Silt		

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	99.9
No.6		3.35	mm	
No.10		2	mm	99.1

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	87.6
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	51.2
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} = 0.064 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 33.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 74
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 43
		Plasticity Index	: 31
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.31
Gravel (3in. + No.10)	: 0.9	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 11.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 36.4	AASHTO Classification: M145	: A-7-5 (14)
Silt + Clay (-No.200)	: 51.2	ASTM Classification: D2487	: MH

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)	: 0.8
Medium Sand (-No.10 + No.40)	: 11.5
Fine Sand (-No.40 + No.200)	: 36.4
Silt + Clay (-No.200)	: 51.2

Approved By : Kevin E. Walker

Soil No. 101

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-7
Project County	: Pulaski	Sample Loc.	: Boring No. B-120
Project State	: Arkansas	Sample Depth	: 40.0' to 41.5'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Gray Sandy Elastic Silt		

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	100.0
3/4	in.	19	mm	94.6
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	94.6
1/4		6.3	mm	
No.4		4.75	mm	94.5
No.6		3.35	mm	
No.10		2	mm	94.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	86.9
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	52.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.058 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 30.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 52
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 34
		Plasticity Index	: 18
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.19
Gravel (3in. + No.10)	: 5.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 7.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 34.9	AASHTO Classification: M145	: A-7-5 (7)
Silt + Clay (-No.200)	: 52.0	ASTM Classification: D2487	: MH

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 5.4
Fine Gravel (-3/4in. + No.4)	: 0.1
Coarse Sand (-No.4 + No.10)	: 0.2
Medium Sand (-No.10 + No.40)	: 7.4
Fine Sand (-No.40 + No.200)	: 34.9
Silt + Clay (-No.200)	: 52.0

Approved By : Kevin E. Walker

Soil No. 102

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-121
Project State	: Arkansas	Sample Depth	: 3.3' to 4.8'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Red & Gray 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	
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	99.1
No.6		3.35	mm	
No.10		2	mm	98.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	96.0
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	22.3
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} = 0.144 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 25.9
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 33
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 22
		Plasticity Index	: 11
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.37
Gravel (3in. + No.10)	: 1.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 2.8	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 73.7	AASHTO Classification: M145	: A-2-6 (0)
Silt + Clay (-No.200)	: 22.3	ASTM Classification: D2487	: SC

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)	: 0.3
Medium Sand (-No.10 + No.40)	: 2.8
Fine Sand (-No.40 + No.200)	: 73.7
Silt + Clay (-No.200)	: 22.3

Approved By : Kevin E. Walker

Soil No. 103

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-121
Project State	: Arkansas	Sample Depth	: 8.3' to 9.8'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Tan Silty 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	
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

AASHTO T88

				% Passing
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	17.7
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} = 0.153 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 28.2
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 30
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 6
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.74
Gravel (3in. + No.10)	: 0.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 3.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 78.6	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 17.7	ASTM Classification: D2487	: 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)	: 0.0
Medium Sand (-No.10 + No.40)	: 3.7
Fine Sand (-No.40 + No.200)	: 78.6
Silt + Clay (-No.200)	: 17.7

Approved By : Kevin E. Walker

Soil No. 104

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-136
Project State	: Arkansas	Sample Depth	: 4.2' to 5.7'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Tan, Gray & Red 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	
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	98.2

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	80.9
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	40.6
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} = 0.112 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 22.4
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		Liquidity Index	: 0.16
Gravel (3in. + No.10)	: 1.8	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 17.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 40.3	AASHTO Classification: M145	: A-6 (2)
Silt + Clay (-No.200)	: 40.6	ASTM Classification: D2487	: SC

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)	: 1.8
Medium Sand (-No.10 + No.40)	: 17.3
Fine Sand (-No.40 + No.200)	: 40.3
Silt + Clay (-No.200)	: 40.6

Approved By : Kevin E. Walker

Soil No. 105

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-136
Project State	: Arkansas	Sample Depth	: 14.2' to 15.7'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Tan & Yellow 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	
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	99.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	93.2
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	26.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.139 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 29.5
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 37
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 23
		Plasticity Index	: 14
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.44
Gravel (3in. + No.10)	: 0.4	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 67.2	AASHTO Classification: M145	: A-2-6 (1)
Silt + Clay (-No.200)	: 26.0	ASTM Classification: D2487	: SC

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)	: 6.4
Fine Sand (-No.40 + No.200)	: 67.2
Silt + Clay (-No.200)	: 26.0

Approved By : Kevin E. Walker

Soil No. 106

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-141
Project State	: Arkansas	Sample Depth	: 4.3' to 5.8'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Tan & Gray Silty 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	
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

AASHTO T88

				% 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	15.4
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} = 0.155 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 27.1
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 26
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 23
		Plasticity Index	: 3
AASHTO Composition of Total Sample: M145		Liquidity Index	: 1.43
Gravel (3in. + No.10)	: 0.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 2.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 82.4	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 15.4	ASTM Classification: D2487	: 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)	: 2.1
Fine Sand (-No.40 + No.200)	: 82.4
Silt + Clay (-No.200)	: 15.4

Approved By : Kevin E. Walker

Soil No. 107

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-141
Project State	: Arkansas	Sample Depth	: 9.3' to 10.8'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Tan & Gray Silty 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	89.5
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	26.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.143 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 34.1
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 32
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 23
		Plasticity Index	: 9
AASHTO Composition of Total Sample: M145		Liquidity Index	: 1.19
Gravel (3in. + No.10)	: 0.3	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 10.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 63.0	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 26.5	ASTM Classification: D2487	: 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)	: 0.3
Medium Sand (-No.10 + No.40)	: 10.2
Fine Sand (-No.40 + No.200)	: 63.0
Silt + Clay (-No.200)	: 26.5

Approved By : Kevin E. Walker

Soil No. 108

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-143
Project State	: Arkansas	Sample Depth	: 4.5' to 6.0'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Tan & Gray Silty 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	97.4
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	14.4
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} = 0.158 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 28.5
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 26
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 23
		Plasticity Index	: 3
AASHTO Composition of Total Sample: M145		Liquidity Index	: 1.80
Gravel (3in. + No.10)	: 0.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 2.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 83.0	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 14.4	ASTM Classification: D2487	: 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)	: 0.0
Medium Sand (-No.10 + No.40)	: 2.6
Fine Sand (-No.40 + No.200)	: 83.0
Silt + Clay (-No.200)	: 14.4

Approved By : Kevin E. Walker

Soil No. 109

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-143
Project State	: Arkansas	Sample Depth	: 19.5' to 21.0'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Gray 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	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	99.3
1/4		6.3	mm	
No.4		4.75	mm	98.5
No.6		3.35	mm	
No.10		2	mm	97.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	88.6
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	28.1
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} = 0.141 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 26.9
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 41
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 17
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.19
Gravel (3in. + No.10)	: 2.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 8.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 60.5	AASHTO Classification: M145	: A-2-7 (1)
Silt + Clay (-No.200)	: 28.1	ASTM Classification: D2487	: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 1.5
Coarse Sand (-No.4 + No.10)	: 1.2
Medium Sand (-No.10 + No.40)	: 8.7
Fine Sand (-No.40 + No.200)	: 60.5
Silt + Clay (-No.200)	: 28.1

Approved By : Kevin E. Walker

Soil No. 110

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-6
Project County	: Pulaski	Sample Loc.	: Boring No. B-143
Project State	: Arkansas	Sample Depth	: 34.5' to 36.0'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Gray Sandy Fat 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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	88.2
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	52.7
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} = 0.053 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 30.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 69
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 29
		Plasticity Index	: 40
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.03
Gravel (3in. + No.10)	: 0.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 11.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 35.5	AASHTO Classification: M145	: A-7-6 (17)
Silt + Clay (-No.200)	: 52.7	ASTM Classification: D2487	: CH

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)	: 11.7
Fine Sand (-No.40 + No.200)	: 35.5
Silt + Clay (-No.200)	: 52.7

Approved By : Kevin E. Walker

Soil No. 111

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-122
Project State	: Arkansas	Sample Depth	: 19.8' to 20.3'
Laboratory No.	: 11206-03	Date Tested	: 06/23/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Tan Silty 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	
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	99.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	93.4
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	45.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.087 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 36.7
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 52
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 30
		Plasticity Index	: 22
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.32
Gravel (3in. + No.10)	: 0.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 47.5	AASHTO Classification: M145	: A-7-6 (7)
Silt + Clay (-No.200)	: 45.9	ASTM Classification: D2487	: SM

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)	: 0.0
Medium Sand (-No.10 + No.40)	: 6.5
Fine Sand (-No.40 + No.200)	: 47.5
Silt + Clay (-No.200)	: 45.9

Approved By : Kevin E. Walker

Soil No. 112

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SOIL CLASSIFICATION

Project Name	:	Main St.-Vandenburg Blvd. (Widening)		
Project No.	:	CA0604	Sample No.	: ST-1
Project County	:	Pulaski	Sample Loc.	: Boring No. B-130
Project State	:	Arkansas	Sample Depth	: 15.1' to 15.6'
Laboratory No.	:	11206-03	Date Tested	: 06/23/16
Submitted By	:	HDR|ICA	Date Reported	: 07/05/16
Soil Type	:	Red & Tan Silty 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	
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	99.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	93.7
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	47.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.082 mm

CBR	:	NA	Natural Moisture (%) (AASHTO T265)	: 38.0
Dry Dens.	:	NA	Liquid Limit (AASHTO T89)	: 44
Opt. Moist.	:	NA	Plastic Limit (AASHTO T90)	: 29
			Plasticity Index	: 15
AASHTO Composition of Total Sample: M145			Liquidity Index	: 0.59
Gravel (3in. + No.10)	:	0.4	Activity	: NA
Coarse Sand (-No.10 + No.40)	:	5.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	:	46.2	AASHTO Classification: M145	: A-7-6 (4)
Silt + Clay (-No.200)	:	47.5	ASTM Classification: D2487	: 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)	:	0.4
Medium Sand (-No.10 + No.40)	:	5.9
Fine Sand (-No.40 + No.200)	:	46.2
Silt + Clay (-No.200)	:	47.5

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Soil No. 113

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-163
Project State	: Arkansas	Sample Depth	: 10.3' to 10.8'
Laboratory No.	: 11206-03	Date Tested	: 06/23/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Brown & Gray 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	
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

AASHTO T88

				% Passing
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	40.3
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} = 0.1 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 23.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 49
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 22
		Plasticity Index	: 27
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.05
Gravel (3in. + No.10)	: 0.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 1.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 58.3	AASHTO Classification: M145	: A-7-6 (6)
Silt + Clay (-No.200)	: 40.3	ASTM Classification: D2487	: SC

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)	: 1.2
Fine Sand (-No.40 + No.200)	: 58.3
Silt + Clay (-No.200)	: 40.3

Approved By : Kevin E. Walker

Soil No. 114

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-163
Project State	: Arkansas	Sample Depth	: 19.9' to 20.4'
Laboratory No.	: 11206-03	Date Tested	: 06/22/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Brown & Gray Sandy Elastic Silt		

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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	91.7
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	54.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.046 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 33.5
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 52
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 34
		Plasticity Index	: 18
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.02
Gravel (3in. + No.10)	: 0.3	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 8.0	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 37.7	AASHTO Classification: M145	: A-7-5 (8)
Silt + Clay (-No.200)	: 54.0	ASTM Classification: D2487	: MH

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)	: 8.0
Fine Sand (-No.40 + No.200)	: 37.7
Silt + Clay (-No.200)	: 54.0

Approved By : Kevin E. Walker

Soil No. 115

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-165
Project State	: Arkansas	Sample Depth	: 4.9' to 6.9'
Laboratory No.	: 11206-03	Date Tested	: 06/20/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Brown Sandy Silty 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	94.9
No.6		3.35	mm	
No.10		2	mm	89.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	83.1
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	58.1
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} = 0.03 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 38.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 25
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 18
		Plasticity Index	: 7
AASHTO Composition of Total Sample: M145		Liquidity Index	: 2.93
Gravel (3in. + No.10)	: 10.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 25.0	AASHTO Classification: M145	: A-4 (2)
Silt + Clay (-No.200)	: 58.1	ASTM Classification: D2487	: CL-ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 5.1
Coarse Sand (-No.4 + No.10)	: 5.4
Medium Sand (-No.10 + No.40)	: 6.4
Fine Sand (-No.40 + No.200)	: 25.0
Silt + Clay (-No.200)	: 58.1

Approved By : Kevin E. Walker

Soil No. 116

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SOIL CLASSIFICATION

Project Name	:	Main St.-Vandenburg Blvd. (Widening)		
Project No.	:	CA0604	Sample No.	: ST-2
Project County	:	Pulaski	Sample Loc.	: Boring No. B-165
Project State	:	Arkansas	Sample Depth	: 20.7' to 21.2'
Laboratory No.	:	11206-03	Date Tested	: 06/23/16
Submitted By	:	HDR|ICA	Date Reported	: 07/05/16
Soil Type	:	Brown Sandy Elastic Silt		

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	100.0

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	92.4
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	57.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.032 mm

CBR	:	NA	Natural Moisture (%) (AASHTO T265)	: 35.6
Dry Dens.	:	NA	Liquid Limit (AASHTO T89)	: 64
Opt. Moist.	:	NA	Plastic Limit (AASHTO T90)	: 36
			Plasticity Index	: 28
AASHTO Composition of Total Sample: M145			Liquidity Index	: -0.03
Gravel (3in. + No.10)	:	0.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	:	7.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	:	34.9	AASHTO Classification: M145	: A-7-5 (15)
Silt + Clay (-No.200)	:	57.5	ASTM Classification: D2487	: MH

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)	:	7.6
Fine Sand (-No.40 + No.200)	:	34.9
Silt + Clay (-No.200)	:	57.5

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-167
Project State	: Arkansas	Sample Depth	: 4.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 06/22/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Brown & Gray 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	87.9
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	23.8
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} = 0.152 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 33
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 13
		Plasticity Index	: 20
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.92
Gravel (3in. + No.10)	: 0.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 11.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 64.1	AASHTO Classification: M145	: A-2-6 (2)
Silt + Clay (-No.200)	: 23.8	ASTM Classification: D2487	: SC

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)	: 11.5
Fine Sand (-No.40 + No.200)	: 64.1
Silt + Clay (-No.200)	: 23.8

Approved By : Kevin E. Walker

Soil No. 118

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-167
Project State	: Arkansas	Sample Depth	: 21.0' to 21.5'
Laboratory No.	: 11206-03	Date Tested	: 06/23/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Brown & Gray Sandy Elastic Silt		

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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	89.3
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	50.2
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} = 0.073 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 35.2
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 73
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 44
		Plasticity Index	: 29
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.30
Gravel (3in. + No.10)	: 0.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 10.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 39.1	AASHTO Classification: M145	: A-7-5 (12)
Silt + Clay (-No.200)	: 50.2	ASTM Classification: D2487	: MH

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)	: 10.6
Fine Sand (-No.40 + No.200)	: 39.1
Silt + Clay (-No.200)	: 50.2

Approved By : Kevin E. Walker

Soil No. 119

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-168
Project State	: Arkansas	Sample Depth	: 25.2' to 25.7'
Laboratory No.	: 11206-03	Date Tested	: 06/23/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Brown & Gray 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	82.8
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	47.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.083 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 36.5
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 73
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 29
		Plasticity Index	: 44
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.18
Gravel (3in. + No.10)	: 0.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 17.0	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 34.9	AASHTO Classification: M145	: A-7-6 (16)
Silt + Clay (-No.200)	: 47.9	ASTM Classification: D2487	: SC

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)	: 17.0
Fine Sand (-No.40 + No.200)	: 34.9
Silt + Clay (-No.200)	: 47.9

Approved By : Kevin E. Walker

Soil No. 120

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-169
Project State	: Arkansas	Sample Depth	: 9.8' to 11.8'
Laboratory No.	: 11206-03	Date Tested	: 06/20/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Red & Gray 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	91.8
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	45.2
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} = 0.09 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 30.1
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	: 0.50
Gravel (3in. + No.10)	: 0.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 8.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 46.6	AASHTO Classification: M145	: A-6 (4)
Silt + Clay (-No.200)	: 45.2	ASTM Classification: D2487	: SC

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)	: 8.1
Fine Sand (-No.40 + No.200)	: 46.6
Silt + Clay (-No.200)	: 45.2

Approved By : Kevin E. Walker

Soil No. 121

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-170
Project State	: Arkansas	Sample Depth	: 14.8' to 15.3'
Laboratory No.	: 11206-03	Date Tested	: 06/23/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Red 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	88.9
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	37.4
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} = 0.115 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 19.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 31
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 18
		Plasticity Index	: 13
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.10
Gravel (3in. + No.10)	: 0.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 11.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 51.5	AASHTO Classification: M145	: A-6 (1)
Silt + Clay (-No.200)	: 37.4	ASTM Classification: D2487	: SC

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)	: 11.1
Fine Sand (-No.40 + No.200)	: 51.5
Silt + Clay (-No.200)	: 37.4

Approved By : Kevin E. Walker

Soil No. 122

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-171
Project State	: Arkansas	Sample Depth	: 4.7' to 6.7'
Laboratory No.	: 11206-03	Date Tested	: 06/20/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Brown Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.2
No.6		3.35	mm	
No.10		2	mm	97.2

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	90.7
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	57.4
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} = 0.032 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 21.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 36
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 22
		Plasticity Index	: 14
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.02
Gravel (3in. + No.10)	: 2.8	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 33.3	AASHTO Classification: M145	: A-6 (6)
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)	: 0.8
Coarse Sand (-No.4 + No.10)	: 2.0
Medium Sand (-No.10 + No.40)	: 6.5
Fine Sand (-No.40 + No.200)	: 33.3
Silt + Clay (-No.200)	: 57.4

Approved By : Kevin E. Walker

Soil No. 123

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-166
Project State	: Arkansas	Sample Depth	: 4.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 06/23/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Red & Brown Silty 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	89.8
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	18.1
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} = 0.162 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 30.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 33
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 25
		Plasticity Index	: 8
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.71
Gravel (3in. + No.10)	: 0.3	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 9.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 71.7	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 18.1	ASTM Classification: D2487	: 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)	: 0.3
Medium Sand (-No.10 + No.40)	: 9.9
Fine Sand (-No.40 + No.200)	: 71.7
Silt + Clay (-No.200)	: 18.1

Approved By : Kevin E. Walker

Soil No. 124

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-168
Project State	: Arkansas	Sample Depth	: 10.0' to 10.5'
Laboratory No.	: 11206-03	Date Tested	: 06/23/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Red & Gray 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	96.1
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	42.7
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} = 0.095 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 26.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 57
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 22
		Plasticity Index	: 35
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.14
Gravel (3in. + No.10)	: 0.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 3.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 53.4	AASHTO Classification: M145	: A-7-6 (9)
Silt + Clay (-No.200)	: 42.7	ASTM Classification: D2487	: SC

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)	: 3.7
Fine Sand (-No.40 + No.200)	: 53.4
Silt + Clay (-No.200)	: 42.7

Approved By : Kevin E. Walker

Soil No. 125

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-104
Project State	: Arkansas	Sample Depth	: 6.5' to 7.0'
Laboratory No.	: 11206-03	Date Tested	: 07/06/16
Submitted By	: HDR|ICA	Date Reported	: 07/07/16
Soil Type	: Gray 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	96.8
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	32.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.12 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 25.7
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 32
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 22
		Plasticity Index	: 10
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.35
Gravel (3in. + No.10)	: 0.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 3.0	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 64.3	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 32.5	ASTM Classification: D2487	: SC

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)	: 3.0
Fine Sand (-No.40 + No.200)	: 64.3
Silt + Clay (-No.200)	: 32.5

Approved By : Kevin E. Walker

Soil No. 126

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-120
Project State	: Arkansas	Sample Depth	: 20.9' to 21.4'
Laboratory No.	: 11206-03	Date Tested	: 07/06/16
Submitted By	: HDR|ICA	Date Reported	: 07/07/16
Soil Type	: Gray Sandy Elastic Silt		

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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	85.7
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	60.2
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} = 0.024 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 33.2
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 60
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 32
		Plasticity Index	: 28
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.03
Gravel (3in. + No.10)	: 0.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 14.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 25.5	AASHTO Classification: M145	: A-7-5 (16)
Silt + Clay (-No.200)	: 60.2	ASTM Classification: D2487	: MH

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)	: 14.1
Fine Sand (-No.40 + No.200)	: 25.5
Silt + Clay (-No.200)	: 60.2

Approved By : Kevin E. Walker

Soil No. 127

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-123
Project State	: Arkansas	Sample Depth	: 25.1' to 25.6'
Laboratory No.	: 11206-03	Date Tested	: 07/06/16
Submitted By	: HDR|ICA	Date Reported	: 07/07/16
Soil Type	: Brown & Gray Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.5
No.6		3.35	mm	
No.10		2	mm	96.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	84.4
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	59.6
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} = 0.026 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 17.5
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	: -0.07
Gravel (3in. + No.10)	: 3.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 12.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 24.8	AASHTO Classification: M145	: A-6 (9)
Silt + Clay (-No.200)	: 59.6	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.5
Coarse Sand (-No.4 + No.10)	: 2.6
Medium Sand (-No.10 + No.40)	: 12.5
Fine Sand (-No.40 + No.200)	: 24.8
Silt + Clay (-No.200)	: 59.6

Approved By : Kevin E. Walker

Soil No. 128

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-126
Project State	: Arkansas	Sample Depth	: 14.9' to 15.4'
Laboratory No.	: 11206-03	Date Tested	: 07/06/16
Submitted By	: HDR|ICA	Date Reported	: 07/07/16
Soil Type	: Gray & Brown Sandy Fat 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	99.2

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	91.6
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	60.7
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} = 0.023 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 17.9
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 50
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 17
		Plasticity Index	: 33
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.03
Gravel (3in. + No.10)	: 0.8	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 7.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 30.9	AASHTO Classification: M145	: A-7-6 (17)
Silt + Clay (-No.200)	: 60.7	ASTM Classification: D2487	: CH

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)	: 0.8
Medium Sand (-No.10 + No.40)	: 7.6
Fine Sand (-No.40 + No.200)	: 30.9
Silt + Clay (-No.200)	: 60.7

Approved By : Kevin E. Walker

Soil No. 129

SOIL CLASSIFICATION

Project Name	:	Main St.-Vandenburg Blvd. (Widening)		
Project No.	:	CA0604	Sample No.	: ST-1
Project County	:	Pulaski	Sample Loc.	: Boring No. B-131
Project State	:	Arkansas	Sample Depth	: 24.0' to 24.5'
Laboratory No.	:	11206-03	Date Tested	: 07/06/16
Submitted By	:	HDR|ICA	Date Reported	: 07/07/16
Soil Type	:	Brown & Gray Sandy Silty 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	98.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	89.7
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	59.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.025 mm

CBR	:	NA	Natural Moisture (%) (AASHTO T265)	: 18.6
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	: 0.26
Gravel (3in. + No.10)	:	1.3	Activity	: NA
Coarse Sand (-No.10 + No.40)	:	9.0	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	:	29.8	AASHTO Classification: M145	: A-4 (2)
Silt + Clay (-No.200)	:	59.9	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)	:	1.2
Medium Sand (-No.10 + No.40)	:	9.0
Fine Sand (-No.40 + No.200)	:	29.8
Silt + Clay (-No.200)	:	59.9

Approved By : Kevin E. Walker

Soil No. 130

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-136
Project State	: Arkansas	Sample Depth	: 10.2' to 10.7'
Laboratory No.	: 11206-03	Date Tested	: 07/06/16
Submitted By	: HDR|ICA	Date Reported	: 07/07/16
Soil Type	: Gray Sandy 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	99.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	86.9
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	66.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.014 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 25.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 38
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 23
		Plasticity Index	: 15
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.16
Gravel (3in. + No.10)	: 0.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 12.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 20.0	AASHTO Classification: M145	: A-6 (9)
Silt + Clay (-No.200)	: 66.9	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.0
Coarse Sand (-No.4 + No.10)	: 0.6
Medium Sand (-No.10 + No.40)	: 12.5
Fine Sand (-No.40 + No.200)	: 20.0
Silt + Clay (-No.200)	: 66.9

Approved By : Kevin E. Walker

Soil No. 131

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-139
Project State	: Arkansas	Sample Depth	: 17.5' to 18.0'
Laboratory No.	: 11206-03	Date Tested	: 07/06/16
Submitted By	: HDR|ICA	Date Reported	: 07/07/16
Soil Type	: Tan & Gray 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	91.8
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	38.1
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} = 0.11 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 30.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 38
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 14
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.42
Gravel (3in. + No.10)	: 0.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 8.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 53.7	AASHTO Classification: M145	: A-6 (2)
Silt + Clay (-No.200)	: 38.1	ASTM Classification: D2487	: SC

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)	: 8.2
Fine Sand (-No.40 + No.200)	: 53.7
Silt + Clay (-No.200)	: 38.1

Approved By : Kevin E. Walker

Soil No. 132

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-141
Project State	: Arkansas	Sample Depth	: 15.3' to 15.8'
Laboratory No.	: 11206-03	Date Tested	: 07/06/16
Submitted By	: HDR|ICA	Date Reported	: 07/07/16
Soil Type	: Tan 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	90.5
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	36.2
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} = 0.117 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 29.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 46
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 26
		Plasticity Index	: 20
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.19
Gravel (3in. + No.10)	: 0.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 9.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 54.3	AASHTO Classification: M145	: A-7-6 (2)
Silt + Clay (-No.200)	: 36.2	ASTM Classification: D2487	: SC

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)	: 9.4
Fine Sand (-No.40 + No.200)	: 54.3
Silt + Clay (-No.200)	: 36.2

Approved By : Kevin E. Walker

Soil No. 133

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-143
Project State	: Arkansas	Sample Depth	: 10.0' to 10.5'
Laboratory No.	: 11206-03	Date Tested	: 07/06/16
Submitted By	: HDR|ICA	Date Reported	: 07/07/16
Soil Type	: Tan Silty 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	92.9
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	22.7
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} = 0.147 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 27.7
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 26
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 25
		Plasticity Index	: 1
AASHTO Composition of Total Sample: M145		Liquidity Index	: 2.50
Gravel (3in. + No.10)	: 0.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 70.2	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 22.7	ASTM Classification: D2487	: 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)	: 0.2
Medium Sand (-No.10 + No.40)	: 6.9
Fine Sand (-No.40 + No.200)	: 70.2
Silt + Clay (-No.200)	: 22.7

Approved By : Kevin E. Walker

Soil No. 134

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-150
Project State	: Arkansas	Sample Depth	: 10.5' to 11.0'
Laboratory No.	: 11206-03	Date Tested	: 07/06/16
Submitted By	: HDR|ICA	Date Reported	: 07/07/16
Soil Type	: Brown & Gray Silty 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	
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	98.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	84.8
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	18.3
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} = 0.171 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 32.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 30
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 26
		Plasticity Index	: 4
AASHTO Composition of Total Sample: M145		Liquidity Index	: 1.44
Gravel (3in. + No.10)	: 1.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 14.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 66.5	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 18.3	ASTM Classification: D2487	: 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)	: 1.1
Medium Sand (-No.10 + No.40)	: 14.1
Fine Sand (-No.40 + No.200)	: 66.5
Silt + Clay (-No.200)	: 18.3

Approved By : Kevin E. Walker

Soil No. 135

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-158
Project State	: Arkansas	Sample Depth	: 6.9' to 7.4'
Laboratory No.	: 11206-03	Date Tested	: 07/06/16
Submitted By	: HDR|ICA	Date Reported	: 07/07/16
Soil Type	: Brown & Gray Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	99.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	94.0
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	69.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.012 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 21.2
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	: 0.54
Gravel (3in. + No.10)	: 0.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 5.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 25.0	AASHTO Classification: M145	: A-4 (4)
Silt + Clay (-No.200)	: 69.0	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.1
Coarse Sand (-No.4 + No.10)	: 0.6
Medium Sand (-No.10 + No.40)	: 5.3
Fine Sand (-No.40 + No.200)	: 25.0
Silt + Clay (-No.200)	: 69.0

Approved By : Kevin E. Walker

Soil No. 136

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-159
Project State	: Arkansas	Sample Depth	: 15.5' to 16.0'
Laboratory No.	: 11206-03	Date Tested	: 07/06/16
Submitted By	: HDR|ICA	Date Reported	: 07/07/16
Soil Type	: Brown & Gray Sandy Elastic Silt		

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	99.9
No.6		3.35	mm	
No.10		2	mm	97.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	84.3
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	51.7
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} = 0.06 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 25.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 62
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 34
		Plasticity Index	: 28
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.31
Gravel (3in. + No.10)	: 2.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 13.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 32.6	AASHTO Classification: M145	: A-7-5 (12)
Silt + Clay (-No.200)	: 51.7	ASTM Classification: D2487	: MH

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)	: 2.1
Medium Sand (-No.10 + No.40)	: 13.5
Fine Sand (-No.40 + No.200)	: 32.6
Silt + Clay (-No.200)	: 51.7

Approved By : Kevin E. Walker

Soil No. 137

UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-104
Project State	: Arkansas	Sample Depth	: 6.5' to 7.0'
Laboratory #	: 251537	Date Tested	: 6/29/2016
Submitted By	: HDR | ICA	Date Reported	: 7/7/2016

Soil Type	: Gray, Clayey Sand				
Wet Density	: 123.6	pcf	Initial Height	: 5.86	in
Dry Density	: 98.3	pcf	Initial Diameter	: 2.85	in
Moisture	: 25.7	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	21.2	0.04	0.3	0.48
3	36.6	0.04	0.5	0.82
4	47.1	0.04	0.8	1.06
5	56.8	0.04	1.0	1.27
6	63.5	0.04	1.3	1.42
7	68.3	0.04	1.5	1.52
8	74.1	0.05	1.8	1.64
9	77.9	0.05	2.0	1.72
10	83.7	0.05	2.4	1.85
11	88.5	0.05	2.7	1.95
12	92.3	0.05	3.1	2.02
13	97.1	0.05	3.4	2.12
14	99.1	0.05	3.8	2.15
15	102.9	0.05	4.1	2.23
16	104.8	0.05	4.4	2.26
17	105.8	0.05	4.8	2.28
18	106.8	0.05	5.1	2.29
19	103.9	0.05	5.5	2.22
20	91.4	0.05	6.0	1.94

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UNCONFINED COMPRESSION TEST

Project Name	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-104
Project State	: Arkansas	Sample Depth	: 6.5' to 7.0'
Laboratory #	: 251537	Date Tested	: 6/29/2016
Submitted By	: HDR | ICA	Date Reported	: 7/7/2016
Soil Type	: Gray, Clayey Sand		
Wet Density	: 123.6 pcf	Initial Height	: 5.86 in
Dry Density	: 98.3 pcf	Initial Diameter	: 2.85 in
Moisture	: 25.7 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		

APPROVED BY: Kevin E. Walker

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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-136
Project State	: Arkansas	Sample Depth	: 10.2' to 10.7'
Laboratory #	: 251537	Date Tested	: 6/29/2016
Submitted By	: HDR | ICA	Date Reported	: 7/7/2016

Soil Type	: Gray, Sandy Lean Clay				
Wet Density	: 113.8	pcf	Initial Height	: 5.80	in
Dry Density	: 85.5	pcf	Initial Diameter	: 2.85	in
Moisture	: 33.2	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	6.7	0.04	0.3	0.15
3	11.5	0.04	0.5	0.26
4	14.4	0.04	0.8	0.32
5	18.3	0.04	1.0	0.41
6	21.2	0.04	1.3	0.47
7	24.0	0.05	1.6	0.53
8	27.9	0.05	1.8	0.62
9	29.8	0.05	2.1	0.66
10	33.7	0.05	2.4	0.74
11	35.6	0.05	2.8	0.78
12	36.6	0.05	3.1	0.80
13	33.7	0.05	3.4	0.73
14	28.9	0.05	3.8	0.63

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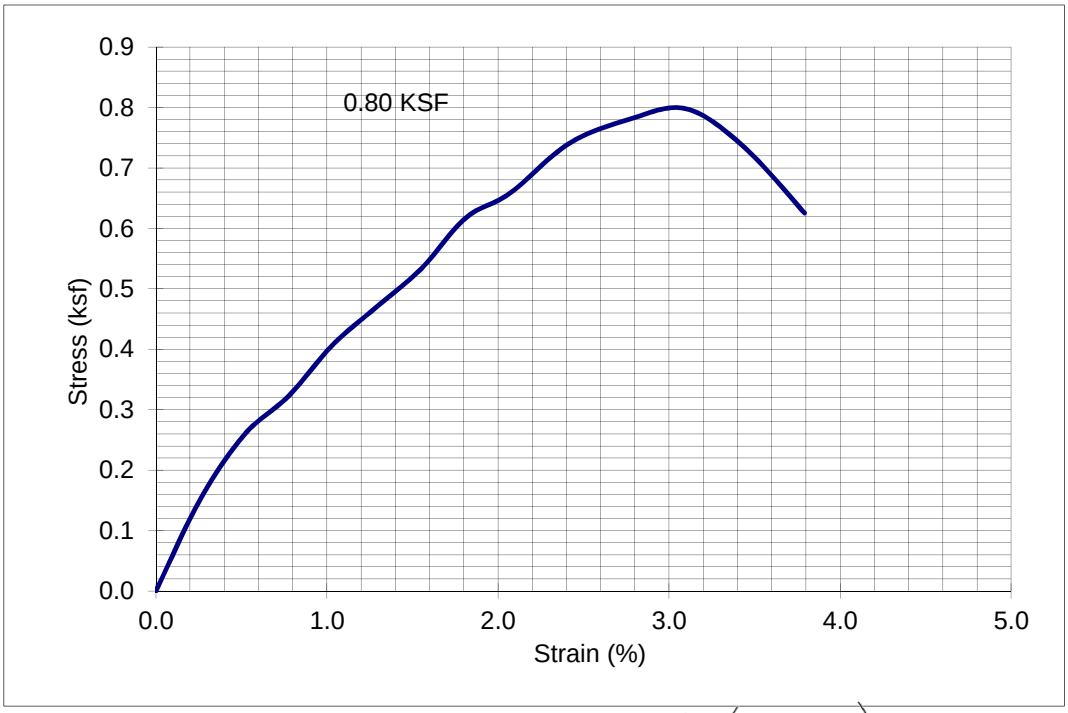
UNCONFINED COMPRESSION TEST

Project Name	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-136
Project State	: Arkansas	Sample Depth	: 10.2' to 10.7'
Laboratory #	: 251537	Date Tested	: 6/29/2016
Submitted By	: HDR | ICA	Date Reported	: 7/7/2016
Soil Type	: Gray, Sandy Lean Clay		
Wet Density	: 113.8 pcf	Initial Height	: 5.80 in
Dry Density	: 85.5 pcf	Initial Diameter	: 2.85 in
Moisture	: 33.2 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		



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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-139
Project State	: Arkansas	Sample Depth	: 17.5' to 18.0'
Laboratory #	: 251537	Date Tested	: 6/29/2016
Submitted By	: HDR | ICA	Date Reported	: 7/7/2016

Soil Type	: Tan & Gray, Clayey Sand				
Wet Density	: 118.3	pcf	Initial Height	: 5.82	in
Dry Density	: 90.8	pcf	Initial Diameter	: 2.85	in
Moisture	: 30.3	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	12.5	0.04	0.3	0.28
3	25.0	0.04	0.5	0.56
4	37.5	0.04	0.8	0.84
5	48.1	0.04	1.0	1.08
6	58.7	0.04	1.3	1.31
7	69.3	0.04	1.5	1.54
8	78.9	0.05	1.8	1.75
9	84.6	0.05	2.1	1.87
10	84.6	0.05	2.4	1.87
11	72.1	0.05	2.7	1.59

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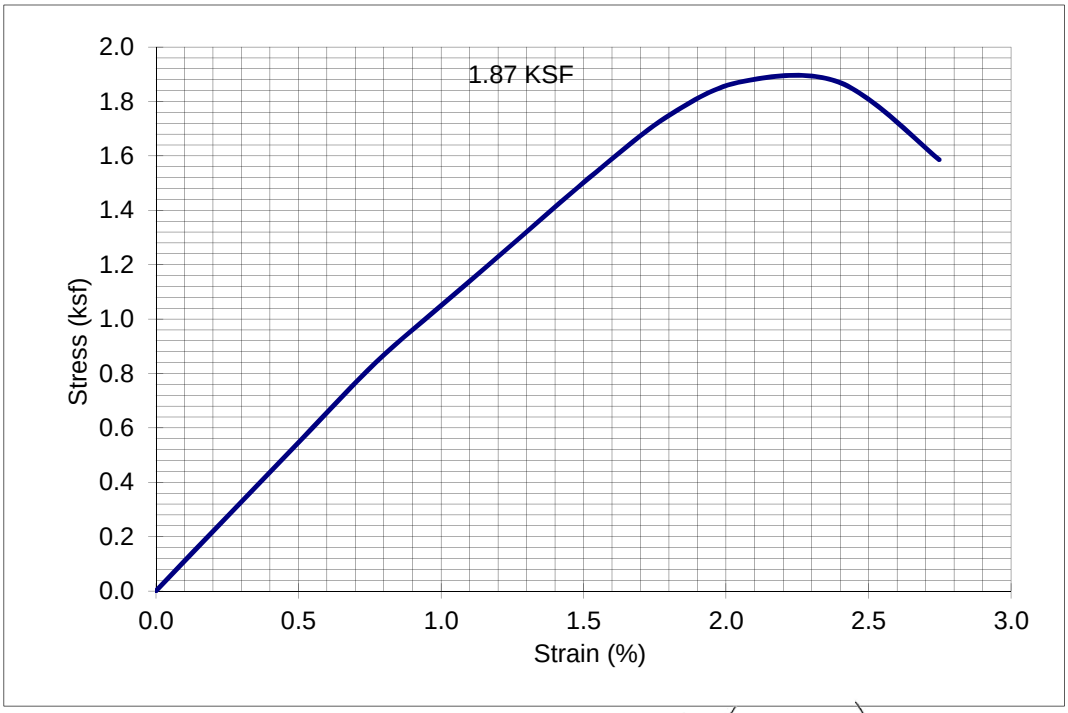
UNCONFINED COMPRESSION TEST

Project Name	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-139
Project State	: Arkansas	Sample Depth	: 17.5' to 18.0'
Laboratory #	: 251537	Date Tested	: 6/29/2016
Submitted By	: HDR | ICA	Date Reported	: 7/7/2016
Soil Type	: Tan & Gray, Clayey Sand		
Wet Density	: 118.3 pcf	Initial Height	: 5.82 in
Dry Density	: 90.8 pcf	Initial Diameter	: 2.85 in
Moisture	: 30.3 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		



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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-143
Project State	: Arkansas	Sample Depth	: 10.0' to 10.5'
Laboratory #	: 251537	Date Tested	: 6/29/2016
Submitted By	: HDR | ICA	Date Reported	: 7/7/2016

Soil Type	: Tan, Silty Sand				
Wet Density	: 120.2	pcf	Initial Height	: 5.85	in
Dry Density	: 94.1	pcf	Initial Diameter	: 2.86	in
Moisture	: 27.7	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	6.7	0.04	0.3	0.15
3	14.4	0.04	0.5	0.32
4	23.1	0.04	0.8	0.51
5	32.7	0.05	1.0	0.73
6	41.4	0.05	1.3	0.92
7	46.2	0.05	1.5	1.02
8	45.2	0.05	1.8	1.00
9	35.6	0.05	2.1	0.78
10	24.0	0.05	2.4	0.53

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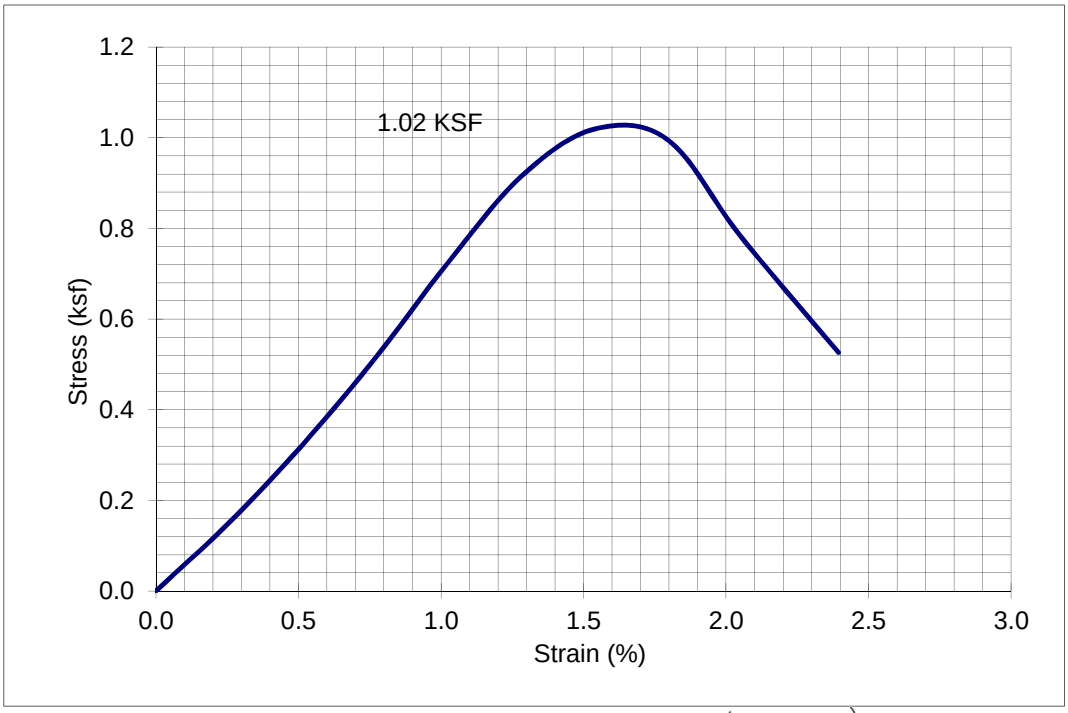
UNCONFINED COMPRESSION TEST

Project Name	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-143
Project State	: Arkansas	Sample Depth	: 10.0' to 10.5'
Laboratory #	: 251537	Date Tested	: 6/29/2016
Submitted By	: HDR | ICA	Date Reported	: 7/7/2016
Soil Type	: Tan, Silty Sand		
Wet Density	: 120.2 pcf	Initial Height	: 5.85 in
Dry Density	: 94.1 pcf	Initial Diameter	: 2.86 in
Moisture	: 27.7 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		



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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-150
Project State	: Arkansas	Sample Depth	: 10.5' to 11.0'
Laboratory #	: 251537	Date Tested	: 6/29/2016
Submitted By	: HDR | ICA	Date Reported	: 7/7/2016

Soil Type	: Brown & Gray, Silty Sand				
Wet Density	: 115.8	pcf	Initial Height	: 5.79	in
Dry Density	: 87.7	pcf	Initial Diameter	: 2.81	in
Moisture	: 32.0	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	6.7	0.04	0.3	0.16
3	13.5	0.04	0.5	0.31
4	20.2	0.04	0.8	0.47
5	26.0	0.04	1.0	0.60
6	32.7	0.04	1.3	0.75
7	39.4	0.04	1.6	0.90
8	44.2	0.04	1.8	1.01
9	42.3	0.04	2.1	0.97
10	20.2	0.04	2.4	0.46

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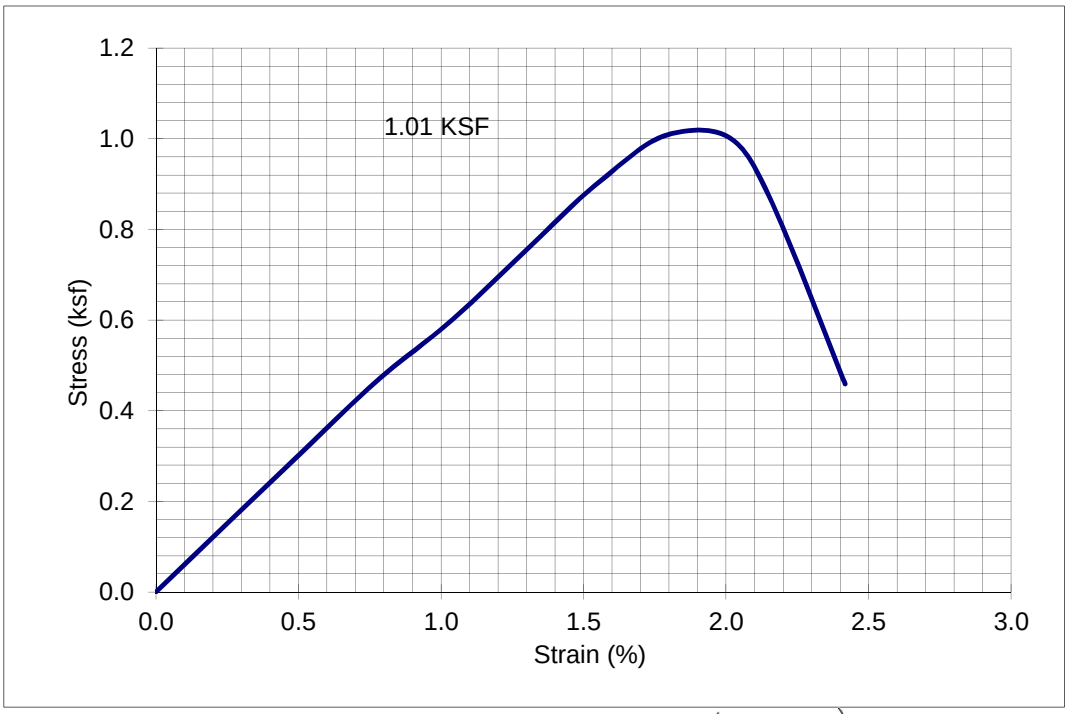
UNCONFINED COMPRESSION TEST

Project Name	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-150
Project State	: Arkansas	Sample Depth	: 10.5' to 11.0'
Laboratory #	: 251537	Date Tested	: 6/29/2016
Submitted By	: HDR | ICA	Date Reported	: 7/7/2016
Soil Type	: Brown & Gray, Silty Sand		
Wet Density	: 115.8 pcf	Initial Height	: 5.79 in
Dry Density	: 87.7 pcf	Initial Diameter	: 2.81 in
Moisture	: 32.0 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		



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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: Highway 67 Widening from Main Street to Vandenberg Blvd		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-165
Project State	: Arkansas	Sample Depth	: 5.7' to 6.2'
Laboratory #	: 251537	Date Tested	: 6/14/2015
Submitted By	: HDR | ICA	Date Reported	: 7/6/2016

Soil Type	: Brown, Sandy Silty Clay				
Wet Density	: 125.1	pcf	Initial Height	: 5.88	in
Dry Density	: 102.1	pcf	Initial Diameter	: 2.88	in
Moisture	: 22.5	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.05	0.0	0.00
2	3.8	0.05	0.3	0.08
3	5.8	0.05	0.5	0.13
4	6.7	0.05	0.8	0.15
5	7.7	0.05	1.0	0.17
6	8.2	0.05	1.3	0.18
7	8.7	0.05	1.5	0.19
8	9.6	0.05	1.8	0.21
9	11.5	0.05	2.0	0.25
10	12.5	0.05	2.4	0.27
11	13.5	0.05	2.7	0.29
12	14.4	0.05	3.1	0.31
13	15.4	0.05	3.4	0.33
14	15.9	0.05	3.7	0.34
15	16.4	0.05	4.1	0.35
16	16.8	0.05	4.4	0.36
17	17.3	0.05	4.8	0.36
18	17.8	0.05	5.1	0.37
19	18.3	0.05	5.5	0.38
20	19.2	0.05	6.0	0.40
21	19.7	0.05	6.4	0.41
22	20.2	0.05	6.8	0.42
23	21.2	0.05	7.2	0.43
24	22.1	0.05	7.7	0.45
25	22.1	0.05	8.1	0.45
26	22.1	0.05	8.5	0.45
27	22.1	0.05	9.4	0.44

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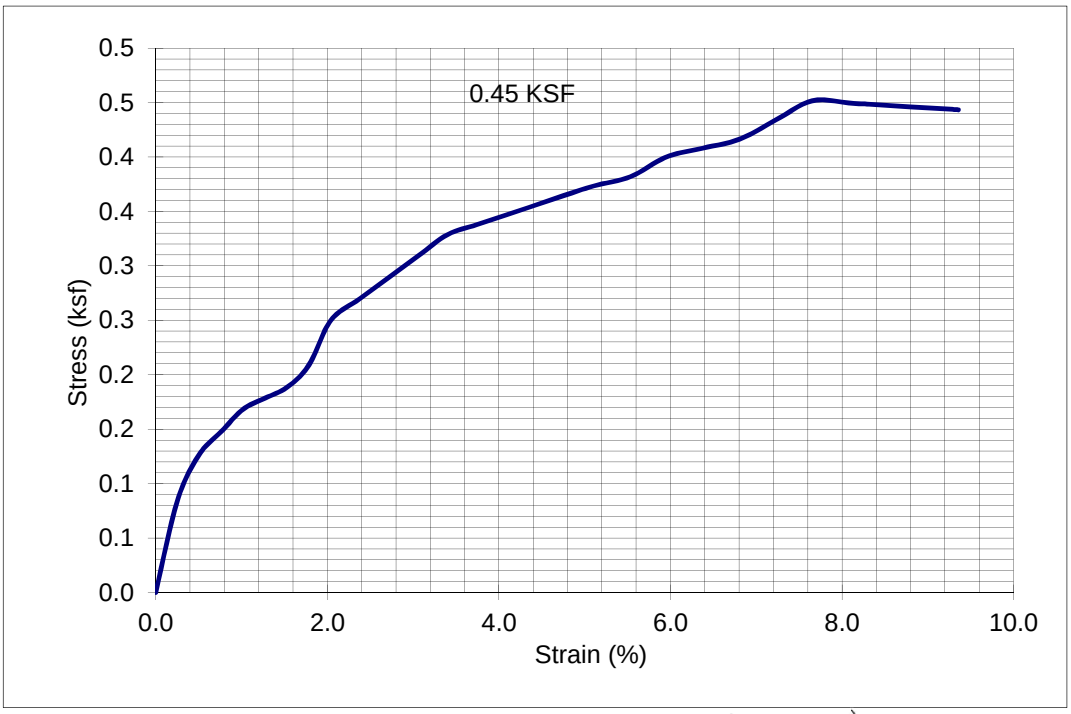
UNCONFINED COMPRESSION TEST

Project Name	: Highway 67 Widening from Main Street to Vandenberg Blvd		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-165
Project State	: Arkansas	Sample Depth	: 5.7' to 6.2'
Laboratory #	: 251537	Date Tested	: 6/14/2015
Submitted By	: HDR | ICA	Date Reported	: 7/6/2016
Soil Type	: Brown, Sandy Silty Clay		
Wet Density	: 125.1 pcf	Initial Height	: 5.88 in
Dry Density	: 102.1 pcf	Initial Diameter	: 2.88 in
Moisture	: 22.5 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		



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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: Highway 67 Widening from Main Street to Vandenberg Blvd		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-169
Project State	: Arkansas	Sample Depth	: 10.5' to 11.0'
Laboratory #	: 251537	Date Tested	: 6/14/2015
Submitted By	: HDR | ICA	Date Reported	: 7/6/2016

Soil Type	: Red & Gray, Clayey Sand				
Wet Density	: 118.4	pcf	Initial Height	: 5.87	in
Dry Density	: 90.3	pcf	Initial Diameter	: 2.85	in
Moisture	: 31.2	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	8.7	0.04	0.3	0.20
3	22.1	0.04	0.5	0.50
4	37.5	0.04	0.8	0.84
5	51.9	0.04	1.0	1.16
6	63.5	0.04	1.3	1.42
7	73.1	0.04	1.5	1.63
8	79.8	0.05	1.8	1.77
9	84.6	0.05	2.0	1.87
10	85.6	0.05	2.4	1.89
11	76.0	0.05	2.7	1.67
12	52.9	0.05	3.1	1.16

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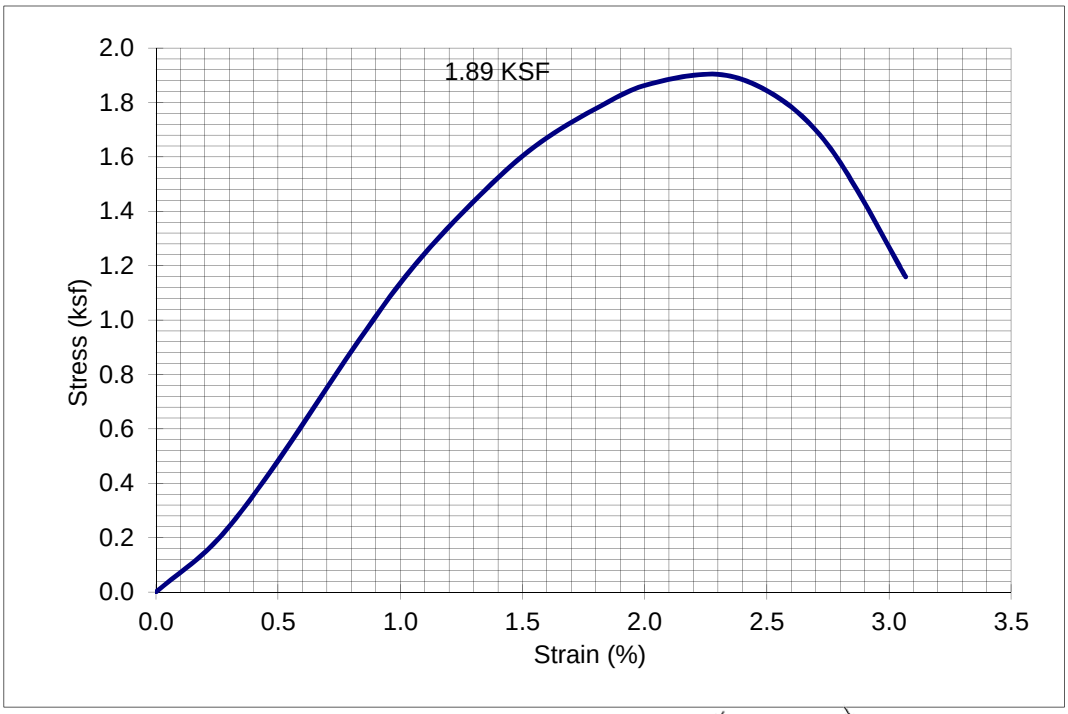
UNCONFINED COMPRESSION TEST

Project Name	: Highway 67 Widening from Main Street to Vandenberg Blvd		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-169
Project State	: Arkansas	Sample Depth	: 10.5' to 11.0'
Laboratory #	: 251537	Date Tested	: 6/14/2015
Submitted By	: HDR | ICA	Date Reported	: 7/6/2016
Soil Type	: Red & Gray, Clayey Sand		
Wet Density	: 118.4 pcf	Initial Height	: 5.87 in
Dry Density	: 90.3 pcf	Initial Diameter	: 2.85 in
Moisture	: 31.2 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		



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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: Highway 67 Widening from Main Street to Vandenberg Blvd		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-171
Project State	: Arkansas	Sample Depth	: 5.7' to 6.2'
Laboratory #	: 251537	Date Tested	: 6/14/2015
Submitted By	: HDR | ICA	Date Reported	: 7/6/2016

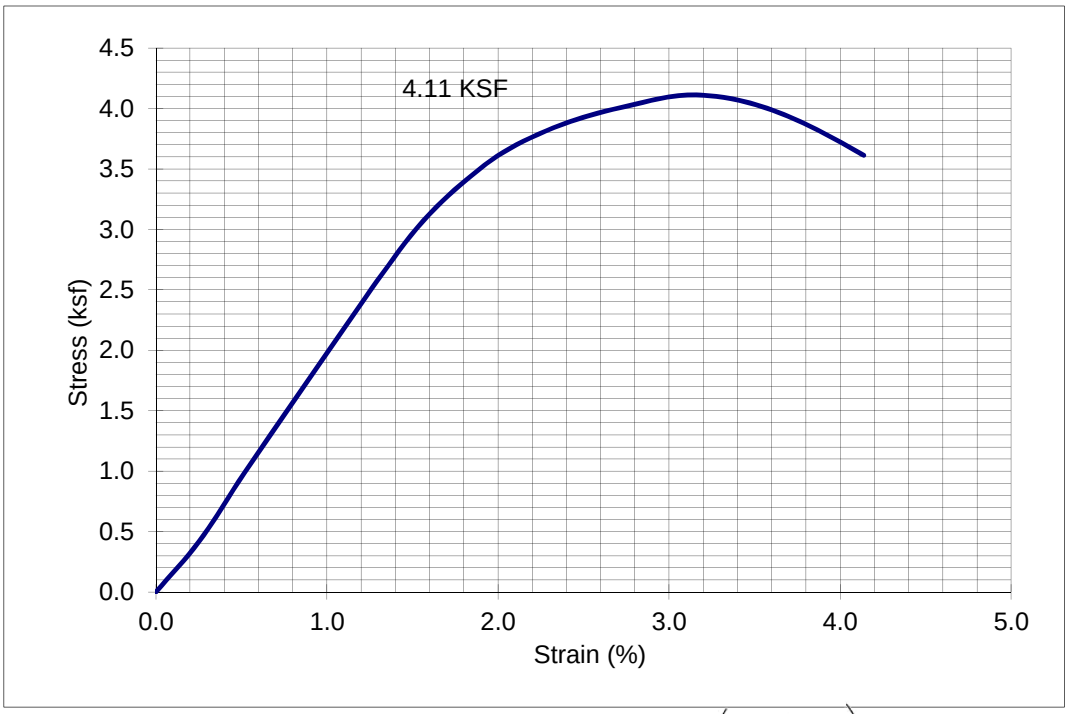
Soil Type	: Brown, Sandy Lean Clay				
Wet Density	: 127.1	pcf	Initial Height	: 5.80	in
Dry Density	: 103.2	pcf	Initial Diameter	: 2.86	in
Moisture	: 23.1	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	19.2	0.04	0.3	0.43
3	44.2	0.04	0.5	0.99
4	68.3	0.05	0.8	1.52
5	92.3	0.05	1.0	2.05
6	116.4	0.05	1.3	2.57
7	138.5	0.05	1.6	3.05
8	154.9	0.05	1.8	3.40
9	167.4	0.05	2.1	3.67
10	177.9	0.05	2.4	3.89
11	184.7	0.05	2.8	4.02
12	189.5	0.05	3.1	4.11
13	187.6	0.05	3.4	4.05
14	179.9	0.05	3.8	3.87
15	168.3	0.05	4.1	3.61

UNCONFINED COMPRESSION TEST

Project Name	: Highway 67 Widening from Main Street to Vandenberg Blvd		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-171
Project State	: Arkansas	Sample Depth	: 5.7' to 6.2'
Laboratory #	: 251537	Date Tested	: 6/14/2015
Submitted By	: HDR | ICA	Date Reported	: 7/6/2016
Soil Type	: Brown, Sandy Lean Clay		
Wet Density	: 127.1 pcf	Initial Height	: 5.80 in
Dry Density	: 103.2 pcf	Initial Diameter	: 2.86 in
Moisture	: 23.1 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-117
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 10.4' to 10.9'
LABORATORY #	: 251537	DATE TESTED	: 6/14/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016
SOIL TYPE	: Red & Gray, Clayey Sand		

WET DENSITY	: 118.39 pcf	DELTA HEIGHT	: 0.45 cm	INITIAL HEIGHT	: 14.88 cm
DRY DENSITY	: 91.97 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.24 cm
MOISTURE	: 28.72 %	CHAMBER PRES.	: 9.04 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	9.04	9.04	1.00
2	0.09	9.04	10.13	1.12
3	0.18	9.04	11	1.22
4	0.26	9.04	11.55	1.28
5	0.35	9.04	12.2	1.35
6	0.44	9.04	12.74	1.41
7	0.53	9.04	13.28	1.47
8	1.06	9.04	21.75	2.41
9	1.59	9.04	32.34	3.58
10	2.11	9.04	38.73	4.29
11	2.64	9.04	39.07	4.32
12	3.17	9.04	39.22	4.34
13	3.52	9.04	39.29	4.35
14	4.40	9.04	39.25	4.34
15	5.28	9.04	39.11	4.33
16	6.16	9.04	38.94	4.31
17	7.04	9.04	38.69	4.28
18	7.93	9.04	38.57	4.27
19	8.81	9.04	38.62	4.27
20	9.69	9.04	38.5	4.26
21	10.57	9.04	38.37	4.25
22	11.45	9.04	38.4	4.25
23	12.33	9.04	38.42	4.25
24	13.21	9.04	38.28	4.24
25	14.09	9.04	38.14	4.22
26	14.97	9.04	37.99	4.2
27	15.85	9.04	37.84	4.19
28	16.73	9.04	37.99	4.2
29	17.61	9.04	37.83	4.19
30	18.49	9.04	39.28	4.35
31	19.37	9.04	40.11	4.44
32	20.25	9.04	39.91	4.42

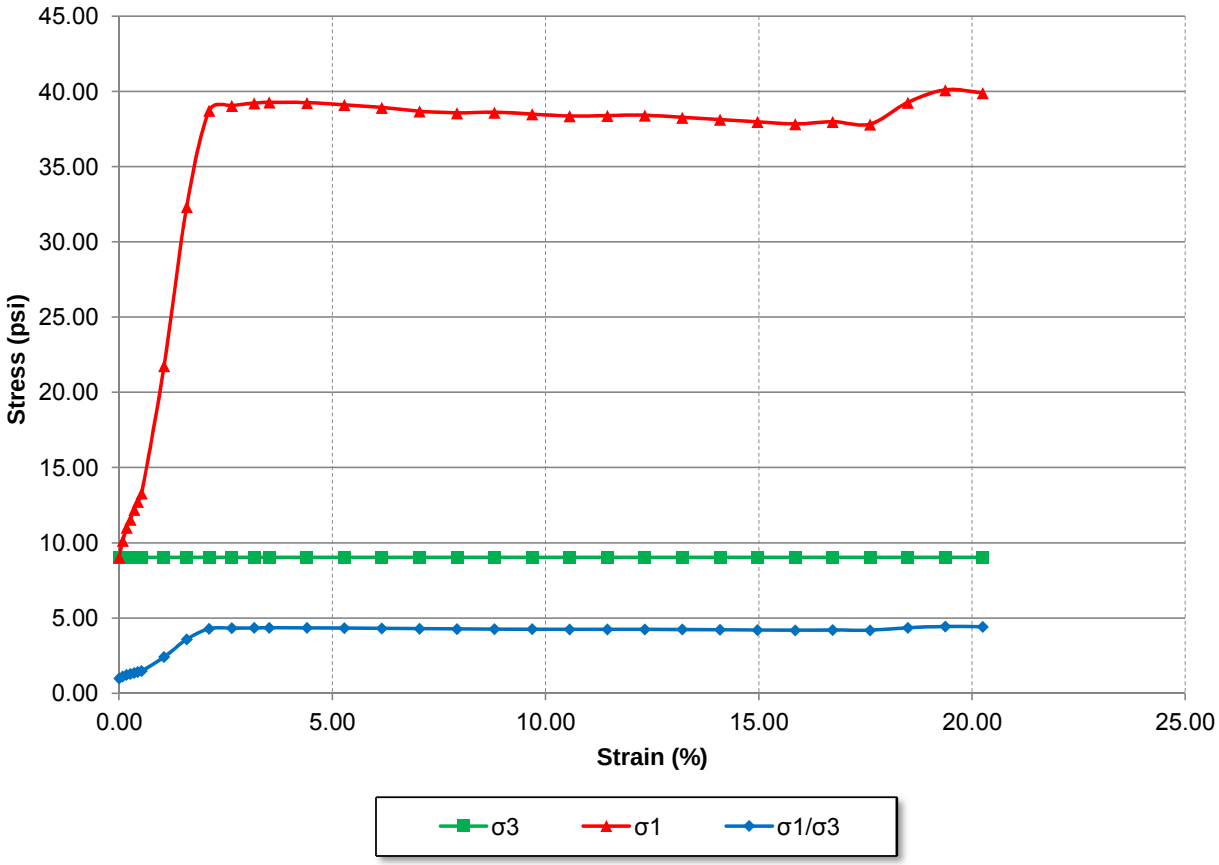
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blv		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-117
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 10.4' to 10.9'
LABORATORY #	: 251537	DATE TESTED	: 6/14/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

FINAL MOISTURE	: 28.72 %	EFF. CONS. STRESS	: 9.04 psi
FINAL HEIGHT	: 11.5 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.08 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-117
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 10.4' to 10.9'
LABORATORY #	: 251537	DATE TESTED	: 6/14/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

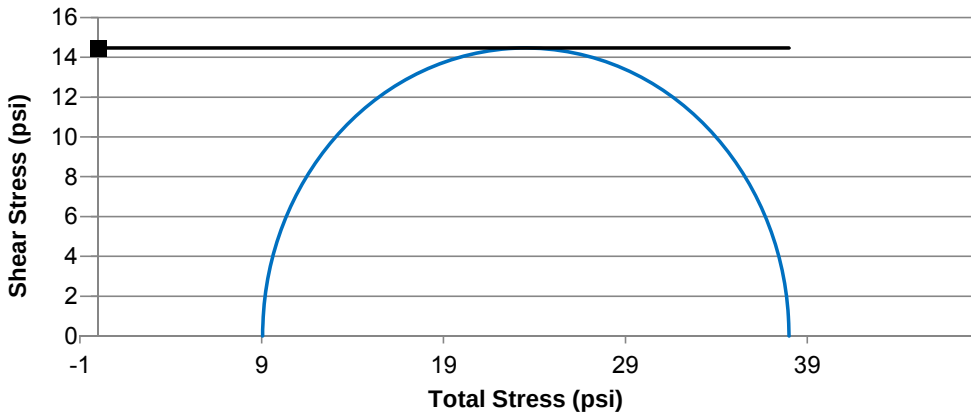
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	9.04 psi	37.99 psi

Compressive Strength =	4169 psf
Cohesion =	2084 psf
Phi =	0 deg
Tan (Phi) =	0

At Maximum Deviator Stress 15%

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-120
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 20.9' to 21.4'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016
SOIL TYPE	: Gray, Sandy Elastic Silt		

WET DENSITY	: 119.23 pcf	DELTA HEIGHT	: 0.08 cm	INITIAL HEIGHT	: 14.89 cm
DRY DENSITY	: 91.01 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.25 cm
MOISTURE	: 31.01 %	CHAMBER PRES.	: 12.03 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	12.03	12.03	1.00
2	0.09	12.03	12.58	1.05
3	0.17	12.03	13.7	1.14
4	0.26	12.03	15.26	1.27
5	0.34	12.03	16.82	1.4
6	0.43	12.03	19.1	1.59
7	0.51	12.03	28.61	2.38
8	1.03	12.03	45.77	3.81
9	1.54	12.03	61.16	5.09
10	2.06	12.03	71.94	5.98
11	2.57	12.03	73.45	6.11
12	3.09	12.03	69.76	5.8
13	3.43	12.03	68.05	5.66

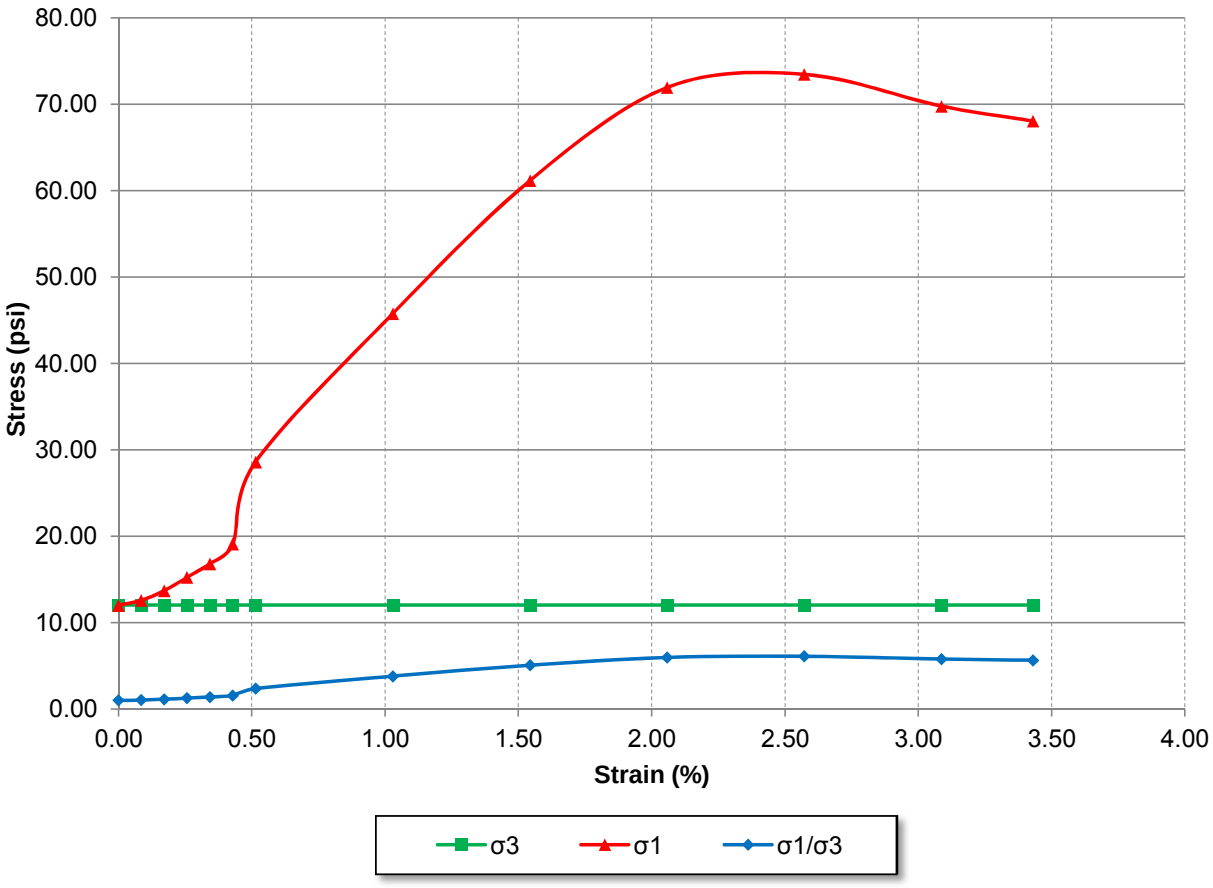
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blv		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-120
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 20.9' to 21.4'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

FINAL MOISTURE	: 31.01 %	EFF. CONS. STRESS	: 12.03 psi
FINAL HEIGHT	: 14.3 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 7.38 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

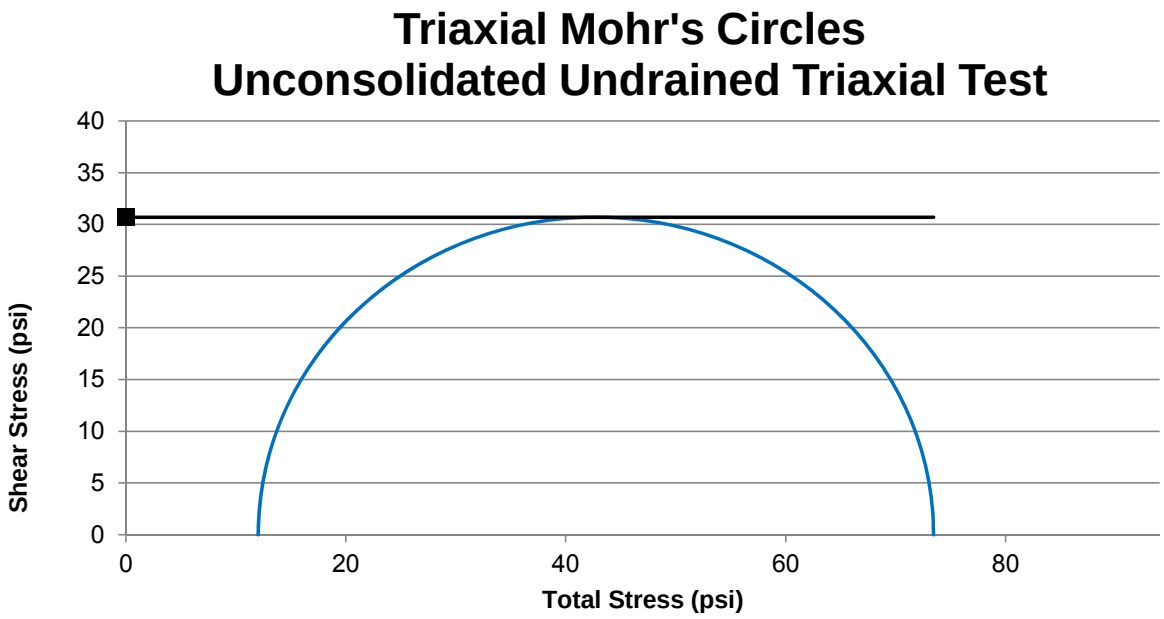
PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-120
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 20.9' to 21.4'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	12.03 psi	73.45 psi

Compressive Strength =	8845 psf
Cohesion =	4422 psf
Phi =	0 deg
Tan (Phi) =	0

Maximum Deviator Stress



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-123
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 25.1' to 25.6'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016
SOIL TYPE	: Brown & Gray, Sandy Lean Clay		
WET DENSITY	: 131.08 pcf	DELTA HEIGHT	: 0.45 cm
DRY DENSITY	: 109.16 pcf	DELTA VOLUME	: NA
MOISTURE	: 20.08 %	CHAMBER PRES.	: 20.99 psi

INITIAL HEIGHT	: 14.6 cm		
INITIAL DIAMETER	: 7.25 cm		
COMMENTS	: AASHTO T-296		

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	20.99	20.99	1.00
2	0.09	20.99	23.5	1.12
3	0.18	20.99	25.02	1.19
4	0.27	20.99	26.21	1.25
5	0.36	20.99	30.83	1.47
6	0.45	20.99	36.19	1.72
7	0.54	20.99	40.57	1.93
8	1.08	20.99	51.82	2.47
9	1.62	20.99	54.93	2.62
10	2.15	20.99	57.37	2.73
11	2.69	20.99	58.91	2.81
12	3.23	20.99	59.74	2.85
13	3.59	20.99	60.11	2.86
14	4.49	20.99	60.97	2.9
15	5.39	20.99	61.72	2.94
16	6.28	20.99	62.05	2.96
17	7.18	20.99	62.28	2.97
18	8.08	20.99	62.44	2.97
19	8.98	20.99	62.46	2.98
20	9.88	20.99	62.47	2.98
21	10.77	20.99	62.73	2.99
22	11.67	20.99	62.73	2.99
23	12.57	20.99	62.71	2.99
24	13.47	20.99	62.61	2.98
25	14.37	20.99	62.66	2.99
26	15.26	20.99	62.62	2.98
27	16.16	20.99	62.34	2.97
28	17.06	20.99	62.13	2.96
29	17.96	20.99	61.92	2.95
30	18.85	20.99	61.78	2.94
31	19.75	20.99	61.33	2.92
32	20.65	20.99	61.03	2.91

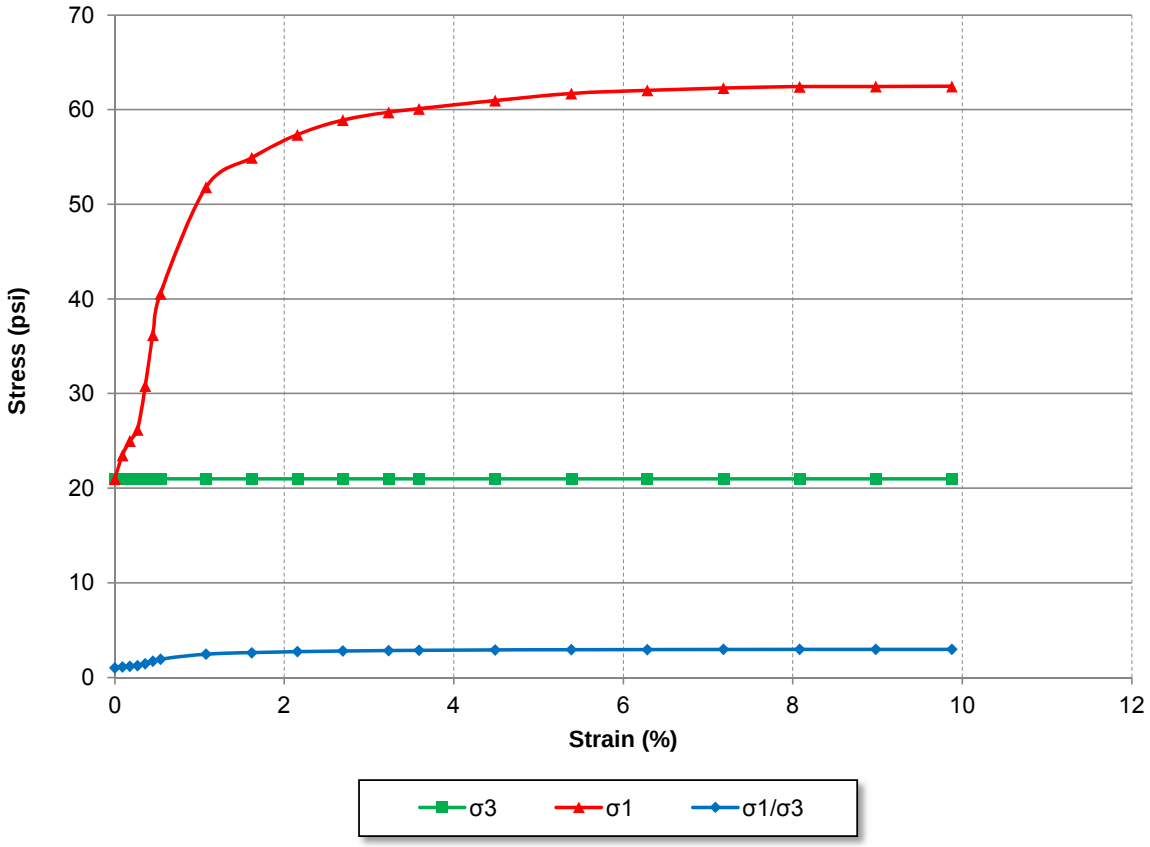
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-123
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 25.1' to 25.6'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

FINAL MOISTURE	: 20.08 %	EFF. CONS. STRESS	: 20.99 psi
FINAL HEIGHT	: 11.22 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.1 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-123
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 25.1' to 25.6'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

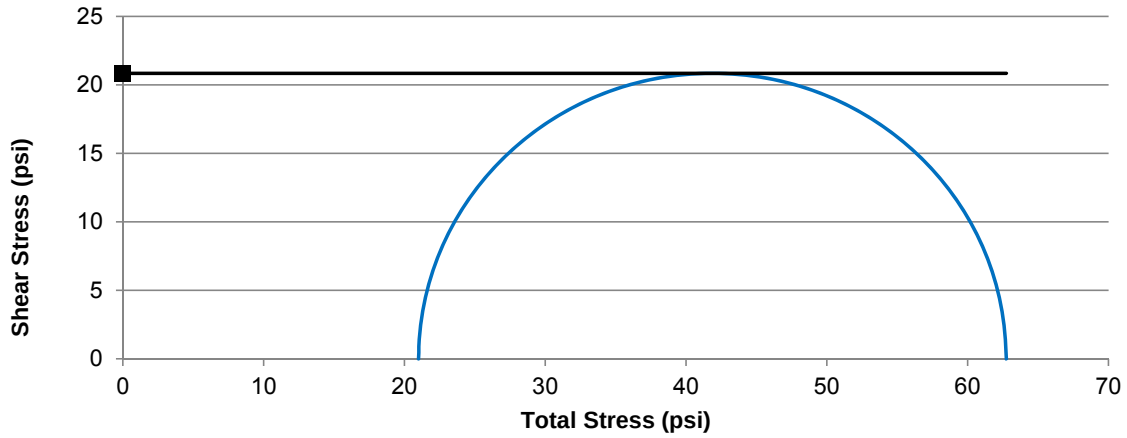
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	20.99 psi	62.73 psi

Compressive Strength =	6011	psf
Cohesion =	3005	psf
Phi =	0	deg
Tan (Phi) =	0	

Maximum Deviator Stress

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-126
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 14.9' to 15.4'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016
SOIL TYPE	: Gray & Brown, Sandy Fat Clay		
WET DENSITY	: 130.71 pcf	DELTA HEIGHT	: 0.45 cm
DRY DENSITY	: 108.09 pcf	DELTA VOLUME	: NA
MOISTURE	: 20.94 %	CHAMBER PRES.	: 13.02 psi

INITIAL HEIGHT	: 14.78 cm	
INITIAL DIAMETER	: 7.23 cm	
COMMENTS	: AASHTO T-296	

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	13.02	13.02	1.00
2	0.09	13.02	14.77	1.13
3	0.18	13.02	15.65	1.2
4	0.27	13.02	16.52	1.27
5	0.35	13.02	17.28	1.33
6	0.44	13.02	17.93	1.38
7	0.53	13.02	18.47	1.42
8	1.06	13.02	32.59	2.5
9	1.60	13.02	41.22	3.17
10	2.13	13.02	42.87	3.29
11	2.66	13.02	43.07	3.31
12	3.19	13.02	43.19	3.32
13	3.54	13.02	43.25	3.32
14	4.43	13.02	43.32	3.33
15	5.32	13.02	43.45	3.34
16	6.20	13.02	44.35	3.41
17	7.09	13.02	45.05	3.46
18	7.98	13.02	45.58	3.5
19	8.86	13.02	46.24	3.55
20	9.75	13.02	46.57	3.58
21	10.63	13.02	47.04	3.61
22	11.52	13.02	47.34	3.64
23	12.41	13.02	47.47	3.65
24	13.29	13.02	47.74	3.67
25	14.18	13.02	48	3.69
26	15.06	13.02	47.94	3.68
27	15.95	13.02	48.15	3.7
28	16.84	13.02	48.28	3.71
29	17.72	13.02	48.53	3.73
30	18.61	13.02	48.5	3.72
31	19.50	13.02	48.66	3.74
32	20.38	13.02	48.74	3.74

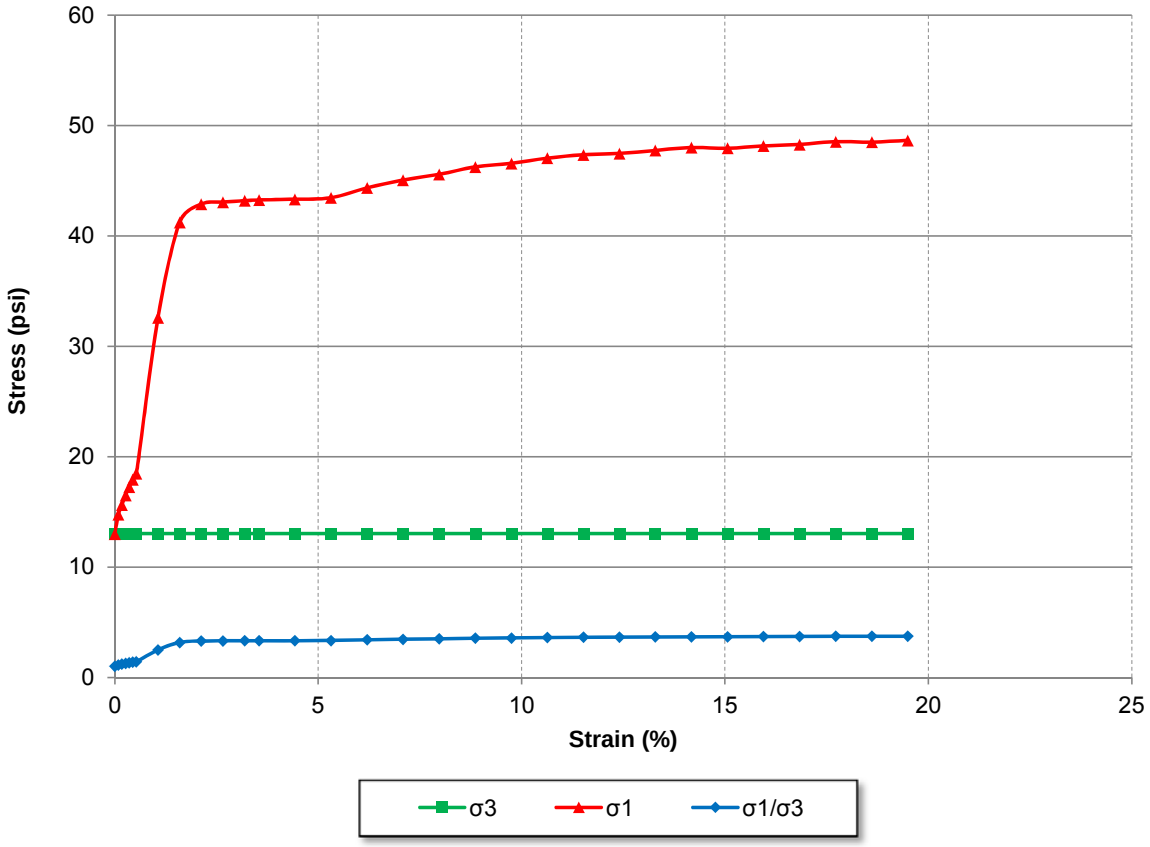
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-126
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 14.9' to 15.4'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

FINAL MOISTURE	: 20.94 %	EFF. CONS. STRESS	: 13.02 psi
FINAL HEIGHT	: 11.41 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.07 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

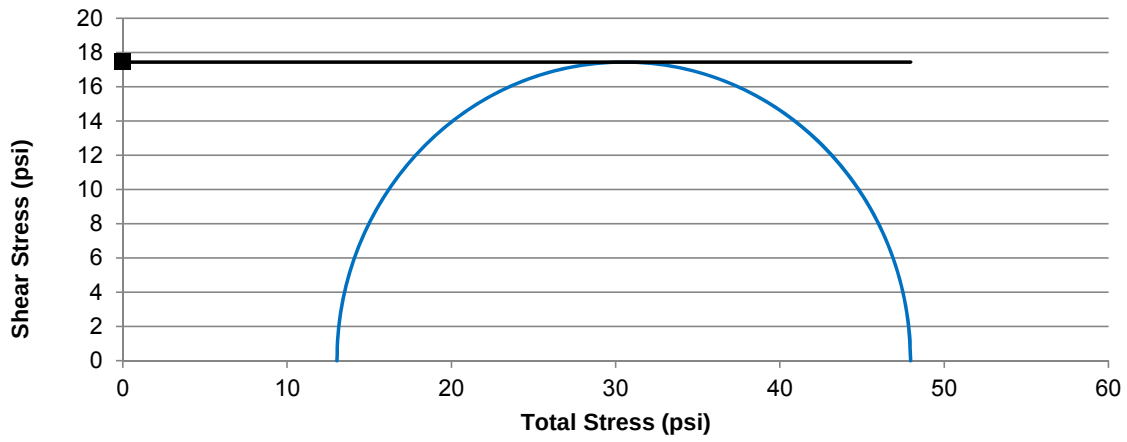
PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-126
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 14.9' to 15.4'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	13.02 psi	47.95 psi

Compressive Strength =	5029	psf
Cohesion =	2515	psf
Phi =	0	deg
Tan (Phi) =	0	

At Maximum Deviator Stress 15%



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-130
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 15.1' to 15.6'
LABORATORY #	: 251537	DATE TESTED	: 6/14/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

SOIL TYPE	: Red & Tan, Silty Sand				
WET DENSITY	: 111.62 pcf	DELTA HEIGHT	: 0.14 cm	INITIAL HEIGHT	: 14.49 cm
DRY DENSITY	: 81.86 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.3 cm
MOISTURE	: 36.35 %	CHAMBER PRES.	: 8.04 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	8.04	8.04	1.00
2	0.09	8.04	8.81	1.1
3	0.18	8.04	9.47	1.18
4	0.27	8.04	9.9	1.23
5	0.35	8.04	10.45	1.3
6	0.44	8.04	10.89	1.35
7	0.53	8.04	11.32	1.41
8	1.06	8.04	15.93	1.98
9	1.59	8.04	28.06	3.49
10	2.12	8.04	37.78	4.7
11	2.65	8.04	38.26	4.76
12	3.18	8.04	38.52	4.79
13	3.54	8.04	38.62	4.8
14	4.42	8.04	38.52	4.79
15	5.31	8.04	38.2	4.75
16	6.19	8.04	37.85	4.71

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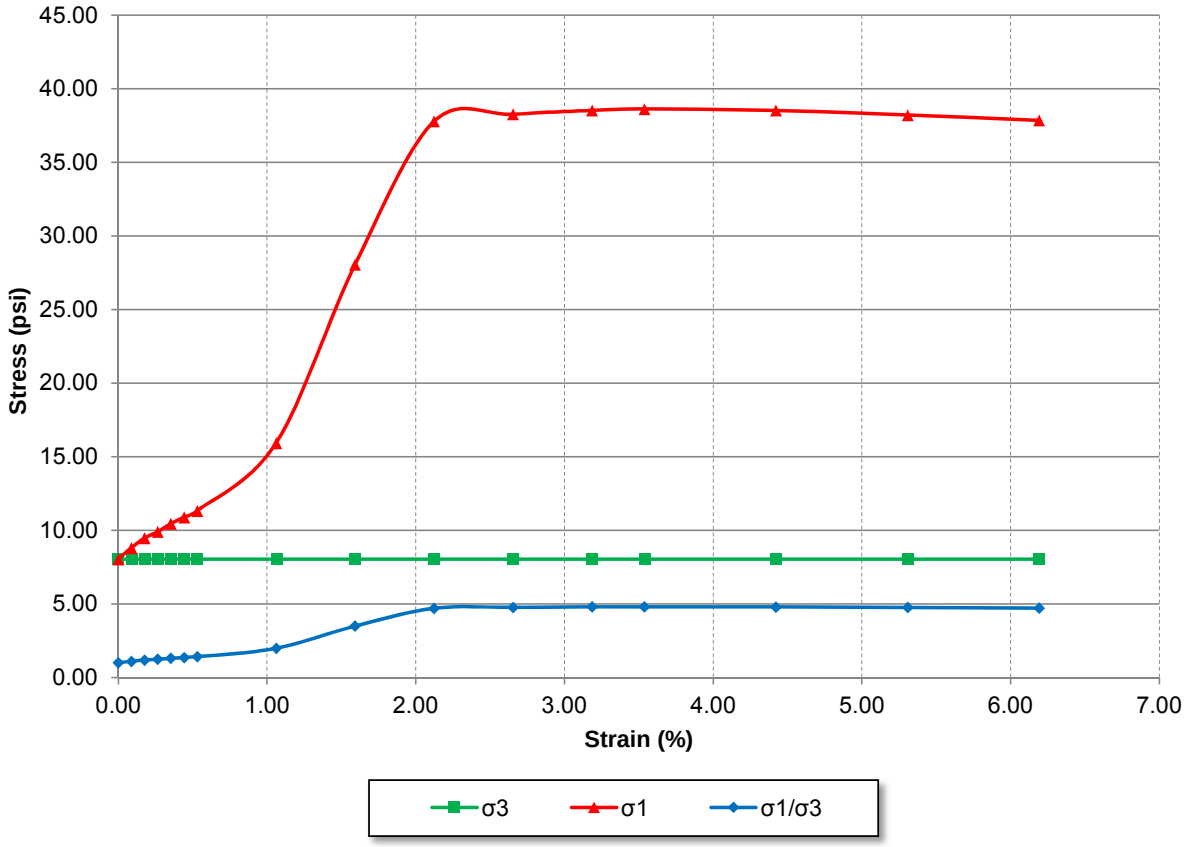
TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-130
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 15.1' to 15.6'
LABORATORY #	: 251537	DATE TESTED	: 6/14/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

FINAL MOISTURE	: 36.35 %	EFF. CONS. STRESS	: 8.04 psi
FINAL HEIGHT	: 13.47 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 7.53 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-130
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 15.1' to 15.6'
LABORATORY #	: 251537	DATE TESTED	: 6/14/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

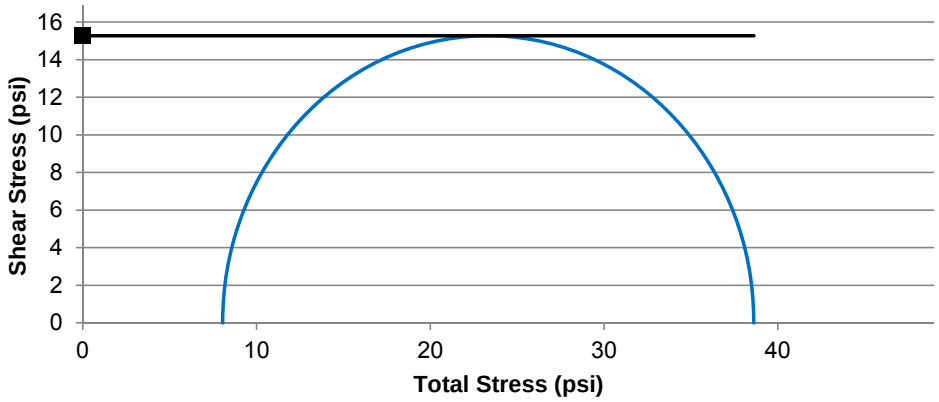
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	8.04 psi	38.62 psi

Compressive Strength =	4404	psf
Cohesion =	2202	psf
Phi =	0	deg
Tan (Phi) =	0	

Maximum Deviator Stress

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-131
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 24.0' to 24.5'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016
SOIL TYPE	: Brown & Gray, Sandy Silty Clay		
WET DENSITY	: 135.44 pcf	DELTA HEIGHT	: 0.45 cm
DRY DENSITY	: 116.59 pcf	DELTA VOLUME	: NA
MOISTURE	: 16.17 %	CHAMBER PRES.	: 19.99 psi

INITIAL HEIGHT	: 14.84 cm	
INITIAL DIAMETER	: 7.15 cm	
COMMENTS	: AASHTO T-296	

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	19.99	19.99	1.00
2	0.09	19.99	23.13	1.16
3	0.18	19.99	24.25	1.21
4	0.26	19.99	25.03	1.25
5	0.35	19.99	26.08	1.3
6	0.44	19.99	29.09	1.45
7	0.53	19.99	31.59	1.58
8	1.06	19.99	44.51	2.23
9	1.59	19.99	50.59	2.53
10	2.12	19.99	50.87	2.54
11	2.65	19.99	51.14	2.56
12	3.18	19.99	51.29	2.57
13	3.53	19.99	51.39	2.57
14	4.41	19.99	52.48	2.62
15	5.30	19.99	53.74	2.69
16	6.18	19.99	54.81	2.74
17	7.06	19.99	55.68	2.78
18	7.94	19.99	56.35	2.82
19	8.83	19.99	56.67	2.83
20	9.71	19.99	57.15	2.86
21	10.59	19.99	57.83	2.89
22	11.47	19.99	58.08	2.9
23	12.36	19.99	58.23	2.91
24	13.24	19.99	58.38	2.92
25	14.12	19.99	58.73	2.94
26	15.00	19.99	58.78	2.94
27	15.89	19.99	58.89	2.95
28	16.77	19.99	58.97	2.95
29	17.65	19.99	59.51	2.98
30	18.53	19.99	59.48	2.97
31	19.42	19.99	59.44	2.97
32	20.30	19.99	59.39	2.97

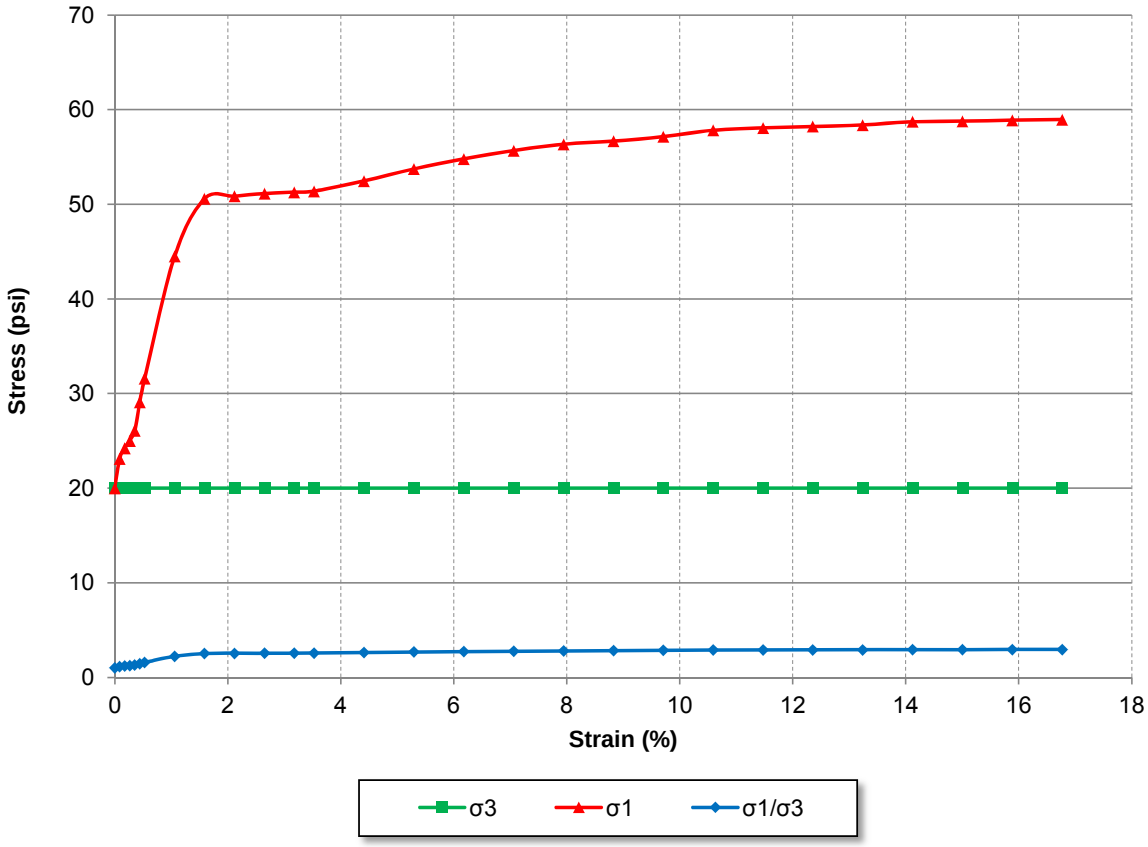
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-131
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 24.0' to 24.5'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

FINAL MOISTURE	: 16.17 %	EFF. CONS. STRESS	: 19.99 psi
FINAL HEIGHT	: 11.47 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 7.98 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

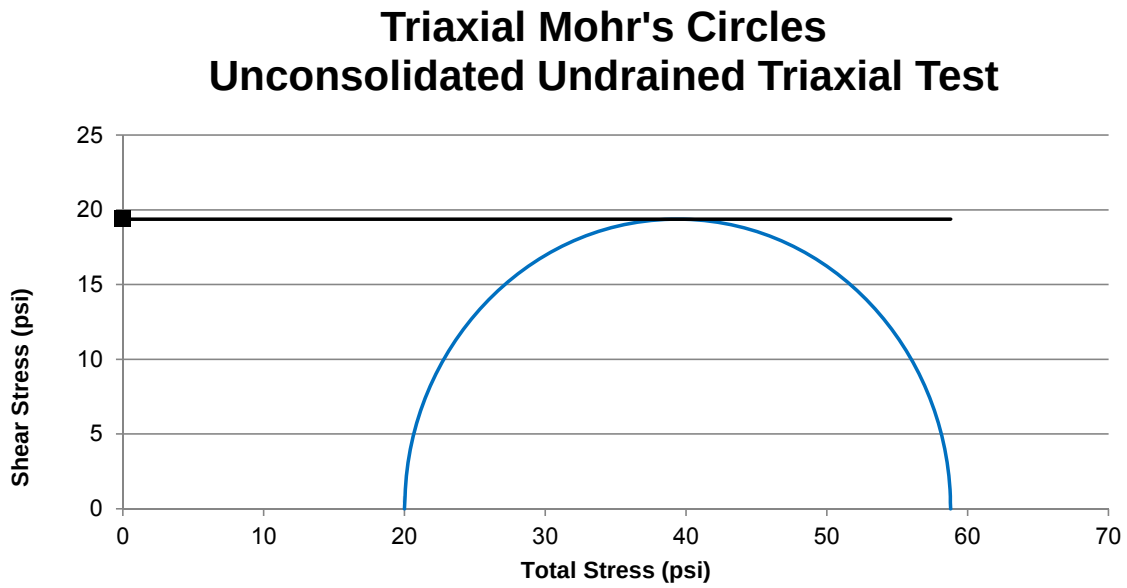
PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-131
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 24.0' to 24.5'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	19.99 psi	58.78 psi

Compressive Strength =	5585	psf
Cohesion =	2793	psf
Phi =	0	deg
Tan (Phi) =	0	

At Maximum Deviator Stress 15%



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-141
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 15.3' to 15.8'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016
SOIL TYPE	: Tan, Clayey Sand		

WET DENSITY	: 117.63 pcf	DELTA HEIGHT	: 0.45 cm	INITIAL HEIGHT	: 14.78 cm
DRY DENSITY	: 90.63 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.2 cm
MOISTURE	: 29.78 %	CHAMBER PRES.	: 12.03 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	12.03	12.03	1.00
2	0.09	12.03	13.13	1.09
3	0.18	12.03	13.68	1.14
4	0.27	12.03	13.9	1.16
5	0.35	12.03	14.23	1.18
6	0.44	12.03	14.56	1.21
7	0.53	12.03	14.89	1.24
8	1.06	12.03	16.3	1.36
9	1.60	12.03	18.45	1.53
10	2.13	12.03	23.78	1.98
11	2.66	12.03	29.05	2.42
12	3.19	12.03	33.78	2.81
13	3.55	12.03	36.1	3
14	4.43	12.03	40.64	3.38
15	5.32	12.03	41.09	3.42
16	6.21	12.03	40.99	3.41
17	7.09	12.03	40.86	3.4
18	7.98	12.03	40.68	3.38
19	8.87	12.03	40.54	3.37
20	9.75	12.03	40.4	3.36
21	10.64	12.03	40.25	3.35
22	11.53	12.03	40.07	3.33
23	12.41	12.03	39.88	3.32
24	13.30	12.03	39.76	3.31
25	14.19	12.03	39.6	3.29
26	15.07	12.03	39.44	3.28
27	15.96	12.03	39.62	3.29
28	16.85	12.03	39.93	3.32
29	17.73	12.03	40.08	3.33
30	18.62	12.03	40.37	3.36
31	19.51	12.03	40.2	3.34
32	20.39	12.03	40.04	3.33

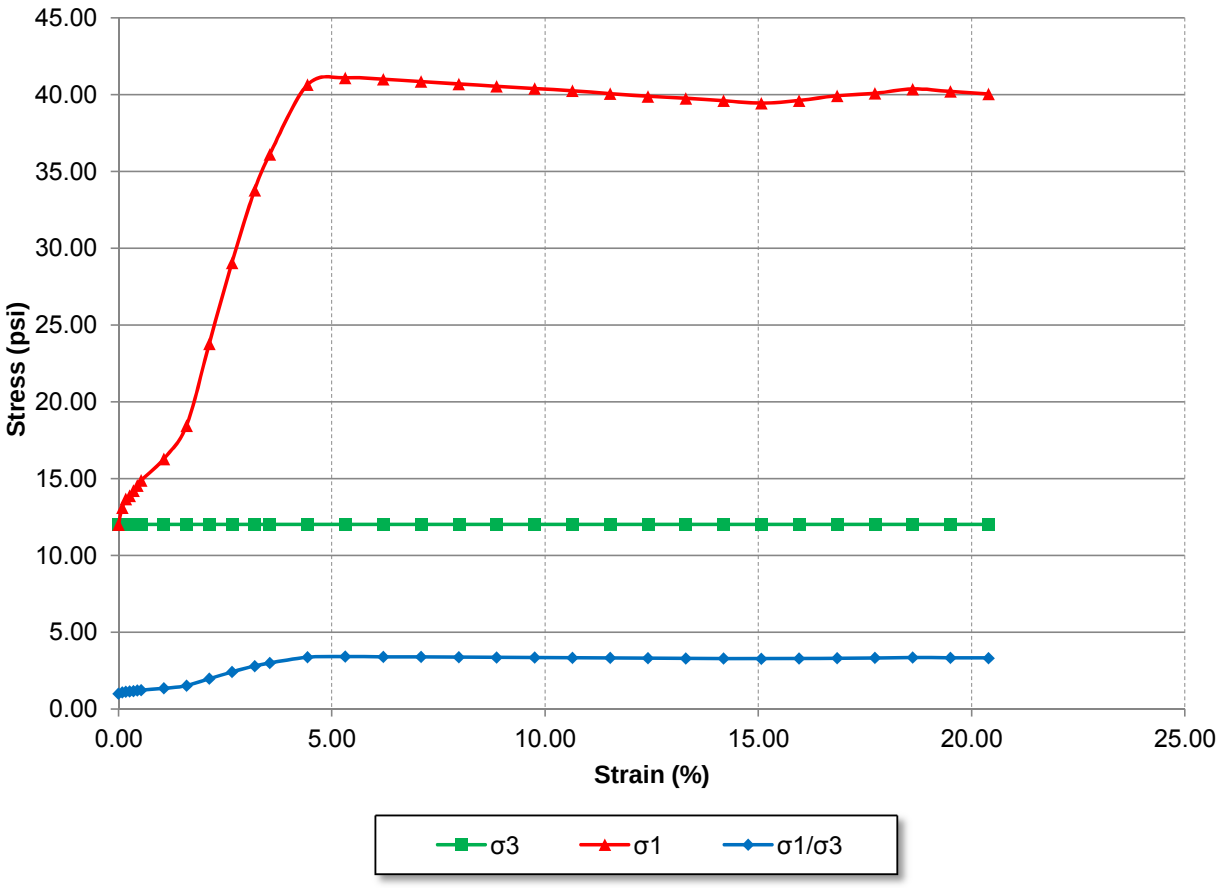
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blv		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-141
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 15.3' to 15.8'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

FINAL MOISTURE	: 29.78 %	EFF. CONS. STRESS	: 12.03 psi
FINAL HEIGHT	: 11.4 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.03 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

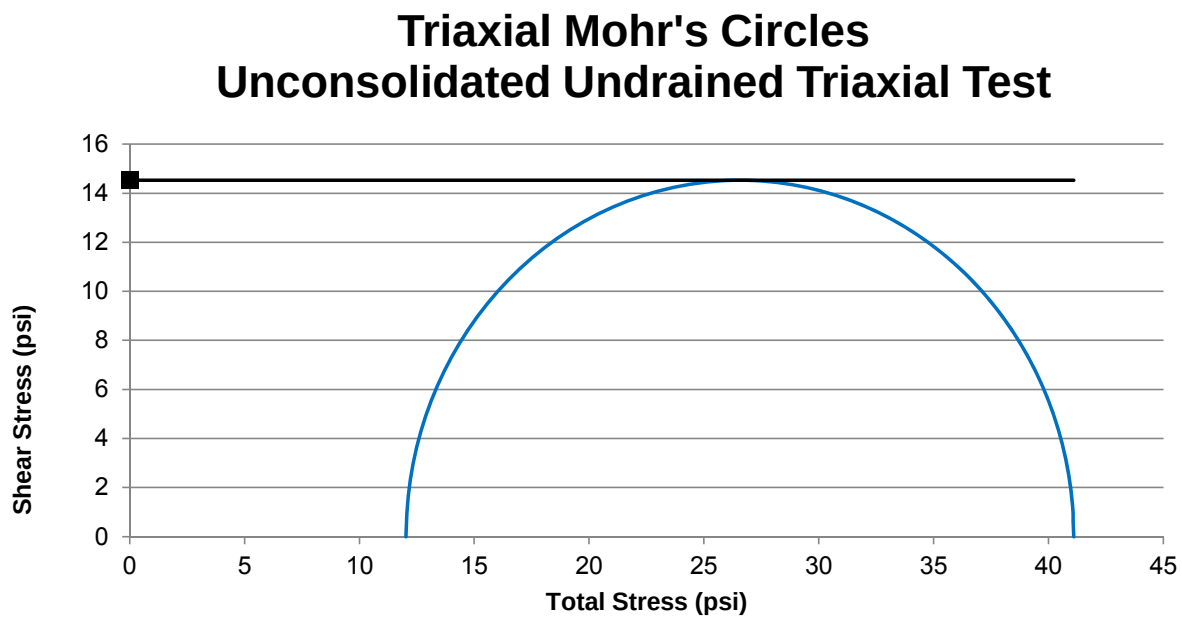
PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-141
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 15.3' to 15.8'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	12.03 psi	41.09 psi

Compressive Strength =	4186 psf
Cohesion =	2093 psf
Phi =	0 deg
Tan (Phi) =	0

Maximum Deviator Stress



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-158
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 6.9' to 7.4'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016
SOIL TYPE	: Brown & Gray, Sandy Lean Clay		
WET DENSITY	: 132.2 pcf	DELTA HEIGHT	: 0.33 cm
DRY DENSITY	: 109.09 pcf	DELTA VOLUME	: NA
MOISTURE	: 21.19 %	CHAMBER PRES.	: 6.05 psi

INITIAL HEIGHT	: 14.77 cm		
INITIAL DIAMETER	: 7.18 cm		
COMMENTS	: AASHTO T-296		

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	6.05	6.05	1.00
2	0.09	6.05	6.38	1.06
3	0.18	6.05	6.49	1.07
4	0.26	6.05	6.61	1.09
5	0.35	6.05	6.72	1.11
6	0.44	6.05	6.72	1.11
7	0.53	6.05	6.83	1.13
8	1.06	6.05	7.38	1.22
9	1.58	6.05	7.7	1.27
10	2.11	6.05	8.24	1.36
11	2.64	6.05	8.56	1.41
12	3.17	6.05	8.98	1.48
13	3.52	6.05	9.18	1.52
14	4.40	6.05	9.8	1.62
15	5.28	6.05	10.08	1.67
16	6.16	6.05	10.57	1.75
17	7.04	6.05	10.84	1.79
18	7.92	6.05	10.9	1.8
19	8.80	6.05	11.16	1.84
20	9.68	6.05	11.56	1.91
21	10.56	6.05	11.96	1.98
22	11.44	6.05	11.9	1.97
23	12.32	6.05	12.28	2.03
24	13.20	6.05	12.22	2.02
25	14.08	6.05	11.73	1.94
26	14.96	6.05	11.67	1.93

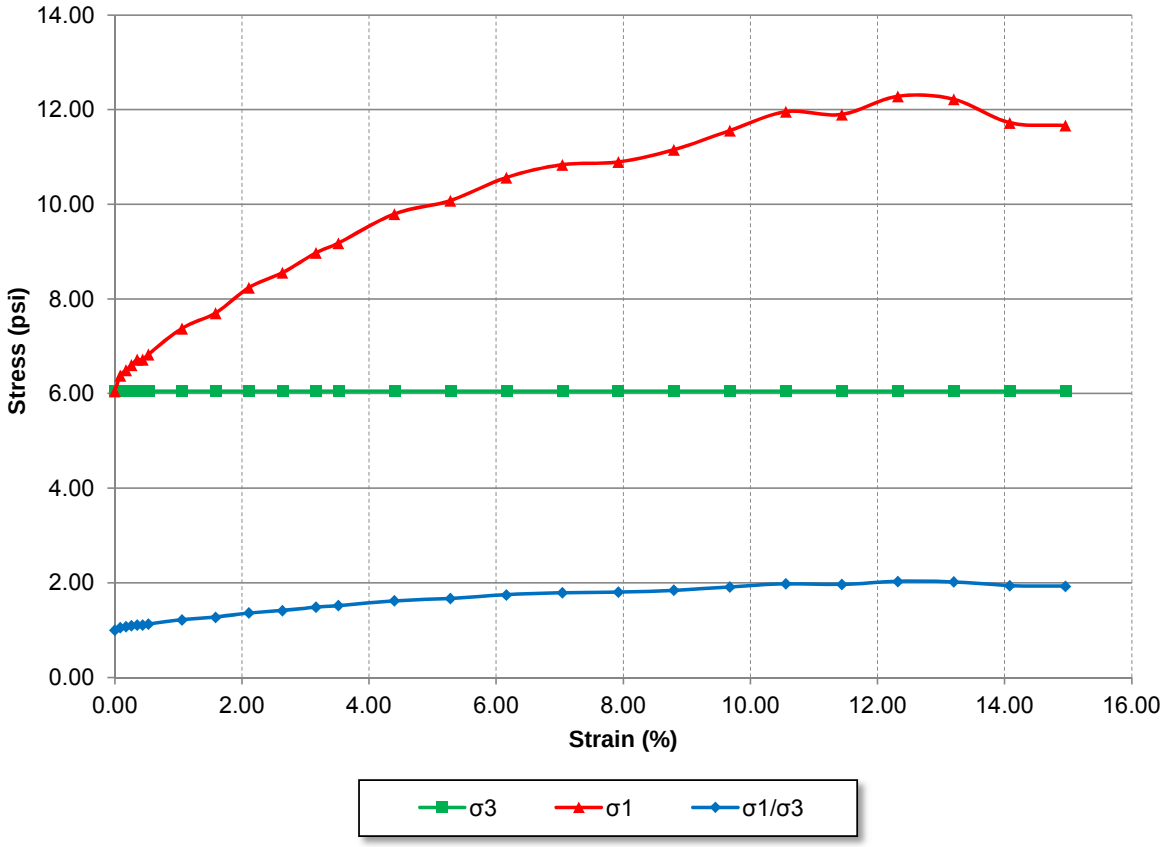
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-158
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 6.9' to 7.4'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

FINAL MOISTURE	: 21.19 %	EFF. CONS. STRESS	: 6.05 psi
FINAL HEIGHT	: 12.27 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 7.77 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

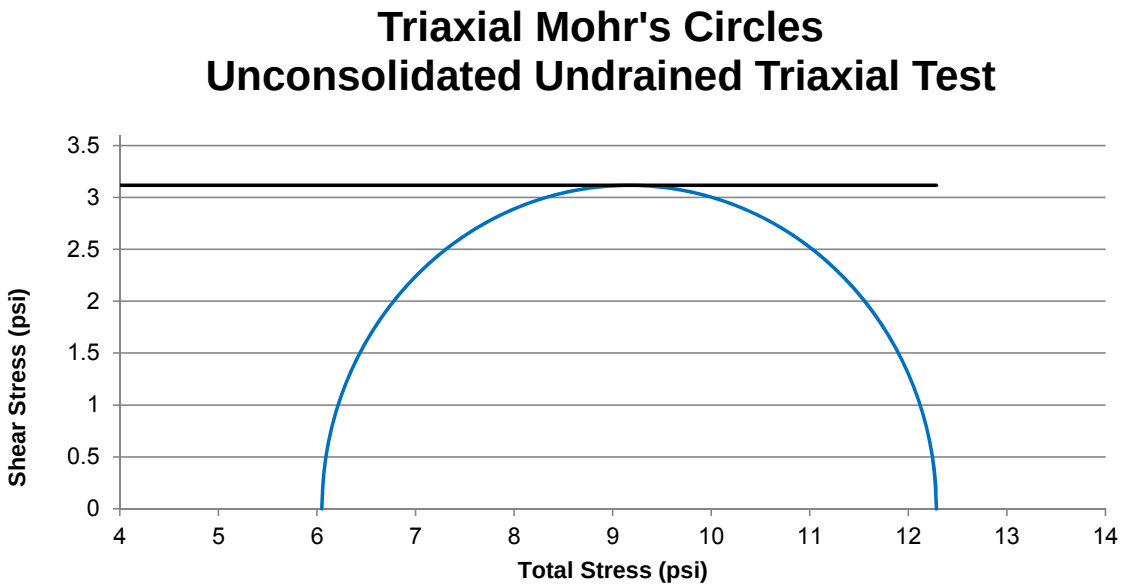
PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-158
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 6.9' to 7.4'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	6.05 psi	12.28 psi

Compressive Strength =	898	psf
Cohesion =	449	psf
Phi =	0	deg
Tan (Phi) =	0	

Maximum Deviator Stress



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-159
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 15.5' to 16.0'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016
SOIL TYPE	: Brown & Gray, Sandy Elastic Silt		
WET DENSITY	: 115.07 pcf	DELTA HEIGHT	: 0.45 cm
DRY DENSITY	: 84.64 pcf	DELTA VOLUME	: NA
MOISTURE	: 35.95 %	CHAMBER PRES.	: 13.02 psi
		INITIAL HEIGHT	: 14.84 cm
		INITIAL DIAMETER	: 7.25 cm
		COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	13.02	13.02	1.00
2	0.09	13.02	13.89	1.07
3	0.18	13.02	14.66	1.13
4	0.26	13.02	15.2	1.17
5	0.35	13.02	15.63	1.2
6	0.44	13.02	16.17	1.24
7	0.53	13.02	16.5	1.27
8	1.06	13.02	21.34	1.64
9	1.59	13.02	32.41	2.49
10	2.12	13.02	40	3.07
11	2.65	13.02	42.39	3.26
12	3.18	13.02	42.48	3.26
13	3.53	13.02	42.47	3.26
14	4.41	13.02	42.48	3.26
15	5.30	13.02	42.55	3.27
16	6.18	13.02	42.59	3.27
17	7.06	13.02	42.61	3.27
18	7.94	13.02	43.65	3.35
19	8.83	13.02	44.5	3.42
20	9.71	13.02	44.84	3.44
21	10.59	13.02	45.33	3.48
22	11.47	13.02	45.48	3.49
23	12.36	13.02	45.94	3.53
24	13.24	13.02	46.08	3.54
25	14.12	13.02	46.36	3.56
26	15.01	13.02	46.62	3.58
27	15.89	13.02	46.88	3.6
28	16.77	13.02	46.97	3.61
29	17.65	13.02	47.1	3.62
30	18.54	13.02	47.08	3.62
31	19.42	13.02	47.05	3.61
32	20.30	13.02	47.08	3.62

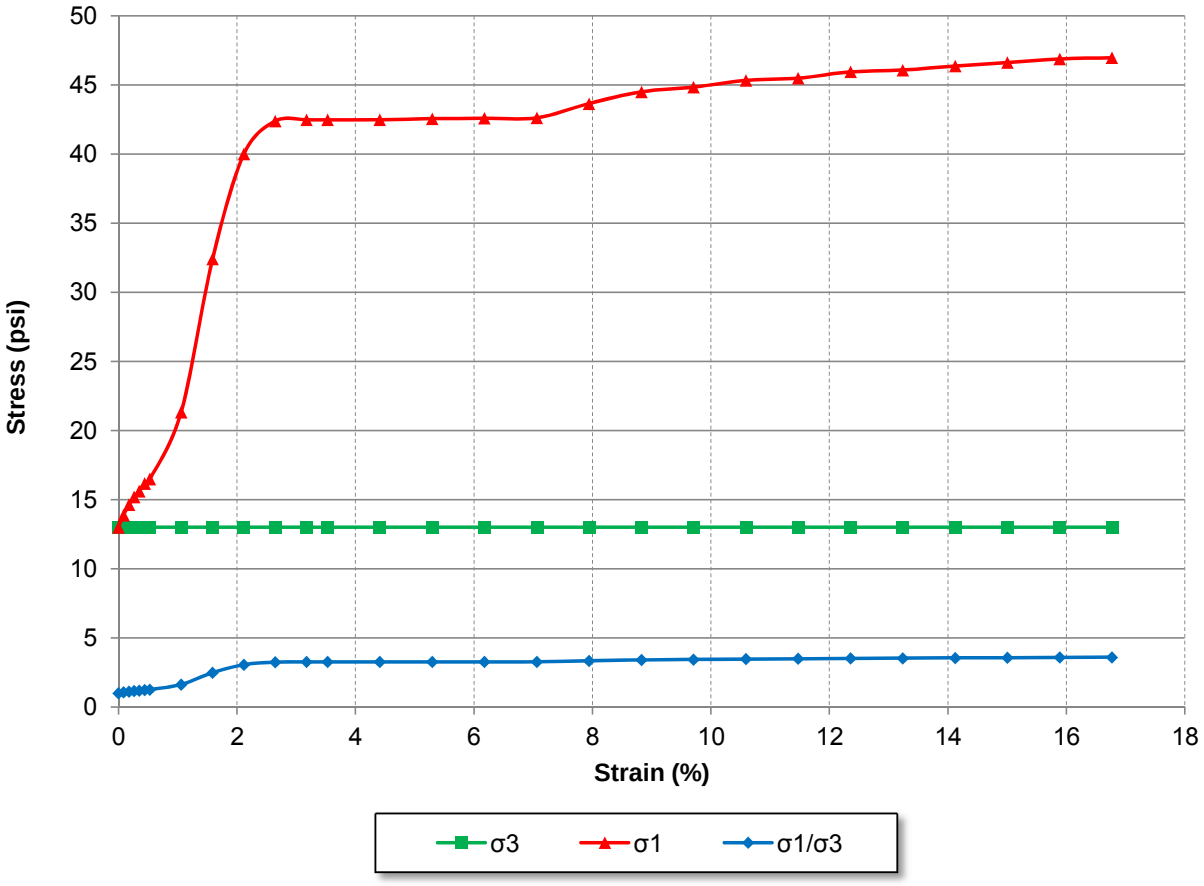
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blv		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-159
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 15.5' to 16.0'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

FINAL MOISTURE	: 35.95 %	EFF. CONS. STRESS	: 13.02 psi
FINAL HEIGHT	: 11.47 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.09 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

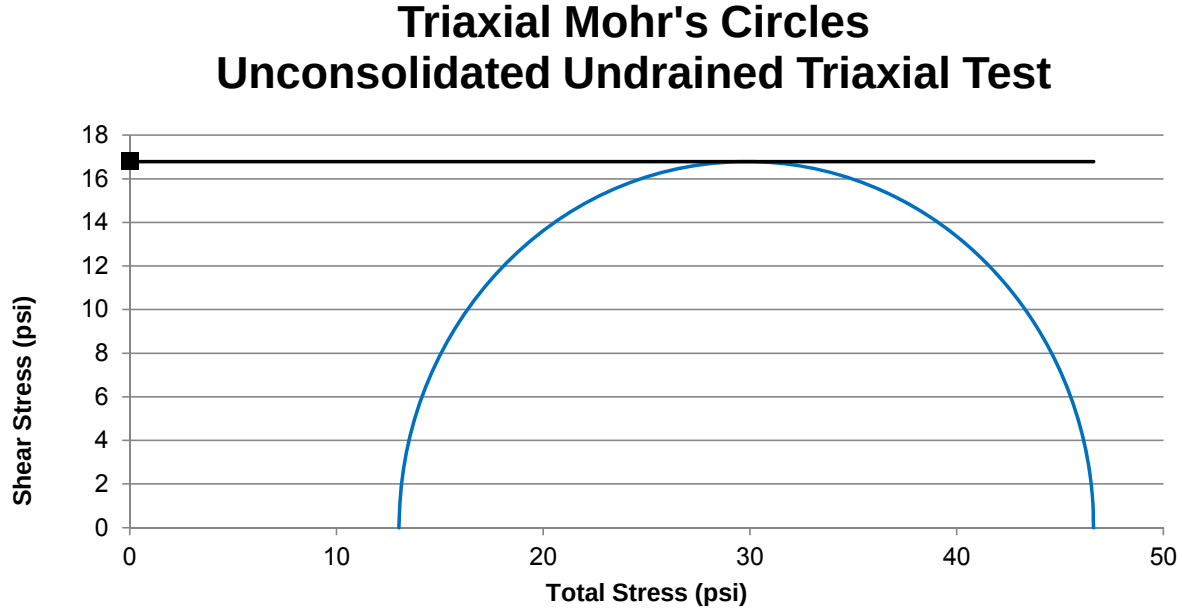
PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-159
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 15.5' to 16.0'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	13.02 psi	46.62 psi

Compressive Strength =	4838 psf
Cohesion =	2419 psf
Phi =	0 deg
Tan (Phi) =	0

At Maximum Deviator Stress 15%



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-163
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 19.9' to 20.4'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016
SOIL TYPE	: Brown & Gray, Sandy Elastic Silt		

WET DENSITY	: 113.87 pcf	DELTA HEIGHT	: 0.45 cm	INITIAL HEIGHT	: 14.7 cm
DRY DENSITY	: 85.19 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.27 cm
MOISTURE	: 33.66 %	CHAMBER PRES.	: 15.01 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	15.01	15.01	1.00
2	0.09	15.01	16.64	1.11
3	0.18	15.01	17.51	1.17
4	0.27	15.01	18.26	1.22
5	0.36	15.01	18.91	1.26
6	0.45	15.01	19.66	1.31
7	0.53	15.01	20.2	1.35
8	1.07	15.01	34.4	2.29
9	1.60	15.01	42.95	2.86
10	2.14	15.01	44.34	2.95
11	2.67	15.01	44.35	2.95
12	3.21	15.01	44.3	2.95
13	3.57	15.01	44.19	2.94
14	4.46	15.01	44.09	2.94
15	5.35	15.01	43.93	2.93
16	6.24	15.01	43.82	2.92
17	7.13	15.01	43.65	2.91
18	8.02	15.01	43.57	2.9
19	8.91	15.01	43.46	2.89
20	9.80	15.01	43.38	2.89
21	10.70	15.01	43.45	2.89
22	11.59	15.01	44.11	2.94
23	12.48	15.01	44.91	2.99
24	13.37	15.01	45.99	3.06
25	14.26	15.01	46.74	3.11
26	15.15	15.01	46.86	3.12
27	16.04	15.01	46.83	3.12
28	16.93	15.01	47.38	3.16
29	17.83	15.01	47.32	3.15
30	18.72	15.01	47.26	3.15
31	19.61	15.01	47.05	3.13
32	20.50	15.01	47.12	3.14

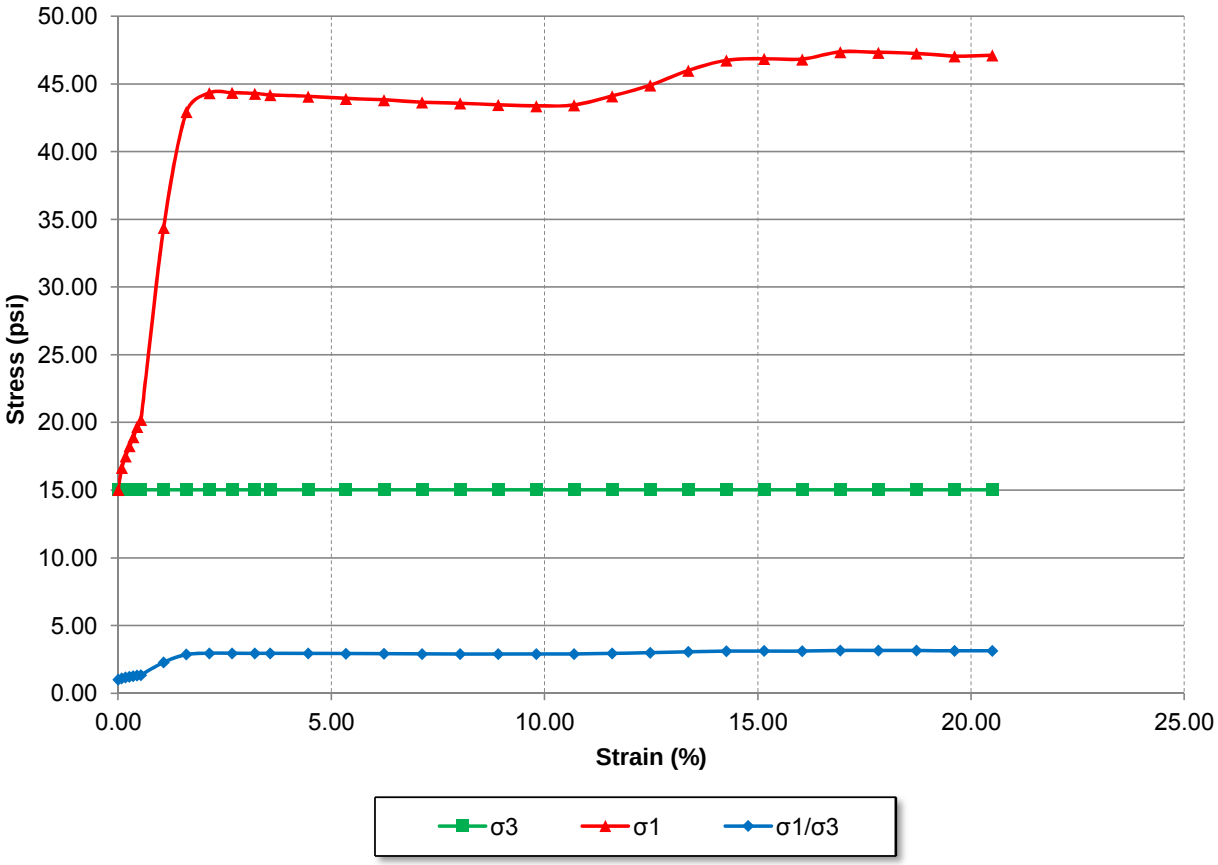
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blv		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-163
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 19.9' to 20.4'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

