ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

SUBSURFACE INVESTIGATION

STATE JOB NO. 061102

FEDERAL AID PROJECT NO. NHPP-0043(28)

HWY. 67 INTERCHANGE (N. OF CABOT) (S)

STATE HIGHWAY 67 SECTION 11

IN LONOKE COUNTY

LETTING OF DECEMBER 7, 2016

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

From: Benson, Michael C.
To: Baker, David W
Subject: FW: 061102 N. Cabot ACHM Volume Controls
Date: Tuesday, September 06, 2016 1:06:50 PM
Attachments: image001.png

David,

See values hilited in yellow below that we report out currently.

Michael

From: Mitchell, Jim
Sent: Tuesday, September 06, 2016 12:53 PM
To: Benson, Michael C.
Subject: RE: 061102 N. Cabot ACHM Volume Controls

Michael,

Current Values are close but as of right now I report out the following avg.

ACHM BASE COURSE (1-1/2") - MINERAL AGGREGATE = 96.2%, ASPHALT BINDER (PG 64-22) = 3.8% **3.8%**
ACHM BINDER COURSE (1") - MINERAL AGGREGATE = 95.6%, ASPHALT BINDER (PG 64-22) = 4.4% 4.1%
ACHM SURFACE COURSE (1/2") - MINERAL AGGREGATE = 95.0%, ASPHALT BINDER (PG 64-22) = 5.0 5.0%

ACHM SURFACE COURSE (1/2") - MINERAL AGGREGATE = 95.0%, ASPHALT BINDER (PG 70-22) = 5.0 4.8%

Jim

From: Benson, Michael C.
Sent: Tuesday, September 06, 2016 12:39 PM
To: Mitchell, Jim
Subject: FW: 061102 N. Cabot ACHM Volume Controls

Jim,

Please look at the percentages below and let me know if they are comparable to our historical information or if they need to be changed.

Michael

From: Baker, David W
Sent: Friday, September 02, 2016 8:02 AM
To: Benson, Michael C.
Subject: FW: 061102 N. Cabot ACHM Volume Controls

Mike,

Please review the numbers provided by the design consultant for the pavement mix on project

061102. I have also attached the approved pavement design. Let me know if you need any more information.

David W. Baker, P.E.

Staff Design Engineer | Roadway Design CAD Coordinator

Roadway Design Division | Arkansas State Highway & Transportation Department

☎ (501) 569-2525

✉ david.baker@ahtd.ar.gov

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From: Robbins, Paul [mailto:Paul.Robbins@hdrinc.com]
Sent: Thursday, August 25, 2016 9:01 AM
To: Baker, David W
Subject: 061102 N. Cabot ACHM Volume Controls

David: For the job to the south, CA0605, we used the following volume controls:

ACHM BASE COURSE (1-1/2") - MINERAL AGGREGATE = 96.2%, ASPHALT BINDER (PG 64-22) = 3.8%
ACHM BINDER COURSE (1") - MINERAL AGGREGATE = 95.6%, ASPHALT BINDER (PG 64-22) = 4.4%
ACHM SURFACE COURSE (1/2") - MINERAL AGGREGATE = 95.0%, ASPHALT BINDER (PG 64-22) = 5.0%

ACHM SURFACE COURSE (1/2") - MINERAL AGGREGATE = 95.0%, ASPHALT BINDER (PG 70-22) = 5.0%

Is this still approximate for this project?

Thanks.

Paul Robbins, PE, CFM®
Project Manager

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Highway 67 Interchange (North of Cabot) Roadway Geotechnical Report

Job 061102

Lonoke County, Arkansas
April 1, 2016

April 1, 2016

Mike Fugett, PE
Arkansas Highway and Transportation Department
Assistant Chief Engineer of Design
10324 Interstate 30
PO Box 2261
Little Rock, AR 72203

Dear Mr. Fugett,

We have completed the Roadway Geotechnical Report for the Highway 67 Interchange (North of Cabot) in Lonoke County, Arkansas. This report and discussion reflects the latest geotechnical data as it relates to the current alignment geometry.

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

Sincerely,

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

Maegan L. Mansfield, E.I.T.

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1 Introduction

The new Highway 67 interchange is proposed between Highway 89 and Highway 305 to facilitate the extension of Highway 38. The proposed Highway 67 interchange will require three (3) new bridges over Four Mile Creek and one (1) new bridge carrying Highway 38 over Highway 67. The geotechnical report for these bridges will be provided under separate cover. In general, Standard Penetration Test (SPT), Shelby tube, and bulk sample borings were advanced; 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. Recommendations for any problematic areas along the alignment are included herein.

2 Project Description

This roadway report includes discussion and recommendations for the proposed Highway 67 interchange between Highway 89 and Highway 305 alignment. 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 (M_r) for pavement design, settlement, slope stability, and problematic areas.

3 Field and Laboratory Procedures

Thirty-four (34) total borings, where eleven (11) were roadway borings and twenty-three (23) were bulk samples, were advanced along the proposed alignment.

For the roadway borings, SPT (ASTM D1586) and Shelby tube (ASTM D1587) samples were obtained. Boring depths ranged from 2.7 feet to 55.3 feet. Auger or split spoon refusal occurred in all borings with the exception of B-172 and B-173. Coring operations were performed in borings B-147 and B-148 upon auger refusal. Roadway borings were advanced utilizing two (2) track mounted drill rigs. A CME 55 and CME 45-C were utilized to advance the borings using 3¼" I.D. hollow stem augers. Hand augers were utilized on the bulk sample borings.

Bulk sample borings were spaced approximately every 500 feet along the alignments and six (6) pavement cores were drilled 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. 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

U.S.C.S Classification	Description
CL	Lean Clay with Sand, Sandy Lean Clay, Lean Clay
CL-ML	Sandy Silty Clay, Silty Clay with Sand
ML	Sandy Silt
MH	Sandy Elastic Silt
GM	Silty Gravel with Sand
SM	Silty Sand with Gravel, Silty Sand
SC	Clayey Sand, Clayey Sand with Gravel
SC-SM	Silty Clayey Sand

4 Site Conditions

4.1 Geology

The proposed Highway 67 interchange is located along the physiographic boundary between the Ouachita Mountains Province and Mississippi Embayment Province (Major Physiographic Provinces Map of Arkansas, Arkansas Geological Commission). The proposed alignment generally follows the boundary, with some borings penetrating through Mississippi Embayment sediments into underlying Ouachita Mountain bedrock. Topographic mapping (Cabot Quadrangle, 7.5 minute Series, USGS, 2011) indicates elevations ranging from approximately 290 feet, near the beginning of the subject alignment, to 240± feet at the Four Mile Creek crossing, to 260± feet near the end of the project.

General soil/rock profiles include fine grain, sandy to gravelly, cohesive roadway fill; silty, clayey, finely sandy, predominately cohesive Holocene alluvium; sandy to gravelly soils of the undifferentiated Midway Group (Paleocene/Tertiary); silty to rock fragment rich residual soils; sandstone and shale of the Pennsylvanian Atoka Formation; and Johns Valley Shale, intercepted at varying depths depending upon location along the multiple alignments, comprising the proposed interchange. Regional structural formation dip for Midway Group strata trends southeastward at very low gradients, while dip for Pennsylvanian strata (Atoka Formation and Johns Valley Shale) is northeastward or southwestward (depending upon location along the alignment) away from the axis of an east-west oriented anticline, as indicated on the Arkansas State Geologic Map (Haley, et. al., 1993) and on unpublished geologist's proof, Cabot Quadrangle (Stone - 1968). Faulting is indicated on published mapping within the limits of the subject project

alignments, represented by an east-southeast trending thrust fault. The thrust faulting is associated with a similarly oriented anticline with an axis approximately defined by the Four Mile Creek drainage course. Examination of rock core, recovered from the advanced core borings located within the project limits, revealed slickensides along a few discontinuities within bridge borings B-135A, B-150, B-170, and B-171.

4.2 Soil and Groundwater Conditions

Roadway embankment fill was encountered within boring B-173 from existing ground surface to 9.0 feet in depth. The fill was composed of medium plasticity clay with small fractions of fine to coarse sand and gravel. SPT drives indicate stiff consistency.

Holocene Alluvium, deposited within the floodplain of Four Mile Creek and tributaries, was intercepted from existing ground surface or underlying roadway fill within borings B-100, B-111, B-114, B-119, B-147, B-148, B-173, B-121, B-123, and B-172. Alluvium consisted of clay, clay with sand, sandy silt, sandy silty clay, silty sand, clayey sand, and silty sand with gravel. SPT drives and laboratory testing of advanced Shelby tubes indicate very soft to medium stiff consistency for cohesive sediments, or loose relative density for granular sediments. Alluvial sediments were penetrated to depths between 3.4 feet and 16.8 feet, reflecting a thickness range of 3.4 feet and 13.0 feet. Borings B-111, B-119, and B-121 were terminated within alluvial sediments. Alluvial deposits are interpreted to extend from Station 709+00 to Station 711+75 and Station 728+50 to at least Station 737+00 mainline; Station 713+00 to Station 716+00 Ramp 1; Station 730+50 to end of alignment Ramp 2A; Station 726+25 to Station 730+50, and Station 734+50 to end of alignment Ramp 3A and Station 520+25 to Station 524+25 Willie Ray Drive.

Residual soils developed upon Midway Group sediments were intercepted at existing ground surface or underlying alluvium within borings B-100, B-107, B-108, B-109, B-110, B-101, B-112, B-113, B-114, B-115, B-116, B-102, B-117, B-118, B-104, B-122, B-124, B-165, B-166, B-167, and B-168. Midway sediments consisted of clayey sand with gravel, high plasticity silt, low plasticity clay with some fine grain sand, low plasticity sandy silty clay, low plasticity clay, fine grain sand in roughly equal fractions, and clayey to silty fine grain sand. Where intercepted in SPT borings, consistency was stiff to hard for dominantly cohesive sediments and medium dense to dense relative density for granular sediments. Laboratory results indicate granular sediments typically contain sufficient clay/silt fractions to exhibit plasticity. Midway sediments were penetrated to depths from 3.8 feet to 16.3 feet, reflecting a thickness range of 3.8 feet to 14.3 feet. Midway sediments were penetrated to termination elevations ranging from 281.8 feet to 251.7 feet within borings B-107, B-108, B-109, B-110, B-112, B-113, B-114, B-115, B-116, B-117, B-118, B-104, B-122, and B-124. Auger refusal was encountered within borings B-107, B-109, B-115, B-116, B-118, B-104, and B-122, but upon other, older strata units. Midway Group deposits are interpreted to extend beneath the majority of the proposed interchange alignment excluding Willie Ray Drive, the eastern two thirds of Ramp 3A, mainline from Station 723+50 eastward, the eastern half of Ramp 2A, and the southbound C/D.

Residual soils, developed upon Atoka Formation sandstone and shale, and Johns Valley shale were intercepted within borings B-102, B-103, B-120, B-147, B-148, B-105, B-125,

B-106, B-126, B-127, B-128, and B-129 from the existing surface or underlying alluvium, or Midway Group sediments to depths ranging from 1.8 feet to 18.8 feet. Atoka and Johns Valley residual soils included low to medium plasticity clay with trace to small fractions of fine to coarse grain sand and/or gravel, silty sand with gravel, fine to coarse grain silty to clayey sand with traces to some gravel and silty gravel with sand. Some of the sand size fragments and all of the gravel size fragments are weathered sandstone or shale from the respective underlying formations. SPT drives indicate very stiff to firm consistency or dense to very dense relative density. Thickness of these residual soils ranges from 0.5 feet to 14.0 feet. Residual Atoka/Johns Valley soils are interpreted to extend generally northward from US 67 with remnant masses immediately south of US 67.

Residual Atoka/Johns Valley soils or Residual Midway Group soils graded into Weathered Rock (WR) based upon SPT penetration of less than 0.5 foot per 50 blows. Borings B-100, B-101, B-148, B-173, and B-172 recovered samples interpreted as weathered rock consisting of fragments of shale and sandstone with evidence of clay seams. Weathered rock thickness appears to vary from 0.1 feet to 5.4 feet based upon advanced roadway borings. Estimated elevations at top of rock within the roadway borings where Atoka Formation or Johns Valley Shale were encountered ranges from 281.8 feet to 228.1 feet.

Core sampling was advanced within borings B-147 and B-148 for the roadway investigation. Underlying weathered rock recovered within boring 147, were described as severely to completely weathered shale (claystone), exhibiting soft to low hardness, traces of iron oxide staining, and traces of gypsum veining and fracture infill, interpreted as weathered rock. Continued core sampling in borings B-147 and B-148 intercepted slight to moderately weathered shale (claystone) with silty laminations, medium hardness with soft seams, scattered gypsum infill, thin severely to completely weathered seams and intersecting joints. Apparent bedding orientation varied from 30° to 40° with similarly bedded discontinuity orientations, as well as 60° to 70°, 75° to 90°, 50° to 55°, 40° and 0° to 30° joint (discontinuity) sets, some containing clay and/or iron oxide infill. Core recovery within the two (2) borings ranged from 76% to 100% with RQD ranging from 0% to 62%. Both core borings were terminated within Johns Valley Shale strata.

Boring termination by drill or core depth, SPT refusal, or auger refusal, within all roadway borings ranged from 1.5 feet to 55.3 feet equating to termination elevations from 284.0 to 189.0. Rock on the surface was noted surrounding boring B-129 and also at adjacent locations.

Table 4-1. Summary of Laboratory Test Results

ASTM Soil Type	Plasticity Index	Natural Moisture (%)	Optimum Moisture (%)	Max Dry Unit Weight (pcf)	CBR Values
Clayey Sand	8-26	3.9-20	13.2-19	105.7-119.8	2.7-7.1
Clayey Sand with Gravel	8-15	10.8-32.1	9.6	120.1	1.9
Clayey Gravel with Sand	13	17.8	--	--	--

Table 4-1. Summary of Laboratory Test Results

ASTM Soil Type	Plasticity Index	Natural Moisture (%)	Optimum Moisture (%)	Max Dry Unit Weight (pcf)	CBR Values
Lean Clay	10,13	24.2,27	--	--	--
Lean Clay with Sand	8-16	17.5-20.3	14.8	113.1	1.9
Sandy Elastic Silt	43	39.8	--	--	--
Sandy Lean Clay	8-27	9-27	12.4-19.8	104.7-118.2	2.8-6.9
Sandy Silt	4	22.5	13.5	116.3	2.9
Sandy Silty Clay	5-7	14.6-21	12.3-13.6	115.5-119.3	3.4-3.8
Silty Clay with Sand	7	19.9	--	--	--
Silty Gravel with Sand	4	13	--	--	--
Silty Sand	NP-4	9.3-21.9	10.2-13.2	115.2-120.3	4.2-15.1
Silty Sand with Gravel	4,8	6.1,14.3	11	121.1	10.9
Silty, Clayey Sand	6	21.1	--	--	--

Review of driller's logs and notes suggest that borehole conditions, immediately upon completion of moisture/bulk sampling, SPT sampling, or Shelby tube sampling, were generally dry. Three (3) observations during drilling operations indicate water levels at 2.0 feet to 6.0 feet below existing ground equating to elevations of 263.3 to 251.5. One (1) 24 hour observation indicated water level at 8.5 feet below existing ground equating to an elevation of 236.4. Seasonal variation in rainfall and position of borings within the Four Mile Creek floodplain or above on uplands are likely to change these observations from dry to groundwater near the existing ground surface. The presence of sandy layers within predominately cohesive sediments likely will lead to perched water levels which may create seepage problems for cut intervals and excavations during construction.

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 0.259 g and the horizontal response spectral acceleration value at a 1.0 second period is equal to 0.252 g. 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, and silty gravel with sand. One soil sample of sandy elastic silt 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 tend to shrink and swell with changes in moisture content, can be problematic during compaction, and could pose significant long term stability issues if placed within embankments. Therefore, we recommend any highly plastic soils not be utilized for embankment construction, irregardless of the source. Any highly plastic materials excavated from cuts shall be used for final dressing of slopes or be wasted. We recommend all embankment construction be performed in accordance with the Special Provision "Embankment Construction." In general, the Special Provision requires material placement in embankment areas shall have a plasticity index (PI) of 15 or less, or a cherty clay material with a minimum of 55 percent retained on the No. 4 sieve prior to compaction will be allowed. This requirement shall be imposed for all embankments, except where select material is specified. The embankment stability appears acceptable when parameters for these materials are applied for the analysis. Specific analysis and recommendations are discussed below. Furthermore, muck and poor quality soils from pond/wet area stabilization shall not be utilized within embankment limits and shall be used for final dressing of slopes or be wasted.

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

California Bearing Ratio (CBR) testing values performed on the bulk soil samples ranged from 1.9 to 15.1 and a resilient modulus of 2,500 psi and R-value (California) of 5 were selected for the pavement designs on this project. We recommend all borrow material meet these minimum requirements as well as the requirements set forth in the Standard Specifications for Highway Construction. In addition, the borrow material must meet the requirement that the Maximum Plasticity Index cannot be greater than 15 to ensure the integrity and long term stability of the embankments, as indicated in the Special Provision, excluding the areas where Select Materials are specified. We suggest the higher plasticity soils be wasted first, allowing the lower plasticity materials that meet the Maximum Plasticity Index less than 15 criteria to be utilized for embankment construction.

The natural moisture 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.

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

5.2 Cut/Embankment Slopes

The roadway design cross sections indicate excavation and fill are required to construct this project. Cut slopes are less than 18 feet in depth and embankment slopes are as high as 33 feet. Individual recommendations are depicted on the attached critical cross sections. In general, soil cut slopes of 2H:1V or flatter have been utilized to develop roadway cross sections. Excavation may be difficult along the station interval 718+50 to 723+00 along C/D road where bedrock is encountered above proposed grade. One cut-section was analyzed (CD Road 719+50) where this occurred. Seismic analyses were performed on cross-sections nearest to proposed bridge ends. During a seismic event if the embankment leading up to the bridge were to fail, unanticipated forces developed by small displacements of the embankment could act on the foundations of the bridge structure. In general practice, the bridge should be designed to withstand the seismic event and remain functioning, thus the stability of embankment leading up to the bridge will be an integral factor to the bridge withstanding seismic loads. Outside of these areas it is assumed that embankments can undergo a substantial amount of displacement before complete failure occurs, thus seismic analysis is not considered. Based on the seismic analysis completed near the bridge ends, we don't foresee any seismic slope stability issues anywhere along the project corridor. Critical cross-sections are located in Appendix C of this report.

Table 5-1. Factors of Safety for Slope Stability

Location	Short Term	Long Term	Seismic*	Slope
Highway 38 102+50	3.9	3.3	--	3:1
Highway 38 107+50	2.6	2.4	1.4	3:1
Highway 38 112+00	2.5	2.3	--	3:1
Highway 38 133+50	2.9	2.3	--	3:1
Ramp 1 722+00	3.7	2.8	--	3:1
Ramp 2 721+50	3.8	2.8	--	3:1
Ramp 2 732+50	3.5	3.3	1.7	3:1
Ramp 3A 724+00	2.4	2.1	--	3:1
Ramp 3A 725+00	2.3	2.2	1.2	3:1
Ramp 3A 728+00	2.3	2.1	1.2	3:1
Ramp 3A 732+00	3.2	2.6	--	3:1
Ramp 3B 729+00	2.3	2.1	--	3:1
CD Road 719+50	2.0	2.0	--	3:1
Willie Ray Drive 520+00	2.0	1.6	1.3	2:1
Willie Ray Drive 522+50	2.0	2.2	1.1	3:1
*Seismic analyses were performed only on cross-sections located near the proposed bridge ends.				

5.3 Settlement

Subsurface conditions indicate potential settlement for new embankment construction within the analyzed areas (stability sections) could range from 1.0'' to 5.2". Cohesive soils are present beneath the alignment; however, the non-cohesive materials layered or laminated within the cohesive soils should allow the majority of this settlement to dissipate during the construction period. In some areas, soils could still be consolidating after the construction period. However, the amount of settlement in these layers occurring during post construction periods is estimated to be marginal, thus no waiting periods are recommended for the construction of embankment.

5.4 General Site Recommendations

Several ponds, wetland areas, and swell areas exist within the project vicinity. Potential for undercut and stabilization of soils that are or are susceptible to become saturated will be discussed for each alignment in this section of the report. In addition to areas discussed herein, ground waters level outside of these areas can increase due to periodic flooding during wet seasons. Undercutting and stabilization of soils that become saturated during such events may be required as determined by the Engineer.

Highway 38 Alignment

Station 125+50 to Station 130+50

A pond approximately 360 feet in length and 150 feet in width is located within 50 feet of the right side of the alignment, facing up station. The pond begins at approximate Station 126+50 and ends at approximate Station 130+00. Under normal conditions, undercutting near the toe of the slope or draining of the pond will not be required for construction or stability of embankment. However, under seasonally wet conditions where water elevations of the pond could be higher than normal, a potential for temporarily draining the pond to a lower elevation may be required during construction.

A pond approximately 190 feet in length and 120 feet in width is located approximately 30 feet of the left side of the alignment, facing up station. The pond begins at approximate Station 126+00 and ends at approximate Station 128+00. Undercut and backfill of Type I granular material is recommended for permanent stability of the embankment during wet seasons where elevated water levels within the pond could influence the toe of embankment slope. Undercut limits shall extend from 29.5 feet left to 55 feet left of centerline of proposed alignment.

Station 132+00 to Station 138+00

Two (2) swells and/or streams possibly originating from a pond located near West Berry Lane are encountered within or near the proposed alignment. The swells are estimated to be 2 feet to 7 feet in depth and about 8 feet to 20 feet wide. If no piping is anticipated to be constructed under the roadway to facilitate movement of water in this area, then undercut and backfill of Type I granular material will be needed. The undercut limits will need to span the alignment from toe to toe of the slopes, where the swells are present within this Station range.

Willie Ray Drive

Station 522+06 (End of Bridge) to Station 526+00

Wetland areas are encountered from the end of the proposed bridge structure until Station 526+00. Stability analyses performed in these areas indicated stable slopes without the use of undercut and backfill materials. However, if wet conditions are present during the construction of embankment, undercut and backfill or draining may be required due to the probability of standing water being present.

For the areas discussed above, or where saturated soft soils are encountered, we recommend the saturated soft soils be undercut and replaced with rock fill comprised of durable stone. If swell areas are encountered within the roadway alignment footprint, the swell shall be completely filled with rock material. Type I granular material meeting the size requirement range of 1.5 inches to 30 inches, or other approved materials, specified in the Standard Specifications for Highway Construction are also permissible. Undercut areas for ponds, swells, wetland areas, or other soft soils that are unexpectedly encountered, shall typically extend three (3) below the surface, unless additional excavation is directed by the Engineer. The replacement rock material shall be overlain with 6 inches of choke stone or geotextile fabric to prevent the migration of fines. The muck and poor quality soils removed during this undercut process shall not be used within embankment limits and shall be used as final dressing on slopes or be wasted. Grading operations in this area shall promote positive drainage away from embankment slopes and insure ponding water does not re-occur within ROW limits. Where undercut operations and the drainage layer mentioned above are required by the Engineer, the undercut shall be in addition to the drainage layer requirement.

6 Limitations

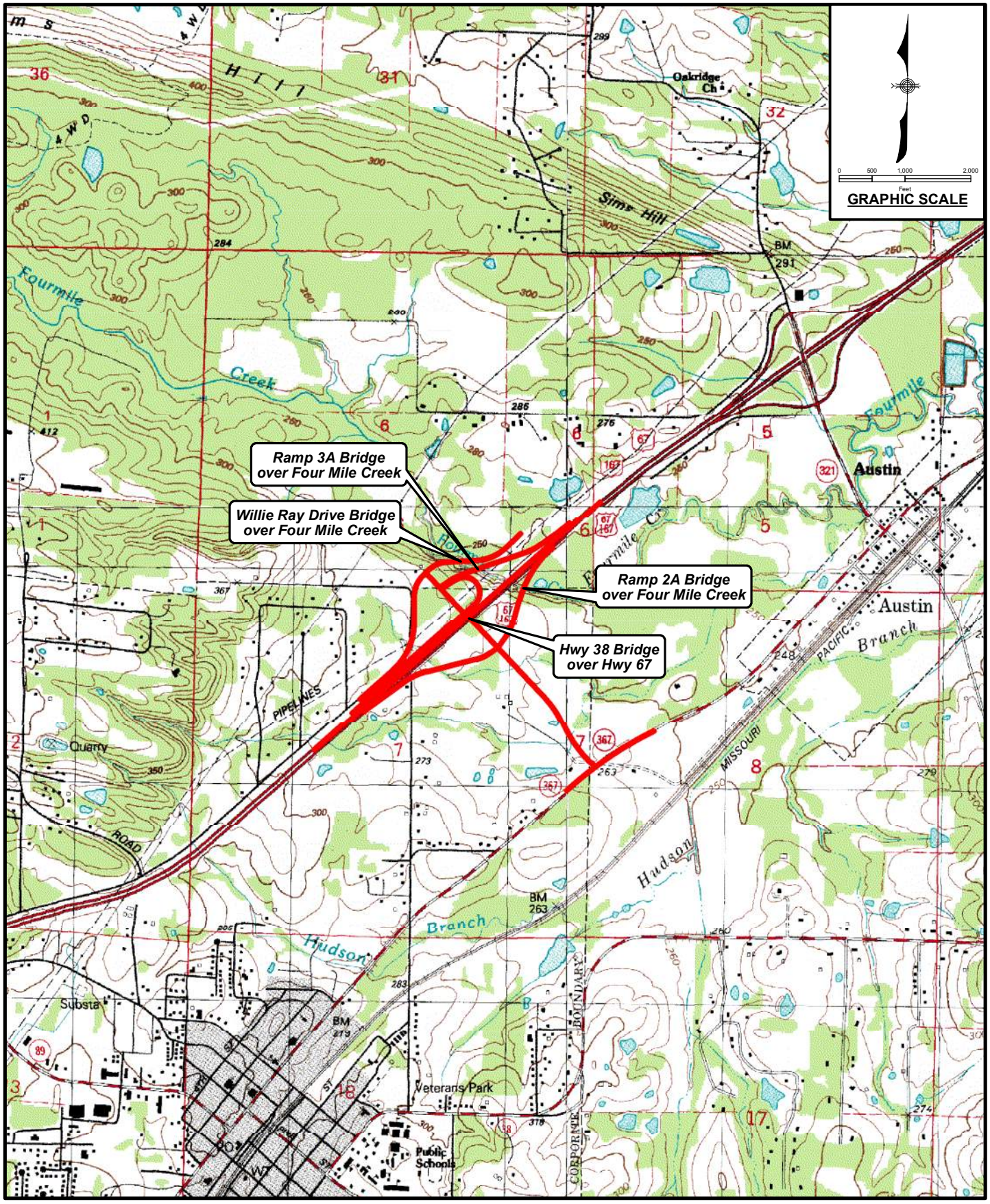
This report has been prepared for Arkansas State Highway and Transportation Department with specific application to the proposed project in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made as the professional advice included herein. 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.

Appendix A. SITE VICINITY MAP, PLAN VIEW OF BORINGS, AND BORING LOGS

HDR | ICA

Subsurface Investigation



BEBEE, CABOT & OAK GROVE QUADRANGLES
7.5 MINUTE SERIES (TOPOGRAPHIC)
ARKANSAS - LONOKE COUNTY

Highway 67 Interchange (North of Cabot)

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.		061102	X	XXX
				(2)	PLAN HWY. 67 STA. 690+00 TO 704+00			

RETAIN
EXIST. GUARD CABLE
LOCATION

STA. 690+00 TO STA. 705+00 ℄ MED. HWY. 67

GUARD CABLE

℄ MED. HWY. 67 RT. - 1400 LIN. FT.

STA. 699+03.94 ℄ MED. HWY. 67 - IN PLACE
DROP INLET IN MEDIAN
WITH 24" X 84' R.C. PIPE CULVERT
WITH HDWLS. LT. AND RT.
REMOVE HDWL. LT. AND EXTEND R.C. PIPE
22' LT. (CLASS XX) (TYPE XX) BEDDING WITH FES LT.
Q50 = XX CFS D.A. = XX ACRES
24" R.C. PIPE = 16 LIN. FT.
24" FES = 1EACH

FLOOD PLAIN LIMITS

FLOOD PLAIN LIMITS

BRIARWOOD LOOP

EXIST. ROW

200' TRANS.

PROP. ROW

CONST. LIMITS

16'

12'

8'

24"

8"

WILLIE RAY DR.

N48°50'09.1"E

PC 698+61.74

PI 700+04.61

PT 701+47.42

.9

15'

300' TAPER

CONST. LIMITS

700' ACCEL. LANE

SOUTHBOUND C/D ROAD

N48°50'00.0"E

N45°58'35.5"E

PC-1

N48°50'00"E

℄ MED. HWY. 67

HWY. 67

PT 701+08.58

+43.12

24"

30'

PC 703+23.16

30'

30'

24"

24"

N48°50'00.0"E

N54°32'30.0"E

RAMP 1

6'

10'

PC 700+13.36

CONST. LIMITS

PT 702+08.64

EXIST. ROW

STA. 691+43.12 ℄ MED. HWY. 67
BEGIN JOB 061102

690+00

695+00

700+00

FLOOD PLAIN LIMITS

FLOOD PLAIN LIMITS

KEY MAP

PLAN HWY. 67
STA. 690+00 TO 704+00

RETAIN
EXIST. GUARD CABLE
LOCATION

STA. 705+00 TO STA. 720+00 ℄ MED. HWY. 67

GUARD CABLE

℄ MED. HWY. 67 RT. - 1500 LIN. FT.

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.		061102	X	XXX

(2) PLAN HWY. 67 STA. 704+00 TO 720+00

PROP. ROW
CONST. LIMITS
EXIST. WILLIE RAY DR.
℄ CONST. WILLIE RAY DR.
PT 506+90.5
R 30'
16'
8'
24'
22'
B-127
N8°41'42.0"E
PI 496+00.00
DELTA = 0°05'00" RT.
PC 498+52.75
B-126
WILLIE RAY DR.
N48°50'09.1"E
N48°55'09.1"E
B-122
N45°58'35.5"E
N48°50'00.0"E
PI 704+66.05
PT 706+08.85
BARRIER WALL
STA. 712+54.70 ℄ MED. HWY. 67 - IN PLACE
DROP INLET IN MEDIAN WITH
6' X 3' X 157' R.C. BOX
WITH (2:1) WINGS LT. & RT.
RETAIN AND EXTEND 42' LT.
Q50 = XX CFS D.A. = XX ACRES
EXIST. ROW
EXIST. P.C.E.
B-104
B-123
B-124
℄ CONST. SOUTHBOUND C/D ROAD
SOUTHBOUND C/D ROAD
PI 708+80.15
PC-3
PC-2
B-112
N48°50'00"E
HWY. 67
℄ MED. HWY. 67
PI 709+56.9
N54°32'30.0"E
B-113
PC 707+73.86
PROP. P.C.E.
R 40'
N. POLK ST.
N76°14'39.8"E
PT 711+35.57
FLOOD PLAIN LIMITS
705+00
710+00
715+00
RAMP I
B-114
℄ CONST. RAMP I
REMOVAL OF PAVEMENT
KEY MAP

PLAN HWY. 67
STA. 704+00 TO 720+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.		061102	X	XXX

(2) PLAN HWY. 67 STA. 720+00 TO 735+00

B-103 B-136 B-120 B-137 B-138 B-139 B-140 B-173 B-147 B-148 B-105 B-166 B-130 B-165 B-125 B-131 B-132 B-168 B-167 B-135A B-169 B-135 B-170 B-171 B-134 B-133

PROP. ROW

N86°56'22.1"E

℄ CONST. WILLIE RAY DR.

8' 24' 8'

CONST. LIMITS

N47°12'37.3"E

PT 527+96.09

WILLIE RAY DR.

PI 525+38.23

4'

CONST. LIMITS

℄ CONST. RAMP 3A

EXIST. WILLIE RAY DR.

HWY. 388

69'

CONST. LIMITS

RAMP 3B

PI 730+16.27

PCC 730+02.15

PI 731+50.07

S43°40'00.0"E

+39.38

100' TAPER

6' 4' 15'

STA. 721+31.30 ℄ CONST. SOUTHBOUND C/D ROAD =
STA. 108+38.61 ℄ CONST. HWY. 38
△ 87°30'00"

+39.38

STA. 721+34.40 ℄ MEDIAN HWY. 67
STA. 109+20.19 ℄ CONST. HWY. 38
△ 87°30'00"

CONST. LIMITS

FOUR MILE CREEK

℄ CONST. SOUTHBOUND C/D ROAD

℄ CONST. RAMP 3B

EXIST. ROW

PC 734+40.38

N71°12'

STA. 728+87.54 TO STA. 730+07.06 ℄ MED. HWY. 67 - IN PLACE
122'-5" X 45'-0" BRIDGE CONSISTING
OF 40' COMPOSITE I-BEAM SPANS
RETAIN

FLOOD PLAIN LIMITS

BARRIER WALL

STA. 723+42.32 ℄ CONST. RAMP 3B =
STA. 723+42.32 ℄ CONST. SOUTHBOUND C/D ROAD
△ 00°00'00"

N48°50'00"E

HWY. 67

℄ MED. HWY. 67

10' 24' 30' 30' 24' 10'

PI 733+27.25

℄ CONST. HWY. 38

PC -4

STA. 729+37.36 TO STA. 730+57.87 ℄ MED. HWY. 67 - IN PLACE
122'-5" X 45'-0" BRIDGE CONSISTING
OF 40' COMPOSITE I-BEAM SPANS
RETAIN

FLOOD PLAIN LIMITS

720+00

58' F-F

EXIST. ROW

N16°06'29.4"E

730+00

735+00

CONST. LIMITS

PROP. ROW

℄ CONST. RAMP 2

4' 15'

RAMP 2

728+46.61

CONST. LIMITS

PROP. ROW

FLOOD PLAIN LIMITS

KEY MAP

PLAN HWY. 67
STA. 720+00 TO 735+00

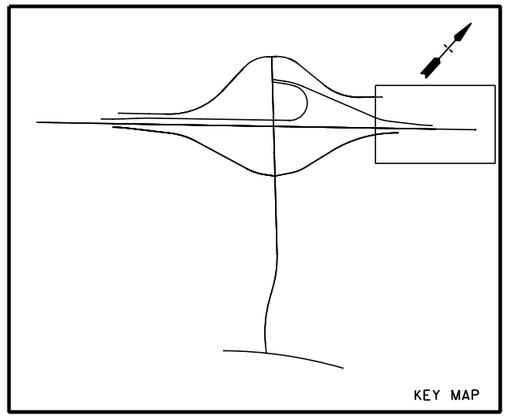
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	X	XXX
				(2)	PLAN HWY. 67 STA. 735+00 TO 748+00			

PROP. ROW
CONST. LIMITS
℄ CONST. WILLIE RAY DR.
CONST. LIMITS
EXIST. WILLIE RAY DR.
FLOOD PLAIN LIMITS
STA. 737+52.72 ℄ MED. HWY. 67 - IN PLACE
DROP INLET IN MEDIAN
WITH 30" X 180' R.C. PIPE CULVERT
WITH HDWL. LT. AND RT.
RETAIN AND EXTEND 14' RT. AND 42' LT.
EXIST. ROW
B-121
N54°30.0"E
PT 736+62.50
15'
6'
CONST. LIMITS
℄ CONST. RAMP 3A
PC 740+34.51
PI 741+29.73
PT 742+24.79
N54°32'30.0"E
N48°50'00.0"E
PI 735+52.23
10'
24'
PC-5
30'
+69.57
N48°50'00"E
℄ MED. HWY. 67
30'
24'
+31.96
N48°50'00.0"E
PC-6
PI 748+00.00
B-119
700' ACCEL. LANE
300' TAPER
CONST. LIMITS
EXIST. ROW
PROP. ROW
℄ CONST. RAMP 2
PT 737+8.62
FLOOD PLAIN LIMITS
735+00
740+00
745+00

STA. 746+31.96 ℄ MED. HWY. 67
END JOB 061102

RETAIN EXIST. GUARD CABLE LOCATION

		GUARD CABLE
STA. 735+00 TO STA. 748+00 ℄ MED. HWY. 67	℄ MED. HWY. 67 RT.	- 1300 LIN. FT.



PLAN HWY. 67
STA. 735+00 TO 748+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.		061102	X	XXX

2 PLAN HWY. 38 STA. 100+00 TO 111+50

B-150 B-149 B-136 B-103 B-120 B-106 B-129 B-125 B-105 B-167 B-165 B-107 B-130 B-131 B-132 B-168 B-166 B-104 B-124 B-128

PROP. ROW
CONST. LIMITS
FOUR MILE CREEK
WILLIE RAY DR.
FLOOD PLAIN LIMITS
EXIST. ROW
BARRIER WALL
℄ MED. HWY. 67
℄ CONST. SOUTHBOUND C/D ROAD
℄ CONST. RAMP 3A
℄ CONST. RAMP 3B
RAMP 3A
RAMP 3B
℄ CONST. WILLIE RAY DR.
℄ CONST. HWY. 38
HWY. 38
HWY. 67
SOUTHBOUND C/D ROAD
EXIST. P.C.E.
100' TAPER

STA. 723+42.32 ℄ RAMP 3B =
STA. 723+42.32 ℄ SOUTHBOUND C/D ROAD
◁ 00°00'00"

STA. 514+83.62 ℄ CONST. WILLIE RAY DR. =
STA. 100+00.00 ℄ CONST. HWY. 38
◁ 90°00'00"

STA. 720+10.65 ℄ CONST. RAMP 3A =
STA. 103+00.00 ℄ CONST. HWY. 38
◁ 80°00'00"

STA. 733+06.47 ℄ CONST. RAMP 3B =
STA. 103+33.51 ℄ CONST. HWY. 38
◁ 80°00'00"

STA. 721+31.30 ℄ CONST. SOUTHBOUND C/D ROAD =
STA. 108+38.61 ℄ CONST. HWY. 38
◁ 87°30'00"

STA. 721+34.4 ℄ MED. HWY. 67 =
STA. 109+20.19 ℄ CONST. HWY. 38
◁ 87°30'00"

PC-4
PT 124+20.66
PI 122+91.47
PCC 730+02.15
PI 730+76.27
PT 731+50.07
PC 121+72.81
PI 517+07.23
PT 518+53.19
PC 515+47.33
PT 514+27.70
PI 512+65.20
PC 510+83.46
N72°03'34"E
N86°56'26"W
N56°20'00.0"E
N46°20'00.0"E
S65°31'34.2"W
S43°40'00.0"E
N48°50'00"E
100+00
105+00
110+00
R100'
R30'
20'
26'
36'
8'
6'
15'
4'
24'
18'
17'
12'
5'
3'
58' F-F
69' F-F
+39.38
-39.38

KEY MAP

PLAN HWY. 38
STA. 100+00 TO 111+50

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.		061102	X	XXX
				(2)	PLAN HWY. 38 STA. 111+50 TO 127+00			

B-118

PC 122+49.43

N56°20'00.0"E 1256.94'

PT 124+51.68

PI 123+51.62

CONST. LIMITS

PROP. ROW

FLOOD PLAIN LIMITS

℄ CONST. RAMP 2

STA. 720+28.63 ℄ CONST. RAMP 2 =
STA. 115+77.81 ℄ CONST. HWY. 38
◁ 80°00'00"

B-117

B-102

CONST. LIMITS

PROP. ROW

R100'

R 75'

22'

20'

+00.00

200' TAPER

00.00

SIDEWALK

5'

3'

℄ CONST. HWY. 38

CONST. LIMITS

HWY. 38

58' F-F

60'

B-108

B-109

B-110

S43°

SIDEWALK

SIDEWALK

CONST. LIMITS

STA. 722+82.36 ℄ CONST. RAMP 1 =
STA. 115+77.81 ℄ CONST. HWY. 38
◁ 80°00'00"

B-116

B-101

CONST. LIMITS

RAMP

PROP. ROW

PT 124+43.44

115+00

N56°20'00.0"E 1256.94'

120+00

125+00

PI 120+20.26

PC 126+08.10

HIGHWAY 38
P.I. = 128+20.51
Δ = 16°52'12.8" RT.
D = 4°00'00"
T = 212.41'
L = 421.76'
PC = 126+08.10
PT = 130+29.86
e = 0.034 FT./FT.
Ls = 375'

PC 118+94.55

N76°14'55.9"W 1256.94'

B-115

CONST. LIMITS

PROP. ROW

FLOOD PLAIN LIMITS

15' 4' 6'

℄ CONST. RAMP 1

EXIST. P.C.E.

EXIST. P.C.E.

W. BERRY LN.

KEY MAP

PLAN HWY. 38
STA. 111+50 TO 127+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.		061102	X	XXX
				(2)	PLAN STA. HWY. 38 127+00 TO 139+31			

HIGHWAY 38
P.I. = 128+20.51
Δ = 16°52'12.8" RT.
D = 4°00'00"
T = 212.41'
L = 421.76'
PC = 126+08.10
PT = 130+29.86
e = 0.034 FT./FT.
Ls = 375'

HIGHWAY 38
P.I. = 135+23.53
Δ = 20°44'40.8" LT.
D = 3°30'00"
T = 299.63'
L = 592.70'
PC = 132+23.90
PT = 138+16.60
e = 0.030 FT./FT.
Ls = 375'

HIGHWAY 367
P.I. = 113+06.01
Δ = 15°56'49.0" RT.
D = 1°00'00"
T = 802.53'
L = 1594.70'
PC = 105+03.48
PT = 120+98.18
e = EXISTING
Ls = EXISTING

HIGHWAY 38
P.I. = 301+37.73
Δ = 5°48'03.7" LT.
D = 10°00'00"
T = 29.03'
L = 58.01'
PC = 301+08.70
PT = 301+66.71
e = EXISTING
Ls = EXISTING

P.I. 128+20.51
S40°00.0"E
S26°47'47.2"E
PROP. ROW
CONST. LIMITS
SIDEWALK
3'
5'
50' F-F
PC 132+23.90
PT 130+29.86
HWY. 38
B-100
B-111
℄ CONST. HWY. 38
CONST. LIMITS
PROP. ROW
P.C.E.
PT 138+16.60
S47°32'28.0"E
EXIST. P.C.E.
CONST. LIMITS
PROP. ROW
P.I. 135+23.53
130+00
135+00
W. BERRY LN.
EXIST. P.C.E.
EXIST. P.C.E.
EXIST. P.C.E.
FLOOD PLAIN LIMITS
P.I. 113+06.01
N64°10'11.0"W
N48°13'22.0"E
EXIST. ROW
HWY. 367
R 50
38°
R 100
EXIST. ROW
HWY. 367
PC 301+08.70
PT 301+66.71
℄ EXIST. HWY. 38
S47°32'28.0"E
S53°20'31.7"E
EXIST. HWY. 38
EXIST. ROW
P.I. 301+37.73
EXIST. ROW
STA. 110+65.64 ℄ HWY. 367 =
STA. 139+31.38 ℄ CONST. HWY. 38
◁ 78°37'00"
139+31
EXIST. ROW
℄ EXIST. HWY. 367
HWY. 367
Hwy 38

KEY MAP

PLAN HWY. 38
STA. 127+00 TO 139+31

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.		061102	X	XXX
				(2)	PLAN RAMP I STA. 700+13 TO 709+00			

FLOOD PLAIN LIMITS

BRIARWOOD LOOP

℄ CONST. WILLIE RAY DR.

PROP. ROW

CONST. LIMITS

EXIST. ROW

PI 496+00.00
DELTA = 0°05'00" RT.

PC 498+52.75

PROP. ROW

WILLIE RAY DR.

CONST. LIMITS

PC 698+61.74

PI 700+04.6

PT 701+47.42

N48°50'09.1"E

N48°50'09.1"E

WILLIE RAY DR.

B-122

SOUTHBOUND C/D ROAD

N48°50'00.0"E

N45°58'35.5"E

PC-1

N45°58'35.5"E

N48°50'00.0"E

SOUTHBOUND C/D ROAD

+43.12

PT 701+08.58

PC 703+23.16

℄ CONST. SOUTHBOUND C/D ROAD

PI 704+66.03

PT 706+08.84

BARRIER WALL

N48°50'00"E

HWY. 67

℄ MED. HWY. 67

N48°50'00.0"E

N54°32'30.0"E

PC-2

+68.57

PC 700+13.36

PT 702+03.64

B-112

℄ CONST. RAMP I

RAMP I

N54°32'30.0"E

EXIST. ROW

CONST. LIMITS

PROP. ROW

B-113

PC 707+73.86

PROP. P.C.E.

PROP. P.C.E.

N. POLK ST.

705+00

RAMP I
P.I. = 701+08.58
Δ = 5°42'30.0" RT.
D = 3°00'00"
T = 95.22'
L = 190.28'
PC = 700+13.36
PT = 702+03.64
e = N/A
Ls = N/A

RAMP I
P.I. = 709+56.91
Δ = 21°42'09.8" RT.
D = 6°00'00"
T = 183.05'
L = 361.71'
PC = 707+73.86
PT = 711+35.57
e = 0.092 FT./FT.
Ls = 350'

KEY MAP

REMOVAL OF PAVEMENT

PLAN RAMP I
STA. 700+13 TO 709+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.		061102	X	XXX

(2) PLAN RAMP I STA. 708+00 TO 722+82

B-168

HWY. 67

PROP. ROW

CONST. LIMITS

EXIST. ROW

℄ CONST. WILLIE RAY DR.

N8°41'42.0"E

℄ CONST. SOUTHBOUND C/D ROAD

15'

6'

SOUTHBOUND C/D ROAD

PC-3

12'

24'

30'

30'

24'

10'

℄ MED. HWY. 67

BARRIER WALL

B-123

24" RC BOX, 0% FILLED

36" RC BOX, 0% FILLED

36" RC BOX, 0% FILLED

0% FILLED

WILLIE RAY DR.

20'

N55°09.1"E

B-126

PI 708+09.15

HWY. 38

℄ CONST. HWY. 38

CONST. LIMITS

SIDEWALK

58' F-F

STA. 722+82.36 ℄ CONST. RAMP I =
STA. 115+77.81 ℄ CONST. HWY. 38
◁ 80°00'00"

RAMP I
P.I. = 720+20.26
Δ = 19°54'39.8" LT.
D = 8°00'00"
T = 125.71'
L = 248.89'
PC = 718+94.55
PT = 721+43.44
e = 0.100 FT./FT.
Ls = 350'

PI 721+43.44

R 75'

22'

20'

60'

B-116

B-101

R 100'

58' F-F

B-108

PC 718+94.55

CONST. LIMITS

℄ CONST. RAMP I

15'

6'

4'

N76°14'39.8"E

N56°20'00.0"E

B-114

RAMP I

B-115

PI 709+56.98

N76°14'39.8"E

N57°32'30.0"E

B-113

R 40'

711+35.57

PT

CONST. LIMITS

FLOOD PLAIN LIMITS

PI 720+20.26

CONST. LIMITS

PROP. ROW

PROP. P.C.E.

PI 710+72.98

PROP. P.C.E.

R 40'

20'

N. POLK ST.

710+00

715+00

720+00

EXIST. P.C.E.

EXIST. P.C.E.

FLOOD PLAIN LIMITS

STA. 708+04.67 ℄ CONST. RAMP I - IN PLACE
12" X 21' C.M.
PIPE CULVERT RT. SIDE DRAIN
RETAIN

FLOOD PLAIN LIMITS

KEY MAP

REMOVAL OF PAVEMENT

PLAN RAMP I
STA. 708+00 TO 722+82

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.		061102	X	XXX

(2) PLAN RAMP 2 STA. 720+28 TO 735+00

B-167
PC-4
℄ MED. HWY. 67
EXIST. ROW
HWY. 67
10'
24'
30'
36'
24'
10'
48" FILLED
84" RCP SLIP FILLED
CONST. LIMITS
EXIST. ROW
℄ CONST. RAMP 3A
FLOOD PLAIN LIMITS
54" RCP SLIP FILLED
B-147
MP
B-148
℄ CONST. WILLIE RAY DR.
PI 15+27.85
PT 15+27.85
PI 15+52.44
CONST. LIMITS
SIDEWALK
HWY. 38
SIDEWALK
CONST. LIMITS
58'
℄ CONST. HWY. 38
STA. 720+28.63 ℄ CONST. RAMP 2A =
STA. 715+77.81 ℄ CONST. HWY. 38
◁ 80°00'00"
R 75'
22'
60'
20'
R 75'
R100'
B-117
B-102
PC 722+49.43
N36°20'00.0"E
N16°06'29.4"E
PT 724+51.68
B-118
15'
9'
℄ CONST. RAMP 2
RAMP 2
CONST. LIMITS
PI 723+51.62
PC 728+86.61
B-133
B-134
B-135
B-135A
B-169
B-170
B-171
PROP. ROW
CONST. LIMITS
PROP. ROW
FLOOD PLAIN LIMITS
FLOOD PLAIN LIMITS
725+00
730+00
735+00

RAMP 2
P.I. = 723+51.62
Δ = 20°13'30.6" LT.
D = 10°00'00"
T = 102.19'
L = 202.25'
PC = 722+49.43
PT = 724+51.68
e = 0.094 FT./FT.
Ls = 300'

STA. XXX+XX.XX ℄ CONST. RAMP 2A BRIDGE END - CONSTRUCT
XXX'-XX" CONTINUOUS COMP. W-BEAM UNIT
BRIDGE NO. XXXXX
XX'-XX" CLEAR ROADWAY WIDTH
XXX'-XX" BRIDGE LENGTH
STA. XXX+XX.XX ℄ CONST. RAMP 2A BRIDGE END

KEY MAP

PLAN RAMP 2
STA. 720+28 TO 735+00

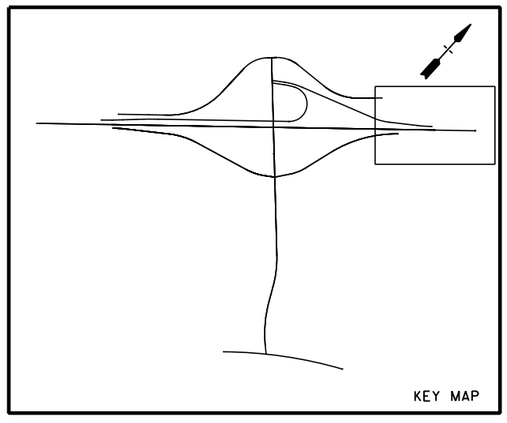
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102	X	XXX
				(2)	PLAN RAMP 2 STA. 735+00 TO 737+81			

PROP. ROW
CONST. LIMITS
8'
24'
8'
℄ CONST. WILLIE RAY DR. CONST. LIMITS
EXIST. WILLIE RAY DR.
PROP. ROW
FLOOD PLAIN LIMITS
PC 734+40.38
EXIST. ROW
N71°20'34.4"E
B-121
N54°32'30.0"E
PT 736+62.50
4'
15'
6'
CONST. LIMITS
℄ CONST. RAMP 3A
RAMP 3A
PC 740+34.51
PT 741+29.73
PT 742+24.79
N54°32'30.0"E
N48°50'00.0"E
10'
24'
30'
PI 735+52.23
PC-5
HWY. 67
+69.57
N48°50'00"E
℄ MED. HWY. 67
12'
6'
30'
24'
+31.96
N48°50'00.0"E
4.5'
10'
RAMP 2
B-119
700' ACCEL. LANE
300' TAPER
PC-6
PI 748+00.00
FLOOD PLAIN LIMITS
℄ CONST. RAMP 2
CONST. LIMITS
PT 737+81.62
EXIST. ROW
PROP. ROW

STA. 746+31.96 ℄ MED. HWY. 67
END JOB 061102

RAMP 2
P.I. = 733+27.25
Δ = 32°43'30.6" RT.
D = 3°30'00"
T = 480.64'
L = 935.01'
PC = 728+46.61
PT = 737+81.62
e = 0.065 FT./FT.
Ls = 300'

735+00



PLAN RAMP 2
STA. 735+00 TO 737+81

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.		061102	X	XXX
				(2) PLAN RAMP 3A STA. 720+12 TO 735+00				

RAMP 3A
P.I. = 722+97.47
Δ = 14°52'03.4" RT.
D = 6°00'00"
T = 124.60'
L = 247.79'
PC = 721+72.87
PT = 724+20.66
e = 0.092 FT./FT.
Ls = 350'

STA. XXX+XX.XX ℄ CONST. RAMP 3A BRIDGE END - CONSTRUCT
XXX'-XX" CONTINUOUS COMP. W-BEAM UNIT
BRIDGE NO. XXXXX
XX'-XX" CLEAR ROADWAY WIDTH
XXX'-XX" BRIDGE LENGTH
STA. XXX+XX.XX ℄ CONST. RAMP 3A BRIDGE END

STA. 720+10.65 ℄ CONST. RAMP 3A =
STA. 103+00.00 ℄ CONST. HWY. 38
◁ 80°00'00"

STA. 723+42.32 ℄ CONST. RAMP 3B =
STA. 723+42.32 ℄ CONST. SOUTHBOUND C/D ROAD
◁ 00°00'00"

RAMP 3A
P.I. = 735+52.23
Δ = 16°39'33.4" LT.
D = 7°30'00"
T = 111.85'
L = 222.12'
PC = 734+40.38
PT = 736+62.50
e = 0.099 FT./FT.
Ls = 350'

B-107 B-103 B-105 B-125 B-130 B-131 B-132 B-136 B-137 B-138 B-139 B-140 B-147 B-148 B-149 B-150 B-151 B-152 B-165 B-166 B-167 B-168 B-170 B-171 B-172 B-173 B-120

PC-4

HWY. 38&67

EXIST. WILLIE RAY DR.

WILLIE RAY DR.

SB C/D ROAD

EXIST. ROW

FOUR MILE CREEK

RAMP 3B

100' TAPER

BARRIER WALL

FLOOD PLAIN LIMITS

CONST. LIMITS

PROP. ROW

℄ CONST. HWY. 38

℄ CONST. SOUTHBOUND C/D ROAD

℄ CONST. RAMP 3B

℄ CONST. RAMP 3A

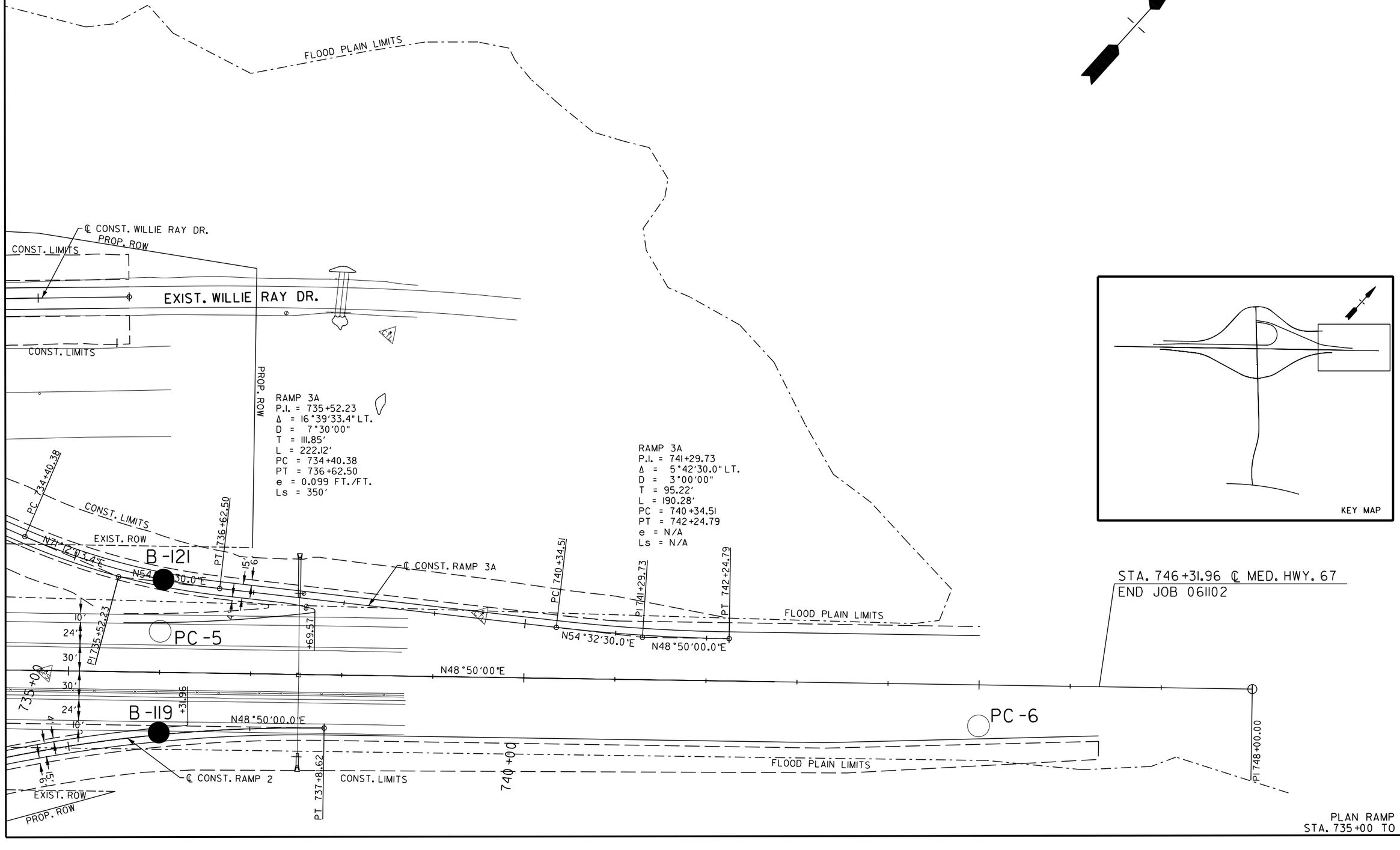
℄ CONST. RAMP 2

℄ MED. HWY. 67

KEY MAP

PLAN RAMP 3A
STA. 720+12 TO 735+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.		061102	X	XXX
				(2)	PLAN RAMP 3A STA. 735+00 TO 742+25			



PLAN RAMP 3A
STA. 735+00 TO 742+25

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.		061102	X	XXX
				(2)	PLAN RAMP 3B STA. 723+46 TO 733+14			

B-128
PC 510+83.26
PROP. ROW
CONST. LIMITS
12'
8'
24'
WILLIE RAY DR.
EXIST. P.C.E.
PT 506+56.49
58' F-F
B-107
℄ CONST. HWY. 38
R100
PC 721+72.87
CONST. LIMITS
PI 722+87.47
PT 518+53.19
B-149
B-150
℄ CONST. WILLIE RAY DR.
B-151
B-152
WILLIE RAY DR.
PC 522+98.47
FLOOD PLAIN LIMITS
PT 724+20.69
N71°12'03.4"E
56'
58'
N56°20'00.0"E
STA. 733+06.47 ℄ CONST. RAMP 3B=
STA. 103+33.51 ℄ CONST. HWY. 38
◁80°00'00"
733+14
20'
R100
PT 731+50.07
PI 730+76.27
PC 730+02.15
B-103
B-136
B-120
BARRIER WALL
B-137
B-138
B-172
CONST. LIMITS
PROP. ROW
N86°36'22.7"E
℄ CONST. RAMP 3A
B-139
B-140
B-173
EXIST. WILLIE RAY DR.
RAMP 3B
6'
15'
4'
PI 525+58.23
CONST. LIMITS
FOUR MILE CREEK
EXIST. ROW
B-104
B-166
B-130
B-165
B-105
B-125
℄ CONST. SOUTHBOUND C/D ROAD
℄ CONST. RAMP 3B
BARRIER WALL
B-124
SOUTHBOUND C/D ROAD
PC-3
12'
24'
30'
30'
24'
10'
HWY. 67
N48°50'00"E
℄ MED. HWY. 67
HWY. 67
PC-4
B-131
B-168
B-132
B-167
EXIST. ROW
EXIST. ROW
EXIST. ROW

KEY MAP

RAMP 3B
P.I. = 730+76.27
Δ = 9°11'34.2" LT.
D = 6°12'53"
T = 74.12'
L = 147.92'
PC = 730+02.15
PT = 731+50.07
e = 0.048 FT./FT.
Ls = 250'

RAMP 3B
P.I. = 739+20.23
Δ = 163°18'25.8" LT.
D = 24°45'00"
T = 1577.91'
L = 659.83'
PC = 723+42.32
PT = 730+02.15
e = 0.100 FT./FT.
Ls = 300'

STA. 723+42.32 ℄ CONST. RAMP 3B=
STA. 723+42.32 ℄ CONST. SOUTHBOUND C/D ROAD
◁00°00'00"

STA. 722+52.92 ℄ MED. HWY. 67 - IN PLACE
DROP INLET IN MEDIAN
WITH 24" X 84' R.C. PIPE CULVERT
WITH HDWL. LT.
REMOVE HDWL. LT AND EXTEND R.C. PIPE
40' LT. (CLASS XX) (TYPE XX) BEDDING WITH FES LT.
Q50 = XX CFS D.A. = XX ACRES
24" R.C. PIPE = 40 LIN. FT.
24" FES = EACH

+39.38
100' TAPER
+39.38
CONST. LIMITS
S43°40'00.0"E
723+46
126+00

PLAN RAMP 3B
STA. 723+46 TO 733+14

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.		061102	X	XXX

(2) PLAN SOUTHBOUND C/D ROAD STA. 698+62 TO 705+00

FLOOD PLAIN LIMITS

FLOOD PLAIN LIMITS

SOUTHBOUND C/D ROAD
P.I. = 700+04.61
Δ = 2°51'24.5" LT.
D = 1°00'00"
T = 142.87'
L = 285.68'
PC = 698+61.74
PT = 701+47.42
e = N/A
Ls = N/A

SOUTHBOUND C/D ROAD
P.I. = 704+66.03
Δ = 2°51'24.5" RT.
D = 1°00'00"
T = 142.87'
L = 285.68'
PC = 703+23.16
PT = 706+08.84
e = N/A
Ls = N/A

BRIARWOOD LOOP

EXIST. ROW

200' TRANS.

PROP. ROW

CONST. LIMITS

PI 496+00.00
DELTA = 0°05'00" RT.

16'

12'

12'

8'

24'

8'

WILLIE RAY DR.

N48°50'09.1"E

N48°50'09.1"E

300' TAPER

700' ACCEL. LANE

PC 698+61.74

PI 700+04.61

PT 701+47.42

9.15'

B-122

PC-1

SOUTHBOUND C/D ROAD

N48°50'00.0"E

N45°58'35.5"E

N45°58'35.5"E

N48°50

℄ MED. HWY. 67

HWY. 67

PI 701+08.58

+43.12

24'

30'

PC 703+23.16

30'

PI 704+66.03

30'

24'

N48°50'00.0"E

N54°32'30.0"E

PC-2

RAMP

+68.57

6'

10'

PC 700+13.36

PT 702+03.64

CONST. LIMITS

B-112

EXIST. ROW

PROP. ROW

STA. 691+43.12 ℄ MED. HWY. 67
BEGIN JOB 061102

690+00

695+00

700+00

705+00

FLOOD PLAIN LIMITS

FLOOD PLAIN LIMITS

KEY MAP

PLAN SOUTHBOUND C/D ROAD
STA. 690+00 TO 705+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.		061102	X	XXX

(2) PLAN SOUTHBOUND C/D ROAD STA. 705+00 TO 720+00

SOUTHBOUND C/D ROAD
P.I. = 704+66.03
Δ = 2°51'24.5" RT.
D = 1°00'00"
T = 142.87'
L = 285.68'
PC = 703+23.16
PT = 706+08.84
e = N/A
Ls = N/A

B-127
B-126
B-123
B-104
B-166
B-124
PC-3
B-113
B-114
B-168
PC 498+52.75
PT 706+08.84
PC 701+73.86
PI 709+56.9
PI 711+35.57
PT 506+56.49
N48°55'09.1"E
N48°50'00.0"E
N10°41'42.0"E
N54°32'30.0"E
N76°14'39.8"E
N48°50'00"E
R 30'
R 40'
22'
8'
24'
6'
15'
4'
12'
30'
10'
705+00
710+00
715+00
720+00
PROP. ROW
CONST. LIMITS
EXIST. ROW
FLOOD PLAIN LIMITS
EXIST. P.C.E.
PROP. P.C.E.
WILLIE RAY DR.
EXIST. WILLIE RAY DR.
℄ CONST. WILLIE RAY DR.
℄ CONST. SOUTHBOUND C/D ROAD
℄ CONST. RAMP I
RAMP
BARRIER WALL
HWY. 67
℄ MED. HWY. 67
KEY MAP
REMOVAL OF PAVEMENT

PLAN SOUTHBOUND C/D ROAD
STA. 705+00 TO 720+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.		06II02	X	XXX

(2) PLAN WILLIE RAY DR. STA. 492+00 TO 510+00

STA. 492+37.02 ℄ CONST. WILLIE RAY DR. - IN PLACE
15" X 23' C.M.
PIPE CULVERT LT. SIDE DRAIN
RETAIN
CONSTRUCT APPROACH = XX CU. YDS.

STA. 493+90.60 ℄ CONST. WILLIE RAY DR. - IN PLACE
10" X 26' C.M.
PIPE CULVERT LT. SIDE DRAIN
RETAIN
CONSTRUCT APPROACH = XX CU. YDS.

STA. 494+96.47 ℄ CONST. WILLIE RAY DR. - IN PLACE
15" X 21' C.M.
PIPE CULVERT LT. SIDE DRAIN
RETAIN
CONSTRUCT APPROACH = XX CU. YDS.

STA. 498+92.39 ℄ CONST. WILLIE RAY DR. - IN PLACE
24" X 144' C.M.
PIPE CULVERT LT. SIDE DRAIN
REMOVE AND INSTALL
XX" X XX' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = XX CU. YDS.

STA. 500+93.79 ℄ CONST. WILLIE RAY DR. - IN PLACE
24" X 21' C.M.
PIPE CULVERT LT. SIDE DRAIN
RETAIN AND INSTALL
XX" X XX' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = XX CU. YDS.

STA. 503+04.39 ℄ CONST. WILLIE RAY DR. - IN PLACE
6' X 3' X 47' R.C. BOX
WITH (2:1) WINGS LT. & RT.
RETAIN & EXTEND 94' LT.
Q50 = XX CFS D.A. = XX ACRES

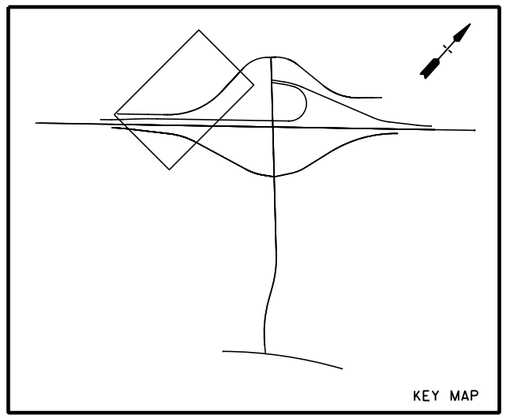
STA. 505+91.05 ℄ CONST. WILLIE RAY DR. - IN PLACE
18" X 68' C.M.
PIPE CULVERT RT. SIDE DRAIN
REMOVE

STA. 506+05.96 ℄ CONST. WILLIE RAY DR. - IN PLACE
15" X 25' C.M.
PIPE CULVERT LT. SIDE DRAIN
REMOVE AND INSTALL
XX" X XX' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = XX CU. YDS.

℄ CONST. WILLIE RAY DR.
REMOVAL & DISPOSAL OF GAURDRAIL

STA. 502+71 TO STA. 503+67	RT. ℄ CONST. WILLIE RAY DR. LIN. FT.

WILLIE RAY DR.
P.I. = 502+80.15
Δ = 48°13'27.0" LT.
D = 6°00'00"
T = 427.40'
L = 803.74'
PC = 498+52.75
PT = 506+56.49
e = 0.070 FT./FT.
Ls = 200'



PROP. ROW
200' TRANS.
EXIST. ROW
PT 701+
N48°50'09.1"E
PI 703+23.19
N45°58'35.5"E
B-122
PI 704+66.03
N48°50'00.0"E
PC 2
℄ MED. HWY. 67
EXIST. ROW
495+00
B-112
PT 706+08.84
BARRIER WALL
PROP. ROW
CONST. LIMITS
RAMP I
℄ CONST. RAMP I
PC 707+73.86
N54°32'30.0"E
PROP. P.C.E.
B-113
N. POLK ST.
R-40'
PROP. P.C.E.
FLOOD PLAIN LIMITS
PROP. ROW
EXIST. ROW
N76°44'39.8"E
PI 709+56.91
500+00
HWY. 67
SOUTHBOUND C/D ROAD
PI 710+80.15
B-126
N48°55'09.1"E
PC 496+00.00
DELTA = 0°05'00" RT.
498+52.75
30°
20'
CONST. LIMITS
PROP. ROW
B-127
N0°41'42.0"E
PROP. ROW
CONST. LIMITS
22'
R-30'
16'
12'
8'
24'
WILLIE RAY DR.
℄ CONST. WILLIE RAY DR.
CONST. LIMITS
PT 506+56.49
EXIST. WILLIE RAY DR.
B-123
℄ CONST. SOUTHBOUND C/D ROAD
CONST. LIMITS
EXIST. ROW
505+00
510+00
REMOVAL OF PAVEMENT

PLAN WILLIE RAY DR.
STA. 492+00 TO 510+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.		061102	X	XXX

(2) PLAN WILLIE RAY DR. STA. 510+00 TO 528+00

STA. 510+00.65 ℄ CONST. WILLIE RAY DR. - IN PLACE
12" X 18' C.M.
PIPE CULVERT LT. SIDE DRAIN
REMOVE AND INSTALL
XX" X XX' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = XX CU. YDS.

STA. XXX+XX.XX ℄ CONST. WILLIE RAY DR. BRIDGE END - CONSTRUCT
XXX'-XX" CONTINUOUS COMP. W-BEAM UNIT
BRIDGE NO. XXXXX
XX'-XX" CLEAR ROADWAY WIDTH
XXX'-XX" BRIDGE LENGTH
STA. XXX+XX.XX ℄ WILLIE RAY DR. BRIDGE END

WILLIE RAY DR.
P.I. = 525+58.23
Δ = 39°43'45.4" LT.
D = 8°00'00"
T = 258.76'
L = 496.62'
PC = 522+99.47
PT = 527+96.09
e = 0.084 FT./FT.
Ls = 250'

WILLIE RAY DR.
P.I. = 517+07.31
Δ = 40°36'22.7" RT.
D = 13°15'00"
T = 159.98'
L = 306.46'
PC = 515+47.33
PT = 518+53.79
e = 0.100 FT./FT.
Ls = 250'

WILLIE RAY DR.
P.I. = 512+65.20
Δ = 45°38'18.0" RT.
D = 13°15'00"
T = 181.94'
L = 344.44'
PC = 510+83.26
PT = 514+27.70
e = 0.100 FT./FT.
Ls = 250'

STA. 514+83.62 ℄ CONST. WILLIE RAY DR. =
STA. 100+00.00 ℄ CONST. HWY. 38
◁ 90°00'00"

STA. 720+10.65 ℄ CONST. RAMP 3A =
STA. 103+00.00 ℄ CONST. HWY. 38
◁ 80°00'00"

STA. 733+06.47 ℄ CONST. RAMP 3B =
STA. 103+33.51 ℄ CONST. HWY. 38
◁ 80°00'00"

B-106 B-129 B-150 B-152 B-172 B-149 B-151 B-147 B-140 B-173 B-139 B-138 B-103 B-137 B-136 B-120 B-107 B-128 B-105 B-125

WILLIE RAY DR. PROP. ROW CONST. LIMITS EXIST. ROW EXIST. P.C.E. ℄ CONST. WILLIE RAY DR. ℄ CONST. RAMP 3A ℄ CONST. HWY. 38 ℄ MED. HWY. 67 HWY. 38 HWY. 67 RAMP 3B FOUR MILE CREEK BARRIER WALL SIDEWALK FLOOD PLAIN LIMITS 200' TAPER OWEN'S UTILITY LINE PC-4

KEY MAP

PLAN WILLIE RAY DR.
STA. 510+00 TO 528+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.		061102	X	XXX

(2) PLAN WILLIE RAY DR. STA. 528+00 TO 531+00

FLOOD PLAIN LIMITS

PROP. ROW

EXIST. WILLIE RAY DR.

200' TRANS.

℄ CONST. WILLIE RAY DR.

531+00

PT 527+96.09

WILLIE RAY DR.

CONST. LIMITS

WILLIE RAY DR.
P.I. = 525+58.23
Δ = 39°43'45.4" LT.
D = 8°00'00"
T = 258.76'
L = 496.62'
PC = 522+99.47
PT = 527+96.09
e = 0.084 FT./FT.
Ls = 250'

PC 522+99.47

PROP. ROW

CONST. LIMITS

N47°12'57.3"E

N86°56'22.7"E

B-152

B-172

B-147

B-148

℄ CONST. RAMP 3A

PI 525+58.23

B-140

B-173

B-138

B-139

B-137

525+00

RAMP 3

EXIST. ROW

HWY. 67

PT 735+62.50

PC 734+40.54

N47°12'01.4"E

B-121

PC-5

PT 735+52.33

B-119

℄ CONST. RAMP 2

RAMP 2

EXIST. ROW

PROP. ROW

735+00

PI 735+21.85

N54°32'30.0"E

PC 740+34.51

FLOOD PLAIN LIMITS

PT 742+24.79

N48°50'00.0"E

℄ MED. HWY. 67

N48°50'00"E

CONST. LIMITS

PT 737+81.62

738+14

KEY MAP

PLAN WILLIE RAY DR.
STA. 528+00 TO 531+00

HDR | ICA

BORING NO.: B-100

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 133+50

LOCATION: 31' Lt. (Hwy 38)

LATITUDE: 34.99041 ° LONGITUDE: 91.99996 °

DATE: 2/5/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 45C

LOGGED BY: W. Smith

COMPLETION DEPTH: 20.2 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 253.9	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'								
			Medium dense, tan & gray, silty, clayey sand.								
5.0					16	21.1	22	109.5			
			8.3'								
10.0			Medium dense, brown, orange & tan, clayey sand with gravel.		16	21.6	31		3,7,7		
			13.1'								
15.0			Medium dense, gray & brown, clayey sand with gravel.		42	39.8	85	81.5			
20.0			20.2'								
			Splitspoon Refusal & Boring Terminated at 20.2' (Elev. 233.7).						50/0.1		
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-101

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 722+00

LOCATION: 18' Rt. (Ramp 1)

LATITUDE: 34.99397 ° LONGITUDE: 92.00392 °

DATE: 1/10/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 45C

LOGGED BY: W. Smith

COMPLETION DEPTH: 14.4 ft.

GROUNDWATER @ 6.0'

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 266.5	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'								
			Dense, brown & gray, clayey sand.								
5.0									6,15,18		
			7.6'								
			Hard, brown, sandy, silty clay.								
10.0									7,14,17		
			14.4'								
15.0			Auger Refusal & Boring Terminated at 14.4' (Elev. 252.1).						50/0.1		
			Boulder encountered at 6.0'.								
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-102

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JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 721+50

LOCATION: 14' Rt. (Ramp 2)

LATITUDE: 34.99438 ° LONGITUDE: 92.00345 °

DATE: 1/10/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 10.3 ft.

GROUNDWATER @ 2.0'

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 265.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 1.0'								
			Hard, brown & gray, sandy lean clay.								
5.0									6,10,22		
			7.6'								
			Very dense, brown & gray, clayey sand with gravel.								
10.0			10.3'						22,50/0.5		
			Auger Refusal & Boring Terminated at 10.3' (Elev. 255.0).								
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-103

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JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 725+00

LOCATION: 14' Lt. (Ramp 3A)

LATITUDE: 34.99733 ° LONGITUDE: 92.00525 °

DATE: 1/23/2016

TYPE OF DRILLING: HSA

EQUIPMENT: CME 45C

LOGGED BY: W. Smith

COMPLETION DEPTH: 2.7 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 254.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Interpreted as brown, silty sand with gravel.								
			2.7 Auger Refusal & Boring Terminated at 2.7' (Elev. 251.3).								
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.: B-104

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JOB NO.: 061102
JOB NAME: Hwy. 67 Interchange (N. of Cabot)
STATION: 718+00
LOCATION: 38' Lt. (SB C/D)
LATITUDE: 34.99508 ° LONGITUDE: 92.00635 °

DATE: 6/27/2015
TYPE OF DRILLING: HSA/SPT
EQUIPMENT: CME 55
LOGGED BY: F. Woodard

COMPLETION DEPTH: 7.8 ft. GROUNDWATER @

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
5.0			Gray, brown & tan, clayey sand.		15	15.6	23	113.7			
			7.8'								
10.0			Auger Refusal & Boring Terminated at 7.8' (Elev. 273.5).								
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-105

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JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 724+50

LOCATION: 42' Lt. (Ramp 3B)

LATITUDE: 34.99627 ° LONGITUDE: 92.00483 °

DATE: 6/27/2015

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 6.7 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 270.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Very dense, tan & gray, silty sand. 6.7'		NP	9.3	NP		40,31,50/0.2		
			Auger Refusal & Boring Terminated at 6.7' (Elev. 263.8).								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-106

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JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 518+00

LOCATION: 20' Lt. (Willie Ray Drive)

LATITUDE: 34.99775 ° LONGITUDE: 92.00648 °

DATE: 1/23/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 45C

LOGGED BY: W. Smith

COMPLETION DEPTH: 6.0 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 253.6	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Dense, brown & gray, clayey sand.		23	11.9	39		6,18,21		
			6.0' Auger Refusal & Boring Terminated at 6.0' (Elev. 247.6).								
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-107

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JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 102+50

LOCATION: CL (Hwy 38)

LATITUDE: 34.99677 ° LONGITUDE: 92.00679 °

DATE: 6/27/2015

TYPE OF DRILLING: Hand Auger

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 3.8 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 279.1	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Brown, clayey sand.		15	15.9	23	116.5			
			3.0 Red & gray, silty sand. 3.8		18	12.9	19	120.2			
5.0			Auger Refusal & Boring Terminated at 3.8' (Elev. 275.3). Bag #6 obtained from 0.5'-3.0'. Bag #7 obtained from 3.0'-3.8'.								
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-108

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JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 117+00

LOCATION: CL (Hwy 38)

LATITUDE: 34.99389 ° LONGITUDE: 92.00345 °

DATE: 6/28/2015

TYPE OF DRILLING: Hand Auger

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 264.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Brown, red & gray, sandy lean clay.		16	16.0	25	118.2			
5.0			5.0'								
			No Auger Refusal & Boring Terminated at 5.0' (Elev. 259.4). Bag #8 obtained from 0.4'-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.: B-109

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JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 122+00

LOCATION: CL (Hwy 38)

LATITUDE: 34.99290 ° LONGITUDE: 92.00229 °

DATE: 6/28/2015

TYPE OF DRILLING: Hand Auger

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 3.9 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 261.4	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. 3.9'								
5.0			Auger Refusal & Boring Terminated at 3.9' (Elev. 257.5).								
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

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JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 127+00

LOCATION: CL (Hwy 38)

LATITUDE: 34.99190 ° LONGITUDE: 92.00115 °

DATE: 6/28/2015

TYPE OF DRILLING: Hand Auger

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 256.7	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Brown, red & gray, lean clay with sand.		15	17.5	23	113.1			
5.0			5.0'								
			No Auger Refusal & Boring Terminated at 5.0' (Elev. 251.7). Bag #9 obtained from 0.5'-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.: B-111

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JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 135+00

LOCATION: CL (Hwy 38)

LATITUDE: 34.99002 ° LONGITUDE: 91.99977 °

DATE: 6/28/2015

TYPE OF DRILLING: Hand Auger

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 254.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Light brown, lean clay with sand.								
5.0			5.0'								
			No Auger Refusal & Boring Terminated at 5.0' (Elev. 249.5).								
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-112

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JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 704+50

LOCATION: CL (Ramp 1)

LATITUDE: 34.99222 ° LONGITUDE: 92.00931 °

DATE: 6/28/2015

TYPE OF DRILLING: Hand Auger

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 285.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Brown, red & gray, sandy lean clay.		22	23.7	46	104.7			
5.0			5.0'								
			No Auger Refusal & Boring Terminated at 5.0' (Elev. 280.3). Bag #30 obtained from 0.5'-5.0'.								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-113

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 709+00

LOCATION: CL (Ramp 1)

LATITUDE: 34.99292 ° LONGITUDE: 92.00807 °

DATE: 6/28/2015

TYPE OF DRILLING: Hand Auger

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 281.9	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Brown, red & gray, sandy lean clay.								
5.0			5.0'								
			No Auger Refusal & Boring Terminated at 5.0' (Elev. 276.9).								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-114

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JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 714+00

LOCATION: CL (Ramp 1)

LATITUDE: 34.99333 ° LONGITUDE: 92.00648 °

DATE: 7/22/2015

TYPE OF DRILLING: Hand Auger

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @ Dry

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 272.7	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 0.8'		15	15.2	19	115.2			
			Brown, silty sand. 3.4'		15	13.4	24	119.8			
5.0			Red, clayey sand. 5.0'								
			No Auger Refusal & Boring Terminated at 5.0' (Elev. 267.7).								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-115

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JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 719+00

LOCATION: CL (Ramp 1)

LATITUDE: 34.99365 ° LONGITUDE: 92.00485 °

DATE: 7/22/2015

TYPE OF DRILLING: Hand Auger

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 3.8 ft.

GROUNDWATER @ Dry

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 268.1	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 Brown, clayey sand. 3.8								
5.0			Auger Refusal & Boring Terminated at 3.8' (Elev. 264.3).								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-116

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JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 722+00

LOCATION: CL (Ramp 1)

LATITUDE: 34.99401 ° LONGITUDE: 92.00396 °

DATE: 7/22/2015

TYPE OF DRILLING: Hand Auger

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 3.9 ft.

GROUNDWATER @ Dry

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 266.9	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' Dense, brown, clayey sand. 3.9'								
5.0			Auger Refusal & Boring Terminated at 3.9' (Elev. 263.0).								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-117

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JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 721+50

LOCATION: CL (Ramp 2)

LATITUDE: 34.99440 ° LONGITUDE: 92.00349 °

DATE: 6/28/2015

TYPE OF DRILLING: Hand Auger

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 265.7	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Hard, brown, red & gray, sandy silty clay.		17	21.0	23	115.5			
5.0			5.0'								
			No Auger Refusal & Boring Terminated at 5.0' (Elev. 260.7). Bag #23 obtained from 0.4'-5.0'.								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

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JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 725+00

LOCATION: CL (Ramp 2)

LATITUDE: 34.99525 ° LONGITUDE: 92.00295 °

DATE: 6/28/2015

TYPE OF DRILLING: Hand Auger

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 4.5 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 266.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Brown, sandy, silty clay.								
5.0			4.5' Auger Refusal & Boring Terminated at 4.5' (Elev. 261.7).								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-119

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JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 736+00

LOCATION: CL (Ramp 2)

LATITUDE: 34.99795 ° LONGITUDE: 92.00142 °

DATE: 6/28/2015

TYPE OF DRILLING: Hand Auger

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 250.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Brown, red & gray, clayey sand.		21	20.0	40	105.7			
5.0			5.0'								
			No Auger Refusal & Boring Terminated at 5.0' (Elev. 245.5). Bag #22 obtained from 0.6'-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-120

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JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 725+00

LOCATION: CL (Ramp 3A)

LATITUDE: 34.99729 ° LONGITUDE: 92.00523 °

DATE: 6/28/2015

TYPE OF DRILLING: Hand Auger

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 1.8 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 257.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Very dense, brown, silty sand with gravel. 1.8'		19	6.1	23	121.1			
			Auger Refusal & Boring Terminated at 1.8' (Elev. 255.2). Bag #20 obtained from 0.4'-1.8'.								
5.0											
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

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JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 736+00

LOCATION: CL (Ramp 3A)

LATITUDE: 34.99831 ° LONGITUDE: 92.00178 °

DATE: 6/27/2015

TYPE OF DRILLING: Hand Auger

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 246.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Brown, sandy silt.		16	22.5	20	116.3			
5.0			5.0'								
			No Auger Refusal & Boring Terminated at 5.0' (Elev. 241.5). Bag #21 obtained from 0.4'-5.0'.								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-122

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JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 704+50

LOCATION: CL (SB C/D)

LATITUDE: 34.99256 ° LONGITUDE: 92.00965 °

DATE: 6/26/2015

TYPE OF DRILLING: HSA

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 3.7 ft.

GROUNDWATER @

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
			Light brown, clayey sand with gravel.		17	10.8	29	120.1			
			3.7'								
5.0			Auger Refusal & Boring Terminated at 3.7' (Elev. 281.8).								
			Bag #3 obtained from 0.0'-3.7'.								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-123

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 713+00

LOCATION: CL (SB C/D)

LATITUDE: 34.99410 ° LONGITUDE: 92.00752 °

DATE: 6/26/2015

TYPE OF DRILLING: HSA

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 280.1	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Brown, sandy, silty clay.		16	14.6	23	119.3			
5.0			5.0'								
			No Auger Refusal & Boring Terminated at 5.0' (Elev. 275.1). Bag #2 obtained from 0.0'-5.0'.								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-124

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 718+00

LOCATION: CL (SB C/D)

LATITUDE: 34.99500 ° LONGITUDE: 92.00627 °

DATE: 6/26/2015

TYPE OF DRILLING: HSA

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 277.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Light brown, silty sand.		15	18.5	18	119.1			
5.0			5.0'								
			No Auger Refusal & Boring Terminated at 5.0' (Elev. 272.0). Bag #1 obtained from 0.0'-5.0'.								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-125

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 724+50

LOCATION: CL (Ramp 3B)

LATITUDE: 34.99622 ° LONGITUDE: 92.00470 °

DATE: 6/28/2015

TYPE OF DRILLING: Hand Auger

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 2.3 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 268.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Very dense, brown, silty sand.		16	10.1	20	120.3			
			2.3'								
			Auger Refusal & Boring Terminated at 2.3' (Elev. 265.9). Bag #40 obtained from 0.6'-2.3'.								
5.0											
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-126

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 500+50

LOCATION: CL (Willie Ray Drive)

LATITUDE: 34.99360 ° LONGITUDE: 92.00861 °

DATE: 6/27/2015

TYPE OF DRILLING: Hand Auger

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 2.3 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 282.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Dark brown, silty sand. 2.3'								
			Auger Refusal & Boring Terminated at 2.3' (Elev. 280.0).								
5.0											
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-127

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 505+00

LOCATION: CL (Willie Ray Drive)

LATITUDE: 34.99472 ° LONGITUDE: 92.00801 °

DATE: 6/27/2015

TYPE OF DRILLING: HSA

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 282.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Brown, sandy, lean clay.		15	15.0	26	115.0			
5.0			5.0'								
			No Auger Refusal & Boring Terminated at 5.0' (Elev. 277.3). Bag #4 obtained from 0.0'-5.0'.								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-128

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 511+50

LOCATION: 10' Rt. (Willie Ray Drive)

LATITUDE: 34.99650 ° LONGITUDE: 92.00790 °

DATE: 6/27/2015

TYPE OF DRILLING: HSA

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 5.0 ft.

GROUNDWATER @

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
			Light brown, silty sand.								
5.0			5.0'								
			No Auger Refusal & Boring Terminated at 5.0' (Elev. 284.0).								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-129

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 518+00

LOCATION: CL (Willie Ray Drive)

LATITUDE: 34.99770 ° LONGITUDE: 92.00647 °

DATE: 6/27/2015

TYPE OF DRILLING: Hand Auger

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 1.5 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 257.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Dense, brown, silty gravel with sand. 1.5'		19	13.0	23	114.7			
			Auger Refusal & Boring Terminated at 1.5' (Elev. 256.0).								
			Bag #5 obtained from 0.3'-1.5'.								
5.0											
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-147

PAGE: 1 of 2

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 731+33

LOCATION: CL (Ramp 3A)

LATITUDE: 34.99785 ° LONGITUDE: 92.00323 °

DATE: 6/30/2015

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 55.3 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 244.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Very stiff, gray, brown & tan, lean clay.		18	27.0	31				
			7.7' Very stiff, brown, black & white, lean clay with sand.								
10.0					21	20.3	37		10,18,12		
			13.3' Very hard, black, tan & gray, lean clay.								
15.0					18	24.2	28	93.1			
			16.3' Auger Refusal at 16.3', Begin Coring in Shale (Claystone). Black, dk. gray, trcs. orange brown stain & white, v.f. grain, sev. to completely weathered, v. thinly laminated, soft to low hardness, trcs. Iron oxide stain, trcs. gypsum veining & frac. infill <1mm.							93	0
20.0			Shale breaks with light hand pressure, jts. & fracs. masked by weathering condition							76	0
25.0			24.7' Shale (Claystone): Dark gray to black, trcs. white, v.f. grain, silty laminations, sli. to mod. weathered w/seams sev. to completely weathered, v. thinly laminated, med. hardness w/soft seams, scat. gypsum infill of fracs., intersecting jts.							76	18
30.0			6+ 75°-90° jts. w/clay slickensides-gypsum infill <1mm & few v.f. sand grains; 5+ 50°-55° jts. w/smooth & hard walls; 34+ 40° bedding fracs., some w/sev. weathered walls; 47+ 0°-30° fracs., some bedding some intercept bedding, sev. weathered walls & some w/clay infill							100	20
35.0										100	8
40.0										100	24
45.0										100	30
50.0											

HDR | ICA

BORING NO.: B-147

PAGE: 2 of 2

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 731+33

LOCATION: CL (Ramp 3A)

LATITUDE: 34.99785 ° LONGITUDE: 92.00323 °

DATE: 6/30/2015

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 55.3 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 244.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
55.0			55.3'							100	8
			Boring Terminated at 55.3' (Elev. 189.0). RS-J collected from 26.9' - 27.2' RS-K collected from 34.4' - 34.7'								
60.0											
65.0											
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-147 Station 731+33 @ CL Box 1 of 5



B-147 Station 731+33 @ CL Box 2 of 5

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-147 Station 731+33 @ CL Box 3 of 5



B-147 Station 731+33 @ CL Box 4 of 5

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-147 Station 731+33 @ CL Box 5 of 5

HDR | ICA

BORING NO.: B-148

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 731+81

LOCATION: CL (Ramp 3A)

LATITUDE: 34.99789 ° LONGITUDE: 92.00308 °

DATE: 6/29/2015

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 34.8 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 245.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Medium dense, brown & black, silty sand with gravel.		28	14.3	36		8,5,15		
			8.3'								
10.0			Very dense, dark gray, clayey sand.						15,30,40		
15.0					18	3.9	33		25,50/0.4		
20.0									17,50/0.4		
25.0			24.8'								
			Auger Refusal at 24.8', Begin Coring in Shale (Claystone). Dark gray to black, trcs. white, v.f. grain, sli. weathered w/seams mod. to sev. weathered, v. thinly laminated, soft to med. hardness.							94	62
30.0			Shale breaks with light hand pressure; 8 30°-40° bedding fracs. w/spotty gypsum, weathered walls; 6 60°-70° jts. some w/spotty gypsum, clay slickensides, weathered walls; 12 0° fracs. w/weathered walls; some jts. intersect; apparent bedding 30°-40°							94	48
35.0			34.8'								
			Boring Terminated at 34.8' (Elev. 210.2). RS-F collected from 28.7' - 29.1'								
40.0											
45.0											
50.0											

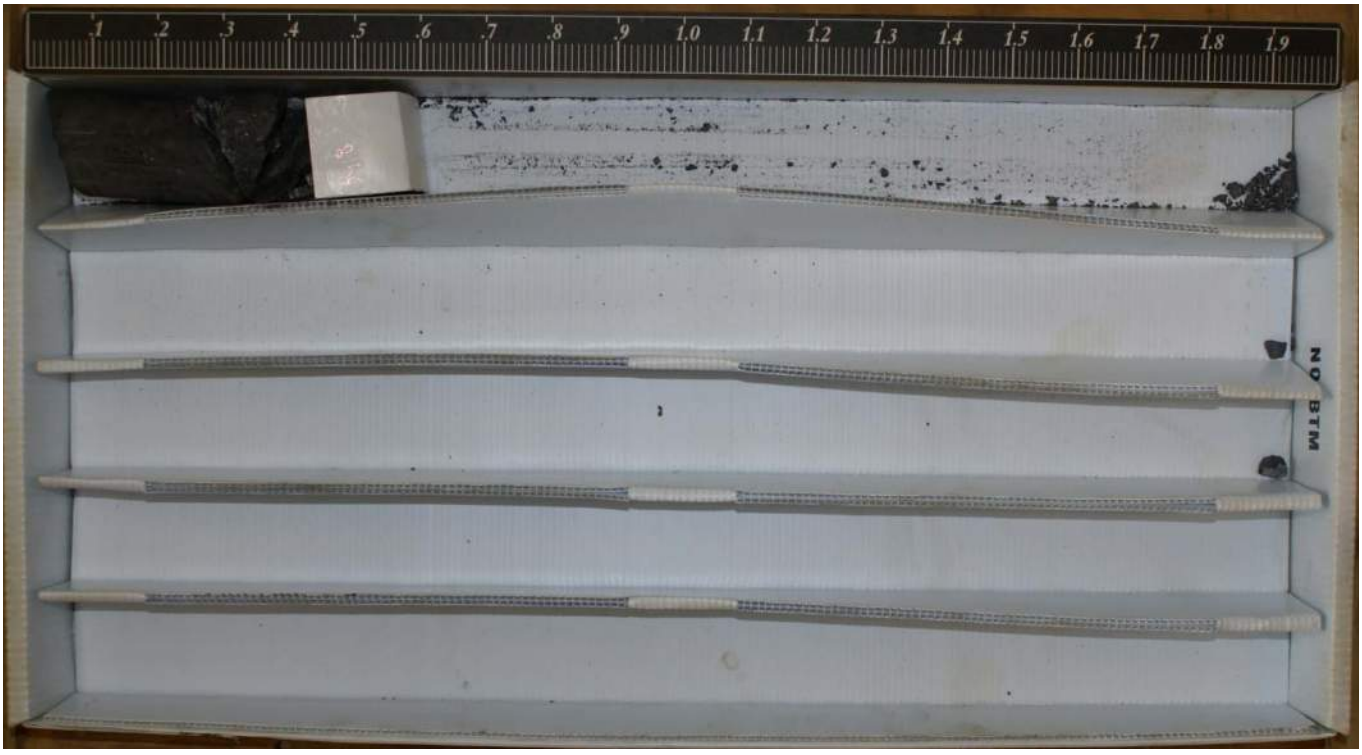
CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-148 Station 731+81 @ CL Box 1 of 2



B-148 Station 731+81 @ CL Box 2 of 2

HDR | ICA

BORING NO.: B-172

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 522+50

LOCATION: 12' Rt. (Willie Ray Drive)

LATITUDE: 34.99774 ° LONGITUDE: 92.00497 °

DATE: 1/22/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 16.8 ft.

GROUNDWATER @ 8.5

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 244.9	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, silty clay with sand.								
5.0					18	19.9	25		1,3,2		
			8.0'								
			Very loose to very dense, light & dark brown, silty sand.								
10.0					18	21.9	20		1,2,2		
15.0									50/0.3		
			16.8'						50/0.1		
			No Refusal & Boring Terminated at 16.8' (Elev. 228.1).								
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-173

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 728+00

LOCATION: 8' Rt. (Ramp 3A)

LATITUDE: 34.99754 ° LONGITUDE: 92.00428 °

DATE: 2/4/2016

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 20.2 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 250.1	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'								
			Stiff, brown, orange & gray, sandy lean clay.								
5.0					18	18.2	30		2,4,7		
			9.2'								
10.0			Very loose to loose, brown, silty sand.								
					NP	20.9	NP		0,0,2		
15.0									2,2,3		
			18.2'								
20.0			Very dense, dark gray, clayey sand.								
			20.2'		20	11.4	33		50/0.3		
			No Refusal & Boring Terminated at 20.2' (Elev. 229.9).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: PC-1

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 695+00

LOCATION: 45' Lt. (Hwy 67)

LATITUDE: 34.99077 ° LONGITUDE: 92.01196 °

DATE: 7/25/2015

TYPE OF DRILLING: Pvmt Core

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 1.0 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Asphalt surface and base. 0.8 DGA 1.0 Boring Terminated at 1.0'.								
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-2

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 704+50

LOCATION: 45' Rt. (Hwy 67)

LATITUDE: 34.99230 ° LONGITUDE: 92.00938 °

DATE: 7/25/2015

TYPE OF DRILLING: Pvmt Core

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 1.1 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Asphalt surface and base. 0.8 DGA 1.1 Boring Terminated at 1.1'.								
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.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 715+00

LOCATION: 45' Lt. (Hwy 67)

LATITUDE: 34.99439 ° LONGITUDE: 92.00694 °

DATE: 7/25/2015

TYPE OF DRILLING: Pvmt Core

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 1.0 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Asphalt surface and base. 0.7 DGA 1.0								
			Boring Terminated at 1.0'.								
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-4

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 425+00

LOCATION: 45' Rt. (Hwy 67)

LATITUDE: 34.99601 ° LONGITUDE: 92.00423 °

DATE: 7/25/2015

TYPE OF DRILLING: Pvmt Core

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 1.1 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Asphalt surface and base. 0.8 DGA 1.1 Boring Terminated at 1.1'.								
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.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 736+00

LOCATION: 45' Lt. (Hwy 67)

LATITUDE: 34.99818 ° LONGITUDE: 92.00166 °

DATE: 7/25/2015

TYPE OF DRILLING: Pvmt Core

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 1.1 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Asphalt surface and base. 0.8 DGA 1.1 Boring Terminated at 1.1'.								
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.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 745+00

LOCATION: 45' Rt. (Hwy 67)

LATITUDE: 34.99963 ° LONGITUDE: 91.99920 °

DATE: 7/25/2015

TYPE OF DRILLING: Pvmt Core

EQUIPMENT:

LOGGED BY: A. Wilder

COMPLETION DEPTH: 1.1 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Asphalt surface and base. 0.8 DGA 1.1 Boring Terminated at 1.1'.								
5.0											
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

Appendix B. LABORATORY TESTING

HDR | ICA

Project Name : North Cabot Interchange
Location : Lonoke County, Arkansas
Job Number : 251539
Project Job No. : 251539

Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	pH	Natural Moisture Content (%)
65	B-100		ST-1	5.7	6.4	Tan & Gray Silty, Clayey Sand		21.1
35	B-100		SS-1	10.1	11.6	Brown, Orange & Tan Clayey Sand with Gravel		21.6
66	B-100		ST-2	14.5	15.9	Tan & Gray Sandy Elastic Silt		39.8
35	B-100		SS-2	20.1	20.2	Gray & Brown Clayey Sand with Gravel		13.7
10	B-101		SS-1	4.3	5.8	Brown & Gray Clayey Sand		16.2
11	B-101		SS-2	9.3	10.5	Brown Sandy Silty Clay		17.9
	B-101		SS-3	14.3	14.4	No Recovery		
6	B-102		SS-1	4.3	5.8	Brown & Gray Sandy Lean Clay		22.6
35	B-102		SS-2	9.3	10.3	Brown & Gray Clayey Sand with Gravel		14.9
10	B-104		ST-1	5.0	5.4	Gray, Brown & Tan Clayey Sand		15.6
9	B-105		SS-1	5.0	6.5	Tan & Gray Silty Sand		9.3
36	B-106		SS-1	3.8	5.3	Brown & Gray Clayey Sand		11.9
18	B-107		Bag-6	0.5	3.0	Brown Clayey Sand		15.9
19	B-107		Bag-7	3.0	3.8	Red & Gray Silty Sand		12.9
20	B-108		Bag-8	0.4	5.0	Brown, Red & Gray Sandy Lean Clay		16.0
20	B-109		MC-1	0.0	3.9	Brown Sandy Lean Clay		16.5
21	B-110		Bag-9	0.5	5.0	Brown, Red & Gray Lean Clay with Sand		17.5
21	B-111		MC-1	0.6	5.0	Light Brown Lean Clay with Sand		21.2
22	B-112		Bag-30	0.5	5.0	Brown, Red & Gray Sandy Lean Clay		23.7
23	B-114		Bag-31	0.8	3.4	Brown Silty Sand		15.2
24	B-114		Bag-32	3.4	5.0	Red Clayey Sand		13.4
24	B-115		MC-1	0.6	3.8	Brown Clayey Sand		16.9
24	B-116		MC-1	0.5	3.9	Brown Clayey Sand		16.4
25	B-117		Bag-23	0.4	5.0	Brown, Red & Gray Sandy Silty Clay		21.0
25	B-118		MC-1	0.6	4.5	Brown Sandy Silty Clay		20.1
26	B-119		Bag-22	0.6	4.5	Brown, Red & Gray Clayey Sand		20.0
27	B-120		Bag-20	0.4	1.8	Brown Silty Sand with Gravel		6.1
28	B-121		Bag-21	0.4	5.0	Brown Sandy Silt		22.5
29	B-122		Bag-3	0.0	3.7	Light Brown Clayey Sand with Gravel		10.8
30	B-123		Bag-2	0.0	5.0	Brown Sandy Silty Clay		14.6
31	B-124		Bag-1	0.0	5.0	Light Brown Silty Sand		18.5
32	B-125		Bag-40	0.6	2.3	Brown Silty Sand		10.1
32	B-126		MC-1	0.5	2.3	Dark Brown Silty Sand		15.6

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Project Name : North Cabot Interchange
Location : Lonoke County, Arkansas
Job Number : 251539
Project Job No. : 251539

Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	pH	Natural Moisture Content (%)
33	B127		Bag-4	0.6	5.0	Brown Sandy Lean Clay		15.0
31	B-128		MC-1	0.6	5.0	Light Brown Silty Sand		16.8
34	B-129		Bag-5	0.3	1.5	Brown Silty Gravel with Sand		13.0
6	B-130		SS-1	5.0	6.5	Light Brown & Gray Sandy Lean Clay		18.7
7	B-130		SS-2	10.0	11.5	Light Brown & Gray Silty, Clayey Sand		7.8
7	B-130		SS-3	15.0	15.7	Light Brown Silty, Clayey Sand		6.5
	B-131		ST-1	4.9		No Recovery		
7	B-131		SS-1	5.5	7.0	Brown, Gray & Black Silty, Clayey Sand		12.8
7	B-131		SS-2	9.9	11.4	Brown, Gray & Black Silty, Clayey Sand		9.5
8	B-132		SS-1	4.5	6.0	Tan & Gray Silty Sand with Gravel		14.7
9	B-132		SS-2	9.5	10.1	Tan & Gray Silty Sand		3.5
11	B-135		ST-1	5.0	6.4	Brown Sandy Silty Clay		15.5
12	B-135		ST-2	10.0	11.8	Gray, Brown & Tan Sandy Silt		20.2
1	B-135		SS-1	15.0	16.5	Brown & Black Clayey Sand		13.7
67	B-135A		ST-1	4.2	5.5	Brown Sandy Silt		20.2
37	B-136		SS-1	4.9	6.4	Brown Silty, Clayey Gravel with Sand		12.5
37	B-136		SS-2	9.9	10.1	Gray Silty, Clayey Gravel with Sand		11.5
38	B-137		SS-1	5.3	6.8	Gray & Brown Clayey Sand		14.4
39	B-138		SS-1	4.7	6.2	Brown Silty Sand		25.7
40	B-138		SS-2	9.7	11.2	Brown, Gray & Black Clayey Sand with Gravel		32.1
41	B-138		SS-3	14.7	15.0	Black Clayey Sand		8.0
2	B-139		SS-1	4.3	5.8	Brown Sandy Silt		15.2
13	B-139		ST-1	9.3	9.3	Gray & Tan Silty Sand		19.9
68	B-140		ST-1	4.7	5.4	Tan & Gray Sandy Lean Clay		20.8
42	B-140		SS-1	5.6	7.1	Gray & Brown Clayey Sand with Gravel		14.2
43	B-140		SS-2	9.7	11.2	Brown Sandy Lean Clay		29.6
69	B-140		ST-2	14.7	15.2	Gray & Brown Silty, Clayey Sand		17.0
44	B-140		SS-3	15.6	17.1	Brown & Black Clayey Gravel with Sand		17.8
45	B-140		SS-4	19.7	20.1	Gray & Brown Clayey Sand		9.6
14	B-147		ST-1	5.0	5.4	Gray, Brown & Tan Lean Clay		27.0
3	B-147		SS-1	10.0	11.5	Brown, Black & White Lean Clay with Sand		20.3
15	B-147		ST-2	15.0	16.0	Black, Tan & Gray Lean Clay		24.2
4	B-148		SS-1	5.0	6.5	Brown & Black Silty Sand with Gravel		14.3
5	B-148		SS-2	10.0	11.5	Dark Gray Clayey Sand		11.8
5	B-148		SS-3	15.0	15.9	Dark Gray Clayey Sand		3.9
5	B-148		SS-4	20.0	20.9	Dark Gray Clayey Sand		4.8
46	B-149		SS-1	5.2	6.7	Brown & Gray Poorly Graded Gravel with Silt		9.1
47	B-149		SS-2	10.2	10.6	Black & Brown Clayey Sand		11.3
48	B-150		SS-1	5.5	7.0	Brown Silty Sand		31.5
49	B-150		SS-2	10.5	12.0	Gray & Brown Poorly Graded Sand		14.4
50	B-150		SS-3	15.5	17.0	Dark Gray Clayey Sand		11.2
50	B-150		SS-4	20.0	20.2	Dark Gray Clayey Sand		10.3
51	B-151		SS-1	4.1	5.6	Brown & Gray Silty Sand		24.1
70	B-151		ST-1	9.1	9.4	Brown & Gray Silty Sand		30.9

Project Name : North Cabot Interchange
Location : Lonoke County, Arkansas
Job Number : 251539
Project Job No. : 251539

Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	pH	Natural Moisture Content (%)
52	B-151		SS-2	14.1	14.8	Dark Gray Clayey Sand with Gravel		14.2
53	B-152		SS-1	4.4	5.9	Brown Sandy Silty Clay		21.1
54	B-152		SS-2	9.4	10.9	Brown & Gray Silty Sand		18.5
55	B-152		SS-3	14.4	15.9	Gray & Brown Clayey Sand		10.9
55	B-152		SS-4	16.4	16.8	Gray Clayey Sand		5.2
8	B-165		SS-1	4.8	6.3	Tan & Gray Silty Sand with Gravel		11.6
8	B-165		SS-2	9.8	11.3	Tan & Gray Silty Sand with Gravel		6.3
8	B-165		SS-3	14.8	16.3	Tan & Gray Silty Sand with Gravel		10.4
9	B-166		SS-1	5.0	5.8	Tan & Gray Silty Sand		8.9
16	B-167		ST-1	4.4	5.9	Brown, Tan, Yellow, Black & Gray Sandy Lean Clay		9.9
7	B-167		SS-1	9.4	10.9	Light Brown, Black & Gray Silty, Clayey Sand		10.0
17	B-168		ST-1	4.6	5.9	Gray, White & Tan Lean Clay with Sand		19.0
72	B-169		SS-1	4.5	6.0	Brown Silty Clay with Sand		23.6
71	B-169		ST-1	9.5	10.8	Tan & Gray Sandy Silt		19.2
57	B-169		SS-2	14.5	16.0	Brown, Gray & Black Clayey Sand		12.9
72	B-170		ST-1	4.6	5.9	Tan & Gray Silty Clay with Sand		24.2
56	B-170		SS-1	9.6	11.1	Brown Silty, Clayey Gravel with Sand		17.5
57	B-170		SS-2	14.6	16.1	Brown & Gray Clayey Sand		13.2
57	B-170		SS-3	19.6	19.9	Gray Clayey Sand		6.7
73	B-171		ST-1	4.5	5.8	Brown, Tan & Gray Sandy Lean Clay		23.4
58	B-171		SS-1	9.5	11.0	Brown, Tan & Gray Sandy Silt		20.7
59	B-171		SS-2	14.5	15.3	Dark Gray & Brown Clayey Sand		17.8
59	B-171		SS-3	19.5	19.9	Dark Gray & Brown Clayey Sand		15.5
60	B-172		SS-1	4.7	6.2	Brown Silty Clay with Sand		19.9
61	B-172		SS-2	9.7	11.2	Light & Dark Brown Silty Sand		21.9
62	B-173		SS-1	4.9	6.4	Brown, Orange & Gray Sandy Lean Clay		18.2
63	B-173		SS-2	11.9	13.4	Brown Silty Sand		20.9
63	B-173		SS-3	14.9	16.4	Brown Silty Sand		20.6
64	B-173		SS-4	19.9	20.2	Dark Gray Clayey Sand		11.4

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown & Black Clayey Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-135
Sample Depth : 15.0' to 16.5'
Date Tested : 10/16/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	93.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	58.0
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	34.5
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} = 0.2355 mm

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

Natural Moisture (%) (AASHTO T265) : 13.7
Liquid Limit (AASHTO T89) : 27
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 10
Liquidity Index : -0.33
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 6.2
Coarse Sand (-No.10 + No.40) : 35.8
Fine Sand (-No.40 + No.200) : 23.5
Silt + Clay (-No.200) : 34.5

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) : 6.0
Medium Sand (-No.10 + No.40) : 35.8
Fine Sand (-No.40 + No.200) : 23.5
Silt + Clay (-No.200) : 34.5

Approved By : J.S.