FINAL MOISTURE	: 33.66 %	EFF. CONS. STRESS	: 15.01 psi
FINAL HEIGHT	: 11.33 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.12 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-163
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 19.9' to 20.4'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

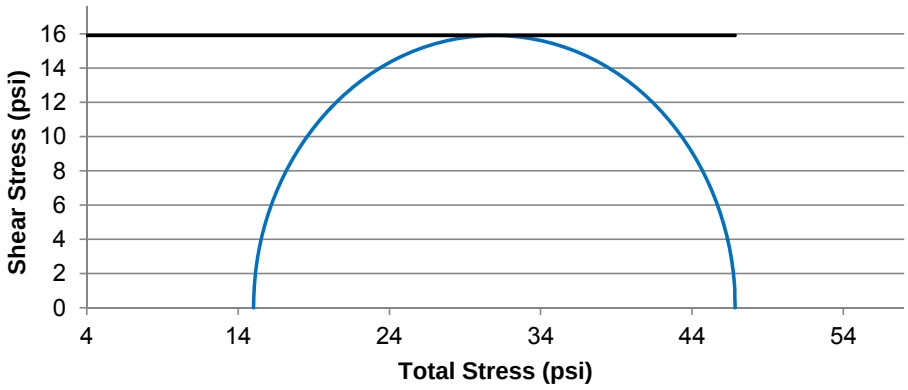
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	15.01 psi	46.84 psi

Compressive Strength =	4584 psf
Cohesion =	2292 psf
Phi =	0 deg
Tan (Phi) =	0

At Maximum Deviator Stress 15%

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



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Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-165
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 20.7' to 21.2'
LABORATORY #	: 251537	DATE TESTED	: 6/14/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

SOIL TYPE	: Brown, Sandy Elastic Silt				
WET DENSITY	: 112.39 pcf	DELTA HEIGHT	: 0.45 cm	INITIAL HEIGHT	: 14.92 cm
DRY DENSITY	: 80.05 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.26 cm
MOISTURE	: 40.39 %	CHAMBER PRES.	: 15.01 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	15.01	15.01	1.00
2	0.09	15.01	16.97	1.13
3	0.18	15.01	18.28	1.22
4	0.26	15.01	19.25	1.28
5	0.35	15.01	20.23	1.35
6	0.44	15.01	24.34	1.62
7	0.53	15.01	28.24	1.88
8	1.05	15.01	44.17	2.94
9	1.58	15.01	45.04	3
10	2.11	15.01	45.16	3.01
11	2.63	15.01	45.18	3.01
12	3.16	15.01	45.19	3.01
13	3.51	15.01	45.15	3.01
14	4.39	15.01	45.05	3
15	5.27	15.01	44.88	2.99
16	6.15	15.01	44.74	2.98
17	7.02	15.01	44.56	2.97
18	7.90	15.01	44.94	2.99
19	8.78	15.01	45.14	3.01
20	9.66	15.01	45.17	3.01
21	10.54	15.01	45.52	3.03
22	11.42	15.01	45.54	3.03
23	12.29	15.01	45.55	3.03
24	13.17	15.01	45.71	3.04
25	14.05	15.01	45.7	3.04
26	14.93	15.01	45.69	3.04
27	15.81	15.01	45.68	3.04
28	16.68	15.01	45.8	3.05
29	17.56	15.01	45.77	3.05
30	18.44	15.01	45.74	3.05
31	19.32	15.01	45.84	3.05
32	20.20	15.01	45.65	3.04

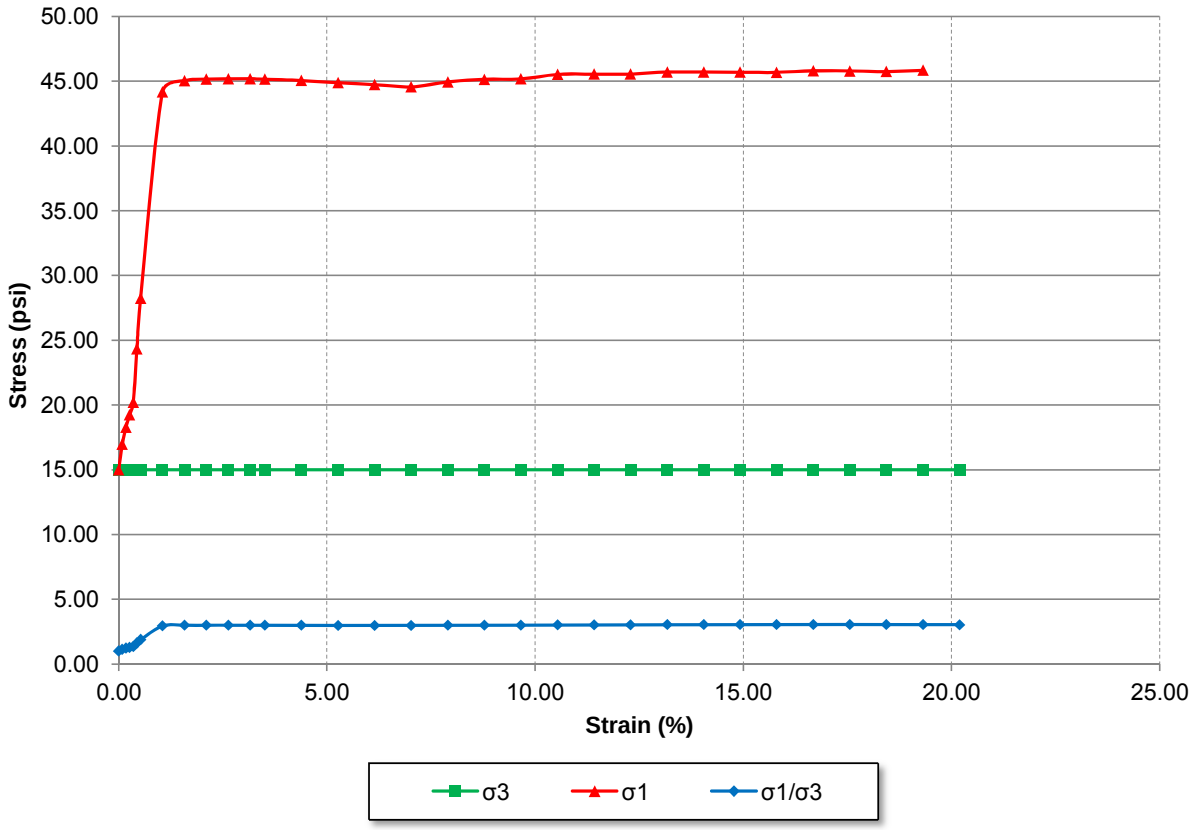
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-165
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 20.7' to 21.2'
LABORATORY #	: 251537	DATE TESTED	: 6/14/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

FINAL MOISTURE	: 40.39 %	EFF. CONS. STRESS	: 15.01 psi
FINAL HEIGHT	: 11.54 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.09 cm	COMMENTS	: AASHTO T-296

RESULTS:



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Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-165
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 20.7' to 21.2'
LABORATORY #	: 251537	DATE TESTED	: 6/14/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

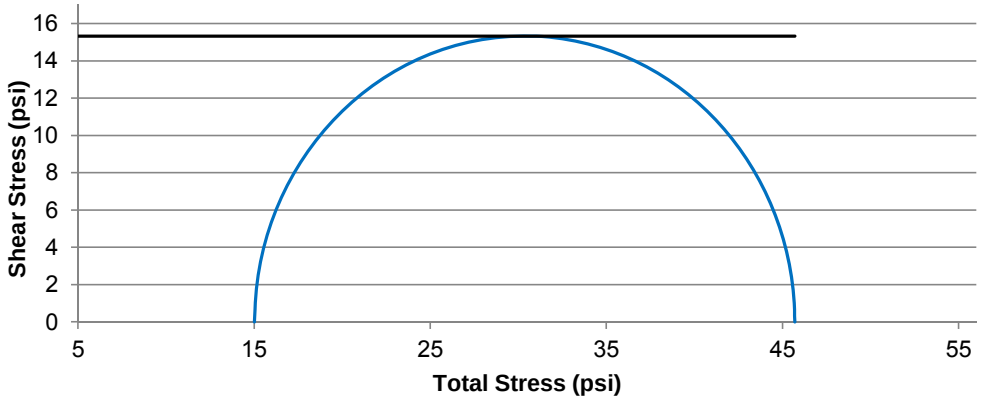
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	15.01 psi	45.69 psi

Compressive Strength =	4418 psf
Cohesion =	2209 psf
Phi =	0 deg
Tan (Phi) =	0

At Maximum Deviator Stress 15%

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



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Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-166
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 4.5' to 5.0'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

SOIL TYPE	: Red & Brown, Silty Sand				
WET DENSITY	: 119.3 pcf	DELTA HEIGHT	: 0.39 cm	INITIAL HEIGHT	: 14.86 cm
DRY DENSITY	: 90.74 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.17 cm
MOISTURE	: 31.47 %	CHAMBER PRES.	: 5.05 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	5.05	5.05	1.00
2	0.09	5.05	5.61	1.11
3	0.18	5.05	5.95	1.18
4	0.26	5.05	6.28	1.24
5	0.35	5.05	6.5	1.29
6	0.44	5.05	6.72	1.33
7	0.53	5.05	6.95	1.38
8	1.05	5.05	8.27	1.64
9	1.58	5.05	9.57	1.89
10	2.11	5.05	12.02	2.38
11	2.63	5.05	15.91	3.15
12	3.16	5.05	18.78	3.72
13	3.51	5.05	20.67	4.09
14	4.39	5.05	24.87	4.92
15	5.27	5.05	28.03	5.55
16	6.15	5.05	30.18	5.97
17	7.02	5.05	31.82	6.3
18	7.90	5.05	33.46	6.62
19	8.78	5.05	33.26	6.58
20	9.66	5.05	33.05	6.54
21	10.54	5.05	32.88	6.51
22	11.42	5.05	32.68	6.47
23	12.29	5.05	32.47	6.43
24	13.17	5.05	32.26	6.39
25	14.05	5.05	32.08	6.35
26	14.93	5.05	31.87	6.31
27	15.81	5.05	31.62	6.26
28	16.68	5.05	31.41	6.22
29	17.56	5.05	31.22	6.18

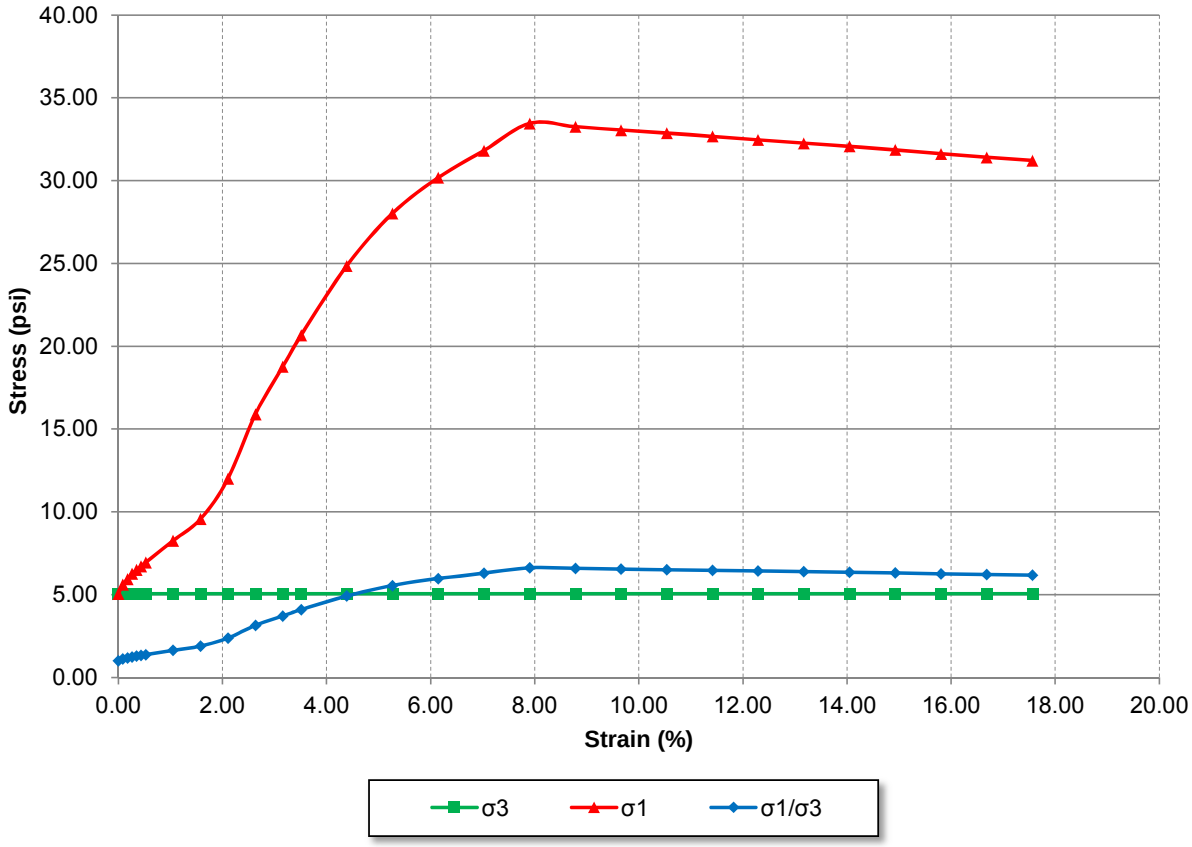
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-166
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 4.5' to 5.0'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

FINAL MOISTURE	: 31.47 %	EFF. CONS. STRESS	: 5.05 psi
FINAL HEIGHT	: 11.92 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 7.87 cm	COMMENTS	: AASHTO T-296

RESULTS:



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Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-166
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 4.5' to 5.0'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

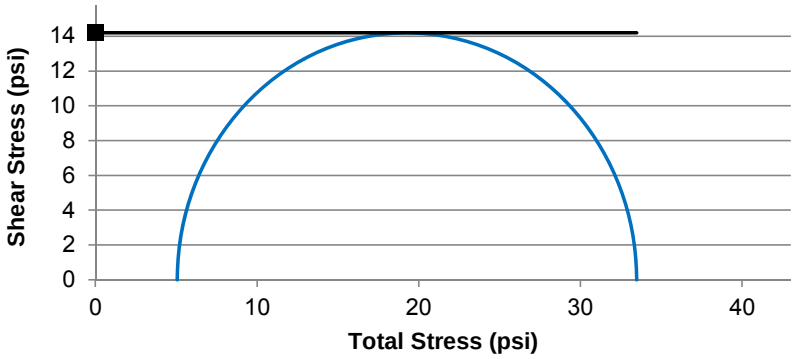
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	5.05 psi	33.46 psi

Compressive Strength =	4091	psf
Cohesion =	2045	psf
Phi =	0	deg
Tan (Phi) =	0	

Maximum Deviator Stress

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-167
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 4.5' to 5.0'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

SOIL TYPE : Brown & Gray, Clayey Sand

WET DENSITY	: 121.99 pcf	DELTA HEIGHT	: 0.45 cm	INITIAL HEIGHT	: 14.85 cm
DRY DENSITY	: 93.93 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.19 cm
MOISTURE	: 29.88 %	CHAMBER PRES.	: 4.06 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	4.06	4.06	1.00
2	0.09	4.06	4.61	1.14
3	0.18	4.06	4.94	1.22
4	0.26	4.06	5.27	1.3
5	0.35	4.06	5.38	1.33
6	0.44	4.06	5.71	1.41
7	0.53	4.06	5.93	1.46
8	1.06	4.06	7.24	1.79
9	1.59	4.06	8.42	2.08
10	2.12	4.06	10.46	2.58
11	2.65	4.06	14.32	3.53
12	3.17	4.06	16.68	4.11
13	3.53	4.06	18.56	4.58
14	4.41	4.06	21.77	5.37
15	5.29	4.06	23.5	5.79
16	6.17	4.06	25.66	6.33
17	7.06	4.06	26.39	6.51
18	7.94	4.06	27.55	6.79
19	8.82	4.06	29.61	7.3
20	9.70	4.06	31.16	7.68
21	10.58	4.06	31.41	7.75
22	11.47	4.06	31.24	7.7
23	12.35	4.06	31.06	7.66
24	13.23	4.06	30.89	7.62
25	14.11	4.06	30.71	7.57
26	14.99	4.06	30.56	7.54
27	15.87	4.06	30.35	7.48
28	16.76	4.06	30.2	7.45
29	17.64	4.06	29.98	7.39
30	18.52	4.06	29.8	7.35
31	19.40	4.06	29.61	7.3
32	20.28	4.06	29.65	7.31

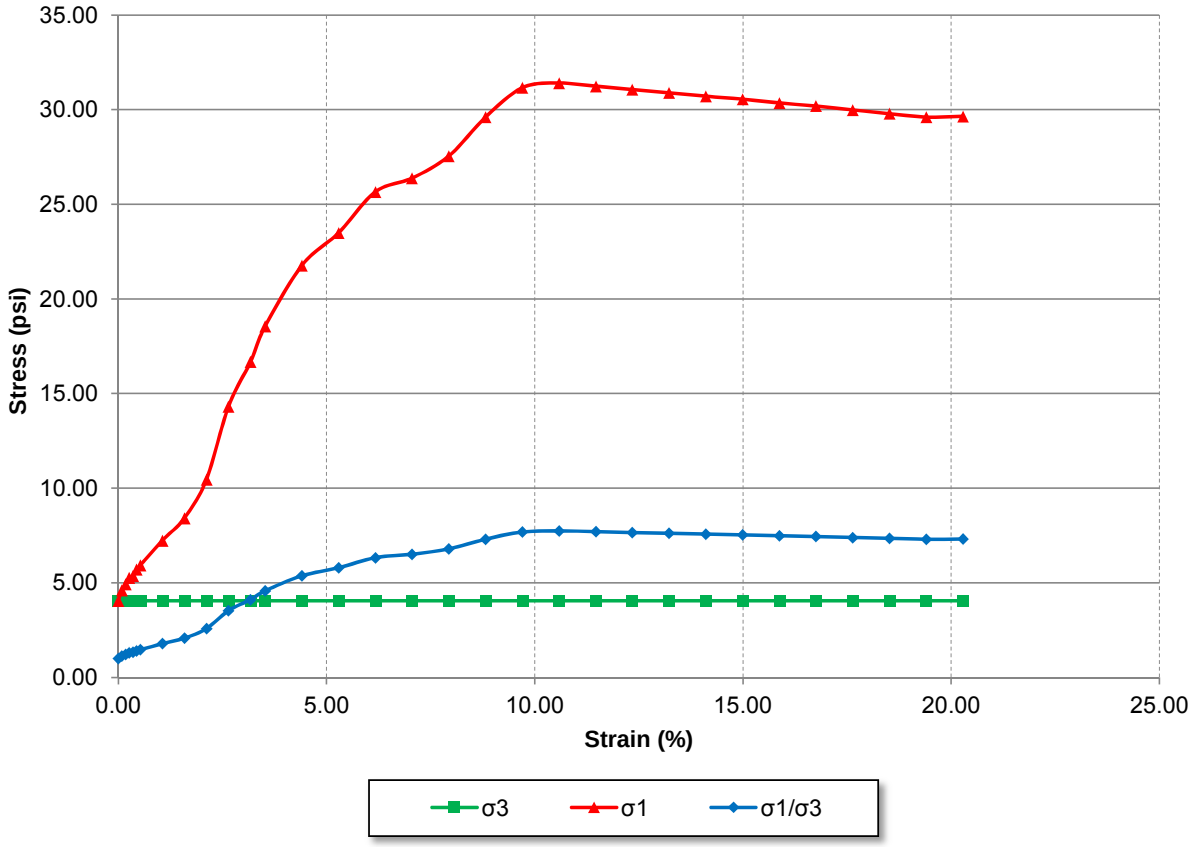
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-167
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 4.5' to 5.0'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

FINAL MOISTURE	: 29.88 %	EFF. CONS. STRESS	: 4.06 psi
FINAL HEIGHT	: 11.48 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.02 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-167
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 4.5' to 5.0'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

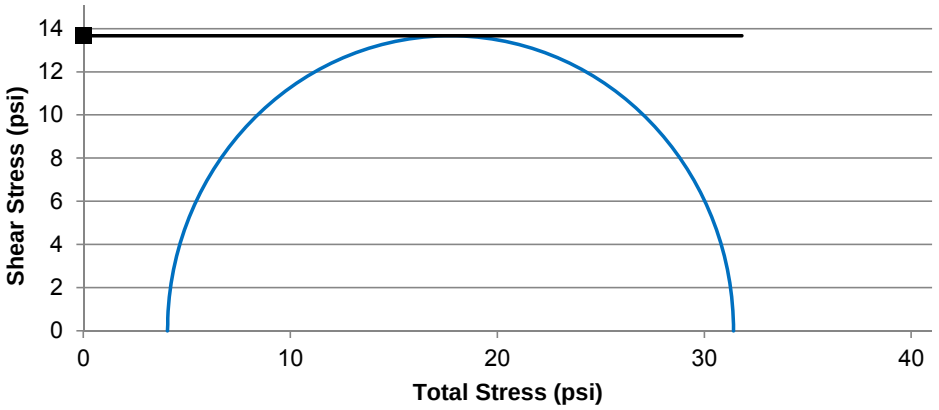
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	4.06 psi	31.41 psi

Compressive Strength =	3939	psf
Cohesion =	1970	psf
Phi =	0	deg
Tan (Phi) =	0	

Maximum Deviator Stress

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-167
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 21.0' to 21.5'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

SOIL TYPE	: Brown & Gray, Sandy Elastic Silt				
WET DENSITY	: 113.51 pcf	DELTA HEIGHT	: 0.39 cm	INITIAL HEIGHT	: 14.89 cm
DRY DENSITY	: 82.04 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.26 cm
MOISTURE	: 38.36 %	CHAMBER PRES.	: 17.01 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	17.01	17.01	1.00
2	0.09	17.01	17.44	1.03
3	0.18	17.01	17.88	1.05
4	0.26	17.01	18.97	1.12
5	0.35	17.01	19.95	1.17
6	0.44	17.01	20.6	1.21
7	0.53	17.01	21.35	1.26
8	1.05	17.01	36.03	2.12
9	1.58	17.01	46.79	2.75
10	2.10	17.01	47.35	2.78
11	2.63	17.01	47.58	2.8
12	3.15	17.01	47.73	2.81
13	3.50	17.01	47.93	2.82
14	4.38	17.01	49.02	2.88
15	5.26	17.01	49.74	2.93
16	6.13	17.01	50.45	2.97
17	7.01	17.01	50.97	3
18	7.89	17.01	51.31	3.02
19	8.76	17.01	51.47	3.03
20	9.64	17.01	51.63	3.04
21	10.51	17.01	51.77	3.04
22	11.39	17.01	51.59	3.03
23	12.27	17.01	51.41	3.02
24	13.14	17.01	51.06	3
25	14.02	17.01	50.72	2.98
26	14.90	17.01	50.38	2.96
27	15.77	17.01	50.18	2.95
28	16.65	17.01	49.54	2.91
29	17.52	17.01	48.9	2.88

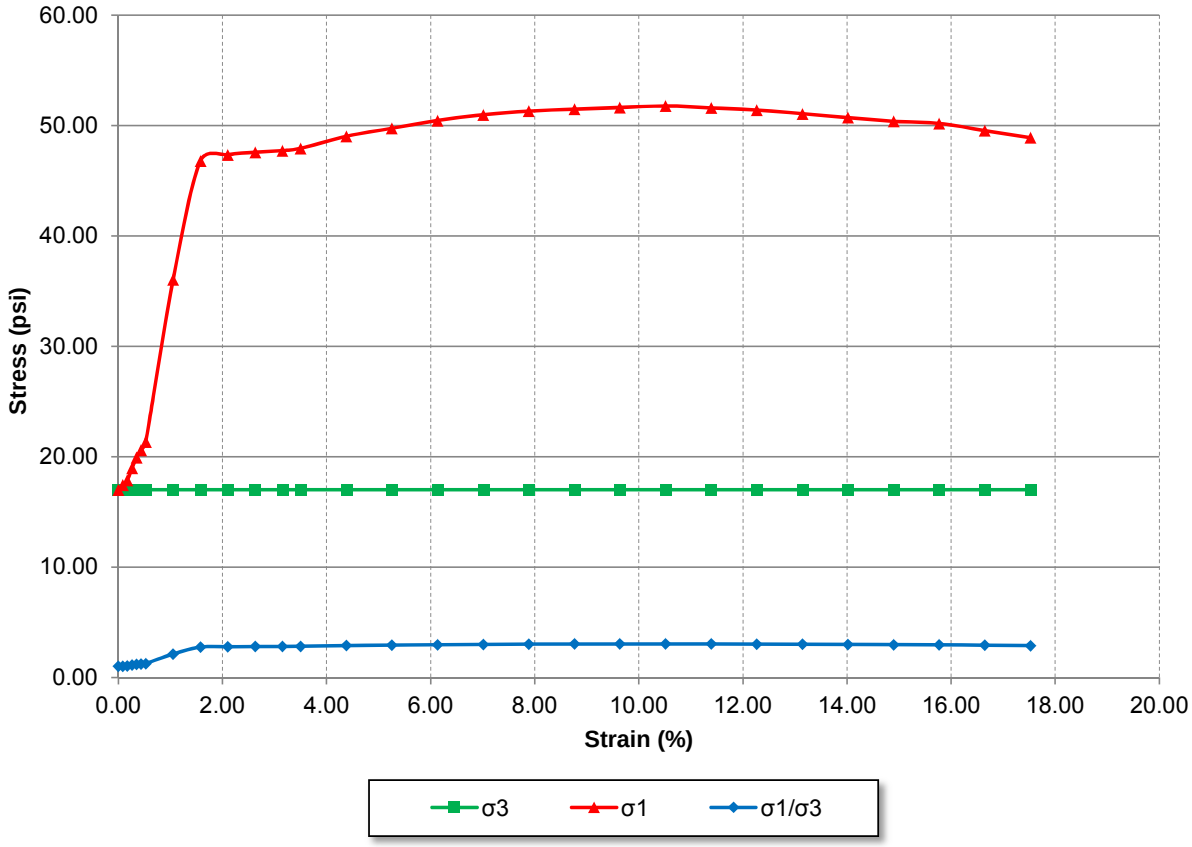
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-167
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 21.0' to 21.5'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

FINAL MOISTURE	: 38.36 %	EFF. CONS. STRESS	: 17.01 psi
FINAL HEIGHT	: 11.95 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 7.97 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-167
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 21.0' to 21.5'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

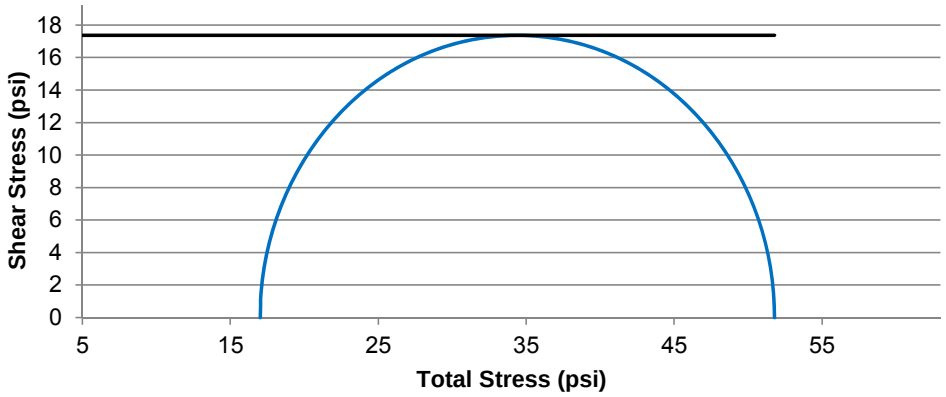
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	17.01 psi	51.77 psi

Compressive Strength =	5007	psf
Cohesion =	2503	psf
Phi =	0	deg
Tan (Phi) =	0	

Maximum Deviator Stress

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-168
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 10.0' to 10.5'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

SOIL TYPE : Red & Gray, Clayey Sand

WET DENSITY	: 121.86 pcf	DELTA HEIGHT	: 0.45 cm	INITIAL HEIGHT	: 14.81 cm
DRY DENSITY	: 94.39 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.19 cm
MOISTURE	: 29.1 %	CHAMBER PRES.	: 9.04 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	9.04	9.04	1.00
2	0.09	9.04	9.92	1.1
3	0.18	9.04	10.81	1.2
4	0.27	9.04	11.69	1.29
5	0.35	9.04	12.35	1.37
6	0.44	9.04	12.9	1.43
7	0.53	9.04	13.12	1.45
8	1.06	9.04	14.19	1.57
9	1.59	9.04	16.95	1.88
10	2.12	9.04	19.84	2.2
11	2.65	9.04	22.21	2.46
12	3.18	9.04	24.07	2.66
13	3.54	9.04	25.46	2.82
14	4.42	9.04	27.69	3.06
15	5.31	9.04	30.36	3.36
16	6.19	9.04	32.5	3.6
17	7.08	9.04	34.13	3.78
18	7.96	9.04	35.73	3.95
19	8.85	9.04	36.84	4.08
20	9.73	9.04	36.67	4.06
21	10.61	9.04	36.53	4.04
22	11.50	9.04	36.32	4.02
23	12.38	9.04	36.12	4
24	13.27	9.04	35.94	3.98
25	14.15	9.04	35.76	3.96
26	15.04	9.04	35.55	3.93
27	15.92	9.04	35.37	3.91
28	16.81	9.04	35.15	3.89
29	17.69	9.04	34.93	3.87
30	18.58	9.04	34.71	3.84
31	19.46	9.04	34.5	3.82
32	20.34	9.04	34.25	3.79

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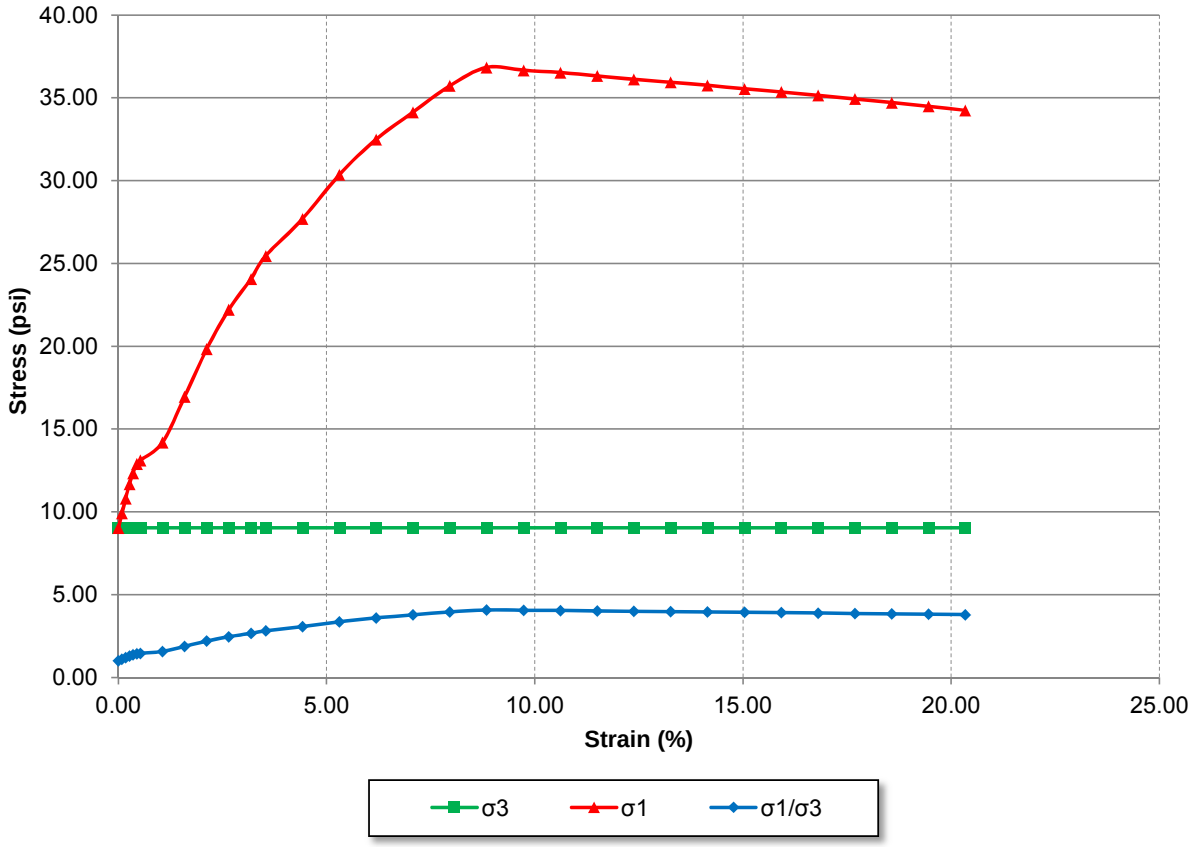
TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-168
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 10.0' to 10.5'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

FINAL MOISTURE	: 29.1 %	EFF. CONS. STRESS	: 9.04 psi
FINAL HEIGHT	: 11.44 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.02 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-168
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 10.0' to 10.5'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

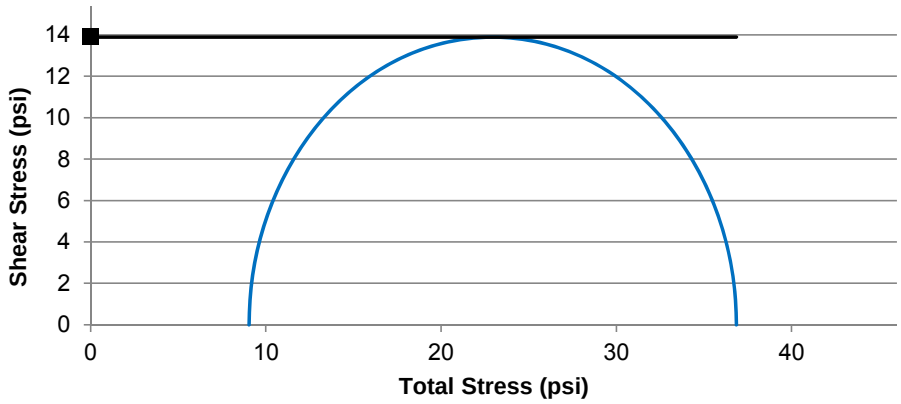
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	9.04 psi	36.84 psi

Compressive Strength =	4004 psf
Cohesion =	2002 psf
Phi =	0 deg
Tan (Phi) =	0

Maximum Deviator Stress

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-168
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 25.2' to 25.7'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

SOIL TYPE : Brown & Gray, Clayey Sand

WET DENSITY	: 121.25 pcf	DELTA HEIGHT	: 0.45 cm	INITIAL HEIGHT	: 14.76 cm
DRY DENSITY	: 80.39 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.26 cm
MOISTURE	: 50.81 %	CHAMBER PRES.	: 19.99 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	19.99	19.99	1.00
2	0.09	19.99	21.19	1.06
3	0.18	19.99	21.73	1.09
4	0.27	19.99	22.38	1.12
5	0.36	19.99	22.92	1.15
6	0.44	19.99	23.35	1.17
7	0.53	19.99	23.89	1.19
8	1.07	19.99	29.74	1.49
9	1.60	19.99	37.88	1.89
10	2.13	19.99	44.02	2.2
11	2.66	19.99	49.21	2.46
12	3.20	19.99	49.4	2.47
13	3.55	19.99	49.53	2.48
14	4.44	19.99	49.78	2.49
15	5.33	19.99	49.85	2.49
16	6.21	19.99	50.11	2.51
17	7.10	19.99	50.65	2.53
18	7.99	19.99	50.85	2.54
19	8.88	19.99	51.04	2.55
20	9.76	19.99	51.06	2.55
21	10.65	19.99	50.76	2.54
22	11.54	19.99	50.61	2.53
23	12.43	19.99	50.3	2.52
24	13.31	19.99	50.15	2.51
25	14.20	19.99	49.84	2.49
26	15.09	19.99	49.53	2.48
27	15.98	19.99	49.37	2.47
28	16.86	19.99	49.21	2.46
29	17.75	19.99	49.05	2.45
30	18.64	19.99	48.88	2.44
31	19.53	19.99	48.56	2.43
32	20.42	19.99	48.39	2.42

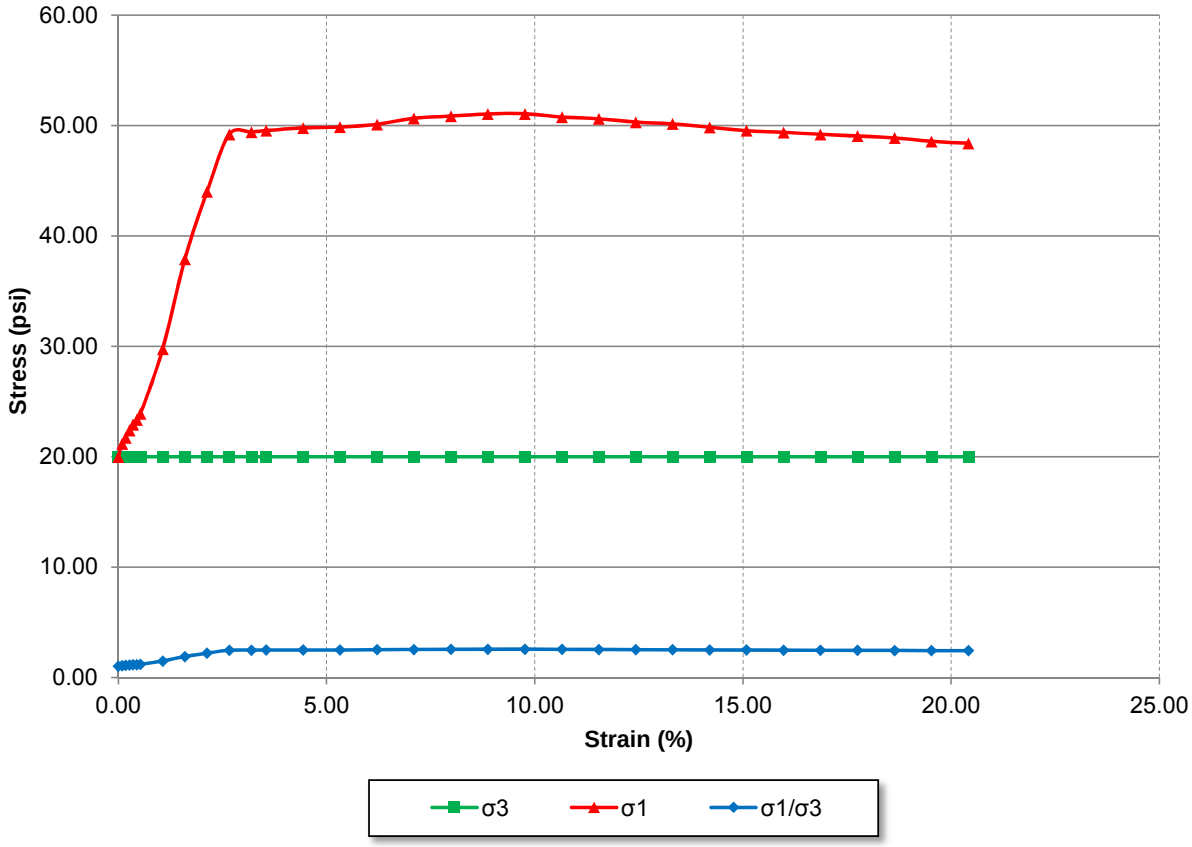
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-168
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 25.2' to 25.7'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

FINAL MOISTURE	: 50.81 %	EFF. CONS. STRESS	: 19.99 psi
FINAL HEIGHT	: 11.39 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.1 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-168
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 25.2' to 25.7'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

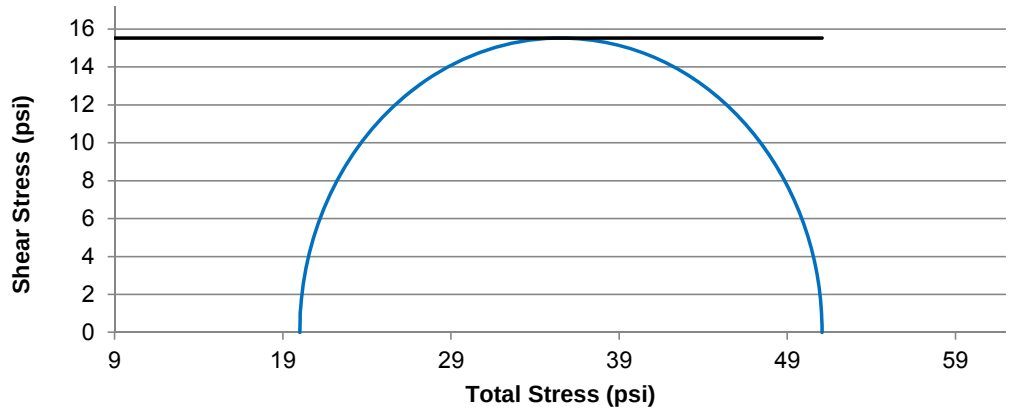
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	19.99 psi	51.06 psi

Compressive Strength =	4474	psf
Cohesion =	2237	psf
Phi =	0	deg
Tan (Phi) =	0	

Maximum Deviator Stress

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



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Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-170
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 14.8' to 15.3'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

SOIL TYPE	: Red, Clayey Sand				
WET DENSITY	: 134.3 pcf	DELTA HEIGHT	: 0.45 cm	INITIAL HEIGHT	: 14.6 cm
DRY DENSITY	: 114.7 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.23 cm
MOISTURE	: 17.09 %	CHAMBER PRES.	: 12.03 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	12.03	12.03	1.00
2	0.09	12.03	13.34	1.11
3	0.18	12.03	14.1	1.17
4	0.27	12.03	14.87	1.24
5	0.36	12.03	15.52	1.29
6	0.45	12.03	16.28	1.35
7	0.54	12.03	17.04	1.42
8	1.08	12.03	32.08	2.67
9	1.62	12.03	41.75	3.47
10	2.15	12.03	42.16	3.51
11	2.69	12.03	42.31	3.52
12	3.23	12.03	42.46	3.53
13	3.59	12.03	42.56	3.54
14	4.49	12.03	43.24	3.6
15	5.38	12.03	44.82	3.73
16	6.28	12.03	46.02	3.83
17	7.18	12.03	47.03	3.91
18	8.08	12.03	47.85	3.98
19	8.97	12.03	48.81	4.06
20	9.87	12.03	49.47	4.11
21	10.77	12.03	50.01	4.16
22	11.67	12.03	50.45	4.2
23	12.56	12.03	50.81	4.23
24	13.46	12.03	51.31	4.27
25	14.36	12.03	51.55	4.29
26	15.26	12.03	51.77	4.31
27	16.15	12.03	51.91	4.32
28	17.05	12.03	52.19	4.34
29	17.95	12.03	52.06	4.33
30	18.85	12.03	52.16	4.34
31	19.74	12.03	52.02	4.33
32	20.64	12.03	52.1	4.33

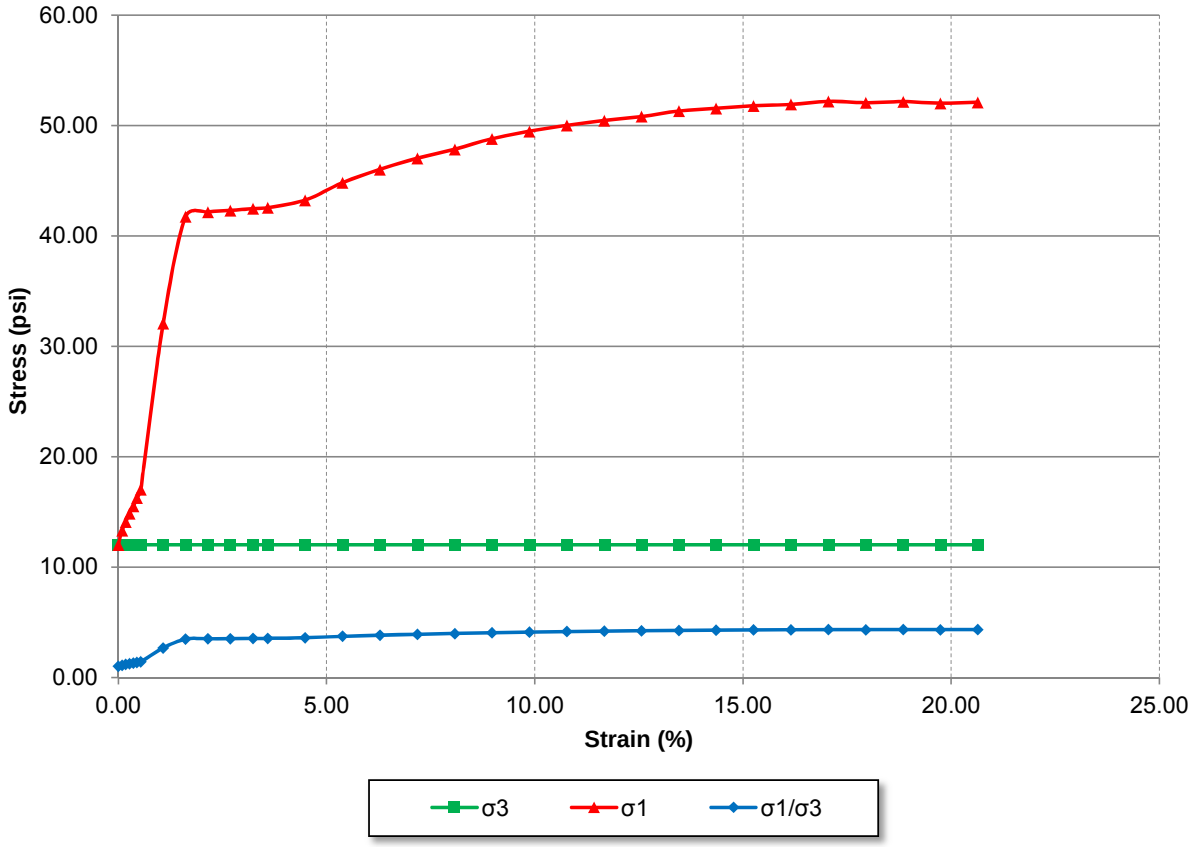
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-170
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 14.8' to 15.3'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

FINAL MOISTURE	: 17.09 %	EFF. CONS. STRESS	: 12.03 psi
FINAL HEIGHT	: 11.23 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.09 cm	COMMENTS	: AASHTO T-296

RESULTS:



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Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-170
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 14.8' to 15.3'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

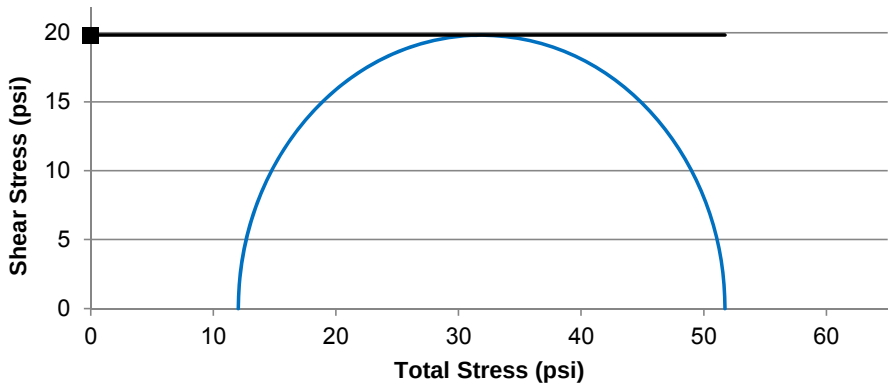
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	12.03 psi	51.71 psi

Compressive Strength =	5715	psf
Cohesion =	2857	psf
Phi =	0	deg
Tan (Phi) =	0	

At Maximum Deviator Stress 15%

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



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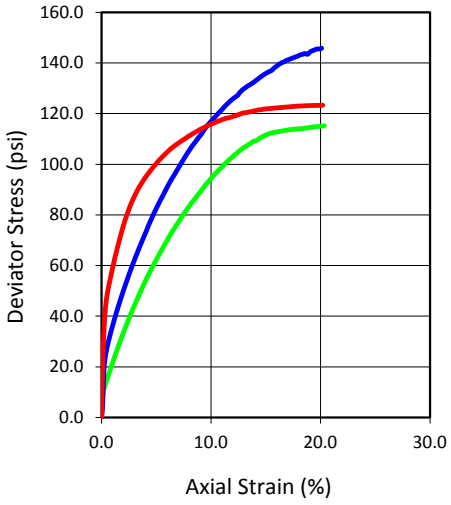
Consolidated Undrained Triaxial Test (ASTM D4767)

PROJECT NAME : Main Street Vandenburg Blvd. (Widening)
PROJECT NO. : 251537
PROJECT LOCATION : Arkansas
BORING NUMBER : B-116
REMARKS :

Mohr Stre NO. : ST-1
SAMPLE DEPTH : 10.3-10.8
SAMPLE TYPE : Undisturbed
DESCRIPTION : Red Silty Sand
TEST TYPE : Consolidated Undrained

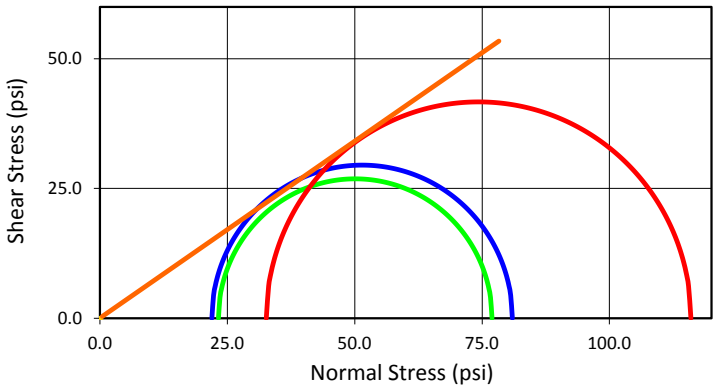
Deviator Stress Vs. Axial Strain



Initial	Specimen A	B	C	D
Water Content (%)	27.7	28.3	28.4	
Dry Density (pcf)	94.7	94.8	93.5	
Saturation (%)	98.12	100.68	97.83	
Void Ratio	0.744	0.742	0.766	
Diameter (in)	2.806	2.818	2.826	
Height (in)	5.817	5.859	5.830	
Specific Gravity	2.65	2.65	2.65	
Liquid Limit	27	27	27	
Plastic Limit	23	23	23	
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.98	1.00	1.00	
Water Content (%)	30.3	28.6	29.9	
Dry Density (pcf)	94.81	94.83	95.35	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.745	0.745	0.735	
Effective Stress (psi)	10.0	30.0	40.0	
Back Press. (psi)	41.6	44.8	32.0	
Rate of Strain	0.006	0.006	0.006	

Maximum Principal Stress Ratio Criterion		After Shear	A	B	C	D
C (psi)	15.5	σ'1 at Failure (psi)	76.95	80.94	115.99	
Ø (deg)	0.0	σ'3 at Failure (psi)	23.25	21.96	32.64	
C' (psi)	19.5					
Ø' (deg)	34.3					

Stress at Maximum Deviator Stress Criterion



Tested By: _____
Date: _____

Approved By: _____
Date: _____

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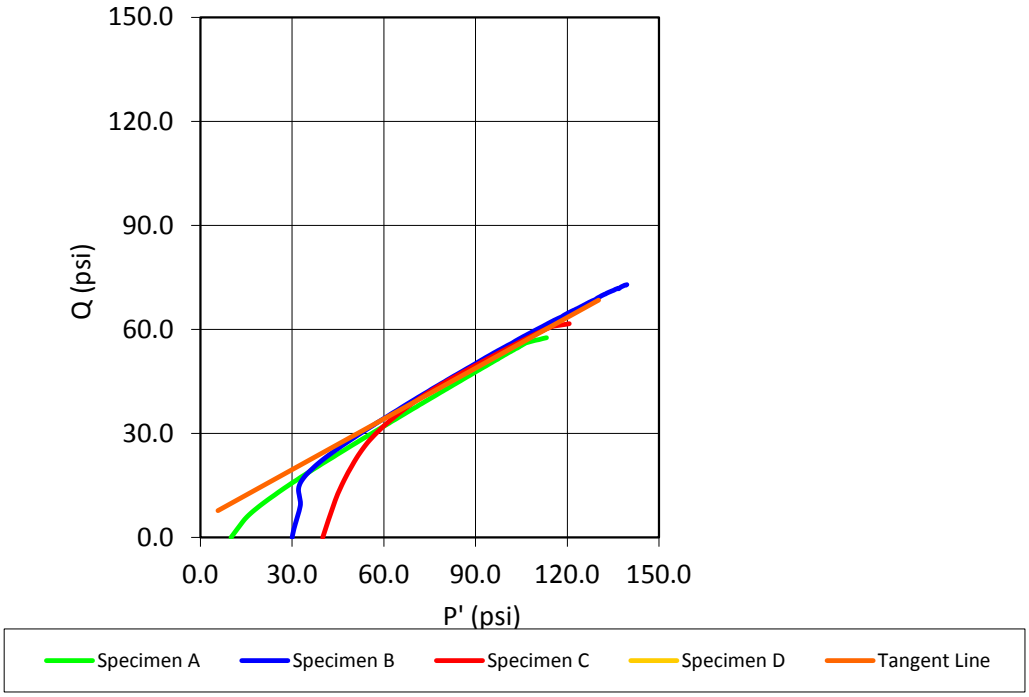
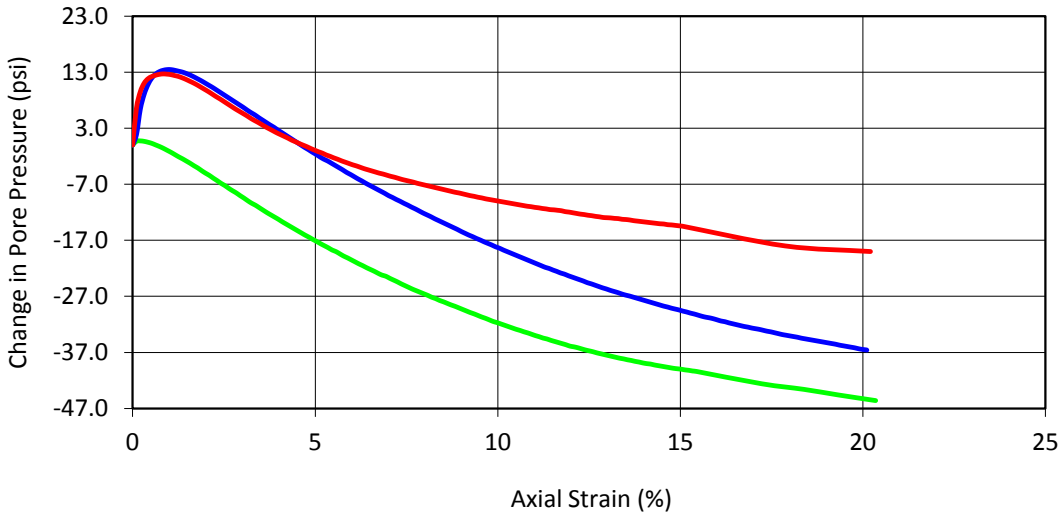
Stress Paths (Effective)
(a = 4.9 alpha = 26.0)



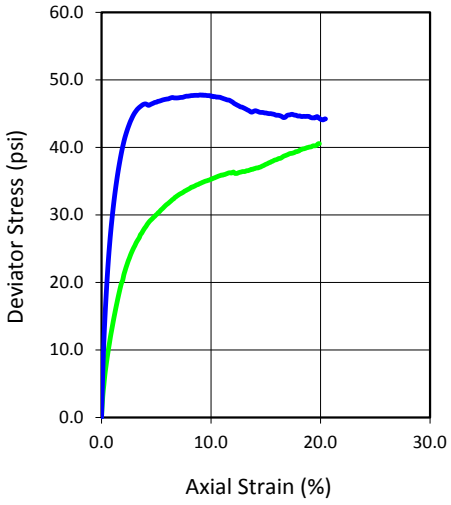
Change in Pore Pressure vs. Axial Strain



Consolidated Undrained Triaxial Test (ASTM D4767)

PROJECT NAME :	Main Street Vandenburg Blvd. (Widening)	SAMPLE NO. :	ST-1
PROJECT NO. :	251537	SAMPLE DEPTH :	19.8-20.3
PROJECT LOCATION :	Arkansas	SAMPLE TYPE :	Undisturbed
BORING NUMBER :	B-122	DESCRIPTION :	Tan Silty Sand
REMARKS :	First point (Green) fractured vertically	TEST TYPE :	Consolidated Undrained

Deviator Stress Vs. Axial Strain

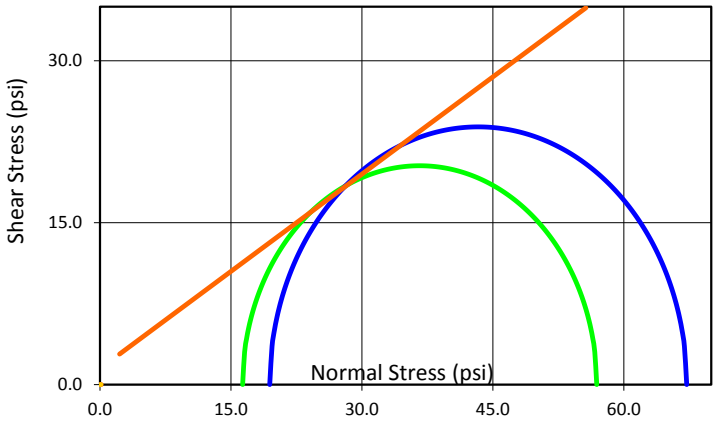


Specimen				
Initial	**A**	**B**	**C**	**D**
Water Content (%)	36.7	39.3		
Dry Density (pcf)	83.0	78.2		
Saturation (%)	98.03	93.32		
Void Ratio	0.989	1.112		
Diameter (in)	2.857	2.886		
Height (in)	5.883	5.835		
Specific Gravity	2.65	2.65		
Liquid Limit	52	52		
Plastic Limit	30	30		
After Consolidation	**A**	**B**	**C**	**D**
B-Value	1.00	0.99		
Water Content (%)	35.9	37.7		
Dry Density (pcf)	81.44	80.04		
Saturation (%)	100.00	100.00		
Void Ratio	1.031	1.067		
Effective Stress (psi)	20.0	40.0		
Back Press. (psi)	28.0	39.1		
Rate of Strain	0.006	0.006		

Maximum Deviator Stress Criterion	
C (psi)	12.6
Ø (deg)	10.9
C' (psi)	1.5
Ø' (deg)	31.0

After Shear	A	B	C	D
σ'1 at Failure (psi)	56.88	67.18		
σ'3 at Failure (psi)	16.33	19.43		

Stress at Maximum Deviator Stress Criterion



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Date: _____ Date: _____

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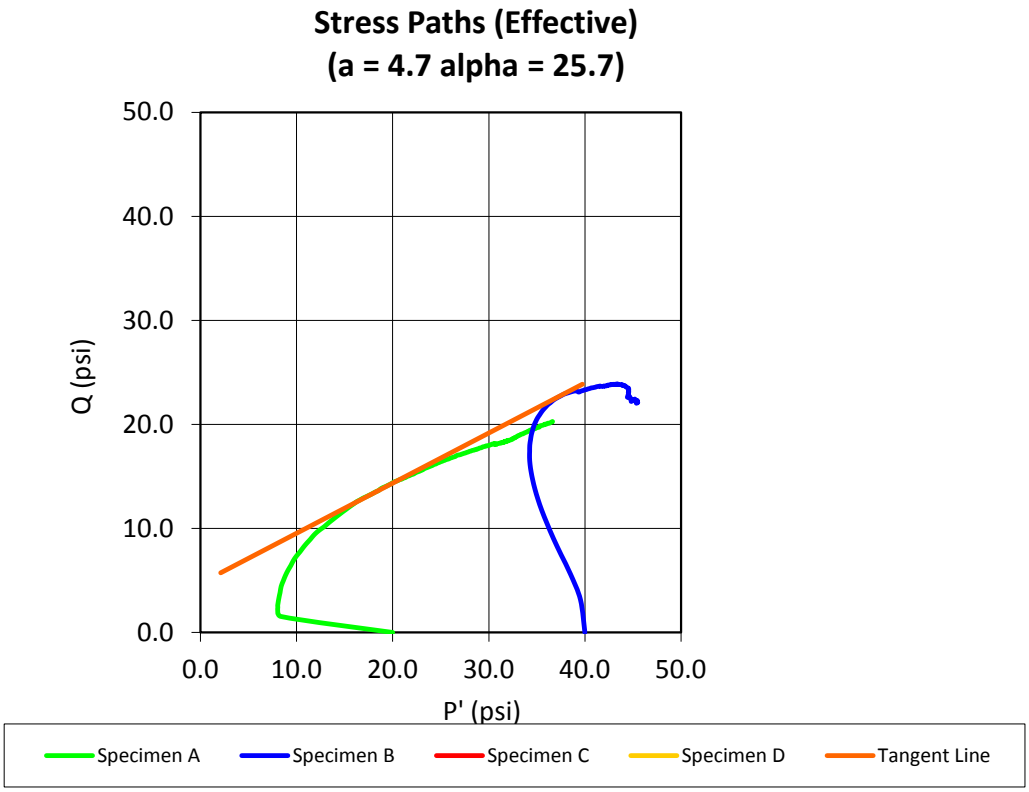

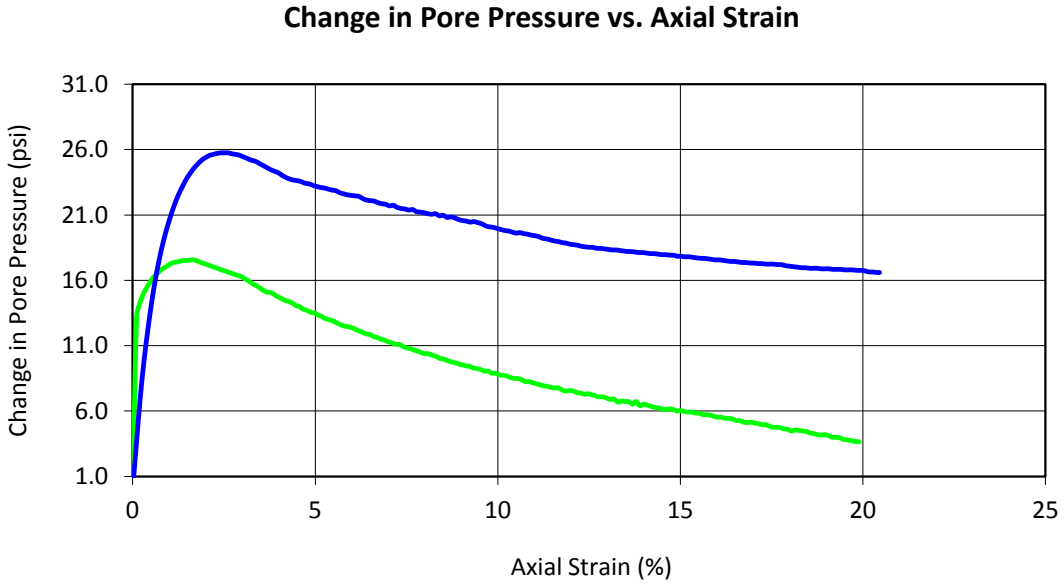

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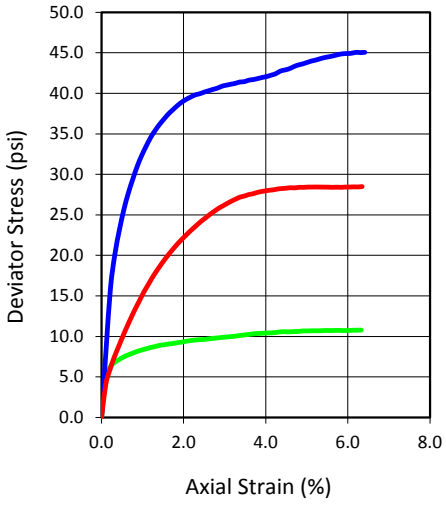
Consolidated Undrained Triaxial Test (ASTM D4767)

PROJECT NAME :	Main Street Vandenburg Blvd. (Widening)	SAMPLE NO. :	ST-1
PROJECT NO. :	251537	SAMPLE DEPTH :	10.3-10.8
PROJECT LOCATION :	Arkansas	SAMPLE TYPE :	Undisturbed
BORING NUMBER :	B-163	DESCRIPTION :	Brown & Gray Clayey Sand
REMARKS :		TEST TYPE :	Consolidated Undrained

Deviator Stress Vs. Axial Strain

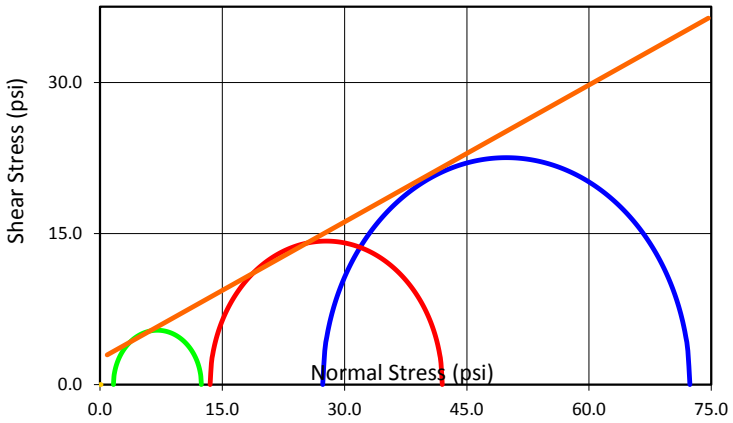


Initial	Specimen A	B	C	D
Water Content (%)	23.6	26.5	24.2	
Dry Density (pcf)	102.3	96.9	100.0	
Saturation (%)	101.36	99.44	97.91	
Void Ratio	0.615	0.705	0.652	
Diameter (in)	2.846	2.862	2.848	
Height (in)	5.582	5.593	5.897	
Specific Gravity	2.65	2.65	2.65	
Liquid Limit	49	49	49	
Plastic Limit	22	22	22	
After Consolidation	**A**	**B**	**C**	**D**
B-Value	1.00	0.95	0.96	
Water Content (%)	26.7	26.7	24.8	
Dry Density (pcf)	102.72	96.99	100.91	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.611	0.706	0.639	
Effective Stress (psi)	10.0	40.0	20.0	
Back Press. (psi)	32.4	42.3	43.2	
Rate of Strain	0.006	0.006	0.006	

Maximum Deviator Stress Criterion	
C (psi)	3.9
Ø (deg)	19.6
C' (psi)	2.5
Ø' (deg)	24.4

After Shear	A	B	C	D
σ'1 at Failure (psi)	12.43	72.37	41.99	
σ'3 at Failure (psi)	1.64	27.32	13.50	

Stress at Maximum Deviator Stress Criterion



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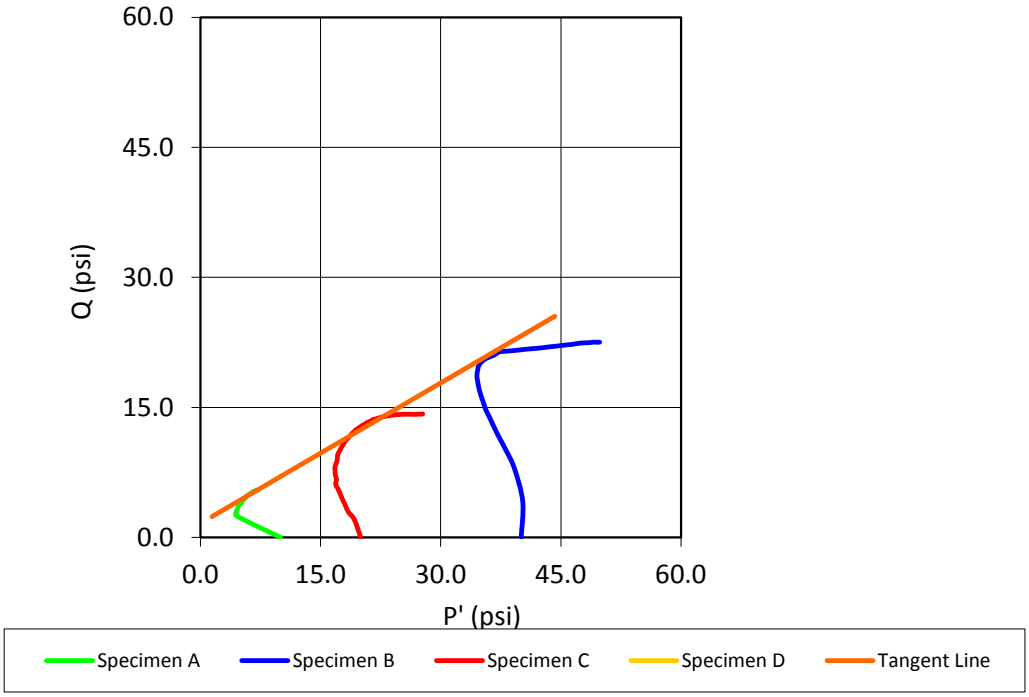
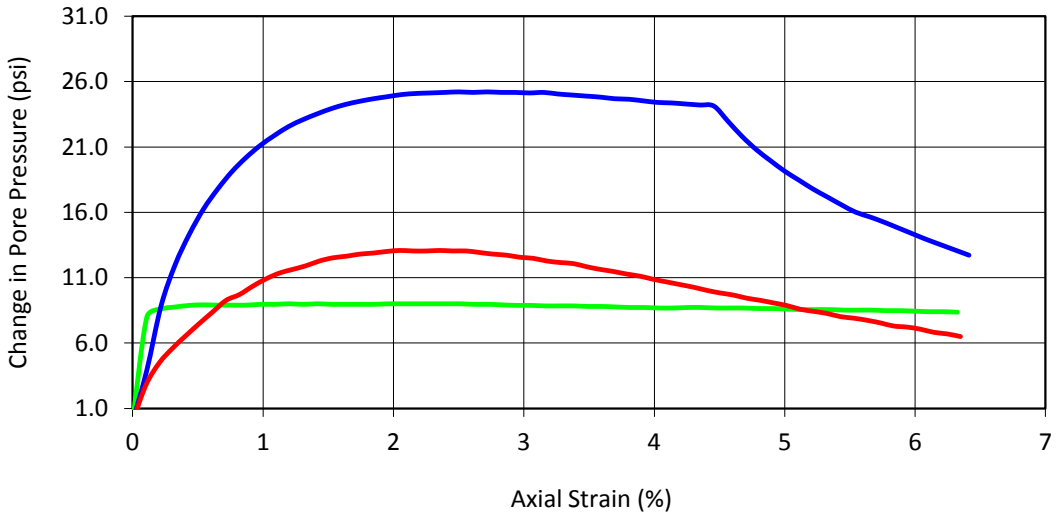
Stress Paths (Effective)
(a = 1.6 alpha = 28.3)



Change in Pore Pressure vs. Axial Strain



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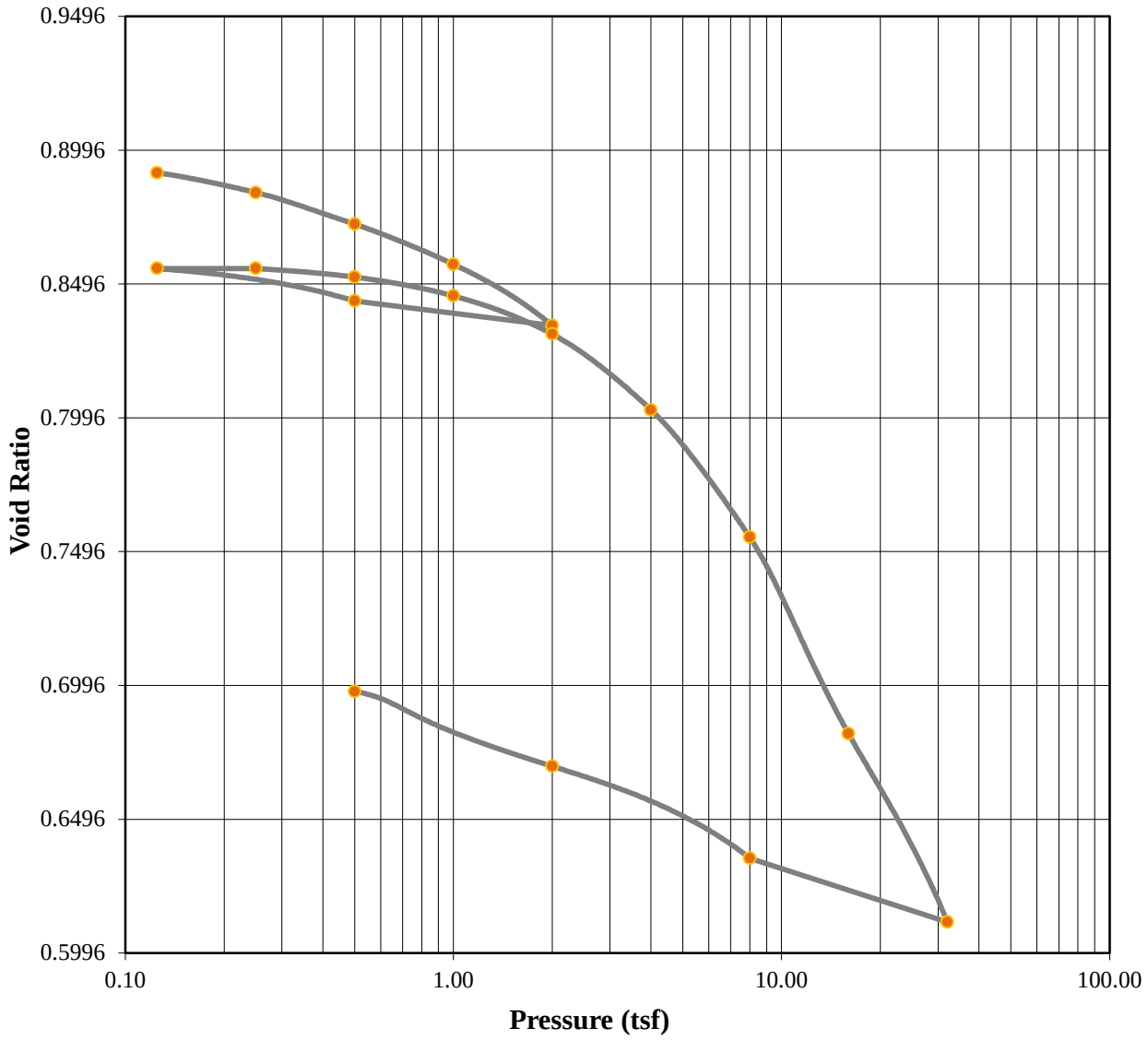

Test Date: 6/15/2016

Summary of Consolidation Test Results

Overburden Press. (tsf)	**0.58**	**Compression Index, C_c**	**0.24**
Preconsol. Press., P_c (tsf)	**3.46**	**Rebound Index, C_r**	**0.01**
Over Consolidation Ratio	**5.97**		

Soil Description:	Red & Gray Clayey Sand			
Project Number:	251537	**Depth:**	9.9'-10.4'	**Remarks:**
Sample Number:	ST-1	**Boring Number:**	B-117	
Project:				
Client:				
Location:	B-117			

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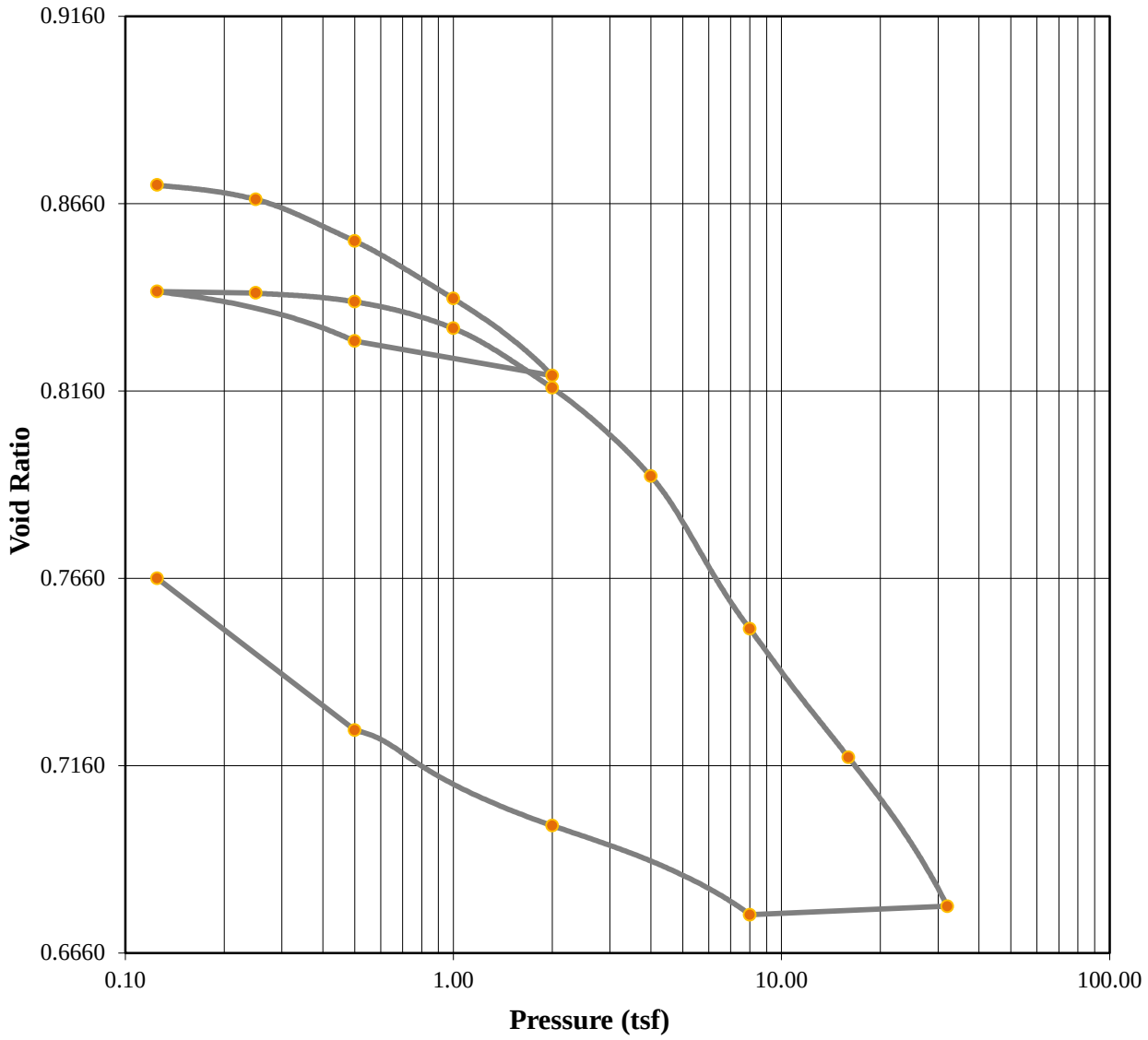

Test Date: 6/16/2016

Summary of Consolidation Test Results

Overburden Press. (tsf)	0.84	Compression Index, C_c	0.13
Preconsol. Press., P_c (tsf)	0.93	Rebound Index, C_r	0.02
Over Consolidation Ratio	1.11		

Soil Description:

Project Number:	251537	**Depth:**	20.0-20.4	**Remarks:**
Sample Number:	B-120	**Boring Number:**	B-120	
Project:	Highway 67			
Client:				
Location:	ST-1			

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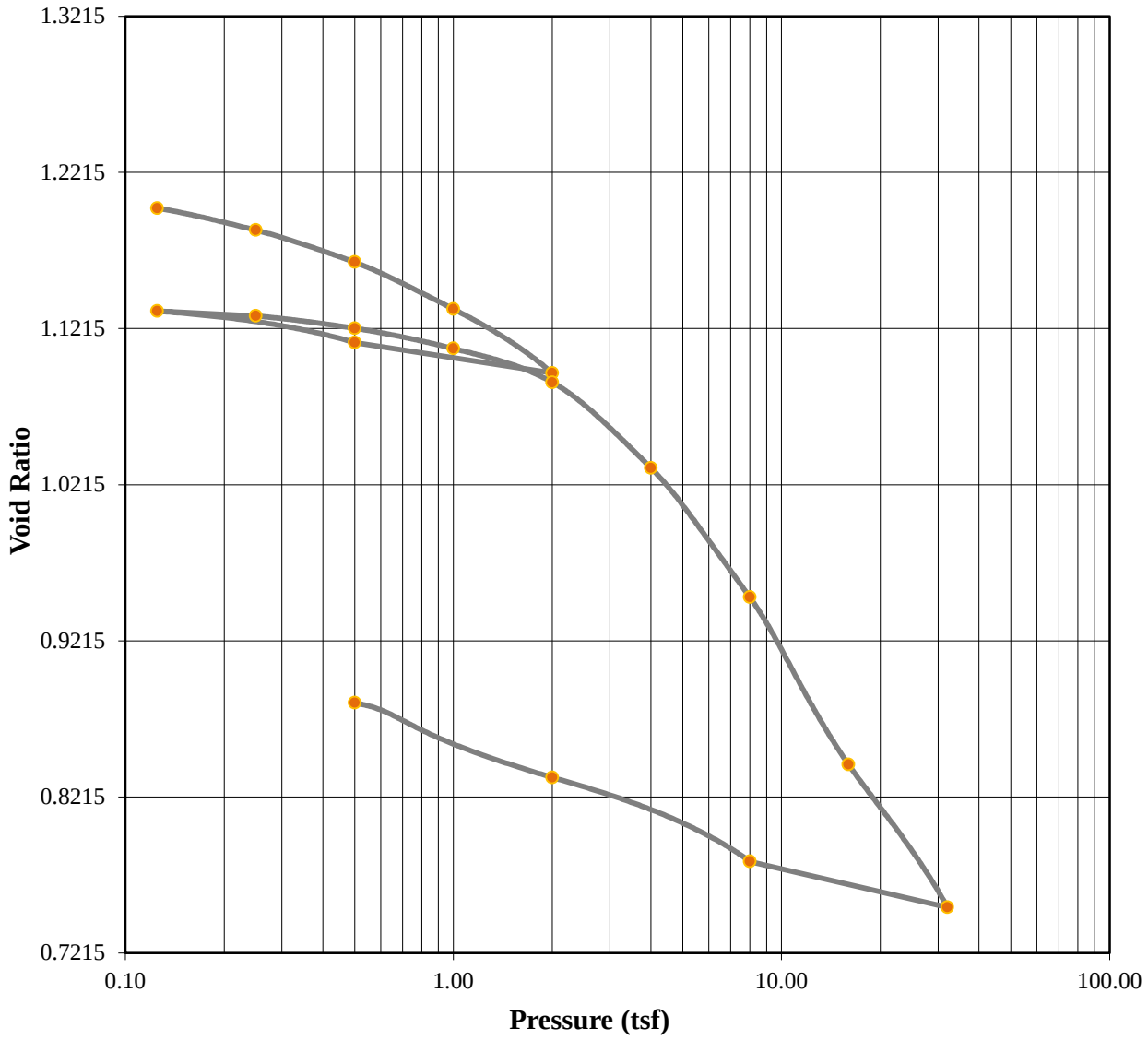

Test Date: 6-23-16

Summary of Consolidation Test Results

Overburden Press. (tsf)	**1.18**	**Compression Index, C_c**	**0.32**
Preconsol. Press., P_c (tsf)	**2.00**	**Rebound Index, C_r**	**0.04**
Over Consolidation Ratio	**1.69**		

Soil Description:

Project Number:	251537	**Depth:** 19.4-19.8	**Remarks:**
Sample Number:	B-122	**Boring Number:** B-122	
Project:	Highway 67		
Client:			
Location:	ST-1		

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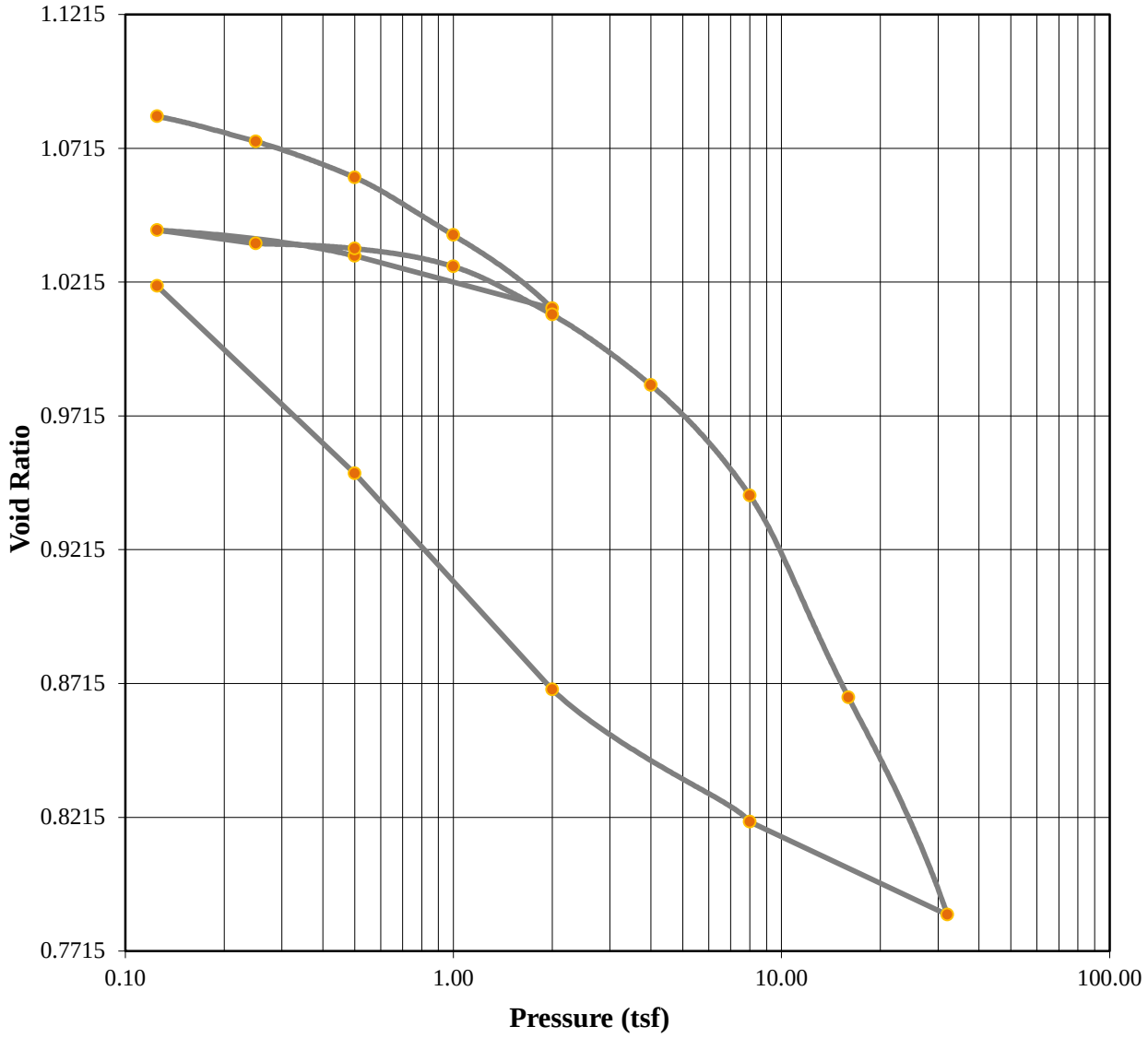

Test Date: 6/15/2016

Summary of Consolidation Test Results

Overburden Press. (tsf)	**0.58**	**Compression Index, C_c**	**0.25**
Preconsol. Press., P_c (tsf)	**3.43**	**Rebound Index, C_r**	**0.06**
Over Consolidation Ratio	**5.91**		

Soil Description:

Project Number:	251537	**Depth:** 14.6-15.1	**Remarks:**
Sample Number:	ST-1	**Boring Number:** B-130	
Project:			
Client:			
Location:	B-130		

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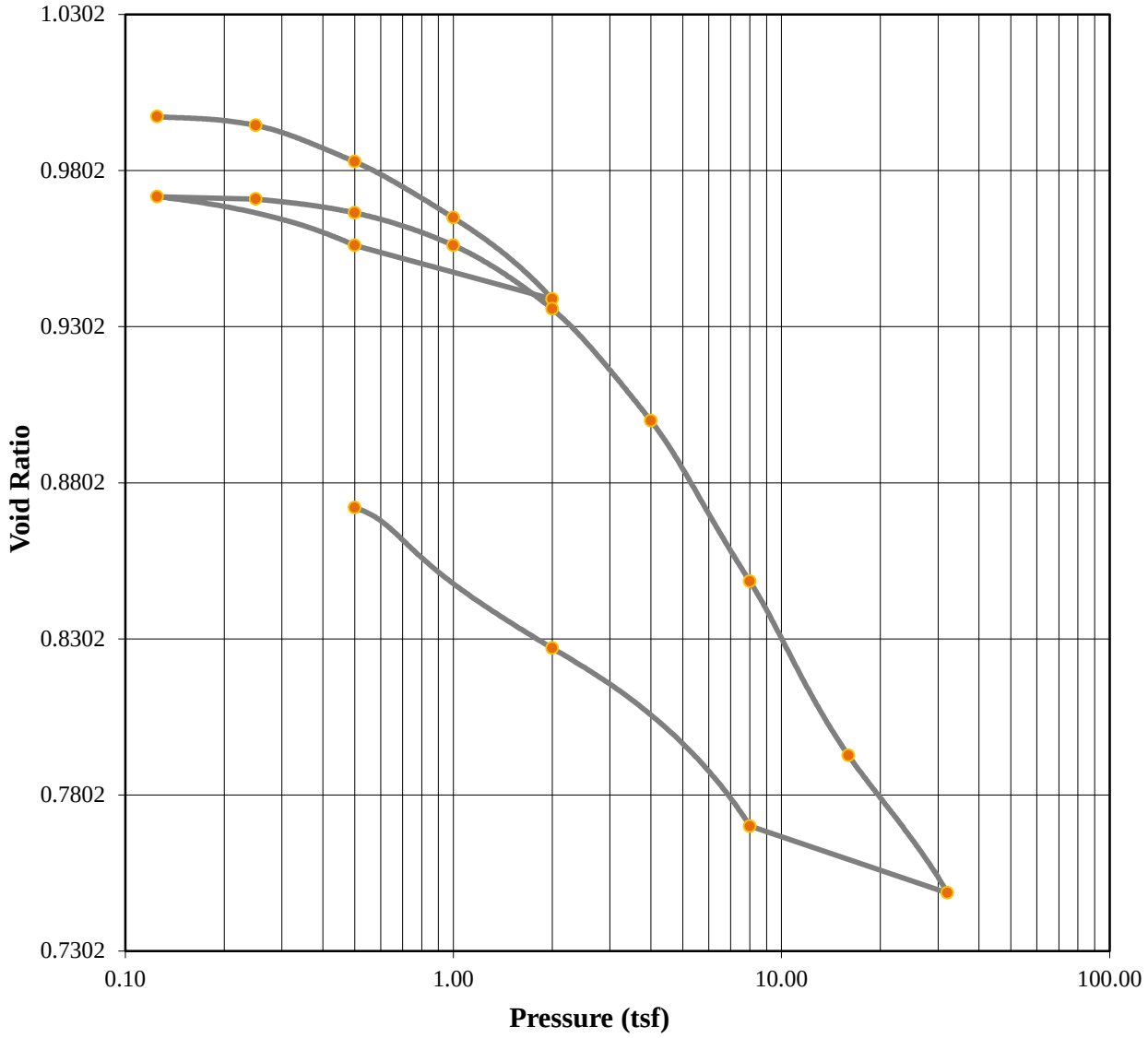

Test Date: 6/22/2016

Summary of Consolidation Test Results

Overburden Press. (tsf)	**1.24**	**Compression Index, C_c**	**0.18**
Preconsol. Press., P_c (tsf)	**1.43**	**Rebound Index, C_r**	**0.04**
Over Consolidation Ratio	**1.15**		

Soil Description:

Project Number:	251537	**Depth:** 20.4-20.9	**Remarks:**
Sample Number:	B-163	**Boring Number:** B-163	
Project:	Highway 67		
Client:			
Location:	ST-2		

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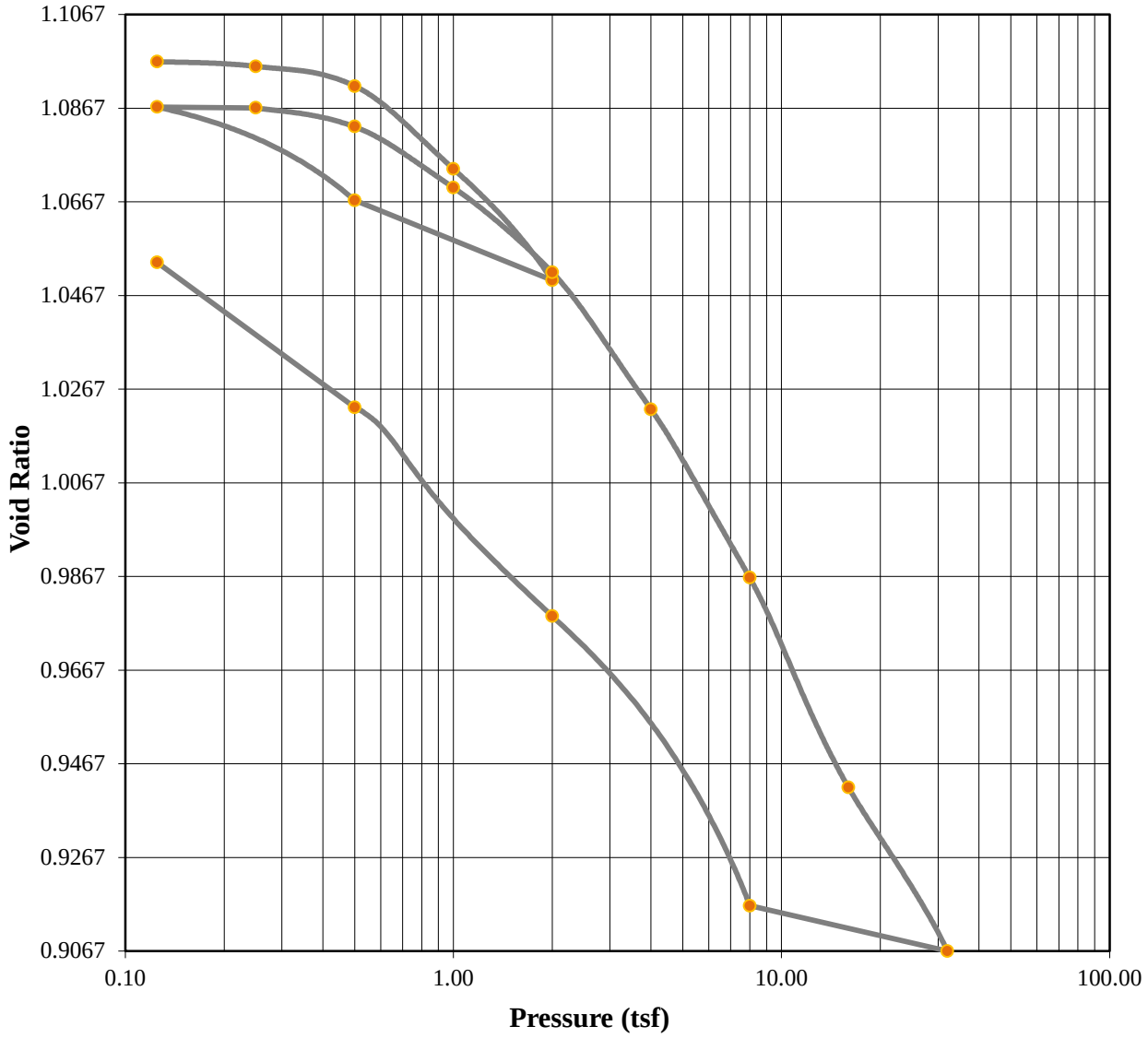

Test Date: 6-23-16			
Summary of Consolidation Test Results			
Overburden Press. (tsf)	**1.23**	**Compression Index, C_c**	**0.13**
Preconsol. Press., P_c (tsf)	**1.42**	**Rebound Index, C_r**	**0.04**
Over Consolidation Ratio	**1.15**		

Soil Description:				
Project Number:	251537	**Depth:**	20.2-20.7	**Remarks:**
Sample Number:	B-165	**Boring Number:**	B-165	
Project:	Highway 67			
Client:				
Location:	ST-2			

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

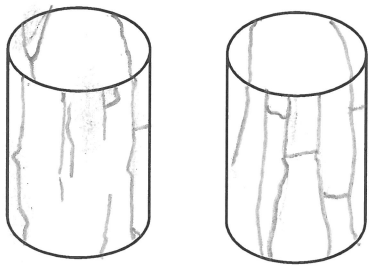
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-122
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 28.0' to 28.4'
LABORATORY NO.	: 251537	DATE TESTED	: 6/28/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 6/30/2016

ROCK DESCRIPTION : Limestone: fossiliferous, calcareous, mod. wthd.

Diameter :	1.98 in	Area :	3.09 in^2
Height :	4.12 in	Volume :	0.0074 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	163.08	lbs/$ft.^3$
Maximum Stress :	2860	psi
Elapsed Time :	6:18	min.
Rate of Loading :	30	lb/sec



Comments :

Approved By : Ka E Walker

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

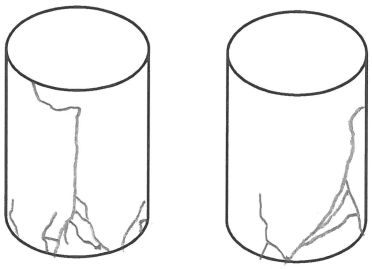
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-2
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-122
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 46.4' to 46.8'
LABORATORY NO.	: 251537	DATE TESTED	: 6/28/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 6/30/2016

ROCK DESCRIPTION : Shale: silty, f. micaceous, sli. wthd.

Diameter :	1.98 in	Area :	3.09 in^2
Height :	4.09 in	Volume :	0.0073 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	156.7	lbs/$ft.^3$
Maximum Stress :	1897	psi
Elapsed Time :	3:55	min.
Rate of Loading :	40	lb/sec



Comments :

Approved By : Ka E Walker

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

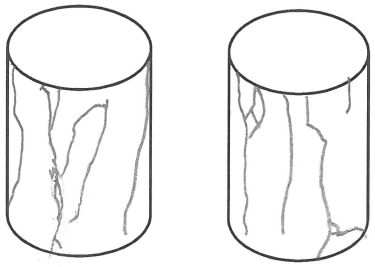
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-3
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-124
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 41.3' to 41.7'
LABORATORY NO.	: 251537	DATE TESTED	: 6/28/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 6/30/2016

ROCK DESCRIPTION : Sandstone: calcareous, fossiliferous, sli. wthd.

Diameter :	2.00 in	Area :	3.13 in²
Height :	4.08 in	Volume :	0.0074 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	166.66	lbs/ft.³
Maximum Stress :	5491	psi
Elapsed Time :	8:07	min.
Rate of Loading :	60	lb/sec



Comments :

Approved By : Kr E Wells

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

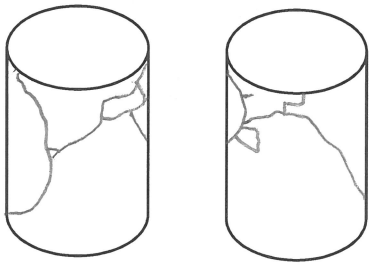
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-4
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-124
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 46.5' to 46.9'
LABORATORY NO.	: 251537	DATE TESTED	: 6/28/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 6/30/2016

ROCK DESCRIPTION : Clay: soft, calcareous, sev. wthd.

Diameter :	1.97 in	Area :	3.04 in^2
Height :	3.92 in	Volume :	0.0069 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	139.16	lbs/$ft.^3$
Maximum Stress :	135	psi
Elapsed Time :	2:00	min.
Rate of Loading :	1	lb/sec



Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

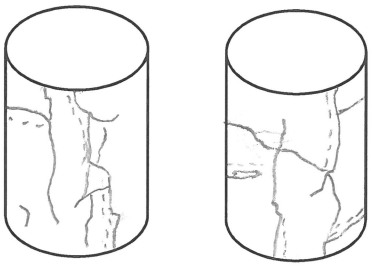
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-5
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-127
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 31.6' to 32.0'
LABORATORY NO.	: 251537	DATE TESTED	: 6/28/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 6/30/2016

ROCK DESCRIPTION : Claystone: calcareous, dessication cracks, mod. wthd.

Diameter :	1.97 in	Area :	3.04 in^2
Height :	3.88 in	Volume :	0.0068 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	124.72	lbs/$ft.^3$
Maximum Stress :	482	psi
Elapsed Time :	3:53	min.
Rate of Loading :	10	lb/sec



Comments :

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

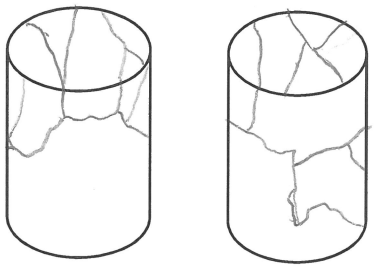
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-6
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-127
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 39.7-40.1
LABORATORY NO.	: 251537	DATE TESTED	: 6/28/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 6/30/2016

ROCK DESCRIPTION : Clay: soft, calcareous, sev. wthd.

Diameter :	1.98 in	Area :	3.07 in²
Height :	3.94 in	Volume :	0.007 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	136.37	lbs/ft.³
Maximum Stress :	108	psi
Elapsed Time :	3:00	min.
Rate of Loading :	1	lb/sec



Comments :

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

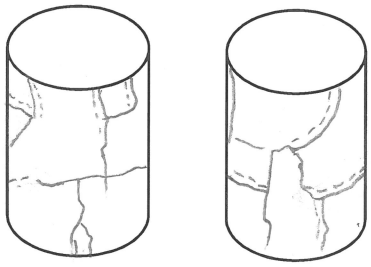
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-7
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-163
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 36.3' to 36.7'
LABORATORY NO.	: 251537	DATE TESTED	: 6/28/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 6/30/2016

ROCK DESCRIPTION : Claystone: sli. silty ion parts, calcareous, scat. vuggy texture, sli. wthd.

Diameter :	1.97 in	Area :	3.04 in²
Height :	3.94 in	Volume :	0.0069 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	117.08	lbs/ft.³
Maximum Stress :	296	psi
Elapsed Time :	4:00	min.
Rate of Loading :	1	lb/sec



--------- Existing Dessication Cracks

Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

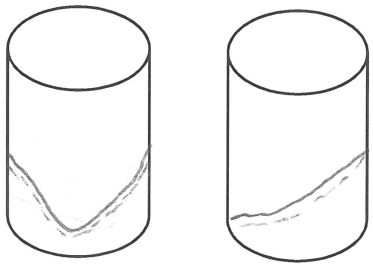
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-8
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-164
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 68.5' to 68.9'
LABORATORY NO.	: 251537	DATE TESTED	: 6/28/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 6/30/2016

ROCK DESCRIPTION : Shale: silty, sli. wthd.

Diameter :	1.97 in	Area :	3.06 in²
Height :	4.01 in	Volume :	0.0071 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	154.41	lbs/ft.³
Maximum Stress :	79	psi
Elapsed Time :	3:00	min.
Rate of Loading :	1	lb/sec



--------- Existing Fracture During Prep

Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

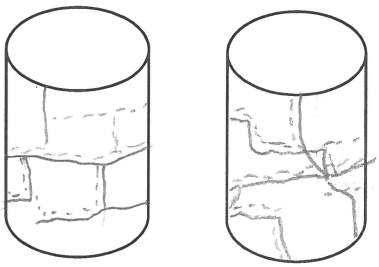
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-9
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-130
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 39.1' to 39.5'
LABORATORY NO.	: 251537	DATE TESTED	: 6/28/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 6/30/2016

ROCK DESCRIPTION : Claystone: fossiliferous, calcareous, mod. wthd.

Diameter :	1.96 in	Area :	3.00 in²
Height :	3.95 in	Volume :	0.0069 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	124.05	lbs/ft.³
Maximum Stress :	476	psi
Elapsed Time :	4:23	min.
Rate of Loading :	10	lb/sec



--------- Existing Dessication Cracks

Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

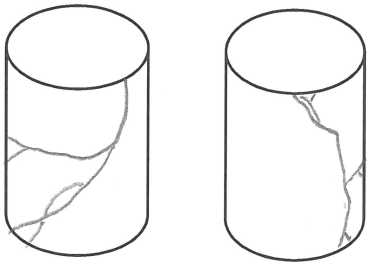
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-10
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-130
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 52.3' to 52.7'
LABORATORY NO.	: 251537	DATE TESTED	: 6/28/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 6/30/2016

ROCK DESCRIPTION : Shale: sli. silty, dessication cracks, mod. to sev. wthd.

Diameter :	1.95 in	Area :	3.00 in^2
Height :	4.06 in	Volume :	0.007 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	136.55	lbs/ft.^{3}
Maximum Stress :	260	psi
Elapsed Time :	2:01	min.
Rate of Loading :	10	lb/sec



--------- Existing Dessication Cracks

Comments :

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

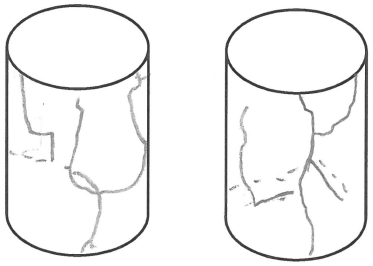
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-11
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-165
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 40.9' to 41.3'
LABORATORY NO.	: 251537	DATE TESTED	: 6/30/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/5/2016

ROCK DESCRIPTION : Claystone: f. sandy, calcareous, scat. fossiliferous, sli. wthd.

Diameter :	1.97 in	Area :	3.06 in^2
Height :	4.06 in	Volume :	0.0072 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	116.75	lbs/$ft.^3$
Maximum Stress :	288	psi
Elapsed Time :	3:16	min.
Rate of Loading :	10	lb/sec



--------- Existing Dessication Cracks

Comments :

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

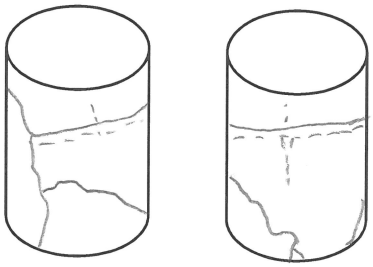
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-12
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-165
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 55.0' to 55.4'
LABORATORY NO.	: 251537	DATE TESTED	: 6/30/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/5/2016

ROCK DESCRIPTION : Claystone: silty in part, fossiliferous, calcareous, mod. wthd.

Diameter :	1.97 in	Area :	3.04 in^2
Height :	4.00 in	Volume :	0.007 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	125.5	lbs/$ft.^3$
Maximum Stress :	382	psi
Elapsed Time :	3:22	min.
Rate of Loading :	10	lb/sec



--------- Existing Dessication Cracks

Comments :

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

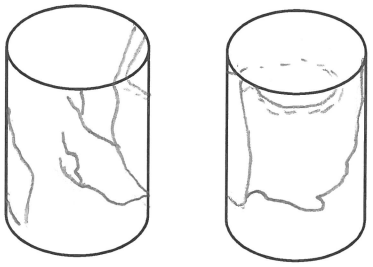
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-13
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-165
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 65.5' to 65.9'
LABORATORY NO.	: 251537	DATE TESTED	: 6/30/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/5/2016

ROCK DESCRIPTION : Shale: sli. silty, fresh

Diameter :	1.98 in	Area :	3.07 in^2
Height :	4.02 in	Volume :	0.0071 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	156.35	lbs/$ft.^3$
Maximum Stress :	672	psi
Elapsed Time :	4:44	min.
Rate of Loading :	10	lb/sec



--------- Existing Dessication Cracks

Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

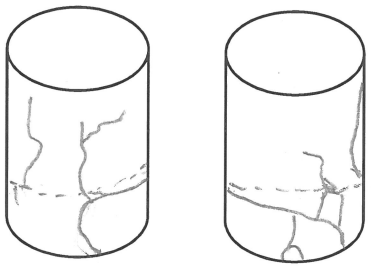
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-14
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-118
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 52.0' to 52.4'
LABORATORY NO.	: 251537	DATE TESTED	: 6/30/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/5/2016

ROCK DESCRIPTION : Claystone: v.f. sandy, calcareous, fossiliferous, mod. wthd.

Diameter :	1.98 in	Area :	3.07 in²
Height :	4.07 in	Volume :	0.0072 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	119.39	lbs/ft.³
Maximum Stress :	342	psi
Elapsed Time :	4:25	min.
Rate of Loading :	10	lb/sec



--------- Existing Dessication Cracks

Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

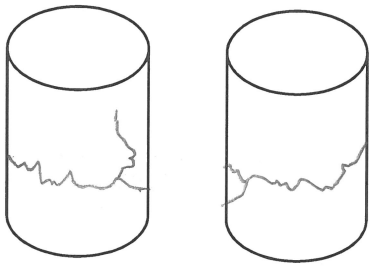
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-15
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-118
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 61.7' to 62.1'
LABORATORY NO.	: 251537	DATE TESTED	: 6/30/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/5/2016

ROCK DESCRIPTION : Limestone: vuggy, fossiliferous, sev. wthd.

Diameter :	1.98 in	Area :	3.09 in²
Height :	4.12 in	Volume :	0.0074 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	129.7	lbs/ft.³
Maximum Stress :	857	psi
Elapsed Time :	4:03	min.
Rate of Loading :	30	lb/sec



--------- Existing Dessication Cracks

Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

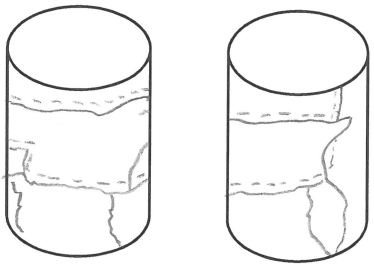
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-16
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-117
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 60.5' to 60.9'
LABORATORY NO.	: 251537	DATE TESTED	: 6/30/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/5/2016

ROCK DESCRIPTION : Claystone: v.f. to f. sandy laminae, calcareous, sli. wthd.

Diameter :	1.96 in	Area :	3.02 in^2
Height :	3.99 in	Volume :	0.007 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	120.83	lbs/$ft.^3$
Maximum Stress :	278	psi
Elapsed Time :	4:51	min.
Rate of Loading :	1	lb/sec



--------- Existing Dessication Cracks

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UNCONFINED COMPRESSION TEST (ROCK CORE)

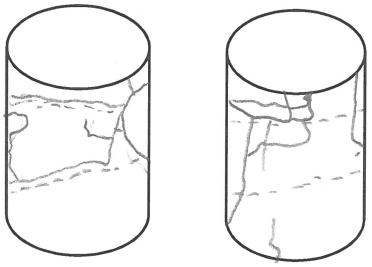
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-17
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-117
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 65.0' to 65.4'
LABORATORY NO.	: 251537	DATE TESTED	: 6/30/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/5/2016

ROCK DESCRIPTION : Claystone: v.f. to f. sandy laminae, calcareous, sli. wthd.

Diameter :	1.97 in	Area :	3.05 in²
Height :	4.00 in	Volume :	0.0071 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	119.53	lbs/ft.³
Maximum Stress :	338	psi
Elapsed Time :	4:47	min.
Rate of Loading :	1	lb/sec



--------- Existing Dessication Cracks

Comments :

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HDR | ICA

ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

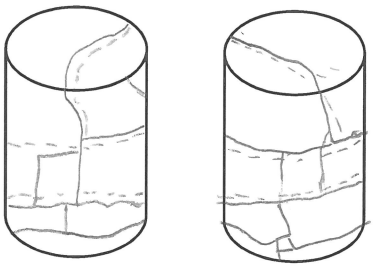
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-18
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-116
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 38.2' to 38.6'
LABORATORY NO.	: 251537	DATE TESTED	: 6/30/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/5/2016

ROCK DESCRIPTION : Claystone: sli. calcareous, f. micaceous, mod. wthd.

Diameter :	1.94 in	Area :	2.97 in²
Height :	3.94 in	Volume :	0.0068 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	119.11	lbs/ft.³
Maximum Stress :	206	psi
Elapsed Time :	2:08	min.
Rate of Loading :	10	lb/sec



--------- Existing Dessication Cracks

Comments :

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

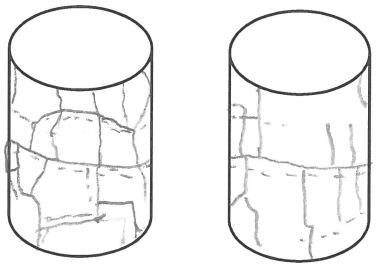
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-19
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-116
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 51.1' to 51.5'
LABORATORY NO.	: 251537	DATE TESTED	: 6/30/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/5/2016

ROCK DESCRIPTION : Claystone: v.f. to f. sandy, calcareous, sli. wthd.

Diameter :	1.98 in	Area :	3.08 in^2
Height :	3.94 in	Volume :	0.007 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	116.87	lbs/$ft.^3$
Maximum Stress :	292	psi
Elapsed Time :	3:00	min.
Rate of Loading :	10	lb/sec



--------- Existing Dessication Cracks

Comments :

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

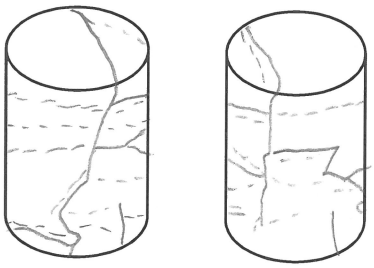
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-20
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-123
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 57.0' to 57.4'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Claystone: f. sandy, fossiliferous, calcareous, mod. wthd.

Diameter :	1.97 in	Area :	3.06 in²
Height :	4.06 in	Volume :	0.0072 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	117.09	lbs/ft.³
Maximum Stress :	380	psi
Elapsed Time :	4:35	min.
Rate of Loading :	10	lb/sec



--------- Existing Dessication Cracks

Comments :

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

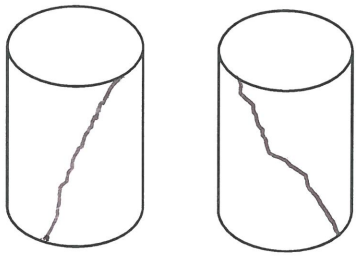
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-21
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-123
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 66.3' to 66.7'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Claystone: trc. fossiliferous, sli. silty, mod. wthd.

Diameter :	1.96 in	Area :	3.03 in^2
Height :	4.01 in	Volume :	0.007 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	130.98	lbs/$ft.^3$
Maximum Stress :	440	psi
Elapsed Time :	3:00	min.
Rate of Loading :	10	lb/sec



Comments :

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

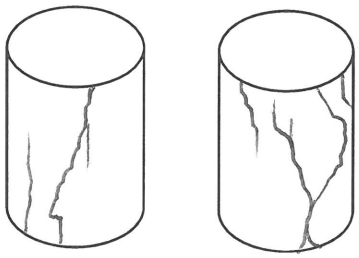
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-22
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-123
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 77.2' to 77.6'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Shale: f. grain sandstone laminae, silty, sli. wthd.

Diameter :	1.98 in	Area :	3.09 in^2
Height :	4.05 in	Volume :	0.0072 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	161.59	lbs/$ft.^3$
Maximum Stress :	1696	psi
Elapsed Time :	4:15	min.
Rate of Loading :	30	lb/sec



Comments :

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

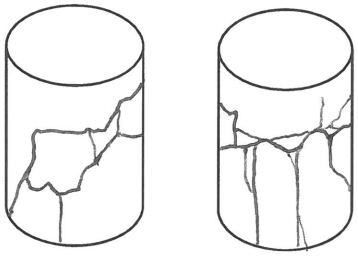
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-23
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-120
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 55.5' to 55.9'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Limestone: fossiliferous, vuggy, sli. to mod. wthd.

Diameter :	1.98 in	Area :	3.08 in^2
Height :	4.09 in	Volume :	0.0073 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	148.56	lbs/$ft.^3$
Maximum Stress :	2403	psi
Elapsed Time :	5:00	min.
Rate of Loading :	50	lb/sec



Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

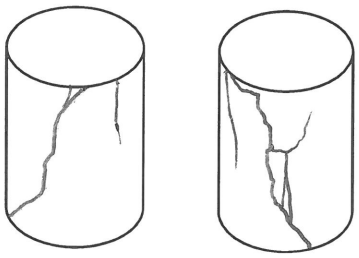
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-24
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-120
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 66.2' to 66.6'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Shale: silty, f. micaceous, sli. wthd.

Diameter :	1.98 in	Area :	3.09 in^2
Height :	4.02 in	Volume :	0.0072 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	153.12	lbs/$ft.^3$
Maximum Stress :	2445	psi
Elapsed Time :	6:50	min.
Rate of Loading :	80	lb/sec



Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

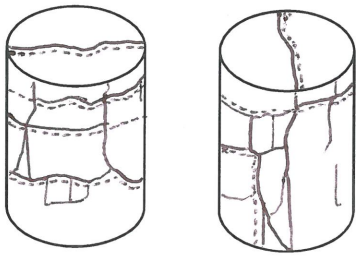
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-25
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-121
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 29.2' to 29.6'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Claystone: calcareous, fossiliferous, mod. wthd.

Diameter :	1.98 in	Area :	3.08 in^2
Height :	4.08 in	Volume :	0.0073 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	117.82	lbs/ft.^{3}
Maximum Stress :	234	psi
Elapsed Time :	3:50	min.
Rate of Loading :	10	lb/sec



--------- Existing Dessication Cracks

Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

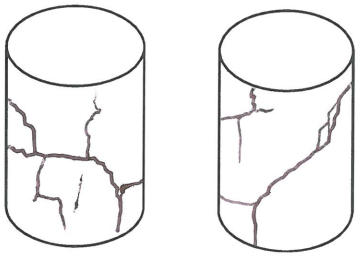
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-26
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-121
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 45.2' to 45.6'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Claystone: v.f. to f. sandy w/ripple laminae, sli. wthd.

Diameter :	1.98 in	Area :	3.07 in^2
Height :	4.06 in	Volume :	0.0072 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	117.35	lbs/$ft.^3$
Maximum Stress :	329	psi
Elapsed Time :	3:20	min.
Rate of Loading :	10	lb/sec



Comments :

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

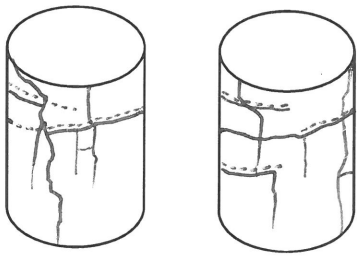
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-27
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-130
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 57.0' to 57.4'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Claystone: calcareous in part, fossiliferous, mod. wthd.

Diameter :	1.96 in	Area :	3.02 in^2
Height :	4.08 in	Volume :	0.0071 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	121.14	lbs/ft.^{3}
Maximum Stress :	400	psi
Elapsed Time :	3:28	min.
Rate of Loading :	10	lb/sec



--------- Existing Dessication Cracks

Comments :

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

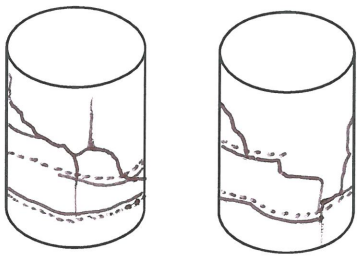
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-28
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-130
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 71.9' to 72.3'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Clay: soft, sli. calcareous, trc. f. micaceous, mod. wthd.

Diameter :	1.94 in	Area :	2.97 in^2
Height :	4.02 in	Volume :	0.0069 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	131.1	lbs/$ft.^3$
Maximum Stress :	185	psi
Elapsed Time :	2:00	min.
Rate of Loading :	10	lb/sec



--------- Existing Dessication Cracks

Comments :

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

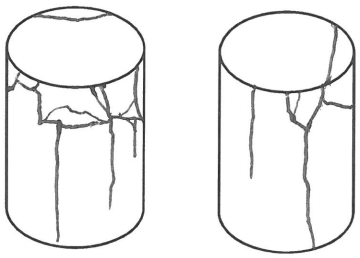
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-29
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-126
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 50.0' to 50.4'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Claystone: calcareous, fossiliferous, mod. wthd.

Diameter :	1.95 in	Area :	2.99 in²
Height :	3.97 in	Volume :	0.0069 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	124.62	lbs/ft.³
Maximum Stress :	391	psi
Elapsed Time :	5:20	min.
Rate of Loading :	1	lb/sec



Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

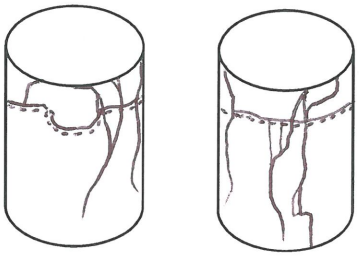
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-30
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-126
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 59.9' to 60.3'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Shale: silty, f. micaceous, mod. wthd.

Diameter :	1.97 in	Area :	3.04 in²
Height :	4.01 in	Volume :	0.0071 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	151.33	lbs/ft.³
Maximum Stress :	730	psi
Elapsed Time :	6:13	min.
Rate of Loading :	10	lb/sec



--------- Existing Healed Joint

Comments :

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

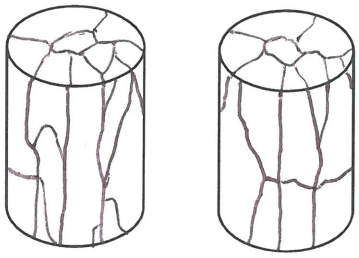
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-31
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-131
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 53.4' to 53.8'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Limestone: vuggy, fossiliferous, sli. wthd.

Diameter :	1.98 in	Area :	3.08 in²
Height :	4.10 in	Volume :	0.0073 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	164.82	lbs/ft.³
Maximum Stress :	3590	psi
Elapsed Time :	6:25	min.
Rate of Loading :	80	lb/sec



Comments :

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

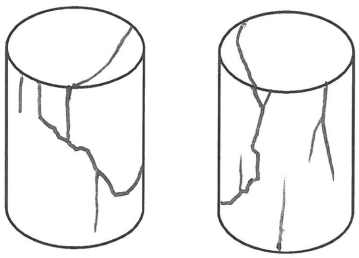
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-32
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-131
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 71.0' to 71.4'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Claystone: calcareous in part, fossiliferous, trcs. organic frags., sli. wthd.

Diameter :	1.94 in	Area :	2.97 in^2
Height :	4.02 in	Volume :	0.0069 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	132.03	lbs/$ft.^3$
Maximum Stress :	519	psi
Elapsed Time :	5:10	min.
Rate of Loading :	10	lb/sec



Comments :

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

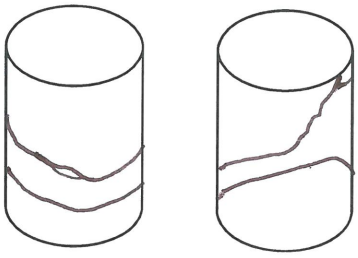
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-33
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-131
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 75.9' to 76.3'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Clay: sli. calcareous, trcs. f. mica & organic frags., mod. wthd.

Diameter :	1.93 in	Area :	2.94 in²
Height :	4.03 in	Volume :	0.0069 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	133.86	lbs/ft.³
Maximum Stress :	78	psi
Elapsed Time :	1:00	min.
Rate of Loading :	1	lb/sec



Comments :

Approved By : Ken E Walker

hdrinc.com
ica-onramp.com

4645 Village Square Drive, Suite F, Paducah, KY 42001
T 270.444.9691 F 270.538.1599

Appendix C. PROFILE AND PLAN SHEETS FOR BRIDGES AND RETAINING WALLS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		CA0604	1	7
				(1)				

B-141
B-116
B-117
B-118
B-142
B-143
B-120
B-121
B-144
MSE Wall No. B1
MSE Wall No. B2
PT 136+84.03
Approx. 0.14 Miles to Begin Construction
Approx. 0.13 Miles to End Construction
C.L. Const. Hwy. 67
Toe of Slope
Transitional Approach Railing (Typ.)
1'-5" Parapet
6'-6" Sidewalk
1V:3H
3'-0"
5'-0" Sidewalk
1'-6" Curb & Gutter
Face of Curb
45°20'15" (Typ.)
Shoring
Longitudinal Constr. Joint
11'-4½" Clear
2% Slope
58'-0" Roadway Width (Curb to Curb)
56'-0" Pavement
11'-0" Lane
12'-0" Turn Lane
3'-0"
3'-1" Stage 1 Constr.
43'-1" Stage 3 Constr.
74'-2" Out-to-Out
58'-0" Clear Roadway
207+00
208+00
209+00
210+00
629+00
630+00
N 02°02'14.8" E
C.L. Bridge
6'-0"
C.L. Const. James St. & Profile Grade
Existing Bridge To Be Removed
Pt. of min. vert. clear
Concrete Riprap For details, See Std. Dwg. No. 55002 (Typ.)
Tangent Distance Greater Than 500'
Pavement Varies 36'-0" to 48'-0"
Varies Shld.
1'-4" Barrier
6'-0" Shld.
10'-0" Shld.
36'-0" Pavement
N 46°42'00.0"E

PRELIMINARY NOT FOR CONSTRUCTION

03-08-16
DATE
BRIDGE ENGINEER

SHEET 1 OF 2
LAYOUT OF OVERPASS JAMES ST. OVER HWY. 67 MAIN ST. - VANDENBERG BLVD. (WIDENING) (S) PULASKI COUNTY

ROUTE 67 SEC. 10 & 11

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: TSS DATE: 07/16
CHECKED BY: DATE:
DESIGNED BY: DATE:
FILENAME: CA0604MI_LL.dgn
SCALE: 1" = 20'-0"

BRIDGE NO. MI
DRAWING NO. 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		CA0604	2	7
				(1)		LAYOUT		

END BENT 1

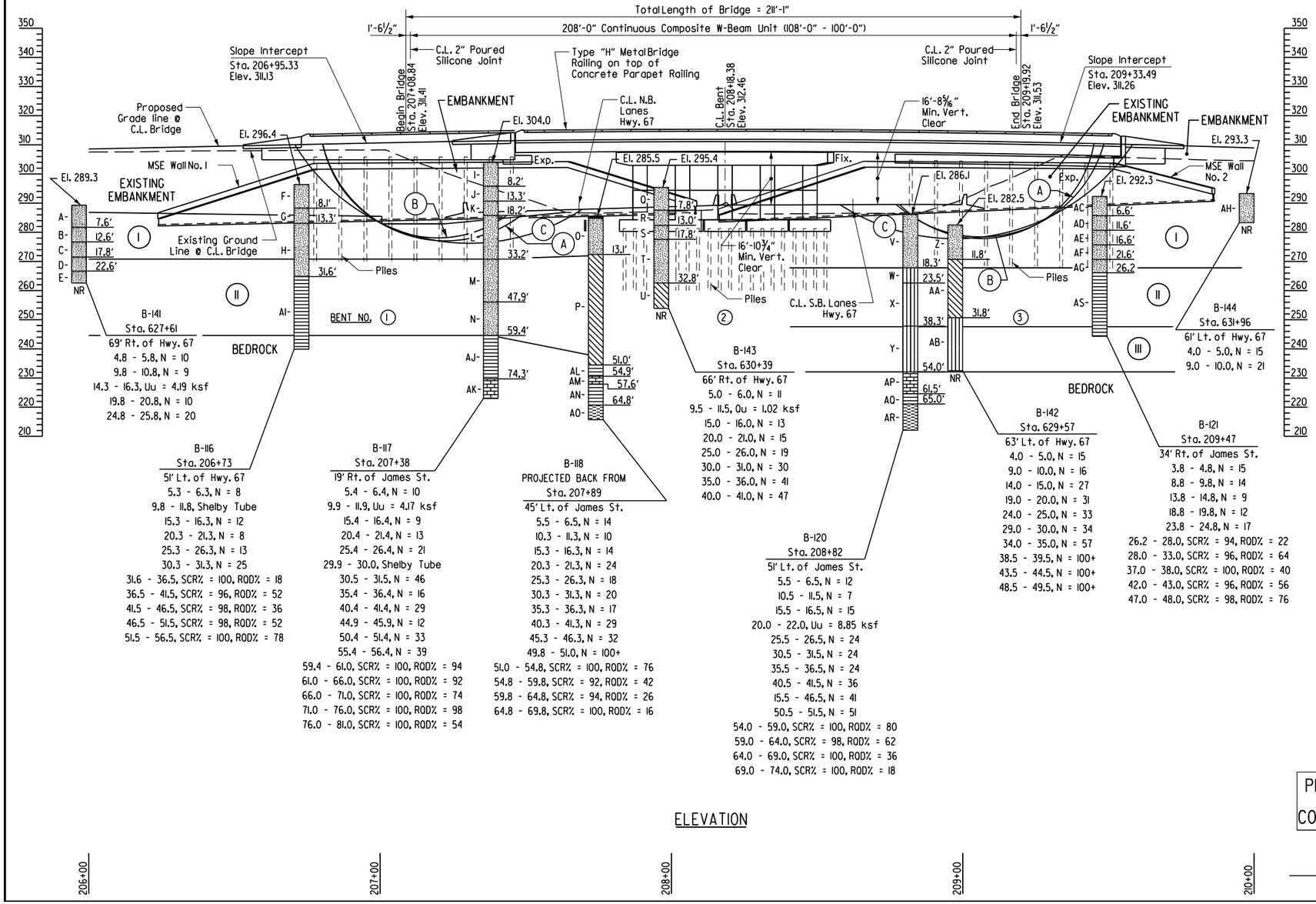
ASSUMED SOIL STRENGTH PARAMETERS				
SOIL	EMBANKMENT	EXISTING EMBANKMENT	I	II
SHORT TERM	c = 800 PSF Φ = 0° γ = 120 PCF	c = 0 PSF Φ = 30° γ = 120 PCF	c = 0 PSF Φ = 32° γ = 115 PCF	c = 2000 PSF Φ = 0° γ = 120 PCF
LONG TERM	c̄ = 160 PSF Φ̄ = 26° γ = 120 PCF	c̄ = 0 PSF Φ̄ = 30° γ = 120 PCF	c̄ = 0 PSF Φ̄ = 32° γ = 115 PCF	c̄ = 400 PSF Φ̄ = 26° γ = 120 PCF

FACTORS OF SAFETY		
SHORT TERM	A	2.1
LONG TERM	B	2.1
SEISMIC	C	1.3

END BENT 3

ASSUMED SOIL STRENGTH PARAMETERS					
SOIL	EMBANKMENT	EXISTING EMBANKMENT	I	II	III
SHORT TERM	c = 800 PSF Φ = 0° γ = 120 PCF	c = 0 PSF Φ = 30° γ = 120 PCF	c = 0 PSF Φ = 32° γ = 115 PCF	c = 2500 PSF Φ = 0° γ = 120 PCF	c = 2500 PSF Φ = 0° γ = 120 PCF
LONG TERM	c̄ = 160 PSF Φ̄ = 26° γ = 120 PCF	c̄ = 0 PSF Φ̄ = 30° γ = 120 PCF	c̄ = 0 PSF Φ̄ = 32° γ = 115 PCF	c̄ = 500 PSF Φ̄ = 26° γ = 120 PCF	c̄ = 500 PSF Φ̄ = 26° γ = 120 PCF

FACTORS OF SAFETY		
SHORT TERM	A	2.2
LONG TERM	B	2.1
SEISMIC	C	1.4



ELEVATION

BORING LEGEND

A - Loose, tan & gray, silty sand.
B - Loose, tan & gray, silty sand.
C - Loose, tan, clayey sand.
D - Loose, tan & gray, silty sand.
E - Medium dense, tan & gray, silty sand.
F - Loose, red, clayey, sand.
G - Loose to medium dense, red, silty sand.
H - Loose to medium dense, brown & gray, clayey sand.
I - Loose, brown, clayey sand.
J - Loose, red & gray, clayey sand.
K - Loose, red & gray, clayey sand.
L - Medium dense to dense, brown & gray, silty sand.
M - Medium dense, black, brown & gray, clayey sand.
N - Dense, black, clayey sand.
O - Loose to medium dense, tan, clayey sand.
P - Stiff to very hard, tan & gray, sandy, fat clay.
Q - Medium dense, tan & gray, silty sand.
R - Medium dense, tan, silty sand.
S - Medium dense, tan, silty sand.
T - Medium dense, gray, clayey sand.
U - Hard, gray, sandy fat clay.
V - Loose to medium dense, tan & gray silty sand.
W - Stiff to very stiff, gray, sandy, elastic silt.
X - Very stiff, black & gray, sandy, elastic silt.
Y - Hard, gray, sandy, elastic silt.
Z - Medium dense, brown, clayey sand.
AA - Very stiff to hard, brown & gray, sandy fat clay.
AB - Hard to very hard, gray, sandy silt.
AC - Medium dense, red & gray, clayey sand.
AD - Medium dense, tan, silty sand.
AE - Loose, tan & gray, clayey sand.
AF - Medium dense, tan & gray, silty sand
AG - Medium dense, gray & tan, clayey sand.
AH - Medium dense, red & brown, clayey sand.
AI - Claystone: Dark gray-black, gray-lt. brown, brown-orange stain, sli. to mod. weathered w/seam sev. weathered, low hardness.
AJ - Claystone: Dark gray-black, gray-lt. brown, sli. to mod. weathered, low hardness.
AK - Limestone: Light gray, dk. gray, mod. weathered to sev. weathered, v. thin to thin bedded, mod. hard.
AL - Claystone: Dark gray-black-dk. brown, scat. lt. gray, mod. weathered w/sev. weathered seam, low hardness.
AM - Limestone: Light gray, gray-tan, dk. gray, mod. to sev. weathered, v. thin to thin bedded, mod. hard w/ soft seams.
AN - Claystone: Dark gray-black, lt. gray, trcs. tan, mod. to completely weathered, v. soft to mod. hard.
AO - Black-dk. gray trcs. lt. gray, sev. grading to sli. weathered, v. thin bedded, soft grading to mod. hard.
AP - Limestone: Light gray, dk. gray, mod. t sev. weathered, v. thin to thin bedded, mod. hard w/soft seams.
AQ - Claystone: Dark gray-black, tan-brown, mod-weathered, low hardness.
AR - Shale: Dark gray-black, gray, mod. grading to sli. weathered, mod. hard.
AS - Clayston: Dark gray-black, brown-orange-red, lt. gray, mod. grading to sli weathered w/ sev. weathered seams, low hardness.

Note: Unless noted otherwise, stations and elevations shown are taken along C.L. Bridge.

PRELIMINARY NOT FOR CONSTRUCTION

03-08-16
DATE
BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF OVERPASS JAMES ST. OVER HWY. 67
MAIN ST. - VANDENBERG BLVD.
(WIDENING) (S)
PULASKI COUNTY

ROUTE 67 SEC. 10 & 11
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: TSS DATE: 07/16 FILENAME: CA0604MI_LL.dgn
CHECKED BY: DATE: SCALE: 1" = 20'-0"
DESIGNED BY: DATE:
BRIDGE NO. MI DRAWING NO. 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		CA0604	3	7

1

For R/W Data, See Roadway Plans

B-167 B-169 B-164 B-171 B-163 B-165 B-170 B-168 B-166

Concrete Riprap For details, See Std. Dwg. No. 55002 (Typ.)

MSE Wall No. B3

C.L. Const. John Harden Dr.

C.L. Const. Hwy. 67

C.L. Const. T.P. White Dr.

C.L. Const. Gregory St., C.L. Bridge & Profile Grade

Transitional Approach Railing (Typ.)

Tangent Distance Greater Than 500'

Approx. 0.12 Miles to S.B. I-61

Approx. 0.14 Miles to Begin Construction

MSE Wall No. B4

Type B Parapet See Dwg. No. ????

WALL

PLAN

SHEET 1 OF 2
LAYOUT OF OVERPASS GREGORY ST.
OVER HWY. 67
MAIN ST. - VANDENBERG BLVD.
(WIDENING) (S)
PULASKI COUNTY

PRELIMINARY NOT FOR CONSTRUCTION

07-14-16
DATE
BRIDGE ENGINEER

ROUTE 67 SEC. 10
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: TSS DATE: 07-16 FILENAME: 1" = 30'-0"
CHECKED BY: WDS DATE: 07-16 SCALE:
DESIGNED BY: DATE:

BRIDGE NO. M2 DRAWING NO. 3

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		CA0604	4	7

(1)

BORING LEGEND

A - Medium dense, red & brown, silty sand.
B - Loose to medium dense, brown & gray, clayey sand.
C - Stiff, brown & gray, fat clay with sand.
D - Loose, brown & gray, clayey sand.
E - Stiff, brown & gray, sandy, fat clay.
F - Stiff, brown & gray, sandy, elastic silt.
G - Stiff, brown & gray, sandy, elastic silt.
H - Meidum stiff, red & gray, sandy fat clay.
I - Loose, red & gray, clayey sand.
J - Stiff, red & gray, sandy fat clay.
K - Stiff, brown & gray, fat clay with sand.
L - Medium dense, brown & gray, clayey sand.
M - Stiff, brown & gray, fat clay with sand.
N - Medium stiff, red, sandy lean clay.
O - Loose, brown & gray, clayey sand.
P - Medium stiff, brown & gray, sandy fat clay.
Q - Medium stiff to stiff, brown & gray, sandy, elastic silt.
R - Stiff, brown & gray, sandy fat clay.
S - Medium dense, red & gray, clayey sand.
T - Medium dense, red & gray, clayey sand.
U - Stiff, brown & gray, sandy lean clay.
V - Medium dense, brown, silty, clayey gravel with sand.
W - Medium stiff to stiff, brown & tan, sandy lean clay.
X - Medium dense, brown, silty sand.
Y - Stiff to very hard, brown, sandy, fat clay.
Z - Soft, brown, sandy, silty clay.
AA - Soft to stiff, brown, sandy lean clay.
AB - Stiff, brown, sandy elastic silt.
AC - Stiff to very stiff, brown, sandy fat clay.
AD - Stiff, brown, sandy lean clay.
AE - Loose, brown, clayey sand.
AF - Very loose to loose, red, clayey sand.
AG - Loose to medium dense, red, clayey sand.
AH - Loose, red, clayey sand.
AI - Claystone: Dark gray-black, brown orange stain, sli. to sev. weathered, low hardness, thin bedded.
AJ - Limestone: Light gray, gray, dk. gray, mod. weathered, mod. hard.
AK - Limestone: Light gray, gray, dk. gray-black, mod. weathered.
AL - Shale: Dark gray-black, sli. weathered, thin bedded, mod. hard.
AM - Claystone: Dark gray-black, scat. lt. gray, sli. weathered.
AN - Limestone: Light gray, gray, dk. gray, mod. to sev. weathered.
AO - Claystone: Dark gray-black, scat. brown-gray & lt. gray, trcs orange stain, sli. mod. weathered.
AP - Shale: Dark gray-black, sli. weathered to fresh, thin bedded.

[1] Sta. 808+80.58 C/L. Gregory St.
Sta. 660+38.57 C.L. Hwy. 67

[2] Denotes: Horizontal distance to face of crash wall.

[3] Roadway barrier. See roadway plans for details.

Note: Unless noted otherwise, stations and elevations shown are taken along C.L. Bridge.

All bents are parallel.

END BENT 1

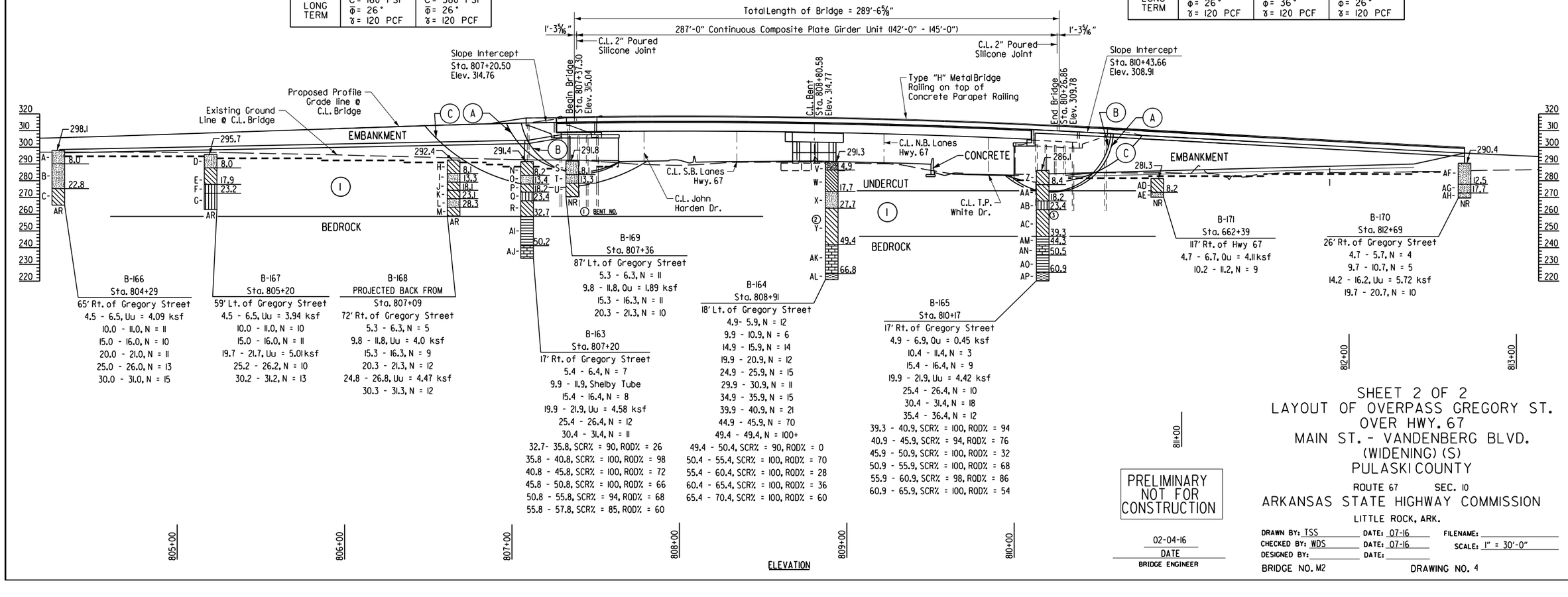
ASSUMED SOIL STRENGTH PARAMETERS		
SOIL	EMBANKMENT	1
SHORT TERM	c = 800 PSF Φ = 0° γ = 120 PCF	c = 1900 PSF Φ = 0° γ = 120 PCF
LONG TERM	c̄ = 160 PSF Φ̄ = 26° γ = 120 PCF	c̄ = 380 PSF Φ̄ = 26° γ = 120 PCF

FACTORS OF SAFETY		
SHORT TERM	A	2.9
LONG TERM	B	2.2
SEISMIC	C	1.9

FACTORS OF SAFETY		
SHORT TERM	A	2.5
LONG TERM	B	2.5
SEISMIC	C	1.6

END BENT 3

ASSUMED SOIL STRENGTH PARAMETERS			
SOIL	EMBANKMENT	UNDERCUT	1
SHORT TERM	c = 800 PSF Φ = 0° γ = 120 PCF	c = 0 PSF Φ = 36° γ = 120 PCF	c = 1900 PSF Φ = 0° γ = 120 PCF
LONG TERM	c̄ = 160 PSF Φ̄ = 26° γ = 120 PCF	c̄ = 0 PSF Φ̄ = 36° γ = 120 PCF	c̄ = 380 PSF Φ̄ = 26° γ = 120 PCF



ELEVATION

PRELIMINARY NOT FOR CONSTRUCTION

02-04-16
DATE
BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF OVERPASS GREGORY ST. OVER HWY. 67
MAIN ST. - VANDENBERG BLVD. (WIDENING) (S)
PULASKI COUNTY

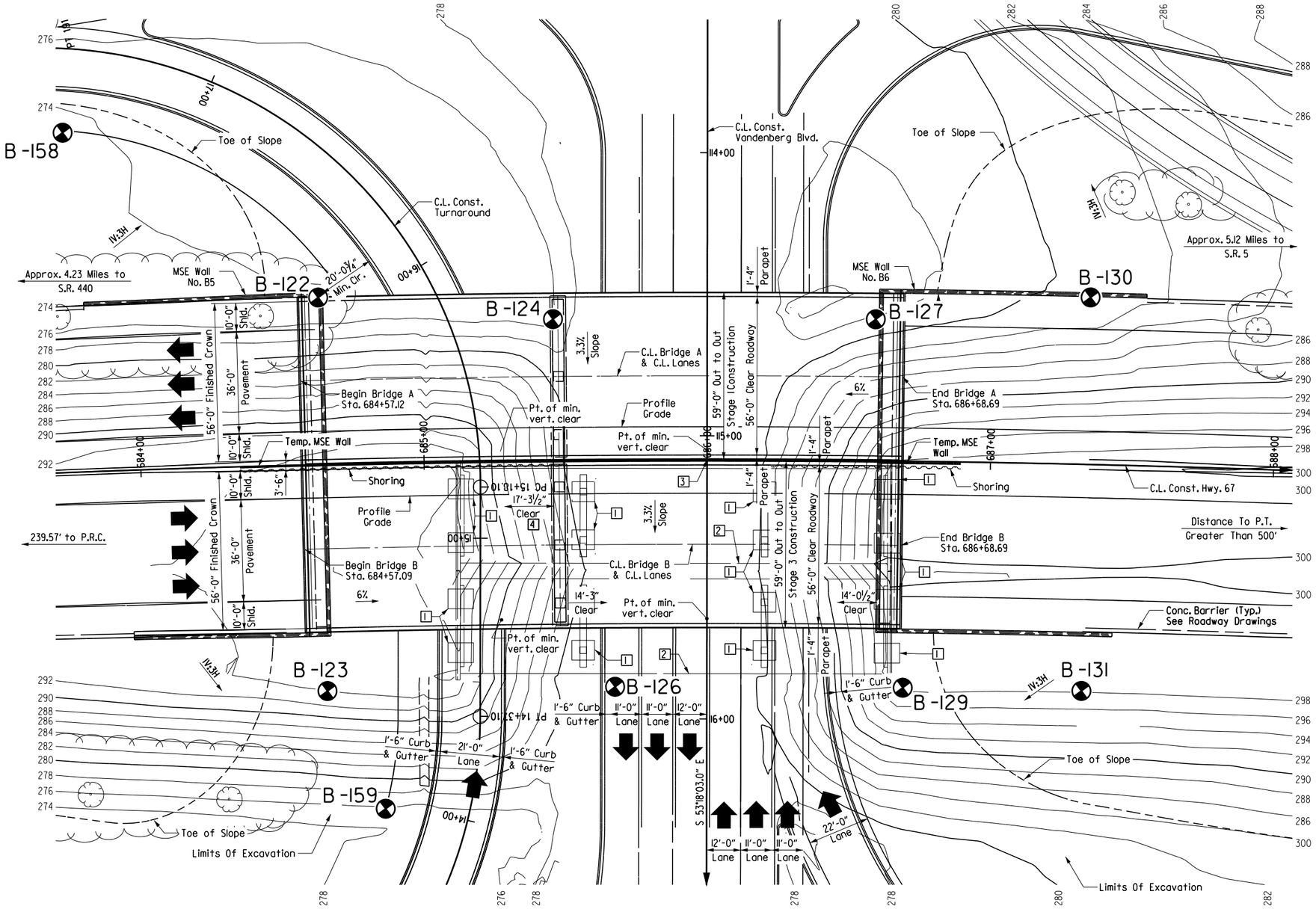
ROUTE 67 SEC. 10

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: TSS DATE: 07-16 FILENAME:
CHECKED BY: WDS DATE: 07-16 SCALE: 1" = 30'-0"
DESIGNED BY: DATE:

BRIDGE NO. M2 DRAWING NO. 4

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		CA0604	4	6
				(1)		LAYOUT		



PLAN

HORIZONTAL CURVE DATA
C.L. CONSTRUCTION

PI Sta 693+83.05
PC Sta 682+30.43
PT Sta 705+05.30
R = 5729.58'
L = 2274.87'
T = 1152.62'
Delta = 22°44'55" RT.
D = 1°00'00"

1. Existing foundations to be removed.
2. Existing bridges to be removed.
3. Sta. 685+99.94 C.L. Hwy. 67
   Sta. 115+08.55 C.L. Vandenberg Blvd.
4. Denotes: Horizontal distance to face of crashwall.

PRELIMINARY NOT FOR CONSTRUCTION

07-14-16
DATE
BRIDGE ENGINEER

SHEET 1 OF 3
LAYOUT OF BRIDGES OVER
VANDENBERG BLVD.
MAIN ST. - VANDENBERG BLVD.
(WIDENING) (S)
PULASKI COUNTY

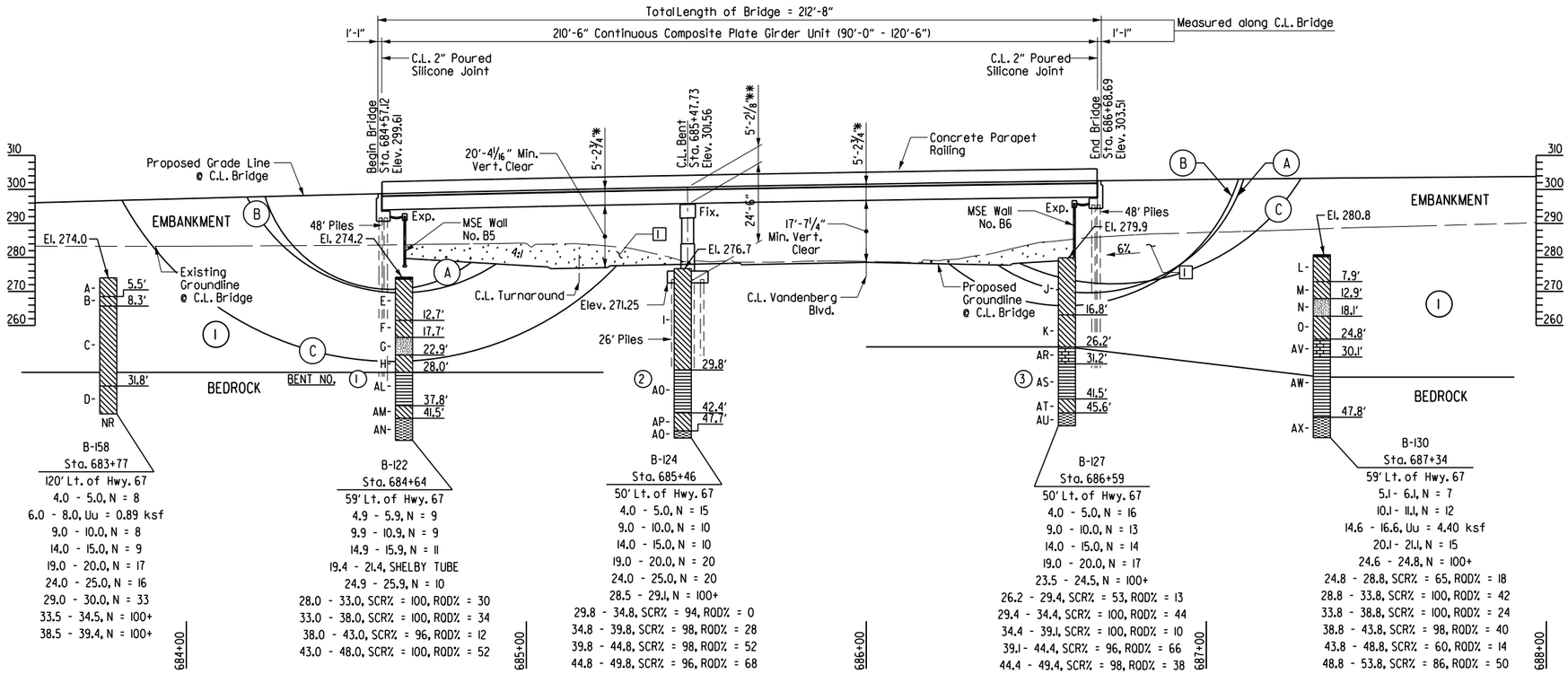
ROUTE 67 SEC. 10

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: TSS DATE: 07-16 FILENAME: CA0604M3_LI.dgn
CHECKED BY: DATE: SCALE: 1" = 20'-0"
DESIGNED BY: DATE:

BRIDGE NO. M3 DRAWING NO. 4

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		CA0604	5	6
				(1)		LAYOUT		



ELEVATION - BRIDGE A

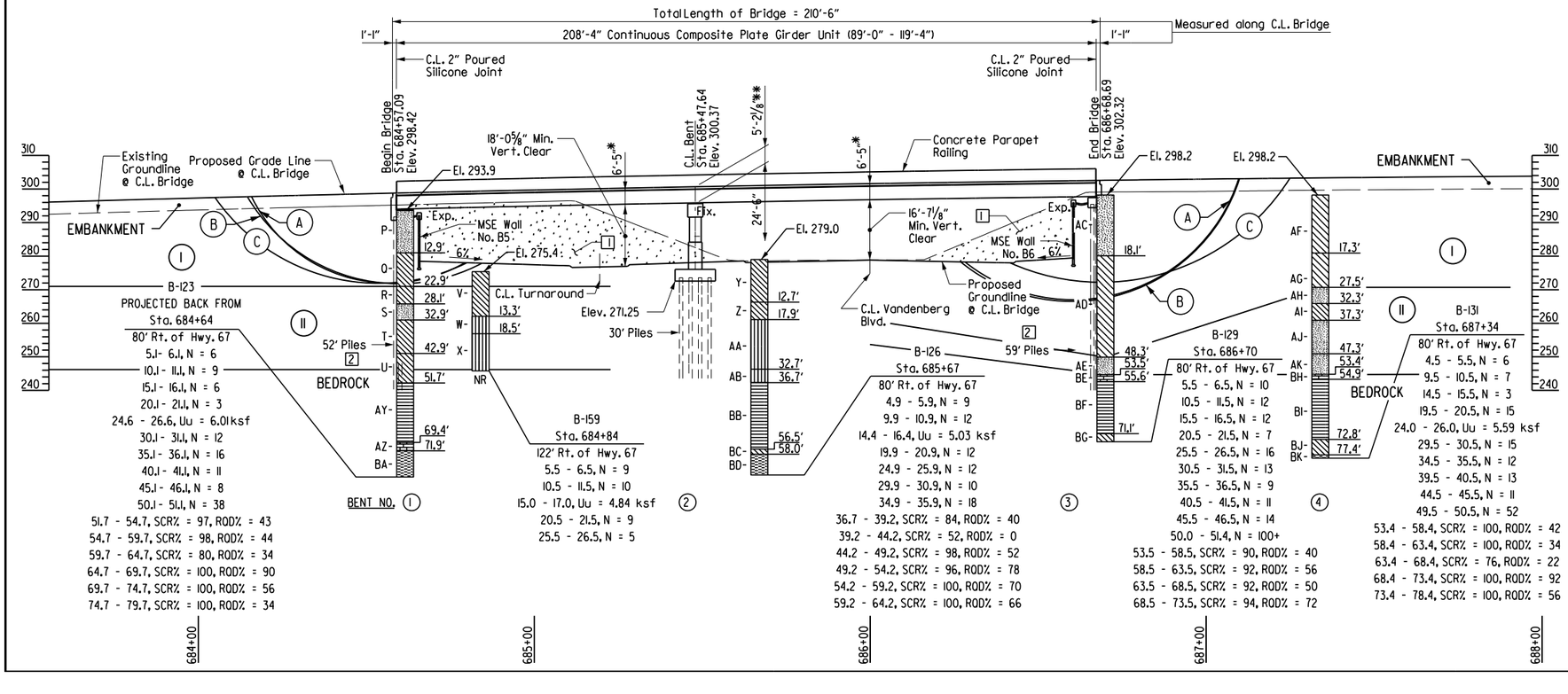
Note: For Boring Legend, see Dwg. No. 6

** Top Of Deck @ C.L. Bent @ C.L. Bridge To Low Side Top Of Cap

* Top Of Deck @ C.L. Bridge To Low Steel

Note: Unless noted otherwise, elevations shown are along C.L. Bridge. Stationing is along C.L. Construction. Stations shown in elevation are determined by a radial projection from C.L. Bridge to C.L. Construction. C.L. Bridge is on a horizontal curve concentric to C.L. Construction. The total bridge length, span lengths, and C.L. Joint to Beginning and End of Bridge dimensions are measured along C.L. Bridge.

(1) Note: Excavate the existing embankment at the bridge ends to achieve the slopes shown.



ELEVATION - BRIDGE B

PRELIMINARY NOT FOR CONSTRUCTION

02-04-16
DATE
BRIDGE ENGINEER

SHEET 2 OF 3
LAYOUT OF BRIDGES
OVER VANDENBERG BLVD.
MAIN ST. - VANDENBERG BLVD.
(WIDENING) (S)
PULASKI COUNTY

ROUTE 67 SEC. 10

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: TSS DATE: 07-16 FILENAME: CA0604M3_L2.dgn
CHECKED BY: _____ DATE: _____ SCALE: 1" = 20'-0"
DESIGNED BY: _____ DATE: _____

BRIDGE NO. M3 DRAWING NO. 5

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		CA0604	6	6

1

BRIDGE A - END BENT 1

ASSUMED SOIL STRENGTH PARAMETERS		
SOIL	EMBANKMENT	I
SHORT TERM	c = 800 PSF Φ = 0° γ = 120 PCF	c = 1800 PSF Φ = 11° γ = 120 PCF
LONG TERM	$\bar{c}$ = 160 PSF $\bar{\Phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 216 PSF $\bar{\Phi}$ = 31° γ = 120 PCF

FACTORS OF SAFETY		
SHORT TERM	A	>3.0
LONG TERM	B	2.5
SEISMIC	C	2.5

BRIDGE A - END BENT 3

ASSUMED SOIL STRENGTH PARAMETERS		
SOIL	EMBANKMENT	I
SHORT TERM	c = 800 PSF Φ = 0° γ = 120 PCF	c = 1800 PSF Φ = 0° γ = 120 PCF
LONG TERM	$\bar{c}$ = 800 PSF $\bar{\Phi}$ = 0° γ = 120 PCF	$\bar{c}$ = 360 PSF $\bar{\Phi}$ = 26° γ = 120 PCF

FACTORS OF SAFETY		
SHORT TERM	A	2.7
LONG TERM	B	2.1
SEISMIC	C	1.8

BRIDGE B - END BENT 1

ASSUMED SOIL STRENGTH PARAMETERS			
SOIL	EMBANKMENT	I	II
INTERMEDIATE TERM	NA	c = 320 PSF Φ = 24° γ = 120 PCF	c = 1200 PSF Φ = 22° γ = 120 PCF
SHORT TERM	c = 800 PSF Φ = 0° γ = 120 PCF	$\bar{c}$ = 800 PSF $\bar{\Phi}$ = 0° γ = 120 PCF	$\bar{c}$ = 3000 PSF $\bar{\Phi}$ = 0° γ = 120 PCF
LONG TERM	$\bar{c}$ = 160 PSF $\bar{\Phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 160 PSF $\bar{\Phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 600 PSF $\bar{\Phi}$ = 26° γ = 120 PCF

FACTORS OF SAFETY		
SHORT TERM	A	1.8
LONG TERM	B	2.1
SEISMIC	C	1.1

BRIDGE B - END BENT 3

ASSUMED SOIL STRENGTH PARAMETERS			
SOIL	EMBANKMENT	I	II
INTERMEDIATE TERM	NA	c = 720 PSF Φ = 22° γ = 120 PCF	c = 1000 PSF Φ = 22° γ = 120 PCF
SHORT TERM	c = 800 PSF Φ = 0° γ = 120 PCF	$\bar{c}$ = 1800 PSF $\bar{\Phi}$ = 0° γ = 120 PCF	$\bar{c}$ = 2500 PSF $\bar{\Phi}$ = 0° γ = 120 PCF
LONG TERM	$\bar{c}$ = 160 PSF $\bar{\Phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 360 PSF $\bar{\Phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 500 PSF $\bar{\Phi}$ = 26° γ = 120 PCF

FACTORS OF SAFETY		
SHORT TERM	A	2.3
LONG TERM	B	2.0
SEISMIC	C	1.7

BORING LEGEND

A - Medium stiff, red, lean clay with sand.
B - Medium stiff, brown & gray, sandy lean clay.
C - Medium stiff to hard, red & brown, lean clay with sand.
D - Very hard, gray, gravelly lean clay with sand.
E - Stiff, tan, sandy lean clay.
F - Stiff, tan, fat clay with sand.
G - Loose to medium dense, tan, silty sand.
H - Stiff, tan, fat clay with sand.
I - Stiff to very stiff, brown, fat clay with sand.
J - Stiff to very stiff, brown sandy lean clay.
K - Very stiff to very hard, brown, fat clay with sand.
L - Medium stiff, brown & gray, sandy, lean clay with gravel.
M - Stiff, red & tan, sandy fat clay.
N - Medium dense, red & tan, silty sand.
O - Stiff, tan, sandy, fat clay.
P - Loose, brown & gray, clayey sand.
Q - Soft to medium stiff, brown & gray, sandy fat clay.
R - Soft to stiff, brown & gray, sandy, lean clay.
S - Medium dense, brown & gray, clayey sand.
T - Medium dense, brown & gray, sandy fat clay.
U - Medium stiff to hard, brown & gray, fat clay with sand.
V - Stiff, brown & gray, sandy lean clay.
W - Stiff, brown & gray, sandy elastic silt.
X - Medium stiff to stiff, gray & brown, sandy, elastic silt.
Y - Stiff, brown & gray, sandy lean clay.
Z - Stiff, gray and brown, sandy, fat clay.
AA - Stiff, gray & brown, sandy silt.
AB - Very stiff, brown & gray, sandy, elastic silt.
AC - Loose to medium dense, red & brown, clayey sand.
AD - Medium stiff to very stiff, brown & gray, sandy lean clay.
AE - Very dense, brown, clayey sand with gravel.
AF - Soft to stiff, brown & gray, sandy, lean clay.
AG - Stiff, brown & gray, sandy, silty clay.
AH - Medium dense, brown & red, clayey sand.
AI - Stiff, brown & red, sandy, lean clay.
AJ - Medium dense, brown & gray, clayey sand.
AK - Very dense, brown, clayey sand with gravel.
AL - Claystone: Dark gray-black, brown-orange stain, mod. to sev. weathered, low hardness.
AM - Clay: Light gray, sev. weathered, soft.
AN - Shale: Black-dk. gray, sev. grading to sli. weathered.
AO - Claystone: Brown grading to dk. gray, some lt. gray, mod. to sev. weathered, soft to low hardness.
AP - Clay: Light gray, orange-red stain in lower part, sev. weathered, soft.
AQ - Shale: Black-dk. gray, orange-brown stain, sev. weathered, soft grading to med. hard.
AR - Limestone: Light gray, gray, brown stain, gray-olive gray, mod. weathered, mod. hard.
AS - Claystone: Dark gray-brown, black, trcs. brown-orange stain, mod. weathered, low hardness.
AT - Clay: Light gray, red stain, sev. weathered, soft.
AU - Shale: Black-dk. gray-lt. gray mottled, red & orange-brown stain, sev. weathered, soft grading to med. hard..
AV - Limestone: Brown-lt. gray, scat. dk. gray, sev. weathered, mod. hard.
AW - Claystone: Black-dk. gray-dk. brown, scat. brown-orange stain, mod. weathered, low hardness.
AX - Shale: Red-orange-purple-lt. gray mottled grading to black w/lt. gray-red mottling, sev. weathered grading to mod. weathered, soft grading to med. hard.
AY - Claystone: Dark gray-black-dk. brown, tan-brown, trcs. brown-orange stain, mod. to sev. weathered, low hardness.
AZ - Limestone: Brown, red-orange stain, mod. weathered, mod. hard.
BA - Shale: Dark gray-black, lt. gray laminae, sev. grading to sli. weathered, soft grading to mod. hard.
BB - Claystone: Dark gray-dk. brown grading to black-dk. gray, tan-brown-gray, sev. weathered grading to mod. weathered, low hardness.
BC - Clay: Lt. gray, sev. weathered, soft.
BD - Shale: Dark gray-black, sev. weathered grading to mod. weathered, soft grading to med. hard.
BE - Limestone: Light gray, dk. gray, mod. weathered, mod. hard.
BF - Claystone: Dark gray-dk. brown grading to black-dk. gray, tan-brown-gray, mod. weathered, low hardness.
BG - Clay: Light gray, sev. weathered, soft.
BH - Limestone: Light gray, scat. dk. gray, sli. weathered, mod. hard.
BI - Claystone: Dark gray-dk. brown grading to black-dk. gray, tan-brown-gray, lt. gray, sli. to mod. weathered, low hardness.
BJ - Clay: Light gray w/dk. gray mottling in part, mod. weathered, soft.
BK - Shale: Dark gray, mod. weathered, med. hard.

PRELIMINARY
NOT FOR
CONSTRUCTION

07-14-16
DATE
BRIDGE ENGINEER

SHEET 3 OF 3
LAYOUT OF BRIDGES
OVER VANDENBERG BLVD.
MAIN ST. - VANDENBERG BLVD.
(WIDENING) (S)
PULASKI COUNTY

ROUTE 67 SEC. 10

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: TSS DATE: 07-16 FILENAME: CA0604M3_L2.dgn
CHECKED BY: _____ DATE: _____ SCALE: _____
DESIGNED BY: _____ DATE: _____

BRIDGE NO. M3 DRAWING NO. 6

Appendix D. SPECIAL PROVISIONS

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

SPECIAL PROVISION

JOB NO. CA0604

RETAINING WALLS

Description. This item shall consist of the construction of mechanically stabilized earth walls in accordance with these specifications and in conformity with the locations, dimensions, lines and grades shown on the plans. Modular Block wall systems will not be considered. All references to Division, Section, and Subsection refer to the Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition).

General. The same type retaining wall system shall be used at all locations. Any approved retaining wall system, except Modular Block Walls, on the Qualified Products List (QPL) will be acceptable provided that:

1. The maintenance-free life expectancy shall be at least seventy-five (75) years.

2. Retaining walls shall be designed by an Arkansas Registered Professional Engineer. The design shall be in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications and this Special Provision.

3. The basic wall geometry, including top and bottom of wall face, grade lines, and length and limits of walls shall be as shown on the plans.

4. Structural elements of the wall shall not interfere with the location of roadway drainage structures and end bent piling as shown on the plans.

5. An Ashlar Stone finish, or approved equivalent, will be required for the concrete wall face.

6. The wall system design shall comply with requirements for global stability as determined by the Department.

7. The passive resistance of the soil at the front face of the wall shall be neglected in the analysis of external stability for sliding.

8. Factored bearing resistances are recommended below for MSE walls on James Street over Highway 67, Gregory Street over Highway 67, and Highway 67 over Vandenberg Boulevard for the existing foundation material based on an estimated width of reinforced zone:

RETAINING WALLS

Wall	Location	Factored Bearing Resistance
James Street	End Bent 1	6,600 PSF
James Street	End Bent 3	6,600 PSF
Gregory Street	End Bent 1	6,300 PSF
Gregory Street	End Bent 3	6,300 PSF
Vandenberg Boulevard	End Bent 1	6,600 PSF
Vandenberg Boulevard	End Bent 3	6,600 PSF

The Department will evaluate factored bearing pressures in excess of the recommended factored bearing resistance and in any undercut areas upon submittal of the wall system design.

9. Due to the total amount of MSE Wall settlement expected to occur at Gregory Street End Bent 1, Gregory Street End Bent 3, and Vandenberg Blvd End Bent 1A, two-phase MSE Wall construction will be required. The wire face wall shall be constructed to full height in Phase 1. Once waiting periods have been acknowledged and/or settlement monitoring devices indicate tolerable settlement ranges, Phase 2 can begin. Phase 2 consists of installation of permanent wall panel facing.

Materials. (a) Concrete Facing Panels. The reinforced concrete facing panels shall be rectangular or square in shape, fabricated in accordance with Subsection 802.21 and Section 804 and the materials shall meet the requirements of Subsections 802.02 and 804.02 with the following additions and modifications:

1. The Contractor shall submit his concrete mix design to the Resident Engineer for approval. The Portland cement concrete shall have a minimum 4000 psi compressive strength at 28 days; with a minimum cement factor of 6 bags per cubic yard, an air content of 6% ± 2%, and a maximum aggregate size of 1 inch.

2. The units shall be fully supported by the forms until the concrete reaches a minimum compressive strength of 2500 psi as evidenced by test cylinders cured in the same manner as the panels and tested in accordance with AASHTO T 22.

3. All units shall be handled, stored, and shipped in such a manner as to eliminate the dangers of chipping, discoloration, cracks, fractures, and excessive bending stresses. Stored panels shall be supported in firm blocking to protect the panel connection devices and the exterior finish.

4. Panel connection devices shall be positioned within a tolerance of 1 inch. Panel squareness, as determined by the difference between the two diagonals, shall not exceed 0.5 inch.

5. Units shall be rejected because of failure to meet any of the requirements specified above. In addition, any or all of the following shall be sufficient cause for rejection:

- Imperfections.
- Honeycombing or open texture concrete.
- Cracked or severely chipped panels.
- Color variation on front face of panel due to excess form oil or other causes.

6. The manufacturer shall have a Quality Control program whereby representative samples of raw materials (cement, aggregates, reinforcement) are tested and/or reviewed for conformity to specifications. In addition, quality control tests (slump, air content, concrete temperature, compressive strength, and gradations, as applicable) shall be conducted by the manufacturer during casting operations. Quality control tests shall be conducted in accordance with the AASHTO Testing Procedures. The frequency of quality control tests shall be a minimum of one (1) set of tests per pouring day for each type product (panels or coping).

   Records of materials used in the manufacture of reinforced concrete facing panels and quality control tests shall be maintained by the manufacturer. The Department shall reserve the right to review records for compliance with all applicable specifications and to reject any non-conforming units. Reinforced concrete facing panels shall not be shipped nor incorporated into the job until all testing has been completed. Copies of the manufacturer's quality control and inspection records shall be provided to the Engineer upon request.

   The Department shall reserve the right to observe all manufacturing processes and conduct random quality assurance tests to determine compliance. If deemed necessary, drilled cores shall be taken at the direction of the Engineer to verify the compressive strength.

   All reinforced concrete facing panels manufactured for use on Department projects shall be legibly marked on their back side with the cast date and a distinct identification number.

7. The manufacturer shall furnish a Certificate of Delivery for each shipment stating that the listed products conform to all applicable specifications. The information on the Certificate of Delivery shall include the state job number (or state purchase order number), consignee, destination, number of pieces, cast dates, identification numbers, and plant of origin. One copy of the Certificate of Delivery and shipping papers shall be furnished to the Engineer.

(b) Soil Reinforcing and Attachment Devices. All reinforcing and attachment devices shall be carefully inspected to ensure they are true to size and free from defects that may impair their strength and durability. Metallic reinforcements and attachment devices shall be galvanized in accordance with AASHTO M 111.

RETAINING WALLS

1. Turn Buckle Connectors: For permanent walls that are indicated in the Plans to be constructed using two-phase construction methods, provide connection hardware conforming to the requirements shown in the approved Shop Plans. Determine the size and type of the turn-buckles and the number of connectors considering the facing panel size, distance between the two facing units , the type of infill used, and the amount of relative settlement anticipated between the two facing systems after the second phase facing is constructed. Cast connection hardware in the precast concrete panels such that all connectors are in alignment and able to transfer full and even load to the soil reinforcement. Ensure fasteners consist of hexagonal cap and screw bolts and nuts conforming to the requirements of ASTM A 325, ASTM A 449, or equal. Mechanically galvanize in accordance with ASTM B 695, Class 55.

(c) Filter Fabric. All joints between panels on the back face of the wall shall be covered with a geotextile filter fabric meeting the requirements of Subsection 625.02, Type 2. The minimum width and lap shall be 12 inches. Geotextile filter fabric meeting the requirements of Subsection 625.02, Type 2 is also required between the drainage fill material and backfill in the reinforcement zone. The geotextile fabric shall be placed for each lift of backfill material. The geotextile fabric and reinforcing elements used in the wall construction shall be able to resist deterioration when exposed to the properties of the concrete in the wall facing panels and the backfill material selected. Geotextile fabric shall be protected from sunlight during storage.

(d) Drainage Fill Material. Drainage fill material placed immediately behind the wall shall conform to the requirements of a Class 3 mineral aggregate as specified in Subsections 403.01 and 403.02. As shown on the plans, drainage fill material shall be placed for a minimum width of 12 inches behind the wall, for the full height of wall, in 10 inch loose lifts and compacted in such a manner as to avoid any damage or distortion of wall materials or wall alignment. The Contractor shall perform quality control and acceptance sampling and testing of the backfill in accordance with Section 306, with the exception that the minimum frequency of acceptance testing shall be one lot test for gradation and decantation loss for each 500 cubic yards of drainage fill material.

(e) Select Granular Backfill. All backfill material used within the reinforcement zone shall be granular having an angle of internal friction greater than 32 degrees as determined by the standard direct shear test AASHTO T-236 on the portion finer than the No. 10 sieve, using a sample of the material compacted to 95 percent of AASHTO T-99 and shall have no cohesion. Aggregates meeting the material requirements of Section 302 for Selected Material (Class SM-1) or the material requirements of Section 303 for Aggregate Base Course (Class 7) are acceptable backfill materials and shall be placed and compacted in accordance with Subsections 210.07, 210.09, and 210.10. The Contractor shall perform quality control and acceptance sampling and testing of the backfill in accordance with Section 306, with the exception that the minimum frequency of acceptance testing shall be one lot test for density, moisture content, gradation, and plasticity index for each 3000 cubic yards of backfill material placed except that at least one set of tests shall be performed on each layer of backfill. If the material used for Select Granular Backfill is Aggregate Base Course (Class 7) and the source remains consistent, testing requirements for gradation and plasticity index shall meet the minimum frequency of one test per 3000 cubic yards. The Engineer may waive PI testing as outlined in Section 306. Construction requirements outlined in Subsection 302.02 shall apply.

RETAINING WALLS

The Contractor shall sample and test the backfill material prior to wall construction to verify that the angle of internal friction used in the wall system design does not exceed the angle of internal friction of the backfill material within the reinforcement zone. The Contractor shall conduct one additional shear test on a sample taken during the wall construction at a location as determined by the Engineer. Also, if the backfill material source changes and/or material properties change during wall construction from the original sample tested, the angle of internal friction shall be re-verified. If either the additional test result or the re-verified test result is less than the design value utilized in the design of the wall, the material shall be removed and replaced with acceptable backfill material.

(f) Coping. Concrete for coping shall comply with the requirements of Section 802 for Class S(AE) Concrete. Reinforcing steel shall comply with the requirements of Section 804.

(g) Buy America Requirements. All iron and steel material used on Department projects must be in compliance with "Buy America" requirements and Subsection 106.01. All manufacturing processes of the iron or steel in a product (i.e., smelting/remelting, and any subsequent process which alters the steel material's physical form or shape or changes its chemical composition) must occur within the United States to be considered of domestic origin. This includes, but is not limited to, such processes such as rolling, extruding, machining, bending, grinding, drilling, and applying coatings. The use of pig iron or processed, pelletized, and reduced iron ore manufactured outside of the United States is permitted in the domestic manufacturing process for steel and/or iron materials. All steel and iron mill test reports must include a statement certifying that all manufacturing processes for the iron or steel product occurred in the United States. Each supplier/fabricator of an intermediate product shall also certify that the product complies with "Buy America" requirements.

Working Drawings. At least 30 calendar days prior to fabrication of the concrete panels, the Contractor shall submit four (4) copies of design calculations, working drawings, and material and construction specifications to the Resident Engineer for review. This will be used to verify compliance with design requirements. The drawings shall include details that provide for flexibility, differential settlement, and aesthetics at changes in direction of the wall alignment. Test results for gradation, plasticity index, unit weight and angle of internal friction of the Select Granular Backfill shall be submitted with the Working Drawings for all proposed sources. These results shall state Method A Construction or Method B Construction. The wall designer shall review all proposed Select Granular Backfill sources and shall state in writing that the materials meet the wall manufacturer's recommendations regarding Electrochemical Properties. The above verification process shall not relieve the Contractor of any of his responsibility under the contract for the successful completion of the work.

Ashlar Stone Finish. Before production of the precast concrete panels may begin, approval of the Ashlar Stone finish will be required. Approval will be based on a sample panel with approximate dimensions of 6 feet by 6 feet. In lieu of a sample panel, the Engineer may accept proof of previous work performed with similar size panels and finishes. Prior to construction of any panels, a work plan showing the materials, construction methods, name and pattern number of form liner manufacturer, and other features affecting the finish shall be

RETAINING WALLS

submitted to and approved by the Engineer. All panels shall be constructed according to the approved plan.

Construction. The Contractor will be required to have a manufacturer's representative experienced and knowledgeable in the design and construction of the retaining wall system available throughout the construction period.

The Contractor shall furnish a certification that the components of the wall system were manufactured in compliance with the approved design and that the materials furnished comply with the specifications.

Prior to wall construction, the foundation shall be compacted as directed by the Engineer. Any unsuitable foundation material shall be excavated and backfilled according to the undercutting requirements of this special provision. At each foundation level, a cast-in-place unreinforced concrete leveling pad shall be provided. The leveling pad shall be in place a minimum of 24 hours before panel erection begins and have a minimum earth cover as shown on the plans. Concrete for leveling pad shall comply with the requirements of Section 802 for Class A or higher class Concrete as required by the wall supplier's construction requirements.

Precast concrete panels shall be placed so that their final position is vertical as shown on the plans. As drainage and backfill material are placed behind the panels, the panels shall be maintained in position by means of temporary wedges or bracing according to the wall supplier's recommendations. Concrete facing vertical tolerances and horizontal alignment tolerances shall not exceed 0.75 inch per ten (10) feet of length. During construction, the maximum allowable offset in any panel joint shall be 0.75 inch. The completed overall vertical tolerance of the wall (top to bottom) shall not exceed 0.5 inch per ten (10) feet of wall height.

As shown on the plans, drainage fill material shall be placed for a minimum width of 12 inches behind the wall, for the full height of the wall, in 10 inch loose lifts and compacted in such a manner as to avoid any damage or distortion of wall materials or wall alignment. The Contractor shall perform quality control and acceptance sampling and testing of the backfill in accordance with Section 306, with the exception that the minimum frequency of acceptance testing shall be one lot test for gradation and decantation loss for each 500 cubic yards of drainage fill material.

Select Granular Backfill placement shall closely follow the erection of each lift of panels. Backfill material within the reinforcement zone shall be compacted and placed in conformance with the applicable provisions of Section 302.03. At each reinforcement level, the backfill shall be placed to the level of the connection. Backfill placement methods near the facing shall assure that no voids exist directly beneath the reinforcing elements. The Contractor shall perform quality control and acceptance sampling and testing of the backfill in accordance with Section 306, with the exception that the minimum frequency of acceptance testing shall be one lot test for density, moisture content, gradation, and plasticity index for each 3000 cubic yards of backfill material placed except that at least one set of tests for density and moisture content shall be performed on each layer of backfill.

RETAINING WALLS

Backfill shall be placed in such a manner as to avoid any damage or disturbance of the wall materials or misalignment of the facing panels or reinforcing elements. Any damage or distortion of the wall materials during backfill placement shall be corrected at the Contractor's expense. Construction traffic will not be permitted on wall reinforcement unless a minimum backfill cover of 8 inches is provided.

The Contractor shall be responsible for preventing surface water or rainwater from damaging the retaining walls during construction. This shall include shaping the backfill to prevent water from ponding or flowing on the backfill or against the wall face. Any damage or movement caused by erosion, sloughing, or saturation of the retaining wall or embankment backfill shall be repaired at the Contractor's expense.

For permanent walls that are indicated on the Plans to be constructed using two-phase construction methods, use the following construction sequence:

1. Install settlement monitoring instrumentation with the Plans prior to commencement of two-phase MSE wall construction

2. Construct the MSE wall with temporary welded mire mesh facing as indicated in the Plans to allow for settlement to occur. Locate welded wire mesh facing to allow construction of the second phase of the permanent MSE wall facing.

3. After the Contractor in consultation with the Geotechnical Engineer has determined sufficient settlement has occurred, the Department will provide written notice to proceed with the construction of permanent MSE wall facing.

4. Construct the MSE wall leveling pad at the location of the permanent wall facing.

5. Place the permanent wall facing and attach connections to the soil reinforcement as indicated in the MSE wall details included in the accepted Shop Plans.

6. As the permanent facing is being placed, backfill the space between the temporary and the permanent facings.

7. Backfill in front of wall and above leveling pad to prevent erosion or ponding of water. Prevent water from standing adjacent to leveling pad.

Unless otherwise noted in the plans, the exposed surfaces of the coping on the top of the wall shall receive a Class 2 Rubbed Finish in accordance with Subsection 802.19.

Undercutting. All the material within any undercut areas shown in the plans shall be excavated to the limits shown. Additional soft and unstable materials shall be excavated as directed by the Engineer. All undercut areas shall be backfilled with granular material meeting the requirements specified in the plans. The granular backfill material shall be placed and compacted in accordance with Subsections 210.07, 210.09 and 210.10. The Contractor shall perform quality control and acceptance sampling and testing of the backfill in accordance with Section 306, with the exception that the minimum frequency of acceptance testing shall be one lot test for density, moisture content, gradation and plasticity index for each 3000 cubic yards

of backfill material placed except that at least one set of tests for density and moisture content shall be performed on each layer of backfill.

Method of Measurement. Retaining walls will be measured by the square foot of front surface area between the top of the leveling pad at the face of the wall and the top of the wall including any coping required.

All excavation within the limits of any undercut areas, directly over any undercut areas outside the limits of the reinforcement zone, within the reinforcement zone and for the leveling pad will be measured as Unclassified Excavation.

All backfill and drainage fill material placed behind retaining walls within the reinforcement zone will be measured as Select Granular Backfill in its final position in accordance with Subsection 210.12(c).

All backfill placed directly over the limits of any undercut areas and outside the limits of the reinforcement zone will be measured as Compacted Embankment. All backfill within the limits of any undercut areas will be measured as shown in the plans.

Basis of Payment. Retaining walls completed, accepted and measured as provided above will be paid for at the contract unit price bid per square foot for Retaining Wall, which price shall be full compensation for designing; for quality control and acceptance sampling and testing; for furnishing all materials except backfill and drainage fill materials but including pipe underdrains and joint materials; for constructing the leveling pad, the wall, and the coping; and for all labor, equipment, tools, and incidentals necessary to complete the work.

All excavation within the limits of any undercut areas, directly over any undercut areas outside the limits of the reinforcement zone, within the reinforcement zone and for the leveling pad will be paid for as Unclassified Excavation in accordance with Section 210.

All backfill and drainage fill material placed behind retaining walls within the reinforcement zone, including quality control and acceptance sampling and testing, will be paid for as Select Granular Backfill in accordance with this Special Provision.

All backfill directly over the limits of any undercut areas and outside the limits of the reinforcement zone, including quality control and sampling and testing, will be paid for as Compacted Embankment in accordance with Section 210. All backfill within the limits of any undercut areas, including quality control and acceptance sampling and testing, will be paid for as shown in the plans.

The Contractor shall comply with applicable Federal, State, and local laws governing safety in accordance with Subsection 107.01(b) in any and all excavation and/or shoring operations. Any shoring and additional excavation with replacement backfill outside the reinforcement zone or outside the limits and not directly over any undercut areas will not be paid for directly, but will be considered subsidiary to the unit price bid per square foot for Retaining Wall.

RETAINING WALLS

Payment will be made under:

Pay Item	Pay Unit
Retaining Wall	Square Foot
Select Granular Backfill	Cubic Yard

SP-27 - METHOD FOR INSTALLATION AND USE OF PIPE RISER SETTLEMENT MONITORING DEVICE

DESCRIPTION

SP27-1.1 This work includes the installation and measurement for pipe riser settlement monitoring devices at locations specified in the table below. The locations shown on the plans and in the table below are approximate and may be adjusted by the contractor. The installation, maintenance, and data collection procedures for the pipe riser settlement devices used to monitor subsurface settlement are described in this method. Settlement devices are used to monitor the rate and magnitude of settlement occurring at a point within or beneath an embankment during and subsequent to construction. The data obtained from these devices are used to determine commencement of permanent structure construction. The pipe riser settlement device is a direct-reading unit which is exposed for the full duration of fill construction.

Settlement Monitoring Locations

James Street	MSE Wall at EB 3	208+80	50’ LT
James Street	MSE Wall at EB 3	209+55	20’ RT
Gregory Street	MSE Wall at EB 1	807+35	85’ LT
Gregory Street	MSE Wall at EB 1	807+05	70’ RT
Gregory Street	MSE Wall at EB 1	807+20	15’ RT
Gregory Street	MSE Wall at EB 1	804+25	65’ RT
Gregory Street	MSE Wall at EB 1	805+20	60’ LT
Gregory Street	MSE Wall at EB 3	810+05	25’ RT
Gregory Street	MSE Wall at EB 3	810+85	100’ LT
Gregory Street	MSE Wall at EB 3	812+70	25’ RT
Vandenberg Boulevard Bridge A	MSE Wall at EB 1	684+64	59’ LT
Vandenberg Boulevard Bridge A	MSE Wall at EB1	683+75	59’ LT
Vandenberg Boulevard Bridge A	MSE Wall at EB3	686+60	60’ LT
Vandenberg Boulevard Bridge A	MSE Wall at EB3	687+35	60’ LT

PIPE RISER SETTLEMENT DEVICE

SP27-2.1 APPARATUS

1. Pipe riser settlement device (see attached figure)
2. Hand tools - shovel, bar, hammer, pipe wrenches, etc.

SP27-2.2 INSTALLATION

1. It will usually be necessary to determine the location for installing the settlement device by survey. If settlement readings are to be continued after completion of the fill, it is imperative that the unit be located outside of the travel way of vehicle or construction equipment.
2. After approximately 2 feet of embankment material has been placed, excavate a pit to the depth of the original ground level at the previously determined location for the settlement device. Prepare a firm, level area free of large rocks or clods for the settlement device at the bottom of the pit.
3. Assemble the settlement device as shown in the attached figure. Attach a ¾ inch pipe floor flange to the center of the wood platform with bolts or lag screws. Then screw a 6-foot length of ¾ inch pipe into the floor flange. Place a pipe coupling on the top of the ¾ inch pipe and tighten all joints in the assembly using a pipe wrench.
4. Survey the elevation of the top of the pipe coupling. Then slip the 1-1/2 inch by 5-foot protective sleeve, which may be either rigid polyvinyl chloride (PVC) or iron pipe, over the control pipe until it is about 2± inches above the floor flange. Place a duct seal or other seal to hold the protective sleeve in place. See attached figure for detail. Do not attach the protective sleeve to the wood platform or the control pipe. This protective sleeve is used to absorb the friction between the fill material and the settlement unit and, therefore, must be free to move independently from the wood platform and control pipe.
5. Firmly seat the settlement device on the prepared area in the bottom of the pit. Then fill and compact by hand using fine embankment material free of large rocks and clods around the settlement device to a depth of 1 foot.
6. Using a spirit level, check to make sure the control pipe is reasonably plumb, then carefully fill the pit with embankment material and compact in place.
7. Attach a post to the top of the protective sleeve to alert construction equipment operators of the obstruction.

   NOTE: It has been found that a 6-foot long 2-by-4 painted with alternate 1-foot wide stripes of red and white is satisfactory for this use. It is recommended that flagging be attached to the top of this post. The post should be attached so that it can be easily removed and reattached as additional pipe is added during embankment construction.

SP27-2.2 COLLECTION OF DATA

1. As soon as possible after the settlement device has been installed, survey the elevation of the top of the ¾ inch pipe coupling attached to the first section of riser pipe.

2. During embankment construction, the elevation of the top of the riser pipe should be determined by survey at least once a day when construction is occurring on the embankment, or every other day when construction is not occurring on the embankment. After embankment construction is completed, the elevation should be determined frequently enough to indicate significant changes in the rate of settlement. Normally, the time between surveys will be twice-weekly immediately subsequent to completion of the embankment for the first two weeks, and the interval between surveys will increase with time. The contractor will be responsible for securing settlement plate survey readings. Settlement plate survey readings should be secured at the same time of day each day by the same surveyor using the same survey equipment. Readings must be secured to the nearest 0.01 foot, minimum.
3. During fill placement, it will be necessary to add sections of riser pipe and protective sleeve. When extending the riser pipe, use the following procedure:
    a. Survey and record the elevation of the top of the existing riser pipe coupling (Column 2).
    b. Remove the protective post, attach a coupling to the section of riser pipe that will be added, and tighten the joint with pipe wrenches.
    c. Insert the added section into the coupling on top of the existing riser pipe and tighten the joint by using one pipe wrench on the existing coupling and one pipe wrench on the added length of riser pipe. While tightening the joint, do not allow the coupling between the existing riser pipe and the added length to turn. Turn only the added length of riser pipe.
    d. Survey the elevation of the top of the coupling on the added length of riser pipe. Record the new top of riser pipe elevation on a new line on the data sheet and add a note under Column 9 (Remarks) that the new top of pipe elevation is for the added section.
    e. Calculate the length of riser pipe added from the survey elevations and add to the last length recorded in Column 3.
    f. Add and secure a 5-foot length of protective sleeve to the existing sleeve and secure to the top of the post.
4. Enter all data on the attached form follows:

    Column 1 - Record the reading date.

    Column 2 - Record the elevation of the top of the riser pipe as determined by survey.

    Column 3 - Record the cumulative length of each section of riser pipe added.

    Column 4 - Record the height of the riser above the original ground (Column 2 minus Column 3).

    Column 5 - Record the total settlement to the nearest 0.1 inch. This value is obtained by subtracting the value in Column 4 for the day being read from the value at the top of Column 4 (elevation at the time of installation).

    Column 6 - Record the elevation of the surface of the fill as determined by survey.

    Column 7 - Record the height of the fill above original ground to the nearest 0.1 feet.

    Column 8 - Record the number of calendar days elapsed since the settlement device was installed. (Day of installation equals Day 1).

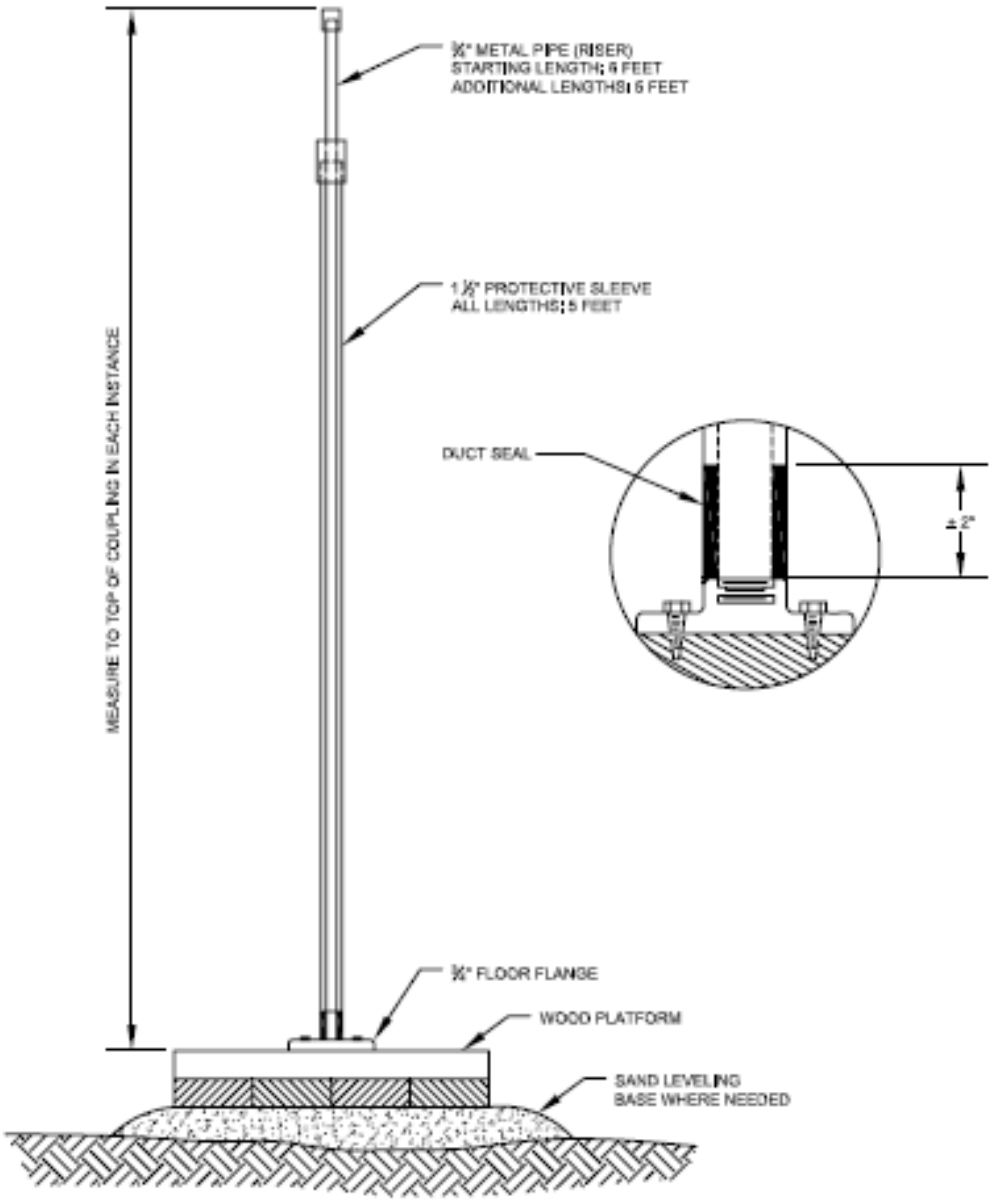
    Column 9 - Record any information that would be helpful in the analysis of data. Be sure to indicate in this column the date and length added to the riser pipe.

Settlement plate survey readings must be submitted to the Engineer the same day that readings are secured by the contractor. The Engineer, or his representative, will be responsible for analyzing the data and determining the rate that embankment construction can proceed to reduce the risk of slope failure.

MEASUREMENT AND PAYMENT

SP27-3.1 The installation, maintenance and data collection of the pipe riser settlement device will not be measured for separate payment but shall be included under ITEM SP-2 – BRIDGE CONSTRUCTION.

END OF ITEM SP-27


¾" METAL PIPE (RISER)
STARTING LENGTH: 6 FEET
ADDITIONAL LENGTHS: 5 FEET
1 ½" PROTECTIVE SLEEVE
ALL LENGTHS: 5 FEET
DUCT SEAL
± 2"
MEASURE TO TOP OF COUPLING IN EACH INSTANCE
¾" FLOOR FLANGE
WOOD PLATFORM
SAND LEVELING
BASE WHERE NEEDED

PIPE RISER SETTLEMENT PLATE DATA SHEET

Project: Location:	Plate ID: Station/Offset: Design Fill Height: Surcharge Height:	Comments:

Date	RISER PIPE		Elevation Change	Settlement	FILL HEIGHT		Elapsed Time	Remarks
	Top of Pipe Elevation	Length of Pipe			Surface Elevation	Fill Above Original Ground		
	(ft)	(ft)	(ft)	(in)	(ft)	(ft)	(days)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

ARKANSAS STATE HIGHWAY AND TRANSPORATION DEPARTMENT

SPECIAL PROVISION

Prefabricated Vertical Wick Drain with Fabric

Job No. CA0604

DESCRIPTION

Furnish all necessary materials, labor, equipment, all necessary submittals and incidentals for the installation of prefabricated vertical wick drains with fabric (PVDs) in accordance with the details shown on the plans and these Supplemental Technical Specifications. The PVDs consist of a corrugated polymeric core encased in a suitable drainage fabric (jacket). Install the PVDs at the locations shown on the plans, unless otherwise directed by the either the Resident Construction Engineer (RCE) or the Geotechnical Engineer-of-Record (GEOR).

TESTING STANDARDS

Use the latest edition of the testing standards indicated in this specification. Substitution of standards will require the prior written approval of the Materials and Research Engineer (MRE) with concurrence of the GEOR. The Contractor or the PVD Installer is to provide copies of all substituted standards to the RCE. The RCE will provide the copies to the MRE and GEOR for acceptance.

MATERIALS

General. The PVDs shall consist of newly manufactured materials and shall consist of a continuous polymeric drainage core and nonwoven geotextile filter fabric (jacket). The jacket shall allow free passage of pore water to the core without loss of soil material or piping. The core shall provide continuous vertical drainage. The core and jacket material may be either non-bonded or bonded. For non-bonded PVDs, the jacket material is wrapped around the core and seamed to itself. For bonded PVDs, the jacket material is fused to both faces of the core along the peaks of the corrugations.

Jacket Materials

The jacket components shall conform to the following:

a.) Be a synthetic nonwoven polymeric geotextile meeting the criteria listed in Table 1.

b.) The jacket material shall not be subject to localized damage (e.g., punching through the filter by sand/gravel particles).

c.) The jacket material shall be rigid enough to withstand lateral earth pressures due to embedment and surcharge so that the vertical flow capacity through the core will not be adversely affected.

d.) The jacket material shall be flexible enough to bend smoothly during installation and during any induced consolidation settlement without damage.

1. The jacket material shall not undergo cracking and peeling during installation of the vertical drain.

Table 1 – Jacket Material Properties

PROPERTY[1]	TEST METHOD	UNITS	REQUIREMENTS
Mass	ASTM D5261	oz./yd^2	$\geq$ 4.0
Grab Elongation	ASTM D4632	%	$\geq$ 50
Grab Strength[2]	ASTM D4632	lbs.	$\geq$ 130
Tear Strength[3]	ASTM D4533	lbs.	$\geq$ 60
Permittivity	ASTM D4491	sec.$^{-1}$	$\geq$ 0.5
AOS	ASTM D4751	Sieve Size (mm)	#100 ($\leq$0.15)
Ultraviolet Stability (Retained Strength)	ASTM D4355	%	$\geq$50 after 500 hrs. of exposure

Notes:

[1]All numeric values represent Minimum Average Roll Value (MARV) in the weaker principal direction. Provide geotextiles whose average test results from any roll sampled in a lot for conformance or quality assurance testing meets or exceeds minimum values provided in this Table.

[2]For bonded drains, grab tensile strength tests shall be conducted on the assembled drain using ASTM D4595.

[3]For bonded drains the trapezoidal tear strength test shall be waived.

Core Materials

The core materials shall conform to the following:

a.) The core shall be continuous polymeric material fabricated with grooves to promote drainage along the axis of the vertical drain. Studded cores are not allowed.

Table 2 – Core Material Properties

PROPERTY	TEST METHOD	UNITS	REQUIREMENTS
Thickness	ASTM D5199	in.	0.0938 (3/32)
Mass	ASTM D3776	oz./ft.	$\geq$ 0.60
Tensile Strength	ASTM D638	lbs.	300
Crush Strength	ASTM D1621	psi	450
Ultraviolet Stability (Retained Strength)	ASTM D4355	%	□ □50 after 500 hrs. of exposure

PVD Assemblies

Label or tag the assembled PVDs in such a manner that the information for sample identification and other quality control purposes can be read from the label. As a minimum, identify each roll of assembled PVD by the manufacturer as to lot or control numbers, individual roll number, date of manufacture, manufacturer and product identification of the jacket and core. The assembled PVDs shall be resistant against wet rot, mildew, bacterial action, insects, dissolved salts, acids, alkalis, solvents, and other ingredients in the site ground water.

Use only a single type of assembled PVD on the project. Provide an assembled PVD that meets the properties indicated in Table 3

Table 3 – Assembled PVD Properties

PROPERTY	TEST METHOD	UNITS	REQUIREMENTS
Perimeter	--	in.	≥ 7.75
Width	Measure with caliper	in.	≥ 3.75
Thickness	ASTM D5199	in.	≥ 0.1250 (1/8)
Discharge	ASTM D6918	gpm	1.5 (at 25%
Discharge Capacity	ASTM D6918	gpm	1.5 (at 25% compression)

During shipment and storage, wrap the PVDs in burlap or similar heavy duty protective covering. Protect the PVDs from sunlight, mud, dirt, dust, debris, and other detrimental substances during shipping and on-site storage. The PVDs shall be free of defects, rips, holes, and/or flaws. Material which is damaged during shipment, unloading, storage, or handling, or which does not meet the requirements of the drain material will be rejected by the RCE.

Non-bonded PVDs may be field spliced. Remove approximately 6 inches of the jacket material from the current assembled PVD roll exposing the core. Insert the exposed core into the new roll of assembled PVD and secure using methods approved by the PVD supplier and accepted by the RCE. The core material shall not be exposed after splicing. The core materials from each roll should be in firm contact, with the corrugated peaks of one core overlapping the corrugated valleys of the other core.

For bonded PVDs, provide to the RCE the PVD Manufacturer's splicing procedure for review and acceptance by the GEOR prior to any PVD material being installed.

SUBMITTALS

Prefabricated Vertical Drain Material

Acceptance of the sample PVD material by the MRE will be required prior to delivery of the PVD material to the Project. At least 30 calendar days before beginning PVD installation, the Contractor and PVD Installer shall:

a.) Identify the proposed source of the assembled PVDs prior to delivery to the site. Supply, to the RCE, a manufacturer's material certification that the assembled PVD meets or exceeds the material requirements of this specification. The manufacturer's literature shall document the physical and mechanical properties of the PVD. The PVD Manufacturer shall be a specialist in the manufacture of PVDs and shall have produced a minimum of 2,000,000 linear feet of the PVD material similar to that proposed for the Project and that has been successfully used in similar applications within the past 5 years, including details on prior performance on these projects.

b.) Submit to the RCE for review and visual inspection 3 samples of the unspliced PVD to be used and 3 samples of proposed splices, if splices are allowed on the project. The samples of unspliced PVD shall be at least 5 feet long. Samples of spliced PVD shall be long enough to include the splice plus 2 feet of unspliced drain on both sides of the splice. The samples shall be stamped or labeled by the manufacturer as being representative of the PVD material having its specified trade name.

c.) Submit to the RCE for review and visual inspection 3 samples of the proposed anchor plate to be used to anchor the PVDs at the design depth shown on the plans.

Prefabricated Vertical Drain Installer

Provide proof to the RCE and GEOR of the experience of the PVD Installer for the work described at least 30 calendar days before beginning PVD installation. The PVD Installer shall:

a.) Document successful installation of at least 2,000,000 linear feet of PVDs during the last 5 years and shall be a certified installer of the PVD Manufacturer.

b.) Document at least 5 successfully completed projects within the last 5 years of similar size and complexity to that of the Project. Document the PVD Installer's experience by providing a project summary that includes for each referenced project, the project start and completion dates, total quantity of PVDs installed, and a detailed description of the project, site conditions, and subsurface conditions. Include in the project description details of the PVD materials, the equipment and technique used to install the PVDs, the average and maximum length of PVD installed, the client name and address, the name and telephone number of the representative of the consultant and owner for whom the work was performed and who can attest to the successful completion of the work, and any other information relevant to demonstrating the PVD Installer's qualifications.

c.) Identify a full-time supervisor who has been in responsible charge of supervising PVD installation operations for at least 5 projects in the last 5 years. The supervisor shall be present at the work site at all times during PVD installation operations. Provide a detailed resume of the supervisor's experience and qualifications. Provide a detailed resume for the replacement supervisor, if required.

Prefabricated Vertical Drain Installation Plan

At least 30 calendar days before beginning PVD installation, the Contractor and the PVD Installer shall submit to the RCE for review a PVD Installation Plan that includes as a minimum the following information:

1. The configuration of the installation equipment including size, type, weight, maximum pushing force, and vibratory hammer rated energy.

2. Dimensions and length of the mandrel.

3. Details of the PVD anchorage.

4. Detailed description of proposed installation procedures.

5. Proposed methods for securing splices in non-bonded PVDs or the manufacturers splicing procedure for bonded PVDs, if splicing is allowed.

6. Proposed methods and equipment for preaugering or spudding.

7. Submit documentation of the successful application of the proposed PVD installation operations.

8. Provide shop drawings showing the planned locations and bottom elevations of all PVDs, a unique identification number for each PVD, the proposed installation sequence, the location of all potential conflicts with the locations of the PVDs.

Submittal Reviews

Acceptance of the proposed materials will be by the MRE. The equipment, construction sequence, and installation method will be accepted by the GEOR. Acceptance of the PVD materials, equipment, construction sequence, or installation method does not relieve the Contractor and PVD Installer of its responsibility to install the PVDs in accordance with the plans and specifications. Acceptance by the GEOR of the method and equipment to be used to install the PVDs is contingent upon satisfactory demonstration of PVD installation at the project site. If, at any time, the RCE or the GEOR considers that the method of installation does not produce satisfactory PVDs, alter the method and/or equipment as necessary to comply with this Special Provision. The RCE and the GEOR will determine the adequacy of the Contractor's methods and equipment.

CONSTRUCTION REQUIREMENTS

Install PVDs as indicated on the plans or as directed by the RCE and GEOR. Install the PVDs with equipment that will minimize the disturbance of the subsoil during the installation operation and maintain the mandrel in a vertical position. Size the equipment to minimize the disturbance of the subsoil during the installation operation. Provide equipment with sufficient push force to install the PVDs through all existing subsurface material to the depths shown on the plans. Size the equipment to have the capability of installing the PVDs to a depth of approximately 20 feet greater than the maximum PVD depth shown on the plans. Select equipment such that it will not force the fill soil into the existing soil, nor disturb the fill soil, nor cause any bearing capacity problems with the subgrade soils due to the weight of the equipment.

Install the PVDs using a mandrel or sleeve that can be advanced through the soils to the required depth. The mandrel or sleeve shall protect the PVD material from tears, cuts, and abrasion during installation and shall be retracted after each PVD is installed. To minimize disturbance of the subsoil, the mandrel or sleeve shall have a maximum cross-sectional area of 10 square inches. The mandrel or sleeve shall be sufficiently stiff to prevent wobble or deflection during installation. In no case will alternative raising and lowering of the mandrel during advancement be permitted. Permit the raising of the mandrel only after completion of the PVD installation to the bottom PVD elevation shown on the plans or otherwise authorized by the GEOR.

Install the PVDs using either a constant load or constant rate of advancement technique. Use a vibrator only when approved by the RCE in areas where constant load or constant rate of advancement methods cannot install the PVDs to the design depths. Jetting or use of an impact hammer will not be allowed to install PVDs.

Provide each PVD with an "anchor" plate or similar arrangement to anchor the bottom of the drain at the required depth during mandrel removal and to prevent soil from entering the bottom of the mandrel during PVD installation. The anchorage shall be adequate to keep the bottom of the PVD at the required depth subject to approval and field verification by the RCE. The corresponding dimension of the anchor shall conform as closely as possible to the breadth dimensions of the mandrel to minimize soil disturbance. The projected cross-sectional area of the mandrel and anchor combination shall not be greater than 14 square inches.

Notify the RCE at least 3 working days prior to installation of the initial PVDs at the location(s) shown on the plans to allow the RCE sufficient time to provide the necessary inspection for the initial PVD installation.

Do not begin installation of the initial PVDs at the location(s) indicated without the presence of the RCE or his/her representative. During the installation of the initial 10 PVDs at the indicated location(s), demonstrate that the equipment, method, and material produce a satisfactory installation, as determined by the RCE. Following completion of the initial PVD installations at the indicated location(s), do not proceed with the installation of the remaining PVDs at the embankment location until authorized by the RCE.

If foundations have been previously installed, install the PVDs in a manner as to avoid these foundations. The location of the PVDs relative to the foundations shall be determined and staked out prior to the installation of the PVDs. In addition, take precautions to preserve the stake locations and re-stake PVD locations as necessary.

Using a baseline and benchmark determined by the Contractor, locate, number, and stake out the PVDs. All other construction staking, for taking precautions to preserve the stake locations, and for re-staking, if necessary, is the responsibility of the Contractor. Do not vary the as-installed locations of the PVDs by more than 6 inches from the locations designated on the plans or approved shop drawings.

PVDs that deviate from the plan locations by more than 6 inches, that are damaged, or improperly installed will be rejected. Abandon in place rejected PVDs. Replacement PVDs shall be placed as close as possible to the correct original locations.

Provide the RCE with a means of verifying the plumbness of the mandrel and determining the depth of the PVDs. Check the equipment for plumbness prior to installing each PVD. A deviation from the vertical of no more than 2 percent (2%) during installation is allowed.

Splices, if allowed in the plans or by the GEOR, shall be done in accordance with approved PVD Installation plan.

Cut off the PVDs neatly at least 6 inches above the working layer, unless otherwise shown on the plans.

Provide the RCE with a means of determining the depth of the advancing PVD at any given time and the length of the drain installed at each location. Submit a summary tabulation of the number and length (to nearest 1/2 foot) of acceptable PVD daily to the RCE.

Refusal is defined as the point where the soils resist a reasonable effort at further penetration of the PVDs. The GEOR will establish refusal criteria based on the existing soil borings and the initial PVD installations to be performed by the PVD Installer in the presence of the RCE or his/her inspector, as specified herein. Terminate no PVDs above the design PVD bottom elevations shown on the plans without the approval of the GEOR. The GEOR may vary the depths, spacing, and/or number of PVDs to be installed, and may revise the plan limits for this work based on the actual subsurface conditions encountered.

Where obstructions are encountered below the working surface, install a new drain within a 1 foot radius of the original location of the obstructed PVD. As directed by the RCE make a maximum of 2 additional installation attempts for each obstructed PVD. If the PVD still cannot be installed to the design bottom elevation, abandon the PVD location and install a new PVD at a location directed by the RCE in consultation with the GEOR. Clearly mark in the field locations where PVDs do not meet the depth criteria due to obstructions. The RCE in consultation with the GEOR will have the right to waive the replacement PVD requirement upon written notice to the Contactor and the PVD Installer.

Preaugering or spudding for the PVD installation shall be allowed to advance the PVDs through compacted fill material or other obstructions. Penetrate the overlying fill material or any dense layers or obstructions when encountered to satisfactorily install the PVDs. Obstruction is defined as any man-made or natural object or strata, that prevent the proper insertion of the mandrel and installation of the PVD.

The Contractor may use augering, spudding, or other approved methods to loosen the soil and obstructing material prior to the installation of the PVDs. The obstruction clearance procedure is subject to the approval of the RCE; however, such approval shall not relieve the Contractor or PVD Installer of the responsibility to clear obstructions in accordance with the specifications.

If augering is the selected method, the augers shall have a minimum outside diameter equal to the largest horizontal dimension of the mandrel, shoe, or anchor, whichever is greatest. The maximum outside diameter of the auger shall be no more than 3 inches greater than the maximum dimension of the mandrel.

Limit the use of obstruction clearance procedures and use only when approved by the RCE. Penetrate no more than 3 feet beneath the obstruction when using augering or other obstruction removal techniques.

Provide the RCE with "As-Built" plans of the PVD installation. Include in the plans the location, the date installed, and the length of each PVD below the fill soil surface elevation. In addition, include on the "As-Built" PVD plans the fill soil surface elevation at each location, the "As-Built" PVD bottom elevation, and identify any rejected or abandoned PVD installations. Submit "As-Built" plans at least weekly during PVD installation operations. Submit a final "As-Built" PVD plan within 7 calendar days of the completion of PVD installation in all embankment locations. The final "As-Built" plans will be subject to the approval of the RCE.

A 2' thick drainage layer of Class 7 stone shall be placed below reinforced zone of the MSE wall and shall extend to cover all wick drains. Include a drain pipe installed per standard drawing PU-1 placed at the plan centerline of the drainage layer and extended to daylight at both ends.

METHOD OF MEASURMENT

Furnish all supervision, materials, equipment, mobilization, crews, tools, required permits, survey stake out of PVD locations, and other equipment and materials as necessary to properly execute the work. In addition, this item includes clearing of obstructions and the proper disposal of surplus materials brought to the ground surface by obstruction clearance, if required.

Measure the length of acceptably installed PVDs to the nearest 1/2 foot. The length of the PVDs to be paid for shall be the distance the installation mandrel tip penetrates below the working grade plus the required cut-off length above the working surface. Payment will not be made for drains that are not anchored to the required depth, unless previously approved by the GEOR and the RCE in writing.

The GEOR may vary the depths, spacing, or numbers of PVDs to be installed and may revise the PVD installation limits shown on the plans based on the actual subsurface conditions encountered. Such changes or revisions may increase or decrease the total quantity of the PVDs estimated based on the plans. In the event of such changes in required PVD quantity, the payment for PVDs shall be made on the basis of the contract unit price per linear foot.

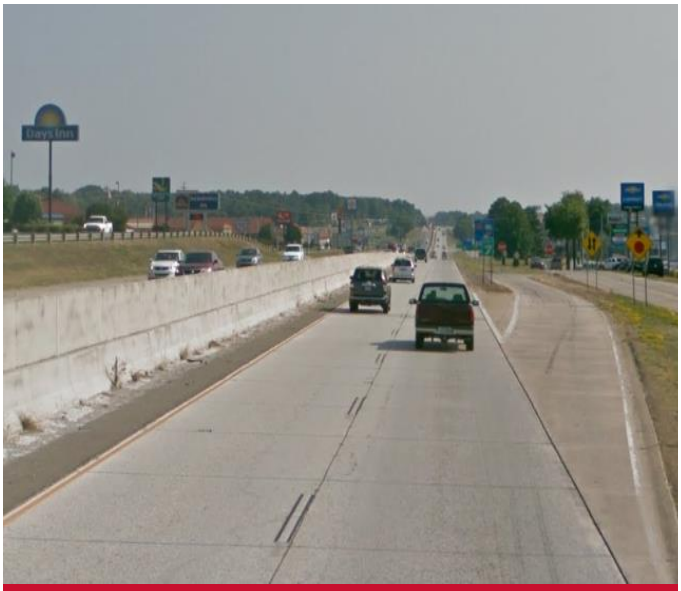
BASIS OF PAYMENT

Payment will be based on the sum total length of all acceptably installed PVDs.

No payment will be made for PVDs, or for any delays or expenses incurred through changes necessitated by improper material or equipment. No payment will be made for PVDs placed deeper than the bottom elevation designated on the plans unless authorized in writing by the RCE.

Payments shall be made under:

Pay Item	Pay Unit
Prefabricated Vertical Wick Drain with Fabric	LF



Highway 67 Widening Roadway Geotechnical Report

Job CA0604

Pulaski County, Arkansas
May 10, 2017

May 10, 2017

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

Dear Mr. Fulmer,

We have completed the Roadway Geotechnical Report for the Highway 67 Widening from Main Street to Vandenberg Boulevard in Pulaski County, Arkansas. This report and discussion reflects the latest geotechnical data as it relates to the current and proposed 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,

Kenneth R. Bussey Jr., P.E.
Senior Geotechnical Engineer

Nicholas R Miller, E.I.T.

Zachary R. Bruce, E.I.T.

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Appendices

Appendix A. SITE VICINITY MAP, PLAN VIEW OF BORINGS, AND BORING LOGS

Appendix B. LABORATORY TESTING

Appendix C. DESIGN CROSS SECTIONS

Appendix D. SPECIAL PROVISIONS

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1 Introduction

The new Highway 67 widening is proposed from Main Street to Vandenberg Boulevard. The proposed Highway 67 interchange will require replacing the existing James Street over Highway 67, constructing new twin bridges replacing the existing Highway 67 over Vandenberg Boulevard, and constructing proposed Gregory Street over Highway 67. A geotechnical bridge report is provided under separate cover. In general, Standard Penetration Test (SPT), Shelby tube, and bulk sample borings were advanced and collected soil samples were delivered to the HDR I 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.

Several retaining walls are proposed along John Harden Drive, TP White Drive, North Bailey Boulevard, and Highway 67. Some proposed walls are Type C barrier walls and will not be discussed in design recommendations. Retaining walls associated with the bridges are included in the bridge geotechnical report. All other wall analyses are presented within this report.

The following walls were added to design scope after original subsurface investigation completion:

- North Bailey Boulevard Station 19+60 to Station 23+27
- TP White Drive Station 140+80 to Station 146+50

These two walls will be discussed in an addendum to this report once their respective subsurface investigations are complete.

Recommendations for problematic areas identified during the subsurface investigation along the alignment are included herein.

2 Project Description

This roadway report includes discussion and recommendations for the proposed Highway 67 alignment from Main Street to Vandenberg Boulevard. A site vicinity map is shown in Appendix A for reference. Discussion includes laboratory testing and field procedures, site geology, groundwater conditions, seismic conditions, and general subsurface findings. Roadway recommendations include resilient modulus (Mr) for pavement design, settlement, slope stability, and mitigation of problematic areas.

3 Field and Laboratory Procedures

A total of seventy-four (74) borings designated for roadway were advanced along the proposed alignment, where eight (8) were roadway stability borings, eight (8) were bulk samples, thirty-seven (37) were retaining wall borings, and twenty-one (21) were pavement core borings.

For the roadway stability and retaining wall borings, SPT (ASTM D1586) and Shelby tube (ASTM D1587) samples were obtained. Boring termination depths ranged from 10.0 feet to 55.0 feet. The pavement core borings were less than one (1) foot in depth.

Auger or casing refusal occurred in borings B-104, B-166, B-167, and B-168. Roadway borings were advanced utilizing two (2) CME track mounted drill rigs and one (1) halyard ATV mounted drill rig. Borings were advance using 3¼" I.D. hollow stem augers, rotary wash, 3" casing advancement, and NQ2 wireline rock core tooling.

Bulk sample borings were spaced approximately every 1500 feet along the Highway 67 alignment and pavement cores were drilled approximately every 2000 feet along the alignments to obtain information pertaining to the existing pavement conditions. All borings including roadway, bulk samples, pavement cores, bridge, and MSE wall borings are presented in Appendix A. Plan views of boring locations are also located in Appendix A.

Collected samples were delivered to the HDR|ICA laboratory for further testing and analysis. Laboratory tests performed on representative samples included natural moisture content, Atterberg limits, grain size analysis, moisture-density relationship (proctor), consolidation, California Bearing Ratio (CBR), unconfined compression, and triaxial compression. Selected soil samples were tested to determine the AASHTO and Unified Soil Classification System (USCS) classification. Results of the laboratory testing are presented in Appendix B.

The soil groups encountered during the field investigation consist of a wide variety of AASHTO Classifications. Table 3-1 is a brief summary of the soil classifications within the roadway borings:

Table 3-1. Summary of Soil Classifications and Descriptions

USCS Classification	Description
CH	Fat Clay with Sand, Sandy Fat Clay
CL	Lean Clay with Sand, Sandy Lean Clay, Gravelly Lean Clay with Sand
CL-ML	Sandy Silty Clay
ML	Sandy Silt
MH	Sandy Elastic Silt
SM	Silty Sand with Gravel, Silty Sand
SC	Clayey Sand, Clayey Sand with Gravel

4 Site Conditions

4.1 Geology

The proposed Highway 67 widening and interchange improvements are located immediately southeast of the physiographic boundary between the Ouachita Mountains Province and Mississippi River Alluvial Plain (Major Physiographic Provinces Map of Arkansas, Arkansas Geological Commission). The proposed alignment generally passes

thru Alluvial Plain sediments overlying Ouachita Mountain rock. Topographic mapping for the corridor (McAlmont Quadrangle, Jacksonville Quadrangle and Cabot Quadrangle, 7.5 minute Series, USGS, 2011) indicates elevations ranging from approximately 240+ feet, near the beginning of the subject alignment, to 270± feet at the Gregory Street interchange, to 330 feet near the end of the project.

A general soil/rock profile includes silty to finely sandy, low and high plasticity clay interpreted as Quaternary alluvium; clayey to silty fine grain sands and finely sandy clay of the undifferentiated Wilcox group; clayey, fine grain sand, sandy fat clay, sandy clay, finely sandy elastic silt - all exhibiting medium to high plasticity interpreted as undifferentiated Midway Group sediments. Regional structural formation dip for Wilcox Group strata and Midway Group strata trends southeastward at very low gradients, while dip for Pennsylvanian strata (lower Atoka Formation) is northeast to northward into an east-west trending thrust fault as indicated on the Arkansas State Geologic Map (Haley, et. al., 1993) and in the on-line Surface Geology Map (AGS - 2016). Faulting is not indicated on published mapping within the limits of the subject project corridor; however, thrust faulting associated with the Ouachita Mountains lies immediately west. Examination of rock core, recovered from the advanced core borings located within the project limits, did not reveal slickensides or other evidence of faulting.

4.2 Soil and Groundwater Conditions

Subsurface conditions for the roadway alignment are based upon borings advanced to evaluate the main roadway alignment, collect bulk samples for subgrade design, and evaluate retaining wall positions.

Material interpreted as roadway embankment fill/development fill was intercepted within borings B-157 and B-162 from existing grade to depths of 11.8 feet and 6.8 feet respectively. Fill materials were composed of medium dense clayey, fine grain sand and medium dense silty sand with gravel. The base of fill materials were interpreted at elevations 275.7 and 291.0 for B-157 and B-162, respectively. Each boring was extended into underlying sediments. Fill material was encountered throughout the alignment particularly in the vicinity of existing interchanges, along access roadways, and development parking areas.

Quaternary alluvium, deposited within the floodplain of tributary streams prior to development, was intercepted from existing grade within borings B-101, B-103, B-104, B-113, B-132, and B-157. Alluvium consisted of finely sandy clay, clayey fine to medium grain sand, silty fine grain sand, and silty fine grain sand with gravel. SPT drives and laboratory testing of advanced Shelby tubes indicate very soft to stiff consistency for clay sediments and very loose to dense relative density for sand sediments. Alluvial sediments were penetrated to depths between 5.0 feet and 21.8 feet. Boring B-113 was terminated within alluvial sediments while all other borings were advanced into underlying sediments. Alluvial deposits, based upon roadway borings, bulk sample borings, and retaining wall borings, are interpreted to extend from Station 598+00 to Station 600+50, left to right; Station 616+00 to Station 617+50 left to right; Station 664+50, left to Station 683+50 left to right.

Wilcox Group sediments were intercepted at existing grade within borings B-100, B-102, B-107, B-108, B-110, B-111, B-114, B-133, B-134, B-137 thru B-140, B-145 thru B-149,

B-151, B-154, and B-156. Wilcox sediments underlie alluvium within boring B-321. Wilcox sediments consisted of silty, fine grain sand; silty fine grain sand with gravel; clayey, fine grain sand; finely sandy clay; sandy, silty clay; sandy fat clay; finely sandy silt with gravel; clayey sand with gravel; and finely sandy elastic silt. Where intercepted in SPT borings, consistency was soft to very stiff for dominantly cohesive sediments and primarily medium dense (few loose and dense) relative density for granular sediments. Laboratory results indicate granular sediments typically contain sufficient clay/silt fractions to exhibit low to medium plasticity (rarely high plasticity). Wilcox sediments were penetrated to depths from 5.0 feet to 30.0 feet. Wilcox sediments were penetrated to termination elevations ranging from 312.5 feet to 247.5 feet within borings B-100, B-102, B-107, B-108, B-110, B-111, B-114, B-132 thru B-136, B-145 thru B-149, B-151, and B-156 with no auger refusal encountered. Borings B-107, B-137, B-138 thru B-140, and B-154 were advanced thru Wilcox sediments and into underlying deposits. Wilcox Group deposits are interpreted to extend from Station 600+50 to Station 605+00, left to right; Station 627+50 to Station 637+50, left to right including parts of James Street Interchange; Station 642+50 to Station 652+00 left to right; Station 660+50 to Station 664+50, left and where surface elevations exceed 290 feet.

Midway Group sediments were intercepted at existing grade within borings B-105 thru B-107, B-109, B-112, B-115, B-135, B-136, B-152, B-153, B-155, B-160, B-161, and B-171. Midway group sediments were intercepted underlying fill/alluvium/Wilcox sediments within borings B-101, B-103, B-104, B-107, B-137, B-138 thru B-140, B-154, B-156, B-157, and B-162. Midway sediments consisted of medium plasticity clay with varying fractions of fine grain sand; sandy fat clay; clayey fine grain sand exhibiting medium plasticity; rarely non-plastic to medium plasticity sandy silt; and finely sandy elastic silt. Where intercepted in SPT borings consistency was stiff to hard (mostly very stiff) for dominantly cohesive sediments and loose to dense (mostly medium dense) relative density for granular sediments. Midway sediments were penetrated to depths from 5.0 feet to 55.0 feet, reflecting a penetrated thickness range of 3.2 feet to 38.2 feet. Midway sediments were penetrated to termination elevations ranging from 287.2 feet to 235.2. Auger refusal or SPT refusal was not encountered within the borings penetrating Midway Group sediments to the elevations discussed above. Midway Group sediments are interpreted to extend beneath the entire proposed alignment and included interchanges.

A summary of the laboratory test results is presented in Table 4-1.

Table 4-1. Summary of Laboratory Test Results

ASTM Soil Type	Plasticity Index	Natural Moisture (%)	Optimum Moisture (%)	Max Dry Unit Weight (pcf)	CBR Values
Fat Clay with Sand	44-52	29.1-37.9	--	--	--
Sandy Fat Clay	25-74	30-42	13.7	109.3	2.5
Lean Clay with Sand	16-28	21.9-22.6	--	--	--
Sandy Lean Clay	9-25	16.2-26.5	12.0-12.6	113.2-117.8	3.4-10.3

Table 4-1. Summary of Laboratory Test Results

ASTM Soil Type	Plasticity Index	Natural Moisture (%)	Optimum Moisture (%)	Max Dry Unit Weight (pcf)	CBR Values
Gravelly Lean Clay with Sand	27	30.9	--	--	--
Sandy Silty Clay	7	17.1	13.6	112.1	2.8
Sandy Silt	0-18	18.2-34	--	--	--
Sandy Elastic Silt	16-29	25.4-39.9	--	--	--
Silty Sand with Gravel	4-23	14.2-42.5	--	--	--
SIlty Sand	1-14	27.1-33.6	--	--	--
Clayey Sand	10-44	13.8-36.5	12.7	112.9	5.6
Clayey Sand with Gravel	23	30.8	--	--	--

Review of driller's logs and notes suggest that borehole conditions, immediately upon completion of moisture/bulk sampling, SPT sampling, or Shelby tube sampling for roadway and retaining wall borings, were assumed dry. Groundwater observations for all advanced borings including bridge borings suggest immediate water levels at 14.5 feet to 46.1 feet below existing grade equating to elevations of 273.2 to 258.4. Static (24 hour) observations indicated water levels at 2.0 feet to 35.0 feet below existing grade equating to an elevation range of 286.4 to 258.9. Seasonal variation in rainfall and position of borings along the project corridor are likely to change these observations over time.

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 0.236g and the horizontal response spectral acceleration value at a 1.0 second period is equal to 0.240g. These values were provided by the United States Geology Survey (USGS) based on a Site Class D 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, silty to clayey sand with gravel, sandy silt, silty sand with gravel, lean clay to fat clay with sand, sandy lean to fat clay, sandy elastic silt, and sandy

silty clay. One soil sample of gravelly lean clay with sand and silty, clayey gravel with sand was also encountered. These soils have low to moderate plasticity. However, some volumes of highly plastic materials were encountered within and along the project corridor. Highly plastic soils, that 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," located in Appendix D. 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.

California Bearing Ratio (CBR) testing values performed on the bulk soil samples ranged from 2.5 to 10.3 with an average of 4.4 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.

The natural moisture contents of the cohesive samples along the project corridor were typically slightly 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.

5.2 Cut/Embankment Slopes

The roadway design cross sections indicate excavation and fill are required to construct this project. Cut slopes are less than 20.5 feet in depth and embankment slopes are as high as 25.9 feet. Individual recommendations are depicted on the attached critical cross sections. In general, soil cut and fill slopes of 3H:1V or flatter have been utilized to develop roadway cross sections.

Due to wall geometry at Station 136+00 of TP White Drive, a four (4) foot bench extending from the toe of the retaining wall is required; due to this requirement a 2.5H:1V slope will extend from the end of the bench down to ditch. This recommendation applies for the entire wall segment.

Seismic analyses were performed on the retaining walls at the critical wall heights. Based on the seismic analysis completed at the critical retaining wall heights, slope instability due to the design seismic event is not anticipated. Table 5-1, shown below, list the factors of safety associated with each critical roadway and retaining wall section. Critical cross-sections are located in Appendix C of this report.

Table 5-1. Factors of Safety for Slope Stability

Location	Short Term (Total Stress)	Intermediate	Long Term (Effective Stress)	Seismic*	Slope/Wall Type
John Harden Drive 137+00	2.8	--	2.3	1.7	MSE
John Harden Drive 152+00	1.6	--	1.6	1.2	Soil Nail
John Harden Drive 160+00	2.3	2.2	2.5	1.5	Soil Nail
John Harden Drive 172+00	>3.0	>3.0	>3.0	>3.0	MSE
TP White Drive 136+00	1.9	1.9	1.9	1.3	MSE
Gregory St. 807+00 RT	>3.0	--	2.6	1.9	MSE**
Gregory St. 807+00 LT	>3.0	--	2.9	2.0	MSE**
Gregory St. 811+00 RT	2.0	--	1.9	1.3	MSE**
Gregory St. 811+00 LT	2.2	--	2.0	1.2	3H:1V
James St. 210+00 RT	2.3	--	2.0	--	3H:1V
James St. 210+00 LT	>3.0	--	2.5	--	3H:1V
Highway 67 611+00	3.0	--	2.8	--	3H:1V
Highway 67 675+00 (TP White Drive MSE wall)	1.9	--	2.0	1.1	MSE
Highway 67 684+00 RT	2.2	--	1.9	1.5	ES***
Highway 67 684+00 LT	1.8	--	2.0	1.0	MSE**
Highway 67 688+00	2.3	--	2.3	--	3H:1V

*Seismic analyses were performed only on cross-sections located near the critical wall heights.
**MSE walls are associated with bridges, MSE wall analyses and recommendations are detailed in the Bridge Geotechnical Report.
***Analysis performed on existing slope due to change in traffic loading and roadway geometry. Seismic analysis performed because slope failure would influence retaining wall failure.

5.3 Retaining Walls

Several walls are proposed along the Highway 67 alignment, including MSE walls, soil nail walls, cast in place walls, and barrier walls. Analyses were performed on MSE walls and soil nail walls along the roadway, but outside of bridge retaining wall limits. Analysis results and recommendations are presented in Table 5-2 and Table 5-3. For barrier walls and cast in place walls, AHTD standard specifications and details shall be utilized. Retaining walls associated with bridge structures are covered in the Hwy 67 Widening from Main Street to Vandenberg Boulevard Bridge Geotechnical Report.

Additional walls and/or additional wall types may be needed and will be included in an addendum at a later date.

5.3.1 MSE Walls

MSE wall discussion included within this section cover MSE walls along the roadway alignment. At all times, MSE wall design and construction must be in accordance with the Roadway MSE Wall special provision included in the appendix of this report.

High plasticity soils and high liquid limit values were found at or near the bottom of leveling pad elevations along some of the walls. When in contact with water, these soils have the potential to swell which greatly reduces the bearing capacity; therefore, it is recommended that these soils be undercut a minimum of one (1) foot below the bottom of leveling pad elevation or deeper as directed by the engineer. The maximum wall height, maximum anticipated strap lengths, strap length to wall height ratio, factored bearing resistance, and undercut limits are presented below in Table 5-2. A minimum two (2) foot embedment is required for all roadway walls, except one wall. Three (3) foot of wall embedment is required for the wall located on John Harden Drive from Station 135+80 to Station 138+77.

Table 5-2. MSE Wall Summary

Alignment	Wall Location		Maximum Wall Height (ft)[a]	Max. Anticipated Strap length (ft)	Strap Length to Wall Height Ratio	Factored Bearing Resistance (psf)	Undercut Limits (Along Alignment)		Undercut Depth (ft)
	Begin	End					Begin	End	
JH[b]	135+80	138+77	16.6	18.0	1.10	4,100	135+80	138+77	3.0
JH	166+10	175+30	8.5	6.5	0.75	5,600	166+10	175+30	1.0
TPW[c]	133+00	136+50	20.5	21.0	1.05	5,380	133+00	136+50	1.0

[a]Heights include embedment depth of wall.
[b]Minimum footing depth of three (3) feet required.
[c]Minimum footing depth of two (2) feet required, with a 2.5H:1 slope.
JH-John Harden Drive
TPW-TP White Drive

The estimated factored bearing resistance provided in Table 5-2 is for informational purposes only. The required factored bearing resistance and strap lengths will be determined by the wall designer based on the final wall design.

The reinforced soil that will be used for the MSE wall shall meet the minimum requirements set forth in the Special Provision. In general, these requirements state that the material shall be granular with no cohesion, and possess a minimum angle of internal friction greater than 32 degrees. Aggregate Base Course (Class 7) or Selected Material (SM-1) meets this minimum requirement. Regardless of the material selected for the reinforcement zone, the Contractor shall produce test results that prove the design material parameters, utilized by the selected wall designer, are obtained. These values are typically higher than the minimum requirements set forth in the Special Provision. All fill material shall be placed and compacted in accordance with the minimum requirements defined in the AHTD Standard Specifications for Highway Construction. Furthermore, a 2-foot wedge of porous crushed stone backfill shall be placed immediately behind the wall along with a 4-inch pipe underdrain and Type II filter fabric to

ensure positive drainage and prevent additional hydrostatic pressures on the retaining system.

In areas where undercut is recommended, the backfill material shall consist of stone backfill in accordance with Section 207 of the Standard Specifications for Highway Construction. The replacement rock shall be overlain with 6 inches of choke stone or geotextile fabric to prevent the migration of fines.

5.3.2 Soil Nail Walls

Soil nail wall design and construction shall follow AHTD standard details. The special provision for soil nail walls is included in Appendix D. Preliminary design included using Snail Version 2.0.3.1 software to model proposed soil nail wall conditions and determine a bar length . Internal stability is to be verified by the specialty contractor. Nail spacing was assumed to be on a four (4) foot by four (4) foot grid. Results are shown in Table 5-3.

Table 5-3. Soil Nail Wall Summary

Alignment	Wall Location		Nail Inclination from Horizontal (degrees)	Maximum Wall Height (ft)	Max. Anticipated Bar length (ft)	Bond Strength (psi)
	Begin	End				
JH	148+70	158+40	20	8.0	8.0	12
Ramp 4	12+40	20+20	20	12.2	13.0	12
JH-John Harden Drive Nail Spacing: 4ft x 4ft grid						

The estimated bar lengths and bond strengths provided in Table 5-3 is for informational purposes only. Materials implemented in soil nail wall construction shall follow the requirements set forth in the Soil Nail Wall Special Provision. In general, the nail solid bar shall be a minimum grade 420 (60 ksi steel) and continuous without splices or welds. Couplers, if required, shall also develop the full tensile strength of the bar. Centralizers shall be manufactured from Schedule 40 PVC pipe or another material that is not damaging to the nail solid bar.

For proper drainage of water behind the wall, geocomposite drain strips shall be placed behind the welded wire fabric and in between the nail columns and as stated in the Special Provision. In addition, underdrains and perforated pipe shall be designed according to Standard Specification Section 611 and Standard Drawing No. PU-1.

Nail testing is required for both sacrificial and production nails. Proof tests are to be performed on production nails after the shotcrete facing has cured for a minimum of 72 hours and have achieved the specified 3-day compressive strength. Requirements for testing sacrificial nails and production nails in addition to the acceptance criteria are described in the Special Provision.

5.4 Settlement

Subsurface conditions indicate potential settlement within the analyzed areas could range from 0.5'' to 8.8" for analysis sections discussed within this report. Some reported settlements are predominately consolidation and will have excessive wait times to reach 90% consolidation. These embankment areas correspond to bridge MSE wall locations. Wick drains have been recommended in the Bridge Report for the MSE walls in this area; likewise, wick drains can be installed underneath proposed embankment to speed up waiting periods. It is recommended that if contractor elects to use wick drains for bridge MSE wall construction that they also be placed for the nearby roadway embankment as specified below, to avoid significant differential settlement. Also, if contractor elects to not use wick drains for bridge MSE walls, they should not be used for nearby roadway embankment. Wick drains are only recommended for areas where high consolidation totals are anticipated. Waiting periods without wick drains are specified for various areas below, but the estimated consolidation in these areas are smaller, thus the need for wick drains is not anticipated. See Table 5-4 for settlement total summaries and corresponding waiting periods.

Table 5-4. Settlement Summary

Alignment	Station	Estimated Elastic Settlement (inches)	Estimated Consolidation (inches)	Est. Time to 90% Consolidation w/o wick drains (days)	Est. Time to 90% Consolidation with Wick Drains (days)
John Harden	137+00	0	2.1	50	--
TP White	136+00	0.4	1.9	120	--
Gregory Street	807+00	0	8.5	300	21
Gregory Street	811+00	0	8.8	350	26
James Street	210+00	1.7	0.8	170	--
Hwy. 67	675+00	0.8	7.6	10	--
Hwy. 67	684+00	0	2.3	45	--
Hwy. 67	688+00	0	6.4	55	--

Wick drains shall be three (3) inches in diameter, placed at four (4) foot spacing in a triangular grid formation. A drainage layer shall be placed at the top two (2) feet of the wick drains consisting of Class 7 aggregate material in accordance with AHTD Standard Specifications. Refer to the special provision for Prefabricated Vertical Wick Drains attached in Appendix D for further details. See Table 5-5 for wick drain details.

Table 5-5. Wick Drain Details

Alignment	Begin Station	End Station	Offset Left	Offset Right	Estimated Wick Drain End Elevation (ft)
Gregory Street	804+50	807+37.3	20' LT	20' RT	+260 or refusal

Table 5-5. Wick Drain Details

Alignment	Begin Station	End Station	Offset Left	Offset Right	Estimated Wick Drain End Elevation (ft)
Gregory Street	810+26.9	813+50	20' LT	5' RT*	+250 or refusal
*wick drains shall be extended right to combine with wick drains to be installed under the MSE wall straps. Detail for wick drains located underneath MSE wall are discussed in Bridge Report.					

Settlement monitoring at roadway locations with high settlement totals will be required to observe settlement and time of consolidation prior to commencing placement of pavement. Settlement monitoring has been specified in the Bridge Report for bridge MSE walls and these locations will cover nearby roadway embankment. Settlement monitoring for roadway embankments with high settlement totals, outside of bridge areas, are discussed in Table 5-6.

Table 5-6. Settlement Monitoring Locations

Alignment	Station	Offset
Hwy. 67	688+00	55' LT

A special provision regarding the installation and use of pipe riser settlement monitoring devices for roadway monitoring location(s) is included in Appendix D for further instruction. One (1) settlement plate has been designated for the station interval where higher consolidation settlement totals are anticipated. This area does not need wick drains, due to the projected waiting period being minimal. Table 5-6 above shows the approximate settlement monitoring location where a plate riser shall be installed and monitored. The settlement monitoring plate riser shall be installed within the footprint of new embankment as the station and offset below are approximate measurements.

The notes below shall be added to Roadway Plans:

IF CONTRACTOR ELECTS TO USE WICK DRAINS AT GREGORY STREET LOCATION, THREE (3) INCH DIAMETER WICK DRAINS AT FOUR (4) FOOT SPACING SHALL BE INSTALLED AT THE FOLLOWING LOCATIONS:

LOCATION	STATION INTERVAL	OFFSET	TIP ELEVATION** (FT)
GREGORY STREET	804+50 TO 807+37.3	20' LT TO 20' RT	260.0
GREGORY STREET	810+26.9 TO 813+50	20' LT TO 5' RT*	250.0
*WICK DRAINS SHALL CONTINUE TO EXTEND UNDERNEATH MSE WALL STRAPS AS SPECIFIED IN BRIDGE PLANS. **WICK DRAINS SHALL BE INSTALLED TO THE PROVIDED TIP ELEVATION OR TO REFUSAL.			

SETTLEMENT MONITORING DEVICES SHALL BE INSTALLED AT STATION 688+00 ON HIGHWAY 67 NEAR THE FOLLOWING LOCATIONS, WITHIN THE TALLEST FILL EMBANKMENT LOCATION.

LOCATION	STATION	OFFSET
HIGHWAY 67	688+00	55’ LT

5.5 General Site Recommendations

High plasticity soils, which have swell potentials, were found during the subsurface investigation. These clays pose a threat to the durability of the proposed pavement and will need to be undercut. Table 5-7, shown below, lists the recommended undercut below the proposed grade for areas affected by potentially expansive soils.

Table 5-7. Recommended Undercut

Alignment	Station Range		Offset Range		Undercut Depth (ft)
	From	To	From	To	
Highway 67	638+00	647+00	0	90’ RT	3.0
Highway 67	649+00	650+00	0	120’ RT	3.0
Highway 67	664+00	670+00	50’ RT	140’ RT	3.0

For the areas discussed above, or where saturated soft or highly plastic soils are encountered, undercut is recommended within the widening limits and replaced with stone backfill. Typically, the undercut extends three (3) feet below the surface; however, actual excavation limits shall be determined by the Engineer. If swell areas are encountered within the roadway alignment footprint, the swell shall be completely filled with stone backfill. Stone backfill requirements are specified in Section 207 of the Standard Specifications for Highway Construction. The stone backfill shall be overlain with 6 inches of choke stone or geotextile fabric to prevent the migration of fines. The 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.

6 Limitations

This report has been prepared for Arkansas State Highway and Transportation Department with specific application to the proposed project in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made as the professional advice included herein. The conclusions and

recommendations do not reflect variations in subsurface conditions which could exist beyond the limits of this report. Should such variations become apparent during the proposed construction, it will be necessary to re-evaluate the conclusions and recommendations based upon on-site observations of the conditions.

In the event that changes are made in the proposed design or location of the alignments, the recommendations presented in the report shall not be considered valid unless the changes are reviewed by the geotechnical engineer of record and conclusions of this report modified and/or verified in writing. Further review is generally warranted to insure that the recommendations and comments provided herein have been understood and properly implemented.

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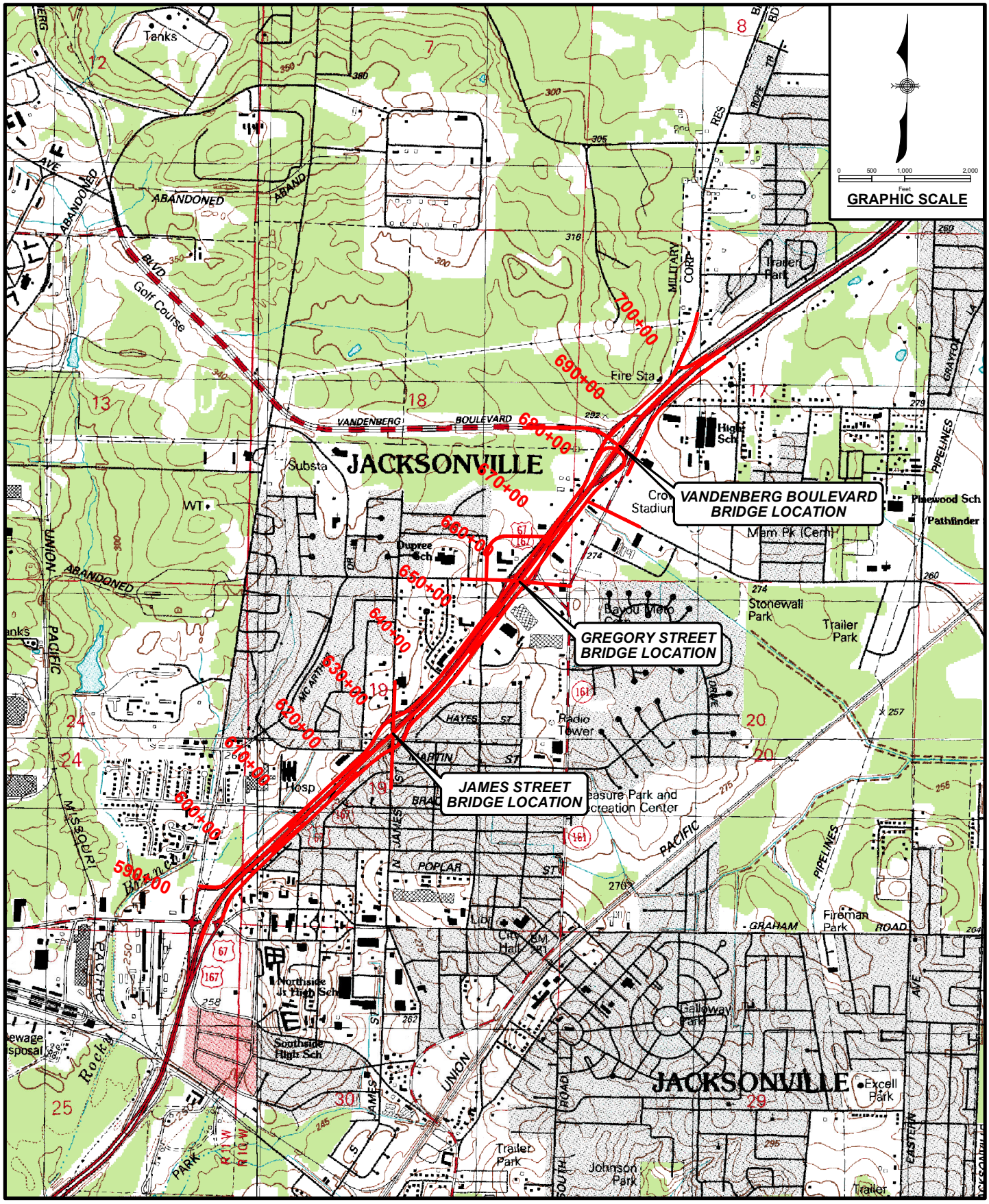
Appendix A. SITE VICINITY MAP, PLAN VIEW OF BORINGS, AND BORING LOGS

HDR | ICA

Subsurface Investigation



McALMONT, JACKSONVILLE & CABOT QUADRANGLES
7.5 MINUTE SERIES (TOPOGRAPHIC)
ARKANSAS - PULASKI COUNTY

Highway 67 Widening
Job CA0604

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		CA0604	XXX	XXX
				(2)	PLAN STA. 586+11 TO 595+00			

STA. 100+11.40 ℄ CONST. JOHN HARDEN DR.
BEGIN CONSTRUCTION
BEGIN TYPE A C&G LT. & RT.

N8°56'13"E

100+00

MARSHALL RD.

70+00

MARSHALL RD.

PI 70+00.00

JOHN HARDEN DR.

PC 102+12.18
JOHN HARDEN DR.

S82°26'47"E

PT 104+10.47
JOHN HARDEN DR.

MAIN ST. TURNAROUND

N46°28'44"E

PI 592+30.2

N46°28'44"E

PI 103+17.86
JOHN HARDEN DR.

N46°14'27"E

PI 104+23.67
T.P. WHITE DR.

N44°29'17"E

N21°40'41"E

T.P. WHITE DR.

PC 103+08.03
T.P. WHITE DR.

595+00

194+00

195+00

200+00

PC 198+41.01

SCHOOL DRIVE

00+00

W. MAIN ST. N.

PC 201+06.00

100+00

PI 202+95.06

PT 203+76.19

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR

PLAN MAIN LANES
STA. 586+11 TO 595+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		CA0604	XXX	XXX
				(2)	PLAN STA. 595+00 TO 610+00			

105+00

110+00

115+00

JOHN HARDEN DR.

PT 104+10.47
JOHN HARDEN DR.

BEGIN MSE & CONC. BARRIER WALL +25.00

BEGIN RETAINING WALL +86.66

END RETAINING WALL +42.22

BEGIN TAPER +93.12 47.00' LT

BARRIER WALL

PI 109+57.73
JOHN HARDEN DR.
Δ 178°41'09"

PI 111+07.77
JOHN HARDEN DR.
Δ 178°18'51"

PI 604+50.00
PI 112+43.62
JOHN HARDEN DR.
Δ 179°50'58"

END MSE & CONC. BARRIER WALL
END PROP. C/A
END TYPE A C&G
+06.88

PI 117+11.95
JOHN HARDEN DR.
Δ 179°10'33"

B-132

B-133

B-134

B-100

B-108

SBA 26.2' LT

N46°28'44"E

N45°09'53"E

N46°51'02"E

N46°42'00"E

PI 103+17.86
JOHN HARDEN DR.

BEGIN PROP C/A

BARRIER WALL

℄ CONST. HWY. 67

RAMP 4

PC 10+00.00
RAMP 4

PI 110+89.76
RAMP 4

PT 598+20.53

BEGIN BARRIER WALL +50.00

PI 104+23.67
T.P. WHITE DR.

PC-7

PC 10+00.00
RAMP 1

PI 110+75.56
RAMP 1

END EXIST. C/A

PC 14+30.29
RAMP 1

N51°13'52"E

RAMP 1

N21°40'41"E

N44°29'17"E

T.P. WHITE DR.

PI 105+36.19
T.P. WHITE DR.

PI 599+85.24

PI 600+00.00
EONBK 600+00.00
EONAHD 600+20.98

PC 109+20.60
T.P. WHITE DR.

PI 110+38.73
T.P. WHITE DR.

PT 111+56.83
T.P. WHITE DR.

PI 113+26.18
T.P. WHITE DR.
Δ 179°50'58"

BEGIN TAPER +79.80 12.00' LT

END TAPER +10.37

PI 115+05.85
RAMP 1

PT 15+81.33
RAMP 1

PT 11+51.04
RAMP 1

END BARRIER WALL
BEGIN TYPE B C&G
+47.00

BEGIN BARRIER WALL
BEGIN TYPE A C&G
+77.01

595+00

605+00

610+00

RAMADA

STA. 105+36.19 ℄ CONST. T.P. WHITE DR.
MATCH JOB 061276
STA. 105+36.35 ℄ CONST. T.P. WHITE DR
BEGIN CONSTRUCTION
BEGIN TYPE A C&G LT. & RT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR

PLAN MAIN LANES
STA. 595+00 TO 610+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		CA0604		
				(2)	PLAN STA. 610+00 TO 625+00			

STA. 11+20.00 ℄ CONST. BRADEN ST.
BEGIN CONSTRUCTION
BEGIN TYPE A C&G LT. & RT

STA. 10+00.00 ℄ BRADEN ST. =
STA. 121+50.44 ℄ JOHN HARDEN DR.

STA. 10+25.00 ℄ CONST. N. JEFF DAVIS AVE.
BEGIN CONSTRUCTION
BEGIN TYPE A C&G LT. & RT

120+00

125+00

130+00

135+00

BRADEN ST.

PI 119+20.55
JOHN HARDEN DR.
Δ 179°10'33"

PI 114+09.49
RAMP 4

N88°20'02"E

PC 10+00.00
BRADEN ST.

B-101

N47°31'27"

N41°19'06"E

RAMP 4

N46°42'00"E

PC-1

JOHN HARDEN DR.

BEGIN TAPER
+04.55
12.00' RT

BARRIER WALL

END TAPER
+28.64
12.00' RT

BEGIN TAPER
+07.84
0.00' RT

END BARRIER WALL
END TYPE A C&G
+90.70

PI 112+09.59
RAMP 3

HILL ST.

S87°59'47"E

PC 10+25.37
N. JEFF DAVIS AVE.

PI 10+65.01
N. JEFF DAVIS AVE.

PC 133+14.71
JOHN HARDEN DR.

PI 110+89.76
RAMP 4

PT 11+79.39
RAMP 4

BEGIN BARRIER WALL
BEGIN EXIST. C/A
BEGIN TYPE A C&G
+20.32

PC 13+19.73
RAMP 4

PT 14+99.12
RAMP 4

B-109

END TAPER
+04.55
20.00' RT

PC 11+18.10
RAMP 3

RAMP 3

N52°11'05"E

PT 13+00.93
RAMP 3

PC 14+73.68
RAMP 3

PI 115+65.17
RAMP 3

N46°42'00"E

PC 10+00.00
RAMP 2

PC-8

PT 11+68.56
RAMP 2

N41°38'36"E

RAMP 2

PI 114+24.58
RAMP 2

PI 130+73.53
T.P. WHITE DR.

BEGIN
RETAINING WALL
+24.88

B-135

N50°36'05"E

PT 15+81.33
RAMP 1

BEGIN BARRIER WALL
BEGIN TYPE A C&G
+77.01

BEGIN TAPER
+00.62
20.00' LT

BARRIER
WALL

END TAPER
+00.62
12.00' LT

PI 110+84.33
RAMP 2

PC 128+78.39
T.P. WHITE DR.

PC 13+40.25
RAMP 2

PT 15+08.8
RAMP 2

PT 132+68.52
T.P. WHITE DR.

END BARRIER WALL
END TYPE A C&G
+85.98

610+00

615+00

620+00

625+00

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR

PLAN MAIN LANES
STA. 610+00 TO 625+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		CA0604		XXX

(2) PLAN STA. 625+00 TO 640+00

STA. 139+96.43 ℄ CONST. JOHN HARDEN DR. =
STA. 210+60.51 ℄ CONST. N. JAMES ST.

STA. 630+27.32 ℄ CONST. HWY. 67 =
STA. 208+34.57 ℄ CONST. N. JAMES ST.

STA. 11+00.00 ℄ CONST. N. JEFF DAVIS AVE.
END CONSTRUCTION
END TYPE A C&G LT. & RT

BEGIN PROP. C/A

PC 133+14.71 JOHN HARDEN DR.

PT 10+87.84 N. JEFF DAVIS AVE.

N. JEFF DAVIS AVE.

135+00

PT 135+31.94 JOHN HARDEN DR.

BEGIN RETAINING WALL +74.25

PI 138+21.54 JOHN HARDEN DR.

END RETAINING WALL +72.22

B-138

B-139

B-140

N. JAMES ST.

PC 140+55.28 JOHN HARDEN DR.

PI 126+17.77 N. JAMES ST.

SECOND BABTIST CHURCH

215+00

PHILLIPS 66 (FOR SALE)

QUICK CARE

HOLT DENTISTRY

STATE FARM

GRVL PARKING

145+00

PT 145+33.15 EONBK 145+33.15 EONAHD 145+34.64

PC 146+74.37 JOHN HARDEN DR.

PI 142+96.46 JOHN HARDEN DR.

PT 145+33.15 JOHN HARDEN DR.

JOHN HARDEN DR.

PC-2

N62°02'52"E

N42°55'59"E

PT 139+71.51 JOHN HARDEN DR.

210+00

N46°42'00"E

PI 115+65.17 RAMP 3

PT 16+56.51 RAMP 3

PI 134+27.24 JOHN HARDEN DR.

BEGIN RETAINING WALL +57.27

END RETAINING WALL +96.02

B-110

PC 634+44.76

BEGIN RETAINING WALL +61.18

PI 135+69.95 WHITE DR.

B-136

PT 136+84.03 T.P. WHITE DR.

END RETAINING WALL +78.65

B-137

PC 137+64.65 T.P. WHITE DR.

B-700

END RETAINING WALL +38.65

BEGIN RETAINING WALL +77.33

B-701

B-704

PC-9

T.P. WHITE DR.

N45°39'00"E

N36°49'11"E

N20°48'29"E

PT 140+59.58 T.P. WHITE DR.

PC 140+92.64 T.P. WHITE DR.

PT 142+58.25 T.P. WHITE DR.

PC 144+80.50 T.P. WHITE DR.

PI 639+40.00

PI 149+22.89 T.P. WHITE DR.

END RETAINING WALL +44.04

PC 134+55.11 T.P. WHITE DR.

N50°36'05"E

N62°02'52"E

625+00

135+00

RETAINING WALL

N 2° 02'15" E

N. JAMES ST.

205+00

630+00

PI 139+08.37 T.P. WHITE DR.

HILL ST.

140+00

635+00

145+00

640+00

STA. 137+42.42 ℄ CONST. T.P. WHITE DR. =
STA. 205+98.94 ℄ CONST. N. JAMES ST.
△ 60°00'37"

STATE OF ARKANSAS
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No. 9808
JAMES L. BARR

PLAN MAIN LANES
STA. 625+00 TO 640+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		CA0604		XXX
				(2)	PLAN STA. 640+00 TO 655+00			

BEGIN RETAINING WALL +63.28

TAG ST.

150+00

PI 149+29.77 JOHN HARDEN DR.

PT 151+84.47 JOHN HARDEN DR.

PT 644+32.79

PI 154+40.29 JOHN HARDEN DR.
Δ 178°48'24"

155+00

BEGIN RETAINING WALL +79.17

RETAINING WALL

PC 158+40.29 JOHN HARDEN DR.

PI 159+05.65 JOHN HARDEN DR.

PI 161+64.82 JOHN HARDEN DR.

160+00

PI 161+01.25 RAMP 4

PRC 159+70.96 JOHN HARDEN DR.

B-145 B-146 B-147 B-111 B-148 B-149 B-150 PC-3 B-151

JOHN HARDEN DR.

RAMP 4

N42°55'59"E N35°37'36"E N36°49'11"E N36°49'11"E N42°53'21"E N40°41'29" N36°49'11"E N42°53'21"E

PC 15+00.00 RAMP 4

END RETAINING WALL +39.07

PT 17+02.32 RAMP 4

PC 18+50.14 RAMP 4

PI 19+50.99 RAMP 4

BEGIN BARRIER WALL
BEGIN EXIST. C/A
BEGIN TYPE A C&G
+05.64

BEGIN TAPER +99.72 20.00' LT

PT 15+40.76 RAMP 1

BEGIN RETAINING WALL +83.76

PC 10+00.00 RAMP 1

N36°49'11"E

PI 10+90.27 RAMP 1

PT 11+80.40 RAMP 1

PC 13+60.36 RAMP 1

N42°13'54"E

PC-10

B-102

RAMP 1

T.P. WHITE DR.

PI 149+22.89 T.P. WHITE DR.

PT 153+63.53 T.P. WHITE DR.

PI 14+85.77 N. BAILEY BLVD.