Soil No. 1

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Sandy Silt

Sample No. : SS-1
Sample Loc. : Boring No. B-139
Sample Depth : 4.3' to 5.8'
Date Tested : 10/16/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	99.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	69.9
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} = 0.0114 mm

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

Natural Moisture (%) (AASHTO T265) : 15.2
Liquid Limit (AASHTO T89) : 22
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 4
Liquidity Index : -0.76
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (1)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.0
Coarse Sand (-No.10 + No.40) : 0.4
Fine Sand (-No.40 + No.200) : 29.7
Silt + Clay (-No.200) : 69.9

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.0
Medium Sand (-No.10 + No.40) : 0.4
Fine Sand (-No.40 + No.200) : 29.7
Silt + Clay (-No.200) : 69.9

Approved By : J.S.

Soil No. 2

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Black & White Lean Clay with Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-147
Sample Depth : 10.0' to 11.5'
Date Tested : 10/16/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	97.6
No.6		3.35	mm	
No.10		2	mm	92.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	86.2
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	76.7
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} = 0.0075 mm

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

Natural Moisture (%) (AASHTO T265) : 20.3
Liquid Limit (AASHTO T89) : 37
Plastic Limit (AASHTO T90) : 21
Plasticity Index : 16
Liquidity Index : -0.04
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-6 (11)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 7.3
Coarse Sand (-No.10 + No.40) : 6.5
Fine Sand (-No.40 + No.200) : 9.5
Silt + Clay (-No.200) : 76.7

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 2.4
Coarse Sand (-No.4 + No.10) : 4.9
Medium Sand (-No.10 + No.40) : 6.5
Fine Sand (-No.40 + No.200) : 9.5
Silt + Clay (-No.200) : 76.7

Approved By : J.S.

Soil No. 3

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown & Black Silty Sand with Gravel

Sample No. : SS-1
Sample Loc. : Boring No. B-148
Sample Depth : 5.0' to 6.5'
Date Tested : 10/16/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
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	93.9
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	87.8
1/4		6.3	mm	
No.4		4.75	mm	76.8
No.6		3.35	mm	
No.10		2	mm	56.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	34.9
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	24.0
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} = 1.2487 mm

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

Natural Moisture (%) (AASHTO T265) : 14.3
Liquid Limit (AASHTO T89) : 36
Plastic Limit (AASHTO T90) : 28
Plasticity Index : 8
Liquidity Index : -1.76
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 43.4
Coarse Sand (-No.10 + No.40) : 21.7
Fine Sand (-No.40 + No.200) : 10.9
Silt + Clay (-No.200) : 24.0

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 6.1
Fine Gravel (-3/4in. + No.4) : 17.1
Coarse Sand (-No.4 + No.10) : 20.2
Medium Sand (-No.10 + No.40) : 21.7
Fine Sand (-No.40 + No.200) : 10.9
Silt + Clay (-No.200) : 24.0

Approved By : J.S.

Soil No. 4

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Dark Gray Clayey Sand

Sample No. : SS-3
Sample Loc. : Boring No. B-148
Sample Depth : 15.0' to 16.5'
Date Tested : 10/16/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	98.2
No.6		3.35	mm	
No.10		2	mm	79.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	32.7
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	17.5
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} = 0.7543 mm

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

Natural Moisture (%) (AASHTO T265) : 3.9
Liquid Limit (AASHTO T89) : 33
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 15
Liquidity Index : -0.96
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-6 (1)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 20.6
Coarse Sand (-No.10 + No.40) : 46.7
Fine Sand (-No.40 + No.200) : 15.2
Silt + Clay (-No.200) : 17.5

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 1.8
Coarse Sand (-No.4 + No.10) : 18.8
Medium Sand (-No.10 + No.40) : 46.7
Fine Sand (-No.40 + No.200) : 15.2
Silt + Clay (-No.200) : 17.5

Approved By : J.S.

Soil No. 5

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Light Brown & Gray Sandy Lean Clay

Sample No. : SS-1
Sample Loc. : Boring No. B-130
Sample Depth : 5.0' to 6.5'
Date Tested : 10/16/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	97.8
1/4		6.3	mm	
No.4		4.75	mm	90.7
No.6		3.35	mm	
No.10		2	mm	85.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	79.8
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	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} = 0.0121 mm

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

Natural Moisture (%) (AASHTO T265) : 18.7
Liquid Limit (AASHTO T89) : 45
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 27
Liquidity Index : 0.03
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-7-6 (17)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 14.6
Coarse Sand (-No.10 + No.40) : 5.6
Fine Sand (-No.40 + No.200) : 10.8
Silt + Clay (-No.200) : 69.0

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 9.3
Coarse Sand (-No.4 + No.10) : 5.3
Medium Sand (-No.10 + No.40) : 5.6
Fine Sand (-No.40 + No.200) : 10.8
Silt + Clay (-No.200) : 69.0

Approved By : J.S.

Soil No. 6

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Gray & Black Silty, Clayey Sand

Sample No. : SS-2
Sample Loc. : Boring No. B-131
Sample Depth : 9.9' to 11.4'
Date Tested : 10/16/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	84.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	57.3
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	46.5
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} = 0.1316 mm

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

Natural Moisture (%) (AASHTO T265) : 9.5
Liquid Limit (AASHTO T89) : 29
Plastic Limit (AASHTO T90) : 22
Plasticity Index : 7
Liquidity Index : -1.84
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (1)
ASTM Classification: D2487 : SC-SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 15.4
Coarse Sand (-No.10 + No.40) : 27.3
Fine Sand (-No.40 + No.200) : 10.8
Silt + Clay (-No.200) : 46.5

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) : 14.7
Medium Sand (-No.10 + No.40) : 27.3
Fine Sand (-No.40 + No.200) : 10.8
Silt + Clay (-No.200) : 46.5

Approved By : J.S.

Soil No. 7

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Tan & Gray Silty Sand with Gravel

Sample No. : SS-2
Sample Loc. : Boring No. B-165
Sample Depth : 9.8' to 11.3'
Date Tested : 10/16/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	89.5
1/4		6.3	mm	
No.4		4.75	mm	79.9
No.6		3.35	mm	
No.10		2	mm	71.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	59.8
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	27.6
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} = 0.2507 mm

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

Natural Moisture (%) (AASHTO T265) : 6.3
Liquid Limit (AASHTO T89) : 21
Plastic Limit (AASHTO T90) : 19
Plasticity Index : 2
Liquidity Index : -6.41
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 28.2
Coarse Sand (-No.10 + No.40) : 12.0
Fine Sand (-No.40 + No.200) : 32.2
Silt + Clay (-No.200) : 27.6

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 20.1
Coarse Sand (-No.4 + No.10) : 8.1
Medium Sand (-No.10 + No.40) : 12.0
Fine Sand (-No.40 + No.200) : 32.2
Silt + Clay (-No.200) : 27.6

Approved By : J.S.

Soil No. 8

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Tan & Gray Silty Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-105
Sample Depth : 5.0' to 6.5'
Date Tested : 10/16/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	96.2
No.6		3.35	mm	
No.10		2	mm	89.1

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	65.1
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	21.6
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} = 0.2327 mm

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

Natural Moisture (%) (AASHTO T265) : 9.3
Liquid Limit (AASHTO T89) : NP
Plastic Limit (AASHTO T90) : NP
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 10.9
Coarse Sand (-No.10 + No.40) : 24.0
Fine Sand (-No.40 + No.200) : 43.5
Silt + Clay (-No.200) : 21.6

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 3.8
Coarse Sand (-No.4 + No.10) : 7.1
Medium Sand (-No.10 + No.40) : 24.0
Fine Sand (-No.40 + No.200) : 43.5
Silt + Clay (-No.200) : 21.6

Approved By : J.S.

Soil No. 9

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Gray, Brown & Tan Clayey Sand

Sample No. : ST-1
Sample Loc. : Boring No. B-104
Sample Depth : 5.0' to 5.8'
Date Tested : 10/21/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	94.6
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	47.7
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} = 0.0817 mm

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

Natural Moisture (%) (AASHTO T265) : 15.6
Liquid Limit (AASHTO T89) : 23
Plastic Limit (AASHTO T90) : 15
Plasticity Index : 8
Liquidity Index : 0.01
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (1)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.1
Coarse Sand (-No.10 + No.40) : 5.3
Fine Sand (-No.40 + No.200) : 46.9
Silt + Clay (-No.200) : 47.7

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.1
Medium Sand (-No.10 + No.40) : 5.3
Fine Sand (-No.40 + No.200) : 46.9
Silt + Clay (-No.200) : 47.7

Approved By : J.S.

Soil No. 10

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Sandy Silty Clay

Sample No. : ST-1
Sample Loc. : Boring No. B-135
Sample Depth : 5.0' to 6.4'
Date Tested : 10/22/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	99.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	58.4
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} = 0.0289 mm

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

Natural Moisture (%) (AASHTO T265) : 15.5
Liquid Limit (AASHTO T89) : 19
Plastic Limit (AASHTO T90) : 14
Plasticity Index : 5
Liquidity Index : 0.29
Activity : NA
Sp. Gr. (AASHTO T100) : 2.740
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : CL-ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.0
Coarse Sand (-No.10 + No.40) : 0.4
Fine Sand (-No.40 + No.200) : 41.2
Silt + Clay (-No.200) : 58.4

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.0
Medium Sand (-No.10 + No.40) : 0.4
Fine Sand (-No.40 + No.200) : 41.2
Silt + Clay (-No.200) : 58.4

Approved By : J.S.

Soil No. 11

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Gray, Brown & Tan Sandy Silt

Sample No. : ST-2
Sample Loc. : Boring No. B-135
Sample Depth : 10.0' to 11.8'
Date Tested : 10/22/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	94.2
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	58.8
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} = 0.0278 mm

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

Natural Moisture (%) (AASHTO T265) : 20.2
Liquid Limit (AASHTO T89) : 19
Plastic Limit (AASHTO T90) : 15
Plasticity Index : 4
Liquidity Index : 1.26
Activity : NA
Sp. Gr. (AASHTO T100) : 2.723
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.1
Coarse Sand (-No.10 + No.40) : 5.7
Fine Sand (-No.40 + No.200) : 35.4
Silt + Clay (-No.200) : 58.8

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) : 5.7
Fine Sand (-No.40 + No.200) : 35.4
Silt + Clay (-No.200) : 58.8

Approved By : J.S.

Soil No. 12

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Gray & Tan Silty Sand

Sample No. : ST-1
Sample Loc. : Boring No. B-139
Sample Depth : 9.3' to 9.9'
Date Tested : 10/21/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	97.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	94.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	49.8
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} = 0.0756 mm

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

Natural Moisture (%) (AASHTO T265) : 19.9
Liquid Limit (AASHTO T89) : 18
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 2
Liquidity Index : 2.11
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 2.2
Coarse Sand (-No.10 + No.40) : 3.2
Fine Sand (-No.40 + No.200) : 44.8
Silt + Clay (-No.200) : 49.8

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.9
Coarse Sand (-No.4 + No.10) : 1.3
Medium Sand (-No.10 + No.40) : 3.2
Fine Sand (-No.40 + No.200) : 44.8
Silt + Clay (-No.200) : 49.8

Approved By : J.S.

Soil No. 13

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Gray, Brown & Tan Lean Clay

Sample No. : ST-1
Sample Loc. : Boring No. B-147
Sample Depth : 5.0' to 5.4'
Date Tested : 10/26/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	98.7
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	89.9
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} = 0.004 mm

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

Natural Moisture (%) (AASHTO T265) : 27.0
Liquid Limit (AASHTO T89) : 31
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 13
Liquidity Index : 0.69
Activity : NA
Sp. Gr. (AASHTO T100) : 2.709
AASHTO Classification: M145 : A-6 (11)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.3
Coarse Sand (-No.10 + No.40) : 1.0
Fine Sand (-No.40 + No.200) : 8.8
Silt + Clay (-No.200) : 89.9

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.3
Medium Sand (-No.10 + No.40) : 1.0
Fine Sand (-No.40 + No.200) : 8.8
Silt + Clay (-No.200) : 89.9

Approved By : J.S.

Soil No. 14

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Black, Tan & Gray Lean Clay

Sample No. : ST-2
Sample Loc. : Boring No. B-147
Sample Depth : 15.0' to 16.0'
Date Tested : 10/22/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	96.0
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	85.6
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D_{50} = 0.0048 mm

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

Natural Moisture (%) (AASHTO T265) : 24.2
Liquid Limit (AASHTO T89) : 28
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 10
Liquidity Index : 0.65
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (7)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.6
Coarse Sand (-No.10 + No.40) : 3.4
Fine Sand (-No.40 + No.200) : 10.4
Silt + Clay (-No.200) : 85.6

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.6
Medium Sand (-No.10 + No.40) : 3.4
Fine Sand (-No.40 + No.200) : 10.4
Silt + Clay (-No.200) : 85.6

Approved By : J.S.

Soil No. 15

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Tan, Yellow, Black & Gray Sandy Lean Clay

Sample No. : ST-1
Sample Loc. : Boring No. B-167
Sample Depth : 4.4' to 5.9'
Date Tested : 10/16/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
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	96.1
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	92.2
1/4		6.3	mm	
No.4		4.75	mm	88.2
No.6		3.35	mm	
No.10		2	mm	82.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	77.6
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	58.2
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} = 0.0295 mm

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

Natural Moisture (%) (AASHTO T265) : 9.9
Liquid Limit (AASHTO T89) : 28
Plastic Limit (AASHTO T90) : 15
Plasticity Index : 13
Liquidity Index : -0.37
Activity : NA
Sp. Gr. (AASHTO T100) : 2.723
AASHTO Classification: M145 : A-6 (5)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 17.3
Coarse Sand (-No.10 + No.40) : 5.1
Fine Sand (-No.40 + No.200) : 19.4
Silt + Clay (-No.200) : 58.2

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 3.9
Fine Gravel (-3/4in. + No.4) : 7.9
Coarse Sand (-No.4 + No.10) : 5.5
Medium Sand (-No.10 + No.40) : 5.1
Fine Sand (-No.40 + No.200) : 19.4
Silt + Clay (-No.200) : 58.2

Approved By : J.S.

Soil No. 16

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Gray, White & Tan Lean Clay with Sand

Sample No. : ST-1
Sample Loc. : Boring No. B-168
Sample Depth : 4.6' to 5.9'
Date Tested : 10/16/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	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	97.1
No.6		3.35	mm	
No.10		2	mm	94.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	87.5
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	73.3
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} = 0.0091 mm

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

Natural Moisture (%) (AASHTO T265) : 19.0
Liquid Limit (AASHTO T89) : 37
Plastic Limit (AASHTO T90) : 19
Plasticity Index : 18
Liquidity Index : -0.03
Activity : NA
Sp. Gr. (AASHTO T100) : 2.717
AASHTO Classification: M145 : A-6 (12)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 5.4
Coarse Sand (-No.10 + No.40) : 7.1
Fine Sand (-No.40 + No.200) : 14.2
Silt + Clay (-No.200) : 73.3

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 2.9
Coarse Sand (-No.4 + No.10) : 2.5
Medium Sand (-No.10 + No.40) : 7.1
Fine Sand (-No.40 + No.200) : 14.2
Silt + Clay (-No.200) : 73.3

Approved By : J.S.

Soil No. 17

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Clayey Sand

Sample No. : Bag-6
Sample Loc. : Boring No. B-107
Sample Depth : 0.5' to 3.0'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	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	95.3
1/4		6.3	mm	
No.4		4.75	mm	92.6
No.6		3.35	mm	
No.10		2	mm	89.1

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	49.0
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} = 0.0786 mm

CBR (AASHTO: T-193) : 2.7
Dry Dens. (AASHTO: T-99; Method (C)) : 116.5 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 13.8 %

Natural Moisture (%) (AASHTO T265) : 15.9
Liquid Limit (AASHTO T89) : 23
Plastic Limit (AASHTO T90) : 15
Plasticity Index : 8
Liquidity Index : 0.11
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (1)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 10.9
Coarse Sand (-No.10 + No.40) : 3.5
Fine Sand (-No.40 + No.200) : 36.6
Silt + Clay (-No.200) : 49.0

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 7.4
Coarse Sand (-No.4 + No.10) : 3.5
Medium Sand (-No.10 + No.40) : 3.5
Fine Sand (-No.40 + No.200) : 36.6
Silt + Clay (-No.200) : 49.0

Approved By : J.S.

Soil No. 18

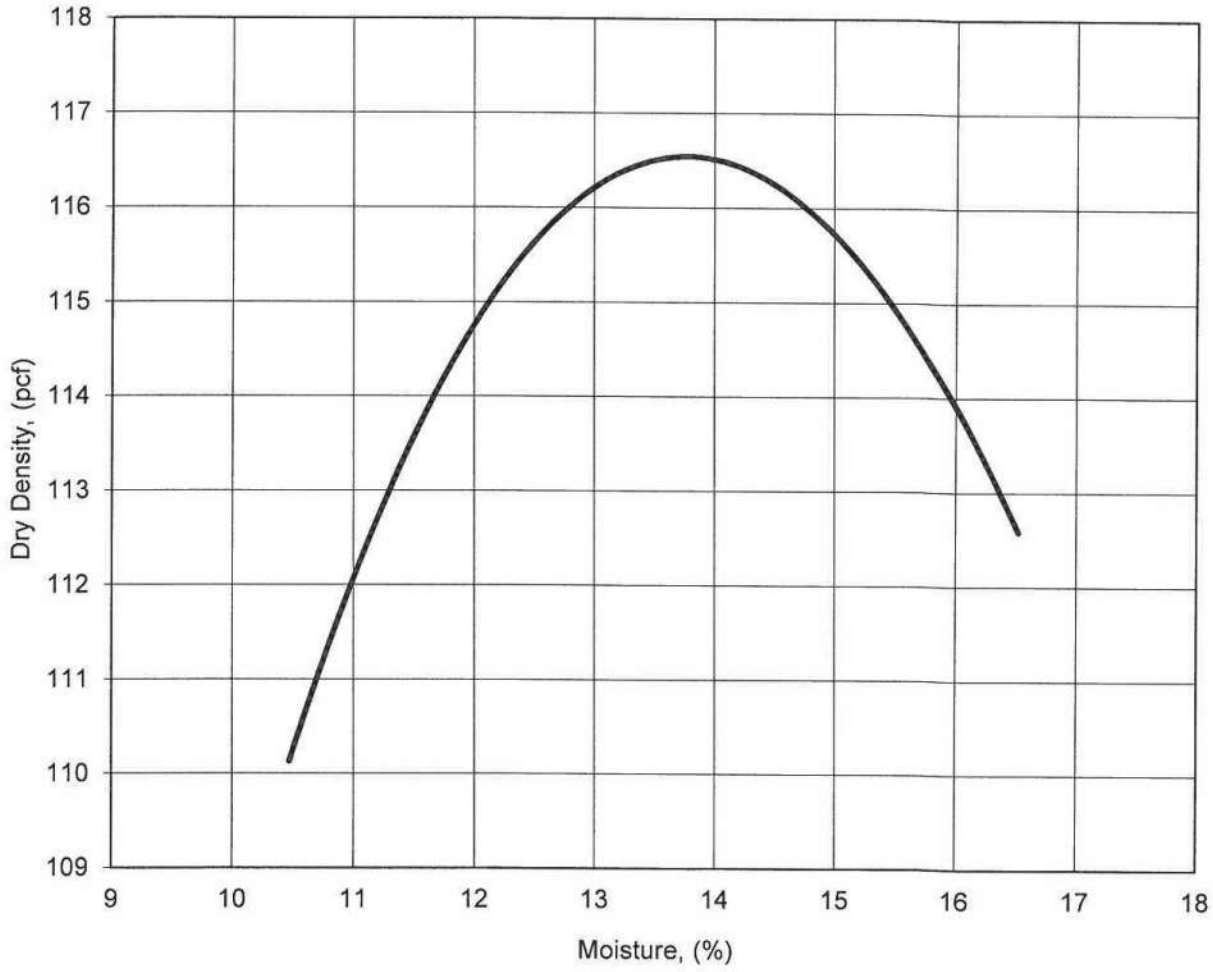
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Clayey Sand

Sample No. : Bag-6
Sample Loc. : Boring No. B-107
Sample Depth : 0.5' to 3.0'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 116.5 pcf

OPTIMUM MOISTURE: 13.8 %

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

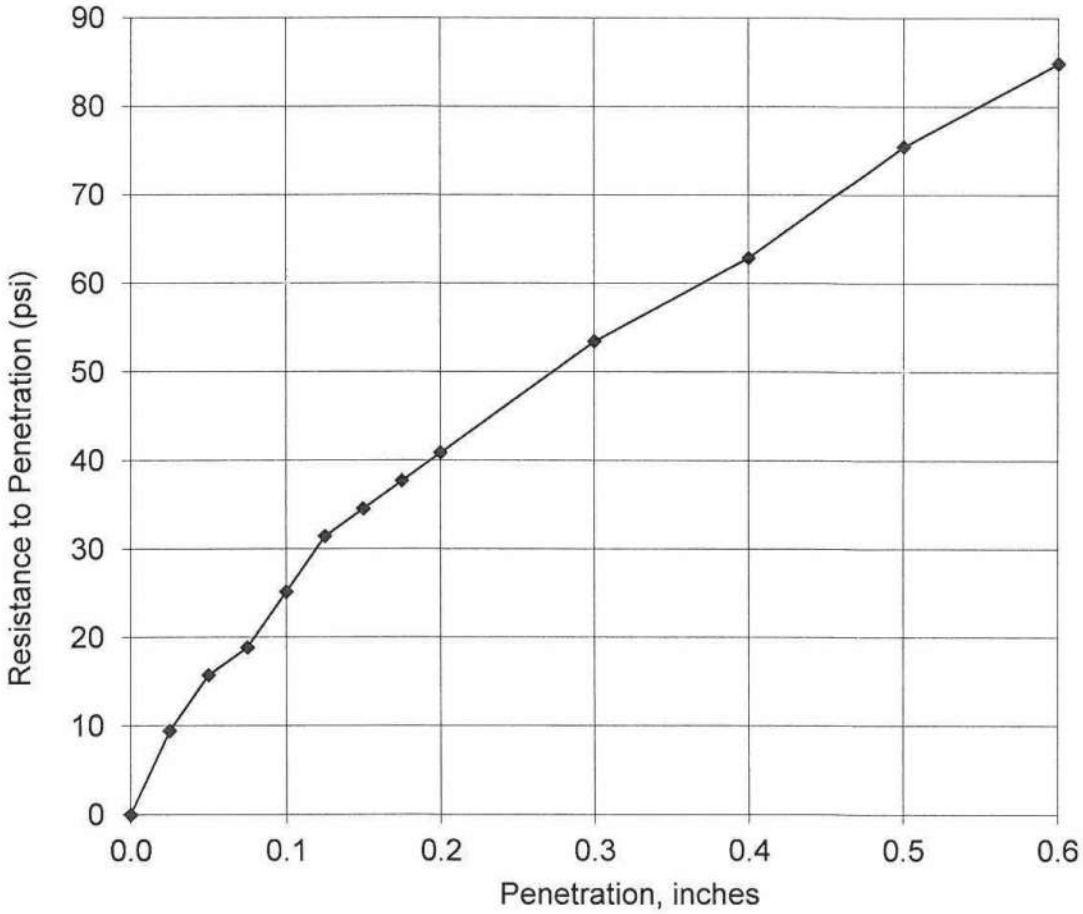
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-6
Project County	: Lonoke	Sample Loc.	: Boring No. B-107
Project State	: Arkansas	Sample Depth	: 0.5' to 3.0'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR| ICA	Date Reported	: 11/3/15
Soil Type	: Brown Clayey Sand		



Compaction Effort = 40 Blows per layer
Percent Compacted = 98.6
Percent Swell = 0.33

C.B.R. @ 0.1 In. = 2.5
C.B.R. @ 0.2 In. = 2.7*

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Red & Gray Silty Sand

Sample No. : Bag-7
Sample Loc. : Boring No. B-107
Sample Depth : 3.0' to 3.8'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	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	95.6
1/4		6.3	mm	
No.4		4.75	mm	94.6
No.6		3.35	mm	
No.10		2	mm	90.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	81.0
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	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} = 0.1412 mm

CBR (AASHTO: T-193) : 15.1
Dry Dens. (AASHTO: T-99; Method (C)) : 120.2 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 10.5 %

Natural Moisture (%) (AASHTO T265) : 12.9
Liquid Limit (AASHTO T89) : 19
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 1
Liquidity Index : -5.22
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 9.3
Coarse Sand (-No.10 + No.40) : 9.7
Fine Sand (-No.40 + No.200) : 48.8
Silt + Clay (-No.200) : 32.2

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 5.4
Coarse Sand (-No.4 + No.10) : 3.9
Medium Sand (-No.10 + No.40) : 9.7
Fine Sand (-No.40 + No.200) : 48.8
Silt + Clay (-No.200) : 32.2

Approved By : J.S.

Soil No. 19

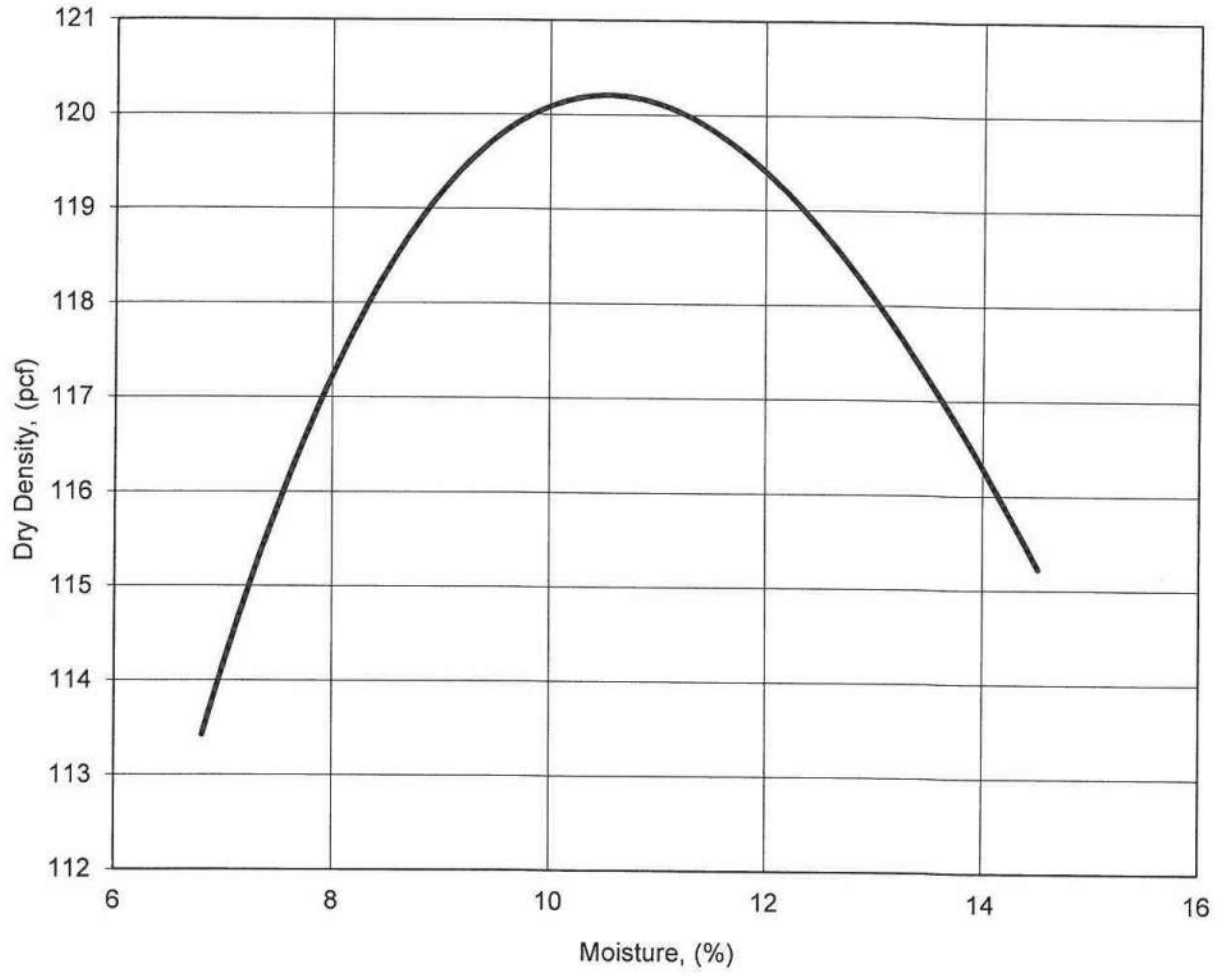
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Red & Gray Silty Sand

Sample No. : Bag-7
Sample Loc. : Boring No. B-107
Sample Depth : 3.0' to 3.8'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 120.2 pcf

OPTIMUM MOISTURE: 10.5 %

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

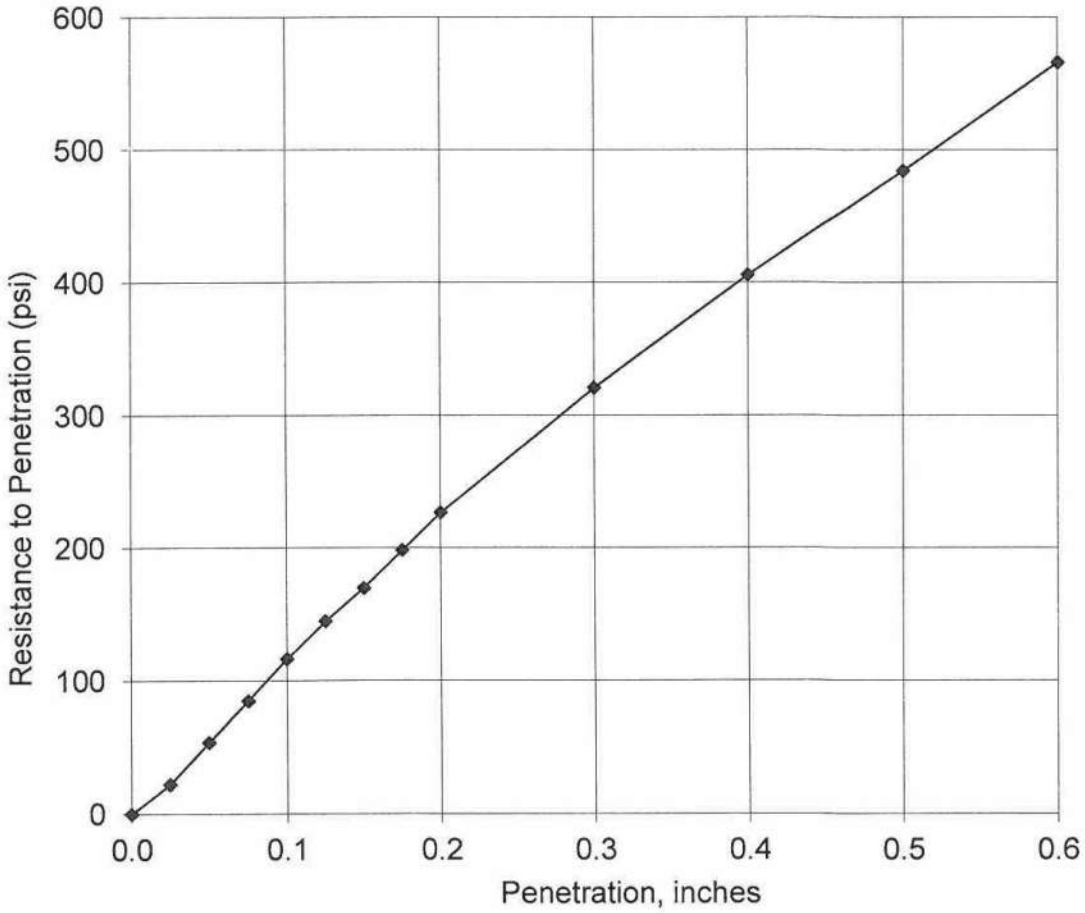
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HDR | ICA

CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-7
Project County	: Lonoke	Sample Loc.	: Boring No. B-107
Project State	: Arkansas	Sample Depth	: 3.0' to 3.8'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR|ICA	Date Reported	: 11/3/15
Soil Type	: Red & Gray Silty Sand		



Compaction Effort = 40 Blows per layer
Percent Compacted = 99.5
Percent Swell = 0.22

C.B.R. @ 0.1 In. = 11.6
C.B.R. @ 0.2 In. = 15.1*

COMMENTS: AASHTO: T-193

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Red & Gray Sandy Lean Clay

Sample No. : Bag-8
Sample Loc. : Boring No. B-108
Sample Depth : 0.4' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	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	98.2
No.6		3.35	mm	
No.10		2	mm	95.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	92.3
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	62.5
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} = 0.02 mm

CBR (AASHTO: T-193) : 6.9
Dry Dens. (AASHTO: T-99; Method (C)) : 118.2 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 12.4 %

Natural Moisture (%) (AASHTO T265) : 16.0
Liquid Limit (AASHTO T89) : 25
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 9
Liquidity Index : 0.05
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (3)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 4.7
Coarse Sand (-No.10 + No.40) : 3.0
Fine Sand (-No.40 + No.200) : 29.8
Silt + Clay (-No.200) : 62.5

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 1.8
Coarse Sand (-No.4 + No.10) : 2.9
Medium Sand (-No.10 + No.40) : 3.0
Fine Sand (-No.40 + No.200) : 29.8
Silt + Clay (-No.200) : 62.5

Approved By : J.S.

Soil No. 20

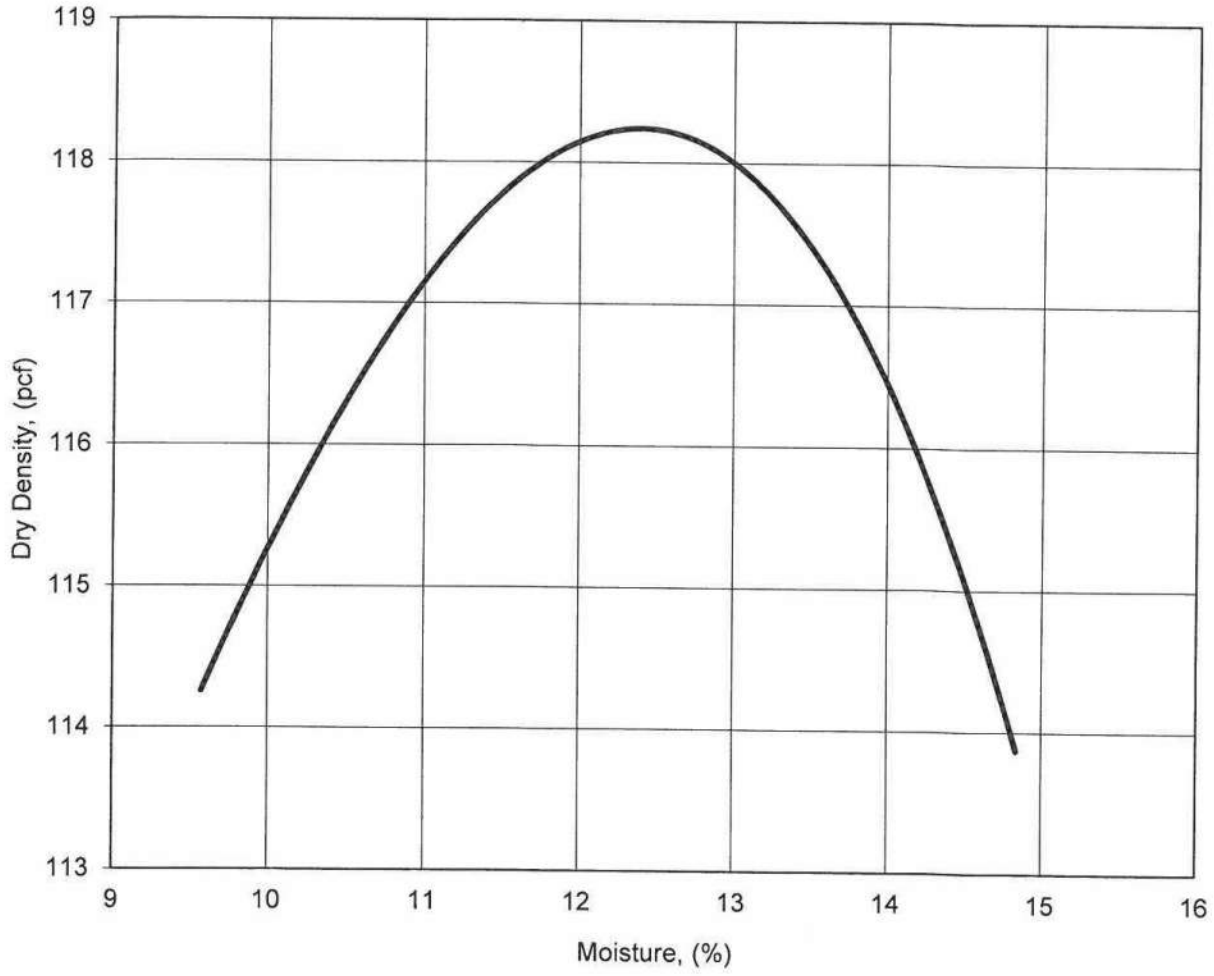
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Red & Gray Sandy Lean Clay

Sample No. : Bag-8
Sample Loc. : Boring No. B-108
Sample Depth : 0.4' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 118.2 pcf

OPTIMUM MOISTURE: 12.4 %

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

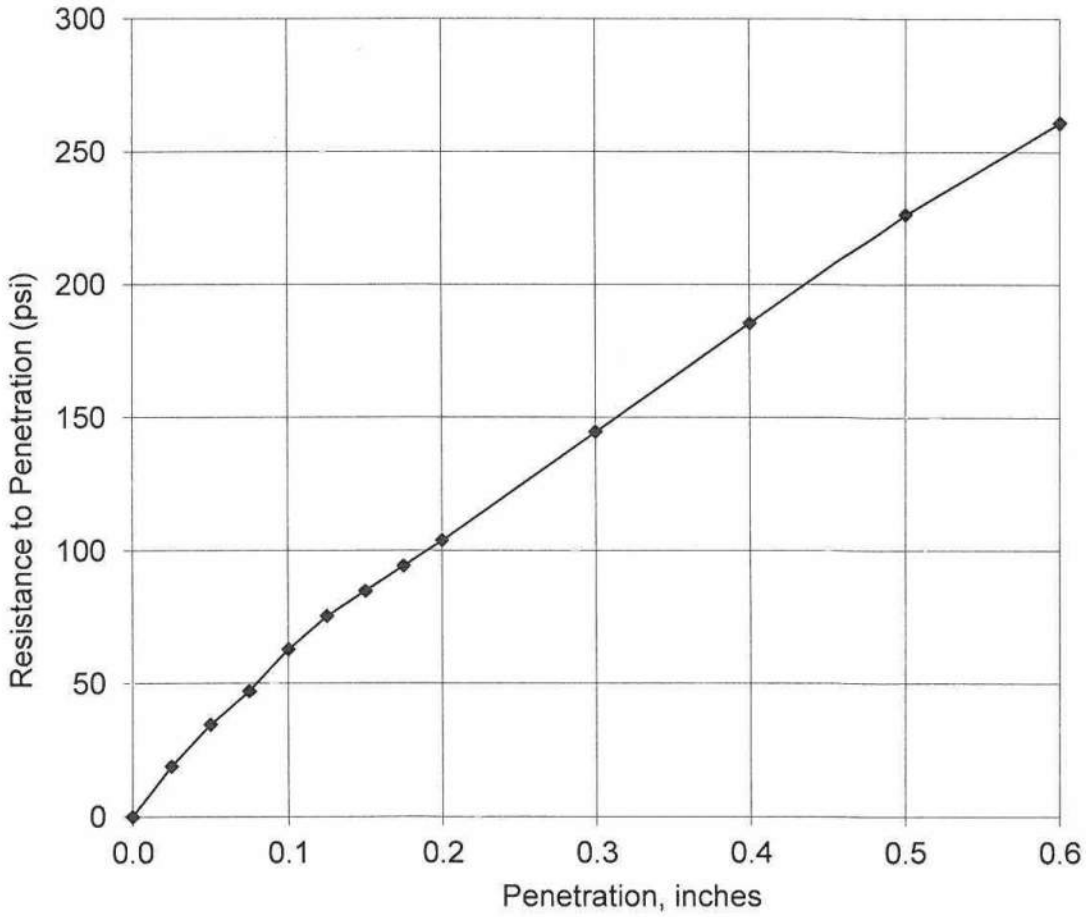
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-8
Project County	: Lonoke	Sample Loc.	: Boring No. B-108
Project State	: Arkansas	Sample Depth	: 0.4' to 5.0'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR|ICA	Date Reported	: 11/3/15
Soil Type	: Brown, Red & Gray Sandy Lean Clay		



Compaction Effort = 40 Blows per layer
Percent Compacted = 98.4
Percent Swell = 0.11

C.B.R. @ 0.1 In. = 6.3
C.B.R. @ 0.2 In. = 6.9*

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Red & Gray Lean Clay with Sand

Sample No. : Bag-9
Sample Loc. : Boring No. B-110
Sample Depth : 0.5' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	96.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	94.2
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	71.5
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} = 0.0102 mm

CBR (AASHTO: T-193) : 1.9
Dry Dens. (AASHTO: T-99; Method (C)) : 113.1 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 14.8 %

Natural Moisture (%) (AASHTO T265) : 17.5
Liquid Limit (AASHTO T89) : 23
Plastic Limit (AASHTO T90) : 15
Plasticity Index : 8
Liquidity Index : 0.29
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (3)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 3.3
Coarse Sand (-No.10 + No.40) : 2.5
Fine Sand (-No.40 + No.200) : 22.7
Silt + Clay (-No.200) : 71.5

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) : 1.9
Medium Sand (-No.10 + No.40) : 2.5
Fine Sand (-No.40 + No.200) : 22.7
Silt + Clay (-No.200) : 71.5

Approved By : J.S.

Soil No. 21

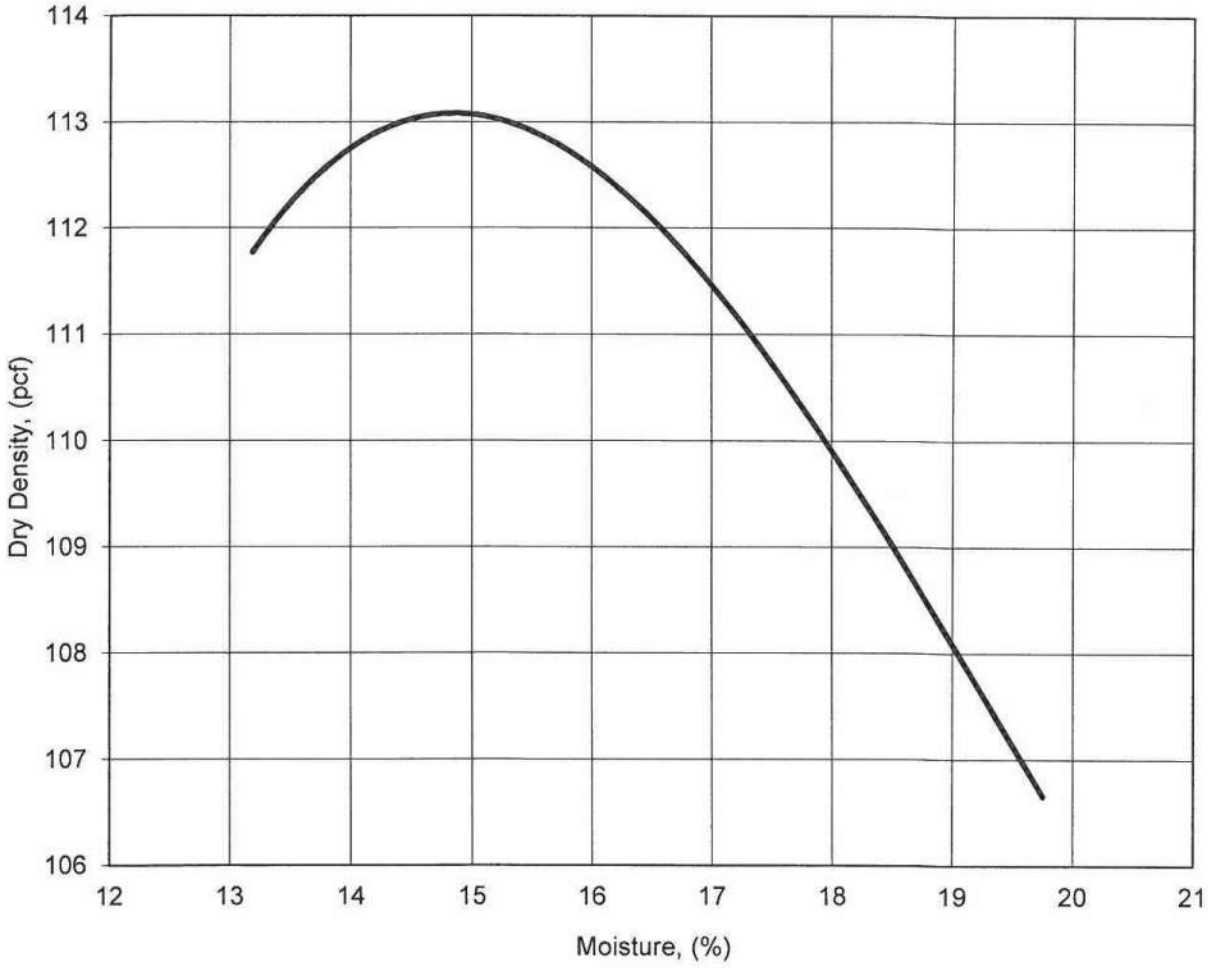
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Red & Gray Lean Clay with Sand

Sample No. : Bag-9
Sample Loc. : Boring No. B-110
Sample Depth : 0.5' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 113.1 pcf

OPTIMUM MOISTURE: 14.8 %

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

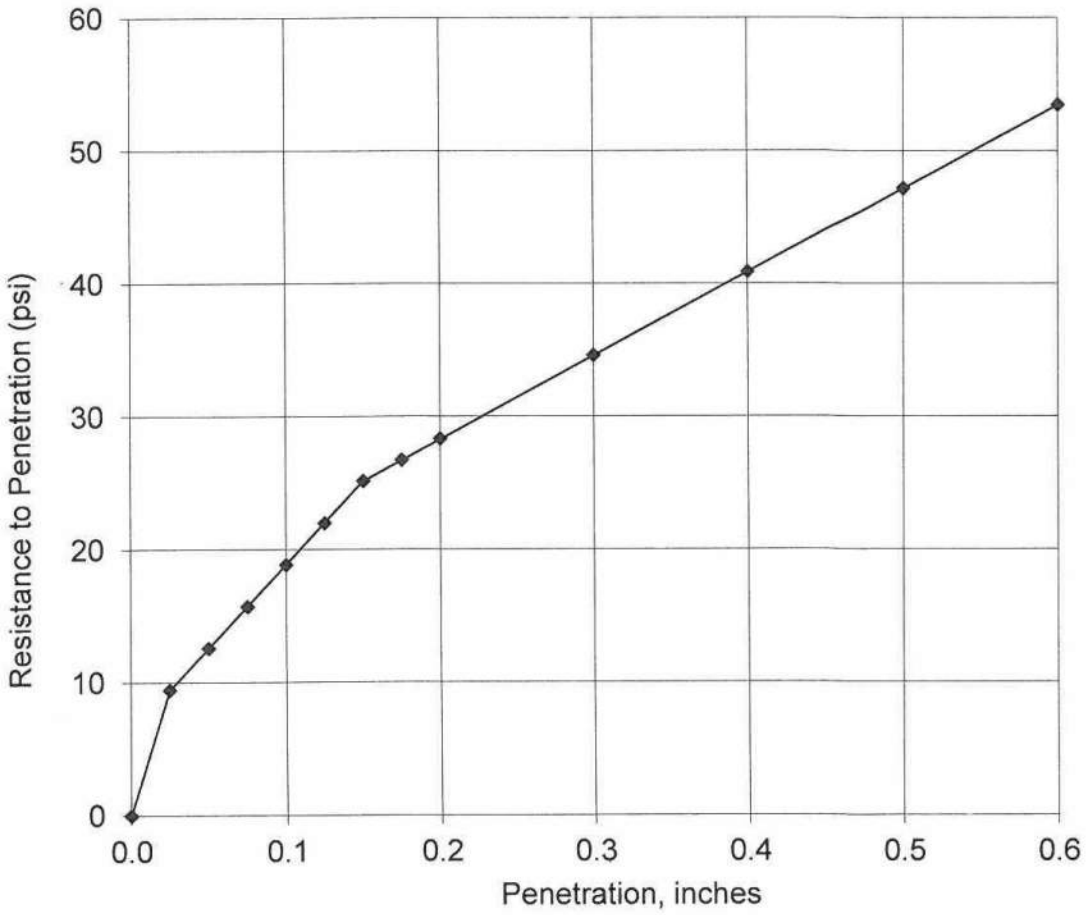
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-9
Project County	: Lonoke	Sample Loc.	: Boring No. B-110
Project State	: Arkansas	Sample Depth	: 0.5' to 5.0'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR | ICA	Date Reported	: 11/3/15
Soil Type	: Brown, Red & Gray Lean Clay with Sand		



Compaction Effort = 40 Blows per layer
Percent Compacted = 97
Percent Swell = 0.39

C.B.R. @ 0.1 In. = 1.9*
C.B.R. @ 0.2 In. = 1.9

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Red & Gray Sandy Lean Clay

Sample No. : Bag-30
Sample Loc. : Boring No. B-112
Sample Depth : 0.5' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	97.6
1/4		6.3	mm	
No.4		4.75	mm	97.6
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	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	70.9
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} = 0.0107 mm

CBR (AASHTO: T-193) : 5.3
Dry Dens. (AASHTO: T-99; Method (C)) : 104.7 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 19.8 %

Natural Moisture (%) (AASHTO T265) : 23.7
Liquid Limit (AASHTO T89) : 46
Plastic Limit (AASHTO T90) : 22
Plasticity Index : 24
Liquidity Index : 0.08
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-7-6 (16)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 3.2
Coarse Sand (-No.10 + No.40) : 6.1
Fine Sand (-No.40 + No.200) : 19.8
Silt + Clay (-No.200) : 70.9

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 2.4
Coarse Sand (-No.4 + No.10) : 0.8
Medium Sand (-No.10 + No.40) : 6.1
Fine Sand (-No.40 + No.200) : 19.8
Silt + Clay (-No.200) : 70.9

Approved By : J.S.

Soil No. 22

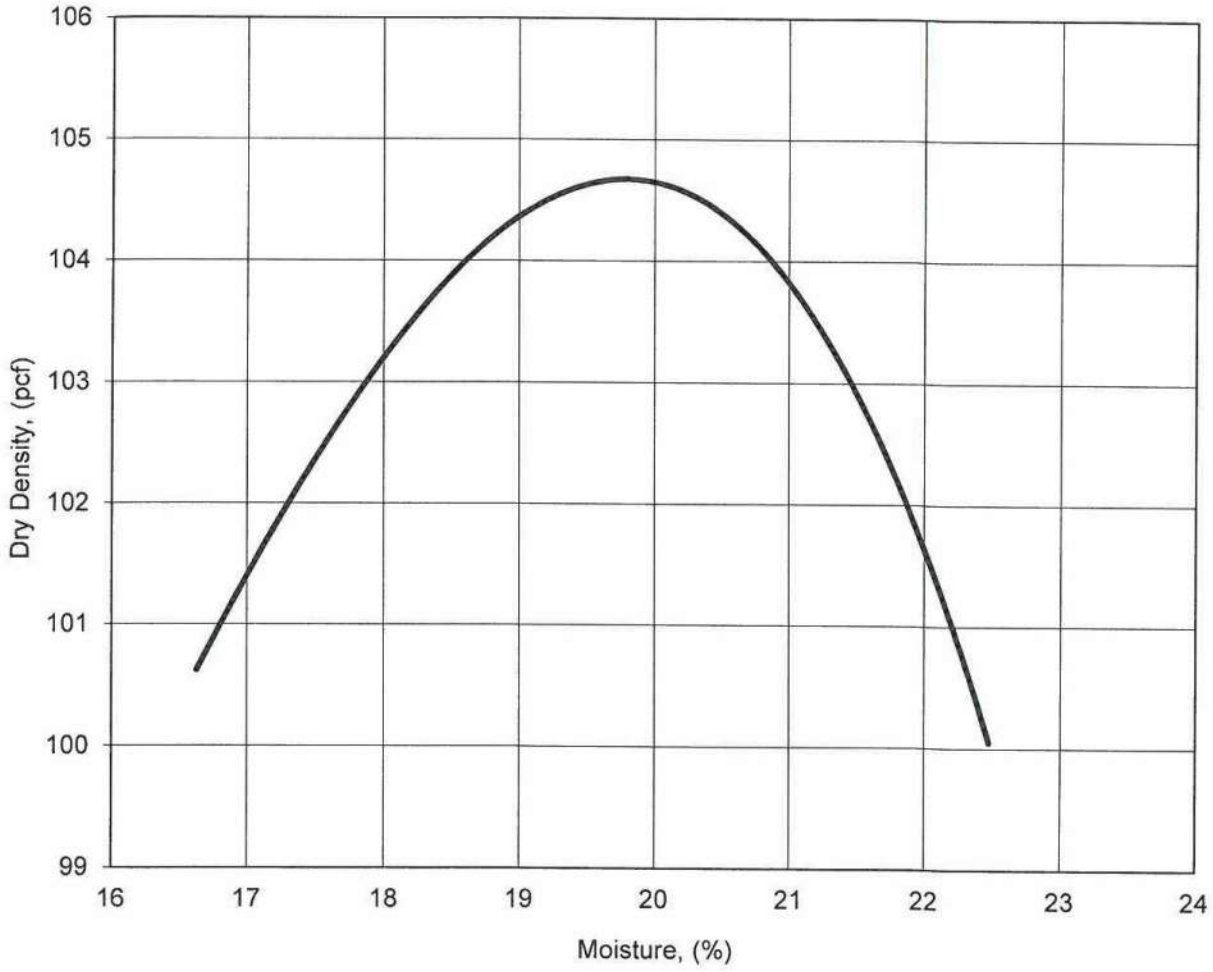
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Red & Gray Sandy Lean Clay

Sample No. : Bag-30
Sample Loc. : Boring No. B-112
Sample Depth : 0.5' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 104.7 pcf

OPTIMUM MOISTURE: 19.8 %

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

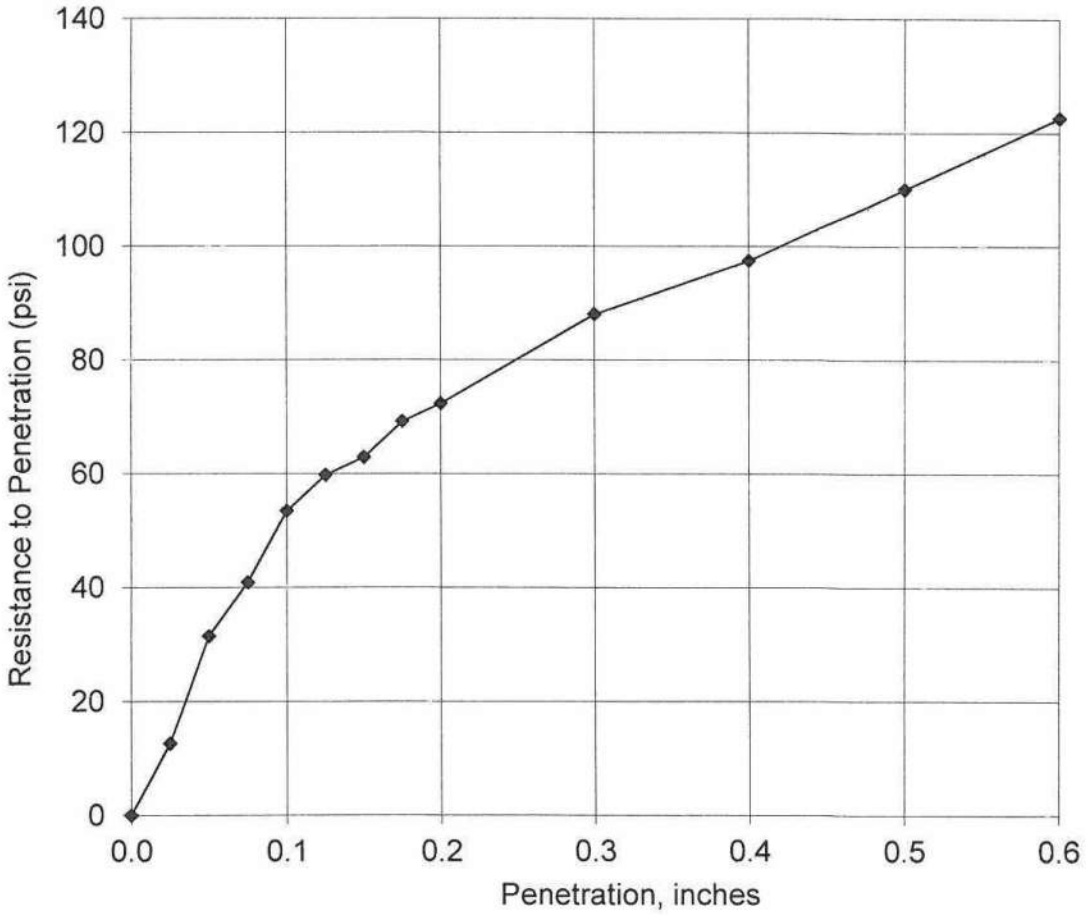
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-30
Project County	: Lonoke	Sample Loc.	: Boring No. B-112
Project State	: Arkansas	Sample Depth	: 0.5' to 5.0'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR| ICA	Date Reported	: 11/3/15
Soil Type	: Brown, Red & Gray Sandy Lean Clay		



Compaction Effort = 40 Blows per layer
Percent Compacted = 99.1
Percent Swell = 1.13

C.B.R. @ 0.1 In. = 5.3*
C.B.R. @ 0.2 In. = 4.8

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Sand

Sample No. : Bag-31
Sample Loc. : Boring No. B-114
Sample Depth : 0.8' to 3.4'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
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	87.6
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	87.6
1/4		6.3	mm	
No.4		4.75	mm	86.7
No.6		3.35	mm	
No.10		2	mm	82.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	77.4
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	49.0
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} = 0.0797 mm

CBR (AASHTO: T-193) : 4.2
Dry Dens. (AASHTO: T-99; Method (C)) : 115.2 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 13.2 %

Natural Moisture (%) (AASHTO T265) : 15.2
Liquid Limit (AASHTO T89) : 19
Plastic Limit (AASHTO T90) : 15
Plasticity Index : 4
Liquidity Index : 0.04
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 17.2
Coarse Sand (-No.10 + No.40) : 5.4
Fine Sand (-No.40 + No.200) : 28.4
Silt + Clay (-No.200) : 49.0

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 12.4
Fine Gravel (-3/4in. + No.4) : 0.9
Coarse Sand (-No.4 + No.10) : 3.9
Medium Sand (-No.10 + No.40) : 5.4
Fine Sand (-No.40 + No.200) : 28.4
Silt + Clay (-No.200) : 49.0

Approved By : J.S.

Soil No. 23

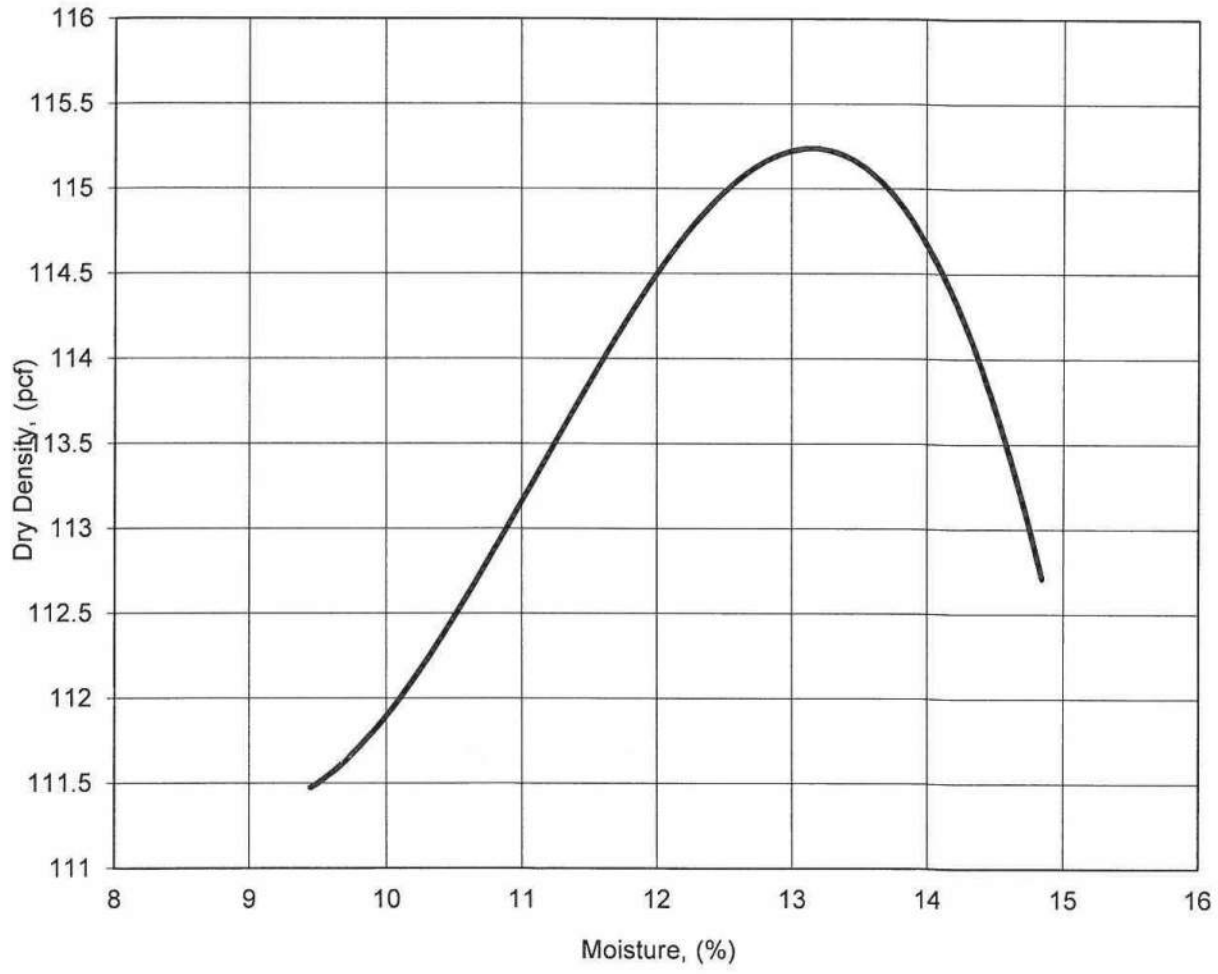
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Sand

Sample No. : Bag-31
Sample Loc. : Boring No. B-114
Sample Depth : 0.8' to 3.4'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 115.2 pcf

OPTIMUM MOISTURE: 13.2 %

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

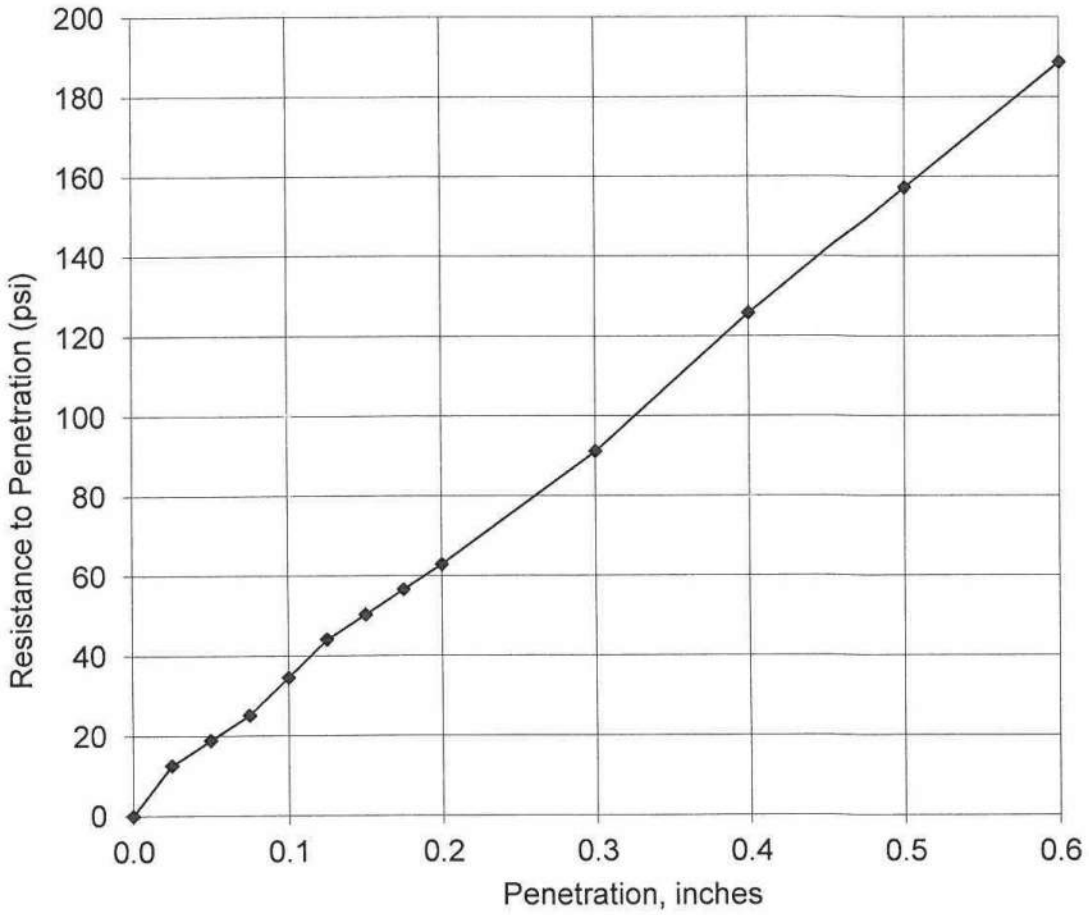
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-31
Project County	: Lonoke	Sample Loc.	: Boring No. B-114
Project State	: Arkansas	Sample Depth	: 0.8' to 3.4'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR|ICA	Date Reported	: 11/3/15
Soil Type	: Brown Silty Sand		



Compaction Effort = 40 Blows per layer
Percent Compacted = 99
Percent Swell = 0.09

C.B.R. @ 0.1 In. = 3.5
C.B.R. @ 0.2 In. = 4.2*

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Red Clayey Sand

Sample No. : Bag-32
Sample Loc. : Boring No. B-114
Sample Depth : 3.4' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	97.7
1/4		6.3	mm	
No.4		4.75	mm	93.9
No.6		3.35	mm	
No.10		2	mm	84.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	73.6
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	40.6
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} = 0.1229 mm

CBR (AASHTO: T-193) : 7.1
Dry Dens. (AASHTO: T-99; Method (C)) : 119.8 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 13.2 %

Natural Moisture (%) (AASHTO T265) : 13.4
Liquid Limit (AASHTO T89) : 24
Plastic Limit (AASHTO T90) : 15
Plasticity Index : 9
Liquidity Index : -0.19
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 15.5
Coarse Sand (-No.10 + No.40) : 10.9
Fine Sand (-No.40 + No.200) : 33.0
Silt + Clay (-No.200) : 40.6

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) : 9.4
Medium Sand (-No.10 + No.40) : 10.9
Fine Sand (-No.40 + No.200) : 33.0
Silt + Clay (-No.200) : 40.6

Approved By : J.S.

Soil No. 24

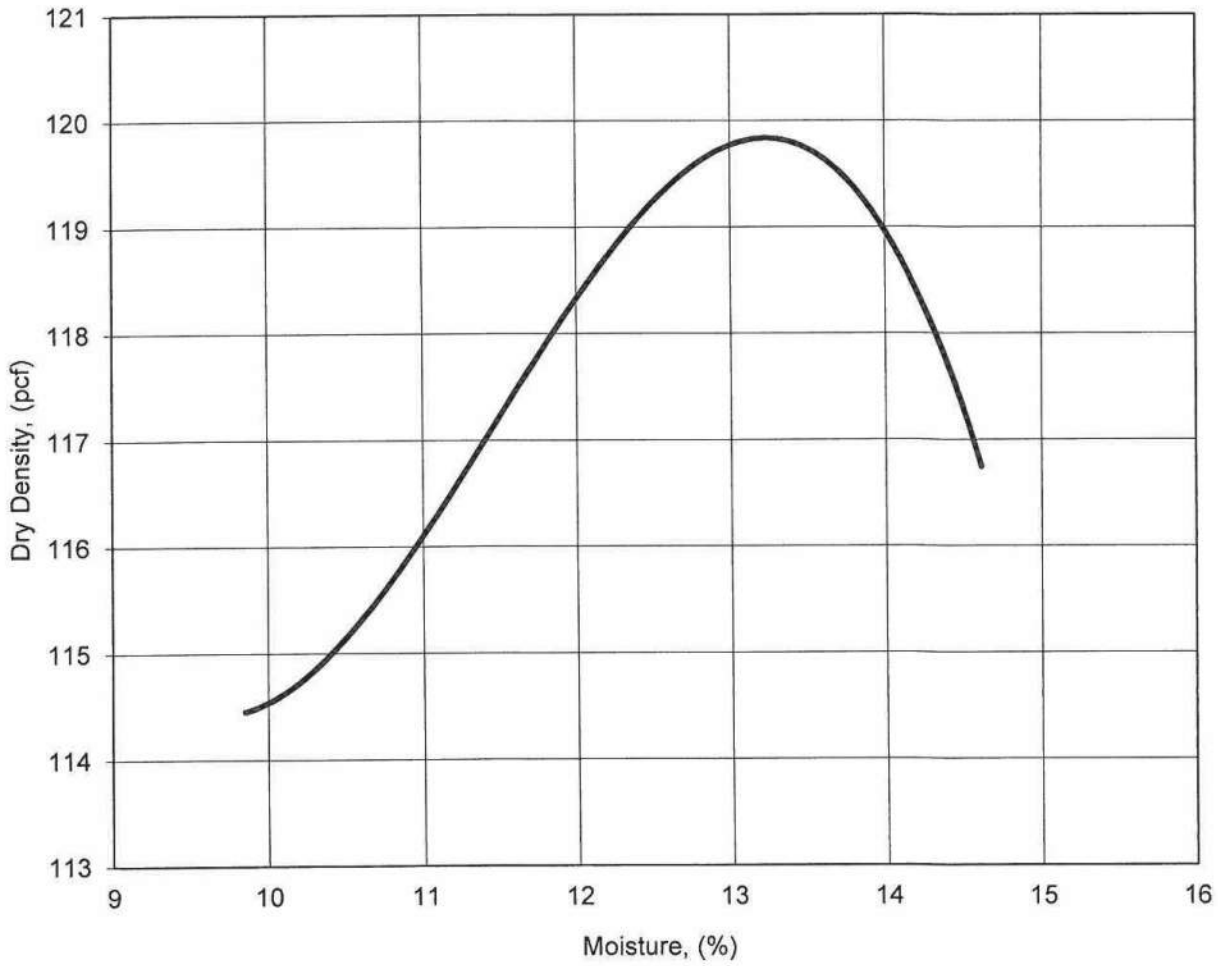
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Red Clayey Sand

Sample No. : Bag-32
Sample Loc. : Boring No. B-114
Sample Depth : 3.4' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 119.8 pcf

OPTIMUM MOISTURE: 13.2 %

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

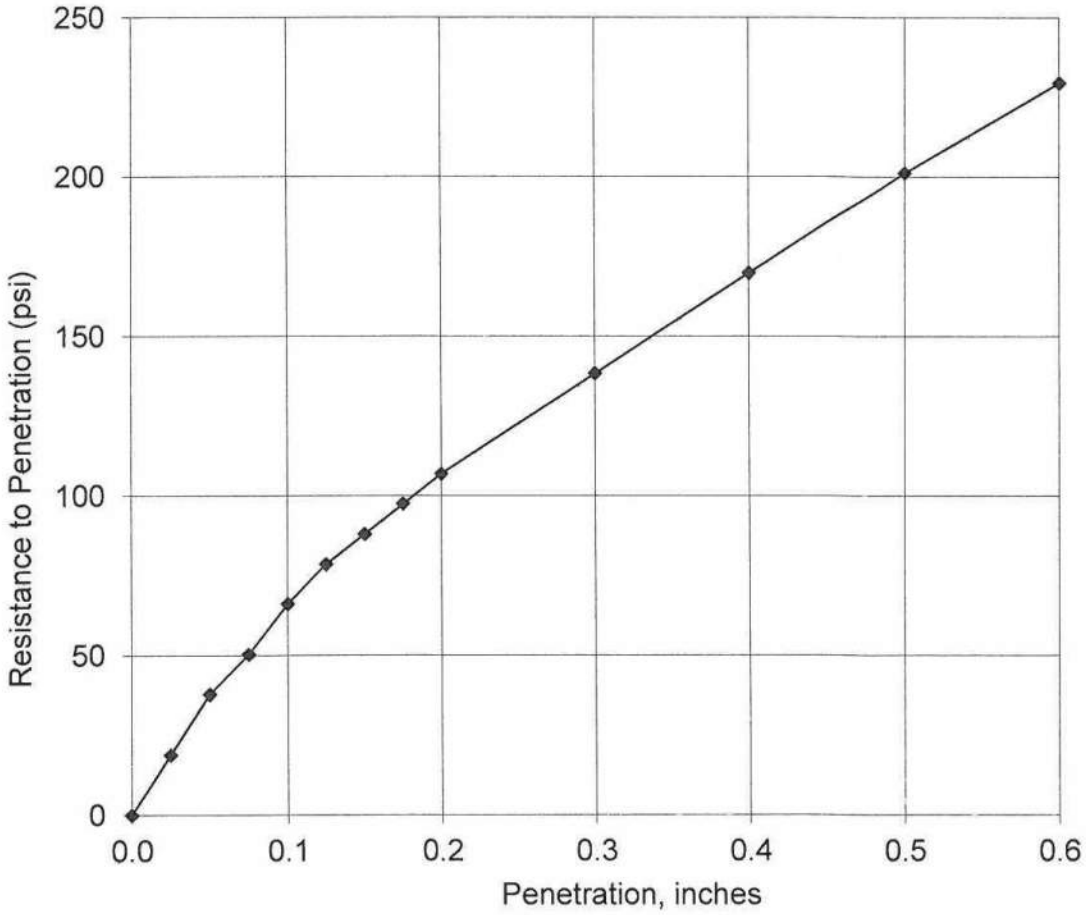
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-32
Project County	: Lonoke	Sample Loc.	: Boring No. B-114
Project State	: Arkansas	Sample Depth	: 3.4' to 5.0'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR | ICA	Date Reported	: 11/3/15
Soil Type	: Red Clayey Sand		



Compaction Effort = 40 Blows per layer
Percent Compacted = 99.7
Percent Swell = 0.15

C.B.R. @ 0.1 In. = 6.6
C.B.R. @ 0.2 In. = 7.1*

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Red & Gray Sandy Silty Clay

Sample No. : Bag-23
Sample Loc. : Boring No. B-117
Sample Depth : 0.4' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	97.4
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	85.5
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	64.5
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} = 0.0169 mm

CBR (AASHTO: T-193) : 3.8
Dry Dens. (AASHTO: T-99; Method (C)) : 115.5 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 13.6 %

Natural Moisture (%) (AASHTO T265) : 21.0
Liquid Limit (AASHTO T89) : 23
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 6
Liquidity Index : 0.61
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (1)
ASTM Classification: D2487 : CL-ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 9.8
Coarse Sand (-No.10 + No.40) : 4.7
Fine Sand (-No.40 + No.200) : 21.0
Silt + Clay (-No.200) : 64.5

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 2.6
Coarse Sand (-No.4 + No.10) : 7.2
Medium Sand (-No.10 + No.40) : 4.7
Fine Sand (-No.40 + No.200) : 21.0
Silt + Clay (-No.200) : 64.5

Approved By : J.S.

Soil No. 25

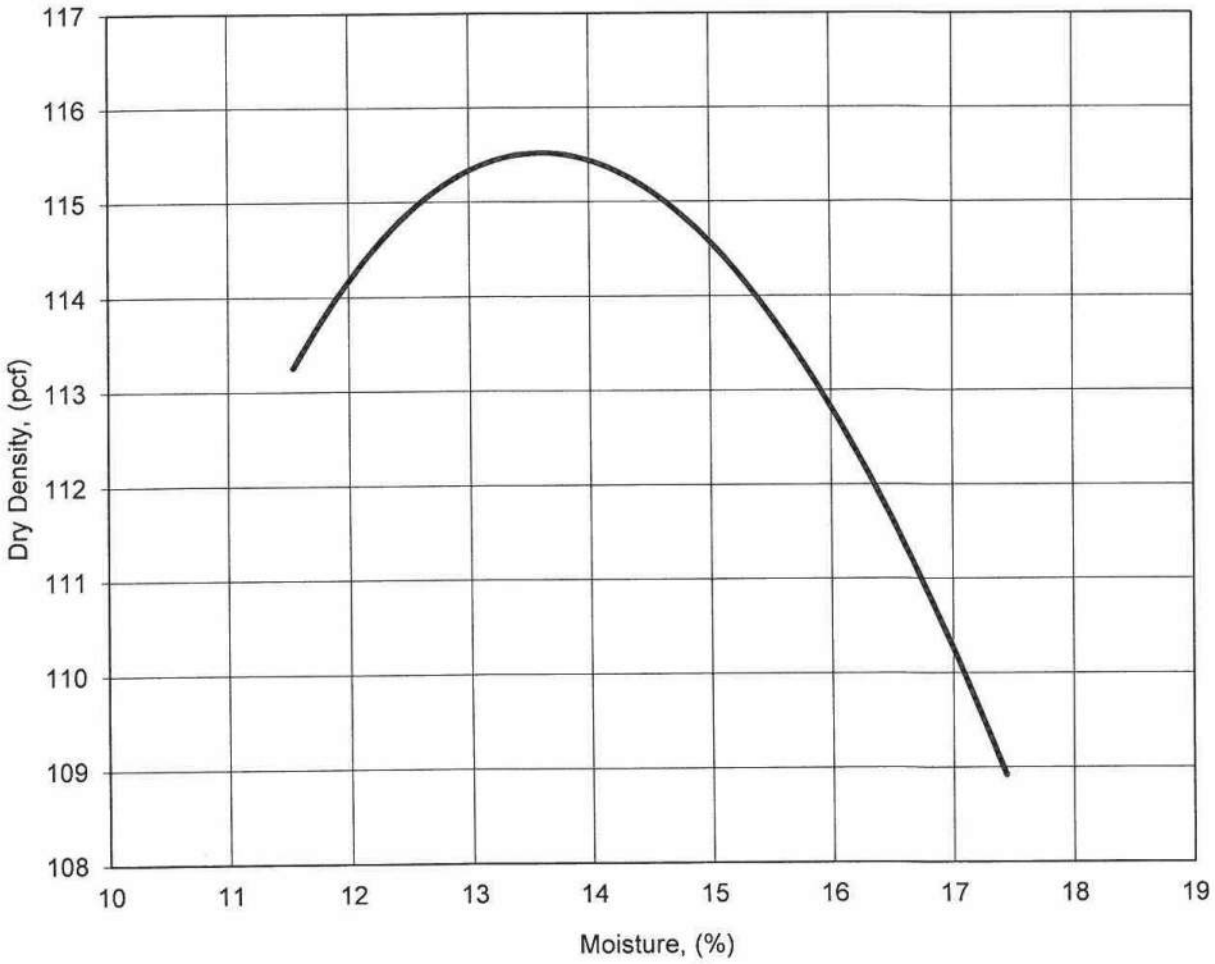
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Red & Gray Sandy Silty Clay

Sample No. : Bag-23
Sample Loc. : Boring No. B-117
Sample Depth : 0.4' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 115.5 pcf

OPTIMUM MOISTURE: 13.6 %

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

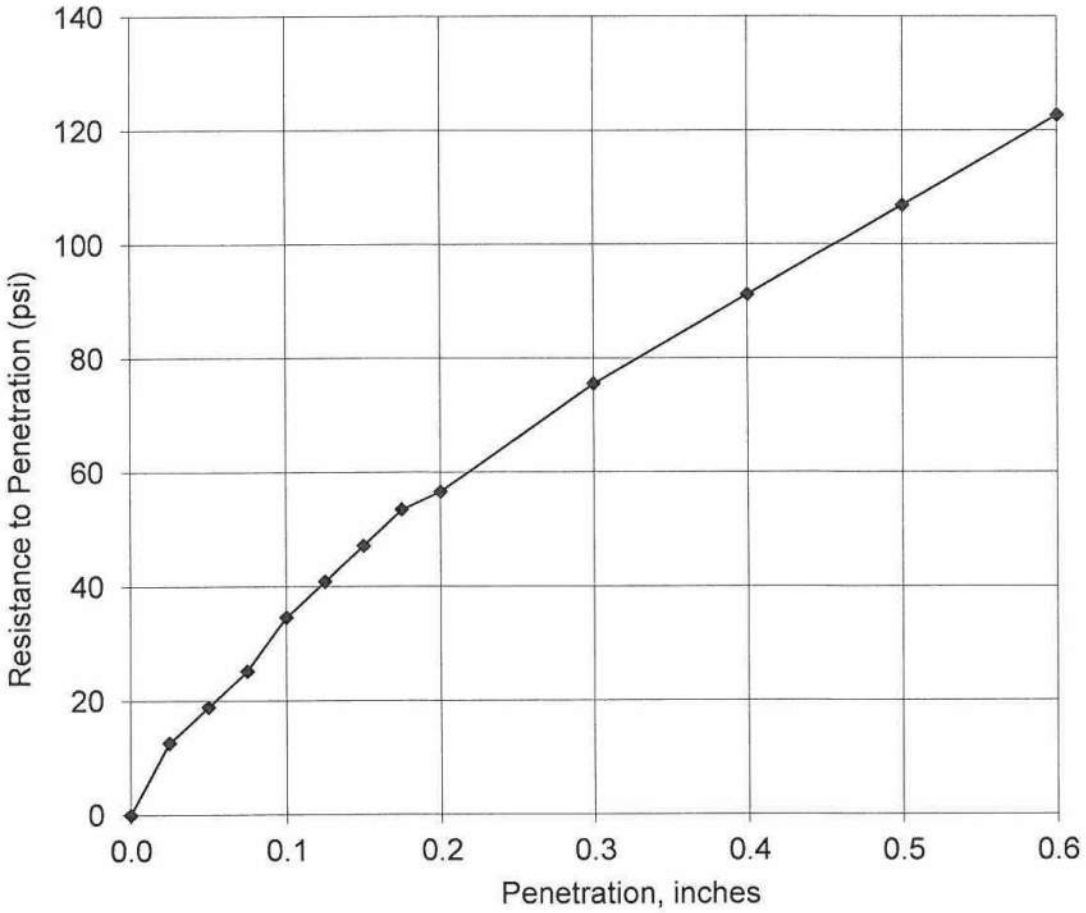
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-23
Project County	: Lonoke	Sample Loc.	: Boring No. B-117
Project State	: Arkansas	Sample Depth	: 0.4' to 5.0'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR | ICA	Date Reported	: 11/3/15
Soil Type	: Brown, Red & Gray Sandy Silty Clay		



Compaction Effort = 40 Blows per layer
Percent Compacted = 99.3
Percent Swell = 0.13

C.B.R. @ 0.1 In. = 3.5
C.B.R. @ 0.2 In. = 3.8*

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Red & Gray Clayey Sand

Sample No. : Bag-22
Sample Loc. : Boring No. B-119
Sample Depth : 0.6' to 4.5'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	97.2
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	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} = 0.1206 mm

CBR (AASHTO: T-193) : 3.8
Dry Dens. (AASHTO: T-99; Method (A)) : 105.7 pcf
Opt. Moist. (AASHTO: T-99; Method (A)) : 19 %

Natural Moisture (%) (AASHTO T265) : 20.0
Liquid Limit (AASHTO T89) : 40
Plastic Limit (AASHTO T90) : 21
Plasticity Index : 19
Liquidity Index : -0.05
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-6 (2)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.1
Coarse Sand (-No.10 + No.40) : 2.7
Fine Sand (-No.40 + No.200) : 65.0
Silt + Clay (-No.200) : 32.2

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.1
Medium Sand (-No.10 + No.40) : 2.7
Fine Sand (-No.40 + No.200) : 65.0
Silt + Clay (-No.200) : 32.2

Approved By : J.S.

Soil No. 26

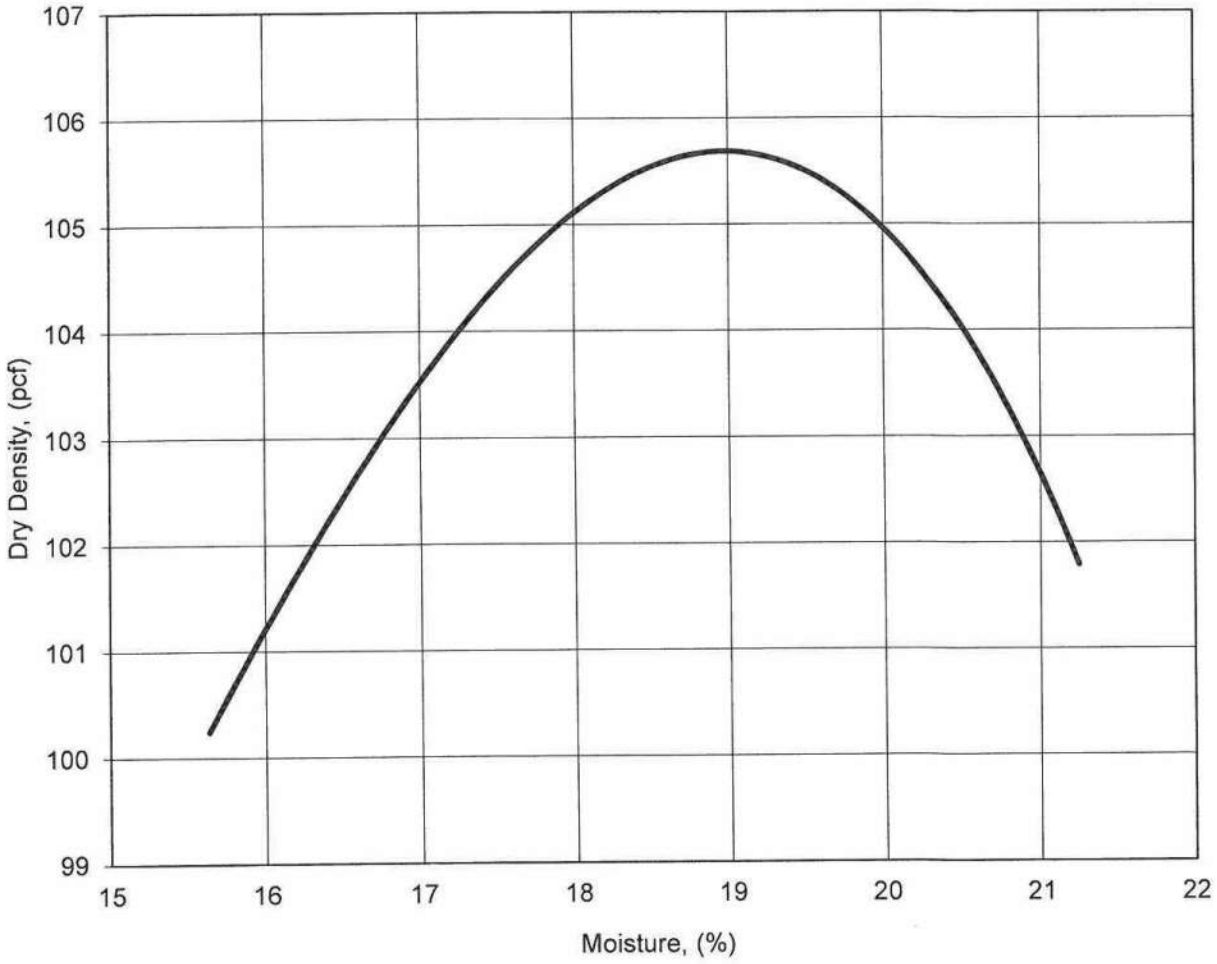
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Red & Gray Clayey Sand

Sample No. : Bag-22
Sample Loc. : Boring No. B-119
Sample Depth : 0.6' to 4.5'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 105.7 pcf

OPTIMUM MOISTURE: 19 %

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

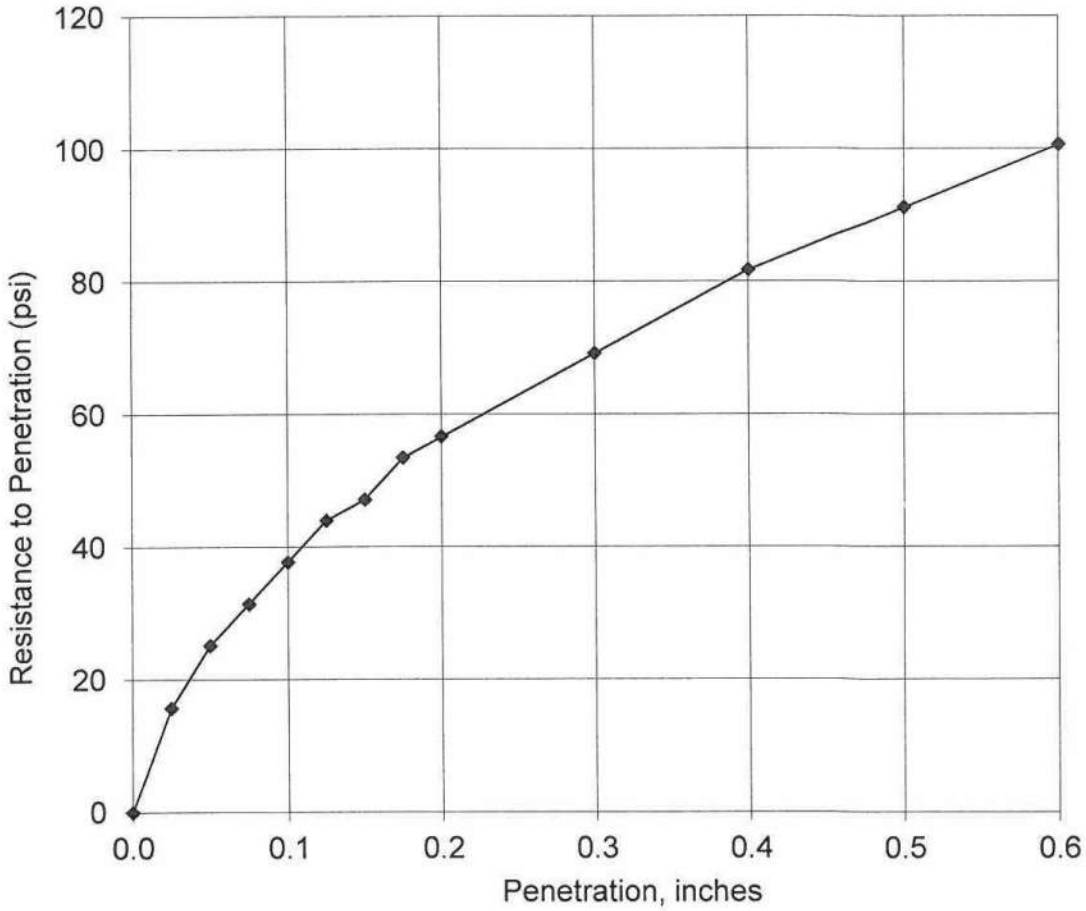
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-22
Project County	: Lonoke	Sample Loc.	: Boring No. B-119
Project State	: Arkansas	Sample Depth	: 0.6' to 4.5'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR | ICA	Date Reported	: 11/3/15
Soil Type	: Brown, Red & Gray Clayey Sand		



Compaction Effort = 40 Blows per layer
Percent Compacted = 99.1
Percent Swell = 0.61

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

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Sand with Gravel

Sample No. : Bag-20
Sample Loc. : Boring No. B-120
Sample Depth : 0.4' to 1.8'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
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	83.9
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	82.4
1/4		6.3	mm	
No.4		4.75	mm	69.2
No.6		3.35	mm	
No.10		2	mm	59.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	52.5
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	31.7
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} = 0.345 mm

CBR (AASHTO: T-193) : 10.9
Dry Dens. (AASHTO: T-99; Method (C)) : 121.1 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 11 %

Natural Moisture (%) (AASHTO T265) : 6.1
Liquid Limit (AASHTO T89) : 23
Plastic Limit (AASHTO T90) : 19
Plasticity Index : 4
Liquidity Index : -3.19
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 40.3
Coarse Sand (-No.10 + No.40) : 7.2
Fine Sand (-No.40 + No.200) : 20.8
Silt + Clay (-No.200) : 31.7

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 16.1
Fine Gravel (-3/4in. + No.4) : 14.7
Coarse Sand (-No.4 + No.10) : 9.5
Medium Sand (-No.10 + No.40) : 7.2
Fine Sand (-No.40 + No.200) : 20.8
Silt + Clay (-No.200) : 31.7

Approved By : J.S.

Soil No. 27

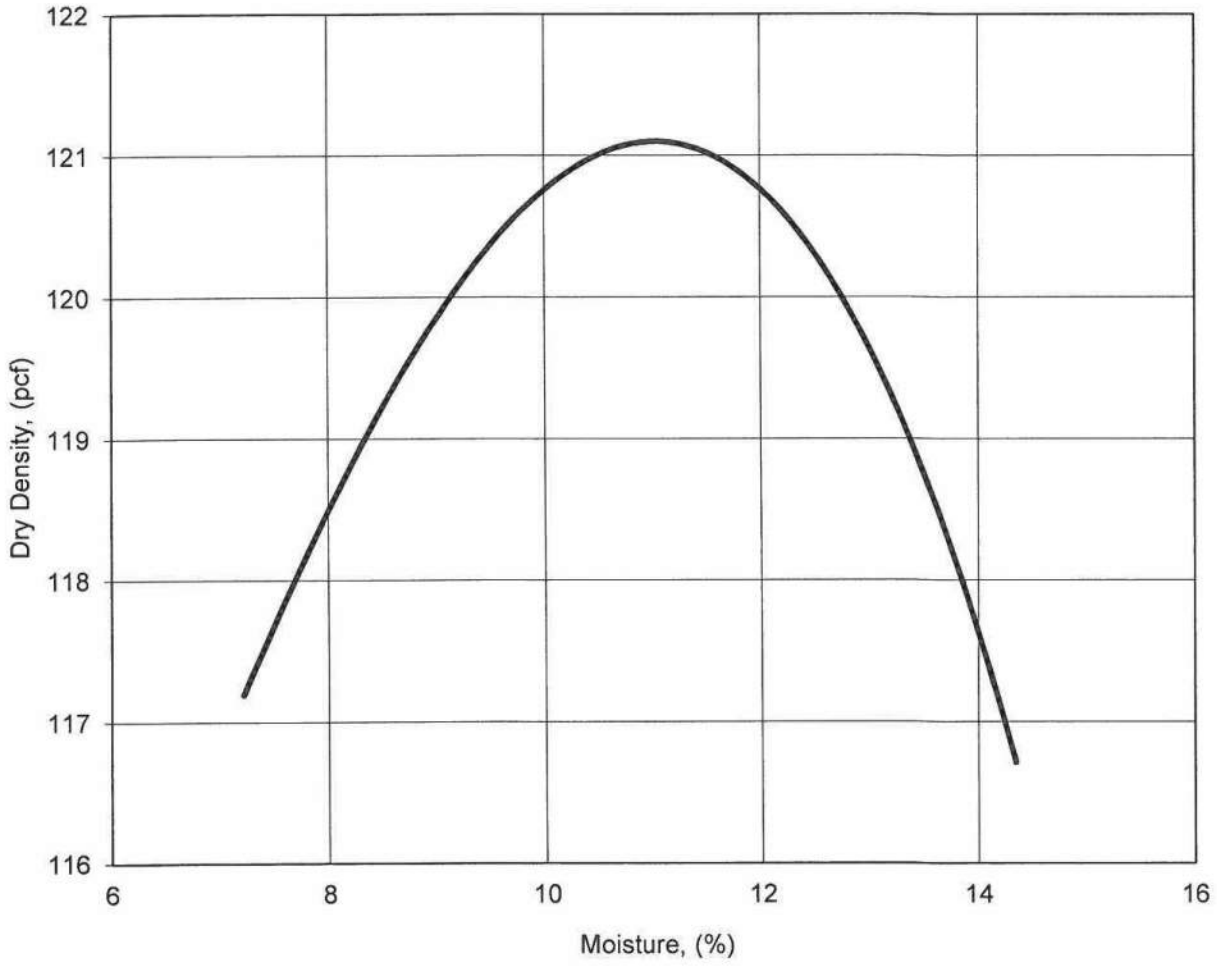
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Sand with Gravel

Sample No. : Bag-20
Sample Loc. : Boring No. B-120
Sample Depth : 0.4' to 1.8'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 121.1 pcf

OPTIMUM MOISTURE: 11 %

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

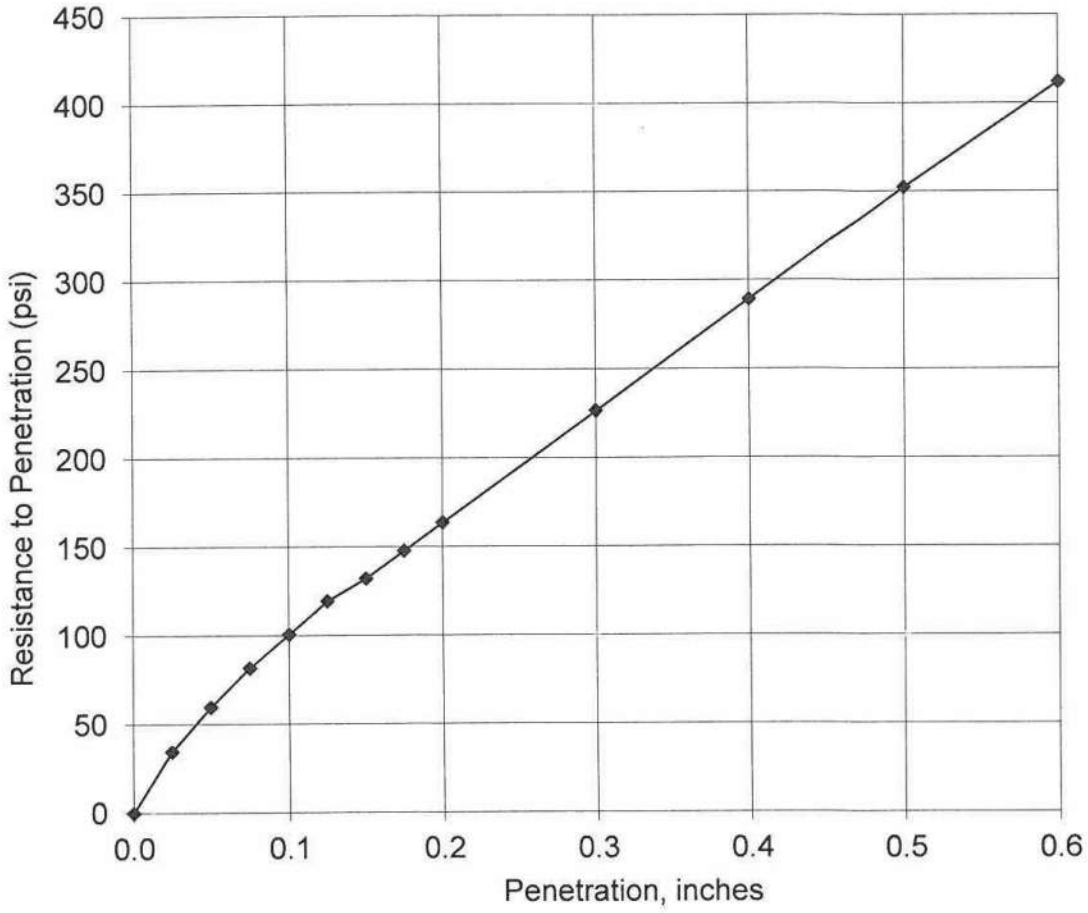
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-20
Project County	: Lonoke	Sample Loc.	: Boring No. B-120
Project State	: Arkansas	Sample Depth	: 0.4' to 1.8'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR | ICA	Date Reported	: 11/3/15
Soil Type	: Brown Silty Sand with Gravel		



Compaction Effort = 40 Blows per layer
Percent Compacted = 99.4
Percent Swell = 0.11

C.B.R. @ 0.1 In. = 10.1
C.B.R. @ 0.2 In. = 10.9*

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Sandy Silt

Sample No. : Bag-21
Sample Loc. : Boring No. B-121
Sample Depth : 0.4' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	97.1

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	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} = 0.0249 mm

CBR (AASHTO: T-193) : 2.9
Dry Dens. (AASHTO: T-99; Method (C)) : 116.3 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 13.5 %

Natural Moisture (%) (AASHTO T265) : 22.5
Liquid Limit (AASHTO T89) : 20
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 4
Liquidity Index : 1.52
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 2.9
Coarse Sand (-No.10 + No.40) : 4.7
Fine Sand (-No.40 + No.200) : 32.4
Silt + Clay (-No.200) : 60.0

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) : 2.4
Medium Sand (-No.10 + No.40) : 4.7
Fine Sand (-No.40 + No.200) : 32.4
Silt + Clay (-No.200) : 60.0

Approved By : J.S.

Soil No. 28

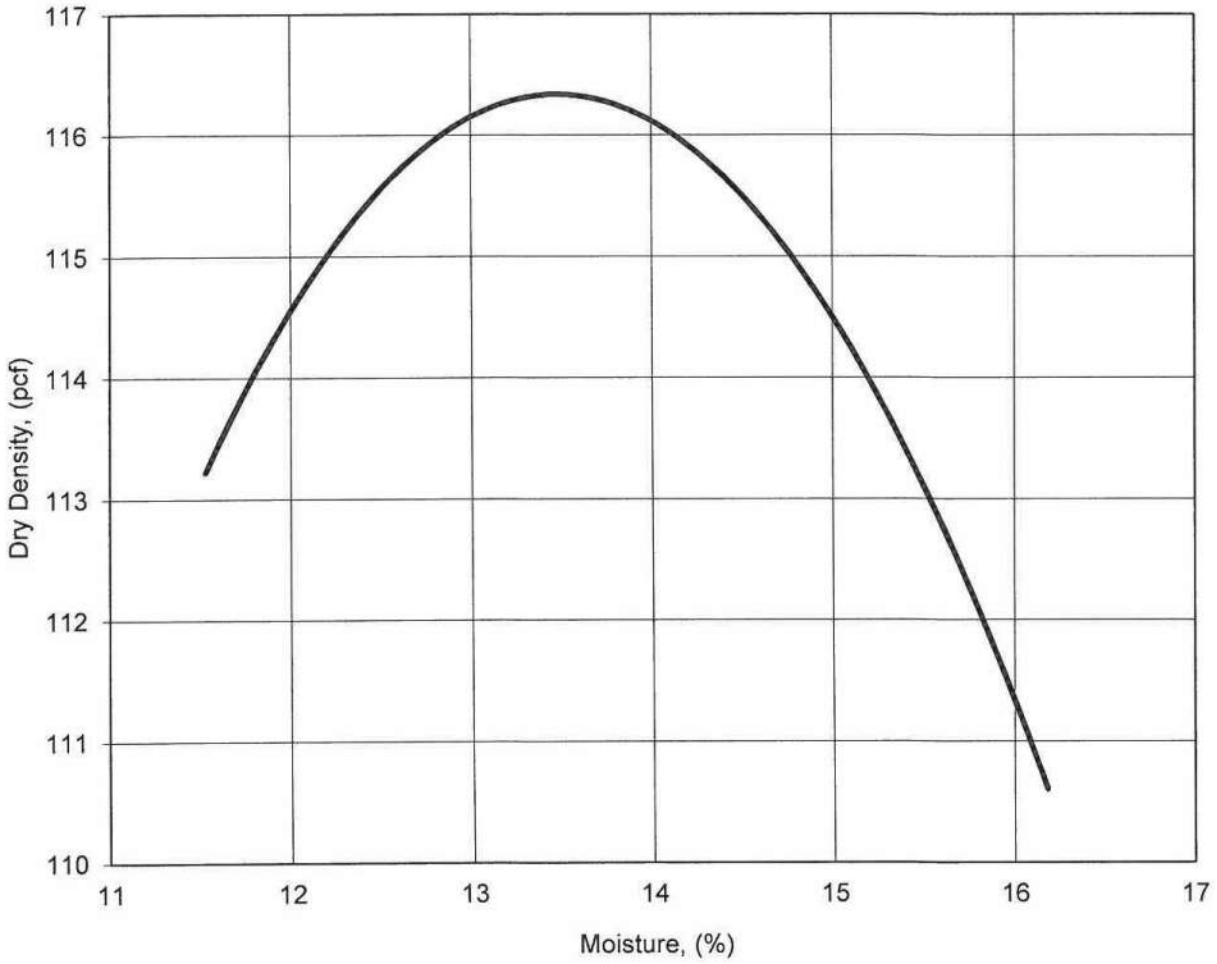
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Sandy Silt

Sample No. : Bag-21
Sample Loc. : Boring No. B-121
Sample Depth : 0.4' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 116.3 pcf

OPTIMUM MOISTURE: 13.5 %

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

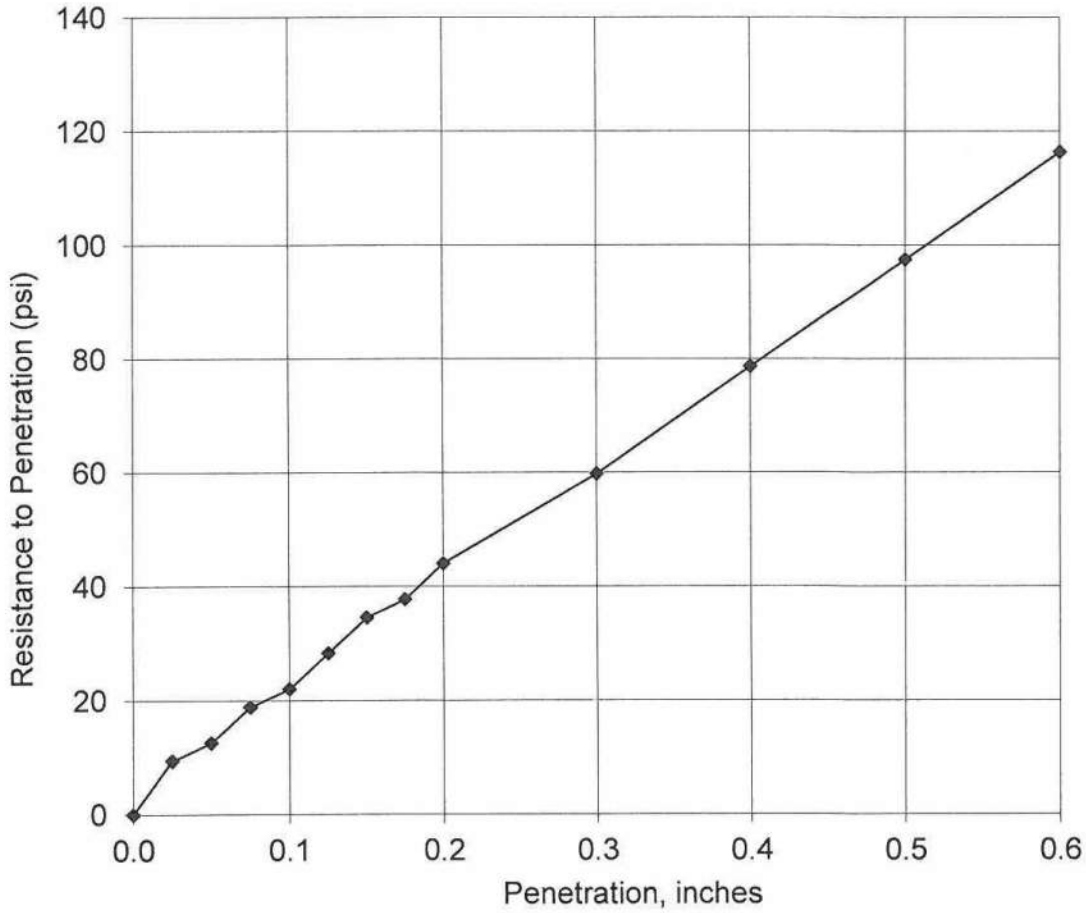
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-21
Project County	: Lonoke	Sample Loc.	: Boring No. B-121
Project State	: Arkansas	Sample Depth	: 0.4' to 5.0'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR | ICA	Date Reported	: 11/3/15
Soil Type	: Brown Sandy Silt		



Compaction Effort = 40 Blows per layer
Percent Compacted = 98
Percent Swell = 0.44

C.B.R. @ 0.1 In. = 2.2
C.B.R. @ 0.2 In. = 2.9*

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Light Brown Clayey Sand with Gravel

Sample No. : Bag-3
Sample Loc. : Boring No. B-122
Sample Depth : 0.0' to 3.7'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
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	96.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	82.1
1/4		6.3	mm	
No.4		4.75	mm	74.0
No.6		3.35	mm	
No.10		2	mm	65.1

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	42.8
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} = 0.196 mm

CBR (AASHTO: T-193) : 1.9
Dry Dens. (AASHTO: T-99; Method (C)) : 120.1 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 9.6 %

Natural Moisture (%) (AASHTO T265) : 10.8
Liquid Limit (AASHTO T89) : 29
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 12
Liquidity Index : -0.55
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-6 (2)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 34.9
Coarse Sand (-No.10 + No.40) : 9.3
Fine Sand (-No.40 + No.200) : 13.0
Silt + Clay (-No.200) : 42.8

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 4.0
Fine Gravel (-3/4in. + No.4) : 22.0
Coarse Sand (-No.4 + No.10) : 8.9
Medium Sand (-No.10 + No.40) : 9.3
Fine Sand (-No.40 + No.200) : 13.0
Silt + Clay (-No.200) : 42.8

Approved By : J.S.