PI 14+50.63 RAMP 1

640+00 150+00 645+00 155+00 650+00 160+00 655+00

N2°14'11"E

N. BAILEY BLVD.

N. BAILEY BLVD. +00.00

END BARRIER WALL END PROP. C/A +33.46

STA. 159+32.28 ℄ CONST. T.P. WHITE DR.
STA. 13+41.51 ℄ CONST. N. BAILEY BLVD.
◁ 34°35'00"

STA. 9+70.61 ℄ CONST. N. BAILEY BLVD.
BEGIN CONSTRUCTION
BEGIN TYPE A C&G LT & RT

℄ CONST. HWY. 67
P.I. = 639+40.00
Δ = 9°52'49.0" LT.
D = 1°00'00"
T = 495.24'
L = 988.03'
PC = 634+44.76
PT = 644+32.79
e = 0.033 FT/FT
Ls = 420'

STATE OF ARKANSAS
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PLAN MAIN LANES
STA. 640+00 TO 655+00

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				6	ARK.			
				JOB NO.		CA0604	XXX	XXX

2 PLAN STA. 655+00 TO 670+00

STA. 803+73.63 ℄ CONST. GREGORY ST. =
STA. 10+00.00 ℄ CONST. N. BAILEY BLVD.
◁ 89°44'36"

STA. 176+26.11 ℄ CONST. JOHN HARDEN DR. =
STA. 24+35.87 ℄ CONST. N. BAILEY BLVD.

STA. 808+80.58 ℄ CONST. GREGORY ST. =
STA. 630+38.57 ℄ CONST. HWY. 67
◁ 58°16'32"

GREGORY ST.

N. BAILEY BLVD.

JOHN HARDEN DR.

T.P. WHITE DR.

RAMP 3

RAMP 2

I-70

END RETAINING WALL +88.26

BEGIN RETAINING WALL +29.65

END RETAINING WALL +15.17

BEGIN TAPER +34.00 12.00' LT

END TAPER +54.00 24.00' LT

BEGIN TAPER +58.84

BEGIN RETAINING WALL +08.79

END TAPER +58.65 12.00' RT

B-154

B-156

B-157

B-152

B-153

B-155

B-112

PC-11

END RETAINING WALL +83.74

BEGIN TAPER +35.00 24.00' RT

BEGIN TAPER +85.00 12.00' RT

BEGIN RETAINING WALL +94.10

END RETAINING WALL +49.58

END RETAINING WALL +35.73

STATE OF ARKANSAS
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PLAN MAIN LANES
STA. 655+00 TO 670+00

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				JOB NO.		CA0604		

(2) PLAN STA. 670+00 TO 685+00

STA. 10+00.00 ℄ CONST. WALMART DR. =
STA. 181+21.63 ℄ CONST. JOHN HARDEN DR.
◁ 84°04'52"

STA. 185+52.70 ℄ CONST. T.P. WHITE DR. =
STA. 10+00.00 ℄ CONST. N.J.P. WRIGHT LOOP RD.
◁ 79°27'18"

BEGIN TAPER +99.31 24.00' LT
BEGIN TAPER +58.84 24.00' LT
END TAPER +99.62 12.00' LT
PI 14+66.91 RAMP 3
PC 13+84.91 RAMP 3
PT 15+48.81 RAMP 3
PI 14+31.69 RAMP 2
PT 15+24.85 RAMP 2
PC 13+38.38 RAMP 2
CNTR. TO WALMART
PI 11+17.48 WALMART
PC 674+53.71
PC 185+84.73 T.P. WHITE DR.
PI 185+16.61 JOHN HARDEN DR.
PC 187+31.84 JOHN HARDEN DR.
PC 188+59.47 JOHN HARDEN DR.
PI 189+51.79 JOHN HARDEN DR.
PRC 190+64.08 JOHN HARDEN DR.
PC 191+21.97 JOHN HARDEN DR.
PI 191+79.81 JOHN HARDEN DR.
PC 192+42.78 JOHN HARDEN DR.
PI 193+29.75 JOHN HARDEN DR.
PI 186+24.68 JOHN HARDEN DR.
PI 187+45.14 T.P. WHITE DR.
PT 189+04.22 T.P. WHITE DR.
PI 198+52.17 N. IST ST.
PC 197+12.20 N. IST ST.
PI 314+59.77 HWY. 161
PI 313+17.60 HWY. 161
PI 318+03.89 HWY. 161
PI 319+38.46 HWY. 161
PI 678+42.22
PI 16+99.95 TURNAROUND
PT 17+86.72 TURNAROUND
PC 15+18.10 TURNAROUND
PT 14+37.10 TURNAROUND
PC 11+58.99 TURNAROUND
PI 13+53.10 TURNAROUND
PRC 682+30.43
END TAPER +84.82 12.00' RT
BEGIN RETAINING WALL +00.00
BEGIN TAPER +84.82 12.00' RT
BEGIN TAPER +77.83 59.00' RT
END TAPER +77.83 47.00' RT.
BEGIN TAPER +48.80 12.00' RT
END TAPER +98.80 7.50' RT.
END TAPER +83.42 136.12' RT
B-113
B-103
B-104
B-158
B-159
PC-19
JOHN HARDEN DR.
T.P. WHITE DR.
TEXAS TURNAROUND
N. IST ST.
WALMART
TURNAROUND
00+01
180+00
185+00
190+00
670+00
675+00
680+00
N36°49'11"E
N31°54'10"E
N23°54'22"E
N32°56'10"E
N26°09'08"E
N24°40'49"E
N27°31'46"W
N53°18'03"W
N47°38'16"W
N49°35'58"E
N27°40'31"E
N26°45'29"E
N25°38'42"E
N22°08'24"E
S63°43

STATE OF ARKANSAS
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PLAN MAIN LANES
STA. 670+00 TO 685+00

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				6	ARK.			
				JOB NO.		CA0604		

(2) PLAN STA. 685+00 TO 700+00

STA. 113+07.62 ℄ CONST. VANDENBERG BLVD. =
STA. 194+15.51 ℄ CONST. JOHN HARDEN DR.
◁ 86°23'58"

STA. 118+19.42 ℄ CONST. VANDENBERG BLVD. =
STA. 199+99.52 ℄ CONST. T.P. WHITE DR./ N. IST ST.
◁ 75°34'28"

STA. 100+00.00 ℄ CONST. MADDEN RD. =
STA. 209+30.92 ℄ CONST. T.P. WHITE DR./ N. IST ST.
◁ 90°00'00"

JOHN HARDEN DR.
VANDENBERG BLVD
T.P. WHITE DR.
MADDEN RD.
LOWES ENTR.
N. IST ST.

PI 193+29.75 JOHN HARDEN DR.
PT 194+15.45 JOHN HARDEN DR.
PI 195+09.07 JOHN HARDEN DR.
PC 194+51.85 JOHN HARDEN DR.
PT 195+66.85 JOHN HARDEN DR.
PC 205+47.64 JOHN HARDEN DR.
PI 207+31.47 JOHN HARDEN DR.
PI 116+99.95 TURNAROUND
PI 113+53.39 TURNAROUND
PRC 199+91.97
PI 200+53.48 T.P. WHITE DR.
PT 201+14.98 T.P. WHITE DR.
PC 205+26.21 T.P. WHITE DR.
PI 206+77.30 T.P. WHITE DR.
PC 209+30.93 T.P. WHITE DR.
PT 208+25.02 T.P. WHITE DR.
PI 213+95.27 T.P. WHITE DR.
PI 100+65.97 MADDEN RD.
PC 100+24.22 MADDEN RD.
PT 101+03.32 MADDEN RD.

N39°35'37"E
N40°04'45"E
N46°56'16"E
N53°18'03"W
N32°56'10"E
N32°56'10"E
N46°56'16"E
N25°08'38"E
N53°18'03"W
N24°19'00"E
N45°14'00"E
N45°14'00"E
N22°08'24"E

BEGIN TAPER +00.00 48.00' LT
END TAPER +00.00 36.00' LT
BEGIN RETAINING WALL +27.23
END RETAINING WALL +45.50
BEGIN TAPER +34.71 18.00' RT
END TAPER +34.71 30.00' RT
BEGIN TAPER +30.00 6.00' LT
END TAPER +30.00 18.00' LT

PC-5
B-160
B-161
B-162
B-114
PC-12

685+00
690+00
695+00
700+00
200+00
205+00
210+00

STATE OF ARKANSAS
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PLAN MAIN LANES
STA. 685+00 TO 700+00

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				6	ARK.			
				JOB NO.		CA0604		
				(2)	PLAN STA. 700+00 TO 715+00			

STA. 700+16.00 ℄ CONST.
VANDENBERG RAMP 4 =
STA. 209+22.36 CONST.
JOHN HARDEN DR.
◁ 81°36'13"

STA. 211+05.21 ℄ CONST. N. IST ST. =
STA. 30+00.00 ℄ CONST. JOHN HARDEN DR.
◁ 90°00'00"

STA. 705+05.30 ℄ CONST. HWY. 67
END JOB CA0604

STA. 218+00.00 ℄ CONST. T.P. WHITE DR.
END CONSTRUCTION
END TYPE A C&G

PLAN MAIN LANES
STA. 700+00 TO 715+00

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		CA0604		

(2) PLAN STA. 715+00 TO 730+00

STA. 48+87.00 ℄ CONST. JOHN HARDEN DR.
END CONSTRUCTION
END TYPE A C&G

PINE MEADOWS

BEGIN TAPER +37.00

END TAPER +87.00

PI 48+08.13 JOHN HARDEN DR.

50'

45+00

EXIST. ROW

PI 715+09.62 RAMP 4

N55°41'05"E

JOHN HARDEN DR.

EVANS DR.

EXIST. ROW

N62°29'28"E

PI 716+09.28

PI 716+22.93 RAMP 4

N62°29'28"E

N55°25'56"E

PC 47+83.59 JOHN HARDEN DR.

PRC 48+32.65 JOHN HARDEN DR.

PI 48+59.84 JOHN HARDEN DR.

℄ CONST. HWY. 67

PRC 716+40.72 RAMP 4

PI 717+40.72 RAMP 4

PT 718+58.22 RAMP 4

PI 234+33.67 T.P. WHITE DR.

T.P. WHITE DR.

715+00

N55°23'00"E

N27°02'00"E

PI 721+86.45 T.P. WHITE DR.

PC 722+99.05 T.P. WHITE DR.

720+00

235+00

PT. 235+62.77 T.P. WHITE DR.

725+00

T.P. WHITE DR.

730+00

EXIST. ROW

N27°02'00"E

N56°20'00"E

PI 230+38.32 T.P. WHITE DR.

EXIST. ROW

230+00

LINK FENCE

CONC DRIVE

RCP AT HEADWALL

POND

GATE

STATE OF ARKANSAS
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PLAN MAIN LANES
STA. 715+00 TO 730+00

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				6	ARK.			
				JOB NO.		CA0604		XXX
				(2)	PLAN JAMES ST. STA. 201+50 TO 215+80			

N. JEFF DAVIS AVE.

135+00

JOHN HARDEN DR.

N46°42'00.0"E

625+00

RETAINING WALL

BARRIER WALL

B-141

B-142

STA. 630+27.32 ℄ CONST. HWY 67 =
STA. 208+34.57 ℄ CONST. N. JAMES ST.
◁ 44°39'45"

STA. 213+65.12 ℄ CONST.
BEGIN WIDENING
END CONST.

STA. 201+50.00 ℄ CONST. N. JAMES ST.
BEGIN WIDENING

135+00

140+00

PC-14

PC-15

B-107

210+00

B-144

B-143

STA. 215+80.00 ℄ CONST
END WIDENING

215+00

STA. 204+51.85 ℄ CONST. N. JAMES ST.
END WIDENING
BEGIN CONST.

STA. 137+42.42 ℄ CONST. T.P. WHITE DR. =
STA. 205+98.94 ℄ CONST. N. JAMES ST.
◁ 60°00'37"

STA. 139+96.43 ℄ CONST. JOHN HARDEN DR. =
STA. 210+60.51 ℄ CONST. N. JAMES ST.
◁ 60°00'37"

205+00

630+00

HILL ST.

140+00

JOHN HARDEN DR.

145+00

T.P. WHITE DR.

635+00

PC-9

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR

PLAN JAMES ST.
STA. 201+50 TO 215+80

$PLOT_INFO$

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		CA0604	XXX	XXX
				(2)	PLAN GREGORY STA. 800+07 TO 816+55			

GREGORY ST.

N. BAILEY BLVD.

STA. 803+73.63 ℄ CONST. GREGORY ST. =
STA. 10+00.00 ℄ CONST. N. BAILEY BLVD. CONNECTION
◁ 89°44'36"

RETAINING WALL
+38.52
70.90' LT

B-167

END RETAINING WALL
+20.00
70.90' LT

PC-18

B-166

B-169

JOHN HARDEN DR.

T.P. WHITE DR.

BEGIN RETAINING WALL
+50.00
64.90' RT

RETAINING WALL

RETAINING WALL
+63.56
25.90' LT

RETAINING WALL
+07.39
64.90' RT

B-168

N36°49'11"E

B-171

BEGIN RETAINING WALL
+81.42
104.80' LT

STA. 816+26.87 ℄ CONST.
GREGORY ST.
END CONST.

RETAINING WALL
+99.95
26.98' RT

B-170

END RETAINING WALL
+68.95
26.98' RT

N. 1st ST.

STA. 808+80.58 ℄ CONST. GREGORY ST. =
STA. 660+38.57 ℄ CONST. HWY. 67
◁ 58°16'32"

STATE OF ARKANSAS
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PLAN GREGORY ST.
STA. 800+07 TO 816+55

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		CA0604		XXX

(2) PLAN N. BAILEY BLVD. CONNECTION STA. 10+00 TO 24+36

STA. 24+35.87 ℄ CONST. N. BAILEY BLVD. CONNECTION =
STA. 176+26.11 ℄ CONST. JOHN HARDEN ST.

STA. 10+00.00 ℄ CONST.
N. BAILEY ST. CONNECTION =
STA. 803+73.63 ℄ CONST. GREGORY ST.
◁ 89°44'36"

PARRISH ST.

N. BAILEY BLVD.

PI 16+10.77
N. BAILEY BLVD.

PC 13+87.54
N. BAILEY BLVD.

N1°47'49"E

PT 18+34.28
N. BAILEY BLVD.

PC -20

PC -21

B-702

BEGIN RETAINING WALL
+35.00

B-703

END RETAINING WALL
+30.00

S88°51'22"E

20+00

15+00

PT 11+63.90
RAMP 3

PI 10+82.00
RAMP 3

N57°54'48"E

PT 11+86.47
RAMP 2

PI 10+00.00
RAMP 3

JOHN HARDEN DR.

N36°49'11"E

N51°15'52"E

PI 10+93.34
RAMP 2

PI 10+00.00
RAMP 2

175+00

665+00

170+00

PI 169+54.81
JOHN HARDEN DR.
Δ 179°08'26"

PI 806+20.23
GREGORY ST.

RETAINING WALL

GREGORY ST.

S88°27'35"E

00+01

S84°54'17"E

PC 805+31.33
GREGORY ST.

805+00

PI 807+09.08
GREGORY ST.

N35°52'57"E

PI 170+69.95
T.P. WHITE DR.

S84°54'17"E

RETAINING WALL

N7°19'00"E

00+

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR

PLAN N. BAILEY BLVD. CONNECTION
STA. 10+00 TO 24+36

$PLOT_INFO$

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		CA0604	XXX	XXX

2 PLAN N. J. P. WRIGHT LOOP RD.

PC 188+59.47
JOHN HARDEN DR.
N23°55'
N32°56'10"E
PT 187+31.84
JOHN HARDEN DR.
N23°54'22"E
PI 186+24.66
JOHN HARDEN DR.
PI 678+42.22
N36°49'11"E
PC 185+16.61
JOHN HARDEN DR.
N36°49'11"E
PI 184+45.14
T.P. WHITE DR.
N19°35'58"E
PT 189+04.22
T.P. WHITE DR.
680+00
190+00
PI 319+38.46
HWY. 161
N25°38'42"E
PI 318+03.89
HWY. 161
N26°45'29"E
PC 185+84.73
T.P. WHITE DR.
S63°43'31"E
PI 18+89.10
N.J.P. WRIGHT LOOP RD.
185+00
PI 314+59.71
HWY. 161
675+00
315+00
PC 674+53.71
N36°49'11"E
PI 17+47.48
N47°38'16"W
PT 15+48.81
RAMP 3
DRAINAGE DITCH
N36°49'11"E
PI 14+66
RAMP 3
N31°54'10"E
PC 13+84.9
RAMP 3
PI 14+31.69
RAMP 2
N36°49'11"E
PT 15+24.85
RAMP 2
N27°40'31"E
PI 313+17.60
HWY. 161
STA. 316+06.33 ℄ N. IST ST. =
STA. 13+45.00 ℄ N. J.P. WRIGHT LOOP RD.
△ 90°00'00"
HWY. 161

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR

PLAN N. J. P. WRIGHT LOOP RD.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		CA0604	XXX	XXX

(2) PLAN VANDENBERG BLVD. STA. 108+52 TO 118+19

STA. 115+08.55 ℄ CONST. VANDENBERG BLVD. =
STA. 685+99.94 ℄ CONST. HWY. 67

STA. 113+31.65 ℄ CONST. VANDENBERG BLVD. =
STA. 194+15.57 ℄ CONST. JOHN HARDEN DR.

STA. 194+15.51 ℄ CONST. JOHN HARDEN DR.
OFFSET 24.03' RT =
STA. 194+15.57 ℄ CONST. JOHN HARDEN DR.

STA. 113+07.62 ℄ CONST. VANDENBERG BLVD. =
STA. 194+15.51 ℄ CONST. JOHN HARDEN DR.

STA. 108+45.69 ℄ CONST.
VANDENBERG BLVD.

STA. 118+19.42 ℄ CONST. VANDENBERG BLVD. =
STA. 199+99.52 ℄ CONST. T.P. WHITE DR.
∢ 75°34'28"

JOHN HARDEN DR.
HWY. 67
N. IST ST.
VANDENBERG BLVD.
B-106
PC-17
PC-16
00+069
195+00
200+00
685+00
115+00
110+00
190+00

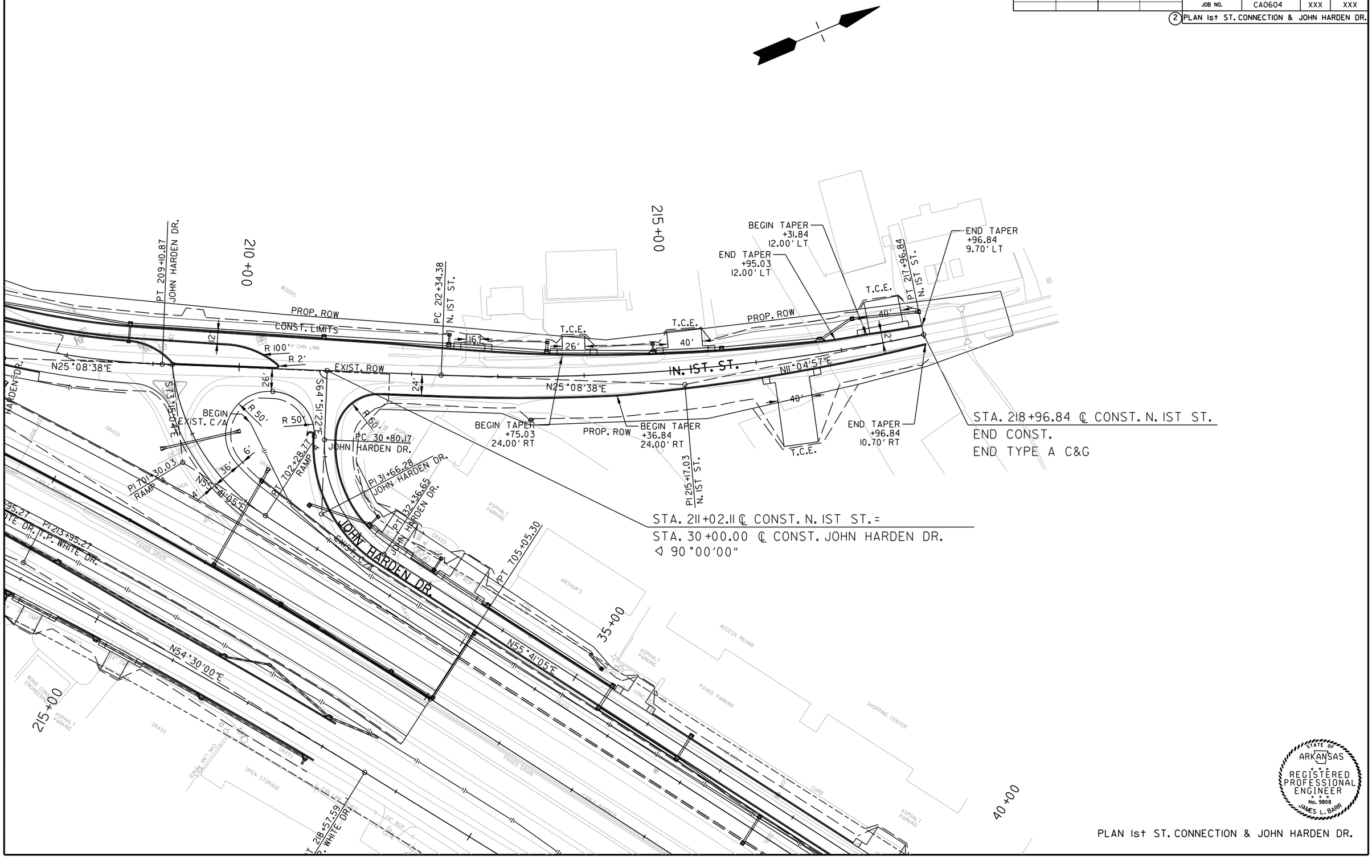
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR

PLAN VANDENBERG BLVD.
STA. 108+52 TO 118+19

$PLOT_INFO$

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		CA0604	XXX	XXX

(2) PLAN Ist ST. CONNECTION & JOHN HARDEN DR.



STA. 218+96.84 ℄ CONST. N. IST ST.
END CONST.
END TYPE A C&G

STA. 211+02.11 ℄ CONST. N. IST ST. =
STA. 30+00.00 ℄ CONST. JOHN HARDEN DR.
◁ 90°00'00"

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9808
JAMES L. BARR

PLAN Ist ST. CONNECTION & JOHN HARDEN DR.

HDR | ICA

BORING NO.: B-100

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 602+00 105' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87019 ° LONGITUDE: 92.12544 °

DATE: 5/10/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 268.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Loose to very dense, red, silty sand.						9,11,14		
10.0					24	28.6	33		5,5,5		
15.0									10,50/0.5		
20.0			16.8' Very dense, red, silty sand with gravel. 20.0'						30,27,25		
25.0			No Refusal & Boring Terminated @ 20.0' (Elev. 248.0).								
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-101

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 611+00 100' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87188 ° LONGITUDE: 92.12324 °

DATE: 5/10/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 25.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 263.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Soft to stiff, brown, sandy lean clay.								
5.0									5,4,5		
10.0									1,1,1		
			11.8'								
			Very stiff, brown, lean clay with sand.								
15.0									7,14,15		
20.0					17	21.9	37		4,6,11		
			21.8'								
			Medium dense, brown, silty sand.								
25.0			25.0'						7,10,13		
			No Refusal & Boring Terminated @ 25.0' (Elev. 238.4).								
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-102

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 647+00 110' Rt.

LOCATION: Hwy 67

LATITUDE: 34.87853 ° LONGITUDE: 92.11432 °

DATE: 5/13/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 306.8	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Very stiff, red, sandy lean clay.		18	25.3	37		4,10,15		
			6.8'								
10.0			Loose to medium dense, red, silty sand.						4,5,4		
15.0									3,6,6		
20.0			20.0'		24	33.8	34		3,7,10		
			No Refusal & Boring Terminated @ 20.0' (Elev. 286.8).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-103

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 675+00 95' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88472 ° LONGITUDE: 92.10877 °

DATE: 5/13/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 30.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 273.2								
			Soft, red, sandy lean clay.								
5.0									2,2,2		
			6.8'								
			Soft, red, lean clay with sand.								
10.0									1,1,2		
			11.8'								
			Medium dense, brown, clayey sand.								
15.0									4,6,6		
			16.8'								
			Stiff, brown, sandy lean clay.								
20.0					16	17.0	28		4,5,5		
			21.8'								
			Medium dense, brown, clayey sand.								
25.0									3,4,7		
30.0									4,6,8		
			30.0'								
			No Refusal & Boring Terminated @ 30.0' (Elev. 243.2).								
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-104

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 683+00 60' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88678 ° LONGITUDE: 92.10768 °

DATE: 5/10/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 38.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			Soft, brown, sandy lean clay.						2,1,2		
5.0			5.5'								
			Very loose to medium dense, gray, clayey sand.		22	25.7	32	98.3			
			8.3'								
			Stiff, brown, sandy, fat clay.						4,6,8		
10.0			11.8'								
			Very stiff, brown, lean clay with sand.						6,5,11		
15.0			16.8'								
			Very stiff, brown, sandy, fat clay.						5,9,12		
20.0			21.8'								
			Medium dense, brown, silty sand.						6,11,10		
25.0			26.8'								
			Very stiff, brown, sandy fat clay.		32	31.8	82		6,10,13		
30.0											
									7,11,15		
35.0			38.0'								
			Auger Refusal & Boring Terminated @ 38.0' (Elev. 235.2).								
40.0											
45.0											
50.0											

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BORING NO.: B-105

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 702+00 110' Lt.

LOCATION: Hwy 67

LATITUDE: 34.89072 ° LONGITUDE: 92.10343 °

DATE: 5/11/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 289.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Medium stiff to stiff, brown, lean clay with sand.								
5.0									2,2,3		
10.0									2,4,6		
			11.8'								
			Dense, brown, silty sand.								
15.0									10,17,19		
			16.8'								
			Very stiff, brown, sandy lean clay.								
20.0			20.0'						6,12,16		
			No Refusal & Boring Terminated @ 20.0' (Elev. 269.0).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-106

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 117+00 100' Lt.

LOCATION: Vandenberg Blvd.

LATITUDE: 34.88727 ° LONGITUDE: 92.10623 °

DATE: 5/11/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 25.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 278.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Very stiff, red, lean clay with sand.								
5.0									6,8,11		
			6.8'								
			Medium dense, red, clayey sand.								
10.0									4,6,8		
15.0									9,11,15		
			16.8'								
			Very stiff, red, lean clay with sand.								
20.0									8,12,17		
			21.8'								
			Hard, red, sandy, fay clay.								
25.0			25.0'						10,15,25		
			No Refusal & Boring Terminated @ 25.0' (Elev. 253.3).								
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-107

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 210+50 25' Rt.

LOCATION: James Street

LATITUDE: 34.87590 ° LONGITUDE: 92.11823 °

DATE: 5/11/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 25.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 302.8								
			Medium stiff to stiff, red, lean clay with sand.								
									2,2,3		
5.0											
									2,3,7		
10.0											
			11.8'								
			Stiff, brown, sandy lean clay.								
									4,4,7		
15.0											
			16.8'								
			Medium dense, brown, clayey sand.								
									6,7,9		
20.0											
					23	31.6	39		4,7,10		
25.0			25.0'								
			No Refusal & Boring Terminated @ 25.0' (Elev. 277.8).								
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-108

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 603+00 60' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87029 ° LONGITUDE: 92.12509 °

DATE: 5/10/2016

TYPE OF DRILLING: HSA

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 267.7	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.		16	19.1	29	117.8			
5.0			5.0'								
			No Refusal & Boring Terminated @ 5.0' (Elev. 262.7). Bulk sample collected from 0'-5'.								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-109

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 618+00 50' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87310 ° LONGITUDE: 92.12143 °

DATE: 5/10/2016

TYPE OF DRILLING: HSA

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 273.4	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.		19	21.3	36	115.1			
5.0			5.0'								
			No Refusal & Boring Terminated @ 5.0' (Elev. 268.4). Bulk sample collected from 0'-5'.								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-110

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 633+00 40' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87591 ° LONGITUDE: 92.11777 °

DATE: 6/4/2016

TYPE OF DRILLING: HSA

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @ Dry

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 295.7	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 0.6'								
			Brown, sandy, silty clay.		16	17.1	23	112.1			
5.0			5.0'								
			No Refusal & Boring Terminated @ 5.0' (Elev. 290.7).								
			Bulk & MC samples collected from 0.6'-5'.								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-111

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 648+00 60' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87903 ° LONGITUDE: 92.11457 °

DATE: 6/4/2016

TYPE OF DRILLING: HSA

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @ Dry

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 317.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 0.4'								
			Brown, clayey sand.		26	27.1	43	110.7			
5.0			5.0'								
			No Refusal & Boring Terminated @ 5.0' (Elev. 312.3).								
			Bulk & MC samples collected from 0.4'-5'.								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-112

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 663+50 60' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88225 ° LONGITUDE: 92.11116 °

DATE: 5/12/2016

TYPE OF DRILLING: HSA

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 281.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Red, sandy lean clay.		17	21.2	33	113.2			
5.0			5.0'								
			No Refusal & Boring Terminated @ 5.0' (Elev. 276.0). Bulk sample collected from 0'-5'.								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-113

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 678+00 42' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88561 ° LONGITUDE: 92.10855 °

DATE: 5/12/2016

TYPE OF DRILLING: HSA

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 274.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Red, sandy lean clay.		18	20.4	27	113.7			
5.0			5.0'								
			No Refusal & Boring Terminated @ 5.0' (Elev. 269.0). Bulk sample collected from 0'-5'.								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-114

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 693+00 80' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88868 ° LONGITUDE: 92.10524 °

DATE: 5/12/2016

TYPE OF DRILLING: HSA

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 295.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Red, sandy, fat clay.		25	21.5	53	109.3			
5.0			5.0'								
			No Refusal & Boring Terminated @ 5.0' (Elev. 290.4). Bulk sample collected from 0'-5'.								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-115

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 703+00 55' Rt.

LOCATION: Hwy 67

LATITUDE: 34.89053 ° LONGITUDE: 92.10283 °

DATE: 5/12/2016

TYPE OF DRILLING: HSA

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 292.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Red, clayey sand.		20	13.8	43	112.9			
5.0			5.0'								
			No Refusal & Boring Terminated @ 5.0' (Elev. 287.2). Bulk sample collected from 0'-5'.								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-116

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 206+73 51' Lt.

LOCATION: James Street

LATITUDE: 34.87488 ° LONGITUDE: 92.11853 °

DATE: 6/7/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 56.5 ft.

GROUNDWATER @ 10.0 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 296.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Loose, red, clayey sand.								
5.0						28.9			2,3,5		
			8.1'								
			Loose to medium dense, red, silty sand.								
10.0					23	27.7	27				
			13.3'								
			Loose to medium dense, brown & gray, clayey sand.								
15.0						30.5			2,5,7		
20.0						30.3			1,3,5		
25.0					25	27.0	41		2,6,7		
30.0						29.9			6,10,15		
			31.6'								
			Auger Refusal @ 31.6', Begin Coring in Claystone. Dark gray-black, gray-lt. brown, brown-orange stain, sli. to mod. weathered w/seam sev. weathered, low hardness, thin to thick bedded, calcareous, fossiliferous, v. f. to f. sandy ripple laminae and v. thin beds, clay grains to pebbles, trcs. vugular texture.							100	18
35.0			very f. to f. sandy, calcareous 31.6'-32.1'; 70° jt. w/iron oxide stain 35.5'; 35° jt. w/soft walls 40.2'; 85° jt. w/smooth, soft walls 41.6'-43.0'; v. f. to f. sandy, calcareous 46.7'-47.1'; sev. weathered 46.5'-47.3'; 30° jt. w/<1mm clay infill & soft walls 48.0'; v. f. to f. sandy, calcareous 51.4'-51.8'; 20° jt. w/soft walls 56.2'							96	52
40.0											
45.0										98	36
50.0										98	52

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BORING NO.: B-116

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 206+73 51' Lt.

LOCATION: James Street

LATITUDE: 34.87488 ° LONGITUDE: 92.11853 °

DATE: 6/7/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 56.5 ft.

GROUNDWATER @ 10.0 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 296.4								
										98	52
55.0										100	78
			56.5'								
			Boring Terminated @ 56.5' (Elev. 239.9).								
60.0			RS-18 collected from 38.2'-38.6' RS-19 collected from 51.1'-51.5'								
65.0			NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-117

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 207+38 19' Rt.

LOCATION: James Street

LATITUDE: 34.87505 ° LONGITUDE: 92.11829 °

DATE: 6/7/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 81.0 ft.

GROUNDWATER @ 21.0 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 304.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Loose, brown, clayey sand.								
5.0						23.6			2,4,6		
			8.2'								
			Loose, red & gray, clayey sand.								
10.0					19	29.0	30	92.0			
			13.3'								
			Loose, red & gray, clayey sand.								
15.0					21	32.1	35		3,4,5		
			18.2'								
			Medium dense to dense, brown & gray, silty sand.								
20.0						35.0			3,5,8		
25.0					20	25.6	23		4,11,10		
30.0						26.2			11,28,18		
			33.2'								
			Medium dense, black, brown & gray, clayey sand.								
35.0					19	31.5	40		4,7,9		
40.0						27.1			9,16,13		
45.0						29.4			2,5,7		
			47.9'								
			Dense, black, clayey sand.								
50.0											

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BORING NO.: B-117

PAGE: 2 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 207+38 19' Rt.

LOCATION: James Street

LATITUDE: 34.87505 ° LONGITUDE: 92.11829 °

DATE: 6/7/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 81.0 ft.

GROUNDWATER @ 21.0 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 304.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
55.0						30.6			5,13,20		
					24	31.4	51		6,18,21		
			59.4'								
60.0			Auger Refusal @ 59.4', Begin Coring in Claystone. Dark gray-black, gray-lt. brown, sli. to mod. weathered, low hardness, thin to thick bedded, calcareous, fossiliferous, v. f. to f. sandy ripple laminae and v. thin beds, clay grains to pebbles, trcs. vugular texture. 10 0°-10° bedding discontinuities 59.4'-74.3'; 35° jt. w/soft walls 65.5'; 35° jt. w/soft walls 65.5'; fossiliferous sand 74.1'-74.3'							100	94
										100	92
65.0											
										100	74
70.0											
										100	98
75.0			74.3'								
			Limestone: Light gray, dk. gray, mod. weathered to sev. weathered, v. thin to thin bedded, mod. hard w/soft seams, vuggy in parts, fossiliferous w/beds soft, calcareous, fossiliferous Claystone. 15 0°-10° bedding discontinuities 74.3'-81.0'; fossiliferous, calcareous claystone 76.7'-77.5'							100	54
80.0			81.0'								
			Boring Terminated @ 81.0' (Elev. 223.0).								
85.0			Boring relocated due to steep embankment.								
			RS-16 collected from 60.5'-60.9' RS-17 collected from 65.0'-65.4'								
90.0			NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
95.0											
100.0											

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BORING NO.: B-118

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 207+89 45' Lt.

LOCATION: James Street

LATITUDE: 34.87518 ° LONGITUDE: 92.11850 °

DATE: 6/6/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 69.8 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 285.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Asphalt 0.7'								
			Loose to medium dense, tan, clayey sand.								
5.0						35.2			4,4,10		
10.0					21	31.2	37		3,5,5		
			13.1'								
			Stiff to very hard, tan & gray, sandy, fat clay.								
15.0						29.6			4,6,8		
20.0						27.3			5,11,13		
25.0					30	34.4	68		6,7,11		
30.0						32.5			7,8,12		
35.0						35.7			3,7,10		
40.0						28.2			10,13,16		
45.0						30.4			12,14,18		
50.0											

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BORING NO.: B-118

PAGE: 2 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 207+89 45' Lt.

LOCATION: James Street

LATITUDE: 34.87518 ° LONGITUDE: 92.11850 °

DATE: 6/6/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 69.8 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 285.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			51.0'			28.8			14,40,50/0.2		
			Auger Refusal @ 51.0', Begin Coring in Claystone. Dark gray-black-dk. brown, scat. lt. gray, mod. weathered w/sev. weathered seam, low hardness, thin bedded, calcareous, fossiliferous, v. f. to f. sandy rippled laminae. 54.9' 5 0° bedding discontinuities 51.0'-54.9'; v. f. sandy, calcareous 52.9'-53.3'							100	76
55.0			Limestone: Light gray, gray-tan, dk. gray, mod. to sev. weathered, v. thin to thin bedded, mod. hard w/soft seams, vuggy, fossiliferous w/thin beds soft, calcareous, fossiliferous Claystone. 57.6' 6 0° bedding discontinuities 54.9'-57.6'							92	42
60.0			Claystone: Dark gray-black, lt. gray, trcs. tan, mod. to completely weathered, v. soft to mod. hard, thin bedded, calcareous, fossiliferous w/thin bedded, fossiliferous Limestone beds. 64.8' limestone beds 58.5'-59.2', 60.1'-60.7', 61.4'-62.8'; 18 0° bedding discontinuities 57.6'-64.8'; fossiliferous, clayey, calcareous conglomerate 62.8'-63.1'							94	26
65.0										100	16
70.0			Shale: Black-dk. gray, trcs. lt. gray, sev. grading to sli. weathered, v. thin bedded, soft grading to mod. hard, silty in parts, finely micaceous, fissle in parts, trcs. f. grain Sandstone laminae. 69.8' 22 20°-25° bedding discontinuities; 1 80° jt. w/soft clay infill; mechanical break 68.4'-69.1'								
75.0			Boring Terminated @ 69.8' (Elev. 215.7). RS-14 collected fron 52.0'-52.4' RS-15 collected from 61.7'-62.1' NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
80.0											
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-120

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 208+82 51' Lt.

LOCATION: James Street

LATITUDE: 34.87545 ° LONGITUDE: 92.11851 °

DATE: 6/19/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 74.0 ft.

GROUNDWATER @ 5.0 ft

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 286.1	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Loose to medium dense, tan & gray silty sand.								
5.0					24	33.7	28		3,5,7		
10.0						31.2			2,3,4		
15.0						31.1			3,6,9		
			18.3'								
			Stiff to very stiff, gray, sandy, elastic silt.								
20.0					32	33.2	60	91.0			
			23.5'								
			Very stiff, black & gray, sandy, elastic silt.								
25.0					43	33.8	74		7,10,14		
30.0						34.8			7,11,13		
35.0						34.5			6,11,13		
			38.3'								
			Hard, gray, sandy, elastic silt.								
40.0					34	30.6	52		11,16,20		
45.0						30.0			8,16,25		
50.0											

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BORING NO.: B-120

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 208+82 51' Lt.

LOCATION: James Street

LATITUDE: 34.87545 ° LONGITUDE: 92.11851 °

DATE: 6/19/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 74.0 ft.

GROUNDWATER @ 5.0 ft

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 286.1	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
						25.7			10,20,31		
			54.0'								
55.0			Auger Refusal @ 54.0', Begin Coring in Limestone. Light gray, dk. gray, mod. to sev. weathered, v. thin to thin bedded, mod. hard w/soft seams, vuggy, fossiliferous w/v. thin to thin beds, soft, calcareous, fossiliferous Claystone. 16 0°-20° bedding discontinuities 54.0'-61.5'; claystone bed 56.2'-57.2', 59.0'-59.2', 59.4'-59.5', 60.6'-61.0'							100	80
60.0			61.5'							98	62
65.0			Claystone: Dark gray-black, tan-brown, mod. weathered, low hardness, v. thin bedded, calcareous in most parts, fossiliferous, sandy in parts w/v. thin bedded, fossiliferous, vuggy Limestone beds. 65.0' 9 0°-10° bedding discontinuities 61.5'-65.0'; limestone beds 62.5'-62.7', 63.1'-63.3', 63.9'-64.0'							100	36
70.0			Shale: Dark gray-black, gray, mod. grading to sli. weathered, laminated to thin bedded, mod. hard, interbedded f. grain sandstone w/rippled Shale laminae, f. micaceous. sandstone 65.0'-65.1', 68.6'-69.3'; 40 30° bedding discontinuities 65.0'-74.0'; 5 60°-70° jts. w/sli. rough, hard walls 65.0'-74.0'; apparent bedding dip = 30°; sandstone 74.0' 71.0'-72.9'; 30° bedding discontinuity w/4mm clay infill 73.3'							100	18
75.0			Boring Terminated @ 74.0' (Elev. 212.1).								
80.0			RS-23 collected from 55.5'-55.9' RS-24 collected from 66.2'-66.6'								
85.0			NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
90.0											
95.0											
100.0											

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BORING NO.: B-121

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 209+47 34' Rt.

LOCATION: James Street

LATITUDE: 34.87562 ° LONGITUDE: 92.11822 °

DATE: 6/19/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 48.0 ft.

GROUNDWATER @ 15.0 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	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
			Medium dense, red & gray, clayey sand.								
5.0					22	25.9	33		4,6,9		
			6.6' Medium dense, tan, silty sand.								
10.0					24	28.2	30		6,6,8		
			11.6' Loose, tan & gray, clayey sand.								
15.0						34.2			2,4,5		
			16.6' Medium dense, tan & gray, silty sand.								
20.0						28.6			2,4,8		
			21.6' Medium dense, gray & tan, clayey sand.								
25.0						31.9			4,7,10		
			26.2' Auger Refusal @ 26.2', Begin Coring in Claystone.							94	22
30.0			Dark gray-black, brown-orange-red, lt. gray, mod. grading to sli. weathered w/sev. weathered seams, low hardness, thin bedded, calcareous, fossiliferous, v. f. to f. sandy ripple laminae in lower part, v. thin beds fossiliferous Limestone.							96	64
35.0			limestone beds 26.2-26.6'; sev. weathered 26.6'-27.6'; 85° jt. w/iron oxide stain 29.0'-30.4'; 30 0°-15° bedding discontinuities 27.6'-48.0'; 3 30°-40° jts. w/sli. rough, soft walls 27.6'-48.0'; 1 65° jt. w/sli rough walls 27.6'-48.0'; fossiliferous sand & clay bed 37.5'-36.8'; limestone bed 41.5'-42.0'							100	40
40.0										96	56
45.0										98	76
			48.0' Boring Terminated @ 48.0' (Elev. 244.3).								
50.0											

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BORING NO.: B-121

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 209+47 34' Rt.

LOCATION: James Street

LATITUDE: 34.87562 ° LONGITUDE: 92.11822 °

DATE: 6/19/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 48.0 ft.

GROUNDWATER @ 15.0 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	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
			RS-25 collected from 30.5'-30.9' RS-26 collected from 45.2'-45.6' NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
55.0											
60.0											
65.0											
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-122

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 684+64 59' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88715 ° LONGITUDE: 92.10736 °

DATE: 6/3/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 48.0 ft.

GROUNDWATER @ 19.4 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 274.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 0.6'								
			Stiff, tan, sandy lean clay.								
5.0						16.7			2,4,5		
10.0					27	20.4	49		2,4,5		
			12.7'								
			Stiff, tan, fat clay with sand.								
15.0						30.2			4,4,7		
			17.7'								
			Loose to medium dense, tan, silty sand.								
20.0					30	36.7	52				
			22.9'								
			Stiff, tan, fat clay with sand.								
25.0					26	46.7	63		1,4,6		
			28.0'								
30.0			Auger Refusal @ 28.0', Begin Coring in Claystone. Dark gray-black, brown-orange stain, mod. to sev. weathered, low hardness, thin bedded, calcareous, fossiliferous sli. silty in parts w/v. thin to thin bedded, fossiliferous Limestone.							100	30
35.0			limestone bed 28.0'-28.4'; 21+ 0°-10° bedding discontinuities 28.0'-37.8'; limestone bed 35.7'-37.4'							100	34
			37.8'								
40.0			Clay: Light gray, sev. weathered, soft, calcareous, trcs. f. mica, trcs. organic laminae. 14 0°-10° bedding discontinuities 37.8'-41.5'; 60° joint w/soft walls 38.8'							96	12
			41.5'								
45.0			Shale: Black-dk. gray, sev. grading to sli. weathered, v. thin bedded, soft grading to mod. hard, silty, f. micaceous. clayey 41.5'-43.5'; 90° jt. w/rough, hard walls 44.7'-44.8'							100	52
			48.0'								
50.0			Boring Terminated @ 48.0' (Elev. 226.2).								

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BORING NO.: B-122

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 684+64 59' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88715 ° LONGITUDE: 92.10736 °

DATE: 6/3/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 48.0 ft.

GROUNDWATER @ 19.4 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 274.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			RS-1 collected from 28.0'-28.4' NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
55.0											
60.0											
65.0											
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-123

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 684+64 80' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88693 ° LONGITUDE: 92.10698 °

DATE: 6/15/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 79.7 ft.

GROUNDWATER @ 35.0 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 293.9	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Asphalt 0.3'								
			Loose, brown & gray, clayey sand.								
5.0					17	20.4	28		2,3,3		
10.0						20.7			2,4,5		
			12.9'								
			Soft to medium stiff, brown & gray, sandy fat clay.								
15.0					24	29.0	54		2,2,4		
20.0						19.9			1,2,1		
			22.9'								
			Soft to stiff, brown & gray, sandy, lean clay.								
25.0					19	17.5	38	109.2			
			28.1'								
			Medium dense, brown & gray, clayey sand.								
30.0						16.2			0,5,7		
			32.9'								
			Medium dense, brown & gray, sandy fat clay.								
35.0						16.2			3,7,9		
40.0						19.0			1,4,7		
			42.9'								
			Medium stiff to hard, brown & gray, fat clay with sand.								
45.0					30	40.5	68		2,3,5		
50.0											

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BORING NO.: B-123

PAGE: 2 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 684+64 80' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88693 ° LONGITUDE: 92.10698 °

DATE: 6/15/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 79.7 ft.

GROUNDWATER @ 35.0 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 293.9	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			51.7'			35.1			2,7,31		
55.0			Auger Refusal @ 51.7', Begin Coring in Claystone. Dark gray-black-dk. brown, tan-brown, trcs. brown-orange stain, mod. to sev. weathered, low hardness, v. thin to thin bedded, calcareous in most parts, fossiliferous, sandy in parts w/v. thin to thin bedded, fossiliferous Limestone & fossil frag. Sandstone bed. marl beds 51.7'-52.1', 52.4'-52.7'; fossiliferous sand/clay 52.7'-53.1'; 36 0° bedding discontinuities; fossiliferous sand/clay 57.8', 58.7'-58.9'; marl bed 59.5'-59.7'; fossiliferous sand 61.6', 61.8', 62.0'-63.7'							97	43
60.0										98	44
65.0										80	34
70.0			69.4' Limestone: Brown, red-orange stain, mod. weathered, thin bedded, mod. hard, vuggy in parts, fossiliferous. 3 0° bedding discontinuities 71.9'							100	90
75.0			Shale: Dark gray-black, lt. gray laminae, sev. grading to sli. weathered, v. thin bedded, soft grading to mod. hard, f. grain sandstone laminae, f. micaceous. 3 55°-70° jts. w/rough, hard walls; 3 40° bedding discontinuities; 16+ 20° bedding discontinuities; 3 20°-40° jts. w/rough, hard walls							100	56
80.0			79.7' Boring Terminated @ 79.7' (Elev. 214.2). RS-20 collected from 57.0'-57.4' RS-21 collected from 66.3'-66.7' RS-22 collected from 77.2'-77.6' NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.							100	34
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-124

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 685+46 50' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88732 ° LONGITUDE: 92.10718 °

DATE: 5/11/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 49.8 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 276.7	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Stiff to very stiff, brown, fat clay with sand.								
					24	18.3	52		4,7,8		
5.0											
									3,4,6		
10.0											
									4,5,5		
15.0											
									5,10,10		
20.0											
									7,11,9		
25.0											
									7,50/0.1		
30.0			29.8'								
			Auger Refusal @ 29.8', Begin Coring in Claystone. Brown grading to dk. gray, some lt. gray, mod. to sev. weathered, soft to low hardness w/beds mod. hard, thin bedded, calcareous, fossiliferous, sli. silty in parts w/v. thin to thin bedded calcareous, fossiliferous Limestone & Sandstone.							94	0
35.0			limestone beds 29.8'-30.1', 30.4'-30.6', 31.1'-31.4', 31.6'-31.9'; 33+ 0°-10° bedding discontinuities 29.8'-42.4'; 45° jt. w/clay infill <1mm 35.5'; calcareous, fossiliferous Sandstone 38.8'-39.3'; fossiliferous limestone 40.6'-40.9'; calcareous, fossiliferous sandstone 41.2'-42.3'							98	28
40.0			42.4'								
			Clay: Light gray, orange-red stain in lower part, sev. weathered, soft, calcareous, trcs. f. mica, trcs. organic laminae.							98	52
45.0			7 0°-15° bedding discontinuities 42.4'-47.7'								
			47.7'							96	68
50.0			Shale: Black-dk. gray, orange-brown stain, sev. weathered, thin bedded, soft grading to med. hard, silty, f. micaceous 49.8'								

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BORING NO.: B-124

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 685+46 50' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88732 ° LONGITUDE: 92.10718 °

DATE: 5/11/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 49.8 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 276.7								
			90° jt. w/gravel infill, open 6-8mm; 6 20° bedding discontinuities								
			Boring Terminated @ 49.8' (Elev. 226.9).								
55.0			RS-3 collected from 41.3'-41.7' RS-4 collected from 45.6'46.9'								
60.0			NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
65.0											
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-126

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 685+67 80' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88716 ° LONGITUDE: 92.10679 °

DATE: 6/17/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 64.2 ft.

GROUNDWATER @ 29.4 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 279.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Stiff, brown & gray, sandy lean clay.								
5.0					16	17.6	26		4,4,5		
10.0						18.3			4,5,7		
			12.7'								
			Stiff, gray and brown, sandy, fat clay.								
15.0					17	17.9	50	108.1			
			17.9'								
			Stiff, gray & brown, sandy silt.								
20.0					28	18.2	35		3,5,7		
25.0						22.5			0,5,7		
30.0						28.6			2,5,5		
			32.7'								
			Very stiff, brown & gray, sandy, elastic silt.								
35.0					35	36.1	61		0,6,12		
			36.7'								
			Auger Refusal @ 36.7', Begin Coring in Claystone. Dark gray-dk. brown grading to black-dk. gray, tan-brown-gray, sev. weathered grading to mod. weathered, low hardness to soft w/mod. hard beds & friable beds, v. thin to thin bedded, calcareous in parts, fossiliferous, organic fragments in lower part w/v. thin beds fossiliferous, calcareous Conglomerate, v. thin, calcareous, fossiliferous Limestone, trc. f. crystaline pyrite nodules.							84	40
40.0										52	0
45.0			sev. weathered 36.7'-44.5'; 24+ 0° bedding discontinuities 36.7'-56.5'; fossiliferous Conglomerate 44.2'-47.6'; clayey, fossiliferous Limestone 48.2'-48.8'							98	52
50.0										96	78

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BORING NO.: B-126

PAGE: 2 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 685+67 80' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88716 ° LONGITUDE: 92.10679 °

DATE: 6/17/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 64.2 ft.

GROUNDWATER @ 29.4 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 279.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
										96	78
55.0			56.5' Clay: Lt. gray, sev. weathered, soft, sli. calcareous, trcs. f. mica, trcs. organic laminae.							100	70
60.0			58.0' 70° jt. w/soft walls 57.9'-58.3' Shale: Dark gray-black, sev. weathered grading to mod. weathered, thin bedded, soft grading to med. hard, silty, f. micaceous.							100	66
65.0			64.2' 2 20°-30° jts. w/2-6mm clay infill 58.0'-64.2'; 1 10° jt. w/<1mm pyrite grains infill 58.0'-64.2'; 3 0° jts. w/hard walls 58.0'-64.2' Boring Terminated @ 64.2' (Elev. 214.8). RS-29 collected from 50.0'-50.4' RS-30 collected from 59.9'-60.3' NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-127

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 686+59 50' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88757 ° LONGITUDE: 92.10695 °

DATE: 5/11/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 49.4 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 279.9	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Stiff to very stiff, brown sandy lean clay.						6,7,9		
5.0											
					14	16.1	31		5,5,8		
10.0											
									2,5,9		
15.0			16.8'								
			Very stiff to very hard, brown, fat clay with sand.								
					27	37.7	56		4,6,11		
20.0											
									10,50/0.5		
25.0			26.2'								
			Auger Refusal @ 26.2', Begin Coring in Limestone. Light gray, gray, brown stain, gray-olive gray, mod. weathered w/seams sev. weathered, v. thin to thin bedded, mod. hard w/soft seams, vuggy in parts, fossiliferous w/thin beds, soft, calcareous Claystone.							53	13
30.0			31.2' 12 0° bedding discontinuities w/sev. weathered walls 26.2'-31.2'; claystone beds: 29.5'-30.2', 30.4'							100	44
			Claystone: Dark gray-brown, black, trcs. brown-orange stain, mod. weathered w/seams sev. weathered, low hardness w/mod. hard beds, thin bedded, calcareous, fossiliferous, w/v. thin beds fossiliferous, calcareous Sandstone, v. thin to thin bedded, fossiliferous Limestone. 35 0°-15° bedding discontinuities w/soft walls 31.2'-41.5'; sandstone: fossiliferous, calcareous beds 35.9'-36.0', 36.8', 38.3'; fossiliferous Limestone beds 37.7'-37.8', 38.5'-38.8', 39.6'-39.8', 39.9'-40.6'							100	10
35.0											
										96	66
40.0			41.5'								
			Clay: Light gray, red stain, sev. weathered, soft, calcareous, trcs. f. mica, trcs. organic laminae. 6 0°-20° bedding discontinuities w/soft walls 41.5'-45.6'								
45.0			45.6'								
			Shale: Black-dk. gray-lt. gray mottled, red & orange-brown stain, sev. weathered, thin bedded, soft grading to med. hard, silty, f. micaceous. 9 10°-15° bedding discontinuities; 2 20°-25° discontinuities							98	38
50.0			49.4'								

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BORING NO.: B-127

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 686+59 50' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88757 ° LONGITUDE: 92.10695 °

DATE: 5/11/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 49.4 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 279.9								
			w/1mm clay infill, soft walls 45.6'-49.4'								
			Boring Terminated @ 49.4' (Elev. 230.5).								
			RS-5 collected from 31.6'-32.0' RS-6 collected from 39.7'-40.1'								
55.0			NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
60.0											
65.0											
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-129

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 686+70 80' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88738 ° LONGITUDE: 92.10658 °

DATE: 6/17/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 73.5 ft.

GROUNDWATER @ 25.0 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 298.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Loose to medium dense, red & brown, clayey sand.								
5.0						8.0			2,4,6		
10.0					18	19.2	41		4,5,7		
15.0						18.0			3,6,6		
			18.3'								
			Medium stiff to very stiff, brown & gray, sandy lean clay.								
20.0					16	18.4	26		1,3,4		
25.0						18.8			2,6,10		
30.0						26.5			3,5,8		
35.0						35.2			2,4,5		
40.0						23.2			1,5,6		
45.0						38.4			5,7,7		
			48.3'								
50.0			Very dense, brown, clayey sand with gravel.								

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BORING NO.: B-129

PAGE: 2 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 686+70 80' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88738 ° LONGITUDE: 92.10658 °

DATE: 6/17/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 73.5 ft.

GROUNDWATER @ 25.0 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 298.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
					23	30.1	53		5,38,50/0.4		
			53.5'								
55.0			Auger Refusal @ 53.5', Begin Coring in Limestone. Light gray, dk. gray, mod. weathered w/sev. weathered seam, v. thin to thin bedded, mod. hard w/soft seam, scat. vuggy, fossiliferous w/thin beds, soft, calcareous Claystone. sev. weathered w/clay 53.5'-54.3'; claystone 54.6'-54.9'; 5 0°-10° bedding discontinuities 53.5'-55.6'							90	40
			55.6'								
60.0			Claystone: Dark gray-dk. brown grading to black-dk. gray, tan-brown-gray, mod. weathered w/seams sev. weathered, low hardness w/mod. hard beds & friable beds, thin bedded, calcareous in parts, fossiliferous, organic fragments in lower part w/v. thin beds fossiliferous, calcareous Conglomerate, v. thin, fossiliferous Limestone. 28 0°-10° bedding discontinuities 55.6'-71.1'; limestone bed 62.0'-62.4'; fossiliferous Conglomerate 63.1'-65.7'; sandy 65.7'-68.1'							92	56
65.0										92	50
70.0										94	72
			71.1'								
			Clay: Light gray, sev. weathered, soft, sli. calcareous, trcs. f. mica, trcs. organic laminae. 2 0° bedding discontinuities 71.1'-73.5'								
			73.5'								
75.0			Boring Terminated @ 73.5' (Elev. 224.7). RS-27 collected from 57.0'-57.4' RS-28 collected from 71.9'-72.3' NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
80.0											
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-130

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 687+34 59' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88775 ° LONGITUDE: 92.10682 °

DATE: 6/2/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 53.8 ft.

GROUNDWATER @ 3.0 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 280.8	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 0.6'								
			Medium stiff, brown & gray, sandy, lean clay with gravel.								
5.0		X			16	16.5	28		4,3,4		
			7.9'								
			Stiff, red & tan, sandy fat clay.								
10.0		X				36.1			3,5,7		
			12.9'								
			Medium dense, red & tan, silty sand.								
15.0					29	38.0	44	81.9			
			18.1'								
			Stiff, tan, sandy, fat clay.								
20.0		X			26	34.3	50		4,6,9		
25.0			24.8'								
			Auger Refusal @ 24.8', Begin Coring in Limestone. Brown-lt. gray, scat. dk. gray, sev. weathered, v. thin to thin bedded, mod. hard w/scat. soft seams, vuggy, fossiliferous w/laminations to thin beds, soft, calcareous Claystone/Clay.			8.6			50/0.2	65	18
30.0			core loss interpreted as clay seams; 16 0° bedding discontinuities w/clay 24.8'-30.1' 30.1'							100	42
35.0			Claystone: Black-dk. gray-dk. brown, scat. brown-orange stain, mod. weathered w/sev. to completely weathered seams & beds, low hardness w/mod. hard beds, thin bedded, calcareous, fossiliferous, f. micaceous, sli. silty in parts, f. sand laminae w/v. thin to thin bedded, fossiliferous Limestone & fossiliferous, calcareous Sandstone. limestone beds, 30.1'-30.3', 31.6'-32.1', 32.3', 33.0'-33.1', 33.5'-33.8'; 42+ 0° bedding discontinuities 30.1'-47.8'; fossiliferous sandstone beds 34.0', 35.3', 37.1', 38.4'-38.5', 39.8', 40.0'-40.1', 40.8'-40.9', 41.2'-41.3', 43.0'-43.3'; limestone bed 41.3'-43.0'; completely weathered fossiliferous sandstone bed 44.2'-47.8', includes core loss							100	24
40.0										98	40
45.0										60	14
			47.8'								
50.0			Shale: Red-orange-purple-lt. gray mottled grading to black w/lt. gray-red mottling, sev. weathered grading to mod.							86	50

HDR | ICA

BORING NO.: B-130

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 687+34 59' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88775 ° LONGITUDE: 92.10682 °

DATE: 6/2/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 53.8 ft.

GROUNDWATER @ 3.0 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 280.8	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			weathered, thin bedded, soft grading to med. hard, silty, f. micaceous. 2 30°-40° jts. w/soft walls 47.8'-53.8'; 2 50° walls w/soft walls 47.8'-53.8'; 4 0°-10° jts. w/soft walls 47.8'-53.8' 53.8'							86	50
55.0			Boring Terminated @ 53.8' (Elev. 227.0). RS-9 collected from 39.1'-39.5' RS-10 collected from 52.3'-52.7' NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
60.0											
65.0											
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-131

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 687+34 80' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88752 ° LONGITUDE: 92.10646 °

DATE: 6/17/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 78.4 ft.

GROUNDWATER @ 26.0 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 298.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Soft to stiff, brown & gray, sandy, lean clay.								
5.0						17.7			3,2,4		
10.0					18	18.4	36		2,3,4		
15.0						19.5			1,1,2		
20.0						18.9			3,6,9		
			22.3'								
			Stiff, brown & gray, sandy, silty clay.								
25.0					17	18.6	24	116.6			
			27.5'								
			Medium dense, brown & red, clayey sand.								
30.0					20	18.0	41		2,5,10		
			32.3'								
			Stiff, brown & red, sandy, lean clay.								
35.0					22	21.8	40		0,4,8		
			37.3'								
			Medium dense, brown & gray, clayey sand.								
40.0						33.4			3,6,7		
45.0						33.9			2,3,8		
			47.3'								
			Very dense, brown, clayey sand with gravel.								
50.0					27	20.1	56		26,22,30		

HDR | ICA

BORING NO.: B-131

PAGE: 2 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 687+34 80' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88752 ° LONGITUDE: 92.10646 °

DATE: 6/17/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 78.4 ft.

GROUNDWATER @ 26.0 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 298.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			53.4'								
55.0			Auger Refusal @ 53.4', Begin Coring in Limestone. Light gray, scat. dk. gray, sli. weathered, v. thin bedded, mod. hard w/soft seam, trc. vuggy, fossiliferous w/thin bed, soft, calcareous Claystone. 54.9'							100	42
60.0			Claystone: Dark gray-dk. brown grading to black-dk. gray, tan-brown-gray, lt. gray, sli. to mod. weathered w/seams sev. weathered, low hardness w/soft seams & mod. hard beds & friable beds, thin bedded, calcareous in parts, fossiliferous, organic fragments in lower part w/laminations to v. thin beds fossiliferous, calcareous Conglomerate, v. thin, fossiliferous Limestone. 30+ 0° bedding discontinuities 54.9'-72.8'; fossiliferous sand laminations 59.8', 59.9', 59.1'; fossiliferous limestone bed 61.6'-61.9'; fossiliferous sand laminations 62.1', 62.2', 62.3', 62.4', 62.6', 62.9', 63.0'; fossiliferous sand bed 63.3'-65.9'; sandy & fossiliferous 65.9'-68.2'							100	34
65.0										76	22
70.0			72.8'							100	92
75.0			Clay: Light gray w/dk. gray mottling in part, mod. weathered, soft, sli. calcareous, trcs. f. mica, trcs. pyrite. 50° jt. w/soft walls 77.2'							100	56
			77.4'								
80.0			Shale: Dark gray, mod. weathered, thin bedded, med. hard, silty, f. micaceous. 78.4' 9 0°-20° jts. w/hard walls 77.4'-78.4'								
85.0			Boring Terminated @ 78.4' (Elev. 219.8). RS-31 collected from 53.4'-53.8' RS-32 collected from 71.0'-71.4' RS-33 collected from 75.9'-76.3'								
90.0			NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
95.0											
100.0											

HDR | ICA

BORING NO.: B-132

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 598+73 109' Lt.

LOCATION: Hwy 67

LATITUDE: 34.86962 ° LONGITUDE: 92.12619 °

DATE: 5/14/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 267.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Dense, red, silty sand with gravel.		17	14.2	21		16,27,18		
			6.8'								
10.0			Very stiff, red, sandy silt.		28	23.7	46		5,8,11		
			11.8'								
15.0			Medium dense, red, silty sand.						6,12,14		
20.0			20.0'						4,7,11		
			No Refusal & Boring Terminated @ 20.0' (Elev. 247.5).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-133

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 600+00 107' Lt.

LOCATION: Hwy 67

LATITUDE: 34.86986 ° LONGITUDE: 92.12588 °

DATE: 5/14/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 272.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Medium dense, red, clayey sand.						6,10,11		
			6.8'								
10.0			Medium dense, red, silty sand with gravel.						5,8,10		
15.0									5,7,9		
20.0			20.0'						4,7,11		
			No Refusal & Boring Terminated @ 20.0' (Elev. 252.2).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-134

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 601+48 105' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87009 ° LONGITUDE: 92.12556 °

DATE: 5/14/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 269.8	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Medium dense, red, clayey sand.		26	29.0	45		5,11,15		
10.0									4,5,8		
			11.8'								
15.0			Medium dense to dense, red, silty sand.						9,8,13		
20.0			20.0'						7,15,16		
			No Refusal & Boring Terminated @ 20.0' (Elev. 249.8).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-135

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 625+00 84' Rt.

LOCATION: Hwy 67

LATITUDE: 34.87415 ° LONGITUDE: 92.11943 °

DATE: 5/13/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 10.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 287.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Very stiff to hard, red, lean clay with sand.		24	22.6	40		11,16,20		
10.0			10.0'						7,11,17		
			No Refusal & Boring Terminated @ 10.0' (Elev. 277.4).								
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-136

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 626+00 79' Rt.

LOCATION: Hwy 67

LATITUDE: 34.87435 ° LONGITUDE: 92.11920 °

DATE: 6/20/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 25.7 ft.

GROUNDWATER @ 15.7 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 287.9	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Medium dense, tan, gray & red, clayey sand.								
5.0					20	22.4	34		3,6,8		
			7.5' Stiff, gray, sandy lean clay.								
10.0					23	25.6	38	85.5			
			12.7' Medium dense, tan & yellow, clayey sand.								
15.0					23	29.5	37		3,4,7		
			17.5' Medium dense, tan & yellow, clayey sand.								
20.0						34.3			2,5,6		
			22.5' Medium dense, tan & yellow, clayey sand.								
25.0			25.7' No Refusal & Boring Terminated @ 25.7' (Elev. 262.2).			30.6			5,6,9		
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-137

JOB NO.: CA0604
JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.
STATION: 628+20 119' Rt.
LOCATION: Hwy 67
LATITUDE: 34.87469 ° LONGITUDE: 92.11857 °

DATE: 5/13/2016
TYPE OF DRILLING: HSA/SPT
EQUIPMENT: 1980 Hilyard ATV
LOGGED BY: J. Johnson

COMPLETION DEPTH: 55.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 304.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Medium dense, red, clayey sand with gravel.								
									7,9,15		
5.0											
					27	30.8	50		5,6,10		
10.0											
									3,8,12		
15.0											
			16.8'								
			Medium dense, red, clayey sand.								
									5,9,14		
20.0											
									5,12,17		
25.0											
					8	33.8	31		4,11,12		
30.0											
			31.8'								
			Dense, red, brown & gray, clayey sand.								
									7,14,17		
35.0											
					24	31.5	42		5,15,22		
40.0											
									11,23,27		
45.0											
			46.8'								
			Hard to very hard, gray, fat clay with sand.								
									8,27,32		
50.0											

HDR | ICA

BORING NO.: B-137

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 628+20 119' Rt.

LOCATION: Hwy 67

LATITUDE: 34.87469 ° LONGITUDE: 92.11857 °

DATE: 5/13/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 55.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 304.5								
55.0			55.0'		34	29.1	78		11,31,35		
			No Refusal & Boring Terminated @ 55.0' (Elev. 249.5).								
60.0											
65.0											
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

HDR | ICA

BORING NO.: B-138

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 628+00 156' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87520 ° LONGITUDE: 92.11925 °

DATE: 5/14/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 35.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 287.5								
			Very loose to medium dense, red & brown, clayey sand.								
5.0									2,2,3		
10.0									1,2,2		
15.0									6,7,8		
20.0					18	34.5	62		4,6,9		
			21.8'								
			Very stiff to hard, gray, sandy fat clay.								
25.0									6,12,20		
30.0									8,11,15		
35.0			35.0'						11,11,13		
			No Refusal & Boring Terminated @ 35.0' (Elev. 252.5).								
40.0											
45.0											
50.0											

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BORING NO.: B-139

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 629+34 193' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87552 ° LONGITUDE: 92.11901 °

DATE: 5/15/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 35.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 291.5								
			Loose to medium dense, red, clayey sand.								
									3,4,7		
5.0											
									4,5,5		
10.0											
									2,3,3		
15.0											
			16.0'								
			Loose, tan & gray, clayey sand.		24	30.3	38	90.8			
			18.8'						3,4,3		
20.0			Loose, red, clayey sand.								
			21.8'								
			Very stiff to hard, gray, sandy fat clay.								
					29	31.9	66		12,17,19		
25.0											
									10,15,21		
30.0											
									8,12,16		
35.0			35.0'								
			No Refusal & Boring Terminated @ 35.0' (Elev. 256.5).								
40.0											
45.0											
50.0											

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BORING NO.: B-140

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 630+73 207' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87581 ° LONGITUDE: 92.11871 °

DATE: 5/15/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 35.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 301.1								
			Loose, brown, clayey sand.								
5.0									2,3,5		
					24	26.6	45		2,3,4		
10.0			11.8'								
			Soft, gray, sandy silt.								
					15	21.9	19		3,2,1		
15.0											
									2,1,3		
20.0			21.8'								
			Stiff to very stiff, gray, sandy fat clay.								
25.0									5,6,9		
									6,7,10		
30.0											
35.0			35.0'						10,12,17		
			No Refusal & Boring Terminated @ 35.0' (Elev. 266.1).								
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-141

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 627+61 69' Rt.

LOCATION: Hwy 67

LATITUDE: 34.87467 ° LONGITUDE: 92.11883 °

DATE: 6/20/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 26.7 ft.

GROUNDWATER @ 19.3 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 289.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Loose, tan & gray, silty sand.								
5.0					23	27.1	26		3,4,6		
			7.6'								
			Loose, tan & gray, silty sand.								
10.0					23	34.1	32		3,3,6		
			12.6'								
			Loose, tan, clayey sand.								
15.0					26	29.8	46	90.6			
			17.8'								
			Loose, tan & gray, silty sand.								
20.0						37.0			3,5,5		
			22.6'								
			Medium dense, tan & gray, silty sand.								
25.0						30.5			4,9,11		
			26.7'								
			No Refusal & Boring Terminated @ 26.7' (Elev. 262.6).								
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-142

JOB NO.: CA0604
JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.
STATION: 629+57 63' Lt.
LOCATION: Hwy 67
LATITUDE: 34.87531 ° LONGITUDE: 92.11866 °

DATE: 5/16/2016
TYPE OF DRILLING: HSA/SPT
EQUIPMENT: 1980 Hilyard ATV
LOGGED BY: J. Johnson

COMPLETION DEPTH: 50.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 282.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Medium dense, brown, clayey sand.								
5.0									4,7,8		
10.0					25	30.6	43		5,6,10		
			11.8'								
			Very stiff to hard, brown & gray, sandy fat clay.								
15.0					27	31.3	60		7,12,15		
20.0									8,16,15		
25.0									9,16,17		
30.0									10,16,18		
			31.8'								
			Hard to very hard, gray, sandy silt.								
35.0									12,26,31		
40.0									10,50/0.5		
45.0					31	27.3	47		9,50/0.5		
50.0			50.0'						12,50/0.5		

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BORING NO.: B-142

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 629+57 63' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87531 ° LONGITUDE: 92.11866 °

DATE: 5/16/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 50.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 282.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			No Refusal & Boring Terminated @ 50.0' (Elev. 232.5).								
55.0											
60.0											
65.0											
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

HDR | ICA

BORING NO.: B-143

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 630+39 66' Rt.

LOCATION: Hwy 67

LATITUDE: 34.87520 ° LONGITUDE: 92.11816 °

DATE: 6/20/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 41.5 ft.

GROUNDWATER @ 14.5 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 295.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Medium dense, tan & gray, silty sand.								
5.0					23	28.5	26		3,5,6		
			7.8'								
			Medium dense, tan, silty sand.								
10.0					25	27.7	26	94.1			
			13.0'								
			Medium dense, tan, silty sand.								
15.0						28.3			3,5,8		
			17.8'								
			Medium dense, gray, clayey sand.								
20.0					24	26.9	41		4,7,8		
25.0						30.4			5,8,11		
30.0						29.9			8,12,18		
			32.8'								
			Hard, gray, sandy fat clay.								
35.0					29	30.0	69		12,16,25		
40.0						31.5			11,21,26		
			41.5'								
			No Refusal & Boring Terminated @ 41.5' (Elev. 253.9).								
45.0											
50.0											

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BORING NO.: B-144

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 631+96 61' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87575 ° LONGITUDE: 92.11807 °

DATE: 5/12/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 10.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 293.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Medium dense, red & brown, clayey sand.								
5.0									7,7,8		
10.0			10.0'						6,10,11		
			No Refusal & Boring Terminated @ 10.0' (Elev. 283.3).								
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-145

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 643+00 58' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87793 ° LONGITUDE: 92.11556 °

DATE: 5/15/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 15.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 321.7	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Very stiff, red, sandy, elastic silt.						6,9,18		
10.0									5,10,10		
			11.8'								
15.0			Medium dense, red, clayey sand. 15.0'						5,11,11		
			No Refusal & Boring Terminated @ 15.0' (Elev. 306.7).								
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-146

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 645+002 58' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87837 ° LONGITUDE: 92.11516 °

DATE: 5/15/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 15.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 321.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Stiff, red, sandy, elastic silt.						3,5,8		
			6.8'								
10.0			Medium dense, red, silty sand with gravel.						5,11,13		
			11.8'								
15.0			Very stiff, brown, sandy, elastic silt. 15.0'		29	39.9	51		9,10,14		
			No Refusal & Boring Terminated @ 15.0' (Elev. 306.0).								
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-147

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 647+00 64' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87882 ° LONGITUDE: 92.11478 °

DATE: 5/16/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 317.8	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Medium dense, red, silty sand with gravel.		27	33.4	43		8,11,9		
			6.8'								
10.0			Medium dense, red, clayey sand.						9,11,14		
			11.8'								
15.0			Medium dense, brown, silty sand with gravel.						6,8,11		
			16.8'								
20.0			Medium dense, brown, clayey sand. 20.0'						8,5,10		
25.0			No Refusal & Boring Terminated @ 20.0' (Elev. 297.8).								
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-148

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 649+00 96' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87931 ° LONGITUDE: 92.11447 °

DATE: 5/10/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 317.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Medium dense, red, clayey sand.								
					25	31.3	45		2,8,10		
5.0											
									8,10,11		
10.0											
									7,10,9		
15.0											
			16.8'								
			Medium dense, brown, clayey sand.								
									5,8,12		
20.0			20.0'								
			No Refusal & Boring Terminated @ 20.0' (Elev. 297.0).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 651+00 96' Lt.

LOCATION: Hwy 67

LATITUDE: 34.87975 ° LONGITUDE: 92.11407 °

DATE: 5/10/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 30.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 315.9	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Very stiff, red, sandy, elastic silt.								
5.0									6,11,14		
10.0									5,9,13		
			11.8'								
			Medium dense to dense, brown, clayey sand.								
15.0									5,13,15		
20.0									7,15,15		
25.0									11,17,15		
30.0			30.0'		24	31.7	38		10,16,18		
			No Refusal & Boring Terminated @ 30.0' (Elev. 285.9).								
35.0											
40.0											
45.0											
50.0											

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 653+00 86' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88018 ° LONGITUDE: 92.11364 °

DATE: 6/18/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 41.5 ft.

GROUNDWATER @ 26.5 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 313.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Medium dense, brown, silty sand.								
5.0						23.4			4,6,10		
			8.3'								
			Medium dense, brown & gray, silty sand.								
10.0					26	32.0	30	87.7			
			13.5'								
			Medium dense, gray & tan, silty sand.								
15.0					27	33.6	41		3,4,7		
20.0						33.0			4,7,10		
			23.3'								
			Medium dense, brown & gray, silty sand.								
25.0					24	32.7	34		0,5,6		
30.0						31.8			2,5,8		
			33.3'								
			Medium dense to dense, gray & black, clayey sand.								
35.0					24	29.0	38		4,7,11		
40.0						27.9			11,15,20		
			41.5'								
			No Refusal & Boring Terminated @ 41.5' (Elev. 271.9).								
45.0											
50.0											

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BORING NO.: B-151

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 655+00 80' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88061 ° LONGITUDE: 92.11323 °

DATE: 5/16/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 15.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 303.6	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Medium dense, red, clayey sand.						5,8,11		
10.0									4,9,8		
			11.8'								
15.0			Medium dense, brown, clayey sand. 15.0'						4,13,11		
20.0			No Refusal & Boring Terminated @ 15.0' (Elev. 288.6).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 659+00 62' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88125 ° LONGITUDE: 92.11205 °

DATE: 5/12/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 15.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 288.6								
			Very stiff, red, sandy, elastic silt.								
5.0									5,8,10		
10.0									6,8,14		
15.0			15.0'						8,7,9		
			No Refusal & Boring Terminated @ 15.0' (Elev. 273.6).								
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 661+00 61' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88170 ° LONGITUDE: 92.11165 °

DATE: 5/12/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 15.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 285.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Very stiff, red, sandy lean clay.		19	26.5	29		5,7,9		
			6.8'								
10.0			Stiff, red, sandy, elastic silt.						6,6,7		
15.0			15.0'		39	36.4	55		7,7,8		
			No Refusal & Boring Terminated @ 15.0' (Elev. 270.4).								
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-154

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 661+00 73' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88192 ° LONGITUDE: 92.11201 °

DATE: 5/16/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 15.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 289.9	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Medium dense, red, clayey sand.								
5.0									5,8,11		
10.0					22	28.2	46		4,6,8		
			11.8' Very stiff, brown, sandy, fat clay.								
15.0			15.0'		26	36.8	64		7,9,14		
			No Refusal & Boring Terminated @ 15.0' (Elev. 274.9).								
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-155

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 663+00 61' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88214 ° LONGITUDE: 92.11126 °

DATE: 5/12/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 281.7	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Very stiff, red, sandy lean clay.								
5.0									2,8,16		
			6.8'								
			Very stiff, red, sandy elastic silt.								
10.0									5,7,12		
			11.8'								
			Stiff to very stiff, red, sandy fat clay.								
15.0									5,8,8		
20.0			20.0'		35	41.8	109		6,7,8		
			No Refusal & Boring Terminated @ 20.0' (Elev. 261.7).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-156

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 663+00 73' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88236 ° LONGITUDE: 92.11161 °

DATE: 5/17/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 10.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 283.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Medium dense, red, clayey sand.						2,8,9		
10.0			10.0'						3,8,8		
			No Refusal & Boring Terminated @ 10.0' (Elev. 273.5).								
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-157

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 665+00 73' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88280 ° LONGITUDE: 92.11121 °

DATE: 5/17/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 25.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 287.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Very stiff, red, sandy lean clay.								
5.0					26	26.1	49		8,10,12		
									4,13,12		
10.0			11.8'								
			Medium dense to dense, red, clayey sand.								
15.0					19	16.8	30		6,13,13		
									10,20,23		
20.0			21.8'								
			Hard, red, sandy silt.								
25.0			25.0'		NP	34.0	NP		12,22,21		
			No Refusal & Boring Terminated @ 25.0' (Elev. 262.5).								
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-158

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 683+77 120' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88705 ° LONGITUDE: 92.10770 °

DATE: 5/10/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 40.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 274.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Medium stiff, red, lean clay with sand.								
5.0									2,3,5		
			5.5'								
			Medium stiff, brown & gray, sandy lean clay.		16	21.2	26	109.1			
			8.3'								
10.0			Medium stiff to hard, red & brown, lean clay with sand.		15	21.9	43		4,4,4		
15.0									3,4,5		
20.0									5,8,9		
25.0									5,8,8		
30.0									10,13,20		
			31.8'								
			Very hard, gray, gravelly lean clay with sand.								
35.0									12,50/0.5		
40.0			40.0'		19	30.9	46		16,50/0.4		
			No Refusal & Boring Terminated @ 40.0' (Elev. 234.0).								
45.0											
50.0											

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 684+84 122 Rt.

LOCATION: Hwy 67

LATITUDE: 34.88691 ° LONGITUDE: 92.10683 °

DATE: 6/18/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 29.6 ft.

GROUNDWATER @ 17.0 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 275.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Stiff, brown & gray, sandy lean clay.								
5.0						24.9			2,4,5		
10.0					17	17.8	42		2,5,5		
			13.3'								
			Stiff, brown & gray, sandy elastic silt.								
15.0					34	25.4	62	84.6			
			18.5'								
			Medium stiff to stiff, gray & brown, sandy, elastic silt.								
20.0					36	33.6	63		3,4,5		
25.0						41.4			2,2,3		
			29.6'								
30.0			No Refusal & Boring Terminated @ 29.6' (Elev. 245.8).								
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-160

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 693+00 68' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88896 ° LONGITUDE: 92.10560 °

DATE: 5/11/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 298.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Very stiff to hard, red, sandy lean clay.								
5.0									7,10,11		
10.0					14	16.2	34		5,11,18		
15.0									10,15,16		
			16.8'								
			Hard, red, sandy fat clay.								
20.0			20.0'						7,15,16		
			No Refusal & Boring Terminated @ 20.0' (Elev. 278.2).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-161

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 694+00 64' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88915 ° LONGITUDE: 92.10535 °

DATE: 5/11/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 298.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Very stiff, brown, sandy fat clay.								
5.0					29	37.6	69		4,7,11		
10.0									6,6,12		
			11.8'								
			Very stiff, gray, sandy fat clay.								
15.0									6,8,11		
20.0			20.0'		29	42.0	69		7,10,9		
			No Refusal & Boring Terminated @ 20.0' (Elev. 278.3).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-162

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 695+00 64' Lt.

LOCATION: Hwy 67

LATITUDE: 34.88935 ° LONGITUDE: 92.10512 °

DATE: 5/11/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: 1980 Hilyard ATV

LOGGED BY: J. Johnson

COMPLETION DEPTH: 20.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 297.8	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Dense, brown, silty sand with gravel.		31	42.5	54		8,19,28		
			6.8'								
10.0			Very stiff, brown, sandy fat clay.						9,15,13		
			11.8'								
15.0			Very stiff, gray, sandy fat clay.						6,14,12		
20.0			20.0'						5,10,16		
			No Refusal & Boring Terminated @ 20.0' (Elev. 277.8).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-163

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JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 807+20 17' Rt.

LOCATION: Gregory Street

LATITUDE: 34.88165 ° LONGITUDE: 92.11248 °

DATE: 6/4/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 57.8 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 291.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 0.5'								
			Medium stiff, red, sandy lean clay.								
5.0					18	22.4	36		2,4,3		
			8.2'								
			Loose, brown & gray, clayey sand.								
10.0					22	23.6	49				
			13.4'								
			Medium stiff, brown & gray, sandy fat clay.								
15.0						32.5			3,3,5		
			18.2'								
			Medium stiff to stiff, brown & gray, sandy, elastic silt.								
20.0					34	33.5	52	85.2			
			23.4'								
			Stiff, brown & gray, sandy fat clay.								
25.0					32	38.3	79		2,4,8		
30.0						39.3			2,4,7		
			32.7'								
35.0			Auger Refusal @ 32.7', Begin Coring in Claystone. Dark gray-black, brown orange stain, sli. to sev. weathered, low hardness, thin bedded, sli. silty to v. f. sand rippled laminae in parts, calcareous, scattered vuggy texture w/v. thin bedded calcareous Sandstone. sev. weathered 32.7'-34.2'; 21 0°-20° bedding discontinuities w/soft walls 32.7'-50.2'; sandstone bed 45.8'-46.3';							90	26
40.0										100	98
45.0										100	72
50.0										100	66

HDR | ICA

BORING NO.: B-163

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 807+20 17' Rt.

LOCATION: Gregory Street

LATITUDE: 34.88165 ° LONGITUDE: 92.11248 °

DATE: 6/4/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 57.8 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 291.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			50.2'							100	66
55.0			Limestone: Light gray, gray, dk. gray, mod. weathered w/seams sev. weathered, v. thin to thin bedded, mod. hard w/soft seams, vuggy, fossiliferous w/thin beds, soft, calcareous Claystone, v. thin bedded, calcareous Sandstone. 9 0°-10° bedding discontinuities w/rough walls 50.2'-57.8'							94	68
			57.8'							85	60
60.0			Boring Terminated @ 57.8' (Elev. 233.6). Due to very poor quality, weathered, soft limestone at end of 5th core run, advanced boring an additional 2.0 ft. RS-7 collected from 36.3'-36.7' NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
65.0											
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

HDR | ICA

BORING NO.: B-164

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 808+91 18' Lt.

LOCATION: Gregory Street

LATITUDE: 34.88171 ° LONGITUDE: 92.11190 °

DATE: 6/7/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 70.4 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 291.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Asphalt 0.4'								
			Medium dense, brown, silty, clayey gravel with sand.								
5.0					19	17.1	24		19,6,6		
			7.7'								
			Medium stiff to stiff, brown & tan, sandy lean clay.								
10.0					21	24.2	36		2,3,3		
15.0						27.3			3,6,8		
			17.7'								
			Medium dense, brown, silty sand.								
20.0					24	27.8	35		4,5,7		
25.0						31.2			4,6,9		
			27.7'								
			Stiff to very hard, brown, sandy, fat clay.								
30.0						40.4			3,5,6		
35.0						34.2			6,7,8		
40.0					25	30.2	52		6,9,12		
45.0						32.1			14,48,22		
			49.4'								
50.0									50/0.0	90	0

HDR | ICA

BORING NO.: B-164

PAGE: 2 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 808+91 18' Lt.

LOCATION: Gregory Street

LATITUDE: 34.88171 ° LONGITUDE: 92.11190 °

DATE: 6/7/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 70.4 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 291.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Auger Refusal @ 49.4', Begin Coring in Limestone.							90	0
			Light gray, gray, dk. gray-black, mod. weathered, v. thin to thin bedded, mod. hard, vuggy, fossiliferous w/laminations to thin beds, soft, calcareous Claystone, v. thin to thin bedded, calcareous Conglomerate & Sandstone.							100	70
55.0			46+ 0°-20° bedding discontinuities w/rough soft walls 49.4'-66.8'; 70° jt. w/faint iron oxide stain 68.2'; 60° bedding discontinuity 59.2'; interbedded conglomerate & sandstone 59.1'-62.5'; 70° jt. 63.4'							100	28
60.0										100	36
65.0			66.8'								
			Shale: Dark gray-black, sli. weathered, thin bedded, mod. hard, silty, trc. f. micaceous.							100	60
70.0			50° jt. w/rough walls 69.6'								
			70.4'								
			Boring Terminated @ 70.4' (Elev. 220.9).								
			RS-8 collected from 68.5'-68.9'								
75.0			NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
80.0											
85.0											
90.0											
95.0											
100.0											

HDR | ICA

BORING NO.: B-165

PAGE: 1 of 2

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 810+17 17' Rt.

LOCATION: Gregory Street

LATITUDE: 34.88158 ° LONGITUDE: 92.11149 °

DATE: 6/5/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 65.9 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 286.1	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 0.6'								
			Soft, brown, sandy, silty clay.								
5.0					18	38.4	25	102.1			
			8.4'								
			Soft to stiff, brown, sandy lean clay.								
10.0						20.6			WOH,1,2		
15.0					15	31.2	45		2,4,5		
			18.2'								
			Stiff, brown, sandy elastic silt.								
20.0					36	35.6	64	80.1			
			23.4'								
			Stiff to very stiff, brown, sandy fat clay.								
25.0						39.0			2,5,5		
30.0					24	30.3	55		5,9,9		
35.0						35.3			4,5,7		
			39.3'								
40.0			Auger Refusal @ 39.3', Begin Coring in Claystone. Dark gray-black, scat. lt. gray, sli. weathered, low hardness w/med. hard beds, thin bedded, v. f. to f. sandy-rippled laminae in parts, calcareous, w/v. thin bedded calcareous Sandstone seams & beds.							100	94
45.0			3 0°-10° bedding discontinuities 39.3'-44.3'; v. f. sandy 41.3'-41.8'; core loss 44.0'-44.3' 44.3'							94	76
50.0			Limestone: Light gray, gray, dk. gray, mod. to sev. weathered, v. thin to thin bedded, mod. hard w/soft seams, vuggy, fossiliferous w/laminations to thin beds, soft, calcareous Claystone & v. thin to thin bedded, calcareous							100	32

HDR | ICA

BORING NO.: B-165

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 810+17 17' Rt.

LOCATION: Gregory Street

LATITUDE: 34.88158 ° LONGITUDE: 92.11149 °

DATE: 6/5/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 65.9 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 286.1	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Sandstone. 50.5'							100	32
			18 0° bedding discontinuities 44.3'-50.5'								
55.0			Claystone: Dark gray-black, scat. brown-gray & lt. gray, trcs. orange stain, sli. to mod. weathered w/thin seams sev. weathered, low hardness w/med. to mod. hard beds, thin bedded, v. f. to f. sandy laminae, w/thin bedded calcareous Limestone.							100	68
60.0			limestone beds 51.1', 51.3'-51.8', 51.9'-52.0', 52.3'-52.5', 52.7'-54.0'; fossiliferous sand beds 54.4'-54.5', 54.7', 55.9'-56.0', 57.6'-57.7', 58.4'; 16 0°-10° bedding discontinuities 50.5'-60.9'; limestone bed 60.0'-60.9' 60.9'							98	86
65.0			Shale: Dark gray-black, sli. weathered to fresh, thin bedded, med. to mod. hard, silty in part, f. micaceous. 2 50° jts. w/smooth, hard walls; 2 40° jts. w/smooth, hard walls; 6 20° jts. w/hard walls 65.9'							100	54
70.0			Boring Terminated @ 65.9' (Elev. 220.2). Boring relocated due to underground storm drain. Due to poor quality rock, cored additional footage. RS-11 collected from 40.9'-41.3' RS-12 collected from 55.0'-55.4' RS-13 collected from 65.5'-65.9' NOTE: RQD values are at time of logging. Values may change due to dessication, handling or storage time. Samples may be broken by applied hand pressure except in Shale and Limestone.								
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

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BORING NO.: B-166

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 804+29 65' Rt.

LOCATION: Gregory Street

LATITUDE: 34.88156 ° LONGITUDE: 92.11345 °

DATE: 6/5/2016

TYPE OF DRILLING: CS/SPT

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 32.7 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 298.1								
			Concrete 0.6'								
			Medium dense, red & brown, silty sand.								
5.0					25	30.4	33	90.7			
			8.0'								
			Loose to medium dense, brown & gray, clayey sand.								
10.0					23	31.6	36		3,4,7		
15.0						38.0			2,4,6		
20.0						34.3			3,5,6		
			22.8'								
			Stiff, brown & gray, fat clay with sand.								
25.0						35.5			4,6,7		
30.0					28	35.3	72		4,7,8		
			32.7'								
			Casing Refusal & Boring Terminated @ 32.7' (Elev. 265.4).								
35.0			Boring located in cement driveway of restaurant. 3" casing was used to advance the hole in order to minimize disturbance footprint.								
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-167

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 805+20 59' Lt.

LOCATION: Gregory Street

LATITUDE: 34.88189 ° LONGITUDE: 92.11313 °

DATE: 6/4/2016

TYPE OF DRILLING: CS/SPT

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 32.9 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 295.7	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Asphalt 0.3'								
			Loose, brown & gray, clayey sand.								
5.0					13	31.3	33	93.9			
			8.0'								
			Stiff, brown & gray, sandy, fat clay.								
10.0						32.3			3,4,6		
15.0					28	37.0	53		3,5,6		
			17.9'								
			Stiff, brown & gray, sandy, elastic silt.								
20.0					44	35.2	73	82.0			
			23.2'								
			Stiff, brown & gray, sandy, elastic silt.								
25.0						38.9			2,5,5		
30.0					39	37.6	64		2,6,7		
			32.9'								
			Auger Refusal & Boring Terminated @ 32.9' (Elev. 262.8).								
35.0			Boring located in restaurant parking lot. 3" casing was used to advance the hole in order to minimize disturbance footprint.								
40.0											
45.0											
50.0											

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BORING NO.: B-168

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 807+09 72' Rt.

LOCATION: Gregory Street

LATITUDE: 34.88150 ° LONGITUDE: 92.11253 °

DATE: 6/5/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 33.5 ft.

GROUNDWATER @ Dry

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 292.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 0.7'								
			Medium stiff, red & gray, sandy fat clay.								
5.0						20.3			1,2,3		
			8.1'								
			Loose, red & gray, clayey sand.								
10.0					22	26.8	57	94.4			
			13.3'								
			Stiff, red & gray, sandy fat clay.								
15.0						33.3			2,4,5		
			18.1'								
			Stiff, brown & gray, fat clay with sand.								
20.0						35.4			2,5,7		
			23.1'								
			Medium dense, brown & gray, clayey sand.								
25.0					29	36.5	73	80.4			
			28.3'								
			Stiff, brown & gray, fat clay with sand.								
30.0					29	37.9	81		3,5,7		
			33.5'								
35.0			Auger Refusal & Boring Terminated @ 33.5' (Elev. 258.9).								
			Boring relocated due to underground storm drain.								
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-169

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 807+36 87' Lt.

LOCATION: Gregory Street

LATITUDE: 34.88193 ° LONGITUDE: 92.11239 °

DATE: 6/16/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 21.3 ft.

GROUNDWATER @ Dry

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 291.8	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Medium dense, red & gray, clayey sand.		24	24.5	47		2,5,6		
			8.1'								
10.0			Medium dense, red & gray, clayey sand.		21	30.1	39	90.3			
			13.3'								
15.0			Stiff, brown & gray, sandy lean clay.		15	32.4	40		3,5,6		
20.0						36.8			2,5,5		
			21.3'								
25.0			No Auger Refusal & Boring Terminated @ 21.3' (Elev. 270.5). Boring relocated to avoid service road & underground utilities.								
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-170

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 812+69 26' Rt.

LOCATION: Gregory Street

LATITUDE: 34.88150 ° LONGITUDE: 92.11066 °

DATE: 6/6/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 20.7 ft.

GROUNDWATER @ 14.0 ft.

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 290.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 0.4'								
			Very loose to loose, red, clayey sand.								
5.0		X				16.1			1,2,2		
10.0		X				18.4			1,2,3		
			12.5'								
			Loose to medium dense, red, clayey sand.								
15.0		■			18	19.3	31	114.7			
			17.7'								
			Loose, red, clayey sand.								
20.0		X			16	18.0	29		2,4,6		
			20.7'								
			No Refusal & Boring Terminated @ 20.7' (Elev. 269.7).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-171

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 662+39 117' Rt.

LOCATION: Hwy 67

LATITUDE: 34.88191 ° LONGITUDE: 92.11123 °

DATE: 6/6/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 11.2 ft.

GROUNDWATER @ Dry

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 281.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 0.3'								
			Stiff, brown, sandy lean clay.								
5.0					22	21.4	36	103.2			
			8.2'								
			Loose, brown, clayey sand.								
10.0					23	19.2	43		3,4,5		
			11.2'								
			No Auger Refusal & Boring Terminated @ 11.2' (Elev. 270.1).								
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: PC-1

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 122+00 6' Rt.

LOCATION: John Harden Drive

LATITUDE: 34.87242 ° LONGITUDE: 92.12245 °

DATE: 5/17/2016

TYPE OF DRILLING: CS/CORE

EQUIPMENT: PVMT Core Machine

LOGGED BY: C. Banning

COMPLETION DEPTH: 0.7 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 265.8	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			8.25" concrete pavement 0.7 Boring Terminated @ 0.7' (Elev. 265.1).								
5.0											
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: PC-2

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 142+00 3' Lt.

LOCATION: John Harden Drive

LATITUDE: 34.87621 ° LONGITUDE: 92.11773 °

DATE: 5/17/2016

TYPE OF DRILLING: CS/CORE

EQUIPMENT: PVMT Core Machine

LOGGED BY: C. Banning

COMPLETION DEPTH: 0.7 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 303.1	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			8.5" concrete surface 0.7								
			Boring Terminated @ 0.7' (Elev. 302.4).								
5.0											
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: PC-3

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 162+00 2' Lt.

LOCATION: John Harden Drive

LATITUDE: 34.88040 ° LONGITUDE: 92.11345 °

DATE: 5/20/2016

TYPE OF DRILLING: CS/CORE

EQUIPMENT: PVMT Core Machine

LOGGED BY: C. Banning

COMPLETION DEPTH: 0.7 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 308.9	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			8.5" concrete pavement 0.7								
			Boring Terminated @ 0.7' (Elev. 308.2).								
5.0											
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: PC-4

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 182+00 3' Lt.

LOCATION: John Harden Drive

LATITUDE: 34.88481 ° LONGITUDE: 92.10947 °

DATE: 5/19/2016

TYPE OF DRILLING: CS/CORE

EQUIPMENT: PVMT Core Machine

LOGGED BY: C. Banning

COMPLETION DEPTH: 0.7 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			8" concrete pavement 0.7								
			Boring Terminated @ 0.7' (Elev. 273.2).								
5.0											
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: PC-5

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 202+00 6' Rt.

LOCATION: John Harden Drive

LATITUDE: 34.88911 ° LONGITUDE: 92.10550 °

DATE: 5/17/2016

TYPE OF DRILLING: CS/CORE

EQUIPMENT: PVMT Core Machine

LOGGED BY: C. Banning

COMPLETION DEPTH: 0.7 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 299.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			8" concrete pavement 0.7								
			Boring Terminated @ 0.7' (Elev. 298.5).								
5.0											
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: PC-6

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 211+42 200' Rt.

LOCATION: John Harden Drive

LATITUDE: 34.89094 ° LONGITUDE: 92.10305 °

DATE: 5/17/2016

TYPE OF DRILLING: CS/CORE

EQUIPMENT: PVMT Core Machine

LOGGED BY: C. Banning

COMPLETION DEPTH: 1.2 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 293.0								
			7" asphalt pavement consisting of: 0.6 / 1.2 1" surface 2.5" base 1" surface 2.5" base 7.5" DGA								
			Boring Terminated @ 1.2' (Elev. 291.8).								
5.0											
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: PC-7

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 109+00 2' Rt.

LOCATION: T.P. White Drive

LATITUDE: 34.86946 ° LONGITUDE: 92.12541 °

DATE: 5/18/2016

TYPE OF DRILLING: CS/CORE

EQUIPMENT: PVMT Core Machine

LOGGED BY: C. Banning

COMPLETION DEPTH: 0.7 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 272.1	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			8.25" concrete pavement 0.7 Boring Terminated @ 0.7' (Elev. 271.4).								
5.0											
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: PC-8

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 126+00 6' Lt.

LOCATION: T.P. White Drive

LATITUDE: 34.87269 ° LONGITUDE: 92.12132 °

DATE: 5/18/2016

TYPE OF DRILLING: CS/CORE

EQUIPMENT: PVMT Core Machine

LOGGED BY: C. Banning

COMPLETION DEPTH: 0.7 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 274.2								
			8.25" concrete pavement 0.7								
			Boring Terminated @ 0.7' (Elev. 273.5).								
5.0											
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: PC-9

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 146+00 CL

LOCATION: T.P. White Drive

LATITUDE: 34.87642 ° LONGITUDE: 92.11654 °

DATE: 5/20/2016

TYPE OF DRILLING: CS/CORE

EQUIPMENT: PVMT Core Machine

LOGGED BY: C. Banning

COMPLETION DEPTH: 0.7 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 312.1	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			8.5" concrete pavement 0.7 Boring Terminated @ 0.7' (Elev. 311.4).								
5.0											
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: PC-10

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 156+00 4' Lt.

LOCATION: T.P. White Drive

LATITUDE: 34.87854 ° LONGITUDE: 92.11442 °

DATE: 5/17/2016

TYPE OF DRILLING: CS/CORE

EQUIPMENT: PVMT Core Machine

LOGGED BY: C. Banning

COMPLETION DEPTH: 0.7 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 308.5								
			8.5" concrete pavement 0.7								
			Boring Terminated @ 0.7' (Elev. 307.8).								
5.0											
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: PC-11

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 176+00 CL

LOCATION: T.P. White Drive

LATITUDE: 34.88293 ° LONGITUDE: 92.11041 °

DATE: 5/18/2016

TYPE OF DRILLING: CS/CORE

EQUIPMENT: PVMT Core Machine

LOGGED BY: C. Banning

COMPLETION DEPTH: 0.7 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 277.7								
			8.25" concrete pavement 0.7								
			Boring Terminated @ 0.7' (Elev. 277.0).								
5.0											
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: PC-12

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 202+00 6' Rt.

LOCATION: T.P. White Drive

LATITUDE: 34.88735 ° LONGITUDE: 92.10582 °

DATE: 5/19/2016

TYPE OF DRILLING: CS/CORE

EQUIPMENT: PVMT Core Machine

LOGGED BY: C. Banning

COMPLETION DEPTH: 0.9 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 285.8								
			11" asphalt pavement consisting of: 0.9'								
			5" surface								
			6" base								
			Boring Terminated @ 0.9' (Elev. 284.9).								
5.0											
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: PC-13

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 222+00 CL

LOCATION: T.P. White Drive

LATITUDE: 34.89121 ° LONGITUDE: 92.10127 °

DATE: 5/20/2016

TYPE OF DRILLING: CS/CORE

EQUIPMENT: PVMT Core Machine

LOGGED BY: C. Banning

COMPLETION DEPTH: 1.4 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 289.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			9.5" asphalt pavement consisting of: 2.5" surface 3" base 4" surface 7.5" DGA								
5.0			Boring Terminated @ 1.4' (Elev. 287.6).								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: PC-14

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 207+00 2' Lt.

LOCATION: James Street

LATITUDE: 34.87494 ° LONGITUDE: 92.11836 °

DATE: 5/19/2016

TYPE OF DRILLING: CS/CORE

EQUIPMENT: PVMT Core Machine

LOGGED BY: C. Banning

COMPLETION DEPTH: 0.9 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 304.5								
			1.5" surface 0.1								
			9" concrete pavement 0.9								
			Boring Terminated @ 0.9' (Elev. 303.6).								
5.0											
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: PC-15

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 213+00 2' Rt.

LOCATION: James Street

LATITUDE: 34.87659 ° LONGITUDE: 92.11828 °

DATE: 5/20/2016

TYPE OF DRILLING: CS/CORE

EQUIPMENT: PVMT Core Machine

LOGGED BY: C. Banning

COMPLETION DEPTH: 0.8 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 300.6								
			9" concrete pavement 0.8'								
			Boring Terminated @ 0.8' (Elev. 299.7).								
5.0											
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: PC-16

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 105+00 30' Rt.

LOCATION: Vandenberg Blvd.

LATITUDE: 34.88800 ° LONGITUDE: 92.11006 °

DATE: 5/18/2016

TYPE OF DRILLING: CS/CORE

EQUIPMENT: PVMT Core Machine

LOGGED BY: C. Banning

COMPLETION DEPTH: 1.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 277.2								
			4.5" asphalt pavement consisting of: 0.42 3" surface 1.5" base								
			7.5" DGA 1.0								
5.0			Boring Terminated @ 1.0' (Elev. 276.2).								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: PC-17

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 115+00 CL

LOCATION: Vandenberg Blvd.

LATITUDE: 34.88738 ° LONGITUDE: 92.10696 °

DATE: 5/18/2016

TYPE OF DRILLING: CS/CORE

EQUIPMENT: PVMT Core Machine

LOGGED BY: C. Banning

COMPLETION DEPTH: 1.0 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 278.9								
			4.25" surface 0.4								
			8" concrete pavement 1.0								
			Boring Terminated @ 1.0' (Elev. 277.9).								
5.0											
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: PC-18

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 805+00 2' Lt.

LOCATION: Gregory Street

LATITUDE: 34.88174 ° LONGITUDE: 92.11321 °

DATE: 5/20/2016

TYPE OF DRILLING: CS/CORE

EQUIPMENT: PVMT Core Machine

LOGGED BY: C. Banning

COMPLETION DEPTH: 0.7 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 296.9								
			8.75" concrete pavement 0.7								
			Boring Terminated @ 0.7' (Elev. 296.2).								
5.0											
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: PC-19

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 198+00 5' Lt.

LOCATION: N. 1st Street

LATITUDE: 34.88636 ° LONGITUDE: 92.10639 °

DATE: 5/19/2016

TYPE OF DRILLING: CS/CORE

EQUIPMENT: PVMT Core Machine

LOGGED BY: C. Banning

COMPLETION DEPTH: 0.9 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 278.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			3.5" surface 0.3 7.5" DGA 0.9 Boring Terminated @ 0.9' (Elev. 277.3).								
5.0											
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: PC-20

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 11+00 2' Lt.

LOCATION: N. Bailey Street

LATITUDE: 34.88202 ° LONGITUDE: 92.11362 °

DATE: 5/19/2016

TYPE OF DRILLING: CS/CORE

EQUIPMENT: PVMT Core Machine

LOGGED BY: C. Banning

COMPLETION DEPTH: 1.1 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	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
			SURFACE ELEVATION: 295.6								
			6.5" asphalt pavement consisting of: 0.5 1.1 2" surface 4.5" base 6.5" DGA								
5.0			Boring Terminated @ 1.1' (Elev. 294.5).								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: PC-21

PAGE: 1 of 1

JOB NO.: CA0604

JOB NAME: Hwy 67 Widening from Main Street to Vandenberg Blvd.

STATION: 23+00 2' Rt.

LOCATION: N. Bailey Street

LATITUDE: 34.88354 ° LONGITUDE: 92.11106 °

DATE: 5/19/2016

TYPE OF DRILLING: CS/CORE

EQUIPMENT: PVMT Core Machine

LOGGED BY: C. Banning

COMPLETION DEPTH: 1.2 ft.

GROUNDWATER @ NA

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 281.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			7.25" asphalt pavement consisting of: 2.25" surface 5" base 7.5" DGA (0.6 / 1.2) Boring Terminated @ 1.2' (Elev. 280.1).								
5.0											
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

Appendix B. LABORATORY TESTING

Project Name : Highway 67
Location : Pulaski County, Arkansas
Job Number : 251537

Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	pH	Natural Moisture Content (%)
11	B-100		P-1	3.5	5.0	Red Silty Sand		
11			P-2	8.5	10.0	Red Silty Sand		28.6
11			P-3	14.0	15.0	Red Silty Sand		
12			P-4	18.5	20.0	Red Silty Sand with Gravel		
44	B-101		P-1	3.5	5.0	Brown Sandy Lean Clay		
			P-2	8.5	10.0	No Recovery		
43			P-3	13.5	15.0	Brown Lean Clay with Sand		
43			P-4	18.5	20.0	Brown Lean Clay with Sand		21.9
45			P-5	23.5	25.0	Brown Silty Sand		
40	B-102		P-1	3.5	5.0	Red Sandy Lean Clay		25.3
45			P-2	8.5	10.0	Red Silty Sand		
45			P-3	13.5	15.0	Red Silty Sand		
45			P-4	18.5	20.0	Red Silty Sand		33.8
44	B-103		P-1	3.5	5.0	Red Sandy Lean Clay		
43			P-2	8.5	10.0	Red Lean Clay with Sand		
42			P-3	13.5	15.0	Brown Clayey Sand		
44			P-4	18.5	20.0	Brown Sandy Lean Clay		17.0
42			P-5	23.5	25.0	Brown Clayey Sand		
42			P-6	28.5	30.0	Brown Clayey Sand		
44	B-104		P-1	3.5	5.0	Brown Sandy Lean Clay		
126			ST-1	6.0	8.0	Gray Clayey Sand		25.7
41			P-2	8.5	10.0	Brown Sandy Fat Clay		
43			P-3	13.5	15.0	Brown Lean Clay with Sand		
41			P-4	18.5	20.0	Brown Sandy Fat Clay		
45			P-5	23.5	25.0	Brown Silty Sand		
41			P-6	28.5	30.0	Brown Sandy Fat Clay		31.8
41			P-7	33.5	35.0	Brown Sandy Fat Clay		
43	B-105		P-1	3.5	5.0	Brown Lean Clay with Sand		
43			P-2	8.5	10.0	Brown Lean Clay with Sand		
45			P-3	13.5	15.0	Brown Silty Sand		
44			P-4	18.5	20.0	Brown Sandy Lean Clay		
43	B-106		P-1	3.5	5.0	Red Lean Clay with Sand		
42			P-2	8.5	10.0	Red Clayey Sand		
42			P-3	13.5	15.0	Red Clayey Sand		
43			P-4	18.5	20.0	Red Lean Clay with Sand		
41			P-5	23.5	25.0	Red Sandy Fat Clay		
43	B-107		P-1	3.5	5.0	Red Lean Clay with Sand		
43			P-2	8.5	10.0	Red Lean Clay with Sand		
44			P-3	13.5	15.0	Brown Sandy Lean Clay		
42			P-4	18.5	20.0	Brown Clayey Sand		
42			P-5	23.5	25.0	Brown Clayey Sand		31.6
76	B-108		Bag-1	0.0	5.0	Brown Sandy Lean Clay		19.1
77	B-109		Bag-1	0.0	5.0	Brown Sandy Lean Clay		21.3
74	B-110		Bag-1	0.6	5.0	Brown Sandy Silty Clay		17.1
75	B-111		Bag-1	0.4	5.0	Brown Clayey Sand		27.1

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Project Name : Highway 67
Location : Pulaski County, Arkansas
Job Number : 251537

Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	pH	Natural Moisture Content (%)
78	B-112		Bag-1	0.0	5.0	Red Sandy Lean Clay		21.2
79	B-113		Bag-1	0.0	5.0	Red Sandy Lean Clay		20.4
80	B-114		Bag-1	0.0	5.0	Red Sandy Fat Clay		21.5
81	B-115		Bag-1	0.0	5.0	Red Clayey Sand		13.8
48	B-116		SS-1	4.8	6.3	Red Clayey Sand		28.9
7			ST-1	9.8	11.8	Red Silty Sand		27.7
48			SS-2	14.8	16.3	Brown & Gray Clayey Sand		30.5
48			SS-3	19.8	21.3	Brown & Gray Clayey Sand		30.3
48			SS-4	24.8	26.3	Brown & Gray Clayey Sand		27.0
48			SS-5	29.8	31.3	Brown Clayey Sand		29.9
49	B-117		SS-1	4.9	6.4	Brown Clayey Sand		23.6
10			ST-1	9.9	11.9	Red & Gray Clayey Sand		29.0
49			SS-2	14.9	16.4	Red & Gray Clayey Sand		32.1
50			SS-3	19.9	21.4	Brown & Gray Silty Sand		35.0
50			SS-4	24.9	26.4	Brown & Gray Silty Sand		25.6
50			SS-5	30.0	31.5	Brown & Gray Silty Sand		26.2
51			SS-6	34.9	36.4	Black Clayey Sand		31.5
51			SS-7	39.9	41.4	Brown & Gray Clayey Sand		27.1
51			SS-8	44.4	45.9	Brown & Gray Clayey Sand		29.4
52			SS-9	49.9	54.4	Black Clayey Sand		30.6
52			SS-10	54.9	56.4	Black Clayey Sand		31.4
46	B-118		SS-1	5.0	6.5	Tan Clayey Sand		35.2
46			SS-2	9.8	11.3	Tan Clayey Sand		31.2
47			SS-3	14.8	16.3	Tan Sandy Fat Clay		29.6
47			SS-4	19.8	21.3	Tan Sandy Fat Clay		27.3
47			SS-5	24.8	26.3	Tan Sandy Fat Clay		34.4
47			SS-6	29.8	31.3	Tan Sandy Fat Clay		32.5
47			SS-7	34.8	36.3	Gray Sandy Fat Clay		35.7
47			SS-8	39.8	41.3	Gray Sandy Fat Clay		28.2
47			SS-9	44.8	46.3	Gray Sandy Fat Clay		30.4
47			SS-10	49.8	51.0	Gray Sandy Fat Clay		28.8
100	B-120		SS-1	5.0	6.5	Tan & Gray Silty Sand		33.7
100			SS-2	10.0	11.5	Tan Silty Sand		31.2
100			SS-3	15.0	16.5	Tan & Gray Silty Sand		31.1
127			ST-1	20.0	22.0	Gray Sandy Elastic Silt		33.2
101			SS-4	25.0	26.5	Black Sandy Elastic Silt		33.8
101			SS-5	30.0	31.5	Black Sandy Elastic Silt		34.8
101			SS-6	35.0	36.5	Gray Sandy Elastic Silt		34.5
102			SS-7	40.0	41.5	Gray Sandy Elastic Silt		30.6
102			SS-8	45.0	46.5	Gray Sandy Elastic Silt		30.0
102			SS-9	50.0	51.5	Gray Sandy Elastic Silt		25.7
103	B-121		SS-1	3.3	4.8	Red & Gray Clayey Sand		25.9
104			SS-2	8.3	9.8	Tan Silty Sand		28.2
103			SS-3	13.3	14.8	Tan & Gray Clayey Sand		34.2
104			SS-4	18.3	19.8	Tan & Gray Silty Sand		28.6
103			SS-5	23.3	24.8	Gray & Tan Clayey Sand		31.9
53	B-122		SS-1	4.4	5.9	Tan Sandy Lean Clay		16.7
53			SS-2	9.4	10.9	Tan Sandy Lean Clay		20.4
54			SS-3	14.4	15.9	Tan Fat Clay with Sand		30.2
112			ST-1	19.4	21.4	Tan Silty Sand		36.7
54			SS-4	24.4	25.9	Tan Fat Clay with Sand		46.7
82	B-123		SS-1	4.6	6.1	Brown & Gray Clayey Sand		20.4

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Moisture Data

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Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	pH	Natural Moisture Content (%)
82			SS-2	9.6	11.1	Brown Clayey Sand		20.7
83			SS-3	14.6	16.1	Brown Sandy Fat Clay		29.0
83			SS-4	19.6	21.1	Brown & Gray Sandy Fat Clay		19.9
128			ST-1	24.6	26.6	Brown & Gray Sandy Lean Clay		17.5
82			SS-5	29.6	31.1	Brown & Gray Clayey Sand		16.2
83			SS-6	34.6	36.1	Brown Sandy Fat Clay		16.2
83			SS-7	39.6	41.1	Brown & Gray Sandy Fat Clay		19.0
84			SS-8	44.6	46.1	Brown & Gray Fat Clay with Sand		40.5
84			SS-9	49.6	51.1	Brown & Gray Fat Clay with Sand		35.1
6	B-124		P-1	3.5	5.0	Brown Fat Clay with Sand		18.3
6			P-2	8.5	10.0	Brown Fat Clay with Sand		
6			P-3	13.5	15.0	Brown Fat Clay with Sand		
6			P-4	18.5	20.0	Brown Fat Clay with Sand		
6			P-5	23.5	25.0	Brown Fat Clay with Sand		
6			P-6	28.5	29.1	Brown Fat Clay with Sand		
85	B-126		SS-1	4.4	5.9	Brown & Gray Sandy Lean Clay		17.6
85			SS-2	9.4	10.9	Brown Sandy Lean Clay		18.3
129			ST-1	14.4	16.4	Gray & Brown Sandy Fat Clay		17.9
86			SS-3	19.4	20.9	Gray & Brown Sandy Silt		18.2
86			SS-4	24.4	25.9	Brown Gray Sandy Silt		22.5
86			SS-5	29.4	30.9	Gray & Brown Sandy Silt		28.6
87			SS-6	34.4	35.9	Brown & Gray Sandy Elastic Silt		36.1
8	B-127		P-1	3.5	5.0	Brown Sandy Lean Clay		
8			P-2	8.5	10.0	Brown Sandy Lean Clay		16.1
8			P-3	13.5	15.0	Brown Sandy Lean Clay		
9			P-4	18.5	20.0	Brown Fat Clay with Sand		37.7
9			P-5	23.5	24.5	Brown Fat Clay with Sand		
88	B-129		SS-1	5.0	6.5	Red & Brown Clayey Sand		8.0
88			SS-2	10.0	11.5	Red Clayey Sand		19.2
88			SS-3	15.0	16.5	Brown Clayey Sand		18.0
89			SS-4	20.0	21.5	Brown & Gray Sandy Lean Clay		18.4
89			SS-5	25.0	26.5	Brown Sandy Lean Clay		18.8
89			SS-6	30.0	31.5	Brown & Gray Sandy Lean Clay		26.5
89			SS-7	35.0	36.5	Brown & Gray Sandy Lean Clay		35.2
89			SS-8	40.0	41.5	Brown & Gray Sandy Lean Clay		23.2
89			SS-9	45.0	46.5	Brown Sandy Lean Clay		38.4
90			SS-10	50.0	51.5	Brown Clayey Sand with Gravel		30.1
55	B-130		SS-1	4.6	6.1	Brown & Gray Sandy Lean Clay with Gravel		16.5
56			SS-2	9.6	11.1	Red & Tan Sandy Fat Clay		36.1
113			ST-1	14.6	16.6	Red & Tan Silty Sand		38.0
56			SS-3	19.6	21.1	Tan Sandy Fat Clay		34.3
56			SS-4	24.6	24.8	Tan Sandy Fat Clay		8.6
91	B-131		SS-1	4.0	5.5	Brown Sandy Lean Clay		17.7
91			SS-2	9.0	10.5	Brown Sandy Lean Clay		18.4
91			SS-3	14.0	15.5	Brown & Gray Sandy Lean Clay		19.5
91			SS-4	19.0	20.5	Brown & Gray Sandy Lean Clay		18.9
130			ST-1	24.0	26.0	Brown & Gray Sandy Silty Clay		18.6
92			SS-5	29.0	30.5	Brown & Red Clayey Sand		18.0
93			SS-6	34.0	35.5	Brown & Gray Sandy Lean Clay		21.8
92			SS-7	39.0	40.5	Brown & Gray Clayey Sand		33.4
92			SS-8	44.0	45.5	Brown & Gray Clayey Sand		33.9
94			SS-9	49.0	50.5	Brown Clayey Sand with Gravel		20.1
12	B-132		P-1	3.5	5.0	Red Silty Sand with Gravel		14.2
13			P-2	8.5	10.0	Red Sandy Silt		23.7
11			P-3	13.5	15.0	Red Silty Sand		

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Moisture Data

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Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	pH	Natural Moisture Content (%)
11			P-4	18.5	20.0	Red Silty Sand		
14	B-133		P-1	3.5	5.0	Red Clayey Sand		
12			P-2	8.5	10.0	Red Silty Sand with Gravel		
12			P-3	13.5	15.0	Red Silty Sand with Gravel		
12			P-4	18.5	20.0	Red Silty Sand with Gravel		
14	B-134		P-1	3.5	5.0	Red Clayey Sand		29.0
14			P-2	8.5	10.0	Red Clayey Sand		
11			P-3	13.5	15.0	Red Silty Sand		
11			P-4	18.5	20.0	Red Silty Sand		
1	B-135		P-1	3.5	5.0	Red Lean Clay with Sand		22.6
1			P-2	8.5	10.0	Red Lean Clay with Sand		
105	B-136		SS-1	4.2	5.7	Tan, Gray & Red Clayey Sand		22.4
131			ST-1	9.2	11.2	Gray Sandy Lean Clay		25.6
106			SS-2	14.2	15.7	Tan &Yellow Clayey Sand		29.5
105			SS-3	19.2	20.7	Tan &Yellow Clayey Sand		34.3
106			SS-4	24.2	25.7	Tan & Gray Clayey Sand		30.6
2	B-137		P-1	3.5	5.0	Red Clayey Sand with Gravel		
2			P-2	8.5	10.0	Red Clayey Sand with Gravel		30.8
2			P-3	13.5	15.0	Red Clayey Sand with Gravel		
3			P-4	18.5	20.0	Red Clayey Sand		
3			P-5	23.5	25.0	Red Clayey Sand		
3			P-6	28.5	30.0	Red Clayey Sand		33.8
4			P-7	33.5	35.0	Red Clayey Sand		
4			P-8	38.5	40.0	Brown Clayey Sand		31.5
4			P-9	43.5	45.0	Gray Clayey Sand		
5			P-10	48.5	50.0	Gray Fat Clay with Sand		
5			P-11	53.5	55.0	Gray Fat Clay with Sand		29.1
15	B-138		P-1	3.5	5.0	Red Clayey Sand		
15			P-2	8.5	10.0	Brown Clayey Sand		
15			P-3	13.5	15.0	Brown Clayey Sand		
15			P-4	18.5	20.0	Brown Clayey Sand		34.5
18			P-5	23.5	25.0	Gray Sandy Fat Clay		
18			P-6	28.5	30.0	Gray Sandy Fat Clay		
18			P-7	33.5	35.0	Gray Sandy Fat Clay		
15	B-139		P-1	3.5	5.0	Red Clayey Sand		
15			P-2	8.5	10.0	Red Clayey Sand		
15			P-3	13.5	15.0	Red Clayey Sand		
132			ST-1	17.0	19.0	Tan & Gray Clayey Sand		30.3
15			P-4	18.5	20.0	Red Clayey Sand		
18			P-5	23.5	25.0	Gray Sandy Fat Clay		31.9
18			P-6	28.5	30.0	Gray Sandy Fat Clay		
18			P-7	33.5	35.0	Gray Sandy Fat Clay		
17	B-140		P-1	3.5	5.0	Brown Clayey Sand		
17			P-2	8.5	10.0	Brown Clayey Sand		26.6
16			P-3	13.5	15.0	Gray Sandy Silt		21.9
16			P-4	18.5	20.0	Gray Sandy Silt		
18			P-5	23.5	25.0	Gray Sandy Fat Clay		
18			P-6	28.5	30.0	Gray Sandy Fat Clay		
18			P-7	33.5	35.0	Gray Sandy Fat Clay		
107	B-141		SS-1	4.3	5.8	Tan & Gray Silty Sand		27.1
108			SS-2	9.3	10.8	Tan & Gray Silty Sand		34.1
133			ST-1	14.3	16.3	Tan Clayey Sand		29.8
108			SS-3	19.3	20.8	Tan & Gray Silty Sand		37.0

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Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	pH	Natural Moisture Content (%)
107			SS-4	24.3	25.8	Tan & Gray Silty Sand		30.5
19	B-142		P-1	3.5	5.0	Brown Clayey Sand		
19			P-2	8.5	10.0	Brown Clayey Sand		30.6
20			P-3	13.5	15.0	Brown Sandy Fat Clay		31.3
20			P-4	18.5	20.0	Gray Sandy Fat Clay		
20			P-5	23.5	25.0	Gray Sandy Fat Clay		
20			P-6	28.5	30.0	Gray Sandy Fat Clay		
21			P-7	33.5	35.0	Gray Sandy Silt		
21			P-8	38.5	39.5	Gray Sandy Silt		
21			P-9	43.5	44.5	Gray Sandy Silt		27.3
21			P-10	48.5	49.5	Gray Sandy Silt		
109	B-143		SS-1	4.5	6.0	Tan & Gray Silty Sand		28.5
134			ST-1	9.5	11.5	Tan Silty Sand		27.7
109			SS-2	14.5	16.0	Tan Silty Sand		28.3
110			SS-3	19.5	21.0	Gray Clayey Sand		26.9
110			SS-4	24.5	26.0	Gray Clayey Sand		30.4
110			SS-5	29.5	31.0	Gray Clayey Sand		29.9
111			SS-6	34.5	36.0	Gray Sandy Fat Clay		30.0
111			SS-7	39.5	41.0	Gray Sandy Fat Clay		31.5
19	B-144		P-1	3.5	5.0	Red Clayey Sand		
19			P-2	8.5	10.0	Brown Clayey Sand		
22	B-145		P-1	3.5	5.0	Red Sandy Elastic Silt		
22			P-2	8.5	10.0	Red Sandy Elastic Silt		
24			P-3	13.5	15.0	Red Clayey Sand		
22	B-146		P-1	3.5	5.0	Red Sandy Elastic Silt		
23			P-2	8.5	10.0	Red Silty Sand with Gravel		
22			P-3	13.5	15.0	Brown Sandy Elastic Silt		39.9
23	B-147		P-1	3.5	5.0	Red Silty Sand with Gravel		33.4
24			P-2	8.5	10.0	Red Clayey Sand		
23			P-3	13.5	15.0	Brown Silty Sand with Gravel		
25			P-4	18.5	20.0	Brown Clayey Sand		
24	B-148		P-1	3.5	5.0	Red Clayey Sand		31.3
24			P-2	8.5	10.0	Red Clayey Sand		
24			P-3	13.5	15.0	Red Clayey Sand		
25			P-4	18.5	20.0	Brown Clayey Sand		
22	B-149		P-1	3.5	5.0	Red Sandy Elastic Silt		
22			P-2	8.5	10.0	Red Sandy Elastic Silt		
25			P-3	13.5	15.0	Brown Clayey Sand		
25			P-4	18.5	20.0	Brown Clayey Sand		
25			P-5	23.5	25.0	Brown Clayey Sand		
25			P-6	28.5	30.0	Brown Clayey Sand		31.7
97	B-150		SS-1	5.0	6.5	Brown Silty Sand		23.4
135			ST-1	10.0	12.0	Brown & Gray Silty Sand		32.0
97			SS-2	15.0	16.5	Gray & Tan Silty Sand		33.6
97			SS-3	20.0	21.5	Tan Silty Sand		33.0
98			SS-4	25.0	26.5	Brown & Gray Silty Sand		32.7
98			SS-5	30.0	31.5	Brown & Gray Silty Sand		31.8
99			SS-6	35.0	36.5	Gray Clayey Sand		29.0
99			SS-7	40.0	41.5	Black Clayey Sand		27.9
24	B-151		P-1	3.5	5.0	Red Clayey Sand		
24			P-2	8.5	10.0	Red Clayey Sand		
25			P-3	13.5	15.0	Brown Clayey Sand		

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Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	pH	Natural Moisture Content (%)
26	B-152		P-1	3.5	5.0	Red Sandy Elastic Silt		
26			P-2	8.5	10.0	Red Sandy Elastic Silt		
26			P-3	13.5	15.0	Red Sandy Elastic Silt		
28	B-153		P-1	3.5	5.0	Red Sandy Lean Clay		26.5
26			P-2	8.5	10.0	Red Sandy Elastic Silt		
26			P-3	13.5	15.0	Red Sandy Elastic Silt		36.4
33	B-154		P-1	3.5	5.0	Red Clayey Sand		
33			P-2	8.5	10.0	Red Clayey Sand		28.2
29			P-3	13.5	15.0	Brown Sandy Fat Clay		36.8
28	B-155		P-1	3.5	5.0	Red Sandy Lean Clay		
26			P-2	8.5	10.0	Red Sandy Elastic Silt		
27			P-3	13.5	15.0	Red Sandy Fat Clay		
27			P-4	18.5	20.0	Red Sandy Fat Clay		41.8
33	B-156		P-1	3.5	5.0	Red Clayey Sand		
33			P-2	8.5	10.0	Red Clayey Sand		
32	B-157		P-1	3.5	5.0	Red Sandy Lean Clay		26.1
32			P-2	8.5	10.0	Red Sandy Lean Clay		
31			P-3	13.5	15.0	Red Clayey Sand		16.8
31			P-4	18.5	20.0	Red Clayey Sand		
30			P-5	23.5	25.0	Red Sandy Silt		34.0
34	B-158		P-1	3.5	5.0	Red Lean Clay with Sand		
136			ST-1	6.0	8.0	Brown & Gray Sandy Lean Clay		21.2
34			P-2	8.5	10.0	Red Lean Clay with Sand		21.9
34			P-3	13.5	15.0	Brown Lean Clay with Sand		
34			P-4	18.5	20.0	Brown Lean Clay with Sand		
34			P-5	23.5	25.0	Brown Lean Clay with Sand		
34			P-6	28.5	30.0	Brown Lean Clay with Sand		
35			P-7	33.5	34.5	Gray Gravelly Lean Clay with Sand		
35			P-8	38.5	39.4	Gray Gravelly Lean Clay with Sand		30.9
95	B-159		SS-1	5.0	6.5	Brown & Gray Sandy Lean Clay		24.9
95			SS-2	10.0	11.5	Gray Sandy Lean Clay		17.8
137			ST-1	15.0	17.0	Brown & Gray Sandy Elastic Silt		
96			SS-3	20.0	21.5	Gray & Brown Sandy Elastic Silt		33.6
96			SS-4	25.0	26.5	Brown Sandy Elastic Silt		41.4
37	B-160		P-1	3.5	5.0	Red Sandy Lean Clay		
37			P-2	8.5	10.0	Red Sandy Lean Clay		16.2
37			P-3	13.5	15.0	Red Sandy Lean Clay		
38			P-4	18.5	20.0	Red Sandy Fat Clay		
38	B-161		P-1	3.5	5.0	Brown Sandy Fat Clay		37.6
38			P-2	8.5	10.0	Brown Sandy Fat Clay		
39			P-3	13.5	15.0	Gray Sandy Fat Clay		
39			P-4	18.5	20.0	Gray Sandy Fat Clay		42.0
36	B-162		P-1	3.5	5.0	Brown Silty Sand with Gravel		42.5
38			P-2	8.5	10.0	Brown Sandy Fat Clay		
39			P-3	13.5	15.0	Brown Sandy Fat Clay		
39			P-4	18.5	20.0	Gray Sandy Fat Clay		
57	B-163		SS-1	4.9	6.4	Red Sandy Lean Clay		22.4
114			ST-1	9.9	11.9	Brown & Gray Clayey Sand		23.6
58			SS-2	14.9	16.4	Brown & Gray Sandy Fat Clay		32.5
115			ST-2	19.9	21.9	Brown & Gray Sandy Elastic Silt		33.5

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Moisture Data

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Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	pH	Natural Moisture Content (%)
58			SS-3	24.9	26.4	Brown & Gray Sandy Fat Clay		38.3
58			SS-4	29.9	31.4	Brown & Gray Sandy Fat Clay		39.3
59	B-164		SS-1	4.4	5.9	Brown Silty, Clayey Gravel with Sand		17.1
60			SS-2	9.4	10.9	Brown Sandy Lean Clay		24.2
60			SS-3	14.4	15.9	Tan Sandy Lean Clay		27.3
61			SS-4	19.4	20.9	Brown Silty Sand		27.8
61			SS-5	24.4	25.9	Brown Silty Sand		31.2
62			SS-6	29.4	30.9	Brown Sandy Fat Clay		40.4
62			SS-7	34.4	35.9	Brown Sandy Fat Clay		34.2
62			SS-8	39.4	40.9	Brown Sandy Fat Clay		30.2
62			SS-9	44.4	45.9	Brown Sandy Fat Clay		32.1
			SS-10	49.5	49.5	No Recovery		
116	B-165		ST-1	4.9	6.9	Brown Sandy Silty Clay		38.4
63			SS-1	9.9	11.4	Brown Sandy Lean Clay		20.6
63			SS-2	14.9	16.4	Brown Sandy Lean Clay		31.2
117			ST-2	19.9	21.9	Brown Sandy Elastic Silt		35.6
64			SS-3	24.9	26.4	Brown Sandy Fat Clay		39.0
64			SS-4	29.9	31.4	Brown Sandy Fat Clay		30.3
64			SS-5	34.9	36.4	Brown Sandy Fat Clay		35.3
124	B-166		ST-1	4.5	6.5	Red & Brown Silty Sand		30.4
65			SS-1	9.5	11.0	Brown & Gray Clayey Sand		31.6
65			SS-2	14.5	16.0	Brown & Gray Clayey Sand		38.0
65			SS-3	19.5	21.0	Brown Clayey Sand		34.3
66			SS-4	24.5	26.0	Brown & Gray Fat Clay with Sand		35.5
66			SS-5	29.5	31.0	Brown & Gray Fat Clay with Sand		35.3
118	B-167		ST-1	4.5	6.5	Brown & Gray Clayey Sand		31.3
67			SS-1	9.5	11.0	Brown & Gray Sandy Fat Clay		32.3
67			SS-2	14.5	16.0	Brown & Gray Sandy Fat Clay		37.0
119			ST-2	19.7	21.7	Brown & Gray Sandy Elastic Silt		35.2
68			SS-3	24.7	26.2	Brown & Gray Sandy Elastic Silt		38.9
68			SS-4	29.7	31.2	Brown & Gray Sandy Elastic Silt		37.6
67	B-168		SS-1	4.8	6.3	Red & Gray Sandy Fat Clay		20.3
125			ST-1	9.8	11.8	Red & Gray Clayey Sand		26.8
67			SS-2	14.8	16.3	Red & Gray Sandy Fat Clay		33.3
69			SS-3	19.8	21.3	Brown & Gray Fat Clay with Sand		35.4
120			ST-2	24.8	26.8	Brown & Gray Clayey Sand		36.5
69			SS-4	29.8	31.3	Brown & Gray Fat Clay with Sand		37.9
70	B-169		SS-1	4.8	6.3	Red & Gray Clayey Sand		24.5
121			ST-1	9.8	11.8	Red & Gray Clayey Sand		30.1
71			SS-2	14.8	16.3	Brown & Gray Sandy Lean Clay		32.4
71			SS-3	19.8	21.3	Brown & Gray Sandy Lean Clay		36.8
72	B-170		SS-1	4.2	5.7	Red Clayey Sand		16.1
72			SS-2	9.2	10.7	Red Clayey Sand		18.4
122			ST-1	14.2	16.2	Red Clayey Sand		19.3
72			SS-3	19.2	20.7	Red Clayey Sand		18.0
123	B-171		ST-1	4.7	6.7	Brown Sandy Lean Clay		21.4
73			SS-1	9.7	11.2	Brown Clayey Sand		19.2

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-135
Project State	: Arkansas	Sample Depth	: 3.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Red Lean Clay with 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
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	mm	
No.100		0.15	mm	
No.200		0.075	mm	76.6
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} = 0.008 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 22.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 40
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 16
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.09
Gravel (3in. + No.10)	: 0.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 0.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 22.2	AASHTO Classification: M145	: A-6 (12)
Silt + Clay (-No.200)	: 76.6	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)	: 0.5
Medium Sand (-No.10 + No.40)	: 0.7
Fine Sand (-No.40 + No.200)	: 22.2
Silt + Clay (-No.200)	: 76.6

Approved By : Kevin E. Walker

Soil No. 1

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-137
Project State	: Arkansas	Sample Depth	: 8.5' to 10.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Red Clayey Sand with Gravel		

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	87.8
1/4		6.3	mm	
No.4		4.75	mm	81.9
No.6		3.35	mm	
No.10		2	mm	75.2

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	71.0
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	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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.095 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 30.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 50
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 27
		Plasticity Index	: 23
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.17
Gravel (3in. + No.10)	: 24.8	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 4.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 24.3	AASHTO Classification: M145	: A-7-6 (7)
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)	: 18.1
Coarse Sand (-No.4 + No.10)	: 6.7
Medium Sand (-No.10 + No.40)	: 4.2
Fine Sand (-No.40 + No.200)	: 24.3
Silt + Clay (-No.200)	: 46.7

Approved By : Kevin E. Walker

Soil No. 2

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-6
Project County	: Pulaski	Sample Loc.	: Boring No. B-137
Project State	: Arkansas	Sample Depth	: 28.5' to 30.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Red 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	
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	98.4
No.6		3.35	mm	
No.10		2	mm	92.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	79.3
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	28.3
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} = 0.157 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 33.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 31
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 8
		Plasticity Index	: 23
AASHTO Composition of Total Sample: M145		Liquidity Index	: 1.14
Gravel (3in. + No.10)	: 7.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 13.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 51.0	AASHTO Classification: M145	: A-2-6 (3)
Silt + Clay (-No.200)	: 28.3	ASTM Classification: D2487	: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 1.6
Coarse Sand (-No.4 + No.10)	: 5.5
Medium Sand (-No.10 + No.40)	: 13.6
Fine Sand (-No.40 + No.200)	: 51.0
Silt + Clay (-No.200)	: 28.3

Approved By : Kevin E. Walker

Soil No. 3

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-8
Project County	: Pulaski	Sample Loc.	: Boring No. B-137
Project State	: Arkansas	Sample Depth	: 38.5' to 40.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
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	
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	98.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	87.0
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	43.8
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} = 0.096 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.5
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 42
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 18
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.41
Gravel (3in. + No.10)	: 1.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 11.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 43.2	AASHTO Classification: M145	: A-7-6 (4)
Silt + Clay (-No.200)	: 43.8	ASTM Classification: D2487	: SC

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)	: 1.7
Medium Sand (-No.10 + No.40)	: 11.3
Fine Sand (-No.40 + No.200)	: 43.2
Silt + Clay (-No.200)	: 43.8

Approved By : Kevin E. Walker

Soil No. 4

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-11
Project County	: Pulaski	Sample Loc.	: Boring No. B-137
Project State	: Arkansas	Sample Depth	: 53.5' to 55.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Gray Fat Clay with 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	
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	97.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	87.0
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	71.4
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} = 0.01 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 29.1
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 78
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 34
		Plasticity Index	: 44
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.12
Gravel (3in. + No.10)	: 2.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 10.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 15.6	AASHTO Classification: M145	: A-7-5 (33)
Silt + Clay (-No.200)	: 71.4	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)	: 2.0
Medium Sand (-No.10 + No.40)	: 10.9
Fine Sand (-No.40 + No.200)	: 15.6
Silt + Clay (-No.200)	: 71.4

Approved By : Kevin E. Walker

Soil No. 5

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-124
Project State	: Arkansas	Sample Depth	: 3.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Brown Fat Clay with 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	
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	99.7
No.6		3.35	mm	
No.10		2	mm	98.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	93.7
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	82.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.006 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 18.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 52
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 28
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.19
Gravel (3in. + No.10)	: 1.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 4.8	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 11.7	AASHTO Classification: M145	: A-7-6 (24)
Silt + Clay (-No.200)	: 82.0	ASTM Classification: D2487	: CH

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.3
Coarse Sand (-No.4 + No.10)	: 1.2
Medium Sand (-No.10 + No.40)	: 4.8
Fine Sand (-No.40 + No.200)	: 11.7
Silt + Clay (-No.200)	: 82.0

Approved By : Kevin E. Walker

Soil No. 6

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-116
Project State	: Arkansas	Sample Depth	: 11.3' to 11.8'
Laboratory No.	: 11206-03	Date Tested	: 06/23/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Red Silty 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	
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

AASHTO T88

				% Passing
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	12.1
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} = 0.16 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 27.7
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 27
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 23
		Plasticity Index	: 4
AASHTO Composition of Total Sample: M145		Liquidity Index	: 1.26
Gravel (3in. + No.10)	: 0.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 1.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 86.5	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 12.1	ASTM Classification: D2487	: 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)	: 0.0
Medium Sand (-No.10 + No.40)	: 1.4
Fine Sand (-No.40 + No.200)	: 86.5
Silt + Clay (-No.200)	: 12.1

Approved By : Kevin E. Walker

Soil No. 7

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-127
Project State	: Arkansas	Sample Depth	: 8.5' to 10.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Brown Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.6
No.6		3.35	mm	
No.10		2	mm	98.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	92.2
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	63.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.019 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 16.1
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 31
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 14
		Plasticity Index	: 17
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.11
Gravel (3in. + No.10)	: 1.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 29.2	AASHTO Classification: M145	: A-6 (8)
Silt + Clay (-No.200)	: 63.0	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.4
Coarse Sand (-No.4 + No.10)	: 1.1
Medium Sand (-No.10 + No.40)	: 6.3
Fine Sand (-No.40 + No.200)	: 29.2
Silt + Clay (-No.200)	: 63.0

Approved By : Kevin E. Walker

Soil No. 8

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-127
Project State	: Arkansas	Sample Depth	: 18.5' to 20.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Brown Fat Clay with 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	
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	98.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	92.6
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	75.7
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} = 0.008 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 37.7
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 56
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 27
		Plasticity Index	: 29
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.36
Gravel (3in. + No.10)	: 1.3	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 16.9	AASHTO Classification: M145	: A-7-6 (23)
Silt + Clay (-No.200)	: 75.7	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)	: 1.2
Medium Sand (-No.10 + No.40)	: 6.1
Fine Sand (-No.40 + No.200)	: 16.9
Silt + Clay (-No.200)	: 75.7

Approved By : Kevin E. Walker

Soil No. 9

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-117
Project State	: Arkansas	Sample Depth	: 10.4' to 10.9'
Laboratory No.	: 11206-03	Date Tested	: 06/22/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Red & Gray 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
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	32.8
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} = 0.124 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 29.0
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	: 0.92
Gravel (3in. + No.10)	: 0.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 7.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 59.3	AASHTO Classification: M145	: A-2-6 (0)
Silt + Clay (-No.200)	: 32.8	ASTM Classification: D2487	: SC

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)	: 7.7
Fine Sand (-No.40 + No.200)	: 59.3
Silt + Clay (-No.200)	: 32.8

Approved By : Kevin E. Walker

Soil No. 10

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-100
Project State	: Arkansas	Sample Depth	: 8.5' to 10.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Red Silty 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	
1	in.	25	mm	
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	98.5

AASHTO T88

				% 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	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} = 0.113 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 28.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 33
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 9
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.55
Gravel (3in. + No.10)	: 1.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 1.8	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 61.0	AASHTO Classification: M145	: A-4 (0)
Silt + Clay (-No.200)	: 35.7	ASTM Classification: D2487	: SM

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)	: 0.4
Medium Sand (-No.10 + No.40)	: 1.8
Fine Sand (-No.40 + No.200)	: 61.0
Silt + Clay (-No.200)	: 35.7

Approved By : Kevin E. Walker

Soil No. 11

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-132
Project State	: Arkansas	Sample Depth	: 3.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Red Silty Sand with Gravel		

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	100.0
1	in.	25	mm	87.9
3/4	in.	19	mm	82.7
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	69.3
1/4		6.3	mm	
No.4		4.75	mm	63.0
No.6		3.35	mm	
No.10		2	mm	58.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	53.8
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	21.2
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} = 0.347 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 14.2
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 21
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 17
		Plasticity Index	: 4
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.66
Gravel (3in. + No.10)	: 41.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 5.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 32.6	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 21.2	ASTM Classification: D2487	: SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 17.3
Fine Gravel (-3/4in. + No.4)	: 19.7
Coarse Sand (-No.4 + No.10)	: 4.1
Medium Sand (-No.10 + No.40)	: 5.1
Fine Sand (-No.40 + No.200)	: 32.6
Silt + Clay (-No.200)	: 21.2

Approved By : Kevin E. Walker

Soil No. 12

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-132
Project State	: Arkansas	Sample Depth	: 8.5' to 10.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Red Sandy Silt		

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	100.0
3/4	in.	19	mm	89.5
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	89.5
1/4		6.3	mm	
No.4		4.75	mm	89.0
No.6		3.35	mm	
No.10		2	mm	88.0

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	81.9
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	57.2
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} = 0.033 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 23.7
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 46
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 28
		Plasticity Index	: 18
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.24
Gravel (3in. + No.10)	: 12.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 24.7	AASHTO Classification: M145	: A-7-6 (8)
Silt + Clay (-No.200)	: 57.2	ASTM Classification: D2487	: ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 10.5
Fine Gravel (-3/4in. + No.4)	: 0.5
Coarse Sand (-No.4 + No.10)	: 1.0
Medium Sand (-No.10 + No.40)	: 6.1
Fine Sand (-No.40 + No.200)	: 24.7
Silt + Clay (-No.200)	: 57.2

Approved By : Kevin E. Walker

Soil No. 13

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-134
Project State	: Arkansas	Sample Depth	: 3.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Red 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	
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	96.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	85.0
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	45.2
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} = 0.092 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 29.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 45
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 26
		Plasticity Index	: 19
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.17
Gravel (3in. + No.10)	: 3.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 11.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 39.8	AASHTO Classification: M145	: A-7-6 (5)
Silt + Clay (-No.200)	: 45.2	ASTM Classification: D2487	: SC

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)	: 3.2
Medium Sand (-No.10 + No.40)	: 11.4
Fine Sand (-No.40 + No.200)	: 39.8
Silt + Clay (-No.200)	: 45.2

Approved By : Kevin E. Walker

Soil No. 14

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-138
Project State	: Arkansas	Sample Depth	: 18.5' to 20.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	88.3
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	46.1
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} = 0.088 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 34.5
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 62
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 18
		Plasticity Index	: 44
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.38
Gravel (3in. + No.10)	: 0.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 11.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 42.2	AASHTO Classification: M145	: A-7-6 (14)
Silt + Clay (-No.200)	: 46.1	ASTM Classification: D2487	: SC

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)	: 11.1
Fine Sand (-No.40 + No.200)	: 42.2
Silt + Clay (-No.200)	: 46.1

Approved By : Kevin E. Walker

Soil No. 15

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-140
Project State	: Arkansas	Sample Depth	: 13.5' to 15.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Gray Sandy Silt		

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	99.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
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	50.2
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} = 0.073 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 21.9
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 19
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 15
		Plasticity Index	: 4
AASHTO Composition of Total Sample: M145		Liquidity Index	: 1.84
Gravel (3in. + No.10)	: 0.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 0.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 48.8	AASHTO Classification: M145	: A-4 (0)
Silt + Clay (-No.200)	: 50.2	ASTM Classification: D2487	: ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.2
Coarse Sand (-No.4 + No.10)	: 0.3
Medium Sand (-No.10 + No.40)	: 0.5
Fine Sand (-No.40 + No.200)	: 48.8
Silt + Clay (-No.200)	: 50.2

Approved By : Kevin E. Walker

Soil No. 16

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-140
Project State	: Arkansas	Sample Depth	: 8.5' to 10.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
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	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	92.3
1/4		6.3	mm	
No.4		4.75	mm	91.5
No.6		3.35	mm	
No.10		2	mm	90.2

AASHTO T88

				% 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	24.2
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} = 0.155 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 26.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 45
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 21
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.11
Gravel (3in. + No.10)	: 9.8	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 4.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 61.4	AASHTO Classification: M145	: A-2-7 (2)
Silt + Clay (-No.200)	: 24.2	ASTM Classification: D2487	: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 8.5
Coarse Sand (-No.4 + No.10)	: 1.3
Medium Sand (-No.10 + No.40)	: 4.6
Fine Sand (-No.40 + No.200)	: 61.4
Silt + Clay (-No.200)	: 24.2

Approved By : Kevin E. Walker

Soil No. 17

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-5
Project County	: Pulaski	Sample Loc.	: Boring No. B-139
Project State	: Arkansas	Sample Depth	: 23.5' to 25.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Gray Sandy Fat 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	99.2

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	89.5
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	65.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.015 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.9
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 66
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 29
		Plasticity Index	: 37
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.07
Gravel (3in. + No.10)	: 0.8	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 9.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 23.6	AASHTO Classification: M145	: A-7-6 (24)
Silt + Clay (-No.200)	: 65.9	ASTM Classification: D2487	: CH

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)	: 0.8
Medium Sand (-No.10 + No.40)	: 9.7
Fine Sand (-No.40 + No.200)	: 23.6
Silt + Clay (-No.200)	: 65.9

Approved By : Kevin E. Walker

Soil No. 18

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-142
Project State	: Arkansas	Sample Depth	: 8.5' to 10.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	94.7
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	32.2
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} = 0.123 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 30.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 43
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 25
		Plasticity Index	: 18
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.33
Gravel (3in. + No.10)	: 0.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 5.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 62.5	AASHTO Classification: M145	: A-2-7 (2)
Silt + Clay (-No.200)	: 32.2	ASTM Classification: D2487	: SC

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)	: 5.3
Fine Sand (-No.40 + No.200)	: 62.5
Silt + Clay (-No.200)	: 32.2

Approved By : Kevin E. Walker

Soil No. 19

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-142
Project State	: Arkansas	Sample Depth	: 13.5' to 15.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Brown Sandy Fat 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	100.0

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	92.6
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	60.7
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} = 0.023 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 60
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 27
		Plasticity Index	: 33
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.12
Gravel (3in. + No.10)	: 0.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 7.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 31.9	AASHTO Classification: M145	: A-7-6 (18)
Silt + Clay (-No.200)	: 60.7	ASTM Classification: D2487	: CH

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)	: 7.4
Fine Sand (-No.40 + No.200)	: 31.9
Silt + Clay (-No.200)	: 60.7

Approved By : Kevin E. Walker

Soil No. 20

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-9
Project County	: Pulaski	Sample Loc.	: Boring No. B-142
Project State	: Arkansas	Sample Depth	: 43.5' to 44.5'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Gray Sandy Silt		

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	99.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	91.8
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	61.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.022 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 27.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 47
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 31
		Plasticity Index	: 16
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.24
Gravel (3in. + No.10)	: 0.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 7.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 30.3	AASHTO Classification: M145	: A-7-5 (9)
Silt + Clay (-No.200)	: 61.5	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)	: 0.5
Medium Sand (-No.10 + No.40)	: 7.7
Fine Sand (-No.40 + No.200)	: 30.3
Silt + Clay (-No.200)	: 61.5

Approved By : Kevin E. Walker

Soil No. 21

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-146
Project State	: Arkansas	Sample Depth	: 13.5' to 15.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Brown Sandy Elastic Silt		

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	99.4

AASHTO T88

				% Passing
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	53.2
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} = 0.05 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 39.9
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 51
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 29
		Plasticity Index	: 22
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.52
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)	: 43.3	AASHTO Classification: M145	: A-7-6 (9)
Silt + Clay (-No.200)	: 53.2	ASTM Classification: D2487	: MH

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)	: 2.9
Fine Sand (-No.40 + No.200)	: 43.3
Silt + Clay (-No.200)	: 53.2

Approved By : Kevin E. Walker

Soil No. 22

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-147
Project State	: Arkansas	Sample Depth	: 3.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/16/16
Soil Type	: Red Silty Sand with Gravel		

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	84.4
1/4		6.3	mm	
No.4		4.75	mm	80.3
No.6		3.35	mm	
No.10		2	mm	75.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	70.5
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	31.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.173 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 33.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 43
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 27
		Plasticity Index	: 16
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.37
Gravel (3in. + No.10)	: 24.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 4.8	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 39.5	AASHTO Classification: M145	: A-2-7 (1)
Silt + Clay (-No.200)	: 31.0	ASTM Classification: D2487	: SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 19.7
Coarse Sand (-No.4 + No.10)	: 5.0
Medium Sand (-No.10 + No.40)	: 4.8
Fine Sand (-No.40 + No.200)	: 39.5
Silt + Clay (-No.200)	: 31.0

Approved By : Kevin E. Walker

Soil No. 23

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-148
Project State	: Arkansas	Sample Depth	: 3.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	95.5
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	39.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.103 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 45
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 25
		Plasticity Index	: 20
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.30
Gravel (3in. + No.10)	: 0.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 4.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 55.6	AASHTO Classification: M145	: A-7-6 (4)
Silt + Clay (-No.200)	: 39.9	ASTM Classification: D2487	: SC

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)	: 4.3
Fine Sand (-No.40 + No.200)	: 55.6
Silt + Clay (-No.200)	: 39.9

Approved By : Kevin E. Walker

Soil No. 24

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-6
Project County	: Pulaski	Sample Loc.	: Boring No. B-149
Project State	: Arkansas	Sample Depth	: 28.5' to 30.0'
Laboratory No.	: 11206-03	Date Tested	: 05/25/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
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	
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

AASHTO T88

				% Passing
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	41.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.096 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.7
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 38
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 14
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.58
Gravel (3in. + No.10)	: 0.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 1.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 56.7	AASHTO Classification: M145	: A-6 (2)
Silt + Clay (-No.200)	: 41.9	ASTM Classification: D2487	: SC

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)	: 1.2
Fine Sand (-No.40 + No.200)	: 56.7
Silt + Clay (-No.200)	: 41.9

Approved By : Kevin E. Walker

Soil No. 25

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-153
Project State	: Arkansas	Sample Depth	: 13.5' to 15.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red Sandy Elastic Silt		

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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	94.4
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	56.8
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} = 0.034 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 36.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 55
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 39
		Plasticity Index	: 16
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.19
Gravel (3in. + No.10)	: 0.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 5.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 37.6	AASHTO Classification: M145	: A-7-5 (9)
Silt + Clay (-No.200)	: 56.8	ASTM Classification: D2487	: MH

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)	: 5.4
Fine Sand (-No.40 + No.200)	: 37.6
Silt + Clay (-No.200)	: 56.8

Approved By : Kevin E. Walker

Soil No. 26

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-155
Project State	: Arkansas	Sample Depth	: 18.5' to 20.0'
Laboratory No.	: 11206-03	Date Tested	: 06/03/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red Sandy Fat 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	99.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	84.0
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	70.2
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} = 0.011 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 41.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 109
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 35
		Plasticity Index	: 74
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.09
Gravel (3in. + No.10)	: 0.4	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 15.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 13.8	AASHTO Classification: M145	: A-7-5 (55)
Silt + Clay (-No.200)	: 70.2	ASTM Classification: D2487	: CH

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)	: 15.6
Fine Sand (-No.40 + No.200)	: 13.8
Silt + Clay (-No.200)	: 70.2

Approved By : Kevin E. Walker

Soil No. 27

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-153
Project State	: Arkansas	Sample Depth	: 3.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red Sandy 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	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	99.3
1/4		6.3	mm	
No.4		4.75	mm	99.0
No.6		3.35	mm	
No.10		2	mm	97.8

AASHTO T88

				% Passing
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	
No.100		0.15	mm	
No.200		0.075	mm	67.3
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} = 0.014 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 26.5
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 29
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 19
		Plasticity Index	: 10
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.76
Gravel (3in. + No.10)	: 2.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 1.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 28.6	AASHTO Classification: M145	: A-4 (5)
Silt + Clay (-No.200)	: 67.3	ASTM Classification: D2487	: CL

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)	: 1.2
Medium Sand (-No.10 + No.40)	: 1.9
Fine Sand (-No.40 + No.200)	: 28.6
Silt + Clay (-No.200)	: 67.3

Approved By : Kevin E. Walker

Soil No. 28

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-154
Project State	: Arkansas	Sample Depth	: 13.5' to 15.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Brown Sandy Fat 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	100.0

AASHTO T88

				% Passing
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	63.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.019 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 36.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 64
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 26
		Plasticity Index	: 38
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.27
Gravel (3in. + No.10)	: 0.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 3.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 33.3	AASHTO Classification: M145	: A-7-6 (22)
Silt + Clay (-No.200)	: 63.0	ASTM Classification: D2487	: CH

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)	: 3.7
Fine Sand (-No.40 + No.200)	: 33.3
Silt + Clay (-No.200)	: 63.0

Approved By : Kevin E. Walker

Soil No. 29

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-5
Project County	: Pulaski	Sample Loc.	: Boring No. B-157
Project State	: Arkansas	Sample Depth	: 23.5' to 25.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red Sandy Silt		

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	91.9
1/4		6.3	mm	
No.4		4.75	mm	87.4
No.6		3.35	mm	
No.10		2	mm	85.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	80.2
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	60.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.023 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 34.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: NP
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: NP
		Plasticity Index	: NP
AASHTO Composition of Total Sample: M145		Liquidity Index	: NA
Gravel (3in. + No.10)	: 14.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 5.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 19.3	AASHTO Classification: M145	: A-4 (0)
Silt + Clay (-No.200)	: 60.9	ASTM Classification: D2487	: ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 12.6
Coarse Sand (-No.4 + No.10)	: 1.9
Medium Sand (-No.10 + No.40)	: 5.3
Fine Sand (-No.40 + No.200)	: 19.3
Silt + Clay (-No.200)	: 60.9

Approved By : Kevin E. Walker

Soil No. 30

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-157
Project State	: Arkansas	Sample Depth	: 13.5' to 15.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	55.8
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	18.6
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} = 0.324 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 16.8
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	: -0.21
Gravel (3in. + No.10)	: 0.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 43.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 37.2	AASHTO Classification: M145	: A-2-6 (0)
Silt + Clay (-No.200)	: 18.6	ASTM Classification: D2487	: SC

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)	: 43.7
Fine Sand (-No.40 + No.200)	: 37.2
Silt + Clay (-No.200)	: 18.6

Approved By : Kevin E. Walker

Soil No. 31

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-157
Project State	: Arkansas	Sample Depth	: 3.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red Sandy 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	99.1

AASHTO T88

				% 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	57.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.033 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 26.1
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 49
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 26
		Plasticity Index	: 23
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.01
Gravel (3in. + No.10)	: 0.9	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 3.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 38.8	AASHTO Classification: M145	: A-7-6 (11)
Silt + Clay (-No.200)	: 57.0	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)	: 0.9
Medium Sand (-No.10 + No.40)	: 3.3
Fine Sand (-No.40 + No.200)	: 38.8
Silt + Clay (-No.200)	: 57.0

Approved By : Kevin E. Walker

Soil No. 32

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-154
Project State	: Arkansas	Sample Depth	: 8.5' to 10.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red 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	
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	99.7
No.6		3.35	mm	
No.10		2	mm	99.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	96.0
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	43.6
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} = 0.093 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 28.2
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 46
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 22
		Plasticity Index	: 24
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.24
Gravel (3in. + No.10)	: 0.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 3.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 52.4	AASHTO Classification: M145	: A-7-6 (6)
Silt + Clay (-No.200)	: 43.6	ASTM Classification: D2487	: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.3
Coarse Sand (-No.4 + No.10)	: 0.2
Medium Sand (-No.10 + No.40)	: 3.5
Fine Sand (-No.40 + No.200)	: 52.4
Silt + Clay (-No.200)	: 43.6

Approved By : Kevin E. Walker

Soil No. 33

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-158
Project State	: Arkansas	Sample Depth	: 8.5' to 10.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red Lean Clay with 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	
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	99.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	96.0
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	72.4
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} = 0.01 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 21.9
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 43
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 15
		Plasticity Index	: 28
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.24
Gravel (3in. + No.10)	: 0.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 3.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 23.6	AASHTO Classification: M145	: A-7-6 (18)
Silt + Clay (-No.200)	: 72.4	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)	: 0.5
Medium Sand (-No.10 + No.40)	: 3.3
Fine Sand (-No.40 + No.200)	: 23.6
Silt + Clay (-No.200)	: 72.4

Approved By : Kevin E. Walker

Soil No. 34

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-8
Project County	: Pulaski	Sample Loc.	: Boring No. B-158
Project State	: Arkansas	Sample Depth	: 38.5' to 39.4'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Gray Gravelly Lean Clay with 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	100.0
1	in.	25	mm	79.7
3/4	in.	19	mm	79.7
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	71.0
1/4		6.3	mm	
No.4		4.75	mm	67.6
No.6		3.35	mm	
No.10		2	mm	62.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	56.1
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	50.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.075 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 30.9
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 46
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 19
		Plasticity Index	: 27
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.45
Gravel (3in. + No.10)	: 37.3	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 6.1	AASHTO Classification: M145	: A-7-6 (9)
Silt + Clay (-No.200)	: 50.0	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 20.3
Fine Gravel (-3/4in. + No.4)	: 12.1
Coarse Sand (-No.4 + No.10)	: 4.9
Medium Sand (-No.10 + No.40)	: 6.6
Fine Sand (-No.40 + No.200)	: 6.1
Silt + Clay (-No.200)	: 50.0

Approved By : Kevin E. Walker

Soil No. 35

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-162
Project State	: Arkansas	Sample Depth	: 3.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Brown Silty Sand with Gravel		

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	100.0
1	in.	25	mm	80.9
3/4	in.	19	mm	80.9
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	74.8
1/4		6.3	mm	
No.4		4.75	mm	71.2
No.6		3.35	mm	
No.10		2	mm	67.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	62.8
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	41.8
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} = 0.148 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 42.5
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 54
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 31
		Plasticity Index	: 23
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.51
Gravel (3in. + No.10)	: 32.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 5.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 21.0	AASHTO Classification: M145	: A-7-5 (5)
Silt + Clay (-No.200)	: 41.8	ASTM Classification: D2487	: SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 19.1
Fine Gravel (-3/4in. + No.4)	: 9.7
Coarse Sand (-No.4 + No.10)	: 3.3
Medium Sand (-No.10 + No.40)	: 5.1
Fine Sand (-No.40 + No.200)	: 21.0
Silt + Clay (-No.200)	: 41.8

Approved By : Kevin E. Walker

Soil No. 36

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SOIL CLASSIFICATION

Project Name	:	Main St.-Vandenburg Blvd. (Widening)		
Project No.	:	CA0604	Sample No.	: P-2
Project County	:	Pulaski	Sample Loc.	: Boring No. B-160
Project State	:	Arkansas	Sample Depth	: 8.5' to 10.0'
Laboratory No.	:	11206-03	Date Tested	: 05/27/16
Submitted By	:	HDR|ICA	Date Reported	: 06/17/16
Soil Type	:	Red Sandy 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	99.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	88.4
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	56.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.035 mm

CBR	:	NA	Natural Moisture (%) (AASHTO T265)	: 16.2
Dry Dens.	:	NA	Liquid Limit (AASHTO T89)	: 34
Opt. Moist.	:	NA	Plastic Limit (AASHTO T90)	: 14
			Plasticity Index	: 20
AASHTO Composition of Total Sample: M145			Liquidity Index	: 0.10
Gravel (3in. + No.10)	:	0.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	:	11.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	:	31.9	AASHTO Classification: M145	: A-6 (8)
Silt + Clay (-No.200)	:	56.5	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)	:	0.2
Medium Sand (-No.10 + No.40)	:	11.4
Fine Sand (-No.40 + No.200)	:	31.9
Silt + Clay (-No.200)	:	56.5

Approved By : Kevin E. Walker

Soil No. 37

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-161
Project State	: Arkansas	Sample Depth	: 3.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Brown Sandy Fat 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	97.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	87.0
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	60.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.025 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 37.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 69
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 29
		Plasticity Index	: 40
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.21
Gravel (3in. + No.10)	: 2.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 10.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 27.0	AASHTO Classification: M145	: A-7-6 (22)
Silt + Clay (-No.200)	: 60.0	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)	: 2.0
Medium Sand (-No.10 + No.40)	: 10.9
Fine Sand (-No.40 + No.200)	: 27.0
Silt + Clay (-No.200)	: 60.0

Approved By : Kevin E. Walker

Soil No. 38

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-161
Project State	: Arkansas	Sample Depth	: 18.5' to 20.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Gray Sandy Fat 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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	86.8
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	59.3
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} = 0.027 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 42.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 69
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 29
		Plasticity Index	: 40
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.32
Gravel (3in. + No.10)	: 0.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 13.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 27.5	AASHTO Classification: M145	: A-7-6 (22)
Silt + Clay (-No.200)	: 59.3	ASTM Classification: D2487	: CH

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.0
Coarse Sand (-No.4 + No.10)	: 0.1
Medium Sand (-No.10 + No.40)	: 13.1
Fine Sand (-No.40 + No.200)	: 27.5
Silt + Clay (-No.200)	: 59.3

Approved By : Kevin E. Walker

Soil No. 39

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-102
Project State	: Arkansas	Sample Depth	: 3.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red Sandy 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	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	95.4
1/4		6.3	mm	
No.4		4.75	mm	92.7
No.6		3.35	mm	
No.10		2	mm	91.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	89.6
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	54.6
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} = 0.043 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 25.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 37
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 18
		Plasticity Index	: 19
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.36
Gravel (3in. + No.10)	: 8.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 2.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 35.0	AASHTO Classification: M145	: A-6 (7)
Silt + Clay (-No.200)	: 54.6	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 7.3
Coarse Sand (-No.4 + No.10)	: 0.8
Medium Sand (-No.10 + No.40)	: 2.3
Fine Sand (-No.40 + No.200)	: 35.0
Silt + Clay (-No.200)	: 54.6

Approved By : Kevin E. Walker

Soil No. 40

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-6
Project County	: Pulaski	Sample Loc.	: Boring No. B-104
Project State	: Arkansas	Sample Depth	: 28.5' to 30.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Brown Sandy Fat 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	96.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	72.6
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	52.1
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} = 0.057 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 82
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 32
		Plasticity Index	: 50
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.00
Gravel (3in. + No.10)	: 3.3	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 24.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 20.5	AASHTO Classification: M145	: A-7-5 (22)
Silt + Clay (-No.200)	: 52.1	ASTM Classification: D2487	: CH

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)	: 3.3
Medium Sand (-No.10 + No.40)	: 24.1
Fine Sand (-No.40 + No.200)	: 20.5
Silt + Clay (-No.200)	: 52.1

Approved By : Kevin E. Walker

Soil No. 41

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-5
Project County	: Pulaski	Sample Loc.	: Boring No. B-107
Project State	: Arkansas	Sample Depth	: 23.5' to 25.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
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	
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	99.1

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	87.9
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	27.4
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} = 0.143 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.6
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	: 0.51
Gravel (3in. + No.10)	: 0.9	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 11.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 60.5	AASHTO Classification: M145	: A-2-6 (1)
Silt + Clay (-No.200)	: 27.4	ASTM Classification: D2487	: SC

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)	: 0.9
Medium Sand (-No.10 + No.40)	: 11.2
Fine Sand (-No.40 + No.200)	: 60.5
Silt + Clay (-No.200)	: 27.4

Approved By : Kevin E. Walker

Soil No. 42

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-101
Project State	: Arkansas	Sample Depth	: 18.5' to 20.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Brown Lean Clay with 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	
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	99.0
No.6		3.35	mm	
No.10		2	mm	98.1

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	96.1
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	71.3
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} = 0.01 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 21.9
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 37
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 17
		Plasticity Index	: 20
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.22
Gravel (3in. + No.10)	: 1.9	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 2.0	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 24.8	AASHTO Classification: M145	: A-6 (12)
Silt + Clay (-No.200)	: 71.3	ASTM Classification: D2487	: CL

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)	: 0.9
Medium Sand (-No.10 + No.40)	: 2.0
Fine Sand (-No.40 + No.200)	: 24.8
Silt + Clay (-No.200)	: 71.3

Approved By : Kevin E. Walker

Soil No. 43

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-103
Project State	: Arkansas	Sample Depth	: 18.5' to 20.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Brown Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	99.6

AASHTO T88

				% 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	53.7
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} = 0.048 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 17.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 28
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 16
		Plasticity Index	: 12
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.05
Gravel (3in. + No.10)	: 0.4	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 2.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 43.0	AASHTO Classification: M145	: A-6 (3)
Silt + Clay (-No.200)	: 53.7	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.1
Coarse Sand (-No.4 + No.10)	: 0.3
Medium Sand (-No.10 + No.40)	: 2.9
Fine Sand (-No.40 + No.200)	: 43.0
Silt + Clay (-No.200)	: 53.7

Approved By : Kevin E. Walker

Soil No. 44

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: P-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-102
Project State	: Arkansas	Sample Depth	: 18.5' to 20.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red Silty 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	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	99.6
1/4		6.3	mm	
No.4		4.75	mm	98.7
No.6		3.35	mm	
No.10		2	mm	97.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	89.3
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	23.2
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} = 0.152 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 33.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 34
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 10
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.98
Gravel (3in. + No.10)	: 2.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 8.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 66.1	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 23.2	ASTM Classification: D2487	: SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 1.3
Coarse Sand (-No.4 + No.10)	: 1.2
Medium Sand (-No.10 + No.40)	: 8.2
Fine Sand (-No.40 + No.200)	: 66.1
Silt + Clay (-No.200)	: 23.2

Approved By : Kevin E. Walker

Soil No. 45

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-118
Project State	: Arkansas	Sample Depth	: 9.8' to 11.3'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Tan 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	
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	98.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	90.8
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	25.1
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} = 0.145 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.2
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 37
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 21
		Plasticity Index	: 16
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.67
Gravel (3in. + No.10)	: 1.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 8.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 65.7	AASHTO Classification: M145	: A-2-6 (1)
Silt + Clay (-No.200)	: 25.1	ASTM Classification: D2487	: SC

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)	: 1.1
Medium Sand (-No.10 + No.40)	: 8.1
Fine Sand (-No.40 + No.200)	: 65.7
Silt + Clay (-No.200)	: 25.1

Approved By : Kevin E. Walker

Soil No. 46

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-5
Project County	: Pulaski	Sample Loc.	: Boring No. B-118
Project State	: Arkansas	Sample Depth	: 24.8' to 26.3'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Tan Sandy Fat 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	98.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	82.7
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	55.3
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} = 0.04 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 34.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 68
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 30
		Plasticity Index	: 38
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.12
Gravel (3in. + No.10)	: 1.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 15.8	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 27.4	AASHTO Classification: M145	: A-7-6 (18)
Silt + Clay (-No.200)	: 55.3	ASTM Classification: D2487	: CH

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.0
Coarse Sand (-No.4 + No.10)	: 1.5
Medium Sand (-No.10 + No.40)	: 15.8
Fine Sand (-No.40 + No.200)	: 27.4
Silt + Clay (-No.200)	: 55.3

Approved By : Kevin E. Walker

Soil No. 47

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-116
Project State	: Arkansas	Sample Depth	: 24.8' to 26.3'
Laboratory No.	: 11206-03	Date Tested	: 06/16/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Brown & Gray 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	
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	97.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	87.2
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	33.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.128 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 27.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 41
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 25
		Plasticity Index	: 16
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.10
Gravel (3in. + No.10)	: 2.3	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 10.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 53.7	AASHTO Classification: M145	: A-2-7 (1)
Silt + Clay (-No.200)	: 33.5	ASTM Classification: D2487	: SC

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)	: 2.3
Medium Sand (-No.10 + No.40)	: 10.5
Fine Sand (-No.40 + No.200)	: 53.7
Silt + Clay (-No.200)	: 33.5

Approved By : Kevin E. Walker

Soil No. 48

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-117
Project State	: Arkansas	Sample Depth	: 14.9' to 16.4'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Red & Gray 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	91.4
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	39.4
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} = 0.107 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 32.1
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 35
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 21
		Plasticity Index	: 14
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.77
Gravel (3in. + No.10)	: 0.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 8.0	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 52.0	AASHTO Classification: M145	: A-6 (2)
Silt + Clay (-No.200)	: 39.4	ASTM Classification: D2487	: SC

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)	: 8.0
Fine Sand (-No.40 + No.200)	: 52.0
Silt + Clay (-No.200)	: 39.4

Approved By : Kevin E. Walker

Soil No. 49

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-117
Project State	: Arkansas	Sample Depth	: 24.9' to 26.4'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Brown & Gray Silty 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	
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	98.9
No.6		3.35	mm	
No.10		2	mm	96.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	90.7
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	29.7
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} = 0.134 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 25.6
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	: 1.80
Gravel (3in. + No.10)	: 3.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 5.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 61.0	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 29.7	ASTM Classification: D2487	: SM

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)	: 2.6
Medium Sand (-No.10 + No.40)	: 5.6
Fine Sand (-No.40 + No.200)	: 61.0
Silt + Clay (-No.200)	: 29.7

Approved By : Kevin E. Walker

Soil No. 50

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SOIL CLASSIFICATION

Project Name	:	Main St.-Vandenburg Blvd. (Widening)		
Project No.	:	CA0604	Sample No.	: SS-6
Project County	:	Pulaski	Sample Loc.	: Boring No. B-117
Project State	:	Arkansas	Sample Depth	: 34.9' to 36.4'
Laboratory No.	:	11206-03	Date Tested	: 06/14/16
Submitted By	:	HDR|ICA	Date Reported	: 06/21/16
Soil Type	:	Black 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	
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	98.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	90.4
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	49.3
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} = 0.077 mm

CBR	:	NA	Natural Moisture (%) (AASHTO T265)	: 31.5
Dry Dens.	:	NA	Liquid Limit (AASHTO T89)	: 40
Opt. Moist.	:	NA	Plastic Limit (AASHTO T90)	: 19
			Plasticity Index	: 21
AASHTO Composition of Total Sample: M145			Liquidity Index	: 0.58
Gravel (3in. + No.10)	:	1.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	:	8.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	:	41.1	AASHTO Classification: M145	: A-6 (7)
Silt + Clay (-No.200)	:	49.3	ASTM Classification: D2487	: SC

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)	:	1.1
Medium Sand (-No.10 + No.40)	:	8.5
Fine Sand (-No.40 + No.200)	:	41.1
Silt + Clay (-No.200)	:	49.3

Approved By : Kevin E. Walker

Soil No. 51

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-10
Project County	: Pulaski	Sample Loc.	: Boring No. B-117
Project State	: Arkansas	Sample Depth	: 54.9' to 56.4'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Black 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	83.8
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	44.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.097 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 51
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 27
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.26
Gravel (3in. + No.10)	: 1.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 15.0	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 39.8	AASHTO Classification: M145	: A-7-6 (7)
Silt + Clay (-No.200)	: 44.0	ASTM Classification: D2487	: SC

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)	: 15.0
Fine Sand (-No.40 + No.200)	: 39.8
Silt + Clay (-No.200)	: 44.0

Approved By : Kevin E. Walker

Soil No. 52

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-122
Project State	: Arkansas	Sample Depth	: 9.4' to 10.9'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Tan Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	98.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	91.3
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	59.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.026 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 20.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 49
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 27
		Plasticity Index	: 22
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.29
Gravel (3in. + No.10)	: 1.3	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 7.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 31.8	AASHTO Classification: M145	: A-7-6 (11)
Silt + Clay (-No.200)	: 59.5	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.1
Coarse Sand (-No.4 + No.10)	: 1.2
Medium Sand (-No.10 + No.40)	: 7.4
Fine Sand (-No.40 + No.200)	: 31.8
Silt + Clay (-No.200)	: 59.5

Approved By : Kevin E. Walker

Soil No. 53

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SOIL CLASSIFICATION

Project Name	:	Main St.-Vandenburg Blvd. (Widening)		
Project No.	:	CA0604	Sample No.	: SS-4
Project County	:	Pulaski	Sample Loc.	: Boring No. B-122
Project State	:	Arkansas	Sample Depth	: 24.4' to 25.9'
Laboratory No.	:	11206-03	Date Tested	: 06/14/16
Submitted By	:	HDR|ICA	Date Reported	: 06/21/16
Soil Type	:	Tan Fat Clay with 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	
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	99.7
No.6		3.35	mm	
No.10		2	mm	97.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	86.6
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	74.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.009 mm

CBR	:	NA	Natural Moisture (%) (AASHTO T265)	: 46.7
Dry Dens.	:	NA	Liquid Limit (AASHTO T89)	: 63
Opt. Moist.	:	NA	Plastic Limit (AASHTO T90)	: 26
			Plasticity Index	: 37
AASHTO Composition of Total Sample: M145			Liquidity Index	: 0.57
Gravel (3in. + No.10)	:	2.3	Activity	: NA
Coarse Sand (-No.10 + No.40)	:	11.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	:	12.1	AASHTO Classification: M145	: A-7-6 (28)
Silt + Clay (-No.200)	:	74.5	ASTM Classification: D2487	: CH

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	:	0.0
Fine Gravel (-3/4in. + No.4)	:	0.3
Coarse Sand (-No.4 + No.10)	:	2.0
Medium Sand (-No.10 + No.40)	:	11.1
Fine Sand (-No.40 + No.200)	:	12.1
Silt + Clay (-No.200)	:	74.5

Approved By : Kevin E. Walker

Soil No. 54

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-130
Project State	: Arkansas	Sample Depth	: 4.6' to 6.1'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Brown & Gray Sandy Lean Clay with Gravel		

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	100.0
3/4	in.	19	mm	93.4
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	90.3
1/4		6.3	mm	
No.4		4.75	mm	83.5
No.6		3.35	mm	
No.10		2	mm	79.0

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	72.2
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	55.1
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} = 0.041 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 16.5
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 28
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 16
		Plasticity Index	: 12
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.02
Gravel (3in. + No.10)	: 21.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.8	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 17.1	AASHTO Classification: M145	: A-6 (4)
Silt + Clay (-No.200)	: 55.1	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 6.6
Fine Gravel (-3/4in. + No.4)	: 9.9
Coarse Sand (-No.4 + No.10)	: 4.5
Medium Sand (-No.10 + No.40)	: 6.8
Fine Sand (-No.40 + No.200)	: 17.1
Silt + Clay (-No.200)	: 55.1

Approved By : Kevin E. Walker

Soil No. 55

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-130
Project State	: Arkansas	Sample Depth	: 19.6' to 21.1'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Tan Sandy Fat 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	99.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	88.7
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	57.1
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} = 0.033 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 34.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 50
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 26
		Plasticity Index	: 24
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.35
Gravel (3in. + No.10)	: 0.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 10.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 31.6	AASHTO Classification: M145	: A-7-6 (11)
Silt + Clay (-No.200)	: 57.1	ASTM Classification: D2487	: CH

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)	: 0.7
Medium Sand (-No.10 + No.40)	: 10.6
Fine Sand (-No.40 + No.200)	: 31.6
Silt + Clay (-No.200)	: 57.1

Approved By : Kevin E. Walker

Soil No. 56

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-163
Project State	: Arkansas	Sample Depth	: 4.9' to 6.4'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Red Sandy 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	99.8

AASHTO T88

				% 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	60.2
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} = 0.024 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 22.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 36
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 18
		Plasticity Index	: 18
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.23
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)	: 37.5	AASHTO Classification: M145	: A-6 (8)
Silt + Clay (-No.200)	: 60.2	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.0
Coarse Sand (-No.4 + No.10)	: 0.2
Medium Sand (-No.10 + No.40)	: 2.1
Fine Sand (-No.40 + No.200)	: 37.5
Silt + Clay (-No.200)	: 60.2

Approved By : Kevin E. Walker

Soil No. 57

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-163
Project State	: Arkansas	Sample Depth	: 24.9' to 26.4'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Brown & Gray Sandy Fat 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.4
No.6		3.35	mm	
No.10		2	mm	94.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	82.5
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	68.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.013 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 38.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 79
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 32
		Plasticity Index	: 47
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.13
Gravel (3in. + No.10)	: 5.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 11.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 14.5	AASHTO Classification: M145	: A-7-5 (33)
Silt + Clay (-No.200)	: 68.0	ASTM Classification: D2487	: CH

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)	: 5.0
Medium Sand (-No.10 + No.40)	: 11.9
Fine Sand (-No.40 + No.200)	: 14.5
Silt + Clay (-No.200)	: 68.0

Approved By : Kevin E. Walker

Soil No. 58

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-164
Project State	: Arkansas	Sample Depth	: 4.4' to 5.9'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Brown Silty, Clayey Gravel with 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	
1	in.	25	mm	100.0
3/4	in.	19	mm	82.3
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	63.5
1/4		6.3	mm	
No.4		4.75	mm	51.6
No.6		3.35	mm	
No.10		2	mm	44.0

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	37.0
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	19.4
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} = 3.959 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 17.1
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 24
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 19
		Plasticity Index	: 5
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.39
Gravel (3in. + No.10)	: 56.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 7.0	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 17.6	AASHTO Classification: M145	: A-1-b (0)
Silt + Clay (-No.200)	: 19.4	ASTM Classification: D2487	: GC-GM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 17.7
Fine Gravel (-3/4in. + No.4)	: 30.7
Coarse Sand (-No.4 + No.10)	: 7.6
Medium Sand (-No.10 + No.40)	: 7.0
Fine Sand (-No.40 + No.200)	: 17.6
Silt + Clay (-No.200)	: 19.4

Approved By : Kevin E. Walker

Soil No. 59

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-164
Project State	: Arkansas	Sample Depth	: 9.4' to 10.9'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/24/16
Soil Type	: Brown Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.7
No.6		3.35	mm	
No.10		2	mm	95.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	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	60.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.023 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 24.2
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 36
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 21
		Plasticity Index	: 15
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.23
Gravel (3in. + No.10)	: 4.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 2.8	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 32.1	AASHTO Classification: M145	: A-6 (7)
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)	: 1.3
Coarse Sand (-No.4 + No.10)	: 2.9
Medium Sand (-No.10 + No.40)	: 2.8
Fine Sand (-No.40 + No.200)	: 32.1
Silt + Clay (-No.200)	: 60.9

Approved By : Kevin E. Walker

Soil No. 60

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-164
Project State	: Arkansas	Sample Depth	: 19.4' to 20.9'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/24/16
Soil Type	: Brown Silty 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	
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

AASHTO T88

				% Passing
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	25.7
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} = 0.138 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 27.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 35
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 11
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.36
Gravel (3in. + No.10)	: 1.4	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 3.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 69.4	AASHTO Classification: M145	: A-2-6 (0)
Silt + Clay (-No.200)	: 25.7	ASTM Classification: D2487	: 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)	: 1.4
Medium Sand (-No.10 + No.40)	: 3.5
Fine Sand (-No.40 + No.200)	: 69.4
Silt + Clay (-No.200)	: 25.7

Approved By : Kevin E. Walker

Soil No. 61

SOIL CLASSIFICATION

Project Name	:	Main St.-Vandenburg Blvd. (Widening)		
Project No.	:	CA0604	Sample No.	: SS-8
Project County	:	Pulaski	Sample Loc.	: Boring No. B-164
Project State	:	Arkansas	Sample Depth	: 39.4' to 40.9'
Laboratory No.	:	11206-03	Date Tested	: 06/14/16
Submitted By	:	HDR|ICA	Date Reported	: 06/24/16
Soil Type	:	Brown Sandy Fat 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.8
No.6		3.35	mm	
No.10		2	mm	97.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	84.6
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	54.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.046 mm

CBR	:	NA	Natural Moisture (%) (AASHTO T265)	: 30.2
Dry Dens.	:	NA	Liquid Limit (AASHTO T89)	: 52
Opt. Moist.	:	NA	Plastic Limit (AASHTO T90)	: 25
			Plasticity Index	: 27
AASHTO Composition of Total Sample: M145			Liquidity Index	: 0.21
Gravel (3in. + No.10)	:	2.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	:	12.8	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	:	30.6	AASHTO Classification: M145	: A-7-6 (12)
Silt + Clay (-No.200)	:	54.0	ASTM Classification: D2487	: CH

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)	:	2.4
Medium Sand (-No.10 + No.40)	:	12.8
Fine Sand (-No.40 + No.200)	:	30.6
Silt + Clay (-No.200)	:	54.0

Approved By : Kevin E. Walker

Soil No. 62

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-165
Project State	: Arkansas	Sample Depth	: 14.9' to 16.4'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/24/16
Soil Type	: Brown Sandy 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	99.0

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	87.7
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	66.8
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} = 0.014 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.2
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 45
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 15
		Plasticity Index	: 30
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.54
Gravel (3in. + No.10)	: 1.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 11.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 20.9	AASHTO Classification: M145	: A-7-6 (17)
Silt + Clay (-No.200)	: 66.8	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.0
Coarse Sand (-No.4 + No.10)	: 1.0
Medium Sand (-No.10 + No.40)	: 11.3
Fine Sand (-No.40 + No.200)	: 20.9
Silt + Clay (-No.200)	: 66.8

Approved By : Kevin E. Walker

Soil No. 63

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-165
Project State	: Arkansas	Sample Depth	: 29.9' to 31.4'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/24/16
Soil Type	: Brown Sandy Fat 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	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	95.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	82.1
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	57.6
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} = 0.031 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 30.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 55
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 31
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.19
Gravel (3in. + No.10)	: 4.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 13.8	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 24.5	AASHTO Classification: M145	: A-7-6 (15)
Silt + Clay (-No.200)	: 57.6	ASTM Classification: D2487	: CH

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)	: 2.1
Medium Sand (-No.10 + No.40)	: 13.8
Fine Sand (-No.40 + No.200)	: 24.5
Silt + Clay (-No.200)	: 57.6

Approved By : Kevin E. Walker

Soil No. 64

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-166
Project State	: Arkansas	Sample Depth	: 9.5' to 11.0'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/24/16
Soil Type	: Brown & Gray 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	
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	98.7
No.6		3.35	mm	
No.10		2	mm	96.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	89.9
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	37.7
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} = 0.113 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 36
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 23
		Plasticity Index	: 13
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.66
Gravel (3in. + No.10)	: 3.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 52.2	AASHTO Classification: M145	: A-6 (1)
Silt + Clay (-No.200)	: 37.7	ASTM Classification: D2487	: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 1.3
Coarse Sand (-No.4 + No.10)	: 1.9
Medium Sand (-No.10 + No.40)	: 6.9
Fine Sand (-No.40 + No.200)	: 52.2
Silt + Clay (-No.200)	: 37.7

Approved By : Kevin E. Walker

Soil No. 65

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-5
Project County	: Pulaski	Sample Loc.	: Boring No. B-166
Project State	: Arkansas	Sample Depth	: 29.5' to 31.0'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/24/16
Soil Type	: Brown & Gray Fat Clay with 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	
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	98.6
No.6		3.35	mm	
No.10		2	mm	95.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	85.9
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	71.3
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} = 0.01 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 35.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 72
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 28
		Plasticity Index	: 44
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.17
Gravel (3in. + No.10)	: 4.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 9.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 14.6	AASHTO Classification: M145	: A-7-6 (32)
Silt + Clay (-No.200)	: 71.3	ASTM Classification: D2487	: CH

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 1.4
Coarse Sand (-No.4 + No.10)	: 3.1
Medium Sand (-No.10 + No.40)	: 9.6
Fine Sand (-No.40 + No.200)	: 14.6
Silt + Clay (-No.200)	: 71.3

Approved By : Kevin E. Walker

Soil No. 66

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-167
Project State	: Arkansas	Sample Depth	: 14.5' to 16.0'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Brown & Gray Sandy Fat 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.2
No.6		3.35	mm	
No.10		2	mm	94.2

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	80.2
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	59.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.025 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 37.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 53
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 28
		Plasticity Index	: 25
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.34
Gravel (3in. + No.10)	: 5.8	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 14.0	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 20.3	AASHTO Classification: M145	: A-7-6 (13)
Silt + Clay (-No.200)	: 59.9	ASTM Classification: D2487	: CH

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)	: 5.0
Medium Sand (-No.10 + No.40)	: 14.0
Fine Sand (-No.40 + No.200)	: 20.3
Silt + Clay (-No.200)	: 59.9

Approved By : Kevin E. Walker

Soil No. 67

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-167
Project State	: Arkansas	Sample Depth	: 29.7' to 31.2'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Brown & Gray Sandy Elastic Silt		

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	94.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	79.3
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	59.8
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} = 0.025 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 37.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 64
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 39
		Plasticity Index	: 25
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.06
Gravel (3in. + No.10)	: 5.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 15.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 19.5	AASHTO Classification: M145	: A-7-5 (15)
Silt + Clay (-No.200)	: 59.8	ASTM Classification: D2487	: MH

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)	: 5.5
Medium Sand (-No.10 + No.40)	: 15.2
Fine Sand (-No.40 + No.200)	: 19.5
Silt + Clay (-No.200)	: 59.8

Approved By : Kevin E. Walker

Soil No. 68

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-168
Project State	: Arkansas	Sample Depth	: 29.8' to 31.3'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Brown & Gray Fat Clay with 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	
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	99.3
No.6		3.35	mm	
No.10		2	mm	96.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	89.6
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	77.7
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} = 0.007 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 37.9
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 81
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 29
		Plasticity Index	: 52
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.18
Gravel (3in. + No.10)	: 3.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 11.9	AASHTO Classification: M145	: A-7-6 (44)
Silt + Clay (-No.200)	: 77.7	ASTM Classification: D2487	: CH

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.7
Coarse Sand (-No.4 + No.10)	: 2.8
Medium Sand (-No.10 + No.40)	: 6.9
Fine Sand (-No.40 + No.200)	: 11.9
Silt + Clay (-No.200)	: 77.7

Approved By : Kevin E. Walker

Soil No. 69

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-169
Project State	: Arkansas	Sample Depth	: 4.8' to 6.3'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Red & Gray 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	
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	97.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	91.4
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	41.8
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} = 0.1 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 24.5
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 47
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 23
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.04
Gravel (3in. + No.10)	: 2.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 49.6	AASHTO Classification: M145	: A-7-6 (5)
Silt + Clay (-No.200)	: 41.8	ASTM Classification: D2487	: SC

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)	: 2.5
Medium Sand (-No.10 + No.40)	: 6.1
Fine Sand (-No.40 + No.200)	: 49.6
Silt + Clay (-No.200)	: 41.8

Approved By : Kevin E. Walker

Soil No. 70

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-169
Project State	: Arkansas	Sample Depth	: 14.8' to 16.3'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Brown & Gray Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.0

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	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	61.7
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} = 0.021 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 32.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 40
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 15
		Plasticity Index	: 25
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.68
Gravel (3in. + No.10)	: 1.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.0	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 31.3	AASHTO Classification: M145	: A-6 (12)
Silt + Clay (-No.200)	: 61.7	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)	: 1.0
Medium Sand (-No.10 + No.40)	: 6.0
Fine Sand (-No.40 + No.200)	: 31.3
Silt + Clay (-No.200)	: 61.7

Approved By : Kevin E. Walker

Soil No. 71

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-170
Project State	: Arkansas	Sample Depth	: 19.2' to 20.7'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/21/16
Soil Type	: Red 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	93.1
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	35.2
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} = 0.117 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 18.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 29
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 16
		Plasticity Index	: 13
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.12
Gravel (3in. + No.10)	: 0.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 57.9	AASHTO Classification: M145	: A-6 (1)
Silt + Clay (-No.200)	: 35.2	ASTM Classification: D2487	: SC

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)	: 6.9
Fine Sand (-No.40 + No.200)	: 57.9
Silt + Clay (-No.200)	: 35.2

Approved By : Kevin E. Walker

Soil No. 72

HDR | ICA

SOIL CLASSIFICATION

Project Name : Main St.-Vandenburg Blvd. (Widening)
Project No. : CA0604
Project County : Pulaski
Project State : Arkansas
Laboratory No. : 11206-03
Submitted By : HDR | ICA
Soil Type : Brown Clayey Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-171
Sample Depth : 9.7' to 11.2'
Date Tested : 06/14/16
Date Reported : 06/21/16

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	98.1
1/4		6.3	mm	
No.4		4.75	mm	93.9
No.6		3.35	mm	
No.10		2	mm	86.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	80.9
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	48.6
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} = 0.081 mm

CBR : NA
Dry Dens. : NA
Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 19.2
Liquid Limit (AASHTO T89) : 43
Plastic Limit (AASHTO T90) : 23
Plasticity Index : 20
Liquidity Index : -0.21
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-7-6 (6)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 13.3
Coarse Sand (-No.10 + No.40) : 5.8
Fine Sand (-No.40 + No.200) : 32.3
Silt + Clay (-No.200) : 48.6

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 6.1
Coarse Sand (-No.4 + No.10) : 7.2
Medium Sand (-No.10 + No.40) : 5.8
Fine Sand (-No.40 + No.200) : 32.3
Silt + Clay (-No.200) : 48.6

Approved By : Kevin E. Walker

Soil No. 73

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-110
Project State	: Arkansas	Sample Depth	: 0.6' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/27/16
Soil Type	: Brown Sandy Silty 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.5
No.6		3.35	mm	
No.10		2	mm	97.9

AASHTO T88

				% 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	50.2
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} = 0.073 mm

CBR (AASHTO: T-193)	: 2.8	Natural Moisture (%) (AASHTO T265)	: 17.1
Dry Dens. (AASHTO: T-99; Method (C))	: 112.1 pcf	Liquid Limit (AASHTO T89)	: 23
Opt. Moist. (AASHTO: T-99; Method (C))	: 13.6 %	Plastic Limit (AASHTO T90)	: 16
		Plasticity Index	: 7
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.13
Gravel (3in. + No.10)	: 2.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 1.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 46.4	AASHTO Classification: M145	: A-4 (1)
Silt + Clay (-No.200)	: 50.2	ASTM Classification: D2487	: CL-ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.5
Coarse Sand (-No.4 + No.10)	: 1.6
Medium Sand (-No.10 + No.40)	: 1.3
Fine Sand (-No.40 + No.200)	: 46.4
Silt + Clay (-No.200)	: 50.2

Approved By : Kevin E. Walker

Soil No. 74

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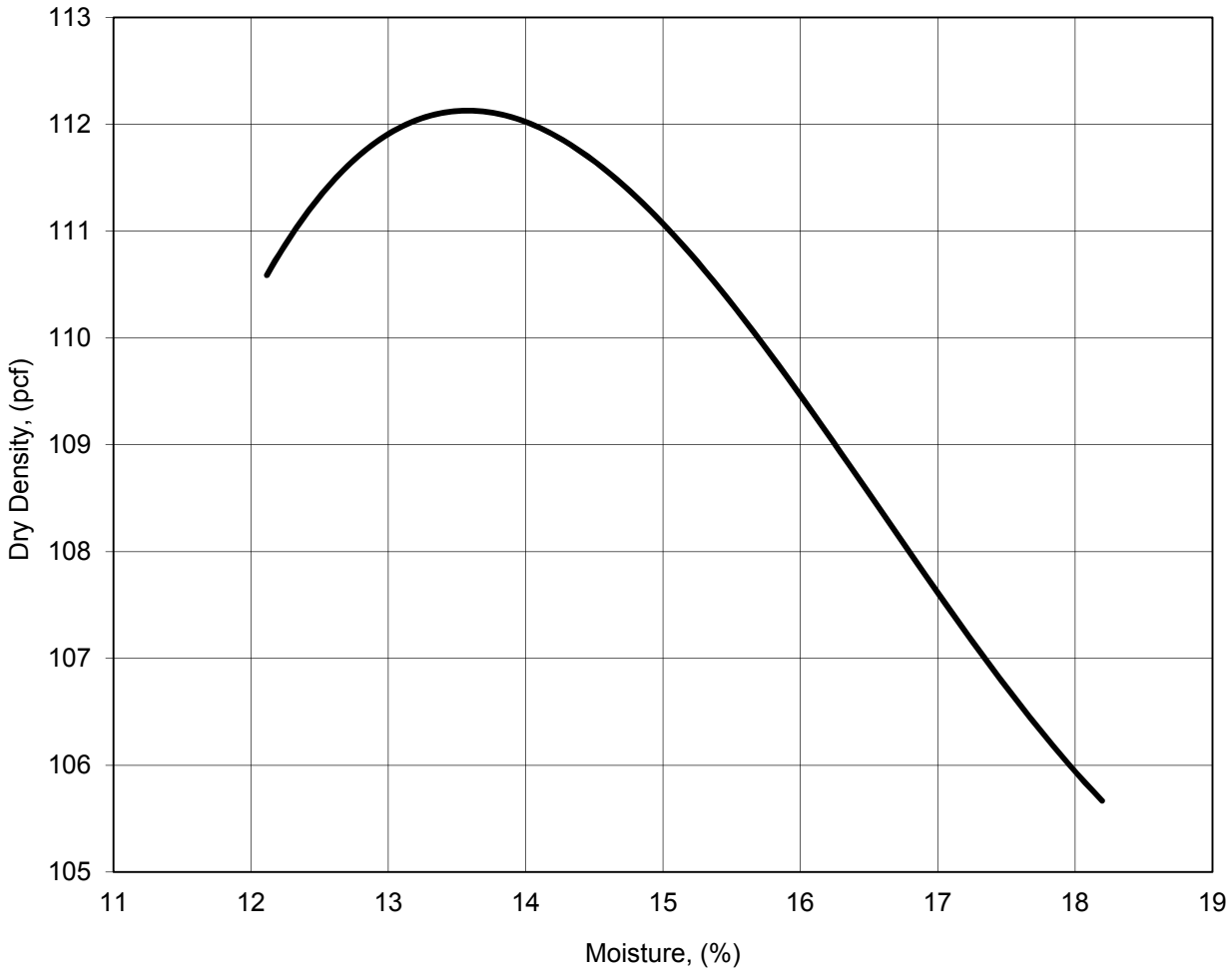
MOISTURE-DENSITY RELATIONSHIP

Project Name	:	Main St.-Vandenburg Blvd. (Widening)			
Project No.	:	CA0604	Sample No.	:	Bag-1
Project County	:	Pulaski	Sample Loc.	:	Boring No. B-110
Project State	:	Arkansas	Sample Depth	:	0.6' to 5.0'
Laboratory No.	:	11206-03	Date Tested	:	06/14/16
Submitted By	:	HDR|ICA	Date Reported	:	06/27/16
Soil Type	:	Brown Sandy Silty Clay			



MAXIMUM DENSITY: 112.1 pcf

OPTIMUM MOISTURE: 13.6 %

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

APPROVED BY: KW

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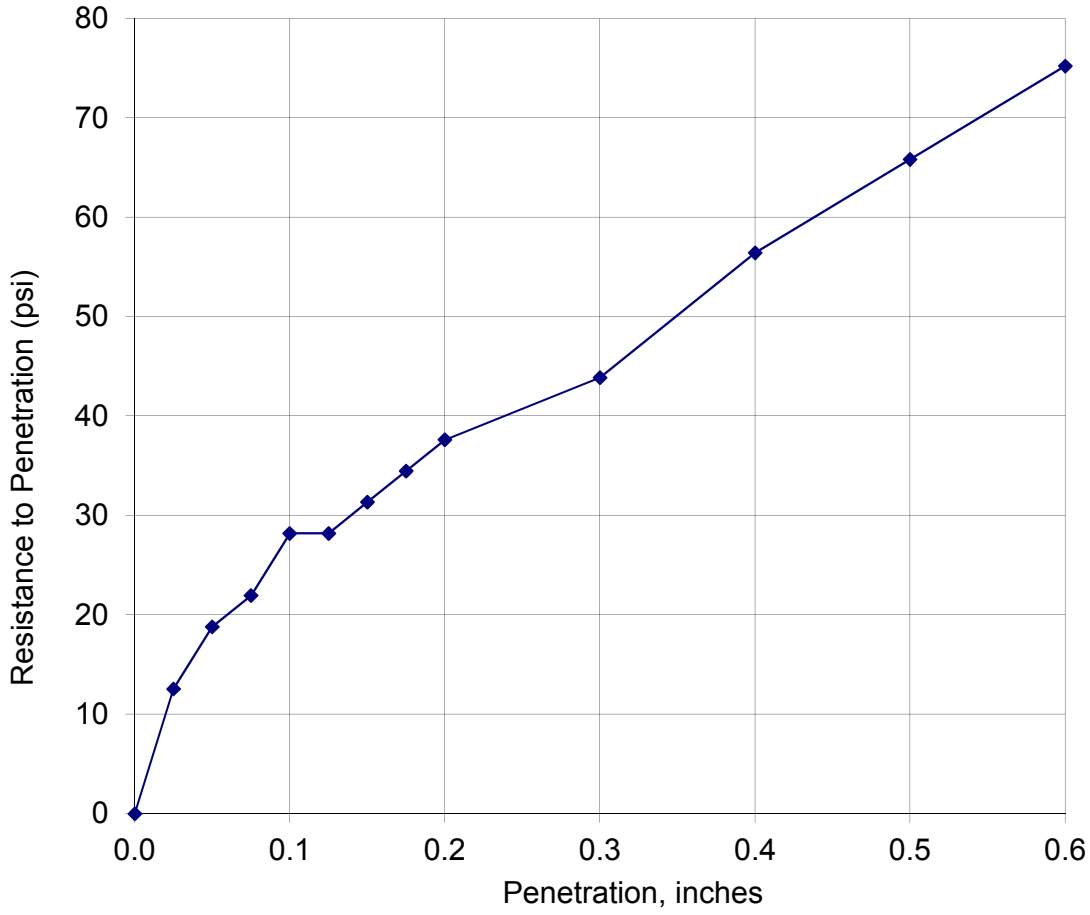
CALIFORNIA BEARING RATIO

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-110
Project State	: Arkansas	Sample Depth	: 0.6' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 6/14/16
Submitted By	: HDR|ICA	Date Reported	: 6/27/16
Soil Type	: Brown Sandy Silty Clay		



Compaction Effort = 45 Blows per layer
Percent Compacted = 97.9
Percent Swell = 2.38

C.B.R. @ 0.1 In. = 2.8*
C.B.R. @ 0.2 In. = 2.5

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-111
Project State	: Arkansas	Sample Depth	: 0.4' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 06/14/16
Submitted By	: HDR|ICA	Date Reported	: 06/27/16
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	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	99.6
1/4		6.3	mm	
No.4		4.75	mm	97.0
No.6		3.35	mm	
No.10		2	mm	93.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	81.3
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	37.8
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} = 0.122 mm

CBR (AASHTO: T-193)	: 3.4	Natural Moisture (%) (AASHTO T265)	: 27.1
Dry Dens. (AASHTO: T-99; Method (C))	: 110.7 pcf	Liquid Limit (AASHTO T89)	: 43
Opt. Moist. (AASHTO: T-99; Method (C))	: 16.5 %	Plastic Limit (AASHTO T90)	: 26
		Plasticity Index	: 17
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.07
Gravel (3in. + No.10)	: 6.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 12.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 43.5	AASHTO Classification: M145	: A-7-6 (2)
Silt + Clay (-No.200)	: 37.8	ASTM Classification: D2487	: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 3.0
Coarse Sand (-No.4 + No.10)	: 3.5
Medium Sand (-No.10 + No.40)	: 12.2
Fine Sand (-No.40 + No.200)	: 43.5
Silt + Clay (-No.200)	: 37.8

Approved By : Kevin E. Walker

Soil No. 75

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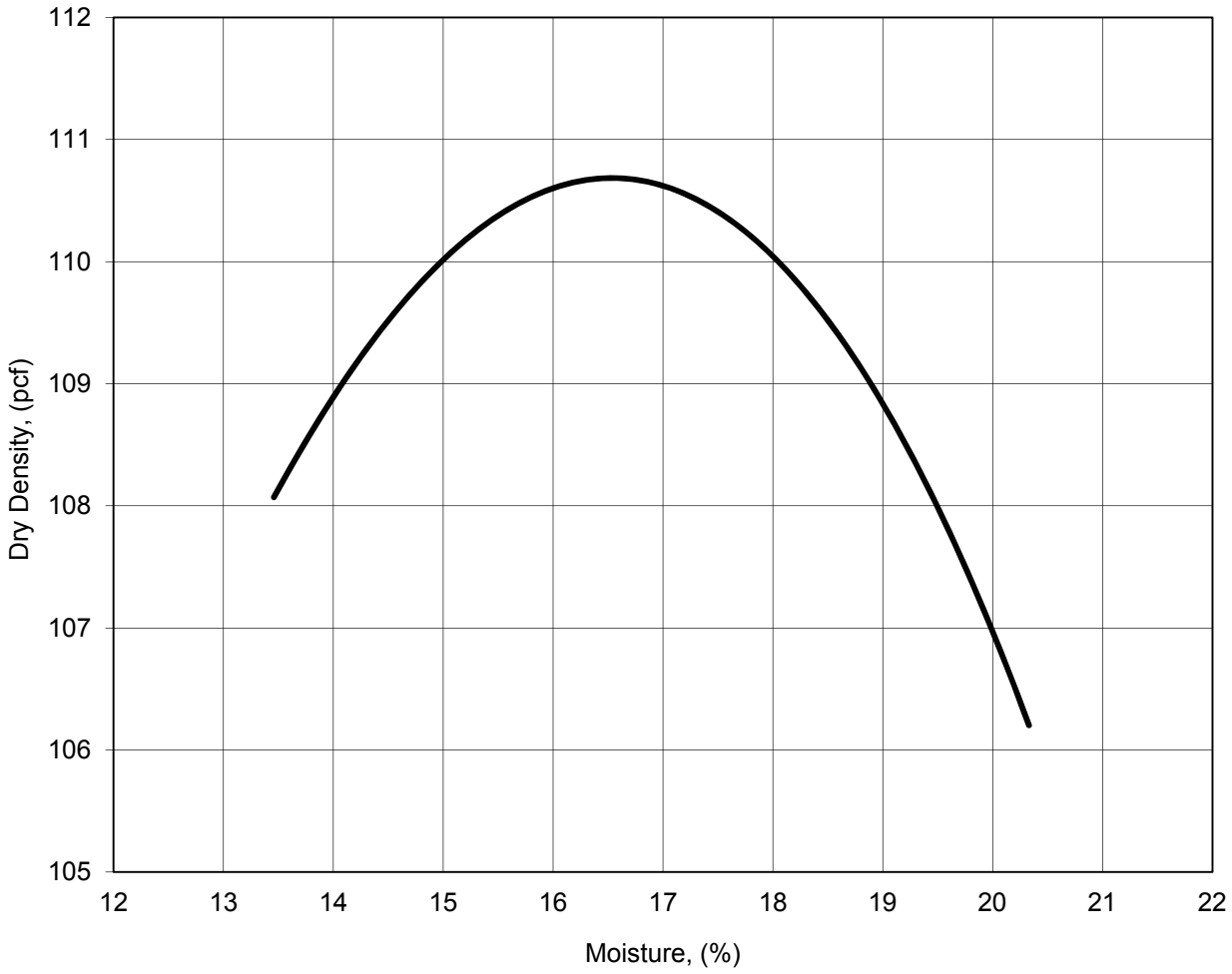
MOISTURE-DENSITY RELATIONSHIP

Project Name	:	Main St.-Vandenburg Blvd. (Widening)			
Project No.	:	CA0604	Sample No.	:	Bag-1
Project County	:	Pulaski	Sample Loc.	:	Boring No. B-111
Project State	:	Arkansas	Sample Depth	:	0.4' to 5.0'
Laboratory No.	:	11206-03	Date Tested	:	06/14/16
Submitted By	:	HDR|ICA	Date Reported	:	06/27/16
Soil Type	:	Brown Clayey Sand			



MAXIMUM DENSITY: 110.7 pcf

OPTIMUM MOISTURE: 16.5 %

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

APPROVED BY: KW

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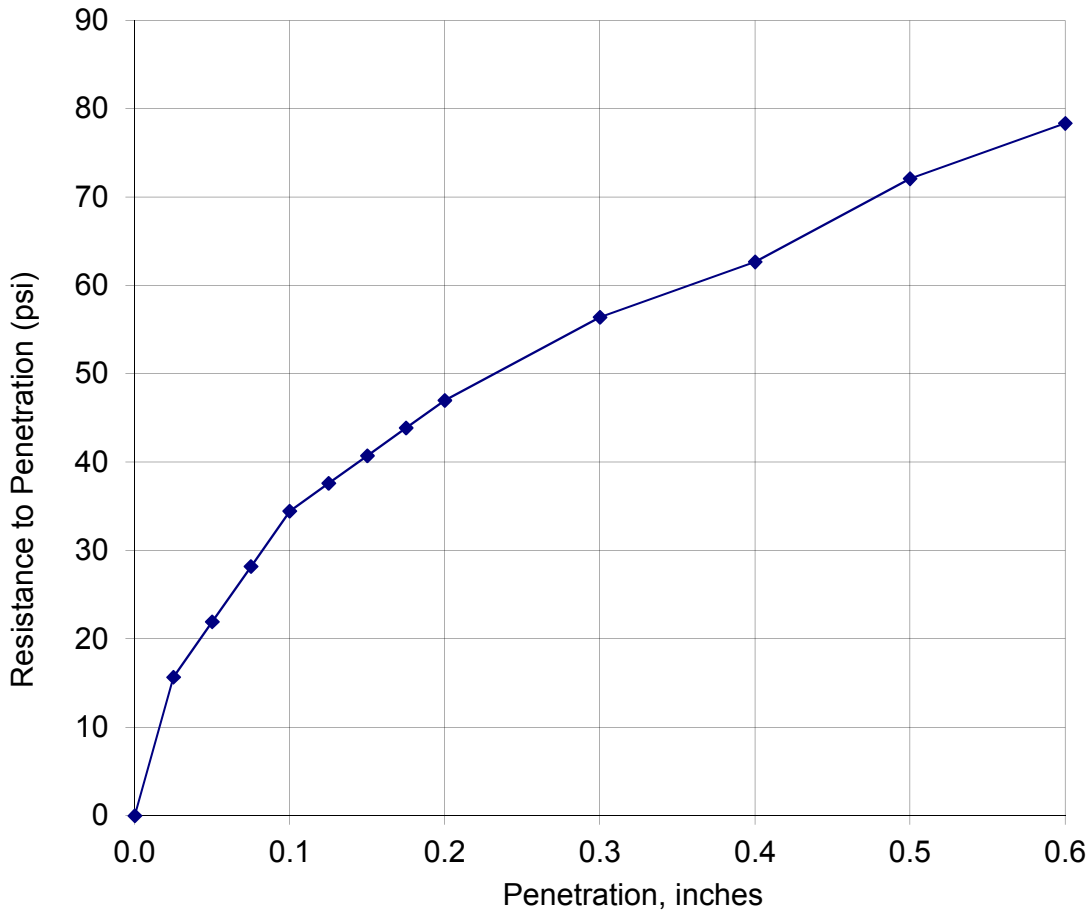
CALIFORNIA BEARING RATIO

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-111
Project State	: Arkansas	Sample Depth	: 0.4' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 6/14/16
Submitted By	: HDR|ICA	Date Reported	: 6/27/16
Soil Type	: Brown Clayey Sand		



Compaction Effort = 40 Blows per layer
Percent Compacted = 98
Percent Swell = 2.53

C.B.R. @ 0.1 In. = 3.4*
C.B.R. @ 0.2 In. = 3.1

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-108
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/27/16
Soil Type	: Brown Sandy 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	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	98.8
1/4		6.3	mm	
No.4		4.75	mm	97.9
No.6		3.35	mm	
No.10		2	mm	97.2

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	95.6
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	57.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.032 mm

CBR (AASHTO: T-193)	: 10.3	Natural Moisture (%) (AASHTO T265)	: 19.1
Dry Dens. (AASHTO: T-99; Method (C))	: 117.8 pcf	Liquid Limit (AASHTO T89)	: 29
Opt. Moist. (AASHTO: T-99; Method (C))	: 12.6 %	Plastic Limit (AASHTO T90)	: 16
		Plasticity Index	: 13
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.22
Gravel (3in. + No.10)	: 2.8	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 1.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 38.1	AASHTO Classification: M145	: A-6 (5)
Silt + Clay (-No.200)	: 57.5	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

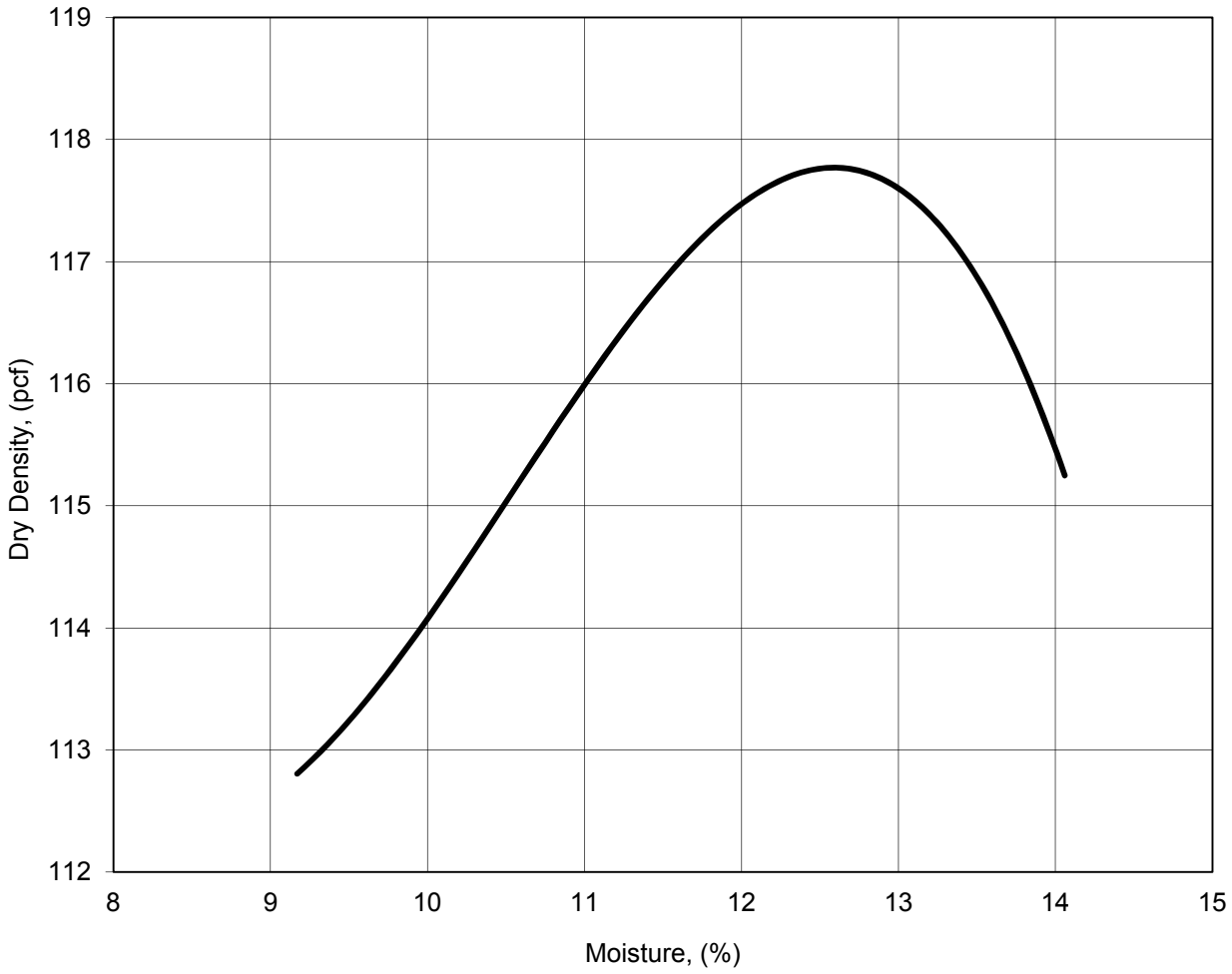
Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 2.1
Coarse Sand (-No.4 + No.10)	: 0.7
Medium Sand (-No.10 + No.40)	: 1.6
Fine Sand (-No.40 + No.200)	: 38.1
Silt + Clay (-No.200)	: 57.5

Approved By : Kevin E. Walker

Soil No. 76

MOISTURE-DENSITY RELATIONSHIP

Project Name	:	Main St.-Vandenburg Blvd. (Widening)			
Project No.	:	CA0604	Sample No.	:	Bag-1
Project County	:	Pulaski	Sample Loc.	:	Boring No. B-108
Project State	:	Arkansas	Sample Depth	:	0.0' to 5.0'
Laboratory No.	:	11206-03	Date Tested	:	05/27/16
Submitted By	:	HDR|ICA	Date Reported	:	06/27/16
Soil Type	:	Brown Sandy Lean Clay			



MAXIMUM DENSITY: 117.8 pcf

OPTIMUM MOISTURE: 12.6 %

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

APPROVED BY: KW

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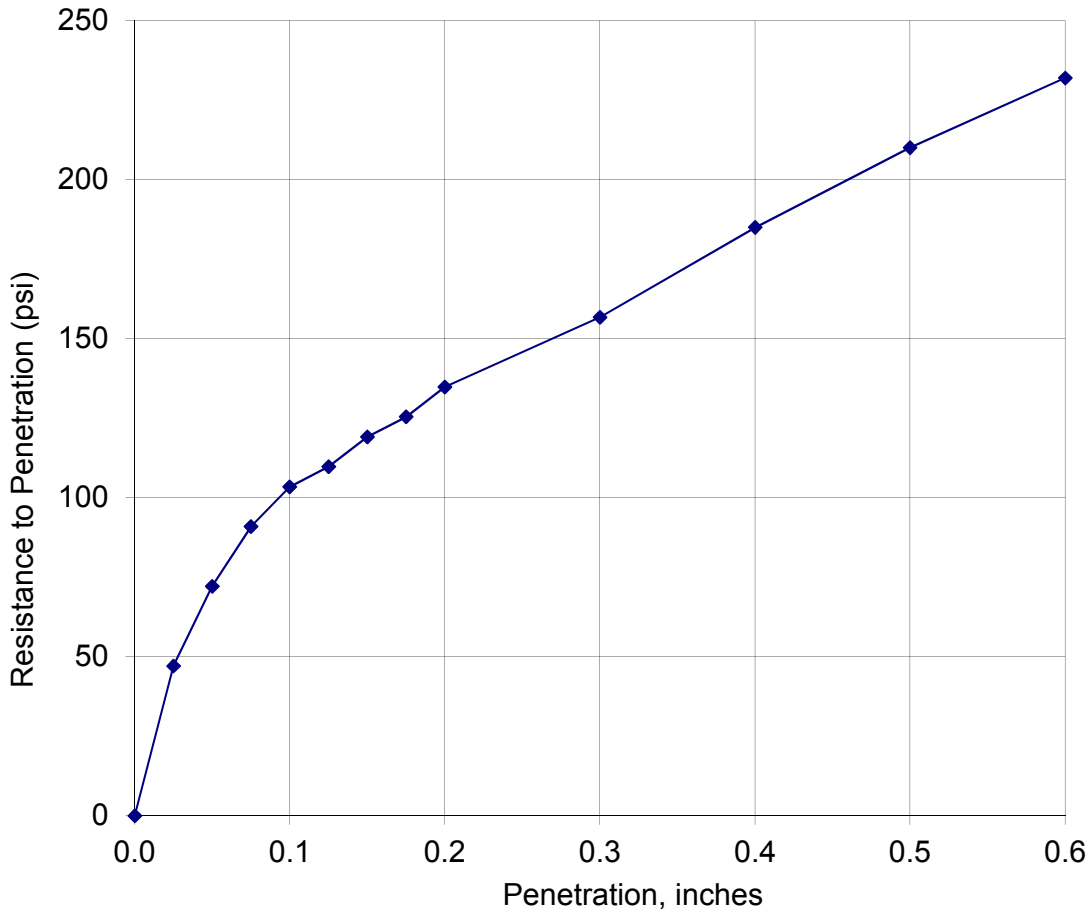
CALIFORNIA BEARING RATIO

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-108
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 5/27/16
Submitted By	: HDR|ICA	Date Reported	: 6/27/16
Soil Type	: Brown Sandy Lean Clay		



Compaction Effort = 45 Blows per layer
Percent Compacted = 98.6
Percent Swell = 0.24

C.B.R. @ 0.1 In. = 10.3*
C.B.R. @ 0.2 In. = 9

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-109
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/27/16
Soil Type	: Brown Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.1
No.6		3.35	mm	
No.10		2	mm	95.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	91.3
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	53.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.052 mm

CBR (AASHTO: T-193)	: 4.1	Natural Moisture (%) (AASHTO T265)	: 21.3
Dry Dens. (AASHTO: T-99; Method (C))	: 115.1 pcf	Liquid Limit (AASHTO T89)	: 36
Opt. Moist. (AASHTO: T-99; Method (C))	: 12 %	Plastic Limit (AASHTO T90)	: 19
		Plasticity Index	: 17
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.16
Gravel (3in. + No.10)	: 4.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 4.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 38.3	AASHTO Classification: M145	: A-6 (6)
Silt + Clay (-No.200)	: 53.0	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 1.9
Coarse Sand (-No.4 + No.10)	: 2.6
Medium Sand (-No.10 + No.40)	: 4.2
Fine Sand (-No.40 + No.200)	: 38.3
Silt + Clay (-No.200)	: 53.0

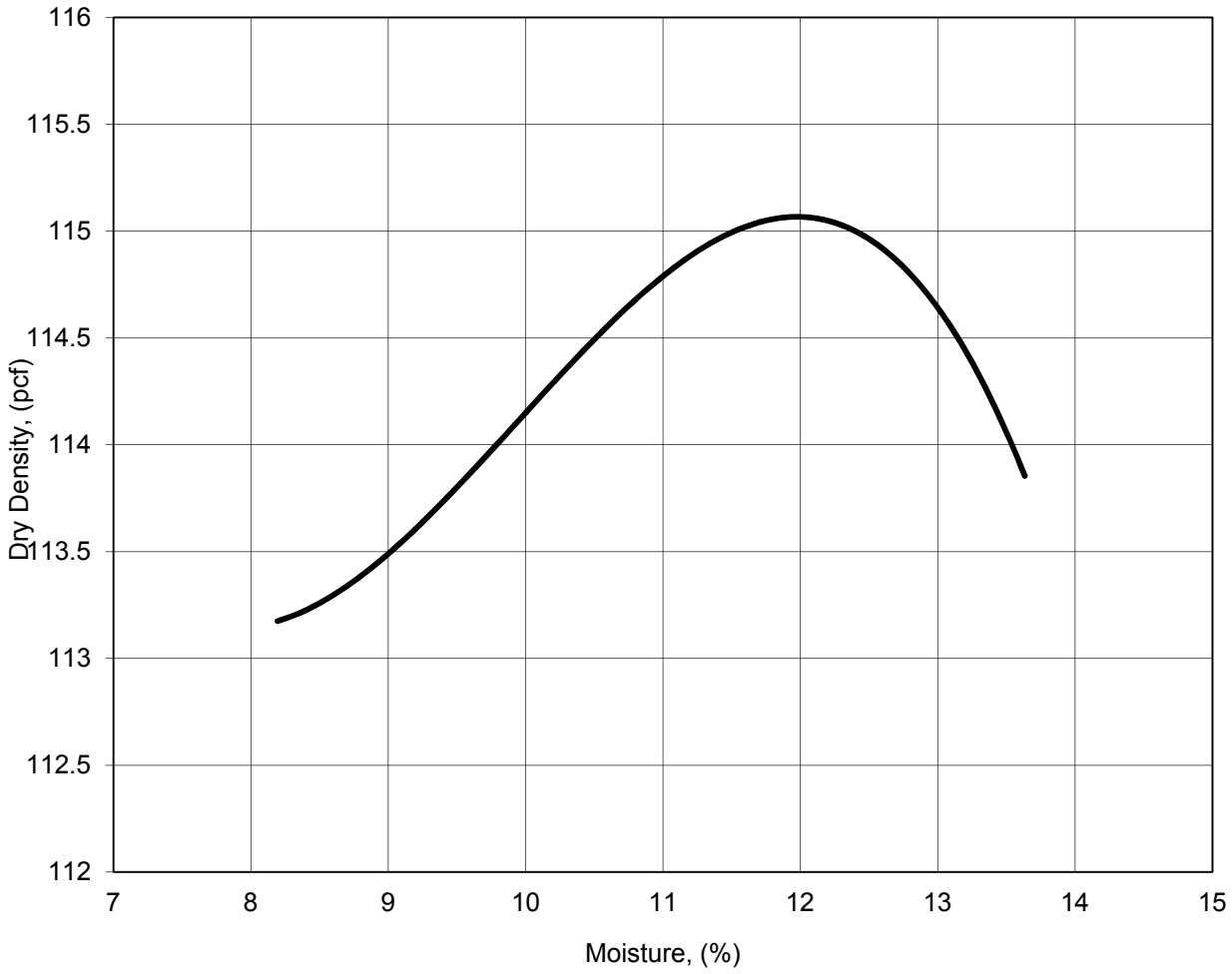
Approved By : Kevin E. Walker

Soil No. 77

MOISTURE-DENSITY RELATIONSHIP

Project Name : Main St.-Vandenburg Blvd. (Widening)
Project No. : CA0604
Project County : Pulaski
Project State : Arkansas
Laboratory No. : 11206-03
Submitted By : HDR | ICA
Soil Type : Brown Sandy Lean Clay

Sample No. : Bag-1
Sample Loc. : Boring No. B-109
Sample Depth : 0.0' to 5.0'
Date Tested : 05/27/16
Date Reported : 06/27/16



MAXIMUM DENSITY: 115.1 pcf

OPTIMUM MOISTURE: 12 %

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

APPROVED BY: KW

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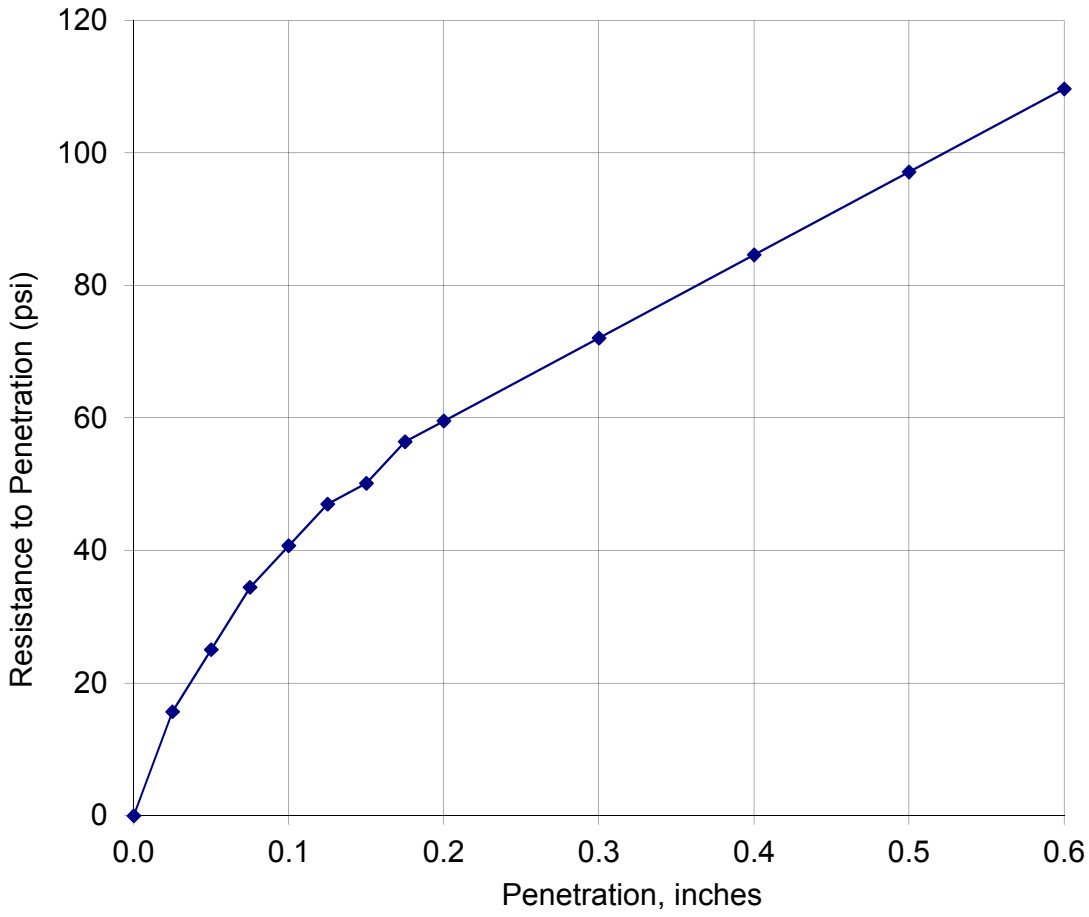
CALIFORNIA BEARING RATIO

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-109
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 5/27/16
Submitted By	: HDR|ICA	Date Reported	: 6/27/16
Soil Type	: Brown Sandy Lean Clay		



Compaction Effort = 45 Blows per layer
Percent Compacted = 92.5
Percent Swell = 2.36

C.B.R. @ 0.1 In. = 4.1*
C.B.R. @ 0.2 In. = 4

COMMENTS: AASHTO: T-193

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-112
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/27/16
Soil Type	: Red Sandy 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	99.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	92.7
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	59.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.025 mm

CBR (AASHTO: T-193)	: 3.4	Natural Moisture (%) (AASHTO T265)	: 21.2
Dry Dens. (AASHTO: T-99; Method (A))	: 113.2 pcf	Liquid Limit (AASHTO T89)	: 33
Opt. Moist. (AASHTO: T-99; Method (A))	: 12.8 %	Plastic Limit (AASHTO T90)	: 17
		Plasticity Index	: 16
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.23
Gravel (3in. + No.10)	: 0.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 32.8	AASHTO Classification: M145	: A-6 (7)
Silt + Clay (-No.200)	: 59.9	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

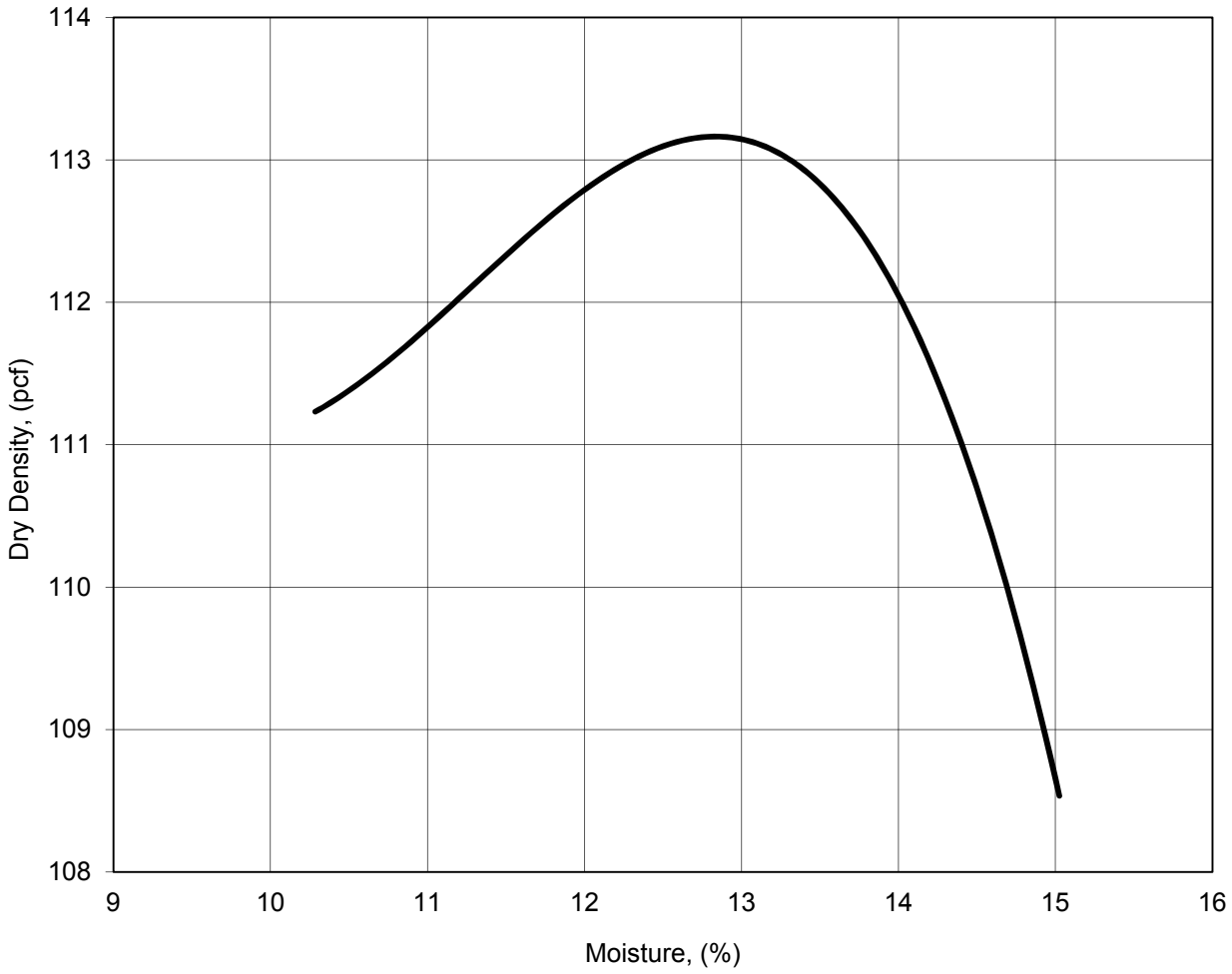
Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.0
Coarse Sand (-No.4 + No.10)	: 0.7
Medium Sand (-No.10 + No.40)	: 6.6
Fine Sand (-No.40 + No.200)	: 32.8
Silt + Clay (-No.200)	: 59.9

Approved By : Kevin E. Walker

Soil No. 78

MOISTURE-DENSITY RELATIONSHIP

Project Name	:	Main St.-Vandenburg Blvd. (Widening)			
Project No.	:	CA0604	Sample No.	:	Bag-1
Project County	:	Pulaski	Sample Loc.	:	Boring No. B-112
Project State	:	Arkansas	Sample Depth	:	0.0' to 5.0'
Laboratory No.	:	11206-03	Date Tested	:	05/27/16
Submitted By	:	HDR|ICA	Date Reported	:	06/27/16
Soil Type	:	Red Sandy Lean Clay			



MAXIMUM DENSITY: 113.2 pcf

OPTIMUM MOISTURE: 12.8 %

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

APPROVED BY: KW

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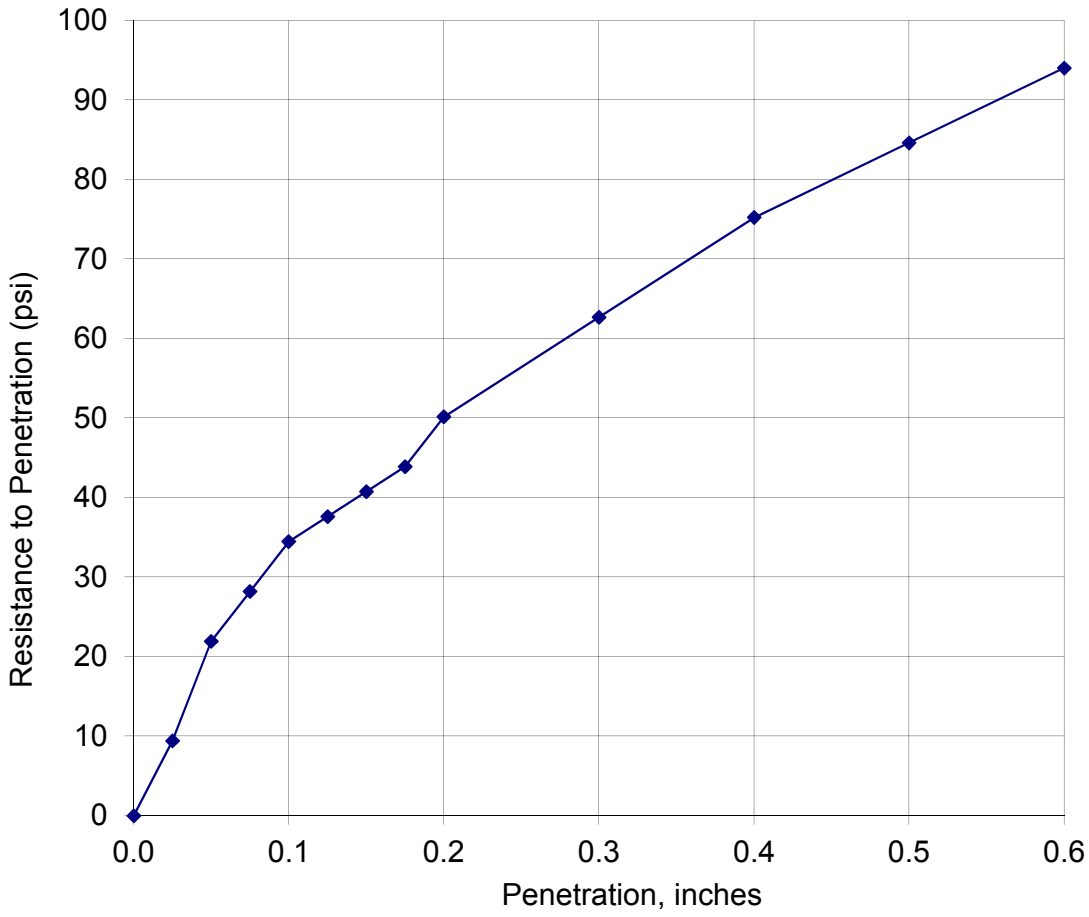
CALIFORNIA BEARING RATIO

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-112
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 5/27/16
Submitted By	: HDR|ICA	Date Reported	: 6/27/16
Soil Type	: Red Sandy Lean Clay		



Compaction Effort = 45 Blows per layer
Percent Compacted = 97
Percent Swell = 2.53

C.B.R. @ 0.1 In. = 3.4*
C.B.R. @ 0.2 In. = 3.3

COMMENTS: AASHTO: T-193

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-113
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/26/16
Submitted By	: HDR|ICA	Date Reported	: 06/27/16
Soil Type	: Red Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.3
No.6		3.35	mm	
No.10		2	mm	98.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	94.3
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	67.8
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} = 0.013 mm

CBR (AASHTO: T-193)	: 3.4	Natural Moisture (%) (AASHTO T265)	: 20.4
Dry Dens. (AASHTO: T-99; Method (C))	: 113.7 pcf	Liquid Limit (AASHTO T89)	: 27
Opt. Moist. (AASHTO: T-99; Method (C))	: 11.2 %	Plastic Limit (AASHTO T90)	: 18
		Plasticity Index	: 9
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.29
Gravel (3in. + No.10)	: 1.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 4.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 26.5	AASHTO Classification: M145	: A-4 (4)
Silt + Clay (-No.200)	: 67.8	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.7
Coarse Sand (-No.4 + No.10)	: 0.8
Medium Sand (-No.10 + No.40)	: 4.2
Fine Sand (-No.40 + No.200)	: 26.5
Silt + Clay (-No.200)	: 67.8

Approved By : Kevin E. Walker

Soil No. 79

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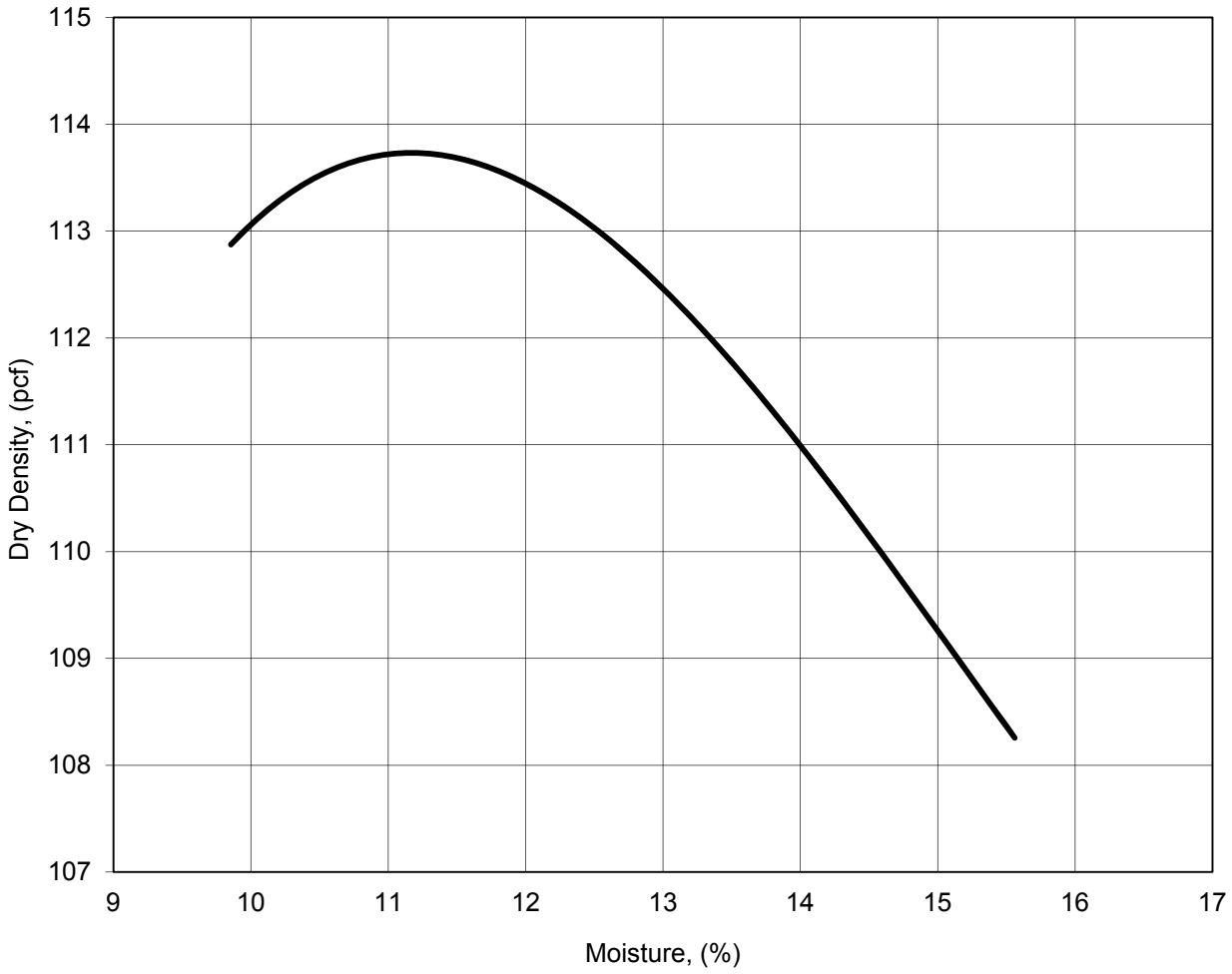
MOISTURE-DENSITY RELATIONSHIP

Project Name	:	Main St.-Vandenburg Blvd. (Widening)			
Project No.	:	CA0604	Sample No.	:	Bag-1
Project County	:	Pulaski	Sample Loc.	:	Boring No. B-113
Project State	:	Arkansas	Sample Depth	:	0.0' to 5.0'
Laboratory No.	:	11206-03	Date Tested	:	05/26/16
Submitted By	:	HDR|ICA	Date Reported	:	06/27/16
Soil Type	:	Red Sandy Lean Clay			



MAXIMUM DENSITY: 113.7 pcf

OPTIMUM MOISTURE: 11.2 %

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

APPROVED BY: KW

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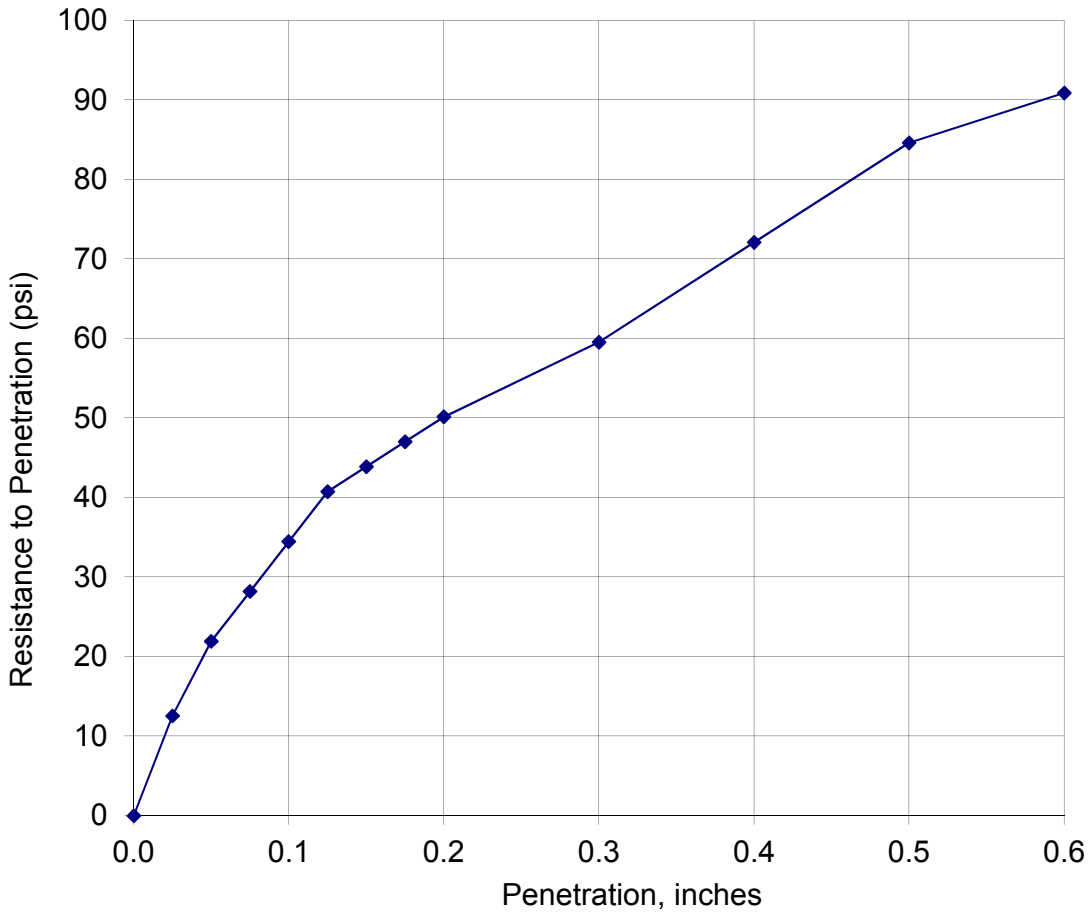
CALIFORNIA BEARING RATIO

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-113
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 5/26/16
Submitted By	: HDR|ICA	Date Reported	: 6/27/16
Soil Type	: Red Sandy Lean Clay		



Compaction Effort = 45 Blows per layer
Percent Compacted = 98.6
Percent Swell = 2.1

C.B.R. @ 0.1 In. = 3.4*
C.B.R. @ 0.2 In. = 3.3

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-114
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/17/16
Soil Type	: Red Sandy Fat 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.8
No.6		3.35	mm	
No.10		2	mm	99.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	96.0
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	55.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.037 mm

CBR (AASHTO: T-193)	: 2.5	Natural Moisture (%) (AASHTO T265)	: 21.5
Dry Dens. (AASHTO: T-99; Method (C))	: 109.3 pcf	Liquid Limit (AASHTO T89)	: 53
Opt. Moist. (AASHTO: T-99; Method (C))	: 13.7 %	Plastic Limit (AASHTO T90)	: 25
		Plasticity Index	: 28
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.11
Gravel (3in. + No.10)	: 0.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 3.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 40.1	AASHTO Classification: M145	: A-7-6 (13)
Silt + Clay (-No.200)	: 55.9	ASTM Classification: D2487	: CH

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)	: 0.4
Medium Sand (-No.10 + No.40)	: 3.4
Fine Sand (-No.40 + No.200)	: 40.1
Silt + Clay (-No.200)	: 55.9

Approved By : Kevin E. Walker

Soil No. 80

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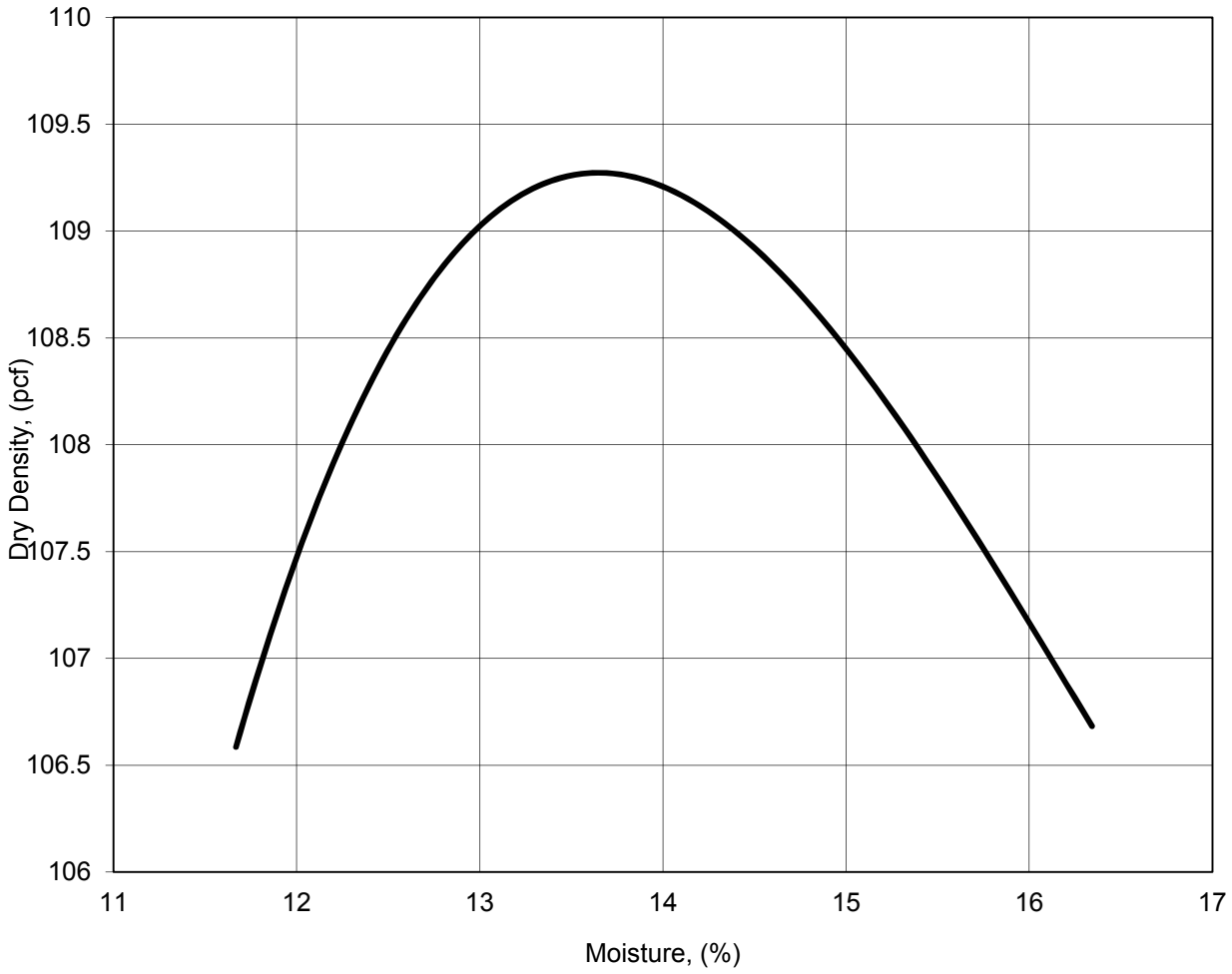
MOISTURE-DENSITY RELATIONSHIP

Project Name	:	Main St.-Vandenburg Blvd. (Widening)			
Project No.	:	CA0604	Sample No.	:	Bag-1
Project County	:	Pulaski	Sample Loc.	:	Boring No. B-114
Project State	:	Arkansas	Sample Depth	:	0.0' to 5.0'
Laboratory No.	:	11206-03	Date Tested	:	05/27/16
Submitted By	:	HDR|ICA	Date Reported	:	06/17/16
Soil Type	:	Red Sandy Fat Clay			



MAXIMUM DENSITY: 109.3 pcf

OPTIMUM MOISTURE: 13.7 %

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

APPROVED BY: KW

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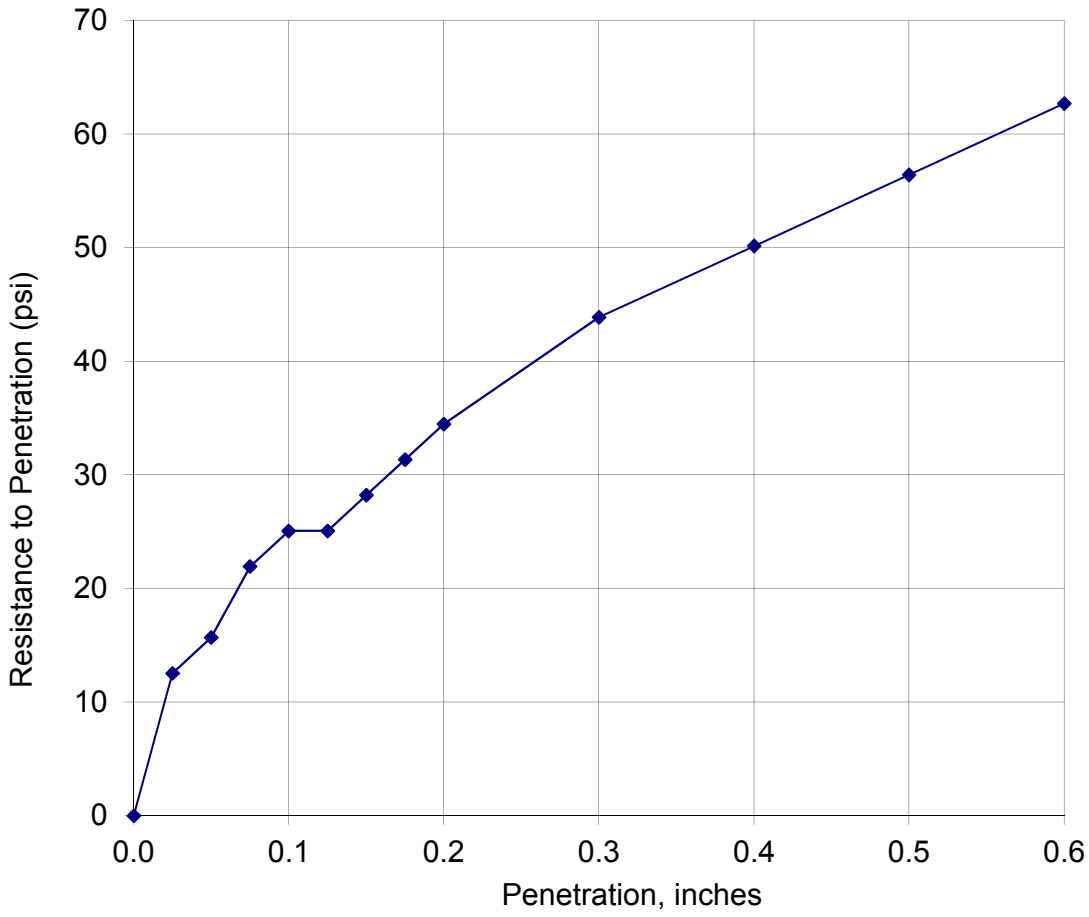
CALIFORNIA BEARING RATIO

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-114
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 5/27/16
Submitted By	: HDR|ICA	Date Reported	: 6/17/16
Soil Type	: Red Sandy Fat Clay		



Compaction Effort = 45 Blows per layer
Percent Compacted = 98.7
Percent Swell = 5.93

C.B.R. @ 0.1 In. = 2.5*
C.B.R. @ 0.2 In. = 2.3

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-115
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 05/27/16
Submitted By	: HDR|ICA	Date Reported	: 06/27/16
Soil Type	: Red 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	
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	99.7
No.6		3.35	mm	
No.10		2	mm	99.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	92.7
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	47.6
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} = 0.082 mm

CBR (AASHTO: T-193)	: 5.6	Natural Moisture (%) (AASHTO T265)	: 13.8
Dry Dens. (AASHTO: T-99; Method (C))	: 112.9 pcf	Liquid Limit (AASHTO T89)	: 43
Opt. Moist. (AASHTO: T-99; Method (C))	: 12.7 %	Plastic Limit (AASHTO T90)	: 20
		Plasticity Index	: 23
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.27
Gravel (3in. + No.10)	: 0.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.8	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 45.1	AASHTO Classification: M145	: A-7-6 (7)
Silt + Clay (-No.200)	: 47.6	ASTM Classification: D2487	: SC

ASTM Composition of Total Sample: D2487

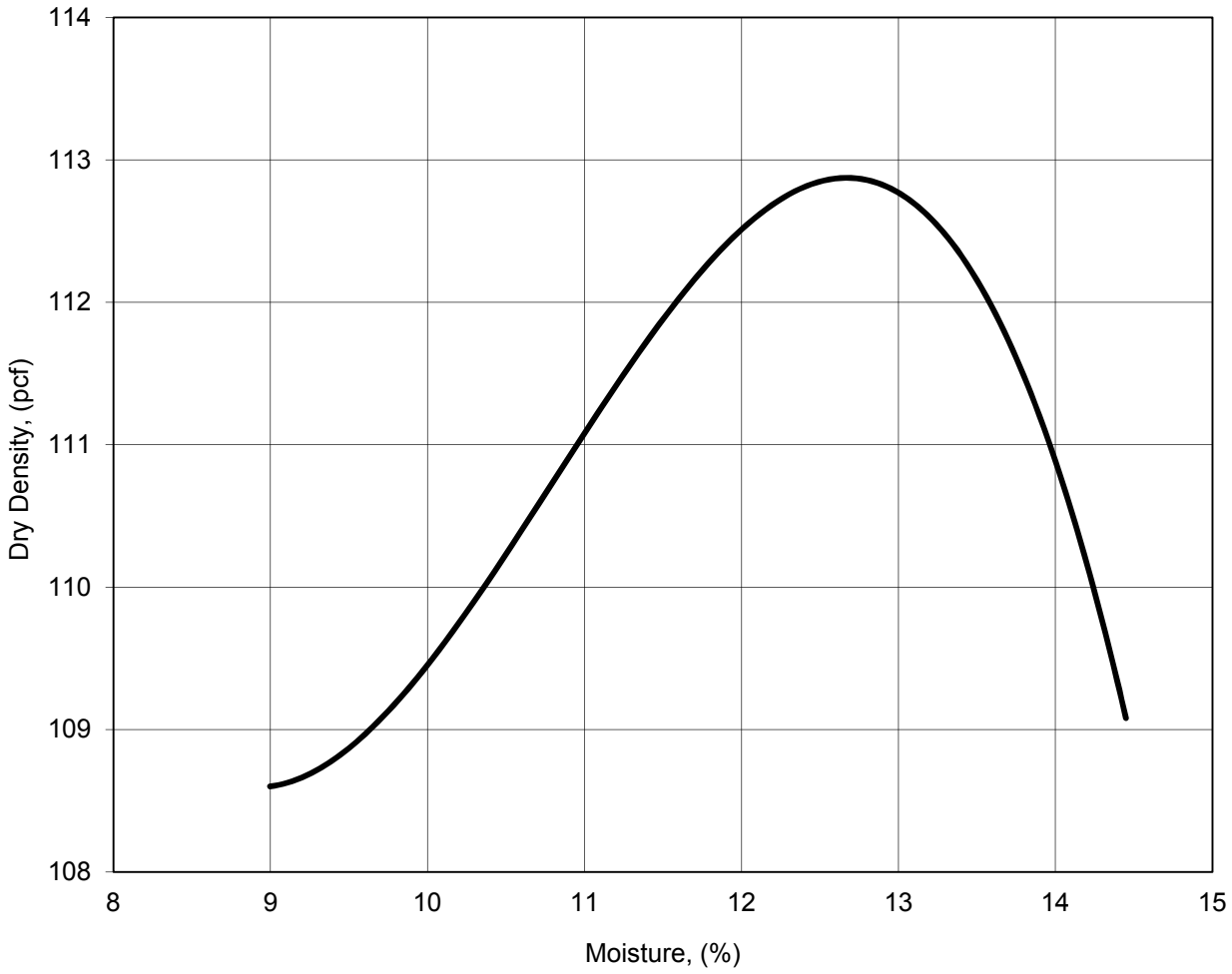
Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.3
Coarse Sand (-No.4 + No.10)	: 0.2
Medium Sand (-No.10 + No.40)	: 6.8
Fine Sand (-No.40 + No.200)	: 45.1
Silt + Clay (-No.200)	: 47.6

Approved By : Kevin E. Walker

Soil No. 81

MOISTURE-DENSITY RELATIONSHIP

Project Name	:	Main St.-Vandenburg Blvd. (Widening)			
Project No.	:	CA0604	Sample No.	:	Bag-1
Project County	:	Pulaski	Sample Loc.	:	Boring No. B-115
Project State	:	Arkansas	Sample Depth	:	0.0' to 5.0'
Laboratory No.	:	11206-03	Date Tested	:	05/27/16
Submitted By	:	HDR|ICA	Date Reported	:	06/27/16
Soil Type	:	Red Clayey Sand			