Soil No. 29

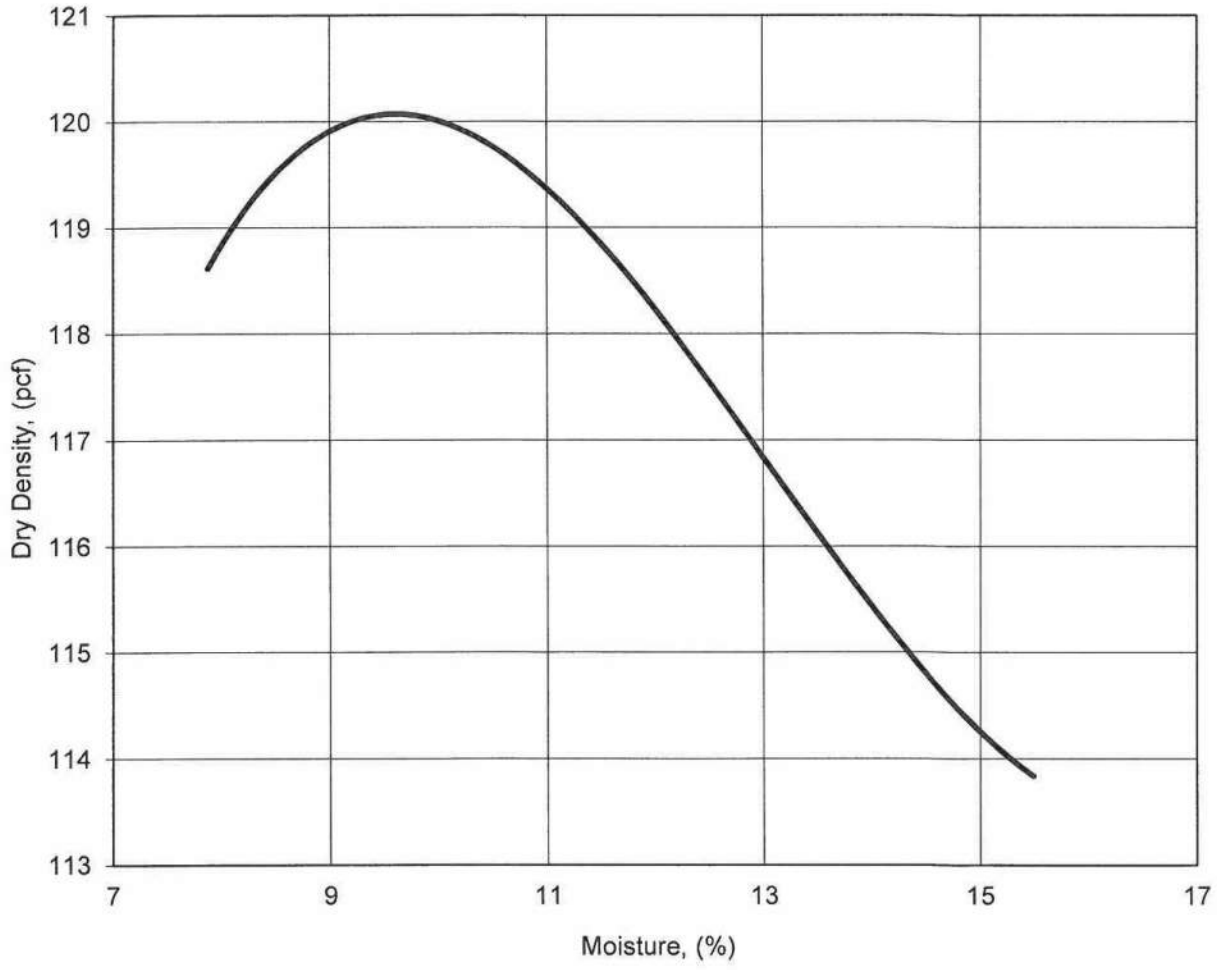
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Light Brown Clayey Sand with Gravel

Sample No. : Bag-3
Sample Loc. : Boring No. B-122
Sample Depth : 0.0' to 3.7'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 120.1 pcf

OPTIMUM MOISTURE: 9.6 %

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

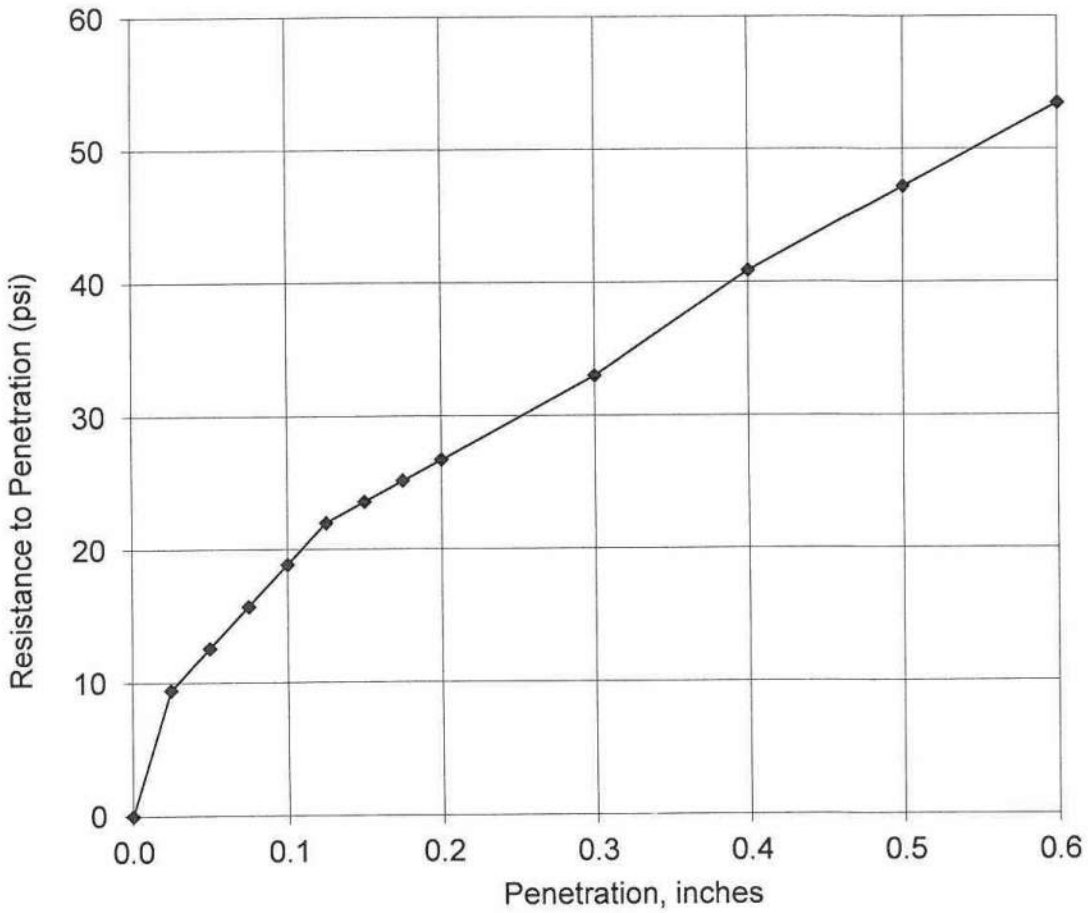
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-3
Project County	: Lonoke	Sample Loc.	: Boring No. B-122
Project State	: Arkansas	Sample Depth	: 0.0' to 3.7'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR | ICA	Date Reported	: 11/3/15
Soil Type	: Light Brown Clayey Sand with Gravel		



Compaction Effort = 40 Blows per layer
Percent Compacted = 97
Percent Swell = 2.66

C.B.R. @ 0.1 In. = 1.9*
C.B.R. @ 0.2 In. = 1.8

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Sandy Silty Clay

Sample No. : Bag-2
Sample Loc. : Boring No. B-123
Sample Depth : 0.0' to 5.0'
Date Tested : 10/14/15
Date Reported : 11/06/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
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	96.6
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	96.6
1/4		6.3	mm	
No.4		4.75	mm	95.3
No.6		3.35	mm	
No.10		2	mm	92.4

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	63.5
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} = 0.0184 mm

CBR (AASHTO: T-193) : 3.4
Dry Dens. (AASHTO: T-99; Method (C)) : 119.3 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 12.3 %

Natural Moisture (%) (AASHTO T265) : 14.6
Liquid Limit (AASHTO T89) : 23
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 7
Liquidity Index : -0.19
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (2)
ASTM Classification: D2487 : CL-ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 7.6
Coarse Sand (-No.10 + No.40) : 4.2
Fine Sand (-No.40 + No.200) : 24.7
Silt + Clay (-No.200) : 63.5

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 3.4
Fine Gravel (-3/4in. + No.4) : 1.3
Coarse Sand (-No.4 + No.10) : 2.9
Medium Sand (-No.10 + No.40) : 4.2
Fine Sand (-No.40 + No.200) : 24.7
Silt + Clay (-No.200) : 63.5

Approved By : J.S.

Soil No. 30

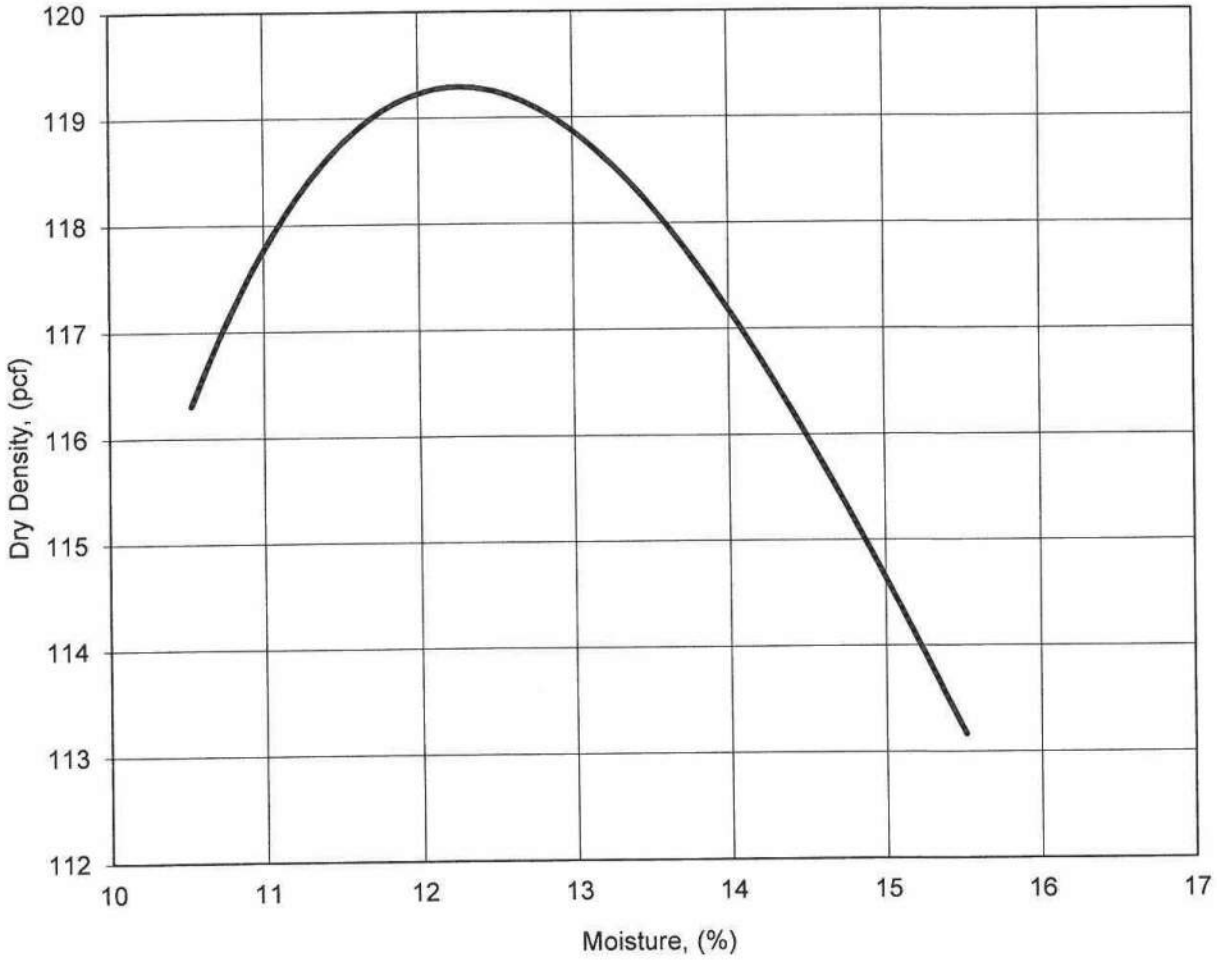
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Sandy Silty Clay

Sample No. : Bag-2
Sample Loc. : Boring No. B-123
Sample Depth : 0.0' to 5.0'
Date Tested : 10/14/15
Date Reported : 11/06/15



MAXIMUM DENSITY: 119.3 pcf

OPTIMUM MOISTURE: 12.3 %

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

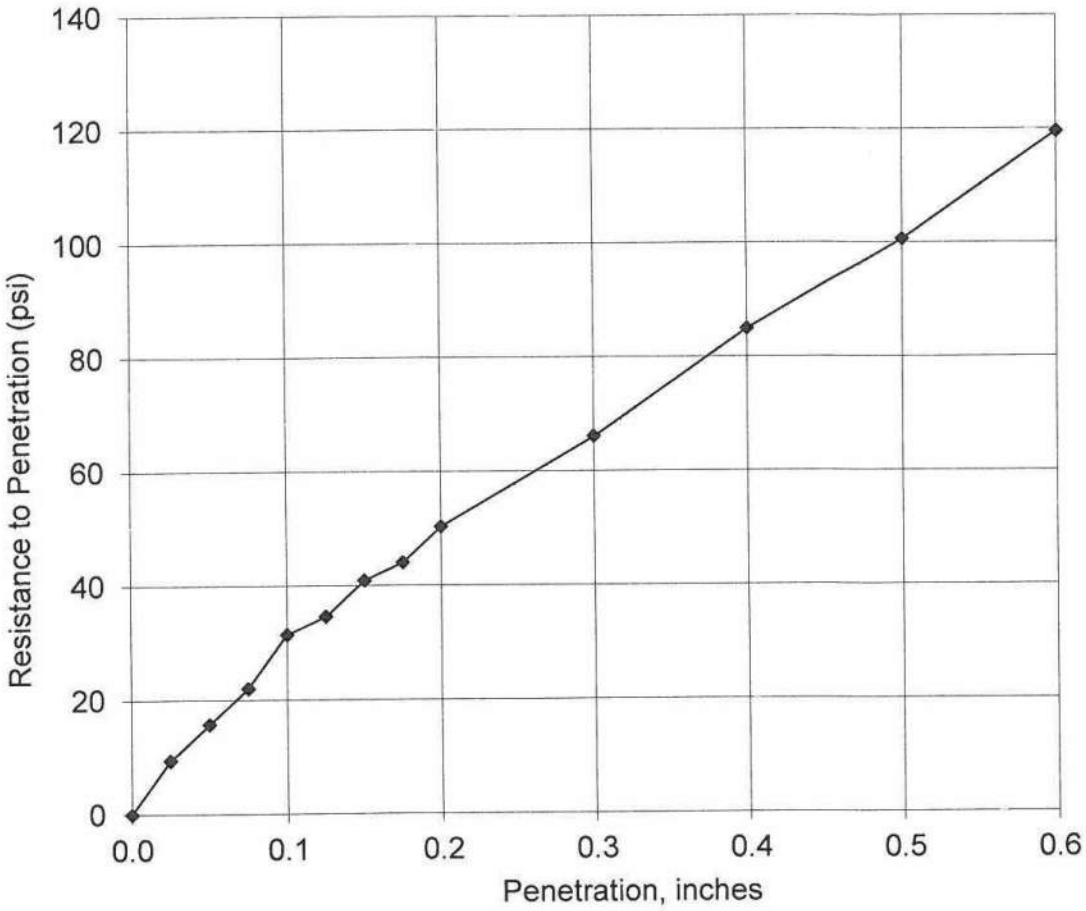
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-2
Project County	: Lonoke	Sample Loc.	: Boring No. B-123
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 251539	Date Tested	: 10/14/15
Submitted By	: HDR | ICA	Date Reported	: 11/6/15
Soil Type	: Brown Sandy Silty Clay		



Compaction Effort = 40 Blows per layer
Percent Compacted = 98.7
Percent Swell = 0.26

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

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Light Brown Silty Sand

Sample No. : Bag-1
Sample Loc. : Boring No. B-124
Sample Depth : 0.0' to 5.0'
Date Tested : 10/14/15
Date Reported : 11/06/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	93.5
1/4		6.3	mm	
No.4		4.75	mm	89.3
No.6		3.35	mm	
No.10		2	mm	81.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	62.3
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	41.5
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} = 0.1524 mm

CBR (AASHTO: T-193) : 8.8
Dry Dens. (AASHTO: T-99; Method (C)) : 119.1 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 12.1 %

Natural Moisture (%) (AASHTO T265) : 18.5
Liquid Limit (AASHTO T89) : 18
Plastic Limit (AASHTO T90) : 15
Plasticity Index : 3
Liquidity Index : 1.03
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 18.2
Coarse Sand (-No.10 + No.40) : 19.5
Fine Sand (-No.40 + No.200) : 20.8
Silt + Clay (-No.200) : 41.5

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 10.7
Coarse Sand (-No.4 + No.10) : 7.5
Medium Sand (-No.10 + No.40) : 19.5
Fine Sand (-No.40 + No.200) : 20.8
Silt + Clay (-No.200) : 41.5

Approved By : J.S.

Soil No. 31

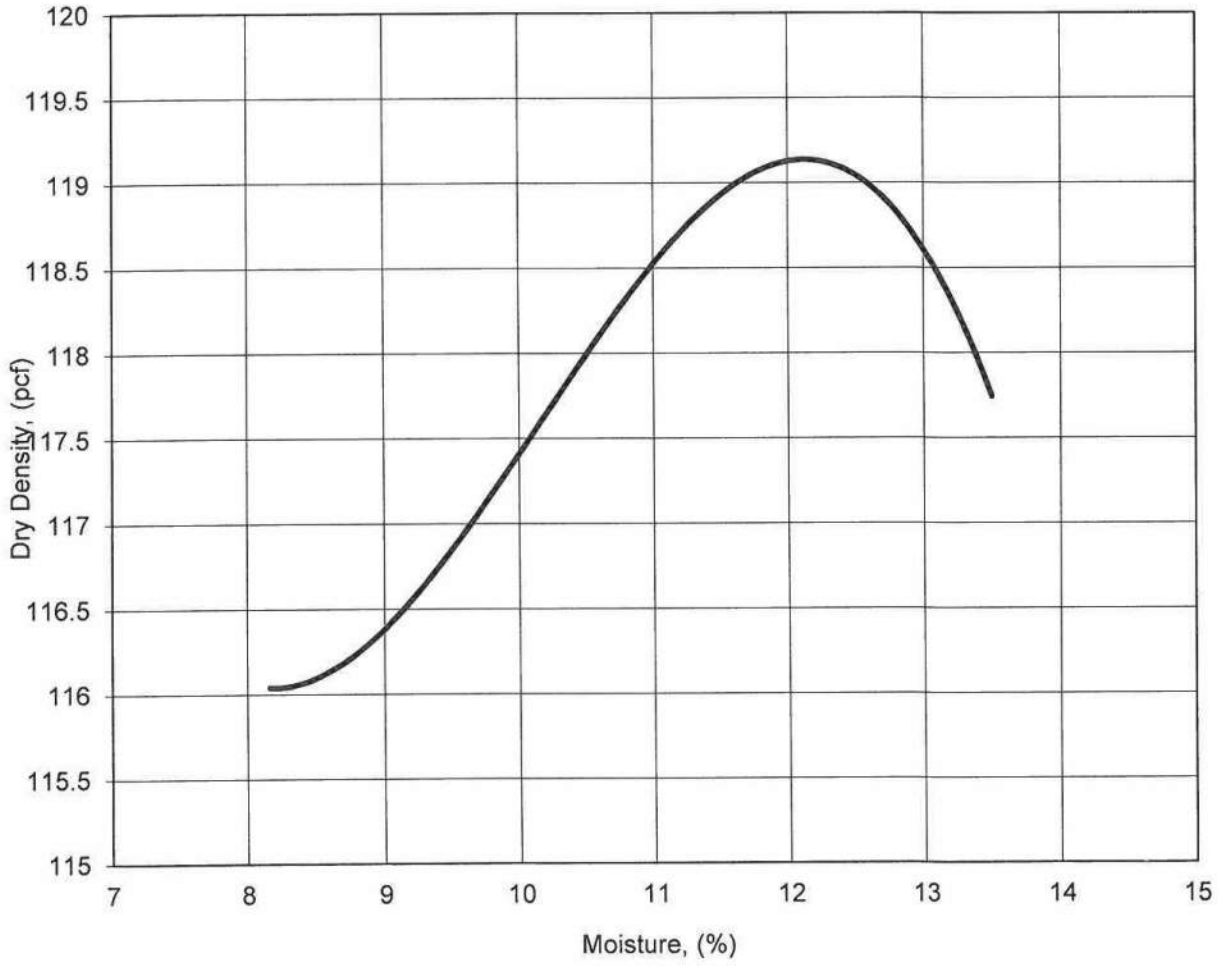
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Light Brown Silty Sand

Sample No. : Bag-1
Sample Loc. : Boring No. B-124
Sample Depth : 0.0' to 5.0'
Date Tested : 10/14/15
Date Reported : 11/06/15



MAXIMUM DENSITY: 119.1 pcf

OPTIMUM MOISTURE: 12.1 %

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

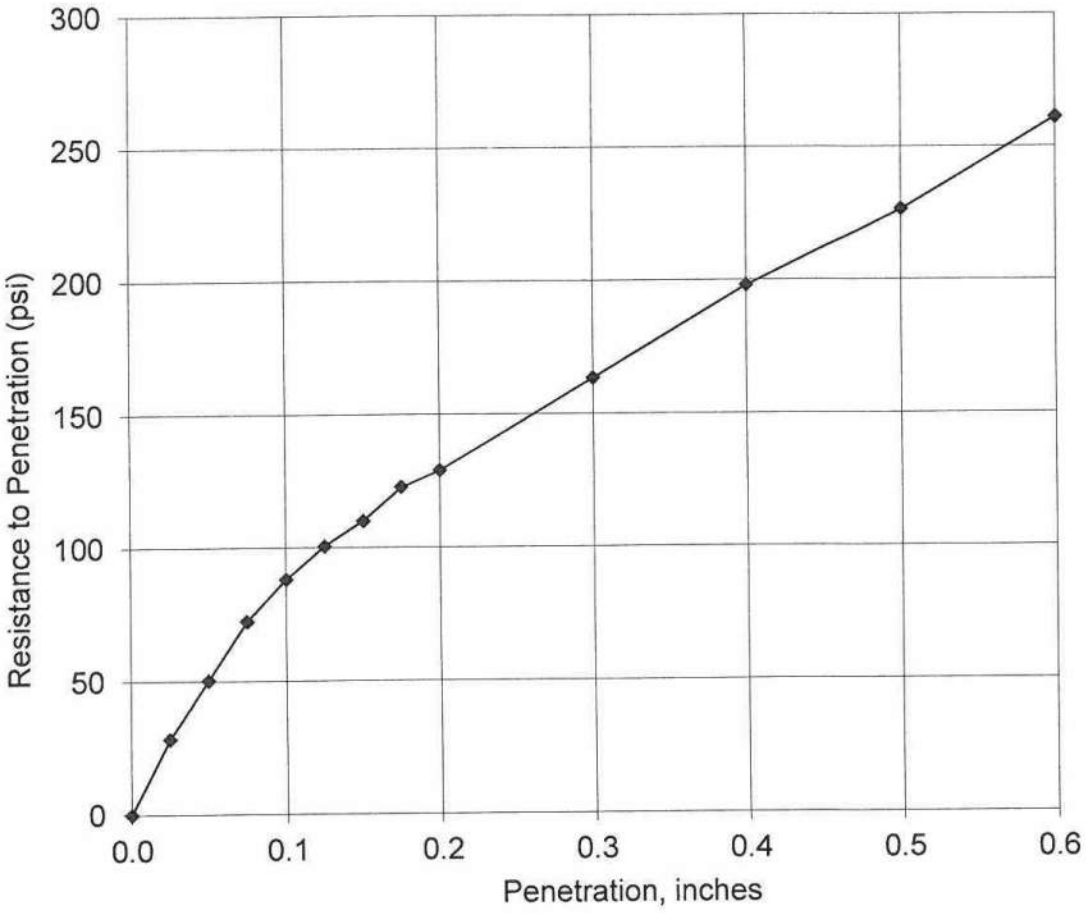
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-124
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 251539	Date Tested	: 10/14/15
Submitted By	: HDR | ICA	Date Reported	: 11/6/15
Soil Type	: Light Brown Silty Sand		



Compaction Effort = 40 Blows per layer
Percent Compacted = 98.1
Percent Swell = 0.26

C.B.R. @ 0.1 In. = 8.8*
C.B.R. @ 0.2 In. = 8.6

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Sand

Sample No. : Bag-40
Sample Loc. : Boring No. B-125
Sample Depth : 0.6' to 2.3'
Date Tested : 07/29/15
Date Reported : 11/06/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	90.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	78.3
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	35.0
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} = 0.1368 mm

CBR (AASHTO: T-193) : 4.4
Dry Dens. (AASHTO: T-99; Method (C)) : 120.3 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 10.2 %

Natural Moisture (%) (AASHTO T265) : 10.1
Liquid Limit (AASHTO T89) : 20
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 4
Liquidity Index : -1.47
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 9.1
Coarse Sand (-No.10 + No.40) : 12.6
Fine Sand (-No.40 + No.200) : 43.3
Silt + Clay (-No.200) : 35.0

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) : 6.1
Medium Sand (-No.10 + No.40) : 12.6
Fine Sand (-No.40 + No.200) : 43.3
Silt + Clay (-No.200) : 35.0

Approved By : J.S.

Soil No. 32

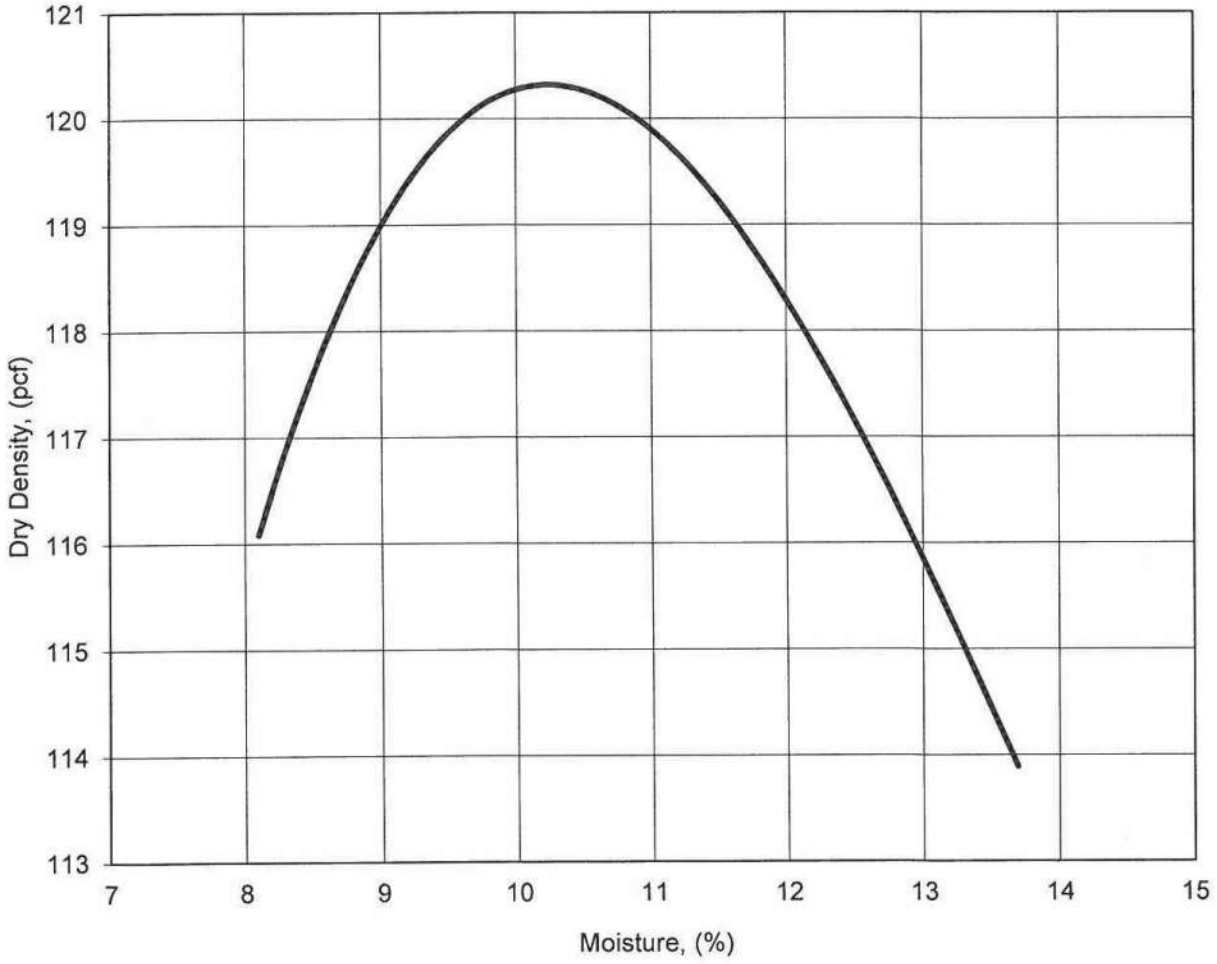
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HDR | ICA

MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Sand

Sample No. : Bag-40
Sample Loc. : Boring No. B-125
Sample Depth : 0.6' to 2.3'
Date Tested : 07/29/15
Date Reported : 11/06/15



MAXIMUM DENSITY: 120.3 pcf

OPTIMUM MOISTURE: 10.2 %

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

APPROVED BY: J.S.

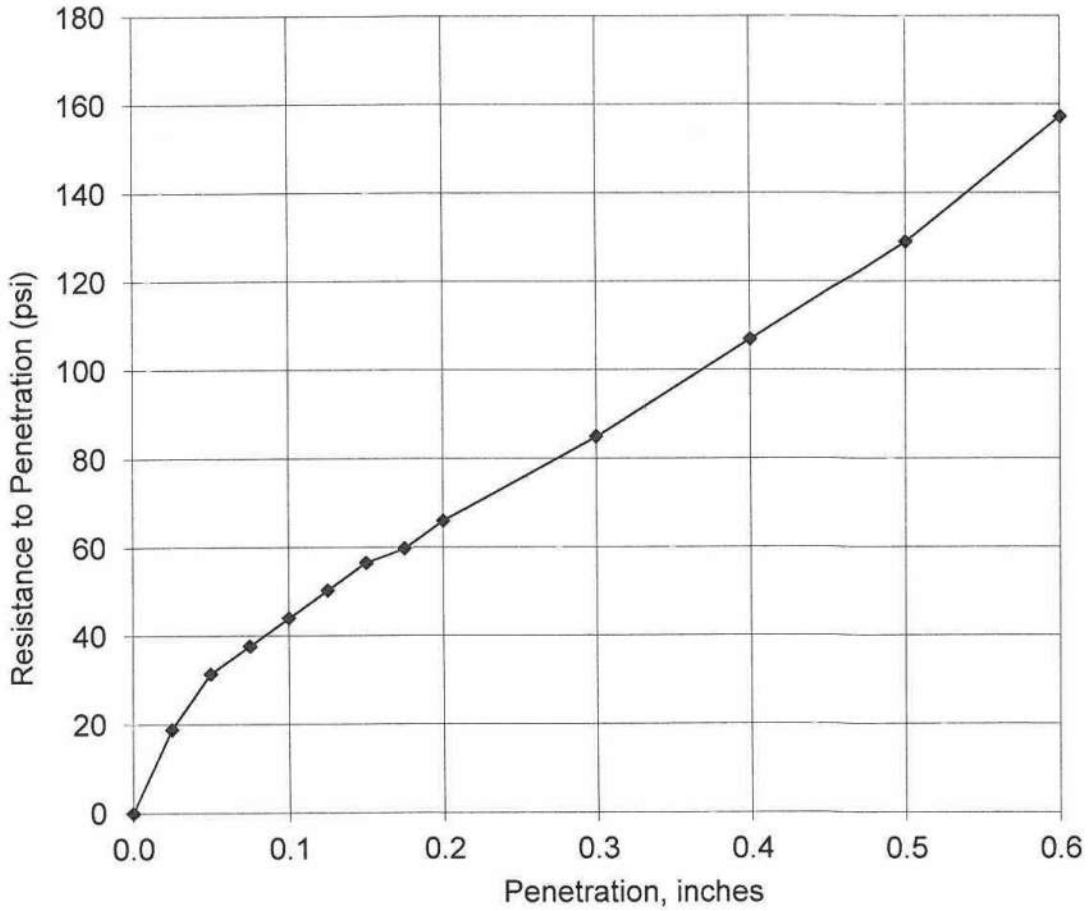
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-40
Project County	: Lonoke	Sample Loc.	: Boring No. B-125
Project State	: Arkansas	Sample Depth	: 0.6' to 2.3'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR | ICA	Date Reported	: 11/6/15
Soil Type	: Brown Silty Sand		



Compaction Effort = 40 Blows per layer
Percent Compacted = 98.9
Percent Swell = 0.46

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

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Sandy Lean Clay

Sample No. : Bag-4
Sample Loc. : Boring No. B-127
Sample Depth : 0.6' to 5.0'
Date Tested : 10/14/15
Date Reported : 11/06/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	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	97.1
No.6		3.35	mm	
No.10		2	mm	92.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	86.2
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	65.8
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} = 0.0153 mm

CBR (AASHTO: T-193) : 2.8
Dry Dens. (AASHTO: T-99; Method (C)) : 115 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 14 %

Natural Moisture (%) (AASHTO T265) : 15.0
Liquid Limit (AASHTO T89) : 26
Plastic Limit (AASHTO T90) : 15
Plasticity Index : 11
Liquidity Index : -0.03
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-6 (5)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 7.7
Coarse Sand (-No.10 + No.40) : 6.1
Fine Sand (-No.40 + No.200) : 20.4
Silt + Clay (-No.200) : 65.8

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 2.9
Coarse Sand (-No.4 + No.10) : 4.8
Medium Sand (-No.10 + No.40) : 6.1
Fine Sand (-No.40 + No.200) : 20.4
Silt + Clay (-No.200) : 65.8

Approved By : J.S.

Soil No. 33

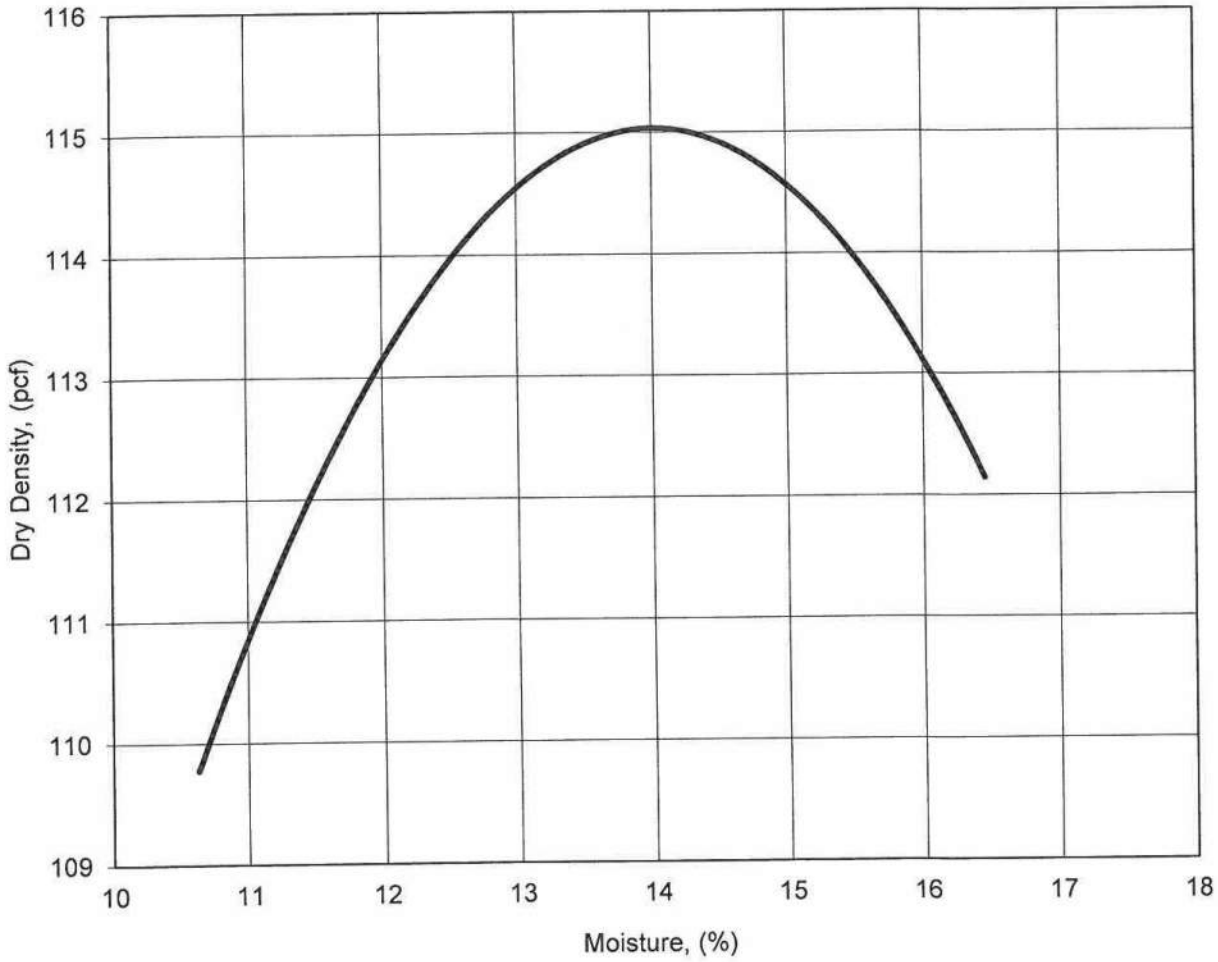
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Sandy Lean Clay

Sample No. : Bag-4
Sample Loc. : Boring No. B-127
Sample Depth : 0.6' to 5.0'
Date Tested : 10/14/15
Date Reported : 11/06/15



MAXIMUM DENSITY: 115 pcf

OPTIMUM MOISTURE: 14 %

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

APPROVED BY: J.S.

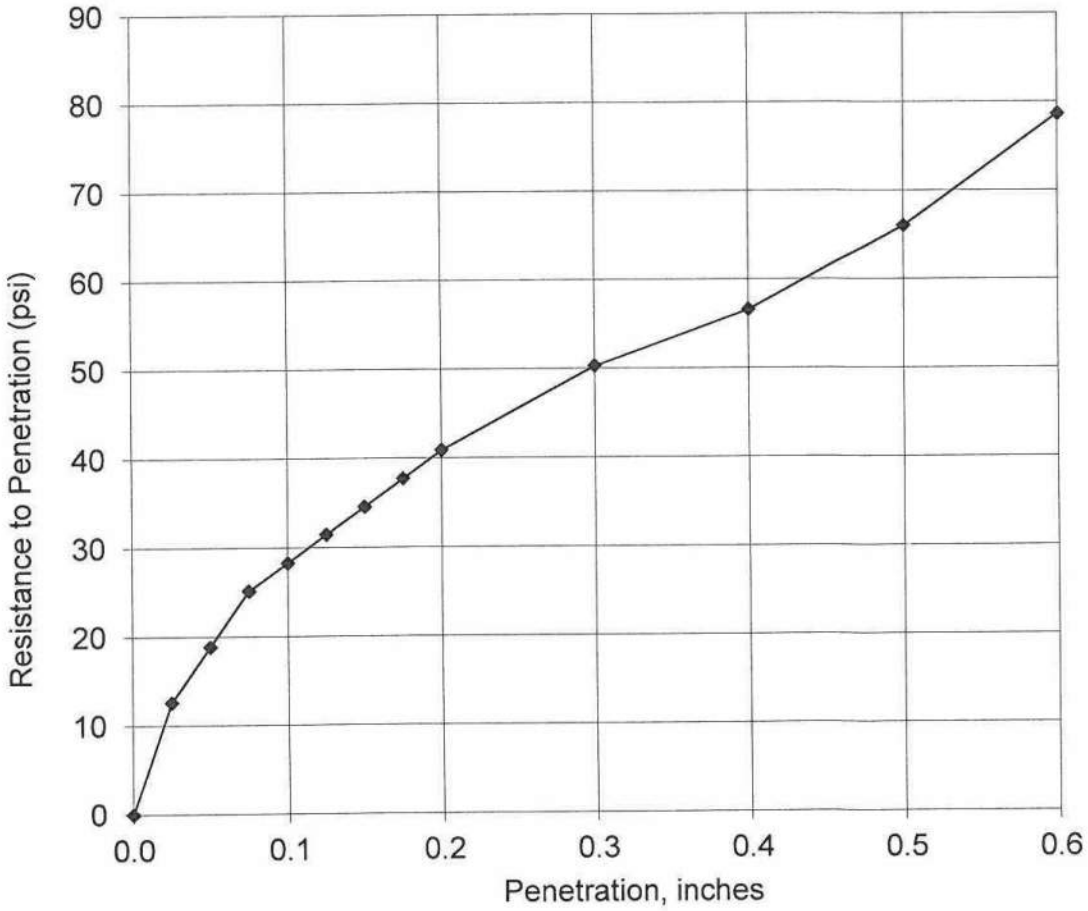
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-4
Project County	: Lonoke	Sample Loc.	: Boring No. B-127
Project State	: Arkansas	Sample Depth	: 0.6' to 5.0'
Laboratory No.	: 251539	Date Tested	: 10/14/15
Submitted By	: HDR|ICA	Date Reported	: 11/6/15
Soil Type	: Brown Sandy Lean Clay		



Compaction Effort = 40 Blows per layer
Percent Compacted = 98.7
Percent Swell = 1.35

C.B.R. @ 0.1 In. = 2.8*
C.B.R. @ 0.2 In. = 2.7

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Gravel with Sand

Sample No. : Bag-5
Sample Loc. : Boring No. B-129
Sample Depth : 0.3' to 1.5'
Date Tested : 07/29/15
Date Reported : 11/06/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
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	84.9
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	71.2
1/4		6.3	mm	
No.4		4.75	mm	59.5
No.6		3.35	mm	
No.10		2	mm	50.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	45.3
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	25.0
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} = 1.8225 mm

CBR (AASHTO: T-193) : 8.8
Dry Dens. (AASHTO: T-99; Method (C)) : 114.7 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 13.3 %

Natural Moisture (%) (AASHTO T265) : 13.0
Liquid Limit (AASHTO T89) : 23
Plastic Limit (AASHTO T90) : 19
Plasticity Index : 4
Liquidity Index : -1.55
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-1-b (0)
ASTM Classification: D2487 : GM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 49.7
Coarse Sand (-No.10 + No.40) : 5.0
Fine Sand (-No.40 + No.200) : 20.3
Silt + Clay (-No.200) : 25.0

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 15.1
Fine Gravel (-3/4in. + No.4) : 25.4
Coarse Sand (-No.4 + No.10) : 9.2
Medium Sand (-No.10 + No.40) : 5.0
Fine Sand (-No.40 + No.200) : 20.3
Silt + Clay (-No.200) : 25.0

Approved By : J.S.

Soil No. 34

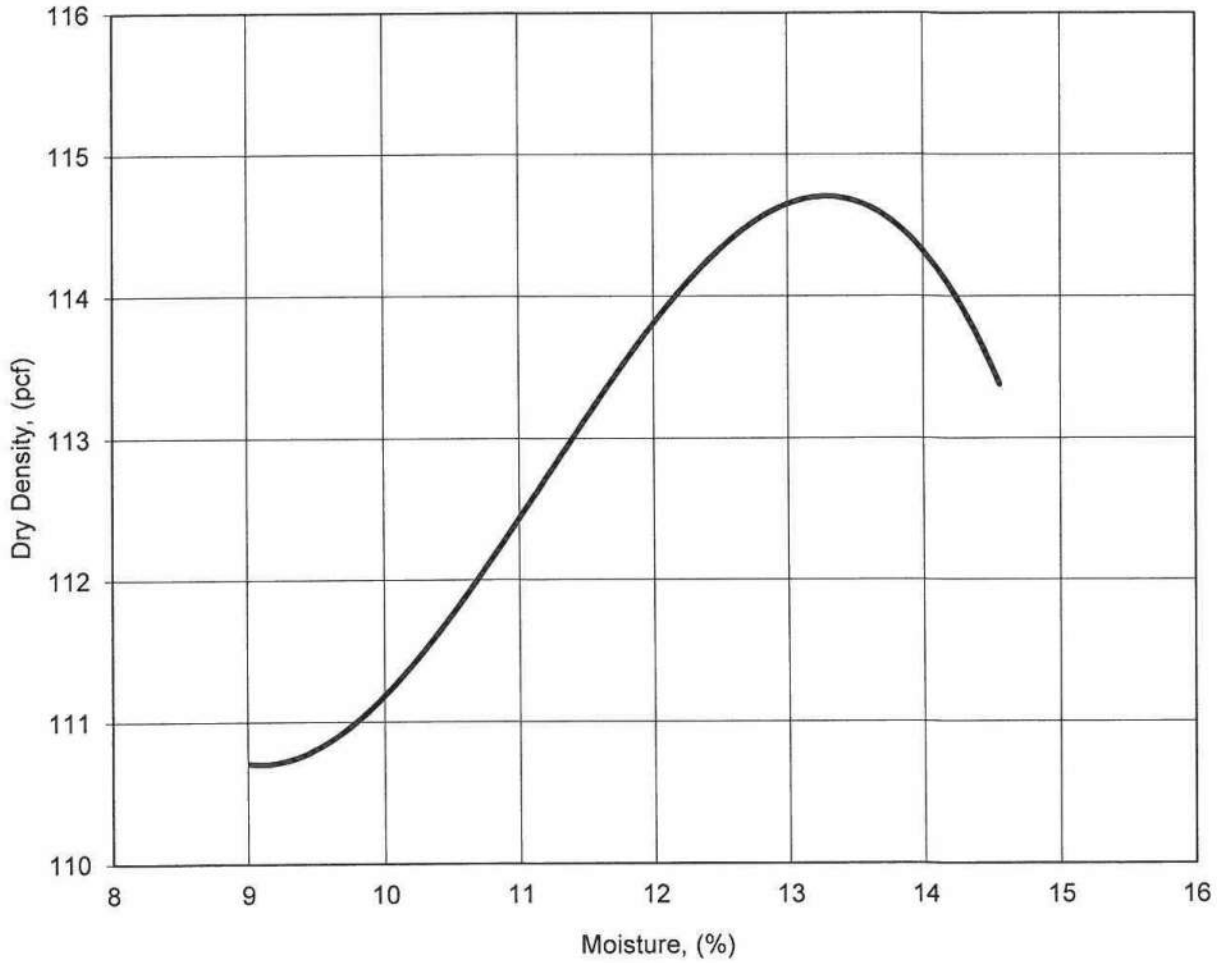
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Gravel with Sand

Sample No. : Bag-5
Sample Loc. : Boring No. B-129
Sample Depth : 0.3' to 1.5'
Date Tested : 07/29/15
Date Reported : 11/06/15



MAXIMUM DENSITY: 114.7 pcf

OPTIMUM MOISTURE: 13.3 %

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

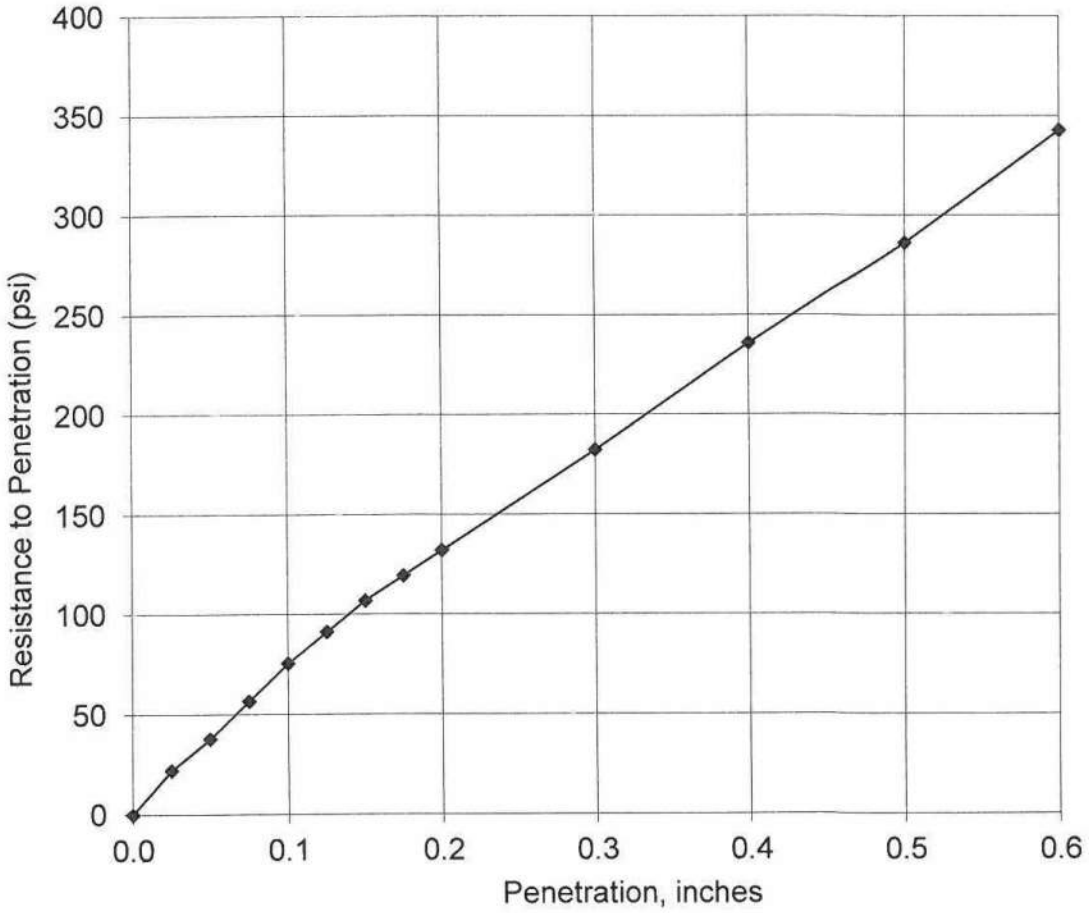
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-5
Project County	: Lonoke	Sample Loc.	: Boring No. B-129
Project State	: Arkansas	Sample Depth	: 0.3' to 1.5'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR | ICA	Date Reported	: 11/6/15
Soil Type	: Brown Silty Gravel with Sand		



Compaction Effort = 40 Blows per layer
Percent Compacted = 99.1
Percent Swell = 0.02

C.B.R. @ 0.1 In. = 7.5
C.B.R. @ 0.2 In. = 8.8*

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Orange & Tan Clayey Sand with Gravel

Sample No. : SS-1
Sample Loc. : Boring No. B-100
Sample Depth : 10.1' to 11.6'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	100.0
3/4	in.	19	mm	97.6
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	92.7
1/4		6.3	mm	
No.4		4.75	mm	78.8
No.6		3.35	mm	
No.10		2	mm	65.1

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	54.9
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	31.1
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} = 0.2974 mm

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

Natural Moisture (%) (AASHTO T265) : 21.6
Liquid Limit (AASHTO T89) : 31
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 15
Liquidity Index : 0.34
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-6 (1)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 34.9
Coarse Sand (-No.10 + No.40) : 10.2
Fine Sand (-No.40 + No.200) : 23.8
Silt + Clay (-No.200) : 31.1

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 2.4
Fine Gravel (-3/4in. + No.4) : 18.8
Coarse Sand (-No.4 + No.10) : 13.7
Medium Sand (-No.10 + No.40) : 10.2
Fine Sand (-No.40 + No.200) : 23.8
Silt + Clay (-No.200) : 31.1

Approved By : J.S.

Soil No. 35

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown & Gray Clayey Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-106
Sample Depth : 3.8' to 5.3'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	96.4
No.6		3.35	mm	
No.10		2	mm	85.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	73.0
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	38.9
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} = 0.1319 mm

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

Natural Moisture (%) (AASHTO T265) : 11.9
Liquid Limit (AASHTO T89) : 39
Plastic Limit (AASHTO T90) : 23
Plasticity Index : 16
Liquidity Index : -0.71
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-6 (2)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 14.4
Coarse Sand (-No.10 + No.40) : 12.6
Fine Sand (-No.40 + No.200) : 34.1
Silt + Clay (-No.200) : 38.9

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 3.6
Coarse Sand (-No.4 + No.10) : 10.8
Medium Sand (-No.10 + No.40) : 12.6
Fine Sand (-No.40 + No.200) : 34.1
Silt + Clay (-No.200) : 38.9

Approved By : J.S.

Soil No. 36

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty, Clayey Gravel with Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-136
Sample Depth : 4.9' to 6.4'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	78.3
1/4		6.3	mm	
No.4		4.75	mm	62.7
No.6		3.35	mm	
No.10		2	mm	49.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	39.9
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	26.6
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} = 2.0403 mm

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

Natural Moisture (%) (AASHTO T265) : 12.5
Liquid Limit (AASHTO T89) : 25
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 7
Liquidity Index : -0.79
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : GC-GM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 50.3
Coarse Sand (-No.10 + No.40) : 9.8
Fine Sand (-No.40 + No.200) : 13.3
Silt + Clay (-No.200) : 26.6

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 37.3
Coarse Sand (-No.4 + No.10) : 13.0
Medium Sand (-No.10 + No.40) : 9.8
Fine Sand (-No.40 + No.200) : 13.3
Silt + Clay (-No.200) : 26.6

Approved By : J.S.

Soil No. 37

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Gray & Brown Clayey Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-137
Sample Depth : 5.3' to 6.8'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.1
No.6		3.35	mm	
No.10		2	mm	90.0

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	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} = 0.1042 mm

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

Natural Moisture (%) (AASHTO T265) : 14.4
Liquid Limit (AASHTO T89) : 45
Plastic Limit (AASHTO T90) : 27
Plasticity Index : 18
Liquidity Index : -0.67
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-7-6 (5)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 10.0
Coarse Sand (-No.10 + No.40) : 19.5
Fine Sand (-No.40 + No.200) : 25.3
Silt + Clay (-No.200) : 45.2

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 2.9
Coarse Sand (-No.4 + No.10) : 7.1
Medium Sand (-No.10 + No.40) : 19.5
Fine Sand (-No.40 + No.200) : 25.3
Silt + Clay (-No.200) : 45.2

Approved By : J.S.

Soil No. 38

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-138
Sample Depth : 4.7' to 6.2'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.9
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	98.1
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	39.7
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	

AASHTO T88

D_{50} = 0.1018 mm

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

Natural Moisture (%) (AASHTO T265) : 25.7
Liquid Limit (AASHTO T89) : 19
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 2
Liquidity Index : 4.56
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.1
Coarse Sand (-No.10 + No.40) : 1.8
Fine Sand (-No.40 + No.200) : 58.4
Silt + Clay (-No.200) : 39.7

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.1
Medium Sand (-No.10 + No.40) : 1.8
Fine Sand (-No.40 + No.200) : 58.4
Silt + Clay (-No.200) : 39.7

Approved By : J.S.

Soil No. 39

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Gray & Black Clayey Sand with Gravel

Sample No. : SS-2
Sample Loc. : Boring No. B-138
Sample Depth : 9.7' to 11.2'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	98.9
1/4		6.3	mm	
No.4		4.75	mm	84.8
No.6		3.35	mm	
No.10		2	mm	66.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	54.5
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	31.7
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} = 0.3018 mm

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

Natural Moisture (%) (AASHTO T265) : 32.1
Liquid Limit (AASHTO T89) : 25
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 8
Liquidity Index : 1.85
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 33.2
Coarse Sand (-No.10 + No.40) : 12.3
Fine Sand (-No.40 + No.200) : 22.8
Silt + Clay (-No.200) : 31.7

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 15.2
Coarse Sand (-No.4 + No.10) : 18.0
Medium Sand (-No.10 + No.40) : 12.3
Fine Sand (-No.40 + No.200) : 22.8
Silt + Clay (-No.200) : 31.7

Approved By : J.S.

Soil No. 40

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Black Clayey Sand

Sample No. : SS-3
Sample Loc. : Boring No. B-138
Sample Depth : 14.7' to 15.0'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.8
No.6		3.35	mm	
No.10		2	mm	86.1

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	51.8
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	25.8
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} = 0.3769 mm

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

Natural Moisture (%) (AASHTO T265) : 8.0
Liquid Limit (AASHTO T89) : 26
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 9
Liquidity Index : -0.99
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 13.9
Coarse Sand (-No.10 + No.40) : 34.3
Fine Sand (-No.40 + No.200) : 26.0
Silt + Clay (-No.200) : 25.8

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 2.2
Coarse Sand (-No.4 + No.10) : 11.7
Medium Sand (-No.10 + No.40) : 34.3
Fine Sand (-No.40 + No.200) : 26.0
Silt + Clay (-No.200) : 25.8

Approved By : J.S.

Soil No. 41

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Gray & Brown Clayey Sand with Gravel

Sample No. : SS-1
Sample Loc. : Boring No. B-140
Sample Depth : 5.6' to 7.1'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	81.3
1/4		6.3	mm	
No.4		4.75	mm	57.6
No.6		3.35	mm	
No.10		2	mm	35.2

AASHTO T88					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	21.6
	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	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} = 3.5419 mm

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

Natural Moisture (%) (AASHTO T265) : 14.2
Liquid Limit (AASHTO T89) : 27
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 10
Liquidity Index : -0.32
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 64.8
Coarse Sand (-No.10 + No.40) : 13.6
Fine Sand (-No.40 + No.200) : 7.2
Silt + Clay (-No.200) : 14.4

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 42.4
Coarse Sand (-No.4 + No.10) : 22.4
Medium Sand (-No.10 + No.40) : 13.6
Fine Sand (-No.40 + No.200) : 7.2
Silt + Clay (-No.200) : 14.4

Approved By : J.S.

Soil No. 42

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Sandy Lean Clay

Sample No. : SS-2
Sample Loc. : Boring No. B-140
Sample Depth : 9.7' to 11.2'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
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	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	63.1
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} = 0.019 mm

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

Natural Moisture (%) (AASHTO T265) : 29.6
Liquid Limit (AASHTO T89) : 31
Plastic Limit (AASHTO T90) : 19
Plasticity Index : 12
Liquidity Index : 0.90
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-6 (5)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.1
Coarse Sand (-No.10 + No.40) : 5.5
Fine Sand (-No.40 + No.200) : 31.3
Silt + Clay (-No.200) : 63.1

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.1
Medium Sand (-No.10 + No.40) : 5.5
Fine Sand (-No.40 + No.200) : 31.3
Silt + Clay (-No.200) : 63.1

Approved By : J.S.

Soil No. 43

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown & Black Clayey Gravel with Sand

Sample No. : SS-3
Sample Loc. : Boring No. B-140
Sample Depth : 15.6' to 17.1'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	51.7
3/4	in.	19	mm	51.7
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	47.5
1/4		6.3	mm	
No.4		4.75	mm	40.3
No.6		3.35	mm	
No.10		2	mm	34.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	30.9
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	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} = 14.3519 mm

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

Natural Moisture (%) (AASHTO T265) : 17.8
Liquid Limit (AASHTO T89) : 30
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 13
Liquidity Index : 0.06
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-6 (1)
ASTM Classification: D2487 : GC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 65.2
Coarse Sand (-No.10 + No.40) : 3.9
Fine Sand (-No.40 + No.200) : 9.7
Silt + Clay (-No.200) : 21.2

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 48.3
Fine Gravel (-3/4in. + No.4) : 11.4
Coarse Sand (-No.4 + No.10) : 5.5
Medium Sand (-No.10 + No.40) : 3.9
Fine Sand (-No.40 + No.200) : 9.7
Silt + Clay (-No.200) : 21.2

Approved By : J.S.

Soil No. 44

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Gray & Brown Clayey Sand

Sample No. : SS-4
Sample Loc. : Boring No. B-140
Sample Depth : 19.7' to 20.1'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
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	91.0

AASHTO T88					% Passing
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	53.5	
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	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} = 0.3368 mm

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

Natural Moisture (%) (AASHTO T265) : 9.6
Liquid Limit (AASHTO T89) : 44
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 26
Liquidity Index : -0.34
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-7 (3)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 9.0
Coarse Sand (-No.10 + No.40) : 37.5
Fine Sand (-No.40 + No.200) : 26.1
Silt + Clay (-No.200) : 27.4

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) : 8.8
Medium Sand (-No.10 + No.40) : 37.5
Fine Sand (-No.40 + No.200) : 26.1
Silt + Clay (-No.200) : 27.4

Approved By : J.S.

Soil No. 45

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown & Gray Poorly Graded Gravel with Silt

Sample No. : SS-1
Sample Loc. : Boring No. B-149
Sample Depth : 5.2' to 6.7'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	64.7
3/4	in.	19	mm	50.7
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	27.3
1/4		6.3	mm	
No.4		4.75	mm	16.4
No.6		3.35	mm	
No.10		2	mm	12.2

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	10.1
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	6.3
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} = 18.6101 mm

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

Natural Moisture (%) (AASHTO T265) : 9.1
Liquid Limit (AASHTO T89) : 17
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 1
Liquidity Index : -6.79
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-1-a (0)
ASTM Classification: D2487 : GP-GM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 87.8
Coarse Sand (-No.10 + No.40) : 2.1
Fine Sand (-No.40 + No.200) : 3.8
Silt + Clay (-No.200) : 6.3

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 49.3
Fine Gravel (-3/4in. + No.4) : 34.3
Coarse Sand (-No.4 + No.10) : 4.2
Medium Sand (-No.10 + No.40) : 2.1
Fine Sand (-No.40 + No.200) : 3.8
Silt + Clay (-No.200) : 6.3

Approved By : J.S.

Soil No. 46

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Black & Brown Clayey Sand

Sample No. : SS-2
Sample Loc. : Boring No. B-149
Sample Depth : 10.2' to 10.6'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
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	91.6

AASHTO T88					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	60.2
	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	36.7
	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} = 0.2002 mm

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

Natural Moisture (%) (AASHTO T265) : 11.3
Liquid Limit (AASHTO T89) : 27
Plastic Limit (AASHTO T90) : 19
Plasticity Index : 8
Liquidity Index : -0.91
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 8.4
Coarse Sand (-No.10 + No.40) : 31.4
Fine Sand (-No.40 + No.200) : 23.5
Silt + Clay (-No.200) : 36.7

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) : 7.1
Medium Sand (-No.10 + No.40) : 31.4
Fine Sand (-No.40 + No.200) : 23.5
Silt + Clay (-No.200) : 36.7

Approved By : J.S.

Soil No. 47

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-150
Sample Depth : 5.5' to 7.0'
Date Tested : 02/12/16
Date Reported : 02/29/16

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	
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	99.1
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	45.7
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} = 0.0862 mm

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

Natural Moisture (%) (AASHTO T265) : 31.5
Liquid Limit (AASHTO T89) : 19
Plastic Limit (AASHTO T90) : 15
Plasticity Index : 4
Liquidity Index : 4.06
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.1
Coarse Sand (-No.10 + No.40) : 0.8
Fine Sand (-No.40 + No.200) : 53.4
Silt + Clay (-No.200) : 45.7

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.1
Medium Sand (-No.10 + No.40) : 0.8
Fine Sand (-No.40 + No.200) : 53.4
Silt + Clay (-No.200) : 45.7

Approved By : J.S.

Soil No. 48

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Gray & Brown Poorly Graded Sand

Sample No. : SS-2
Sample Loc. : Boring No. B-150
Sample Depth : 10.5' to 12.0'
Date Tested : 02/12/16
Date Reported : 02/29/16

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	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	90.7
No.6		3.35	mm	
No.10		2	mm	68.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	41.4
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	2.3
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} = 0.6935 mm

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

Natural Moisture (%) (AASHTO T265) : 14.4
Liquid Limit (AASHTO T89) : 38
Plastic Limit (AASHTO T90) : 22
Plasticity Index : 16
Liquidity Index : -0.46
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-6 (1)
ASTM Classification: D2487 : SP

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 31.4
Coarse Sand (-No.10 + No.40) : 27.2
Fine Sand (-No.40 + No.200) : 39.1
Silt + Clay (-No.200) : 2.3

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 9.3
Coarse Sand (-No.4 + No.10) : 22.1
Medium Sand (-No.10 + No.40) : 27.2
Fine Sand (-No.40 + No.200) : 39.1
Silt + Clay (-No.200) : 2.3

Approved By : J.S.

Soil No. 49

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Dark Gray Clayey Sand

Sample No. : SS-3
Sample Loc. : Boring No. B-150
Sample Depth : 15.5' to 17.0'
Date Tested : 02/12/16
Date Reported : 02/29/16

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	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.0
No.6		3.35	mm	
No.10		2	mm	86.2

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	57.3
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	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} = 0.2817 mm

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

Natural Moisture (%) (AASHTO T265) : 11.2
Liquid Limit (AASHTO T89) : 27
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 10
Liquidity Index : -0.54
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 13.8
Coarse Sand (-No.10 + No.40) : 28.9
Fine Sand (-No.40 + No.200) : 30.8
Silt + Clay (-No.200) : 26.5

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) : 11.8
Medium Sand (-No.10 + No.40) : 28.9
Fine Sand (-No.40 + No.200) : 30.8
Silt + Clay (-No.200) : 26.5

Approved By : J.S.

Soil No. 50

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown & Gray Silty Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-151
Sample Depth : 4.1' to 5.1'
Date Tested : 02/12/16
Date Reported : 02/29/16

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	
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	98.8
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	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} = 0.0917 mm

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

Natural Moisture (%) (AASHTO T265) : 24.1
Liquid Limit (AASHTO T89) : 21
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 3
Liquidity Index : 1.90
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.0
Coarse Sand (-No.10 + No.40) : 1.2
Fine Sand (-No.40 + No.200) : 55.2
Silt + Clay (-No.200) : 43.6

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) : 1.2
Fine Sand (-No.40 + No.200) : 55.2
Silt + Clay (-No.200) : 43.6

Approved By : J.S.

Soil No. 51

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Dark Gray Clayey Sand with Gravel

Sample No. : SS-2
Sample Loc. : Boring No. B-151
Sample Depth : 14.1' to 14.8'
Date Tested : 02/12/16
Date Reported : 02/29/16

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	100.0
3/4	in.	19	mm	84.5
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	84.5
1/4		6.3	mm	
No.4		4.75	mm	83.9
No.6		3.35	mm	
No.10		2	mm	74.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	43.8
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	18.8
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} = 0.5805 mm

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

Natural Moisture (%) (AASHTO T265) : 14.2
Liquid Limit (AASHTO T89) : 26
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 10
Liquidity Index : -0.23
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 25.4
Coarse Sand (-No.10 + No.40) : 30.8
Fine Sand (-No.40 + No.200) : 25.0
Silt + Clay (-No.200) : 18.8

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 15.5
Fine Gravel (-3/4in. + No.4) : 0.6
Coarse Sand (-No.4 + No.10) : 9.3
Medium Sand (-No.10 + No.40) : 30.8
Fine Sand (-No.40 + No.200) : 25.0
Silt + Clay (-No.200) : 18.8

Approved By : J.S.

Soil No. 52

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Sandy Silty Clay

Sample No. : SS-1
Sample Loc. : Boring No. B-152
Sample Depth : 4.4' to 5.9'
Date Tested : 02/12/16
Date Reported : 02/29/16

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	
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	99.2
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	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} = 0.0316 mm

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

Natural Moisture (%) (AASHTO T265) : 21.1
Liquid Limit (AASHTO T89) : 23
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 7
Liquidity Index : 0.68
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (1)
ASTM Classification: D2487 : CL-ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.0
Coarse Sand (-No.10 + No.40) : 0.8
Fine Sand (-No.40 + No.200) : 41.7
Silt + Clay (-No.200) : 57.5

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.0
Medium Sand (-No.10 + No.40) : 0.8
Fine Sand (-No.40 + No.200) : 41.7
Silt + Clay (-No.200) : 57.5

Approved By : J.S.

Soil No. 53

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown & Gray Silty Sand

Sample No. : SS-2
Sample Loc. : Boring No. B-152
Sample Depth : 9.4' to 10.9'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.4
No.6		3.35	mm	
No.10		2	mm	93.1

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	46.0
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} = 0.0886 mm

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

Natural Moisture (%) (AASHTO T265) : 18.5
Liquid Limit (AASHTO T89) : 18
Plastic Limit (AASHTO T90) : 14
Plasticity Index : 4
Liquidity Index : 1.02
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 6.9
Coarse Sand (-No.10 + No.40) : 5.4
Fine Sand (-No.40 + No.200) : 41.7
Silt + Clay (-No.200) : 46.0

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 2.6
Coarse Sand (-No.4 + No.10) : 4.3
Medium Sand (-No.10 + No.40) : 5.4
Fine Sand (-No.40 + No.200) : 41.7
Silt + Clay (-No.200) : 46.0

Approved By : J.S.

Soil No. 54

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Gray & Brown Clayey Sand

Sample No. : SS-3
Sample Loc. : Boring No. B-152
Sample Depth : 14.4' to 15.9'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
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	88.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	52.5
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	24.9
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} = 0.3632 mm

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

Natural Moisture (%) (AASHTO T265) : 10.9
Liquid Limit (AASHTO T89) : 36
Plastic Limit (AASHTO T90) : 23
Plasticity Index : 13
Liquidity Index : -0.97
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-6 (1)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 11.6
Coarse Sand (-No.10 + No.40) : 35.9
Fine Sand (-No.40 + No.200) : 27.6
Silt + Clay (-No.200) : 24.9

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) : 10.2
Medium Sand (-No.10 + No.40) : 35.9
Fine Sand (-No.40 + No.200) : 27.6
Silt + Clay (-No.200) : 24.9

Approved By : J.S.

Soil No. 55

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty, Clayey Gravel with Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-170
Sample Depth : 9.6' to 11.1'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	87.5
3/4	in.	19	mm	87.5
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	70.3
1/4		6.3	mm	
No.4		4.75	mm	62.2
No.6		3.35	mm	
No.10		2	mm	55.2

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	48.7
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	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} = 0.5793 mm

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

Natural Moisture (%) (AASHTO T265) : 17.5
Liquid Limit (AASHTO T89) : 22
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 5
Liquidity Index : 0.03
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : GC-GM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 44.8
Coarse Sand (-No.10 + No.40) : 6.5
Fine Sand (-No.40 + No.200) : 23.6
Silt + Clay (-No.200) : 25.1

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 12.5
Fine Gravel (-3/4in. + No.4) : 25.3
Coarse Sand (-No.4 + No.10) : 7.0
Medium Sand (-No.10 + No.40) : 6.5
Fine Sand (-No.40 + No.200) : 23.6
Silt + Clay (-No.200) : 25.1

Approved By : J.S.

Soil No. 56

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown & Gray Clayey Sand

Sample No. : SS-2
Sample Loc. : Boring No. B-170
Sample Depth : 14.6' to 16.1'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
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	89.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	56.0
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	29.5
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} = 0.287 mm

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

Natural Moisture (%) (AASHTO T265) : 13.2
Liquid Limit (AASHTO T89) : 36
Plastic Limit (AASHTO T90) : 21
Plasticity Index : 15
Liquidity Index : -0.51
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-6 (1)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 10.5
Coarse Sand (-No.10 + No.40) : 33.5
Fine Sand (-No.40 + No.200) : 26.5
Silt + Clay (-No.200) : 29.5

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) : 10.0
Medium Sand (-No.10 + No.40) : 33.5
Fine Sand (-No.40 + No.200) : 26.5
Silt + Clay (-No.200) : 29.5

Approved By : J.S.

Soil No. 57

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Tan & Gray Sandy Silt

Sample No. : SS-1
Sample Loc. : Boring No. B-171
Sample Depth : 9.5' to 11.0'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
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	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	54.8
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} = 0.042 mm

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

Natural Moisture (%) (AASHTO T265) : 20.7
Liquid Limit (AASHTO T89) : 20
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 3
Liquidity Index : 1.14
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.7
Coarse Sand (-No.10 + No.40) : 3.9
Fine Sand (-No.40 + No.200) : 40.6
Silt + Clay (-No.200) : 54.8

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) : 3.9
Fine Sand (-No.40 + No.200) : 40.6
Silt + Clay (-No.200) : 54.8

Approved By : J.S.

Soil No. 58

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Dark Gray & Brown Clayey Sand

Sample No. : SS-3
Sample Loc. : Boring No. B-171
Sample Depth : 19.5' to 19.9'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.5
No.6		3.35	mm	
No.10		2	mm	84.1

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	49.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	18.8
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} = 0.4442 mm

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

Natural Moisture (%) (AASHTO T265) : 15.5
Liquid Limit (AASHTO T89) : 32
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 16
Liquidity Index : -0.05
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-6 (1)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 15.9
Coarse Sand (-No.10 + No.40) : 35.1
Fine Sand (-No.40 + No.200) : 30.2
Silt + Clay (-No.200) : 18.8

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) : 14.4
Medium Sand (-No.10 + No.40) : 35.1
Fine Sand (-No.40 + No.200) : 30.2
Silt + Clay (-No.200) : 18.8

Approved By : J.S.

Soil No. 59

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Clay with Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-172
Sample Depth : 4.7' to 6.2'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
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	98.7
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	76.3
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} = 0.0077 mm

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

Natural Moisture (%) (AASHTO T265) : 19.9
Liquid Limit (AASHTO T89) : 25
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 7
Liquidity Index : 0.21
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (3)
ASTM Classification: D2487 : CL-ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.5
Coarse Sand (-No.10 + No.40) : 0.8
Fine Sand (-No.40 + No.200) : 22.4
Silt + Clay (-No.200) : 76.3

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) : 0.8
Fine Sand (-No.40 + No.200) : 22.4
Silt + Clay (-No.200) : 76.3

Approved By : J.S.

Soil No. 60

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Light & Dark Brown Silty Sand

Sample No. : SS-2
Sample Loc. : Boring No. B-172
Sample Depth : 9.7' to 11.2'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	99.4
1/4		6.3	mm	
No.4		4.75	mm	97.8
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	87.4
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	46.5
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} = 0.087 mm

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

Natural Moisture (%) (AASHTO T265) : 21.9
Liquid Limit (AASHTO T89) : 20
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 2
Liquidity Index : 2.09
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 4.6
Coarse Sand (-No.10 + No.40) : 8.0
Fine Sand (-No.40 + No.200) : 40.9
Silt + Clay (-No.200) : 46.5

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 2.2
Coarse Sand (-No.4 + No.10) : 2.4
Medium Sand (-No.10 + No.40) : 8.0
Fine Sand (-No.40 + No.200) : 40.9
Silt + Clay (-No.200) : 46.5

Approved By : J.S.

Soil No. 61

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Orange & Gray Sandy Lean Clay

Sample No. : SS-1
Sample Loc. : Boring No. B-173
Sample Depth : 4.9' to 6.4'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	94.2
1/4		6.3	mm	
No.4		4.75	mm	89.8
No.6		3.35	mm	
No.10		2	mm	82.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	76.6
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	56.7
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} = 0.0343 mm

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

Natural Moisture (%) (AASHTO T265) : 18.2
Liquid Limit (AASHTO T89) : 30
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 12
Liquidity Index : 0.02
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-6 (4)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 17.1
Coarse Sand (-No.10 + No.40) : 6.3
Fine Sand (-No.40 + No.200) : 19.9
Silt + Clay (-No.200) : 56.7

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 10.2
Coarse Sand (-No.4 + No.10) : 6.9
Medium Sand (-No.10 + No.40) : 6.3
Fine Sand (-No.40 + No.200) : 19.9
Silt + Clay (-No.200) : 56.7

Approved By : J.S.

Soil No. 62

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Sand

Sample No. : SS-2
Sample Loc. : Boring No. B-173
Sample Depth : 11.9' to 13.4'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
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	98.9
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	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} = 0.1248 mm

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

Natural Moisture (%) (AASHTO T265) : 20.9
Liquid Limit (AASHTO T89) : NP
Plastic Limit (AASHTO T90) : NP
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.1
Coarse Sand (-No.10 + No.40) : 1.0
Fine Sand (-No.40 + No.200) : 69.2
Silt + Clay (-No.200) : 29.7

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.1
Medium Sand (-No.10 + No.40) : 1.0
Fine Sand (-No.40 + No.200) : 69.2
Silt + Clay (-No.200) : 29.7

Approved By : J.S.

Soil No. 63

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Dark Gray Clayey Sand

Sample No. : SS-4
Sample Loc. : Boring No. B-173
Sample Depth : 19.9' to 20.2'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
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	88.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	49.4
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	20.9
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} = 0.4352 mm

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

Natural Moisture (%) (AASHTO T265) : 11.4
Liquid Limit (AASHTO T89) : 33
Plastic Limit (AASHTO T90) : 20
Plasticity Index : 13
Liquidity Index : -0.63
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-6 (1)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 11.4
Coarse Sand (-No.10 + No.40) : 39.2
Fine Sand (-No.40 + No.200) : 28.5
Silt + Clay (-No.200) : 20.9

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) : 11.4
Medium Sand (-No.10 + No.40) : 39.2
Fine Sand (-No.40 + No.200) : 28.5
Silt + Clay (-No.200) : 20.9

Approved By : J.S.

Soil No. 64

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Tan & Gray Silty, Clayey Sand

Sample No. : ST-1
Sample Loc. : Boring No. B-100
Sample Depth : 5.7' to 6.4'
Date Tested : 02/12/16
Date Reported : 02/29/16

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	
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	99.7

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	98.5
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	49.4
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	

AASHTO T88

D_{50} = 0.0766 mm

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

Natural Moisture (%) (AASHTO T265) : 21.1
Liquid Limit (AASHTO T89) : 22
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 6
Liquidity Index : 0.81
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SC-SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.3
Coarse Sand (-No.10 + No.40) : 1.2
Fine Sand (-No.40 + No.200) : 49.1
Silt + Clay (-No.200) : 49.4

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.1
Coarse Sand (-No.4 + No.10) : 0.2
Medium Sand (-No.10 + No.40) : 1.2
Fine Sand (-No.40 + No.200) : 49.1
Silt + Clay (-No.200) : 49.4

Approved By : J.S.

Soil No. 65

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Tan & Gray Sandy Elastic Silt

Sample No. : ST-2
Sample Loc. : Boring No. B-100
Sample Depth : 14.5' to 15.9'
Date Tested : 02/05/16
Date Reported : 02/29/16

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	
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	79.0
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	61.8
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} = 0.0212 mm

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

Natural Moisture (%) (AASHTO T265) : 39.8
Liquid Limit (AASHTO T89) : 85
Plastic Limit (AASHTO T90) : 42
Plasticity Index : 43
Liquidity Index : -0.06
Activity : NA
Sp. Gr. (AASHTO T100) : 2.744
AASHTO Classification: M145 : A-7-5 (27)
ASTM Classification: D2487 : MH

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 1.1
Coarse Sand (-No.10 + No.40) : 19.9
Fine Sand (-No.40 + No.200) : 17.2
Silt + Clay (-No.200) : 61.8

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) : 19.9
Fine Sand (-No.40 + No.200) : 17.2
Silt + Clay (-No.200) : 61.8

Approved By : J.S.

Soil No. 66

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Sandy Silt

Sample No. : ST-1
Sample Loc. : Boring No. B-135A
Sample Depth : 4.2' to 5.5'
Date Tested : 02/05/16
Date Reported : 02/29/16

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	
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	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} = 0.0214 mm

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

Natural Moisture (%) (AASHTO T265) : 20.2
Liquid Limit (AASHTO T89) : 20
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 4
Liquidity Index : 0.98
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.2
Coarse Sand (-No.10 + No.40) : 2.1
Fine Sand (-No.40 + No.200) : 36.0
Silt + Clay (-No.200) : 61.7

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.2
Medium Sand (-No.10 + No.40) : 2.1
Fine Sand (-No.40 + No.200) : 36.0
Silt + Clay (-No.200) : 61.7

Approved By : J.S.

Soil No. 67

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Tan & Gray Sandy Lean Clay

Sample No. : ST-1
Sample Loc. : Boring No. B-140
Sample Depth : 4.7' to 5.4'
Date Tested : 02/12/16
Date Reported : 02/29/16

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	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.4
No.6		3.35	mm	
No.10		2	mm	97.0

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	69.7
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} = 0.0115 mm

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

Natural Moisture (%) (AASHTO T265) : 20.8
Liquid Limit (AASHTO T89) : 27
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 11
Liquidity Index : 0.43
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-6 (5)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 3.0
Coarse Sand (-No.10 + No.40) : 5.3
Fine Sand (-No.40 + No.200) : 22.0
Silt + Clay (-No.200) : 69.7

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.6
Coarse Sand (-No.4 + No.10) : 2.4
Medium Sand (-No.10 + No.40) : 5.3
Fine Sand (-No.40 + No.200) : 22.0
Silt + Clay (-No.200) : 69.7

Approved By : J.S.

Soil No. 68

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Gray & Brown Silty, Clayey Sand

Sample No. : ST-2
Sample Loc. : Boring No. B-140
Sample Depth : 14.7' to 15.2'
Date Tested : 02/12/16
Date Reported : 02/29/16

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	98.0
1/4		6.3	mm	
No.4		4.75	mm	94.2
No.6		3.35	mm	
No.10		2	mm	91.0

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	49.5
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} = 0.0768 mm

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

Natural Moisture (%) (AASHTO T265) : 17.0
Liquid Limit (AASHTO T89) : 20
Plastic Limit (AASHTO T90) : 14
Plasticity Index : 6
Liquidity Index : 0.49
Activity : NA
Sp. Gr. (AASHTO T100) : 2.697
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SC-SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 9.0
Coarse Sand (-No.10 + No.40) : 5.3
Fine Sand (-No.40 + No.200) : 36.2
Silt + Clay (-No.200) : 49.5

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 5.8
Coarse Sand (-No.4 + No.10) : 3.2
Medium Sand (-No.10 + No.40) : 5.3
Fine Sand (-No.40 + No.200) : 36.2
Silt + Clay (-No.200) : 49.5

Approved By : J.S.

Soil No. 69

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown & Gray Silty Sand

Sample No. : ST-1
Sample Loc. : Boring No. B-151
Sample Depth : 9.1' to 9.4'
Date Tested : 02/05/16
Date Reported : 02/29/16

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	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.9
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	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	26.8
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} = 0.1405 mm

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

Natural Moisture (%) (AASHTO T265) : 30.9
Liquid Limit (AASHTO T89) : NP
Plastic Limit (AASHTO T90) : NP
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : 2.645
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 3.1
Coarse Sand (-No.10 + No.40) : 6.0
Fine Sand (-No.40 + No.200) : 64.1
Silt + Clay (-No.200) : 26.8

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) : 1.0
Medium Sand (-No.10 + No.40) : 6.0
Fine Sand (-No.40 + No.200) : 64.1
Silt + Clay (-No.200) : 26.8

Approved By : J.S.

Soil No. 70

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Tan & Gray Sandy Silt

Sample No. : ST-1
Sample Loc. : Boring No. B-169
Sample Depth : 9.5' to 10.8'
Date Tested : 02/05/16
Date Reported : 02/29/16

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	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.0
No.6		3.35	mm	
No.10		2	mm	95.1

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	86.0
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} = 0.0214 mm

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

Natural Moisture (%) (AASHTO T265) : 19.2
Liquid Limit (AASHTO T89) : 21
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 3
Liquidity Index : 0.39
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 4.9
Coarse Sand (-No.10 + No.40) : 9.1
Fine Sand (-No.40 + No.200) : 24.3
Silt + Clay (-No.200) : 61.7

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) : 3.9
Medium Sand (-No.10 + No.40) : 9.1
Fine Sand (-No.40 + No.200) : 24.3
Silt + Clay (-No.200) : 61.7

Approved By : J.S.

Soil No. 71

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Tan & Gray Silty Clay with Sand

Sample No. : ST-1
Sample Loc. : Boring No. B-170
Sample Depth : 4.6' to 5.9'
Date Tested : 02/05/16
Date Reported : 02/29/16

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	
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	90.3
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	72.2
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} = 0.0098 mm

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

Natural Moisture (%) (AASHTO T265) : 24.2
Liquid Limit (AASHTO T89) : 25
Plastic Limit (AASHTO T90) : 19
Plasticity Index : 6
Liquidity Index : 0.89
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (2)
ASTM Classification: D2487 : CL-ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.7
Coarse Sand (-No.10 + No.40) : 9.0
Fine Sand (-No.40 + No.200) : 18.1
Silt + Clay (-No.200) : 72.2

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.7
Medium Sand (-No.10 + No.40) : 9.0
Fine Sand (-No.40 + No.200) : 18.1
Silt + Clay (-No.200) : 72.2

Approved By : J.S.

Soil No. 72

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Tan & Gray Sandy Lean Clay

Sample No. : ST-1
Sample Loc. : Boring No. B-171
Sample Depth : 4.5' to 5.8'
Date Tested : 02/05/16
Date Reported : 02/29/16

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	
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	99.3

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	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} = 0.0137 mm

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

Natural Moisture (%) (AASHTO T265) : 23.4
Liquid Limit (AASHTO T89) : 25
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 8
Liquidity Index : 0.79
Activity : NA
Sp. Gr. (AASHTO T100) : 2.686
AASHTO Classification: M145 : A-4 (3)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.7
Coarse Sand (-No.10 + No.40) : 6.1
Fine Sand (-No.40 + No.200) : 25.9
Silt + Clay (-No.200) : 67.3

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) : 6.1
Fine Sand (-No.40 + No.200) : 25.9
Silt + Clay (-No.200) : 67.3

Approved By : J.S.

Soil No. 73

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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-100
Project State	: Arkansas	Sample Depth	: 5.7' to 6.2'
Laboratory #	: 251539	Date Tested	: 02/11/16
Submitted By	: HDR | ICA	Date Reported	: 03/01/16

Soil Type	: Tan & Gray Silty, Clayey Sand				
Wet Density	: 132.6	pcf	Initial Height	: 5.72	in
Dry Density	: 109.5	pcf	Initial Diameter	: 2.79	in
Moisture	: 21.1	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	2.9	0.04	0.3	0.07
3	3.8	0.04	0.5	0.09
4	5.8	0.04	0.8	0.13
5	7.7	0.04	1.0	0.18
6	9.6	0.04	1.3	0.22
7	10.6	0.04	1.6	0.25
8	11.5	0.04	1.8	0.27
9	12.5	0.04	2.1	0.29
10	13.5	0.04	2.4	0.31
11	15.4	0.04	2.8	0.35
12	16.4	0.04	3.1	0.37
13	17.3	0.04	3.5	0.39
14	18.3	0.04	3.8	0.41
15	19.2	0.04	4.2	0.43
16	19.2	0.04	4.5	0.43
17	20.2	0.04	4.9	0.45
18	20.2	0.04	5.2	0.45
19	20.2	0.05	5.7	0.45
20	21.2	0.05	6.1	0.47
21	21.2	0.05	6.6	0.47
22	21.2	0.05	7.0	0.46
23	21.2	0.05	7.4	0.46
24	21.2	0.05	7.9	0.46
25	22.1	0.05	8.3	0.48
26	22.1	0.05	8.7	0.47
27	22.1	0.05	9.6	0.47
28	22.1	0.05	10.5	0.47
29	21.2	0.05	11.4	0.44
30	21.2	0.05	12.2	0.44
31	20.2	0.05	13.1	0.41

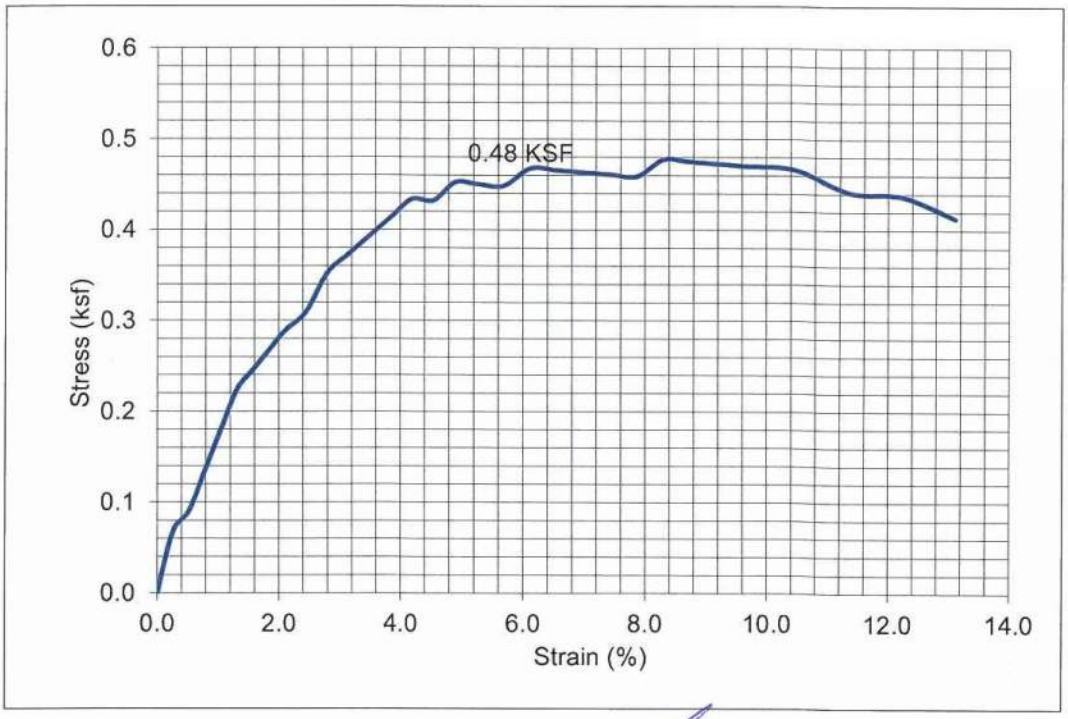
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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-100
Project State	: Arkansas	Sample Depth	: 5.7' to 6.2'
Laboratory #	: 251539	Date Tested	: 02/11/16
Submitted By	: HDR | ICA	Date Reported	: 03/01/16
Soil Type	: Tan & Gray Silty, Clayey Sand		
Wet Density	: 132.6 pcf	Initial Height	: 5.72 in
Dry Density	: 109.5 pcf	Initial Diameter	: 2.79 in
Moisture	: 21.1 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-104
Project State	: Arkansas	Sample Depth	: 5.0' to 5.5'
Laboratory #	: 251539	Date Tested	: 10/19/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15

Soil Type	: Gray, Brown & Tan Clayey Sand				
Wet Density	: 131.5	pcf	Initial Height	: 5.77	in
Dry Density	: 113.7	pcf	Initial Diameter	: 2.83	in
Moisture	: 15.6	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	28.9	0.04	0.3	0.66
3	63.5	0.04	0.5	1.45
4	97.1	0.04	0.8	2.21
5	129.9	0.04	1.0	2.94
6	156.8	0.04	1.3	3.54
7	177.9	0.04	1.6	4.01
8	194.3	0.04	1.8	4.37
9	203.9	0.04	2.1	4.57
10	204.9	0.04	2.4	4.58
11	182.8	0.04	2.8	4.07
12	164.5	0.05	3.1	3.65
13	135.6	0.05	3.5	3.00

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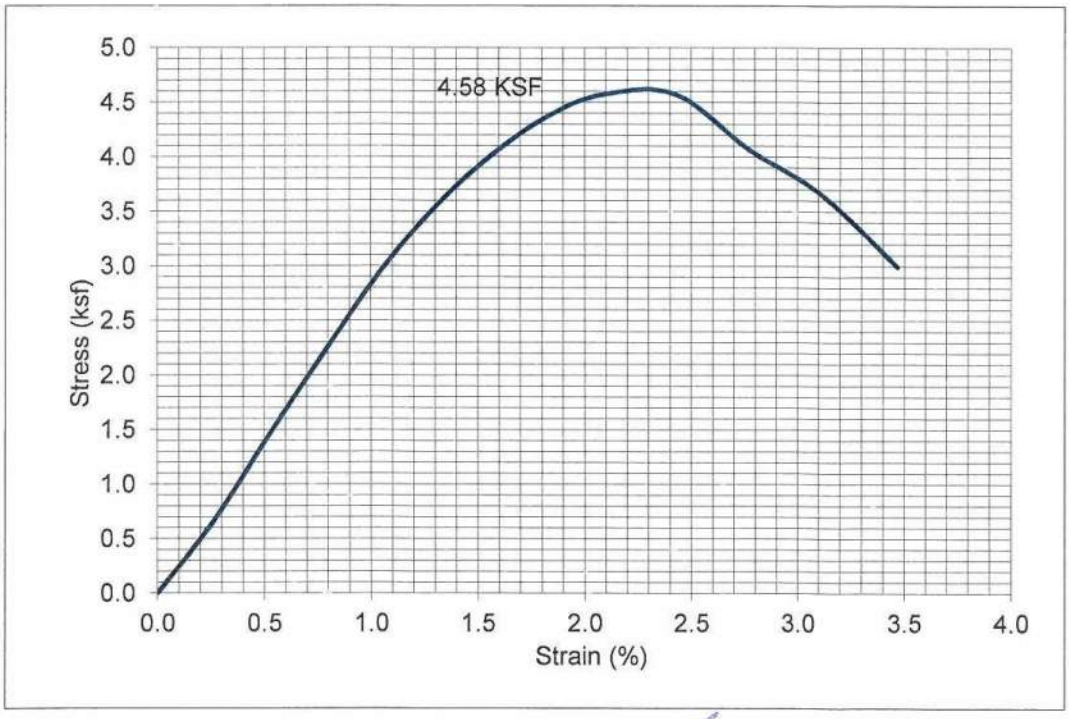
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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-104
Project State	: Arkansas	Sample Depth	: 5.0' to 5.5'
Laboratory #	: 251539	Date Tested	: 10/19/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15
Soil Type	: Gray, Brown & Tan Clayey Sand		
Wet Density	: 131.5 pcf	Initial Height	: 5.77 in
Dry Density	: 113.7 pcf	Initial Diameter	: 2.83 in
Moisture	: 15.6 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-135
Project State	: Arkansas	Sample Depth	: 5.5' to 6.0'
Laboratory #	: 251539	Date Tested	: 10/20/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15

Soil Type	: Brown Sandy, Silty Clay				
Wet Density	: 131.2	pcf	Initial Height	: 5.91	in
Dry Density	: 113.6	pcf	Initial Diameter	: 2.80	in
Moisture	: 15.5	%	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	14.4	0.04	0.5	0.34
4	20.2	0.04	0.8	0.47
5	22.1	0.04	1.0	0.51
6	26.0	0.04	1.3	0.60
7	27.9	0.04	1.5	0.64
8	29.8	0.04	1.8	0.69
9	32.7	0.04	2.0	0.75
10	36.6	0.04	2.4	0.84
11	39.4	0.04	2.7	0.90
12	43.3	0.04	3.0	0.98
13	45.2	0.04	3.4	1.02
14	50.0	0.04	3.7	1.13
15	52.9	0.04	4.1	1.19
16	56.8	0.04	4.4	1.27
17	59.6	0.04	4.7	1.33
18	63.5	0.04	5.1	1.41
19	68.3	0.05	5.5	1.51
20	73.1	0.05	5.9	1.61
21	76.9	0.05	6.3	1.69
22	80.8	0.05	6.8	1.77
23	83.7	0.05	7.2	1.82
24	87.5	0.05	7.6	1.90
25	89.5	0.05	8.0	1.93
26	84.6	0.05	8.5	1.82
27	61.6	0.05	9.3	1.31

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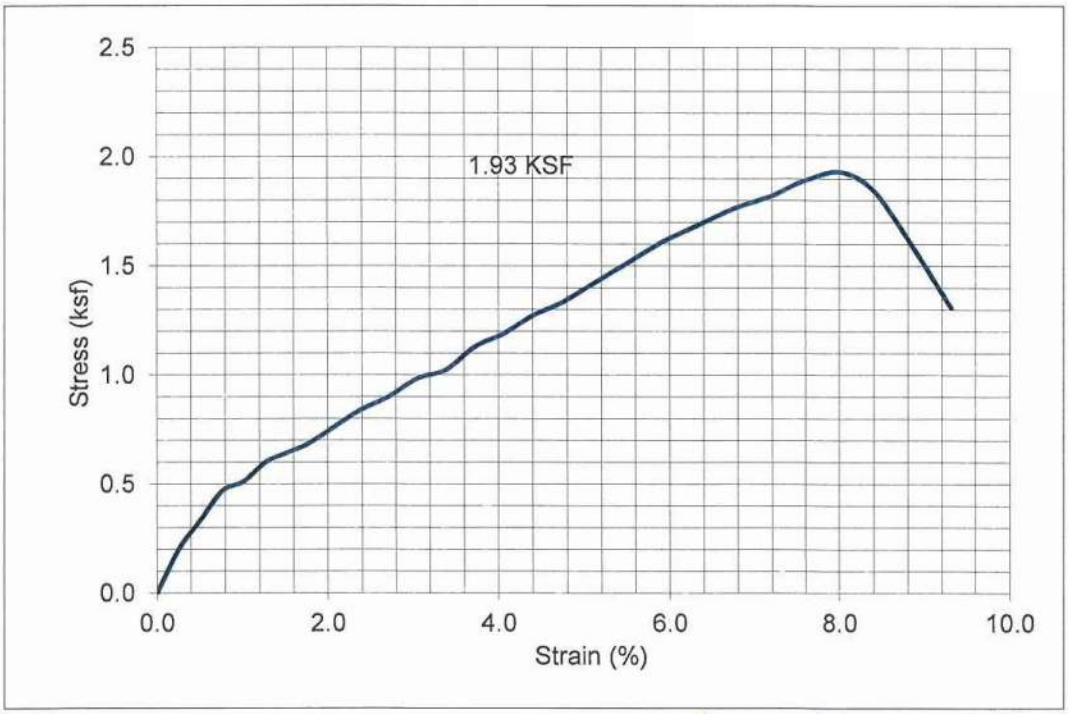
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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-135
Project State	: Arkansas	Sample Depth	: 5.5' to 6.0'
Laboratory #	: 251539	Date Tested	: 10/20/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15
Soil Type	: Brown Sandy, Silty Clay		
Wet Density	: 131.2 pcf	Initial Height	: 5.91 in
Dry Density	: 113.6 pcf	Initial Diameter	: 2.80 in
Moisture	: 15.5 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-2
Project County	: Lonoke	Sample Loc.	: Boring No. B-135
Project State	: Arkansas	Sample Depth	: 11.3' to 11.8'
Laboratory #	: 251539	Date Tested	: 10/20/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15

Soil Type	: Gray, Brown & Tan Sandy Silt				
Wet Density	: 128.5	pcf	Initial Height	: 5.84	in
Dry Density	: 106.8	pcf	Initial Diameter	: 2.85	in
Moisture	: 20.2	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	4.8	0.04	0.3	0.11
3	7.7	0.04	0.5	0.17
4	13.5	0.04	0.8	0.30
5	18.3	0.04	1.0	0.41
6	22.1	0.04	1.3	0.49
7	26.0	0.04	1.5	0.58
8	29.8	0.04	1.8	0.66
9	33.7	0.05	2.1	0.75
10	35.6	0.05	2.4	0.79
11	36.6	0.05	2.7	0.80
12	36.6	0.05	3.1	0.80
13	37.5	0.05	3.4	0.82
14	36.6	0.05	3.8	0.80
15	33.7	0.05	4.1	0.73

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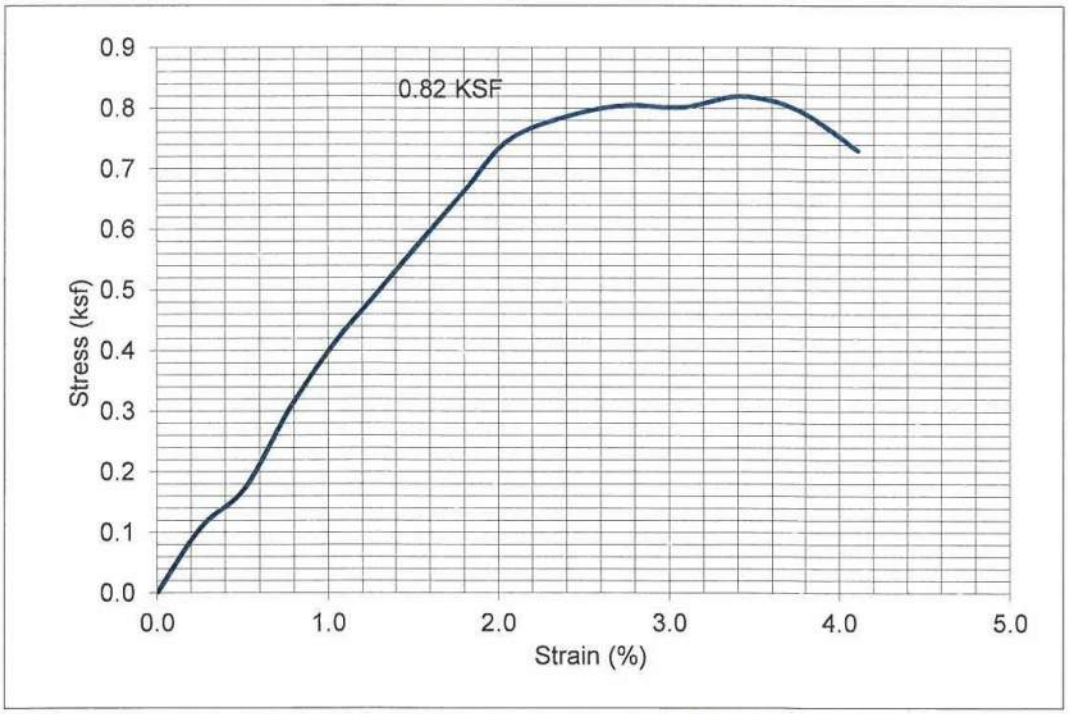
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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-2
Project County	: Lonoke	Sample Loc.	: Boring No. B-135
Project State	: Arkansas	Sample Depth	: 11.3' to 11.8'
Laboratory #	: 251539	Date Tested	: 10/20/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15
Soil Type	: Gray, Brown & Tan Sandy Silt		
Wet Density	: 128.5 pcf	Initial Height	: 5.84 in
Dry Density	: 106.8 pcf	Initial Diameter	: 2.85 in
Moisture	: 20.2 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-135A
Project State	: Arkansas	Sample Depth	: 4.7' to 5.2'
Laboratory #	: 251539	Date Tested	: 02/01/16
Submitted By	: HDR | ICA	Date Reported	: 03/01/16

Soil Type	: Brown Sandy Silt				
Wet Density	: 130.8	pcf	Initial Height	: 5.76	in
Dry Density	: 108.8	pcf	Initial Diameter	: 2.84	in
Moisture	: 20.2	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	1.9	0.04	0.3	0.04
3	3.8	0.04	0.5	0.09
4	5.8	0.04	0.8	0.13
5	6.7	0.04	1.0	0.15
6	9.6	0.04	1.3	0.22
7	12.5	0.04	1.6	0.28
8	13.5	0.04	1.8	0.30
9	15.4	0.05	2.1	0.34
10	19.2	0.05	2.4	0.43
11	21.2	0.05	2.8	0.47
12	24.0	0.05	3.1	0.53
13	26.9	0.05	3.5	0.59
14	28.9	0.05	3.8	0.63
15	30.8	0.05	4.2	0.67
16	33.7	0.05	4.5	0.73
17	35.6	0.05	4.9	0.77
18	37.5	0.05	5.2	0.81
19	38.5	0.05	5.6	0.82
20	41.4	0.05	6.1	0.88
21	43.3	0.05	6.5	0.92
22	44.2	0.05	7.0	0.93
23	46.2	0.05	7.4	0.97
24	47.1	0.05	7.8	0.99
25	50.0	0.05	8.3	1.04
26	51.0	0.05	8.7	1.06
27	51.9	0.05	9.6	1.07
28	53.9	0.05	10.4	1.09
29	57.7	0.05	11.3	1.16
30	59.6	0.05	12.2	1.19
31	60.6	0.05	13.0	1.20
32	61.6	0.05	13.9	1.20
33	62.5	0.05	14.8	1.21
34	61.6	0.05	15.6	1.18
35	60.6	0.05	16.5	1.15
36	57.7	0.05	17.4	1.08