MAXIMUM DENSITY: 112.9 pcf

OPTIMUM MOISTURE: 12.7 %

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

APPROVED BY: KW

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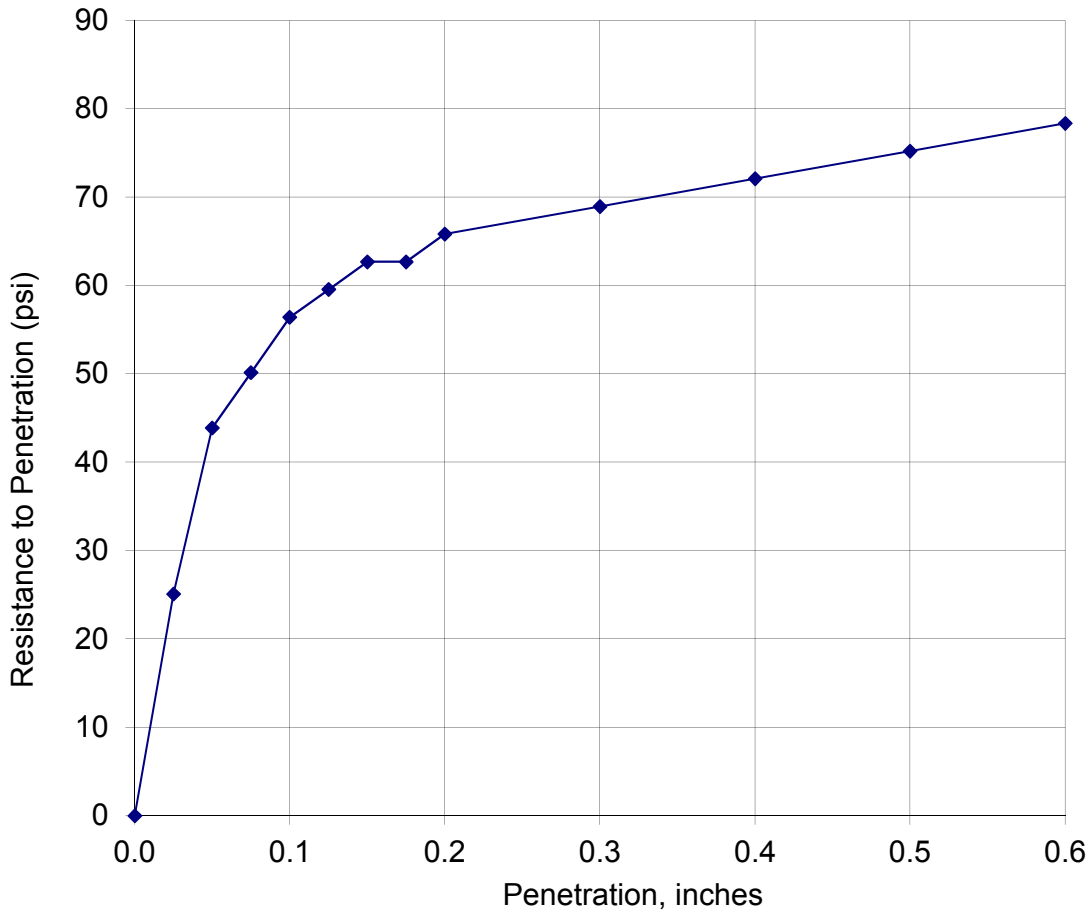
CALIFORNIA BEARING RATIO

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: Bag-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-115
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 5/27/16
Submitted By	: HDR|ICA	Date Reported	: 6/27/16
Soil Type	: Red Clayey Sand		



Compaction Effort = 45 Blows per layer
Percent Compacted = 98.1
Percent Swell = 0.92

C.B.R. @ 0.1 In. = 5.6*
C.B.R. @ 0.2 In. = 4.4

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-123
Project State	: Arkansas	Sample Depth	: 4.6' to 6.1'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Brown & Gray 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	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	96.3
1/4		6.3	mm	
No.4		4.75	mm	94.0
No.6		3.35	mm	
No.10		2	mm	92.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	86.7
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	45.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.089 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 20.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 28
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 17
		Plasticity Index	: 11
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.30
Gravel (3in. + No.10)	: 7.4	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 5.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 40.8	AASHTO Classification: M145	: A-6 (2)
Silt + Clay (-No.200)	: 45.9	ASTM Classification: D2487	: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 6.0
Coarse Sand (-No.4 + No.10)	: 1.4
Medium Sand (-No.10 + No.40)	: 5.9
Fine Sand (-No.40 + No.200)	: 40.8
Silt + Clay (-No.200)	: 45.9

Approved By : Kevin E. Walker

Soil No. 82

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-123
Project State	: Arkansas	Sample Depth	: 14.6' to 16.1'
Laboratory No.	: 11206-03	Date Tested	: 06/29/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Brown Sandy Fat 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.5
No.6		3.35	mm	
No.10		2	mm	94.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	83.1
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	64.2
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} = 0.017 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 29.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 54
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 30
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.16
Gravel (3in. + No.10)	: 5.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 11.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 18.9	AASHTO Classification: M145	: A-7-6 (18)
Silt + Clay (-No.200)	: 64.2	ASTM Classification: D2487	: CH

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.5
Coarse Sand (-No.4 + No.10)	: 5.0
Medium Sand (-No.10 + No.40)	: 11.4
Fine Sand (-No.40 + No.200)	: 18.9
Silt + Clay (-No.200)	: 64.2

Approved By : Kevin E. Walker

Soil No. 83

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SOIL CLASSIFICATION

Project Name	:	Main St.-Vandenburg Blvd. (Widening)		
Project No.	:	CA0604	Sample No.	: SS-8
Project County	:	Pulaski	Sample Loc.	: Boring No. B-123
Project State	:	Arkansas	Sample Depth	: 44.6' to 46.1'
Laboratory No.	:	11206-03	Date Tested	: 06/29/16
Submitted By	:	HDR|ICA	Date Reported	: 07/05/16
Soil Type	:	Brown & Gray Fat Clay with 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	
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	99.7
No.6		3.35	mm	
No.10		2	mm	98.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
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	72.3
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} = 0.01 mm

CBR	:	NA	Natural Moisture (%) (AASHTO T265)	: 40.5
Dry Dens.	:	NA	Liquid Limit (AASHTO T89)	: 68
Opt. Moist.	:	NA	Plastic Limit (AASHTO T90)	: 30
			Plasticity Index	: 38
AASHTO Composition of Total Sample: M145			Liquidity Index	: 0.27
Gravel (3in. + No.10)	:	1.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	:	6.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	:	19.8	AASHTO Classification: M145	: A-7-5 (29)
Silt + Clay (-No.200)	:	72.3	ASTM Classification: D2487	: CH

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	:	0.0
Fine Gravel (-3/4in. + No.4)	:	0.3
Coarse Sand (-No.4 + No.10)	:	0.9
Medium Sand (-No.10 + No.40)	:	6.7
Fine Sand (-No.40 + No.200)	:	19.8
Silt + Clay (-No.200)	:	72.3

Approved By : Kevin E. Walker

Soil No. 84

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-126
Project State	: Arkansas	Sample Depth	: 4.4' to 5.9'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Brown & Gray Sandy 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	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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	94.0
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	64.6
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} = 0.017 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 17.6
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	: 0.21
Gravel (3in. + No.10)	: 0.8	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 5.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 29.4	AASHTO Classification: M145	: A-4 (4)
Silt + Clay (-No.200)	: 64.6	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.2
Coarse Sand (-No.4 + No.10)	: 0.6
Medium Sand (-No.10 + No.40)	: 5.2
Fine Sand (-No.40 + No.200)	: 29.4
Silt + Clay (-No.200)	: 64.6

Approved By : Kevin E. Walker

Soil No. 85

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-126
Project State	: Arkansas	Sample Depth	: 19.4' to 20.9'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Gray & Brown Sandy Silt		

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	99.5
No.6		3.35	mm	
No.10		2	mm	99.1

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	90.9
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	57.3
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} = 0.032 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 18.2
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 35
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 28
		Plasticity Index	: 7
AASHTO Composition of Total Sample: M145		Liquidity Index	: -1.43
Gravel (3in. + No.10)	: 0.9	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 8.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 33.6	AASHTO Classification: M145	: A-4 (3)
Silt + Clay (-No.200)	: 57.3	ASTM Classification: D2487	: ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.5
Coarse Sand (-No.4 + No.10)	: 0.4
Medium Sand (-No.10 + No.40)	: 8.2
Fine Sand (-No.40 + No.200)	: 33.6
Silt + Clay (-No.200)	: 57.3

Approved By : Kevin E. Walker

Soil No. 86

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-6
Project County	: Pulaski	Sample Loc.	: Boring No. B-126
Project State	: Arkansas	Sample Depth	: 34.4' to 35.9'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Brown & Gray Sandy Elastic Silt		

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	97.0
No.6		3.35	mm	
No.10		2	mm	95.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	78.8
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	52.1
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} = 0.057 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 36.1
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 61
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 35
		Plasticity Index	: 26
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.03
Gravel (3in. + No.10)	: 4.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 16.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 26.7	AASHTO Classification: M145	: A-7-5 (11)
Silt + Clay (-No.200)	: 52.1	ASTM Classification: D2487	: MH

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 3.0
Coarse Sand (-No.4 + No.10)	: 1.6
Medium Sand (-No.10 + No.40)	: 16.6
Fine Sand (-No.40 + No.200)	: 26.7
Silt + Clay (-No.200)	: 52.1

Approved By : Kevin E. Walker

Soil No. 87

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-129
Project State	: Arkansas	Sample Depth	: 10.0' to 11.5'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Red 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	
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	99.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	89.7
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	38.6
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} = 0.11 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 19.2
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 41
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 18
		Plasticity Index	: 23
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.07
Gravel (3in. + No.10)	: 0.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 9.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 51.1	AASHTO Classification: M145	: A-7-6 (4)
Silt + Clay (-No.200)	: 38.6	ASTM Classification: D2487	: SC

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)	: 0.6
Medium Sand (-No.10 + No.40)	: 9.6
Fine Sand (-No.40 + No.200)	: 51.1
Silt + Clay (-No.200)	: 38.6

Approved By : Kevin E. Walker

Soil No. 88

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-129
Project State	: Arkansas	Sample Depth	: 20.0' to 21.5'
Laboratory No.	: 11206-03	Date Tested	: 06/29/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Brown & Gray Sandy 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	99.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	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	63.8
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} = 0.018 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 18.4
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	: 0.19
Gravel (3in. + No.10)	: 0.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 29.2	AASHTO Classification: M145	: A-4 (4)
Silt + Clay (-No.200)	: 63.8	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.0
Coarse Sand (-No.4 + No.10)	: 0.5
Medium Sand (-No.10 + No.40)	: 6.5
Fine Sand (-No.40 + No.200)	: 29.2
Silt + Clay (-No.200)	: 63.8

Approved By : Kevin E. Walker

Soil No. 89

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-10
Project County	: Pulaski	Sample Loc.	: Boring No. B-129
Project State	: Arkansas	Sample Depth	: 50.0' to 51.4'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Brown Clayey Sand with Gravel		

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	96.8
1/4		6.3	mm	
No.4		4.75	mm	82.7
No.6		3.35	mm	
No.10		2	mm	66.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	48.0
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	38.7
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} = 0.503 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 30.1
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 53
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 23
		Plasticity Index	: 30
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.23
Gravel (3in. + No.10)	: 33.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 18.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 9.3	AASHTO Classification: M145	: A-7-6 (6)
Silt + Clay (-No.200)	: 38.7	ASTM Classification: D2487	: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 17.3
Coarse Sand (-No.4 + No.10)	: 16.3
Medium Sand (-No.10 + No.40)	: 18.4
Fine Sand (-No.40 + No.200)	: 9.3
Silt + Clay (-No.200)	: 38.7

Approved By : Kevin E. Walker

Soil No. 90

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SOIL CLASSIFICATION

Project Name	:	Main St.-Vandenburg Blvd. (Widening)		
Project No.	:	CA0604	Sample No.	: SS-2
Project County	:	Pulaski	Sample Loc.	: Boring No. B-131
Project State	:	Arkansas	Sample Depth	: 9.0' to 10.5'
Laboratory No.	:	11206-03	Date Tested	: 06/27/16
Submitted By	:	HDR|ICA	Date Reported	: 07/06/16
Soil Type	:	Brown Sandy 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	99.0

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	90.4
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	50.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.075 mm

CBR	:	NA	Natural Moisture (%) (AASHTO T265)	: 18.4
Dry Dens.	:	NA	Liquid Limit (AASHTO T89)	: 36
Opt. Moist.	:	NA	Plastic Limit (AASHTO T90)	: 18
			Plasticity Index	: 18
AASHTO Composition of Total Sample: M145			Liquidity Index	: 0.02
Gravel (3in. + No.10)	:	1.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	:	8.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	:	40.4	AASHTO Classification: M145	: A-6 (5)
Silt + Clay (-No.200)	:	50.0	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)	:	1.0
Medium Sand (-No.10 + No.40)	:	8.6
Fine Sand (-No.40 + No.200)	:	40.4
Silt + Clay (-No.200)	:	50.0

Approved By : Kevin E. Walker

Soil No. 91

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-5
Project County	: Pulaski	Sample Loc.	: Boring No. B-131
Project State	: Arkansas	Sample Depth	: 29.0' to 30.5'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Brown & Red 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	
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	96.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	80.1
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	34.4
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} = 0.136 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 18.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 41
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 20
		Plasticity Index	: 21
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.11
Gravel (3in. + No.10)	: 3.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 16.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 45.7	AASHTO Classification: M145	: A-2-7 (2)
Silt + Clay (-No.200)	: 34.4	ASTM Classification: D2487	: SC

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)	: 1.9
Medium Sand (-No.10 + No.40)	: 16.3
Fine Sand (-No.40 + No.200)	: 45.7
Silt + Clay (-No.200)	: 34.4

Approved By : Kevin E. Walker

Soil No. 92

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-6
Project County	: Pulaski	Sample Loc.	: Boring No. B-131
Project State	: Arkansas	Sample Depth	: 34.0' to 35.5'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Brown & Gray Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	99.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	91.3
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	51.2
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} = 0.064 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 21.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 40
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 22
		Plasticity Index	: 18
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.00
Gravel (3in. + No.10)	: 0.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 8.0	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 40.1	AASHTO Classification: M145	: A-6 (6)
Silt + Clay (-No.200)	: 51.2	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.1
Coarse Sand (-No.4 + No.10)	: 0.6
Medium Sand (-No.10 + No.40)	: 8.0
Fine Sand (-No.40 + No.200)	: 40.1
Silt + Clay (-No.200)	: 51.2

Approved By : Kevin E. Walker

Soil No. 93

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-9
Project County	: Pulaski	Sample Loc.	: Boring No. B-131
Project State	: Arkansas	Sample Depth	: 49.0' to 50.5'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Brown Clayey Sand with Gravel		

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	84.6
1/4		6.3	mm	
No.4		4.75	mm	66.8
No.6		3.35	mm	
No.10		2	mm	47.2

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	26.7
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	20.8
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} = 2.263 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 20.1
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 56
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 27
		Plasticity Index	: 29
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.24
Gravel (3in. + No.10)	: 52.8	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 20.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 5.9	AASHTO Classification: M145	: A-2-7 (4)
Silt + Clay (-No.200)	: 20.8	ASTM Classification: D2487	: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 33.2
Coarse Sand (-No.4 + No.10)	: 19.6
Medium Sand (-No.10 + No.40)	: 20.5
Fine Sand (-No.40 + No.200)	: 5.9
Silt + Clay (-No.200)	: 20.8

Approved By : Kevin E. Walker

Soil No. 94

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-159
Project State	: Arkansas	Sample Depth	: 10.0' to 11.5'
Laboratory No.	: 11206-03	Date Tested	: 06/29/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Gray Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.9
No.6		3.35	mm	
No.10		2	mm	97.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	90.7
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	64.8
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} = 0.017 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 17.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 42
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 17
		Plasticity Index	: 25
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.04
Gravel (3in. + No.10)	: 2.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 25.9	AASHTO Classification: M145	: A-7-6 (14)
Silt + Clay (-No.200)	: 64.8	ASTM Classification: D2487	: CL

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)	: 1.6
Medium Sand (-No.10 + No.40)	: 6.6
Fine Sand (-No.40 + No.200)	: 25.9
Silt + Clay (-No.200)	: 64.8

Approved By : Kevin E. Walker

Soil No. 95

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-159
Project State	: Arkansas	Sample Depth	: 20.0' to 21.5'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Gray & Brown Sandy Elastic Silt		

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	98.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	85.9
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	54.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.043 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 33.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 63
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 36
		Plasticity Index	: 27
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.11
Gravel (3in. + No.10)	: 1.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 12.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 31.4	AASHTO Classification: M145	: A-7-5 (13)
Silt + Clay (-No.200)	: 54.5	ASTM Classification: D2487	: MH

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)	: 1.6
Medium Sand (-No.10 + No.40)	: 12.5
Fine Sand (-No.40 + No.200)	: 31.4
Silt + Clay (-No.200)	: 54.5

Approved By : Kevin E. Walker

Soil No. 96

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-150
Project State	: Arkansas	Sample Depth	: 15.0' to 16.5'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Gray & Tan Silty 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	
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	99.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	88.9
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	20.1
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} = 0.159 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 33.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 41
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 27
		Plasticity Index	: 14
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.48
Gravel (3in. + No.10)	: 0.4	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 10.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 68.8	AASHTO Classification: M145	: A-2-7 (1)
Silt + Clay (-No.200)	: 20.1	ASTM Classification: D2487	: 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)	: 0.4
Medium Sand (-No.10 + No.40)	: 10.7
Fine Sand (-No.40 + No.200)	: 68.8
Silt + Clay (-No.200)	: 20.1

Approved By : Kevin E. Walker

Soil No. 97

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-150
Project State	: Arkansas	Sample Depth	: 25.0' to 26.5'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Brown & Gray Silty 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	95.4
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	23.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.142 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 32.7
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 34
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 10
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.83
Gravel (3in. + No.10)	: 0.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 4.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 71.9	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 23.5	ASTM Classification: D2487	: 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)	: 0.0
Medium Sand (-No.10 + No.40)	: 4.6
Fine Sand (-No.40 + No.200)	: 71.9
Silt + Clay (-No.200)	: 23.5

Approved By : Kevin E. Walker

Soil No. 98

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-6
Project County	: Pulaski	Sample Loc.	: Boring No. B-150
Project State	: Arkansas	Sample Depth	: 35.0' to 36.5'
Laboratory No.	: 11206-03	Date Tested	: 06/29/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Gray 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	
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	99.0

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	92.7
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	46.8
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} = 0.085 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 29.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 38
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 14
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.34
Gravel (3in. + No.10)	: 1.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 45.9	AASHTO Classification: M145	: A-6 (3)
Silt + Clay (-No.200)	: 46.8	ASTM Classification: D2487	: SC

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)	: 1.0
Medium Sand (-No.10 + No.40)	: 6.3
Fine Sand (-No.40 + No.200)	: 45.9
Silt + Clay (-No.200)	: 46.8

Approved By : Kevin E. Walker

Soil No. 99

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-120
Project State	: Arkansas	Sample Depth	: 5.0' to 6.5'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Tan & Gray Silty 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	
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	99.6

AASHTO T88

				% Passing
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	26.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.136 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 33.7
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 28
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 4
AASHTO Composition of Total Sample: M145		Liquidity Index	: 2.34
Gravel (3in. + No.10)	: 0.4	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 4.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 68.4	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 26.5	ASTM Classification: D2487	: 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)	: 0.4
Medium Sand (-No.10 + No.40)	: 4.7
Fine Sand (-No.40 + No.200)	: 68.4
Silt + Clay (-No.200)	: 26.5

Approved By : Kevin E. Walker

Soil No. 100

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-4
Project County	: Pulaski	Sample Loc.	: Boring No. B-120
Project State	: Arkansas	Sample Depth	: 25.0' to 26.5'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Black Sandy Elastic Silt		

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	99.9
No.6		3.35	mm	
No.10		2	mm	99.1

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	87.6
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	51.2
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} = 0.064 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 33.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 74
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 43
		Plasticity Index	: 31
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.31
Gravel (3in. + No.10)	: 0.9	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 11.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 36.4	AASHTO Classification: M145	: A-7-5 (14)
Silt + Clay (-No.200)	: 51.2	ASTM Classification: D2487	: MH

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)	: 0.8
Medium Sand (-No.10 + No.40)	: 11.5
Fine Sand (-No.40 + No.200)	: 36.4
Silt + Clay (-No.200)	: 51.2

Approved By : Kevin E. Walker

Soil No. 101

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-7
Project County	: Pulaski	Sample Loc.	: Boring No. B-120
Project State	: Arkansas	Sample Depth	: 40.0' to 41.5'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Gray Sandy Elastic Silt		

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	100.0
3/4	in.	19	mm	94.6
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	94.6
1/4		6.3	mm	
No.4		4.75	mm	94.5
No.6		3.35	mm	
No.10		2	mm	94.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	86.9
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	52.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.058 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 30.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 52
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 34
		Plasticity Index	: 18
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.19
Gravel (3in. + No.10)	: 5.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 7.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 34.9	AASHTO Classification: M145	: A-7-5 (7)
Silt + Clay (-No.200)	: 52.0	ASTM Classification: D2487	: MH

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 5.4
Fine Gravel (-3/4in. + No.4)	: 0.1
Coarse Sand (-No.4 + No.10)	: 0.2
Medium Sand (-No.10 + No.40)	: 7.4
Fine Sand (-No.40 + No.200)	: 34.9
Silt + Clay (-No.200)	: 52.0

Approved By : Kevin E. Walker

Soil No. 102

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-121
Project State	: Arkansas	Sample Depth	: 3.3' to 4.8'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Red & Gray 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	
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	99.1
No.6		3.35	mm	
No.10		2	mm	98.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	96.0
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	22.3
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} = 0.144 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 25.9
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 33
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 22
		Plasticity Index	: 11
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.37
Gravel (3in. + No.10)	: 1.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 2.8	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 73.7	AASHTO Classification: M145	: A-2-6 (0)
Silt + Clay (-No.200)	: 22.3	ASTM Classification: D2487	: SC

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)	: 0.3
Medium Sand (-No.10 + No.40)	: 2.8
Fine Sand (-No.40 + No.200)	: 73.7
Silt + Clay (-No.200)	: 22.3

Approved By : Kevin E. Walker

Soil No. 103

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-121
Project State	: Arkansas	Sample Depth	: 8.3' to 9.8'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Tan Silty 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	
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

AASHTO T88

				% Passing
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	17.7
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} = 0.153 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 28.2
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 30
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 6
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.74
Gravel (3in. + No.10)	: 0.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 3.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 78.6	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 17.7	ASTM Classification: D2487	: 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)	: 0.0
Medium Sand (-No.10 + No.40)	: 3.7
Fine Sand (-No.40 + No.200)	: 78.6
Silt + Clay (-No.200)	: 17.7

Approved By : Kevin E. Walker

Soil No. 104

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-136
Project State	: Arkansas	Sample Depth	: 4.2' to 5.7'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Tan, Gray & Red 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	
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	98.2

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	80.9
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	40.6
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} = 0.112 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 22.4
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		Liquidity Index	: 0.16
Gravel (3in. + No.10)	: 1.8	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 17.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 40.3	AASHTO Classification: M145	: A-6 (2)
Silt + Clay (-No.200)	: 40.6	ASTM Classification: D2487	: SC

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)	: 1.8
Medium Sand (-No.10 + No.40)	: 17.3
Fine Sand (-No.40 + No.200)	: 40.3
Silt + Clay (-No.200)	: 40.6

Approved By : Kevin E. Walker

Soil No. 105

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-136
Project State	: Arkansas	Sample Depth	: 14.2' to 15.7'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Tan & Yellow 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	
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	99.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	93.2
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	26.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.139 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 29.5
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 37
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 23
		Plasticity Index	: 14
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.44
Gravel (3in. + No.10)	: 0.4	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 67.2	AASHTO Classification: M145	: A-2-6 (1)
Silt + Clay (-No.200)	: 26.0	ASTM Classification: D2487	: SC

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)	: 6.4
Fine Sand (-No.40 + No.200)	: 67.2
Silt + Clay (-No.200)	: 26.0

Approved By : Kevin E. Walker

Soil No. 106

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-141
Project State	: Arkansas	Sample Depth	: 4.3' to 5.8'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Tan & Gray Silty 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	
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

AASHTO T88

				% 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	15.4
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} = 0.155 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 27.1
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 26
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 23
		Plasticity Index	: 3
AASHTO Composition of Total Sample: M145		Liquidity Index	: 1.43
Gravel (3in. + No.10)	: 0.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 2.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 82.4	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 15.4	ASTM Classification: D2487	: 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)	: 2.1
Fine Sand (-No.40 + No.200)	: 82.4
Silt + Clay (-No.200)	: 15.4

Approved By : Kevin E. Walker

Soil No. 107

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-141
Project State	: Arkansas	Sample Depth	: 9.3' to 10.8'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Tan & Gray Silty 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	89.5
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	26.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.143 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 34.1
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 32
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 23
		Plasticity Index	: 9
AASHTO Composition of Total Sample: M145		Liquidity Index	: 1.19
Gravel (3in. + No.10)	: 0.3	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 10.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 63.0	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 26.5	ASTM Classification: D2487	: 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)	: 0.3
Medium Sand (-No.10 + No.40)	: 10.2
Fine Sand (-No.40 + No.200)	: 63.0
Silt + Clay (-No.200)	: 26.5

Approved By : Kevin E. Walker

Soil No. 108

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-143
Project State	: Arkansas	Sample Depth	: 4.5' to 6.0'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Tan & Gray Silty 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	97.4
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	14.4
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} = 0.158 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 28.5
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 26
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 23
		Plasticity Index	: 3
AASHTO Composition of Total Sample: M145		Liquidity Index	: 1.80
Gravel (3in. + No.10)	: 0.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 2.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 83.0	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 14.4	ASTM Classification: D2487	: 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)	: 0.0
Medium Sand (-No.10 + No.40)	: 2.6
Fine Sand (-No.40 + No.200)	: 83.0
Silt + Clay (-No.200)	: 14.4

Approved By : Kevin E. Walker

Soil No. 109

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-3
Project County	: Pulaski	Sample Loc.	: Boring No. B-143
Project State	: Arkansas	Sample Depth	: 19.5' to 21.0'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Gray 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	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	99.3
1/4		6.3	mm	
No.4		4.75	mm	98.5
No.6		3.35	mm	
No.10		2	mm	97.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	88.6
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	28.1
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} = 0.141 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 26.9
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 41
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 17
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.19
Gravel (3in. + No.10)	: 2.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 8.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 60.5	AASHTO Classification: M145	: A-2-7 (1)
Silt + Clay (-No.200)	: 28.1	ASTM Classification: D2487	: SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 1.5
Coarse Sand (-No.4 + No.10)	: 1.2
Medium Sand (-No.10 + No.40)	: 8.7
Fine Sand (-No.40 + No.200)	: 60.5
Silt + Clay (-No.200)	: 28.1

Approved By : Kevin E. Walker

Soil No. 110

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: SS-6
Project County	: Pulaski	Sample Loc.	: Boring No. B-143
Project State	: Arkansas	Sample Depth	: 34.5' to 36.0'
Laboratory No.	: 11206-03	Date Tested	: 06/27/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Gray Sandy Fat 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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	88.2
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	52.7
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} = 0.053 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 30.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 69
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 29
		Plasticity Index	: 40
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.03
Gravel (3in. + No.10)	: 0.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 11.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 35.5	AASHTO Classification: M145	: A-7-6 (17)
Silt + Clay (-No.200)	: 52.7	ASTM Classification: D2487	: CH

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)	: 11.7
Fine Sand (-No.40 + No.200)	: 35.5
Silt + Clay (-No.200)	: 52.7

Approved By : Kevin E. Walker

Soil No. 111

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-122
Project State	: Arkansas	Sample Depth	: 19.8' to 20.3'
Laboratory No.	: 11206-03	Date Tested	: 06/23/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Tan Silty 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	
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	99.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	93.4
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	45.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.087 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 36.7
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 52
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 30
		Plasticity Index	: 22
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.32
Gravel (3in. + No.10)	: 0.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 47.5	AASHTO Classification: M145	: A-7-6 (7)
Silt + Clay (-No.200)	: 45.9	ASTM Classification: D2487	: SM

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)	: 0.0
Medium Sand (-No.10 + No.40)	: 6.5
Fine Sand (-No.40 + No.200)	: 47.5
Silt + Clay (-No.200)	: 45.9

Approved By : Kevin E. Walker

Soil No. 112

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SOIL CLASSIFICATION

Project Name	:	Main St.-Vandenburg Blvd. (Widening)		
Project No.	:	CA0604	Sample No.	: ST-1
Project County	:	Pulaski	Sample Loc.	: Boring No. B-130
Project State	:	Arkansas	Sample Depth	: 15.1' to 15.6'
Laboratory No.	:	11206-03	Date Tested	: 06/23/16
Submitted By	:	HDR|ICA	Date Reported	: 07/05/16
Soil Type	:	Red & Tan Silty 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	
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	99.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	93.7
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	47.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.082 mm

CBR	:	NA	Natural Moisture (%) (AASHTO T265)	: 38.0
Dry Dens.	:	NA	Liquid Limit (AASHTO T89)	: 44
Opt. Moist.	:	NA	Plastic Limit (AASHTO T90)	: 29
			Plasticity Index	: 15
AASHTO Composition of Total Sample: M145			Liquidity Index	: 0.59
Gravel (3in. + No.10)	:	0.4	Activity	: NA
Coarse Sand (-No.10 + No.40)	:	5.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	:	46.2	AASHTO Classification: M145	: A-7-6 (4)
Silt + Clay (-No.200)	:	47.5	ASTM Classification: D2487	: 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)	:	0.4
Medium Sand (-No.10 + No.40)	:	5.9
Fine Sand (-No.40 + No.200)	:	46.2
Silt + Clay (-No.200)	:	47.5

Approved By : Kevin E. Walker

Soil No. 113

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-163
Project State	: Arkansas	Sample Depth	: 10.3' to 10.8'
Laboratory No.	: 11206-03	Date Tested	: 06/23/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Brown & Gray 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	
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

AASHTO T88

				% Passing
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	40.3
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} = 0.1 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 23.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 49
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 22
		Plasticity Index	: 27
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.05
Gravel (3in. + No.10)	: 0.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 1.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 58.3	AASHTO Classification: M145	: A-7-6 (6)
Silt + Clay (-No.200)	: 40.3	ASTM Classification: D2487	: SC

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)	: 1.2
Fine Sand (-No.40 + No.200)	: 58.3
Silt + Clay (-No.200)	: 40.3

Approved By : Kevin E. Walker

Soil No. 114

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-163
Project State	: Arkansas	Sample Depth	: 19.9' to 20.4'
Laboratory No.	: 11206-03	Date Tested	: 06/22/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Brown & Gray Sandy Elastic Silt		

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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	91.7
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	54.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.046 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 33.5
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 52
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 34
		Plasticity Index	: 18
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.02
Gravel (3in. + No.10)	: 0.3	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 8.0	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 37.7	AASHTO Classification: M145	: A-7-5 (8)
Silt + Clay (-No.200)	: 54.0	ASTM Classification: D2487	: MH

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)	: 8.0
Fine Sand (-No.40 + No.200)	: 37.7
Silt + Clay (-No.200)	: 54.0

Approved By : Kevin E. Walker

Soil No. 115

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-165
Project State	: Arkansas	Sample Depth	: 4.9' to 6.9'
Laboratory No.	: 11206-03	Date Tested	: 06/20/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Brown Sandy Silty 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	94.9
No.6		3.35	mm	
No.10		2	mm	89.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	83.1
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	58.1
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} = 0.03 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 38.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 25
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 18
		Plasticity Index	: 7
AASHTO Composition of Total Sample: M145		Liquidity Index	: 2.93
Gravel (3in. + No.10)	: 10.5	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 25.0	AASHTO Classification: M145	: A-4 (2)
Silt + Clay (-No.200)	: 58.1	ASTM Classification: D2487	: CL-ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 5.1
Coarse Sand (-No.4 + No.10)	: 5.4
Medium Sand (-No.10 + No.40)	: 6.4
Fine Sand (-No.40 + No.200)	: 25.0
Silt + Clay (-No.200)	: 58.1

Approved By : Kevin E. Walker

Soil No. 116

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SOIL CLASSIFICATION

Project Name	:	Main St.-Vandenburg Blvd. (Widening)		
Project No.	:	CA0604	Sample No.	: ST-2
Project County	:	Pulaski	Sample Loc.	: Boring No. B-165
Project State	:	Arkansas	Sample Depth	: 20.7' to 21.2'
Laboratory No.	:	11206-03	Date Tested	: 06/23/16
Submitted By	:	HDR|ICA	Date Reported	: 07/05/16
Soil Type	:	Brown Sandy Elastic Silt		

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	100.0

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	92.4
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	57.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.032 mm

CBR	:	NA	Natural Moisture (%) (AASHTO T265)	: 35.6
Dry Dens.	:	NA	Liquid Limit (AASHTO T89)	: 64
Opt. Moist.	:	NA	Plastic Limit (AASHTO T90)	: 36
			Plasticity Index	: 28
AASHTO Composition of Total Sample: M145			Liquidity Index	: -0.03
Gravel (3in. + No.10)	:	0.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	:	7.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	:	34.9	AASHTO Classification: M145	: A-7-5 (15)
Silt + Clay (-No.200)	:	57.5	ASTM Classification: D2487	: MH

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)	:	7.6
Fine Sand (-No.40 + No.200)	:	34.9
Silt + Clay (-No.200)	:	57.5

Approved By : Kevin E. Walker

Soil No. 117

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-167
Project State	: Arkansas	Sample Depth	: 4.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 06/22/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Brown & Gray 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	87.9
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	23.8
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} = 0.152 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 31.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 33
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 13
		Plasticity Index	: 20
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.92
Gravel (3in. + No.10)	: 0.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 11.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 64.1	AASHTO Classification: M145	: A-2-6 (2)
Silt + Clay (-No.200)	: 23.8	ASTM Classification: D2487	: SC

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)	: 11.5
Fine Sand (-No.40 + No.200)	: 64.1
Silt + Clay (-No.200)	: 23.8

Approved By : Kevin E. Walker

Soil No. 118

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-167
Project State	: Arkansas	Sample Depth	: 21.0' to 21.5'
Laboratory No.	: 11206-03	Date Tested	: 06/23/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Brown & Gray Sandy Elastic Silt		

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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	89.3
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	50.2
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} = 0.073 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 35.2
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 73
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 44
		Plasticity Index	: 29
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.30
Gravel (3in. + No.10)	: 0.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 10.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 39.1	AASHTO Classification: M145	: A-7-5 (12)
Silt + Clay (-No.200)	: 50.2	ASTM Classification: D2487	: MH

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)	: 10.6
Fine Sand (-No.40 + No.200)	: 39.1
Silt + Clay (-No.200)	: 50.2

Approved By : Kevin E. Walker

Soil No. 119

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-2
Project County	: Pulaski	Sample Loc.	: Boring No. B-168
Project State	: Arkansas	Sample Depth	: 25.2' to 25.7'
Laboratory No.	: 11206-03	Date Tested	: 06/23/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Brown & Gray 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	82.8
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	47.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.083 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 36.5
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 73
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 29
		Plasticity Index	: 44
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.18
Gravel (3in. + No.10)	: 0.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 17.0	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 34.9	AASHTO Classification: M145	: A-7-6 (16)
Silt + Clay (-No.200)	: 47.9	ASTM Classification: D2487	: SC

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)	: 17.0
Fine Sand (-No.40 + No.200)	: 34.9
Silt + Clay (-No.200)	: 47.9

Approved By : Kevin E. Walker

Soil No. 120

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-169
Project State	: Arkansas	Sample Depth	: 9.8' to 11.8'
Laboratory No.	: 11206-03	Date Tested	: 06/20/16
Submitted By	: HDR|ICA	Date Reported	: 07/05/16
Soil Type	: Red & Gray 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	91.8
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	45.2
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} = 0.09 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 30.1
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	: 0.50
Gravel (3in. + No.10)	: 0.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 8.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 46.6	AASHTO Classification: M145	: A-6 (4)
Silt + Clay (-No.200)	: 45.2	ASTM Classification: D2487	: SC

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)	: 8.1
Fine Sand (-No.40 + No.200)	: 46.6
Silt + Clay (-No.200)	: 45.2

Approved By : Kevin E. Walker

Soil No. 121

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-170
Project State	: Arkansas	Sample Depth	: 14.8' to 15.3'
Laboratory No.	: 11206-03	Date Tested	: 06/23/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Red 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	88.9
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	37.4
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} = 0.115 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 19.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 31
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 18
		Plasticity Index	: 13
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.10
Gravel (3in. + No.10)	: 0.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 11.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 51.5	AASHTO Classification: M145	: A-6 (1)
Silt + Clay (-No.200)	: 37.4	ASTM Classification: D2487	: SC

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)	: 11.1
Fine Sand (-No.40 + No.200)	: 51.5
Silt + Clay (-No.200)	: 37.4

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Soil No. 122

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-171
Project State	: Arkansas	Sample Depth	: 4.7' to 6.7'
Laboratory No.	: 11206-03	Date Tested	: 06/20/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Brown Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.2
No.6		3.35	mm	
No.10		2	mm	97.2

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	90.7
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	57.4
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} = 0.032 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 21.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 36
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 22
		Plasticity Index	: 14
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.02
Gravel (3in. + No.10)	: 2.8	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 33.3	AASHTO Classification: M145	: A-6 (6)
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)	: 0.8
Coarse Sand (-No.4 + No.10)	: 2.0
Medium Sand (-No.10 + No.40)	: 6.5
Fine Sand (-No.40 + No.200)	: 33.3
Silt + Clay (-No.200)	: 57.4

Approved By : Kevin E. Walker

Soil No. 123

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-166
Project State	: Arkansas	Sample Depth	: 4.5' to 5.0'
Laboratory No.	: 11206-03	Date Tested	: 06/23/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Red & Brown Silty 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	89.8
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	18.1
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} = 0.162 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 30.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 33
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 25
		Plasticity Index	: 8
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.71
Gravel (3in. + No.10)	: 0.3	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 9.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 71.7	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 18.1	ASTM Classification: D2487	: 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)	: 0.3
Medium Sand (-No.10 + No.40)	: 9.9
Fine Sand (-No.40 + No.200)	: 71.7
Silt + Clay (-No.200)	: 18.1

Approved By : Kevin E. Walker

Soil No. 124

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-168
Project State	: Arkansas	Sample Depth	: 10.0' to 10.5'
Laboratory No.	: 11206-03	Date Tested	: 06/23/16
Submitted By	: HDR|ICA	Date Reported	: 07/06/16
Soil Type	: Red & Gray 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	96.1
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	42.7
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} = 0.095 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 26.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 57
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 22
		Plasticity Index	: 35
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.14
Gravel (3in. + No.10)	: 0.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 3.7	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 53.4	AASHTO Classification: M145	: A-7-6 (9)
Silt + Clay (-No.200)	: 42.7	ASTM Classification: D2487	: SC

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)	: 3.7
Fine Sand (-No.40 + No.200)	: 53.4
Silt + Clay (-No.200)	: 42.7

Approved By : Kevin E. Walker

Soil No. 125

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-104
Project State	: Arkansas	Sample Depth	: 6.5' to 7.0'
Laboratory No.	: 11206-03	Date Tested	: 07/06/16
Submitted By	: HDR|ICA	Date Reported	: 07/07/16
Soil Type	: Gray 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	96.8
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	32.5
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.12 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 25.7
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 32
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 22
		Plasticity Index	: 10
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.35
Gravel (3in. + No.10)	: 0.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 3.0	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 64.3	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 32.5	ASTM Classification: D2487	: SC

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)	: 3.0
Fine Sand (-No.40 + No.200)	: 64.3
Silt + Clay (-No.200)	: 32.5

Approved By : Kevin E. Walker

Soil No. 126

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-120
Project State	: Arkansas	Sample Depth	: 20.9' to 21.4'
Laboratory No.	: 11206-03	Date Tested	: 07/06/16
Submitted By	: HDR|ICA	Date Reported	: 07/07/16
Soil Type	: Gray Sandy Elastic Silt		

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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	85.7
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	60.2
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} = 0.024 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 33.2
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 60
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 32
		Plasticity Index	: 28
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.03
Gravel (3in. + No.10)	: 0.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 14.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 25.5	AASHTO Classification: M145	: A-7-5 (16)
Silt + Clay (-No.200)	: 60.2	ASTM Classification: D2487	: MH

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)	: 14.1
Fine Sand (-No.40 + No.200)	: 25.5
Silt + Clay (-No.200)	: 60.2

Approved By : Kevin E. Walker

Soil No. 127

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-123
Project State	: Arkansas	Sample Depth	: 25.1' to 25.6'
Laboratory No.	: 11206-03	Date Tested	: 07/06/16
Submitted By	: HDR|ICA	Date Reported	: 07/07/16
Soil Type	: Brown & Gray Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.5
No.6		3.35	mm	
No.10		2	mm	96.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	84.4
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	59.6
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} = 0.026 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 17.5
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	: -0.07
Gravel (3in. + No.10)	: 3.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 12.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 24.8	AASHTO Classification: M145	: A-6 (9)
Silt + Clay (-No.200)	: 59.6	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.5
Coarse Sand (-No.4 + No.10)	: 2.6
Medium Sand (-No.10 + No.40)	: 12.5
Fine Sand (-No.40 + No.200)	: 24.8
Silt + Clay (-No.200)	: 59.6

Approved By : Kevin E. Walker

Soil No. 128

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-126
Project State	: Arkansas	Sample Depth	: 14.9' to 15.4'
Laboratory No.	: 11206-03	Date Tested	: 07/06/16
Submitted By	: HDR|ICA	Date Reported	: 07/07/16
Soil Type	: Gray & Brown Sandy Fat 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	99.2

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	91.6
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	60.7
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} = 0.023 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 17.9
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 50
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 17
		Plasticity Index	: 33
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.03
Gravel (3in. + No.10)	: 0.8	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 7.6	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 30.9	AASHTO Classification: M145	: A-7-6 (17)
Silt + Clay (-No.200)	: 60.7	ASTM Classification: D2487	: CH

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)	: 0.8
Medium Sand (-No.10 + No.40)	: 7.6
Fine Sand (-No.40 + No.200)	: 30.9
Silt + Clay (-No.200)	: 60.7

Approved By : Kevin E. Walker

Soil No. 129

SOIL CLASSIFICATION

Project Name	:	Main St.-Vandenburg Blvd. (Widening)		
Project No.	:	CA0604	Sample No.	: ST-1
Project County	:	Pulaski	Sample Loc.	: Boring No. B-131
Project State	:	Arkansas	Sample Depth	: 24.0' to 24.5'
Laboratory No.	:	11206-03	Date Tested	: 07/06/16
Submitted By	:	HDR|ICA	Date Reported	: 07/07/16
Soil Type	:	Brown & Gray Sandy Silty 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	98.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	89.7
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	59.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.025 mm

CBR	:	NA	Natural Moisture (%) (AASHTO T265)	: 18.6
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	: 0.26
Gravel (3in. + No.10)	:	1.3	Activity	: NA
Coarse Sand (-No.10 + No.40)	:	9.0	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	:	29.8	AASHTO Classification: M145	: A-4 (2)
Silt + Clay (-No.200)	:	59.9	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)	:	1.2
Medium Sand (-No.10 + No.40)	:	9.0
Fine Sand (-No.40 + No.200)	:	29.8
Silt + Clay (-No.200)	:	59.9

Approved By : Kevin E. Walker

Soil No. 130

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-136
Project State	: Arkansas	Sample Depth	: 10.2' to 10.7'
Laboratory No.	: 11206-03	Date Tested	: 07/06/16
Submitted By	: HDR|ICA	Date Reported	: 07/07/16
Soil Type	: Gray Sandy 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	99.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	86.9
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	66.9
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.014 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 25.6
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 38
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 23
		Plasticity Index	: 15
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.16
Gravel (3in. + No.10)	: 0.6	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 12.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 20.0	AASHTO Classification: M145	: A-6 (9)
Silt + Clay (-No.200)	: 66.9	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.0
Coarse Sand (-No.4 + No.10)	: 0.6
Medium Sand (-No.10 + No.40)	: 12.5
Fine Sand (-No.40 + No.200)	: 20.0
Silt + Clay (-No.200)	: 66.9

Approved By : Kevin E. Walker

Soil No. 131

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-139
Project State	: Arkansas	Sample Depth	: 17.5' to 18.0'
Laboratory No.	: 11206-03	Date Tested	: 07/06/16
Submitted By	: HDR|ICA	Date Reported	: 07/07/16
Soil Type	: Tan & Gray 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	91.8
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	38.1
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} = 0.11 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 30.3
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 38
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 24
		Plasticity Index	: 14
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.42
Gravel (3in. + No.10)	: 0.0	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 8.2	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 53.7	AASHTO Classification: M145	: A-6 (2)
Silt + Clay (-No.200)	: 38.1	ASTM Classification: D2487	: SC

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)	: 8.2
Fine Sand (-No.40 + No.200)	: 53.7
Silt + Clay (-No.200)	: 38.1

Approved By : Kevin E. Walker

Soil No. 132

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-141
Project State	: Arkansas	Sample Depth	: 15.3' to 15.8'
Laboratory No.	: 11206-03	Date Tested	: 07/06/16
Submitted By	: HDR|ICA	Date Reported	: 07/07/16
Soil Type	: Tan 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	90.5
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	36.2
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} = 0.117 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 29.8
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 46
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 26
		Plasticity Index	: 20
AASHTO Composition of Total Sample: M145		Liquidity Index	: 0.19
Gravel (3in. + No.10)	: 0.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 9.4	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 54.3	AASHTO Classification: M145	: A-7-6 (2)
Silt + Clay (-No.200)	: 36.2	ASTM Classification: D2487	: SC

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)	: 9.4
Fine Sand (-No.40 + No.200)	: 54.3
Silt + Clay (-No.200)	: 36.2

Approved By : Kevin E. Walker

Soil No. 133

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-143
Project State	: Arkansas	Sample Depth	: 10.0' to 10.5'
Laboratory No.	: 11206-03	Date Tested	: 07/06/16
Submitted By	: HDR|ICA	Date Reported	: 07/07/16
Soil Type	: Tan Silty 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	
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

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	92.9
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	22.7
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} = 0.147 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 27.7
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 26
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 25
		Plasticity Index	: 1
AASHTO Composition of Total Sample: M145		Liquidity Index	: 2.50
Gravel (3in. + No.10)	: 0.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 6.9	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 70.2	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 22.7	ASTM Classification: D2487	: 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)	: 0.2
Medium Sand (-No.10 + No.40)	: 6.9
Fine Sand (-No.40 + No.200)	: 70.2
Silt + Clay (-No.200)	: 22.7

Approved By : Kevin E. Walker

Soil No. 134

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-150
Project State	: Arkansas	Sample Depth	: 10.5' to 11.0'
Laboratory No.	: 11206-03	Date Tested	: 07/06/16
Submitted By	: HDR|ICA	Date Reported	: 07/07/16
Soil Type	: Brown & Gray Silty 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	
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	98.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	84.8
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	18.3
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} = 0.171 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 32.0
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 30
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 26
		Plasticity Index	: 4
AASHTO Composition of Total Sample: M145		Liquidity Index	: 1.44
Gravel (3in. + No.10)	: 1.1	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 14.1	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 66.5	AASHTO Classification: M145	: A-2-4 (0)
Silt + Clay (-No.200)	: 18.3	ASTM Classification: D2487	: 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)	: 1.1
Medium Sand (-No.10 + No.40)	: 14.1
Fine Sand (-No.40 + No.200)	: 66.5
Silt + Clay (-No.200)	: 18.3

Approved By : Kevin E. Walker

Soil No. 135

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SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-158
Project State	: Arkansas	Sample Depth	: 6.9' to 7.4'
Laboratory No.	: 11206-03	Date Tested	: 07/06/16
Submitted By	: HDR|ICA	Date Reported	: 07/07/16
Soil Type	: Brown & Gray Sandy 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	99.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	94.0
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	69.0
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	
Hyd. Rd.	# 7		mm	

D_{50} = 0.012 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 21.2
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	: 0.54
Gravel (3in. + No.10)	: 0.7	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 5.3	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 25.0	AASHTO Classification: M145	: A-4 (4)
Silt + Clay (-No.200)	: 69.0	ASTM Classification: D2487	: CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.)	: 0.0
Fine Gravel (-3/4in. + No.4)	: 0.1
Coarse Sand (-No.4 + No.10)	: 0.6
Medium Sand (-No.10 + No.40)	: 5.3
Fine Sand (-No.40 + No.200)	: 25.0
Silt + Clay (-No.200)	: 69.0

Approved By : Kevin E. Walker

Soil No. 136

SOIL CLASSIFICATION

Project Name	: Main St.-Vandenburg Blvd. (Widening)		
Project No.	: CA0604	Sample No.	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-159
Project State	: Arkansas	Sample Depth	: 15.5' to 16.0'
Laboratory No.	: 11206-03	Date Tested	: 07/06/16
Submitted By	: HDR|ICA	Date Reported	: 07/07/16
Soil Type	: Brown & Gray Sandy Elastic Silt		

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	99.9
No.6		3.35	mm	
No.10		2	mm	97.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	84.3
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	51.7
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} = 0.06 mm

CBR	: NA	Natural Moisture (%) (AASHTO T265)	: 25.4
Dry Dens.	: NA	Liquid Limit (AASHTO T89)	: 62
Opt. Moist.	: NA	Plastic Limit (AASHTO T90)	: 34
		Plasticity Index	: 28
AASHTO Composition of Total Sample: M145		Liquidity Index	: -0.31
Gravel (3in. + No.10)	: 2.2	Activity	: NA
Coarse Sand (-No.10 + No.40)	: 13.5	Sp. Gr. (AASHTO T100)	: NA
Fine Sand (-No.40 + No.200)	: 32.6	AASHTO Classification: M145	: A-7-5 (12)
Silt + Clay (-No.200)	: 51.7	ASTM Classification: D2487	: MH

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)	: 2.1
Medium Sand (-No.10 + No.40)	: 13.5
Fine Sand (-No.40 + No.200)	: 32.6
Silt + Clay (-No.200)	: 51.7

Approved By : Kevin E. Walker

Soil No. 137

UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-104
Project State	: Arkansas	Sample Depth	: 6.5' to 7.0'
Laboratory #	: 251537	Date Tested	: 6/29/2016
Submitted By	: HDR | ICA	Date Reported	: 7/7/2016

Soil Type	: Gray, Clayey Sand				
Wet Density	: 123.6	pcf	Initial Height	: 5.86	in
Dry Density	: 98.3	pcf	Initial Diameter	: 2.85	in
Moisture	: 25.7	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	21.2	0.04	0.3	0.48
3	36.6	0.04	0.5	0.82
4	47.1	0.04	0.8	1.06
5	56.8	0.04	1.0	1.27
6	63.5	0.04	1.3	1.42
7	68.3	0.04	1.5	1.52
8	74.1	0.05	1.8	1.64
9	77.9	0.05	2.0	1.72
10	83.7	0.05	2.4	1.85
11	88.5	0.05	2.7	1.95
12	92.3	0.05	3.1	2.02
13	97.1	0.05	3.4	2.12
14	99.1	0.05	3.8	2.15
15	102.9	0.05	4.1	2.23
16	104.8	0.05	4.4	2.26
17	105.8	0.05	4.8	2.28
18	106.8	0.05	5.1	2.29
19	103.9	0.05	5.5	2.22
20	91.4	0.05	6.0	1.94

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UNCONFINED COMPRESSION TEST

Project Name	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-104
Project State	: Arkansas	Sample Depth	: 6.5' to 7.0'
Laboratory #	: 251537	Date Tested	: 6/29/2016
Submitted By	: HDR | ICA	Date Reported	: 7/7/2016
Soil Type	: Gray, Clayey Sand		
Wet Density	: 123.6 pcf	Initial Height	: 5.86 in
Dry Density	: 98.3 pcf	Initial Diameter	: 2.85 in
Moisture	: 25.7 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		

APPROVED BY: Kevin E. Walker

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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-136
Project State	: Arkansas	Sample Depth	: 10.2' to 10.7'
Laboratory #	: 251537	Date Tested	: 6/29/2016
Submitted By	: HDR | ICA	Date Reported	: 7/7/2016

Soil Type	: Gray, Sandy Lean Clay				
Wet Density	: 113.8	pcf	Initial Height	: 5.80	in
Dry Density	: 85.5	pcf	Initial Diameter	: 2.85	in
Moisture	: 33.2	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	6.7	0.04	0.3	0.15
3	11.5	0.04	0.5	0.26
4	14.4	0.04	0.8	0.32
5	18.3	0.04	1.0	0.41
6	21.2	0.04	1.3	0.47
7	24.0	0.05	1.6	0.53
8	27.9	0.05	1.8	0.62
9	29.8	0.05	2.1	0.66
10	33.7	0.05	2.4	0.74
11	35.6	0.05	2.8	0.78
12	36.6	0.05	3.1	0.80
13	33.7	0.05	3.4	0.73
14	28.9	0.05	3.8	0.63

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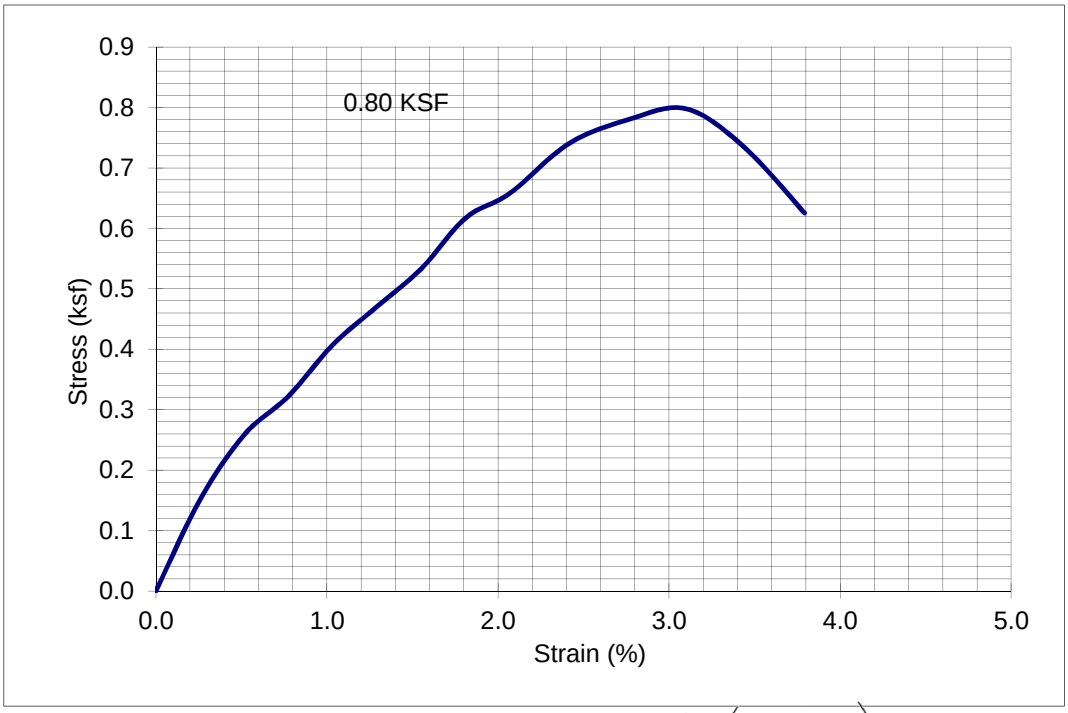
UNCONFINED COMPRESSION TEST

Project Name	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-136
Project State	: Arkansas	Sample Depth	: 10.2' to 10.7'
Laboratory #	: 251537	Date Tested	: 6/29/2016
Submitted By	: HDR | ICA	Date Reported	: 7/7/2016
Soil Type	: Gray, Sandy Lean Clay		
Wet Density	: 113.8 pcf	Initial Height	: 5.80 in
Dry Density	: 85.5 pcf	Initial Diameter	: 2.85 in
Moisture	: 33.2 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		



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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-139
Project State	: Arkansas	Sample Depth	: 17.5' to 18.0'
Laboratory #	: 251537	Date Tested	: 6/29/2016
Submitted By	: HDR | ICA	Date Reported	: 7/7/2016

Soil Type	: Tan & Gray, Clayey Sand				
Wet Density	: 118.3	pcf	Initial Height	: 5.82	in
Dry Density	: 90.8	pcf	Initial Diameter	: 2.85	in
Moisture	: 30.3	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	12.5	0.04	0.3	0.28
3	25.0	0.04	0.5	0.56
4	37.5	0.04	0.8	0.84
5	48.1	0.04	1.0	1.08
6	58.7	0.04	1.3	1.31
7	69.3	0.04	1.5	1.54
8	78.9	0.05	1.8	1.75
9	84.6	0.05	2.1	1.87
10	84.6	0.05	2.4	1.87
11	72.1	0.05	2.7	1.59

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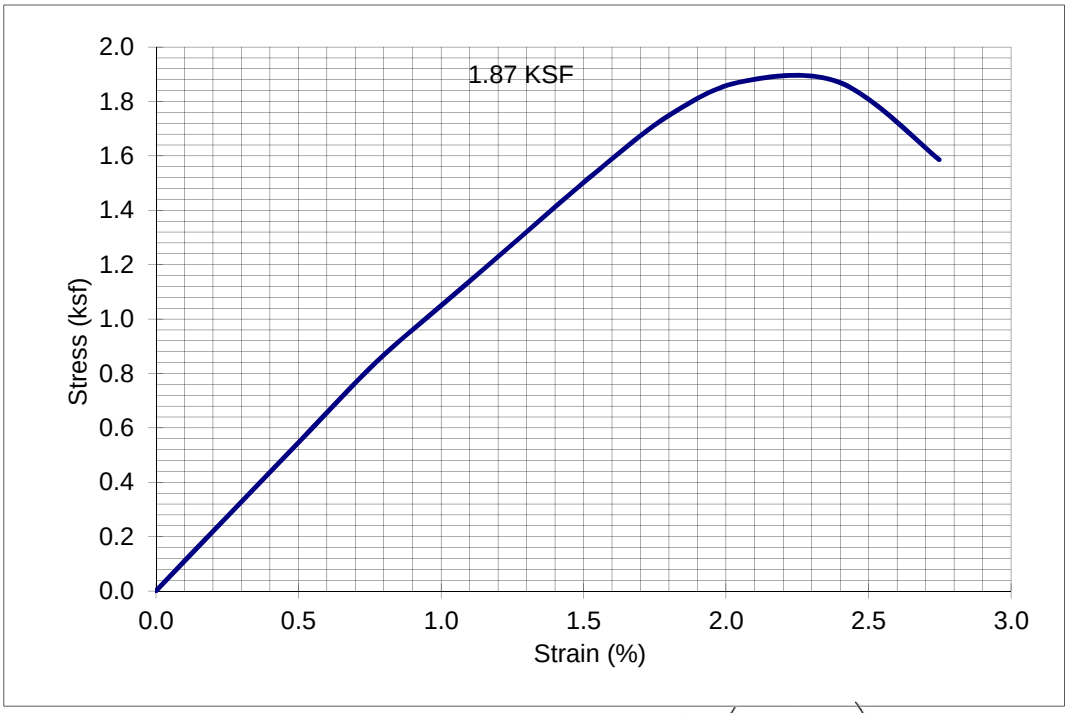
UNCONFINED COMPRESSION TEST

Project Name	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-139
Project State	: Arkansas	Sample Depth	: 17.5' to 18.0'
Laboratory #	: 251537	Date Tested	: 6/29/2016
Submitted By	: HDR | ICA	Date Reported	: 7/7/2016
Soil Type	: Tan & Gray, Clayey Sand		
Wet Density	: 118.3 pcf	Initial Height	: 5.82 in
Dry Density	: 90.8 pcf	Initial Diameter	: 2.85 in
Moisture	: 30.3 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		



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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-143
Project State	: Arkansas	Sample Depth	: 10.0' to 10.5'
Laboratory #	: 251537	Date Tested	: 6/29/2016
Submitted By	: HDR | ICA	Date Reported	: 7/7/2016

Soil Type	: Tan, Silty Sand				
Wet Density	: 120.2	pcf	Initial Height	: 5.85	in
Dry Density	: 94.1	pcf	Initial Diameter	: 2.86	in
Moisture	: 27.7	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	6.7	0.04	0.3	0.15
3	14.4	0.04	0.5	0.32
4	23.1	0.04	0.8	0.51
5	32.7	0.05	1.0	0.73
6	41.4	0.05	1.3	0.92
7	46.2	0.05	1.5	1.02
8	45.2	0.05	1.8	1.00
9	35.6	0.05	2.1	0.78
10	24.0	0.05	2.4	0.53

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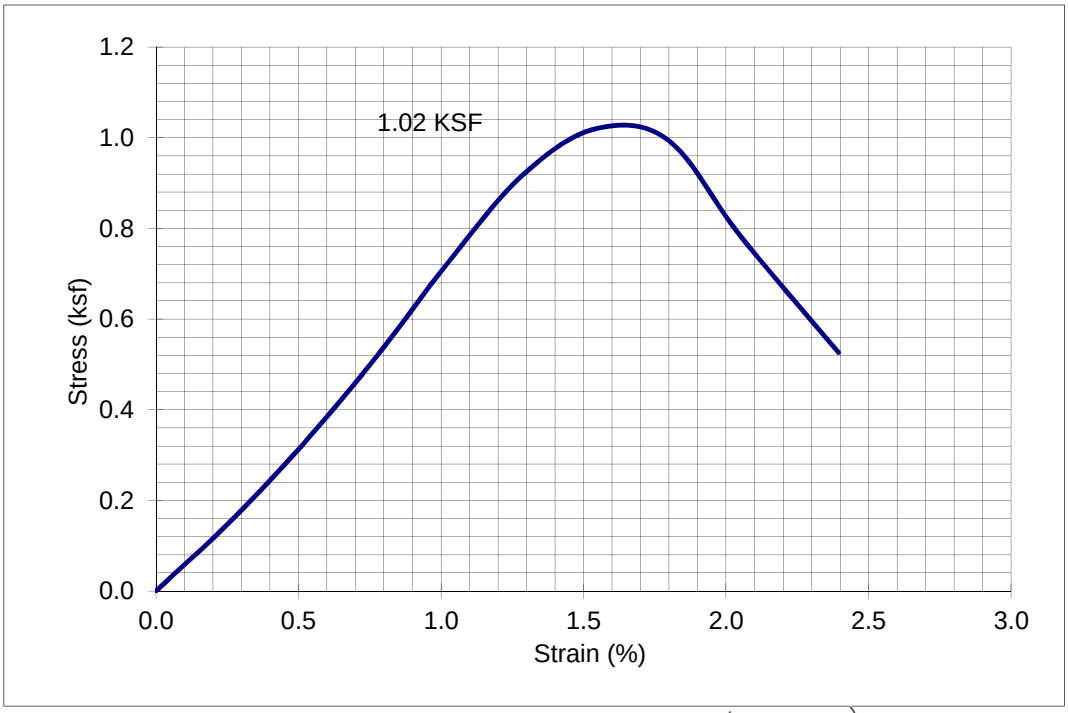
UNCONFINED COMPRESSION TEST

Project Name	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-143
Project State	: Arkansas	Sample Depth	: 10.0' to 10.5'
Laboratory #	: 251537	Date Tested	: 6/29/2016
Submitted By	: HDR | ICA	Date Reported	: 7/7/2016
Soil Type	: Tan, Silty Sand		
Wet Density	: 120.2 pcf	Initial Height	: 5.85 in
Dry Density	: 94.1 pcf	Initial Diameter	: 2.86 in
Moisture	: 27.7 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		



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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-150
Project State	: Arkansas	Sample Depth	: 10.5' to 11.0'
Laboratory #	: 251537	Date Tested	: 6/29/2016
Submitted By	: HDR | ICA	Date Reported	: 7/7/2016

Soil Type	: Brown & Gray, Silty Sand				
Wet Density	: 115.8	pcf	Initial Height	: 5.79	in
Dry Density	: 87.7	pcf	Initial Diameter	: 2.81	in
Moisture	: 32.0	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	6.7	0.04	0.3	0.16
3	13.5	0.04	0.5	0.31
4	20.2	0.04	0.8	0.47
5	26.0	0.04	1.0	0.60
6	32.7	0.04	1.3	0.75
7	39.4	0.04	1.6	0.90
8	44.2	0.04	1.8	1.01
9	42.3	0.04	2.1	0.97
10	20.2	0.04	2.4	0.46

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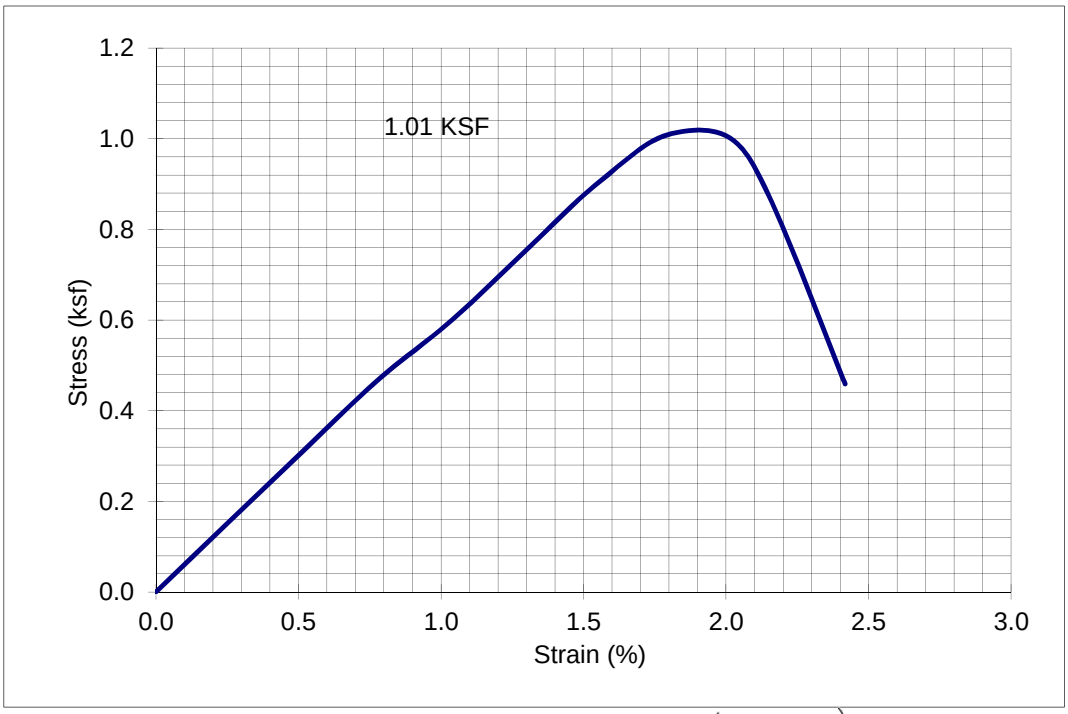
UNCONFINED COMPRESSION TEST

Project Name	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-150
Project State	: Arkansas	Sample Depth	: 10.5' to 11.0'
Laboratory #	: 251537	Date Tested	: 6/29/2016
Submitted By	: HDR | ICA	Date Reported	: 7/7/2016
Soil Type	: Brown & Gray, Silty Sand		
Wet Density	: 115.8 pcf	Initial Height	: 5.79 in
Dry Density	: 87.7 pcf	Initial Diameter	: 2.81 in
Moisture	: 32.0 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		



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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: Highway 67 Widening from Main Street to Vandenberg Blvd		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-165
Project State	: Arkansas	Sample Depth	: 5.7' to 6.2'
Laboratory #	: 251537	Date Tested	: 6/14/2015
Submitted By	: HDR | ICA	Date Reported	: 7/6/2016

Soil Type	: Brown, Sandy Silty Clay				
Wet Density	: 125.1	pcf	Initial Height	: 5.88	in
Dry Density	: 102.1	pcf	Initial Diameter	: 2.88	in
Moisture	: 22.5	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.05	0.0	0.00
2	3.8	0.05	0.3	0.08
3	5.8	0.05	0.5	0.13
4	6.7	0.05	0.8	0.15
5	7.7	0.05	1.0	0.17
6	8.2	0.05	1.3	0.18
7	8.7	0.05	1.5	0.19
8	9.6	0.05	1.8	0.21
9	11.5	0.05	2.0	0.25
10	12.5	0.05	2.4	0.27
11	13.5	0.05	2.7	0.29
12	14.4	0.05	3.1	0.31
13	15.4	0.05	3.4	0.33
14	15.9	0.05	3.7	0.34
15	16.4	0.05	4.1	0.35
16	16.8	0.05	4.4	0.36
17	17.3	0.05	4.8	0.36
18	17.8	0.05	5.1	0.37
19	18.3	0.05	5.5	0.38
20	19.2	0.05	6.0	0.40
21	19.7	0.05	6.4	0.41
22	20.2	0.05	6.8	0.42
23	21.2	0.05	7.2	0.43
24	22.1	0.05	7.7	0.45
25	22.1	0.05	8.1	0.45
26	22.1	0.05	8.5	0.45
27	22.1	0.05	9.4	0.44

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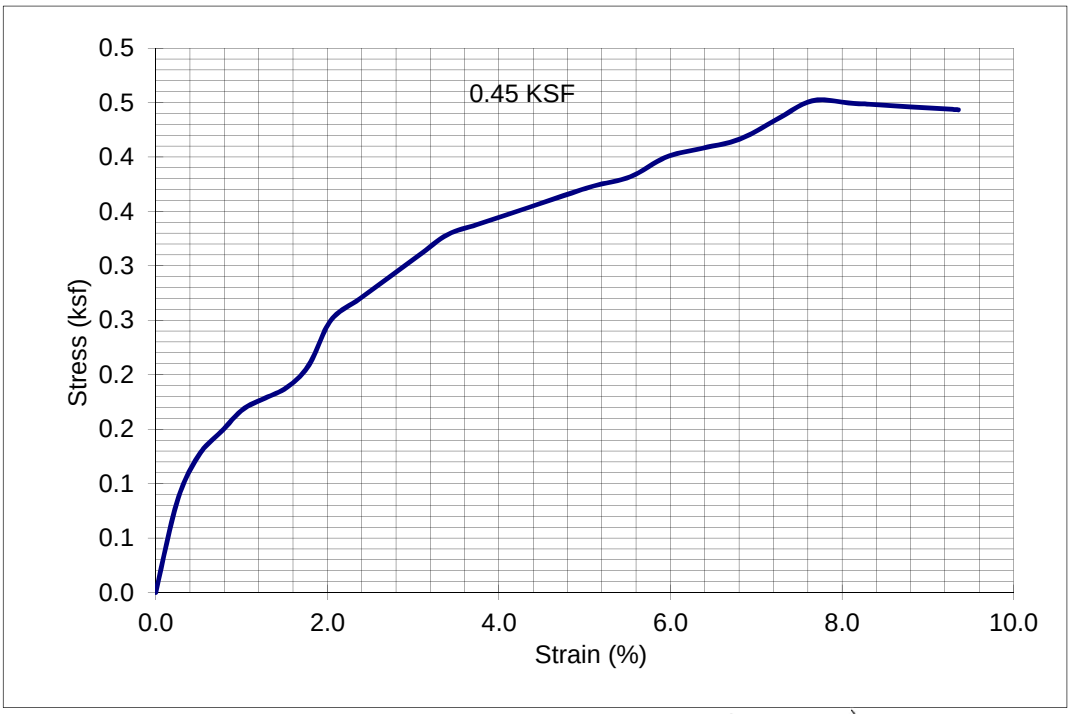
UNCONFINED COMPRESSION TEST

Project Name	: Highway 67 Widening from Main Street to Vandenberg Blvd		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-165
Project State	: Arkansas	Sample Depth	: 5.7' to 6.2'
Laboratory #	: 251537	Date Tested	: 6/14/2015
Submitted By	: HDR | ICA	Date Reported	: 7/6/2016
Soil Type	: Brown, Sandy Silty Clay		
Wet Density	: 125.1 pcf	Initial Height	: 5.88 in
Dry Density	: 102.1 pcf	Initial Diameter	: 2.88 in
Moisture	: 22.5 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		



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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: Highway 67 Widening from Main Street to Vandenberg Blvd		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-169
Project State	: Arkansas	Sample Depth	: 10.5' to 11.0'
Laboratory #	: 251537	Date Tested	: 6/14/2015
Submitted By	: HDR | ICA	Date Reported	: 7/6/2016

Soil Type	: Red & Gray, Clayey Sand				
Wet Density	: 118.4	pcf	Initial Height	: 5.87	in
Dry Density	: 90.3	pcf	Initial Diameter	: 2.85	in
Moisture	: 31.2	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	8.7	0.04	0.3	0.20
3	22.1	0.04	0.5	0.50
4	37.5	0.04	0.8	0.84
5	51.9	0.04	1.0	1.16
6	63.5	0.04	1.3	1.42
7	73.1	0.04	1.5	1.63
8	79.8	0.05	1.8	1.77
9	84.6	0.05	2.0	1.87
10	85.6	0.05	2.4	1.89
11	76.0	0.05	2.7	1.67
12	52.9	0.05	3.1	1.16

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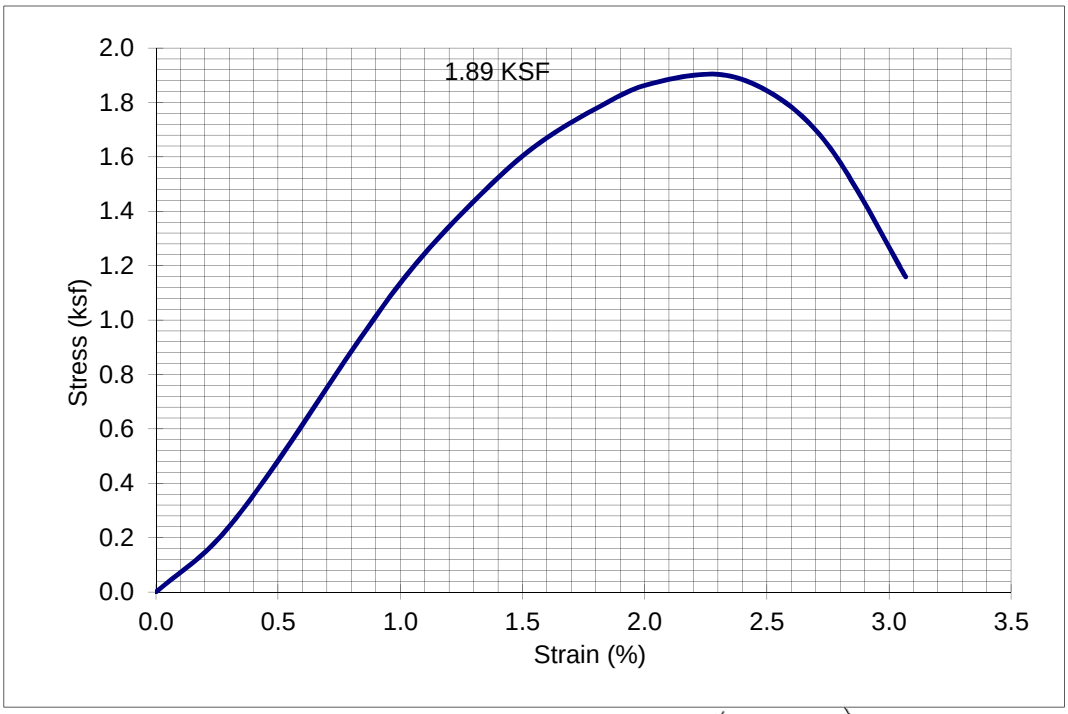
UNCONFINED COMPRESSION TEST

Project Name	: Highway 67 Widening from Main Street to Vandenberg Blvd		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-169
Project State	: Arkansas	Sample Depth	: 10.5' to 11.0'
Laboratory #	: 251537	Date Tested	: 6/14/2015
Submitted By	: HDR | ICA	Date Reported	: 7/6/2016
Soil Type	: Red & Gray, Clayey Sand		
Wet Density	: 118.4 pcf	Initial Height	: 5.87 in
Dry Density	: 90.3 pcf	Initial Diameter	: 2.85 in
Moisture	: 31.2 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		



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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: Highway 67 Widening from Main Street to Vandenberg Blvd		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-171
Project State	: Arkansas	Sample Depth	: 5.7' to 6.2'
Laboratory #	: 251537	Date Tested	: 6/14/2015
Submitted By	: HDR | ICA	Date Reported	: 7/6/2016

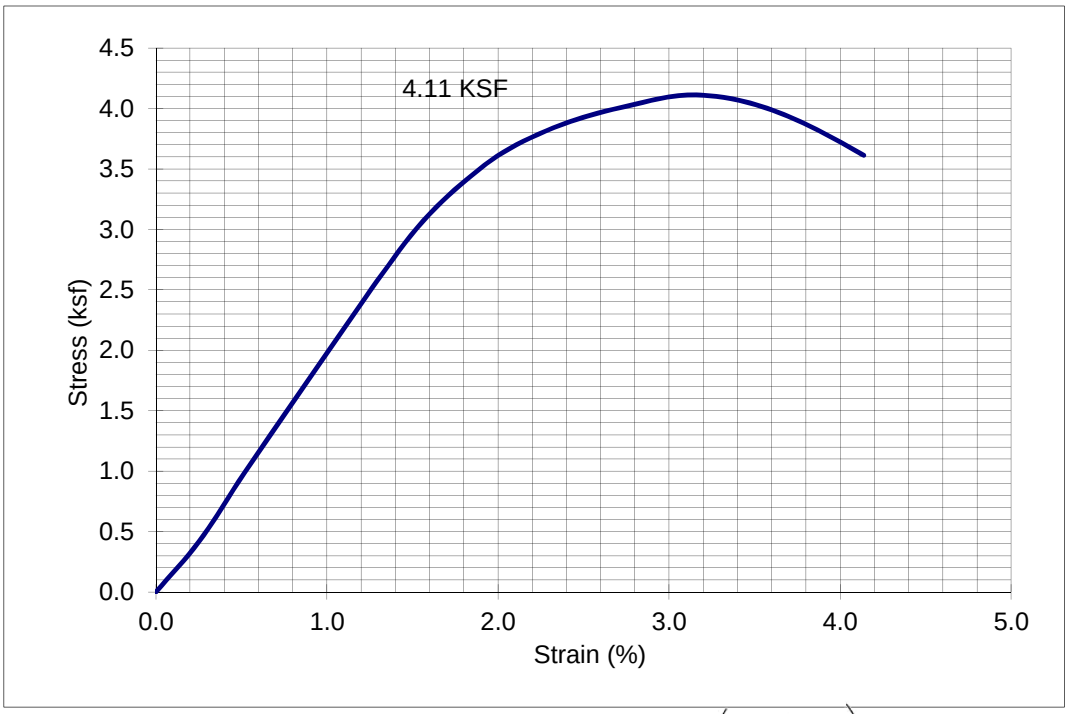
Soil Type	: Brown, Sandy Lean Clay				
Wet Density	: 127.1	pcf	Initial Height	: 5.80	in
Dry Density	: 103.2	pcf	Initial Diameter	: 2.86	in
Moisture	: 23.1	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	19.2	0.04	0.3	0.43
3	44.2	0.04	0.5	0.99
4	68.3	0.05	0.8	1.52
5	92.3	0.05	1.0	2.05
6	116.4	0.05	1.3	2.57
7	138.5	0.05	1.6	3.05
8	154.9	0.05	1.8	3.40
9	167.4	0.05	2.1	3.67
10	177.9	0.05	2.4	3.89
11	184.7	0.05	2.8	4.02
12	189.5	0.05	3.1	4.11
13	187.6	0.05	3.4	4.05
14	179.9	0.05	3.8	3.87
15	168.3	0.05	4.1	3.61

UNCONFINED COMPRESSION TEST

Project Name	: Highway 67 Widening from Main Street to Vandenberg Blvd		
Project #	: 251537	Sample #	: ST-1
Project County	: Pulaski	Sample Loc.	: Boring No. B-171
Project State	: Arkansas	Sample Depth	: 5.7' to 6.2'
Laboratory #	: 251537	Date Tested	: 6/14/2015
Submitted By	: HDR | ICA	Date Reported	: 7/6/2016
Soil Type	: Brown, Sandy Lean Clay		
Wet Density	: 127.1 pcf	Initial Height	: 5.80 in
Dry Density	: 103.2 pcf	Initial Diameter	: 2.86 in
Moisture	: 23.1 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-117
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 10.4' to 10.9'
LABORATORY #	: 251537	DATE TESTED	: 6/14/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016
SOIL TYPE	: Red & Gray, Clayey Sand		

WET DENSITY	: 118.39 pcf	DELTA HEIGHT	: 0.45 cm	INITIAL HEIGHT	: 14.88 cm
DRY DENSITY	: 91.97 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.24 cm
MOISTURE	: 28.72 %	CHAMBER PRES.	: 9.04 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	9.04	9.04	1.00
2	0.09	9.04	10.13	1.12
3	0.18	9.04	11	1.22
4	0.26	9.04	11.55	1.28
5	0.35	9.04	12.2	1.35
6	0.44	9.04	12.74	1.41
7	0.53	9.04	13.28	1.47
8	1.06	9.04	21.75	2.41
9	1.59	9.04	32.34	3.58
10	2.11	9.04	38.73	4.29
11	2.64	9.04	39.07	4.32
12	3.17	9.04	39.22	4.34
13	3.52	9.04	39.29	4.35
14	4.40	9.04	39.25	4.34
15	5.28	9.04	39.11	4.33
16	6.16	9.04	38.94	4.31
17	7.04	9.04	38.69	4.28
18	7.93	9.04	38.57	4.27
19	8.81	9.04	38.62	4.27
20	9.69	9.04	38.5	4.26
21	10.57	9.04	38.37	4.25
22	11.45	9.04	38.4	4.25
23	12.33	9.04	38.42	4.25
24	13.21	9.04	38.28	4.24
25	14.09	9.04	38.14	4.22
26	14.97	9.04	37.99	4.2
27	15.85	9.04	37.84	4.19
28	16.73	9.04	37.99	4.2
29	17.61	9.04	37.83	4.19
30	18.49	9.04	39.28	4.35
31	19.37	9.04	40.11	4.44
32	20.25	9.04	39.91	4.42

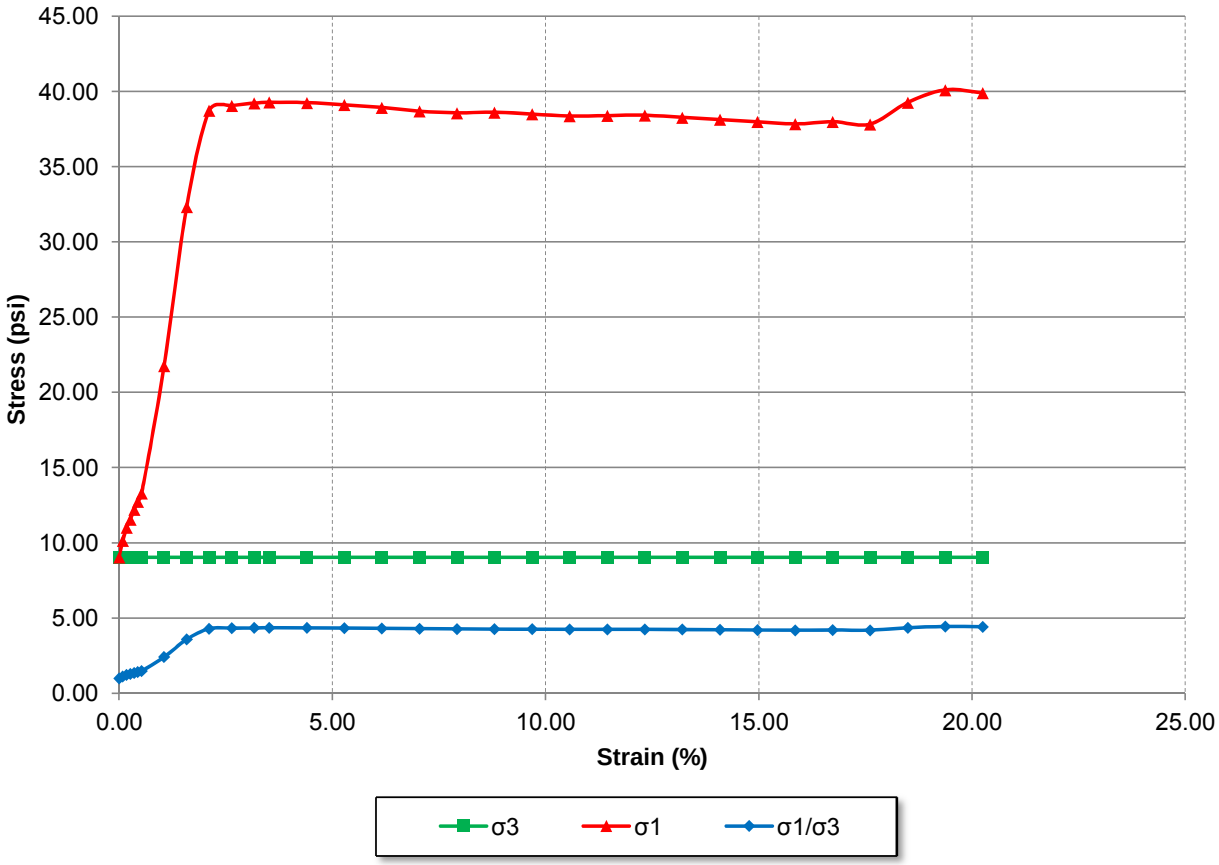
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blv		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-117
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 10.4' to 10.9'
LABORATORY #	: 251537	DATE TESTED	: 6/14/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

FINAL MOISTURE	: 28.72 %	EFF. CONS. STRESS	: 9.04 psi
FINAL HEIGHT	: 11.5 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.08 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-117
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 10.4' to 10.9'
LABORATORY #	: 251537	DATE TESTED	: 6/14/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

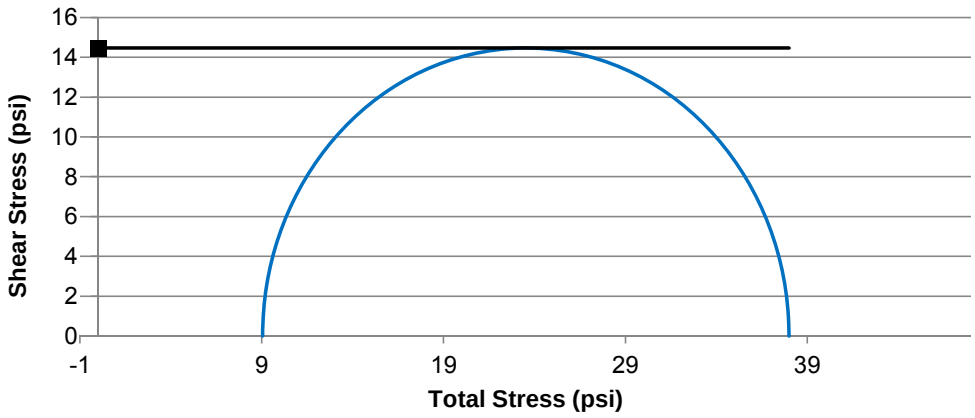
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	9.04 psi	37.99 psi

Compressive Strength =	4169 psf
Cohesion =	2084 psf
Phi =	0 deg
Tan (Phi) =	0

At Maximum Deviator Stress 15%

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-120
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 20.9' to 21.4'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016
SOIL TYPE	: Gray, Sandy Elastic Silt		

WET DENSITY	: 119.23 pcf	DELTA HEIGHT	: 0.08 cm	INITIAL HEIGHT	: 14.89 cm
DRY DENSITY	: 91.01 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.25 cm
MOISTURE	: 31.01 %	CHAMBER PRES.	: 12.03 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	12.03	12.03	1.00
2	0.09	12.03	12.58	1.05
3	0.17	12.03	13.7	1.14
4	0.26	12.03	15.26	1.27
5	0.34	12.03	16.82	1.4
6	0.43	12.03	19.1	1.59
7	0.51	12.03	28.61	2.38
8	1.03	12.03	45.77	3.81
9	1.54	12.03	61.16	5.09
10	2.06	12.03	71.94	5.98
11	2.57	12.03	73.45	6.11
12	3.09	12.03	69.76	5.8
13	3.43	12.03	68.05	5.66

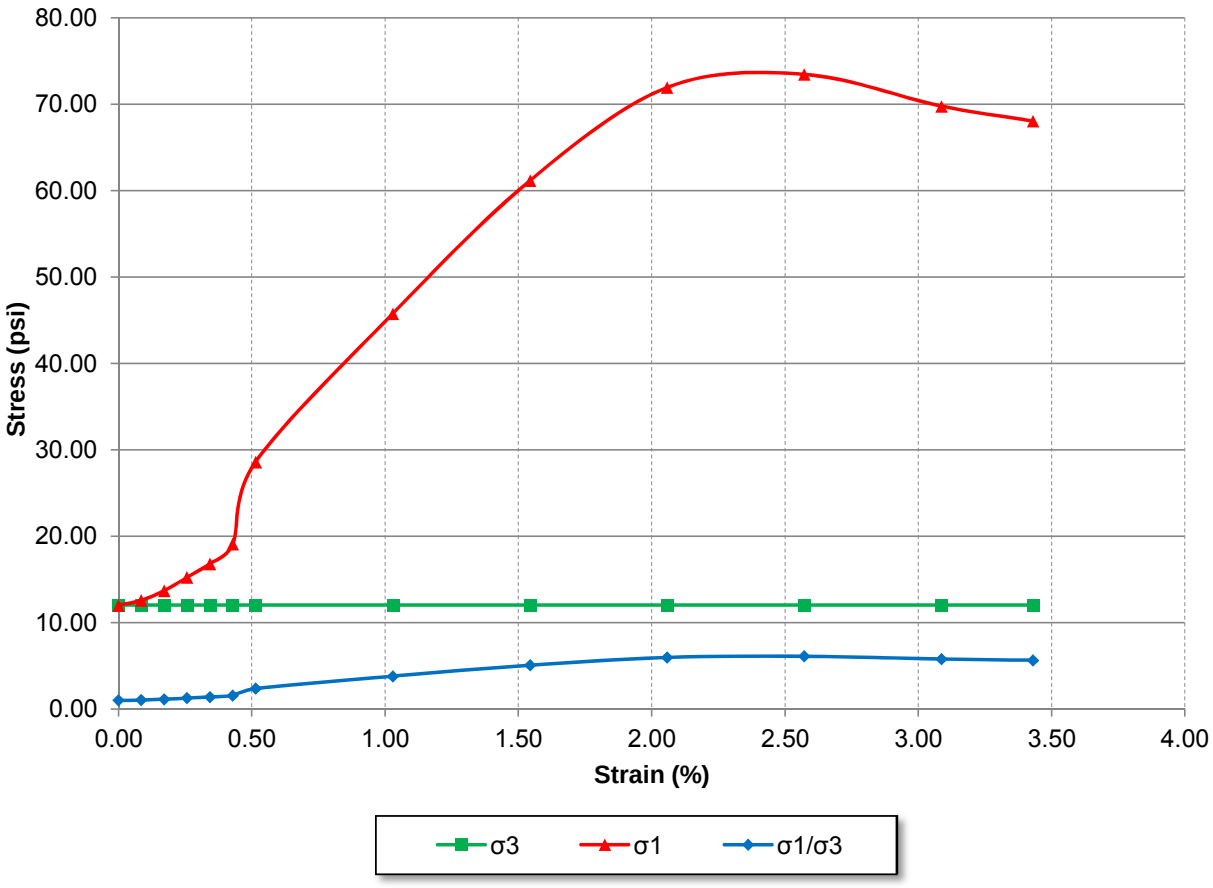
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blv		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-120
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 20.9' to 21.4'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

FINAL MOISTURE	: 31.01 %	EFF. CONS. STRESS	: 12.03 psi
FINAL HEIGHT	: 14.3 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 7.38 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

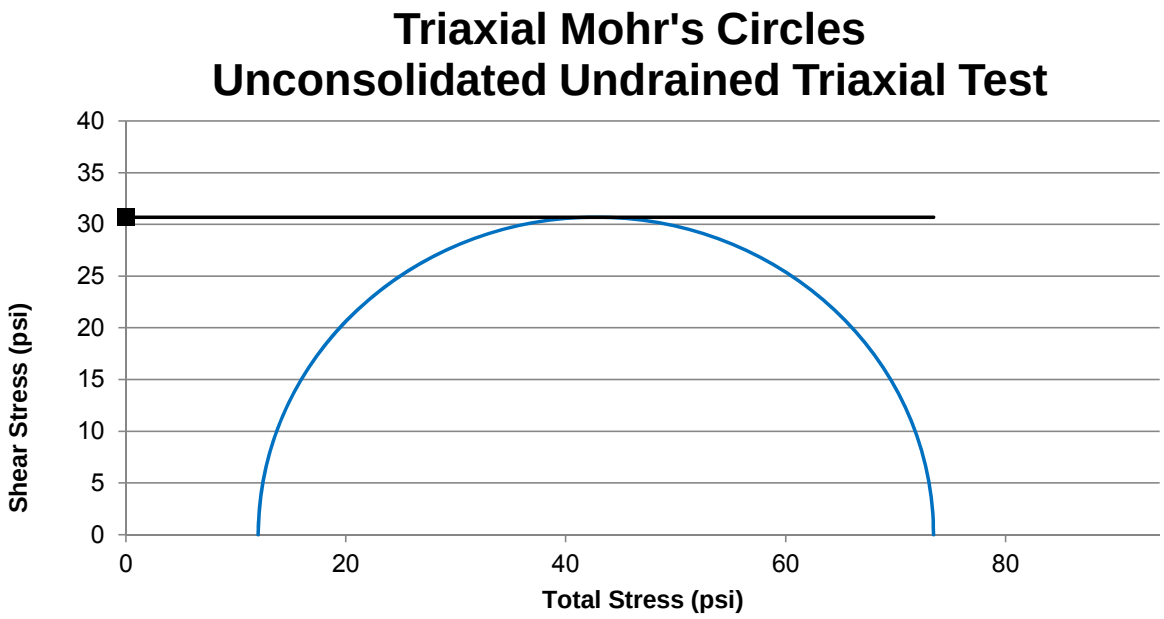
PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-120
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 20.9' to 21.4'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	12.03 psi	73.45 psi

Compressive Strength =	8845 psf
Cohesion =	4422 psf
Phi =	0 deg
Tan (Phi) =	0

Maximum Deviator Stress



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-123
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 25.1' to 25.6'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016
SOIL TYPE	: Brown & Gray, Sandy Lean Clay		
WET DENSITY	: 131.08 pcf	DELTA HEIGHT	: 0.45 cm
DRY DENSITY	: 109.16 pcf	DELTA VOLUME	: NA
MOISTURE	: 20.08 %	CHAMBER PRES.	: 20.99 psi

INITIAL HEIGHT	: 14.6 cm		
INITIAL DIAMETER	: 7.25 cm		
COMMENTS	: AASHTO T-296		

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	20.99	20.99	1.00
2	0.09	20.99	23.5	1.12
3	0.18	20.99	25.02	1.19
4	0.27	20.99	26.21	1.25
5	0.36	20.99	30.83	1.47
6	0.45	20.99	36.19	1.72
7	0.54	20.99	40.57	1.93
8	1.08	20.99	51.82	2.47
9	1.62	20.99	54.93	2.62
10	2.15	20.99	57.37	2.73
11	2.69	20.99	58.91	2.81
12	3.23	20.99	59.74	2.85
13	3.59	20.99	60.11	2.86
14	4.49	20.99	60.97	2.9
15	5.39	20.99	61.72	2.94
16	6.28	20.99	62.05	2.96
17	7.18	20.99	62.28	2.97
18	8.08	20.99	62.44	2.97
19	8.98	20.99	62.46	2.98
20	9.88	20.99	62.47	2.98
21	10.77	20.99	62.73	2.99
22	11.67	20.99	62.73	2.99
23	12.57	20.99	62.71	2.99
24	13.47	20.99	62.61	2.98
25	14.37	20.99	62.66	2.99
26	15.26	20.99	62.62	2.98
27	16.16	20.99	62.34	2.97
28	17.06	20.99	62.13	2.96
29	17.96	20.99	61.92	2.95
30	18.85	20.99	61.78	2.94
31	19.75	20.99	61.33	2.92
32	20.65	20.99	61.03	2.91

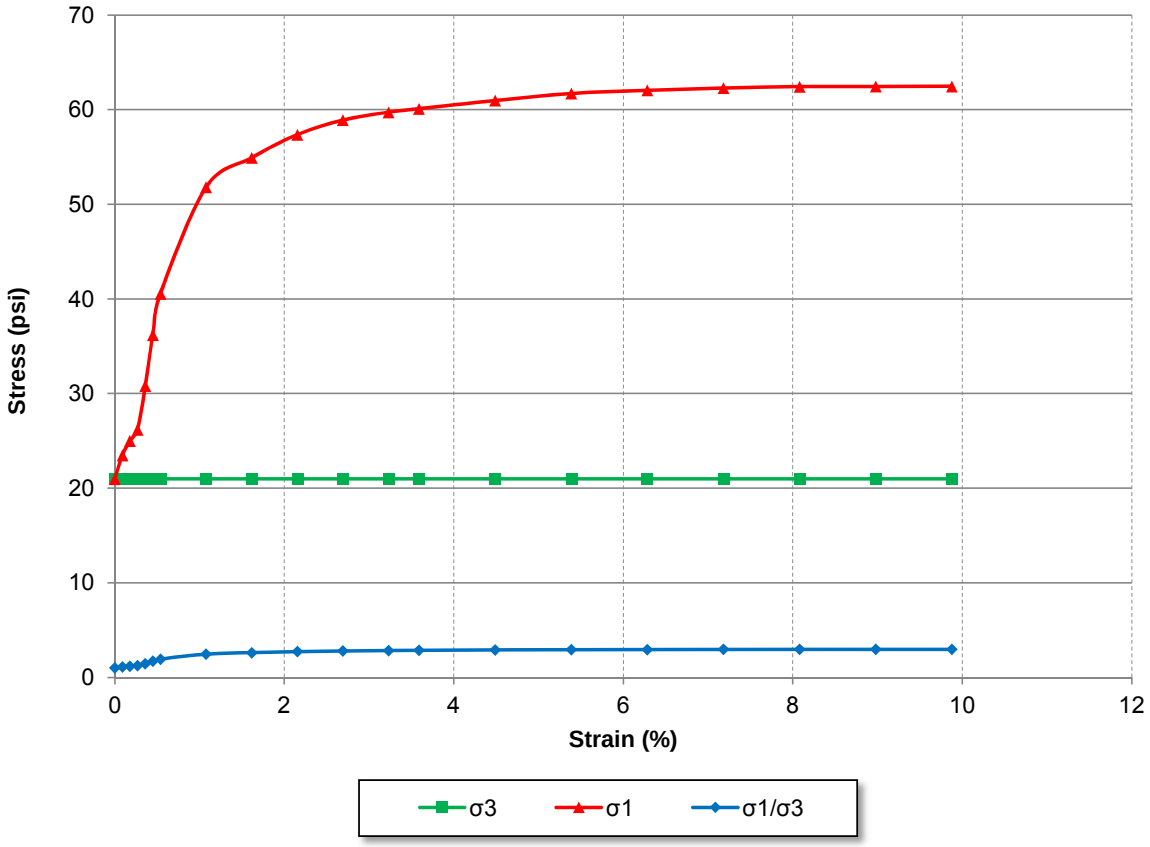
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-123
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 25.1' to 25.6'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

FINAL MOISTURE	: 20.08 %	EFF. CONS. STRESS	: 20.99 psi
FINAL HEIGHT	: 11.22 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.1 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-123
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 25.1' to 25.6'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

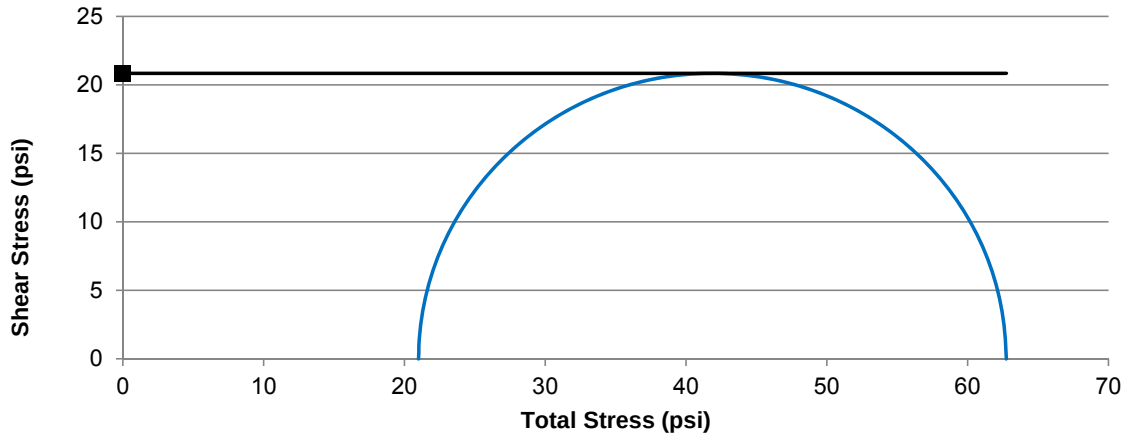
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	20.99 psi	62.73 psi

Compressive Strength =	6011	psf
Cohesion =	3005	psf
Phi =	0	deg
Tan (Phi) =	0	

Maximum Deviator Stress

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-126
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 14.9' to 15.4'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016
SOIL TYPE	: Gray & Brown, Sandy Fat Clay		
WET DENSITY	: 130.71 pcf	DELTA HEIGHT	: 0.45 cm
DRY DENSITY	: 108.09 pcf	DELTA VOLUME	: NA
MOISTURE	: 20.94 %	CHAMBER PRES.	: 13.02 psi

INITIAL HEIGHT	: 14.78 cm	
INITIAL DIAMETER	: 7.23 cm	
COMMENTS	: AASHTO T-296	

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	13.02	13.02	1.00
2	0.09	13.02	14.77	1.13
3	0.18	13.02	15.65	1.2
4	0.27	13.02	16.52	1.27
5	0.35	13.02	17.28	1.33
6	0.44	13.02	17.93	1.38
7	0.53	13.02	18.47	1.42
8	1.06	13.02	32.59	2.5
9	1.60	13.02	41.22	3.17
10	2.13	13.02	42.87	3.29
11	2.66	13.02	43.07	3.31
12	3.19	13.02	43.19	3.32
13	3.54	13.02	43.25	3.32
14	4.43	13.02	43.32	3.33
15	5.32	13.02	43.45	3.34
16	6.20	13.02	44.35	3.41
17	7.09	13.02	45.05	3.46
18	7.98	13.02	45.58	3.5
19	8.86	13.02	46.24	3.55
20	9.75	13.02	46.57	3.58
21	10.63	13.02	47.04	3.61
22	11.52	13.02	47.34	3.64
23	12.41	13.02	47.47	3.65
24	13.29	13.02	47.74	3.67
25	14.18	13.02	48	3.69
26	15.06	13.02	47.94	3.68
27	15.95	13.02	48.15	3.7
28	16.84	13.02	48.28	3.71
29	17.72	13.02	48.53	3.73
30	18.61	13.02	48.5	3.72
31	19.50	13.02	48.66	3.74
32	20.38	13.02	48.74	3.74

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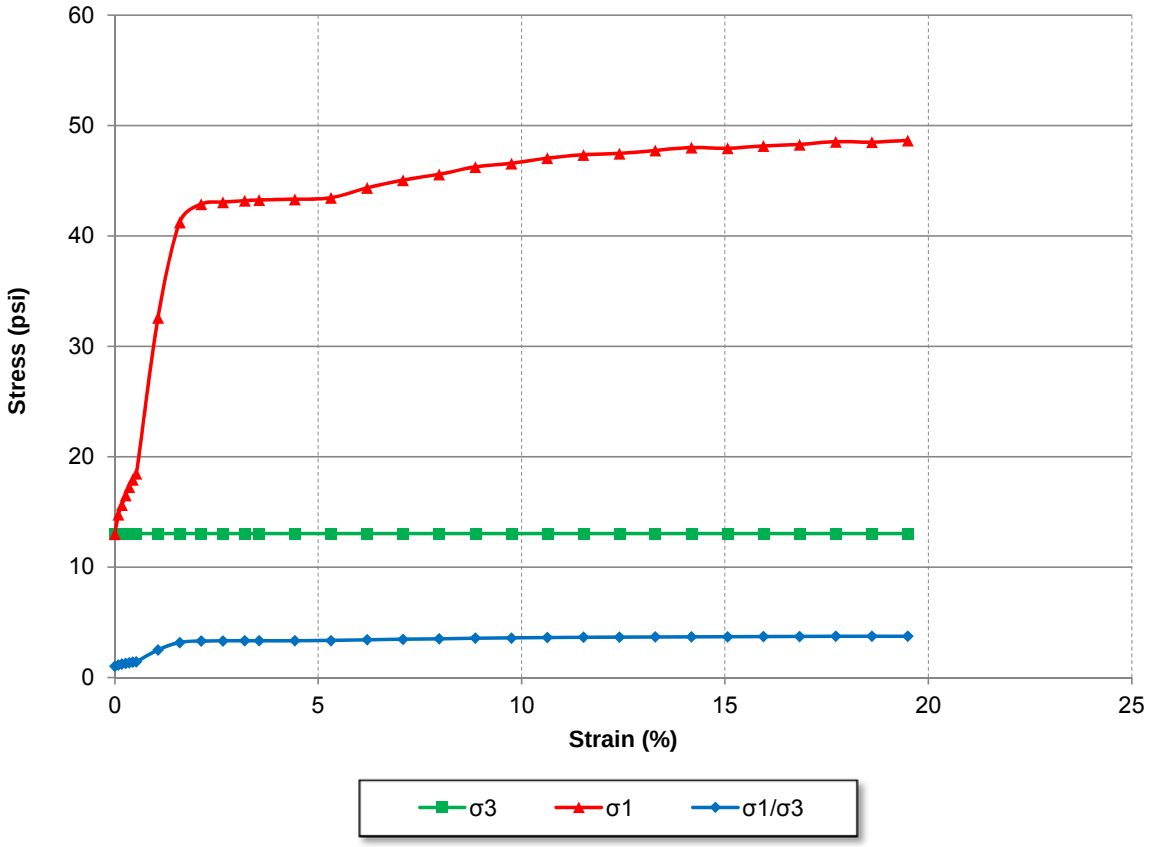
TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-126
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 14.9' to 15.4'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

FINAL MOISTURE	: 20.94 %	EFF. CONS. STRESS	: 13.02 psi
FINAL HEIGHT	: 11.41 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.07 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

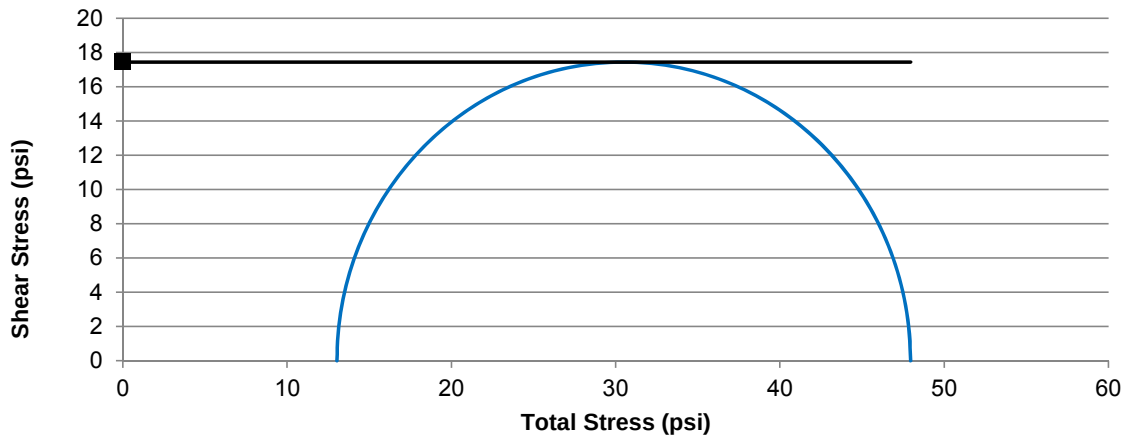
PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-126
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 14.9' to 15.4'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	13.02 psi	47.95 psi

Compressive Strength =	5029	psf
Cohesion =	2515	psf
Phi =	0	deg
Tan (Phi) =	0	

At Maximum Deviator Stress 15%



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-130
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 15.1' to 15.6'
LABORATORY #	: 251537	DATE TESTED	: 6/14/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

SOIL TYPE	: Red & Tan, Silty Sand				
WET DENSITY	: 111.62 pcf	DELTA HEIGHT	: 0.14 cm	INITIAL HEIGHT	: 14.49 cm
DRY DENSITY	: 81.86 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.3 cm
MOISTURE	: 36.35 %	CHAMBER PRES.	: 8.04 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	8.04	8.04	1.00
2	0.09	8.04	8.81	1.1
3	0.18	8.04	9.47	1.18
4	0.27	8.04	9.9	1.23
5	0.35	8.04	10.45	1.3
6	0.44	8.04	10.89	1.35
7	0.53	8.04	11.32	1.41
8	1.06	8.04	15.93	1.98
9	1.59	8.04	28.06	3.49
10	2.12	8.04	37.78	4.7
11	2.65	8.04	38.26	4.76
12	3.18	8.04	38.52	4.79
13	3.54	8.04	38.62	4.8
14	4.42	8.04	38.52	4.79
15	5.31	8.04	38.2	4.75
16	6.19	8.04	37.85	4.71

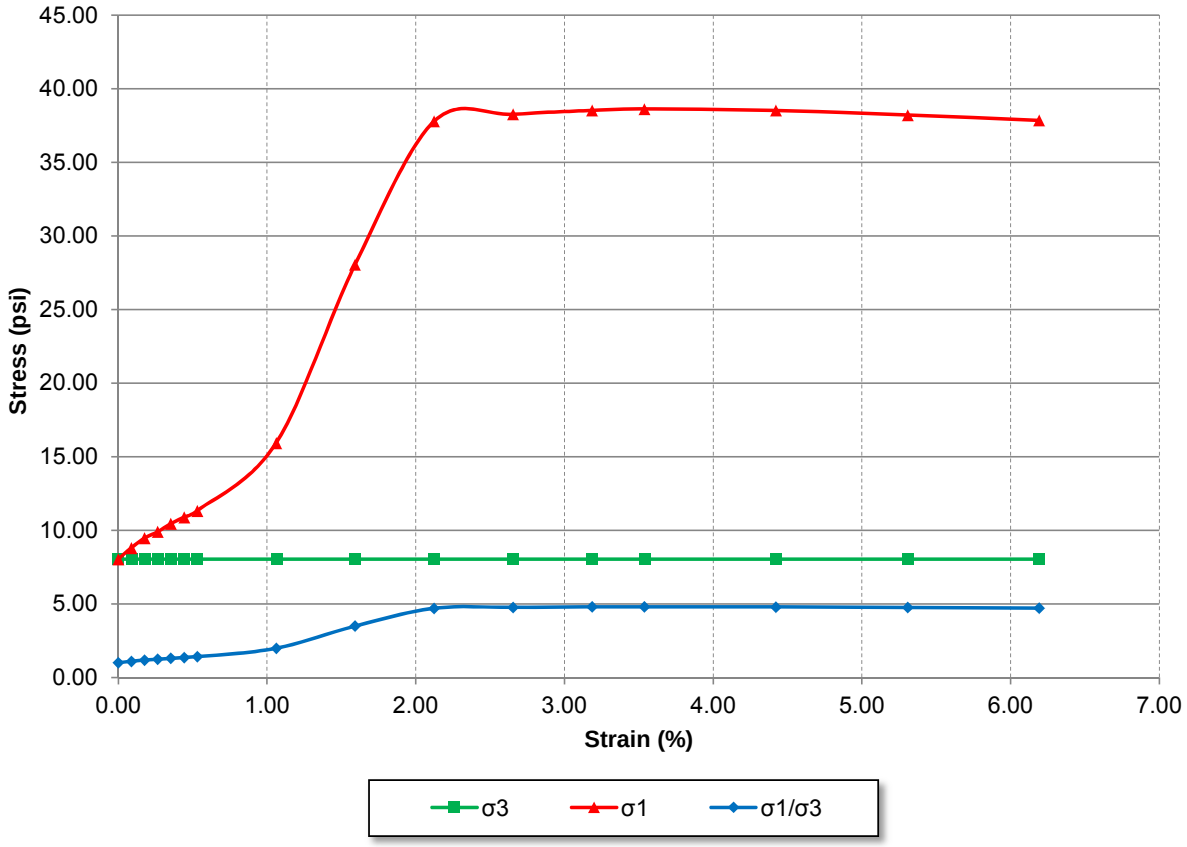
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-130
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 15.1' to 15.6'
LABORATORY #	: 251537	DATE TESTED	: 6/14/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

FINAL MOISTURE	: 36.35 %	EFF. CONS. STRESS	: 8.04 psi
FINAL HEIGHT	: 13.47 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 7.53 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-130
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 15.1' to 15.6'
LABORATORY #	: 251537	DATE TESTED	: 6/14/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

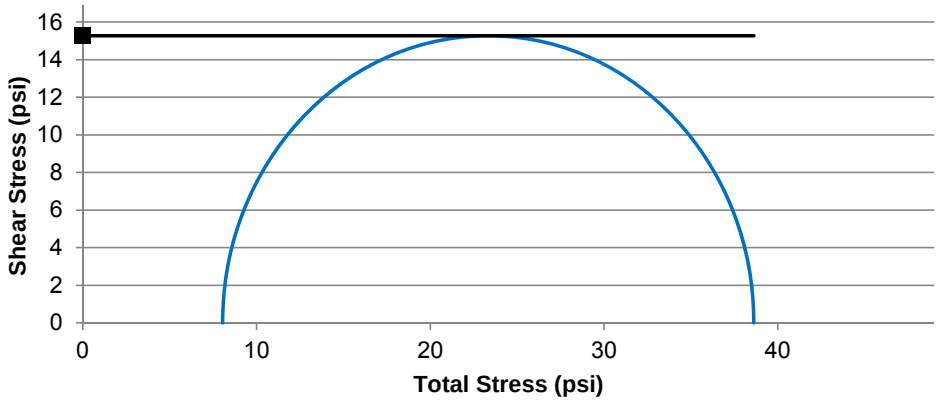
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	8.04 psi	38.62 psi

Compressive Strength =	4404	psf
Cohesion =	2202	psf
Phi =	0	deg
Tan (Phi) =	0	

Maximum Deviator Stress

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-131
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 24.0' to 24.5'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016
SOIL TYPE	: Brown & Gray, Sandy Silty Clay		
WET DENSITY	: 135.44 pcf	DELTA HEIGHT	: 0.45 cm
DRY DENSITY	: 116.59 pcf	DELTA VOLUME	: NA
MOISTURE	: 16.17 %	CHAMBER PRES.	: 19.99 psi

INITIAL HEIGHT	: 14.84 cm	
INITIAL DIAMETER	: 7.15 cm	
COMMENTS	: AASHTO T-296	

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	19.99	19.99	1.00
2	0.09	19.99	23.13	1.16
3	0.18	19.99	24.25	1.21
4	0.26	19.99	25.03	1.25
5	0.35	19.99	26.08	1.3
6	0.44	19.99	29.09	1.45
7	0.53	19.99	31.59	1.58
8	1.06	19.99	44.51	2.23
9	1.59	19.99	50.59	2.53
10	2.12	19.99	50.87	2.54
11	2.65	19.99	51.14	2.56
12	3.18	19.99	51.29	2.57
13	3.53	19.99	51.39	2.57
14	4.41	19.99	52.48	2.62
15	5.30	19.99	53.74	2.69
16	6.18	19.99	54.81	2.74
17	7.06	19.99	55.68	2.78
18	7.94	19.99	56.35	2.82
19	8.83	19.99	56.67	2.83
20	9.71	19.99	57.15	2.86
21	10.59	19.99	57.83	2.89
22	11.47	19.99	58.08	2.9
23	12.36	19.99	58.23	2.91
24	13.24	19.99	58.38	2.92
25	14.12	19.99	58.73	2.94
26	15.00	19.99	58.78	2.94
27	15.89	19.99	58.89	2.95
28	16.77	19.99	58.97	2.95
29	17.65	19.99	59.51	2.98
30	18.53	19.99	59.48	2.97
31	19.42	19.99	59.44	2.97
32	20.30	19.99	59.39	2.97

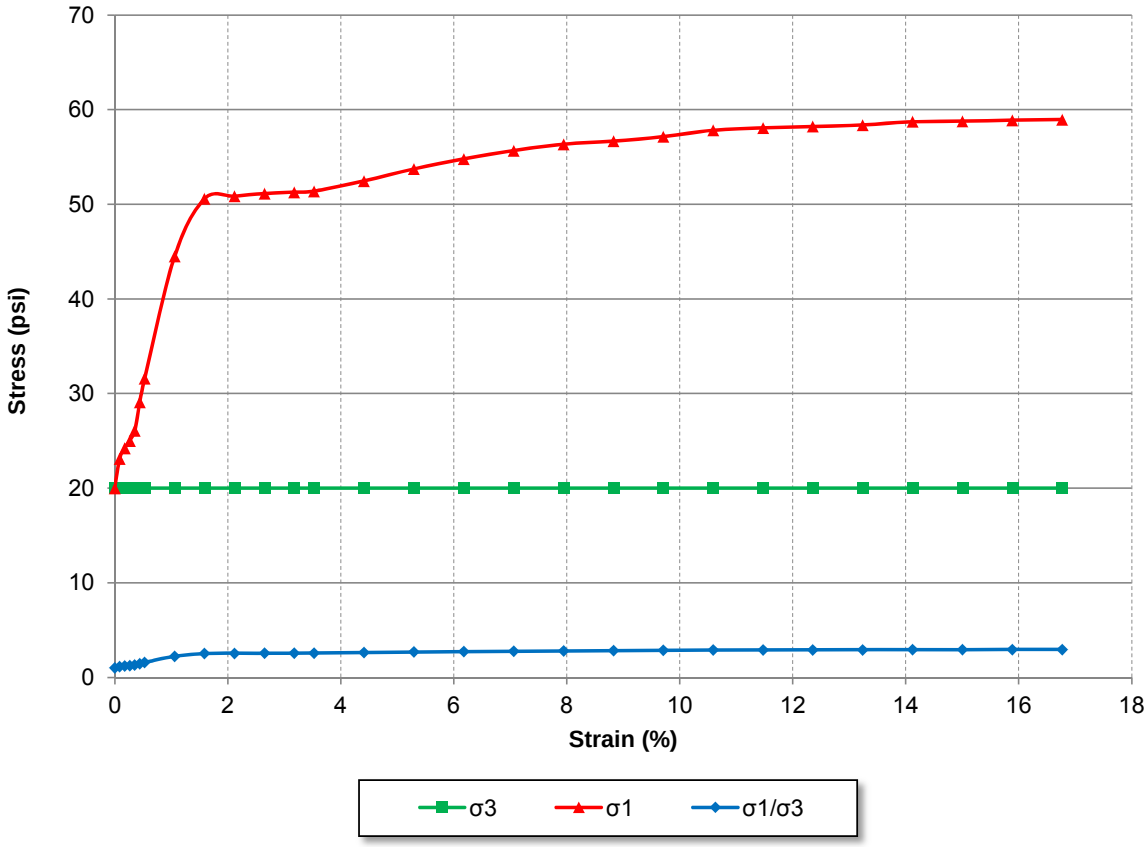
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-131
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 24.0' to 24.5'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

FINAL MOISTURE	: 16.17 %	EFF. CONS. STRESS	: 19.99 psi
FINAL HEIGHT	: 11.47 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 7.98 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

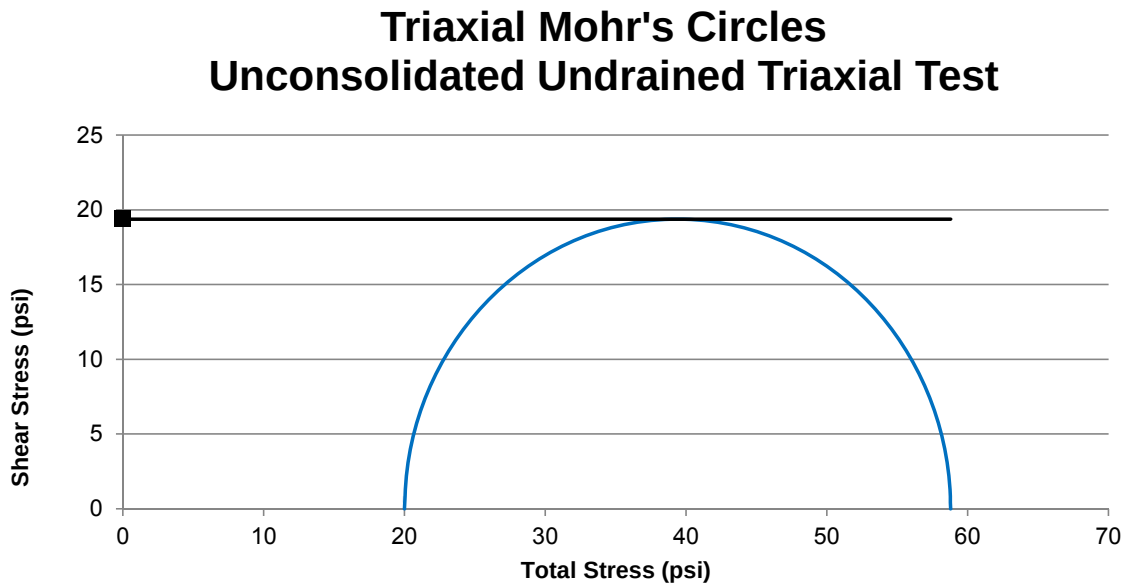
PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-131
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 24.0' to 24.5'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	19.99 psi	58.78 psi

Compressive Strength =	5585	psf
Cohesion =	2793	psf
Phi =	0	deg
Tan (Phi) =	0	

At Maximum Deviator Stress 15%



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-141
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 15.3' to 15.8'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016
SOIL TYPE	: Tan, Clayey Sand		

WET DENSITY	: 117.63 pcf	DELTA HEIGHT	: 0.45 cm	INITIAL HEIGHT	: 14.78 cm
DRY DENSITY	: 90.63 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.2 cm
MOISTURE	: 29.78 %	CHAMBER PRES.	: 12.03 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	12.03	12.03	1.00
2	0.09	12.03	13.13	1.09
3	0.18	12.03	13.68	1.14
4	0.27	12.03	13.9	1.16
5	0.35	12.03	14.23	1.18
6	0.44	12.03	14.56	1.21
7	0.53	12.03	14.89	1.24
8	1.06	12.03	16.3	1.36
9	1.60	12.03	18.45	1.53
10	2.13	12.03	23.78	1.98
11	2.66	12.03	29.05	2.42
12	3.19	12.03	33.78	2.81
13	3.55	12.03	36.1	3
14	4.43	12.03	40.64	3.38
15	5.32	12.03	41.09	3.42
16	6.21	12.03	40.99	3.41
17	7.09	12.03	40.86	3.4
18	7.98	12.03	40.68	3.38
19	8.87	12.03	40.54	3.37
20	9.75	12.03	40.4	3.36
21	10.64	12.03	40.25	3.35
22	11.53	12.03	40.07	3.33
23	12.41	12.03	39.88	3.32
24	13.30	12.03	39.76	3.31
25	14.19	12.03	39.6	3.29
26	15.07	12.03	39.44	3.28
27	15.96	12.03	39.62	3.29
28	16.85	12.03	39.93	3.32
29	17.73	12.03	40.08	3.33
30	18.62	12.03	40.37	3.36
31	19.51	12.03	40.2	3.34
32	20.39	12.03	40.04	3.33

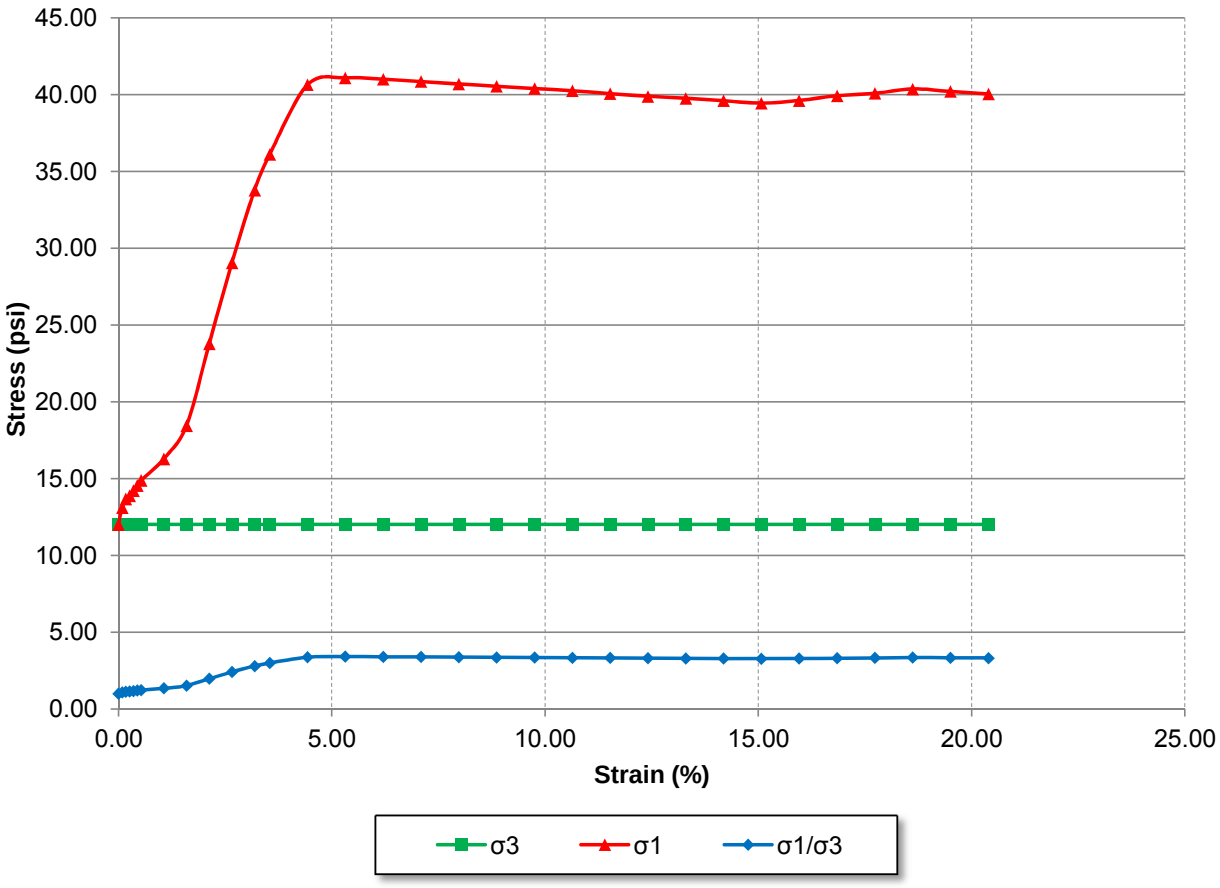
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blv		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-141
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 15.3' to 15.8'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

FINAL MOISTURE	: 29.78 %	EFF. CONS. STRESS	: 12.03 psi
FINAL HEIGHT	: 11.4 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.03 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

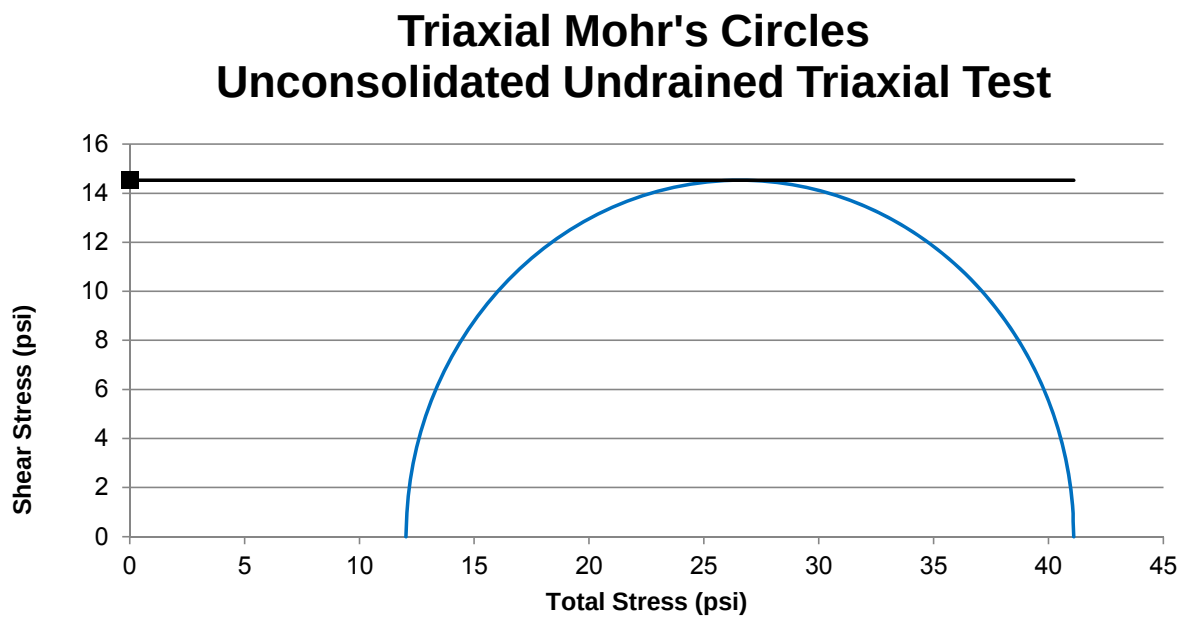
PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-141
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 15.3' to 15.8'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	12.03 psi	41.09 psi

Compressive Strength =	4186 psf
Cohesion =	2093 psf
Phi =	0 deg
Tan (Phi) =	0

Maximum Deviator Stress



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-158
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 6.9' to 7.4'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016
SOIL TYPE	: Brown & Gray, Sandy Lean Clay		
WET DENSITY	: 132.2 pcf	DELTA HEIGHT	: 0.33 cm
DRY DENSITY	: 109.09 pcf	DELTA VOLUME	: NA
MOISTURE	: 21.19 %	CHAMBER PRES.	: 6.05 psi

INITIAL HEIGHT	: 14.77 cm		
INITIAL DIAMETER	: 7.18 cm		
COMMENTS	: AASHTO T-296		

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	6.05	6.05	1.00
2	0.09	6.05	6.38	1.06
3	0.18	6.05	6.49	1.07
4	0.26	6.05	6.61	1.09
5	0.35	6.05	6.72	1.11
6	0.44	6.05	6.72	1.11
7	0.53	6.05	6.83	1.13
8	1.06	6.05	7.38	1.22
9	1.58	6.05	7.7	1.27
10	2.11	6.05	8.24	1.36
11	2.64	6.05	8.56	1.41
12	3.17	6.05	8.98	1.48
13	3.52	6.05	9.18	1.52
14	4.40	6.05	9.8	1.62
15	5.28	6.05	10.08	1.67
16	6.16	6.05	10.57	1.75
17	7.04	6.05	10.84	1.79
18	7.92	6.05	10.9	1.8
19	8.80	6.05	11.16	1.84
20	9.68	6.05	11.56	1.91
21	10.56	6.05	11.96	1.98
22	11.44	6.05	11.9	1.97
23	12.32	6.05	12.28	2.03
24	13.20	6.05	12.22	2.02
25	14.08	6.05	11.73	1.94
26	14.96	6.05	11.67	1.93

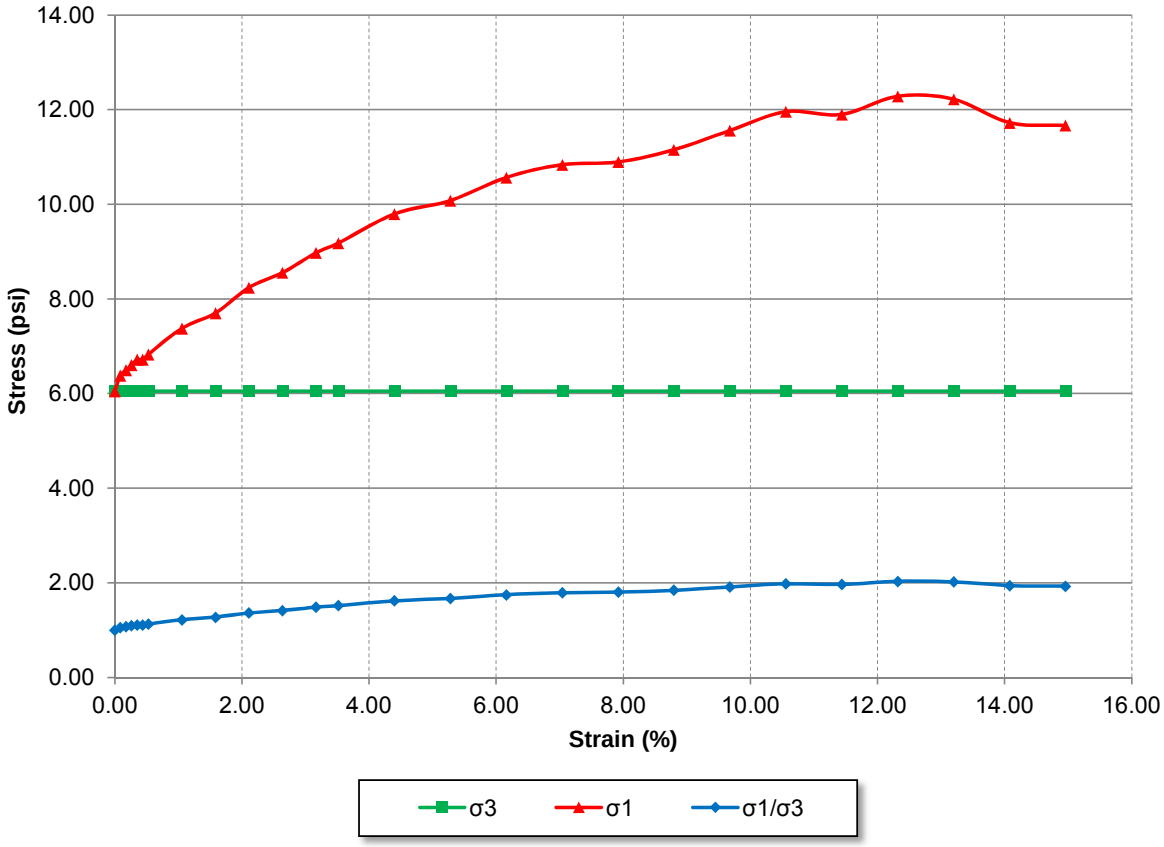
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-158
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 6.9' to 7.4'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

FINAL MOISTURE	: 21.19 %	EFF. CONS. STRESS	: 6.05 psi
FINAL HEIGHT	: 12.27 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 7.77 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

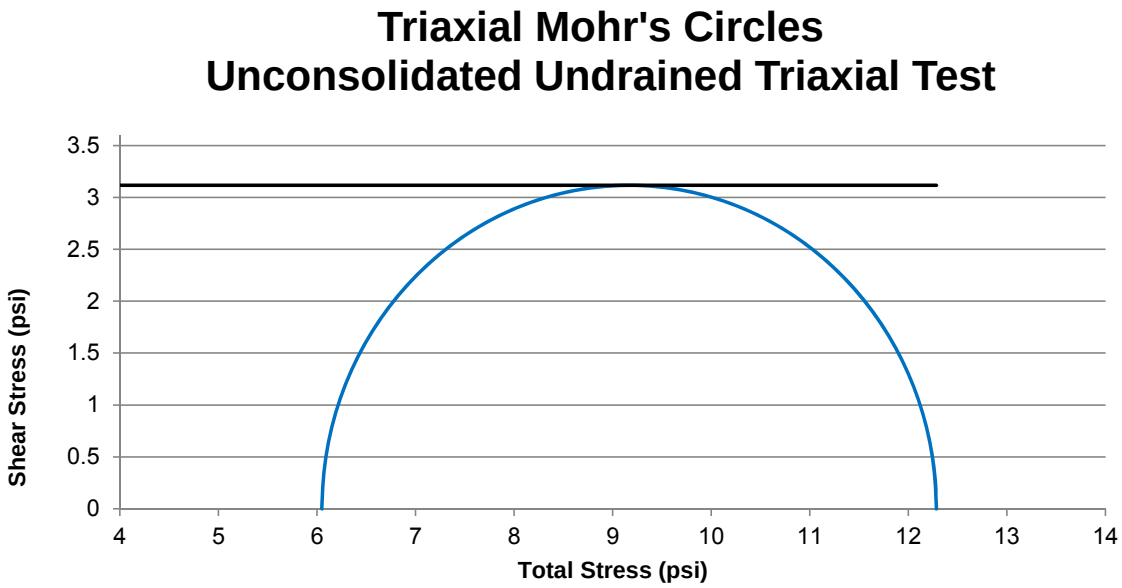
PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-158
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 6.9' to 7.4'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	6.05 psi	12.28 psi

Compressive Strength =	898	psf
Cohesion =	449	psf
Phi =	0	deg
Tan (Phi) =	0	

Maximum Deviator Stress



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-159
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 15.5' to 16.0'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016
SOIL TYPE	: Brown & Gray, Sandy Elastic Silt		
WET DENSITY	: 115.07 pcf	DELTA HEIGHT	: 0.45 cm
DRY DENSITY	: 84.64 pcf	DELTA VOLUME	: NA
MOISTURE	: 35.95 %	CHAMBER PRES.	: 13.02 psi
		INITIAL HEIGHT	: 14.84 cm
		INITIAL DIAMETER	: 7.25 cm
		COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	13.02	13.02	1.00
2	0.09	13.02	13.89	1.07
3	0.18	13.02	14.66	1.13
4	0.26	13.02	15.2	1.17
5	0.35	13.02	15.63	1.2
6	0.44	13.02	16.17	1.24
7	0.53	13.02	16.5	1.27
8	1.06	13.02	21.34	1.64
9	1.59	13.02	32.41	2.49
10	2.12	13.02	40	3.07
11	2.65	13.02	42.39	3.26
12	3.18	13.02	42.48	3.26
13	3.53	13.02	42.47	3.26
14	4.41	13.02	42.48	3.26
15	5.30	13.02	42.55	3.27
16	6.18	13.02	42.59	3.27
17	7.06	13.02	42.61	3.27
18	7.94	13.02	43.65	3.35
19	8.83	13.02	44.5	3.42
20	9.71	13.02	44.84	3.44
21	10.59	13.02	45.33	3.48
22	11.47	13.02	45.48	3.49
23	12.36	13.02	45.94	3.53
24	13.24	13.02	46.08	3.54
25	14.12	13.02	46.36	3.56
26	15.01	13.02	46.62	3.58
27	15.89	13.02	46.88	3.6
28	16.77	13.02	46.97	3.61
29	17.65	13.02	47.1	3.62
30	18.54	13.02	47.08	3.62
31	19.42	13.02	47.05	3.61
32	20.30	13.02	47.08	3.62

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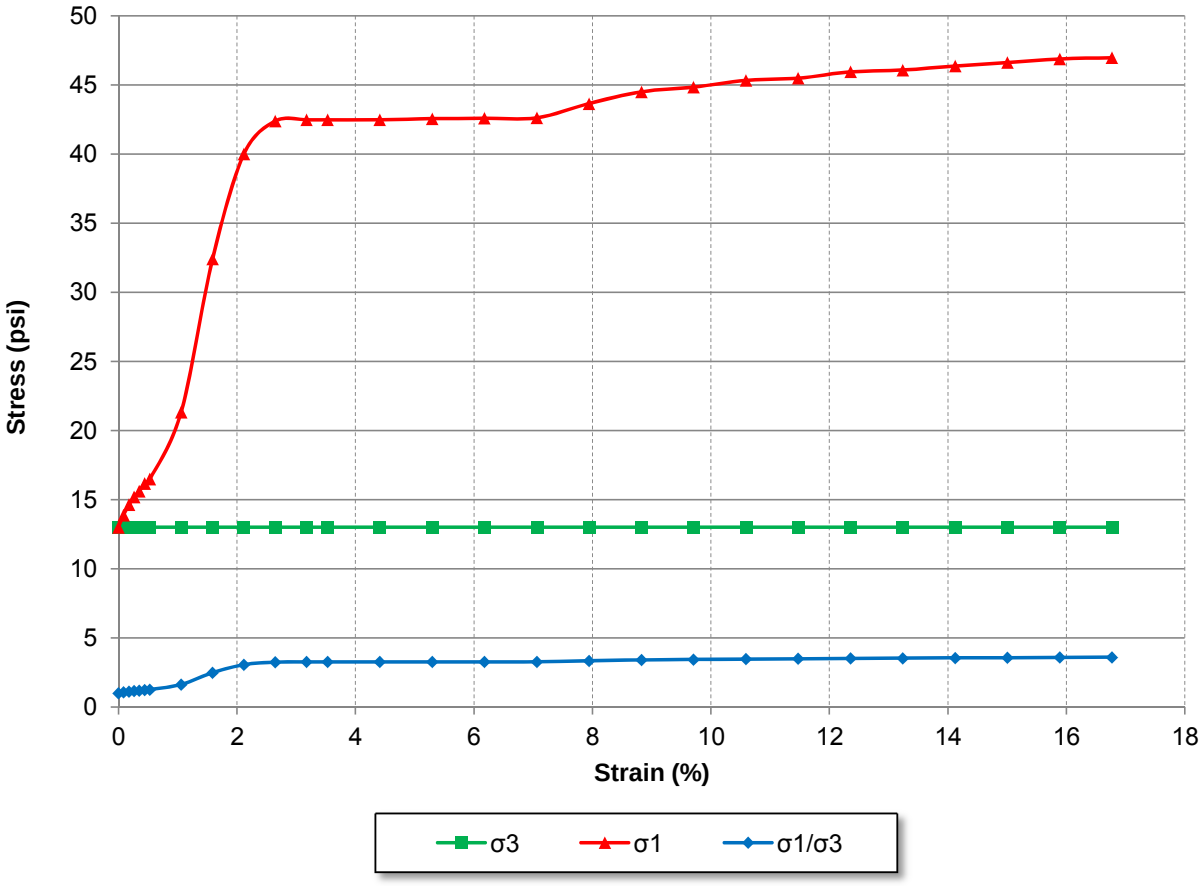
TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blv		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-159
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 15.5' to 16.0'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

FINAL MOISTURE	: 35.95 %	EFF. CONS. STRESS	: 13.02 psi
FINAL HEIGHT	: 11.47 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.09 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

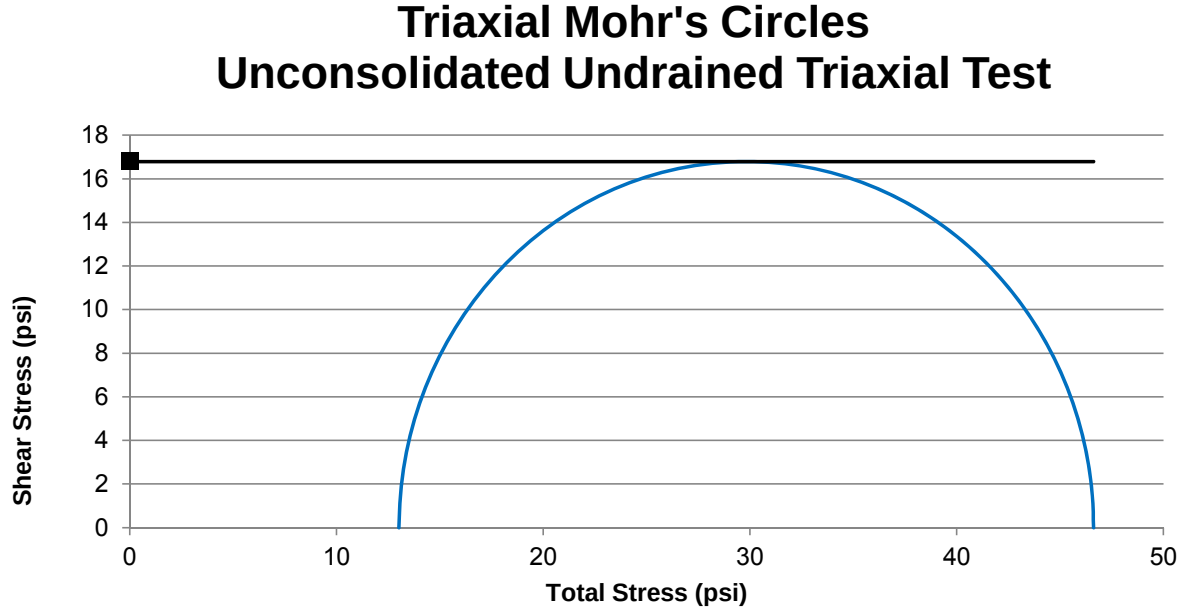
PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-159
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 15.5' to 16.0'
LABORATORY #	: 251537	DATE TESTED	: 6/27/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	13.02 psi	46.62 psi

Compressive Strength =	4838 psf
Cohesion =	2419 psf
Phi =	0 deg
Tan (Phi) =	0

At Maximum Deviator Stress 15%



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-163
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 19.9' to 20.4'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016
SOIL TYPE	: Brown & Gray, Sandy Elastic Silt		

WET DENSITY	: 113.87 pcf	DELTA HEIGHT	: 0.45 cm	INITIAL HEIGHT	: 14.7 cm
DRY DENSITY	: 85.19 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.27 cm
MOISTURE	: 33.66 %	CHAMBER PRES.	: 15.01 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	15.01	15.01	1.00
2	0.09	15.01	16.64	1.11
3	0.18	15.01	17.51	1.17
4	0.27	15.01	18.26	1.22
5	0.36	15.01	18.91	1.26
6	0.45	15.01	19.66	1.31
7	0.53	15.01	20.2	1.35
8	1.07	15.01	34.4	2.29
9	1.60	15.01	42.95	2.86
10	2.14	15.01	44.34	2.95
11	2.67	15.01	44.35	2.95
12	3.21	15.01	44.3	2.95
13	3.57	15.01	44.19	2.94
14	4.46	15.01	44.09	2.94
15	5.35	15.01	43.93	2.93
16	6.24	15.01	43.82	2.92
17	7.13	15.01	43.65	2.91
18	8.02	15.01	43.57	2.9
19	8.91	15.01	43.46	2.89
20	9.80	15.01	43.38	2.89
21	10.70	15.01	43.45	2.89
22	11.59	15.01	44.11	2.94
23	12.48	15.01	44.91	2.99
24	13.37	15.01	45.99	3.06
25	14.26	15.01	46.74	3.11
26	15.15	15.01	46.86	3.12
27	16.04	15.01	46.83	3.12
28	16.93	15.01	47.38	3.16
29	17.83	15.01	47.32	3.15
30	18.72	15.01	47.26	3.15
31	19.61	15.01	47.05	3.13
32	20.50	15.01	47.12	3.14

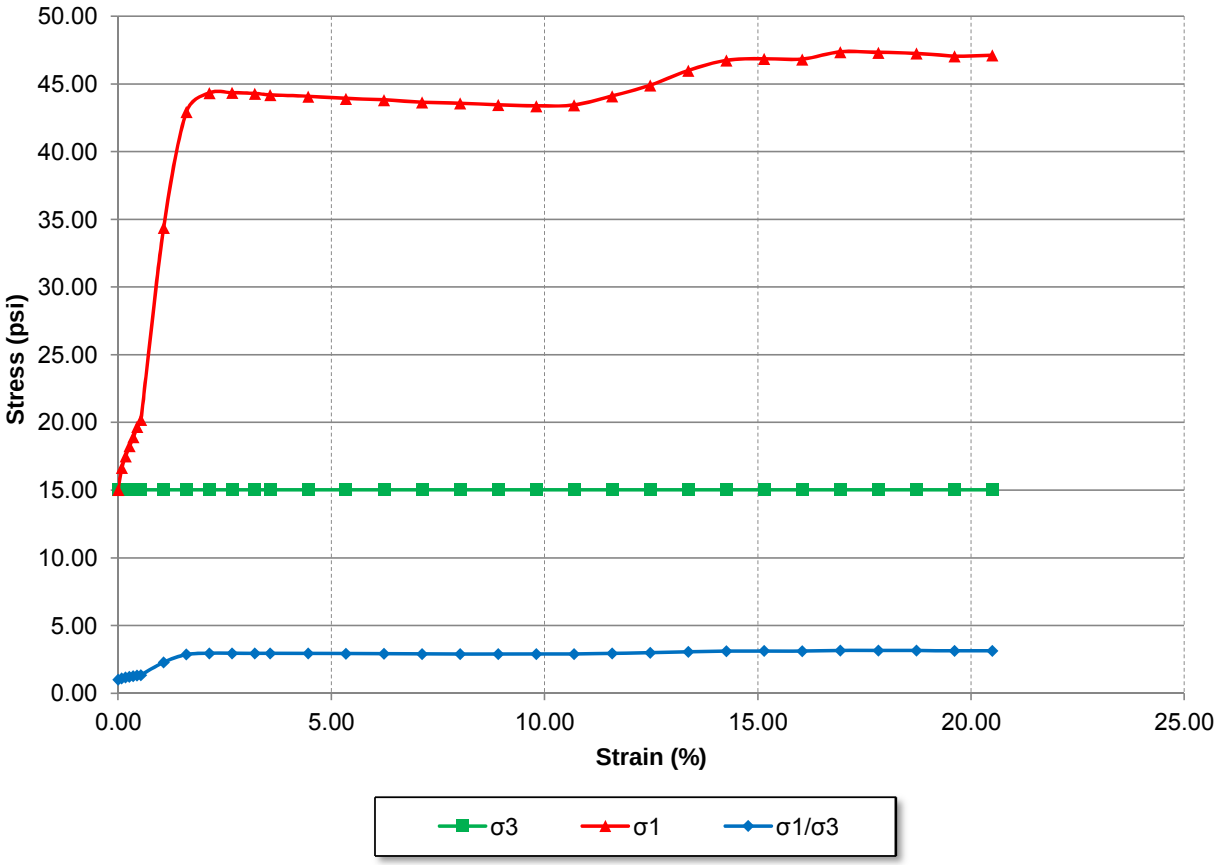
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blv		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-163
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 19.9' to 20.4'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

FINAL MOISTURE	: 33.66 %	EFF. CONS. STRESS	: 15.01 psi
FINAL HEIGHT	: 11.33 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.12 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-163
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 19.9' to 20.4'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

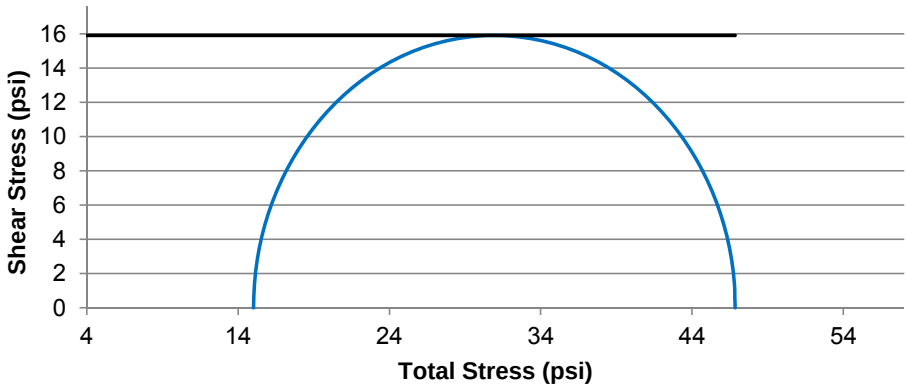
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	15.01 psi	46.84 psi

Compressive Strength =	4584 psf
Cohesion =	2292 psf
Phi =	0 deg
Tan (Phi) =	0

At Maximum Deviator Stress 15%

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-165
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 20.7' to 21.2'
LABORATORY #	: 251537	DATE TESTED	: 6/14/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

SOIL TYPE	: Brown, Sandy Elastic Silt				
WET DENSITY	: 112.39 pcf	DELTA HEIGHT	: 0.45 cm	INITIAL HEIGHT	: 14.92 cm
DRY DENSITY	: 80.05 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.26 cm
MOISTURE	: 40.39 %	CHAMBER PRES.	: 15.01 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	15.01	15.01	1.00
2	0.09	15.01	16.97	1.13
3	0.18	15.01	18.28	1.22
4	0.26	15.01	19.25	1.28
5	0.35	15.01	20.23	1.35
6	0.44	15.01	24.34	1.62
7	0.53	15.01	28.24	1.88
8	1.05	15.01	44.17	2.94
9	1.58	15.01	45.04	3
10	2.11	15.01	45.16	3.01
11	2.63	15.01	45.18	3.01
12	3.16	15.01	45.19	3.01
13	3.51	15.01	45.15	3.01
14	4.39	15.01	45.05	3
15	5.27	15.01	44.88	2.99
16	6.15	15.01	44.74	2.98
17	7.02	15.01	44.56	2.97
18	7.90	15.01	44.94	2.99
19	8.78	15.01	45.14	3.01
20	9.66	15.01	45.17	3.01
21	10.54	15.01	45.52	3.03
22	11.42	15.01	45.54	3.03
23	12.29	15.01	45.55	3.03
24	13.17	15.01	45.71	3.04
25	14.05	15.01	45.7	3.04
26	14.93	15.01	45.69	3.04
27	15.81	15.01	45.68	3.04
28	16.68	15.01	45.8	3.05
29	17.56	15.01	45.77	3.05
30	18.44	15.01	45.74	3.05
31	19.32	15.01	45.84	3.05
32	20.20	15.01	45.65	3.04

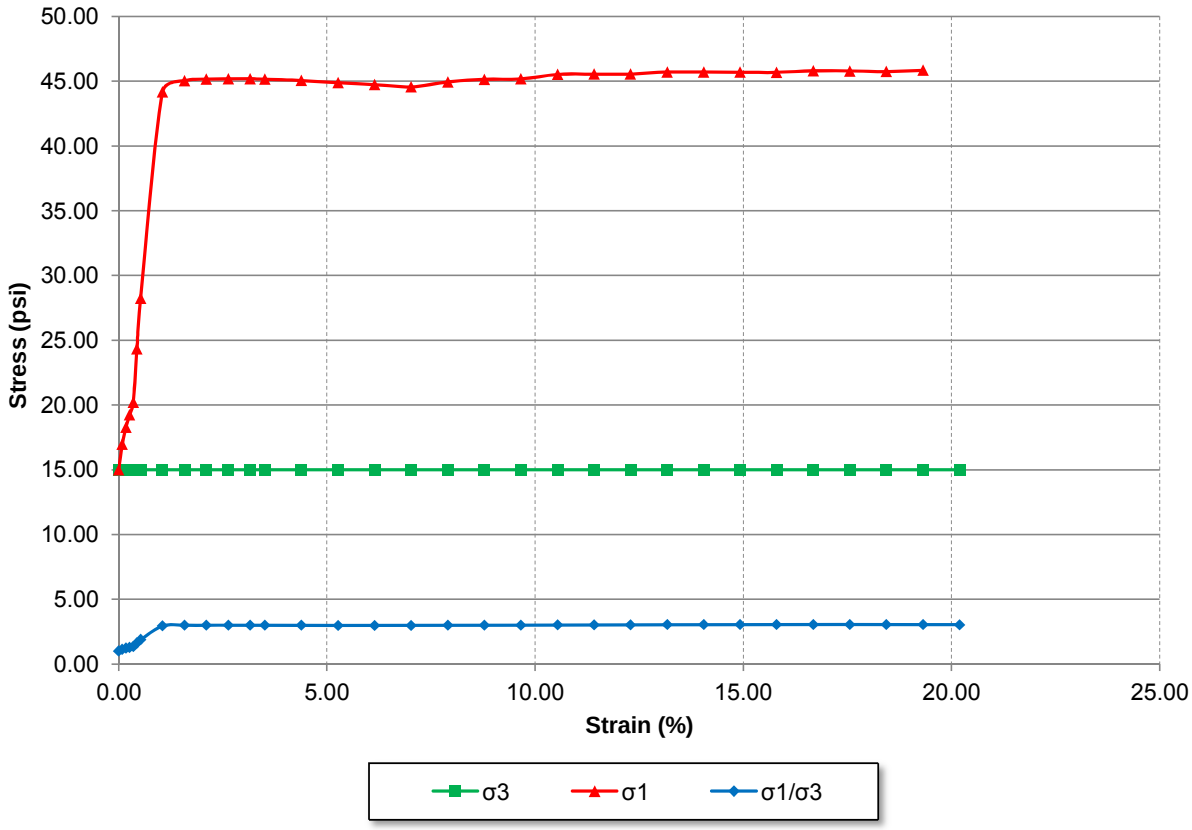
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-165
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 20.7' to 21.2'
LABORATORY #	: 251537	DATE TESTED	: 6/14/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

FINAL MOISTURE	: 40.39 %	EFF. CONS. STRESS	: 15.01 psi
FINAL HEIGHT	: 11.54 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.09 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-165
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 20.7' to 21.2'
LABORATORY #	: 251537	DATE TESTED	: 6/14/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

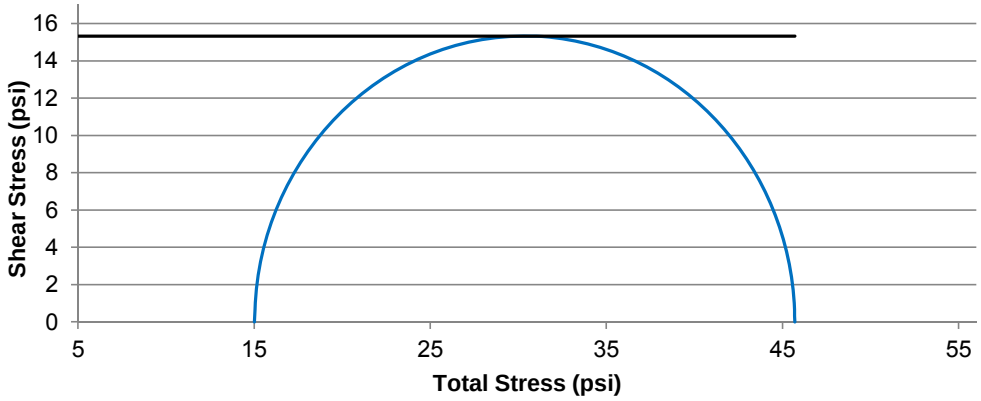
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	15.01 psi	45.69 psi

Compressive Strength =	4418 psf
Cohesion =	2209 psf
Phi =	0 deg
Tan (Phi) =	0

At Maximum Deviator Stress 15%

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-166
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 4.5' to 5.0'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

SOIL TYPE	: Red & Brown, Silty Sand				
WET DENSITY	: 119.3 pcf	DELTA HEIGHT	: 0.39 cm	INITIAL HEIGHT	: 14.86 cm
DRY DENSITY	: 90.74 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.17 cm
MOISTURE	: 31.47 %	CHAMBER PRES.	: 5.05 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	5.05	5.05	1.00
2	0.09	5.05	5.61	1.11
3	0.18	5.05	5.95	1.18
4	0.26	5.05	6.28	1.24
5	0.35	5.05	6.5	1.29
6	0.44	5.05	6.72	1.33
7	0.53	5.05	6.95	1.38
8	1.05	5.05	8.27	1.64
9	1.58	5.05	9.57	1.89
10	2.11	5.05	12.02	2.38
11	2.63	5.05	15.91	3.15
12	3.16	5.05	18.78	3.72
13	3.51	5.05	20.67	4.09
14	4.39	5.05	24.87	4.92
15	5.27	5.05	28.03	5.55
16	6.15	5.05	30.18	5.97
17	7.02	5.05	31.82	6.3
18	7.90	5.05	33.46	6.62
19	8.78	5.05	33.26	6.58
20	9.66	5.05	33.05	6.54
21	10.54	5.05	32.88	6.51
22	11.42	5.05	32.68	6.47
23	12.29	5.05	32.47	6.43
24	13.17	5.05	32.26	6.39
25	14.05	5.05	32.08	6.35
26	14.93	5.05	31.87	6.31
27	15.81	5.05	31.62	6.26
28	16.68	5.05	31.41	6.22
29	17.56	5.05	31.22	6.18

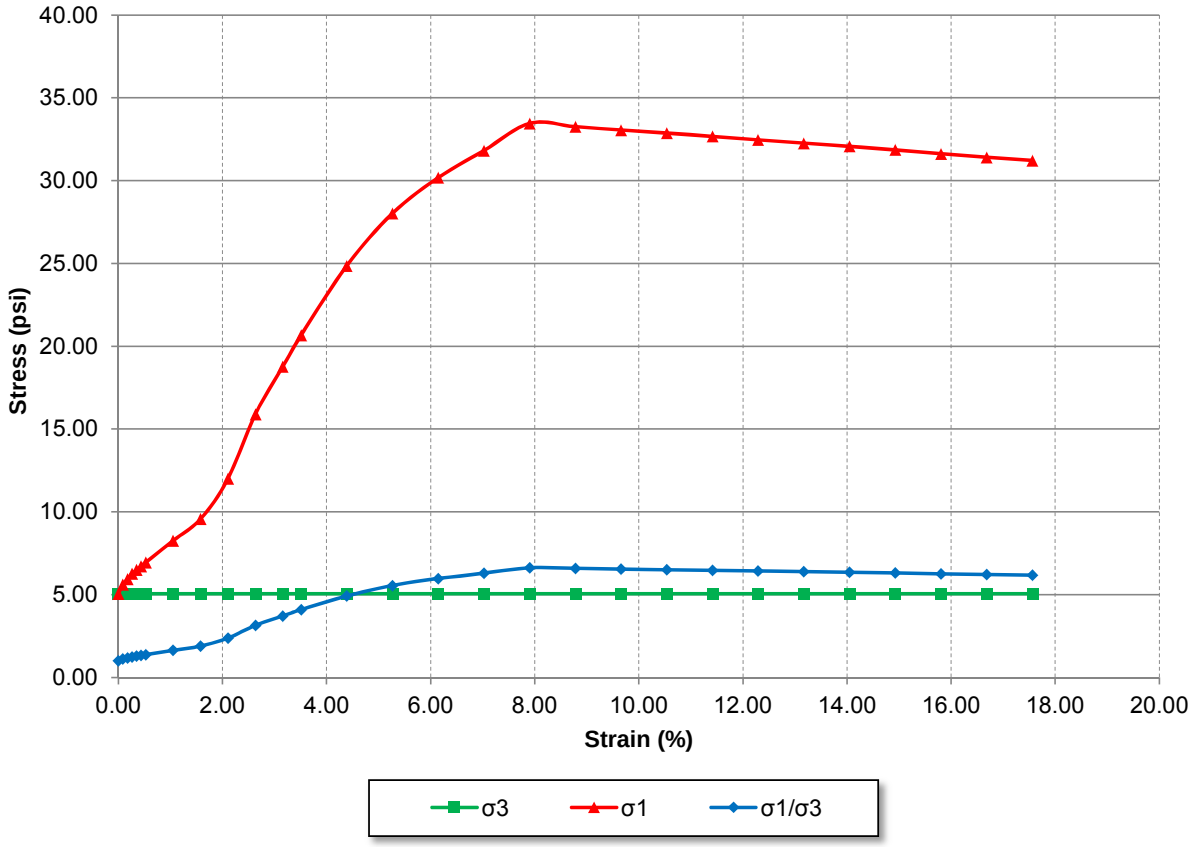
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-166
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 4.5' to 5.0'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

FINAL MOISTURE	: 31.47 %	EFF. CONS. STRESS	: 5.05 psi
FINAL HEIGHT	: 11.92 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 7.87 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-166
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 4.5' to 5.0'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

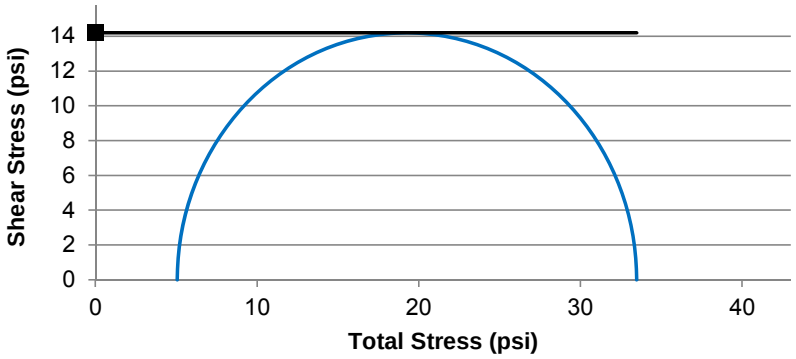
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	5.05 psi	33.46 psi

Compressive Strength =	4091	psf
Cohesion =	2045	psf
Phi =	0	deg
Tan (Phi) =	0	

Maximum Deviator Stress

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-167
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 4.5' to 5.0'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

SOIL TYPE : Brown & Gray, Clayey Sand

WET DENSITY	: 121.99 pcf	DELTA HEIGHT	: 0.45 cm	INITIAL HEIGHT	: 14.85 cm
DRY DENSITY	: 93.93 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.19 cm
MOISTURE	: 29.88 %	CHAMBER PRES.	: 4.06 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	4.06	4.06	1.00
2	0.09	4.06	4.61	1.14
3	0.18	4.06	4.94	1.22
4	0.26	4.06	5.27	1.3
5	0.35	4.06	5.38	1.33
6	0.44	4.06	5.71	1.41
7	0.53	4.06	5.93	1.46
8	1.06	4.06	7.24	1.79
9	1.59	4.06	8.42	2.08
10	2.12	4.06	10.46	2.58
11	2.65	4.06	14.32	3.53
12	3.17	4.06	16.68	4.11
13	3.53	4.06	18.56	4.58
14	4.41	4.06	21.77	5.37
15	5.29	4.06	23.5	5.79
16	6.17	4.06	25.66	6.33
17	7.06	4.06	26.39	6.51
18	7.94	4.06	27.55	6.79
19	8.82	4.06	29.61	7.3
20	9.70	4.06	31.16	7.68
21	10.58	4.06	31.41	7.75
22	11.47	4.06	31.24	7.7
23	12.35	4.06	31.06	7.66
24	13.23	4.06	30.89	7.62
25	14.11	4.06	30.71	7.57
26	14.99	4.06	30.56	7.54
27	15.87	4.06	30.35	7.48
28	16.76	4.06	30.2	7.45
29	17.64	4.06	29.98	7.39
30	18.52	4.06	29.8	7.35
31	19.40	4.06	29.61	7.3
32	20.28	4.06	29.65	7.31

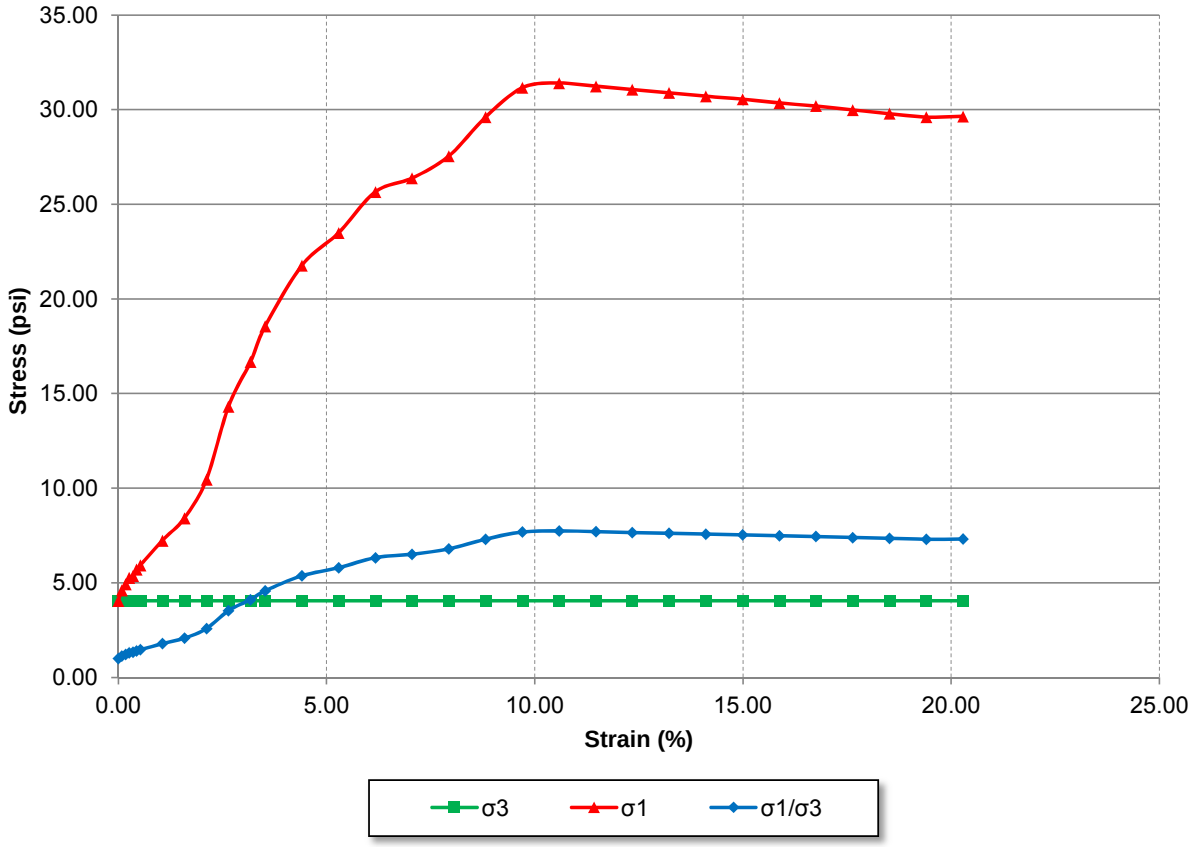
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-167
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 4.5' to 5.0'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

FINAL MOISTURE	: 29.88 %	EFF. CONS. STRESS	: 4.06 psi
FINAL HEIGHT	: 11.48 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.02 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-167
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 4.5' to 5.0'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

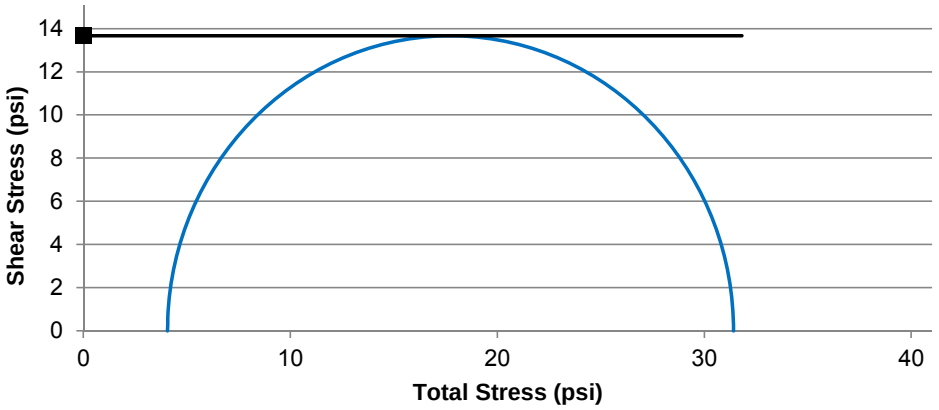
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	4.06 psi	31.41 psi

Compressive Strength =	3939	psf
Cohesion =	1970	psf
Phi =	0	deg
Tan (Phi) =	0	

Maximum Deviator Stress

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-167
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 21.0' to 21.5'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

SOIL TYPE	: Brown & Gray, Sandy Elastic Silt				
WET DENSITY	: 113.51 pcf	DELTA HEIGHT	: 0.39 cm	INITIAL HEIGHT	: 14.89 cm
DRY DENSITY	: 82.04 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.26 cm
MOISTURE	: 38.36 %	CHAMBER PRES.	: 17.01 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	17.01	17.01	1.00
2	0.09	17.01	17.44	1.03
3	0.18	17.01	17.88	1.05
4	0.26	17.01	18.97	1.12
5	0.35	17.01	19.95	1.17
6	0.44	17.01	20.6	1.21
7	0.53	17.01	21.35	1.26
8	1.05	17.01	36.03	2.12
9	1.58	17.01	46.79	2.75
10	2.10	17.01	47.35	2.78
11	2.63	17.01	47.58	2.8
12	3.15	17.01	47.73	2.81
13	3.50	17.01	47.93	2.82
14	4.38	17.01	49.02	2.88
15	5.26	17.01	49.74	2.93
16	6.13	17.01	50.45	2.97
17	7.01	17.01	50.97	3
18	7.89	17.01	51.31	3.02
19	8.76	17.01	51.47	3.03
20	9.64	17.01	51.63	3.04
21	10.51	17.01	51.77	3.04
22	11.39	17.01	51.59	3.03
23	12.27	17.01	51.41	3.02
24	13.14	17.01	51.06	3
25	14.02	17.01	50.72	2.98
26	14.90	17.01	50.38	2.96
27	15.77	17.01	50.18	2.95
28	16.65	17.01	49.54	2.91
29	17.52	17.01	48.9	2.88

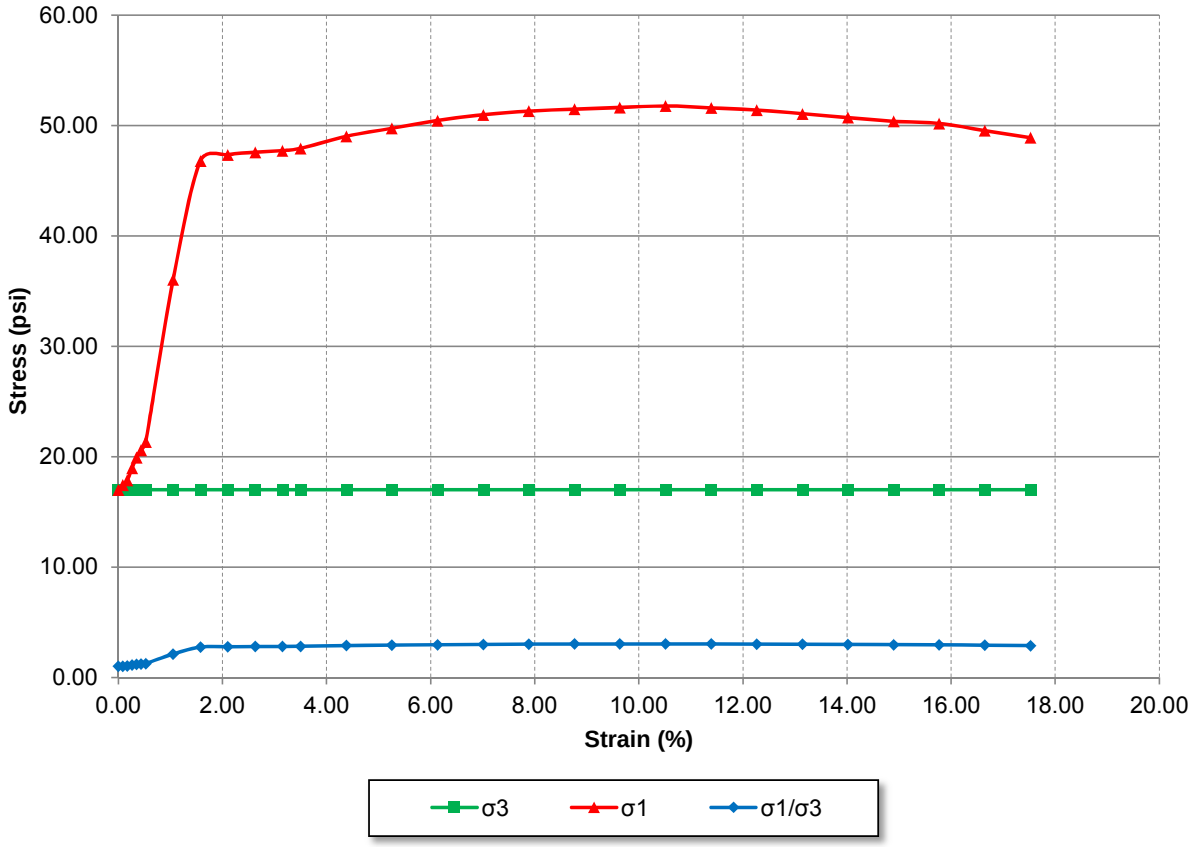
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-167
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 21.0' to 21.5'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

FINAL MOISTURE	: 38.36 %	EFF. CONS. STRESS	: 17.01 psi
FINAL HEIGHT	: 11.95 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 7.97 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-167
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 21.0' to 21.5'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

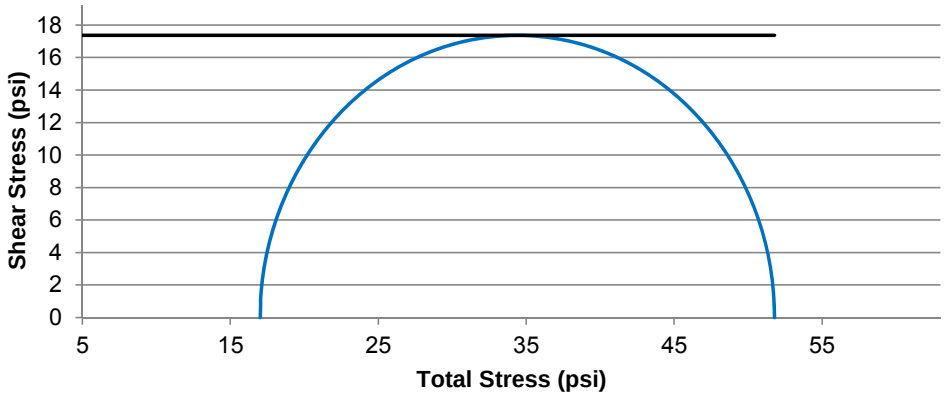
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	17.01 psi	51.77 psi

Compressive Strength =	5007	psf
Cohesion =	2503	psf
Phi =	0	deg
Tan (Phi) =	0	

Maximum Deviator Stress

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-168
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 10.0' to 10.5'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

SOIL TYPE : Red & Gray, Clayey Sand

WET DENSITY	: 121.86 pcf	DELTA HEIGHT	: 0.45 cm	INITIAL HEIGHT	: 14.81 cm
DRY DENSITY	: 94.39 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.19 cm
MOISTURE	: 29.1 %	CHAMBER PRES.	: 9.04 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	9.04	9.04	1.00
2	0.09	9.04	9.92	1.1
3	0.18	9.04	10.81	1.2
4	0.27	9.04	11.69	1.29
5	0.35	9.04	12.35	1.37
6	0.44	9.04	12.9	1.43
7	0.53	9.04	13.12	1.45
8	1.06	9.04	14.19	1.57
9	1.59	9.04	16.95	1.88
10	2.12	9.04	19.84	2.2
11	2.65	9.04	22.21	2.46
12	3.18	9.04	24.07	2.66
13	3.54	9.04	25.46	2.82
14	4.42	9.04	27.69	3.06
15	5.31	9.04	30.36	3.36
16	6.19	9.04	32.5	3.6
17	7.08	9.04	34.13	3.78
18	7.96	9.04	35.73	3.95
19	8.85	9.04	36.84	4.08
20	9.73	9.04	36.67	4.06
21	10.61	9.04	36.53	4.04
22	11.50	9.04	36.32	4.02
23	12.38	9.04	36.12	4
24	13.27	9.04	35.94	3.98
25	14.15	9.04	35.76	3.96
26	15.04	9.04	35.55	3.93
27	15.92	9.04	35.37	3.91
28	16.81	9.04	35.15	3.89
29	17.69	9.04	34.93	3.87
30	18.58	9.04	34.71	3.84
31	19.46	9.04	34.5	3.82
32	20.34	9.04	34.25	3.79

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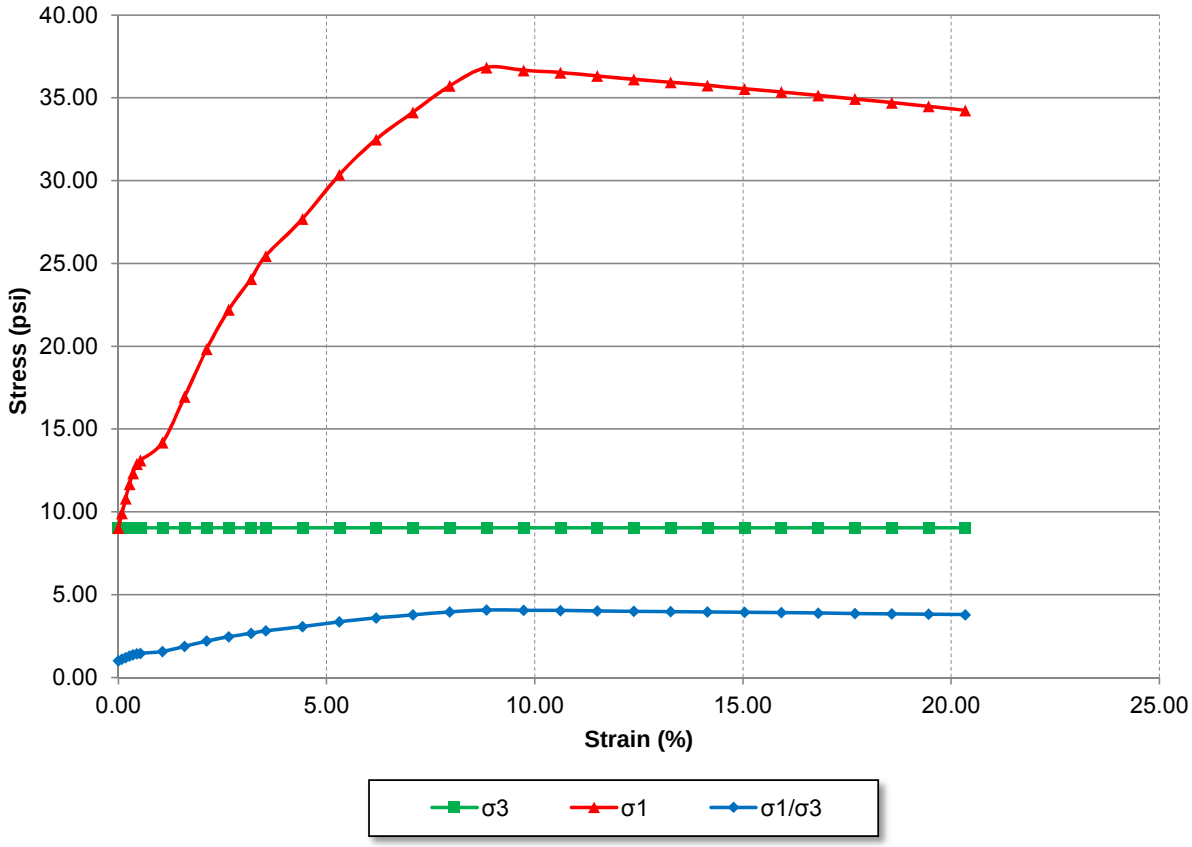
TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-168
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 10.0' to 10.5'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

FINAL MOISTURE	: 29.1 %	EFF. CONS. STRESS	: 9.04 psi
FINAL HEIGHT	: 11.44 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.02 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-168
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 10.0' to 10.5'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

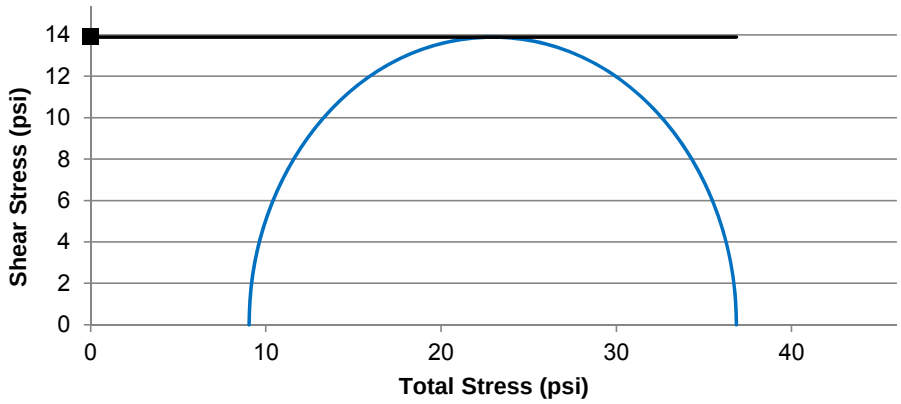
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	9.04 psi	36.84 psi

Compressive Strength =	4004 psf
Cohesion =	2002 psf
Phi =	0 deg
Tan (Phi) =	0

Maximum Deviator Stress

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-168
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 25.2' to 25.7'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

SOIL TYPE : Brown & Gray, Clayey Sand

WET DENSITY	: 121.25 pcf	DELTA HEIGHT	: 0.45 cm	INITIAL HEIGHT	: 14.76 cm
DRY DENSITY	: 80.39 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.26 cm
MOISTURE	: 50.81 %	CHAMBER PRES.	: 19.99 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	19.99	19.99	1.00
2	0.09	19.99	21.19	1.06
3	0.18	19.99	21.73	1.09
4	0.27	19.99	22.38	1.12
5	0.36	19.99	22.92	1.15
6	0.44	19.99	23.35	1.17
7	0.53	19.99	23.89	1.19
8	1.07	19.99	29.74	1.49
9	1.60	19.99	37.88	1.89
10	2.13	19.99	44.02	2.2
11	2.66	19.99	49.21	2.46
12	3.20	19.99	49.4	2.47
13	3.55	19.99	49.53	2.48
14	4.44	19.99	49.78	2.49
15	5.33	19.99	49.85	2.49
16	6.21	19.99	50.11	2.51
17	7.10	19.99	50.65	2.53
18	7.99	19.99	50.85	2.54
19	8.88	19.99	51.04	2.55
20	9.76	19.99	51.06	2.55
21	10.65	19.99	50.76	2.54
22	11.54	19.99	50.61	2.53
23	12.43	19.99	50.3	2.52
24	13.31	19.99	50.15	2.51
25	14.20	19.99	49.84	2.49
26	15.09	19.99	49.53	2.48
27	15.98	19.99	49.37	2.47
28	16.86	19.99	49.21	2.46
29	17.75	19.99	49.05	2.45
30	18.64	19.99	48.88	2.44
31	19.53	19.99	48.56	2.43
32	20.42	19.99	48.39	2.42

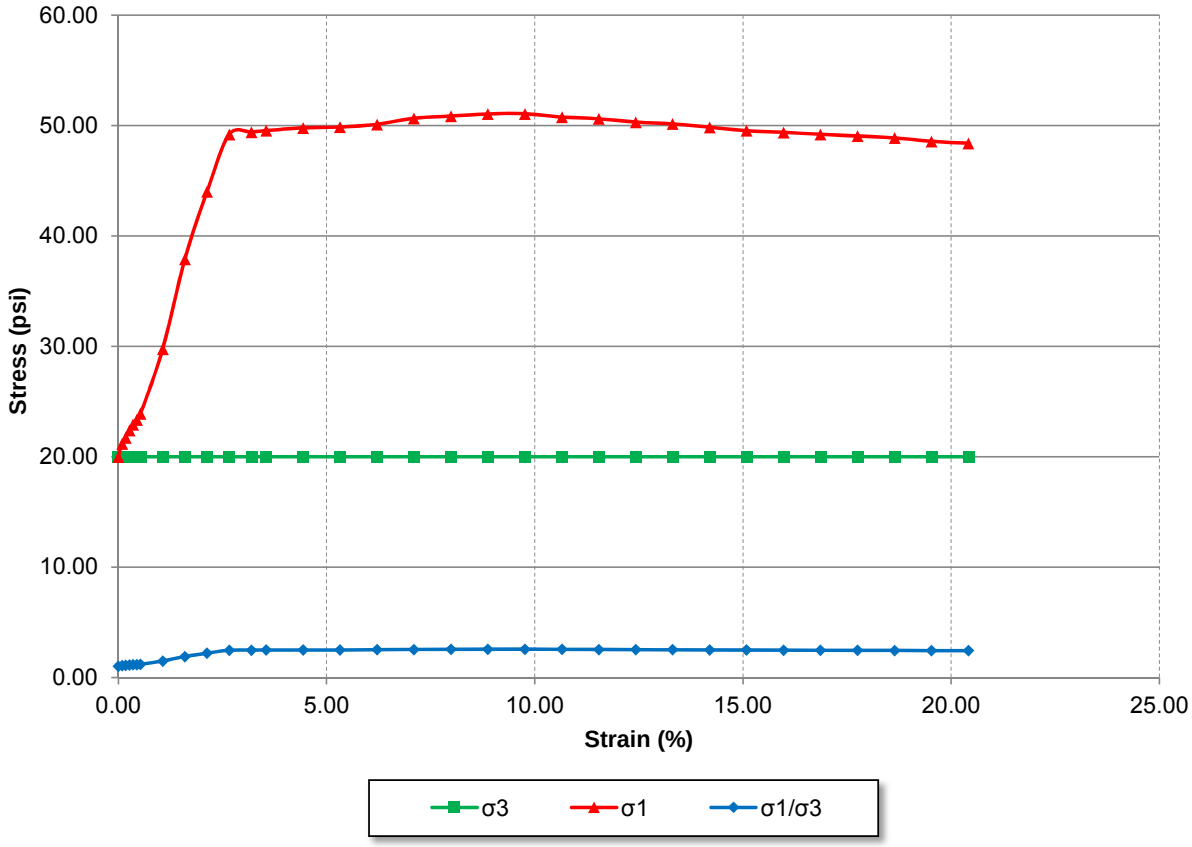
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-168
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 25.2' to 25.7'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

FINAL MOISTURE	: 50.81 %	EFF. CONS. STRESS	: 19.99 psi
FINAL HEIGHT	: 11.39 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.1 cm	COMMENTS	: AASHTO T-296

RESULTS:



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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-168
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 25.2' to 25.7'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

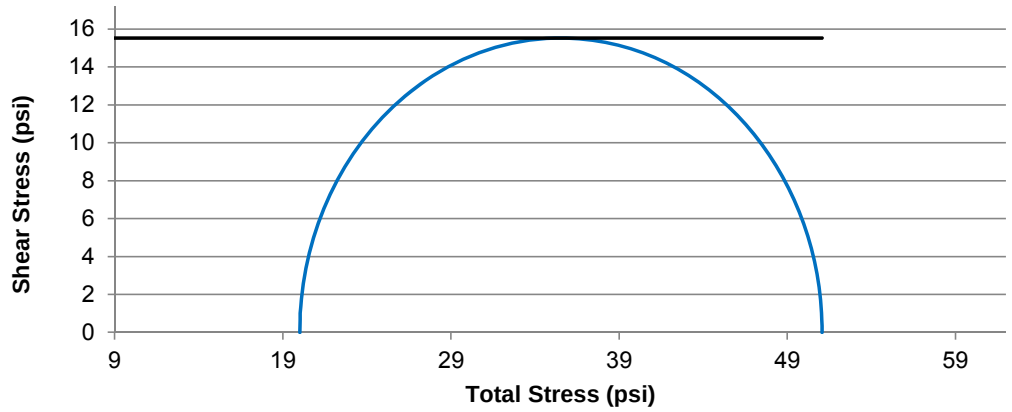
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	19.99 psi	51.06 psi

Compressive Strength =	4474	psf
Cohesion =	2237	psf
Phi =	0	deg
Tan (Phi) =	0	

Maximum Deviator Stress

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



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Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-170
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 14.8' to 15.3'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

SOIL TYPE	: Red, Clayey Sand				
WET DENSITY	: 134.3 pcf	DELTA HEIGHT	: 0.45 cm	INITIAL HEIGHT	: 14.6 cm
DRY DENSITY	: 114.7 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.23 cm
MOISTURE	: 17.09 %	CHAMBER PRES.	: 12.03 psi	COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	12.03	12.03	1.00
2	0.09	12.03	13.34	1.11
3	0.18	12.03	14.1	1.17
4	0.27	12.03	14.87	1.24
5	0.36	12.03	15.52	1.29
6	0.45	12.03	16.28	1.35
7	0.54	12.03	17.04	1.42
8	1.08	12.03	32.08	2.67
9	1.62	12.03	41.75	3.47
10	2.15	12.03	42.16	3.51
11	2.69	12.03	42.31	3.52
12	3.23	12.03	42.46	3.53
13	3.59	12.03	42.56	3.54
14	4.49	12.03	43.24	3.6
15	5.38	12.03	44.82	3.73
16	6.28	12.03	46.02	3.83
17	7.18	12.03	47.03	3.91
18	8.08	12.03	47.85	3.98
19	8.97	12.03	48.81	4.06
20	9.87	12.03	49.47	4.11
21	10.77	12.03	50.01	4.16
22	11.67	12.03	50.45	4.2
23	12.56	12.03	50.81	4.23
24	13.46	12.03	51.31	4.27
25	14.36	12.03	51.55	4.29
26	15.26	12.03	51.77	4.31
27	16.15	12.03	51.91	4.32
28	17.05	12.03	52.19	4.34
29	17.95	12.03	52.06	4.33
30	18.85	12.03	52.16	4.34
31	19.74	12.03	52.02	4.33
32	20.64	12.03	52.1	4.33

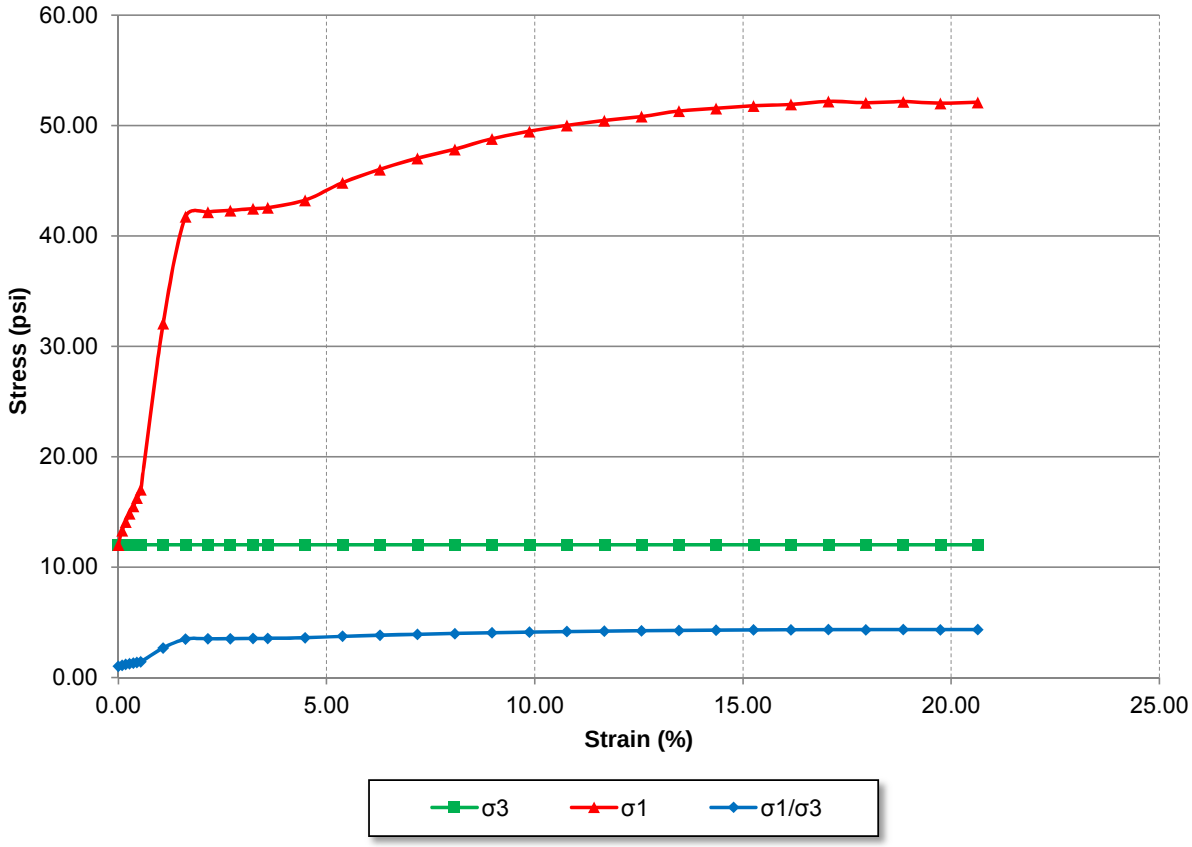
Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvc		
PROJECT #	: 251537	POINT #	: 1
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-170
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 14.8' to 15.3'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

FINAL MOISTURE	: 17.09 %	EFF. CONS. STRESS	: 12.03 psi
FINAL HEIGHT	: 11.23 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.09 cm	COMMENTS	: AASHTO T-296

RESULTS:



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Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: Highway 67 Widening from Main St. to Vandenburg Blvd.		
PROJECT #	: 251537	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-170
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 14.8' to 15.3'
LABORATORY #	: 251537	DATE TESTED	: 6/16/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/6/2016

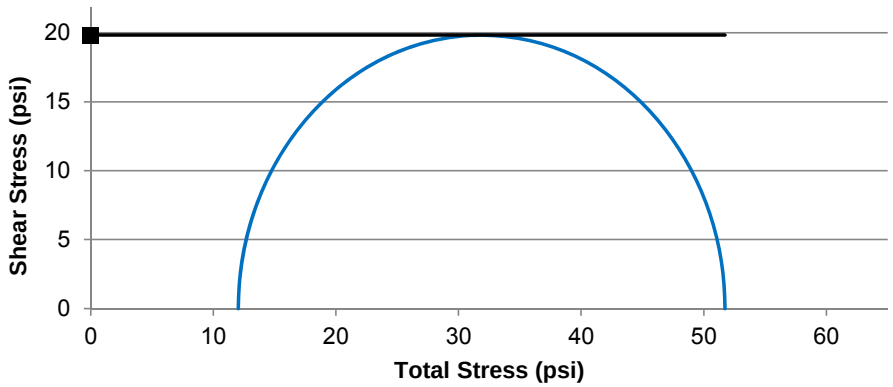
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	12.03 psi	51.71 psi

Compressive Strength =	5715	psf
Cohesion =	2857	psf
Phi =	0	deg
Tan (Phi) =	0	

At Maximum Deviator Stress 15%

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



Approved By: Kevin E. Walker

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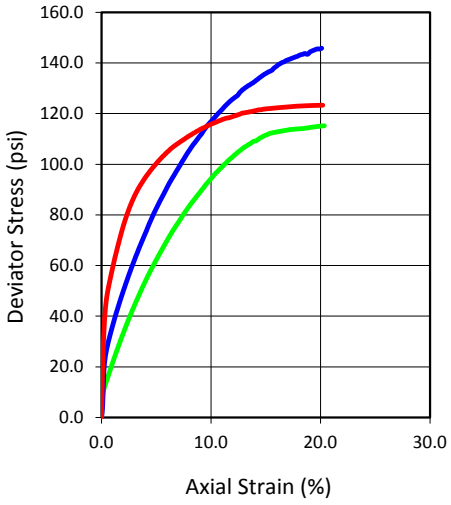
Consolidated Undrained Triaxial Test (ASTM D4767)

PROJECT NAME : Main Street Vandenburg Blvd. (Widening)
PROJECT NO. : 251537
PROJECT LOCATION : Arkansas
BORING NUMBER : B-116
REMARKS :

Mohr Stre NO. : ST-1
SAMPLE DEPTH : 10.3-10.8
SAMPLE TYPE : Undisturbed
DESCRIPTION : Red Silty Sand
TEST TYPE : Consolidated Undrained

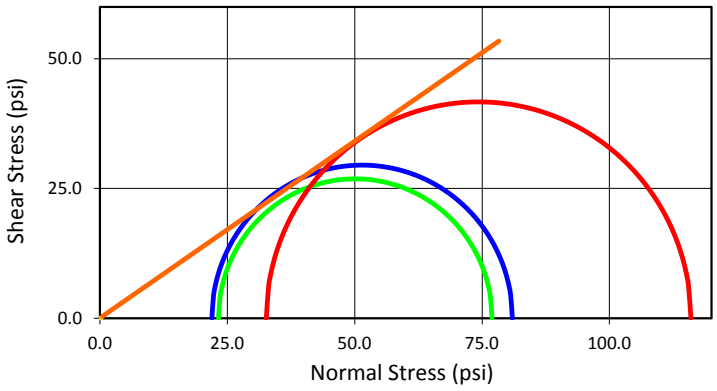
Deviator Stress Vs. Axial Strain



Initial	Specimen A	B	C	D
Water Content (%)	27.7	28.3	28.4	
Dry Density (pcf)	94.7	94.8	93.5	
Saturation (%)	98.12	100.68	97.83	
Void Ratio	0.744	0.742	0.766	
Diameter (in)	2.806	2.818	2.826	
Height (in)	5.817	5.859	5.830	
Specific Gravity	2.65	2.65	2.65	
Liquid Limit	27	27	27	
Plastic Limit	23	23	23	
After Consolidation	**A**	**B**	**C**	**D**
B-Value	0.98	1.00	1.00	
Water Content (%)	30.3	28.6	29.9	
Dry Density (pcf)	94.81	94.83	95.35	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.745	0.745	0.735	
Effective Stress (psi)	10.0	30.0	40.0	
Back Press. (psi)	41.6	44.8	32.0	
Rate of Strain	0.006	0.006	0.006	

Maximum Principal Stress Ratio Criterion		After Shear	A	B	C	D
C (psi)	15.5	σ'1 at Failure (psi)	76.95	80.94	115.99	
Ø (deg)	0.0	σ'3 at Failure (psi)	23.25	21.96	32.64	
C' (psi)	19.5					
Ø' (deg)	34.3					

Stress at Maximum Deviator Stress Criterion



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Date: _____

Approved By: _____
Date: _____

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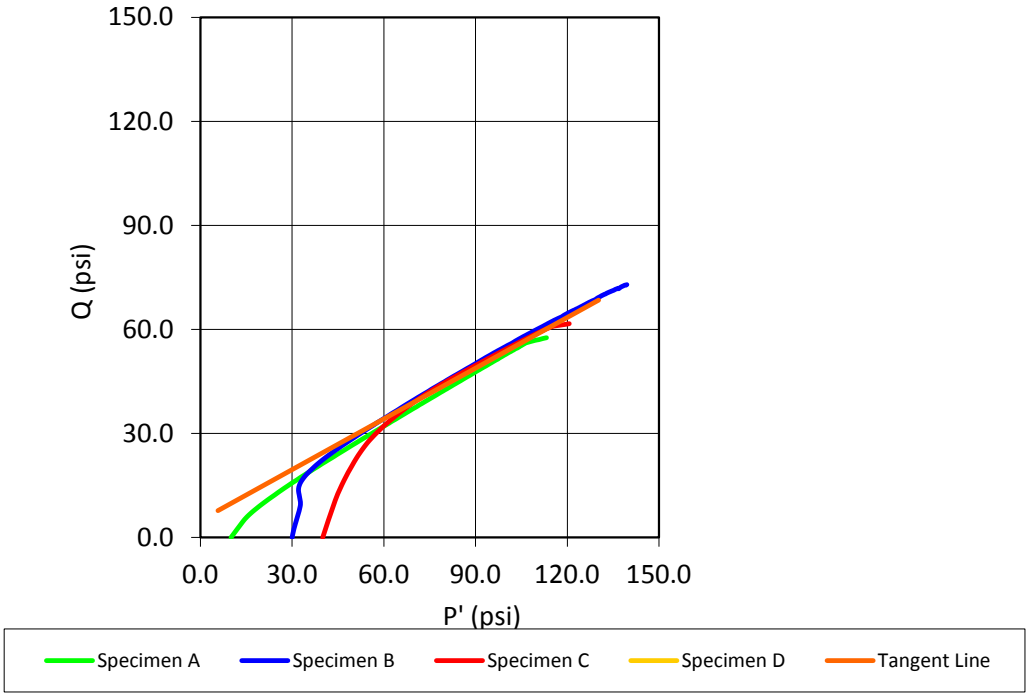
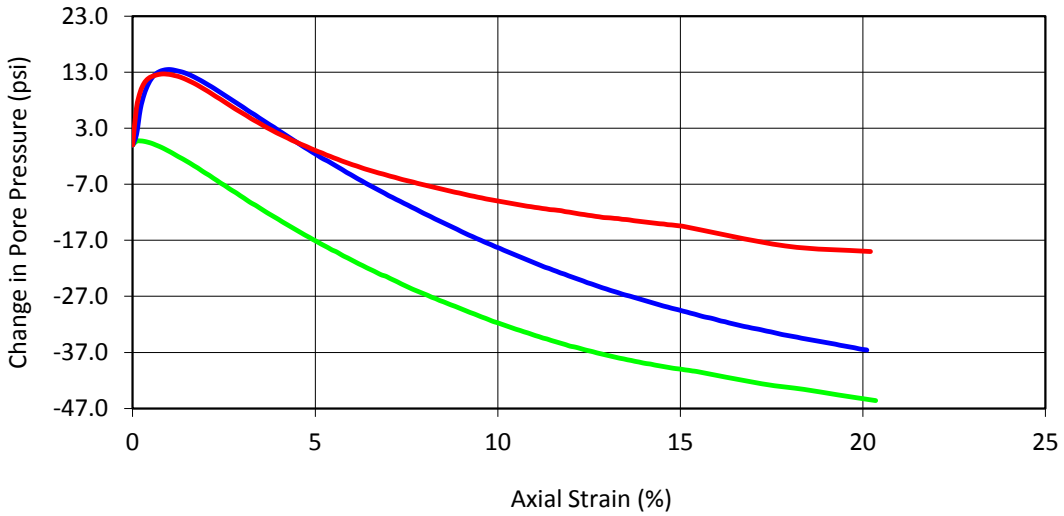
Stress Paths (Effective)
(a = 4.9 alpha = 26.0)



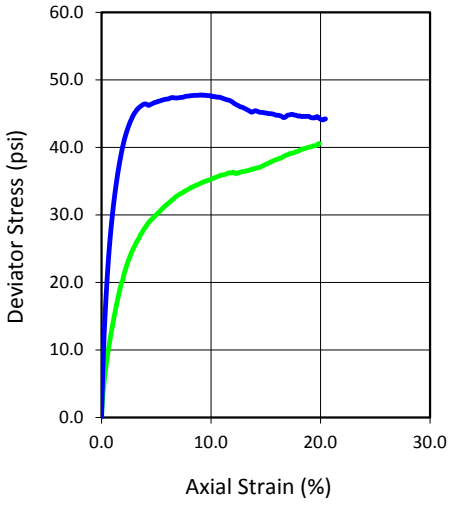
Change in Pore Pressure vs. Axial Strain



Consolidated Undrained Triaxial Test (ASTM D4767)

PROJECT NAME :	Main Street Vandenburg Blvd. (Widening)	SAMPLE NO. :	ST-1
PROJECT NO. :	251537	SAMPLE DEPTH :	19.8-20.3
PROJECT LOCATION :	Arkansas	SAMPLE TYPE :	Undisturbed
BORING NUMBER :	B-122	DESCRIPTION :	Tan Silty Sand
REMARKS :	First point (Green) fractured vertically	TEST TYPE :	Consolidated Undrained

Deviator Stress Vs. Axial Strain

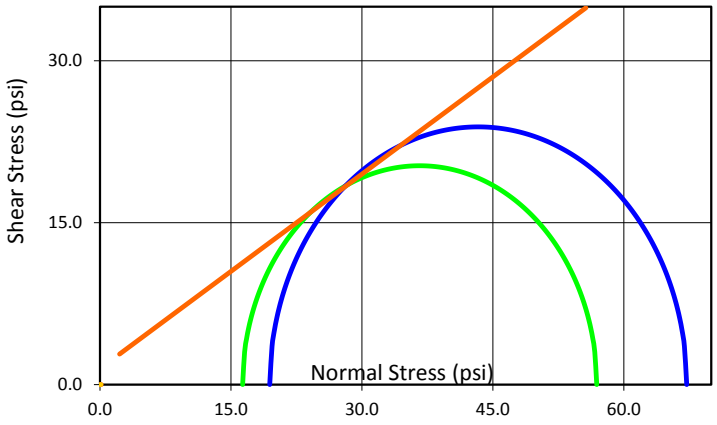


Specimen				
Initial	**A**	**B**	**C**	**D**
Water Content (%)	36.7	39.3		
Dry Density (pcf)	83.0	78.2		
Saturation (%)	98.03	93.32		
Void Ratio	0.989	1.112		
Diameter (in)	2.857	2.886		
Height (in)	5.883	5.835		
Specific Gravity	2.65	2.65		
Liquid Limit	52	52		
Plastic Limit	30	30		
After Consolidation	**A**	**B**	**C**	**D**
B-Value	1.00	0.99		
Water Content (%)	35.9	37.7		
Dry Density (pcf)	81.44	80.04		
Saturation (%)	100.00	100.00		
Void Ratio	1.031	1.067		
Effective Stress (psi)	20.0	40.0		
Back Press. (psi)	28.0	39.1		
Rate of Strain	0.006	0.006		

Maximum Deviator Stress Criterion	
C (psi)	12.6
Ø (deg)	10.9
C' (psi)	1.5
Ø' (deg)	31.0

After Shear	A	B	C	D
σ'1 at Failure (psi)	56.88	67.18		
σ'3 at Failure (psi)	16.33	19.43		

Stress at Maximum Deviator Stress Criterion



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Date: _____ Date: _____

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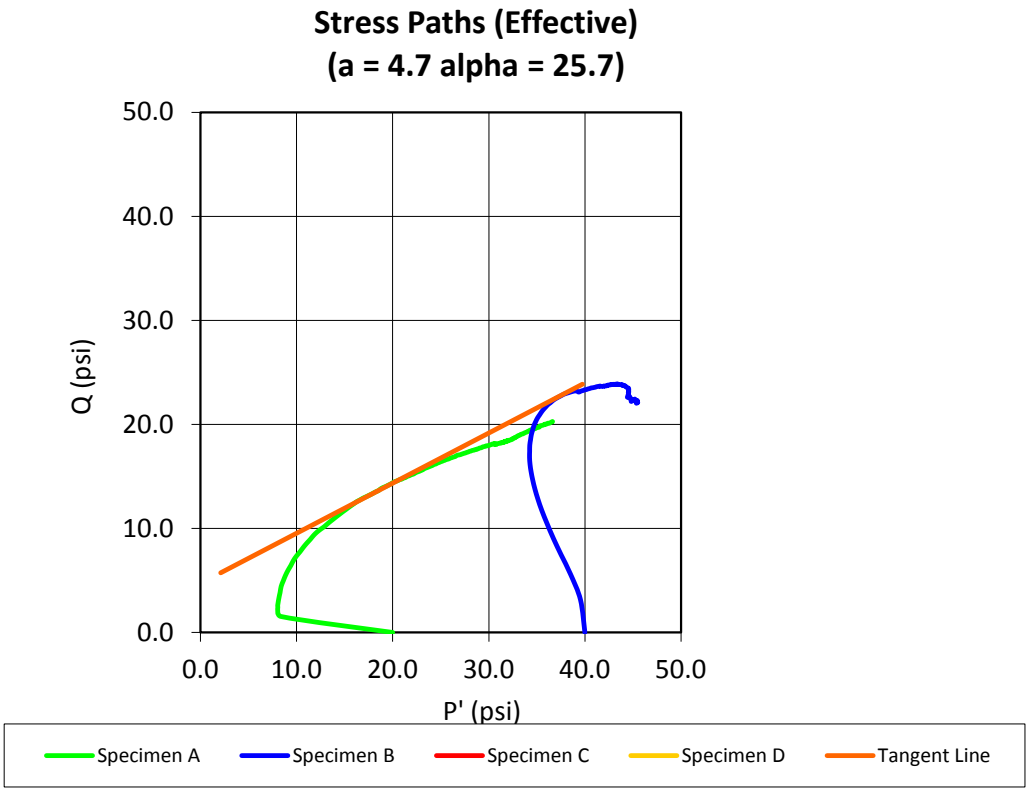

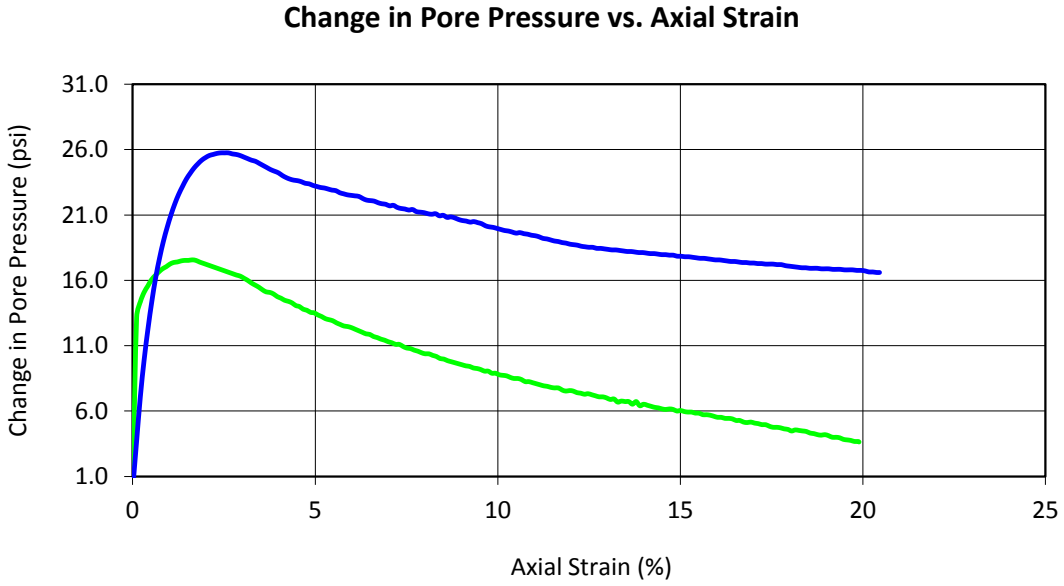

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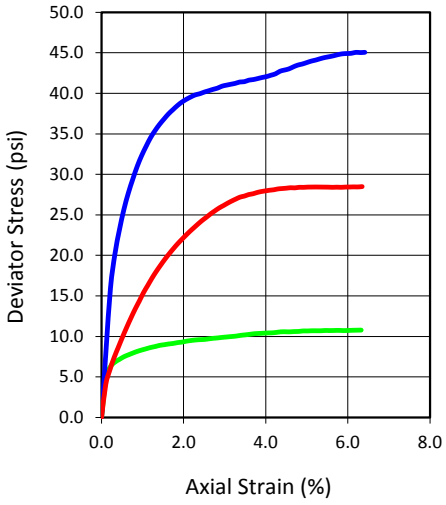
Consolidated Undrained Triaxial Test (ASTM D4767)

PROJECT NAME :	Main Street Vandenburg Blvd. (Widening)	SAMPLE NO. :	ST-1
PROJECT NO. :	251537	SAMPLE DEPTH :	10.3-10.8
PROJECT LOCATION :	Arkansas	SAMPLE TYPE :	Undisturbed
BORING NUMBER :	B-163	DESCRIPTION :	Brown & Gray Clayey Sand
REMARKS :		TEST TYPE :	Consolidated Undrained

Deviator Stress Vs. Axial Strain

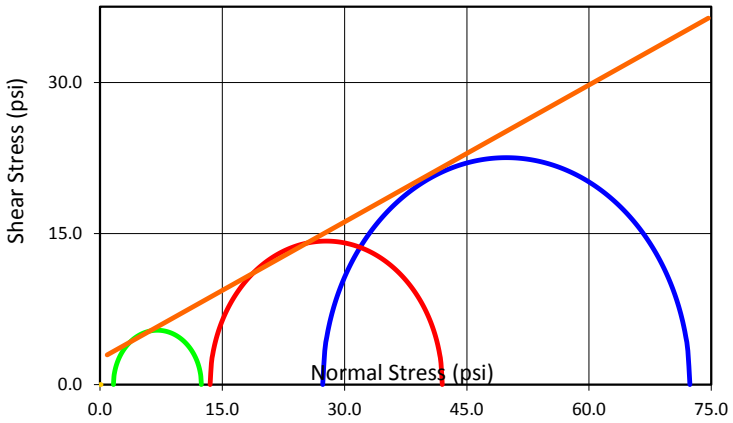


Initial	Specimen A	B	C	D
Water Content (%)	23.6	26.5	24.2	
Dry Density (pcf)	102.3	96.9	100.0	
Saturation (%)	101.36	99.44	97.91	
Void Ratio	0.615	0.705	0.652	
Diameter (in)	2.846	2.862	2.848	
Height (in)	5.582	5.593	5.897	
Specific Gravity	2.65	2.65	2.65	
Liquid Limit	49	49	49	
Plastic Limit	22	22	22	
After Consolidation	**A**	**B**	**C**	**D**
B-Value	1.00	0.95	0.96	
Water Content (%)	26.7	26.7	24.8	
Dry Density (pcf)	102.72	96.99	100.91	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.611	0.706	0.639	
Effective Stress (psi)	10.0	40.0	20.0	
Back Press. (psi)	32.4	42.3	43.2	
Rate of Strain	0.006	0.006	0.006	

Maximum Deviator Stress Criterion	
C (psi)	3.9
Ø (deg)	19.6
C' (psi)	2.5
Ø' (deg)	24.4

After Shear	A	B	C	D
σ'1 at Failure (psi)	12.43	72.37	41.99	
σ'3 at Failure (psi)	1.64	27.32	13.50	

Stress at Maximum Deviator Stress Criterion



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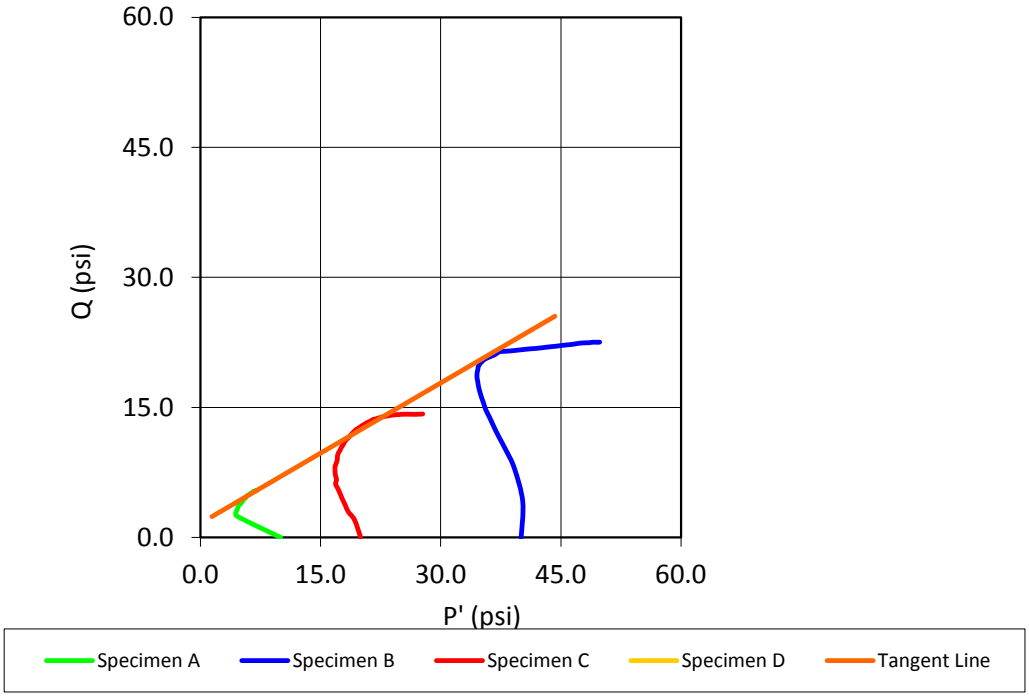
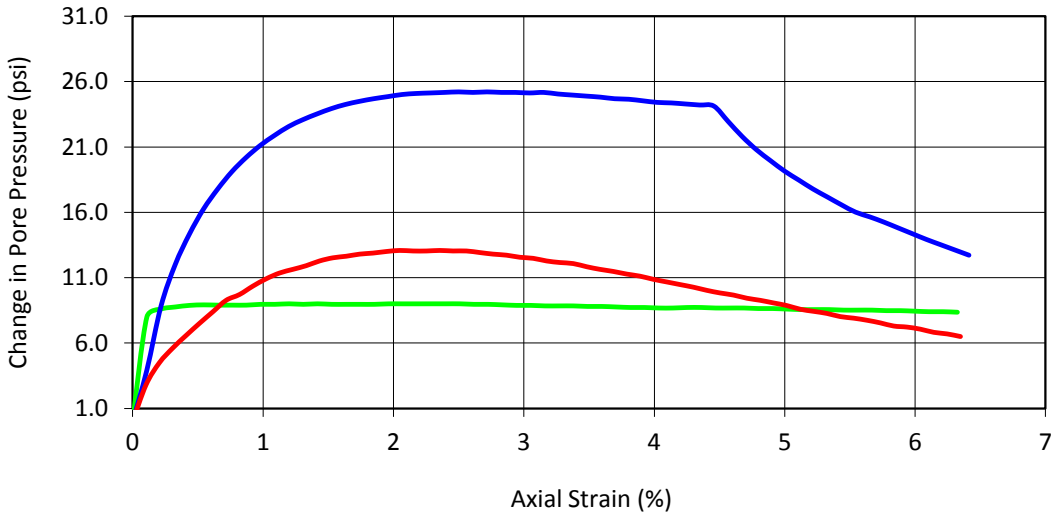
Stress Paths (Effective)
(a = 1.6 alpha = 28.3)



Change in Pore Pressure vs. Axial Strain



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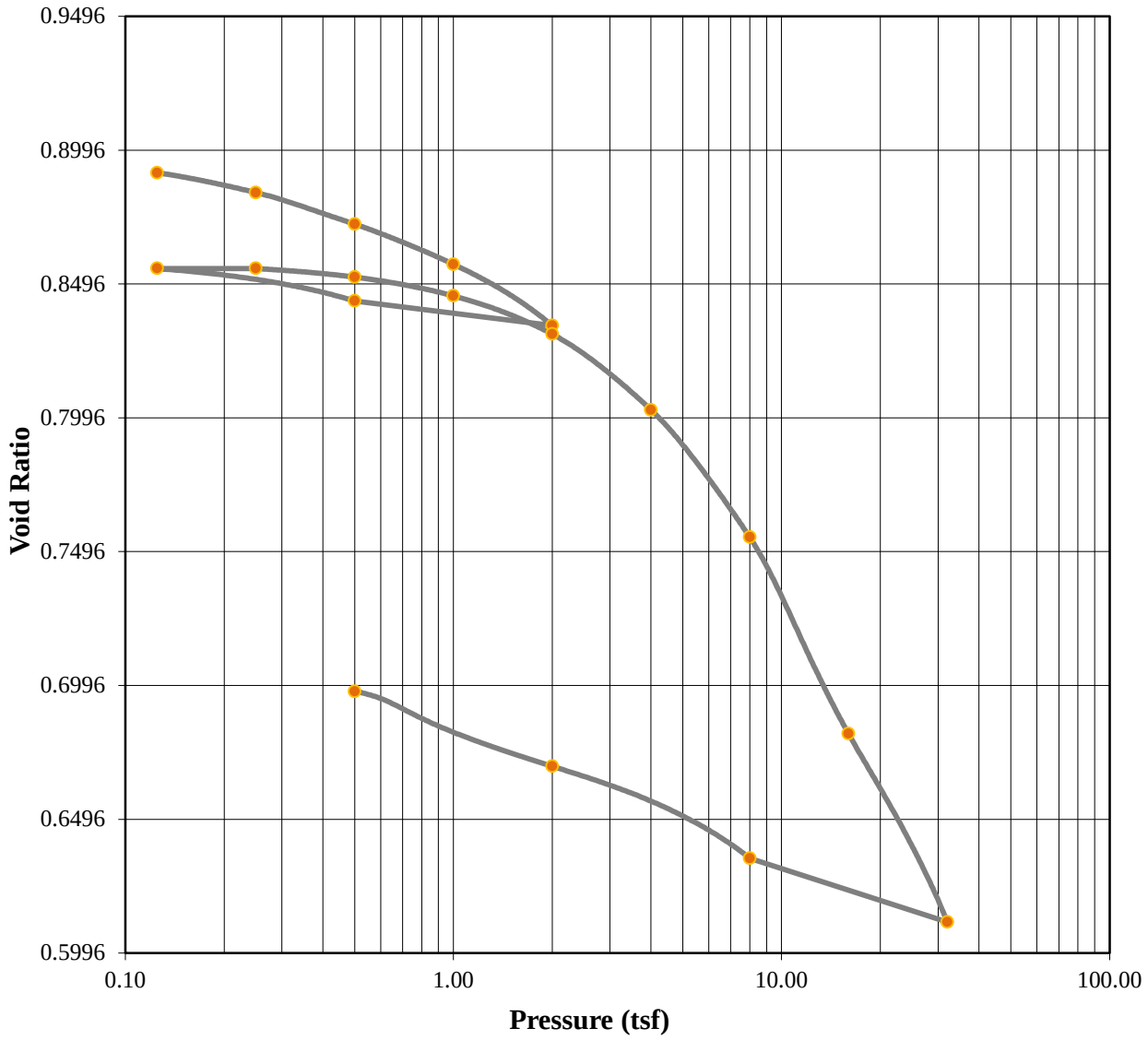

Test Date: 6/15/2016

Summary of Consolidation Test Results

Overburden Press. (tsf)	**0.58**	**Compression Index, C_c**	**0.24**
Preconsol. Press., P_c (tsf)	**3.46**	**Rebound Index, C_r**	**0.01**
Over Consolidation Ratio	**5.97**		

Soil Description:	Red & Gray Clayey Sand			
Project Number:	251537	**Depth:**	9.9'-10.4'	**Remarks:**
Sample Number:	ST-1	**Boring Number:**	B-117	
Project:				
Client:				
Location:	B-117			

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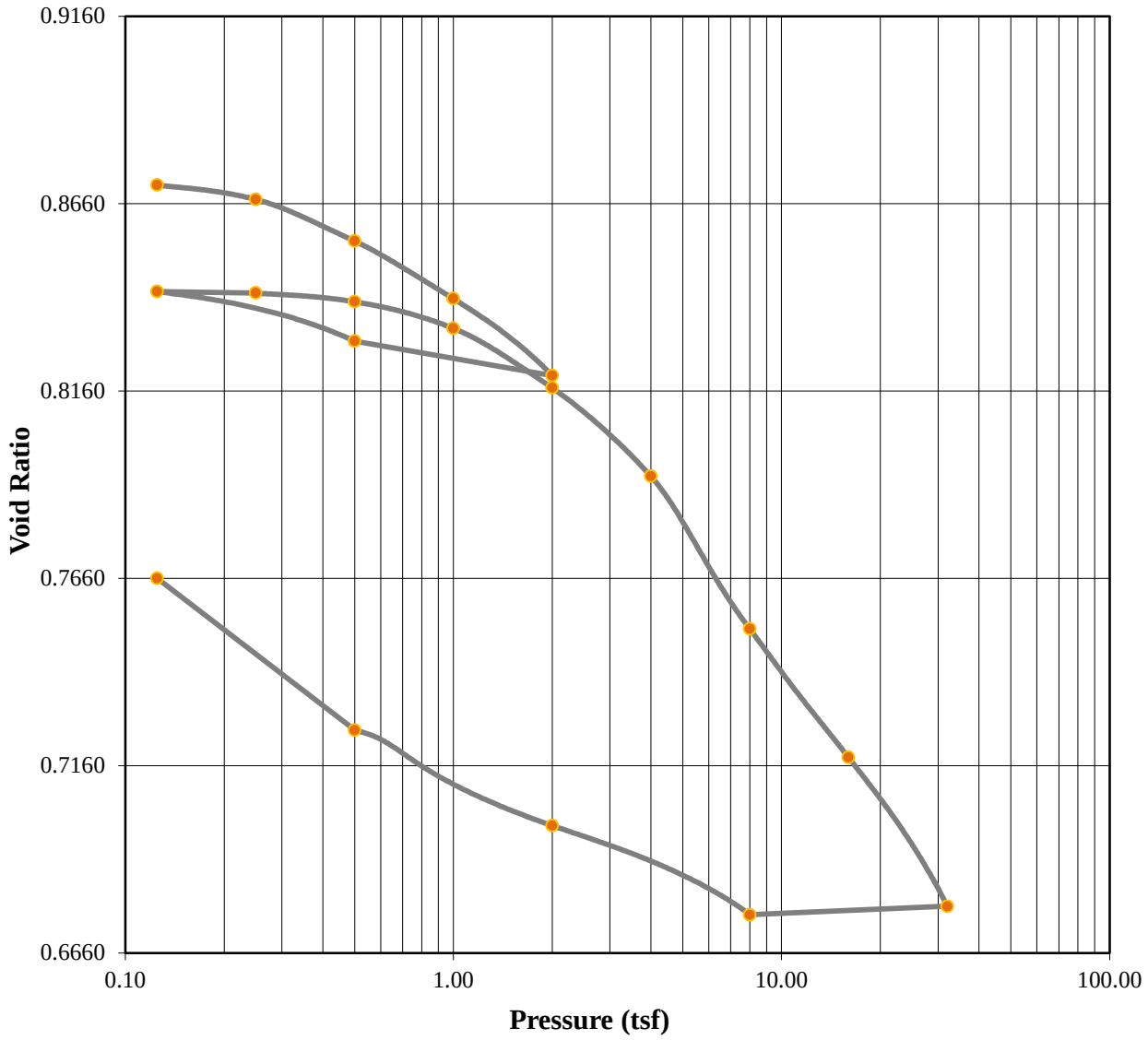

Test Date: 6/16/2016

Summary of Consolidation Test Results

Overburden Press. (tsf)	0.84	Compression Index, C_c	0.13
Preconsol. Press., P_c (tsf)	0.93	Rebound Index, C_r	0.02
Over Consolidation Ratio	1.11		

Soil Description:

Project Number:	251537	**Depth:**	20.0-20.4	**Remarks:**
Sample Number:	B-120	**Boring Number:**	B-120	
Project:	Highway 67			
Client:				
Location:	ST-1			

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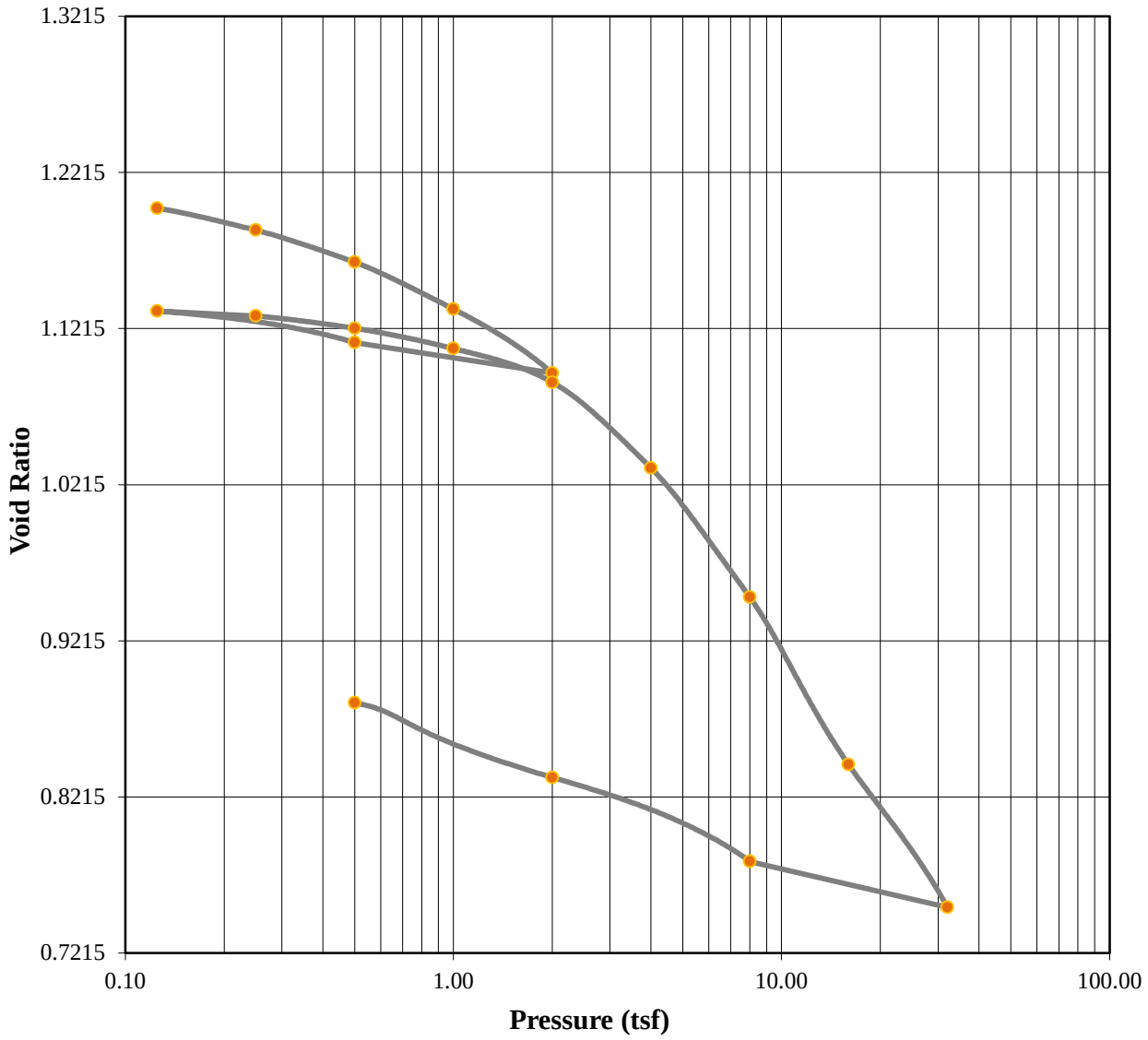

Test Date: 6-23-16

Summary of Consolidation Test Results

Overburden Press. (tsf)	**1.18**	**Compression Index, C_c**	**0.32**
Preconsol. Press., P_c (tsf)	**2.00**	**Rebound Index, C_r**	**0.04**
Over Consolidation Ratio	**1.69**		

Soil Description:

Project Number:	251537	**Depth:** 19.4-19.8	**Remarks:**
Sample Number:	B-122	**Boring Number:** B-122	
Project:	Highway 67		
Client:			
Location:	ST-1		

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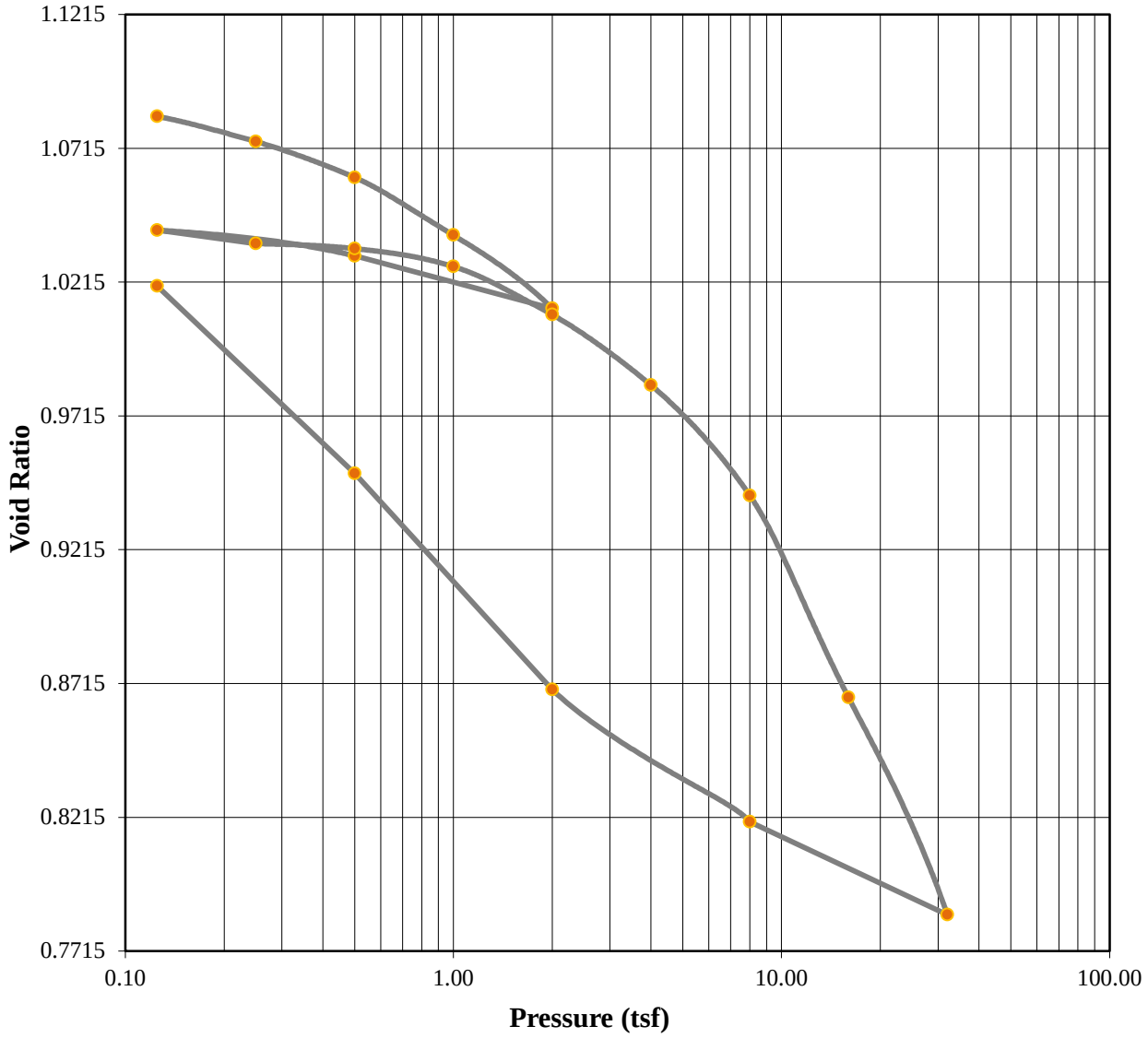

Test Date: 6/15/2016

Summary of Consolidation Test Results

Overburden Press. (tsf)	**0.58**	**Compression Index, C_c**	**0.25**
Preconsol. Press., P_c (tsf)	**3.43**	**Rebound Index, C_r**	**0.06**
Over Consolidation Ratio	**5.91**		

Soil Description:

Project Number:	251537	**Depth:** 14.6-15.1	**Remarks:**
Sample Number:	ST-1	**Boring Number:** B-130	
Project:			
Client:			
Location:	B-130		

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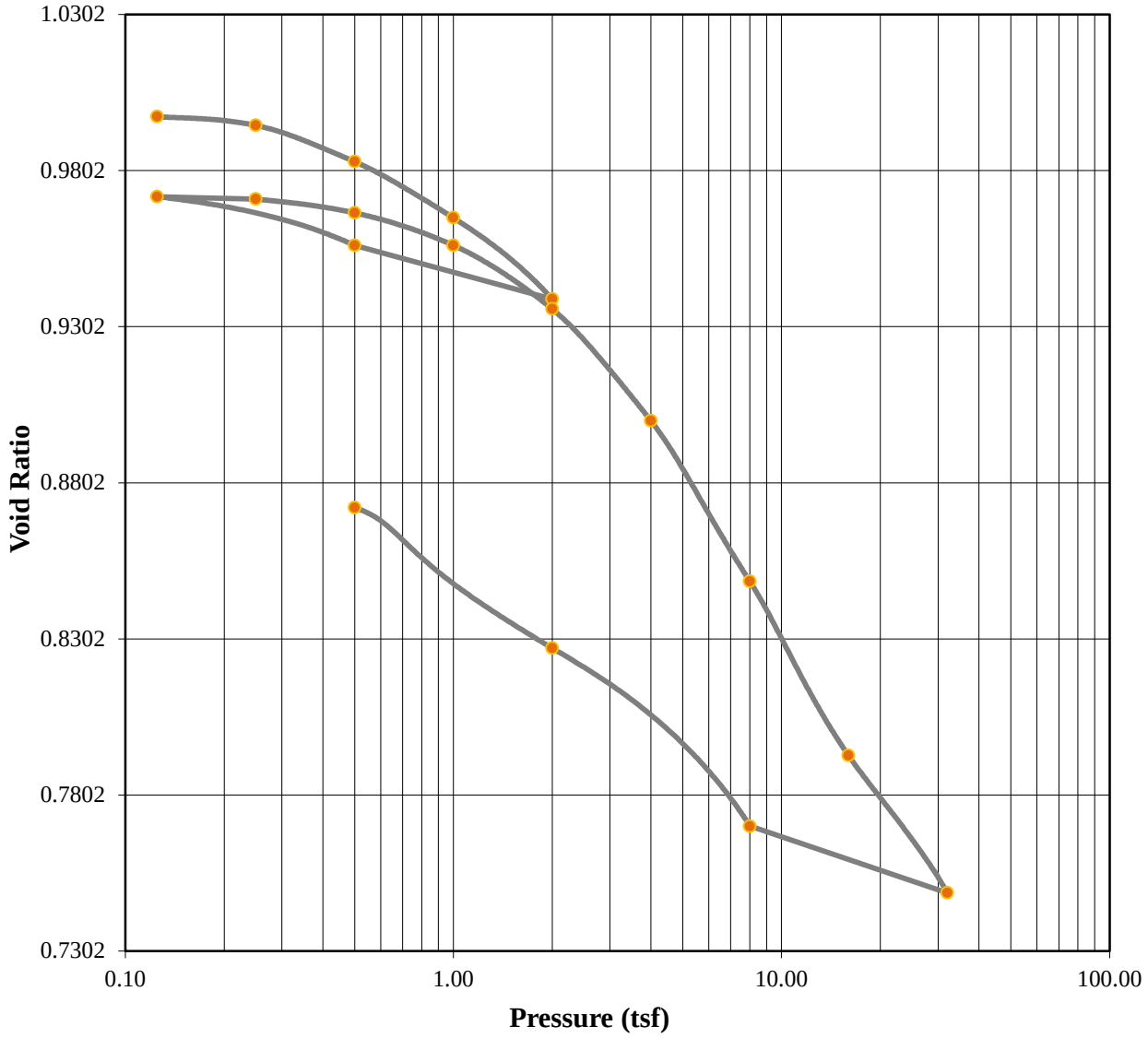

Test Date: 6/22/2016

Summary of Consolidation Test Results

Overburden Press. (tsf)	**1.24**	**Compression Index, C_c**	**0.18**
Preconsol. Press., P_c (tsf)	**1.43**	**Rebound Index, C_r**	**0.04**
Over Consolidation Ratio	**1.15**		

Soil Description:

Project Number:	251537	**Depth:** 20.4-20.9	**Remarks:**
Sample Number:	B-163	**Boring Number:** B-163	
Project:	Highway 67		
Client:			
Location:	ST-2		

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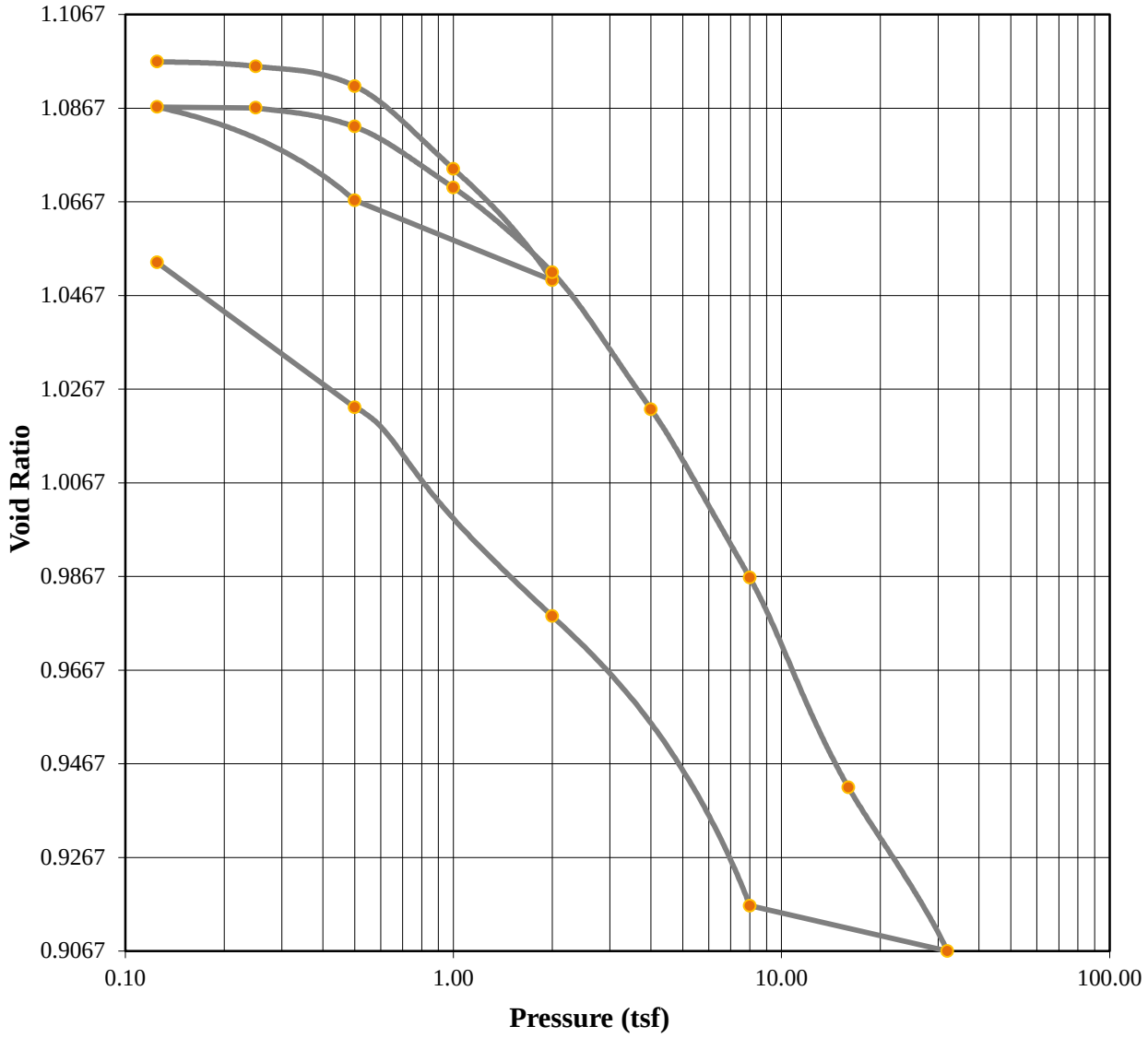

Test Date: 6-23-16			
Summary of Consolidation Test Results			
Overburden Press. (tsf)	**1.23**	**Compression Index, C_c**	**0.13**
Preconsol. Press., P_c (tsf)	**1.42**	**Rebound Index, C_r**	**0.04**
Over Consolidation Ratio	**1.15**		

Soil Description:				
Project Number:	251537	**Depth:**	20.2-20.7	**Remarks:**
Sample Number:	B-165	**Boring Number:**	B-165	
Project:	Highway 67			
Client:				
Location:	ST-2			

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

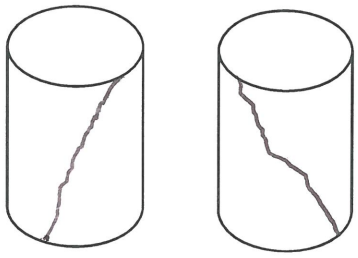
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-21
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-123
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 66.3' to 66.7'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Claystone: trc. fossiliferous, sli. silty, mod. wthd.

Diameter :	1.96 in	Area :	3.03 in^2
Height :	4.01 in	Volume :	0.007 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	130.98	lbs/$ft.^3$
Maximum Stress :	440	psi
Elapsed Time :	3:00	min.
Rate of Loading :	10	lb/sec



Comments :

Approved By : Ke E Walker

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

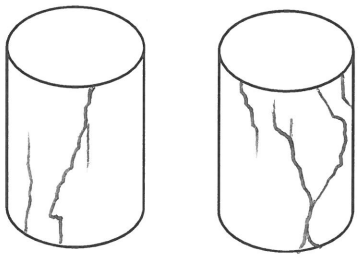
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-22
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-123
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 77.2' to 77.6'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Shale: f. grain sandstone laminae, silty, sli. wthd.

Diameter :	1.98 in	Area :	3.09 in^2
Height :	4.05 in	Volume :	0.0072 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	161.59	lbs/$ft.^3$
Maximum Stress :	1696	psi
Elapsed Time :	4:15	min.
Rate of Loading :	30	lb/sec



Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

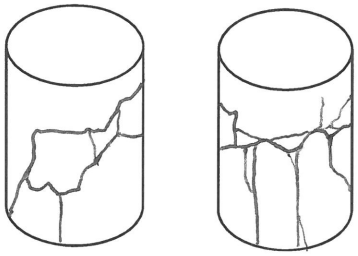
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-23
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-120
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 55.5' to 55.9'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Limestone: fossiliferous, vuggy, sli. to mod. wthd.

Diameter :	1.98 in	Area :	3.08 in^2
Height :	4.09 in	Volume :	0.0073 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	148.56	lbs/$ft.^3$
Maximum Stress :	2403	psi
Elapsed Time :	5:00	min.
Rate of Loading :	50	lb/sec



Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

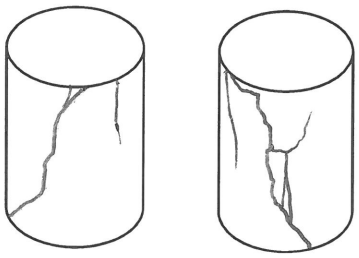
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-24
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-120
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 66.2' to 66.6'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Shale: silty, f. micaceous, sli. wthd.

Diameter :	1.98 in	Area :	3.09 in^2
Height :	4.02 in	Volume :	0.0072 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	153.12	lbs/$ft.^3$
Maximum Stress :	2445	psi
Elapsed Time :	6:50	min.
Rate of Loading :	80	lb/sec



Comments :

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

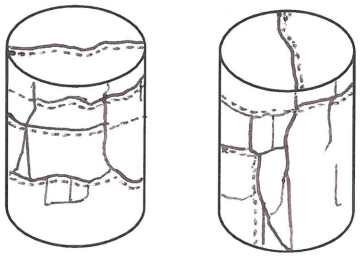
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-25
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-121
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 29.2' to 29.6'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Claystone: calcareous, fossiliferous, mod. wthd.

Diameter :	1.98 in	Area :	3.08 in^2
Height :	4.08 in	Volume :	0.0073 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	117.82	lbs/ft.^{3}
Maximum Stress :	234	psi
Elapsed Time :	3:50	min.
Rate of Loading :	10	lb/sec



--------- Existing Dessication Cracks

Comments :

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

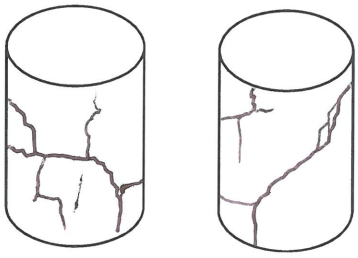
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-26
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-121
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 45.2' to 45.6'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Claystone: v.f. to f. sandy w/ripple laminae, sli. wthd.

Diameter :	1.98 in	Area :	3.07 in^2
Height :	4.06 in	Volume :	0.0072 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	117.35	lbs/$ft.^3$
Maximum Stress :	329	psi
Elapsed Time :	3:20	min.
Rate of Loading :	10	lb/sec



Comments :

Approved By : Ken E Walker

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T 270.444.9691 F 270.538.1599

HDR | ICA

ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

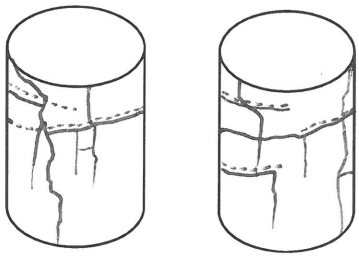
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-27
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-130
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 57.0' to 57.4'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Claystone: calcareous in part, fossiliferous, mod. wthd.

Diameter :	1.96 in	Area :	3.02 in^2
Height :	4.08 in	Volume :	0.0071 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	121.14	lbs/ft.^{3}
Maximum Stress :	400	psi
Elapsed Time :	3:28	min.
Rate of Loading :	10	lb/sec



--------- Existing Dessication Cracks

Comments :

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

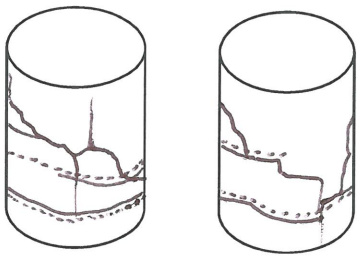
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-28
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-130
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 71.9' to 72.3'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Clay: soft, sli. calcareous, trc. f. micaceous, mod. wthd.

Diameter :	1.94 in	Area :	2.97 in^2
Height :	4.02 in	Volume :	0.0069 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	131.1	lbs/$ft.^3$
Maximum Stress :	185	psi
Elapsed Time :	2:00	min.
Rate of Loading :	10	lb/sec



--------- Existing Dessication Cracks

Comments :

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

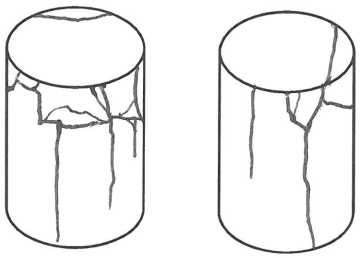
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-29
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-126
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 50.0' to 50.4'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Claystone: calcareous, fossiliferous, mod. wthd.

Diameter :	1.95 in	Area :	2.99 in²
Height :	3.97 in	Volume :	0.0069 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	124.62	lbs/ft.³
Maximum Stress :	391	psi
Elapsed Time :	5:20	min.
Rate of Loading :	1	lb/sec



Comments :

Approved By : K. E. Walker

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

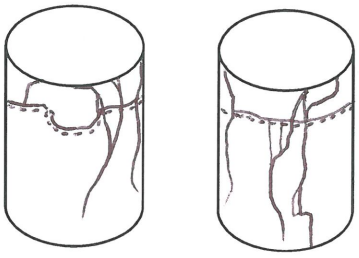
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-30
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-126
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 59.9' to 60.3'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Shale: silty, f. micaceous, mod. wthd.

Diameter :	1.97 in	Area :	3.04 in²
Height :	4.01 in	Volume :	0.0071 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	151.33	lbs/ft.³
Maximum Stress :	730	psi
Elapsed Time :	6:13	min.
Rate of Loading :	10	lb/sec



--------- Existing Healed Joint

Comments :

Approved By : K. E. Walker

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

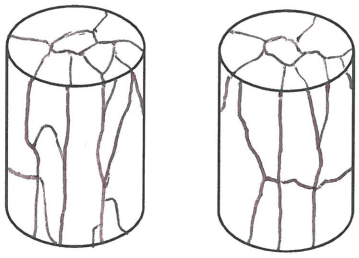
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-31
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-131
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 53.4' to 53.8'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Limestone: vuggy, fossiliferous, sli. wthd.

Diameter :	1.98 in	Area :	3.08 in²
Height :	4.10 in	Volume :	0.0073 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	164.82	lbs/ft.³
Maximum Stress :	3590	psi
Elapsed Time :	6:25	min.
Rate of Loading :	80	lb/sec



Comments :

Approved By : Ken E Walker

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

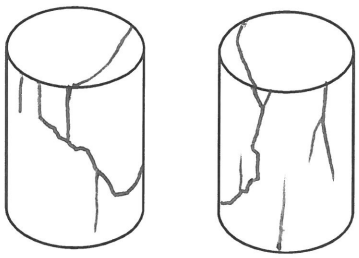
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-32
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-131
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 71.0' to 71.4'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Claystone: calcareous in part, fossiliferous, trcs. organic frags., sli. wthd.

Diameter :	1.94 in	Area :	2.97 in^2
Height :	4.02 in	Volume :	0.0069 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	132.03	lbs/$ft.^3$
Maximum Stress :	519	psi
Elapsed Time :	5:10	min.
Rate of Loading :	10	lb/sec



Comments :

Approved By : Ken E Wolfe

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ASTM: D7012-Method C

UNCONFINED COMPRESSION TEST (ROCK CORE)

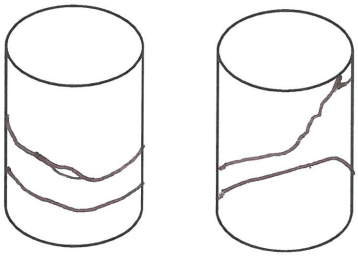
PROJECT NAME	: Hwy. 67 Widening - Main St. to Vandenberg Blvd.		
PROJECT NO.	: 251537	SAMPLE NO.	: RS-33
PROJECT COUNTY	: Pulaski	SAMPLE LOC.	: B-131
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 75.9' to 76.3'
LABORATORY NO.	: 251537	DATE TESTED	: 7/5/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 7/7/2016

ROCK DESCRIPTION : Clay: sli. calcareous, trcs. f. mica & organic frags., mod. wthd.