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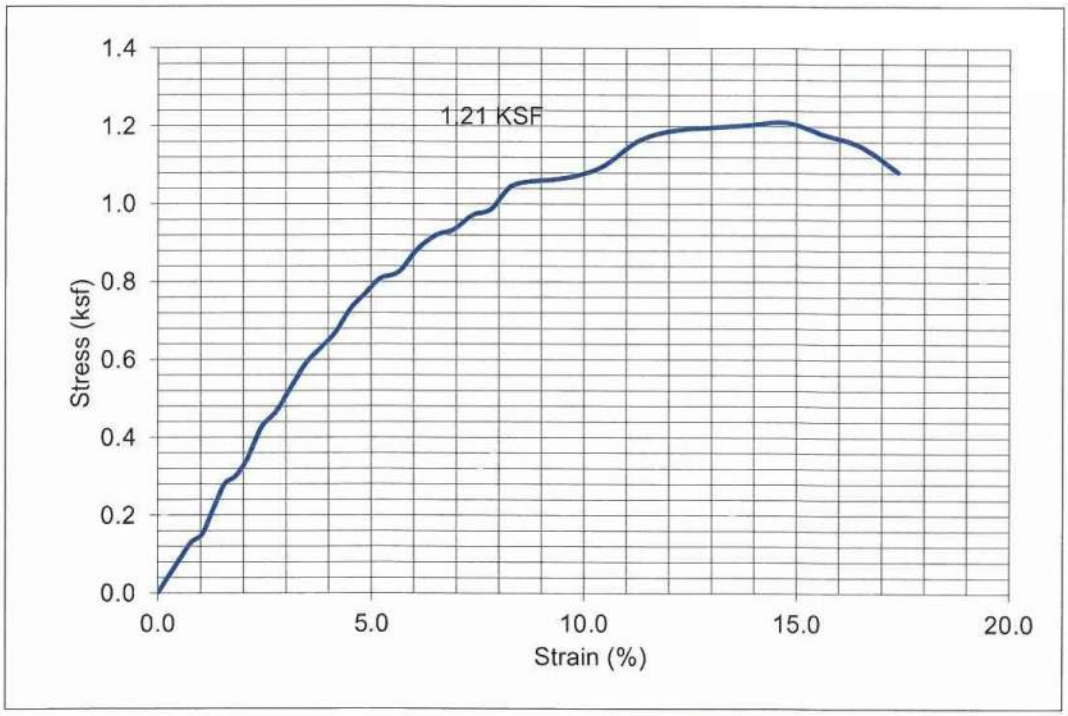
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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-135A
Project State	: Arkansas	Sample Depth	: 4.7' to 5.2'
Laboratory #	: 251539	Date Tested	: 02/01/16
Submitted By	: HDR | ICA	Date Reported	: 03/01/16
Soil Type	: Brown Sandy Silt		
Wet Density	: 130.8 pcf	Initial Height	: 5.76 in
Dry Density	: 108.8 pcf	Initial Diameter	: 2.84 in
Moisture	: 20.2 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-139
Project State	: Arkansas	Sample Depth	: 9.3' to 9.9'
Laboratory #	: 251539	Date Tested	: 10/19/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15

Soil Type	: Gray & Tan Silty Sand				
Wet Density	: 121.4	pcf	Initial Height	: 5.78	in
Dry Density	: 101.2	pcf	Initial Diameter	: 2.87	in
Moisture	: 19.9	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	2.9	0.04	0.3	0.06
3	6.7	0.05	0.5	0.15
4	8.7	0.05	0.8	0.19
5	12.5	0.05	1.0	0.28
6	15.4	0.05	1.3	0.34
7	18.3	0.05	1.6	0.40
8	21.2	0.05	1.8	0.46
9	23.1	0.05	2.1	0.50
10	26.9	0.05	2.4	0.59
11	28.9	0.05	2.8	0.63
12	29.8	0.05	3.1	0.65
13	30.8	0.05	3.5	0.66
14	30.8	0.05	3.8	0.66
15	30.8	0.05	4.2	0.66
16	29.8	0.05	4.5	0.64

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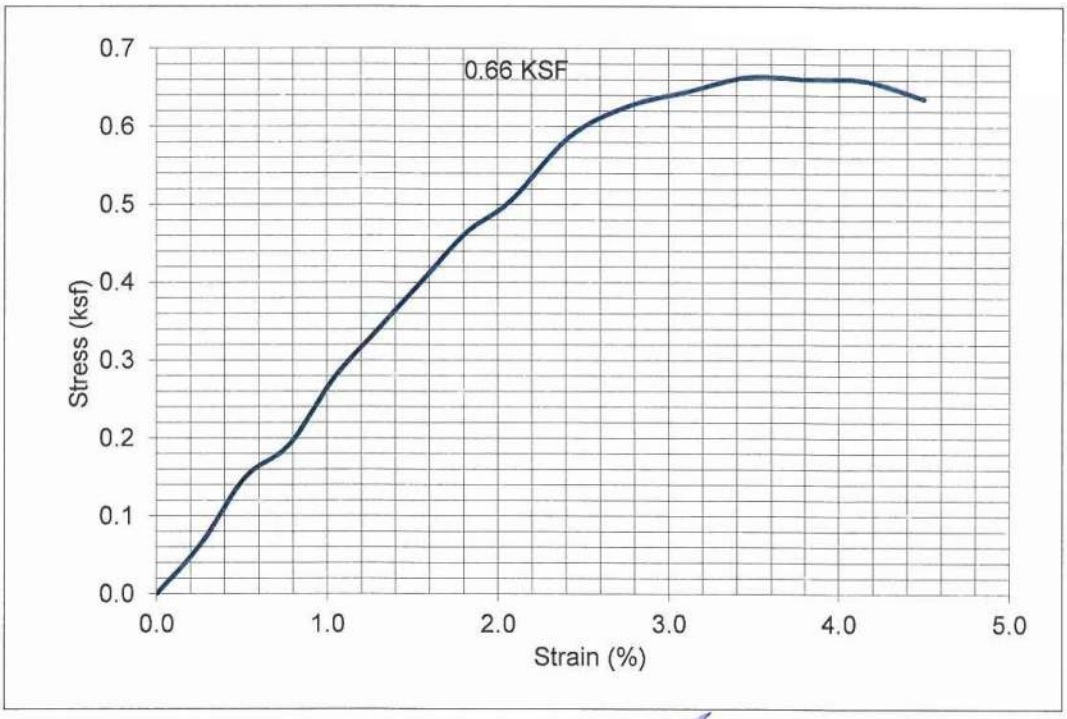
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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-139
Project State	: Arkansas	Sample Depth	: 9.3' to 9.9'
Laboratory #	: 251539	Date Tested	: 10/19/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15
Soil Type	: Gray & Tan Silty Sand		
Wet Density	: 121.4 pcf	Initial Height	: 5.78 in
Dry Density	: 101.2 pcf	Initial Diameter	: 2.87 in
Moisture	: 19.9 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-140
Project State	: Arkansas	Sample Depth	: 4.7' to 5.2'
Laboratory #	: 251539	Date Tested	: 02/11/16
Submitted By	: HDR | ICA	Date Reported	: 03/01/16
Soil Type	: Brown Sandy Silt		
Wet Density	: 129.7 pcf	Initial Height	: 5.82 in
Dry Density	: 107.3 pcf	Initial Diameter	: 2.85 in
Moisture	: 20.8 %	Proving Ring	: #22734

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	3.8	0.04	0.3	0.09
3	9.6	0.04	0.5	0.22
4	12.5	0.04	0.8	0.28
5	18.3	0.04	1.0	0.41
6	22.1	0.04	1.3	0.49
7	26.9	0.04	1.5	0.60
8	31.7	0.04	1.8	0.71
9	34.6	0.05	2.1	0.77
10	41.4	0.05	2.4	0.91
11	46.2	0.05	2.8	1.02
12	50.0	0.05	3.1	1.10
13	54.8	0.05	3.4	1.20
14	57.7	0.05	3.8	1.26
15	63.5	0.05	4.1	1.38
16	66.4	0.05	4.5	1.43
17	70.2	0.05	4.8	1.51
18	73.1	0.05	5.2	1.57
19	78.9	0.05	5.6	1.69
20	81.8	0.05	6.0	1.74
21	85.6	0.05	6.4	1.81
22	87.5	0.05	6.9	1.84
23	90.4	0.05	7.3	1.90
24	94.3	0.05	7.7	1.97
25	96.2	0.05	8.2	2.00
26	98.1	0.05	8.6	2.03
27	101.0	0.05	9.5	2.07
28	102.9	0.05	10.3	2.09
29	102.9	0.05	11.2	2.07
30	102.9	0.05	12.0	2.05
31	102.0	0.05	12.9	2.01
32	101.0	0.05	13.8	1.97

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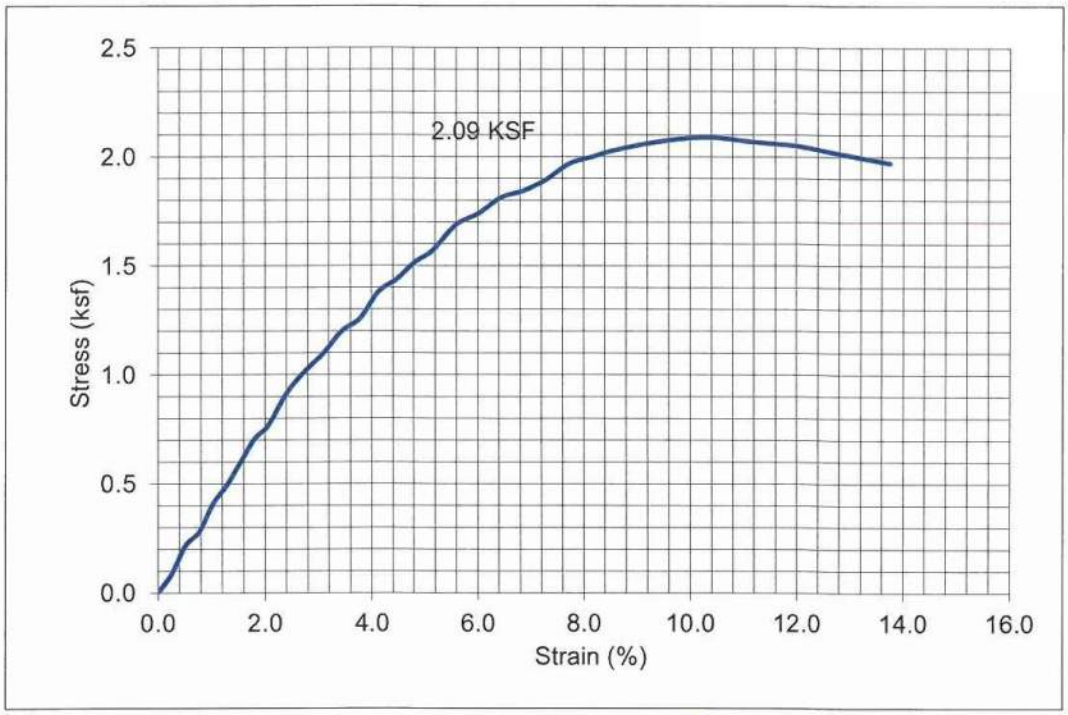
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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-140
Project State	: Arkansas	Sample Depth	: 4.7' to 5.2'
Laboratory #	: 251539	Date Tested	: 02/11/16
Submitted By	: HDR | ICA	Date Reported	: 03/01/16
Soil Type	: Brown Sandy Silt		
Wet Density	: 129.7 pcf	Initial Height	: 5.82 in
Dry Density	: 107.3 pcf	Initial Diameter	: 2.85 in
Moisture	: 20.8 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-2
Project County	: Lonoke	Sample Loc.	: Boring No. B-147
Project State	: Arkansas	Sample Depth	: 15.5' to 16.0'
Laboratory #	: 251539	Date Tested	: 10/20/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15
Soil Type	: Black, Tan & Gray Lean Clay		
Wet Density	: 115.7 pcf	Initial Height	: 5.87 in
Dry Density	: 93.1 pcf	Initial Diameter	: 2.85 in
Moisture	: 24.2 %	Proving Ring	: #22734

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	5.8	0.04	0.3	0.13
3	10.6	0.04	0.5	0.24
4	15.4	0.04	0.8	0.35
5	21.2	0.04	1.0	0.47
6	26.0	0.04	1.3	0.58
7	30.8	0.04	1.5	0.69
8	34.6	0.05	1.8	0.77
9	37.5	0.05	2.0	0.83
10	40.4	0.05	2.4	0.89
11	42.3	0.05	2.7	0.93
12	43.3	0.05	3.1	0.95
13	44.2	0.05	3.4	0.97
14	46.2	0.05	3.8	1.00
15	49.1	0.05	4.1	1.06
16	51.0	0.05	4.4	1.10
17	51.9	0.05	4.8	1.12
18	52.9	0.05	5.1	1.14
19	54.8	0.05	5.5	1.17
20	56.8	0.05	6.0	1.21
21	58.7	0.05	6.4	1.24
22	59.6	0.05	6.8	1.26
23	60.6	0.05	7.2	1.27
24	61.6	0.05	7.7	1.29
25	62.5	0.05	8.1	1.30
26	63.5	0.05	8.5	1.31
27	64.4	0.05	9.4	1.32
28	65.4	0.05	10.2	1.33
29	66.4	0.05	11.1	1.33
30	66.4	0.05	11.9	1.32
31	66.4	0.05	12.8	1.31
32	65.4	0.05	13.6	1.28

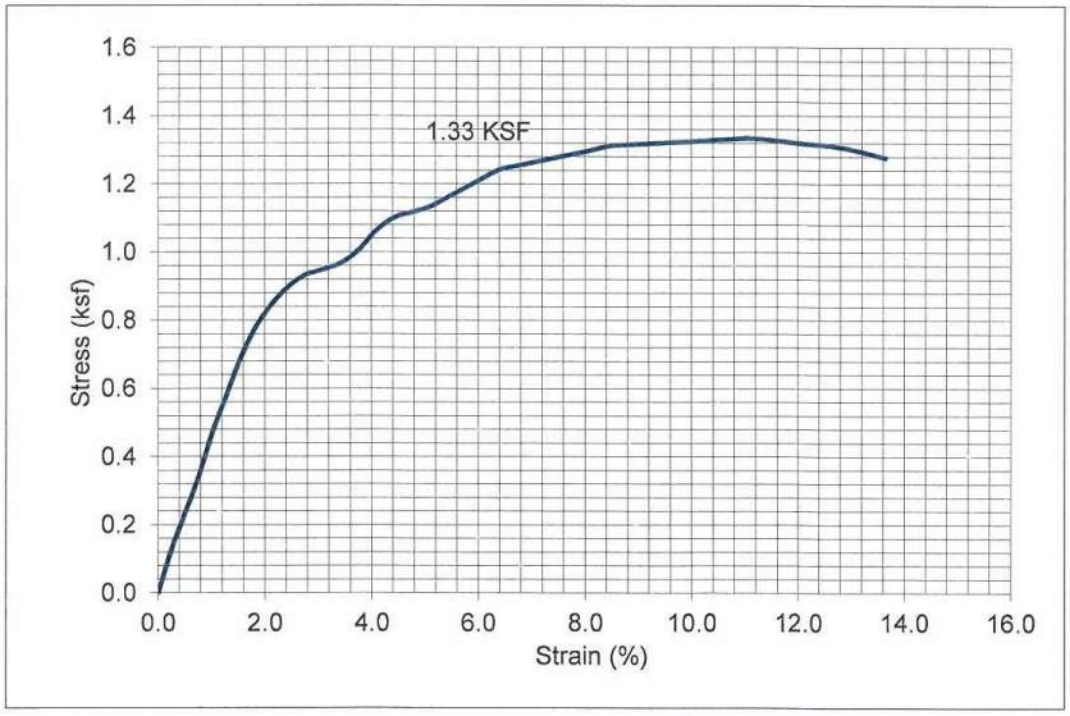
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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-2
Project County	: Lonoke	Sample Loc.	: Boring No. B-147
Project State	: Arkansas	Sample Depth	: 15.5' to 16.0'
Laboratory #	: 251539	Date Tested	: 10/20/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15
Soil Type	: Black, Tan & Gray Lean Clay		
Wet Density	: 115.7 pcf	Initial Height	: 5.87 in
Dry Density	: 93.1 pcf	Initial Diameter	: 2.85 in
Moisture	: 24.2 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-168
Project State	: Arkansas	Sample Depth	: 5.1' to 5.6'
Laboratory #	: 251539	Date Tested	: 10/19/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15

Soil Type	: Gray, White & Tan Lean Clay with Sand				
Wet Density	: 129.6	pcf	Initial Height	: 5.87	in
Dry Density	: 108.9	pcf	Initial Diameter	: 2.85	in
Moisture	: 19.0	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	4.8	0.04	0.3	0.11
3	18.3	0.04	0.5	0.41
4	50.0	0.04	0.8	1.12
5	88.5	0.04	1.0	1.98
6	121.2	0.04	1.3	2.70
7	151.0	0.05	1.5	3.35
8	177.0	0.05	1.8	3.92
9	199.1	0.05	2.0	4.40
10	218.3	0.05	2.4	4.81
11	231.8	0.05	2.7	5.09
12	231.8	0.05	3.1	5.07
13	157.7	0.05	3.4	3.44
14	35.6	0.05	3.7	0.77

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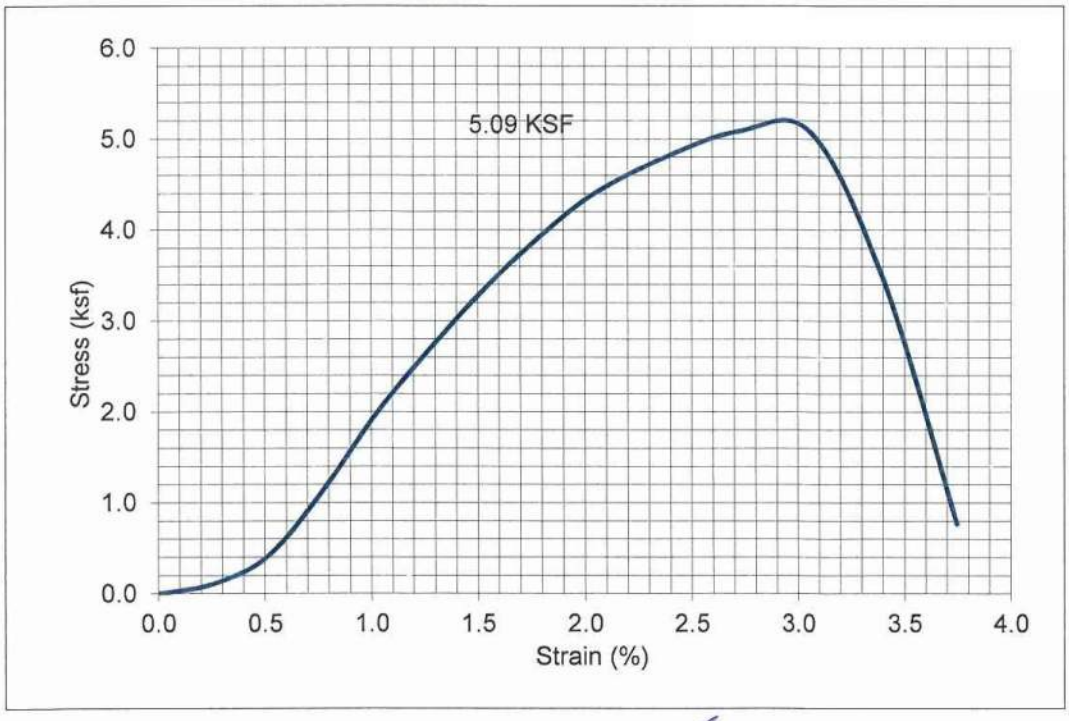
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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-168
Project State	: Arkansas	Sample Depth	: 5.1' to 5.6'
Laboratory #	: 251539	Date Tested	: 10/19/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15
Soil Type	: Gray, White & Tan Lean Clay with Sand		
Wet Density	: 129.6 pcf	Initial Height	: 5.87 in
Dry Density	: 108.9 pcf	Initial Diameter	: 2.85 in
Moisture	: 19.0 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-167
Project State	: Arkansas	Sample Depth	: 4.9' to 5.4'
Laboratory #	: 251539	Date Tested	: 10/19/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15

Soil Type	: Brown, Tan, Yellow, Black & Gray Sandy Lean Clay				
Wet Density	: 136.4	pcf	Initial Height	: 5.86	in
Dry Density	: 124.0	pcf	Initial Diameter	: 2.81	in
Moisture	: 9.9	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	22.1	0.04	0.3	0.51
3	101.0	0.04	0.5	2.33
4	172.2	0.04	0.8	3.97
5	230.8	0.04	1.0	5.31
6	294.3	0.04	1.3	6.75
7	375.1	0.04	1.5	8.58
8	477.1	0.04	1.8	10.88
9	555.0	0.04	2.0	12.62
10	586.3	0.04	2.4	13.29
11	681.3	0.04	2.7	15.39
12	765.3	0.04	3.1	17.23
13	802.9	0.04	3.4	18.01
14	760.9	0.04	3.8	17.01
15	621.6	0.04	4.1	13.84
16	539.6	0.05	4.4	11.97

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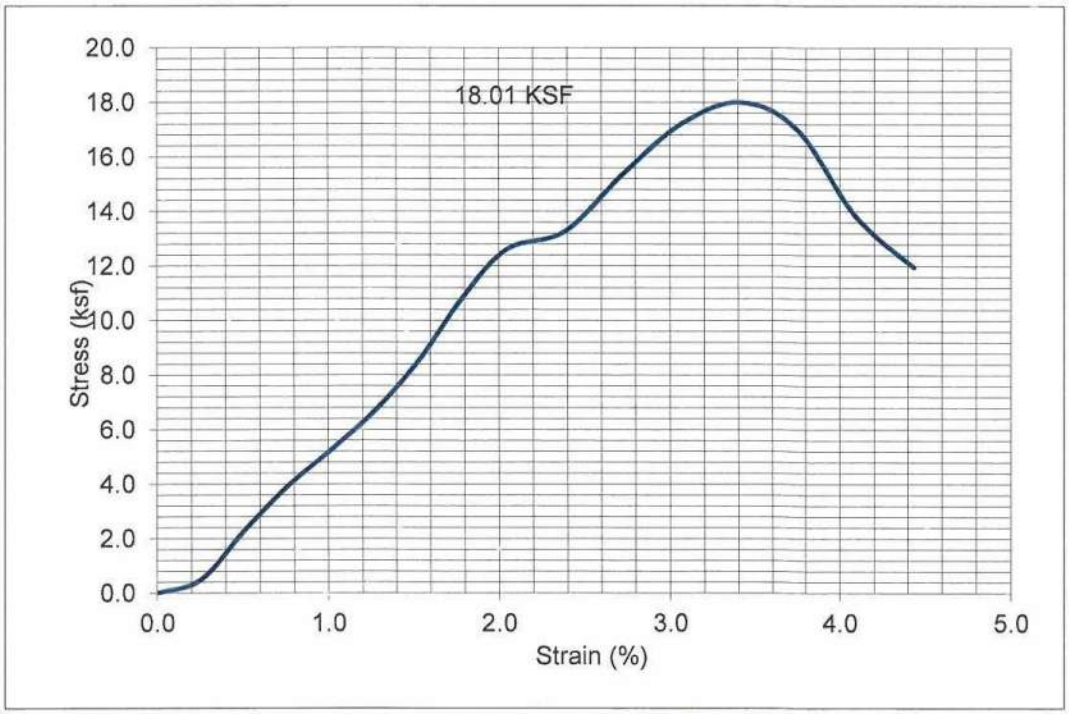
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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-167
Project State	: Arkansas	Sample Depth	: 4.9' to 5.4'
Laboratory #	: 251539	Date Tested	: 10/19/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15
Soil Type	: Brown, Tan, Yellow, Black & Gray Sandy Lean Clay		
Wet Density	: 136.4 pcf	Initial Height	: 5.86 in
Dry Density	: 124.0 pcf	Initial Diameter	: 2.81 in
Moisture	: 9.9 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





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AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-169
Project State	: Arkansas	Sample Depth	: 10.0' to 10.5'
Laboratory #	: 251539	Date Tested	: 02/01/16
Submitted By	: HDR | ICA	Date Reported	: 03/01/16

Soil Type	: Tan & Gray Sandy Silt				
Wet Density	: 128.5	pcf	Initial Height	: 5.79	in
Dry Density	: 107.8	pcf	Initial Diameter	: 2.84	in
Moisture	: 19.2	%	Proving Ring	: #22734	

RESULTS:

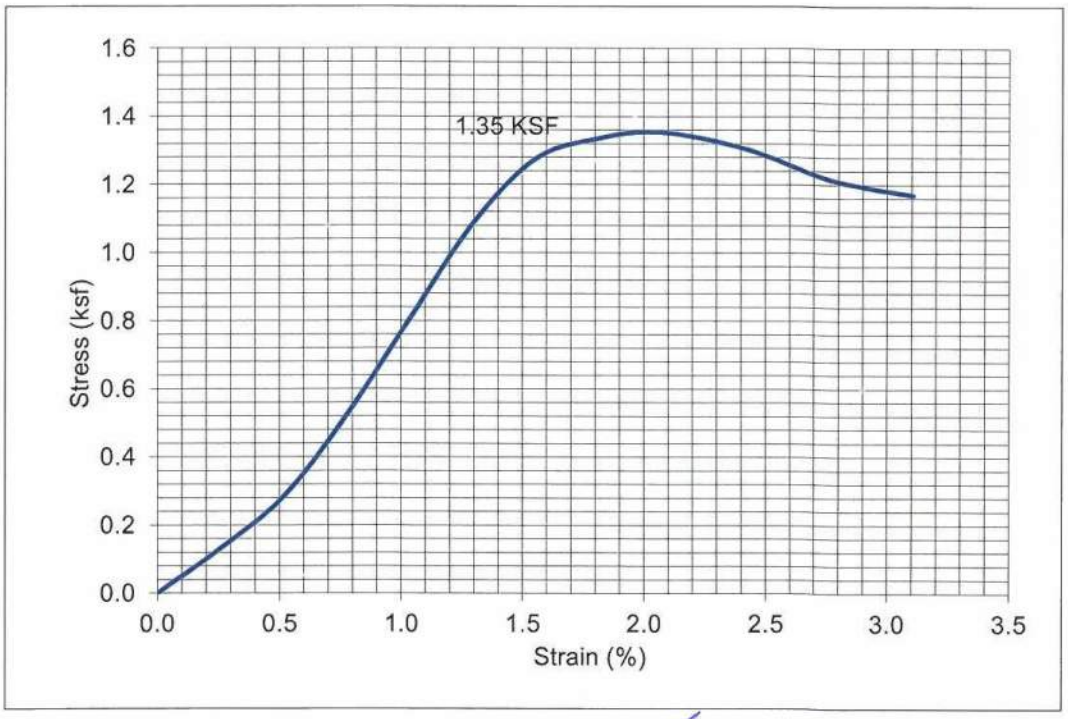
#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	5.8	0.04	0.3	0.13
3	12.5	0.04	0.5	0.28
4	23.1	0.04	0.8	0.52
5	35.6	0.04	1.0	0.80
6	48.1	0.04	1.3	1.08
7	56.8	0.04	1.6	1.27
8	59.6	0.04	1.8	1.34
9	60.6	0.04	2.1	1.35
10	58.7	0.04	2.4	1.31
11	54.8	0.05	2.8	1.22
12	52.9	0.05	3.1	1.17

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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-169
Project State	: Arkansas	Sample Depth	: 10.0' to 10.5'
Laboratory #	: 251539	Date Tested	: 02/01/16
Submitted By	: HDR | ICA	Date Reported	: 03/01/16
Soil Type	: Tan & Gray Sandy Silt		
Wet Density	: 128.5 pcf	Initial Height	: 5.79 in
Dry Density	: 107.8 pcf	Initial Diameter	: 2.84 in
Moisture	: 19.2 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





APPROVED BY: Jeremy Soto

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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-170
Project State	: Arkansas	Sample Depth	: 5.1' to 5.6'
Laboratory #	: 251539	Date Tested	: 02/01/16
Submitted By	: HDR | ICA	Date Reported	: 03/01/16

Soil Type	: Tan & Gray Silty Clay with Sand				
Wet Density	: 126.4	pcf	Initial Height	: 5.71	in
Dry Density	: 101.8	pcf	Initial Diameter	: 2.85	in
Moisture	: 24.2	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	3.8	0.04	0.3	0.09
3	6.7	0.04	0.5	0.15
4	11.5	0.04	0.8	0.26
5	14.4	0.04	1.1	0.32
6	20.2	0.04	1.3	0.45
7	24.0	0.04	1.6	0.53
8	28.9	0.05	1.8	0.64
9	33.7	0.05	2.1	0.74
10	36.6	0.05	2.5	0.81
11	41.4	0.05	2.8	0.91
12	45.2	0.05	3.2	0.99
13	49.1	0.05	3.5	1.07
14	51.0	0.05	3.9	1.11
15	51.9	0.05	4.2	1.12
16	54.8	0.05	4.6	1.18
17	56.8	0.05	4.9	1.22
18	58.7	0.05	5.3	1.26
19	59.6	0.05	5.7	1.27
20	59.6	0.05	6.1	1.26
21	59.6	0.05	6.6	1.26
22	59.6	0.05	7.0	1.25

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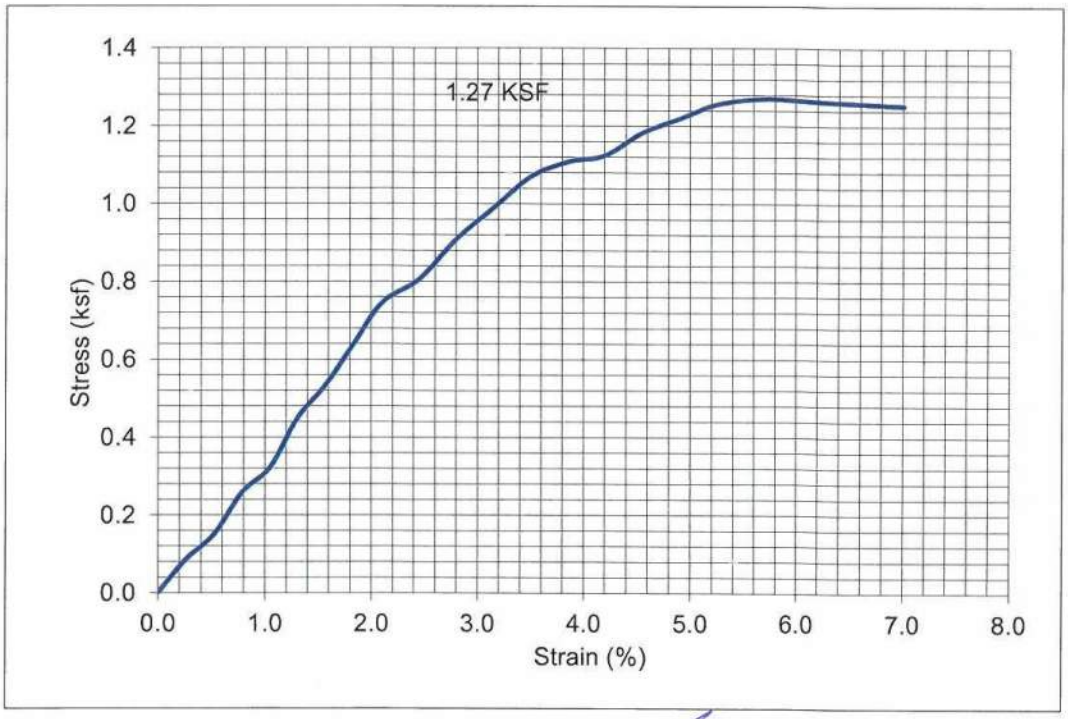
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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-170
Project State	: Arkansas	Sample Depth	: 5.1' to 5.6'
Laboratory #	: 251539	Date Tested	: 02/01/16
Submitted By	: HDR | ICA	Date Reported	: 03/01/16
Soil Type	: Tan & Gray Silty Clay with Sand		
Wet Density	: 126.4 pcf	Initial Height	: 5.71 in
Dry Density	: 101.8 pcf	Initial Diameter	: 2.85 in
Moisture	: 24.2 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





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Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: North Cabot Interchange		
PROJECT #	: 251539	POINT #	: 1
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-100
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 14.6' to 15.2'
LABORATORY #	: 251539	DATE TESTED	: 02/01/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/01/16
SOIL TYPE	: Tan & Gray Sandy Elastic Silt		
WET DENSITY	: 113.89 pcf	DELTA HEIGHT	: 0.45 cm
DRY DENSITY	: 81.49 pcf	DELTA VOLUME	: NA
MOISTURE	: 39.75 %	CHAMBER PRES.	: 9.73 psi
		INITIAL HEIGHT	: 14.89 cm
		INITIAL DIAMETER	: 7.25 cm
		COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	9.73	9.73	1.00
2	0.09	9.73	11.04	1.13
3	0.18	9.73	12.57	1.29
4	0.26	9.73	14.09	1.45
5	0.35	9.73	15.61	1.6
6	0.44	9.73	17.12	1.76
7	0.53	9.73	18.42	1.89
8	1.06	9.73	24.94	2.56
9	1.58	9.73	28.2	2.9
10	2.11	9.73	28.73	2.95
11	2.64	9.73	28.01	2.88
12	3.17	9.73	27.5	2.82
13	3.52	9.73	27.23	2.8

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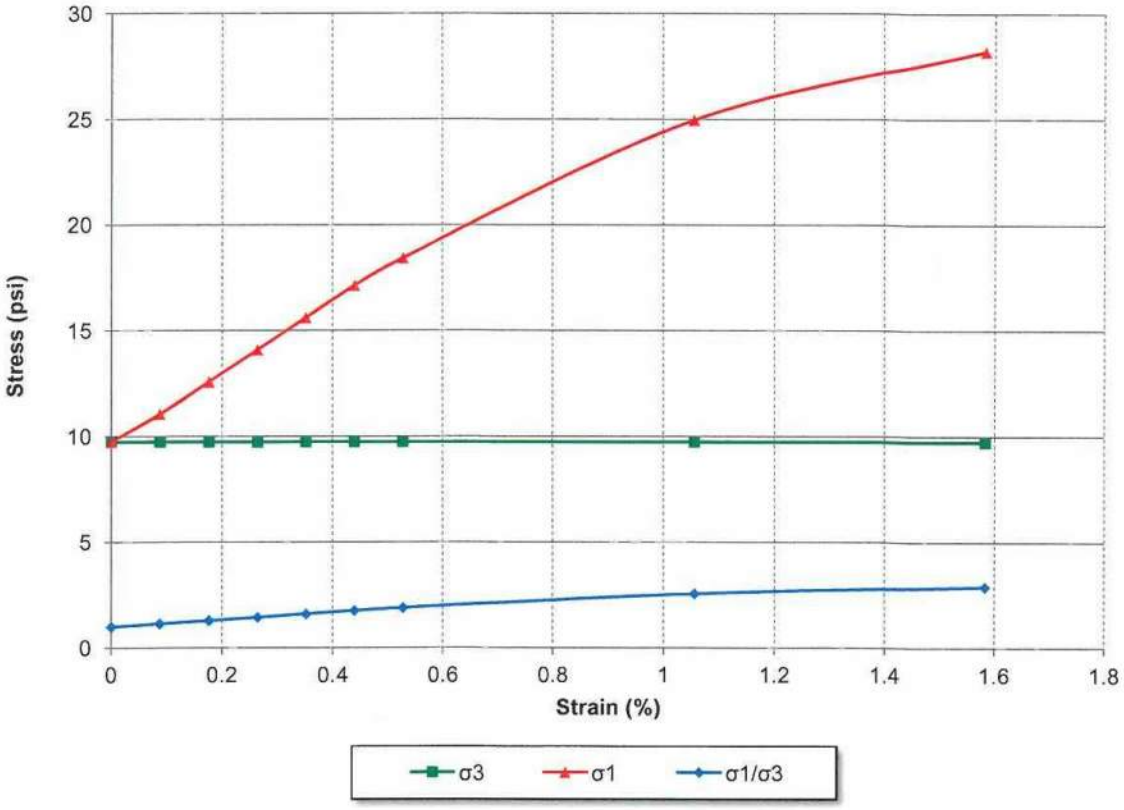
TRIAXIAL COMPRESSION TEST

PROJECT NAME	: North Cabot Interchange		
PROJECT #	: 251539	POINT #	: 1
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-100
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 14.6' to 15.2'
LABORATORY #	: 251539	DATE TESTED	: 02/01/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/01/16

FINAL MOISTURE	: 39.75 %	EFF. CONS. STRESS	: 9.73 psi
FINAL HEIGHT	: 11.52 cm	SPECIFIC GRAVITY	: 2.74
FINAL DIAMETER	: 8.08 cm	COMMENTS	: AASHTO T-296

RESULTS:





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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: North Cabot Interchange		
PROJECT #	: 251539	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-100
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 14.6' to 15.2'
LABORATORY #	: 251539	DATE TESTED	: 02/01/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/01/16

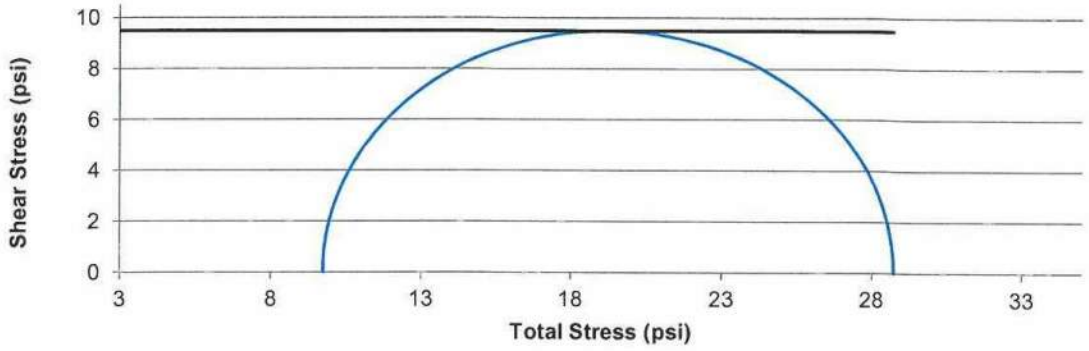
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	9.73 psi	28.73 psi

Compressive Strength =	2735 psf
Cohesion =	1368 psf
Phi =	0 deg
Tan (Phi) =	0

Maximum Deviator Stress

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



Approved By: Jeremy Sobo

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Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: North Cabot Interchange		
PROJECT #	: 251539	POINT #	: 1
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-171
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 5.0' to 5.5'
LABORATORY #	: 251539	DATE TESTED	: 02/01/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/01/16
SOIL TYPE	: Brown, Tan & Gray Sandy Lean Clay		
WET DENSITY	: 128.54 pcf	DELTA HEIGHT	: 0.45 cm
DRY DENSITY	: 104.2 pcf	DELTA VOLUME	: NA
MOISTURE	: 23.35 %	CHAMBER PRES.	: 4.95 psi
		INITIAL HEIGHT	: 14.67 cm
		INITIAL DIAMETER	: 7.19 cm
		COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	4.95	4.95	1.00
2	0.09	4.95	5.17	1.04
3	0.18	4.95	5.39	1.09
4	0.27	4.95	5.62	1.13
5	0.36	4.95	5.84	1.18
6	0.45	4.95	6.06	1.22
7	0.54	4.95	6.28	1.27
8	1.07	4.95	6.93	1.4
9	1.61	4.95	8.01	1.62
10	2.14	4.95	8.64	1.75
11	2.68	4.95	9.49	1.92
12	3.22	4.95	9.89	2
13	3.57	4.95	10.3	2.08
14	4.47	4.95	11.1	2.24
15	5.36	4.95	11.67	2.36
16	6.25	4.95	12.02	2.43
17	7.15	4.95	12.57	2.54
18	8.04	4.95	12.71	2.57
19	8.93	4.95	13.03	2.63
20	9.83	4.95	13.15	2.66
21	10.72	4.95	13.27	2.68
22	11.61	4.95	13.58	2.74
23	12.51	4.95	13.69	2.76
24	13.40	4.95	13.6	2.75
25	14.29	4.95	13.7	2.77
26	15.18	4.95	13.8	2.79
27	16.08	4.95	13.89	2.8
28	16.97	4.95	13.98	2.82
29	17.86	4.95	13.88	2.8
30	18.76	4.95	13.96	2.82
31	19.65	4.95	14.21	2.87
32	20.54	4.95	14.28	2.88

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Unconsolidated Undrained

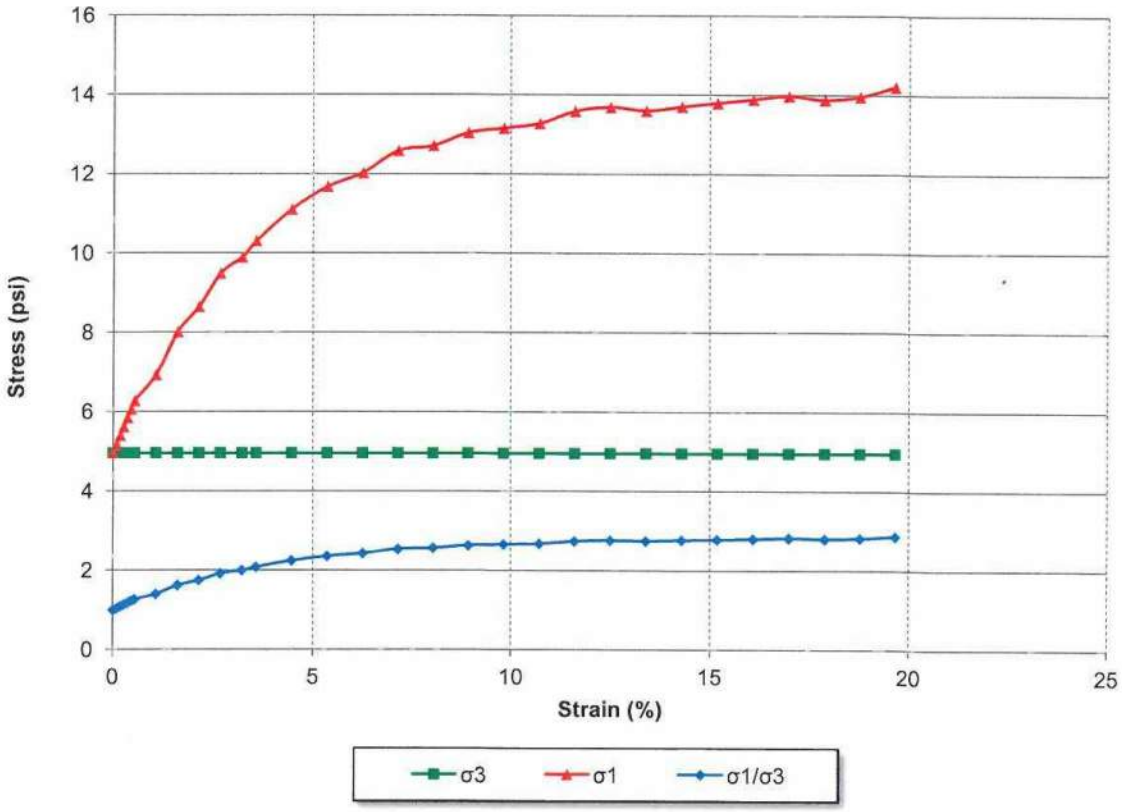
TRIAXIAL COMPRESSION TEST

PROJECT NAME	: North Cabot Interchange		
PROJECT #	: 251539	POINT #	: 1
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-171
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 5.0' to 5.5'
LABORATORY #	: 251539	DATE TESTED	: 02/01/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/01/16

FINAL MOISTURE	: 23.35 %	EFF. CONS. STRESS	: 4.95 psi
FINAL HEIGHT	: 11.3 cm	SPECIFIC GRAVITY	: 2.69
FINAL DIAMETER	: 8.03 cm	COMMENTS	: AASHTO T-296

RESULTS:





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Unconsolidated Undrained

TRIAXIAL COMPRESSION TEST

PROJECT NAME	: North Cabot Interchange		
PROJECT #	: 251539	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-171
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 5.0' to 5.5'
LABORATORY #	: 251539	DATE TESTED	: 02/01/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/01/16

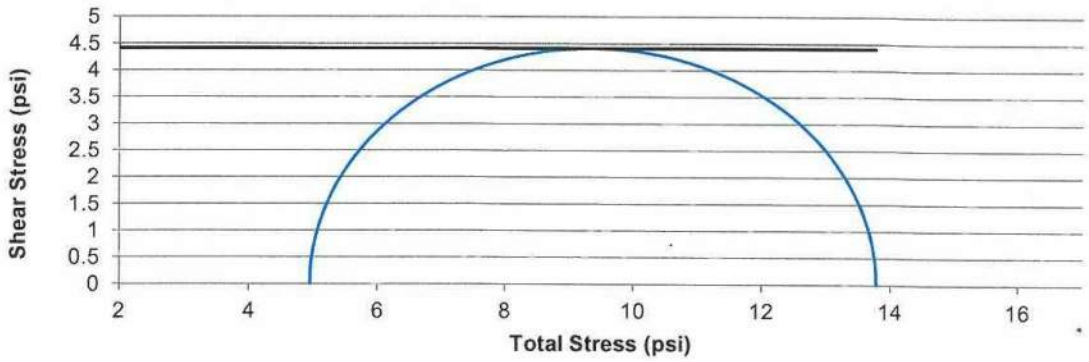
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	4.95 psi	13.78 psi

Compressive Strength =	1271 psf
Cohesion =	635 psf
Phi =	0 deg
Tan (Phi) =	0

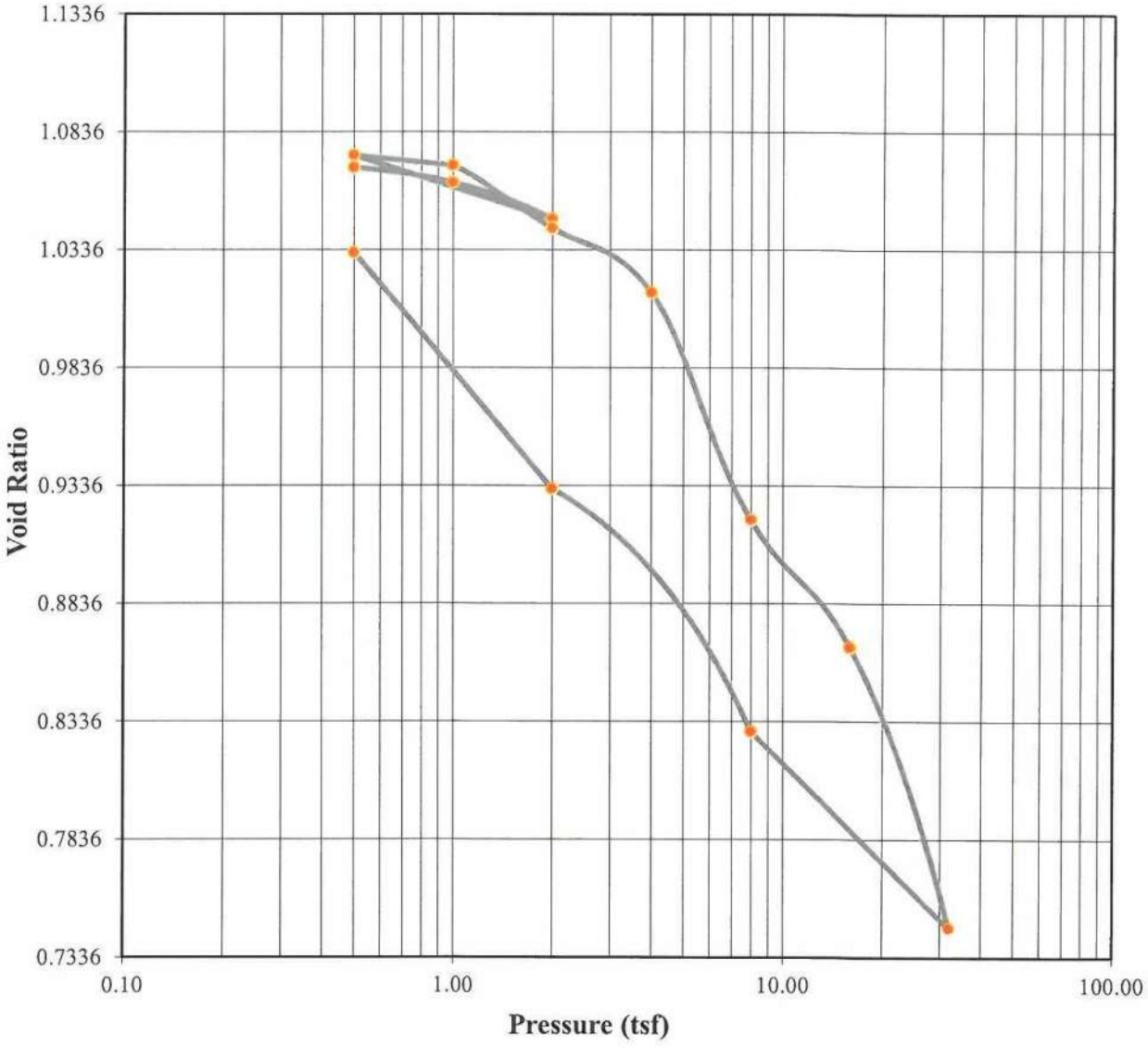
At Maximum Deviator Stress 15%

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



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Test Date: 02/02/16

Summary of Consolidation Test Results

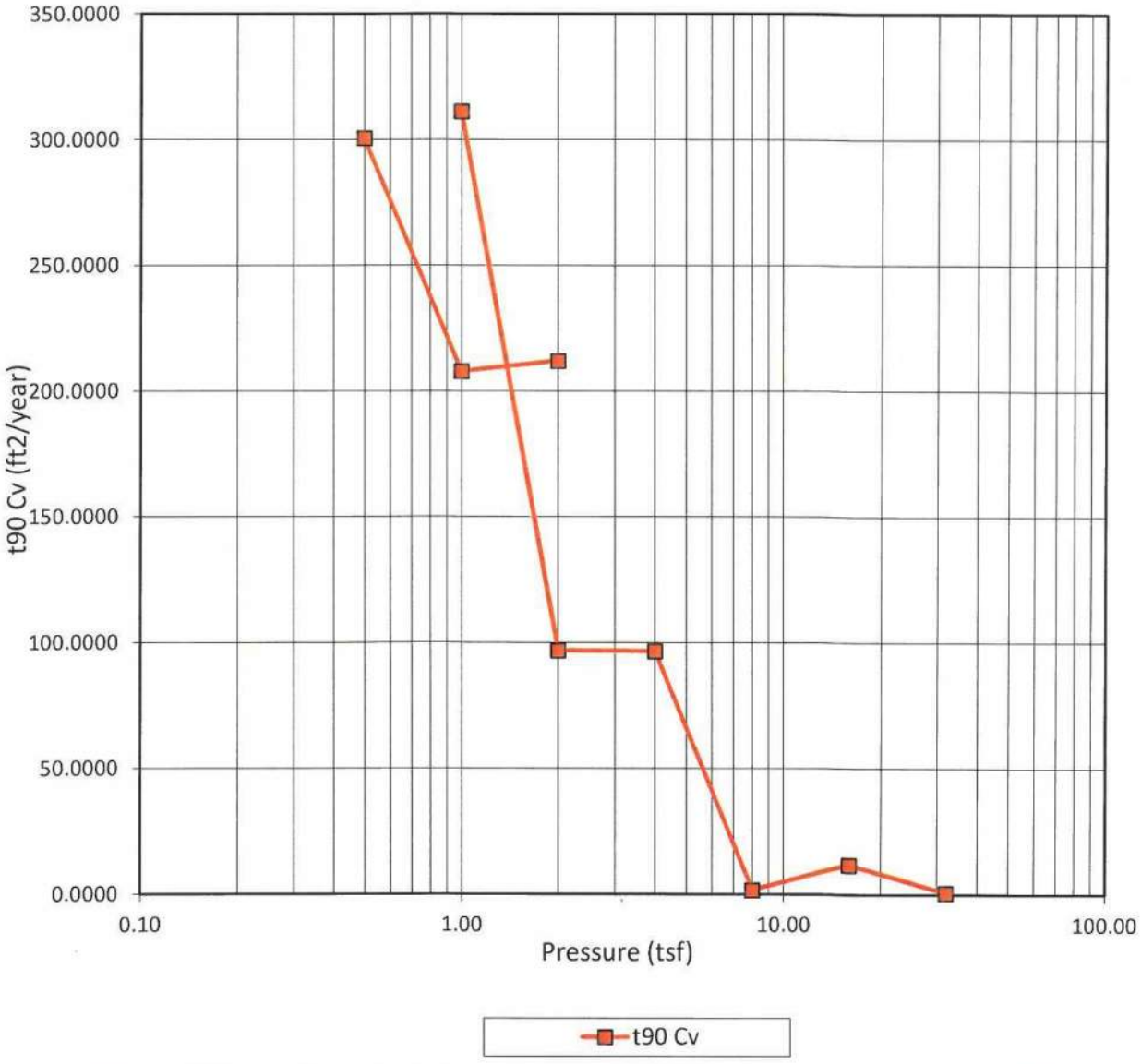
Overburden Press. (tsf)	0.93	Compression Index, C_c	0.25
Preconsol. Press., P_c (tsf)	4.00	Rebound Index, C_r	0.05
Over Consolidation Ratio	4.30		

Soil Description:	Tan & Gray Sandy Elastic Silt		
Project Number:	251539	Depth: 15.2' to 15.8'	Remarks:
Sample Number:	ST-2	Boring Number: B-100	
Project:	North Cabot Interchange		
Client:			
Location:	B-100 ST-2 15.2' to 15.8'		

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CONSOLIDATION TEST



	Before	After				
			Liquid Limits:	85	Test Date:	02/02/16
Moisture (%):	36.98	39.58	Plastic Limits:	42		
Dry Density (pcf):	82.62	97.66	Plasticity Index (%):	43		
Saturation (%):	94.53	144.05				
Void Ratio:	1.0696	0.7335	Specific Gravity:	2.744	Measured	

Soil Description:	Tan & Gray Sandy Elastic Silt		
Project Number:	251539	Depth: 15.2' to 15.8'	Remarks:
Sample Number:	ST-2	Boring Number: B-100	
Project:	North Cabot Interchange		
Client:			
Location:	B-100 ST-2 15.2' to 15.8'		

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CONSOLIDATION TEST

Test Summary

Project: North Cabot Interchange
Location: B-100 ST-2 15.2' to 15.8'
Job Number: 251539

Project Number: 251539

Sample Number: ST-2
Boring Number: B-100
Depth: 15.2' to 15.8'
Sample Type: Undisturbed

Sample Description:
Tan & Gray Sandy Elastic Silt
Remarks:

Test Number:
Test Date: 02/02/16

Index	Load Sequenc (tsf)	Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	-0.0010	1.0050	0.5204	-0.10	1.0697	0.000	0.000	0.000	0.000
1	0.500	-0.0004	1.0044	0.5198	-0.04	1.0685	2.599	* 1.4439	300.354	125.596
2	1.000	0.0027	1.0013	0.5167	0.27	1.0621	3.735	* 2.0752	207.698	86.850
3	2.000	0.0102	0.9938	0.5092	1.01	1.0467	3.607	* 2.0040	211.865	88.593
4	0.500	-0.0029	1.0069	0.5223	-0.29	1.0736	0.000	0.000	0.000	0.000
5	1.000	-0.0008	1.0048	0.5202	-0.08	1.0693	2.512	* 1.3953	311.067	130.074
6	2.000	0.0121	0.9919	0.5073	1.20	1.0428	7.876	* 4.3755	96.664	40.421
7	4.000	0.0254	0.9786	0.4940	2.53	1.0154	7.680	* 4.2668	96.486	40.347
8	8.000	0.0722	0.9318	0.4472	7.18	0.9190	437.456	* 243.0313	1.536	0.642
9	16.000	0.0984	0.9056	0.4210	9.79	0.8650	54.597	* 30.3319	11.623	4.860
10	32.000	0.1562	0.8478	0.3632	15.54	0.7460	936.955	* 520.5307	0.594	0.248
11	8.000	0.1158	0.8882	0.4036	11.52	0.8292	0.000	0.000	0.000	0.000
12	2.000	0.0658	0.9382	0.4536	6.55	0.9322	0.000	0.000	0.000	0.000
13	0.500	0.1632	0.8418	0.3562	1.80	1.0323	0.000	0.000	0.000	0.000

Predicted value indicated with *

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CONSOLIDATION TEST

Consolidation Specimen Information

Project: North Cabot Interchange
Location: B-100 ST-2 15.2' to 15.8'
Job Number: 251539

Project Number: 251539
Test Date: 02/02/16

Sample Number: ST-2
Boring Number: B-100
Depth: 15.2' to 15.8'
Sample Type: Undisturbed

Sample Description: Tan & Gray Sandy Elastic Silt
Remarks:

Test Number:
Liquid Limit: 85.0000
Plastic Limit: 42.0000
Specific Gravity: 2.7440 Measured

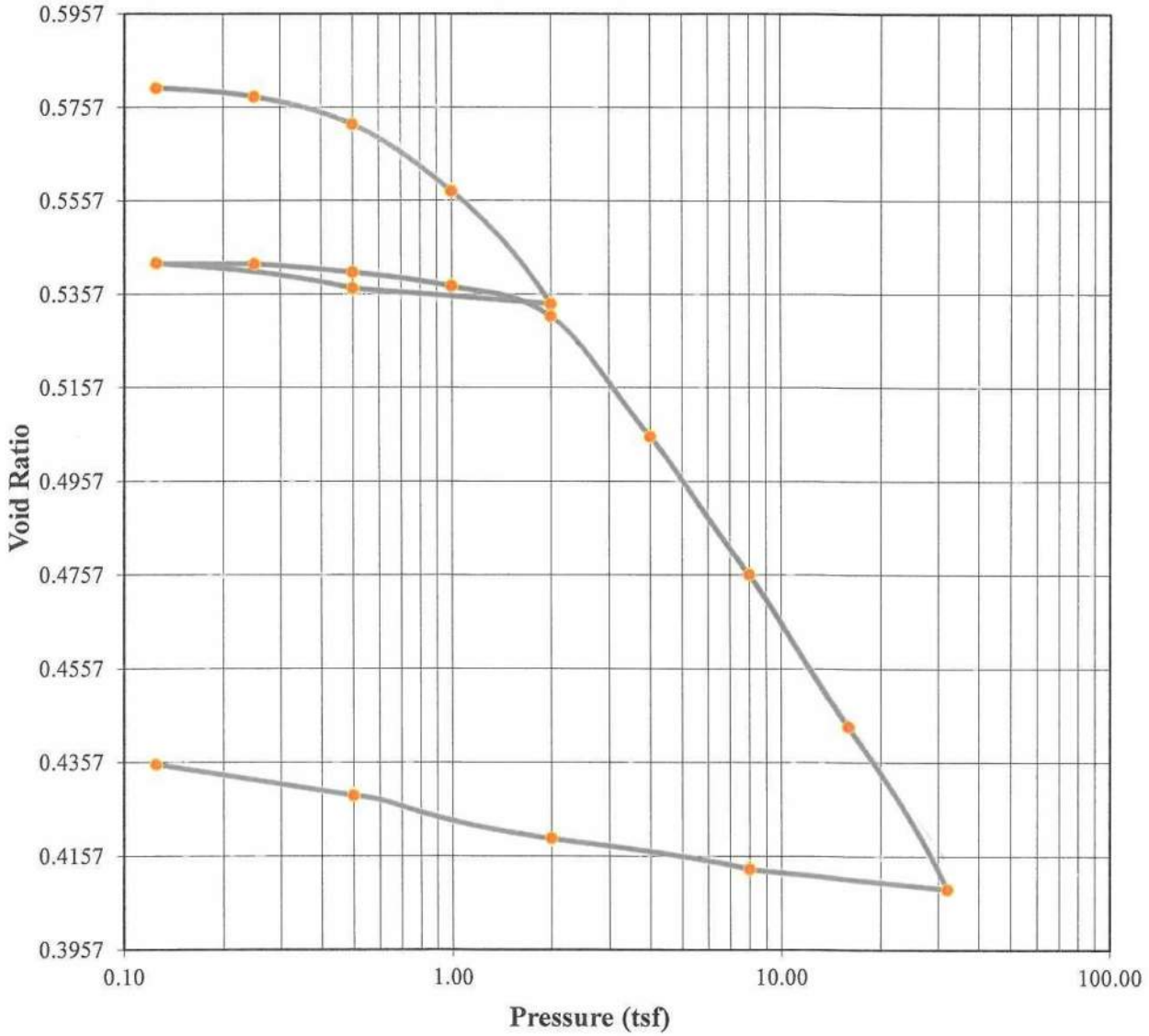
Initial Void Ratio: 1.0696
Plasticity Index (%): 43.0000
Weight of Ring (g): 110.8400

Initial Height (in): 1.0050
Initial Diameter (in): 2.4965

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	398.19	221.41
Dry Soil + Container (g)	310.41	179.83
Weight of Container (g)	73.06	74.78
Moisture Content (%)	36.98	39.58
Void Ratio	1.0696	0.7335
Saturation (%)	94.53	144.05
Dry Density (pcf)	82.62	97.66

Tested By: Jesus Soto

Checked By: S. Bowden



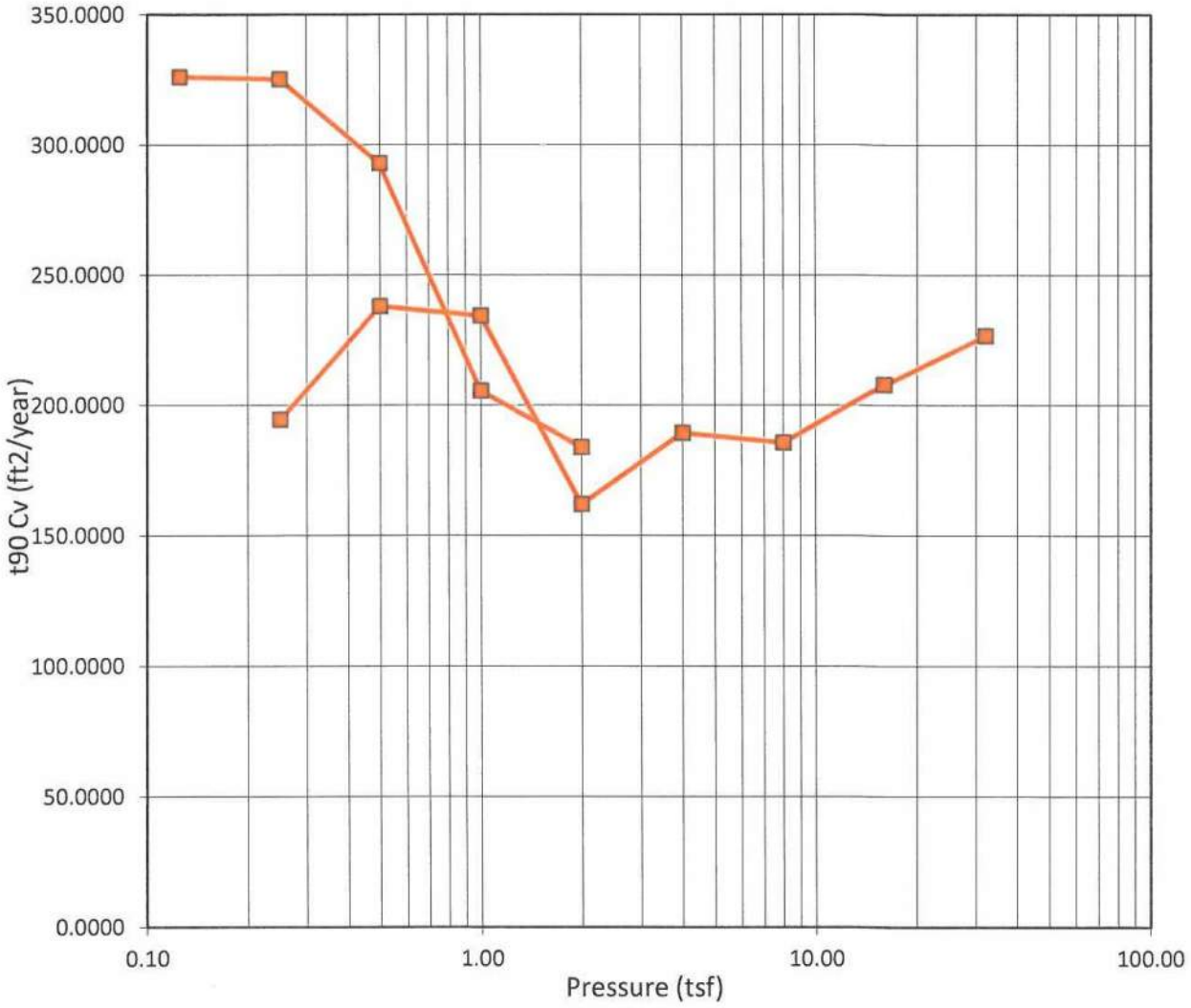
Test Date: 10/21/15

Summary of Consolidation Test Results

Overburden Press. (tsf)	0.37	Compression Index, C_c	0.10
Preconsol. Press., P_c (tsf)	1.00	Rebound Index, C_r	0.01
Over Consolidation Ratio	2.69		
Soil Description:	Brown Sandy Silty Clay		
Project Number:	251539	Depth: 6.0' to 6.4'	Remarks:
Sample Number:	ST-1	Boring Number: B-135	
Project:	North Cabot Interchange		
Client:			
Location:	B-135 ST-1 6.0' to 6.4'		

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	Before	After				
			Liquid Limits:	19	Test Date:	10/21/15
Moisture (%):	17.74	15.09	Plastic Limits:	14		
Dry Density (pcf):	107.97	122.29	Plasticity Index (%):	5		
Saturation (%):	83.20	103.70				
Void Ratio:	0.5814	0.3957	Specific Gravity:	2.740	Measured	

Soil Description:	Brown Sandy Silty Clay		
Project Number:	251539	Depth: 6.0' to 6.4'	Remarks:
Sample Number:	ST-1	Boring Number: B-135	
Project:	North Cabot Interchange		
Client:			
Location:	B-135 ST-1 6.0' to 6.4'		

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CONSOLIDATION TEST

Test Summary

Project: North Cabot Interchange
Location: B-135 ST-1 6.0' to 6.4'
Job Number: 251539

Project Number: 251539

Sample Number: ST-1
Boring Number: B-135
Depth: 6.0' to 6.4'
Sample Type: Undisturbed

Sample Description: Brown Sandy Silty Clay
Remarks:

Test Number:
Test Date: 10/21/15

Index	Load Sequence (tsf)	Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0033	0.3689	0.00	0.5814	0.000	0.000	0.000	0.000
1	0.125	0.0010	1.0023	0.3679	0.10	0.5799	2.384	* 1.3246	326.036	136.336
2	0.250	0.0022	1.0011	0.3667	0.22	0.5780	2.384	* 1.3246	325.256	136.009
3	0.500	0.0059	0.9974	0.3630	0.59	0.5721	2.629	* 1.4607	292.770	122.427
4	1.000	0.0150	0.9883	0.3539	1.50	0.5578	3.679	* 2.0436	205.464	85.917
5	2.000	0.0303	0.9730	0.3386	3.02	0.5337	3.986	* 2.2143	183.804	76.858
6	0.500	0.0282	0.9751	0.3407	2.81	0.5370	0.000	0.000	0.000	0.000
7	0.125	0.0248	0.9785	0.3441	2.47	0.5423	0.000	0.000	0.000	0.000
8	0.250	0.0249	0.9784	0.3440	2.48	0.5422	3.811	* 2.1172	194.373	81.277
9	0.500	0.0260	0.9773	0.3429	2.59	0.5404	3.106	* 1.7255	237.962	99.504
10	1.000	0.0279	0.9754	0.3410	2.78	0.5374	3.143	* 1.7460	234.251	97.954
11	2.000	0.0320	0.9713	0.3369	3.19	0.5310	4.508	* 2.5043	161.948	67.720
12	4.000	0.0483	0.9550	0.3206	4.81	0.5053	3.725	* 2.0697	189.434	79.213
13	8.000	0.0670	0.9363	0.3019	6.68	0.4758	3.655	* 2.0307	185.580	77.604
14	16.000	0.0876	0.9157	0.2813	8.73	0.4433	3.123	* 1.7349	207.771	86.882
15	32.000	0.1096	0.8937	0.2593	10.92	0.4087	2.727	* 1.5152	226.611	94.757
16	8.000	0.1069	0.8964	0.2620	10.65	0.4129	0.000	0.000	0.000	0.000
17	2.000	0.1027	0.9006	0.2662	10.24	0.4195	0.000	0.000	0.000	0.000
18	0.500	0.0969	0.9064	0.2720	9.66	0.4287	0.000	0.000	0.000	0.000
19	0.125	0.1178	0.8855	0.2511	9.24	0.4353	0.000	0.000	0.000	0.000

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CONSOLIDATION TEST

Consolidation Specimen Information

Project: North Cabot Interchange
Location: B-135 ST-1 6.0' to 6.4'
Job Number: 251539

Project Number: 251539
Test Date: 10/21/15

Sample Number: ST-1
Boring Number: B-135
Depth: 6.0' to 6.4'
Sample Type: Undisturbed

Sample Description: Brown Sandy Silty Clay
Remarks:

Test Number:
Liquid Limit: 19.0000
Plastic Limit: 14.0000
Specific Gravity: 2.7400 Measured

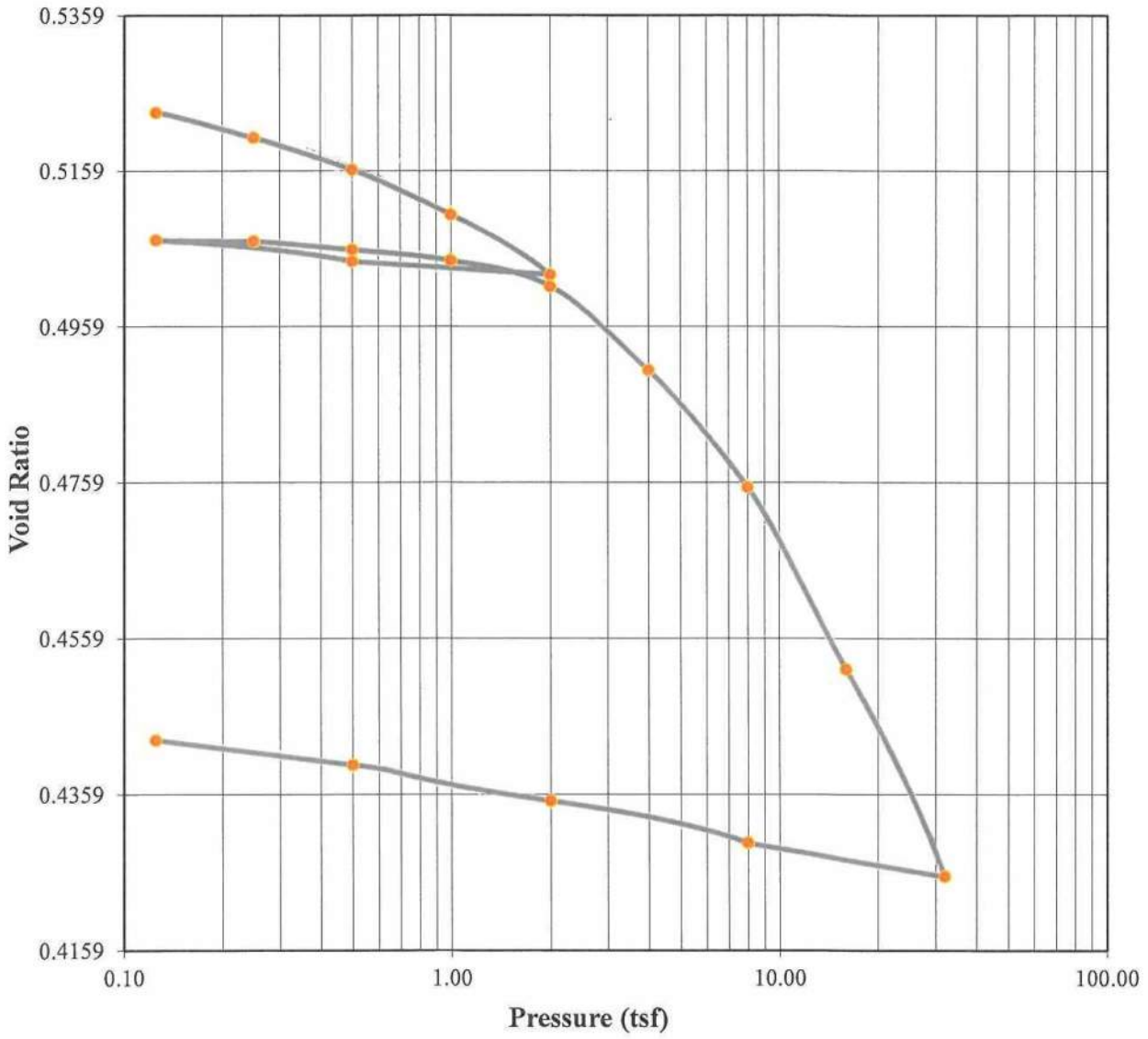
Initial Void Ratio: 0.5814
Plasticity Index (%): 5.0000
Weight of Ring (g): 109.6400

Initial Height (in): 1.0033
Initial Diameter (in): 2.4983

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	261.24	219.46
Dry Soil + Container (g)	233.11	198.47
Weight of Container (g)	74.52	59.36
Moisture Content (%)	17.74	15.09
Void Ratio	0.5814	0.3957
Saturation (%)	83.20	103.70
Dry Density (pcf)	107.97	122.29

Tested By: Jerry Soto

Checked By: S. Bodum



Test Date: 10/26/15

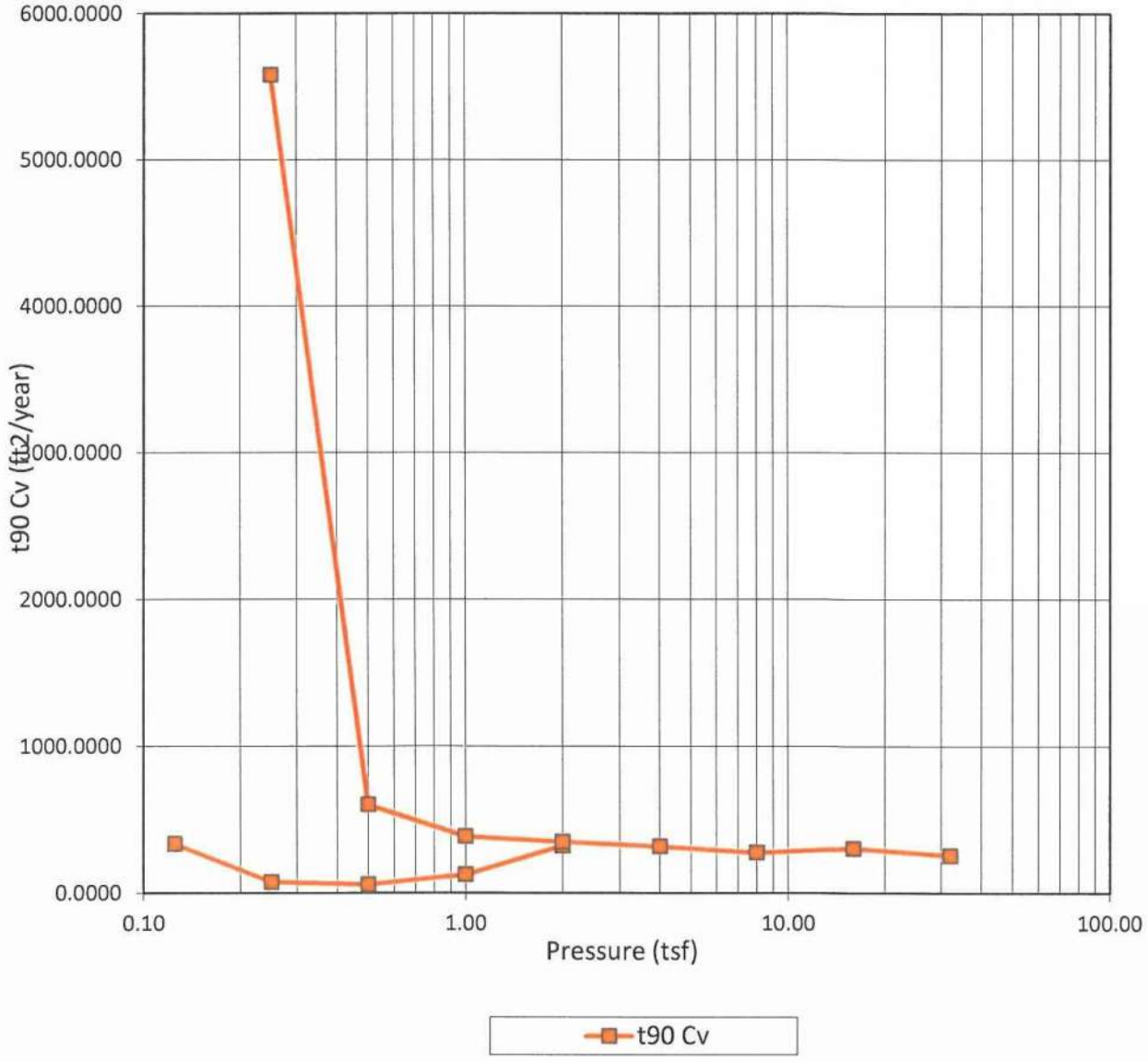
Summary of Consolidation Test Results

Overburden Press. (tsf)	0.66	Compression Index, C_c	0.06
Preconsol. Press., P_c (tsf)	3.00	Rebound Index, C_r	0.004
Over Consolidation Ratio	4.52		

Soil Description:	Gray, Brown & Tan Sandy Silt		
Project Number:	251539	Depth: 10.8' to 11.3'	Remarks:
Sample Number:	ST-2	Boring Number: B-135	
Project:	North Cabot Interchange		
Client:			
Location:	B-135 ST-2 10.8' to 11.3'		

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CONSOLIDATION TEST



	Before	After				
			Liquid Limits:	19	**Test Date:**	10/26/15
Moisture (%):	17.43	15.88	**Plastic Limits:**	15		
Dry Density (pcf):	110.84	120.32	**Plasticity Index (%):**	4		
Saturation (%):	88.93	104.76				
Void Ratio:	0.5295	0.4146	**Specific Gravity:**	2.723	Measured	

Soil Description:	Gray, Brown & Tan Sandy Silt		
Project Number:	251539	**Depth:** 10.8' to 11.3'	**Remarks:**
Sample Number:	ST-2	**Boring Number:** B-135	
Project:	North Cabot Interchange		
Client:			
Location:	B-135 ST-2 10.8' to 11.3'		

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CONSOLIDATION TEST

Test Summary

Project: North Cabot Interchange
Location: B-135 ST-2 10.8' to 11.3'
Job Number: 251539

Project Number: 251539

Sample Number: ST-2
Boring Number: B-135
Depth: 10.8' to 11.3'
Sample Type: Undisturbed

Sample Description: Gray, Brown & Tan Sandy Silt
Remarks:

Test Number:
Test Date: 10/26/15

Index	Load Sequence (tsf)	Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	0.9980	0.3461	0.00	0.5310	0.000	0.000	0.000	0.000
1	0.125	0.0049	0.9931	0.3412	0.49	0.5235	2.272	* 1.2620	335.952	140.484
2	0.250	0.0070	0.9910	0.3391	0.70	0.5202	10.190	* 5.6612	74.575	31.184
3	0.500	0.0097	0.9883	0.3364	0.97	0.5161	12.967	* 7.2038	58.287	24.373
4	1.000	0.0135	0.9845	0.3326	1.35	0.5103	5.940	* 3.3002	126.254	52.795
5	2.000	0.0185	0.9795	0.3276	1.85	0.5026	2.303	* 1.2792	322.436	134.825
6	0.500	0.0174	0.9806	0.3287	1.74	0.5043	0.000	0.000	0.000	0.000
7	0.125	0.0156	0.9824	0.3305	1.56	0.5070	0.000	0.000	0.000	0.000
8	0.250	0.0157	0.9823	0.3304	1.57	0.5069	0.134	* 0.0743	5579.965	2334.526
9	0.500	0.0164	0.9816	0.3297	1.64	0.5058	1.239	* 0.6882	601.870	251.683
10	1.000	0.0173	0.9807	0.3288	1.73	0.5044	1.927	* 1.0706	386.202	161.490
11	2.000	0.0195	0.9785	0.3266	1.95	0.5011	2.125	* 1.1806	348.638	145.787
12	4.000	0.0265	0.9715	0.3196	2.66	0.4903	2.303	* 1.2792	317.190	132.631
13	8.000	0.0363	0.9617	0.3098	3.64	0.4753	2.606	* 1.4477	274.641	114.842
14	16.000	0.0515	0.9465	0.2946	5.16	0.4520	2.272	* 1.2620	305.162	127.609
15	32.000	0.0688	0.9292	0.2773	6.89	0.4254	2.599	* 1.4439	257.064	107.493
16	8.000	0.0660	0.9320	0.2801	6.61	0.4297	0.000	0.000	0.000	0.000
17	2.000	0.0625	0.9355	0.2836	6.26	0.4351	0.000	0.000	0.000	0.000
18	0.500	0.0595	0.9385	0.2866	5.96	0.4397	0.000	0.000	0.000	0.000
19	0.125	0.0750	0.9230	0.2711	5.66	0.4429	0.000	0.000	0.000	0.000

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CONSOLIDATION TEST

Consolidation Specimen Information

Project: North Cabot Interchange
Location: B-135 ST-2 10.8' to 11.3'
Job Number: 251539

Project Number: 251539
Test Date: 10/26/15

Sample Number: ST-2
Boring Number: B-135
Depth: 10.8' to 11.3'
Sample Type: Undisturbed

Sample Description: Gray, Brown & Tan Sandy Silt
Remarks:

Test Number:
Liquid Limit: 19.0000
Plastic Limit: 15.0000
Specific Gravity: 2.7230 Measured

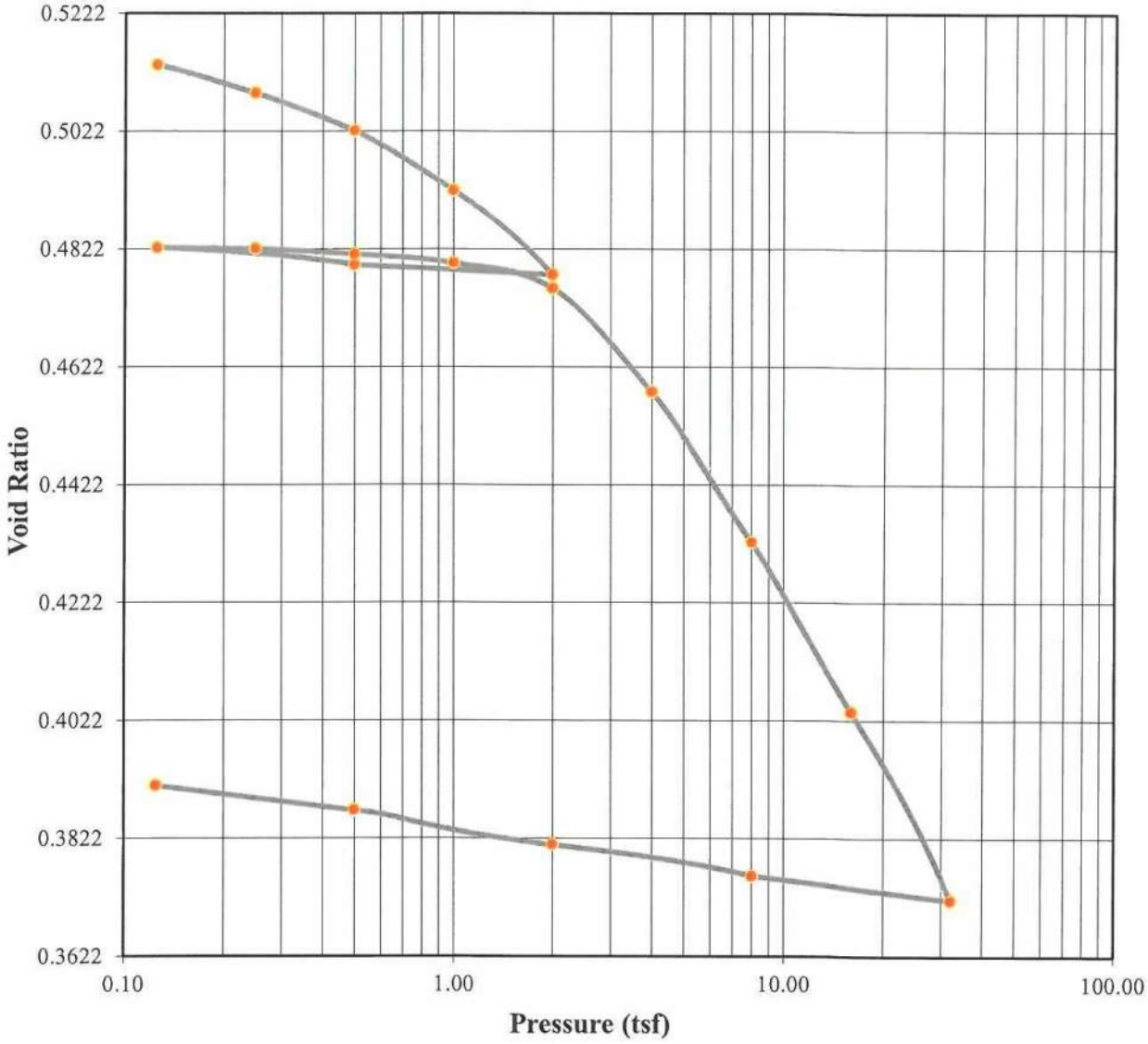
Initial Void Ratio: 0.5295
Plasticity Index (%): 4.0000
Weight of Ring (g): 109.2500

Initial Height (in): 0.9980
Initial Diameter (in): 2.4955

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	427.83	241.04
Dry Soil + Container (g)	375.59	218.42
Weight of Container (g)	75.96	76.01
Moisture Content (%)	17.43	15.88
Void Ratio	0.5295	0.4146
Saturation (%)	88.93	104.76
Dry Density (pcf)	110.84	120.32

Tested By: Jeremy Soto

Checked By: S. Boulton



Test Date: 02/11/16

Summary of Consolidation Test Results

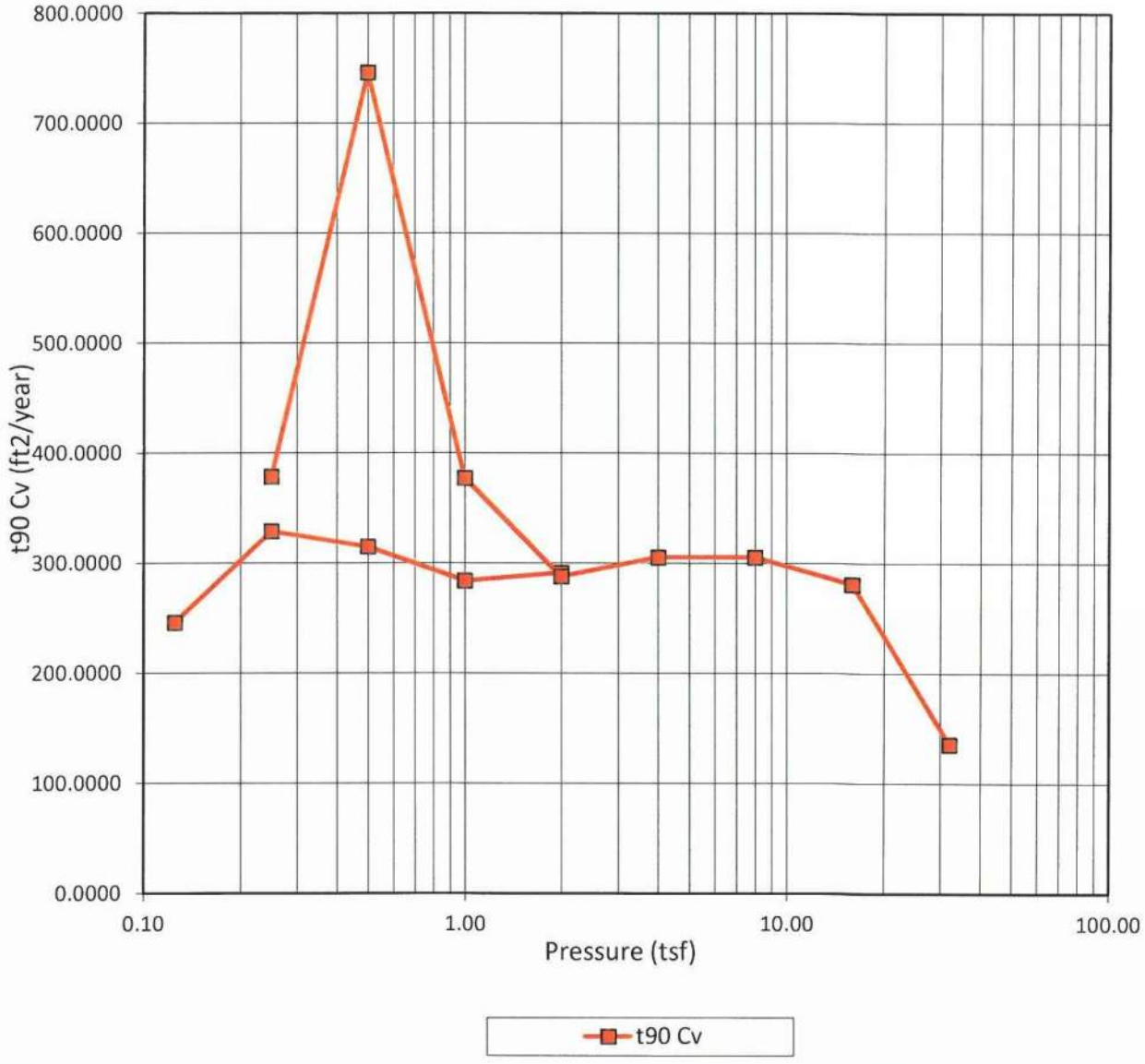
Overburden Press. (tsf)	0.90	Compression Index, C_c	0.09
Preconsol. Press., P_c (tsf)	1.50	Rebound Index, C_r	0.004
Over Consolidation Ratio	1.67		

Soil Description:	Gray & Brown Silty, Clayey Sand			
Project Number:	251539	Depth:	14.7' to 15.2'	Remarks:
Sample Number:	ST-2	Boring Number:	B-140	
Project:	North Cabot Interchange			
Client:				
Location:	B-140 ST-2 14.7' to 15.2'			

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	Before	After				
Moisture (%):	16.99	15.00	**Liquid Limits:**	20	**Test Date:**	02/11/16
Dry Density (pcf):	110.71	123.19	**Plastic Limits:**	14		
Saturation (%):	87.98	110.32	**Plasticity Index (%):**	6		
Void Ratio:	0.5200	0.3639	**Specific Gravity:**	2.697	Measured	

Soil Description:	Gray & Brown Silty, Clayey Sand		
Project Number:	251539	**Depth:** 14.7' to 15.2'	**Remarks:**
Sample Number:	ST-2	**Boring Number:** B-140	
Project:	North Cabot Interchange		
Client:			
Location:	B-140 ST-2 14.7' to 15.2'		

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CONSOLIDATION TEST

Test Summary

Project: North Cabot Interchange
Location: B-140 ST-2 14.7' to 15.2'
Job Number: 251539

Project Number: 251539

Sample Number: ST-2
Boring Number: B-140
Depth: 14.7' to 15.2'
Sample Type: Undisturbed

Sample Description: Gray & Brown Silty, Clayey Sand
Remarks:

Test Number:
Test Date: 02/11/16

Index	Load Sequenc (tsf)	Change in Height (in)	Specime n Height (in)	Height of Void (in)	Vertica l Strain (%)	Void Ratio	t90 Fitting (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	0.9943	0.3393	0.00	0.5181	0.000	0.000	0.000	0.000
1	0.125	0.0031	0.9912	0.3362	0.31	0.5134	3.095	* 1.7192	245.668	102.730
2	0.250	0.0062	0.9881	0.3331	0.62	0.5086	2.300	* 1.2776	328.518	137.374
3	0.500	0.0104	0.9839	0.3289	1.05	0.5022	2.381	* 1.3225	314.664	131.585
4	1.000	0.0170	0.9773	0.3223	1.71	0.4921	2.606	* 1.4477	283.627	118.598
5	2.000	0.0264	0.9679	0.3129	2.66	0.4778	2.489	* 1.3829	291.228	121.778
6	0.500	0.0253	0.9690	0.3140	2.54	0.4795	0.000	0.000	0.000	0.000
7	0.125	0.0234	0.9709	0.3159	2.35	0.4824	0.000	0.000	0.000	0.000
8	0.250	0.0235	0.9708	0.3158	2.36	0.4822	1.927	* 1.0706	378.444	158.246
9	0.500	0.0241	0.9702	0.3152	2.42	0.4813	0.977	* 0.5426	745.787	311.847
10	1.000	0.0251	0.9692	0.3142	2.52	0.4798	1.927	* 1.0706	377.197	157.724
11	2.000	0.0279	0.9664	0.3114	2.81	0.4755	2.512	* 1.3953	287.743	120.322
12	4.000	0.0394	0.9549	0.2999	3.96	0.4579	2.312	* 1.2846	305.136	127.599
13	8.000	0.0561	0.9382	0.2832	5.64	0.4324	2.232	* 1.2398	305.196	127.626
14	16.000	0.0750	0.9193	0.2643	7.54	0.4036	2.331	* 1.2952	280.494	117.294
15	32.000	0.0959	0.8984	0.2434	9.64	0.3717	4.620	* 2.5665	135.195	56.532
16	8.000	0.0932	0.9011	0.2461	9.37	0.3758	0.000	0.000	0.000	0.000
17	2.000	0.0897	0.9046	0.2496	9.02	0.3811	0.000	0.000	0.000	0.000
18	0.500	0.0859	0.9084	0.2534	8.64	0.3869	0.000	0.000	0.000	0.000
19	0.125	0.1021	0.8922	0.2372	8.48	0.3911	0.000	0.000	0.000	0.000

Predicted value indicated with *

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CONSOLIDATION TEST

Consolidation Specimen Information

Project: North Cabot Interchange
Location: B-140 ST-2 14.7' to 15.2'
Job Number: 251539

Project Number: 251539
Test Date: 02/11/16

Sample Number: ST-2
Boring Number: B-140
Depth: 14.7' to 15.2'
Sample Type: Undisturbed

Sample Description: Gray & Brown Silty, Clayey Sand
Remarks:

Test Number:
Liquid Limit: 20.0000
Plastic Limit: 14.0000
Specific Gravity: 2.6970 Measured

Initial Void Ratio: 0.5200
Plasticity Index (%): 6.0000
Weight of Ring (g): 109.2500

Initial Height (in): 0.9943
Initial Diameter (in): 2.4955

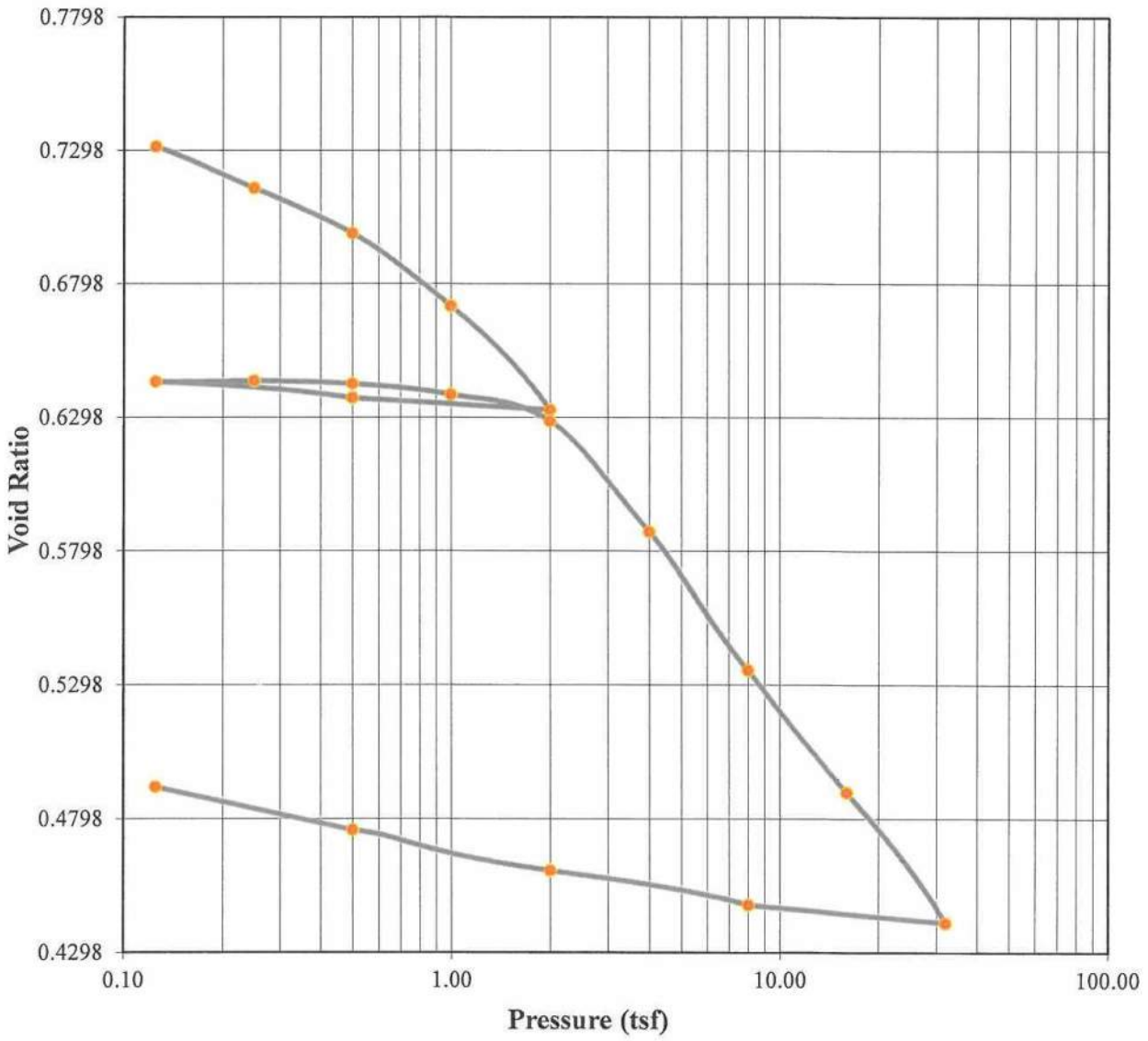
Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	413.77	237.91
Dry Soil + Container (g)	364.19	216.79
Weight of Container (g)	72.32	75.97
Moisture Content (%)	16.99	15.00
Void Ratio	0.5200	0.3639
Saturation (%)	87.98	110.32
Dry Density (pcf)	110.71	123.19

Tested By: Jeremy Soto

Checked By: S. Boulos

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Test Date: 10/22/15

Summary of Consolidation Test Results

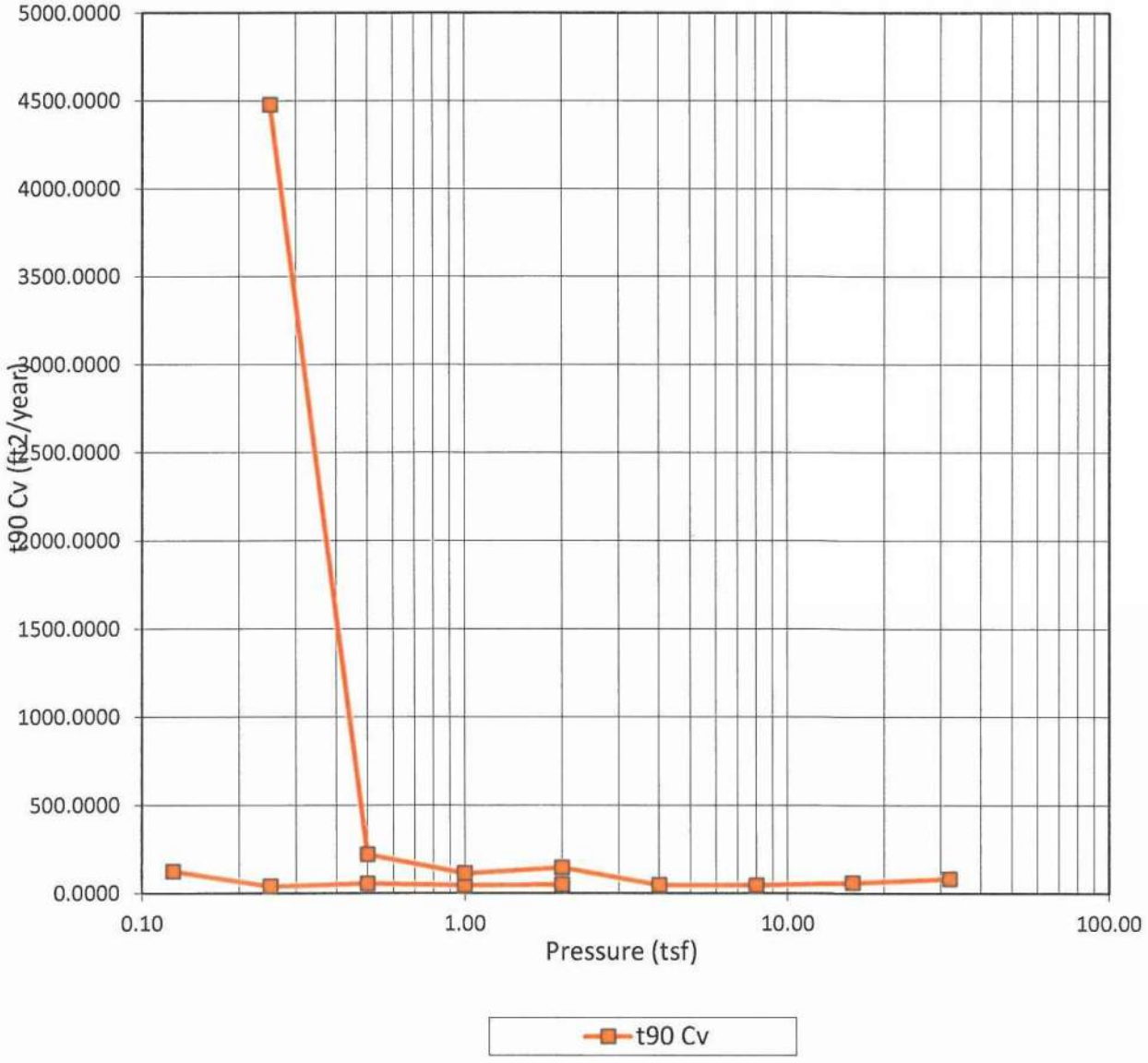
Overburden Press. (tsf)	0.31	Compression Index, C_c	0.16
Preconsol. Press., P_c (tsf)	1.05	Rebound Index, C_r	0.01
Over Consolidation Ratio	3.37		

Soil Description:	Gray, Brown & Tan Lean Clay			
Project Number:	251539	Depth:	5.0' to 5.4'	Remarks:
Sample Number:	ST-1	Boring Number:	B-147	
Project:	North Cabot Interchange			
Client:				
Location:	B-147 ST-1 5.0' to 5.4'			

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	Before	After				
			Liquid Limits:	31	Test Date:	10/22/15
Moisture (%):	27.05	19.55	Plastic Limits:	18		
Dry Density (pcf):	96.78	117.29	Plasticity Index (%):	13		
Saturation (%):	98.05	119.85				
Void Ratio:	0.7452	0.4305	Specific Gravity:	2.709	Measured	

Soil Description:	Gray, Brown & Tan Lean Clay		
Project Number:	251539	Depth: 5.0' to 5.4'	Remarks:
Sample Number:	ST-1	Boring Number: B-147	
Project:	North Cabot Interchange		
Client:			
Location:	B-147 ST-1 5.0' to 5.4'		

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CONSOLIDATION TEST

Test Summary

Project: North Cabot Interchange
Location: B-147 ST-1 5.0' to 5.4'
Job Number: 251539

Project Number: 251539

Sample Number: ST-1
Boring Number: B-147
Depth: 5.0' to 5.4'
Sample Type: Undisturbed

Sample Description: Gray, Brown & Tan Lean Clay
Remarks:

Test Number:
Test Date: 10/22/15

Index	Load Sequence (tsf)	Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	0.9905	0.4226	0.00	0.7443	0.000	0.000	0.000	0.000
1	0.125	0.0075	0.9830	0.4151	0.76	0.7311	6.026	* 3.3480	124.075	51.882
2	0.250	0.0163	0.9742	0.4063	1.65	0.7156	18.556	* 10.3091	39.576	16.549
3	0.500	0.0259	0.9646	0.3967	2.61	0.6987	13.044	* 7.2467	55.196	23.081
4	1.000	0.0414	0.9491	0.3812	4.18	0.6714	15.268	* 8.4823	45.653	19.090
5	2.000	0.0634	0.9271	0.3592	6.40	0.6326	13.026	* 7.2364	51.061	21.352
6	0.500	0.0609	0.9296	0.3617	6.15	0.6370	0.000	0.000	0.000	0.000
7	0.125	0.0575	0.9330	0.3651	5.81	0.6430	0.000	0.000	0.000	0.000
8	0.250	0.0573	0.9332	0.3653	5.78	0.6434	0.151	* 0.0836	4476.819	1872.588
9	0.500	0.0579	0.9326	0.3647	5.85	0.6423	3.059	* 1.6992	220.039	92.012
10	1.000	0.0602	0.9303	0.3624	6.08	0.6383	5.929	* 3.2941	112.944	47.229
11	2.000	0.0658	0.9247	0.3568	6.64	0.6284	4.532	* 2.5175	146.010	61.056
12	4.000	0.0893	0.9012	0.3333	9.02	0.5870	13.445	* 7.4694	46.743	19.546
13	8.000	0.1187	0.8718	0.3039	11.98	0.5352	12.764	* 7.0908	46.078	19.268
14	16.000	0.1446	0.8459	0.2780	14.60	0.4896	9.270	* 5.1501	59.728	24.976
15	32.000	0.1723	0.8182	0.2503	17.40	0.4409	6.310	* 3.5057	82.091	34.328
16	8.000	0.1685	0.8220	0.2541	17.01	0.4475	0.000	0.000	0.000	0.000
17	2.000	0.1612	0.8293	0.2614	16.27	0.4604	0.000	0.000	0.000	0.000
18	0.500	0.1526	0.8379	0.2700	15.41	0.4755	0.000	0.000	0.000	0.000
19	0.125	0.1786	0.8119	0.2440	14.53	0.4916	0.000	0.000	0.000	0.000

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CONSOLIDATION TEST

Consolidation Specimen Information

Project: North Cabot Interchange
Location: B-147 ST-1 5.0' to 5.4'
Job Number: 251539

Project Number: 251539
Test Date: 10/22/15

Sample Number: ST-1
Boring Number: B-147
Depth: 5.0' to 5.4'
Sample Type: Undisturbed

Sample Description: Gray, Brown & Tan Lean Clay
Remarks:

Test Number:
Liquid Limit: 31.0000
Plastic Limit: 18.0000
Specific Gravity: 2.7090 Measured

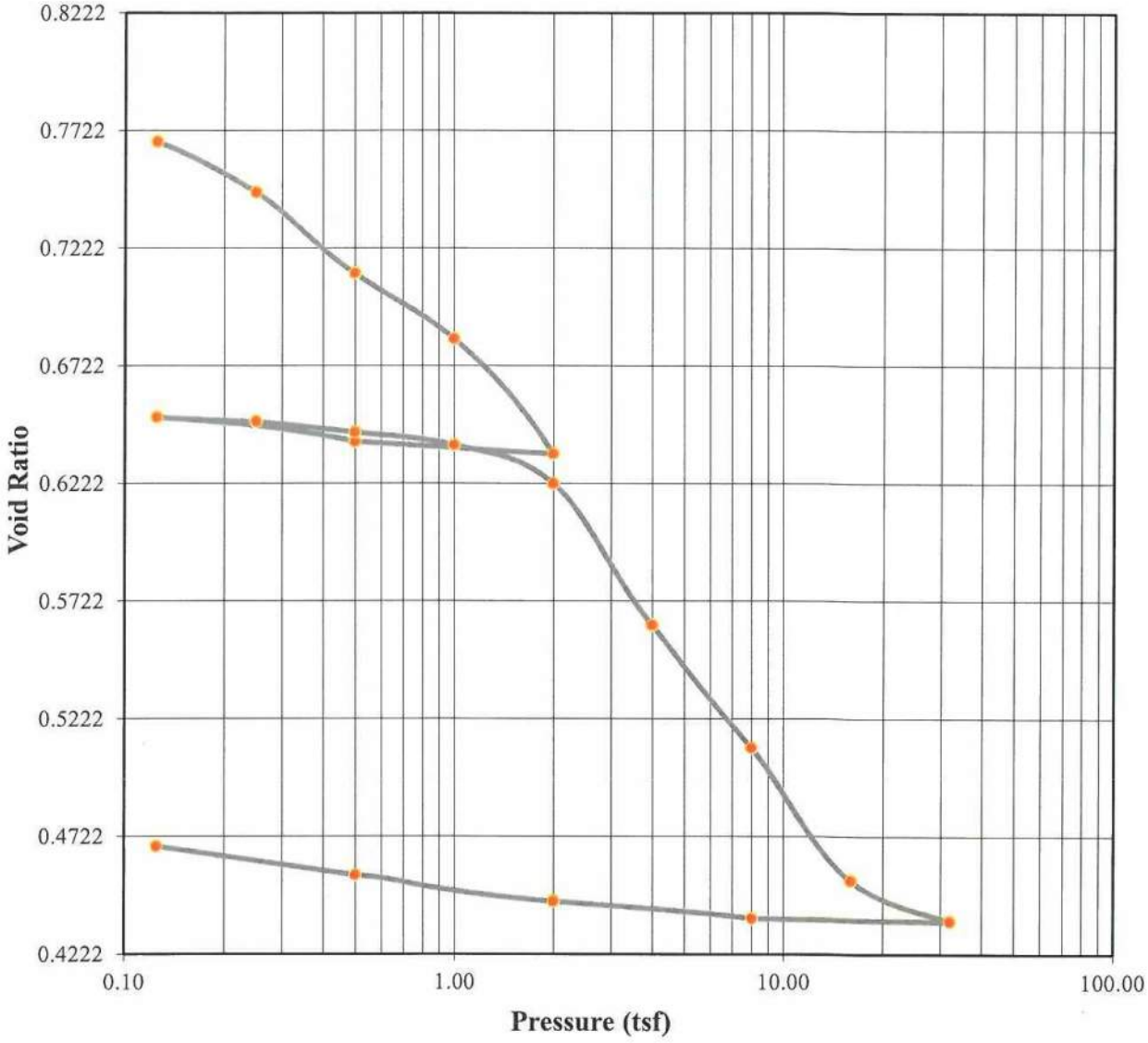
Initial Void Ratio: 0.7452
Plasticity Index (%): 13.0000
Weight of Ring (g): 109.2600

Initial Height (in): 0.9905
Initial Diameter (in): 2.4955

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	371.07	220.62
Dry Soil + Container (g)	307.63	196.76
Weight of Container (g)	73.08	74.70
Moisture Content (%)	27.05	19.55
Void Ratio	0.7452	0.4305
Saturation (%)	98.05	119.85
Dry Density (pcf)	96.78	117.29

Tested By: Jerry Soto

Checked By: S. Bordens



Test Date: 02/01/16

Summary of Consolidation Test Results

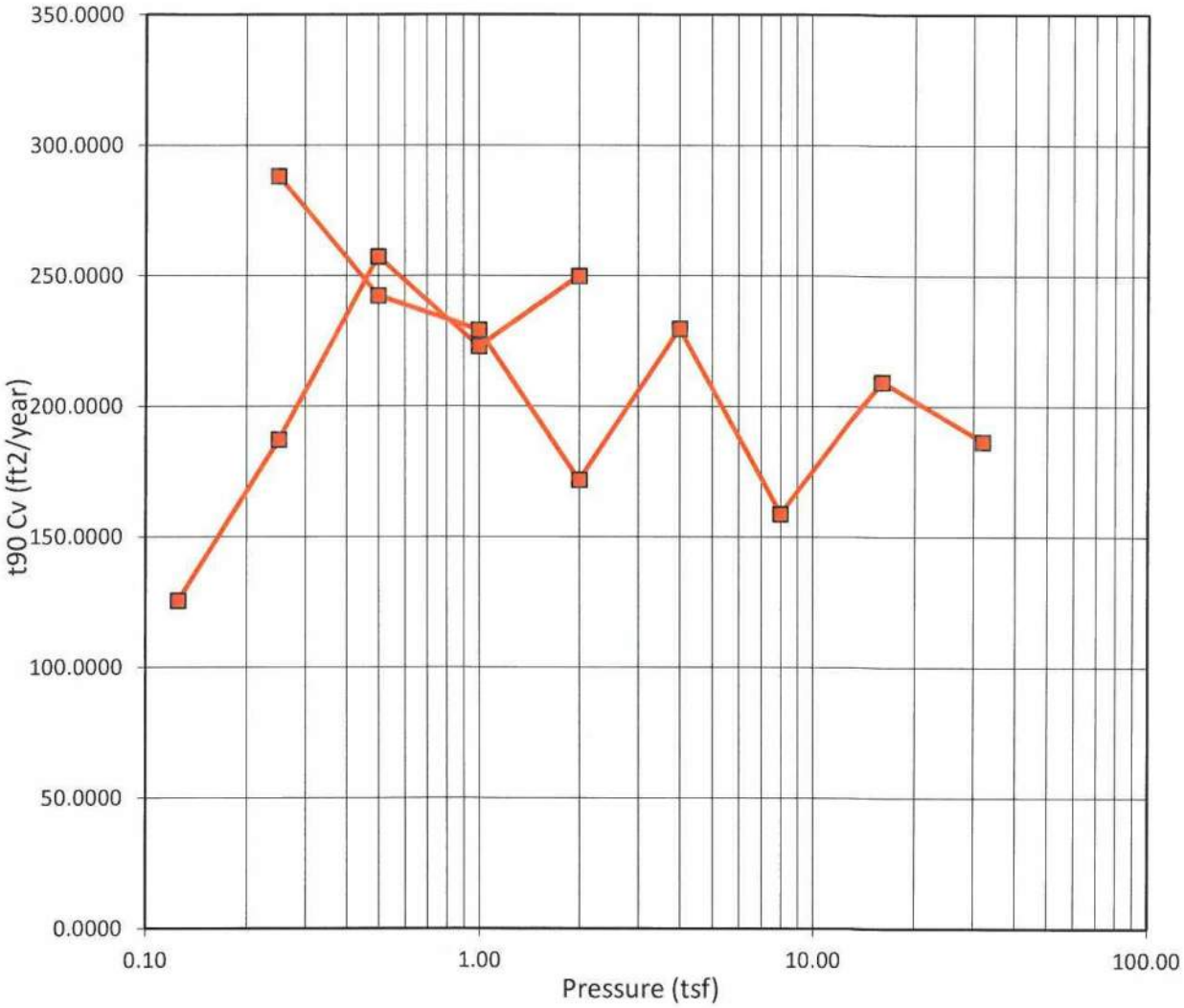
Overburden Press. (tsf)	0.56	Compression Index, C_c	0.18
Preconsol. Press., P_c (tsf)	0.51	Rebound Index, C_r	0.016
Over Consolidation Ratio	0.92		

Soil Description:	Brown & Gray Silty Sand		
Project Number:	251539	Depth: 9.1' to 9.4'	Remarks:
Sample Number:	ST-1	Boring Number: B-151	
Project:	North Cabot Interchange		
Client:			
Location:	B-151 ST-1 9.1' to 9.4'		

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	Before	After				
			Liquid Limits:	0	Test Date:	02/01/16
Moisture (%):	30.91	21.91	Plastic Limits:	0		
Dry Density (pcf):	90.42	115.18	Plasticity Index (%):	0		
Saturation (%):	98.97	133.67				
Void Ratio:	0.8262	0.4249	Specific Gravity:	2.645	Measured	

Soil Description:	Brown & Gray Silty Sand		
Project Number:	251539	Depth: 9.1' to 9.4'	Remarks:
Sample Number:	ST-1	Boring Number: B-151	
Project:	North Cabot Interchange		
Client:			
Location:	B-151 ST-1 9.1' to 9.4'		

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CONSOLIDATION TEST

Test Summary

Project: North Cabot Interchange
Location: B-151 ST-1 9.1' to 9.4'
Job Number: 251539

Project Number: 251539

Sample Number: ST-1
Boring Number: B-151
Depth: 9.1' to 9.4'
Sample Type: Undisturbed

Sample Description: Brown & Gray Silty Sand
Remarks:

Test Number:
Test Date: 02/01/16

Index	Load Sequenc (tsf)	Change in Height (in)	Specime n Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0015	0.4521	0.00	0.8228	0.000	0.000	0.000	0.000
1	0.125	0.0305	0.9710	0.4216	3.05	0.7673	5.815	* 3.2307	125.456	52.462
2	0.250	0.0423	0.9592	0.4098	4.22	0.7458	3.805	* 2.1137	187.125	78.248
3	0.500	0.0612	0.9403	0.3909	6.11	0.7114	2.659	* 1.4775	257.261	107.573
4	1.000	0.0765	0.9250	0.3756	7.64	0.6836	2.972	* 1.6513	222.751	93.144
5	2.000	0.1034	0.8981	0.3487	10.32	0.6346	2.498	* 1.3879	249.827	104.470
6	0.500	0.1005	0.9010	0.3516	10.03	0.6399	0.000	0.000	0.000	0.000
7	0.125	0.0949	0.9066	0.3572	9.48	0.6501	0.000	0.000	0.000	0.000
8	0.250	0.0959	0.9056	0.3562	9.58	0.6483	2.204	* 1.2242	287.999	120.426
9	0.500	0.0983	0.9032	0.3538	9.82	0.6439	2.606	* 1.4476	242.259	101.302
10	1.000	0.1013	0.9002	0.3508	10.11	0.6384	2.736	* 1.5201	229.177	95.831
11	2.000	0.1103	0.8912	0.3418	11.01	0.6221	3.580	* 1.9890	171.660	71.782
12	4.000	0.1434	0.8581	0.3087	14.32	0.5618	2.482	* 1.3788	229.578	96.001
13	8.000	0.1720	0.8295	0.2801	17.17	0.5098	3.356	* 1.8646	158.639	66.336
14	16.000	0.2030	0.7985	0.2491	20.27	0.4533	2.358	* 1.3097	209.280	87.514
15	32.000	0.2125	0.7890	0.2396	21.22	0.4360	2.583	* 1.4350	186.487	77.983
16	8.000	0.2118	0.7897	0.2403	21.15	0.4373	0.000	0.000	0.000	0.000
17	2.000	0.2078	0.7937	0.2443	20.75	0.4446	0.000	0.000	0.000	0.000
18	0.500	0.2017	0.7998	0.2504	20.14	0.4557	0.000	0.000	0.000	0.000
19	0.125	0.2201	0.7814	0.2320	19.62	0.4679	0.000	0.000	0.000	0.000

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CONSOLIDATION TEST

Consolidation Specimen Information

Project: North Cabot Interchange
Location: B-151 ST-1 9.1' to 9.4'
Job Number: 251539

Project Number: 251539
Test Date: 02/01/16

Sample Number: ST-1
Boring Number: B-151
Depth: 9.1' to 9.4'
Sample Type: Undisturbed

Sample Description: Brown & Gray Silty Sand
Remarks:

Test Number:
Liquid Limit: 0.0000
Plastic Limit: 0.0000
Specific Gravity: 2.6450 Measured

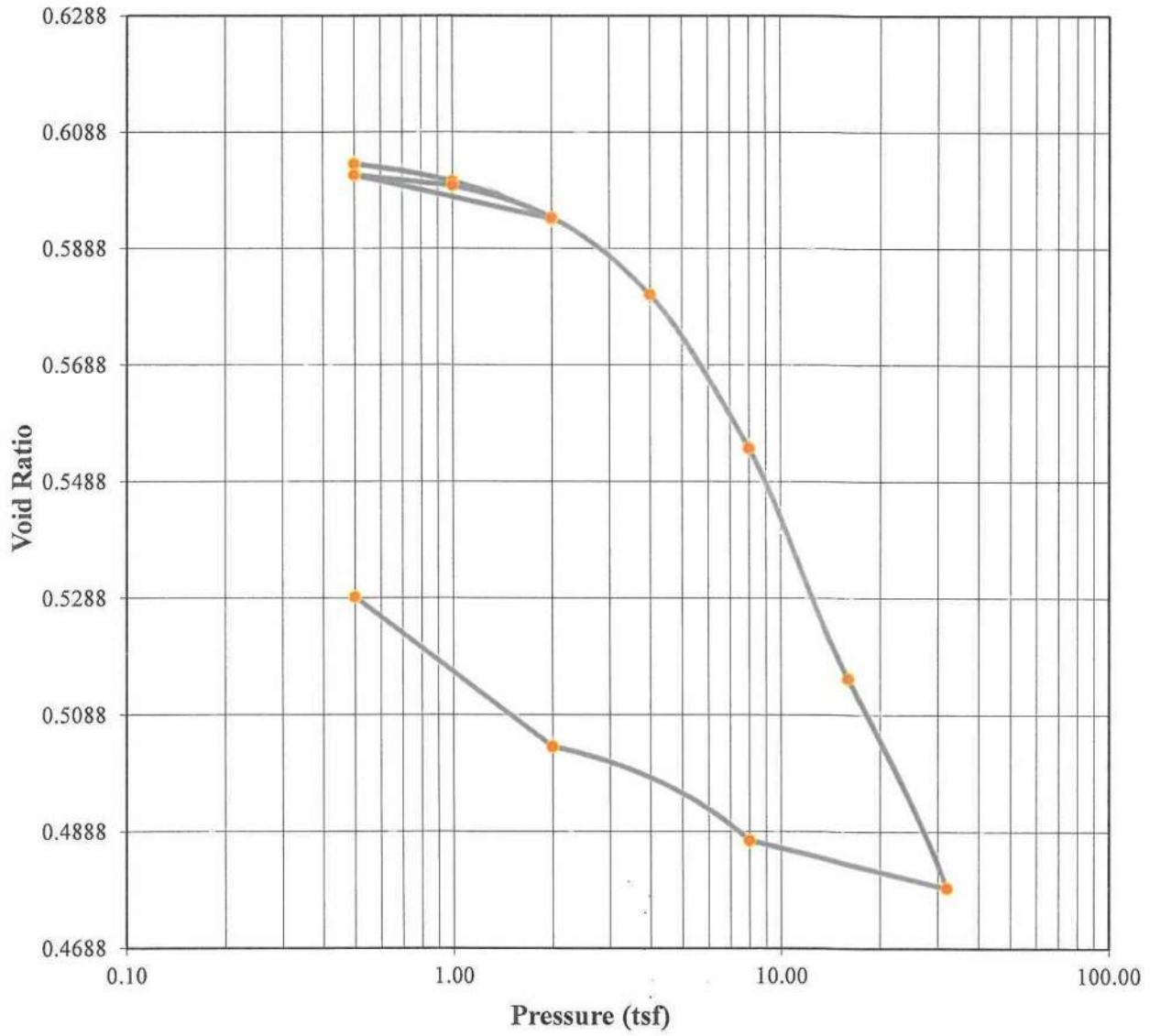
Initial Void Ratio: 0.8262
Plasticity Index (%): 0.0000
Weight of Ring (g): 109.6200

Initial Height (in): 1.0015
Initial Diameter (in): 2.4983

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	550.89	218.00
Dry Soil + Container (g)	438.34	192.75
Weight of Container (g)	74.21	77.48
Moisture Content (%)	30.91	21.91
Void Ratio	0.8262	0.4249
Saturation (%)	98.97	133.67
Dry Density (pcf)	90.42	115.18

Tested By: Jerry Sebo

Checked By: S. Boulware



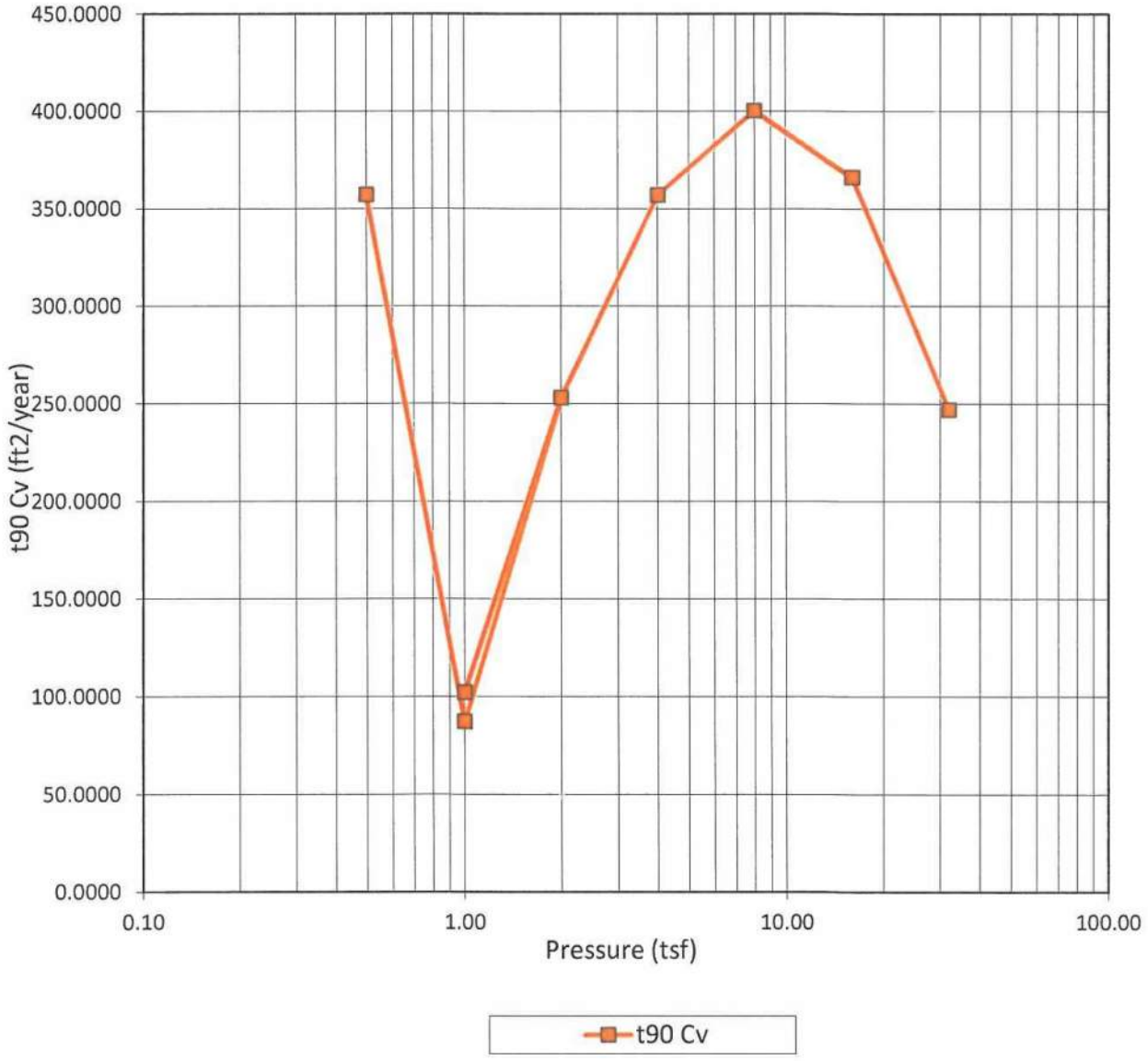
Test Date: 10/26/15

Summary of Consolidation Test Results

Overburden Press. (tsf)	0.34	Compression Index, C_c	0.13
Preconsol. Press., P_c (tsf)	3.30	Rebound Index, C_r	0.02
Over Consolidation Ratio	9.73		

Soil Description:	Brown, Tan, Yellow, Black & Gray Sandy Lean Clay		
Project Number:	251539	Depth: 5.4' to 5.9'	Remarks:
Sample Number:	ST-1	Boring Number: B-167	
Project:	North Cabot Interchange		
Client:			
Location:	B-167 ST-1 5.4' to 5.9'		

CONSOLIDATION TEST



	Before	After				
			Liquid Limits:	28	**Test Date:**	10/26/15
Moisture (%):	16.64	16.92	**Plastic Limits:**	15		
Dry Density (pcf):	105.71	119.01	**Plasticity Index (%):**	13		
Saturation (%):	74.51	107.54				
Void Ratio:	0.6034	0.4671	**Specific Gravity:**	2.723	Measured	

Soil Description:	Brown, Tan, Yellow, Black & Gray Sandy Lean Clay		
Project Number:	251539	**Depth:** 5.4' to 5.9'	**Remarks:**
Sample Number:	ST-1	**Boring Number:** B-167	
Project:	North Cabot Interchange		
Client:			
Location:	B-167 ST-1 5.4' to 5.9'		

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CONSOLIDATION TEST

Test Summary

Project: North Cabot Interchange
Location: B-167 ST-1 5.4' to 5.9'
Job Number: 251539

Project Number: 251539

Sample Number: ST-1
Boring Number: B-167
Depth: 5.4' to 5.9'
Sample Type: Undisturbed

Sample Description:
Brown, Tan, Yellow, Black & Gray Sandy Lean Clay
Remarks:

Test Number:
Test Date: 10/26/15

Index	Load Sequence (tsf)	Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	-0.0004	1.0070	0.3801	-0.04	0.6052	0.000	0.000	0.000	0.000
1	0.500	0.0008	1.0058	0.3789	0.08	0.6033	2.192	* 1.2177	357.128	149.342
2	1.000	0.0027	1.0039	0.3770	0.27	0.6003	8.938	* 4.9653	87.256	36.487
3	2.000	0.0067	0.9999	0.3730	0.67	0.5939	3.059	* 1.6992	252.941	105.771
4	0.500	0.0020	1.0046	0.3777	0.20	0.6014	0.000	0.000	0.000	0.000
5	1.000	0.0031	1.0035	0.3766	0.31	0.5996	7.616	* 4.2309	102.320	42.786
6	2.000	0.0066	1.0000	0.3731	0.66	0.5941	3.059	* 1.6992	252.992	105.792
7	4.000	0.0149	0.9917	0.3648	1.48	0.5808	2.131	* 1.1841	357.041	149.304
8	8.000	0.0314	0.9752	0.3483	3.12	0.5545	1.838	* 1.0212	400.341	167.408
9	16.000	0.0562	0.9504	0.3235	5.58	0.5150	1.910	* 1.0611	365.957	153.023
10	32.000	0.0787	0.9279	0.3010	7.82	0.4791	2.699	* 1.4995	246.843	103.218
11	8.000	0.0736	0.9330	0.3061	7.31	0.4873	0.000	0.000	0.000	0.000
12	2.000	0.0635	0.9431	0.3162	6.31	0.5034	0.000	0.000	0.000	0.000
13	0.500	0.0856	0.9214	0.2941	4.64	0.5290	0.000	0.000	0.000	0.000

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Consolidation Specimen Information

Project: North Cabot Interchange
Location: B-167 ST-1 5.4' to 5.9'
Job Number: 251539

Project Number: 251539
Test Date: 10/26/15

Sample Number: ST-1
Boring Number: B-167
Depth: 5.4' to 5.9'
Sample Type: Undisturbed

Sample Description: Brown, Tan, Yellow, Black & Gray Sandy Lean Clay
Remarks:

Test Number:
Liquid Limit: 28.0000
Plastic Limit: 15.0000
Specific Gravity: 2.7230 Measured

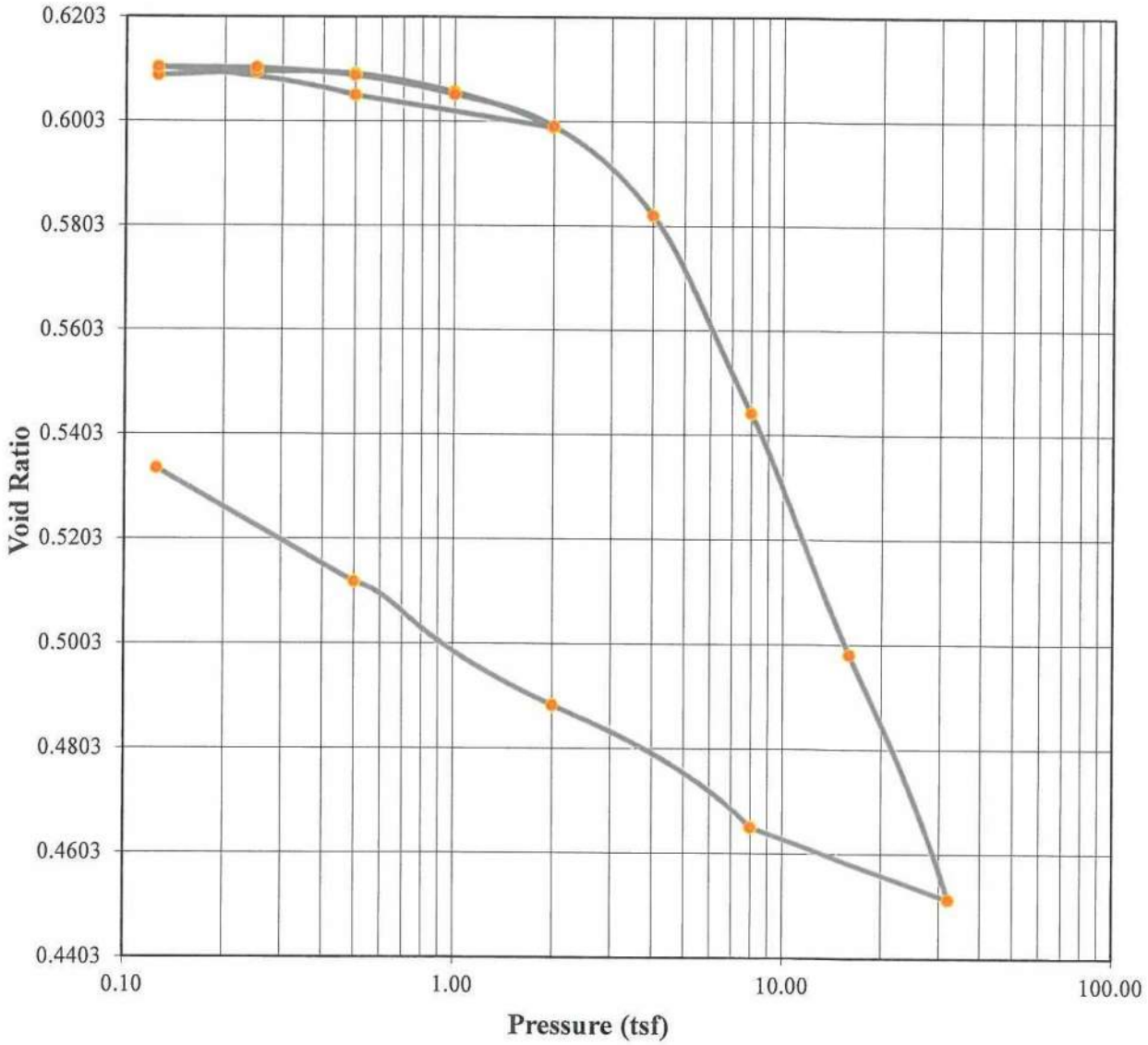
Initial Void Ratio: 0.6034
Plasticity Index (%): 13.0000
Weight of Ring (g): 109.6300

Initial Height (in): 1.0070
Initial Diameter (in): 2.4983

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	486.60	239.24
Dry Soil + Container (g)	427.95	215.39
Weight of Container (g)	75.41	74.45
Moisture Content (%)	16.64	16.92
Void Ratio	0.6034	0.4671
Saturation (%)	74.51	107.54
Dry Density (pcf)	105.71	119.01

Tested By: Jeremy Sides

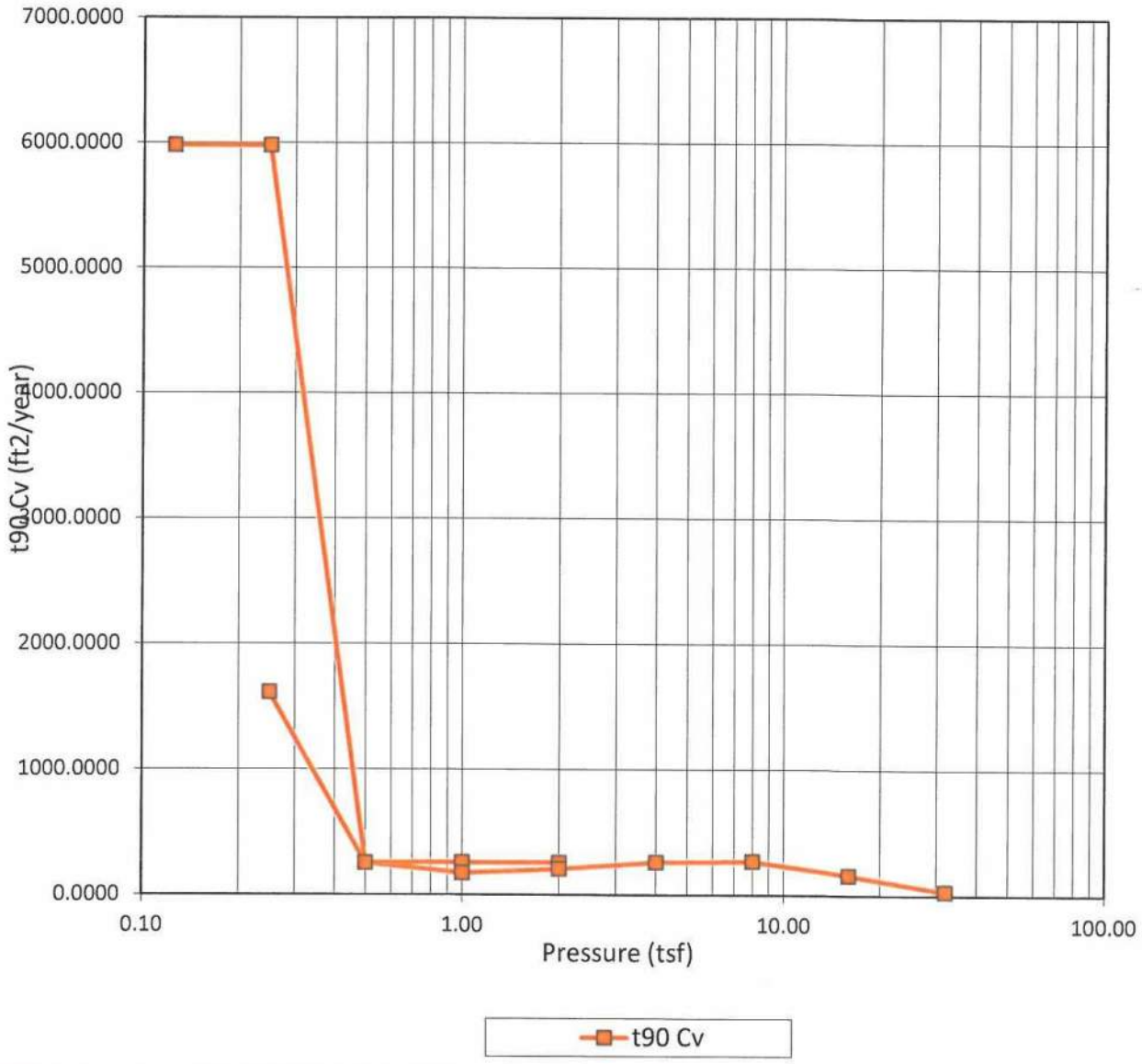
Checked By: S. Baldwin



Summary of Consolidation Test Results				Test Date: 10/21/15
Overburden Press. (tsf)	0.35	Compression Index, C_c	0.15	
Preconsol. Press., P_c (tsf)	3.00	Rebound Index, C_r	0.01	
Over Consolidation Ratio	8.70			
Soil Description:	Gray, White & Tan Lean Clay with Sand			
Project Number:	251539	Depth: 5.6' to 5.9'	Remarks:	
Sample Number:	ST-1	Boring Number: B-168		
Project:	North Cabot Interchange			
Client:				
Location:	B-168 ST-1 5.6' to 5.9'			

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	Before	After				
			Liquid Limits:	37	Test Date:	10/21/15
Moisture (%):	16.93	20.34	Plastic Limits:	19		
Dry Density (pcf):	105.35	115.81	Plasticity Index (%):	18		
Saturation (%):	75.40	118.94				
Void Ratio:	0.6113	0.4439	Specific Gravity:	2.717	Measured	

Soil Description:	Gray, White & Tan Lean Clay with Sand		
Project Number:	251539	Depth: 5.6' to 5.9'	Remarks:
Sample Number:	ST-1	Boring Number: B-168	
Project:	North Cabot Interchange		
Client:			
Location:	B-168 ST-1 5.6' to 5.9'		

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CONSOLIDATION TEST

Test Summary

Project: North Cabot Interchange
Location: B-168 ST-1 5.6' to 5.9'
Job Number: 251539

Project Number: 251539

Sample Number: ST-1
Boring Number: B-168
Depth: 5.6' to 5.9'
Sample Type: Undisturbed

Sample Description: Gray, White & Tan Lean Clay with Sand
Remarks:

Test Number:
Test Date: 10/21/15

Index	Load Sequence (tsf)	Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0093	0.3813	0.00	0.6072	0.000	0.000	0.000	0.000
1	0.125	-0.0012	1.0105	0.3825	-0.12	0.6091	0.132	* 0.0734	5977.616	2500.781
2	0.250	-0.0016	1.0109	0.3829	-0.16	0.6098	0.132	* 0.0735	5978.658	2499.356
3	0.500	-0.0014	1.0107	0.3827	-0.14	0.6094	3.106	* 1.7254	254.513	106.427
4	1.000	0.0008	1.0085	0.3805	0.08	0.6059	3.043	* 1.6904	258.649	108.159
5	2.000	0.0050	1.0043	0.3763	0.50	0.5992	3.043	* 1.6904	256.499	107.260
6	0.500	0.0012	1.0081	0.3801	0.12	0.6053	0.000	0.000	0.000	0.000
7	0.125	-0.0022	1.0115	0.3835	-0.22	0.6107	0.000	0.000	0.000	0.000
8	0.250	-0.0021	1.0114	0.3834	-0.21	0.6105	0.491	* 0.2726	1613.131	674.558
9	0.500	-0.0012	1.0105	0.3825	-0.12	0.6091	3.105	* 1.7252	254.443	106.398
10	1.000	0.0011	1.0082	0.3802	0.11	0.6055	4.508	* 2.5043	174.486	72.964
11	2.000	0.0049	1.0044	0.3764	0.49	0.5994	3.778	* 2.0988	206.636	86.405
12	4.000	0.0156	0.9937	0.3657	1.55	0.5824	2.923	* 1.6239	261.398	109.308
13	8.000	0.0394	0.9699	0.3419	3.90	0.5445	2.709	* 1.5049	268.722	112.369
14	16.000	0.0683	0.9410	0.3130	6.77	0.4984	4.284	* 2.3801	159.936	66.878
15	32.000	0.0977	0.9116	0.2836	9.68	0.4516	20.401	* 11.3339	31.520	13.180
16	8.000	0.0891	0.9202	0.2922	8.83	0.4653	0.000	0.000	0.000	0.000
17	2.000	0.0745	0.9348	0.3068	7.38	0.4886	0.000	0.000	0.000	0.000
18	0.500	0.0597	0.9496	0.3216	5.91	0.5121	0.000	0.000	0.000	0.000
19	0.125	0.1048	0.9045	0.2765	4.81	0.5338	0.000	0.000	0.000	0.000

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CONSOLIDATION TEST

Consolidation Specimen Information

Project: North Cabot Interchange
Location: B-168 ST-1 5.6' to 5.9'
Job Number: 251539

Project Number: 251539
Test Date: 10/21/15

Sample Number: ST-1
Boring Number: B-168
Depth: 5.6' to 5.9'
Sample Type: Undisturbed

Sample Description: Gray, White & Tan Lean Clay with Sand
Remarks:

Test Number:
Liquid Limit: 37.0000
Plastic Limit: 19.0000
Specific Gravity: 2.7170 Measured

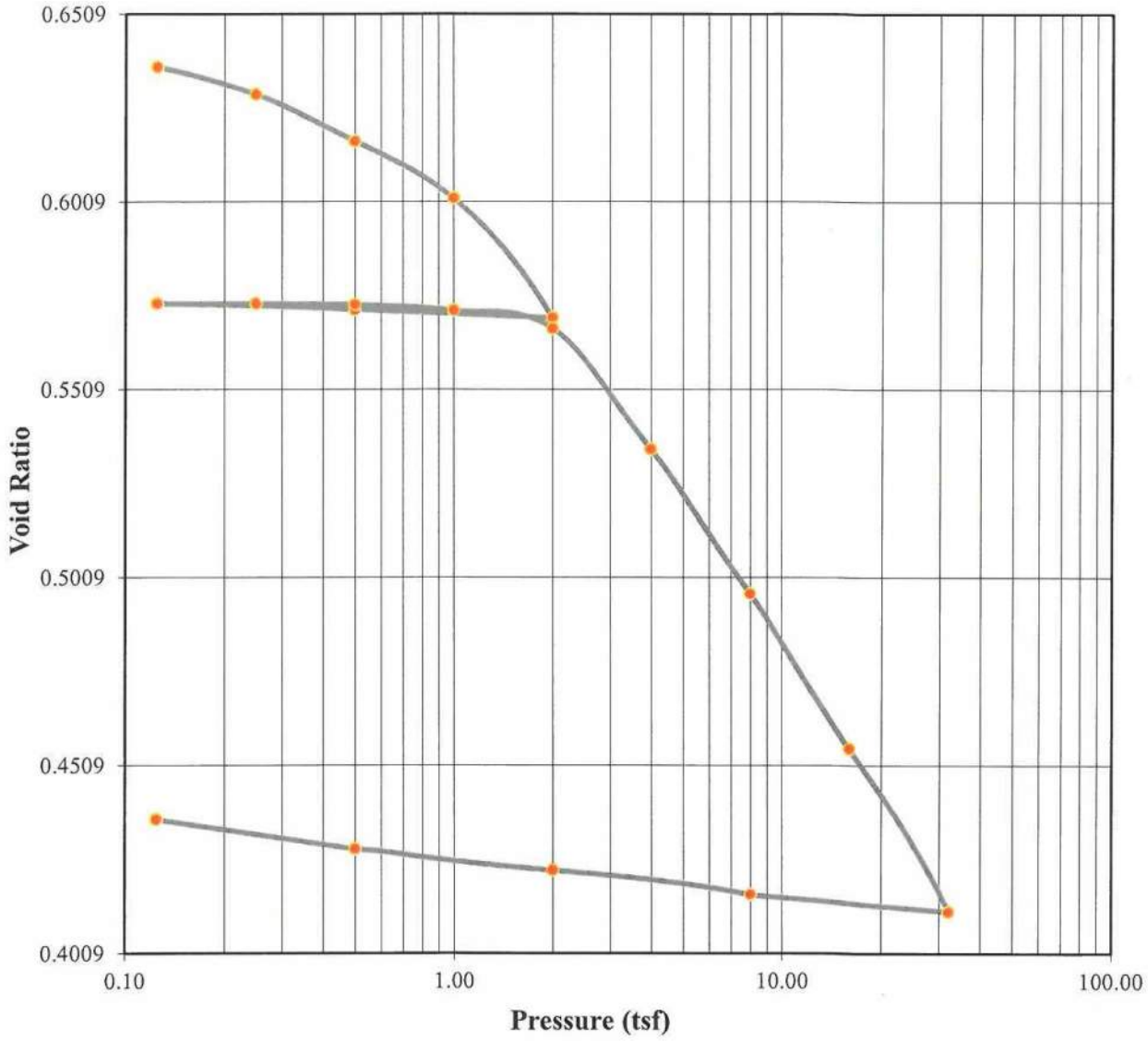
Initial Void Ratio: 0.6113
Plasticity Index (%): 18.0000
Weight of Ring (g): 110.8600

Initial Height (in): 1.0093
Initial Diameter (in): 2.4965

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	514.55	237.94
Dry Soil + Container (g)	450.83	210.60
Weight of Container (g)	74.51	76.17
Moisture Content (%)	16.93	20.34
Void Ratio	0.6113	0.4439
Saturation (%)	75.40	118.94
Dry Density (pcf)	105.35	115.81

Tested By: Jeremy Sebo

Checked By: S. Bradley



Test Date: 02/01/16

Summary of Consolidation Test Results

Overburden Press. (tsf)	0.34	Compression Index, C_c	0.13
Preconsol. Press., P_c (tsf)	0.90	Rebound Index, C_r	0.003
Over Consolidation Ratio	2.65		

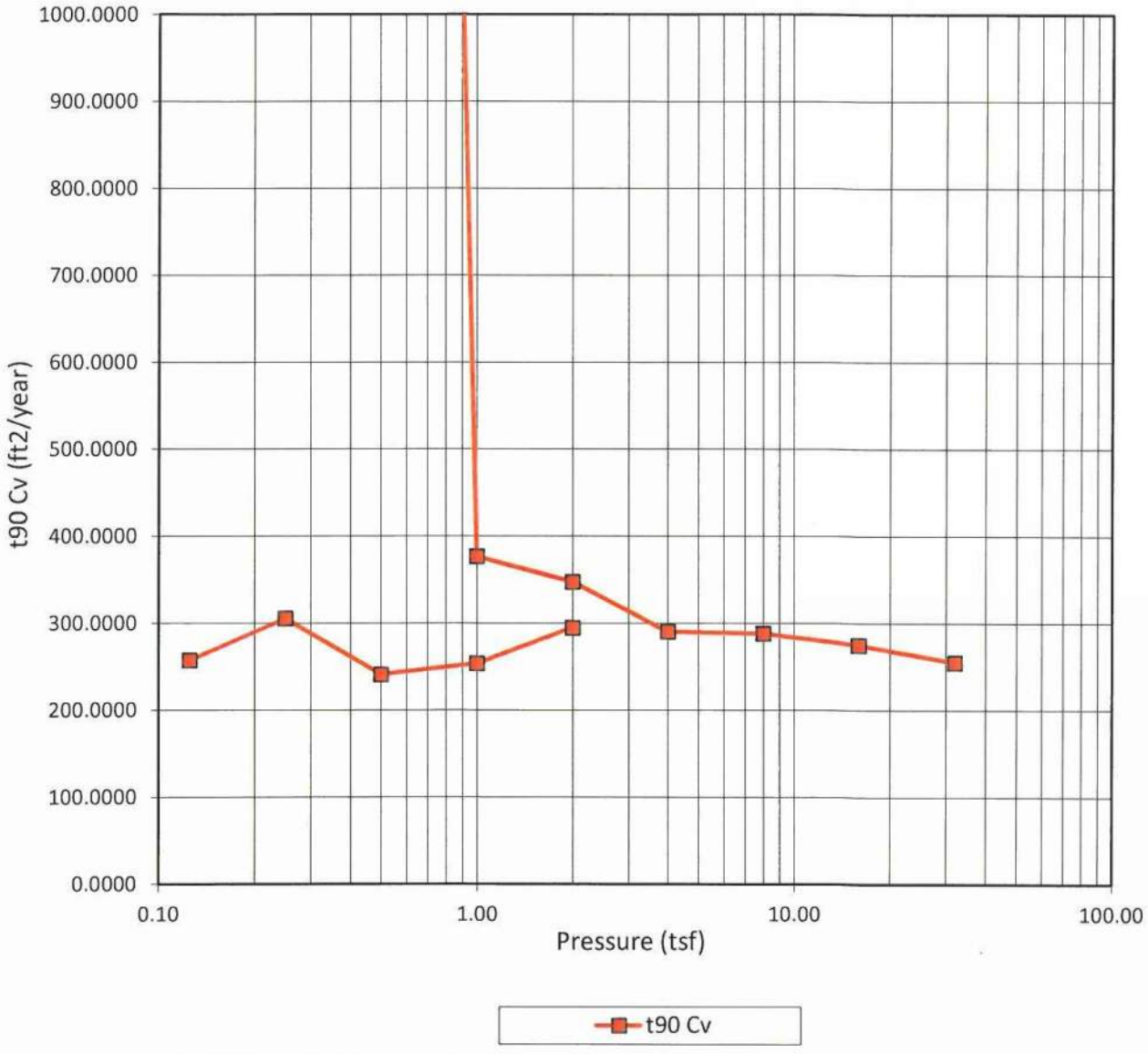
Soil Description:	Brown, Tan & Gray Sandy Lean Clay		
Project Number:	251539	Depth: 5.5' to 5.8'	Remarks:
Sample Number:	ST-1	Boring Number: B-171	
Project:	North Cabot Interchange		
Client:			
Location:	B-171 ST-1 5.5' to 5.8'		

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	Before	After				
			Liquid Limits:	25	**Test Date:**	02/01/16
Moisture (%):	22.13	16.85	**Plastic Limits:**	17		
Dry Density (pcf):	101.56	119.47	**Plasticity Index (%):**	8		
Saturation (%):	91.30	112.17				
Void Ratio:	0.6509	0.4032	**Specific Gravity:**	2.686	Measured	

Soil Description:	Brown, Tan & Gray Sandy Lean Clay		
Project Number:	251539	**Depth:** 5.5' to 5.8'	**Remarks:**
Sample Number:	ST-1	**Boring Number:** B-171	
Project:	North Cabot Interchange		
Client:			
Location:	B-171 ST-1 5.5' to 5.8'		

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Test Summary

Project: North Cabot Interchange
Location: B-171 ST-1 5.5' to 5.8'
Job Number: 251539

Project Number: 251539

Sample Number: ST-1
Boring Number: B-171
Depth: 5.5' to 5.8'
Sample Type: Undisturbed

Sample Description: Brown, Tan & Gray Sandy Lean Clay
Remarks:

Test Number:
Test Date: 02/01/16

Index	Load Sequence (tsf)	Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	0.9945	0.3911	0.00	0.6481	0.000	0.000	0.000	0.000
1	0.125	0.0069	0.9876	0.3842	0.69	0.6367	2.937	* 1.6318	256.950	107.447
2	0.250	0.0113	0.9832	0.3798	1.14	0.6294	2.453	* 1.3628	304.941	127.512
3	0.500	0.0188	0.9757	0.3723	1.89	0.6170	3.062	* 1.7012	240.572	100.595
4	1.000	0.0280	0.9665	0.3631	2.82	0.6017	2.855	* 1.5858	253.220	105.890
5	2.000	0.0472	0.9473	0.3439	4.75	0.5699	2.359	* 1.3106	294.341	123.085
6	0.500	0.0459	0.9486	0.3452	4.62	0.5721	0.000	0.000	0.000	0.000
7	0.125	0.0449	0.9496	0.3462	4.51	0.5737	0.000	0.000	0.000	0.000
8	0.250	0.0449	0.9496	0.3462	4.51	0.5737	0.134	* 0.0744	5209.210	2178.750
9	0.500	0.0451	0.9494	0.3460	4.53	0.5734	0.136	* 0.0758	5114.264	2137.609
10	1.000	0.0460	0.9485	0.3451	4.63	0.5719	1.850	* 1.0279	376.267	157.334
11	2.000	0.0489	0.9456	0.3422	4.92	0.5671	1.993	* 1.1074	347.105	145.147
12	4.000	0.0683	0.9262	0.3228	6.87	0.5349	2.290	* 1.2719	289.933	121.243
13	8.000	0.0915	0.9030	0.2996	9.20	0.4965	2.192	* 1.2180	287.794	120.345
14	16.000	0.1164	0.8781	0.2747	11.70	0.4552	2.173	* 1.2071	274.603	114.827
15	32.000	0.1425	0.8520	0.2486	14.33	0.4120	2.206	* 1.2253	254.689	106.497
16	8.000	0.1398	0.8547	0.2513	14.06	0.4164	0.000	0.000	0.000	0.000
17	2.000	0.1359	0.8586	0.2552	13.67	0.4229	0.000	0.000	0.000	0.000
18	0.500	0.1325	0.8620	0.2586	13.32	0.4285	0.000	0.000	0.000	0.000
19	0.125	0.1492	0.8453	0.2419	12.99	0.4364	0.000	0.000	0.000	0.000

Predicted value indicated with *

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CONSOLIDATION TEST

Consolidation Specimen Information

Project: North Cabot Interchange
Location: B-171 ST-1 5.5' to 5.8'
Job Number: 251539

Project Number: 251539
Test Date: 02/01/16

Sample Number: ST-1
Boring Number: B-171
Depth: 5.5' to 5.8'
Sample Type: Undisturbed

Sample Description: Brown, Tan & Gray Sandy Lean Clay
Remarks:

Test Number:
Liquid Limit: 25.0000
Plastic Limit: 17.0000
Specific Gravity: 2.6860 Measured

Initial Void Ratio: 0.6509
Plasticity Index (%): 8.0000
Weight of Ring (g): 109.2400

Initial Height (in): 0.9945
Initial Diameter (in): 2.4955

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	347.20	224.62
Dry Soil + Container (g)	297.60	202.78
Weight of Container (g)	73.42	73.19
Moisture Content (%)	22.13	16.85
Void Ratio	0.6509	0.4032
Saturation (%)	91.30	112.17
Dry Density (pcf)	101.56	119.47

Tested By: Jeremy Sides

Checked By: S. Bradley

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UNCONFINED COMPRESSION TEST (ROCK CORE)

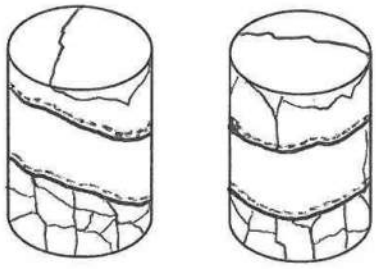
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-F
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-148
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 28.7' to 29.1'
LABORATORY NO.	: 251539	DATE TESTED	: 07/17/15
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 11/03/15

ROCK DESCRIPTION : v. thinly laminated, v.f. grain Shale, sli. wthd.

Diameter :	1.96 in	Area :	3.02 in^2
Height :	3.95 in	Volume :	0.0069 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	158	lbs/$ft.^3$
Maximum Stress :	460	psi
Elapsed Time :	4:40	min.
Rate of Loading :	10	lb/sec



--------- Existing Fractures

Comments :

Approved By : Jeremy Sabo

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UNCONFINED COMPRESSION TEST (ROCK CORE)

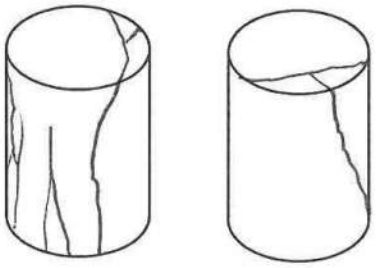
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-G
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-132
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 10.4' to 10.8'
LABORATORY NO.	: 251539	DATE TESTED	: 07/17/15
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 11/03/15

ROCK DESCRIPTION : f. grain, well cemented Sandstone w/heavy iron stain, mod. 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 :	154.76	lbs/$ft.^3$
Maximum Stress :	8251	psi
Elapsed Time :	6:42	min.
Rate of Loading :	90	lb/sec



Comments :

Approved By : Jeremy Sides

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UNCONFINED COMPRESSION TEST (ROCK CORE)

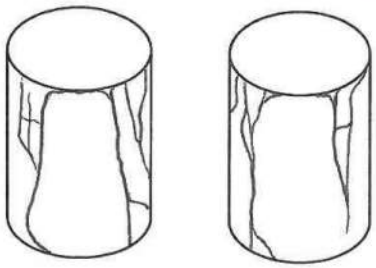
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-H
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-132
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 19.2' to 19.6'
LABORATORY NO.	: 251539	DATE TESTED	: 07/17/15
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 11/03/15

ROCK DESCRIPTION : f. grain, well cemented Sandstone w/healed jts., fresh

Diameter :	1.99 in	Area :	3.10 in^2
Height :	4.01 in	Volume :	0.0072 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	156.29	lbs/ft.^{3}
Maximum Stress :	7071	psi
Elapsed Time :	5:44	min.
Rate of Loading :	60	lb/sec



Comments :

Approved By : Jacob Sabo

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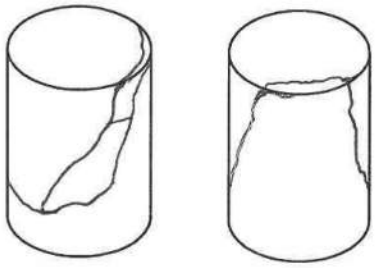
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-I
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-130
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 27.7' to 28.1'
LABORATORY NO.	: 251539	DATE TESTED	: 07/17/15
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 11/03/15

ROCK DESCRIPTION : v. thinly laminated, v.f. grain Shale w/Sandstone pebble, sli. wthd.

Diameter :	1.98 in	Area :	3.07 in^2
Height :	4.05 in	Volume :	0.0072 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	162.98	lbs/ft.^{3}
Maximum Stress :	1366	psi
Elapsed Time :	4:00	min.
Rate of Loading :	20	lb/sec



Comments :

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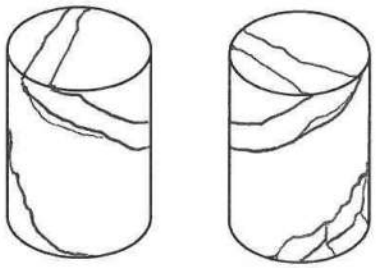
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-J
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-147
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 26.9' to 27.2'
LABORATORY NO.	: 251539	DATE TESTED	: 07/17/15
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 11/03/15

ROCK DESCRIPTION : v. thinly laminated, v.f. grain Shale, mod. wthd.

Diameter :	1.93 in	Area :	2.91 in^2
Height :	3.85 in	Volume :	0.0065 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	160.41	lbs/ft.³
Maximum Stress :	597	psi
Elapsed Time :	2:32	min.
Rate of Loading :	30	lb/sec



Comments :

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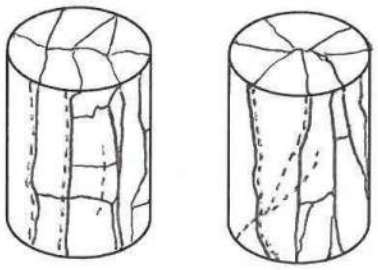
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-K
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-147
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 34.4' to 34.7'
LABORATORY NO.	: 251539	DATE TESTED	: 07/17/15
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 11/03/15

ROCK DESCRIPTION : v. thinly laminated, v.f. grain Shale, sli. to mod. wthd.

Diameter :	1.96 in	Area :	3.03 in²
Height :	4.02 in	Volume :	0.0071 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	162.43	lbs/ft.³
Maximum Stress :	7123	psi
Elapsed Time :	9:55	min.
Rate of Loading :	50	lb/sec



--------- Existing Fracture w/gypsum infill

Comments :

Approved By : Jeremy Sides

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UNCONFINED COMPRESSION TEST (ROCK CORE)

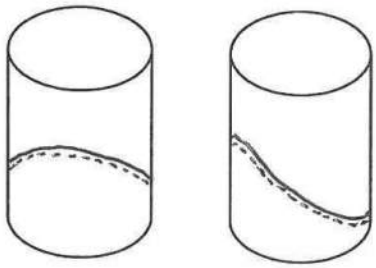
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-L
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-139
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 24.0' to 24.4'
LABORATORY NO.	: 251539	DATE TESTED	: 07/17/15
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 11/03/15

ROCK DESCRIPTION : v. thinly laminated, v.f. grain Shale, f. breaks along bedding, sli. wthd.

Diameter :	1.98 in	Area :	3.08 in²
Height :	4.04 in	Volume :	0.0072 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	162.43	lbs/ft.³
Maximum Stress :	172	psi
Elapsed Time :	0:45	min.
Rate of Loading :	20	lb/sec



--------- Existing Bedding Plane Discontinuity

Comments :

Approved By : Jerry Sides

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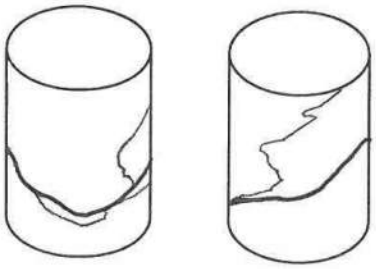
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-M
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-139
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 16.6' to 17.0'
LABORATORY NO.	: 251539	DATE TESTED	: 07/17/15
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 11/03/15

ROCK DESCRIPTION : v. thinly laminated, v.f. grain Shale, f. breaks along bedding, sli. wthd.

Diameter :	1.98 in	Area :	3.07 in^2
Height :	3.90 in	Volume :	0.0069 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	157.79	lbs/ft.³
Maximum Stress :	534	psi
Elapsed Time :	3:20	min.
Rate of Loading :	10	lb/sec



Comments :

Approved By : Jeremy Sobo

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UNCONFINED COMPRESSION TEST (ROCK CORE)

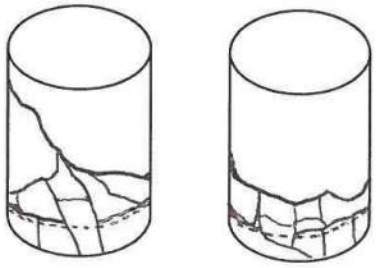
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-N
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-131
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 13.1' to 13.5'
LABORATORY NO.	: 251539	DATE TESTED	: 07/17/15
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 11/03/15

ROCK DESCRIPTION : v. thinly laminated, v.f. grain Shale, iron stain along bedding, mod. wthd.

Diameter :	1.98 in	Area :	3.08 in²
Height :	3.98 in	Volume :	0.0071 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	139.41	lbs/ft.³
Maximum Stress :	130	psi
Elapsed Time :	2:38	min.
Rate of Loading :	10	lb/sec



--------- Existing Fracture

Comments :

Approved By : Jeremy Sabo

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UNCONFINED COMPRESSION TEST (ROCK CORE)

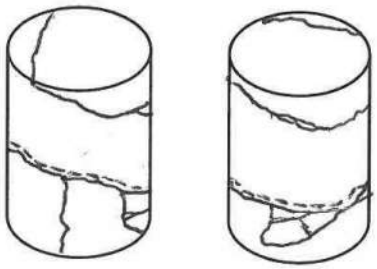
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-O
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-131
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 21.1' to 21.5'
LABORATORY NO.	: 251539	DATE TESTED	: 07/17/15
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 11/03/15

ROCK DESCRIPTION : v. thinly laminated, v.f. grain Shale, f. breaks along bedding, trcs. f. grain Sandstone laminae, fresh

Diameter :	1.98 in	Area :	3.07 in^2
Height :	3.96 in	Volume :	0.007 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	156.19	lbs/ft.^{3}
Maximum Stress :	369	psi
Elapsed Time :	3:32	min.
Rate of Loading :	20	lb/sec



--------- Existing Bedding Plane Discontinuity

Comments :

Approved By : Jerry Sato

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UNCONFINED COMPRESSION TEST (ROCK CORE)

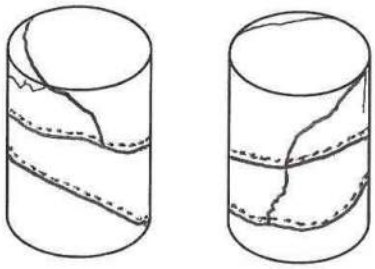
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-P
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-131
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 38.1' to 38.5'
LABORATORY NO.	: 251539	DATE TESTED	: 07/17/15
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 11/03/15

ROCK DESCRIPTION : v. thinly laminated, v.f. grain Shale, f. breaks along bedding, fresh

Diameter :	1.99 in	Area :	3.11 in^2
Height :	4.07 in	Volume :	0.0073 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	159.84	lbs/ft.³
Maximum Stress :	382	psi
Elapsed Time :	4:57	min.
Rate of Loading :	10	lb/sec



--------- Existing Bedding Plane Discontinuities

Comments :

Approved By : Jeremy Sisko

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UNCONFINED COMPRESSION TEST (ROCK CORE)

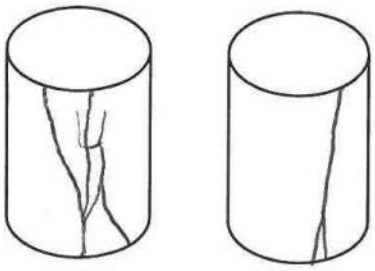
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-Q
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-133
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 4.6' to 5.0'
LABORATORY NO.	: 251539	DATE TESTED	: 02/03/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : f. grain, well cemented Sandstone, mod. weathered to fresh

Diameter :	1.98 in	Area :	3.07 in^2
Height :	4.07 in	Volume :	0.0072 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	163.58	lbs/ft.^{3}
Maximum Stress :	14078	psi
Elapsed Time :	10:25	min.
Rate of Loading :	100	lb/sec



Comments :

Approved By : Jerry Sabo

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UNCONFINED COMPRESSION TEST (ROCK CORE)

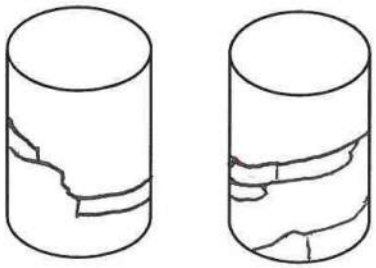
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-R
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-134
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 14.5' to 14.9'
LABORATORY NO.	: 251539	DATE TESTED	: 2/3/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 3/2/2016

ROCK DESCRIPTION : v. thinly laminated, v.f. sandy to silty in part, Shale mod. weathered to fresh

Diameter :	1.99 in	Area :	3.09 in^2
Height :	4.04 in	Volume :	0.0072 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	157.54	lbs/$ft.^3$
Maximum Stress :	255	psi
Elapsed Time :	2:00	min.
Rate of Loading :	10	lb/sec



Comments :

Approved By : Jerry Soto

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UNCONFINED COMPRESSION TEST (ROCK CORE)

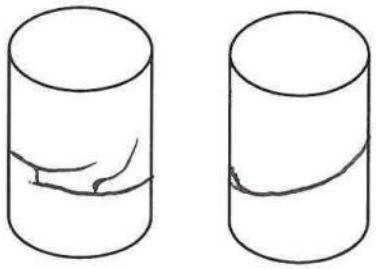
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-S
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-134
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 23.3' to 23.7'
LABORATORY NO.	: 251539	DATE TESTED	: 2/3/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 3/2/2016

ROCK DESCRIPTION : v. thinly laminated, v.f. sandy to silty in part, Shale sli. weathered to fresh

Diameter :	1.98 in	Area :	3.09 in^2
Height :	4.08 in	Volume :	0.0073 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	158.94	lbs/ft.^{3}
Maximum Stress :	191	psi
Elapsed Time :	1:50	min.
Rate of Loading :	10	lb/sec



Comments :

Approved By : Jeremy Solo

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UNCONFINED COMPRESSION TEST (ROCK CORE)

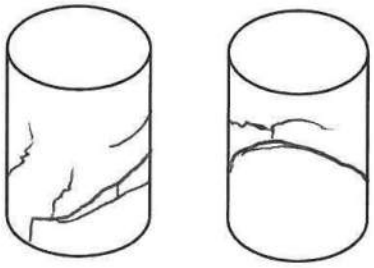
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-T
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-134
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 31.9' to 32.2'
LABORATORY NO.	: 251539	DATE TESTED	: 2/3/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 3/2/2016

ROCK DESCRIPTION : v. thinly laminated, silty in part, Shale fresh

Diameter :	1.98 in	Area :	3.08 in^2
Height :	3.99 in	Volume :	0.0071 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	161.91	lbs/ft.^{3}
Maximum Stress :	551	psi
Elapsed Time :	2:45	min.
Rate of Loading :	20	lb/sec



Comments :

Approved By : Jerry Sebo

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UNCONFINED COMPRESSION TEST (ROCK CORE)

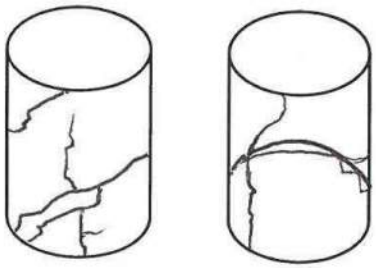
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-U
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-135A
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 27.7' to 28.1'
LABORATORY NO.	: 251539	DATE TESTED	: 2/3/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 3/2/2016

ROCK DESCRIPTION : v. thinly laminated, silty in part, Shale mod. weathered

Diameter :	1.99 in	Area :	3.11 in^2
Height :	4.04 in	Volume :	0.0073 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	164.65	lbs/ft.^{3}
Maximum Stress :	280	psi
Elapsed Time :	5:10	min.
Rate of Loading :	10	lb/sec



Comments :

Approved By : Jerry Sale

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UNCONFINED COMPRESSION TEST (ROCK CORE)

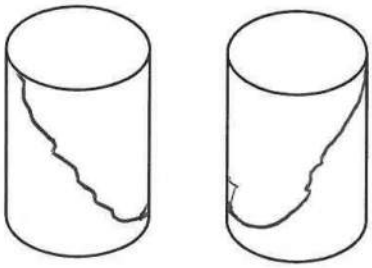
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-V
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-135A
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 39.1' to 39.4'
LABORATORY NO.	: 251539	DATE TESTED	: 02/03/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : v. thinly laminated, mod. hard Shale, fresh to sli. wthd.

Diameter :	1.98 in	Area :	3.09 in^2
Height :	4.04 in	Volume :	0.0072 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	165.74	lbs/$ft.^3$
Maximum Stress :	411	psi
Elapsed Time :	3:02	min.
Rate of Loading :	10	lb/sec



Comments :

Approved By : Jerry Sabo

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UNCONFINED COMPRESSION TEST (ROCK CORE)

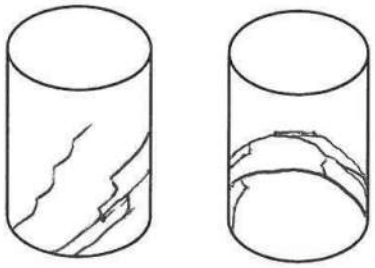
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-W
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-169
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 17.6' to 18.0'
LABORATORY NO.	: 251539	DATE TESTED	: 02/03/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : v. thinly laminated, med. to mod. hard Shale, fresh to sli. wthd.

Diameter :	1.98 in	Area :	3.09 in^2
Height :	4.04 in	Volume :	0.0072 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	156.81	lbs/$ft.^3$
Maximum Stress :	184	psi
Elapsed Time :	3:52	min.
Rate of Loading :	1	lb/sec



Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

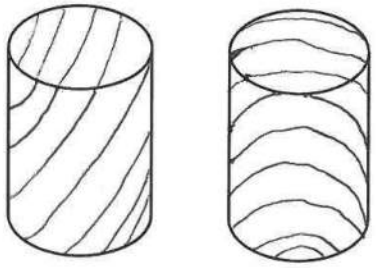
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-X
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-169
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 26.4' to 26.8'
LABORATORY NO.	: 251539	DATE TESTED	: 02/03/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : v. thinly laminated, med. to mod. hard Shale, fresh to sli. wthd.

Diameter :	1.99 in	Area :	3.11 in^2
Height :	4.06 in	Volume :	0.0073 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	155.42	lbs/ft.^{3}
Maximum Stress :	154	psi
Elapsed Time :	5:00	min.
Rate of Loading :	10	lb/sec



Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

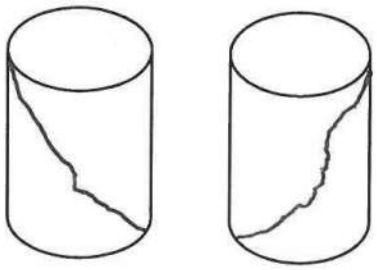
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-Y
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-136
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 16.7' to 17.1'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : f. grain, w/interbedded shale, f. micaceous Sandstone, sli. wthd.

Diameter :	1.99 in	Area :	3.10 in^2
Height :	4.10 in	Volume :	0.0074 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	161.92	lbs/ft.^{3}
Maximum Stress :	729	psi
Elapsed Time :	1:52	min.
Rate of Loading :	30	lb/sec



Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

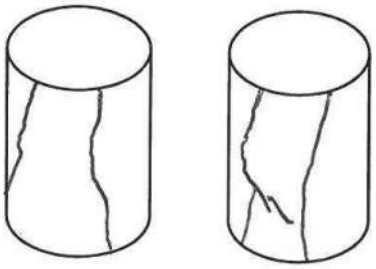
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-Z
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-137
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 14.0' to 14.4'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : f. grain, w/trc. shale pebbles, f. micaceous Sandstone, sli. wthd.

Diameter :	1.99 in	Area :	3.11 in^2
Height :	4.11 in	Volume :	0.0074 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	161.54	lbs/$ft.^3$
Maximum Stress :	9626	psi
Elapsed Time :	12:05	min.
Rate of Loading :	40	lb/sec



Comments :

Approved By : Jeremy Solo

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UNCONFINED COMPRESSION TEST (ROCK CORE)

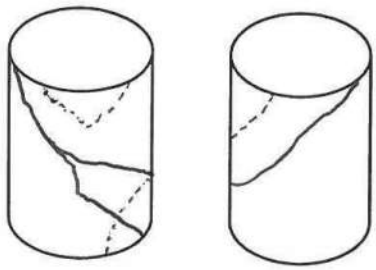
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-AA
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-137
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 27.5' to 27.8'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : v. thinly laminated, med. to mod. hard Shale w/f. grain sandstone laminae, sli. wthd.

Diameter :	1.95 in	Area :	2.99 in^2
Height :	4.07 in	Volume :	0.0071 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	153.59	lbs/$ft.^3$
Maximum Stress :	70	psi
Elapsed Time :	0:46	min.
Rate of Loading :	20	lb/sec



------ Sample Fractured During Preparation

Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

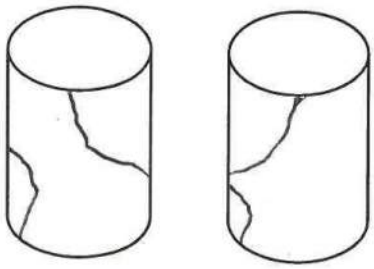
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-AB
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-138
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 15.9' to 16.3'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : v. thinly laminated, med. to mod. hard Shale, trc. quartz veins, fresh to sli. wthd.

Diameter :	1.98 in	Area :	3.08 in²
Height :	4.17 in	Volume :	0.0074 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	156.57	lbs/ft.³
Maximum Stress :	153	psi
Elapsed Time :	1:06	min.
Rate of Loading :	30	lb/sec



Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

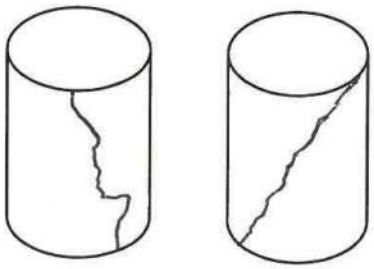
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-AC
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-138
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 25.1' to 25.5'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : v. thinly laminated, med. to mod. hard Shale, trc. pyrite nodule, fresh to sli. wthd.

Diameter :	1.99 in	Area :	3.10 in^2
Height :	4.08 in	Volume :	0.0073 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	160.3	lbs/$ft.^3$
Maximum Stress :	161	psi
Elapsed Time :	1:13	min.
Rate of Loading :	20	lb/sec



Comments :

Approved By : Jerry Sides

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UNCONFINED COMPRESSION TEST (ROCK CORE)

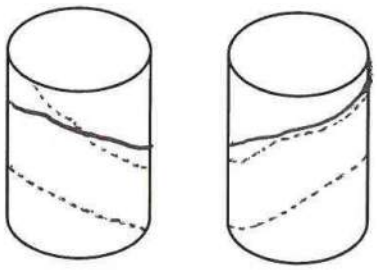
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-AD
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-140
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 20.2' to 20.6'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : v. thinly laminated, med. hard Shale, sli. silty in parts, sli. wthd.

Diameter :	1.99 in	Area :	3.12 in^2
Height :	4.08 in	Volume :	0.0074 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	156.91	lbs/ft.^{3}
Maximum Stress :	208	psi
Elapsed Time :	1:19	min.
Rate of Loading :	20	lb/sec



------- Sample Fractured During Preparation

Comments :

Approved By : Jerry Sabo

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UNCONFINED COMPRESSION TEST (ROCK CORE)

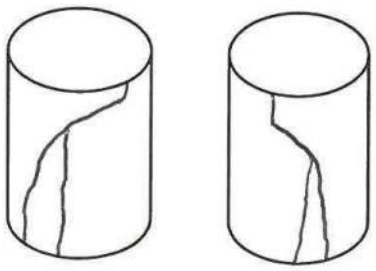
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-AE
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-149
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 13.4' to 13.7'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : v. thinly laminated, med. to mod. hard Shale, fissile in parts, sli. to mod. wthd.

Diameter :	1.99 in	Area :	3.11 in^2
Height :	4.07 in	Volume :	0.0073 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	161.77	lbs/$ft.^3$
Maximum Stress :	2390	psi
Elapsed Time :	5:51	min.
Rate of Loading :	20	lb/sec



Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

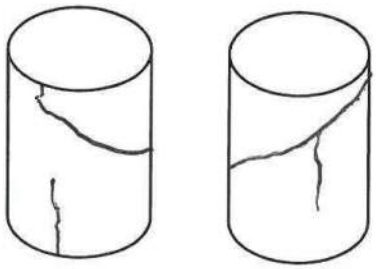
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-AF
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-150
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 22.1' to 22.5'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : thinly laminated, med. to mod. hard Shale, fissile in parts, trcs. sandstone laminae, sli. t

Diameter :	1.98 in	Area :	3.09 in^2
Height :	4.10 in	Volume :	0.0073 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	156.68	lbs/$ft.^3$
Maximum Stress :	376	psi
Elapsed Time :	2:35	min.
Rate of Loading :	20	lb/sec



Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

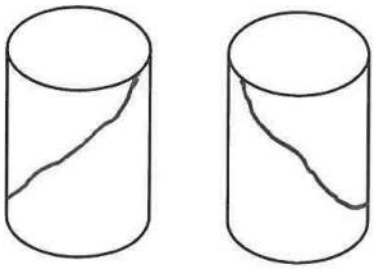
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-AG
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-150
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 33.2' to 33.6'
LABORATORY NO.	: 251539	DATE TESTED	: 2/25/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 3/2/2016

ROCK DESCRIPTION : thinly laminated, Shale, fissile in parts, trcs. sandstone laminae, sli. to mod. 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 :	164.64	lbs/$ft.^3$
Maximum Stress :	742	psi
Elapsed Time :	1:27	min.
Rate of Loading :	30	lb/sec



Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

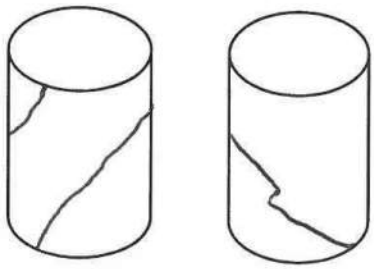
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-AH
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-151
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 22.7' to 23.1'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : thinly laminated, med. to mod. hard Shale, trcs. sandstone laminae, mod. wthd.

Diameter :	1.98 in	Area :	3.08 in^2
Height :	4.10 in	Volume :	0.0073 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	165.5	lbs/$ft.^3$
Maximum Stress :	516	psi
Elapsed Time :	2:14	min.
Rate of Loading :	20	lb/sec



Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

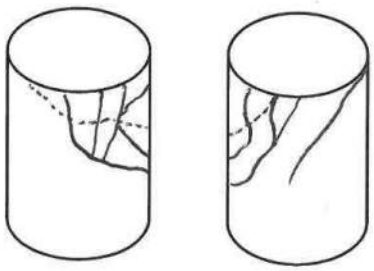
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-AI
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-152
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 21.7' to 22.1'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : thinly laminated, med. hard, poorly fissile Shale, mod. wthd.

Diameter :	1.97 in	Area :	3.04 in^2
Height :	4.06 in	Volume :	0.0071 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	158.37	lbs/ft.^{3}
Maximum Stress :	306	psi
Elapsed Time :	2:12	min.
Rate of Loading :	20	lb/sec



------- Sample Fractured During Preparation

Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

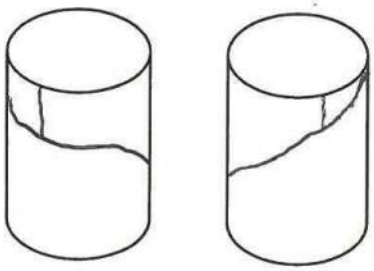
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-AJ
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-170
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 23.1' to 23.5'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : thinly laminated, med. to mod. hard, poorly fissile Shale, silty in parts, sli. to mod. wthd.

Diameter :	1.99 in	Area :	3.11 in^2
Height :	4.08 in	Volume :	0.0074 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	155.16	lbs/$ft.^3$
Maximum Stress :	315	psi
Elapsed Time :	1:32	min.
Rate of Loading :	20	lb/sec



Comments :

Approved By : Jeremy Sabo

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ica-onramp.com

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T 270.444.9691 F 270.443.3943

HDR | ICA

UNCONFINED COMPRESSION TEST (ROCK CORE)

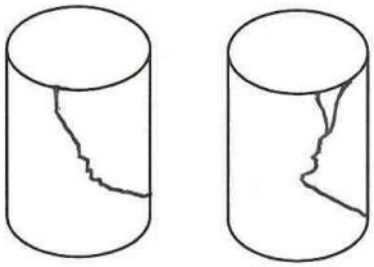
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-AK
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-171
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 21.3' to 21.7'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : thinly laminated, med. to mod. hard, poorly fissile Shale, silty in part, sli. to mod. wthd.

Diameter :	1.97 in	Area :	3.04 in^2
Height :	4.11 in	Volume :	0.0072 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	158.07	lbs/$ft.^3$
Maximum Stress :	415	psi
Elapsed Time :	1:47	min.
Rate of Loading :	20	lb/sec



Comments :

Approved By : Jeremy Soto

hdrinc.com
ica-onramp.com

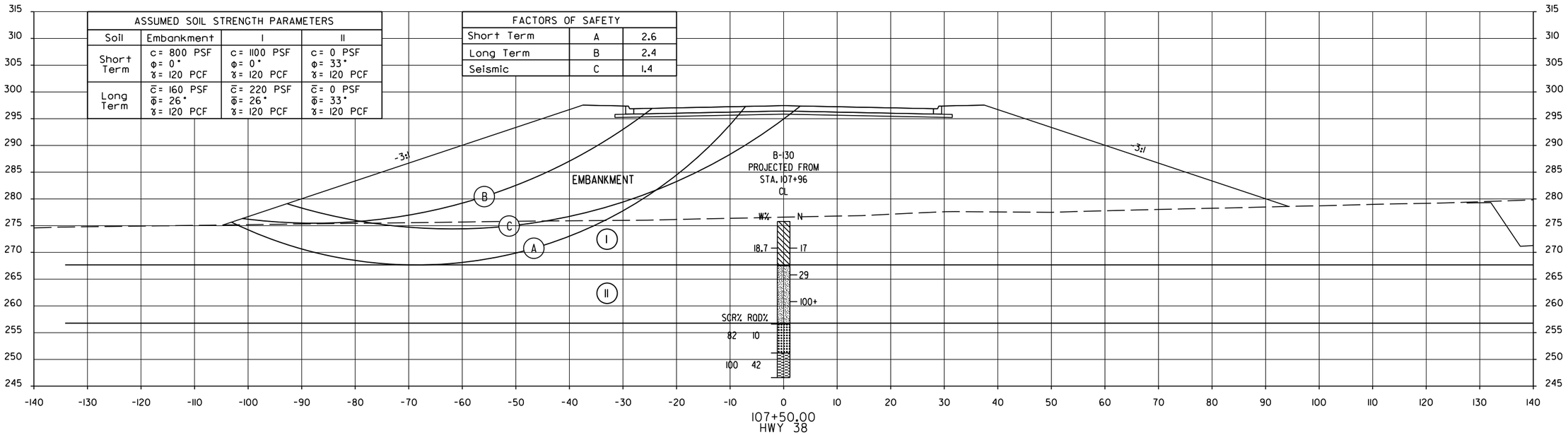
2550 Irvin Cobb Drive, Paducah, Kentucky 42003
T 270.444.9691 F 270.443.3943

Appendix C. DESIGN CROSS SECTIONS

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.		061102		
				(2)	CROSS SECTIONS			

ASSUMED SOIL STRENGTH PARAMETERS			
Soil	Embankment	I	II
Short Term	c = 800 PSF Φ = 0° γ = 120 PCF	c = 1100 PSF Φ = 0° γ = 120 PCF	c = 0 PSF Φ = 33° γ = 120 PCF
Long Term	c̄ = 160 PSF Φ̄ = 26° γ = 120 PCF	c̄ = 220 PSF Φ̄ = 26° γ = 120 PCF	c̄ = 0 PSF Φ̄ = 33° γ = 120 PCF

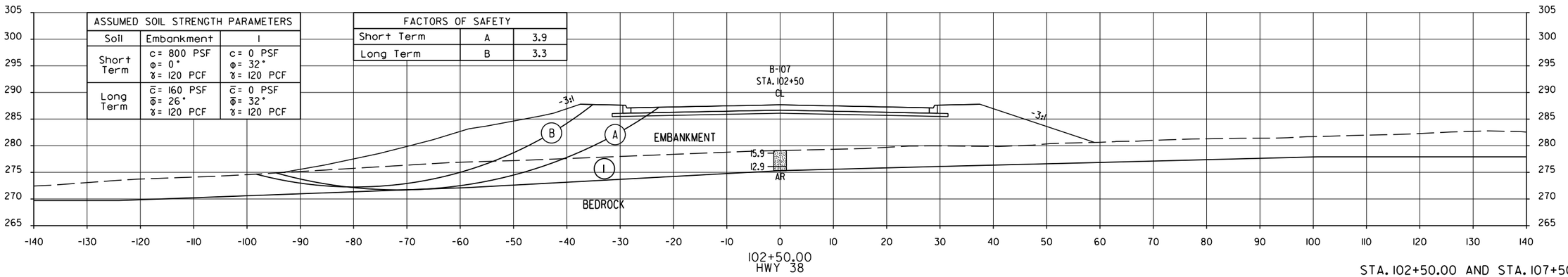
FACTORS OF SAFETY		
Short Term	A	2.6
Long Term	B	2.4
Seismic	C	1.4



107+50.00
HWY 38

ASSUMED SOIL STRENGTH PARAMETERS		
Soil	Embankment	I
Short Term	c = 800 PSF Φ = 0° γ = 120 PCF	c = 0 PSF Φ = 32° γ = 120 PCF
Long Term	c̄ = 160 PSF Φ̄ = 26° γ = 120 PCF	c̄ = 0 PSF Φ̄ = 32° γ = 120 PCF

FACTORS OF SAFETY		
Short Term	A	3.9
Long Term	B	3.3



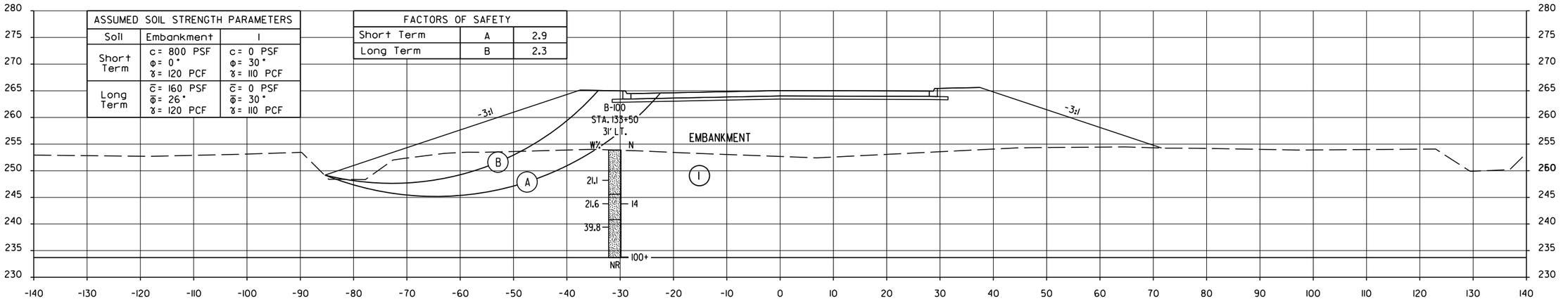
102+50.00
HWY 38

STA. 102+50.00 AND STA. 107+50.00

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.		061102		
				(2)	CROSS SECTIONS			

ASSUMED SOIL STRENGTH PARAMETERS		
Soil	Embankment	1
Short Term	c = 800 PSF Φ = 0° γ = 120 PCF	c = 0 PSF Φ = 30° γ = 110 PCF
Long Term	$\bar{c}$ = 160 PSF $\bar{\Phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 0 PSF $\bar{\Phi}$ = 30° γ = 110 PCF

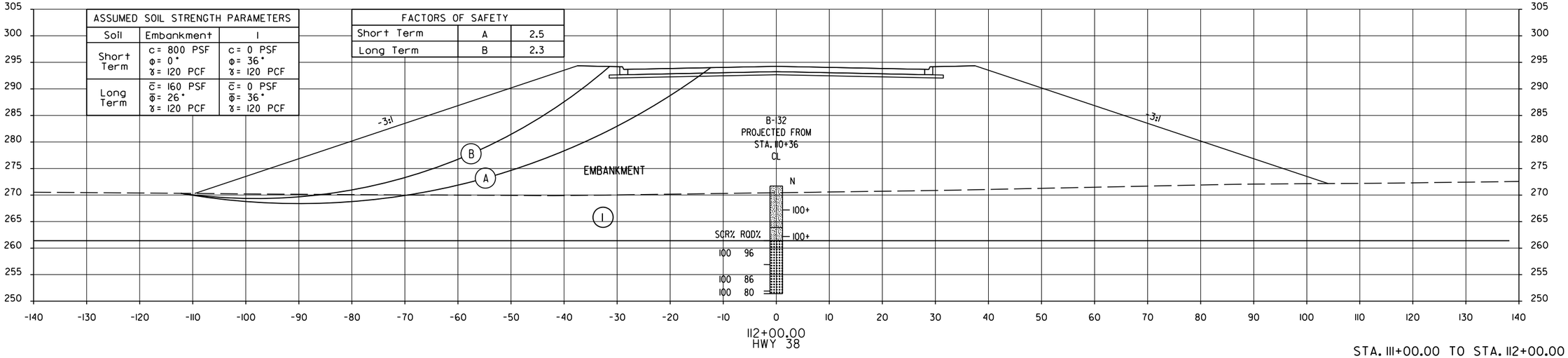
FACTORS OF SAFETY		
Short Term	A	2.9
Long Term	B	2.3



133+50.00
HWY38

ASSUMED SOIL STRENGTH PARAMETERS		
Soil	Embankment	1
Short Term	c = 800 PSF Φ = 0° γ = 120 PCF	c = 0 PSF Φ = 36° γ = 120 PCF
Long Term	$\bar{c}$ = 160 PSF $\bar{\Phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 0 PSF $\bar{\Phi}$ = 36° γ = 120 PCF

FACTORS OF SAFETY		
Short Term	A	2.5
Long Term	B	2.3



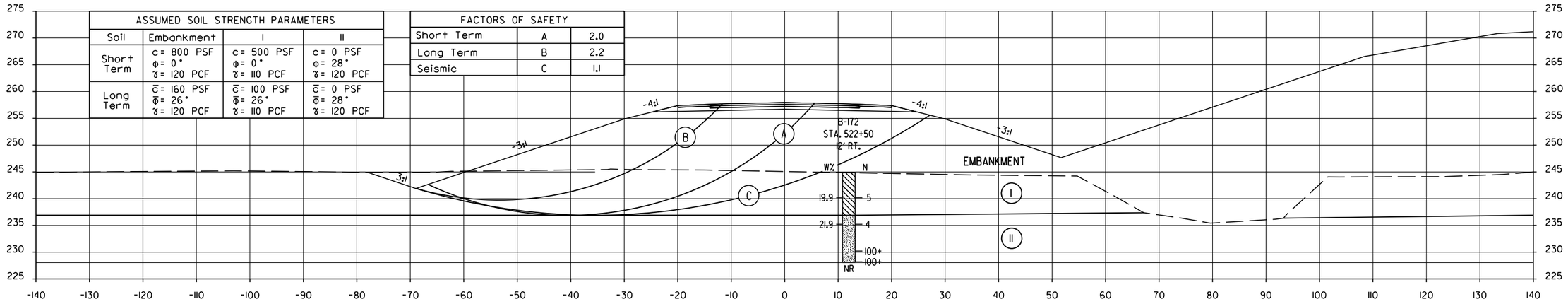
112+00.00
HWY 38

STA. 111+00.00 TO STA. 112+00.00

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.		061102		
				(2)	CROSS SECTIONS			

ASSUMED SOIL STRENGTH PARAMETERS			
Soil	Embankment	I	II
Short Term	c = 800 PSF Φ = 0° γ = 120 PCF	c = 500 PSF Φ = 0° γ = 110 PCF	c = 0 PSF Φ = 28° γ = 120 PCF
Long Term	c̄ = 160 PSF φ̄ = 26° γ = 120 PCF	c̄ = 100 PSF φ̄ = 26° γ = 110 PCF	c̄ = 0 PSF φ̄ = 28° γ = 120 PCF

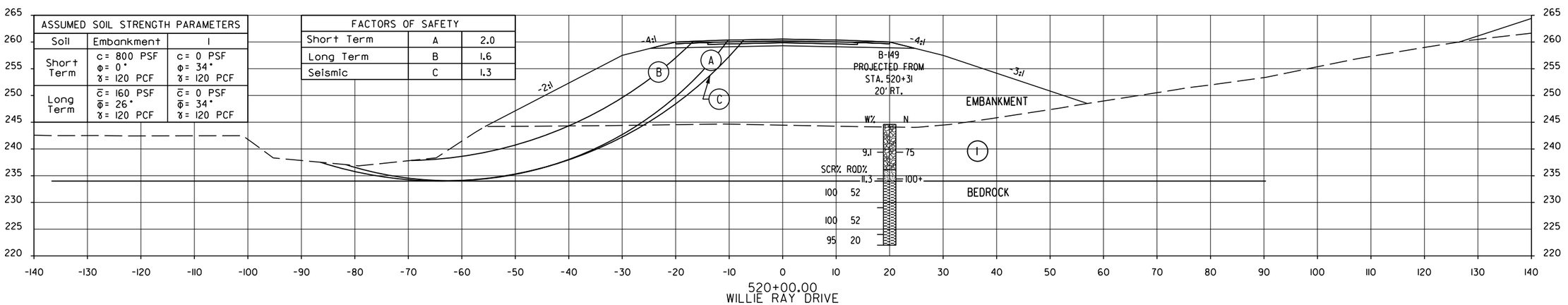
FACTORS OF SAFETY		
Short Term	A	2.0
Long Term	B	2.2
Seismic	C	1.1



522+50.00
WILLIE RAY DRIVE

ASSUMED SOIL STRENGTH PARAMETERS		
Soil	Embankment	I
Short Term	c = 800 PSF Φ = 0° γ = 120 PCF	c = 0 PSF Φ = 34° γ = 120 PCF
Long Term	c̄ = 160 PSF φ̄ = 26° γ = 120 PCF	c̄ = 0 PSF φ̄ = 34° γ = 120 PCF

FACTORS OF SAFETY		
Short Term	A	2.0
Long Term	B	1.6
Seismic	C	1.3



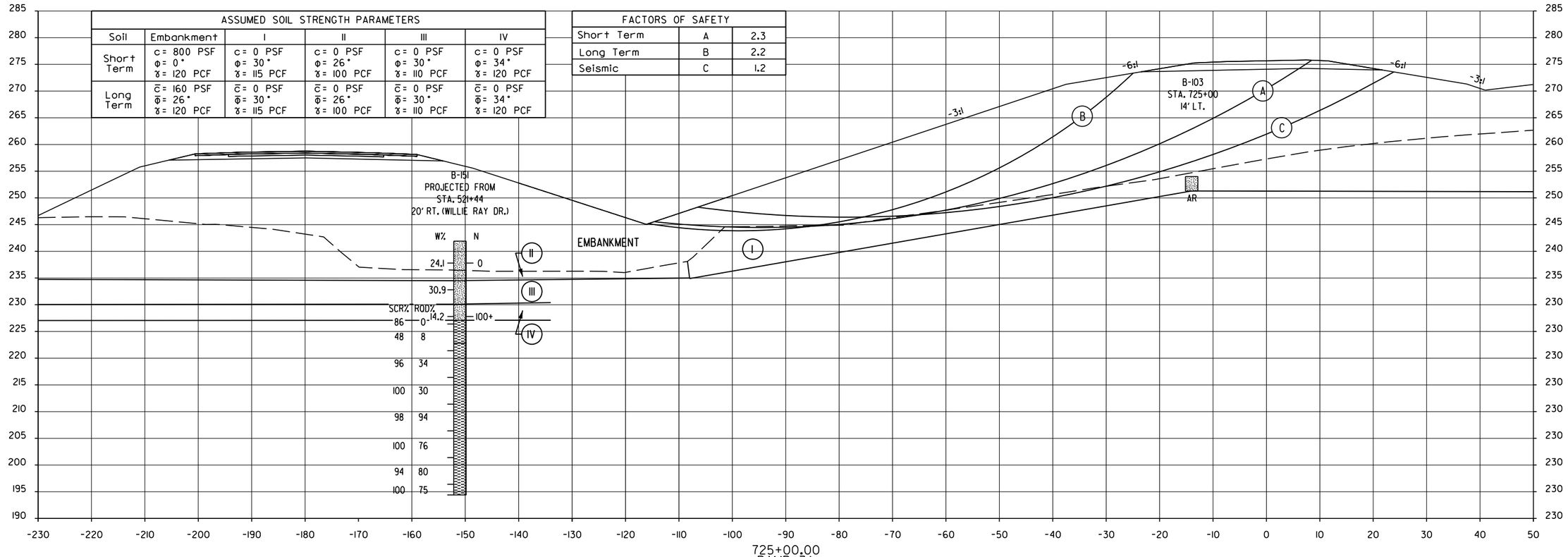
520+00.00
WILLIE RAY DRIVE

STA. 520+00.00 TO STA. 522+50.00

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.		061102		
				(2)	CROSS SECTIONS			

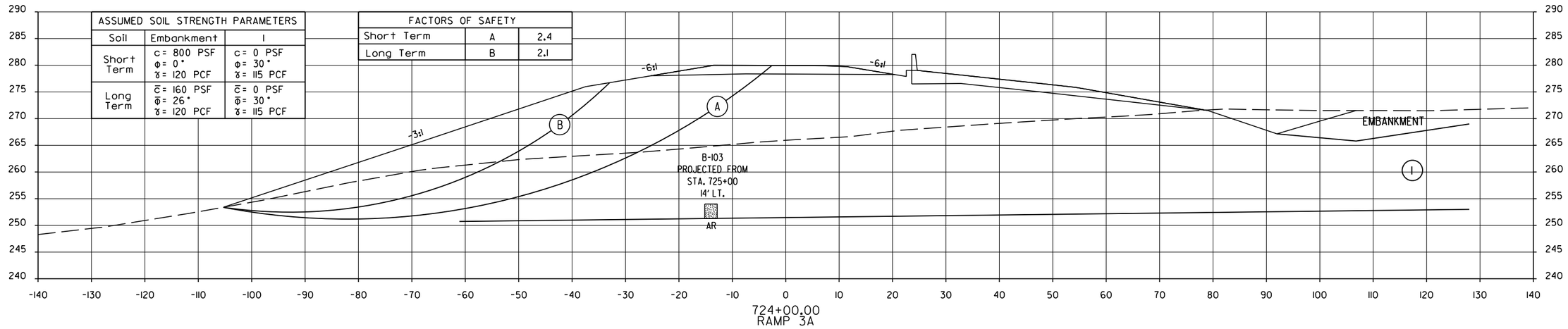
ASSUMED SOIL STRENGTH PARAMETERS					
Soil	Embankment	I	II	III	IV
Short Term	c = 800 PSF Φ = 0° γ = 120 PCF	c = 0 PSF Φ = 30° γ = 115 PCF	c = 0 PSF Φ = 26° γ = 100 PCF	c = 0 PSF Φ = 30° γ = 110 PCF	c = 0 PSF Φ = 34° γ = 120 PCF
Long Term	c̄ = 160 PSF Φ̄ = 26° γ = 120 PCF	c̄ = 0 PSF Φ̄ = 30° γ = 115 PCF	c̄ = 0 PSF Φ̄ = 26° γ = 100 PCF	c̄ = 0 PSF Φ̄ = 30° γ = 110 PCF	c̄ = 0 PSF Φ̄ = 34° γ = 120 PCF

FACTORS OF SAFETY		
Short Term	A	2.3
Long Term	B	2.2
Seismic	C	1.2



ASSUMED SOIL STRENGTH PARAMETERS		
Soil	Embankment	I
Short Term	c = 800 PSF Φ = 0° γ = 120 PCF	c = 0 PSF Φ = 30° γ = 115 PCF
Long Term	c̄ = 160 PSF Φ̄ = 26° γ = 120 PCF	c̄ = 0 PSF Φ̄ = 30° γ = 115 PCF

FACTORS OF SAFETY		
Short Term	A	2.4
Long Term	B	2.1

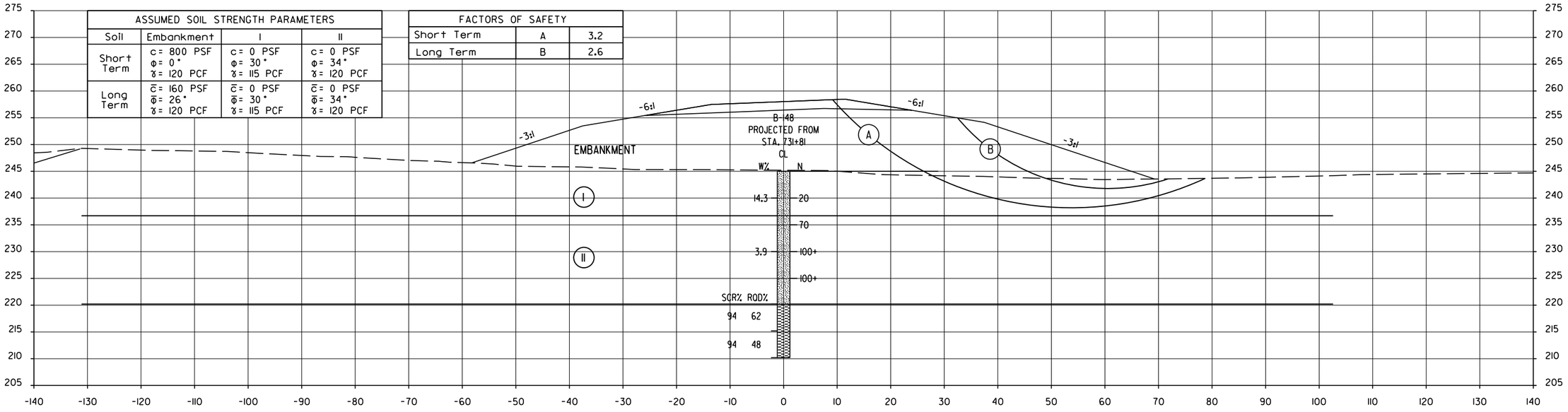


STA. 724+00.00 TO STA. 725+00.00

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.		061102		
				(2)	CROSS SECTIONS			

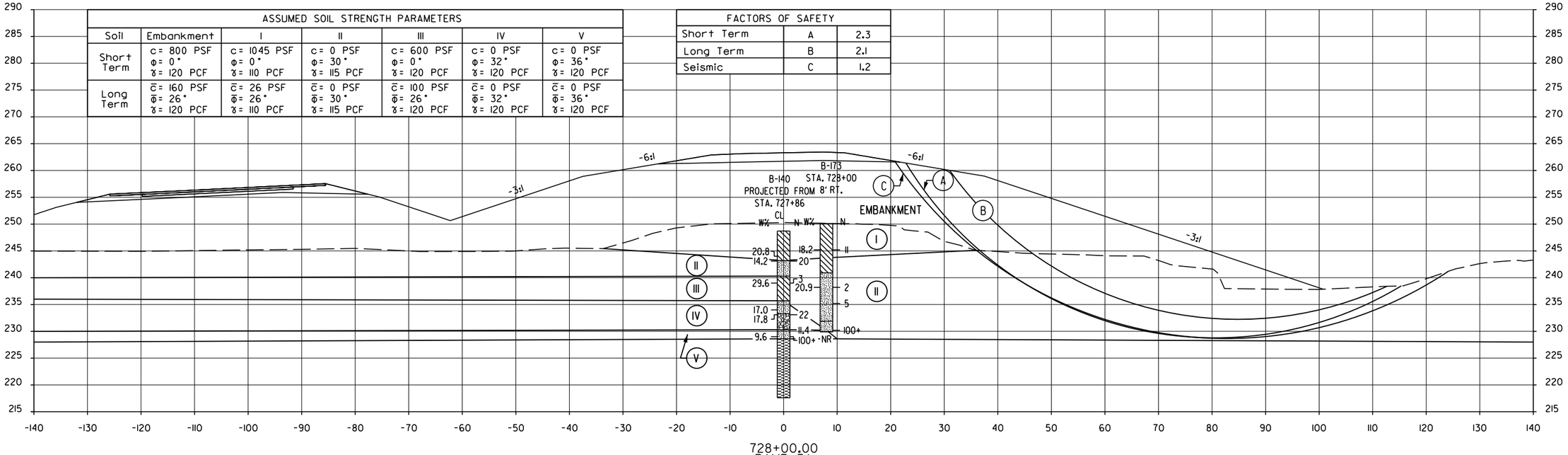
ASSUMED SOIL STRENGTH PARAMETERS			
Soil	Embankment	I	II
Short Term	c= 800 PSF Φ= 0° γ= 120 PCF	c= 0 PSF Φ= 30° γ= 115 PCF	c= 0 PSF Φ= 34° γ= 120 PCF
Long Term	c̄= 160 PSF Φ̄= 26° γ= 120 PCF	c̄= 0 PSF Φ̄= 30° γ= 115 PCF	c̄= 0 PSF Φ̄= 34° γ= 120 PCF

FACTORS OF SAFETY		
Short Term	A	3.2
Long Term	B	2.6



ASSUMED SOIL STRENGTH PARAMETERS						
Soil	Embankment	I	II	III	IV	V
Short Term	c= 800 PSF Φ= 0° γ= 120 PCF	c= 1045 PSF Φ= 0° γ= 110 PCF	c= 0 PSF Φ= 30° γ= 115 PCF	c= 600 PSF Φ= 0° γ= 120 PCF	c= 0 PSF Φ= 32° γ= 120 PCF	c= 0 PSF Φ= 36° γ= 120 PCF
Long Term	c̄= 160 PSF Φ̄= 26° γ= 120 PCF	c̄= 26 PSF Φ̄= 26° γ= 110 PCF	c̄= 0 PSF Φ̄= 30° γ= 115 PCF	c̄= 100 PSF Φ̄= 26° γ= 120 PCF	c̄= 0 PSF Φ̄= 32° γ= 120 PCF	c̄= 0 PSF Φ̄= 36° γ= 120 PCF

FACTORS OF SAFETY		
Short Term	A	2.3
Long Term	B	2.1
Seismic	C	1.2

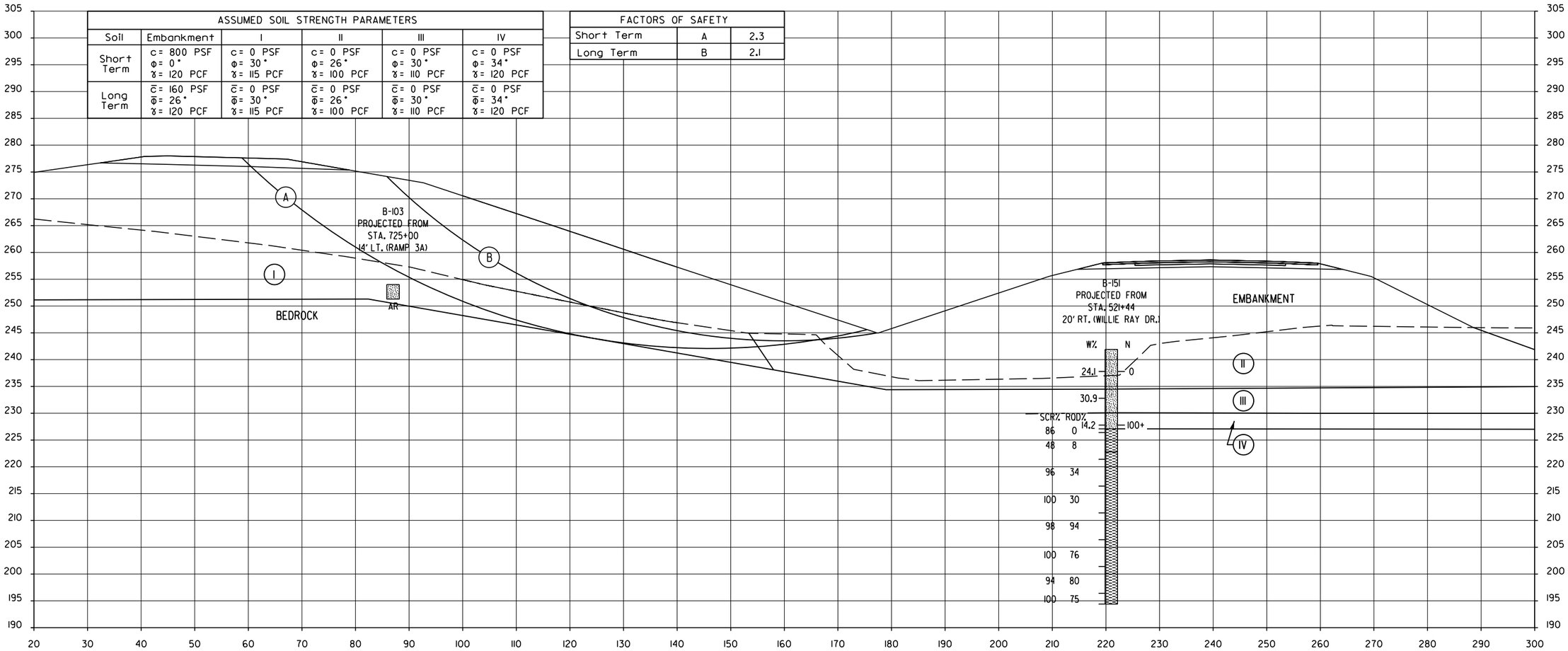


STA. 728+00.00 TO STA. 732+00.00

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				6	ARK.			
				JOB NO.		061102		
				(2)	CROSS SECTIONS			

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 = 115 PCF	c = 0 PSF φ = 26° γ = 100 PCF	c = 0 PSF φ = 30° γ = 110 PCF	c = 0 PSF φ = 34° γ = 120 PCF
Long Term	$\bar{c}$ = 160 PSF $\bar{\phi}$ = 26° γ = 120 PCF	$\bar{c}$ = 0 PSF $\bar{\phi}$ = 30° γ = 115 PCF	$\bar{c}$ = 0 PSF $\bar{\phi}$ = 26° γ = 100 PCF	$\bar{c}$ = 0 PSF $\bar{\phi}$ = 30° γ = 110 PCF	$\bar{c}$ = 0 PSF $\bar{\phi}$ = 34° γ = 120 PCF

FACTORS OF SAFETY		
Short Term	A	2.3
Long Term	B	2.1



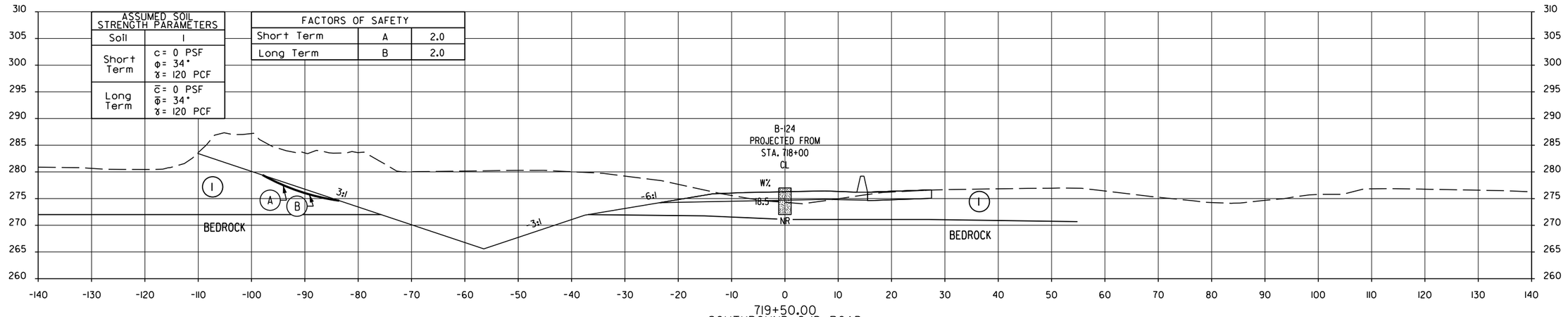
729+00.00
RAMP 3B

STA. 729+00.00 TO STA. 729+00.00

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.		061102		
				(2)	CROSS SECTIONS			

ASSUMED SOIL STRENGTH PARAMETERS	
Soil	1
Short Term	c = 0 PSF Φ = 34° γ = 120 PCF
Long Term	c̄ = 0 PSF φ̄ = 34° γ = 120 PCF

FACTORS OF SAFETY		
Short Term	A	2.0
Long Term	B	2.0



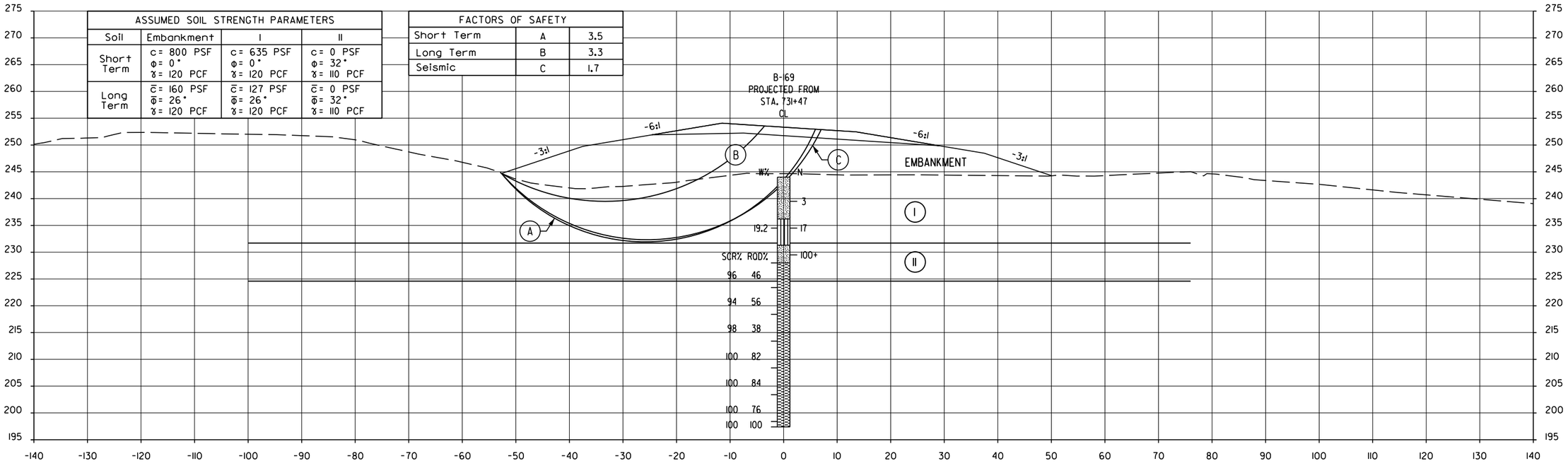
719+50.00
SOUTHBOUND C/D ROAD

STA. 719+50.00 TO STA. 719+50.00

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.		061102		
				(2)	CROSS SECTIONS			

ASSUMED SOIL STRENGTH PARAMETERS			
Soil	Embankment	I	II
Short Term	c = 800 PSF Φ = 0° γ = 120 PCF	c = 635 PSF Φ = 0° γ = 120 PCF	c = 0 PSF Φ = 32° γ = 110 PCF
Long Term	c̄ = 160 PSF Φ̄ = 26° γ = 120 PCF	c̄ = 127 PSF Φ̄ = 26° γ = 120 PCF	c̄ = 0 PSF Φ̄ = 32° γ = 110 PCF

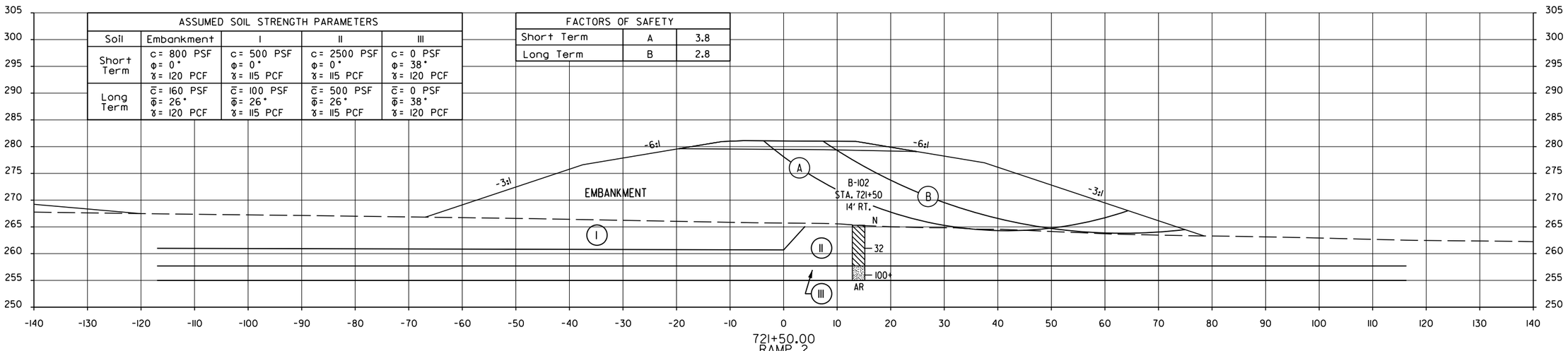
FACTORS OF SAFETY		
Short Term	A	3.5
Long Term	B	3.3
Seismic	C	1.7



732+50.00
RAMP 2

ASSUMED SOIL STRENGTH PARAMETERS				
Soil	Embankment	I	II	III
Short Term	c = 800 PSF Φ = 0° γ = 120 PCF	c = 500 PSF Φ = 0° γ = 115 PCF	c = 2500 PSF Φ = 0° γ = 115 PCF	c = 0 PSF Φ = 38° γ = 120 PCF
Long Term	c̄ = 160 PSF Φ̄ = 26° γ = 120 PCF	c̄ = 100 PSF Φ̄ = 26° γ = 115 PCF	c̄ = 500 PSF Φ̄ = 26° γ = 115 PCF	c̄ = 0 PSF Φ̄ = 38° γ = 120 PCF

FACTORS OF SAFETY		
Short Term	A	3.8
Long Term	B	2.8



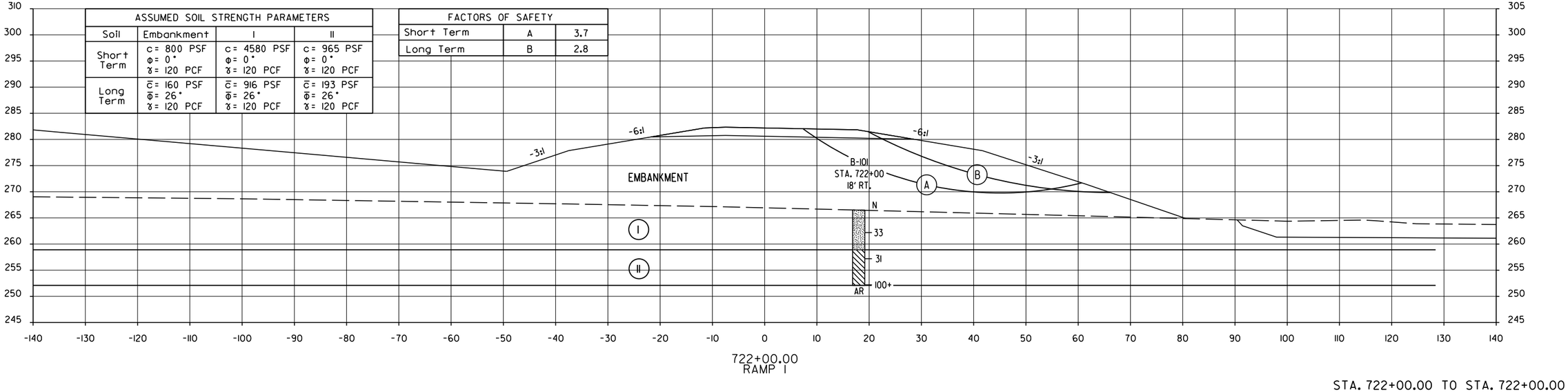
721+50.00
RAMP 2

STA. 721+50.00 TO STA. 732+50.00

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				6	ARK.			
				JOB NO.		061102		
				(2)	CROSS SECTIONS			

ASSUMED SOIL STRENGTH PARAMETERS			
Soil	Embankment	I	II
Short Term	c = 800 PSF Φ = 0° γ = 120 PCF	c = 4580 PSF Φ = 0° γ = 120 PCF	c = 965 PSF Φ = 0° γ = 120 PCF
Long Term	c̄ = 160 PSF Φ̄ = 26° γ = 120 PCF	c̄ = 916 PSF Φ̄ = 26° γ = 120 PCF	c̄ = 193 PSF Φ̄ = 26° γ = 120 PCF

FACTORS OF SAFETY		
Short Term	A	3.7
Long Term	B	2.8



722+00.00
RAMP I

STA. 722+00.00 TO STA. 722+00.00



Highway 67 Interchange (North of Cabot) Bridge Geotechnical Report

Job 061102

Bridges over Four Mile Creek & Highway 67

Lonoke County, Arkansas
May 3, 2016

May 3, 2016

Mike Fugett, PE
Arkansas Highway and Transportation Department
Assistant Chief Engineer of Design
10324 Interstate 30
PO Box 2261
Little Rock, AR 72203

Dear Mr. Fugett,

We have completed the Bridge Geotechnical Report for the Highway 67 Interchange (North of Cabot) in Lonoke County, Arkansas. This report and discussion reflects the latest geotechnical data as it relates to the current alignment geometry.