Diameter :	1.93 in	Area :	2.94 in²
Height :	4.03 in	Volume :	0.0069 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	133.86	lbs/ft.³
Maximum Stress :	78	psi
Elapsed Time :	1:00	min.
Rate of Loading :	1	lb/sec



Comments :

Approved By : Ken E Walker

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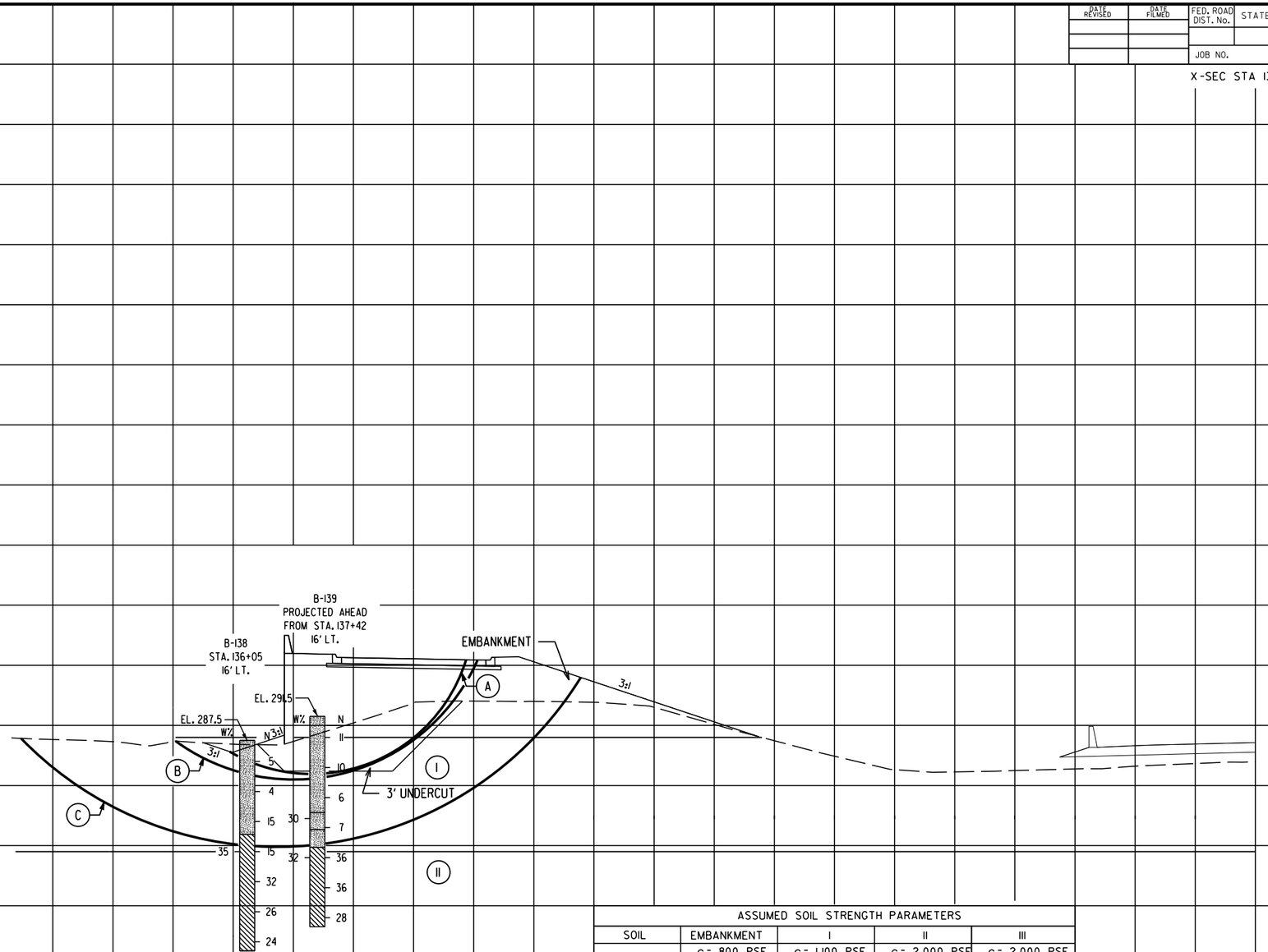
Appendix C. DESIGN CROSS SECTIONS

DATE REVISED	DATE FILMED	FED. ROAD DIST. No.	STATE	FED. AID PROJECT		SHEET No.	TOTAL SHEETS
		JOB NO.		CA0604			

X-SEC STA 137+00 JOHN HARDEN



ASSUMED SOIL STRENGTH PARAMETERS				
SOIL	EMBANKMENT	I	II	III
SHORT TERM / SEISMIC	c = 800 PSF Φ = 0° γ = 120 PCF	c = 1,100 PSF Φ = 0° γ = 120 PCF	c = 2,000 PSF Φ = 0° γ = 120 PCF	c = 2,000 PSF Φ = 0° γ = 120 PCF
LONG TERM	$\bar{c}$ = 160 PSF $\bar{\Phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 220 PSF $\bar{\Phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 400 PSF $\bar{\Phi}$ = 28° γ = 120 PCF	$\bar{c}$ = 400 PSF $\bar{\Phi}$ = 28° γ = 120 PCF

FACTORS OF SAFETY		
SHORT TERM	A	2.8
LONG TERM	B	2.3
SEISMIC	C	1.7

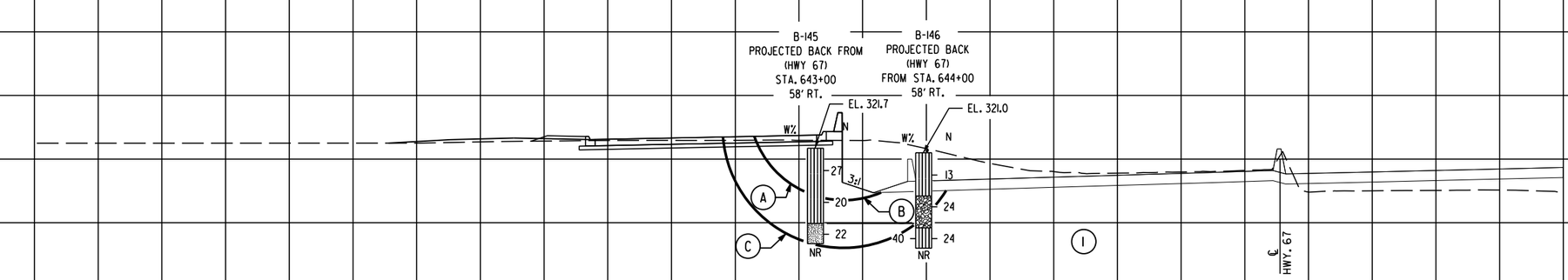
137+00

330 320 310 300 290 280 270 260 250

-150 -140 -130 -120 -110 -100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

DATE REVISED	DATE FILMED	FED. ROAD DIST. No.	STATE	FED. AID PROJECT		SHEET No.	TOTAL SHEETS
		JOB NO.		CA0604			

X-SEC STA 152+00 JOHN HARDEN



ASSUMED SOIL STRENGTH PARAMETERS	
SOIL	I
SHORT TERM / SEISMIC	c = 0 PSF Φ = 32° γ = 120 PCF
LONG TERM	c̄ = 120 PSF φ̄ = 32° γ = 120 PCF

FACTORS OF SAFETY		
SHORT TERM	A	1.6
LONG TERM	B	1.6
SEISMIC	C	1.2

350 340 330 320 310 300 290 280 270

152+00

-150 -140 -130 -120 -110 -100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

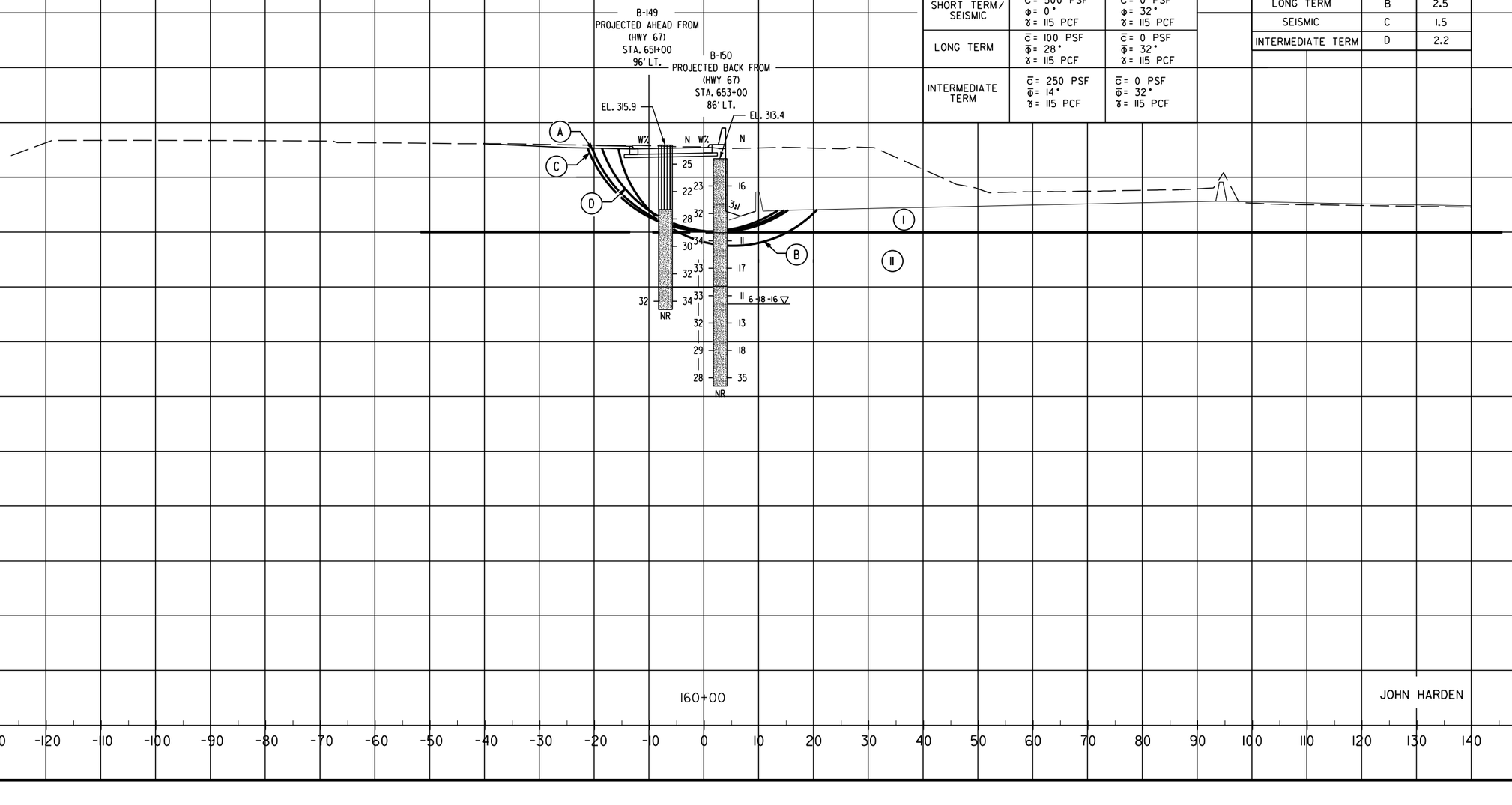
$$$$date$$$$

DATE REVISED	DATE FILMED	FED. ROAD DIST. No.	STATE	FED. AID PROJECT		SHEET No.	TOTAL SHEETS
		JOB NO.		CA0604			

X-SEC STA 160+00 JOHN HARDEN

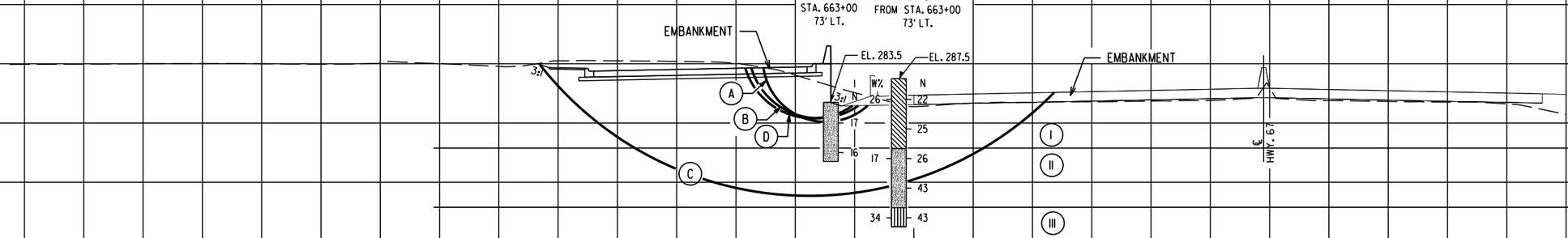
ASSUMED SOIL STRENGTH PARAMETERS		
SOIL	I	II
SHORT TERM / SEISMIC	c = 500 PSF Φ = 0° γ = 115 PCF	c = 0 PSF Φ = 32° γ = 115 PCF
LONG TERM	$\bar{c}$ = 100 PSF $\bar{\Phi}$ = 28° γ = 115 PCF	$\bar{c}$ = 0 PSF $\bar{\Phi}$ = 32° γ = 115 PCF
INTERMEDIATE TERM	$\bar{c}$ = 250 PSF $\bar{\Phi}$ = 14° γ = 115 PCF	$\bar{c}$ = 0 PSF $\bar{\Phi}$ = 32° γ = 115 PCF

FACTORS OF SAFETY		
SHORT TERM	A	2.3
LONG TERM	B	2.5
SEISMIC	C	1.5
INTERMEDIATE TERM	D	2.2



DATE REVISED	DATE FILMED	FED. ROAD DIST. No.	STATE	FED. AID PROJECT		SHEET No.	TOTAL SHEETS
		JOB NO.		CA0604			

(2) X-SEC STA 172+00 JOHN HARDEN



ASSUMED SOIL STRENGTH PARAMETERS				
SOIL	EMBANKMENT	I	II	III
SHORT TERM / SEISMIC	c = 800 PSF Φ = 0° γ = 120 PCF	c = 1,700 PSF Φ = 0° γ = 120 PCF	c = 2,500 PSF Φ = 0° γ = 120 PCF	c = 0 PSF Φ = 34° γ = 120 PCF
LONG TERM	$\bar{c}$ = 160 PSF $\bar{\Phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 340 PSF $\bar{\Phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 500 PSF $\bar{\Phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 0 PSF $\bar{\Phi}$ = 34° γ = 120 PCF
INTERMEDIATE TERM	$\bar{c}$ = 400 PSF $\bar{\Phi}$ = 13° γ = 120 PCF	$\bar{c}$ = 850 PSF $\bar{\Phi}$ = 13° γ = 120 PCF	$\bar{c}$ = 1,250 PSF $\bar{\Phi}$ = 13° γ = 120 PCF	$\bar{c}$ = 0 PSF $\bar{\Phi}$ = 34° γ = 120 PCF

FACTORS OF SAFETY		
SHORT TERM	A	>3
LONG TERM	B	>3
SEISMIC	C	>3
INTERMEDIATE	D	>3

330 320 310 300 290 280 270 260 250

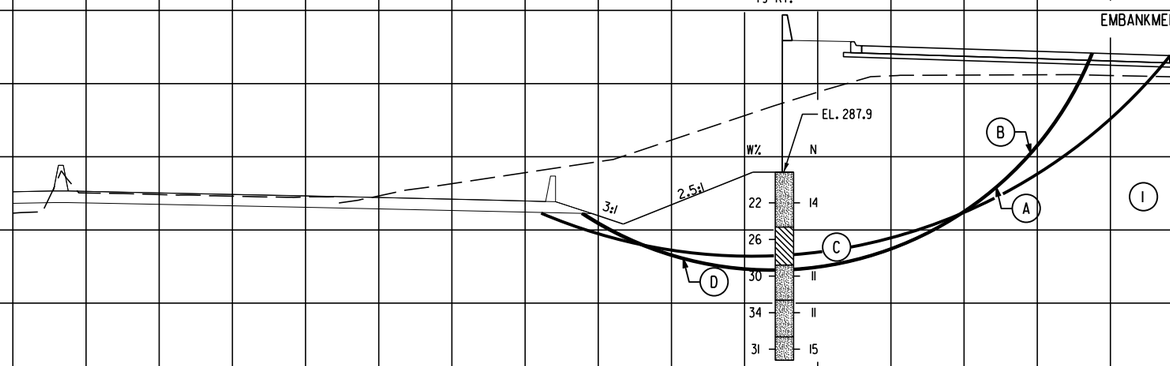
172+00

-150 -140 -130 -120 -110 -100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

SSSSGOTOSSS

DATE REVISED	DATE FILMED	FED. ROAD DIST. No.	STATE	FED. AID PROJECT		SHEET No.	TOTAL SHEETS
		JOB NO.		CA0604			

X-SEC STA 136+00 T.P. WHITE DR.



ASSUMED SOIL STRENGTH PARAMETERS		
SOIL	EMBANKMENT	I
SHORT TERM / SEISMIC	c = 800 PSF ϕ = 0° γ = 120 PCF	c = 0 PSF ϕ = 30° γ = 115 PCF
LONG TERM	$\bar{c}$ = 160 PSF $\bar{\phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 0 PSF $\bar{\phi}$ = 30° γ = 115 PCF
INTERMEDIATE TERM	$\bar{c}$ = 400 PSF $\bar{\phi}$ = 13° γ = 120 PCF	$\bar{c}$ = 0 PSF $\bar{\phi}$ = 30° γ = 115 PCF

FACTORS OF SAFETY		
SHORT TERM	A	1.9
LONG TERM	B	1.9
SEISMIC	C	1.3
INTERMEDIATE TERM	D	1.9

T.P. WHITE DR.

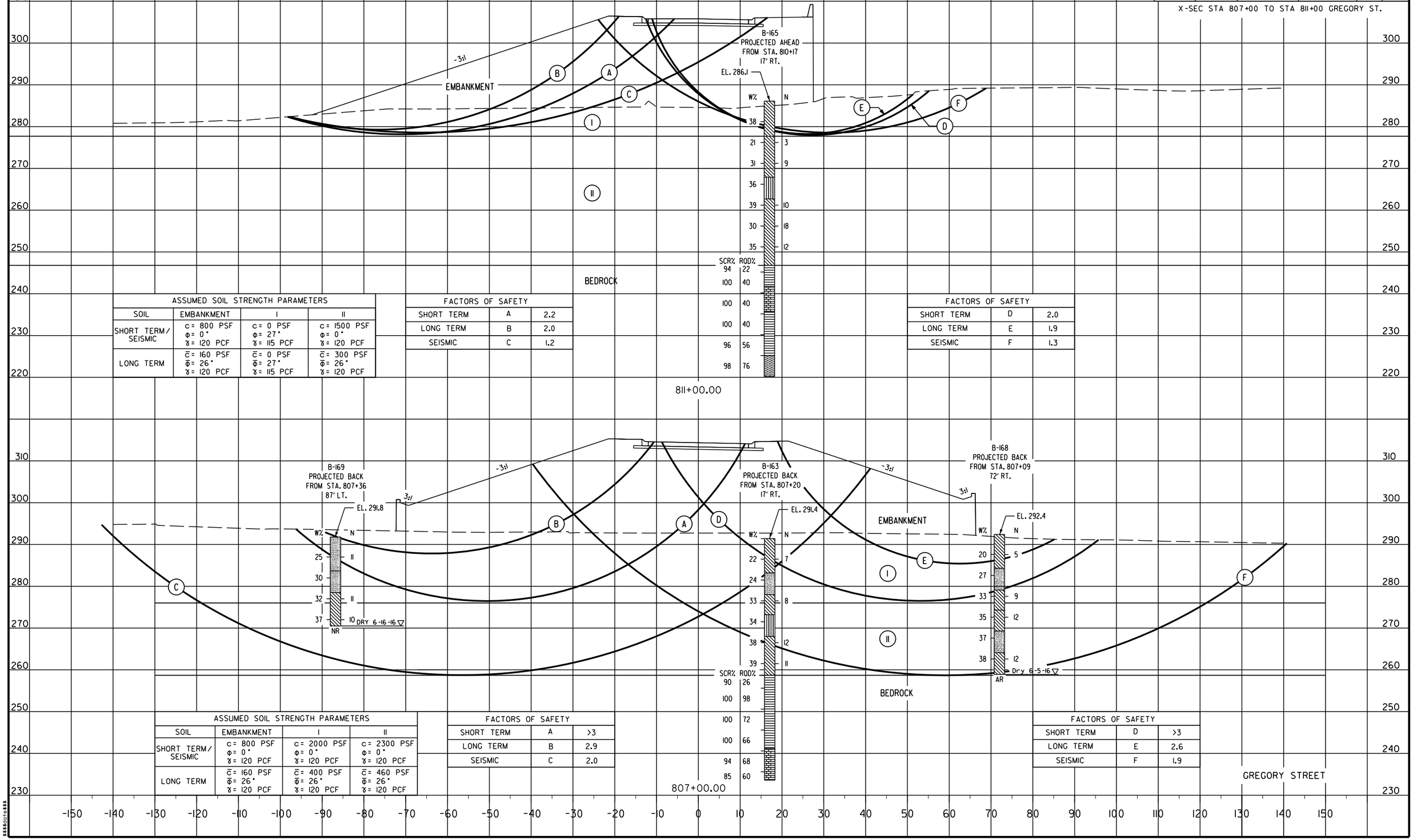
136+00

320 310 300 290 280 270 260 250

-150 -140 -130 -120 -110 -100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

DATE REVISED	DATE FILMED	FED. ROAD DIST. No.	STATE	FED. AID PROJECT		SHEET No.	TOTAL SHEETS
		JOB NO.		CA0604			

X-SEC STA 807+00 TO STA 811+00 GREGORY ST.



ASSUMED SOIL STRENGTH PARAMETERS			
SOIL	EMBANKMENT	I	II
SHORT TERM / SEISMIC	c = 800 PSF Φ = 0° γ = 120 PCF	c = 0 PSF Φ = 27° γ = 115 PCF	c = 1500 PSF Φ = 0° γ = 120 PCF
LONG TERM	$\bar{c}$ = 160 PSF $\bar{\Phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 0 PSF $\bar{\Phi}$ = 27° γ = 115 PCF	$\bar{c}$ = 300 PSF $\bar{\Phi}$ = 26° γ = 120 PCF

FACTORS OF SAFETY		
SHORT TERM	A	2.2
LONG TERM	B	2.0
SEISMIC	C	1.2

FACTORS OF SAFETY		
SHORT TERM	D	2.0
LONG TERM	E	1.9
SEISMIC	F	1.3

ASSUMED SOIL STRENGTH PARAMETERS			
SOIL	EMBANKMENT	I	II
SHORT TERM / SEISMIC	c = 800 PSF Φ = 0° γ = 120 PCF	c = 2000 PSF Φ = 0° γ = 120 PCF	c = 2300 PSF Φ = 0° γ = 120 PCF
LONG TERM	$\bar{c}$ = 160 PSF $\bar{\Phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 400 PSF $\bar{\Phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 460 PSF $\bar{\Phi}$ = 26° γ = 120 PCF

FACTORS OF SAFETY		
SHORT TERM	A	>3
LONG TERM	B	2.9
SEISMIC	C	2.0

FACTORS OF SAFETY		
SHORT TERM	D	>3
LONG TERM	E	2.6
SEISMIC	F	1.9

$$$$date$$$$

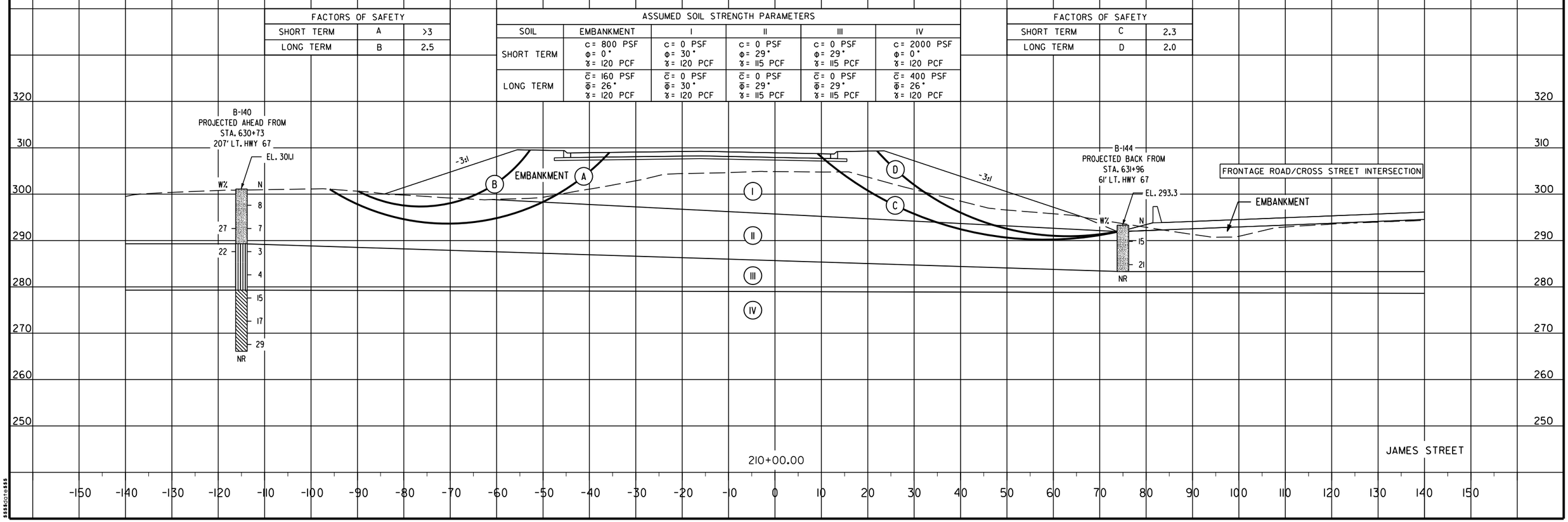
DATE REVISED	DATE FILMED	FED. ROAD DIST. No.	STATE	FED. AID PROJECT		SHEET No.	TOTAL SHEETS
		JOB NO.		CA0604			

X-SEC STA 210+00 JAMES ST.

FACTORS OF SAFETY		
SHORT TERM	A	>3
LONG TERM	B	2.5

ASSUMED SOIL STRENGTH PARAMETERS					
SOIL	EMBANKMENT	I	II	III	IV
SHORT TERM	c = 800 PSF ϕ = 0° γ = 120 PCF	c = 0 PSF ϕ = 30° γ = 120 PCF	c = 0 PSF ϕ = 29° γ = 115 PCF	c = 0 PSF ϕ = 29° γ = 115 PCF	c = 2000 PSF ϕ = 0° γ = 120 PCF
LONG TERM	$\bar{c}$ = 160 PSF $\bar{\phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 0 PSF $\bar{\phi}$ = 30° γ = 120 PCF	$\bar{c}$ = 0 PSF $\bar{\phi}$ = 29° γ = 115 PCF	$\bar{c}$ = 0 PSF $\bar{\phi}$ = 29° γ = 115 PCF	$\bar{c}$ = 400 PSF $\bar{\phi}$ = 26° γ = 120 PCF

FACTORS OF SAFETY		
SHORT TERM	C	2.3
LONG TERM	D	2.0

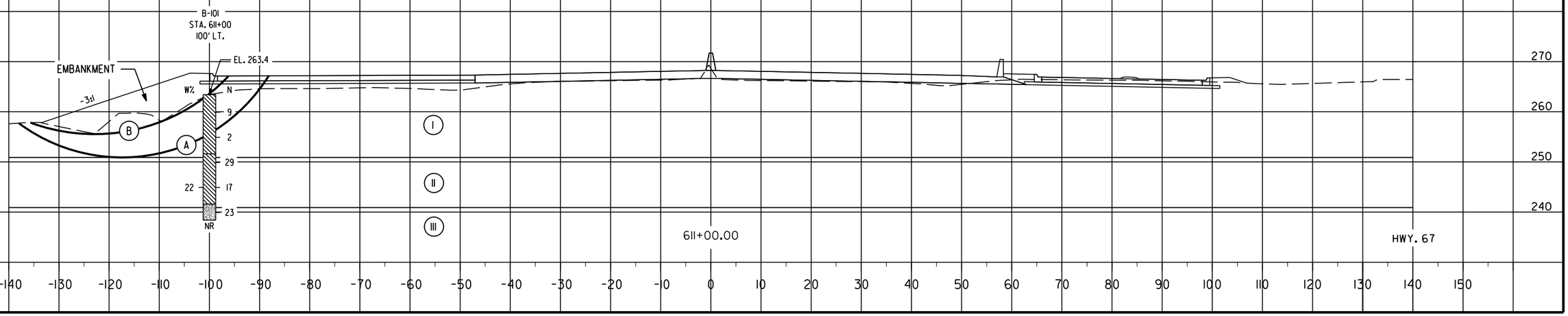


DATE REVISED	DATE FILMED	FED. ROAD DIST. No.	STATE	FED. AID PROJECT		SHEET No.	TOTAL SHEETS
		JOB NO.		CA0604			

X-SEC STA 611+00 HWY 67

ASSUMED SOIL STRENGTH PARAMETERS				
SOIL	EMBANKMENT	I	II	III
SHORT TERM	c= 800 PSF ϕ= 0° γ= 120 PCF	c= 600 PSF ϕ= 0° γ= 120 PCF	c= 2500 PSF ϕ= 0° γ= 120 PCF	c= 0 PSF ϕ= 34° γ= 110 PCF
LONG TERM	$\bar{c}$= 160 PSF $\bar{\phi}$= 26° γ= 120 PCF	$\bar{c}$= 120 PSF $\bar{\phi}$= 26° γ= 120 PCF	$\bar{c}$= 500 PSF $\bar{\phi}$= 26° γ= 120 PCF	$\bar{c}$= 0 PSF $\bar{\phi}$= 34° γ= 110 PCF

FACTORS OF SAFETY		
SHORT TERM	A	>3
LONG TERM	B	2.8

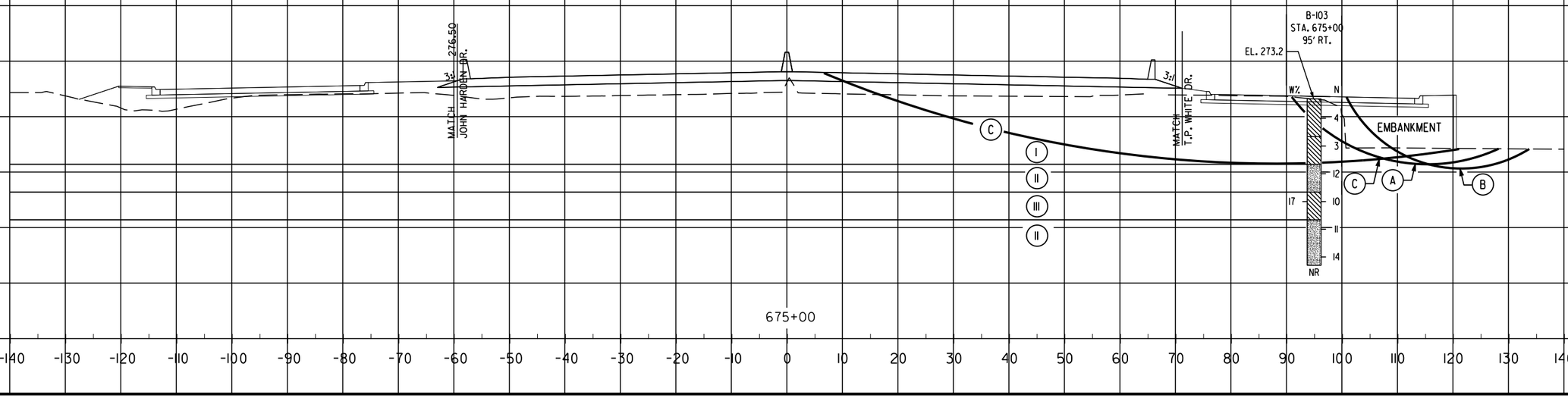


DATE REVISED	DATE FILMED	FED. ROAD DIST. No.	STATE	FED. AID PROJECT		SHEET No.	TOTAL SHEETS
		JOB NO.		CA0604			

X-SEC STA 675+00 HWY 67

ASSUMED SOIL STRENGTH PARAMETERS				
SOIL	EMBANKMENT	I	II	III
SHORT TERM / SEISMIC	c = 800 PSF ϕ = 0° γ = 120 PCF	c = 400 PSF ϕ = 0° γ = 120 PCF	c = 0 PSF ϕ = 30° γ = 115 PCF	c = 1000 PSF ϕ = 0° γ = 120 PCF
LONG TERM	$\bar{c}$ = 160 PSF $\bar{\phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 100 PSF $\bar{\phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 0 PSF $\bar{\phi}$ = 30° γ = 115 PCF	$\bar{c}$ = 160 PSF $\bar{\phi}$ = 26° γ = 120 PCF

FACTORS OF SAFETY		
SHORT TERM	A	1.9
LONG TERM	B	2.0
SEISMIC	C	1.1

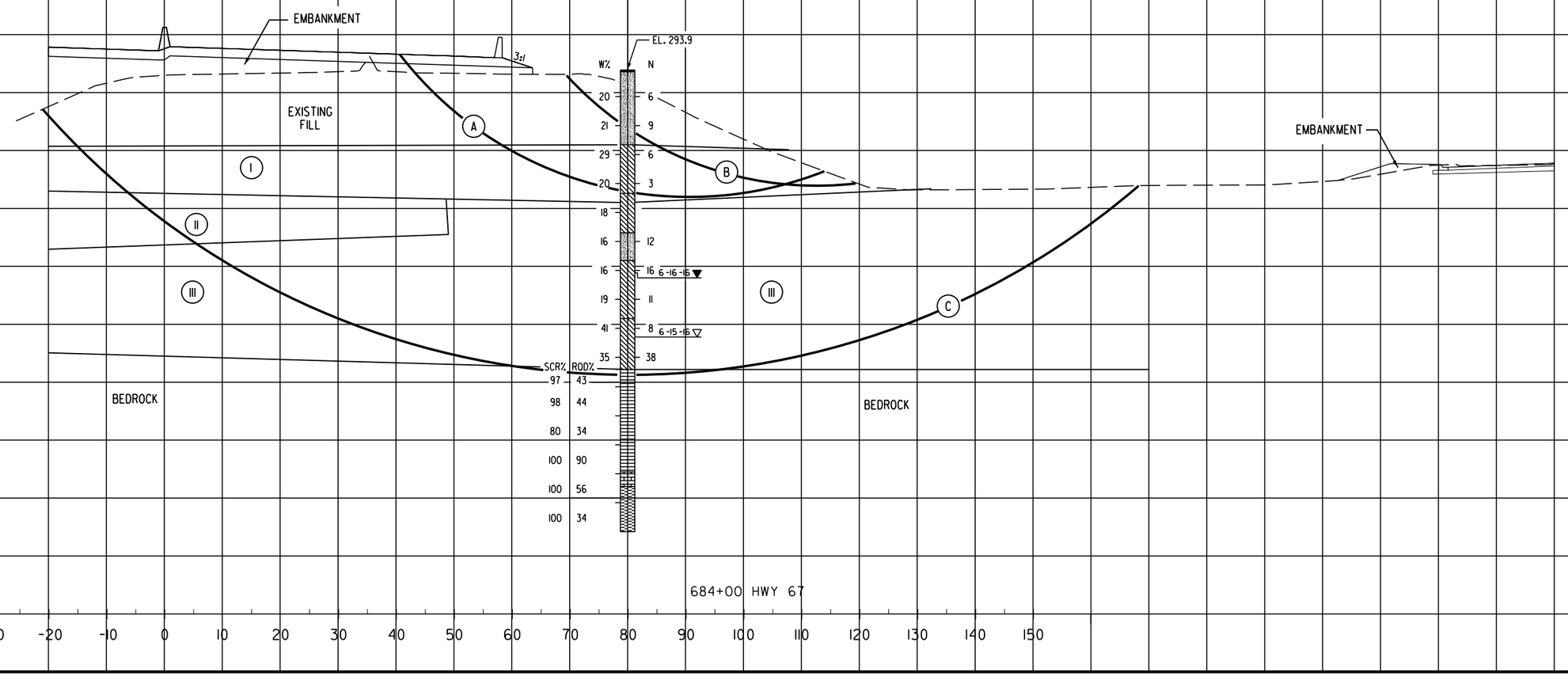


DATE REVISED	DATE FILMED	FED. ROAD DIST. No.	STATE	FED. AID PROJECT		SHEET No.	TOTAL SHEETS
		JOB NO.		CA0604			

(2) X-SEC STA 684+00 HWY 67

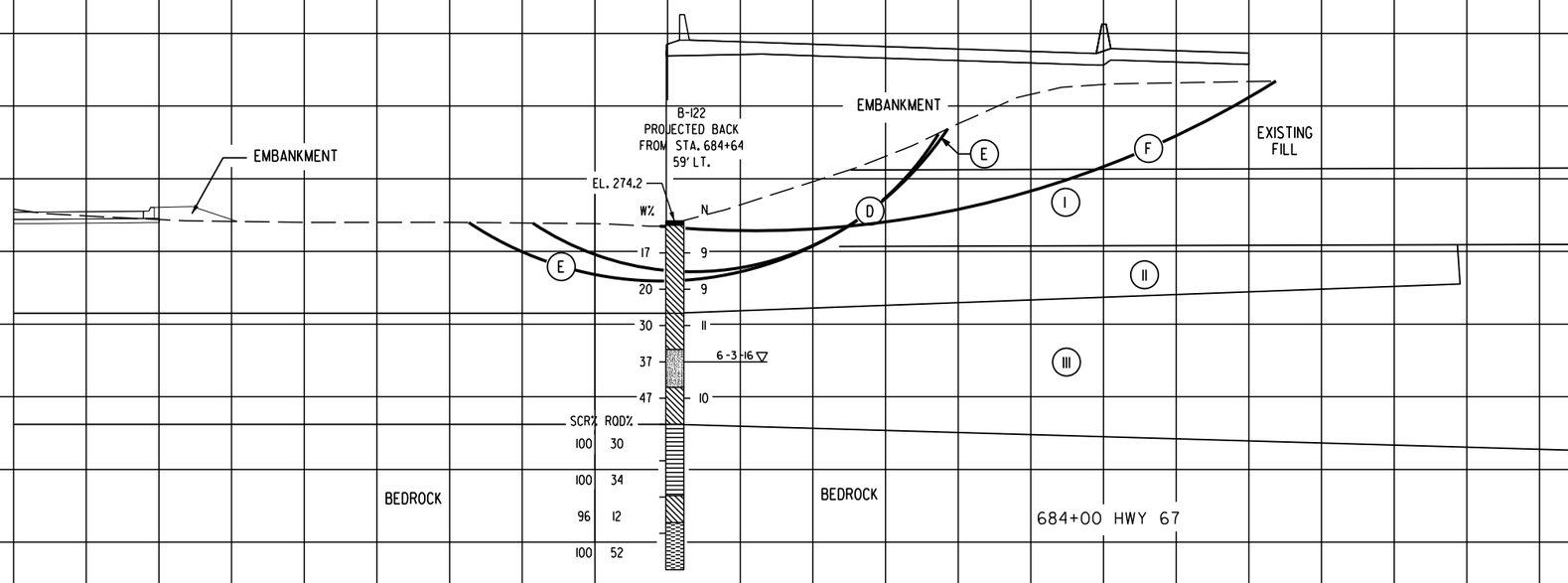
FACTORS OF SAFETY		
SHORT TERM	A	2.2
LONG TERM	B	1.9
SEISMIC	C	1.5

ASSUMED SOIL STRENGTH PARAMETERS					
SOIL	EMBANKMENT	EXISTING FILL	I	II	III
SHORT TERM / SEISMIC	c = 800 PSF Φ = 0° γ = 120 PCF	c = 0 PSF Φ = 30° γ = 120 PCF	c = 800 PSF Φ = 0° γ = 120 PCF	c = 1,200 PSF Φ = 0° γ = 120 PCF	c = 1,800 PSF Φ = 0° γ = 120 PCF
LONG TERM	$\bar{c}$ = 160 PSF $\bar{\Phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 0 PSF $\bar{\Phi}$ = 30° γ = 120 PCF	$\bar{c}$ = 160 PSF $\bar{\Phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 240 PSF $\bar{\Phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 360 PSF $\bar{\Phi}$ = 26° γ = 120 PCF



DATE REVISED	DATE FILMED	FED. ROAD DIST. No.	STATE	FED. AID PROJECT		SHEET No.	TOTAL SHEETS
		JOB NO.		CA0604			

X-SEC STA 684+00 HWY 67



FACTORS OF SAFETY		
SHORT TERM	D	1.8
LONG TERM	E	2.0
SEISMIC	F	1.0

ASSUMED SOIL STRENGTH PARAMETERS					
SOIL	EMBANKMENT	EXISTING FILL	I	II	III
SHORT TERM / SEISMIC	c = 800 PSF Φ = 0° γ = 120 PCF	c = 0 PSF Φ = 30° γ = 120 PCF	c = 800 PSF Φ = 0° γ = 120 PCF	c = 1,200 PSF Φ = 0° γ = 120 PCF	c = 1,800 PSF Φ = 0° γ = 120 PCF
LONG TERM	$\bar{c}$ = 160 PSF $\bar{\Phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 0 PSF $\bar{\Phi}$ = 30° γ = 120 PCF	$\bar{c}$ = 160 PSF $\bar{\Phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 240 PSF $\bar{\Phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 360 PSF $\bar{\Phi}$ = 26° γ = 120 PCF

$$$$date$$$

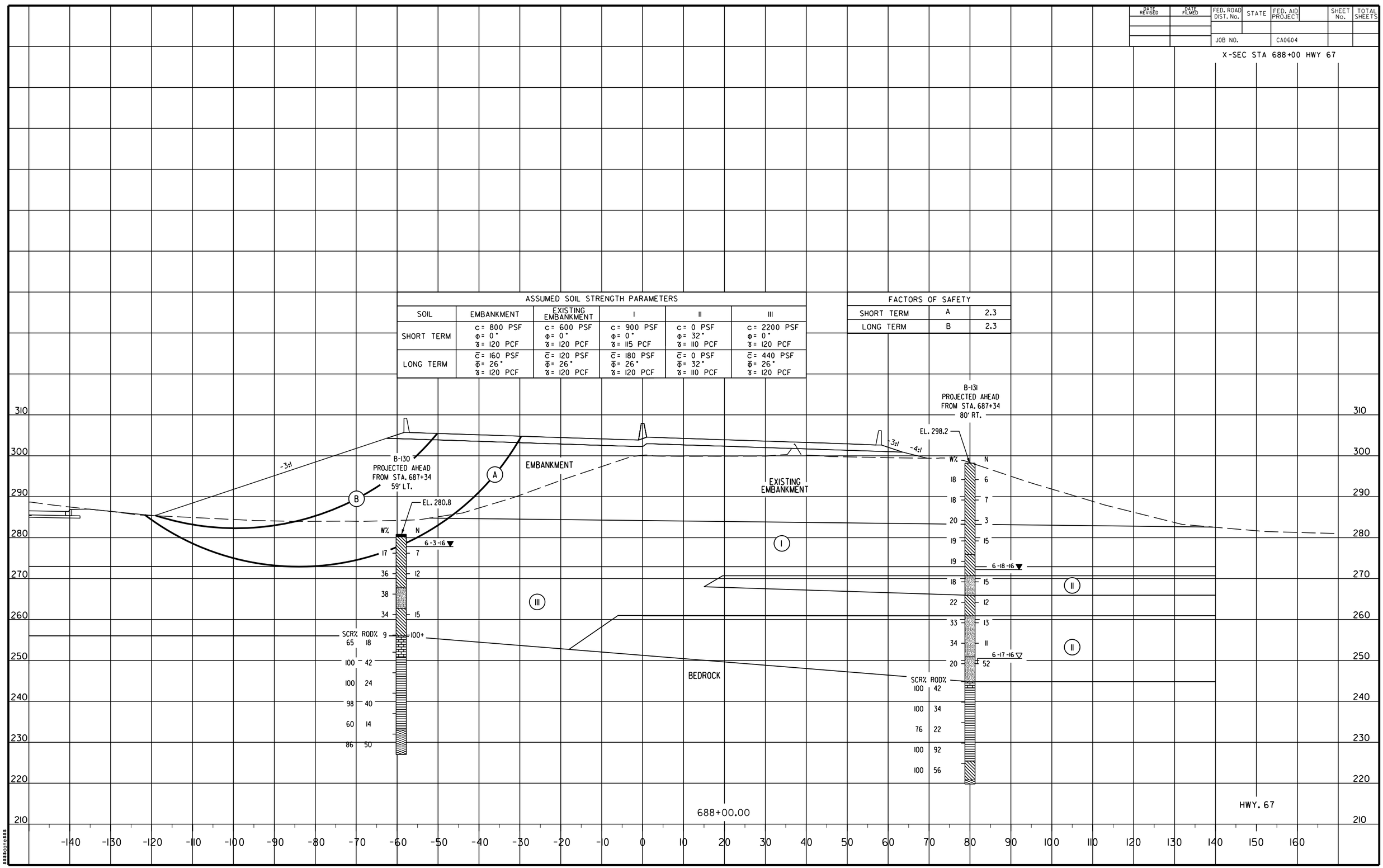
DATE REVISED	DATE FILMED	FED. ROAD DIST. No.	STATE	FED. AID PROJECT		SHEET No.	TOTAL SHEETS
		JOB NO.		CA0604			

X-SEC STA 688+00 HWY 67

ASSUMED SOIL STRENGTH PARAMETERS

SOIL	EMBANKMENT	EXISTING EMBANKMENT	I	II	III
SHORT TERM	c = 800 PSF Φ = 0° γ = 120 PCF	c = 600 PSF Φ = 0° γ = 120 PCF	c = 900 PSF Φ = 0° γ = 115 PCF	c = 0 PSF Φ = 32° γ = 110 PCF	c = 2200 PSF Φ = 0° γ = 120 PCF
LONG TERM	c̄ = 160 PSF φ̄ = 26° γ = 120 PCF	c̄ = 120 PSF φ̄ = 26° γ = 120 PCF	c̄ = 180 PSF φ̄ = 26° γ = 120 PCF	c̄ = 0 PSF φ̄ = 32° γ = 110 PCF	c̄ = 440 PSF φ̄ = 26° γ = 120 PCF

FACTORS OF SAFETY		
SHORT TERM	A	2.3
LONG TERM	B	2.3



Appendix D. SPECIAL PROVISIONS

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

SPECIAL PROVISION

JOB NO. CA0604

EMBANKMENT CONSTRUCTION

Description. This Special Provision shall be supplementary to Section 210, Excavation and Embankment, of the Standard Specifications, Edition of 2014, and shall include the following:

Materials and Construction Requirements. Prior to construction of embankments, the natural ground surface upon which the embankment is to be constructed shall be prepared in accordance with Subsection 210.09 regardless of embankment height. The natural ground surface shall be compacted in accordance with Subsection 210.10 regardless of embankment height. These requirements may be modified by the engineer as conditions justify.

The material furnished for construction of all embankment shall have a plasticity index less than or equal to 15, or a cherty clay material with a minimum of 55 percent retained on the No. 4 sieve. Any soils with a plasticity index above 15, or less than 55 percent of cherty clay material retained on the No. 4 sieve, shall not be utilized for embankment construction, regardless of the source. Muck and poor quality soils from the swell areas shall not be utilized within the embankment limits but can be used for final dressing of slopes or 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.

Alignment	Station Range		Offset Range		Undercut Depth (ft)
	From	To	From	To	
Highway 67	638+00	647+00	0	90’ RT	3.0
Highway 67	649+00	650+00	0	120’ RT	3.0
Highway 67	664+00	670+00	50’ RT	140’ RT	3.0

For the areas listed above, or where saturated soft or highly plastic soils are encountered, the unsuitable soils shall be undercut and replaced with stone backfill as defined in Section 207 of the Standard Specifications. If swell areas are encountered within the roadway alignment footprint, the swell shall be completely filled with stone backfill. Undercut areas for ponds, swells, wetland areas, or other soft soils that are unexpectedly encountered, shall typically extend three (3) feet below the surface, unless additional excavation is directed by the Engineer. The replacement rock material shall be overlain with 6 inches of stone consisting of rock that has

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

SPECIAL PROVISION

JOB NO. CA0604

EMBANKMENT CONSTRUCTION

been reduced to a size that will effectively fill the voids and choke the surface as approved by the Engineer to prevent migration of fines from the overlying embankment. A layer of geotextile fabric (type 5), meeting the requirements of this specification, may be applied between the surface of the stone backfill and other types of embankment materials. Construction requirements shall be in accordance with Subsection 625.03 of the Standard Specifications

The muck and poor quality soils removed during this undercut process shall not be used within embankment limits but can be used as final dressing on slopes or be wasted. Grading operations in all areas shall promote positive drainage away from embankment slopes and insure ponding water does not re-occur within right-of-way 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.

Quality Control and Acceptance Testing. Quality control and acceptance sampling and testing shall be performed in accordance with Subsection 210 of the Standard Specifications. The Contractor shall perform acceptance sampling and testing for gradation and plasticity index in addition to, and at the same frequency as density and moisture content. Test for gradation, liquid limit, and plasticity index shall be performed by AASHTO T 11, T 27, T 89, and T 90. If the result of any test shows that the material does not meet the requirements specified herein, unsuitable material shall be removed and replaced at no cost to the Department.

In addition to the required test, the Engineer may require the Contractor to test any location that, by visual inspection appears different from previously approved material. If the material source is consistent, the Engineer may modify the standard lot size for gradation and plasticity index to one test for each soil type encountered.

Method of Measurement: All embankments constructed as described above will be measured as Compacted Embankment in accordance with Section 210 of the Standard Specifications.

Undercut will be measured as Unclassified Excavation by the cubic yard in accordance with Section 210 of the Standard Specifications.

Stone backfill material placed, compacted and measured as provided above will be considered included in the contract unit price bid per cubic yard for Compacted Embankment, which price shall be full compensation for all costs involved in furnishing, hauling placing and compacting the material; for performing quality control sampling and testing; and for all labor, equipment, tools and incidentals necessary to complete the work.

Basis of Payment: All embankments constructed as described above shall be paid in accordance with section 210.13 of the Standard Specifications.

Payment will be made under:

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

SPECIAL PROVISION

JOB NO. CA0604

EMBANKMENT CONSTRUCTION

Pay Item	Pay Unit
Compacted Embankment	Cubic Yard

Undercut will be paid for as Unclassified Excavation in accordance with Section 210 of the Standard Specifications.

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

SPECIAL PROVISION

JOB NO. CA0604

ROADWAY RETAINING WALLS

Description. This item shall consist of the construction of mechanically stabilized earth walls in accordance with these specifications and in conformity with the locations, dimensions, lines and grades shown on the plans. Modular Block wall systems will not be considered. All references to Division, Section, and Subsection refer to the Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition).

General. The same type retaining wall system shall be used at all locations. Any approved retaining wall system, except Modular Block Walls, on the Qualified Products List (QPL) will be acceptable provided that:

1. The maintenance-free life expectancy shall be at least seventy-five (75) years.

2. Retaining walls shall be designed by an Arkansas Registered Professional Engineer. The design shall be in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications and this Special Provision.

3. The basic wall geometry, including top and bottom of wall face, grade lines, and length and limits of walls shall be as shown on the plans.

4. Structural elements of the wall shall not interfere with the location of roadway drainage structures and end bent piling as shown on the plans.

5. An Ashlar Stone finish, or approved equivalent, will be required for the concrete wall face.

6. The wall system design shall comply with requirements for global stability as determined by the Department.

7. The passive resistance of the soil at the front face of the wall shall be neglected in the analysis of external stability for sliding.

8. Factored bearing resistances are recommended below for MSE walls on John Harden and TP White Drive for the existing foundation material based on an estimated width of reinforced zone:

Alignment	Wall Location	Factored Bearing Resistance
John Harden Drive	135+80 to 138+77	4,100 PSF
John Harden Drive	166+10 to 175+30	5,600 PSF
TP White Drive	133+00 to 136+50	5,380 PSF
For Bridge Retaining Walls refer to the Highway 67 Widening Main Street to		

ROADWAY RETAINING WALLS

Vandenberg Boulevard Bridge Geotechnical Report

The Department will evaluate factored bearing pressures in excess of the recommended factored bearing resistance and in any undercut areas upon submittal of the wall system design.

Materials. (a) Concrete Facing Panels. The reinforced concrete facing panels shall be rectangular or square in shape, fabricated in accordance with Subsection 802.21 and Section 804 and the materials shall meet the requirements of Subsections 802.02 and 804.02 with the following additions and modifications:

1. The Contractor shall submit his concrete mix design to the Resident Engineer for approval. The Portland cement concrete shall have a minimum 4000 psi compressive strength at 28 days; with a minimum cement factor of 6 bags per cubic yard, an air content of 6% ± 2%, and a maximum aggregate size of 1 inch.

2. The units shall be fully supported by the forms until the concrete reaches a minimum compressive strength of 2500 psi as evidenced by test cylinders cured in the same manner as the panels and tested in accordance with AASHTO T 22.

3. All units shall be handled, stored, and shipped in such a manner as to eliminate the dangers of chipping, discoloration, cracks, fractures, and excessive bending stresses. Stored panels shall be supported in firm blocking to protect the panel connection devices and the exterior finish.

4. Panel connection devices shall be positioned within a tolerance of 1 inch. Panel squareness, as determined by the difference between the two diagonals, shall not exceed 0.5 inch.

5. Units shall be rejected because of failure to meet any of the requirements specified above. In addition, any or all of the following shall be sufficient cause for rejection:

    - Imperfections.
    - Honeycombing or open texture concrete.
    - Cracked or severely chipped panels.
    - Color variation on front face of panel due to excess form oil or other causes.

6. The manufacturer shall have a Quality Control program whereby representative samples of raw materials (cement, aggregates, reinforcement) are tested and/or reviewed for conformity to specifications. In addition, quality control tests (slump, air content, concrete temperature, compressive strength, and gradations, as applicable) shall be conducted by the manufacturer during casting operations. Quality control tests shall be conducted in accordance with the AASHTO Testing Procedures. The frequency of quality control tests shall be a minimum of one (1) set of tests per pouring day for each type product (panels or coping).

ROADWAY RETAINING WALLS

Records of materials used in the manufacture of reinforced concrete facing panels and quality control tests shall be maintained by the manufacturer. The Department shall reserve the right to review records for compliance with all applicable specifications and to reject any non-conforming units. Reinforced concrete facing panels shall not be shipped nor incorporated into the job until all testing has been completed. Copies of the manufacturer's quality control and inspection records shall be provided to the Engineer upon request.

The Department shall reserve the right to observe all manufacturing processes and conduct random quality assurance tests to determine compliance. If deemed necessary, drilled cores shall be taken at the direction of the Engineer to verify the compressive strength.

All reinforced concrete facing panels manufactured for use on Department projects shall be legibly marked on their back side with the cast date and a distinct identification number.

7. The manufacturer shall furnish a Certificate of Delivery for each shipment stating that the listed products conform to all applicable specifications. The information on the Certificate of Delivery shall include the state job number (or state purchase order number), consignee, destination, number of pieces, cast dates, identification numbers, and plant of origin. One copy of the Certificate of Delivery and shipping papers shall be furnished to the Engineer.

(b) Soil Reinforcing and Attachment Devices. All reinforcing and attachment devices shall be carefully inspected to ensure they are true to size and free from defects that may impair their strength and durability. Metallic reinforcements and attachment devices shall be galvanized in accordance with AASHTO M 111.

(c) Filter Fabric. All joints between panels on the back face of the wall shall be covered with a geotextile filter fabric meeting the requirements of Subsection 625.02, Type 2. The minimum width and lap shall be 12 inches. Geotextile filter fabric meeting the requirements of Subsection 625.02, Type 2 is also required between the drainage fill material and backfill in the reinforcement zone. The geotextile fabric shall be placed for each lift of backfill material. The geotextile fabric and reinforcing elements used in the wall construction shall be able to resist deterioration when exposed to the properties of the concrete in the wall facing panels and the backfill material selected. Geotextile fabric shall be protected from sunlight during storage.

(d) Drainage Fill Material. Drainage fill material placed immediately behind the wall shall conform to the requirements of a Class 3 mineral aggregate as specified in Subsections 403.01 and 403.02. As shown on the plans, drainage fill material shall be placed for a minimum width of 12 inches behind the wall, for the full height of wall, in 10 inch loose lifts and compacted in such a manner as to avoid any damage or distortion of wall materials or wall alignment. The Contractor shall perform quality control and acceptance sampling and testing of the backfill in accordance with Section 306, with the exception that the minimum frequency

of acceptance testing shall be one lot test for gradation and decantation loss for each 500 cubic yards of drainage fill material.

(e) Select Granular Backfill. All backfill material used within the reinforcement zone shall be granular having an angle of internal friction greater than 32 degrees as determined by the standard direct shear test AASHTO T-236 on the portion finer than the No. 10 sieve, using a sample of the material compacted to 95 percent of AASHTO T-99 and shall have no cohesion. Aggregates meeting the material requirements of Section 302 for Selected Material (Class SM-1) or the material requirements of Section 303 for Aggregate Base Course (Class 7) are acceptable backfill materials and shall be placed and compacted in accordance with Subsections 210.07, 210.09, and 210.10. The Contractor shall perform quality control and acceptance sampling and testing of the backfill in accordance with Section 306, with the exception that the minimum frequency of acceptance testing shall be one lot test for density, moisture content, gradation, and plasticity index for each 3000 cubic yards of backfill material placed except that at least one set of tests shall be performed on each layer of backfill. If the material used for Select Granular Backfill is Aggregate Base Course (Class 7) and the source remains consistent, testing requirements for gradation and plasticity index shall meet the minimum frequency of one test per 3000 cubic yards. The Engineer may waive PI testing as outlined in Section 306. Construction requirements outlined in Subsection 302.02 shall apply.

The Contractor shall sample and test the backfill material prior to wall construction to verify that the angle of internal friction used in the wall system design does not exceed the angle of internal friction of the backfill material within the reinforcement zone. The Contractor shall conduct one additional shear test on a sample taken during the wall construction at a location as determined by the Engineer. Also, if the backfill material source changes and/or material properties change during wall construction from the original sample tested, the angle of internal friction shall be re-verified. If either the additional test result or the re-verified test result is less than the design value utilized in the design of the wall, the material shall be removed and replaced with acceptable backfill material.

(f) Coping. Concrete for coping shall comply with the requirements of Section 802 for Class S(AE) Concrete. Reinforcing steel shall comply with the requirements of Section 804.

(g) Buy America Requirements. All iron and steel material used on Department projects must be in compliance with “Buy America” requirements and Subsection 106.01. All manufacturing processes of the iron or steel in a product (i.e., smelting/remelting, and any subsequent process which alters the steel material’s physical form or shape or changes its chemical composition) must occur within the United States to be considered of domestic origin. This includes, but is not limited to, such processes such as rolling, extruding, machining, bending, grinding, drilling, and applying coatings. The use of pig iron or processed, pelletized, and reduced iron ore manufactured outside of the United States is permitted in the domestic manufacturing process for steel and/or iron materials. All steel and iron mill test reports must include a statement certifying that all manufacturing processes for the iron or steel product occurred in the United States. Each supplier/fabricator of an intermediate product shall also certify that the product complies with “Buy America” requirements.

ROADWAY RETAINING WALLS

Working Drawings. At least 30 calendar days prior to fabrication of the concrete panels, the Contractor shall submit four (4) copies of design calculations, working drawings, and material and construction specifications to the Resident Engineer for review. This will be used to verify compliance with design requirements. The drawings shall include details that provide for flexibility, differential settlement, and aesthetics at changes in direction of the wall alignment. Test results for gradation, plasticity index, unit weight and angle of internal friction of the Select Granular Backfill shall be submitted with the Working Drawings for all proposed sources. These results shall state Method A Construction or Method B Construction. The wall designer shall review all proposed Select Granular Backfill sources and shall state in writing that the materials meet the wall manufacturer's recommendations regarding Electrochemical Properties. The above verification process shall not relieve the Contractor of any of his responsibility under the contract for the successful completion of the work.

Ashlar Stone Finish. Before production of the precast concrete panels may begin, approval of the Ashlar Stone finish will be required. Approval will be based on a sample panel with approximate dimensions of 6 feet by 6 feet. In lieu of a sample panel, the Engineer may accept proof of previous work performed with similar size panels and finishes. Prior to construction of any panels, a work plan showing the materials, construction methods, name and pattern number of form liner manufacturer, and other features affecting the finish shall be submitted to and approved by the Engineer. All panels shall be constructed according to the approved plan.

Construction. The Contractor will be required to have a manufacturer's representative experienced and knowledgeable in the design and construction of the retaining wall system available throughout the construction period.

The Contractor shall furnish a certification that the components of the wall system were manufactured in compliance with the approved design and that the materials furnished comply with the specifications.

Prior to wall construction, the foundation shall be compacted as directed by the Engineer. Any unsuitable foundation material shall be excavated and backfilled according to the undercutting requirements of this special provision. At each foundation level, a cast-in-place unreinforced concrete leveling pad shall be provided. The leveling pad shall be in place a minimum of 24 hours before panel erection begins and have a minimum earth cover as shown on the plans. Concrete for leveling pad shall comply with the requirements of Section 802 for Class A or higher class Concrete as required by the wall supplier's construction requirements.

Precast concrete panels shall be placed so that their final position is vertical as shown on the plans. As drainage and backfill material are placed behind the panels, the panels shall be maintained in position by means of temporary wedges or bracing according to the wall supplier's recommendations. Concrete facing vertical tolerances and horizontal alignment tolerances shall not exceed 0.75 inch per ten (10) feet of length. During construction, the maximum allowable offset in any panel joint shall be 0.75 inch. The completed overall vertical tolerance of the wall (top to bottom) shall not exceed 0.5 inch per ten (10) feet of wall height.

ROADWAY RETAINING WALLS

As shown on the plans, drainage fill material shall be placed for a minimum width of 12 inches behind the wall, for the full height of the wall, in 10 inch loose lifts and compacted in such a manner as to avoid any damage or distortion of wall materials or wall alignment. The Contractor shall perform quality control and acceptance sampling and testing of the backfill in accordance with Section 306, with the exception that the minimum frequency of acceptance testing shall be one lot test for gradation and decantation loss for each 500 cubic yards of drainage fill material.

Select Granular Backfill placement shall closely follow the erection of each lift of panels. Backfill material within the reinforcement zone shall be compacted and placed in conformance with the applicable provisions of Section 302.03. At each reinforcement level, the backfill shall be placed to the level of the connection. Backfill placement methods near the facing shall assure that no voids exist directly beneath the reinforcing elements. The Contractor shall perform quality control and acceptance sampling and testing of the backfill in accordance with Section 306, with the exception that the minimum frequency of acceptance testing shall be one lot test for density, moisture content, gradation, and plasticity index for each 3000 cubic yards of backfill material placed except that at least one set of tests for density and moisture content shall be performed on each layer of backfill.

Backfill shall be placed in such a manner as to avoid any damage or disturbance of the wall materials or misalignment of the facing panels or reinforcing elements. Any damage or distortion of the wall materials during backfill placement shall be corrected at the Contractor's expense. Construction traffic will not be permitted on wall reinforcement unless a minimum backfill cover of 8 inches is provided.

The Contractor shall be responsible for preventing surface water or rainwater from damaging the retaining walls during construction. This shall include shaping the backfill to prevent water from ponding or flowing on the backfill or against the wall face. Any damage or movement caused by erosion, sloughing, or saturation of the retaining wall or embankment backfill shall be repaired at the Contractor's expense.

Unless otherwise noted in the plans, the exposed surfaces of the coping on the top of the wall shall receive a Class 2 Rubbed Finish in accordance with Subsection 802.19.

Undercutting. All the material within any undercut areas shown in the plans shall be excavated to the limits shown. Additional soft and unstable materials shall be excavated as directed by the Engineer. All undercut areas shall be backfilled with stone backfill meeting the requirements specified in the plans. The stone backfill material shall be placed and compacted in accordance with Subsections 210.07, 210.09 and 210.10. The Contractor shall perform quality control and acceptance sampling and testing of the backfill in accordance with Section 306, with the exception that the minimum frequency of acceptance testing shall be one lot test for density, moisture content, gradation and plasticity index for each 3000 cubic yards of backfill material placed except that at least one set of tests for density and moisture content shall be performed on each layer of backfill.

ROADWAY RETAINING WALLS

Method of Measurement. Retaining walls will be measured by the square foot of front surface area between the top of the leveling pad at the face of the wall and the top of the wall including any coping required.

All excavation within the limits of any undercut areas, directly over any undercut areas outside the limits of the reinforcement zone, within the reinforcement zone and for the leveling pad will be measured as Unclassified Excavation.

All backfill and drainage fill material placed behind retaining walls within the reinforcement zone will be measured as Select Granular Backfill in its final position in accordance with Subsection 210.12(c).

All backfill placed directly over the limits of any undercut areas and outside the limits of the reinforcement zone will be measured as Compacted Embankment. All backfill within the limits of any undercut areas will be measured as shown in the plans.

Basis of Payment. Retaining walls completed, accepted and measured as provided above will be paid for at the contract unit price bid per square foot for Retaining Wall, which price shall be full compensation for designing; for quality control and acceptance sampling and testing; for furnishing all materials except backfill and drainage fill materials but including pipe underdrains and joint materials; for constructing the leveling pad, the wall, and the coping; and for all labor, equipment, tools, and incidentals necessary to complete the work.

All excavation within the limits of any undercut areas, directly over any undercut areas outside the limits of the reinforcement zone, within the reinforcement zone and for the leveling pad will be paid for as Unclassified Excavation in accordance with Section 210.

All backfill and drainage fill material placed behind retaining walls within the reinforcement zone, including quality control and acceptance sampling and testing, will be paid for as Select Granular Backfill in accordance with this Special Provision.

All backfill directly over the limits of any undercut areas and outside the limits of the reinforcement zone, including quality control and sampling and testing, will be paid for as Compacted Embankment in accordance with Section 210. All backfill within the limits of any undercut areas, including quality control and acceptance sampling and testing, will be paid for as shown in the plans.

The Contractor shall comply with applicable Federal, State, and local laws governing safety in accordance with Subsection 107.01(b) in any and all excavation and/or shoring operations. Any shoring and additional excavation with replacement backfill outside the reinforcement zone or outside the limits and not directly over any undercut areas will not be paid for directly, but will be considered subsidiary to the unit price bid per square foot for Retaining Wall.

Payment will be made under:

Pay Item	**Pay Unit**

ROADWAY RETAINING WALLS

Retaining Wall	Square Foot
Select Granular Backfill	Cubic Yard

ARKANSAS HIGHWAY AND TRANSPORTATION DEPARTMENT

SPECIAL PROVISION

JOB NO. CA0604

SOIL NAIL WALL

DESCRIPTION: This work consists of designing and constructing permanent soil nail retaining wall at the location and elevation as shown on the plans. The Contractor shall furnish all labor, plans, drawings, design calculations and all other material and equipment required to design and construct the soil nail wall as shown on the plans and as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The work shall include excavating in staged lifts in accordance with the approved Contractor's plan; detailing the drilling of the soil nail drill holes to the diameter and length required to develop the specified capacity; grouting the nails; providing and installing the specified drainage features; providing and installing bearing plates, washers, nuts, and other required miscellaneous materials; and constructing the Pneumatically Placed Concrete (Shotcrete) temporary facing.

PREQUALIFICATION OF SOIL NAIL WALL CONTRACTOR: The Contractor or subcontractor responsible for the work covered under this provision, the Soil nail wall contactor, must have a minimum of five (5) years experience in soil nail installation including at least five (5) projects similar in nature and scope to this project and shall provide satisfactory evidence of experience. A brief description of each project including the location, start and completion dates, and a reference shall be included for each project listed. As a minimum, the reference shall include an individual's name, affiliation with the project, and current phone number. Also, the Engineer responsible for designing the soil nail wall must have a minimum of five (5) years experience in soil nail design including at least five (5) projects similar in nature and scope to this project and shall provide satisfactory evidence of experience. The Engineer must be licensed in the state of Arkansas as Professional Engineer.

In addition, the onsite supervisors for both the soil nail and shotcrete installation, drill rig operators, shotcrete nozzle operators and testing supervisors assigned to this project by the Soil nail wall contactor must have experience in that position on a minimum of three (3) projects within the last three (3) years which are similar in nature to this project. The personnel list shall contain a summary of each individual's experience and contain enough information for the Engineer to assess the individual's qualifications. Requirements for technician certification and laboratory qualifications need to be satisfied according to the Department's Manual of Field Sampling and Testing Procedures.

SOIL NAIL WALL

This information shall be submitted 60 calendar days prior to start of any soil nail construction, and the Engineer shall approve or reject the Soil nail wall contactor and personnel list within 15 calendar days of receipt of the complete submittal. All costs associated with incomplete or unacceptable submittals shall be borne by the Contractor, and no adjustment in Contract Time shall result. Any changes to previously approved subcontractors or personnel must be in writing and shall include the required information for verification of qualifications. The Engineer may suspend work if the Contractor utilizes non-approved personnel in the listed positions. All costs associated with the uses of non-approved personnel shall be borne by the Contractor, and no adjustment in Contract Time shall result from the suspension.

SOIL NAIL WALL DESIGN REQUIREMENTS: Design the soil nail walls including the final structural facing using the Allowable Stress Design (ASD) method, also known as Service Load Method (SLD), as outlined in FHWA Geotechnical Engineering Circular No. 7 “Soil Nail Walls”. Provide minimum recommended factor of safety as listed in section 5.9 and Class I corrosion protection requirements according to the Appendix C of the circular. Also list or show the design shear strength parameters, Seismic design coefficient, easements, and right-of-ways on the working drawings.

SUBMITTALS:

A. The Contractor is responsible for providing the necessary geotechnical investigation if available geotechnical information is not adequate for design. The investigation shall provide sampling and testing information for design requirements.

B. The Contractor is responsible for providing the necessary survey and alignment control during the excavation for each lift, locating drill holes and verifying limits of wall installation. Contractor shall submit complete design calculations and working drawings to the Engineer for review and approval at least 60 calendar days before starting soil nail work. Include all details, dimensions, quantities, ground profiles and cross-sections necessary to construct the wall. Verify the limits of the wall and ground survey data before preparing the drawings. The drawings and calculations shall be signed and sealed by a Professional Engineer registered in the State of Arkansas. The submittal shall include the following:

1. The start date and proposed detailed wall construction sequence.
2. Soil/rock design shear strength parameters and external surcharge loads used in the design.
3. Corrosion protections.
4. Drilling and grouting methods and equipment, including the drill hole diameter, soil nail length, proposed to meet the performance requirements specified herein and any variation of these along the wall alignment. Include casing methods if their use is anticipated.
5. Nail grout mix design, including compressive strength test results (per AASHTO T106/ASTM C109) supplied by a qualified independent testing lab verifying the specified minimum 3-day and 28-day grout compressive strengths.

Previous test results for the same grout mix completed within one year of the start of grouting may be submitted for verification of the required compressive strengths.

6. Nail grout placement procedures and equipment.
7. Soil nail testing methods and equipment setup.
8. Identification number and certified calibration records for each test jack and pressure gauge and load cell to be used. Jack and pressure gauge shall be calibrated as a unit. Calibration records shall include the date tested, the device identification number, and the calibration test results and shall be certified for an accuracy of at least 2 percent of the applied certification loads by a qualified independent testing laboratory within 90 days prior to submittal.
9. Manufacturer Certificates of Compliance for the soil nail ultimate strength, nail bar steel, nuts, bolts, washers, Portland cement, centralizers, bearing plates, epoxy coating, encapsulation and any other materials used in the soil nail wall.
10. Description of proposed equipment for mixing and applying shotcrete. Include the manufacturer instructions, recommendations, literature, performance, and test data.
11. Proposed shotcrete mix design with mix proportions.
12. Representative samples of shotcrete material, if requested by the Engineer.
13. Results of all shotcrete preconstruction testing.
14. Proposed method for applying and curing shotcrete.
15. Other information necessary to verify compliance with ACI 506.2 for shotcrete installation
16. Certification that shotcrete conforms to the standards specified herein.
17. Fiber samples, if used, with supplier or manufacturer recommendations for use.

C. The Engineer shall approve or reject the Contractor's working drawings within 30 working days after the submission. Approval of the Construction Plan does not relieve the Contractor of his responsibility for the successful completion of the work.

PRE-CONSTRUCTION MEETING: A pre-construction meeting shall be scheduled by the Engineer to be held after receipt of the complete soil nail working drawings and Soil nail wall contactor, the soil nail design engineer qualification submittals. The Engineer; the Contractor, including their Superintendent; the Soil nail wall contactor, including the listed onsite supervisor; and the engineer who designed the soil nails shall attend. Attendance is mandatory. All other parties to be involved with the design, fabrication, construction, stressing, or testing the soil nail components may be represented. The meeting will be conducted to clarify the requirements of the work, to coordinate the construction schedule and activities, and to identify the contractual relationships and the delineation of responsibilities amongst the parties involved.

FINAL SUBMITTAL: Within 30 days after completion of work covered by these provisions; the Contractor shall submit revised as-built drawings and information documenting all changes to the soil nails during construction. The revised soil nail schedule shall include the as-built soil nail length. All design calculations, material test results, material certifications, not previously submitted shall also be included.

SOIL NAIL WALL

MATERIALS: Materials used shall conform to designated specifications and be within their manufacturers' design range of use for this application. All materials should be from QPL list or are subject to acceptance/verification testing per the Manual of Field Sampling and Testing Procedures. Materials delivered to the site shall be new and without defect and shall be handled and stored in accordance with their manufacturers' recommendations and in a manner that no damage to the components due to movement or exposure to the elements occurs. Unacceptable, defective, or damaged materials shall be removed from the site and replaced with new at no additional cost to the Department.

A. Soil Nails

1. Nail Solid Bar. AASHTO M31/ASTM A615, Grade 420 (60) or 520 (75), ASTM A 722 for Grade 1035 (150). Deformed bar, continuous without splices or welds, new, straight, undamaged, bare, or epoxy-coated, or encapsulated as shown on the working drawings. Threaded, a minimum of 150 mm (6 in.) on the wall anchorage end, to allow proper attachment of bearing plate and nut. Threading may be continuous spiral deformed ribbing provided by the bar deformations (continuous thread bars) or may be cut into a reinforcing bar. If threads are cut into a reinforcing bar, provide the next-larger bar number designation from that is shown on the working drawings, at no additional cost. The use of self-drilling nail bars (also known as hollow, self-grouting or pressure- grouted nail bars) will not be allowed.
2. Bar Coupler. Bar couplers shall develop the full ultimate tensile strength of the bar as certified by the manufacturer.
3. Fusion Bonded Epoxy Coating. AASHTO M284, ASTM A 775. Minimum 0.4 mm (0.016 in.) thickness electrostatically applied. Bend test requirements are waived. Coating at the wall anchorage end of epoxy-coated bars may be omitted over the length provided for threading the nut against the bearing plate.
4. Encapsulation. Minimum 1-mm (0.04-in.) thick, corrugated, HDPE tube conforming to AASHTO M252 or corrugated PVC tube conforming to ASTM D1784, Class 13464-B.

B. Soil Nail Appurtenances

1. Centralizer. Manufactured from Schedule 40 PVC pipe or tube, steel, or other material not detrimental to the nail steel (wood shall not be used); securely attached to the nail bar; sized to position the nail bar within 25 mm (1 in.) of the center of the drill hole; sized to allow tremie pipe insertion to the bottom of the drill hole; and sized to allow grout to freely flow up the drill hole.
2. Nail Grout. Neat cement or sand/cement mixture with a minimum 3-day compressive strength of 10.5 MPa (1,500 psi) and a minimum 28-day compressive strength of 21 MPa (3,000 psi), per AASHTO T106/ASTM C109.
3. Fine Aggregate shall conform to the applicable requirements of Subsection 802.02b of the Standard Specifications for Highway Construction..
4. Portland Cement shall conform to the applicable requirements of Subsection 802.02a of the Standard Specifications for Highway Construction.
5. Admixtures shall conform the applicable requirements of Subsection 802.02e of the Standard Specifications for Highway Construction. Admixtures that control

bleed, improve flowability, reduce water content, and retard set may be used in the grout subject to review and acceptance by the Engineer. Accelerators are not permitted. Expansive admixtures may only be used in grout used for filling sealed encapsulations. Admixtures shall be compatible with the grout and mixed in accordance with the manufacturer's recommendations.

6. Film Protection. Polyethylene film per ASTM C171-03.

C. Bearing Plates, Nuts, and Welded Stud Shear Connectors.
   1. Bearing Plates. AASHTO M270/ASTM 709 Grade 36 Minimum.
   2. Nuts. ASTM A563, grade B, hexagonal, fitted with beveled washer or spherical seat to provide uniform bearing.
   3. Shear Connectors. Subsection 807.08 of the Standard Specifications.

D. Welded Wire Fabric. AASHTO M55/ASTM A185 or A497.

E. Geocomposite Sheet Drain. Refer to the Department's Qualified Product List (QPL) for approved drainage systems or approved equal.

F. Underdrain and Perforated Pipe. Design according to Standard Specification Section 611 and Standard drawing no. PU-1.

G. Shotcrete. Submit for approval, all materials, methods, and control procedures for this work according to this special provision.

1. Use standard specification items for the following:
   a. Air-entraining admixture (wet mix only)
   b. Chemical admixtures (wet mix only)
   c. Concrete coloring agents
   d. Curing material
   e. Hydraulic cement
   f. Pozzolans
   g. Reinforcing steel

2. Shotcrete Aggregate

   Fine aggregate shall conform to the applicable sections of Standard Specification Section 802.02(b).

STORAGE AND HANDLING

Store and handle soil nail bars in a manner to avoid damage or corrosion. Replace bars exhibiting abrasions, cuts, welds, weld splatter, corrosion, or pitting. Repair or replace any bars exhibiting damage to encapsulation or epoxy coating. Repaired epoxy coating areas shall have a minimum 0.012-in. thick coating.

EXCAVATION

A. The height of exposed unsupported final excavation face cut shall not exceed the vertical nail spacing plus the required reinforcing lap or the short-term stand-up height of the ground, whichever is less. Complete excavation to the final wall excavation line and apply shotcrete in the same work shift, unless otherwise approved by the Engineer. Application of the shotcrete may be delayed up to 24 hours if the contractor can demonstrate that the delay will not adversely affect the excavation face stability.

B. Excavation of the next-lower lift shall not proceed until nail installation, reinforced shotcrete placement, attachment of bearing plates and nuts, and nail testing have been completed and accepted in the current lift. Nail grout and shotcrete shall have cured for at least 72 hours or attained at least their specified 3-day compressive strength before excavating the next underlying lift.

NAIL INSTALLATION

A. Provide nail length and drill hole diameter necessary to develop the load capacity to satisfy the acceptance criteria for the design load required, but not less than the lengths shown in the working drawings. Drill holes for the soil nails at the locations, elevations, orientations, and lengths shown on the working drawings. Select drilling equipment and methods suitable for the ground conditions and in accordance with the approved installation methods submitted by the Contractor. The use of drilling muds or other fluids to remove cuttings will not be allowed. If caving ground is encountered, use approved cased drilling methods to support the sides of the drill holes. Provide nail bars as shown in the working drawings. Provide centralizers sized to position the bar within 1 in. of the center of the drill hole. Position centralizers as shown on the Plans so that their maximum center-to-center spacing does not exceed 8 ft. Also locate centralizers within 1.5 ft from the top and bottom of the drill hole.

GROUTING

A. Grout the drill hole after installation of the nail bar and within 2 hours of completion of drilling. Inject the grout at the lowest point of each drill hole through a grout tube or casing. Keep the outlet end of the conduit delivering grout below the surface of the grout as the conduit is withdrawn to prevent the creation of voids. Completely fill the drill hole in one continuous operation. Cold joints in the grout column are not allowed except at the top of the test bond length of proof tested production nails.

B. Test nail grout according to AASHTO T106/ASTM C109 at a frequency of one test per mix design and a minimum of one test for every 50 cy of grout placed. Provide grout cube test results to the Engineer within 24 hours of testing. Grout testing shall be conducted by a lab already preapproved by Materials division for conducting these types of testing.

NAIL TESTING

A. Perform both verification and proof testing of designated test nails. Perform verification tests on sacrificial test nails at locations shown on the working drawings. Perform proof tests on production nails at locations selected by the Engineer. Testing of any nail shall not be performed until the nail grout and shotcrete facing have cured for at least 72 hours or attained at least their specified 3-day compressive strength.

B. Testing equipment shall include 2 dial gauges, dial gauge support, jack and pressure gauge, electronic load cell, and a reaction frame. The testing setup and equipment shall

need to be preapproved thru the submittal process. The pressure gauge shall be graduated in 75 psi increments or less. Measure the nail head movement with a minimum of 2 dial gauges capable of measuring to 0.001 in.

VERIFICATION TESTING OF SACRIFICIAL NAILS

A. Perform verification testing prior to installation of production nails to confirm the appropriateness of the Contractor's drilling and installation methods, and verify the required nail pullout resistance.

B. Verification test nails shall have both bonded and unbonded lengths. Along the unbonded length, the nail bar is not grouted. The unbonded length of the test nails shall be at least 3 ft. The bonded length of the soil nail during verification tests, LBVT, shall be at least 10 ft but not longer than a maximum length, LBVT max, such that the nail load does not exceed 90 percent of the nail bar tensile allowable load during the verification test. Therefore, the following requirements shall be met:

$$L_{BVT} \leq \begin{cases} 10ft \\ L_{BVTmax} \end{cases}$$

The length $L_{BVT\ max}$ is defined as:

$$L_{BVT\ max} = \frac{C_{RT} * A_t * f_Y}{Q_{ALL} * FS_{Tver}}$$

where,

C_{RT} = Reduction coefficient. Use C_{RT} = 0.9 for Grade 60 and 75 bars.

If Grade 150 bars are allowed in the job, use C_{RT} =0.8.;

A_t = Nail bar cross-sectional area;

f_Y = Nail bar yield tensile strength;

Q_{ALL} = Allowable pullout resistance per unit length ($Q_{ALL} = Q_u/FS_P$), as specified in working drawings; and

FS_{Tver} = Factor of safety against tensile failure during verification tests (use 2.5 or, preferably, 3).

The maximum bonded length shall be preferably based on production nail maximum bar grade. Provide larger bar sizes, if required, to meet the 10-ft minimum test bonded length requirement at no additional cost.

The Design Test Load (DTL) shall be determined as follows:

DTL = LBVT * QALL

DTL shall be calculated based on as-built bonded lengths

C. Perform verification tests by incrementally loading the verification test nails to failure or a maximum test load of 300 percent of the DTL in accordance with the following loading schedule. Record the soil nail movements at each load increment.

SOIL NAIL WALL

Verification of Test Loading Schedule

The alignment load (AL) should be the minimum load required to align the testing apparatus and should not exceed 5 percent of the DTL. Dial gauges should be set to "zero" after the alignment load has been applied. Following application of the maximum load (3.0 DTL) reduce the load to the alignment load (0.05 DTL maximum) and record the permanent set.

D. Hold each load increment for at least 10 minutes. Monitor the verification test nail for creep at the 1.50 DTL load increment. Measure and record nail movements during the creep portion of the test in increments of 1 minute, 2, 3, 5, 6, 10, 20, 30, 50, and 60 minutes. Maintain the load during the creep test within 2 percent of the intended load by use of the load cell.

PROOF TESTING OF PRODUCTION NAILS

Load	Hold Time
0.05 DTL max.(AL)	1 minute
0.25 DTL	10 minutes
0.50 DTL	10 minutes
0.75 DTL	10 minutes
1.00 DTL	10 minutes
1.25 DTL	10 minutes
1.50 DTL (Creep Test)	60 minutes
1.75 DTL	10 minutes
2.00 DTL	10 minutes
2.50 DTL	10 minutes max.
3.0 DTL or Failure	10 minutes max.
0.05 DTL max. (AL)	1 minute (record permanent set)

A. Perform successful proof testing on 5 percent of the production soil nails in each nail row or a minimum of 1 per row. The Engineer shall determine the locations and number of proof tests prior to nail installation in each row. Production proof test nails shall have both bonded and temporary unbonded lengths. The temporary unbonded length of the test nail shall be at least 3 ft. The bonded length of the soil nail during proof production tests, LBPT, shall be the least of 10 ft and a maximum length, LBPT max, such that the nail load does not exceed 90 percent of an allowable value of the nail bar tensile load during the proof production test. Therefore, the following requirements shall be met:

$$L_{BPT} \leq \begin{cases} 3\text{m (10ft)} \\ L_{BPTmax} \end{cases}$$

The length $L_{BPT\ max}$ is defined as:

$$L_{BPT\ max} = \frac{C_R * A_t * f_Y}{Q_{ALL} * FS_{Tproof}}$$

C_{RT} = Reduction coefficient. Use 0.9 for Grade 60 and 75 bars.
If Grade 150 bars are allowed in the job, use C_{RT} =0.8;
A_t = Nail bar cross-sectional area;
f_Y = Nail bar yield tensile strength;
Q_{ALL} = Allowable pullout resistance per unit length ($Q_{ALL} = Q_u/FS_P$), as specified in working drawings; and
FS_{Tproof} = Factor of safety against tensile failure during proof production tests (use 1.5.

The maximum bonded length shall be based on production nail maximum bar grade. Production proof test nails shorter than 12 ft in length may be constructed with less than the minimum 10-ft bond length.

The Design Test Load (DTL) shall be determined as follows:
$DTL = L_{BPT} * Q_{ALL}$
DTL shall be calculated based on as-built bonded lengths.

B. Perform proof tests by incrementally loading the proof test nail to 150 percent of the DTL in accordance with the following loading schedule. Record the soil nail movements at each load increment.

Proof Test Loading Schedule.

The alignment load (AL) should be the minimum load required to align the testing apparatus and should not exceed 5 percent of the DTL. Dial gauges should be set to "zero" after the alignment load has been applied.

C. The creep period shall start as soon as the maximum test load (1.50 DTL) is applied and the nail movement shall be measured and recorded at 1 minute, 2, 3, 5, 6, and 10 minutes. Where the nail movement between 1 minute and 10 minutes exceeds 0.04 in., maintain the maximum test load for an additional 50 minutes and record movements at 20 minutes, 30, 50, and 60 minutes. Maintain all load increments within 5 percent of the intended load.

TEST NAIL ACCEPTANCE CRITERIA

A. A test nail shall be considered acceptable when all of the following criteria are met:

Load	Hold Time
0.05 DTL max. (AL)	Until Movement Stabilizes
0.25 DTL	Until Movement Stabilizes
0.50 DTL	Until Movement Stabilizes
0.75 DTL	Until Movement Stabilizes
1.00 DTL	Until Movement Stabilizes
1.25 DTL	Until Movement Stabilizes
1.50 DTL (Max. Test Load)	Creep Test (see below)

1. For verification tests, the total creep movement is less than 0.08 in. between the 6- and 60-minute readings and the creep rate is linear or decreasing throughout the creep test load hold period.
2. For proof tests, the total creep movement is less than 0.04 in. during the 10-minute readings or the total creep movement is less than 2 mm 0.08 in. during the 60-minute readings and the creep rate is linear or decreasing throughout the creep test load hold period
3. For verification and proof tests, the total measured movement at the maximum test load exceeds 80 percent of the theoretical elastic elongation of the test nail unbonded length.
4. A pullout failure does not occur at 3.0 DTL under verification testing and 1.5 DTL test load under proof testing. Pullout failure is defined as the inability to further increase the test load while there is continued pullout movement of the test nail. Record the pullout failure load as part of the test data.

B. Maintaining stability of the temporary unbonded test length for subsequent grouting is the Contractor's responsibility. If the unbonded test length of production proof test nails cannot be satisfactorily grouted subsequent to testing; the proof test nail shall become sacrificial and shall be replaced with an additional production nail installed at no additional cost to the owner.

TEST NAIL REJECTION

If a test nail does not satisfy the acceptance criterion:

1 For verification test nails, the Engineer will evaluate the results of each verification test. Installation methods that do not satisfy the nail testing requirements shall be rejected. The Contractor shall propose alternative methods and install replacement verification test nails. Replacement test nails shall be installed and tested at no additional cost.

2 For proof test nails, the Engineer may require the Contractor to replace some or all of the installed production nails between a failed proof test nail and the adjacent passing proof test nail. Alternatively, the Engineer may require the installation and testing of additional proof test nails to verify that adjacent previously installed production nails have sufficient load carrying capacity. Installation and testing of additional proof test nails or installation of additional or modified nails as a result of proof test nail failure(s) will be at no additional cost.

WALL DRAINAGE NETWORK

Install and secure all elements of the wall drainage network as shown on the working drawings. The drainage network shall consist of installing geocomposite drain strips, PVC connection pipes, and wall footing drains as shown in the working drawing drawings.

Exclusive of the wall footing drains, all elements of the drainage network shall be installed prior to shotcreting.

1. Geocomposite Drain Strips. Install geocomposite drain strips centered between the columns of nails as shown on the Plans. The drain strips shall be at least 24 in. wide and placed with the geotextile side against the ground. Secure the strips to the excavation face and prevent shotcrete from contaminating the geotextile. Drain strips will be vertically continuous. Make splices with a 12 in. minimum overlap such that the flow of water is not impeded. Install drain plate and connector pipe at base of each strip. Repair damage to the geocomposite drain strip, which may interrupt the flow of water.

SHOTCRETE FACING

A. Provide construction shotcrete facing in accordance with this special provision. Where shotcrete is used to complete the top ungrouted zone of the nail drill hole near the face, position the nozzle into the mouth of the drill hole to completely fill the void

1 Final Face Finish. Shotcrete finish shall be either an undisturbed gun finish as applied from the nozzle or a rod, broom, wood float, rubber float, steel trowel or rough screeded finish as shown on the working drawings.

2 Attachment of Nail Head Bearing Plate and Nut. Attach a bearing plate, washers, and nut to each nail head as shown on the working drawings. While the shotcrete construction facing is still plastic and before its initial set, uniformly seat the plate on the shotcrete by hand-wrench tightening the nut. Where uniform contact between the plate and the shotcrete cannot be provided, set the plate in a bed of grout. After grout has set for 24 hours, hand-wrench tighten the nut. Ensure bearing plates with headed studs are located within the tolerances shown on the working drawings.

3 Shotcrete Facing Tolerances. Construction tolerances for the shotcrete facing from plan location and plan dimensions are as follows:

Horizontal location of welded wire mesh; reinforcing bars, and headed studs:	0.4 in.
Location of headed studs on bearing plate:	¼ in.
Spacing between reinforcing bars:	1 in.
Reinforcing lap, from specified dimension:	1 in.
Complete thickness of shotcrete:	
If troweled or screeded:	0.6 in.
If left as shot:	1.2 in.
Planeness of finish face surface-gap under 3-m (10-ft) straightedge:	
If troweled or screeded:	0.6 in.
If left as shot:	1.2 in.
Nail head bearing plate deviation from parallel to wall face:	10 degrees

SHOTCRETE REINFORCING FIBERS

A. Contractor may elect to use reinforcing deformed steel or fibrillated polypropylene fibers conforming to ASTM C 1116. The use of reinforcing fibers shall be pre-approved

by the Engineer.

SHOTCRETE CONSTRUCTION

GENERAL

A. Conform to the following:
1. ACI 506R Guide to Shotcrete.
2. ACI 506.1 State of the Art Report on Fiber Reinforced Shotcrete.
3. ACI 506.2 Specifications for Proportioning Application of Shotcrete.
4. AASHTO C 311 Method for Sampling and Testing Fly Ash or Natural Pozzolans for Use as a Mineral Admixture in Concrete.
5. Requirements for technician certification and laboratory qualifications are contained in the Department's Manual of Field Sampling and Testing Procedures.

SHOTCRETE EQUIPMENT

A. Water Supply System. For dry mix, provide a water storage tank at the job site. Provide a positive displacement pump with a regulating valve that is accurately controlled to provide water in the pressures and volumes recommended by the delivery machine manufacturer.
B. Mixing. Use equipment capable of handling and applying shotcrete containing the specified maximum size aggregate and admixtures. Provide an air hose and blowpipe to clear dust and rebound during shotcrete application.
C. Air Supply System. Use an air supply system capable of supplying the delivery machine and hose with air at the pressures and volumes recommended by the machine manufacturer. Do not use air supply systems that deliver oil-contaminated air or are incapable of maintaining constant pressure.
D. Delivery Machine. Use a delivery machine capable of supplying material to the delivery hose at a uniform rate. The ejection from the nozzle must adhere to the treated surface with minimum rebound and maximum density when the nozzle is held in the range of 3 to 6 ft from the target surface.

SHOTCRETE COMPOSITION (SHOTCRETE MIX DESIGN)

A. Design and produce shotcrete mixtures conforming to Table 1 for the type of shotcrete specified. Use the amount of water required to produce shotcrete of suitable strength, consistency, quality, and uniformity with the minimum amount of rebound. Use the same material types and sources as submitted with the mix design in the field trials and production work.
1. Fibers. If fibers are required, add them to the mix in the proportions recommended by the manufacturer.
2. Hydration stabilizing admixtures. Hydration stabilizing admixtures may be used to extend the allowable delivery time for shotcrete. Dosage is based on the time needed to delay the initial set of the shotcrete for delivery and discharge on the job. Design shall include discharge time limit in the dosage submittal. Dosage required to stabilize

shotcrete shall be determined using job site material and field trial mixtures. The extended-set admixture shall control the hydration of all cement minerals and gypsum. The maximum allowable design discharge time is 3.50 hours.

3. If a hydration-stabilizing admixture is approved for use in the concrete mix, concrete shall be delivered and placed within the approved design discharge time limit. An approved and compatible hydration activator may be used at the discharge site to insure proper placement and testing.

4. Dosage and type of extended-set admixture shall be included with proposed mix design. When requested, the admixture manufacturer shall provide the service of a qualified person to assist in establishing the proper dose of extended-set admixture and make dosage adjustments required to meet changing job site conditions

Table 1: Composition of Shotcrete

Type of Shotcrete Process	Minimum Cement Content		Maximum W/C(1) Ratio	Air Content Range (%)	Minimum 28-Day Compressive Strength(3)	
	(kg/m3)	(lb/cy3)			(MPa)	(psi)
Wet	325	550	0.55	NA	28	4000
Dry	325	550	0.50	NA	28	4000
Wet (w/EA)	325	550	0.45	5 min	28	4000
Dry (w/EA)	325	550	0.45	5 min.	28	4000

Notes:
(1) W/C = Water/Cement (by weight).
(2) EA = Entrained Air.
(3) According to AASHTO T 22.

SHOTCRETE PRECONSTRUCTION TESTING

Conduct preconstruction shotcrete field trials before starting shotcrete production. Allow the Engineer the opportunity to witness all phases of the preconstruction testing.

1. Field Trials: Construct wood forms at least 6-in. thick by 3 ft by 3 ft in size. Have each proposed nozzle operator make test panels on two vertical wood forms. Cure the test panels according to AASHTO T 23, without immersing the panels.

2. Coring: Drill six 3-in. diameter cores from each test panel according to AASHTO T 24. Trim the ends of the cores according to AASHTO T 24 to make cylinders at least 3-in. long.

3. Compressive Strength Testing: Soak the cylinders in water for 40 hours immediately before testing. Test three cylinders from each test panel three days after field trial and test the remaining three cylinders 28 days after the field trial. Perform tests according to

AASHTO T 22. All specified strength requirements shall be satisfied before the shotcrete mix design will be considered for acceptance.

4. Mix Design Acceptance: The Engineer will accept or reject the shotcrete mix design based on the results of the preconstruction field trials and testing. Before approving any changes to a previously accepted mix design, the Engineer may require additional preconstruction testing at no additional cost to the agency.

SURFACE PREPARATION AND APPLICATION OF SHOTCRETE

A. Surface Preparation - Clean loose material, mud, rebound, and other foreign matter from all surfaces to receive shotcrete. Remove curing compound on previously placed shotcrete surfaces by sandblasting. Install approved depth gages to indicate the thickness of the shotcrete layers. Install depth gages on 6-ft centers longitudinally and transversely with no less than two gauges per increment of surface area to receive the shotcrete. Moisten all surfaces.

B. Weather Limitations - Place shotcrete when the ambient temperature is 41ºF(5ºC) or higher. Do not perform shotcrete operations during high winds and heavy rains.

C. Shotcrete Application
1. Do not apply shotcrete to frozen surfaces.
2. Use acceptable nozzle operators who have fabricated acceptable test panels.
3. Apply shotcrete within 45 minutes of adding cement to the mixture. Apply shotcrete at a mix temperature between 50ºF (10ºC) and 86ºF (30ºC).
4. Direct the shotcrete at right angles to the receiving surface except when shooting ground reinforcing bars. Apply shotcrete in a circular fashion to build up the required layer thickness. Apply shotcrete in a steady uninterrupted flow. If the flow becomes intermittent, direct the flow away from the work area until it becomes steady.
5. Make the surface of each shotcrete layer uniform and free of sags, drips, or runs.
6. Limit the layer thickness of each shotcrete application to 2 in. Thicker applications may be approved if the contractor can demonstrate that no sloughing or sagging is occurring. If additional thickness is required, broom or scarify the applied surface and allow the layer to harden. Dampen the surface before applying an additional layer.
7. Remove laitance, loose material, and rebound. Promptly remove rebound from the work area.
8. Taper construction joints to a thin edge over a distance of at least 1 ft. Wet the joint surface before placing additional shotcrete on the joint. Do not use square construction joint.
D. Production Summary - Prepare and submit a summary of shotcrete production application for each shift. Furnish the summary to the Engineer within 24 hours. Include the following information in the report:
1. Quantity and location of shotcrete applied including sketches.
2. Observations of success or problems of equipment operation, application, final product conditions, and any other relevant issues during production and application.

3. Description of placement equipment.
4. Batch number(s) if applicable.

SHOTCRETE QUALITY CONTROL RECORDS

A. Submit field quality control test reports within two working days of performing the tests. Include the following information in the reports:
1. Sample identification including mix design and test panel number and orientation.

Material or Product	Property or Characteristic	Category	Test Methods or Specifications	Frequency(4)	Sampling Point
	Air content	–	AASHTO T 152	1 per load(1)	Truck, mixer or agitator(2)
Shotcrete	Unit mass	–	AASHTO T 121	1 per load(1)	Truck, mixer or agitator(2)
	Compressive strength	II	AASHTO T 22	1 set per 33 cy, but not less than 1 set each day (3)	Production test panels(3)

2. Date and time of sample preparation including name of persons preparing samples, curing conditions and sample dimensions.
3. Date, time, and type of test.
4. Complete test results including load and deformation data during testing, sketch of sample before and after testing, and any unusual occurrences observed.
5. Names and signature of person performing the test.
6. Location of steel reinforcement, if used, covered by shotcrete.
7. Name of nozzle operator

SHOTCRETE PROTECTION AND CURING

A. Protect and cure the surface according to Standard Specification Section 802. Clear curing compound shall be used as an interim cure for intermediate shotcrete surfaces. Apply curing compound to the final exposed shotcrete surface according to Standard Specification Section 802.17. Protect and maintain shotcrete at a temperature above 41ºF (5ºC) until shotcrete has achieved a minimum strength of 750 psi.

SHOTCRETE ACCEPTANCE

A. Material for concrete will be evaluated by visual inspection of the work, conformance testing and by certification for materials manufactured off-site. Compressive strength will be evaluated by conformance testing using Table 1 for specification limits. See Table 2 for minimum sampling and testing requirements and acceptance quality category.

Table 2: Sampling and Testing of Shotcrete.

Notes:
(1) When continuous mixing is used sample every 10 cy.

(2) Sample according to AASHTO T 141.
(3) Prepare production test panels according to procedures listed in section shotcrete preconstruction testing. Obtain two 3-in. diameter core specimens from each panel according to AASHTO T 24. A single compressive strength test result is the average result from two 3-in. diameter core specimens from the same test panel tested according to AASHTO T 22 at 28 days.
(4) Engineer shall conduct verification testing at a rate of one (1) per four (4) performed by the Contractor or a minimum of one (1) per job.

ACCEPTANCE
Material for the soil nail retaining wall will be accepted based on the manufacturer production certification and from quality control and acceptance sampling and testing results as well as verification testing results. Construction of the soil nail retaining wall will be accepted based on conformance with the plans, specifications and this special provision.

METHOD OF MEASUREMENT: Soil Nail Wall will be measured by the square foot of front surface area between the top of the leveling pad at the face of the wall and the top of the Soil Nail Wall.

BASIS OF PAYMENT: Soil Nail Walls completed, accepted and measured as provided above will be paid for at the contract unit price bid per square foot, which price shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, including design, preparing working drawings, testing, pneumatically placed concrete (shotcrete), construction joints, wall drainage materials, drilling, nail reinforcement, grout, test nails, geotechnical investigation; for performing mix designs and quality control and acceptance sampling and testing; and for doing all the work involved in installing the soil nails, and as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The Contractor shall comply with applicable Federal, State, and local laws governing safety in accordance with Subsection 107.01(b) in any and all excavation and/or shoring operations. Contractor has the option of using a cut slope and/or shoring to maintain stability of the cut. Any shoring, and/or additional excavation, and subsequent backfill beyond the vertical cut line behind the pneumatically placed concrete will not be paid separately.

Payment will be made under:

Pay Item	**Pay Unit**
Soil Nail Wall	Square Foot

SP-27 - METHOD FOR INSTALLATION AND USE OF PIPE RISER SETTLEMENT MONITORING DEVICE ROADWAY

DESCRIPTION

SP27-1.1 This work includes the installation and measurement for pipe riser settlement monitoring devices at locations specified in the table below. The locations shown on the plans and in the table below are approximate and may be adjusted by the contractor. The installation, maintenance, and data collection procedures for the pipe riser settlement devices used to monitor subsurface settlement are described in this method. Settlement devices are used to monitor the rate and magnitude of settlement occurring at a point within or beneath an embankment during and subsequent to construction. The data obtained from these devices are used to determine commencement of permanent structure construction. The pipe riser settlement device is a direct-reading unit which is exposed for the full duration of fill construction.

Settlement Monitoring Roadway Locations

Highway 67	688+00	55’ LT

PIPE RISER SETTLEMENT DEVICE

SP27-2.1 APPARATUS

1. Pipe riser settlement device (see attached figure)
2. Hand tools - shovel, bar, hammer, pipe wrenches, etc.

SP27-2.2 INSTALLATION

1. It will usually be necessary to determine the location for installing the settlement device by survey. If settlement readings are to be continued after completion of the fill, it is imperative that the unit be located outside of the travel way of vehicle or construction equipment.
2. After approximately 2 feet of embankment material has been placed, excavate a pit to the depth of the original ground level at the previously determined location for the settlement device. Prepare a firm, level area free of large rocks or clods for the settlement device at the bottom of the pit.
3. Assemble the settlement device as shown in the attached figure. Attach a ¾ inch pipe floor flange to the center of the wood platform with bolts or lag screws. Then screw a 6-foot length of ¾ inch pipe into the floor flange. Place a pipe coupling on the top of the ¾ inch pipe and tighten all joints in the assembly using a pipe wrench.

4. Survey the elevation of the top of the pipe coupling. Then slip the 1-1/2 inch by 5-foot protective sleeve, which may be either rigid polyvinyl chloride (PVC) or iron pipe, over the control pipe until it is about 2± inches above the floor flange. Place a duct seal or other seal to hold the protective sleeve in place. See attached figure for detail. Do not attach the protective sleeve to the wood platform or the control pipe. This protective sleeve is used to absorb the friction between the fill material and the settlement unit and, therefore, must be free to move independently from the wood platform and control pipe.
5. Firmly seat the settlement device on the prepared area in the bottom of the pit. Then fill and compact by hand using fine embankment material free of large rocks and clods around the settlement device to a depth of 1 foot.
6. Using a spirit level, check to make sure the control pipe is reasonably plumb, then carefully fill the pit with embankment material and compact in place.
7. Attach a post to the top of the protective sleeve to alert construction equipment operators of the obstruction.
   NOTE: It has been found that a 6-foot long 2-by-4 painted with alternate 1-foot wide stripes of red and white is satisfactory for this use. It is recommended that flagging be attached to the top of this post. The post should be attached so that it can be easily removed and reattached as additional pipe is added during embankment construction.

SP27-2.2 COLLECTION OF DATA

1. As soon as possible after the settlement device has been installed, survey the elevation of the top of the ¾ inch pipe coupling attached to the first section of riser pipe.
2. During embankment construction, the elevation of the top of the riser pipe should be determined by survey at least once a day when construction is occurring on the embankment, or every other day when construction is not occurring on the embankment. After embankment construction is completed, the elevation should be determined frequently enough to indicate significant changes in the rate of settlement. Normally, the time between surveys will be twice-weekly immediately subsequent to completion of the embankment for the first two weeks, and the interval between surveys will increase with time. The contractor will be responsible for securing settlement plate survey readings. Settlement plate survey readings should be secured at the same time of day each day by the same surveyor using the same survey equipment. Readings must be secured to the nearest 0.01 foot, minimum.
3. During fill placement, it will be necessary to add sections of riser pipe and protective sleeve. When extending the riser pipe, use the following procedure:
   a. Survey and record the elevation of the top of the existing riser pipe coupling (Column 2).
   b. Remove the protective post, attach a coupling to the section of riser pipe that will be added, and tighten the joint with pipe wrenches.
   c. Insert the added section into the coupling on top of the existing riser pipe and tighten the joint by using one pipe wrench on the existing coupling and one pipe wrench on the added length of riser pipe. While tightening the joint, do not allow the coupling between the existing riser pipe and the added length to turn. Turn only the added length of riser pipe.

d. Survey the elevation of the top of the coupling on the added length of riser pipe. Record the new top of riser pipe elevation on a new line on the data sheet and add a note under Column 9 (Remarks) that the new top of pipe elevation is for the added section.
e. Calculate the length of riser pipe added from the survey elevations and add to the last length recorded in Column 3.
f. Add and secure a 5-foot length of protective sleeve to the existing sleeve and secure to the top of the post.

4. Enter all data on the attached form follows:

Column 1 - Record the reading date.

Column 2 - Record the elevation of the top of the riser pipe as determined by survey.

Column 3 - Record the cumulative length of each section of riser pipe added.

Column 4 - Record the height of the riser above the original ground (Column 2 minus Column 3).

Column 5 - Record the total settlement to the nearest 0.1 inch. This value is obtained by subtracting the value in Column 4 for the day being read from the value at the top of Column 4 (elevation at the time of installation).

Column 6 - Record the elevation of the surface of the fill as determined by survey.

Column 7 - Record the height of the fill above original ground to the nearest 0.1 feet.

Column 8 - Record the number of calendar days elapsed since the settlement device was installed. (Day of installation equals Day 1).

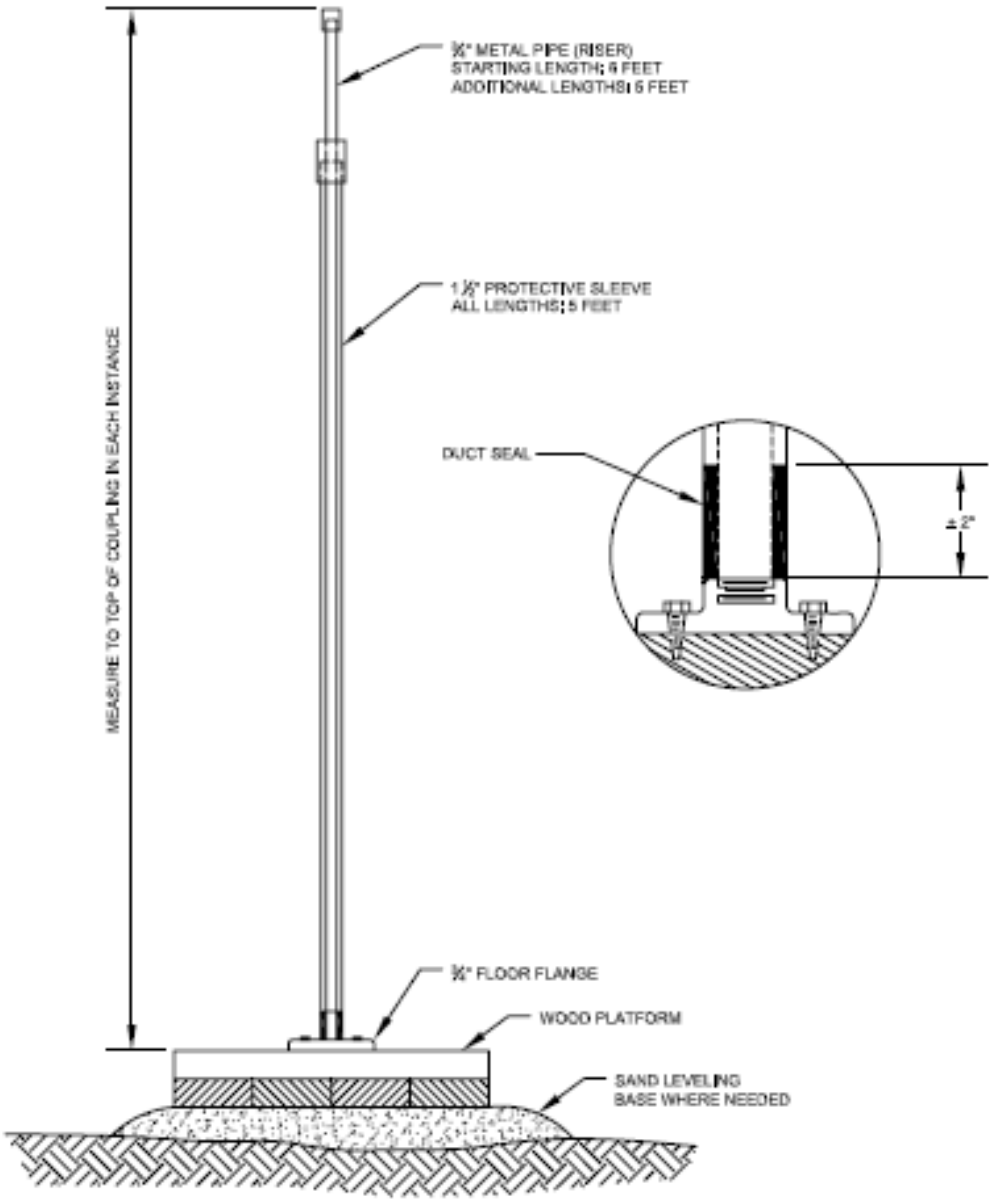
Column 9 - Record any information that would be helpful in the analysis of data. Be sure to indicate in this column the date and length added to the riser pipe.

Settlement plate survey readings must be submitted to the Engineer the same day that readings are secured by the contractor. The Engineer, or his representative, will be responsible for analyzing the data and determining the rate that embankment construction can proceed to reduce the risk of slope failure.

MEASUREMENT AND PAYMENT

SP27-3.1 The installation, maintenance and data collection of the pipe riser settlement device will not be measured for separate payment but shall be included under ITEM SP-2 – BRIDGE CONSTRUCTION.

END OF ITEM SP-27


¾" METAL PIPE (RISER)
STARTING LENGTH: 6 FEET
ADDITIONAL LENGTHS: 5 FEET
1 ½" PROTECTIVE SLEEVE
ALL LENGTHS: 5 FEET
DUCT SEAL
± 2"
MEASURE TO TOP OF COUPLING IN EACH INSTANCE
¾" FLOOR FLANGE
WOOD PLATFORM
SAND LEVELING
BASE WHERE NEEDED

PIPE RISER SETTLEMENT PLATE DATA SHEET

Project: Location:	Plate ID: Station/Offset: Design Fill Height: Surcharge Height:	Comments:

Date	RISER PIPE		Elevation Change	Settlement	FILL HEIGHT		Elapsed Time	Remarks
	Top of Pipe Elevation	Length of Pipe			Surface Elevation	Fill Above Original Ground		
	(ft)	(ft)	(ft)	(in)	(ft)	(ft)	(days)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

ARKANSAS STATE HIGHWAY AND TRANSPORATION DEPARTMENT

SPECIAL PROVISION

Prefabricated Vertical Wick Drain with Fabric

Job No. CA0604

DESCRIPTION

Furnish all necessary materials, labor, equipment, all necessary submittals and incidentals for the installation of prefabricated vertical wick drains with fabric (PVDs) in accordance with the details shown on the plans and these Supplemental Technical Specifications. The PVDs consist of a corrugated polymeric core encased in a suitable drainage fabric (jacket). Install the PVDs at the locations shown on the plans, unless otherwise directed by the either the Resident Construction Engineer (RCE) or the Geotechnical Engineer-of-Record (GEOR).

TESTING STANDARDS

Use the latest edition of the testing standards indicated in this specification. Substitution of standards will require the prior written approval of the Materials and Research Engineer (MRE) with concurrence of the GEOR. The Contractor or the PVD Installer is to provide copies of all substituted standards to the RCE. The RCE will provide the copies to the MRE and GEOR for acceptance.

MATERIALS

General. The PVDs shall consist of newly manufactured materials and shall consist of a continuous polymeric drainage core and nonwoven geotextile filter fabric (jacket). The jacket shall allow free passage of pore water to the core without loss of soil material or piping. The core shall provide continuous vertical drainage. The core and jacket material may be either non-bonded or bonded. For non-bonded PVDs, the jacket material is wrapped around the core and seamed to itself. For bonded PVDs, the jacket material is fused to both faces of the core along the peaks of the corrugations.

Jacket Materials

The jacket components shall conform to the following:

a.) Be a synthetic nonwoven polymeric geotextile meeting the criteria listed in Table 1.

b.) The jacket material shall not be subject to localized damage (e.g., punching through the filter by sand/gravel particles).

c.) The jacket material shall be rigid enough to withstand lateral earth pressures due to embedment and surcharge so that the vertical flow capacity through the core will not be adversely affected.

d.) The jacket material shall be flexible enough to bend smoothly during installation and during any induced consolidation settlement without damage.

1. The jacket material shall not undergo cracking and peeling during installation of the vertical drain.

Table 1 – Jacket Material Properties

PROPERTY[1]	TEST METHOD	UNITS	REQUIREMENTS
Mass	ASTM D5261	oz./yd^2	$\geq$ 4.0
Grab Elongation	ASTM D4632	%	$\geq$ 50
Grab Strength[2]	ASTM D4632	lbs.	$\geq$ 130
Tear Strength[3]	ASTM D4533	lbs.	$\geq$ 60
Permittivity	ASTM D4491	sec.$^{-1}$	$\geq$ 0.5
AOS	ASTM D4751	Sieve Size (mm)	#100 ($\leq$0.15)
Ultraviolet Stability (Retained Strength)	ASTM D4355	%	$\geq$50 after 500 hrs. of exposure

Notes:

[1]All numeric values represent Minimum Average Roll Value (MARV) in the weaker principal direction. Provide geotextiles whose average test results from any roll sampled in a lot for conformance or quality assurance testing meets or exceeds minimum values provided in this Table.

[2]For bonded drains, grab tensile strength tests shall be conducted on the assembled drain using ASTM D4595.

[3]For bonded drains the trapezoidal tear strength test shall be waived.

Core Materials

The core materials shall conform to the following:

a.) The core shall be continuous polymeric material fabricated with grooves to promote drainage along the axis of the vertical drain. Studded cores are not allowed.

Table 2 – Core Material Properties

PROPERTY	TEST METHOD	UNITS	REQUIREMENTS
Thickness	ASTM D5199	in.	0.0938 (3/32)
Mass	ASTM D3776	oz./ft.	$\geq$ 0.60
Tensile Strength	ASTM D638	lbs.	300
Crush Strength	ASTM D1621	psi	450
Ultraviolet Stability (Retained Strength)	ASTM D4355	%	$\geq$ 50 after 500 hrs. of exposure

PVD Assemblies

Label or tag the assembled PVDs in such a manner that the information for sample identification and other quality control purposes can be read from the label. As a minimum, identify each roll of assembled PVD by the manufacturer as to lot or control numbers, individual roll number, date of manufacture, manufacturer and product identification of the jacket and core. The assembled PVDs shall be resistant against wet rot, mildew, bacterial action, insects, dissolved salts, acids, alkalis, solvents, and other ingredients in the site ground water.

Use only a single type of assembled PVD on the project. Provide an assembled PVD that meets the properties indicated in Table 3

Table 3 – Assembled PVD Properties

PROPERTY	TEST METHODS	UNITS	REQUIREMENTS
Perimeter	--	in.	≥ 7.75
Width	Measure with caliper	in.	≥ 3.75
Thickness	ASTM D5199	in.	≥ 0.1250 (1/8)
Discharge Capacity	ASTM D6918	gpm	1.5 (at 25% compression)

During shipment and storage, wrap the PVDs in burlap or similar heavy duty protective covering. Protect the PVDs from sunlight, mud, dirt, dust, debris, and other detrimental substances during shipping and on-site storage. The PVDs shall be free of defects, rips, holes, and/or flaws. Material which is damaged during shipment, unloading, storage, or handling, or which does not meet the requirements of the drain material will be rejected by the RCE.

Non-bonded PVDs may be field spliced. Remove approximately 6 inches of the jacket material from the current assembled PVD roll exposing the core. Insert the exposed core into the new roll of assembled PVD and secure using methods approved by the PVD supplier and accepted by the RCE. The core material shall not be exposed after splicing. The core materials from each roll should be in firm contact, with the corrugated peaks of one core overlapping the corrugated valleys of the other core.

For bonded PVDs, provide to the RCE the PVD Manufacturer's splicing procedure for review and acceptance by the GEOR prior to any PVD material being installed.

SUBMITTALS

Prefabricated Vertical Drain Material

Acceptance of the sample PVD material by the MRE will be required prior to delivery of the PVD material to the Project. At least 30 calendar days before beginning PVD installation, the Contractor and PVD Installer shall:

a.) Identify the proposed source of the assembled PVDs prior to delivery to the site. Supply, to the RCE, a manufacturer's material certification that the assembled PVD meets or exceeds the material requirements of this specification. The manufacturer's literature shall document the physical and mechanical properties of the PVD. The PVD Manufacturer shall be a specialist in the manufacture of PVDs and shall have produced a minimum of 2,000,000 linear feet of the PVD material similar to that proposed for the Project and that has been successfully used in similar applications within the past 5 years, including details on prior performance on these projects.

b.) Submit to the RCE for review and visual inspection 3 samples of the unspliced PVD to be used and 3 samples of proposed splices, if splices are allowed on the project. The samples of unspliced PVD shall be at least 5 feet long. Samples of spliced PVD shall be long enough to include the splice plus 2 feet of unspliced drain on both sides of the splice. The samples shall be stamped or labeled by the manufacturer as being representative of

the PVD material having its specified trade name.

c.) Submit to the RCE for review and visual inspection 3 samples of the proposed anchor plate to be used to anchor the PVDs at the design depth shown on the plans.

Prefabricated Vertical Drain Installer

Provide proof to the RCE and GEOR of the experience of the PVD Installer for the work described at least 30 calendar days before beginning PVD installation. The PVD Installer shall:

a.) Document successful installation of at least 2,000,000 linear feet of PVDs during the last 5 years and shall be a certified installer of the PVD Manufacturer.

b.) Document at least 5 successfully completed projects within the last 5 years of similar size and complexity to that of the Project. Document the PVD Installer's experience by providing a project summary that includes for each referenced project, the project start and completion dates, total quantity of PVDs installed, and a detailed description of the project, site conditions, and subsurface conditions. Include in the project description details of the PVD materials, the equipment and technique used to install the PVDs, the average and maximum length of PVD installed, the client name and address, the name and telephone number of the representative of the consultant and owner for whom the work was performed and who can attest to the successful completion of the work, and any other information relevant to demonstrating the PVD Installer's qualifications.

c.) Identify a full-time supervisor who has been in responsible charge of supervising PVD installation operations for at least 5 projects in the last 5 years. The supervisor shall be present at the work site at all times during PVD installation operations. Provide a detailed resume of the supervisor's experience and qualifications. Provide a detailed resume for the replacement supervisor, if required.

Prefabricated Vertical Drain Installation Plan

At least 30 calendar days before beginning PVD installation, the Contractor and the PVD Installer shall submit to the RCE for review a PVD Installation Plan that includes as a minimum the following information:

1. The configuration of the installation equipment including size, type, weight, maximum pushing force, and vibratory hammer rated energy.

2. Dimensions and length of the mandrel.

3. Details of the PVD anchorage.

4. Detailed description of proposed installation procedures.

5. Proposed methods for securing splices in non-bonded PVDs or the manufacturers splicing procedure for bonded PVDs, if splicing is allowed.

6. Proposed methods and equipment for preaugering or spudding.

7. Submit documentation of the successful application of the proposed PVD installation operations.

8. Provide shop drawings showing the planned locations and bottom elevations of all

PVDs, a unique identification number for each PVD, the proposed installation sequence, the location of all potential conflicts with the locations of the PVDs.

Submittal Reviews

Acceptance of the proposed materials will be by the MRE. The equipment, construction sequence, and installation method will be accepted by the GEOR. Acceptance of the PVD materials, equipment, construction sequence, or installation method does not relieve the Contractor and PVD Installer of its responsibility to install the PVDs in accordance with the plans and specifications. Acceptance by the GEOR of the method and equipment to be used to install the PVDs is contingent upon satisfactory demonstration of PVD installation at the project site. If, at any time, the RCE or the GEOR considers that the method of installation does not produce satisfactory PVDs, alter the method and/or equipment as necessary to comply with this Special Provision. The RCE and the GEOR will determine the adequacy of the Contractor's methods and equipment.

CONSTRUCTION REQUIREMENTS

Install PVDs as indicated on the plans or as directed by the RCE and GEOR. Install the PVDs with equipment that will minimize the disturbance of the subsoil during the installation operation and maintain the mandrel in a vertical position. Size the equipment to minimize the disturbance of the subsoil during the installation operation. Provide equipment with sufficient push force to install the PVDs through all existing subsurface material to the depths shown on the plans. Size the equipment to have the capability of installing the PVDs to a depth of approximately 20 feet greater than the maximum PVD depth shown on the plans. Select equipment such that it will not force the fill soil into the existing soil, nor disturb the fill soil, nor cause any bearing capacity problems with the subgrade soils due to the weight of the equipment.

Install the PVDs using a mandrel or sleeve that can be advanced through the soils to the required depth. The mandrel or sleeve shall protect the PVD material from tears, cuts, and abrasion during installation and shall be retracted after each PVD is installed. To minimize disturbance of the subsoil, the mandrel or sleeve shall have a maximum cross-sectional area of 10 square inches. The mandrel or sleeve shall be sufficiently stiff to prevent wobble or deflection during installation. In no case will alternative raising and lowering of the mandrel during advancement be permitted. Permit the raising of the mandrel only after completion of the PVD installation to the bottom PVD elevation shown on the plans or otherwise authorized by the GEOR.

Install the PVDs using either a constant load or constant rate of advancement technique. Use a vibrator only when approved by the RCE in areas where constant load or constant rate of advancement methods cannot install the PVDs to the design depths. Jetting or use of an impact hammer will not be allowed to install PVDs.

Provide each PVD with an "anchor" plate or similar arrangement to anchor the bottom of the drain at the required depth during mandrel removal and to prevent soil from entering the bottom of the mandrel during PVD installation. The anchorage shall be adequate to keep the bottom of the PVD at the required depth subject to approval and field verification by the RCE. The corresponding dimension of the anchor shall conform as closely as possible to the breadth dimensions of the mandrel to minimize soil disturbance. The projected cross-sectional area of the mandrel and anchor combination shall not be greater than 14 square inches.

Notify the RCE at least 3 working days prior to installation of the initial PVDs at the location(s) shown on the plans to allow the RCE sufficient time to provide the necessary inspection for the initial PVD installation.

Do not begin installation of the initial PVDs at the location(s) indicated without the presence of the RCE or his/her representative. During the installation of the initial 10 PVDs at the indicated location(s), demonstrate that the equipment, method, and material produce a satisfactory installation, as determined by the RCE. Following completion of the initial PVD installations at the indicated location(s), do not proceed with the installation of the remaining PVDs at the embankment location until authorized by the RCE.

If foundations have been previously installed, install the PVDs in a manner as to avoid these foundations. The location of the PVDs relative to the foundations shall be determined and staked out prior to the installation of the PVDs. In addition, take precautions to preserve the stake locations and re-stake PVD locations as necessary.

Using a baseline and benchmark determined by the Contractor, locate, number, and stake out the PVDs. All other construction staking, for taking precautions to preserve the stake locations, and for re-staking, if necessary, is the responsibility of the Contractor. Do not vary the as-installed locations of the PVDs by more than 6 inches from the locations designated on the plans or approved shop drawings.

PVDs that deviate from the plan locations by more than 6 inches, that are damaged, or improperly installed will be rejected. Abandon in place rejected PVDs. Replacement PVDs shall be placed as close as possible to the correct original locations.

Provide the RCE with a means of verifying the plumbness of the mandrel and determining the depth of the PVDs. Check the equipment for plumbness prior to installing each PVD. A deviation from the vertical of no more than 2 percent (2%) during installation is allowed.

Splices, if allowed in the plans or by the GEOR, shall be done in accordance with approved PVD Installation plan.

Cut off the PVDs neatly at least 6 inches above the working layer, unless otherwise shown on the plans.

Provide the RCE with a means of determining the depth of the advancing PVD at any given time and the length of the drain installed at each location. Submit a summary tabulation of the number and length (to nearest 1/2 foot) of acceptable PVD daily to the RCE.

Refusal is defined as the point where the soils resist a reasonable effort at further penetration of the PVDs. The GEOR will establish refusal criteria based on the existing soil borings and the initial PVD installations to be performed by the PVD Installer in the presence of the RCE or his/her inspector, as specified herein. Terminate no PVDs above the design PVD bottom elevations shown on the plans without the approval of the GEOR. The GEOR may vary the depths, spacing, and/or number of PVDs to be installed, and may revise the plan limits for this work based on the actual subsurface conditions encountered.

Where obstructions are encountered below the working surface, install a new drain within a 1 foot radius of the original location of the obstructed PVD. As directed by the RCE make a maximum of 2 additional installation attempts for each obstructed PVD. If the PVD still cannot be installed to the design bottom elevation, abandon the PVD location and install a new PVD at a location directed by the RCE in consultation with the GEOR. Clearly mark in the field locations where PVDs do not meet the depth criteria due to obstructions. The RCE in consultation with the GEOR will have the right to waive the replacement PVD requirement upon written notice to the Contactor and

the PVD Installer.

Preaugering or spudding for the PVD installation shall be allowed to advance the PVDs through compacted fill material or other obstructions. Penetrate the overlying fill material or any dense layers or obstructions when encountered to satisfactorily install the PVDs. Obstruction is defined as any man-made or natural object or strata, that prevent the proper insertion of the mandrel and installation of the PVD.

The Contractor may use augering, spudding, or other approved methods to loosen the soil and obstructing material prior to the installation of the PVDs. The obstruction clearance procedure is subject to the approval of the RCE; however, such approval shall not relieve the Contractor or PVD Installer of the responsibility to clear obstructions in accordance with the specifications.

If augering is the selected method, the augers shall have a minimum outside diameter equal to the largest horizontal dimension of the mandrel, shoe, or anchor, whichever is greatest. The maximum outside diameter of the auger shall be no more than 3 inches greater than the maximum dimension of the mandrel.

Limit the use of obstruction clearance procedures and use only when approved by the RCE. Penetrate no more than 3 feet beneath the obstruction when using augering or other obstruction removal techniques.

Provide the RCE with "As-Built" plans of the PVD installation. Include in the plans the location, the date installed, and the length of each PVD below the fill soil surface elevation. In addition, include on the "As-Built" PVD plans the fill soil surface elevation at each location, the "As-Built" PVD bottom elevation, and identify any rejected or abandoned PVD installations. Submit "As-Built" plans at least weekly during PVD installation operations. Submit a final "As-Built" PVD plan within 7 calendar days of the completion of PVD installation in all embankment locations. The final "As-Built" plans will be subject to the approval of the RCE.

A minimum 2' thick drainage layer of stone shall be placed below the reinforced zone of the MSE wall and shall extend to cover all wick drains. The stone drainage layer shall extend five (5) feet beyond the outer edge of the wick drains. The wick drains shall be placed within the entire reinforced zone of the MSE walls. Thus, the stone drainage layer shall also be present underneath the entire reinforced zone of the MSE wall.

In some MSE wall areas, undercut and backfill depths exceed 2' due to bearing capacity requirements as specified in the project plans. In these areas, stone backfill will serve as both a foundation layer for the MSE walls and a drainage layer for the wick drains. The top 2' of these areas shall consist of Class 7 Aggregate Base Course. Backfill below the top 2' in the deeper undercut areas can consist of Stone Backfill in accordance with Section 207 of the Standard Specifications.

Include a drain pipe installed per standard drawing PU-1 placed at the plan centerline of the drainage layer and extended to daylight at both ends.

METHOD OF MEASURMENT

Furnish all supervision, materials, equipment, mobilization, crews, tools, required permits, survey stake out of PVD locations, and other equipment and materials as necessary to properly execute the work. In addition, this item includes clearing of obstructions and the proper disposal of surplus materials brought to the ground surface by obstruction clearance, if required.

Measure the length of acceptably installed PVDs to the nearest 1/2 foot. The length of the PVDs to be paid for shall be the distance the installation mandrel tip penetrates below the working

grade plus the required cut-off length above the working surface. Payment will not be made for drains that are not anchored to the required depth, unless previously approved by the GEOR and the RCE in writing.

The GEOR may vary the depths, spacing, or numbers of PVDs to be installed and may revise the PVD installation limits shown on the plans based on the actual subsurface conditions encountered. Such changes or revisions may increase or decrease the total quantity of the PVDs estimated based on the plans. In the event of such changes in required PVD quantity, the payment for PVDs shall be made on the basis of the contract unit price per linear foot.

BASIS OF PAYMENT

Payment will be based on the sum total length of all acceptably installed PVDs.

No payment will be made for PVDs, or for any delays or expenses incurred through changes necessitated by improper material or equipment. No payment will be made for PVDs placed deeper than the bottom elevation designated on the plans unless authorized in writing by the RCE.

The PU-1 pipe and geotextile fabric surrounding the pipe and installation of these items is considered subsidiary to this specification.

Payments shall be made under:

Pay Item	Pay Unit
Prefabricated Vertical Wick Drain with Fabric	LF