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

Sincerely,

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

Maegan L. Mansfield, E.I.T.

hdrinc.com

4645 Village Square Dr, Suite F, Paducah, Kentucky 42001
T 270.444.9691 **F** 270.538.1599

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Appendix B. LABORATORY TESTING

Appendix C. PROFILE AND PLAN SHEETS FOR BRIDGES AND RETAINING WALLS

Appendix D. SPECIAL PROVISIONS

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1 Introduction

The new Highway 67 interchange is proposed between Highway 89 and Highway 305 to facilitate the extension of Highway 38. The extension will connect Highway 67 to Highway 38 at the junction of Highway 367. The proposed Highway 67 Interchange will require three (3) new bridges over Four Mile Creek and one (1) new bridge carrying Highway 38 over Highway 67. The Highway 38 over Highway 67 structure will include Mechanically Stabilized Earth (MSE) walls at the end bents. This bridge report provides foundation recommendations for the proposed structures. A roadway report for Ramp 1, Ramp 2A, Ramp 3A, Ramp 3B, Willie Ray Drive, and the extension of Highway 38 will include discussions for bridge approaches and will be presented under separate cover.

2 Geology

The proposed Highway 67 interchange and alignment modification is located along the physiographic boundary between the Ouachita Mountains Province and Mississippi Embayment Province (Major Physiographic Provinces Map of Arkansas, Arkansas Geological Commission). The proposed alignment generally follows the boundary with some borings penetrating thru Mississippi Embayment sediments into underlying Ouachita Mountain bedrock. Topographic mapping (Cabot Quadrangle, 7.5 minute Series, USGS, 2011) indicates elevations ranging from approximately 290 feet near the beginning of the subject alignment to 240 feet ± at the Four Mile Creek crossing to 260± feet near the end of the project.

General soil/rock profiles include fine grain, sandy to gravelly, cohesive roadway fill; silty, clayey, finely sandy, predominately cohesive Holocene alluvium; sandy to gravelly soils of the undifferentiated Midway Group; and silty to rock fragment rich residual soils, sandstone and shale of the Pennsylvanian Atoka Formation and Johns Valley Shale, intercepted at varying depths depending upon location along the multiple alignments comprising the proposed interchange. Regional structural formation dip for Midway Group strata trends southeastward at very low gradients while dip for Pennsylvanian strata (Atoka Formation and Johns Valley Shale) is northeastward or southwestward (depending upon location along the alignment) away from the axis of a east-west oriented anticline as indicated on the Arkansas State Geologic Map (Haley, et. al., 1993), and, on unpublished geologist's proof, Cabot Quadrangle (Stone - 1968). Faulting is indicated on published mapping within the limits of the subject project alignments represented by an east-southeast trending thrust fault. The thrust faulting is associated with a similarly oriented anticline with axis approximately defined by the Four Mile Creek drainage course. Examination of rock core recovered from the advanced core borings located within the project limits revealed slickensides along a few discontinuities within borings B-135A, B-150, B-170, and B-171.

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 0.259 g and the horizontal response spectral acceleration value at a 1.0 second period is equal to 0.252 g. These values were provided by the United States Geology Survey (USGS) based on a Site Class D and a Seismic Zone of 2.

4 Discussion of Field and Laboratory Procedures

Bridge borings were advanced utilizing CME 55 and CME 45-C tracked mounted drill rigs using hollow stem auger and 3" casing advancement and NQ2 wireline rock core tooling. Standard penetration testing (ASTM D1586), Shelby tube sampling (ASTM D1587), and rock sampling were performed in each of the borings. Boring logs for the proposed 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, one-dimensional consolidation, and unconfined compression testing on both soil and rock. Advanced core borings recorded core recovery (REC) ranging from 45% to 100% and rock quality designation (RQD) ranging from 0% to 100%. 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 three (23) borings, designated as bridge investigation were advanced to determine subsurface conditions for the proposed bridge bent locations; borings are presented in Table 5-1.

Table 5-1. Bridge Boring Summary

Boring No.	Alignment	Stationing	Offset Distance (ft)	Core Depth (ft)
Hwy 38 Over Hwy 67				
B-130	Hwy 38	107+96	CL	10.0
B-131	Hwy 38	109+20	CL	30.1
B-132	Hwy 38	110+36	CL	10.0
B-165	Hwy 38 MSE Wall 1	108+01	110' LT	-
B-166	Hwy 38 MSE Wall 1	107+91	109' RT	-

Table 5-1. Bridge Boring Summary

Boring No.	Alignment	Stationing	Offset Distance (ft)	Core Depth (ft)
B-167	Hwy 38 MSE Wall 2	110+39	121' LT	-
B-168	Hwy 38 MSE Wall 2	110+40	96' RT	-
Ramp 2A over Four Mile Creek				
B-133	Ramp 2	729+91	CL	10.3
B-134	Ramp 2	730+27	CL	34.0
B-135	Ramp 2	731+02	CL	10.0
B-135A	Ramp 2	730+92	CL	30.6
B-169	Ramp 2	731+47	CL	30.6
B-170	Ramp 2	732+07	CL	31.1
B-171	Ramp 2	732+56	CL	11.0
Ramp 3A over Four Mile Creek				
B-136	Ramp 3A	725+25	CL	12.0
B-137	Ramp 3A	725+77	CL	35.0
B-138	Ramp 3A	726+55	CL	32.0
B-139	Ramp 3A	727+37	CL	30.0
B-140	Ramp 3A	727+86	CL	11.0
Willie Ray Drive over Four Mile Creek				
B-149	Willie Ray Drive	520+31	20 RT	12.0
B-150	Willie Ray Drive	520+56	20 LT	30.8
B-151	Willie Ray Drive	521+44	20 RT	32.7
B-152	Willie Ray Drive	521+93	20 LT	10.8

Samples were obtained through SPT drives, Shelby tube advancement, and rock coring. The proposed bridge sites are underlain by accumulations of existing roadway embankment, alluvium, Midway Group sediments, residual sediments developed upon Atoka and Johns Valley bedrock, weathered rock, and Atoka Formation and Johns Valley Formation shale and sandstone. Individual bridge and retaining wall sites are discussed in Sections 5.1 through 5.4 of this report.

5.1 Highway 38 over Highway 67

Soils interpreted as residual Midway Group and residual soils and weathered rock developed upon the lower Atoka Formation were penetrated by three (3) advanced investigation borings. The Midway Group sediments were composed of high plasticity, sandy clay exhibiting very stiff consistency. This soil was penetrated within B-130 to a depth of 8.3 feet. Residual soils comprised of silty or clayey rock fragments exhibiting sand to gravel grain size, developed upon bedrock of the lower Atoka Formation, were

penetrated within B-131, B-132, and underlying Midway soils within B-130. These soils exhibited medium dense to very dense relative density and exhibited non-plastic to low plasticity characteristics. Weathered rock, determined by SPT drives of less than six (6) inches for 50 blows applied or visual core description, was penetrated within B-130 and B-132, with a recognized thickness of 3.0 feet and 2.5 feet, respectively. Weathered rock was described as sandstone fragments and severely weathered shale. Top of rock elevations ranged from 261.4 feet to 253.6 feet within the three (3) borings.

Core investigations were advanced for the three (3) bridge borings upon SPT or auger refusal. Recovered rock was described as fine to medium grain, well cemented, slightly weathered to fresh sandstone with some interbedded shale (B-130 and B-132) and very fine grain, slightly to severely weathered shale (claystone) containing very fine mica and sandstone pebbles to cobbles in intervals (B-130 and B-131). Core recovery ranged from 82% to 100% while RQD values ranged from 10% to 96%. Shales broke along some bedding planes during inspection; therefore, RQD values may not reflect reported values as time progresses. Unconfined testing was performed on selected representative sandstone (2) and shale (4) specimens. Sandstone specimen results indicate 7,071 psi to 8,251 psi compressive strength while shale (claystone) specimens indicate 130 psi to 1,366 psi compressive strength. In each failure case except the strongest, failure surfaces occurred along bedding planes within the shale. Borings B-130, B-131, and B-132 were terminated at elevations of 246.6 feet, 228.3 feet, and 251.4 feet, respectively, within sandstone or shale of the lower Atoka Formation.

5.1.1 Highway 38 over Highway 67 MSE Walls

Soils interpreted as residual Midway Group were penetrated by four (4) advanced investigation borings, two (2) at each abutment. The Midway Group sediments were composed of dense fine to coarse grain silty sand with gravel (B-165) or fine to medium grain silty sand (B-166). These soils were penetrated to depths of 5.8 feet and 5.0 feet, respectively. Residual soils comprised of silty sand and weathered sandstone rock fragments exhibiting sand to gravel grain size, developed upon bedrock of the lower Atoka Formation, were penetrated within B-165 and B-166 underlying Midway soils. These soils exhibited dense to very dense relative density and were penetrated to depths of 18.8 feet (B-165) and 5.5 feet (B-166). Weathered rock, determined by SPT drives of less than six (6) inches for 50 blows applied or visual core description, was penetrated within B-166 with a recognized thickness of 0.3 feet. Weathered rock was described as sandstone fragments. Auger refusal was encountered within each boring at 18.8 feet and 6.2 feet 253.6 (MSL) within B-165 and B-166, respectively.

The Midway Group sediments were composed of very stiff to hard sandy clay (B-167) or clay with fine grain sand (B-168). These soils exhibited low to medium plasticity and were penetrated to depths of 7.9 feet and 5.6 feet, respectively. Residual soils comprised of very dense clayey silty sand and weathered sandstone rock fragments exhibiting sand to gravel grain size, developed upon bedrock of the lower Atoka Formation, were penetrated within B-167 and B-168 underlying Midway soils. These soils were penetrated to depths of 13.6 feet (B-167) and 9.0 feet (B-168) where auger refusal was encountered within each boring.

5.2 Ramp 2A over Four Mile Creek

Soils interpreted as Holocene alluvium, residual soils, and weathered rock developed upon the lower Atoka Formation and residual soils and weathered rock developed upon the Johns Valley Shale were penetrated by seven (7) advanced investigation borings. Alluvial sediments deposited within the floodplain of Four Mile Creek and tributaries consisted of low plasticity silt/clay with fine grain sand fractions ranging from little to equal with silt/clay. Alluvium was intercepted within B-135, B-135A, B-169, B-170, and B-171 with SPT drives or Shelby tube testing revealing consistency from very soft to stiff. Alluvial sediments were penetrated from ground surface to depths between 10.1 feet and 15.0 feet. Alluvial deposits at this bridge site are interpreted to extend from Station 730+00 to at least Station 736+00. The residual soils and weathered rock developed upon the lower Atoka Formation were composed of clay and gravel size rock fragments with auger refusal reached before the first SPT sample interval. These soils were penetrated within B-133 and B-134 from ground surface to depths of 3.2 feet and 3.3 feet. Residual soils comprised of silty/clayey/sandy rock fragments exhibiting sand to gravel grain size, developed upon bedrock of the Johns Valley Shale, were penetrated within borings B-135, B-135A, B-169, B-170, and B-171, underlying alluvium. These soils exhibited dense to very dense relative density and exhibited low to medium plasticity characteristics. Weathered rock, determined by SPT drives of less than six (6) inches for 50 blows applied or visual core description, was penetrated within B-134, B-169, B-170, and B-171 with a recognized thickness of 0.4 feet to 3.1 feet. Weathered rock was described as clayey/silty sand to gravel size shale fragments and moderate to severely weathered shale. Top of rock elevations ranged from 245.1 feet to 218.4 feet within the seven (7) borings.

Core investigations were advanced for the seven (7) bridge investigation borings upon SPT or auger refusal. Recovered rock was described as fine grain, well cemented, massive bedded moderately weathered to fresh sandstone with some interbedded shale in part (B-133 and B-134) and very fine grain to silty, moderately weathered to fresh shale (claystone) with severely weathered seams and containing fine grain sandstone laminae to sandstone beds, traces of pyrite and gypsum on some discontinuity walls, traces of ironstone pebbles and slickensides (B-135A). Core recovery ranged from 45% to 100% while RQD values ranged from 0% to 100%. Shales broke along some bedding planes during inspection; therefore, RQD values may not reflect reported values as time progresses. Unconfined testing was performed on selected representative sandstone (1) and shale (9) specimens. The sandstone specimen result indicated 14,078 psi compressive strength while shale (claystone) specimens indicate 154 psi to 551 psi compressive strength. In four (4) shale failure cases, failure surfaces occurred along bedding planes within the shale. Advanced bridge borings were terminated at elevations ranging from 234.8 feet to 187.8 feet within shale (claystone) of the lower Atoka Formation (B-133, B-134) or shale (claystone) of the Johns Valley Shale (B-135, B-135A, B-169, B-170, B-171).

5.3 Ramp 3A over Four Mile Creek

Soils interpreted as roadway embankment, Holocene alluvium, residual Midway Group, residual soils, and weathered rock developed upon the lower Atoka Formation and

residual soils and weathered rock developed upon the Johns Valley Shale were penetrated by five (5) advanced investigation borings. Materials interpreted as roadway embankment were penetrated within boring B-140 to 8.4 feet. These materials were composed of low plasticity, finely sandy clay, and clayey sand and gravel exhibiting low plasticity with stiff consistency or medium dense relatively density respectively. Alluvial sediments deposited within the floodplain of Four Mile Creek and tributaries consisted of low plasticity silt and medium plasticity clay each with fine grain sand fractions ranging from little to equal with silt/clay or fine grain sand with equal fractions clay/silt. Alluvium was intercepted within B-138, B-139, and B-140 underlying roadway embankment. SPT drives or Shelby tube testing revealed soft consistency and very loose to loose relative density. Alluvial sediments were penetrated from ground surface to depths between 10.7 feet and 15.6 feet. Alluvial deposits at this bridge site are interpreted to extend from Station 726+00 to at least Station 736+00. Soils interpreted as residual Midway Group were penetrated, underlying alluvium, within boring B-140 to a depth of 19.7 feet. The Midway Group sediments were composed of clayey gravel with sand exhibiting medium dense relative density and low plasticity. The residual soils developed upon the lower Atoka Formation were composed of sand to gravel size rock fragments and clay with penetration in B-136 and B-137 from ground surface to depths of 7.9 feet and 8.3 feet. Relative density of medium dense to very dense was recorded for this stratum. Residual soils comprised of clayey rock fragments exhibiting sand to gravel grain size, developed upon bedrock of the Johns Valley Shale, were penetrated within boring B-138 underlying alluvium. These soils exhibited medium dense relative density and exhibited low plasticity characteristics. Weathered rock determined by SPT drives of less than six (6) inches for 50 blows applied or visual core description, was penetrated within B-136, B-137, B-138, B-139, and B-140 with a recognized thickness of 0.4 feet to 2.3 feet. Weathered rock, developed upon both lower Atoka Formation and Johns Valley bedrock, was described as soft bedded shale, sandstone and shale fragments, and moderate to severely weathered shale. Top of rock elevations ranged from 243.4 feet to 227.8 feet within the five (5) borings.

Core investigations were advanced for the five (5) bridge investigation borings upon SPT or auger refusal. Recovered rock was described as fine grain, slightly to severely weathered sandstone with shale fragments to interbedded shale in parts (B-136 and B-137 – lower Atoka Formation) and very fine grain to silty, moderately weathered to fresh shale (claystone) with severely weathered seams and containing fine grain sandstone laminae and quartz veining (B-137, B-138, B-139 and B-140 - Johns Valley Shale). Apparent bedding within the Johns Valley strata ranged from 35° to 50°. Recorded discontinuities within sandstone strata were 30°-45°, 60°-70° and 50° (bedding and contact) while discontinuities within shale (claystone) strata were 20°, 40-50° (bedding) and 60-80°. Core recovery ranged from 86% to 100% while RQD values ranged from 0% to 90%. Shale broke along some bedding planes during; inspection, therefore RQD values may not reflect reported values as time progresses. Unconfined testing was performed on selected representative sandstone (2) and shale (6) specimens. Sandstone specimen results indicate 729 psi to 9,626 psi compressive strength while shale (claystone) specimens indicate 70 psi to 729 psi compressive strength. In two (2) shale failure cases, failure surfaces occurred along bedding planes within the shale. Advanced bridge borings were terminated at elevations ranging from 231.4 to 195.8

(MSL) within sandstone of the lower Atoka Formation (B-136) or shale (claystone) of the Johns Valley Shale (B-137, B-138, B-139, B-140).

Faulting was inferred, based upon core inspection, within borings B-136 - 10.1 feet to 17.5 feet and B-137 within a zone extending from 15.6 feet to 20.7 feet. Published mapping suggests thrust faulting with lower Atoka Formation comprising the overriding strata and Johns Valley Shale underlying.

5.4 Willie Ray Drive over Four Mile Creek

Soils interpreted as construction backfill, Holocene alluvium, residual soils and weathered rock developed upon the Johns Valley Shale were penetrated by four (4) advanced investigation borings. Materials interpreted as construction backfill were penetrated within boring B-149 to 4.0 feet. These materials were reported to be composed of sand and gravel. Alluvial sediments deposited within the floodplain of Four Mile Creek and tributaries consisted of relatively equal fractions of fine grain sand and silt/clay exhibiting low plasticity to non-plastic characteristics. Alluvium was intercepted within B-150, B-151, and B-152 at the ground surface to depths of 9.2 feet to 12.0 feet. SPT drives revealed very loose to loose relative density or firm consistency. Alluvial deposits at this bridge site are interpreted to extend from Station 520+40 to at least Station 522+50. Residual soils comprised of clay, silt, and shale rock fragments exhibiting sand to gravel grain size, developed upon bedrock of the Johns Valley Shale, were penetrated within borings B-149 underlying construction backfill and B-150 and B-152 underlying alluvium. These soils exhibited dense to very dense relative density and exhibited low to medium plasticity characteristics. Weathered rock, determined by SPT drives of less than six (6) inches for 50 blows applied or visual core description, was penetrated within B-149, B-150, B-151, and B-152 with a recognized thickness of 0.9 feet to 7.1 feet. Weathered rock, developed upon Johns Valley bedrock, was described as soft bedded shale and severely weathered shale. Top of rock elevations ranged from 234.0 feet to 223.5 feet (MSL) within the four (4) borings.

Core investigations were advanced for the four (4) bridge investigation borings upon SPT or auger refusal. Recovered rock was described as very fine grain, moderately grading to slightly weathered shale (claystone) with severely weathered seams and containing limited fissile intervals, pyrite grains, and gypsum film on some discontinuity walls, and scattered fine grain sandstone laminae. Apparent bedding within the Johns Valley Shale strata ranged from 40° to 60°. Recorded discontinuities within shale (claystone) strata were 20°, 45°-60°, 40°-60° (bedding) and 70-90°. Core recovery ranged from 48% to 100% while RQD values ranged from 0% to 100%. Shale (claystone) specimens indicate 306 psi to 2,390 psi compressive strength. In two (2) failure cases, failure surfaces occurred along bedding planes within the shale. Unconfined testing was performed on selected representative shale (5) specimens. Shale broke along some bedding planes during inspection; therefore, RQD values may not reflect reported values as time progresses. Advanced bridge borings were terminated at elevations ranging from 222.0 feet to 192.7 feet within shale (claystone) of the Johns Valley Shale.

Based upon core inspection, slickensides were noted within boring B-150 at depths of 22.1 feet to 26.5 feet and 47.8 feet to 51.0 feet. The slickensides are interpreted to be a

part of the east-west oriented thrust fault previously discussed within other paragraphs of this report.

5.5 Ground Water Conditions

Observed ground water levels (4 recorded observations) at bridge sites vary from 2.8 feet to 15.0 feet below existing ground surface at the time of drilling. These depths equate to an elevation range of 264.5 feet to 229.6 feet. Observed water levels (3 recorded observations) vary from 1.2 feet to 8.4 feet after a 24 hour stabilization interval. These depths equate to an elevation range of 264.7 feet to 236.5 feet. It is anticipated that groundwater levels will vary based on seasonal fluctuations.

6 Recommendations

The following recommendations included herein consist of foundation type recommendations, critical elevations pertaining to foundations, slope stability analyses, Mechanically Stabilized Earth (MSE) wall recommendations (where applicable), and any miscellaneous information for each proposed structure. Slope stability and settlement analyses are presented at the end of this section for all four (4) 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 four (4) bridges. Specific recommendations for each structure will follow in subsequent sections of this report.

Piles shall be driven to practical refusal on bedrock. A factored resistance of 190 tons using a resistance factor of 0.50 for severe driving conditions is recommended. 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 and gravelly alluvium, as well as to assist with pile penetration and seating into bedrock (typically shale and/or claystone).

It should be noted that compressive strengths resulting from laboratory testing are conservatively skewed due to the similar location of failure plane and loading during unconfined compression testing for the shale and claystone samples. Due to the confined nature of the rock and consideration of rock fracturing, it is reasoned that the limiting factor in pile resistance will be the structural capacity of the pile. 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. Pile logging shall be performed for the full depth of the pile penetration and a Saximeter is recommended to record the blow counts.

To ensure the successful advancement of piles through embankment areas at the end bents, rock fill and/or soil material containing boulders or large stones shall not be placed at the bridge abutments. Proposed fill materials within pile foundation areas shall consist of particles no larger than the Class 7 size in accordance with the AHTD Standard Specifications for Highway Construction.

6.2 General Drilled Shaft Recommendations

The recommendations within this section apply to all bents that will be constructed using drilled shafts on each of the four (4) bridges. Specific recommendations for each structure will follow in subsequent sections of this report.

Drilled shafts are the recommended foundation choice for the interior bents on Ramp 3A over Four Mile Creek and Willie Ray Drive over Four Mile Creek. The drilled shafts will consist of a fifty four (54) inch diameter (OD) steel casing that will continue until top of rock is encountered. A forty eight (48) inch diameter rock socket will follow until a specified termination elevation. The shafts are designed based on side resistance in the rock socket. The drilled shafts shall be installed in accordance with the Special Provision for Drilled Shaft Foundations and AHTD Standard Specifications for Highway Construction.

The side resistance calculated in the rock socket relies on rock strength values higher than those shown in laboratory testing. Increasing the unconfined compressive strength values was reasoned due to the fact that the bedding of rock aligned parallel with the plane of loading during unconfined compression testing. The reported values are considerably lower than the strength the rock will exhibit in a confined state; thus, the strength values were conservatively increased in order to reflect more accurate in-situ conditions based on previous experience within the project area and geological analysis. The inflated values used in design are on the lower end of the spectrum in regards to strength behavior the rock is expected to exhibit for in-situ conditions.

Drilled shafts will be constructed with permanent or temporary steel casing to the top of rock. Drilled shaft resistance analyses were performed in accordance with AASHTO 6th Edition with 2012 Interims LRFD Bridge Design Specifications and capacity was ignored in the cased drilled shaft section above the top of rock. The bottom of casing elevation coincides with the top of rock elevation used in analyses. The rock encountered in the borings at these bents consists of predominately shale, claystone, and some sandstone.

The loading provided for all drilled shafts was 585 kips for axial conditions and the loads given are at ground level. Drilled shafts shall be installed to minimum tip elevation shown in the subsequent sections to ensure adequate side resistance has been obtained for the required design load. Drilled shaft excavations can extend into material that deteriorates when exposed to elements. Concrete should be placed immediately after excavation is completed. The drilled shafts shall be constructed in accordance with the Special Provision for Drilled Shaft Foundations.

6.3 Highway 38 over Highway 67 Foundation Recommendations

The proposed structure on Highway 38 over Highway 67 consists of two (2) spans and MSE walls at each end bent. Based on the subsurface conditions encountered, Steel HP 12x53 piles are recommended for Bent 1 through Bent 3. Due to the shallow presence of rock and weathered rock and/or intermediate geomaterials, all bents will require pre-drilling in order to reach the minimum embedment of ten (10) feet below the base of the MSE Walls. The minimum embedment is based on the existing ground line. A driving system capable of an energy range between 33 to 40 kip-ft is recommended. A summary of recommendations is shown in Table 6-1.

Table 6-1. Highway 38 Summary of Recommendations

Bent Number	Foundation Type	Bottom of MSE Wall Elev. / Existing Ground Elev. (ft)	Pre Drill Elev. (ft)	Est. Pile Tip Elev. (ft)
End Bent 1	HP 12x53 Steel Piles	264	254	253
Interior Bent 2	HP 12x53 Steel Piles	263	253	252
End Bent 3	HP 12x53 Steel Piles	263	253	252
*Pre-drilling is required at all bents.				

6.4 Highway 38 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 at the bridge abutments. The proposed MSE wall has a maximum height of approximately 25 feet and an estimated length of approximately 236 feet at End Bent 1 and 231.3 feet at End Bent 3. 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. In general, these requirements state that the material shall be granular with no cohesion, and possess a minimum angle of internal friction greater than 28 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.

Along the proposed MSE wall alignments, the subsurface soils consists of dense to very dense silty sand with gravel, very dense sand, and very stiff to hard silty clayey sand at End Bent 1 and very hard sandy lean clay, very dense silty clayey sand, very hard lean clay with sand, very dense silty sand and very dense silty sand with gravel at End Bent 3 2 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, the minimum length of reinforcement is 22 feet at End Bent 1 and End Bent 3. This value was determined based on the maximum wall height of 25 feet. The factored bearing resistance of the foundation soil within this station range is approximately 8,000 PSF. 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.

6.5 Ramp 2A over Four Mile Creek Recommendations

The proposed structure for Ramp 2A over Four Mile Creek will consist of five (5) spans with end bents and interior bents supported on steel H Piles. For each bent, pile tip elevations have been set to embed existing soils a minimum of ten (10) feet below scour or existing ground line.

Based on the subsurface conditions encountered, Steel HP 12x53 piles are recommended for Bent 1 through Bent 6. Due to the shallow presence of rock and weathered rock and/or geomaterials, End Bent 1 and Interior Bent 2 will require pre-drilling in order to reach the minimum embedment of ten (10) feet. As stated previously, the minimum embedment is based on the existing ground line (End Bent 1) and the scour line (Interior Bent 2), where applicable. A driving system capable of an energy range between 27 to 43 kip-ft is recommended. A summary of recommendations is shown in Table 6-2.

Table 6-2. Ramp 2A Summary of Recommendations

Bent Number	Foundation Type	Scour/Existing Ground Elev. (ft)	Pre Drill Elev. (ft)	Estimated Pile Tip Elev. (ft)
End Bent 1	HP 12x53 Steel Piles	252	242	241
Interior Bent 2	HP 12x53 Steel Piles	236	226	225
Interior Bent 3	HP 12x53 Steel Piles	238	-	217
Interior Bent 4	HP 12x53 Steel Piles	238	-	227
Interior Bent 5	HP 12x53 Steel Piles	239	-	223
End Bent 6	HP 12x53 Steel Piles	244	-	223
*Pre-Drilling is only required for End Bent 1 and Interior Bent 2.				

6.6 Ramp 3A over Four Mile Creek Recommendations

The proposed structure for Ramp 3A over Four Mile Creek consists of four (4) spans with end bents supported on steel H Piles and interior bents supported on rock socketed drilled shafts. Pre drilling is not anticipated for the end bents of this structure.

Pile foundations at End Bent 1 and End Bent 5 will consist of HP 12x53 piles. Pile tip elevations are based on the top of rock line, at which point pile refusal is anticipated. A driving system capable of an energy range between 27 to 48.5 kip-ft is recommended. A summary of recommendations for each end bent is shown in Table 6-3.

Table 6-3. Ramp 3A Summary of Recommendations (End Bents)

Bent Number	Foundation Type	Existing Ground Elev. (ft)	Pre-Drill Elev. (ft)	Est. Pile Tip Elev. (ft)
End Bent 1	HP 12x53 Steel Piles	253	-	242
End Bent 5	HP 12x53 Steel Piles	248	-	227

For Interior Bent 2 through Interior Bent 4, fifty-four (54) inch diameter drilled shafts with forty-eight (48) inch diameter rock sockets are recommended. Casing will be required until top of rock elevation and no capacity has been accounted for within the cased portion of the drilled shaft. The selection of temporary or permanent casing is at the discretion of the contractor. Wet and dry construction methods are also allowed as long as proper dewatering measures are in place for dry construction methods. Table 6-4 summarizes the bottom of casing elevation, rock socket diameter, rock socket length, and minimum tip elevation for the specified axial loading conditions.

Table 6-4. Ramp 3A Summary of Recommendations (Interior Bents)

Bent	Foundation Type	Scour Elev. (ft)	Bottom of Casing Elev. (ft)	Rock Socket Diameter (ft)	Rock Socket Length (ft)	Minimum Tip Elev. (ft)
Bent 2	Drilled Shaft	244	237	4.0	19*	218
Bent 3	Drilled Shaft	231	227	4.0	13	214
Bent 4	Drilled Shaft	241	231	4.0	13	218
*Note: Low RQD present until El. 227.0, thus rock socket contributing to capacity is from El. 227 to El. 218.						

6.7 Willie Ray Drive over Four Mile Creek Foundations

The proposed structure for Willie Ray Drive over Four Mile Creek consists of three (3) spans supported on steel piles for the end bents and drilled shafts for the interior bents. Pre drilling is not anticipated for the end bents of this structure.

Pile foundations at End Bent 1 and End Bent 4 will consist of HP 12x53 piles. Pile tip elevations are based on the top of rock line, at which point pile refusal is anticipated. A driving system capable of an energy range between 27 to 48.5 kip-ft is recommended. A summary of recommendations for each end bent is shown in Table 6-5.

Table 6-5. Willie Ray Drive Summary of Recommendations (End Bents)

Bent Number	Foundation Type	Existing Ground Elev. (ft)	Pre-Drill Elev. (ft)	Est. Pile Tip Elev. (ft)
End Bent 1	HP 12x53 Steel Piles	244	-	233
End Bent 4	HP 12x53 Steel Piles	244	-	226

For Interior Bent 2 and Interior Bent 3, fifty-four (54) inch diameter drilled shafts with forty-eight (48) inch diameter rock sockets are recommended. Casing will be required until top of rock elevation and no capacity has been accounted for within the cased portion of the drilled shaft. The selection of temporary or permanent casing is at the discretion of the contractor. Wet and dry construction methods are also allowed as long as proper dewatering measures are in place for dry construction methods. Table 6-6 summarizes the bottom of casing elevation, rock socket diameter, rock socket length, and minimum tip elevation for the specified axial loading conditions.

Table 6-6. Willie Ray Drive Summary of Recommendations (Interior Bents)

Bent	Foundation Type	Scour Elev. (ft)	Bottom of Casing Elev. (ft)	Rock Socket Diameter (ft)	Rock Socket Length (ft)	Minimum Tip Elev. (ft)
Bent 2	Drilled Shaft	233	223	4.0	8	215
Bent 3	Drilled Shaft	242	227	4.0	15	212

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 2H:1V slopes at each of the abutments. One boring was drilled at each bent on the centerline with the exception of Willie Ray Drive where borings were drilled alternating left and right offsets. Borings were used in the development of a generalized subsurface profile shown on sheets in Appendix C. Each end bent for each bridge was analyzed for slope stability. The MSE walls for the proposed Highway 38 over Highway 67 bridge were considered in the end bent profile analysis for this structure. Stability analyses were performed for short term, long term, and pseudo static (Seismic) loading conditions. The abutment slopes discussed herein have achieved the minimum required factors of safety for slope stability. Stability analyses for the pseudo-static loading condition were performed using the full PGA value, 0.259g.

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 6-7 and are depicted on the bridge profile sheet in Appendix C.

Table 6-7. Factor of Safety for Slope Stability

Bridge	Location	Selection Type	Short Term	Long Term	Pseudo-Static Seismic
Highway 38	End Bent 1	MSE Wall	2.1	2.0	1.4
Highway 38	End Bent 3	MSE Wall	2.2	2.1	1.5
Ramp 2A	End Bent 1	2H:1V Abutment	2.3	1.6	1.7
Ramp 2A	End Bent 6	2H:1V Abutment	2.6	1.7	1.4
Ramp 3A	End Bent 1	2H:1V Abutment	2.1	1.7	1.2
Ramp 3A	End Bent 5	2H:1V Abutment	1.8	1.9	1.0
Willie Ray DR	End Bent 1	2H:1V Abutment	2.2	1.7	1.2
Willie Ray DR	End Bent 4	2H:1V Abutment	2.1	1.6	1.3

We recommended that suitable vegetation and/or erosion control measures be employed on final slopes as soon as practical during construction, as many of the soil horizons within project limits are susceptible to erosion. Appropriate erosion control procedures, roadway and drainage excavation, as well as embankment benching shall be performed in accordance with the AHTD Standard Specifications for Highway Construction.

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 0.2 inches to 3.5 inches. Settlement at the interior bents is expected to be marginal due to lack of fill and foundations supported on rock.

To minimize downdrag loading potential we recommend a waiting period as indicated in Table 6-8. The waiting period is estimated to be sufficient time for 90 percent of the primary settlement to occur with the remaining settlement being less than 0.4 inches. The waiting periods shall begin after the embankment has been placed for the proposed structures on Ramp 3A and Willie Ray Drive.

Settlement monitoring will be required to determine that 90 percent of settlement has occurred and settlement plates are recommended at the proposed embankments at End Bent 5 of Ramp 3A and End Bent 4 of Willie Ray Drive over Four Mile Creek. The initial elevation of the top of the settlement plate riser shall be surveyed prior to fill placement and with measurements recorded no less than once every seven calendar days during fill placement with more frequent measurements being obtained as dictated by the rate of fill placement during construction. The riser shall remain vertical throughout construction of the proposed embankments. Initial readings shall be taken prior to the placement of any fill and at the same time the settlement platform readings are taken.

Table 6-8. Settlement Summary

Bridge	Bent Number	Estimated Total Settlement (inches)	Estimated Waiting Period (days)
Highway 38	MSE Wall at EB 1	< 0.5	Immediate
Highway 38	MSE Wall at EB 3	< 0.5	Immediate
Ramp 2A	End Bent 1	< 0.5	Immediate
Ramp 2A	End Bent 6	0.7	Immediate
Ramp 3A	End Bent 1	1.5	Immediate
Ramp 3A	End Bent 5	3.2	35
Willie Ray DR	End Bent 1	2.3	Immediate
Willie Ray DR	End Bent 4	3.5	75

Add the following notes to plans:

A WAITING PERIOD OF 35 DAYS IS REQUIRED AFTER THE PLACEMENT OF EMBANKMENT FILL AND PRIOR TO COMMENCING PILE DRIVING OPERATIONS FOR END BENT 5 ON RAMP 3A OVER FOUR MILE CREEK. THE WAITING PERIOD BEGINS AFTER ALL FILL HAS BEEN PLACED FOR END BENT 5.

A WAITING PERIOD OF 75 DAYS IS REQUIRED AFTER THE PLACEMENT OF EMBANKMENT FILL AND PRIOR TO COMMENCING PILE DRIVING OPERATIONS FOR END BENT 4 ON WILLIE RAY DRIVE OVER FOUR MILE CREEK. THE WAITING PERIOD BEGINS AFTER ALL FILL HAS BEEN PLACED FOR END BENT 4.

THE CONTRACTOR SHALL COMPLETE THE EMBANKMENT CONSTRUCTION AND MONITOR THE SETTLEMENT OF THE FOUNDATION SOILS FOR A MINIMUM OF 35 DAYS AT END BENT 5 ON RAMP 3A OVER FOUR MILE CREEK AND FOR A MINIMUM OF 75 DAYS AT END BENT 4 ON WILLIE RAY DRIVE OVER FOUR MILE CREEK PRIOR TO DRIVING PILES. 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.

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

Appendix B. LABORATORY TESTING

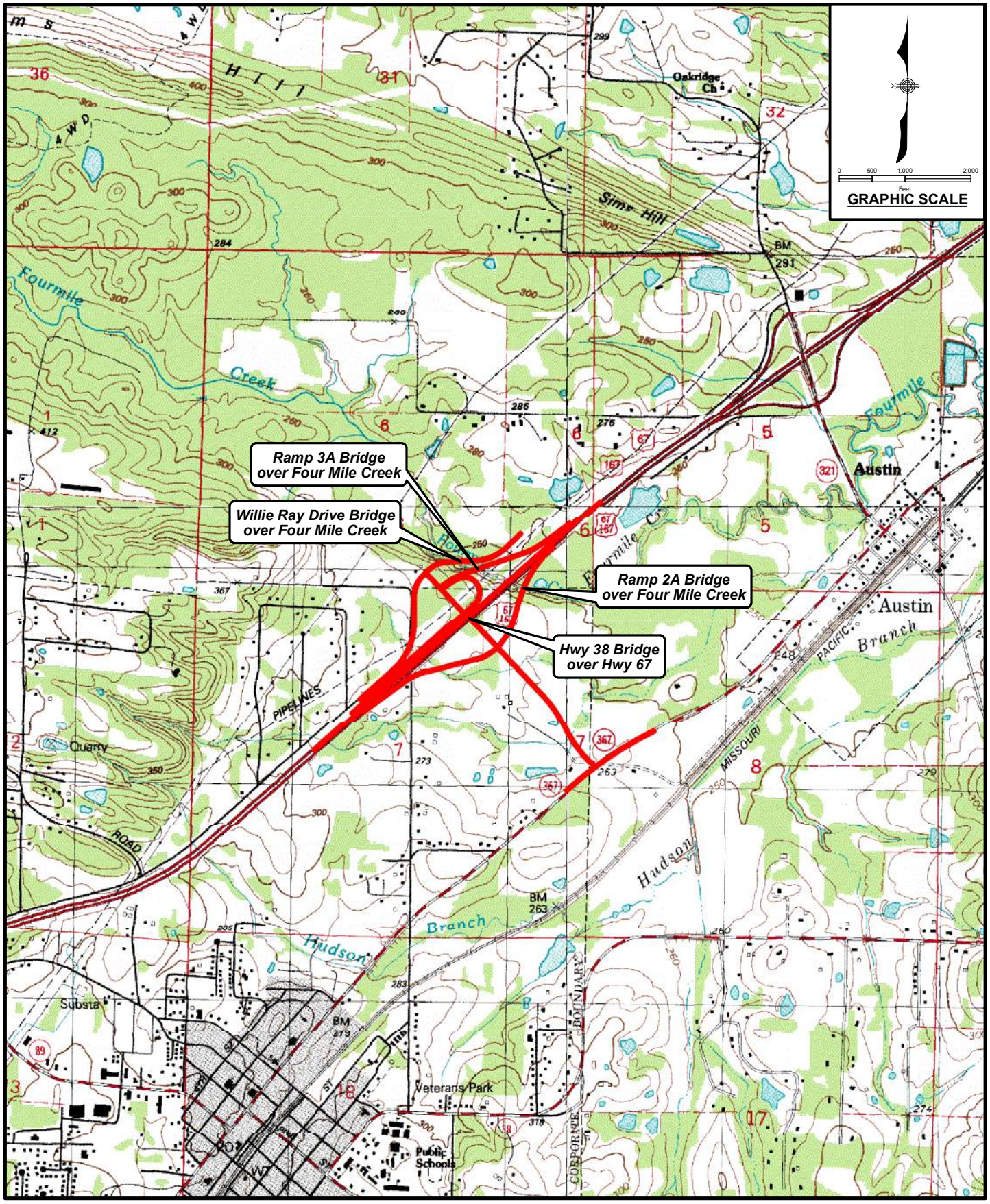
Appendix C. PROFILE AND PLAN SHEETS FOR BRIDGES AND RETAINING WALLS

Appendix D. SPECIAL PROVISIONS

Appendix A. SITE VICINITY MAP AND BORING LOGS

HDR | ICA

Subsurface Investigation



BEBEE, CABOT & OAK GROVE QUADRANGLES
7.5 MINUTE SERIES (TOPOGRAPHIC)
ARKANSAS - LONOKE COUNTY

Highway 67 Interchange (North of Cabot)

HDR | ICA

BORING NO.: B-130

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 107+96

LOCATION: CL (Hwy 38)

LATITUDE: 34.99569 ° LONGITUDE: 92.00553 °

DATE: 6/27/2015

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 29.2 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 275.8	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, light brown & gray, sandy, lean clay.		18	18.7	45		8,8,9		
			8.3'								
10.0			Very stiff to very hard, light brown & gray, silty, clayey sand.						12,13,16		
15.0									31,50/0.2		
			19.2'								
20.0			Auger Refusal at 19.2', Begin Coring in Sandstone. Medium to dk. gray, orange-brown stain, f. grain w/interbedded Shale, sli. weathered w/Shale sev. weathered, highly fractured, contacts contorted, hard w/soft seams.							82	10
25.0			2+ 90° contact frac. w/iron stain; 5+ 55° jts. w/iron stain <1mm open; 2+ 30° jts. w/iron stain 24.6'								
			Shale (Claystone): Dark gray to black, scat. lt. gray, v.f. grain w/f. grain Sandstone pebbles & cobbles, silty laminations, sli. weathered w/seams sev. weathered, v. thinly laminated, med. hardness w/seams soft. 29.2'							100	42
30.0			5 60° jts., some are contact fracs., some w/sev. weathered walls; 10 0° fracs. some w/stepped walls & some w/sev. weathered walls								
			Boring Terminated at 29.2' (Elev. 246.6).								
35.0			RS-I collected from 27.7' - 28.1'								
40.0											
45.0											
50.0											

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-130 Station 107+96 @ CL - Box 1 of 1

HDR | ICA

BORING NO.: B-131

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 109+20

LOCATION: CL (Hwy 38)

LATITUDE: 34.99544 ° LONGITUDE: 92.00525 °

DATE: 7/24/2015

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: A. Wilder

COMPLETION DEPTH: 42.0 ft.

GROUNDWATER @ 5.6

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 270.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 0.7'								
5.0			Dense to very dense, brown, gray & black, silty, clayey sand.						7,19,23		
10.0			11.9'		22	9.5	29		17,36,29		
15.0			Auger Refusal at 11.9', Begin Coring in Shale (Claystone). Black, dk. gray, dk. brown, orange-brown stain, very fine grain, mod. to mod sev. weathered w/seams sev. to completely (clay) weathered, v. thinly laminated, low to med. hardness, sli. silty in parts, iron stain, clay seams. Shale breaks with light hand pressure-RQD may not be representative, clay seam 14.0'-15.0'; 11.9'-20.8' 22 0°-15° fracs. w/iron stain; 8 30°-40° bedding fracs. w/iron stain; clay seam 20.0'-20.5'							89	14
20.0			20.8'							100	26
25.0			Shale (Claystone): Black, dk. gray, very fine grain, fresh to sli. weathered w/seams sev. weathered, v. thinly laminated, med. hardness w/seams soft, sli. silty in parts very finely micaceous. 20.8'-42.0' 31+ 30°-40° bedding fracs.; 7+ 20° fracs. some w/hackley walls; 1 60° frac. w/irregular walls; clay seam 41.7'-41.8'							100	46
30.0										92	56
35.0										98	44
40.0										100	60
			42.0'							100	57
45.0			Boring Terminated at 42.0' (Elev. 228.3). Shelby Tube attempted at 4.9' resulting in tube refusal and no recovery. RS-N collected from 13.1' - 13.6' RS-O collected from 20.1' - 20.5' RS-P collected from 38.1' - 38.5'								
50.0											

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



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B-131 Station 109+20 @ CL Box 2 of 4

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BORING NO.: B-132

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 110+36

LOCATION: CL (Hwy 38)

LATITUDE: 34.99521 ° LONGITUDE: 92.00498 °

DATE: 6/28/2015

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 20.3 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 271.7	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 dense, tan & gray, silty sand with gravel.						13,9,50/0.5		
			7.8'								
10.0			Very dense, tan & gray, silty sand.						21,50/0.1		
			10.3'								
15.0			Auger Refusal at 10.3', Begin Coring in Sandstone. Light to med. gray, trcs. black grains, orange-brown stain, f. grain w/trcs. med. grain, well cemented, massive bedded, sli. weathered to fresh, hard, widely scat. gypsum infill of healed joints. 5 50°-55° jts. w/iron stain & clay infill to 4mm; 2 40° jts. w/iron stain & clay infill to 2mm							100	96
										100	86
20.0			20.3'							100	80
25.0			Boring Terminated at 20.3' (Elev. 251.4). RS-G collected from 10.4' - 10.8' RS-H collected from 19.2' - 19.6'								
30.0											
35.0											
40.0											
45.0											
50.0											

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



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B-132 Station 110+36 @ CL Box 2 of 2

HDR | ICA

BORING NO.: B-133

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 729+91

LOCATION: CL (Ramp 2)

LATITUDE: 34.99654 ° LONGITUDE: 92.00248 °

DATE: 1/10/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 13.5 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 252.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Interpreted as sandy, silty clay with rock fragments.								
			3.2'								
			Auger Refusal at 3.2', Begin Coring in Sandstone.								
5.0			Light to med. gray, orange-brown stain, f. grain, well cemented, massive bedded, mod. weathered to fresh, hard, clay seams/clay infill, trc. quartz veining.							100	76
			Shale breaks with light hand pressure-RQD may not be representative; 6 70°-80° jts. w/iron oxide stain &/or clay infill; 3 60° jts. w/iron oxide stain; 9 30°-50° jts. w/iron oxide stain &/or clay infill 5mm-30mm; 4 20°-40° contact discontinuities							98	72
10.0			11.5'								
			Sandstone & Shale: Gray, black, v.f. grain to f. grain, interlayered, contacts sharp, mod. to sli. weathered.							65	25
			13.5'								
15.0			Boring Terminated at 13.5' (Elev. 238.5).								
			Boring relocated due to underground utilities.								
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



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HDR | ICA

BORING NO.: B-134

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 730+27

LOCATION: CL (Ramp 2)

LATITUDE: 34.99663 ° LONGITUDE: 92.00243 °

DATE: 1/11/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 40.4 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 242.4	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Interpreted as very hard, sandy, silty clay with rock fragments.						50/0.3		
			6.4'								
			Auger Refusal at 6.4', Begin Coring in Sandstone.								
			Light to med. gray, scat. black, orange-brown stain, f. grain, well cemented, massive bedded, mod. to sli. weathered, hard, clay infill, trc. quartz veining, shale laminations. 8.2'							45	15
10.0			Shale breaks with light hand pressure-RQD may not be representative; 6.4'-8.2', 4 50°-60° jts. w/iron oxide stain; 2 40° contact discontinuities; 1 30° jt. w/iron oxide stain; mechanical issues led to low REC							98	26
15.0			Shale (Claystone): Dark gray to black, trcs. lt. gray, v.f. grain to silty in parts w/trcs. v. f. grain sandstone beds to laminae, mod. weathered to fresh w/seams sev. weathered, v. thinly laminated, med. hardness w/scat. soft seams, clay seams & infill.							100	58
20.0			interpreted core loss 8.2'-10.5'; broken & sev. weathered 10.5'-11.4' w/clay infill & iron oxide stain; 8.2'-40.4', 49 30°-50° bedding jts. some w/clay infill <1mm; 8 60° jts. some w/clay infill <1mm; 3 70°-90° jts. two w/trcs. clay infill; apparent bedding 30°-50°; broken & sev. weathered 32.9'-34.0' w/clay infill & iron oxide stain; interpreted core loss 40.0'-40.4'							100	32
25.0										100	76
30.0										100	52
35.0										92	68
40.0			40.4'								
45.0			Boring Terminated at 40.4' (Elev. 202.0). Boulder/fractured rock encountered at 3.3'. Low recovery obtained in Core-1 due to rock stuck in end of barrel. Boring relocated due to underground utilities.								
50.0											

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



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HDR | ICA

BORING NO.: B-135

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JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 731+02

LOCATION: CL (Ramp 2)

LATITUDE: 34.99682 ° LONGITUDE: 92.00233 °

DATE: 6/29/2015

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 29.8 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 244.6	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Soft, brown, sandy, silty clay.		14	15.5	19	113.6			
			8.2'								
10.0			Soft, gray, brown & tan, sandy silt.		15	20.2	19	106.8			
			13.4'								
15.0			Very dense, brown & black, clayey sand.		17	13.7	27		11,21,30		
20.0			19.8'								
			Auger Refusal at 19.8', Begin Coring in Shale (Claystone). Dark gray to black, trcs. lt. gray, v.f. grain w/trcs. f. grain Sandstone, silty laminations, trc. Ironstone pebble, sli. weathered w/seams sev. weathered, v. thinly laminated, med. hardness w/seam soft.							100	66
25.0			Shale breaks with light hand pressure, 12+ 35° bedding fracs, some w/weathered walls; 1 70° jt. w/hard walls, < 1mm open; apparent bedding 35°							96	8
30.0			29.8'								
			Boring Terminated at 29.8' (Elev. 214.8).								
35.0											
40.0											
45.0											
50.0											

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



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HDR | ICA

BORING NO.: B-135A

PAGE: 1 of 2

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 730+92

LOCATION: CL (Ramp 2)

LATITUDE: 34.99679 ° LONGITUDE: 92.00234 °

DATE: 1/11/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: W. Smith

COMPLETION DEPTH: 55.4 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 243.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 0.5'								
			Soft to very hard, brown, sandy silt.								
5.0					16	20.2	20	108.8			
10.0									1,2,2		
15.0									13,21,31		
20.0									16,48,36		
25.0			24.8'						43,50/0.1	83	0
			Auger Refusal at 24.8', Begin Coring in Shale (Claystone). Dark gray to black, trcs. lt. gray, v. f. grain to silty in parts w/trcs. f. grain Sandstone laminae, mod. weathered w/seams sev. weathered, v. thinly laminated, med. hardness w/soft seams.							92	68
30.0			Shale breaks with hand pressure-RQD may not be representative; apparent bedding 50°; 24.8'-35.4' 4 70° jts. <1mm open; 16 30°-50° bedding jts. w/weathered walls							98	64
35.0			35.4'								
			Shale (Claystone): Dark gray to black, v. f. grain in parts, fresh to sli. weathered w/laminations to thin seams sev. weathered, v. thinly laminated, mod. hardness. apparent bedding 50°; broken intervals 39.6'-40.4'; 40.9'-43.0' (includes core loss interval); 35.4'-55.4' 19 45°-50° bedding jts., some w/slickensides on walls; 1 45°-50° jt. cuts bedding							96	54
40.0										68	16
45.0										98	98
50.0											

HDR | ICA

BORING NO.: B-135A

PAGE: 2 of 2

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 730+92

LOCATION: CL (Ramp 2)

LATITUDE: 34.99679 ° LONGITUDE: 92.00234 °

DATE: 1/11/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: W. Smith

COMPLETION DEPTH: 55.4 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 243.2	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
										~~98~~	~~98~~
										100	96
55.0			55.4'								
			Boring Terminated at 55.4' (Elev. 187.8) Low recovery obtained in Core-5 due to inner barrel issues.								
60.0											
65.0											
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-135A Station 730+92 @ CL Box 1 of 4

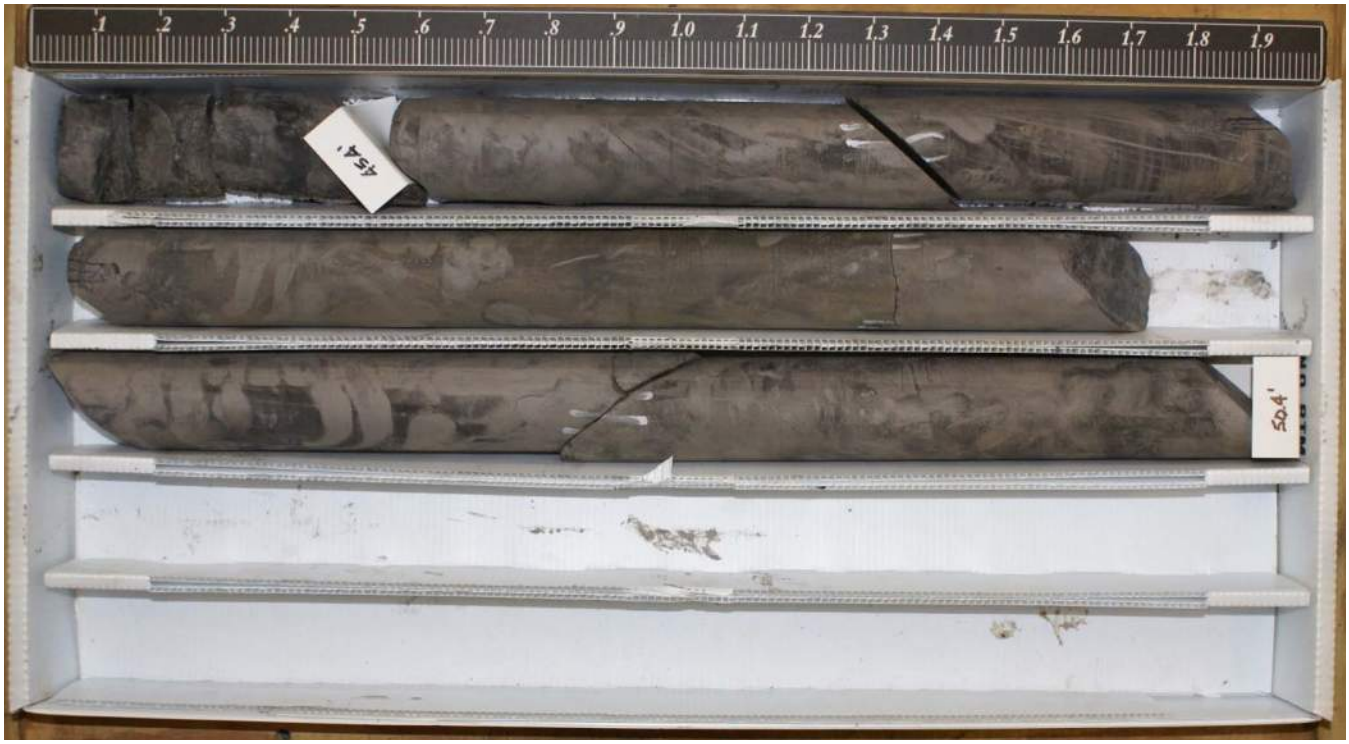


B-135A Station 730+92 @ CL Box 2 of 4

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



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B-135A Station 730+92 @ CL Box 4 of 4

HDR | ICA

BORING NO.: B-136

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JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 725+25

LOCATION: CL (Ramp 3A)

LATITUDE: 34.99731 ° LONGITUDE: 92.00515 °

DATE: 1/24/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: J. Smallwood

COMPLETION DEPTH: 22.1 ft.

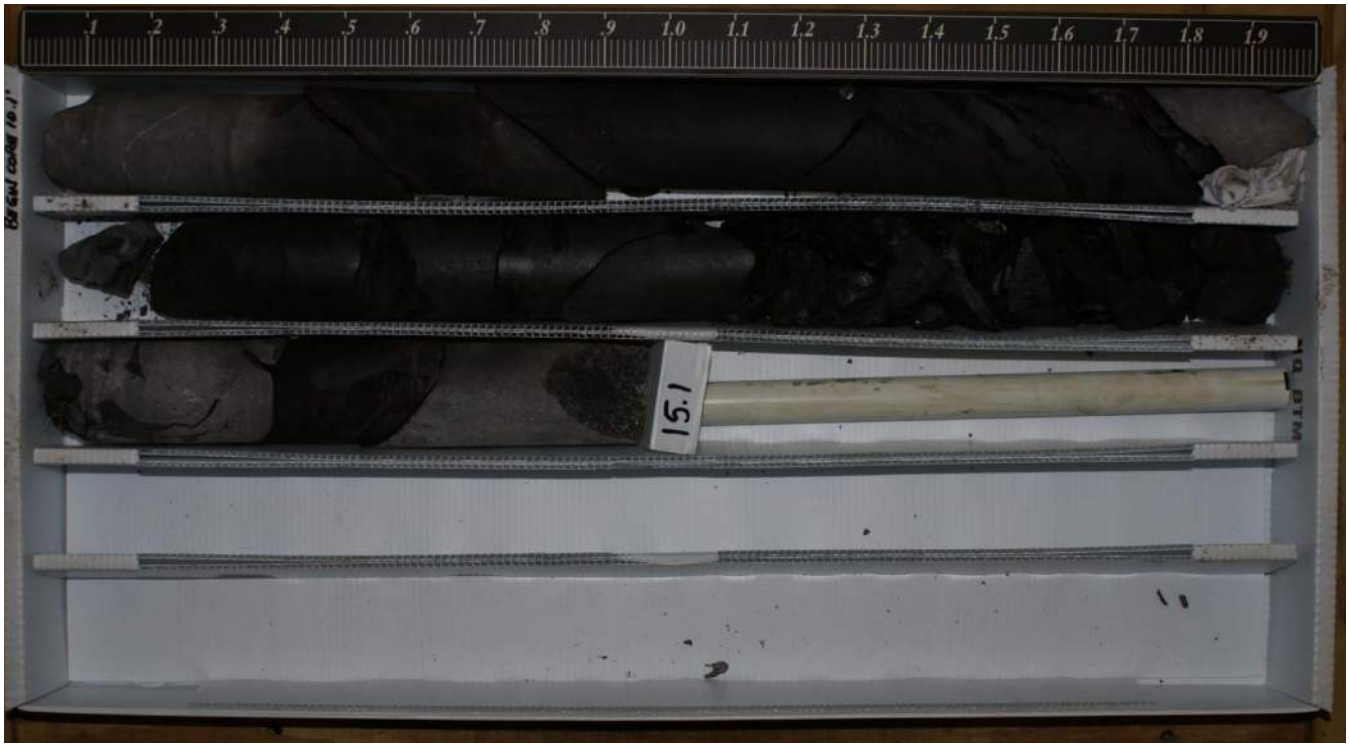
GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 253.5	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Very dense, brown & gray, silty, clayey gravel with sand.		18	12.5	25		20,37,33		
10.0			10.1'						50/0.2		
15.0			Auger Refusal at 10.1', Begin Coring in Sandstone. Light to dk. gray, trcs. white, black, f. grain w/interbedded shale, f. micaceous, sli. to sev. weathered, highly fractured in intervals, hard w/med. hard to soft seams, intervals shale fragments in sandstone & sandstone fragments in shale, quartz veining <1mm to 5mm (vugular texture). shale frags. In sandstone 11.4'-11.9', 12.5'-13.1', 14.1'-14.5', 15.2'-15.7'; highly fractured & weathered 13.0'-14.1' & 19.0-20.1'; 16 50° bedding & contact jts.; 2 50° jts. Intersecting bedding; 7+ 60°-70° jts. Intersect bedding, some along contacts; sandstone frags. in shale 15.7'-16.2', 20.1'-21.0'						96	26
20.0										92	54
			22.1'							95	35
25.0			Boring Terminated at 22.1' (Elev. 231.4). No topsoil, boulders at surface.								
30.0											
35.0											
40.0											
45.0											
50.0											

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-136 Station 725+25 @ CL Box 1 of 2



B-136 725+25 @ CL Box 2 of 2

HDR | ICA

BORING NO.: B-137

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 725+77

LOCATION: CL (Ramp 3A)

LATITUDE: 34.99736 ° LONGITUDE: 92.00499 °

DATE: 2/3/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: W. Smith

COMPLETION DEPTH: 45.4 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 247.8	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, gray & brown, clayey sand.		27	14.4	45		11,9,13		
10.0			10.4'						50/0.1		
15.0			Auger Refusal at 10.4', Begin Coring in Sandstone. Gray, trcs. white, black, f. grain w/trc. shale pebbles, f. micaceous, sli. weathered, hard, quartz veining <1mm, trc. pyrite on jt. walls. 7 30° jts. some w/iron stain; 1 40° intersecting jt.; 1 50° jt. w/rough walls 15.7'							100	82
20.0			Sandstone & Shale (Claystone): Gray, black, v. f. grain & f. grain, f. micaceous, sli. weathered, fractured in intervals, hard & med. hard, shale fragments in sandstone & sandstone fragments in shale. 7 30°-45°; additional breaks along irregular contacts 20.4'							94	10
25.0			Sandstone: Light to dk. gray, trcs. white, black, f. grain w/trcs. shale laminae, f. micaceous, sli. weathered, hard, trcs. shale pebbles, quartz veining <1mm to 2mm (vugular texture). 4 60°-70° intersecting jts.; 3 25°-30° jts. 25.9'							88	66
30.0			Shale (Claystone): Black, trcs. lt. gray, v.f. grain w/trcs. f. grain sandstone laminae, sli. weathered w/laminae & seams sev. weathered, v. thinly laminated, med. to mod. hardness w/soft seams. shale breaks with hand pressure-RQD may not be representative; 40 40°-50° bedding jts., some w/clay infill; 5 20° intersecting jts.; 3 70° intersecting jts.							98	44
35.0										96	82
40.0										100	42
45.0			45.4'							100	70
50.0			Boring Terminated at 45.4' (Elev. 202.4). No topsoil; Poor RQD prompted extra 5.0' of coring.								

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-137 Station 725+77 @ CL Box 1 of 4



B-137 Station 725+77 @ CL Box 2 of 4

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-137 Station 725+77 @ CL Box 3 of 4



B-137 Station 725+77 @ CL Box 4 of 4

HDR | ICA

BORING NO.: B-138

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 726+55

LOCATION: CL (Ramp 3A)

LATITUDE: 34.99743 ° LONGITUDE: 92.00474 °

DATE: 2/3/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 47.0 ft.

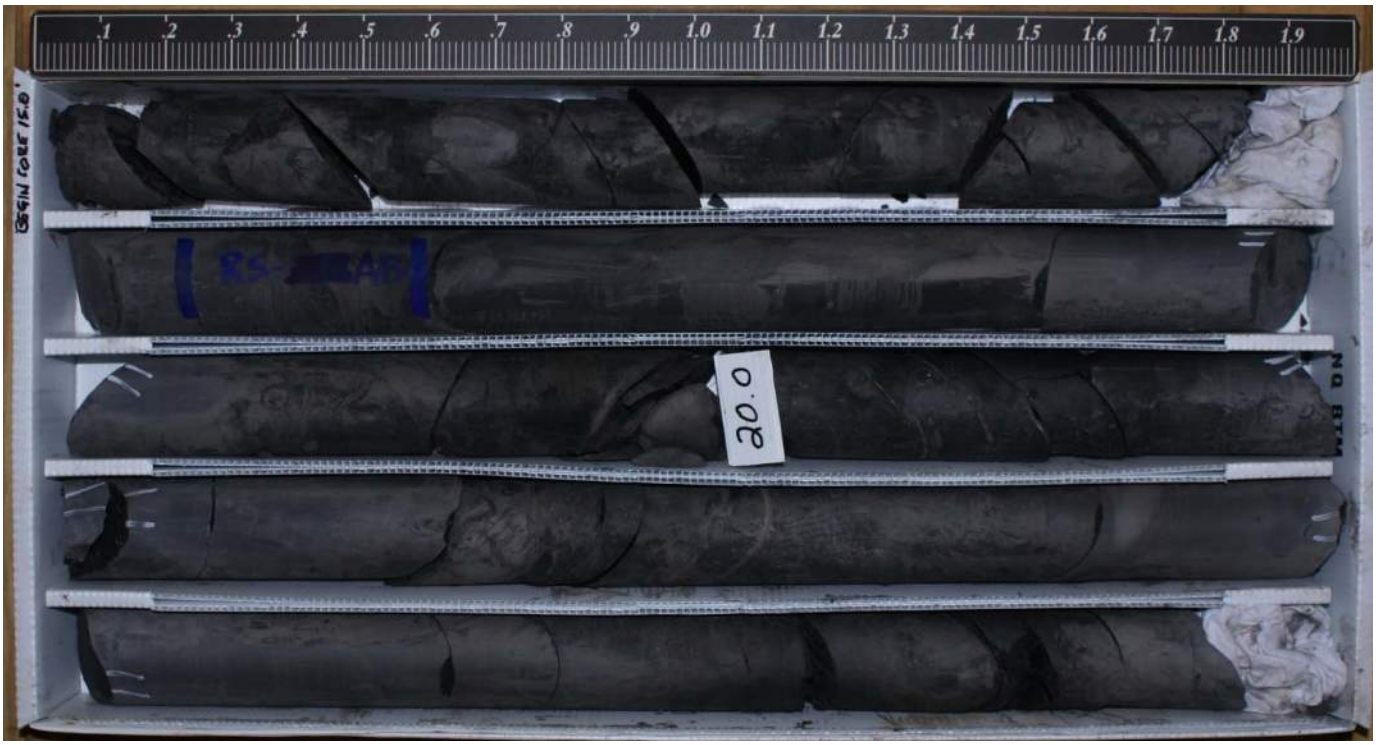
GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 242.8	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Very loose to very dense, brown, gray & black, clayey sand with gravel.								
5.0					17	25.7	19		0,0,0		
10.0					17	32.1	25		6,2,13		
15.0			15.0'		17	8	26		50/0.3		
			Auger Refusal at 15.0', Begin Coring in Shale (Claystone). Black-dk.gray, trcs. lt. gray, v. f. grain to silty in parts w/trcs. f. grain sandstone laminae, fresh to sli. weathered w/seams sev. weathered, v. thinly laminated, med. to mod.hardness w/soft seams, trc. quartz veins <1mm, trcs. pyrite on some jt. walls.							92	54
20.0			shale breaks with hand pressure-RQD may not be representative; 68 25°-40° bedding jts., few w/iron stain; 6 70°-80° jts.; 7 20°-40° jts. intersecting bedding; broken & sev. weathered 29.0'-30.9'; mechanical break 34.6'-35.0'; trcs pyrite							100	50
25.0										100	34
30.0										98	48
35.0										96	82
40.0										100	90
45.0			47.0'							95	90
			Boring Terminated at 47.0' (Elev. 195.8).								
50.0			No topsoil; Poor RQD prompted extra 2.0' of coring.								

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-138 Station 726+55 @ CL Box 1 of 4



B-138 Station 726+55 @ CL Box 2 of 4

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-138 Station 726+55 @ CL Box 3 of 4



B-138 Station 726+55 @ CL Box 4 of 4

HDR | ICA

BORING NO.: B-139

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 727+37

LOCATION: CL (Ramp 3A)

LATITUDE: 34.99750 ° LONGITUDE: 92.00448 °

DATE: 7/23/2015

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: A. Wilder

COMPLETION DEPTH: 43.5 ft.

GROUNDWATER @ 8.4

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 244.9	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 0.8'								
5.0			Soft, brown, sandy silt.		18	15.2	22		2,1,2		
			7.6'								
10.0			Very loose, gray & tan, silty sand.		16	19.9	18	101.2			
			13.5'								
15.0			Auger Refusal at 13.5', Begin Coring in Shale (Claystone).							86	0
			Black, dk. gray, dk. brown, trcs. orange-brown stain, very fine grain, mod. sev. weathered, v. thinly laminated, soft, trcs. iron oxide stain. 15.1'							98	44
			Shale breaks with light hand pressure-RQD may not be representative; 13.5'-15.1' 5 20° fracs, w/iron stain								
20.0			Shale (Claystone): Black, dk. gray, very fine grain, mod. weathered grading to fresh w/seams sev. weathered, v. thinly laminated, low to med. hardness, sli. silty in parts, trc. f. grain Sandstone laminae.							100	68
25.0			sev. weathered 19.3'-19.9'; sev. weathered 21.6'-21.9'; apparent bedding = 45°; fractured & sev. weathered 28.0'-29.6'; 15.1'-43.5' 23+ 40°-50° bedding fracs. some w/iron stain; 12+ 20° fracs. Some w/iron stain, some hackly break; 5 60°-75° w/pyrite & faint iron stain;							94	26
30.0			39.9'-43.5' apparent bedding = 35°-40°							96	10
35.0										94	60
40.0										100	67
			43.5'								
45.0			Boring Terminated at 43.5' (Elev. 201.4).								
			RS-L collected from 24.0' - 24.4'								
			RS-M collected from 16.6' - 17.0'								
50.0											

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-139 Station 727+37 @ CL Box 1 of 4



B-139 Station 727+37 @ CL Box 2 of 4

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-139 Station 727+37 @ CL Box 3 of 4



B-139 Station 727+37 @ CL Box 4 of 4

HDR | ICA

BORING NO.: B-140

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 727+86

LOCATION: CL (Ramp 3A)

LATITUDE: 34.99754 ° LONGITUDE: 92.00433 °

DATE: 2/4/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 31.1 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 248.7	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Asphalt 0.8'								
			Very stiff, tan & gray, sandy lean clay.								
5.0			5.5'		16	20.8	27	107.3			
			Medium dense, gray & brown, clayey sand with gravel.		17	14.2	27		10,13,7		
			8.4'								
10.0			Soft, brown, sandy lean clay.		19	29.6	31		0,1,2		
			13.0'								
			Medium dense, gray & brown, silty, clayey sand.								
15.0			15.4'		14	17.0	20				
			Medium dense, brown & black, clayey gravel with sand.		17	17.8	30		7,13,9		
			18.4'								
20.0			Very dense, gray & brown, clayey sand.								
			20.1'		18	9.6	44		50/0.4		
			Auger Refusal at 20.1', Begin Coring in Shale (Claystone). Black, v. f. grain, sli. weathered grading to fresh, v. thinly laminated, med. hardness, sli. silty in parts.							98	56
25.0			shale breaks with light hand pressure-RQD may not be representative; 14 40°-50° bedding jts. Some w/iron stain; 2 40°-50° intersecting jts. w/pyrite; mechanical frac. 24.6'-25.1'							100	84
30.0			31.1'							100	50
			Boring Terminated at 31.1' (Elev. 217.6).								
			Core slip on Core Run 2, drilled additional 1.0' to get full recovery.								
35.0											
40.0											
45.0											
50.0											

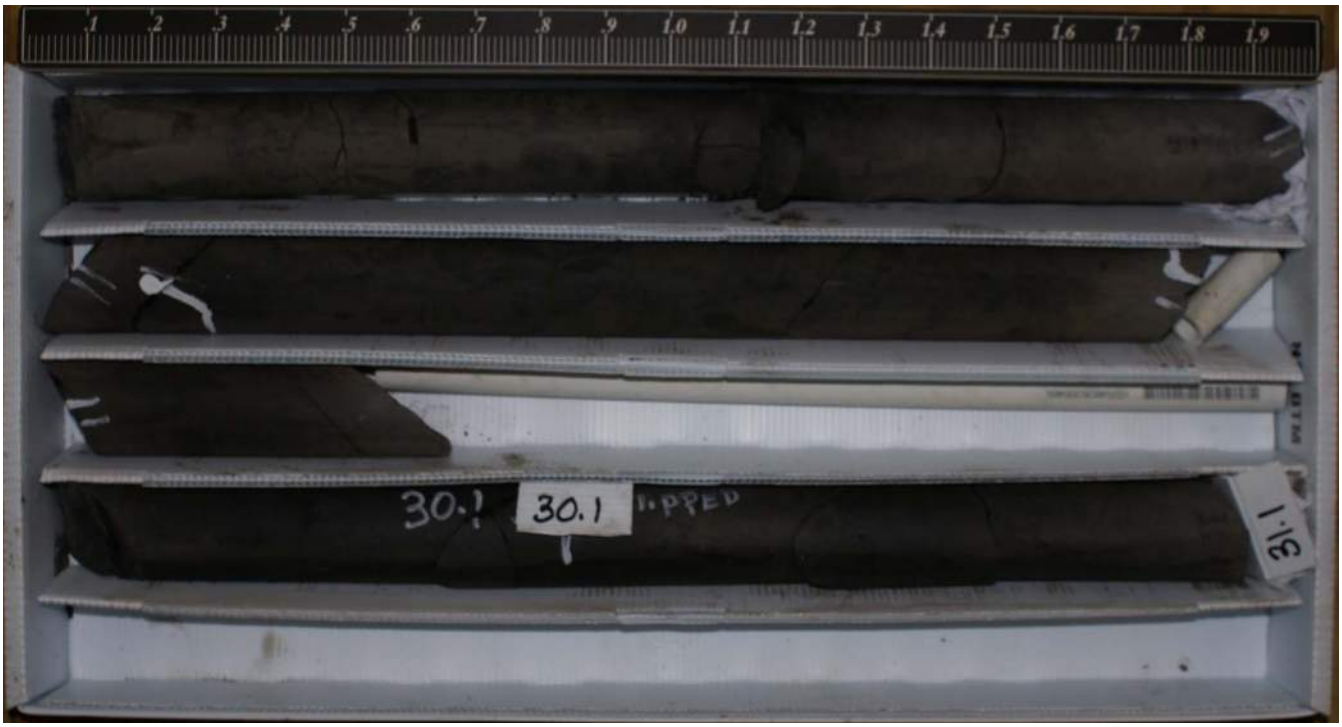
CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-140 Station 727+86 @ CL Box 1 of 2



B-140 Station 727+86 @ CL Box 2 of 2

HDR | ICA

BORING NO.: B-149

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 520+31

LOCATION: 20' Rt. (Willie Ray Drive)

LATITUDE: 34.99769 ° LONGITUDE: 92.00570 °

DATE: 1/24/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 22.6 ft.

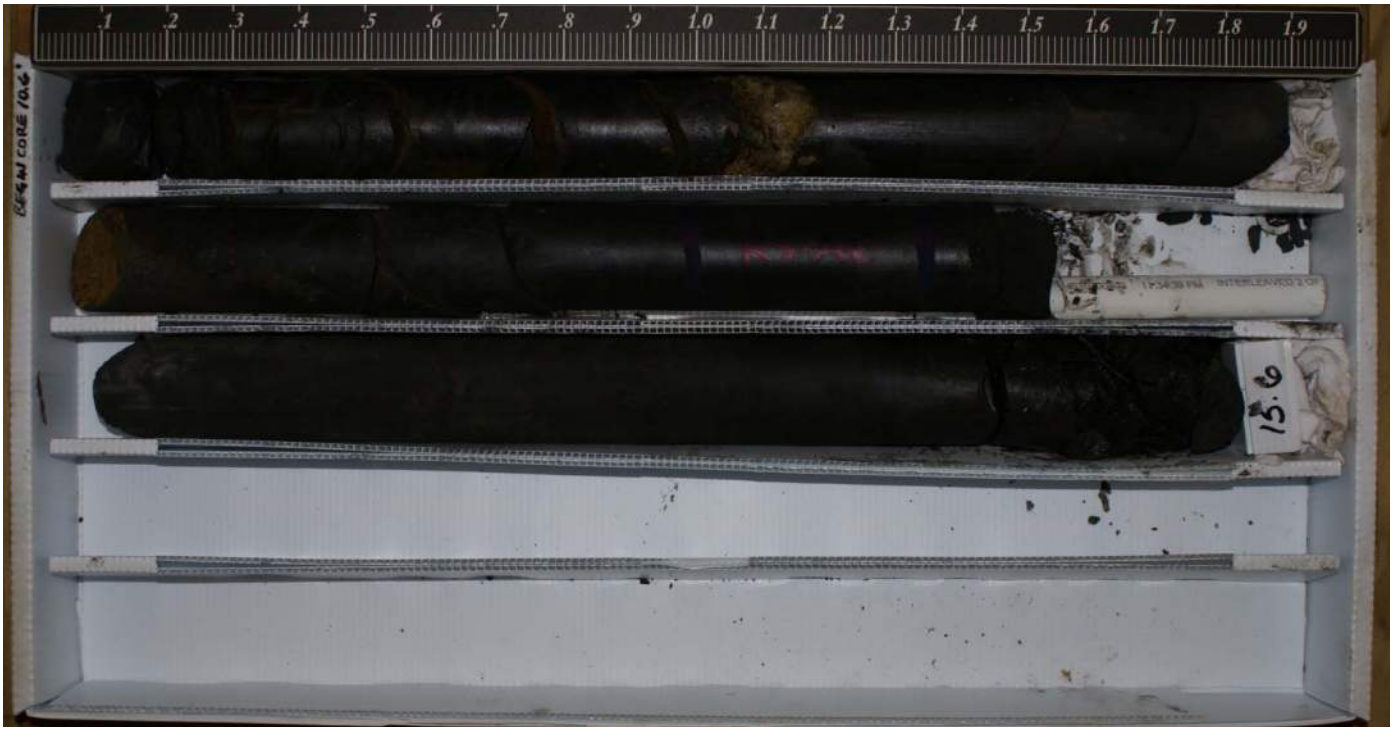
GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 244.6	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Very dense, brown & gray, poorly graded gravel with silt.		16	9.1	17		15,25,50		
			8.5'								
10.0			Very dense, black & brown, clayey sand.		19	11.3	27		50/0.4		
			10.6'								
15.0			Auger Refusal at 10.6', Begin Coring in Shale (Claystone). Black w/trcs. brown-orange-yellow stain, v. f. grain, sli. weathered to mod. weathered, v. thinly laminated, med. to mod. hardness, fissile within limited intervals, clay seams, trcs. pyrite on some jt. walls.							100	52
20.0			shale breaks with light hand pressure-RQD may not be representative; clay seam 11.7'-11.8'; mechanical fracture 15.3'-15.6'; 35 40° bedding jts. some w/iron stain; 4 45°-60° intersecting bedding jts.; highly fractured 20.1'-20.6' & 21.7'-22.2'							100	52
			22.6'							95	20
25.0			Boring Terminated at 22.6' (Elev. 222.0).								
30.0											
35.0											
40.0											
45.0											
50.0											

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-149 Station 520+31 @ 20’ RT Box 1 of 2



B-149 Station 520+31 @ 20’ RT Box 2 of 2

HDR | ICA

BORING NO.: B-150

PAGE: 1 of 2

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 520+56

LOCATION: 20' Lt. (Willie Ray Drive)

LATITUDE: 34.99780 ° LONGITUDE: 92.00562 °

DATE: 1/23/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 51.0 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 243.7	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'								
5.0			Very loose, brown, silty sand.		15	31.5	19		0,0,0		
			8.8'								
10.0			Dense, gray & brown, poorly graded sand.		22	14.4	38		10,16,18		
			13.8'								
15.0			Dense, dark gray, clayey sand.		17	11.2	27		6,18,24		
20.0			20.2'						50/0.2	100	100
			Auger Refusal at 20.2', Begin Coring in Shale (Claystone). Black, dk. gray w/trcs. lt. gray-white & brown-orange stain, v. f. grain, sli. weathered to mod. weathered w/seams sev. weathered, thinly laminated, med. to mod. hardness, fissile within limited intervals, trcs. f. grain sandstone laminae, f. micaceous, clay seams, trcs. f. grain pyrite on some jt. walls.							100	94
25.0			shale dessicates along bedding planes upon drying - RQD may be incorrect; slickensides 22.1', 22.7', 26.5' & 47.8'-51.0'; 47 40°-50° bedding jts. some w/clay, gypsum & pyrite on walls; 2 20° jts. w/clay infill; 2 50° intersecting jts. w/clay							94	74
30.0										100	72
35.0										100	84
40.0										100	50
45.0										100	86
50.0											

HDR | ICA

BORING NO.: B-150

JOB NO.: 061102
JOB NAME: Hwy. 67 Interchange (N. of Cabot)
STATION: 520+56
LOCATION: 20' Lt. (Willie Ray Drive)
LATITUDE: 34.99780 ° LONGITUDE: 92.00562 °

DATE: 1/23/2016
TYPE OF DRILLING: HSA/SPT/CORE
EQUIPMENT: CME 45C
LOGGED BY: B. Cayton

COMPLETION DEPTH: 51.0 ft.

GROUNDWATER @

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: 243.7								
			51.0'							100	86
			Boring Terminated at 51.0' (Elev. 192.7).								
55.0											
60.0											
65.0											
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-150 Station 520+56 @ 20’ LT Box 1 of 4



B-150 Station 520+56 @ 20’ LT Box 2 of 4

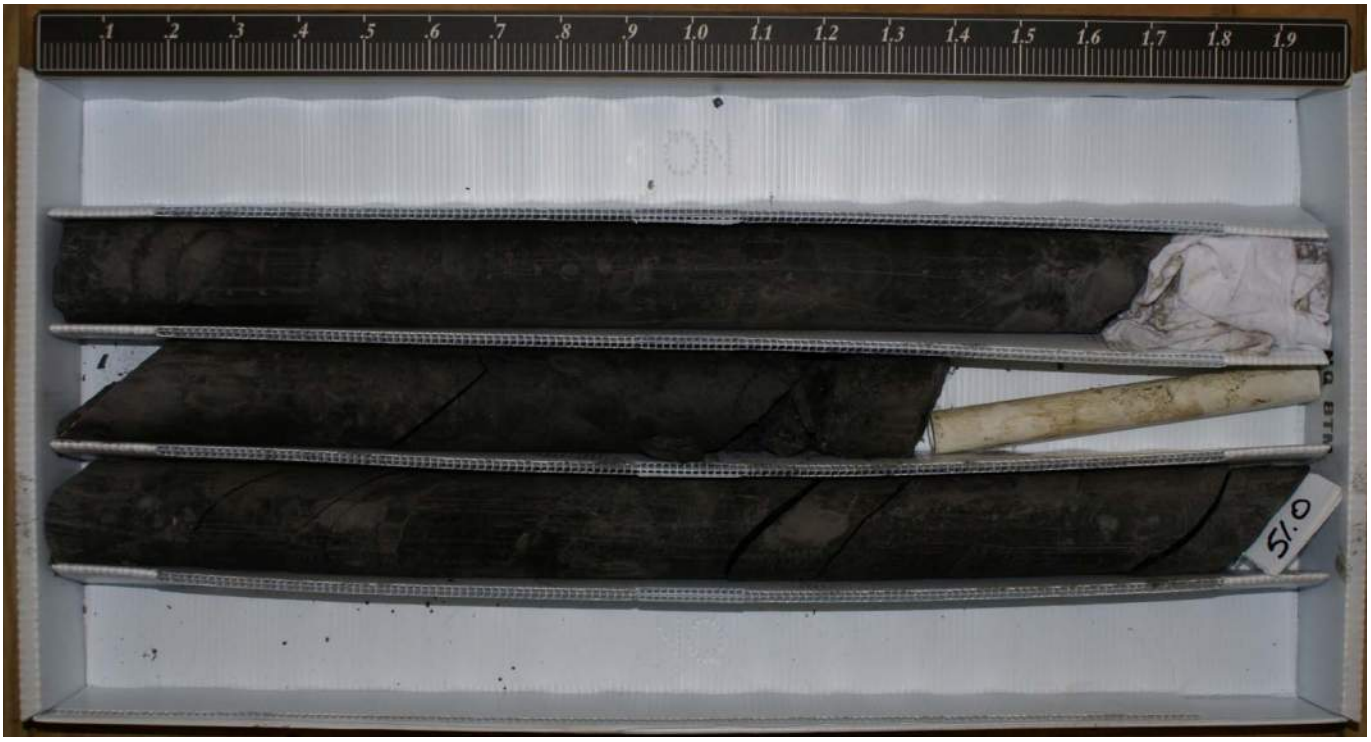
CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-150 Station 520+56 @ 20’ LT Box 3 of 4



B-150 Station 520+56 @ 20’ LT Box 4 of 4

HDR | ICA

BORING NO.: B-151

PAGE: 1 of 2

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 521+44

LOCATION: 20' Rt. (Willie Ray Drive)

LATITUDE: 34.99770 ° LONGITUDE: 92.00532 °

DATE: 1/22/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: W. Smith

COMPLETION DEPTH: 47.5 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 241.9	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'								
5.0			Very loose, brown & gray, silty sand.		18	24.1	21		0,0,0		
			7.4'								
10.0			Medium dense, brown & gray, silty sand.		NP	30.9	NP				
			11.8'								
15.0			Very dense, dark gray, clayey sand with gravel.		16	14.2	26		33,50/0.2		
			14.8'							86	0
			Auger Refusal at 14.8', Begin Coring in Shale (Claystone). Black, v. f. grain, silty laminations, sev. weathered w/fragments mod. weathered, soft w/med. hard seams, broken.							48	8
20.0			shale breaks with light hand pressure-RQD may not be representative; 19.1'								
			Shale (Claystone): Black w/trcs. lt. gray, v. f. grain, silty to f. sandy laminations, mod. weathered grading to sli. weathered & fresh, thinly laminated, med. to mod. hardness, trc. to scat. f. grain sandstone laminations, fissile within limited intervals, pyrite on rare jt. walls.							96	34
25.0			41 40°-60° bedding jts w/smooth walls, pyrite on rare few; 5 70°-90° jts., intercept bedding, smooth to stepped walls; 5 20°-40° jts., intersect bedding, sli. rough walls; rare healed 45° jts. w/f. granular infill							100	30
30.0										98	94
35.0										100	76
40.0										94	80
45.0										100	75
			47.5'								
50.0			Boring Terminated at 47.5' (Elev. 194.4).								

HDR | ICA

BORING NO.: B-151

JOB NO.: 061102
JOB NAME: Hwy. 67 Interchange (N. of Cabot)
STATION: 521+44
LOCATION: 20' Rt. (Willie Ray Drive)
LATITUDE: 34.99770 ° LONGITUDE: 92.00532 °

DATE: 1/22/2016
TYPE OF DRILLING: HSA/SPT/CORE
EQUIPMENT: CME 45C
LOGGED BY: W. Smith

COMPLETION DEPTH: 47.5 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 241.9	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Cored an additional 2.0 ft. due to poor RQD.								
55.0											
60.0											
65.0											
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-151 Station 521+44 @ 20’ RT Box 1 of 4



B-151 Station 521+44 @ 20’ RT Box 2 of 4

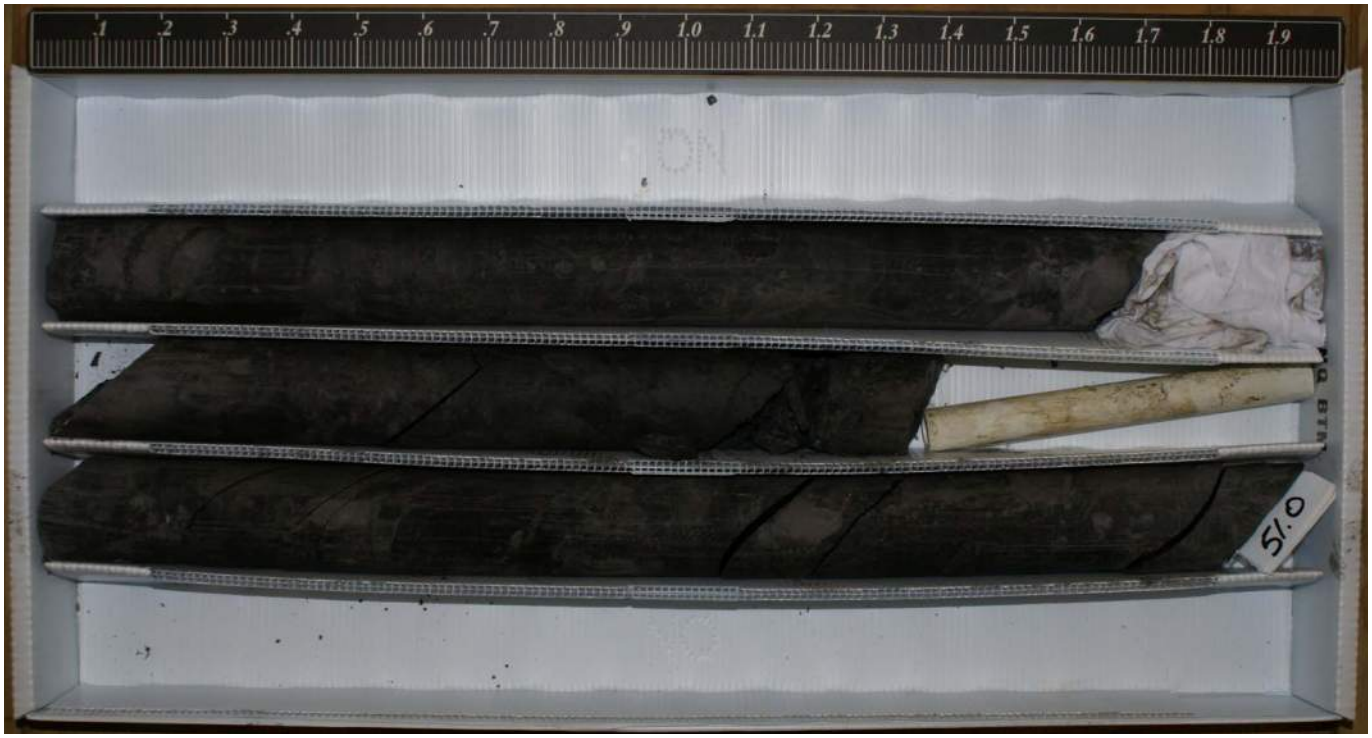
CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-151 Station 521+44 @ 20’ RT Box 3 of 4



B-151 Station 521+44 @ 20’ RT Box 4 of 4

HDR | ICA

BORING NO.: B-152

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 521+93

LOCATION: 20' Lt. (Willie Ray Drive)

LATITUDE: 34.99782 ° LONGITUDE: 92.00517 °

DATE: 1/22/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: B. Cayton

COMPLETION DEPTH: 27.6 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 244.6	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, brown, sandy, silty clay.								
5.0					16	21.1	23		1,2,3		
			7.7'								
			Loose, brown & gray, silty sand.								
10.0					14	18.5	18		2,3,2		
			12.7'								
			Very dense, gray & brown, clayey sand.								
15.0					23	10.9	36		9,22,50		
			16.8'						50/0.4		
			Auger Refusal at 16.8', Begin Coring in Shale (Claystone). Black, v. f. grain, sli. weathered grading to mod. weathered, thinly laminated, med. hardness to soft, poorly fissile within limited intervals, trcs. gypsum infill between jt. walls.							100	97
20.0			shale breaks with light hand pressure-RQD may not be representative; 11 35°-45° bedding jts. some w/clay film; 5 60° intersecting bedding jts. w/clay							96	64
25.0										95	50
			27.6'								
			Boring Terminated at 27.6' (Elev. 217.0).								
30.0											
35.0											
40.0											
45.0											
50.0											

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-152 Station 521+93 @ 20’ LT Box 1 of 2



B-152 Station 521+93 @ 20’ LT Box 2 of 2

HDR | ICA

BORING NO.: B-165

PAGE: 1 of 1

JOB NO.: 061102
JOB NAME: Hwy. 67 Interchange (N. of Cabot)
STATION: 108+01
LOCATION: 110' Lt. (Hwy 38)
LATITUDE: 34.99589 ° LONGITUDE: 92.00525 °

DATE: 6/29/2015
TYPE OF DRILLING: HSA/SPT
EQUIPMENT: CME 55
LOGGED BY: F. Woodard

COMPLETION DEPTH: 18.8 ft. GROUNDWATER @

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: 273.5								
			Dense to very dense, tan & gray, silty sand with gravel.								
5.0									8,13,38		
10.0					19	6.3	21		15,23,17		
15.0									2,8,31		
			18.8'								
20.0			Auger Refusal & Boring Terminated at 18.8' (Elev. 254.7).								
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-166

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 107+91

LOCATION: 109' Rt. (Hwy 38)

LATITUDE: 34.99549 ° LONGITUDE: 92.00581 °

DATE: 6/27/2015

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 6.2 ft.

GROUNDWATER @

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
5.0			Very dense, tan & gray, silty sand. 6.2'						21,50/0.3		
			Auger Refusal & Boring Terminated at 6.2' (Elev. 272.1).								
10.0											
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-167

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 110+39

LOCATION: 121' Lt (Hwy 38)

LATITUDE: 34.99543 ° LONGITUDE: 92.00468 °

DATE: 6/28/2015

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 13.6 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 270.0	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Very hard, brown, tan, yellow, black & gray, sandy lean clay.								
5.0					15	9.9	28	124.0			
			7.7' Very dense, light brown, black & gray, silty, clayey sand.								
10.0									21,26,38		
			13.6' Auger Refusal & Boring Terminated at 13.6' (Elev. 256.4).								
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

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BORING NO.: B-168

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 110+40

LOCATION: 96' Rt. (Hwy 38)

LATITUDE: 34.99502 ° LONGITUDE: 92.00520 °

DATE: 6/28/2015

TYPE OF DRILLING: HSA/SPT

EQUIPMENT: CME 55

LOGGED BY: F. Woodard

COMPLETION DEPTH: 9.0 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 270.1	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
5.0			Very hard, gray, white & tan, lean clay with sand.		19	19.0	37	108.9			
			9.0'								
10.0			Auger Refusal & Boring Terminated at 9.0' (Elev. 261.1).								
15.0											
20.0											
25.0											
30.0											
35.0											
40.0											
45.0											
50.0											

HDR | ICA

BORING NO.: B-169

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 731+47

LOCATION: CL (Ramp 2)

LATITUDE: 34.99693 ° LONGITUDE: 92.00227 °

DATE: 1/12/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: W. Smith

COMPLETION DEPTH: 46.6 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 244.0	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'								
			Soft, brown, silty clay with sand.								
5.0									1,1,2		
			7.8'								
			Hard, tan & gray, sandy silt.								
10.0					18	19.2	21	107.8			
			12.7'								
			Very dense, brown, gray & black, clayey sand.								
15.0									13,33,50/0.4		
			16.0'								
			Auger Refusal at 16.0', Begin Coring in Shale (Claystone). Black, v. f. grain w/silty to v. f. sandy laminae & granules-pebbles, fresh to sli. weathered w/seams sev. weathered, v. thinly laminated, med. to mod. hardness, pyrite on few frac. walls & bedding planes, trcs. quartz veining <1mm, iron oxide stain at top.							96	46
20.0			apparent bedding 45°-50°; clay seams & broken 26.8'-27.0', 27.8'-28.1', 29.8'-30.3'; 16.0'-46.6'							94	56
25.0			2 75°-80° jts.; 32 40°-55° bedding jts. some w/weathered walls; 21 20°-35° jts. some w/weathered walls-clay							98	38
30.0										100	82
35.0										100	84
40.0										100	76
45.0										100	100
			46.6'								
			Boring Terminated at 46.6' (Elev. 197.4).								
			Boulder encountered at 10.6'.								
50.0											

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-169 Station 731+47 @ CL Box 1 of 4

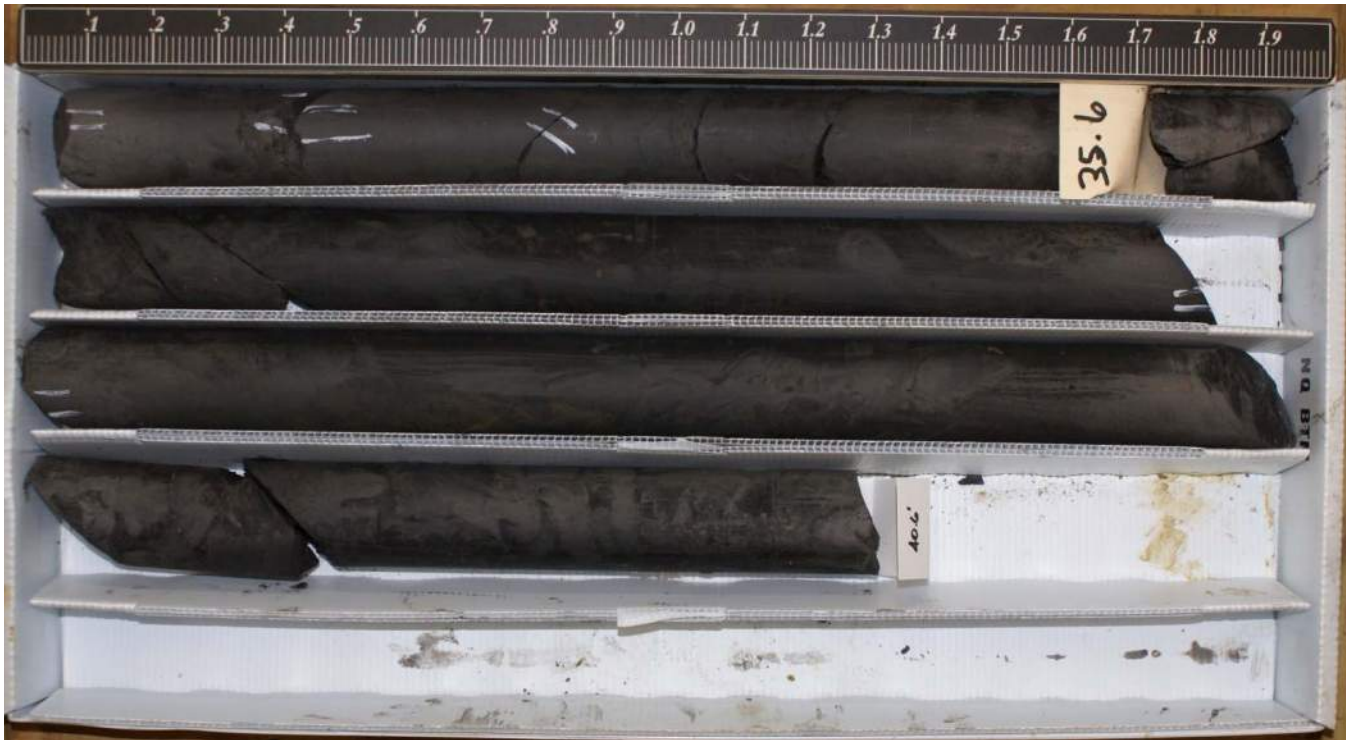


B-169 Station 731+47 @ CL Box 2 of 4

CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-169 Station 731+47 @ CL Box 3 of 4



B-169 Station 731+47 @ CL Box 4 of 4

HDR | ICA

BORING NO.: B-170

PAGE: 1 of 2

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 732+07

LOCATION: CL (Ramp 2)

LATITUDE: 34.99707 ° LONGITUDE: 92.00217 °

DATE: 1/20/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: W. Smith

COMPLETION DEPTH: 51.0 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 244.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			Topsoil 0.8'								
5.0			Soft, tan & gray, silty clay with sand.		19	24.2	25	101.8			
			7.8'								
10.0			Dense, brown, silty, clayey gravel with sand.		17	17.5	22		2,17,16		
			12.9'								
15.0			Very dense, brown & gray, clayey sand.		21	13.2	36		9,22,36		
20.0			19.9'						50/0.3		
			Auger Refusal at 19.9', Begin Coring in Shale (Claystone). Black, trc. white, v. f. grain, silty laminations in parts, sli. to mod. weathered, iron stain on discontinuity walls, thinly laminated, med. to mod. hardness, intersecting jts., pyrite & gypsum on some discontinuity walls.							82	36
25.0			shale breaks with light hand pressure-RQD may not be representative; 10 50°-60° bedding jts., some w/slickensides; 4 20° jts. w/rough walls; 1 50° jt. w/gypsum & pyrite to 1mm; 1 65° jt. w/iron stain; scat. 50°-60° healed bedding jts. w/pyrite							98	88
30.0			31.0'							98	74
			Shale (Claystone): Black, v.f. grain, sev. weathered w/fragments mod. weathered, soft w/med. hard fragments. highly fractured - sev. to completely weathered							88	0
35.0			36.5'								
			Shale (Claystone): Black, v. f. grain, silty laminations in parts, sli. to mod. weathered, v. thinly laminated, med. to mod. hardness, intersecting jts., pyrite & gypsum on some discontinuity walls.							90	58
40.0			22 40°-50° bedding jts. w/smooth walls; 1 90° jt. w/irregular walls; 1 70° jt. w/slickensides, trcs. gypsum & pyrite							98	44
45.0										62	62
50.0											

HDR | ICA

BORING NO.: B-170

JOB NO.: 061102
JOB NAME: Hwy. 67 Interchange (N. of Cabot)
STATION: 732+07
LOCATION: CL (Ramp 2)
LATITUDE: 34.99707 ° LONGITUDE: 92.00217 °

DATE: 1/20/2016
TYPE OF DRILLING: HSA/SPT/CORE
EQUIPMENT: CME 45C
LOGGED BY: W. Smith

COMPLETION DEPTH: 51.0 ft.

GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 244.3	SOIL GROUP	PLASTIC LIMIT	% MOISTURE	LIQUID LIMIT	DRY WEIGHT (lbs. per cu. ft.)	NO. OF BLOWS PER 0.5 ft.	% SCR	% RQD
			51.0'							62	62
			Boring Terminated at 51.0' (Elev. 193.3).								
55.0											
60.0											
65.0											
70.0											
75.0											
80.0											
85.0											
90.0											
95.0											
100.0											

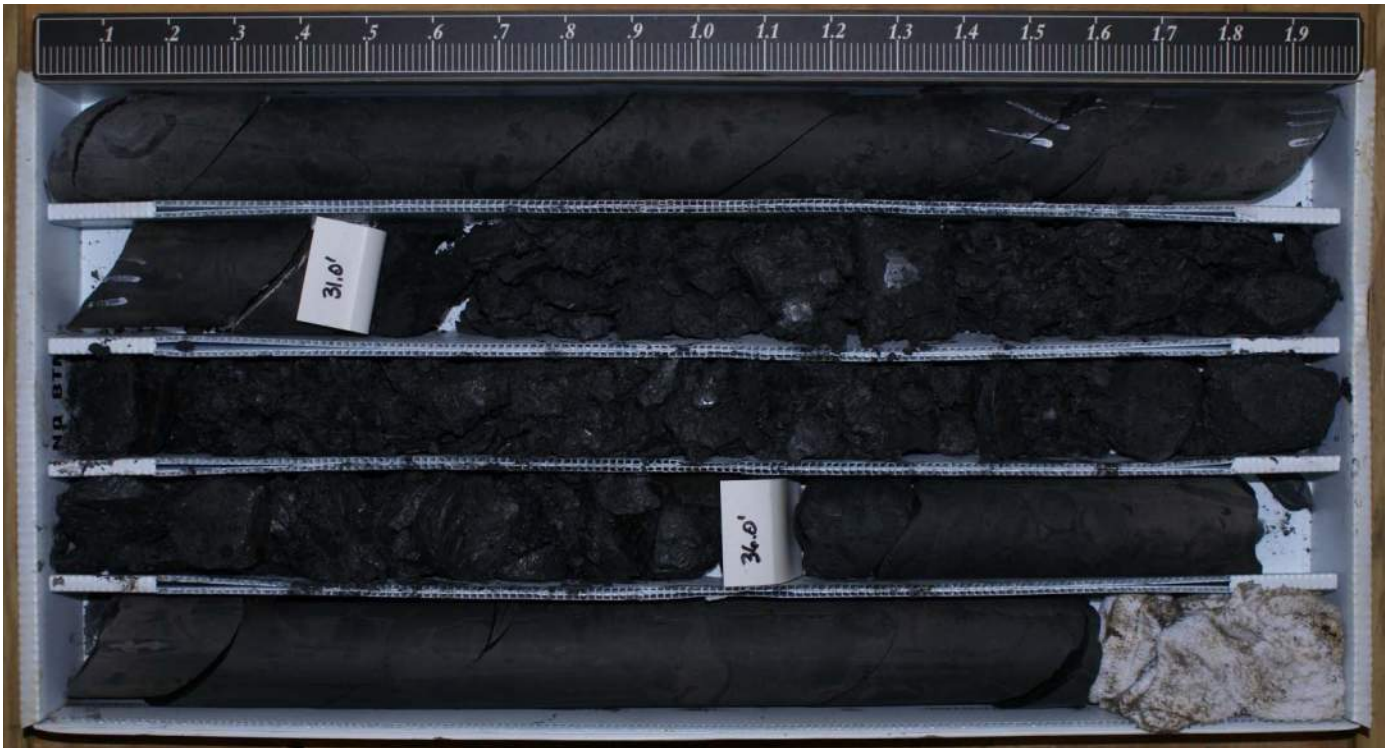
CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-170 Station 732+07 @ CL Box 1 of 4



B-170 Station 732+07 @ CL Box 2 of 4

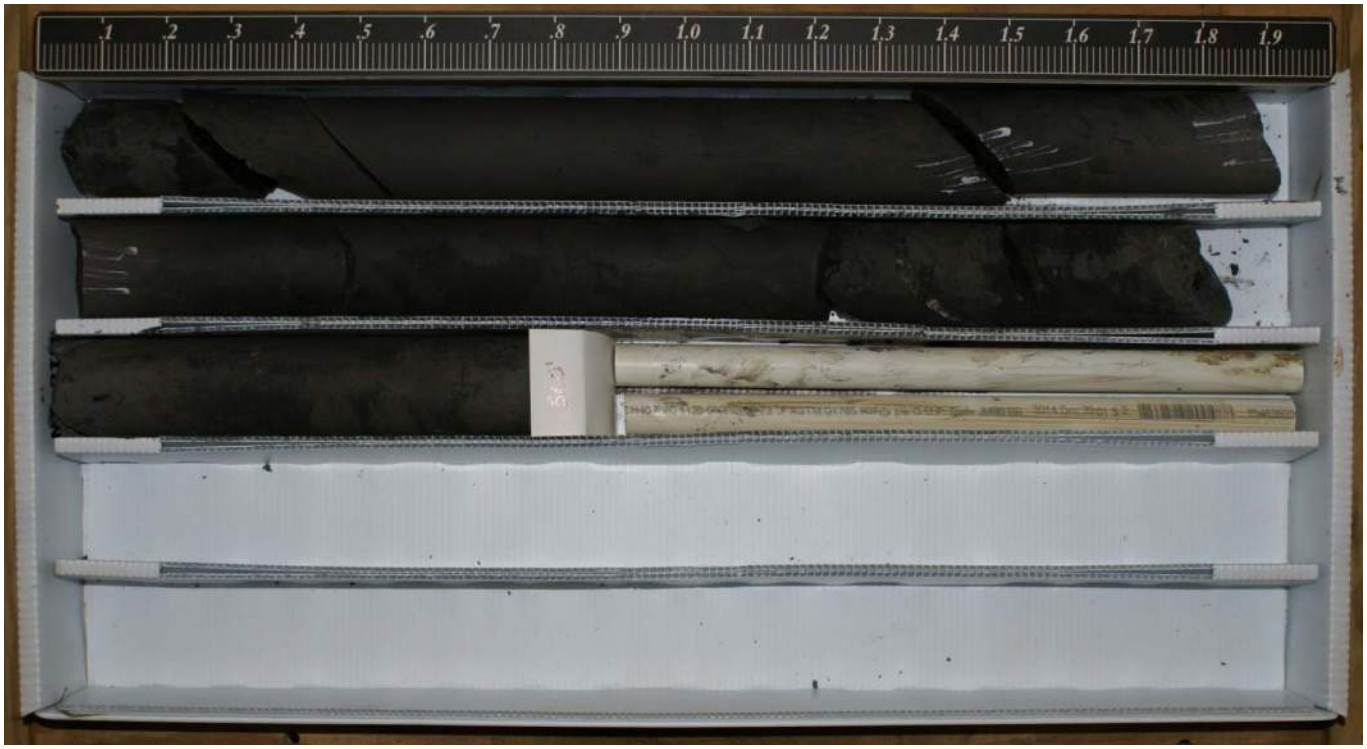
CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-170 Station 732+07 @ CL Box 3 of 4



B-170 Station 732+07 @ CL Box 4 of 4

HDR | ICA

BORING NO.: B-171

PAGE: 1 of 1

JOB NO.: 061102

JOB NAME: Hwy. 67 Interchange (N. of Cabot)

STATION: 732+56

LOCATION: CL (Ramp 2)

LATITUDE: 34.99719 ° LONGITUDE: 92.00209 °

DATE: 1/21/2016

TYPE OF DRILLING: HSA/SPT/CORE

EQUIPMENT: CME 45C

LOGGED BY: W. Smith

COMPLETION DEPTH: 30.9 ft.

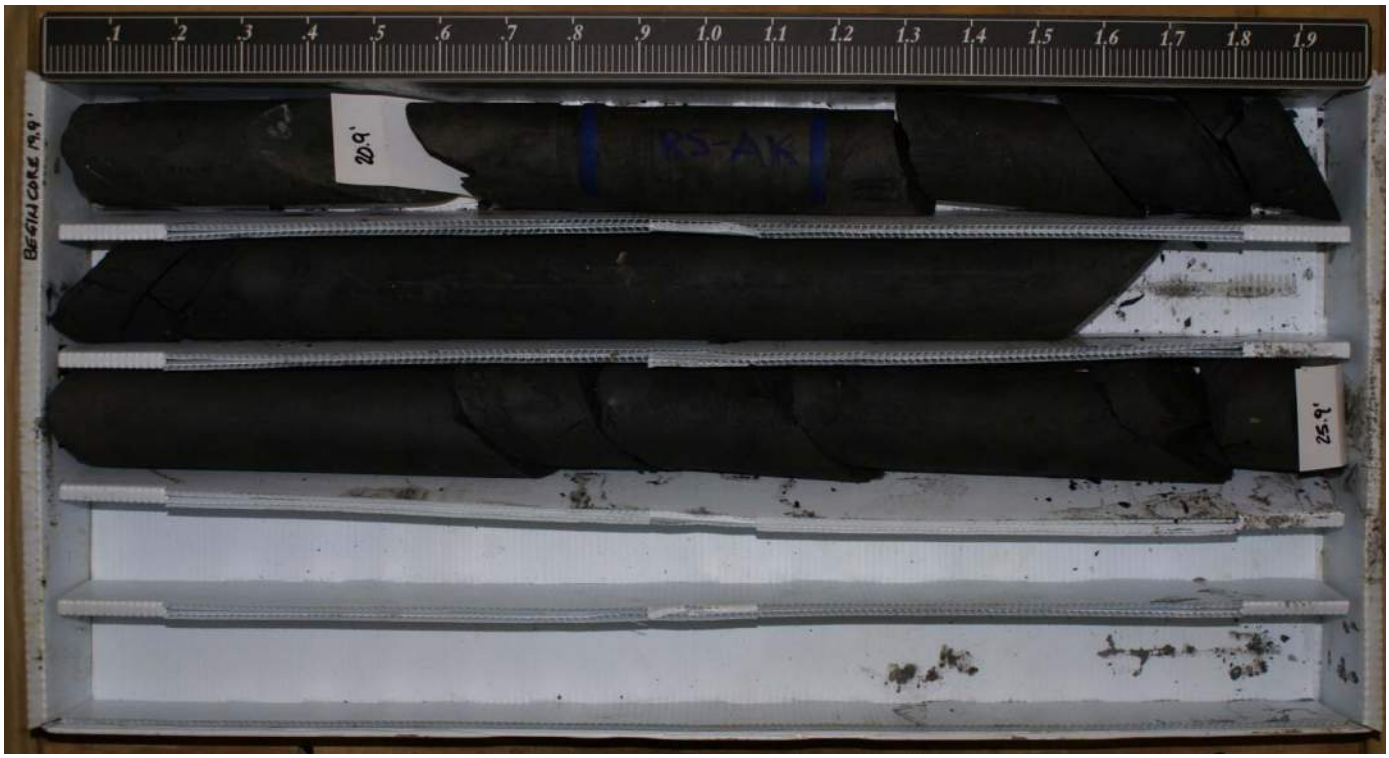
GROUNDWATER @

DEPTH (ft.)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIALS SURFACE ELEVATION: 244.5	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'								
			Soft, brown, tan & gray, sandy lean clay.								
5.0					17	23.4	25	104.2			
			7.7'								
			Medium stiff, brown, tan & gray, sandy silt.								
10.0					17	20.7	20		1,3,3		
			12.8'								
			Medium dense to very dense, dark gray & brown, clayey sand.								
15.0									5,11,11		
20.0			19.9'		16	15.5	32		50/0.4	50	35
			Auger Refusal at 19.9', Begin Coring in Shale (Claystone). Black, v. f. grain, silty laminations, sli. to mod. weathered w/seams sev. weathered at discontinuity walls, v. thinly laminated, med. hardness w/soft seams, intersecting jts., trc. pyrite on discontinuity walls.							96	67
25.0			shale breaks with light hand pressure-RQD may not be representative; 1 60° jt. w/slickensides; 22 40°-50° bedding jts. w/smooth walls & sev. weathering on some, parallels bedding or intercepts bedding; 1 30° jt, w/rough walls, intercepts bedding							98	68
30.0			30.9'								
			Boring Terminated at 30.9' (Elev. 213.6).								
35.0											
40.0											
45.0											
50.0											

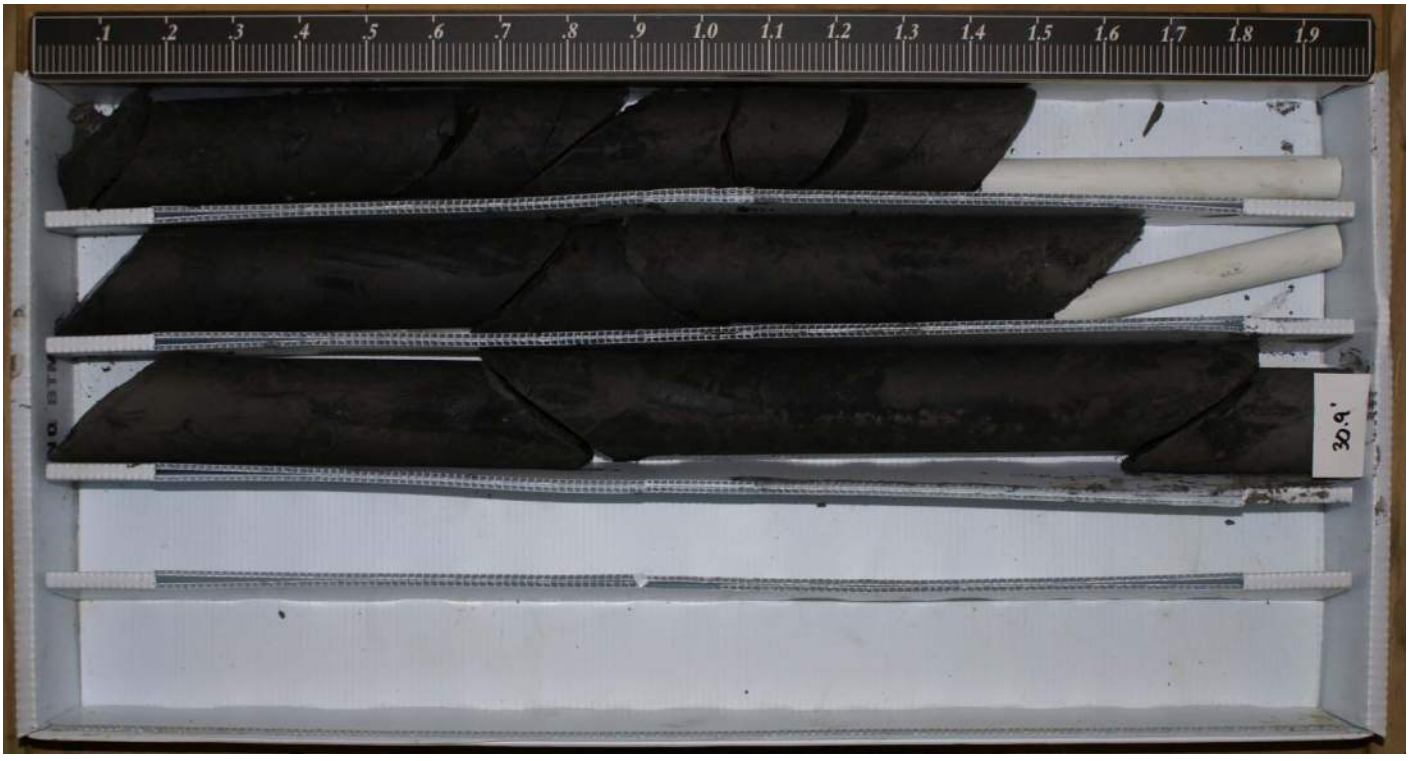
CORE PHOTOGRAPHIC RECORD

Highway 67 Interchange

North of Cabot Arkansas



B-171 Station 732+56 @ CL Box 1 of 2



B-171 Station 732+56 @ CL Box 2 of 2

Appendix B. LABORATORY TESTING

HDR | ICA

Project Name : North Cabot Interchange
Location : Lonoke County, Arkansas
Job Number : 251539
Project Job No. : 251539

Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	pH	Natural Moisture Content (%)
65	B-100		ST-1	5.7	6.4	Tan & Gray Silty, Clayey Sand		21.1
35	B-100		SS-1	10.1	11.6	Brown, Orange & Tan Clayey Sand with Gravel		21.6
66	B-100		ST-2	14.5	15.9	Tan & Gray Sandy Elastic Silt		39.8
35	B-100		SS-2	20.1	20.2	Gray & Brown Clayey Sand with Gravel		13.7
10	B-101		SS-1	4.3	5.8	Brown & Gray Clayey Sand		16.2
11	B-101		SS-2	9.3	10.5	Brown Sandy Silty Clay		17.9
	B-101		SS-3	14.3	14.4	No Recovery		
6	B-102		SS-1	4.3	5.8	Brown & Gray Sandy Lean Clay		22.6
35	B-102		SS-2	9.3	10.3	Brown & Gray Clayey Sand with Gravel		14.9
10	B-104		ST-1	5.0	5.4	Gray, Brown & Tan Clayey Sand		15.6
9	B-105		SS-1	5.0	6.5	Tan & Gray Silty Sand		9.3
36	B-106		SS-1	3.8	5.3	Brown & Gray Clayey Sand		11.9
18	B-107		Bag-6	0.5	3.0	Brown Clayey Sand		15.9
19	B-107		Bag-7	3.0	3.8	Red & Gray Silty Sand		12.9
20	B-108		Bag-8	0.4	5.0	Brown, Red & Gray Sandy Lean Clay		16.0
20	B-109		MC-1	0.0	3.9	Brown Sandy Lean Clay		16.5
21	B-110		Bag-9	0.5	5.0	Brown, Red & Gray Lean Clay with Sand		17.5
21	B-111		MC-1	0.6	5.0	Light Brown Lean Clay with Sand		21.2
22	B-112		Bag-30	0.5	5.0	Brown, Red & Gray Sandy Lean Clay		23.7
23	B-114		Bag-31	0.8	3.4	Brown Silty Sand		15.2
24	B-114		Bag-32	3.4	5.0	Red Clayey Sand		13.4
24	B-115		MC-1	0.6	3.8	Brown Clayey Sand		16.9
24	B-116		MC-1	0.5	3.9	Brown Clayey Sand		16.4
25	B-117		Bag-23	0.4	5.0	Brown, Red & Gray Sandy Silty Clay		21.0
25	B-118		MC-1	0.6	4.5	Brown Sandy Silty Clay		20.1
26	B-119		Bag-22	0.6	4.5	Brown, Red & Gray Clayey Sand		20.0
27	B-120		Bag-20	0.4	1.8	Brown Silty Sand with Gravel		6.1
28	B-121		Bag-21	0.4	5.0	Brown Sandy Silt		22.5
29	B-122		Bag-3	0.0	3.7	Light Brown Clayey Sand with Gravel		10.8
30	B-123		Bag-2	0.0	5.0	Brown Sandy Silty Clay		14.6
31	B-124		Bag-1	0.0	5.0	Light Brown Silty Sand		18.5
32	B-125		Bag-40	0.6	2.3	Brown Silty Sand		10.1
32	B-126		MC-1	0.5	2.3	Dark Brown Silty Sand		15.6

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Project Name : North Cabot Interchange
Location : Lonoke County, Arkansas
Job Number : 251539
Project Job No. : 251539

Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	pH	Natural Moisture Content (%)
33	B127		Bag-4	0.6	5.0	Brown Sandy Lean Clay		15.0
31	B-128		MC-1	0.6	5.0	Light Brown Silty Sand		16.8
34	B-129		Bag-5	0.3	1.5	Brown Silty Gravel with Sand		13.0
6	B-130		SS-1	5.0	6.5	Light Brown & Gray Sandy Lean Clay		18.7
7	B-130		SS-2	10.0	11.5	Light Brown & Gray Silty, Clayey Sand		7.8
7	B-130		SS-3	15.0	15.7	Light Brown Silty, Clayey Sand		6.5
	B-131		ST-1	4.9		No Recovery		
7	B-131		SS-1	5.5	7.0	Brown, Gray & Black Silty, Clayey Sand		12.8
7	B-131		SS-2	9.9	11.4	Brown, Gray & Black Silty, Clayey Sand		9.5
8	B-132		SS-1	4.5	6.0	Tan & Gray Silty Sand with Gravel		14.7
9	B-132		SS-2	9.5	10.1	Tan & Gray Silty Sand		3.5
11	B-135		ST-1	5.0	6.4	Brown Sandy Silty Clay		15.5
12	B-135		ST-2	10.0	11.8	Gray, Brown & Tan Sandy Silt		20.2
1	B-135		SS-1	15.0	16.5	Brown & Black Clayey Sand		13.7
67	B-135A		ST-1	4.2	5.5	Brown Sandy Silt		20.2
37	B-136		SS-1	4.9	6.4	Brown Silty, Clayey Gravel with Sand		12.5
37	B-136		SS-2	9.9	10.1	Gray Silty, Clayey Gravel with Sand		11.5
38	B-137		SS-1	5.3	6.8	Gray & Brown Clayey Sand		14.4
39	B-138		SS-1	4.7	6.2	Brown Silty Sand		25.7
40	B-138		SS-2	9.7	11.2	Brown, Gray & Black Clayey Sand with Gravel		32.1
41	B-138		SS-3	14.7	15.0	Black Clayey Sand		8.0
2	B-139		SS-1	4.3	5.8	Brown Sandy Silt		15.2
13	B-139		ST-1	9.3	9.3	Gray & Tan Silty Sand		19.9
68	B-140		ST-1	4.7	5.4	Tan & Gray Sandy Lean Clay		20.8
42	B-140		SS-1	5.6	7.1	Gray & Brown Clayey Sand with Gravel		14.2
43	B-140		SS-2	9.7	11.2	Brown Sandy Lean Clay		29.6
69	B-140		ST-2	14.7	15.2	Gray & Brown Silty, Clayey Sand		17.0
44	B-140		SS-3	15.6	17.1	Brown & Black Clayey Gravel with Sand		17.8
45	B-140		SS-4	19.7	20.1	Gray & Brown Clayey Sand		9.6
14	B-147		ST-1	5.0	5.4	Gray, Brown & Tan Lean Clay		27.0
3	B-147		SS-1	10.0	11.5	Brown, Black & White Lean Clay with Sand		20.3
15	B-147		ST-2	15.0	16.0	Black, Tan & Gray Lean Clay		24.2
4	B-148		SS-1	5.0	6.5	Brown & Black Silty Sand with Gravel		14.3
5	B-148		SS-2	10.0	11.5	Dark Gray Clayey Sand		11.8
5	B-148		SS-3	15.0	15.9	Dark Gray Clayey Sand		3.9
5	B-148		SS-4	20.0	20.9	Dark Gray Clayey Sand		4.8
46	B-149		SS-1	5.2	6.7	Brown & Gray Poorly Graded Gravel with Silt		9.1
47	B-149		SS-2	10.2	10.6	Black & Brown Clayey Sand		11.3
48	B-150		SS-1	5.5	7.0	Brown Silty Sand		31.5
49	B-150		SS-2	10.5	12.0	Gray & Brown Poorly Graded Sand		14.4
50	B-150		SS-3	15.5	17.0	Dark Gray Clayey Sand		11.2
50	B-150		SS-4	20.0	20.2	Dark Gray Clayey Sand		10.3
51	B-151		SS-1	4.1	5.6	Brown & Gray Silty Sand		24.1
70	B-151		ST-1	9.1	9.4	Brown & Gray Silty Sand		30.9

Project Name : North Cabot Interchange
Location : Lonoke County, Arkansas
Job Number : 251539
Project Job No. : 251539

Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	pH	Natural Moisture Content (%)
52	B-151		SS-2	14.1	14.8	Dark Gray Clayey Sand with Gravel		14.2
53	B-152		SS-1	4.4	5.9	Brown Sandy Silty Clay		21.1
54	B-152		SS-2	9.4	10.9	Brown & Gray Silty Sand		18.5
55	B-152		SS-3	14.4	15.9	Gray & Brown Clayey Sand		10.9
55	B-152		SS-4	16.4	16.8	Gray Clayey Sand		5.2
8	B-165		SS-1	4.8	6.3	Tan & Gray Silty Sand with Gravel		11.6
8	B-165		SS-2	9.8	11.3	Tan & Gray Silty Sand with Gravel		6.3
8	B-165		SS-3	14.8	16.3	Tan & Gray Silty Sand with Gravel		10.4
9	B-166		SS-1	5.0	5.8	Tan & Gray Silty Sand		8.9
16	B-167		ST-1	4.4	5.9	Brown, Tan, Yellow, Black & Gray Sandy Lean Clay		9.9
7	B-167		SS-1	9.4	10.9	Light Brown, Black & Gray Silty, Clayey Sand		10.0
17	B-168		ST-1	4.6	5.9	Gray, White & Tan Lean Clay with Sand		19.0
72	B-169		SS-1	4.5	6.0	Brown Silty Clay with Sand		23.6
71	B-169		ST-1	9.5	10.8	Tan & Gray Sandy Silt		19.2
57	B-169		SS-2	14.5	16.0	Brown, Gray & Black Clayey Sand		12.9
72	B-170		ST-1	4.6	5.9	Tan & Gray Silty Clay with Sand		24.2
56	B-170		SS-1	9.6	11.1	Brown Silty, Clayey Gravel with Sand		17.5
57	B-170		SS-2	14.6	16.1	Brown & Gray Clayey Sand		13.2
57	B-170		SS-3	19.6	19.9	Gray Clayey Sand		6.7
73	B-171		ST-1	4.5	5.8	Brown, Tan & Gray Sandy Lean Clay		23.4
58	B-171		SS-1	9.5	11.0	Brown, Tan & Gray Sandy Silt		20.7
59	B-171		SS-2	14.5	15.3	Dark Gray & Brown Clayey Sand		17.8
59	B-171		SS-3	19.5	19.9	Dark Gray & Brown Clayey Sand		15.5
60	B-172		SS-1	4.7	6.2	Brown Silty Clay with Sand		19.9
61	B-172		SS-2	9.7	11.2	Light & Dark Brown Silty Sand		21.9
62	B-173		SS-1	4.9	6.4	Brown, Orange & Gray Sandy Lean Clay		18.2
63	B-173		SS-2	11.9	13.4	Brown Silty Sand		20.9
63	B-173		SS-3	14.9	16.4	Brown Silty Sand		20.6
64	B-173		SS-4	19.9	20.2	Dark Gray Clayey Sand		11.4

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown & Black Clayey Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-135
Sample Depth : 15.0' to 16.5'
Date Tested : 10/16/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	93.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	58.0
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	34.5
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} = 0.2355 mm

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

Natural Moisture (%) (AASHTO T265) : 13.7
Liquid Limit (AASHTO T89) : 27
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 10
Liquidity Index : -0.33
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 6.2
Coarse Sand (-No.10 + No.40) : 35.8
Fine Sand (-No.40 + No.200) : 23.5
Silt + Clay (-No.200) : 34.5

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) : 6.0
Medium Sand (-No.10 + No.40) : 35.8
Fine Sand (-No.40 + No.200) : 23.5
Silt + Clay (-No.200) : 34.5

Approved By : J.S.

Soil No. 1

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Sandy Silt

Sample No. : SS-1
Sample Loc. : Boring No. B-139
Sample Depth : 4.3' to 5.8'
Date Tested : 10/16/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	99.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	69.9
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} = 0.0114 mm

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

Natural Moisture (%) (AASHTO T265) : 15.2
Liquid Limit (AASHTO T89) : 22
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 4
Liquidity Index : -0.76
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (1)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.0
Coarse Sand (-No.10 + No.40) : 0.4
Fine Sand (-No.40 + No.200) : 29.7
Silt + Clay (-No.200) : 69.9

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.0
Medium Sand (-No.10 + No.40) : 0.4
Fine Sand (-No.40 + No.200) : 29.7
Silt + Clay (-No.200) : 69.9

Approved By : J.S.

Soil No. 2

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Black & White Lean Clay with Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-147
Sample Depth : 10.0' to 11.5'
Date Tested : 10/16/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	97.6
No.6		3.35	mm	
No.10		2	mm	92.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	86.2
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	76.7
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} = 0.0075 mm

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

Natural Moisture (%) (AASHTO T265) : 20.3
Liquid Limit (AASHTO T89) : 37
Plastic Limit (AASHTO T90) : 21
Plasticity Index : 16
Liquidity Index : -0.04
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-6 (11)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 7.3
Coarse Sand (-No.10 + No.40) : 6.5
Fine Sand (-No.40 + No.200) : 9.5
Silt + Clay (-No.200) : 76.7

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 2.4
Coarse Sand (-No.4 + No.10) : 4.9
Medium Sand (-No.10 + No.40) : 6.5
Fine Sand (-No.40 + No.200) : 9.5
Silt + Clay (-No.200) : 76.7

Approved By : J.S.

Soil No. 3

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown & Black Silty Sand with Gravel

Sample No. : SS-1
Sample Loc. : Boring No. B-148
Sample Depth : 5.0' to 6.5'
Date Tested : 10/16/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
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	93.9
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	87.8
1/4		6.3	mm	
No.4		4.75	mm	76.8
No.6		3.35	mm	
No.10		2	mm	56.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	34.9
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	24.0
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} = 1.2487 mm

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

Natural Moisture (%) (AASHTO T265) : 14.3
Liquid Limit (AASHTO T89) : 36
Plastic Limit (AASHTO T90) : 28
Plasticity Index : 8
Liquidity Index : -1.76
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 43.4
Coarse Sand (-No.10 + No.40) : 21.7
Fine Sand (-No.40 + No.200) : 10.9
Silt + Clay (-No.200) : 24.0

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 6.1
Fine Gravel (-3/4in. + No.4) : 17.1
Coarse Sand (-No.4 + No.10) : 20.2
Medium Sand (-No.10 + No.40) : 21.7
Fine Sand (-No.40 + No.200) : 10.9
Silt + Clay (-No.200) : 24.0

Approved By : J.S.

Soil No. 4

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Dark Gray Clayey Sand

Sample No. : SS-3
Sample Loc. : Boring No. B-148
Sample Depth : 15.0' to 16.5'
Date Tested : 10/16/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	98.2
No.6		3.35	mm	
No.10		2	mm	79.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	32.7
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	17.5
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} = 0.7543 mm

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

Natural Moisture (%) (AASHTO T265) : 3.9
Liquid Limit (AASHTO T89) : 33
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 15
Liquidity Index : -0.96
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-6 (1)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 20.6
Coarse Sand (-No.10 + No.40) : 46.7
Fine Sand (-No.40 + No.200) : 15.2
Silt + Clay (-No.200) : 17.5

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 1.8
Coarse Sand (-No.4 + No.10) : 18.8
Medium Sand (-No.10 + No.40) : 46.7
Fine Sand (-No.40 + No.200) : 15.2
Silt + Clay (-No.200) : 17.5

Approved By : J.S.

Soil No. 5

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Light Brown & Gray Sandy Lean Clay

Sample No. : SS-1
Sample Loc. : Boring No. B-130
Sample Depth : 5.0' to 6.5'
Date Tested : 10/16/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	97.8
1/4		6.3	mm	
No.4		4.75	mm	90.7
No.6		3.35	mm	
No.10		2	mm	85.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	79.8
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	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} = 0.0121 mm

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

Natural Moisture (%) (AASHTO T265) : 18.7
Liquid Limit (AASHTO T89) : 45
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 27
Liquidity Index : 0.03
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-7-6 (17)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 14.6
Coarse Sand (-No.10 + No.40) : 5.6
Fine Sand (-No.40 + No.200) : 10.8
Silt + Clay (-No.200) : 69.0

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 9.3
Coarse Sand (-No.4 + No.10) : 5.3
Medium Sand (-No.10 + No.40) : 5.6
Fine Sand (-No.40 + No.200) : 10.8
Silt + Clay (-No.200) : 69.0

Approved By : J.S.

Soil No. 6

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Gray & Black Silty, Clayey Sand

Sample No. : SS-2
Sample Loc. : Boring No. B-131
Sample Depth : 9.9' to 11.4'
Date Tested : 10/16/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	84.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	57.3
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	46.5
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} = 0.1316 mm

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

Natural Moisture (%) (AASHTO T265) : 9.5
Liquid Limit (AASHTO T89) : 29
Plastic Limit (AASHTO T90) : 22
Plasticity Index : 7
Liquidity Index : -1.84
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (1)
ASTM Classification: D2487 : SC-SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 15.4
Coarse Sand (-No.10 + No.40) : 27.3
Fine Sand (-No.40 + No.200) : 10.8
Silt + Clay (-No.200) : 46.5

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) : 14.7
Medium Sand (-No.10 + No.40) : 27.3
Fine Sand (-No.40 + No.200) : 10.8
Silt + Clay (-No.200) : 46.5

Approved By : J.S.

Soil No. 7

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Tan & Gray Silty Sand with Gravel

Sample No. : SS-2
Sample Loc. : Boring No. B-165
Sample Depth : 9.8' to 11.3'
Date Tested : 10/16/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	89.5
1/4		6.3	mm	
No.4		4.75	mm	79.9
No.6		3.35	mm	
No.10		2	mm	71.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	59.8
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	27.6
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} = 0.2507 mm

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

Natural Moisture (%) (AASHTO T265) : 6.3
Liquid Limit (AASHTO T89) : 21
Plastic Limit (AASHTO T90) : 19
Plasticity Index : 2
Liquidity Index : -6.41
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 28.2
Coarse Sand (-No.10 + No.40) : 12.0
Fine Sand (-No.40 + No.200) : 32.2
Silt + Clay (-No.200) : 27.6

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 20.1
Coarse Sand (-No.4 + No.10) : 8.1
Medium Sand (-No.10 + No.40) : 12.0
Fine Sand (-No.40 + No.200) : 32.2
Silt + Clay (-No.200) : 27.6

Approved By : J.S.

Soil No. 8

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Tan & Gray Silty Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-105
Sample Depth : 5.0' to 6.5'
Date Tested : 10/16/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	96.2
No.6		3.35	mm	
No.10		2	mm	89.1

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	65.1
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	21.6
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} = 0.2327 mm

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

Natural Moisture (%) (AASHTO T265) : 9.3
Liquid Limit (AASHTO T89) : NP
Plastic Limit (AASHTO T90) : NP
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 10.9
Coarse Sand (-No.10 + No.40) : 24.0
Fine Sand (-No.40 + No.200) : 43.5
Silt + Clay (-No.200) : 21.6

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 3.8
Coarse Sand (-No.4 + No.10) : 7.1
Medium Sand (-No.10 + No.40) : 24.0
Fine Sand (-No.40 + No.200) : 43.5
Silt + Clay (-No.200) : 21.6

Approved By : J.S.

Soil No. 9

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Gray, Brown & Tan Clayey Sand

Sample No. : ST-1
Sample Loc. : Boring No. B-104
Sample Depth : 5.0' to 5.8'
Date Tested : 10/21/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	94.6
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	47.7
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} = 0.0817 mm

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

Natural Moisture (%) (AASHTO T265) : 15.6
Liquid Limit (AASHTO T89) : 23
Plastic Limit (AASHTO T90) : 15
Plasticity Index : 8
Liquidity Index : 0.01
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (1)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.1
Coarse Sand (-No.10 + No.40) : 5.3
Fine Sand (-No.40 + No.200) : 46.9
Silt + Clay (-No.200) : 47.7

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.1
Medium Sand (-No.10 + No.40) : 5.3
Fine Sand (-No.40 + No.200) : 46.9
Silt + Clay (-No.200) : 47.7

Approved By : J.S.

Soil No. 10

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Sandy Silty Clay

Sample No. : ST-1
Sample Loc. : Boring No. B-135
Sample Depth : 5.0' to 6.4'
Date Tested : 10/22/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	99.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	58.4
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} = 0.0289 mm

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

Natural Moisture (%) (AASHTO T265) : 15.5
Liquid Limit (AASHTO T89) : 19
Plastic Limit (AASHTO T90) : 14
Plasticity Index : 5
Liquidity Index : 0.29
Activity : NA
Sp. Gr. (AASHTO T100) : 2.740
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : CL-ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.0
Coarse Sand (-No.10 + No.40) : 0.4
Fine Sand (-No.40 + No.200) : 41.2
Silt + Clay (-No.200) : 58.4

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.0
Medium Sand (-No.10 + No.40) : 0.4
Fine Sand (-No.40 + No.200) : 41.2
Silt + Clay (-No.200) : 58.4

Approved By : J.S.

Soil No. 11

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Gray, Brown & Tan Sandy Silt

Sample No. : ST-2
Sample Loc. : Boring No. B-135
Sample Depth : 10.0' to 11.8'
Date Tested : 10/22/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	94.2
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	58.8
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} = 0.0278 mm

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

Natural Moisture (%) (AASHTO T265) : 20.2
Liquid Limit (AASHTO T89) : 19
Plastic Limit (AASHTO T90) : 15
Plasticity Index : 4
Liquidity Index : 1.26
Activity : NA
Sp. Gr. (AASHTO T100) : 2.723
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.1
Coarse Sand (-No.10 + No.40) : 5.7
Fine Sand (-No.40 + No.200) : 35.4
Silt + Clay (-No.200) : 58.8

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) : 5.7
Fine Sand (-No.40 + No.200) : 35.4
Silt + Clay (-No.200) : 58.8

Approved By : J.S.

Soil No. 12

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Gray & Tan Silty Sand

Sample No. : ST-1
Sample Loc. : Boring No. B-139
Sample Depth : 9.3' to 9.9'
Date Tested : 10/21/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	97.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	94.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	49.8
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} = 0.0756 mm

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

Natural Moisture (%) (AASHTO T265) : 19.9
Liquid Limit (AASHTO T89) : 18
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 2
Liquidity Index : 2.11
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 2.2
Coarse Sand (-No.10 + No.40) : 3.2
Fine Sand (-No.40 + No.200) : 44.8
Silt + Clay (-No.200) : 49.8

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.9
Coarse Sand (-No.4 + No.10) : 1.3
Medium Sand (-No.10 + No.40) : 3.2
Fine Sand (-No.40 + No.200) : 44.8
Silt + Clay (-No.200) : 49.8

Approved By : J.S.

Soil No. 13

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Gray, Brown & Tan Lean Clay

Sample No. : ST-1
Sample Loc. : Boring No. B-147
Sample Depth : 5.0' to 5.4'
Date Tested : 10/26/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	98.7
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	89.9
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} = 0.004 mm

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

Natural Moisture (%) (AASHTO T265) : 27.0
Liquid Limit (AASHTO T89) : 31
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 13
Liquidity Index : 0.69
Activity : NA
Sp. Gr. (AASHTO T100) : 2.709
AASHTO Classification: M145 : A-6 (11)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.3
Coarse Sand (-No.10 + No.40) : 1.0
Fine Sand (-No.40 + No.200) : 8.8
Silt + Clay (-No.200) : 89.9

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.3
Medium Sand (-No.10 + No.40) : 1.0
Fine Sand (-No.40 + No.200) : 8.8
Silt + Clay (-No.200) : 89.9

Approved By : J.S.

Soil No. 14

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Black, Tan & Gray Lean Clay

Sample No. : ST-2
Sample Loc. : Boring No. B-147
Sample Depth : 15.0' to 16.0'
Date Tested : 10/22/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	96.0
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	85.6
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D_{50} = 0.0048 mm

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

Natural Moisture (%) (AASHTO T265) : 24.2
Liquid Limit (AASHTO T89) : 28
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 10
Liquidity Index : 0.65
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (7)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.6
Coarse Sand (-No.10 + No.40) : 3.4
Fine Sand (-No.40 + No.200) : 10.4
Silt + Clay (-No.200) : 85.6

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.6
Medium Sand (-No.10 + No.40) : 3.4
Fine Sand (-No.40 + No.200) : 10.4
Silt + Clay (-No.200) : 85.6

Approved By : J.S.

Soil No. 15

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Tan, Yellow, Black & Gray Sandy Lean Clay

Sample No. : ST-1
Sample Loc. : Boring No. B-167
Sample Depth : 4.4' to 5.9'
Date Tested : 10/16/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
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	96.1
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	92.2
1/4		6.3	mm	
No.4		4.75	mm	88.2
No.6		3.35	mm	
No.10		2	mm	82.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	77.6
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	58.2
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} = 0.0295 mm

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

Natural Moisture (%) (AASHTO T265) : 9.9
Liquid Limit (AASHTO T89) : 28
Plastic Limit (AASHTO T90) : 15
Plasticity Index : 13
Liquidity Index : -0.37
Activity : NA
Sp. Gr. (AASHTO T100) : 2.723
AASHTO Classification: M145 : A-6 (5)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 17.3
Coarse Sand (-No.10 + No.40) : 5.1
Fine Sand (-No.40 + No.200) : 19.4
Silt + Clay (-No.200) : 58.2

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 3.9
Fine Gravel (-3/4in. + No.4) : 7.9
Coarse Sand (-No.4 + No.10) : 5.5
Medium Sand (-No.10 + No.40) : 5.1
Fine Sand (-No.40 + No.200) : 19.4
Silt + Clay (-No.200) : 58.2

Approved By : J.S.

Soil No. 16

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Gray, White & Tan Lean Clay with Sand

Sample No. : ST-1
Sample Loc. : Boring No. B-168
Sample Depth : 4.6' to 5.9'
Date Tested : 10/16/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	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	97.1
No.6		3.35	mm	
No.10		2	mm	94.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	87.5
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	73.3
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} = 0.0091 mm

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

Natural Moisture (%) (AASHTO T265) : 19.0
Liquid Limit (AASHTO T89) : 37
Plastic Limit (AASHTO T90) : 19
Plasticity Index : 18
Liquidity Index : -0.03
Activity : NA
Sp. Gr. (AASHTO T100) : 2.717
AASHTO Classification: M145 : A-6 (12)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 5.4
Coarse Sand (-No.10 + No.40) : 7.1
Fine Sand (-No.40 + No.200) : 14.2
Silt + Clay (-No.200) : 73.3

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 2.9
Coarse Sand (-No.4 + No.10) : 2.5
Medium Sand (-No.10 + No.40) : 7.1
Fine Sand (-No.40 + No.200) : 14.2
Silt + Clay (-No.200) : 73.3

Approved By : J.S.

Soil No. 17

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Clayey Sand

Sample No. : Bag-6
Sample Loc. : Boring No. B-107
Sample Depth : 0.5' to 3.0'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	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	95.3
1/4		6.3	mm	
No.4		4.75	mm	92.6
No.6		3.35	mm	
No.10		2	mm	89.1

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	49.0
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} = 0.0786 mm

CBR (AASHTO: T-193) : 2.7
Dry Dens. (AASHTO: T-99; Method (C)) : 116.5 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 13.8 %

Natural Moisture (%) (AASHTO T265) : 15.9
Liquid Limit (AASHTO T89) : 23
Plastic Limit (AASHTO T90) : 15
Plasticity Index : 8
Liquidity Index : 0.11
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (1)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 10.9
Coarse Sand (-No.10 + No.40) : 3.5
Fine Sand (-No.40 + No.200) : 36.6
Silt + Clay (-No.200) : 49.0

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 7.4
Coarse Sand (-No.4 + No.10) : 3.5
Medium Sand (-No.10 + No.40) : 3.5
Fine Sand (-No.40 + No.200) : 36.6
Silt + Clay (-No.200) : 49.0

Approved By : J.S.

Soil No. 18

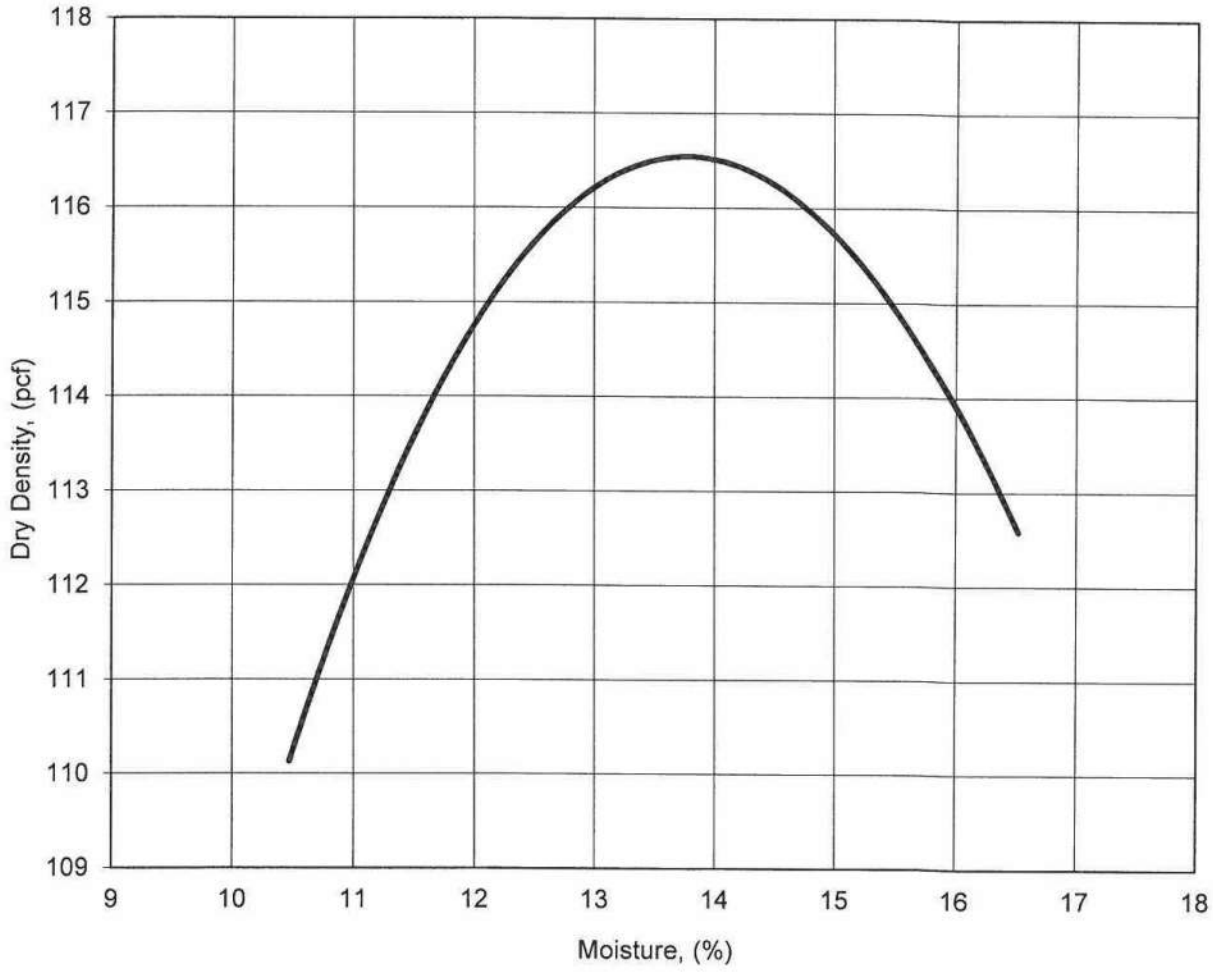
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Clayey Sand

Sample No. : Bag-6
Sample Loc. : Boring No. B-107
Sample Depth : 0.5' to 3.0'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 116.5 pcf

OPTIMUM MOISTURE: 13.8 %

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

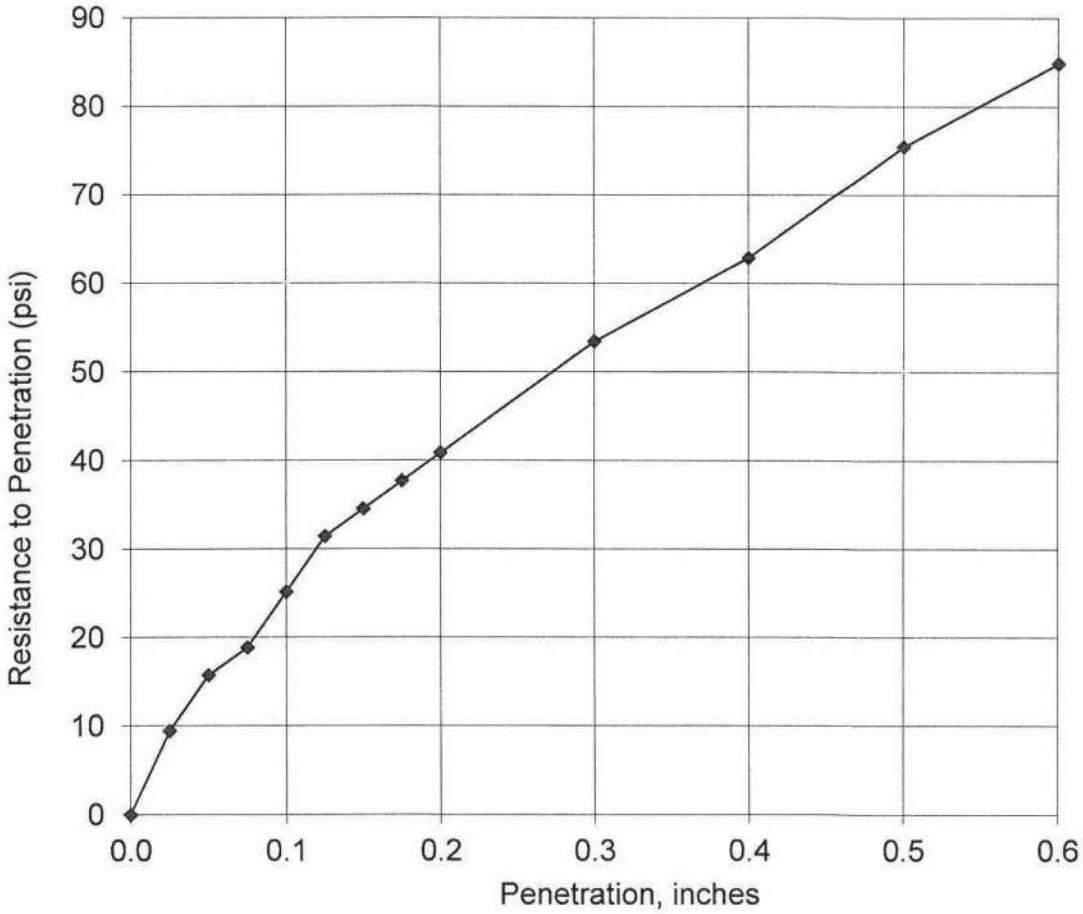
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-6
Project County	: Lonoke	Sample Loc.	: Boring No. B-107
Project State	: Arkansas	Sample Depth	: 0.5' to 3.0'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR| ICA	Date Reported	: 11/3/15
Soil Type	: Brown Clayey Sand		



Compaction Effort = 40 Blows per layer
Percent Compacted = 98.6
Percent Swell = 0.33

C.B.R. @ 0.1 In. = 2.5
C.B.R. @ 0.2 In. = 2.7*

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Red & Gray Silty Sand

Sample No. : Bag-7
Sample Loc. : Boring No. B-107
Sample Depth : 3.0' to 3.8'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	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	95.6
1/4		6.3	mm	
No.4		4.75	mm	94.6
No.6		3.35	mm	
No.10		2	mm	90.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	81.0
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	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} = 0.1412 mm

CBR (AASHTO: T-193) : 15.1
Dry Dens. (AASHTO: T-99; Method (C)) : 120.2 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 10.5 %

Natural Moisture (%) (AASHTO T265) : 12.9
Liquid Limit (AASHTO T89) : 19
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 1
Liquidity Index : -5.22
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 9.3
Coarse Sand (-No.10 + No.40) : 9.7
Fine Sand (-No.40 + No.200) : 48.8
Silt + Clay (-No.200) : 32.2

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 5.4
Coarse Sand (-No.4 + No.10) : 3.9
Medium Sand (-No.10 + No.40) : 9.7
Fine Sand (-No.40 + No.200) : 48.8
Silt + Clay (-No.200) : 32.2

Approved By : J.S.

Soil No. 19

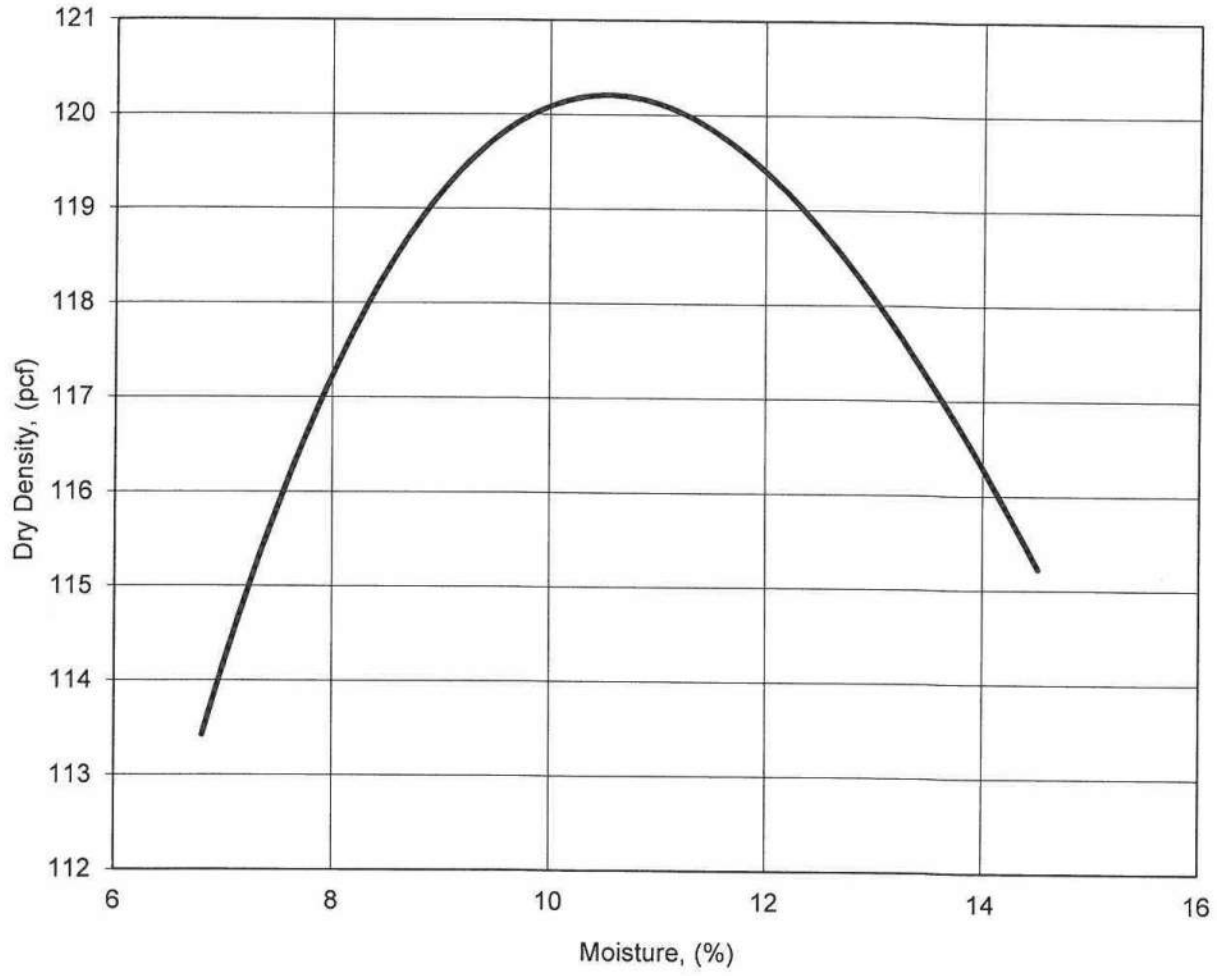
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Red & Gray Silty Sand

Sample No. : Bag-7
Sample Loc. : Boring No. B-107
Sample Depth : 3.0' to 3.8'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 120.2 pcf

OPTIMUM MOISTURE: 10.5 %

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

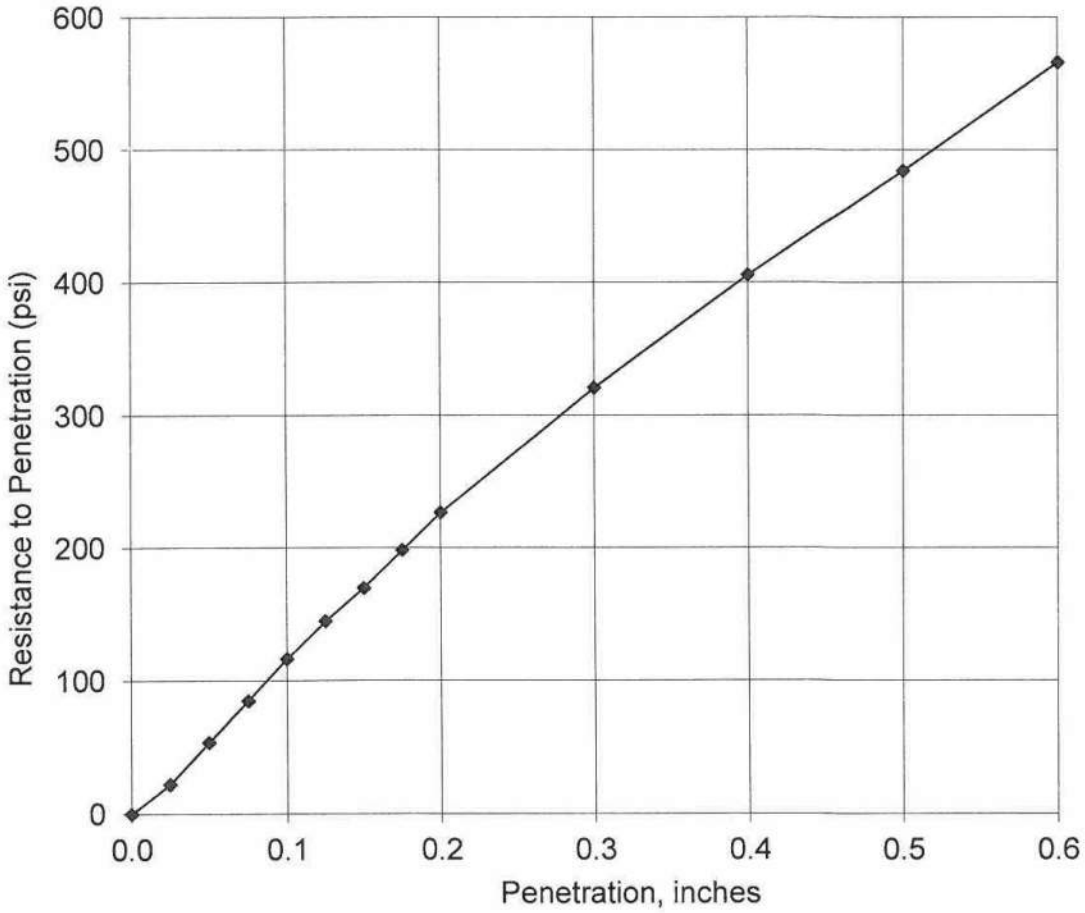
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-7
Project County	: Lonoke	Sample Loc.	: Boring No. B-107
Project State	: Arkansas	Sample Depth	: 3.0' to 3.8'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR|ICA	Date Reported	: 11/3/15
Soil Type	: Red & Gray Silty Sand		



Compaction Effort = 40 Blows per layer
Percent Compacted = 99.5
Percent Swell = 0.22

C.B.R. @ 0.1 In. = 11.6
C.B.R. @ 0.2 In. = 15.1*

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Red & Gray Sandy Lean Clay

Sample No. : Bag-8
Sample Loc. : Boring No. B-108
Sample Depth : 0.4' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	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	98.2
No.6		3.35	mm	
No.10		2	mm	95.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	92.3
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	62.5
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} = 0.02 mm

CBR (AASHTO: T-193) : 6.9
Dry Dens. (AASHTO: T-99; Method (C)) : 118.2 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 12.4 %

Natural Moisture (%) (AASHTO T265) : 16.0
Liquid Limit (AASHTO T89) : 25
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 9
Liquidity Index : 0.05
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (3)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 4.7
Coarse Sand (-No.10 + No.40) : 3.0
Fine Sand (-No.40 + No.200) : 29.8
Silt + Clay (-No.200) : 62.5

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 1.8
Coarse Sand (-No.4 + No.10) : 2.9
Medium Sand (-No.10 + No.40) : 3.0
Fine Sand (-No.40 + No.200) : 29.8
Silt + Clay (-No.200) : 62.5

Approved By : J.S.

Soil No. 20

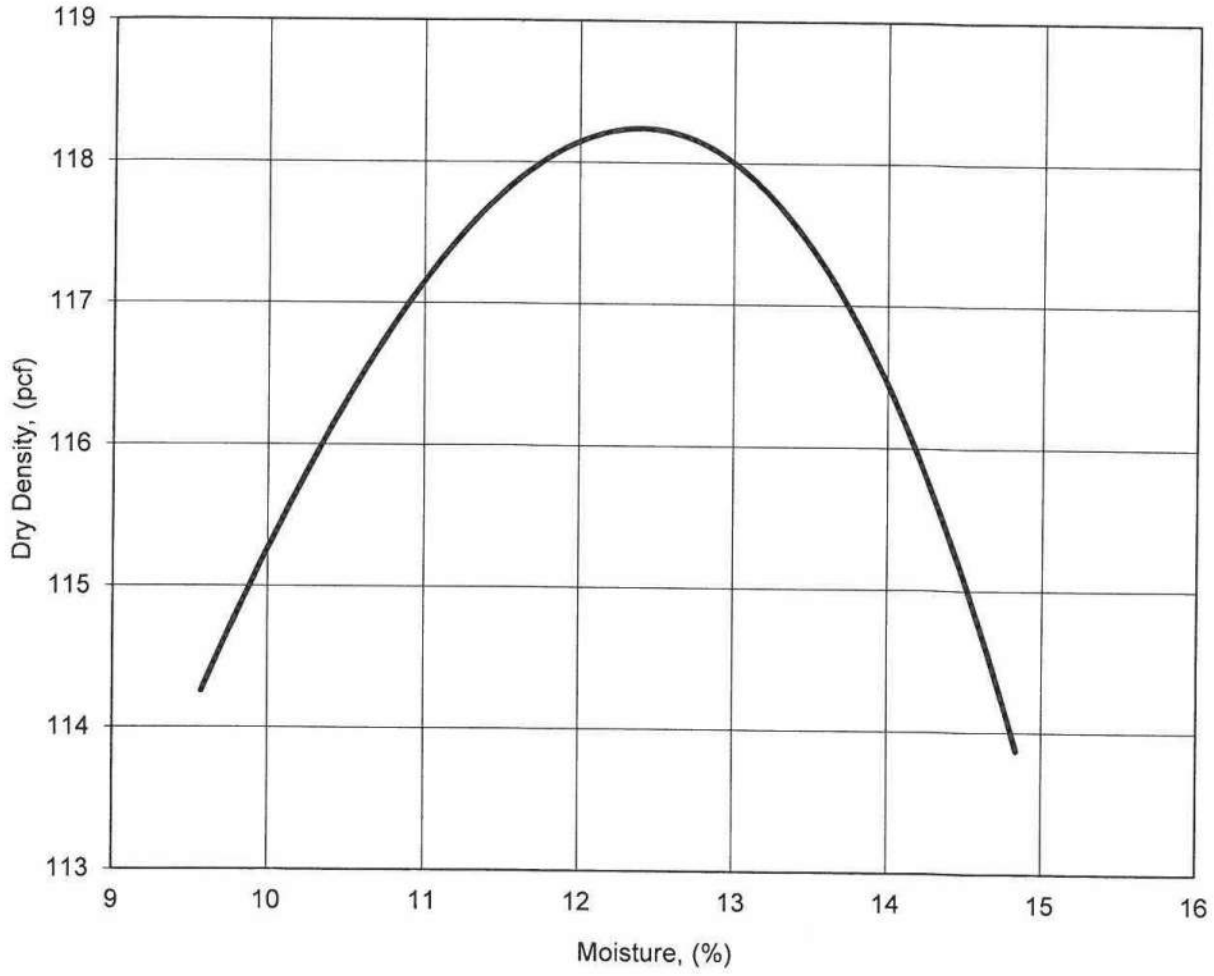
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Red & Gray Sandy Lean Clay

Sample No. : Bag-8
Sample Loc. : Boring No. B-108
Sample Depth : 0.4' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 118.2 pcf

OPTIMUM MOISTURE: 12.4 %

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

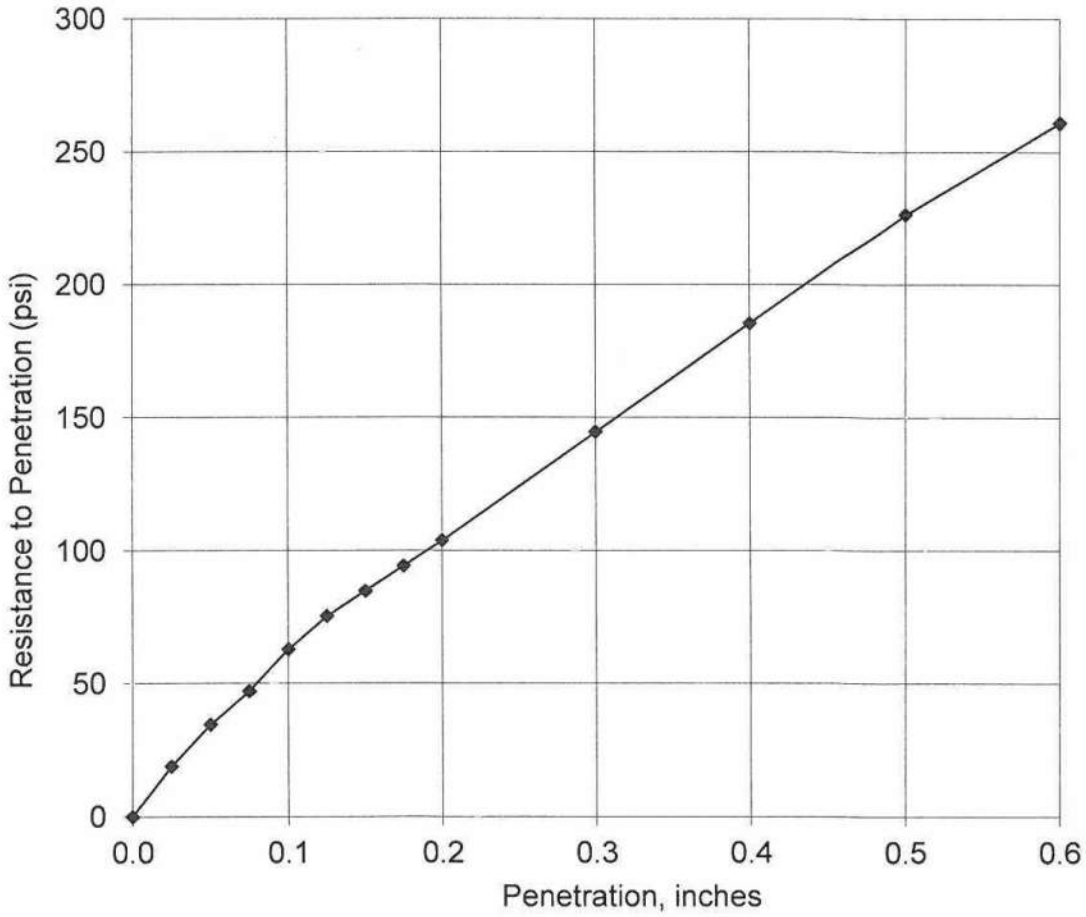
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-8
Project County	: Lonoke	Sample Loc.	: Boring No. B-108
Project State	: Arkansas	Sample Depth	: 0.4' to 5.0'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR|ICA	Date Reported	: 11/3/15
Soil Type	: Brown, Red & Gray Sandy Lean Clay		



Compaction Effort = 40 Blows per layer
Percent Compacted = 98.4
Percent Swell = 0.11

C.B.R. @ 0.1 In. = 6.3
C.B.R. @ 0.2 In. = 6.9*

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Red & Gray Lean Clay with Sand

Sample No. : Bag-9
Sample Loc. : Boring No. B-110
Sample Depth : 0.5' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	96.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	94.2
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	71.5
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} = 0.0102 mm

CBR (AASHTO: T-193) : 1.9
Dry Dens. (AASHTO: T-99; Method (C)) : 113.1 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 14.8 %

Natural Moisture (%) (AASHTO T265) : 17.5
Liquid Limit (AASHTO T89) : 23
Plastic Limit (AASHTO T90) : 15
Plasticity Index : 8
Liquidity Index : 0.29
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (3)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 3.3
Coarse Sand (-No.10 + No.40) : 2.5
Fine Sand (-No.40 + No.200) : 22.7
Silt + Clay (-No.200) : 71.5

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) : 1.9
Medium Sand (-No.10 + No.40) : 2.5
Fine Sand (-No.40 + No.200) : 22.7
Silt + Clay (-No.200) : 71.5

Approved By : J.S.

Soil No. 21

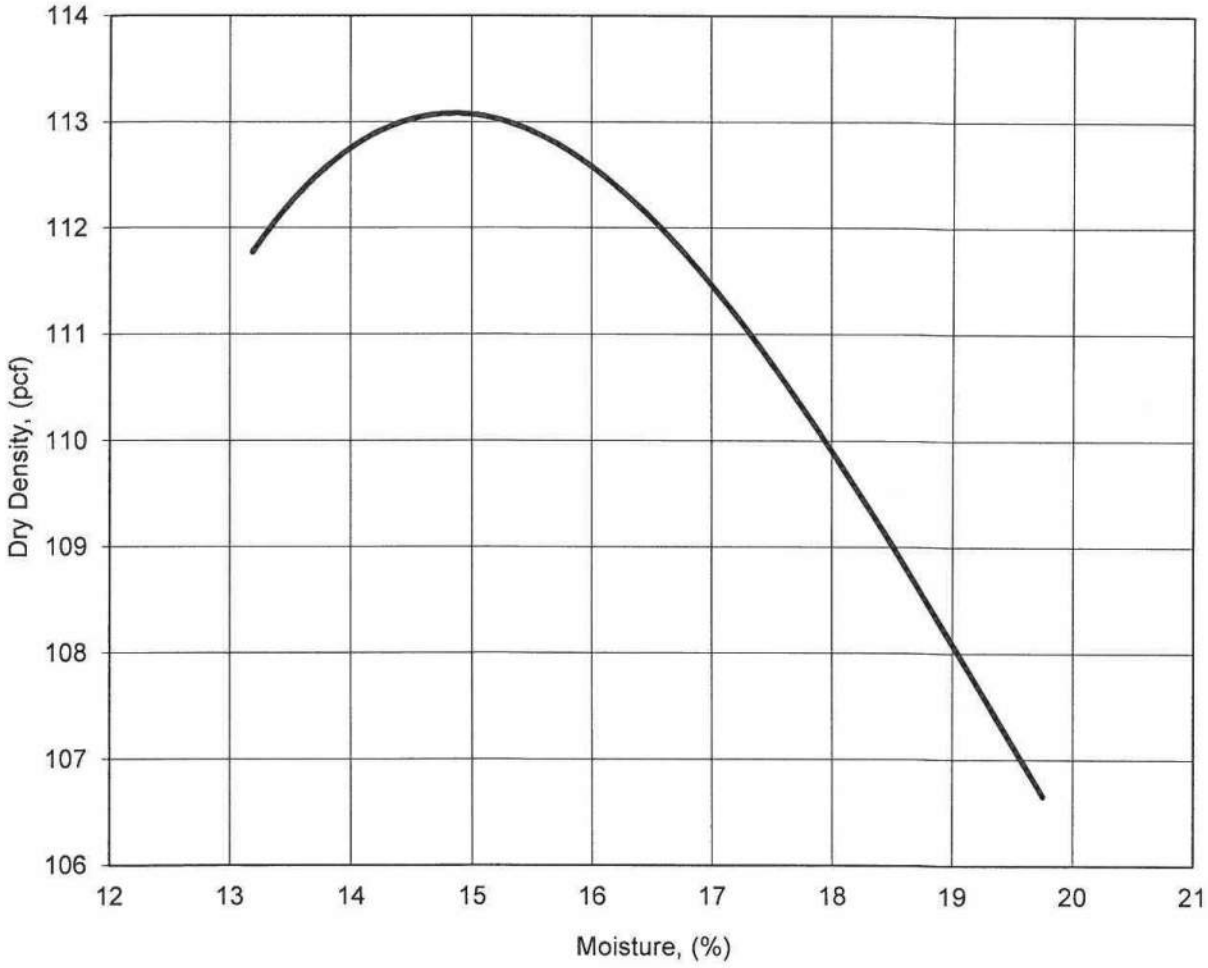
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Red & Gray Lean Clay with Sand

Sample No. : Bag-9
Sample Loc. : Boring No. B-110
Sample Depth : 0.5' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 113.1 pcf

OPTIMUM MOISTURE: 14.8 %

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

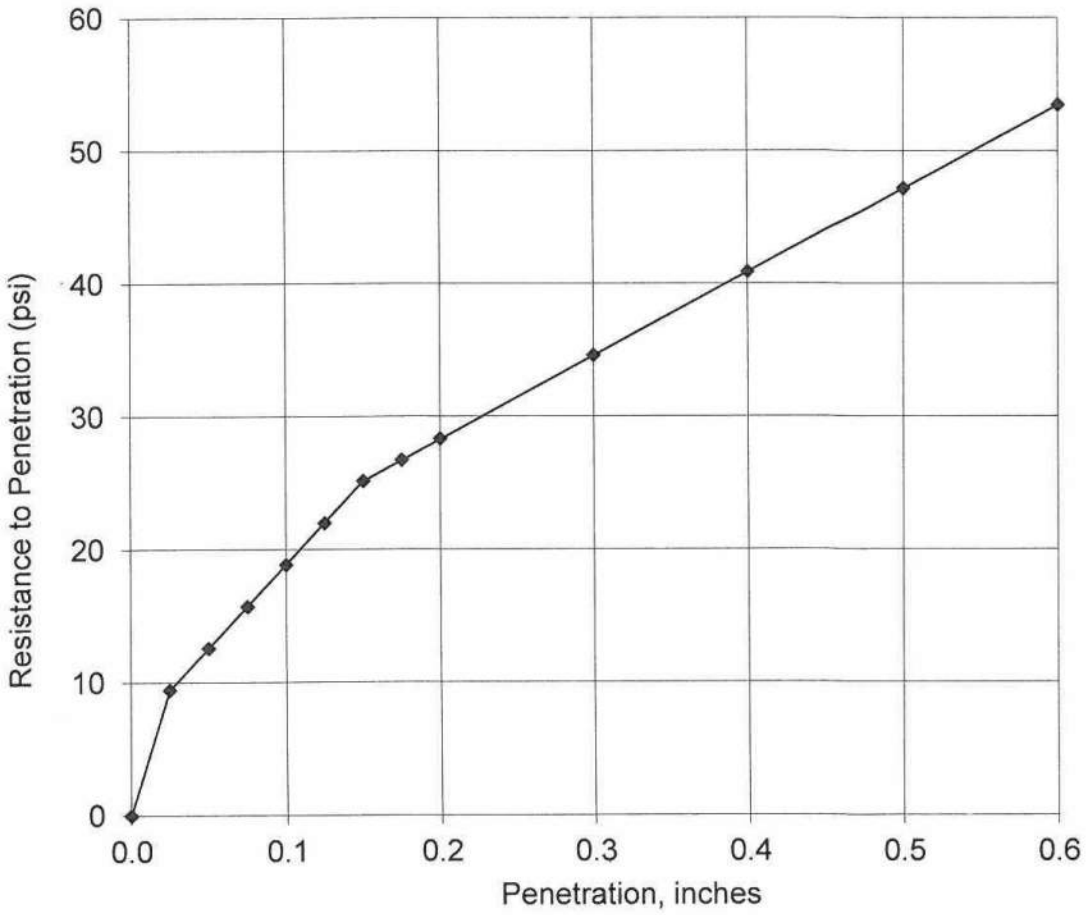
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-9
Project County	: Lonoke	Sample Loc.	: Boring No. B-110
Project State	: Arkansas	Sample Depth	: 0.5' to 5.0'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR | ICA	Date Reported	: 11/3/15
Soil Type	: Brown, Red & Gray Lean Clay with Sand		



Compaction Effort = 40 Blows per layer
Percent Compacted = 97
Percent Swell = 0.39

C.B.R. @ 0.1 In. = 1.9*
C.B.R. @ 0.2 In. = 1.9

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Red & Gray Sandy Lean Clay

Sample No. : Bag-30
Sample Loc. : Boring No. B-112
Sample Depth : 0.5' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	97.6
1/4		6.3	mm	
No.4		4.75	mm	97.6
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	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	70.9
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} = 0.0107 mm

CBR (AASHTO: T-193) : 5.3
Dry Dens. (AASHTO: T-99; Method (C)) : 104.7 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 19.8 %

Natural Moisture (%) (AASHTO T265) : 23.7
Liquid Limit (AASHTO T89) : 46
Plastic Limit (AASHTO T90) : 22
Plasticity Index : 24
Liquidity Index : 0.08
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-7-6 (16)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 3.2
Coarse Sand (-No.10 + No.40) : 6.1
Fine Sand (-No.40 + No.200) : 19.8
Silt + Clay (-No.200) : 70.9

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 2.4
Coarse Sand (-No.4 + No.10) : 0.8
Medium Sand (-No.10 + No.40) : 6.1
Fine Sand (-No.40 + No.200) : 19.8
Silt + Clay (-No.200) : 70.9

Approved By : J.S.

Soil No. 22

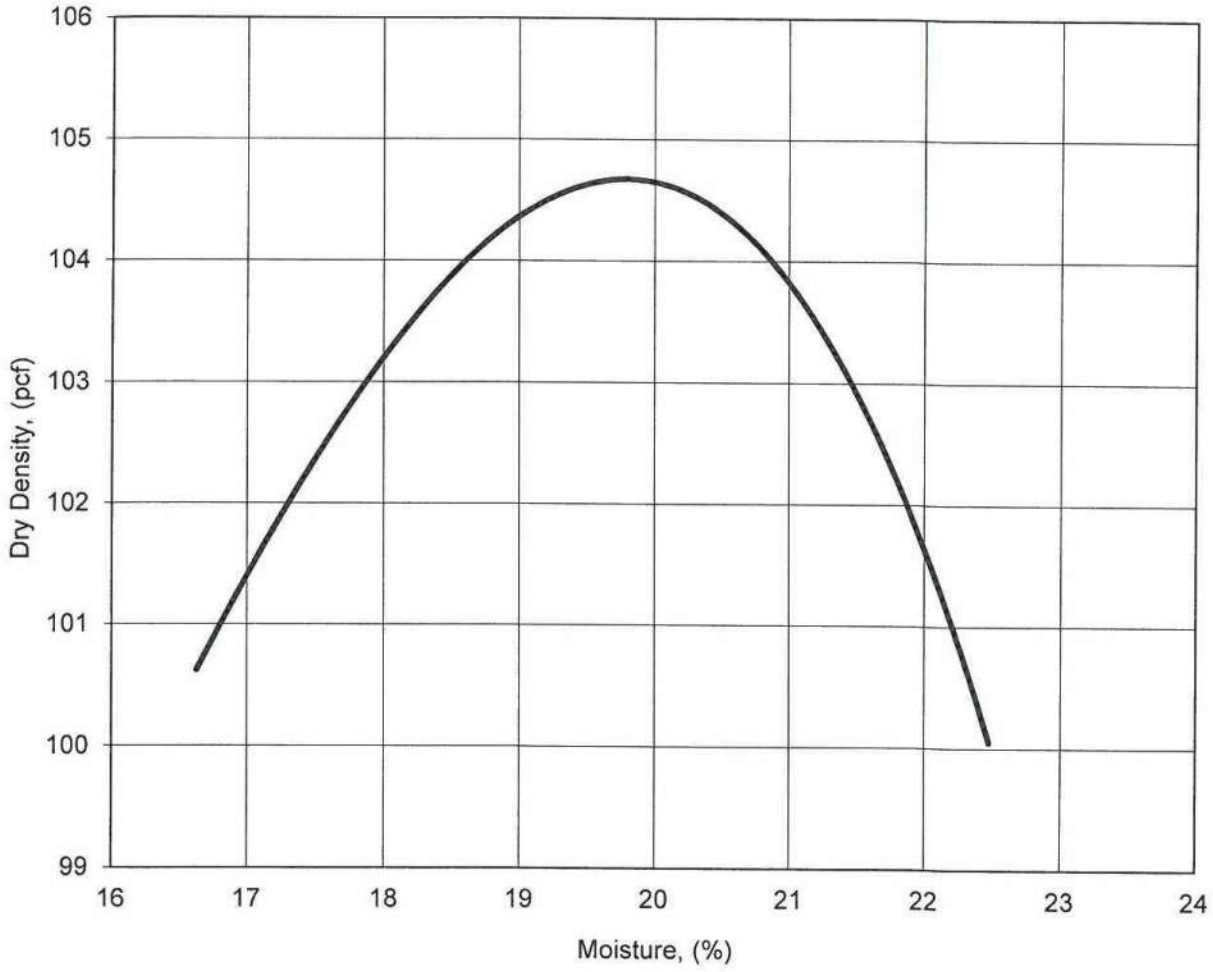
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Red & Gray Sandy Lean Clay

Sample No. : Bag-30
Sample Loc. : Boring No. B-112
Sample Depth : 0.5' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 104.7 pcf

OPTIMUM MOISTURE: 19.8 %

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

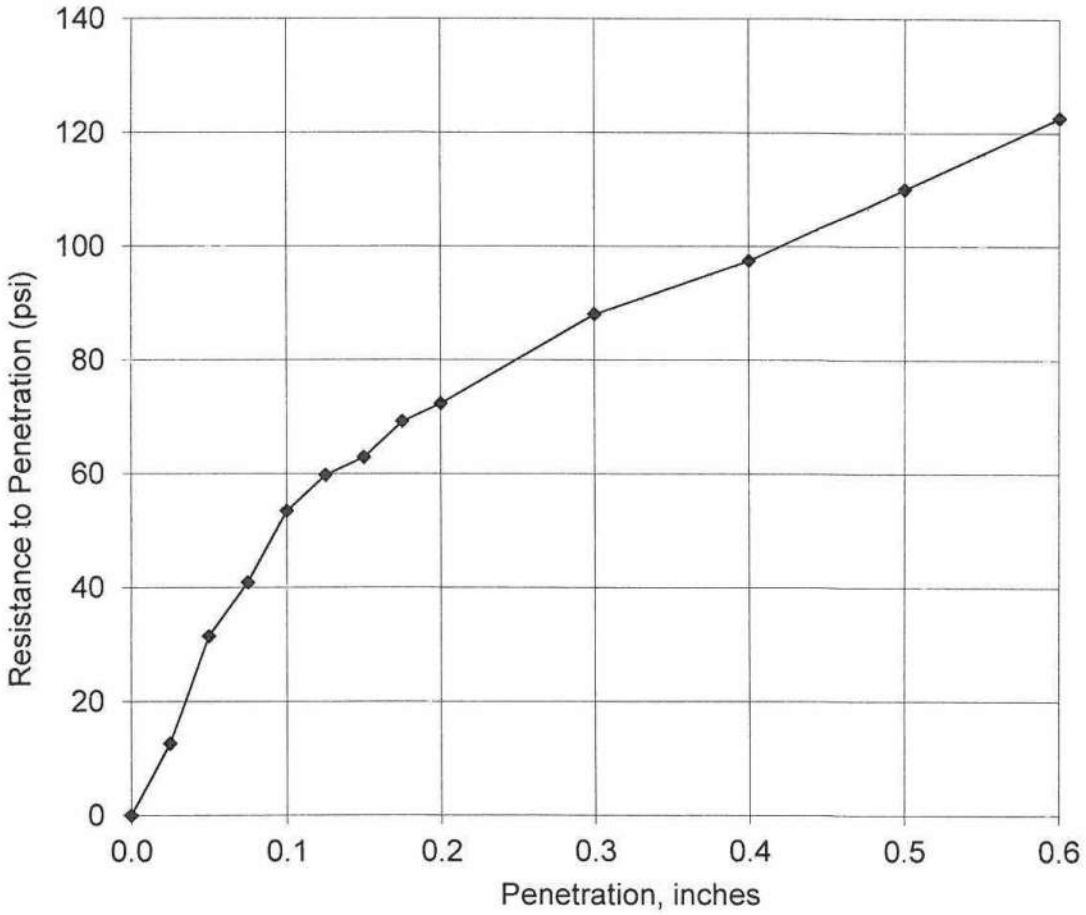
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-30
Project County	: Lonoke	Sample Loc.	: Boring No. B-112
Project State	: Arkansas	Sample Depth	: 0.5' to 5.0'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR| ICA	Date Reported	: 11/3/15
Soil Type	: Brown, Red & Gray Sandy Lean Clay		



Compaction Effort = 40 Blows per layer
Percent Compacted = 99.1
Percent Swell = 1.13

C.B.R. @ 0.1 In. = 5.3*
C.B.R. @ 0.2 In. = 4.8

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Sand

Sample No. : Bag-31
Sample Loc. : Boring No. B-114
Sample Depth : 0.8' to 3.4'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
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	87.6
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	87.6
1/4		6.3	mm	
No.4		4.75	mm	86.7
No.6		3.35	mm	
No.10		2	mm	82.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	77.4
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	49.0
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} = 0.0797 mm

CBR (AASHTO: T-193) : 4.2
Dry Dens. (AASHTO: T-99; Method (C)) : 115.2 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 13.2 %

Natural Moisture (%) (AASHTO T265) : 15.2
Liquid Limit (AASHTO T89) : 19
Plastic Limit (AASHTO T90) : 15
Plasticity Index : 4
Liquidity Index : 0.04
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 17.2
Coarse Sand (-No.10 + No.40) : 5.4
Fine Sand (-No.40 + No.200) : 28.4
Silt + Clay (-No.200) : 49.0

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 12.4
Fine Gravel (-3/4in. + No.4) : 0.9
Coarse Sand (-No.4 + No.10) : 3.9
Medium Sand (-No.10 + No.40) : 5.4
Fine Sand (-No.40 + No.200) : 28.4
Silt + Clay (-No.200) : 49.0

Approved By : J.S.

Soil No. 23

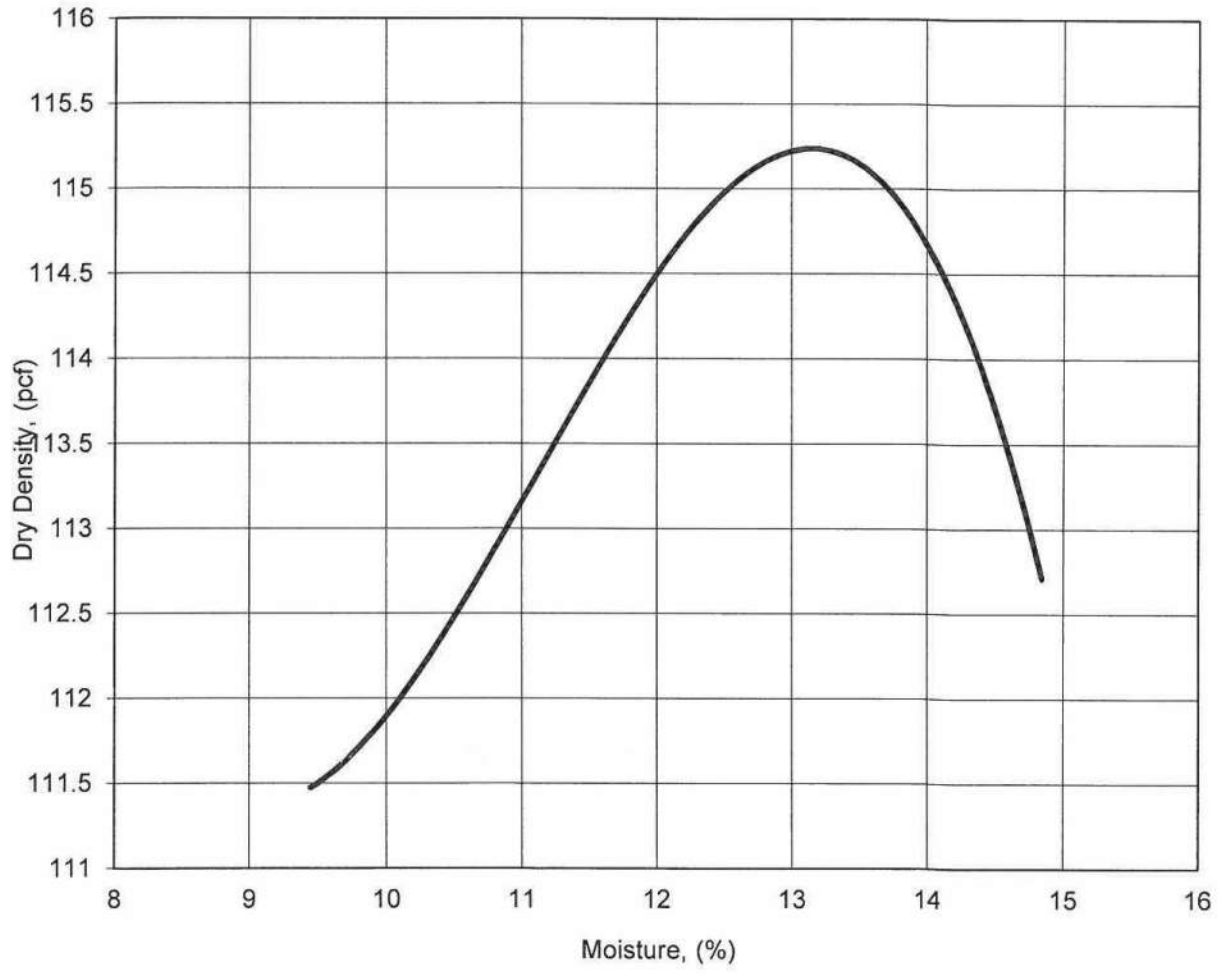
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Sand

Sample No. : Bag-31
Sample Loc. : Boring No. B-114
Sample Depth : 0.8' to 3.4'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 115.2 pcf

OPTIMUM MOISTURE: 13.2 %

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

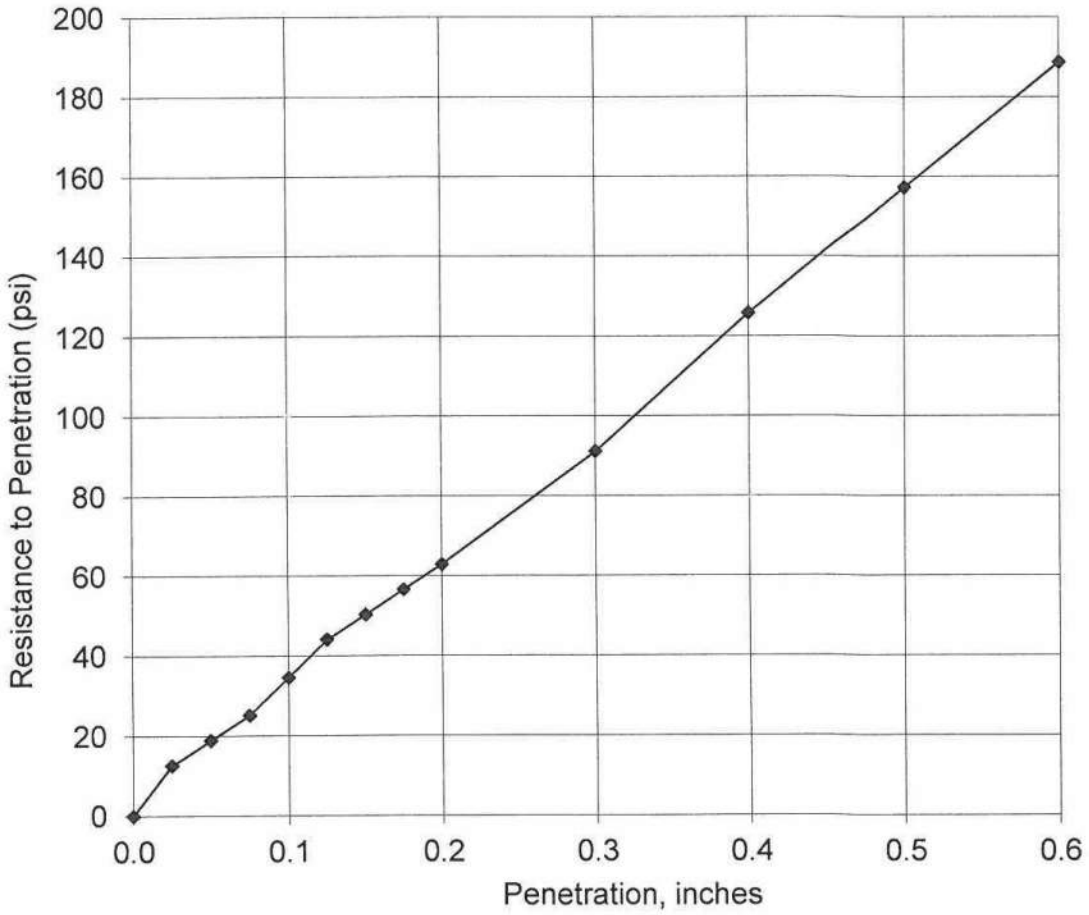
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-31
Project County	: Lonoke	Sample Loc.	: Boring No. B-114
Project State	: Arkansas	Sample Depth	: 0.8' to 3.4'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR|ICA	Date Reported	: 11/3/15
Soil Type	: Brown Silty Sand		



Compaction Effort = 40 Blows per layer
Percent Compacted = 99
Percent Swell = 0.09

C.B.R. @ 0.1 In. = 3.5
C.B.R. @ 0.2 In. = 4.2*

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Red Clayey Sand

Sample No. : Bag-32
Sample Loc. : Boring No. B-114
Sample Depth : 3.4' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	97.7
1/4		6.3	mm	
No.4		4.75	mm	93.9
No.6		3.35	mm	
No.10		2	mm	84.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	73.6
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	40.6
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} = 0.1229 mm

CBR (AASHTO: T-193) : 7.1
Dry Dens. (AASHTO: T-99; Method (C)) : 119.8 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 13.2 %

Natural Moisture (%) (AASHTO T265) : 13.4
Liquid Limit (AASHTO T89) : 24
Plastic Limit (AASHTO T90) : 15
Plasticity Index : 9
Liquidity Index : -0.19
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 15.5
Coarse Sand (-No.10 + No.40) : 10.9
Fine Sand (-No.40 + No.200) : 33.0
Silt + Clay (-No.200) : 40.6

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) : 9.4
Medium Sand (-No.10 + No.40) : 10.9
Fine Sand (-No.40 + No.200) : 33.0
Silt + Clay (-No.200) : 40.6

Approved By : J.S.

Soil No. 24

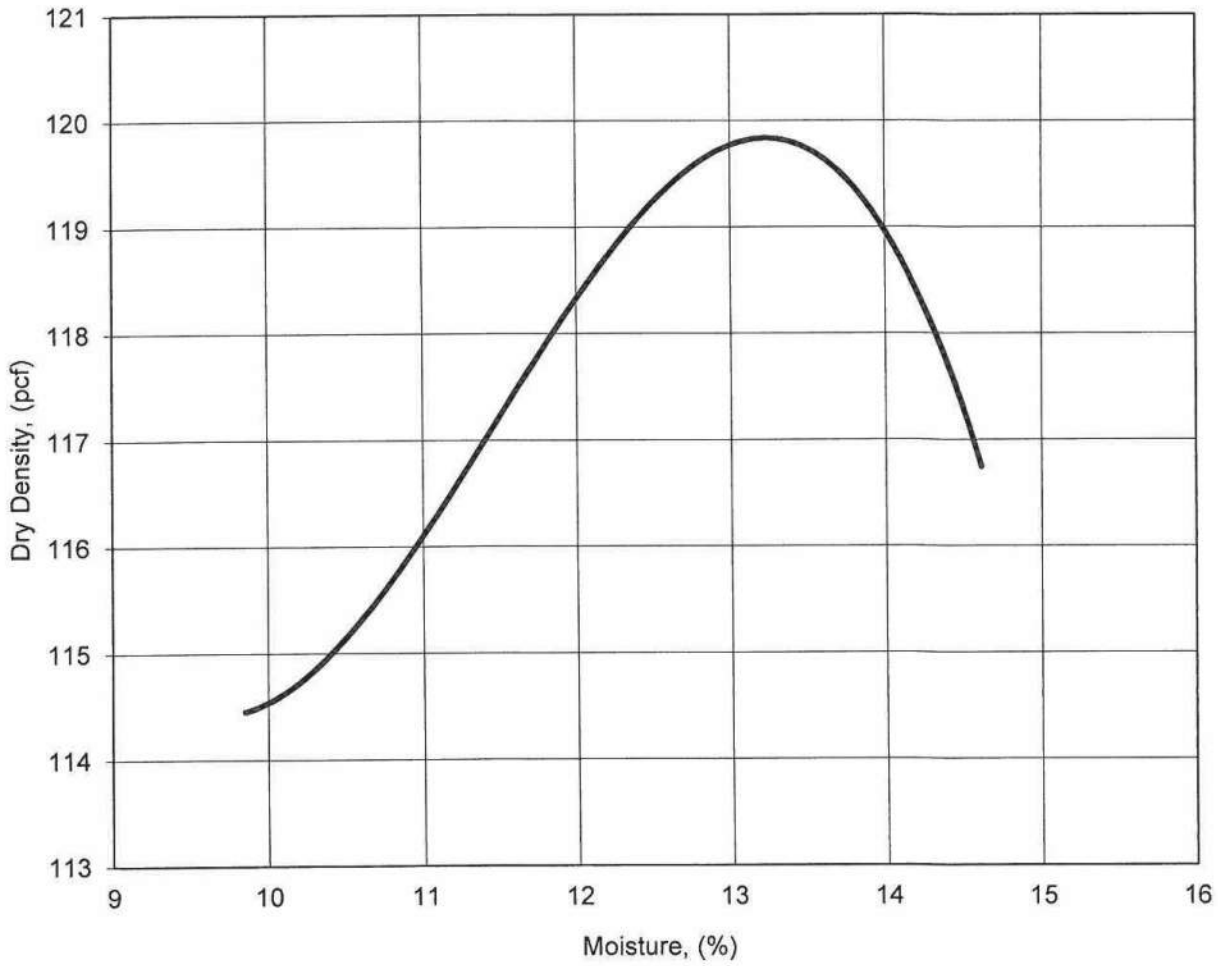
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Red Clayey Sand

Sample No. : Bag-32
Sample Loc. : Boring No. B-114
Sample Depth : 3.4' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 119.8 pcf

OPTIMUM MOISTURE: 13.2 %

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

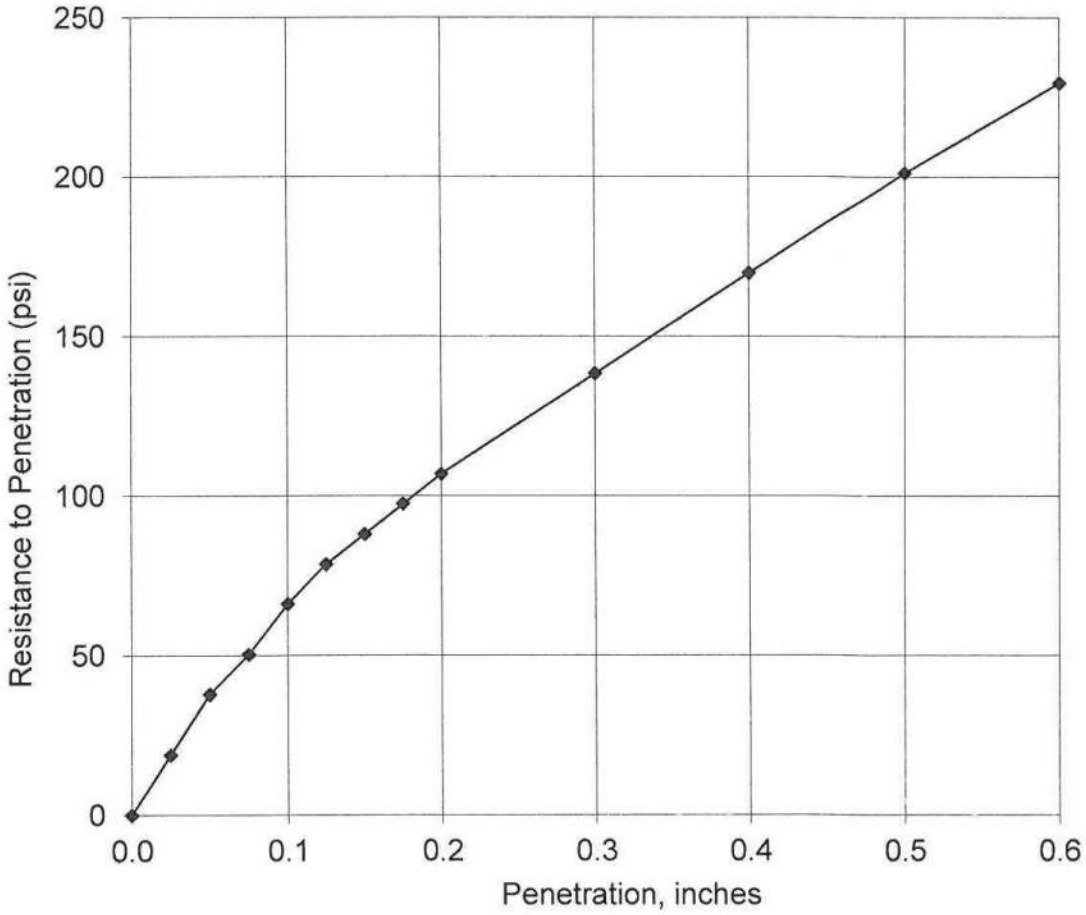
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-32
Project County	: Lonoke	Sample Loc.	: Boring No. B-114
Project State	: Arkansas	Sample Depth	: 3.4' to 5.0'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR | ICA	Date Reported	: 11/3/15
Soil Type	: Red Clayey Sand		



Compaction Effort = 40 Blows per layer
Percent Compacted = 99.7
Percent Swell = 0.15

C.B.R. @ 0.1 In. = 6.6
C.B.R. @ 0.2 In. = 7.1*

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Red & Gray Sandy Silty Clay

Sample No. : Bag-23
Sample Loc. : Boring No. B-117
Sample Depth : 0.4' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	97.4
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	85.5
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	64.5
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} = 0.0169 mm

CBR (AASHTO: T-193) : 3.8
Dry Dens. (AASHTO: T-99; Method (C)) : 115.5 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 13.6 %

Natural Moisture (%) (AASHTO T265) : 21.0
Liquid Limit (AASHTO T89) : 23
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 6
Liquidity Index : 0.61
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (1)
ASTM Classification: D2487 : CL-ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 9.8
Coarse Sand (-No.10 + No.40) : 4.7
Fine Sand (-No.40 + No.200) : 21.0
Silt + Clay (-No.200) : 64.5

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 2.6
Coarse Sand (-No.4 + No.10) : 7.2
Medium Sand (-No.10 + No.40) : 4.7
Fine Sand (-No.40 + No.200) : 21.0
Silt + Clay (-No.200) : 64.5

Approved By : J.S.

Soil No. 25

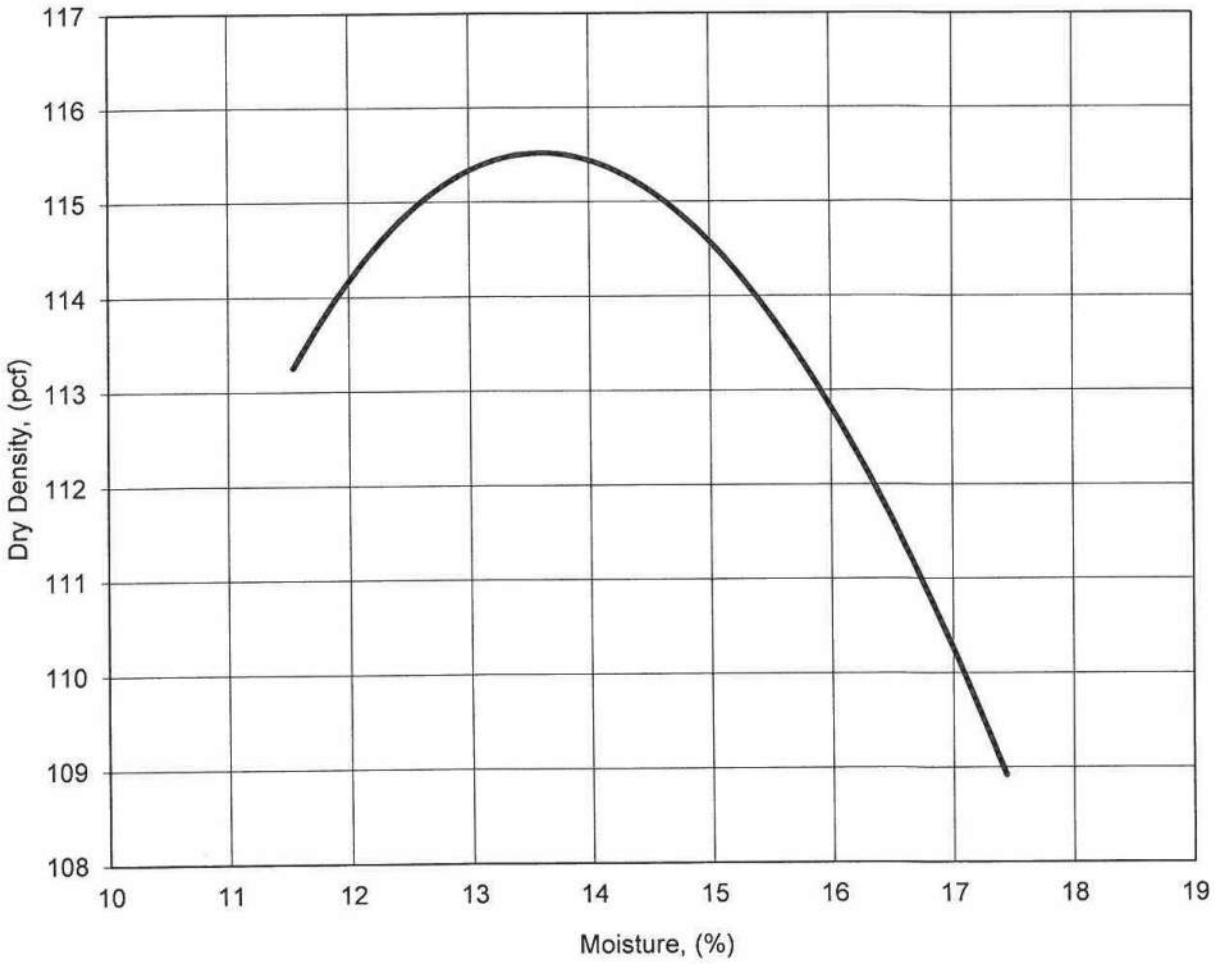
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Red & Gray Sandy Silty Clay

Sample No. : Bag-23
Sample Loc. : Boring No. B-117
Sample Depth : 0.4' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 115.5 pcf

OPTIMUM MOISTURE: 13.6 %

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

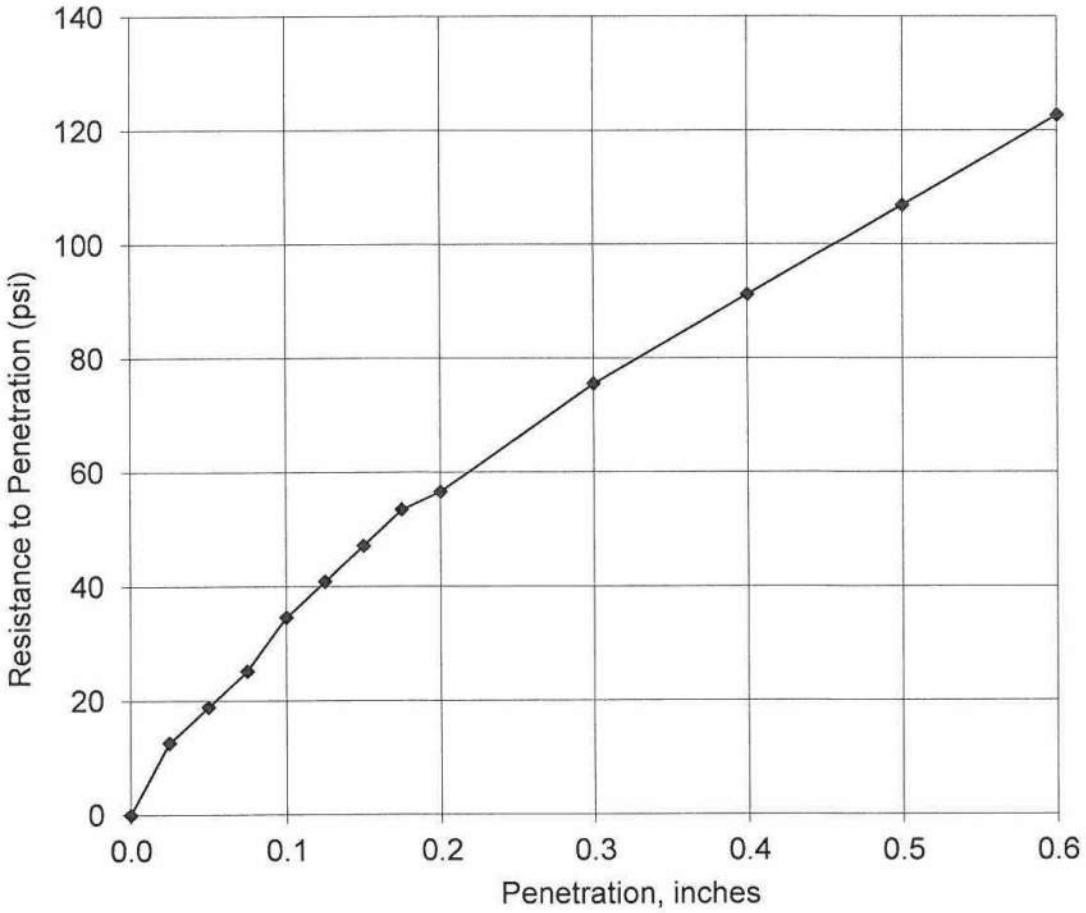
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-23
Project County	: Lonoke	Sample Loc.	: Boring No. B-117
Project State	: Arkansas	Sample Depth	: 0.4' to 5.0'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR | ICA	Date Reported	: 11/3/15
Soil Type	: Brown, Red & Gray Sandy Silty Clay		



Compaction Effort = 40 Blows per layer
Percent Compacted = 99.3
Percent Swell = 0.13

C.B.R. @ 0.1 In. = 3.5
C.B.R. @ 0.2 In. = 3.8*

COMMENTS: AASHTO: T-193

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Red & Gray Clayey Sand

Sample No. : Bag-22
Sample Loc. : Boring No. B-119
Sample Depth : 0.6' to 4.5'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	97.2
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	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} = 0.1206 mm

CBR (AASHTO: T-193) : 3.8
Dry Dens. (AASHTO: T-99; Method (A)) : 105.7 pcf
Opt. Moist. (AASHTO: T-99; Method (A)) : 19 %

Natural Moisture (%) (AASHTO T265) : 20.0
Liquid Limit (AASHTO T89) : 40
Plastic Limit (AASHTO T90) : 21
Plasticity Index : 19
Liquidity Index : -0.05
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-6 (2)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.1
Coarse Sand (-No.10 + No.40) : 2.7
Fine Sand (-No.40 + No.200) : 65.0
Silt + Clay (-No.200) : 32.2

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.1
Medium Sand (-No.10 + No.40) : 2.7
Fine Sand (-No.40 + No.200) : 65.0
Silt + Clay (-No.200) : 32.2

Approved By : J.S.

Soil No. 26

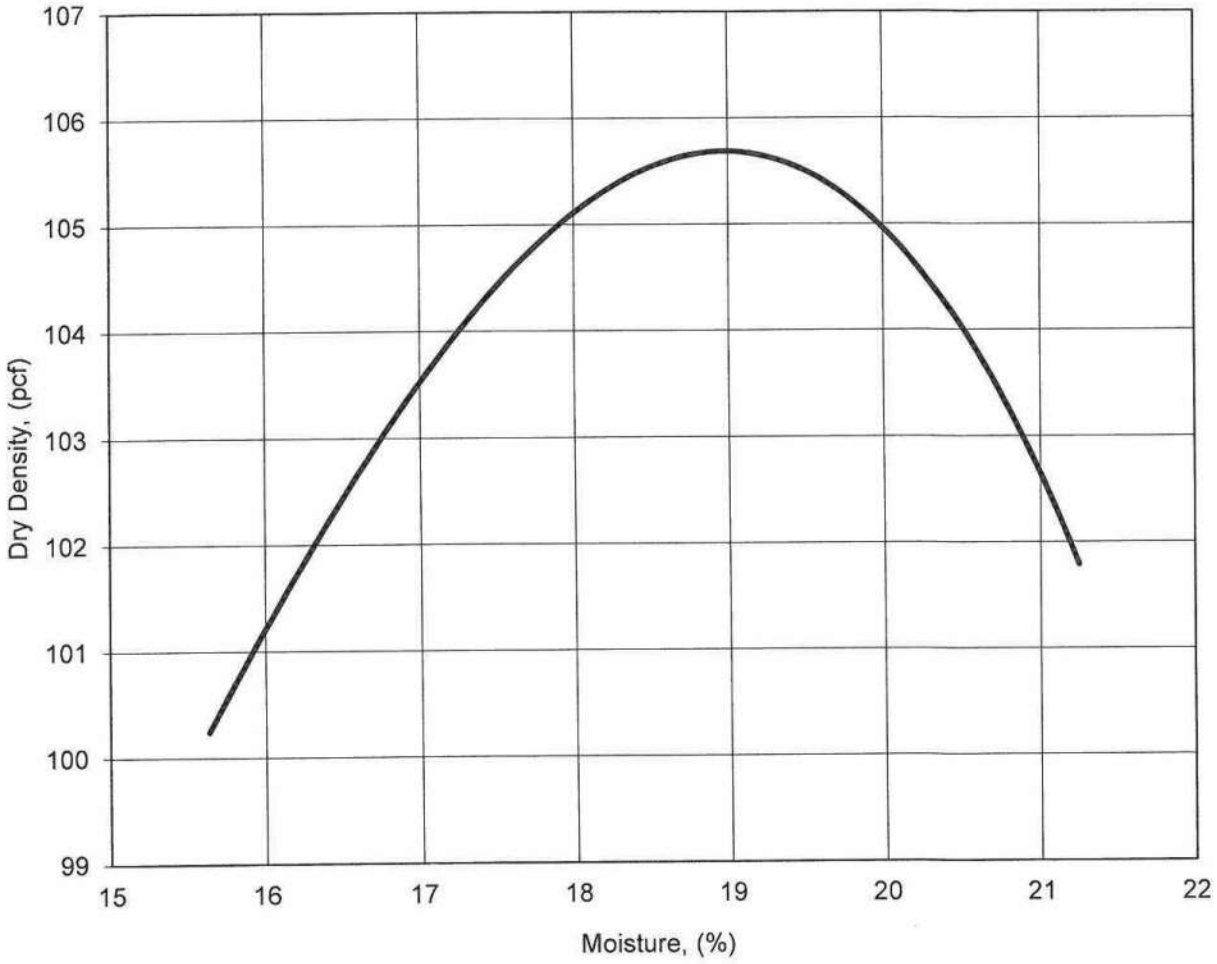
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Red & Gray Clayey Sand

Sample No. : Bag-22
Sample Loc. : Boring No. B-119
Sample Depth : 0.6' to 4.5'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 105.7 pcf

OPTIMUM MOISTURE: 19 %

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

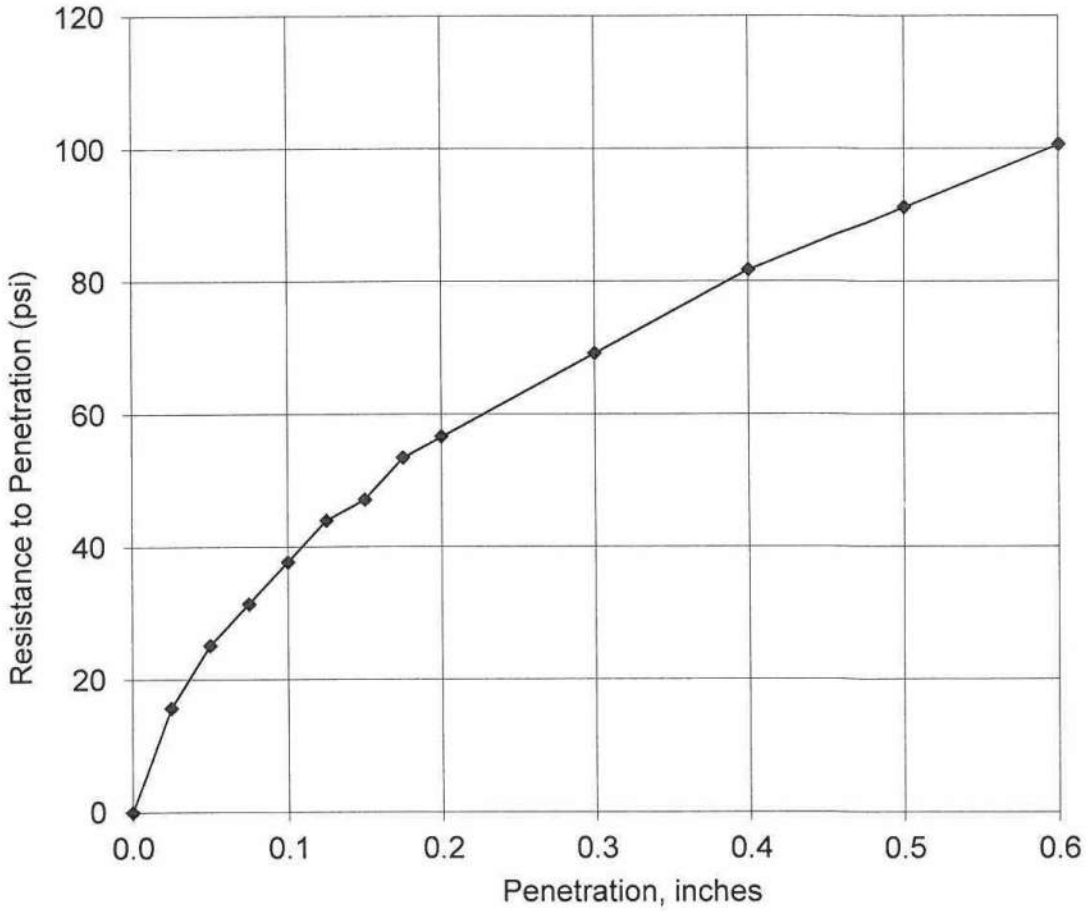
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-22
Project County	: Lonoke	Sample Loc.	: Boring No. B-119
Project State	: Arkansas	Sample Depth	: 0.6' to 4.5'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR | ICA	Date Reported	: 11/3/15
Soil Type	: Brown, Red & Gray Clayey Sand		



Compaction Effort = 40 Blows per layer
Percent Compacted = 99.1
Percent Swell = 0.61

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

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Sand with Gravel

Sample No. : Bag-20
Sample Loc. : Boring No. B-120
Sample Depth : 0.4' to 1.8'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
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	83.9
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	82.4
1/4		6.3	mm	
No.4		4.75	mm	69.2
No.6		3.35	mm	
No.10		2	mm	59.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	52.5
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	31.7
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} = 0.345 mm

CBR (AASHTO: T-193) : 10.9
Dry Dens. (AASHTO: T-99; Method (C)) : 121.1 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 11 %

Natural Moisture (%) (AASHTO T265) : 6.1
Liquid Limit (AASHTO T89) : 23
Plastic Limit (AASHTO T90) : 19
Plasticity Index : 4
Liquidity Index : -3.19
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 40.3
Coarse Sand (-No.10 + No.40) : 7.2
Fine Sand (-No.40 + No.200) : 20.8
Silt + Clay (-No.200) : 31.7

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 16.1
Fine Gravel (-3/4in. + No.4) : 14.7
Coarse Sand (-No.4 + No.10) : 9.5
Medium Sand (-No.10 + No.40) : 7.2
Fine Sand (-No.40 + No.200) : 20.8
Silt + Clay (-No.200) : 31.7

Approved By : J.S.

Soil No. 27

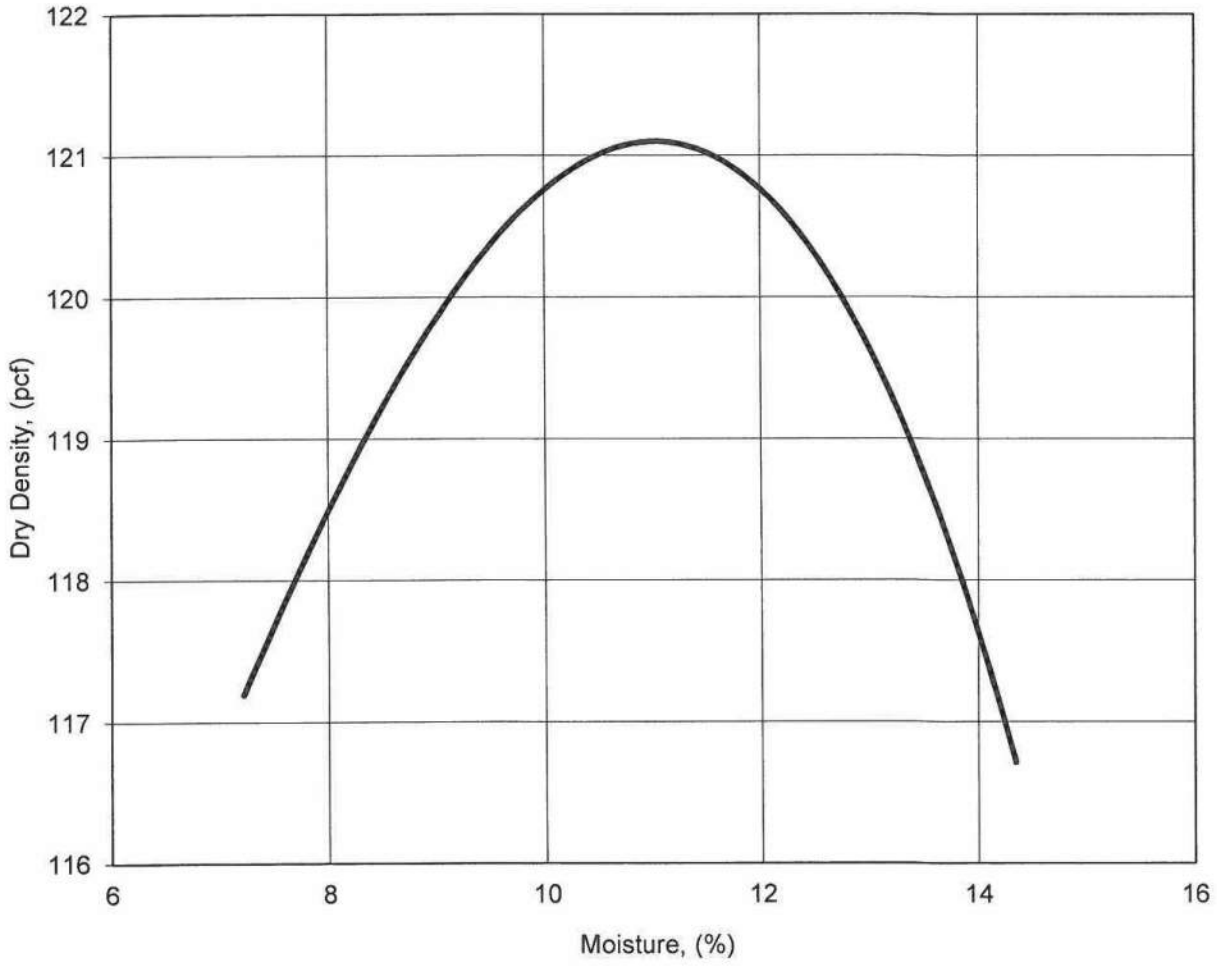
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Sand with Gravel

Sample No. : Bag-20
Sample Loc. : Boring No. B-120
Sample Depth : 0.4' to 1.8'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 121.1 pcf

OPTIMUM MOISTURE: 11 %

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

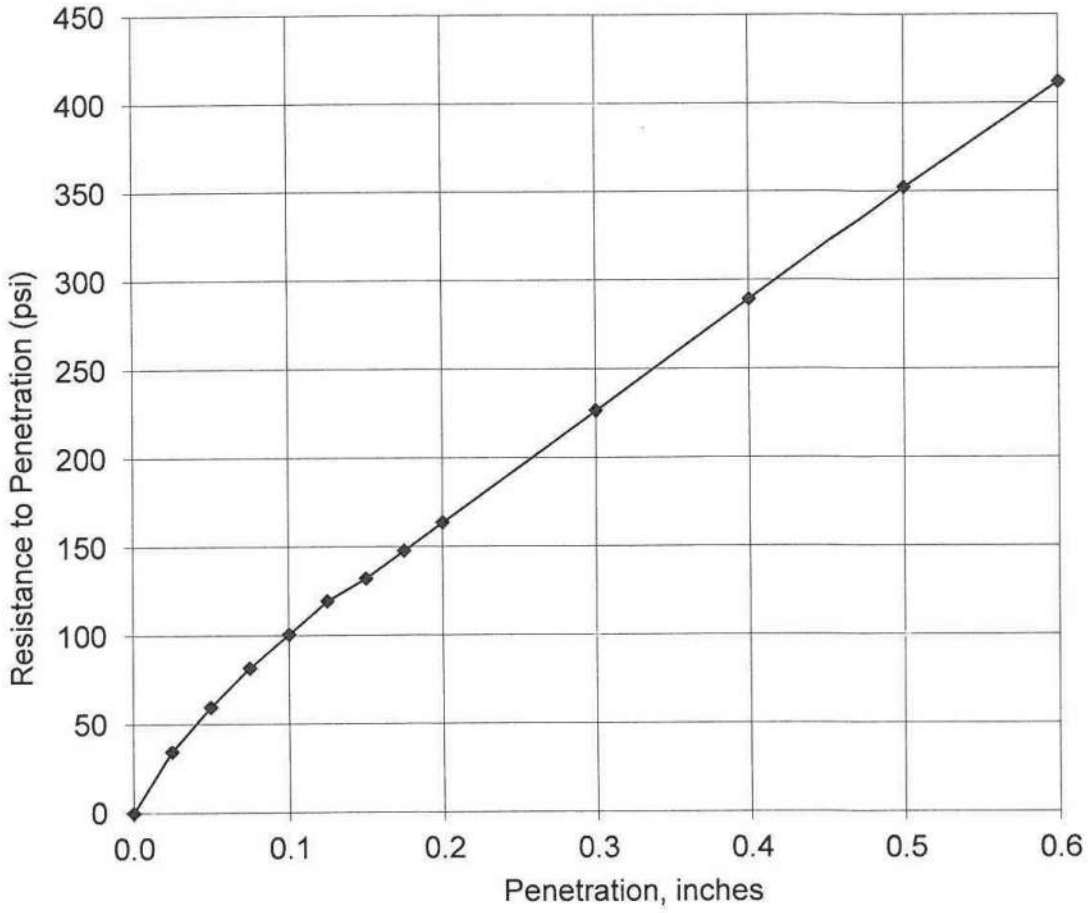
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-20
Project County	: Lonoke	Sample Loc.	: Boring No. B-120
Project State	: Arkansas	Sample Depth	: 0.4' to 1.8'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR | ICA	Date Reported	: 11/3/15
Soil Type	: Brown Silty Sand with Gravel		



Compaction Effort = 40 Blows per layer
Percent Compacted = 99.4
Percent Swell = 0.11

C.B.R. @ 0.1 In. = 10.1
C.B.R. @ 0.2 In. = 10.9*

COMMENTS: AASHTO: T-193

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Sandy Silt

Sample No. : Bag-21
Sample Loc. : Boring No. B-121
Sample Depth : 0.4' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	97.1

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	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} = 0.0249 mm

CBR (AASHTO: T-193) : 2.9
Dry Dens. (AASHTO: T-99; Method (C)) : 116.3 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 13.5 %

Natural Moisture (%) (AASHTO T265) : 22.5
Liquid Limit (AASHTO T89) : 20
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 4
Liquidity Index : 1.52
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 2.9
Coarse Sand (-No.10 + No.40) : 4.7
Fine Sand (-No.40 + No.200) : 32.4
Silt + Clay (-No.200) : 60.0

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) : 2.4
Medium Sand (-No.10 + No.40) : 4.7
Fine Sand (-No.40 + No.200) : 32.4
Silt + Clay (-No.200) : 60.0

Approved By : J.S.

Soil No. 28

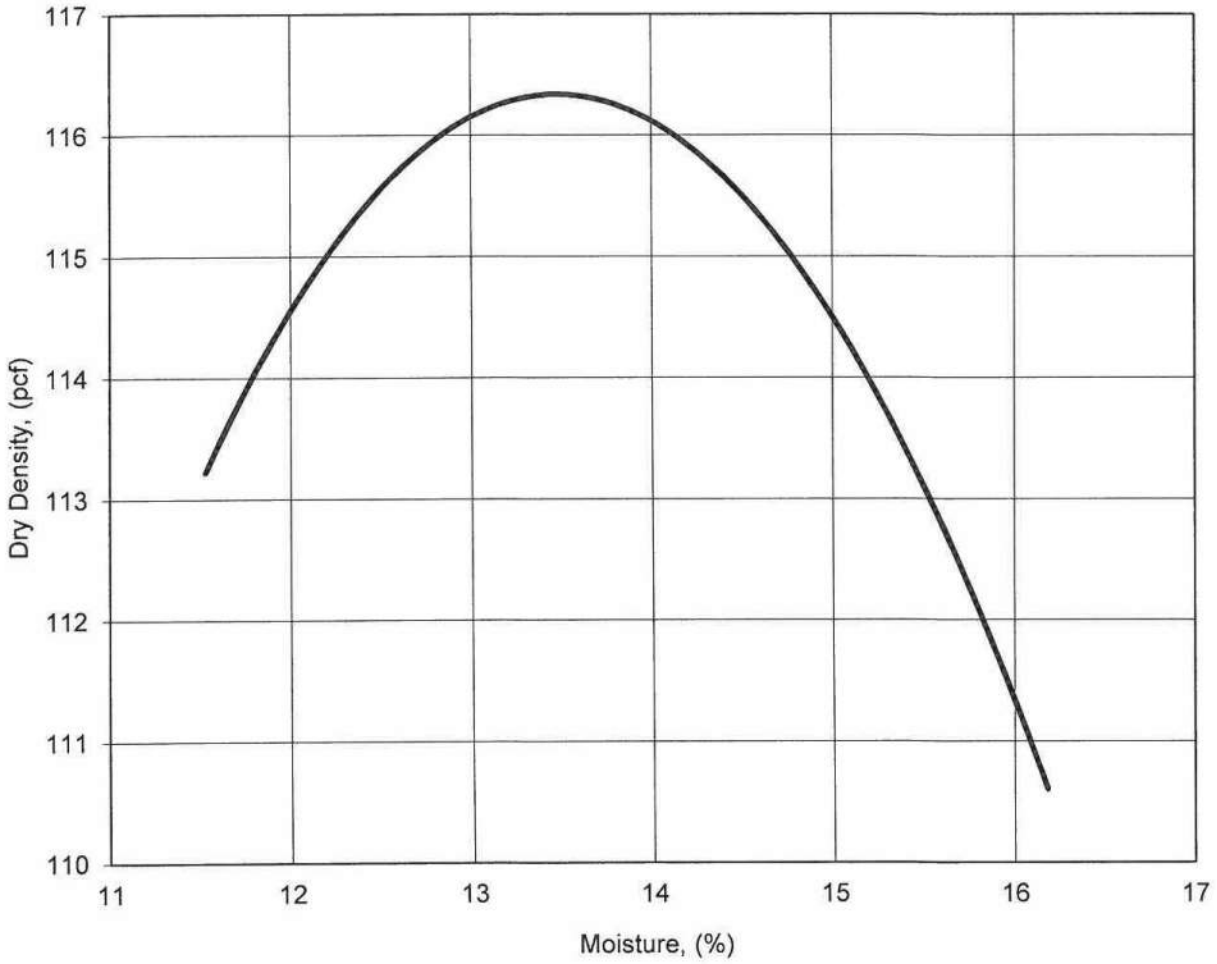
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Sandy Silt

Sample No. : Bag-21
Sample Loc. : Boring No. B-121
Sample Depth : 0.4' to 5.0'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 116.3 pcf

OPTIMUM MOISTURE: 13.5 %

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

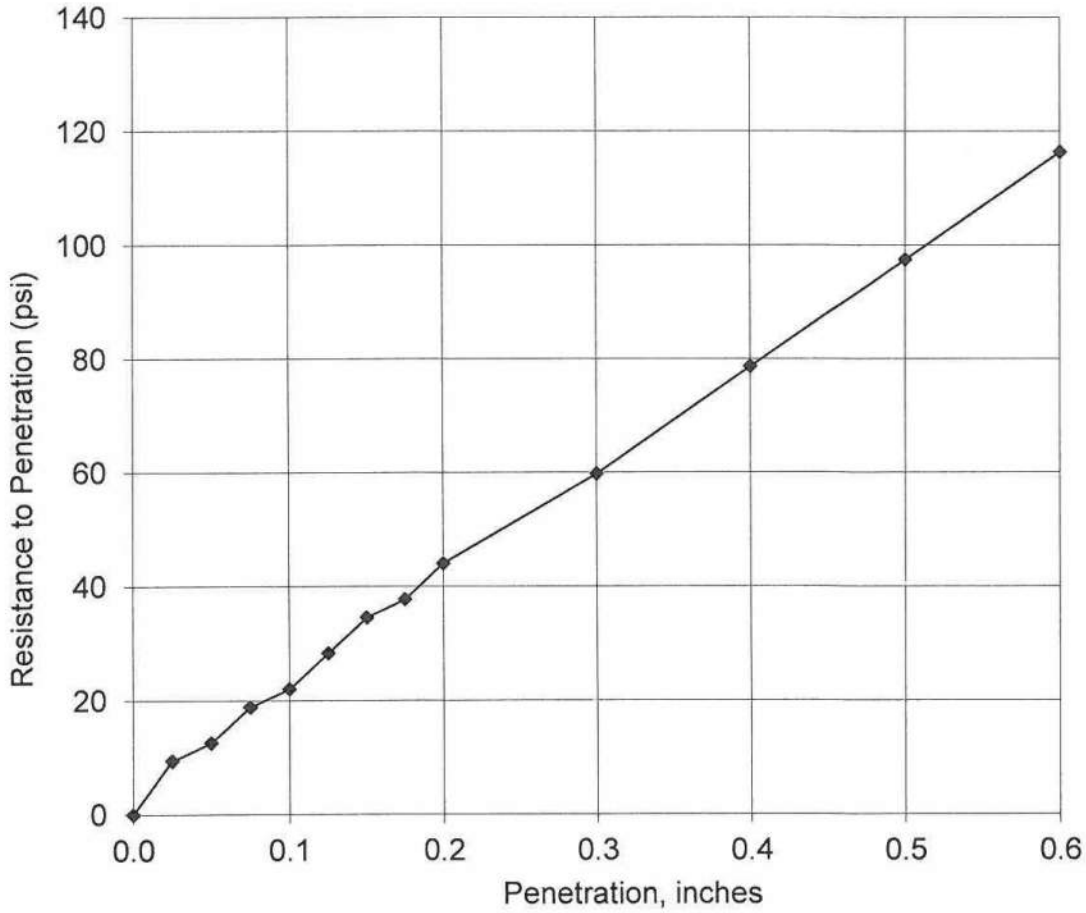
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-21
Project County	: Lonoke	Sample Loc.	: Boring No. B-121
Project State	: Arkansas	Sample Depth	: 0.4' to 5.0'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR | ICA	Date Reported	: 11/3/15
Soil Type	: Brown Sandy Silt		



Compaction Effort = 40 Blows per layer
Percent Compacted = 98
Percent Swell = 0.44

C.B.R. @ 0.1 In. = 2.2
C.B.R. @ 0.2 In. = 2.9*

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Light Brown Clayey Sand with Gravel

Sample No. : Bag-3
Sample Loc. : Boring No. B-122
Sample Depth : 0.0' to 3.7'
Date Tested : 07/29/15
Date Reported : 11/03/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
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	96.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	82.1
1/4		6.3	mm	
No.4		4.75	mm	74.0
No.6		3.35	mm	
No.10		2	mm	65.1

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	42.8
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} = 0.196 mm

CBR (AASHTO: T-193) : 1.9
Dry Dens. (AASHTO: T-99; Method (C)) : 120.1 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 9.6 %

Natural Moisture (%) (AASHTO T265) : 10.8
Liquid Limit (AASHTO T89) : 29
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 12
Liquidity Index : -0.55
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-6 (2)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 34.9
Coarse Sand (-No.10 + No.40) : 9.3
Fine Sand (-No.40 + No.200) : 13.0
Silt + Clay (-No.200) : 42.8

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 4.0
Fine Gravel (-3/4in. + No.4) : 22.0
Coarse Sand (-No.4 + No.10) : 8.9
Medium Sand (-No.10 + No.40) : 9.3
Fine Sand (-No.40 + No.200) : 13.0
Silt + Clay (-No.200) : 42.8

Approved By : J.S.

Soil No. 29

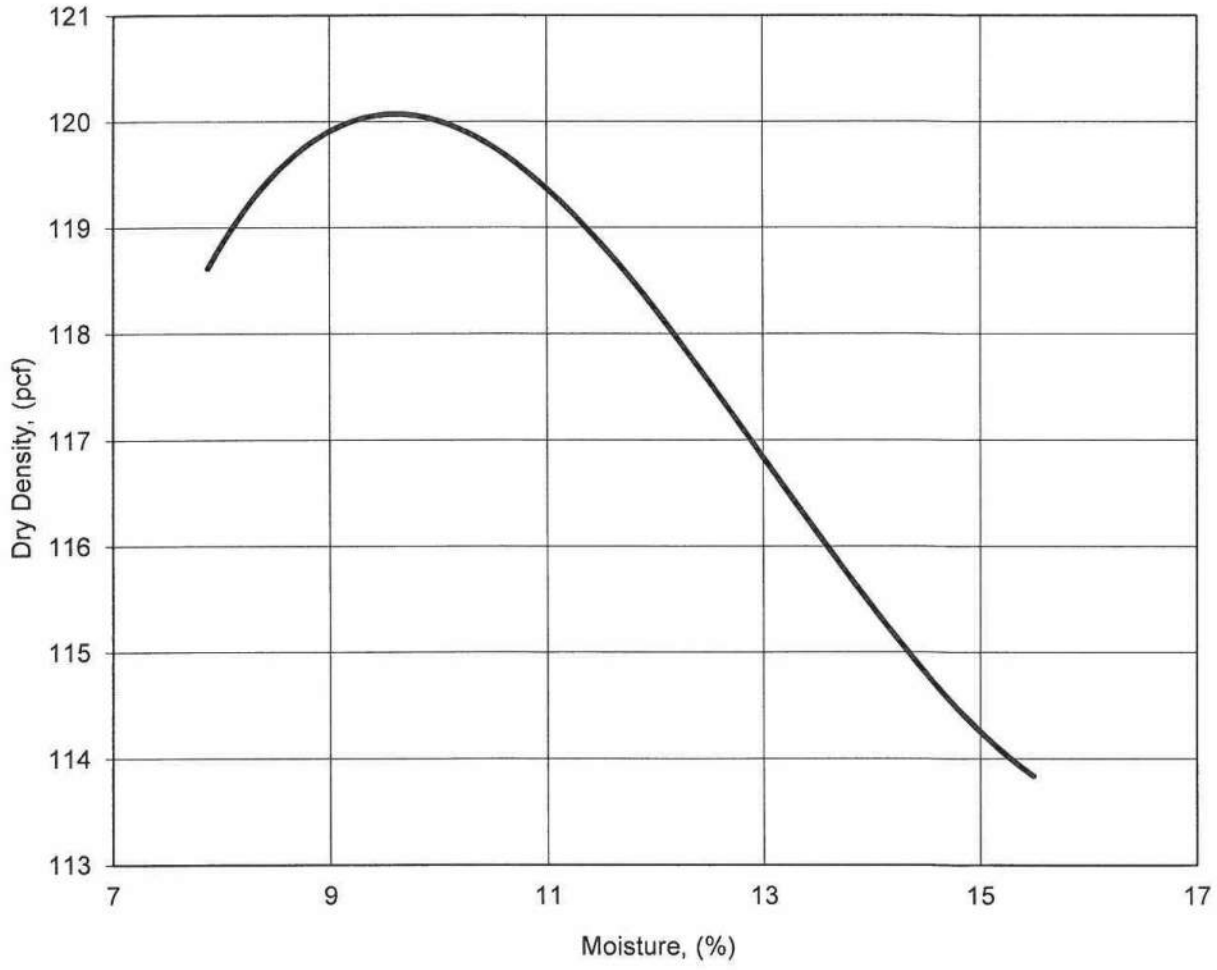
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Light Brown Clayey Sand with Gravel

Sample No. : Bag-3
Sample Loc. : Boring No. B-122
Sample Depth : 0.0' to 3.7'
Date Tested : 07/29/15
Date Reported : 11/03/15



MAXIMUM DENSITY: 120.1 pcf

OPTIMUM MOISTURE: 9.6 %

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

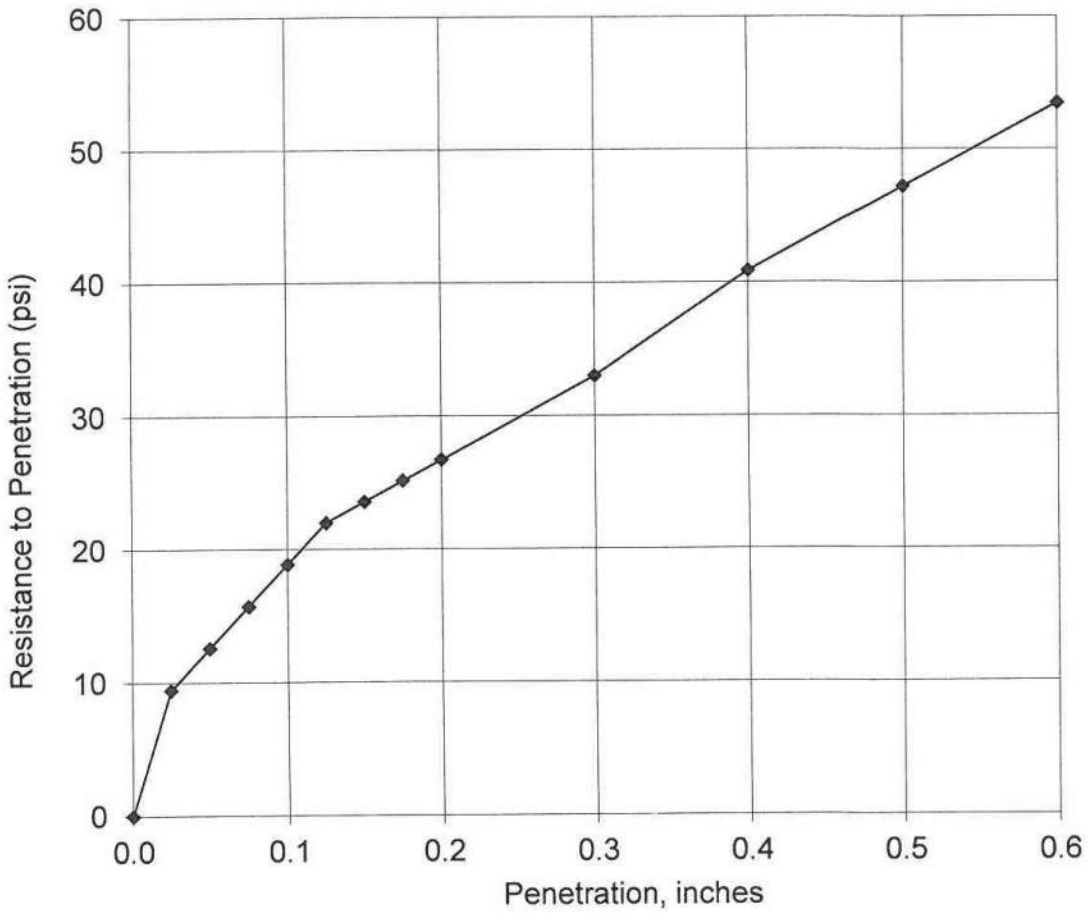
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-3
Project County	: Lonoke	Sample Loc.	: Boring No. B-122
Project State	: Arkansas	Sample Depth	: 0.0' to 3.7'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR | ICA	Date Reported	: 11/3/15
Soil Type	: Light Brown Clayey Sand with Gravel		



Compaction Effort = 40 Blows per layer
Percent Compacted = 97
Percent Swell = 2.66

C.B.R. @ 0.1 In. = 1.9*
C.B.R. @ 0.2 In. = 1.8

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Sandy Silty Clay

Sample No. : Bag-2
Sample Loc. : Boring No. B-123
Sample Depth : 0.0' to 5.0'
Date Tested : 10/14/15
Date Reported : 11/06/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
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	96.6
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	96.6
1/4		6.3	mm	
No.4		4.75	mm	95.3
No.6		3.35	mm	
No.10		2	mm	92.4

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	63.5
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} = 0.0184 mm

CBR (AASHTO: T-193) : 3.4
Dry Dens. (AASHTO: T-99; Method (C)) : 119.3 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 12.3 %

Natural Moisture (%) (AASHTO T265) : 14.6
Liquid Limit (AASHTO T89) : 23
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 7
Liquidity Index : -0.19
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (2)
ASTM Classification: D2487 : CL-ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 7.6
Coarse Sand (-No.10 + No.40) : 4.2
Fine Sand (-No.40 + No.200) : 24.7
Silt + Clay (-No.200) : 63.5

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 3.4
Fine Gravel (-3/4in. + No.4) : 1.3
Coarse Sand (-No.4 + No.10) : 2.9
Medium Sand (-No.10 + No.40) : 4.2
Fine Sand (-No.40 + No.200) : 24.7
Silt + Clay (-No.200) : 63.5

Approved By : J.S.

Soil No. 30

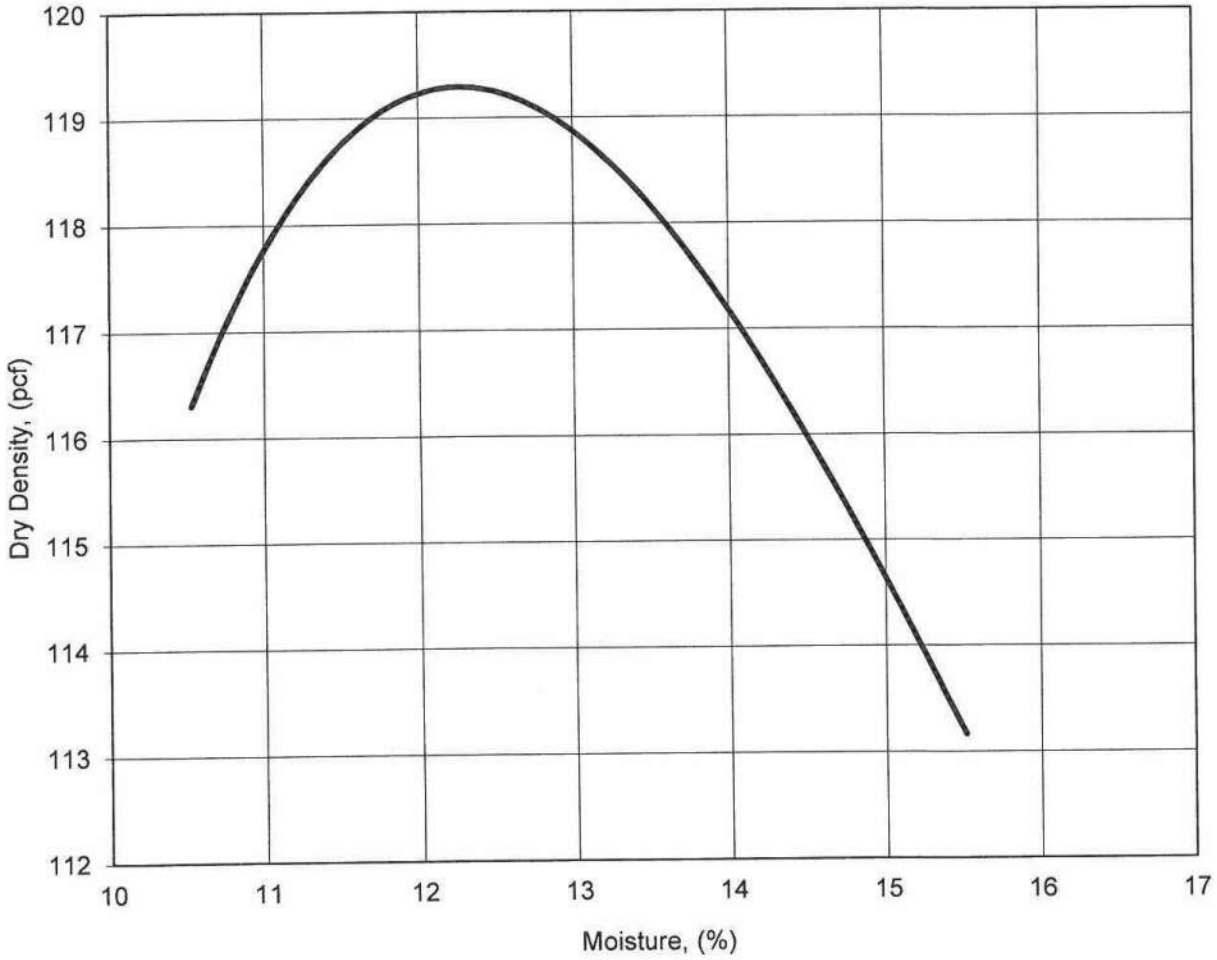
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Sandy Silty Clay

Sample No. : Bag-2
Sample Loc. : Boring No. B-123
Sample Depth : 0.0' to 5.0'
Date Tested : 10/14/15
Date Reported : 11/06/15



MAXIMUM DENSITY: 119.3 pcf

OPTIMUM MOISTURE: 12.3 %

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

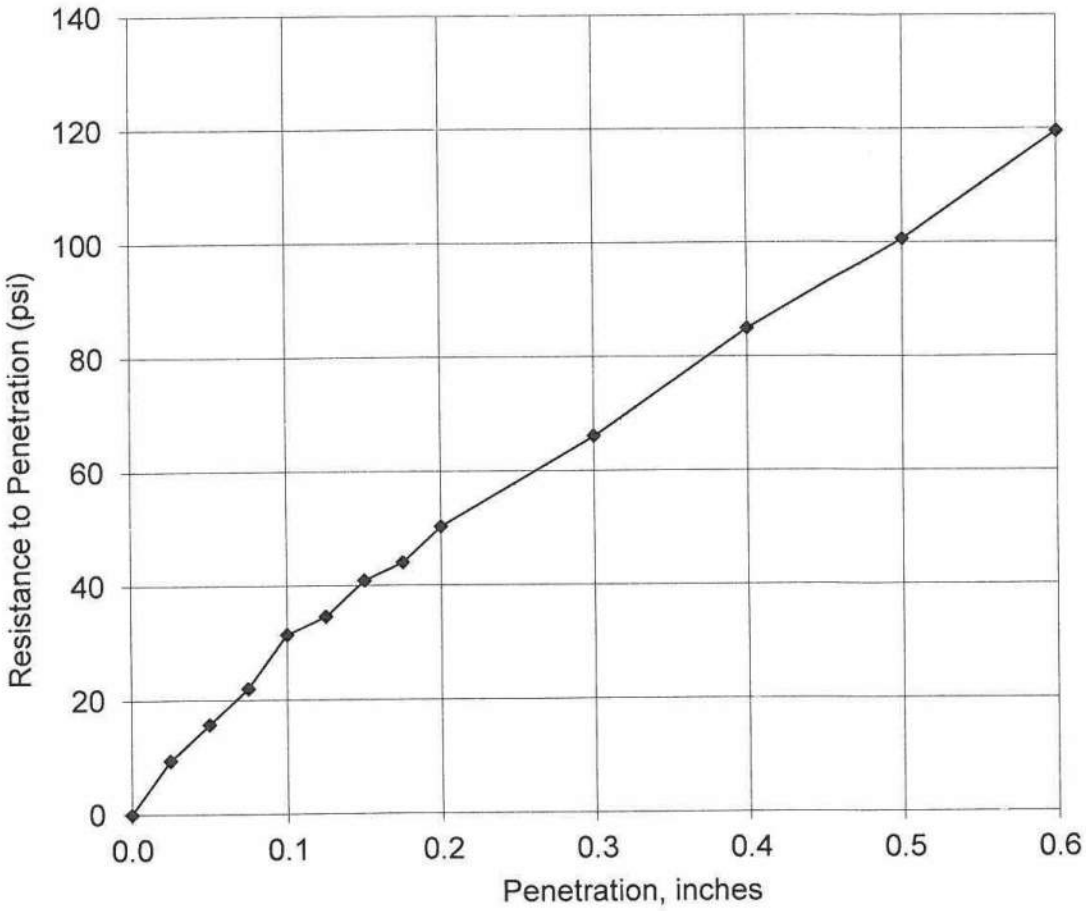
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-2
Project County	: Lonoke	Sample Loc.	: Boring No. B-123
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 251539	Date Tested	: 10/14/15
Submitted By	: HDR | ICA	Date Reported	: 11/6/15
Soil Type	: Brown Sandy Silty Clay		



Compaction Effort = 40 Blows per layer
Percent Compacted = 98.7
Percent Swell = 0.26

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

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Light Brown Silty Sand

Sample No. : Bag-1
Sample Loc. : Boring No. B-124
Sample Depth : 0.0' to 5.0'
Date Tested : 10/14/15
Date Reported : 11/06/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	93.5
1/4		6.3	mm	
No.4		4.75	mm	89.3
No.6		3.35	mm	
No.10		2	mm	81.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	62.3
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	41.5
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} = 0.1524 mm

CBR (AASHTO: T-193) : 8.8
Dry Dens. (AASHTO: T-99; Method (C)) : 119.1 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 12.1 %

Natural Moisture (%) (AASHTO T265) : 18.5
Liquid Limit (AASHTO T89) : 18
Plastic Limit (AASHTO T90) : 15
Plasticity Index : 3
Liquidity Index : 1.03
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 18.2
Coarse Sand (-No.10 + No.40) : 19.5
Fine Sand (-No.40 + No.200) : 20.8
Silt + Clay (-No.200) : 41.5

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 10.7
Coarse Sand (-No.4 + No.10) : 7.5
Medium Sand (-No.10 + No.40) : 19.5
Fine Sand (-No.40 + No.200) : 20.8
Silt + Clay (-No.200) : 41.5

Approved By : J.S.

Soil No. 31

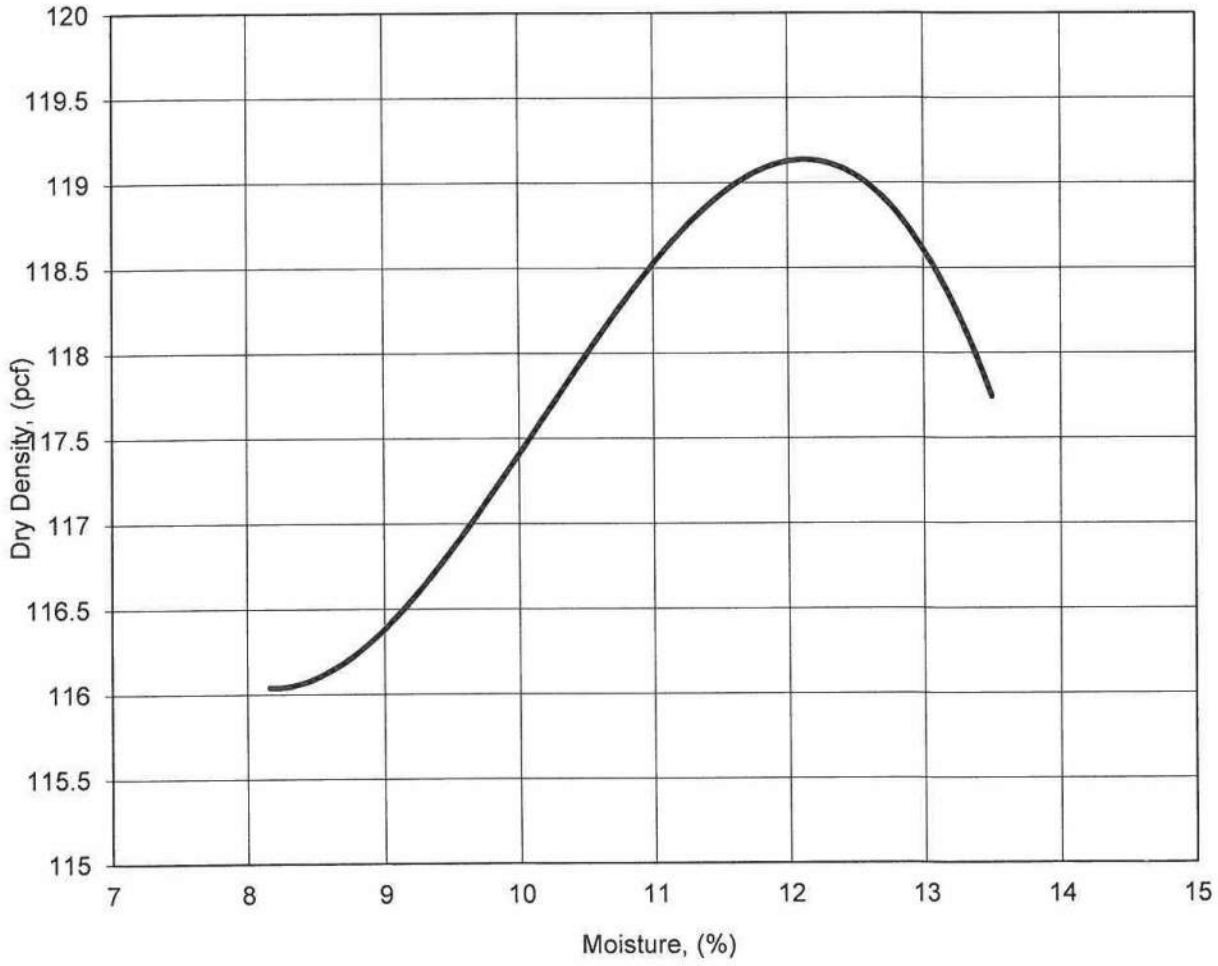
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Light Brown Silty Sand

Sample No. : Bag-1
Sample Loc. : Boring No. B-124
Sample Depth : 0.0' to 5.0'
Date Tested : 10/14/15
Date Reported : 11/06/15



MAXIMUM DENSITY: 119.1 pcf

OPTIMUM MOISTURE: 12.1 %

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

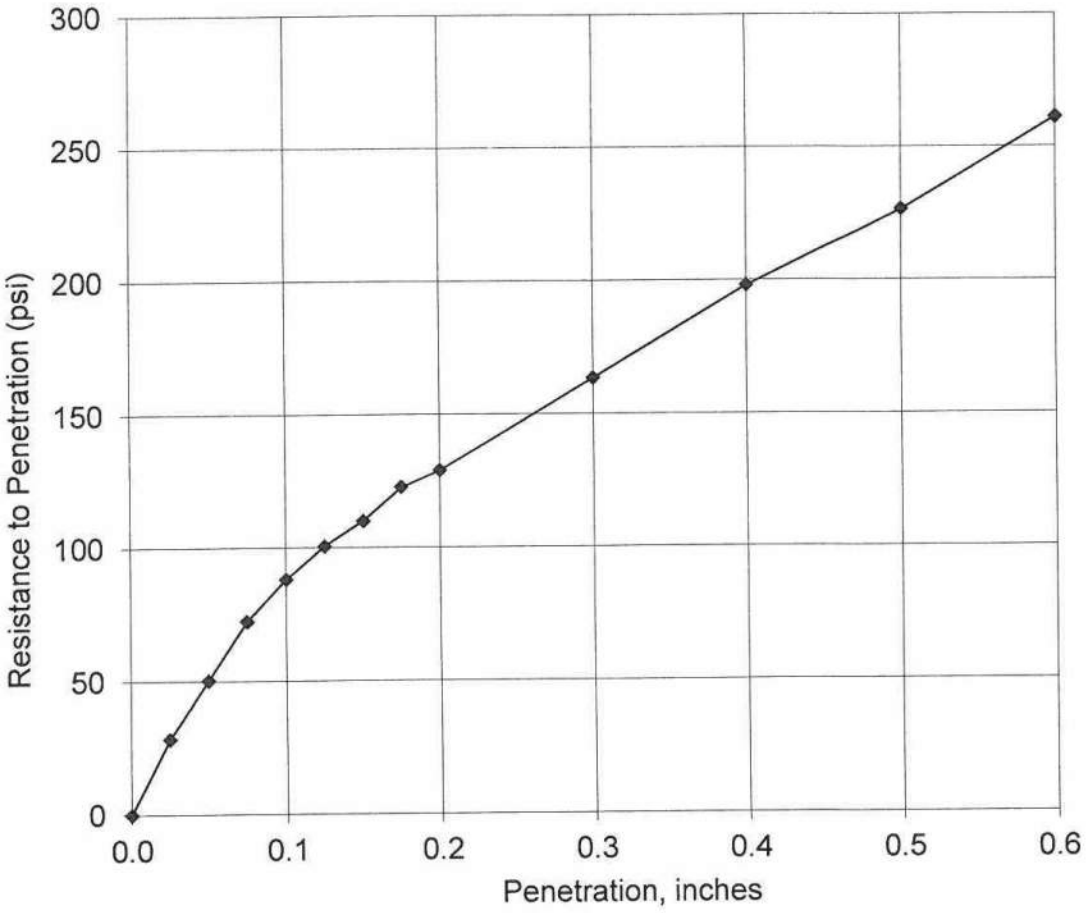
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-124
Project State	: Arkansas	Sample Depth	: 0.0' to 5.0'
Laboratory No.	: 251539	Date Tested	: 10/14/15
Submitted By	: HDR | ICA	Date Reported	: 11/6/15
Soil Type	: Light Brown Silty Sand		



Compaction Effort = 40 Blows per layer
Percent Compacted = 98.1
Percent Swell = 0.26

C.B.R. @ 0.1 In. = 8.8*
C.B.R. @ 0.2 In. = 8.6

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Sand

Sample No. : Bag-40
Sample Loc. : Boring No. B-125
Sample Depth : 0.6' to 2.3'
Date Tested : 07/29/15
Date Reported : 11/06/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	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	90.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	78.3
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	35.0
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} = 0.1368 mm

CBR (AASHTO: T-193) : 4.4
Dry Dens. (AASHTO: T-99; Method (C)) : 120.3 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 10.2 %

Natural Moisture (%) (AASHTO T265) : 10.1
Liquid Limit (AASHTO T89) : 20
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 4
Liquidity Index : -1.47
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 9.1
Coarse Sand (-No.10 + No.40) : 12.6
Fine Sand (-No.40 + No.200) : 43.3
Silt + Clay (-No.200) : 35.0

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) : 6.1
Medium Sand (-No.10 + No.40) : 12.6
Fine Sand (-No.40 + No.200) : 43.3
Silt + Clay (-No.200) : 35.0

Approved By : J.S.

Soil No. 32

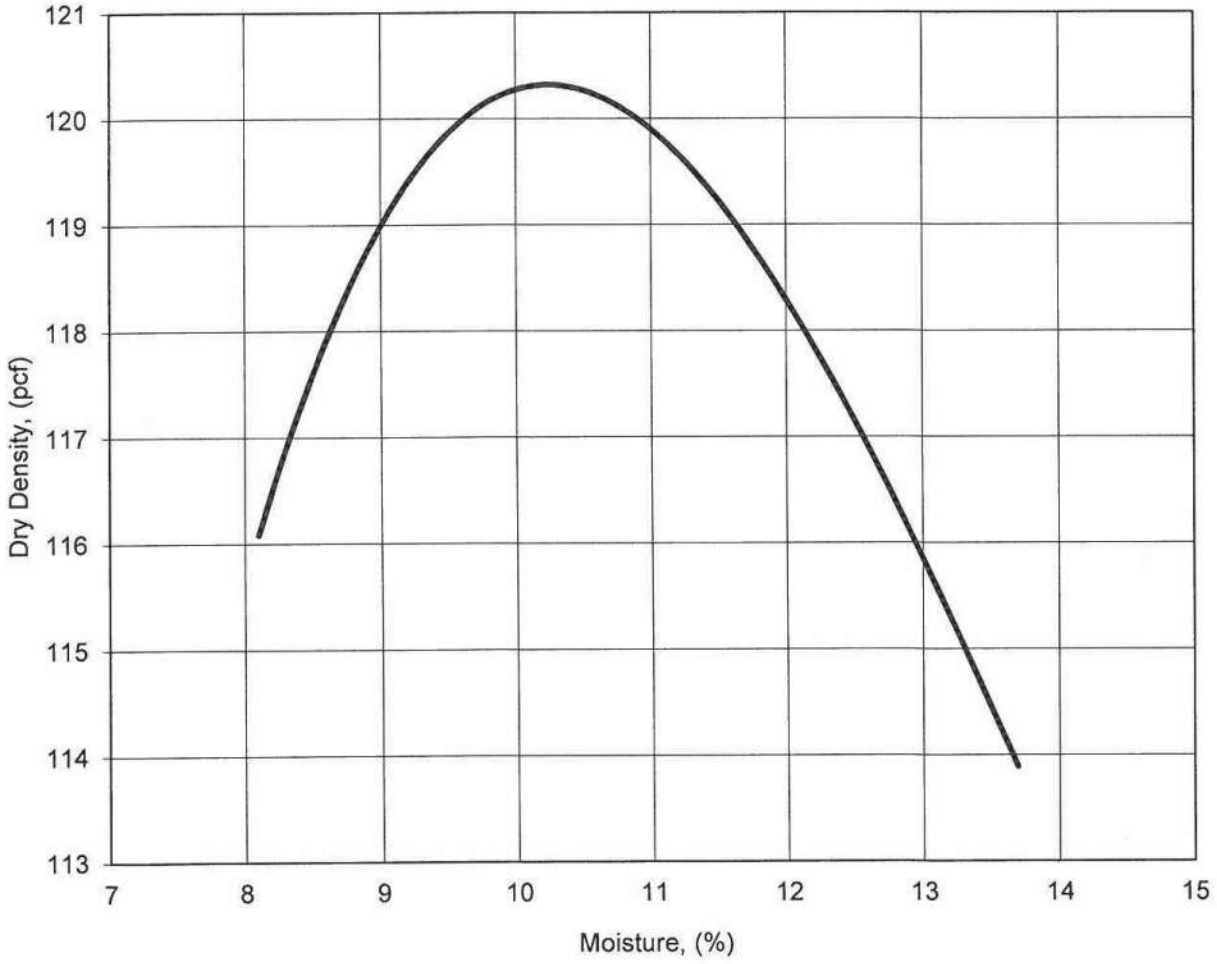
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Sand

Sample No. : Bag-40
Sample Loc. : Boring No. B-125
Sample Depth : 0.6' to 2.3'
Date Tested : 07/29/15
Date Reported : 11/06/15



MAXIMUM DENSITY: 120.3 pcf

OPTIMUM MOISTURE: 10.2 %

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

APPROVED BY: J.S.

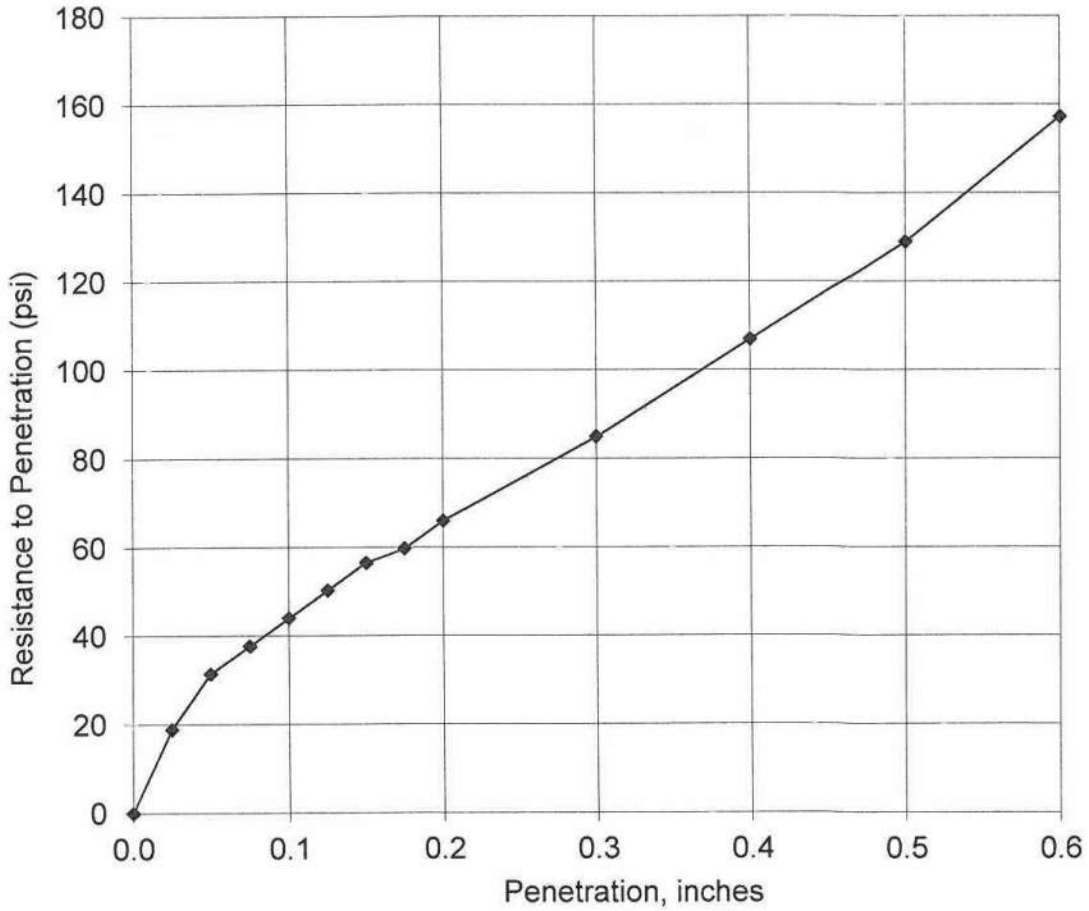
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-40
Project County	: Lonoke	Sample Loc.	: Boring No. B-125
Project State	: Arkansas	Sample Depth	: 0.6' to 2.3'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR | ICA	Date Reported	: 11/6/15
Soil Type	: Brown Silty Sand		



Compaction Effort = 40 Blows per layer
Percent Compacted = 98.9
Percent Swell = 0.46

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

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Sandy Lean Clay

Sample No. : Bag-4
Sample Loc. : Boring No. B-127
Sample Depth : 0.6' to 5.0'
Date Tested : 10/14/15
Date Reported : 11/06/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	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	97.1
No.6		3.35	mm	
No.10		2	mm	92.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	86.2
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	65.8
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} = 0.0153 mm

CBR (AASHTO: T-193) : 2.8
Dry Dens. (AASHTO: T-99; Method (C)) : 115 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 14 %

Natural Moisture (%) (AASHTO T265) : 15.0
Liquid Limit (AASHTO T89) : 26
Plastic Limit (AASHTO T90) : 15
Plasticity Index : 11
Liquidity Index : -0.03
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-6 (5)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 7.7
Coarse Sand (-No.10 + No.40) : 6.1
Fine Sand (-No.40 + No.200) : 20.4
Silt + Clay (-No.200) : 65.8

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 2.9
Coarse Sand (-No.4 + No.10) : 4.8
Medium Sand (-No.10 + No.40) : 6.1
Fine Sand (-No.40 + No.200) : 20.4
Silt + Clay (-No.200) : 65.8

Approved By : J.S.

Soil No. 33

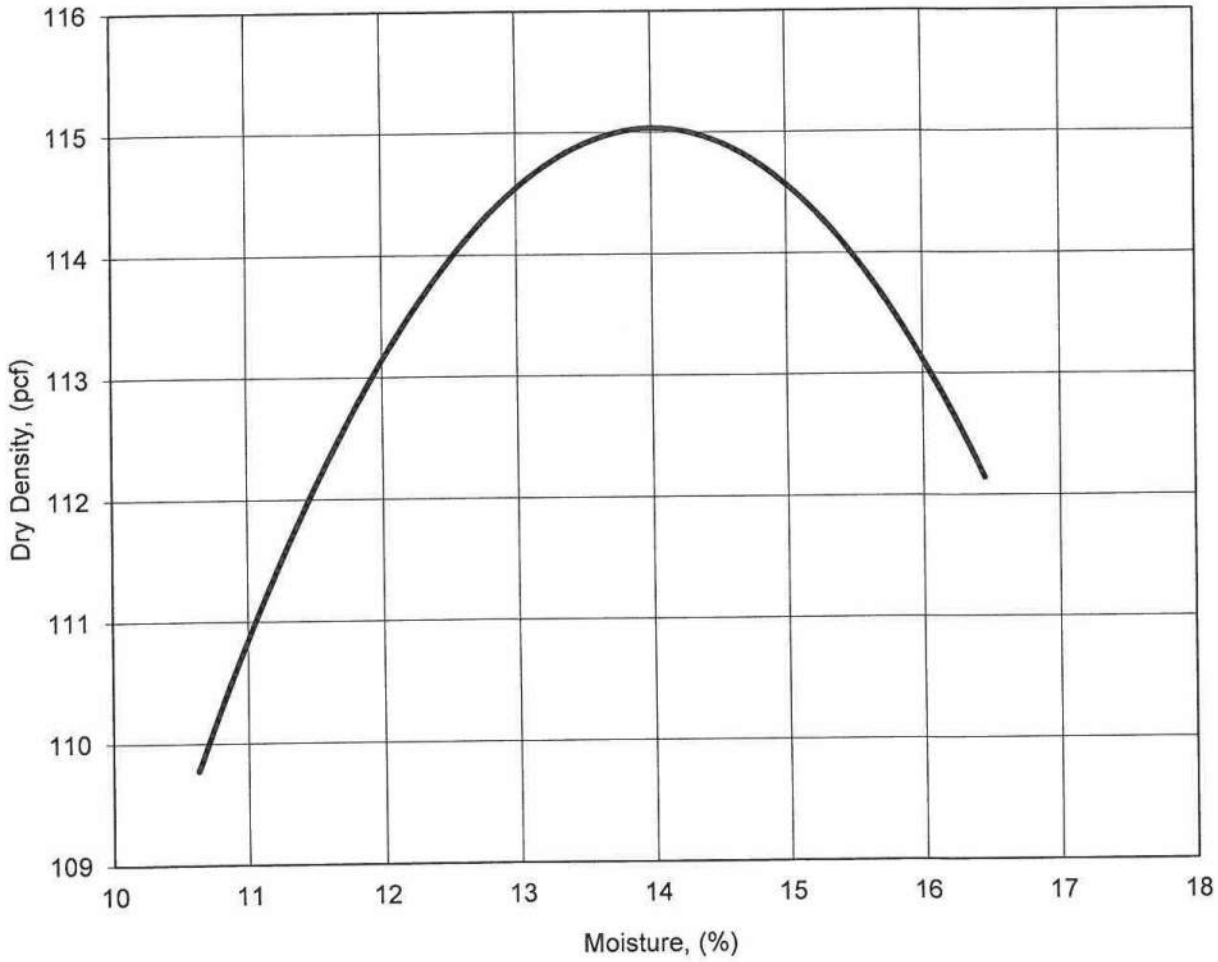
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Sandy Lean Clay

Sample No. : Bag-4
Sample Loc. : Boring No. B-127
Sample Depth : 0.6' to 5.0'
Date Tested : 10/14/15
Date Reported : 11/06/15



MAXIMUM DENSITY: 115 pcf

OPTIMUM MOISTURE: 14 %

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

APPROVED BY: J.S.

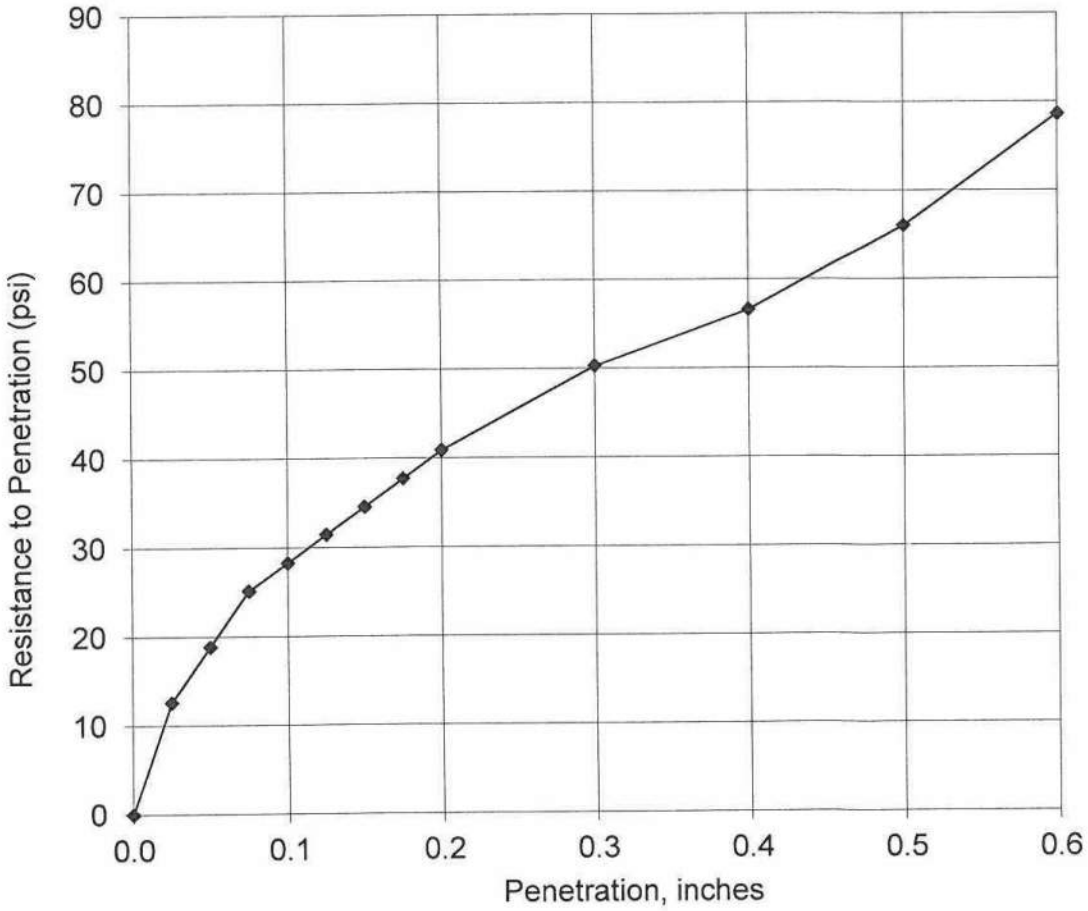
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-4
Project County	: Lonoke	Sample Loc.	: Boring No. B-127
Project State	: Arkansas	Sample Depth	: 0.6' to 5.0'
Laboratory No.	: 251539	Date Tested	: 10/14/15
Submitted By	: HDR|ICA	Date Reported	: 11/6/15
Soil Type	: Brown Sandy Lean Clay		



Compaction Effort = 40 Blows per layer
Percent Compacted = 98.7
Percent Swell = 1.35

C.B.R. @ 0.1 In. = 2.8*
C.B.R. @ 0.2 In. = 2.7

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Gravel with Sand

Sample No. : Bag-5
Sample Loc. : Boring No. B-129
Sample Depth : 0.3' to 1.5'
Date Tested : 07/29/15
Date Reported : 11/06/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
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	84.9
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	71.2
1/4		6.3	mm	
No.4		4.75	mm	59.5
No.6		3.35	mm	
No.10		2	mm	50.3

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	45.3
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	25.0
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} = 1.8225 mm

CBR (AASHTO: T-193) : 8.8
Dry Dens. (AASHTO: T-99; Method (C)) : 114.7 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 13.3 %

Natural Moisture (%) (AASHTO T265) : 13.0
Liquid Limit (AASHTO T89) : 23
Plastic Limit (AASHTO T90) : 19
Plasticity Index : 4
Liquidity Index : -1.55
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-1-b (0)
ASTM Classification: D2487 : GM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 49.7
Coarse Sand (-No.10 + No.40) : 5.0
Fine Sand (-No.40 + No.200) : 20.3
Silt + Clay (-No.200) : 25.0

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 15.1
Fine Gravel (-3/4in. + No.4) : 25.4
Coarse Sand (-No.4 + No.10) : 9.2
Medium Sand (-No.10 + No.40) : 5.0
Fine Sand (-No.40 + No.200) : 20.3
Silt + Clay (-No.200) : 25.0

Approved By : J.S.

Soil No. 34

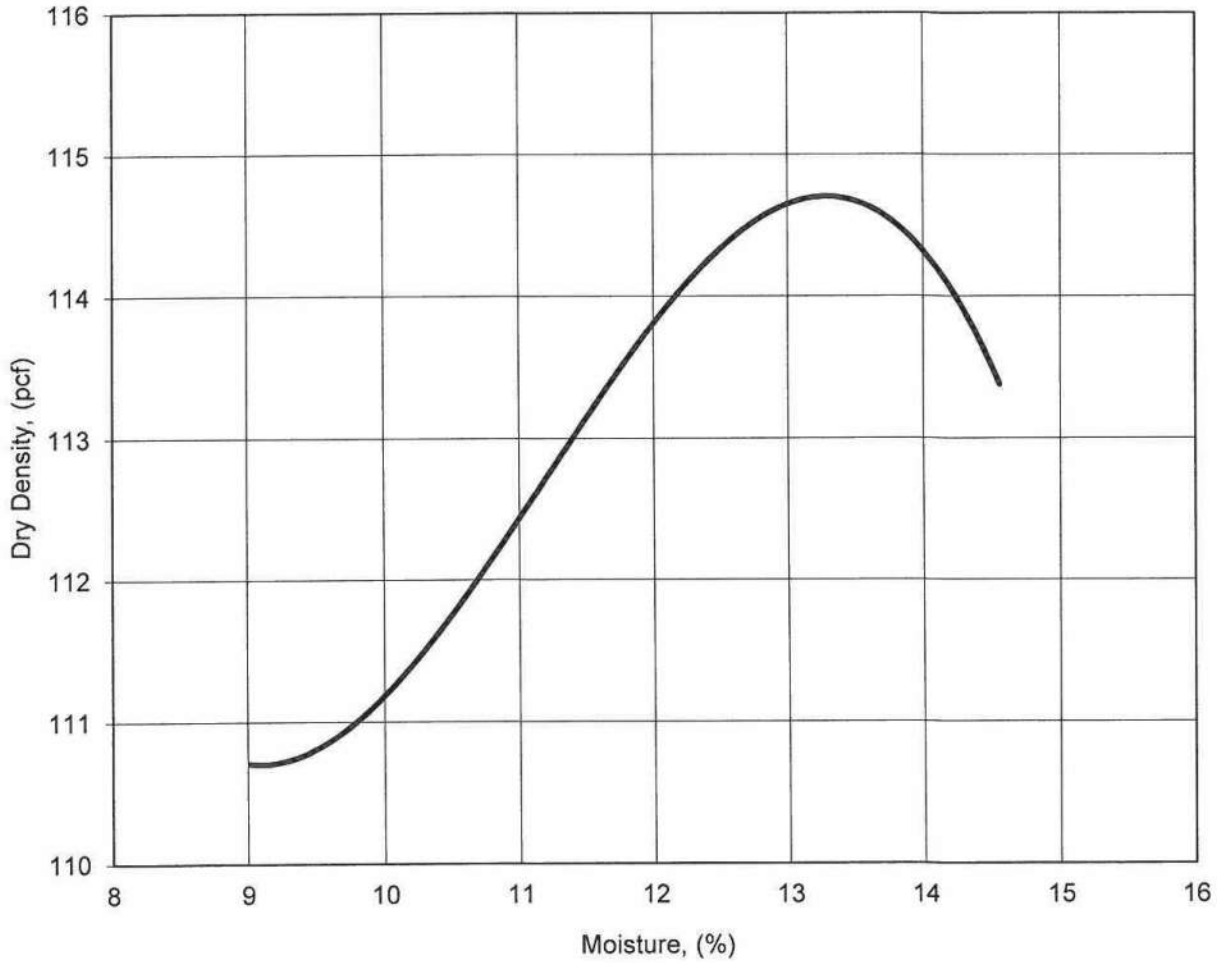
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MOISTURE-DENSITY RELATIONSHIP

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Gravel with Sand

Sample No. : Bag-5
Sample Loc. : Boring No. B-129
Sample Depth : 0.3' to 1.5'
Date Tested : 07/29/15
Date Reported : 11/06/15



MAXIMUM DENSITY: 114.7 pcf

OPTIMUM MOISTURE: 13.3 %

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

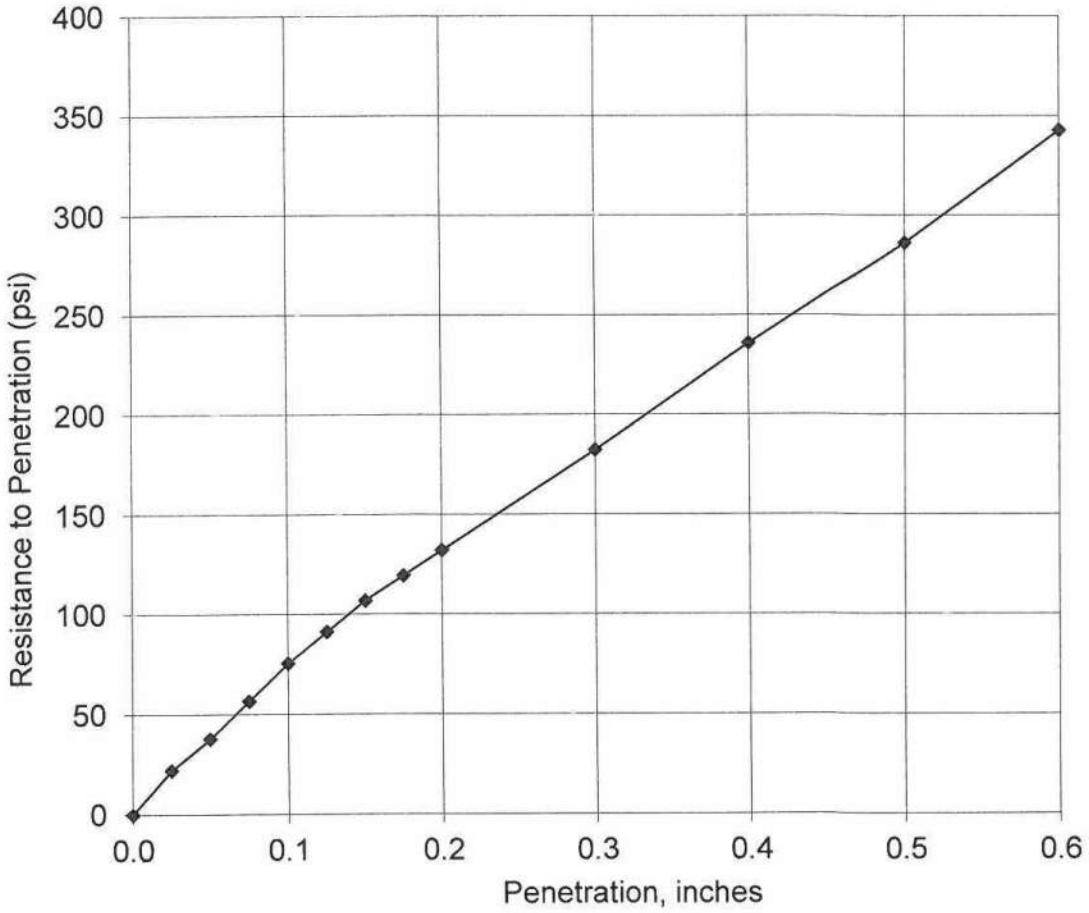
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CALIFORNIA BEARING RATIO

Project Name	: North Cabot Interchange		
Project No.	: 251539	Sample No.	: Bag-5
Project County	: Lonoke	Sample Loc.	: Boring No. B-129
Project State	: Arkansas	Sample Depth	: 0.3' to 1.5'
Laboratory No.	: 251539	Date Tested	: 7/29/15
Submitted By	: HDR | ICA	Date Reported	: 11/6/15
Soil Type	: Brown Silty Gravel with Sand		



Compaction Effort = 40 Blows per layer
Percent Compacted = 99.1
Percent Swell = 0.02

C.B.R. @ 0.1 In. = 7.5
C.B.R. @ 0.2 In. = 8.8*

COMMENTS: AASHTO: T-193

APPROVED BY: JS

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Orange & Tan Clayey Sand with Gravel

Sample No. : SS-1
Sample Loc. : Boring No. B-100
Sample Depth : 10.1' to 11.6'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	100.0
3/4	in.	19	mm	97.6
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	92.7
1/4		6.3	mm	
No.4		4.75	mm	78.8
No.6		3.35	mm	
No.10		2	mm	65.1

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	54.9
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	31.1
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} = 0.2974 mm

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

Natural Moisture (%) (AASHTO T265) : 21.6
Liquid Limit (AASHTO T89) : 31
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 15
Liquidity Index : 0.34
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-6 (1)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 34.9
Coarse Sand (-No.10 + No.40) : 10.2
Fine Sand (-No.40 + No.200) : 23.8
Silt + Clay (-No.200) : 31.1

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 2.4
Fine Gravel (-3/4in. + No.4) : 18.8
Coarse Sand (-No.4 + No.10) : 13.7
Medium Sand (-No.10 + No.40) : 10.2
Fine Sand (-No.40 + No.200) : 23.8
Silt + Clay (-No.200) : 31.1

Approved By : J.S.

Soil No. 35

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown & Gray Clayey Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-106
Sample Depth : 3.8' to 5.3'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	96.4
No.6		3.35	mm	
No.10		2	mm	85.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	73.0
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	38.9
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} = 0.1319 mm

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

Natural Moisture (%) (AASHTO T265) : 11.9
Liquid Limit (AASHTO T89) : 39
Plastic Limit (AASHTO T90) : 23
Plasticity Index : 16
Liquidity Index : -0.71
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-6 (2)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 14.4
Coarse Sand (-No.10 + No.40) : 12.6
Fine Sand (-No.40 + No.200) : 34.1
Silt + Clay (-No.200) : 38.9

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 3.6
Coarse Sand (-No.4 + No.10) : 10.8
Medium Sand (-No.10 + No.40) : 12.6
Fine Sand (-No.40 + No.200) : 34.1
Silt + Clay (-No.200) : 38.9

Approved By : J.S.

Soil No. 36

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty, Clayey Gravel with Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-136
Sample Depth : 4.9' to 6.4'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	78.3
1/4		6.3	mm	
No.4		4.75	mm	62.7
No.6		3.35	mm	
No.10		2	mm	49.7

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	39.9
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	26.6
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} = 2.0403 mm

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

Natural Moisture (%) (AASHTO T265) : 12.5
Liquid Limit (AASHTO T89) : 25
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 7
Liquidity Index : -0.79
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : GC-GM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 50.3
Coarse Sand (-No.10 + No.40) : 9.8
Fine Sand (-No.40 + No.200) : 13.3
Silt + Clay (-No.200) : 26.6

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 37.3
Coarse Sand (-No.4 + No.10) : 13.0
Medium Sand (-No.10 + No.40) : 9.8
Fine Sand (-No.40 + No.200) : 13.3
Silt + Clay (-No.200) : 26.6

Approved By : J.S.

Soil No. 37

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Gray & Brown Clayey Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-137
Sample Depth : 5.3' to 6.8'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.1
No.6		3.35	mm	
No.10		2	mm	90.0

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	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} = 0.1042 mm

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

Natural Moisture (%) (AASHTO T265) : 14.4
Liquid Limit (AASHTO T89) : 45
Plastic Limit (AASHTO T90) : 27
Plasticity Index : 18
Liquidity Index : -0.67
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-7-6 (5)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 10.0
Coarse Sand (-No.10 + No.40) : 19.5
Fine Sand (-No.40 + No.200) : 25.3
Silt + Clay (-No.200) : 45.2

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 2.9
Coarse Sand (-No.4 + No.10) : 7.1
Medium Sand (-No.10 + No.40) : 19.5
Fine Sand (-No.40 + No.200) : 25.3
Silt + Clay (-No.200) : 45.2

Approved By : J.S.

Soil No. 38

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-138
Sample Depth : 4.7' to 6.2'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.9
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	98.1
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	39.7
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	

AASHTO T88

D_{50} = 0.1018 mm

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

Natural Moisture (%) (AASHTO T265) : 25.7
Liquid Limit (AASHTO T89) : 19
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 2
Liquidity Index : 4.56
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.1
Coarse Sand (-No.10 + No.40) : 1.8
Fine Sand (-No.40 + No.200) : 58.4
Silt + Clay (-No.200) : 39.7

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.1
Medium Sand (-No.10 + No.40) : 1.8
Fine Sand (-No.40 + No.200) : 58.4
Silt + Clay (-No.200) : 39.7

Approved By : J.S.

Soil No. 39

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Gray & Black Clayey Sand with Gravel

Sample No. : SS-2
Sample Loc. : Boring No. B-138
Sample Depth : 9.7' to 11.2'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	98.9
1/4		6.3	mm	
No.4		4.75	mm	84.8
No.6		3.35	mm	
No.10		2	mm	66.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	54.5
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	31.7
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} = 0.3018 mm

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

Natural Moisture (%) (AASHTO T265) : 32.1
Liquid Limit (AASHTO T89) : 25
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 8
Liquidity Index : 1.85
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 33.2
Coarse Sand (-No.10 + No.40) : 12.3
Fine Sand (-No.40 + No.200) : 22.8
Silt + Clay (-No.200) : 31.7

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 15.2
Coarse Sand (-No.4 + No.10) : 18.0
Medium Sand (-No.10 + No.40) : 12.3
Fine Sand (-No.40 + No.200) : 22.8
Silt + Clay (-No.200) : 31.7

Approved By : J.S.

Soil No. 40

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Black Clayey Sand

Sample No. : SS-3
Sample Loc. : Boring No. B-138
Sample Depth : 14.7' to 15.0'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.8
No.6		3.35	mm	
No.10		2	mm	86.1

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	51.8
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	25.8
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} = 0.3769 mm

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

Natural Moisture (%) (AASHTO T265) : 8.0
Liquid Limit (AASHTO T89) : 26
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 9
Liquidity Index : -0.99
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 13.9
Coarse Sand (-No.10 + No.40) : 34.3
Fine Sand (-No.40 + No.200) : 26.0
Silt + Clay (-No.200) : 25.8

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 2.2
Coarse Sand (-No.4 + No.10) : 11.7
Medium Sand (-No.10 + No.40) : 34.3
Fine Sand (-No.40 + No.200) : 26.0
Silt + Clay (-No.200) : 25.8

Approved By : J.S.

Soil No. 41

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Gray & Brown Clayey Sand with Gravel

Sample No. : SS-1
Sample Loc. : Boring No. B-140
Sample Depth : 5.6' to 7.1'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	81.3
1/4		6.3	mm	
No.4		4.75	mm	57.6
No.6		3.35	mm	
No.10		2	mm	35.2

AASHTO T88					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	21.6
	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	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} = 3.5419 mm

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

Natural Moisture (%) (AASHTO T265) : 14.2
Liquid Limit (AASHTO T89) : 27
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 10
Liquidity Index : -0.32
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 64.8
Coarse Sand (-No.10 + No.40) : 13.6
Fine Sand (-No.40 + No.200) : 7.2
Silt + Clay (-No.200) : 14.4

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 42.4
Coarse Sand (-No.4 + No.10) : 22.4
Medium Sand (-No.10 + No.40) : 13.6
Fine Sand (-No.40 + No.200) : 7.2
Silt + Clay (-No.200) : 14.4

Approved By : J.S.

Soil No. 42

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Sandy Lean Clay

Sample No. : SS-2
Sample Loc. : Boring No. B-140
Sample Depth : 9.7' to 11.2'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
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	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	63.1
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} = 0.019 mm

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

Natural Moisture (%) (AASHTO T265) : 29.6
Liquid Limit (AASHTO T89) : 31
Plastic Limit (AASHTO T90) : 19
Plasticity Index : 12
Liquidity Index : 0.90
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-6 (5)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.1
Coarse Sand (-No.10 + No.40) : 5.5
Fine Sand (-No.40 + No.200) : 31.3
Silt + Clay (-No.200) : 63.1

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.1
Medium Sand (-No.10 + No.40) : 5.5
Fine Sand (-No.40 + No.200) : 31.3
Silt + Clay (-No.200) : 63.1

Approved By : J.S.

Soil No. 43

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown & Black Clayey Gravel with Sand

Sample No. : SS-3
Sample Loc. : Boring No. B-140
Sample Depth : 15.6' to 17.1'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	51.7
3/4	in.	19	mm	51.7
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	47.5
1/4		6.3	mm	
No.4		4.75	mm	40.3
No.6		3.35	mm	
No.10		2	mm	34.8

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	30.9
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	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} = 14.3519 mm

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

Natural Moisture (%) (AASHTO T265) : 17.8
Liquid Limit (AASHTO T89) : 30
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 13
Liquidity Index : 0.06
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-6 (1)
ASTM Classification: D2487 : GC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 65.2
Coarse Sand (-No.10 + No.40) : 3.9
Fine Sand (-No.40 + No.200) : 9.7
Silt + Clay (-No.200) : 21.2

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 48.3
Fine Gravel (-3/4in. + No.4) : 11.4
Coarse Sand (-No.4 + No.10) : 5.5
Medium Sand (-No.10 + No.40) : 3.9
Fine Sand (-No.40 + No.200) : 9.7
Silt + Clay (-No.200) : 21.2

Approved By : J.S.

Soil No. 44

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Gray & Brown Clayey Sand

Sample No. : SS-4
Sample Loc. : Boring No. B-140
Sample Depth : 19.7' to 20.1'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
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	91.0

AASHTO T88					% Passing
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	53.5	
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	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} = 0.3368 mm

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

Natural Moisture (%) (AASHTO T265) : 9.6
Liquid Limit (AASHTO T89) : 44
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 26
Liquidity Index : -0.34
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-7 (3)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 9.0
Coarse Sand (-No.10 + No.40) : 37.5
Fine Sand (-No.40 + No.200) : 26.1
Silt + Clay (-No.200) : 27.4

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) : 8.8
Medium Sand (-No.10 + No.40) : 37.5
Fine Sand (-No.40 + No.200) : 26.1
Silt + Clay (-No.200) : 27.4

Approved By : J.S.

Soil No. 45

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown & Gray Poorly Graded Gravel with Silt

Sample No. : SS-1
Sample Loc. : Boring No. B-149
Sample Depth : 5.2' to 6.7'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	64.7
3/4	in.	19	mm	50.7
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	27.3
1/4		6.3	mm	
No.4		4.75	mm	16.4
No.6		3.35	mm	
No.10		2	mm	12.2

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	10.1
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	6.3
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} = 18.6101 mm

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

Natural Moisture (%) (AASHTO T265) : 9.1
Liquid Limit (AASHTO T89) : 17
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 1
Liquidity Index : -6.79
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-1-a (0)
ASTM Classification: D2487 : GP-GM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 87.8
Coarse Sand (-No.10 + No.40) : 2.1
Fine Sand (-No.40 + No.200) : 3.8
Silt + Clay (-No.200) : 6.3

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 49.3
Fine Gravel (-3/4in. + No.4) : 34.3
Coarse Sand (-No.4 + No.10) : 4.2
Medium Sand (-No.10 + No.40) : 2.1
Fine Sand (-No.40 + No.200) : 3.8
Silt + Clay (-No.200) : 6.3

Approved By : J.S.

Soil No. 46

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Black & Brown Clayey Sand

Sample No. : SS-2
Sample Loc. : Boring No. B-149
Sample Depth : 10.2' to 10.6'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
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	91.6

AASHTO T88					% Passing
	No.16		1.18	mm	
	No.30		0.6	mm	
	No.40		0.425	mm	60.2
	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	36.7
	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} = 0.2002 mm

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

Natural Moisture (%) (AASHTO T265) : 11.3
Liquid Limit (AASHTO T89) : 27
Plastic Limit (AASHTO T90) : 19
Plasticity Index : 8
Liquidity Index : -0.91
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 8.4
Coarse Sand (-No.10 + No.40) : 31.4
Fine Sand (-No.40 + No.200) : 23.5
Silt + Clay (-No.200) : 36.7

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) : 7.1
Medium Sand (-No.10 + No.40) : 31.4
Fine Sand (-No.40 + No.200) : 23.5
Silt + Clay (-No.200) : 36.7

Approved By : J.S.

Soil No. 47

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-150
Sample Depth : 5.5' to 7.0'
Date Tested : 02/12/16
Date Reported : 02/29/16

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	
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	99.1
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	45.7
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} = 0.0862 mm

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

Natural Moisture (%) (AASHTO T265) : 31.5
Liquid Limit (AASHTO T89) : 19
Plastic Limit (AASHTO T90) : 15
Plasticity Index : 4
Liquidity Index : 4.06
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.1
Coarse Sand (-No.10 + No.40) : 0.8
Fine Sand (-No.40 + No.200) : 53.4
Silt + Clay (-No.200) : 45.7

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.1
Medium Sand (-No.10 + No.40) : 0.8
Fine Sand (-No.40 + No.200) : 53.4
Silt + Clay (-No.200) : 45.7

Approved By : J.S.

Soil No. 48

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Gray & Brown Poorly Graded Sand

Sample No. : SS-2
Sample Loc. : Boring No. B-150
Sample Depth : 10.5' to 12.0'
Date Tested : 02/12/16
Date Reported : 02/29/16

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	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	90.7
No.6		3.35	mm	
No.10		2	mm	68.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	41.4
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	2.3
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} = 0.6935 mm

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

Natural Moisture (%) (AASHTO T265) : 14.4
Liquid Limit (AASHTO T89) : 38
Plastic Limit (AASHTO T90) : 22
Plasticity Index : 16
Liquidity Index : -0.46
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-6 (1)
ASTM Classification: D2487 : SP

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 31.4
Coarse Sand (-No.10 + No.40) : 27.2
Fine Sand (-No.40 + No.200) : 39.1
Silt + Clay (-No.200) : 2.3

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 9.3
Coarse Sand (-No.4 + No.10) : 22.1
Medium Sand (-No.10 + No.40) : 27.2
Fine Sand (-No.40 + No.200) : 39.1
Silt + Clay (-No.200) : 2.3

Approved By : J.S.

Soil No. 49

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Dark Gray Clayey Sand

Sample No. : SS-3
Sample Loc. : Boring No. B-150
Sample Depth : 15.5' to 17.0'
Date Tested : 02/12/16
Date Reported : 02/29/16

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	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.0
No.6		3.35	mm	
No.10		2	mm	86.2

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	57.3
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	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} = 0.2817 mm

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

Natural Moisture (%) (AASHTO T265) : 11.2
Liquid Limit (AASHTO T89) : 27
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 10
Liquidity Index : -0.54
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 13.8
Coarse Sand (-No.10 + No.40) : 28.9
Fine Sand (-No.40 + No.200) : 30.8
Silt + Clay (-No.200) : 26.5

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) : 11.8
Medium Sand (-No.10 + No.40) : 28.9
Fine Sand (-No.40 + No.200) : 30.8
Silt + Clay (-No.200) : 26.5

Approved By : J.S.

Soil No. 50

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown & Gray Silty Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-151
Sample Depth : 4.1' to 5.1'
Date Tested : 02/12/16
Date Reported : 02/29/16

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	
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	98.8
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	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} = 0.0917 mm

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

Natural Moisture (%) (AASHTO T265) : 24.1
Liquid Limit (AASHTO T89) : 21
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 3
Liquidity Index : 1.90
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.0
Coarse Sand (-No.10 + No.40) : 1.2
Fine Sand (-No.40 + No.200) : 55.2
Silt + Clay (-No.200) : 43.6

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) : 1.2
Fine Sand (-No.40 + No.200) : 55.2
Silt + Clay (-No.200) : 43.6

Approved By : J.S.

Soil No. 51

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Dark Gray Clayey Sand with Gravel

Sample No. : SS-2
Sample Loc. : Boring No. B-151
Sample Depth : 14.1' to 14.8'
Date Tested : 02/12/16
Date Reported : 02/29/16

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	100.0
3/4	in.	19	mm	84.5
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	84.5
1/4		6.3	mm	
No.4		4.75	mm	83.9
No.6		3.35	mm	
No.10		2	mm	74.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	43.8
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	18.8
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} = 0.5805 mm

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

Natural Moisture (%) (AASHTO T265) : 14.2
Liquid Limit (AASHTO T89) : 26
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 10
Liquidity Index : -0.23
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 25.4
Coarse Sand (-No.10 + No.40) : 30.8
Fine Sand (-No.40 + No.200) : 25.0
Silt + Clay (-No.200) : 18.8

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 15.5
Fine Gravel (-3/4in. + No.4) : 0.6
Coarse Sand (-No.4 + No.10) : 9.3
Medium Sand (-No.10 + No.40) : 30.8
Fine Sand (-No.40 + No.200) : 25.0
Silt + Clay (-No.200) : 18.8

Approved By : J.S.

Soil No. 52

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Sandy Silty Clay

Sample No. : SS-1
Sample Loc. : Boring No. B-152
Sample Depth : 4.4' to 5.9'
Date Tested : 02/12/16
Date Reported : 02/29/16

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	
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	99.2
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	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} = 0.0316 mm

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

Natural Moisture (%) (AASHTO T265) : 21.1
Liquid Limit (AASHTO T89) : 23
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 7
Liquidity Index : 0.68
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (1)
ASTM Classification: D2487 : CL-ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.0
Coarse Sand (-No.10 + No.40) : 0.8
Fine Sand (-No.40 + No.200) : 41.7
Silt + Clay (-No.200) : 57.5

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.0
Medium Sand (-No.10 + No.40) : 0.8
Fine Sand (-No.40 + No.200) : 41.7
Silt + Clay (-No.200) : 57.5

Approved By : J.S.

Soil No. 53

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown & Gray Silty Sand

Sample No. : SS-2
Sample Loc. : Boring No. B-152
Sample Depth : 9.4' to 10.9'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.4
No.6		3.35	mm	
No.10		2	mm	93.1

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	46.0
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} = 0.0886 mm

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

Natural Moisture (%) (AASHTO T265) : 18.5
Liquid Limit (AASHTO T89) : 18
Plastic Limit (AASHTO T90) : 14
Plasticity Index : 4
Liquidity Index : 1.02
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 6.9
Coarse Sand (-No.10 + No.40) : 5.4
Fine Sand (-No.40 + No.200) : 41.7
Silt + Clay (-No.200) : 46.0

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 2.6
Coarse Sand (-No.4 + No.10) : 4.3
Medium Sand (-No.10 + No.40) : 5.4
Fine Sand (-No.40 + No.200) : 41.7
Silt + Clay (-No.200) : 46.0

Approved By : J.S.

Soil No. 54

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Gray & Brown Clayey Sand

Sample No. : SS-3
Sample Loc. : Boring No. B-152
Sample Depth : 14.4' to 15.9'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
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	88.4

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	52.5
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	24.9
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} = 0.3632 mm

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

Natural Moisture (%) (AASHTO T265) : 10.9
Liquid Limit (AASHTO T89) : 36
Plastic Limit (AASHTO T90) : 23
Plasticity Index : 13
Liquidity Index : -0.97
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-6 (1)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 11.6
Coarse Sand (-No.10 + No.40) : 35.9
Fine Sand (-No.40 + No.200) : 27.6
Silt + Clay (-No.200) : 24.9

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) : 10.2
Medium Sand (-No.10 + No.40) : 35.9
Fine Sand (-No.40 + No.200) : 27.6
Silt + Clay (-No.200) : 24.9

Approved By : J.S.

Soil No. 55

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty, Clayey Gravel with Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-170
Sample Depth : 9.6' to 11.1'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	87.5
3/4	in.	19	mm	87.5
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	70.3
1/4		6.3	mm	
No.4		4.75	mm	62.2
No.6		3.35	mm	
No.10		2	mm	55.2

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	48.7
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	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} = 0.5793 mm

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

Natural Moisture (%) (AASHTO T265) : 17.5
Liquid Limit (AASHTO T89) : 22
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 5
Liquidity Index : 0.03
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : GC-GM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 44.8
Coarse Sand (-No.10 + No.40) : 6.5
Fine Sand (-No.40 + No.200) : 23.6
Silt + Clay (-No.200) : 25.1

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 12.5
Fine Gravel (-3/4in. + No.4) : 25.3
Coarse Sand (-No.4 + No.10) : 7.0
Medium Sand (-No.10 + No.40) : 6.5
Fine Sand (-No.40 + No.200) : 23.6
Silt + Clay (-No.200) : 25.1

Approved By : J.S.

Soil No. 56

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown & Gray Clayey Sand

Sample No. : SS-2
Sample Loc. : Boring No. B-170
Sample Depth : 14.6' to 16.1'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
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	89.5

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	56.0
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	29.5
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} = 0.287 mm

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

Natural Moisture (%) (AASHTO T265) : 13.2
Liquid Limit (AASHTO T89) : 36
Plastic Limit (AASHTO T90) : 21
Plasticity Index : 15
Liquidity Index : -0.51
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-6 (1)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 10.5
Coarse Sand (-No.10 + No.40) : 33.5
Fine Sand (-No.40 + No.200) : 26.5
Silt + Clay (-No.200) : 29.5

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) : 10.0
Medium Sand (-No.10 + No.40) : 33.5
Fine Sand (-No.40 + No.200) : 26.5
Silt + Clay (-No.200) : 29.5

Approved By : J.S.

Soil No. 57

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Tan & Gray Sandy Silt

Sample No. : SS-1
Sample Loc. : Boring No. B-171
Sample Depth : 9.5' to 11.0'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
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	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	54.8
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} = 0.042 mm

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

Natural Moisture (%) (AASHTO T265) : 20.7
Liquid Limit (AASHTO T89) : 20
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 3
Liquidity Index : 1.14
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.7
Coarse Sand (-No.10 + No.40) : 3.9
Fine Sand (-No.40 + No.200) : 40.6
Silt + Clay (-No.200) : 54.8

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) : 3.9
Fine Sand (-No.40 + No.200) : 40.6
Silt + Clay (-No.200) : 54.8

Approved By : J.S.

Soil No. 58

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Dark Gray & Brown Clayey Sand

Sample No. : SS-3
Sample Loc. : Boring No. B-171
Sample Depth : 19.5' to 19.9'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.5
No.6		3.35	mm	
No.10		2	mm	84.1

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	49.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	18.8
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} = 0.4442 mm

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

Natural Moisture (%) (AASHTO T265) : 15.5
Liquid Limit (AASHTO T89) : 32
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 16
Liquidity Index : -0.05
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-6 (1)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 15.9
Coarse Sand (-No.10 + No.40) : 35.1
Fine Sand (-No.40 + No.200) : 30.2
Silt + Clay (-No.200) : 18.8

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) : 14.4
Medium Sand (-No.10 + No.40) : 35.1
Fine Sand (-No.40 + No.200) : 30.2
Silt + Clay (-No.200) : 18.8

Approved By : J.S.

Soil No. 59

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Clay with Sand

Sample No. : SS-1
Sample Loc. : Boring No. B-172
Sample Depth : 4.7' to 6.2'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
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	98.7
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	76.3
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} = 0.0077 mm

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

Natural Moisture (%) (AASHTO T265) : 19.9
Liquid Limit (AASHTO T89) : 25
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 7
Liquidity Index : 0.21
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (3)
ASTM Classification: D2487 : CL-ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.5
Coarse Sand (-No.10 + No.40) : 0.8
Fine Sand (-No.40 + No.200) : 22.4
Silt + Clay (-No.200) : 76.3

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) : 0.8
Fine Sand (-No.40 + No.200) : 22.4
Silt + Clay (-No.200) : 76.3

Approved By : J.S.

Soil No. 60

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Light & Dark Brown Silty Sand

Sample No. : SS-2
Sample Loc. : Boring No. B-172
Sample Depth : 9.7' to 11.2'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	99.4
1/4		6.3	mm	
No.4		4.75	mm	97.8
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	87.4
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	46.5
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} = 0.087 mm

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

Natural Moisture (%) (AASHTO T265) : 21.9
Liquid Limit (AASHTO T89) : 20
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 2
Liquidity Index : 2.09
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 4.6
Coarse Sand (-No.10 + No.40) : 8.0
Fine Sand (-No.40 + No.200) : 40.9
Silt + Clay (-No.200) : 46.5

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 2.2
Coarse Sand (-No.4 + No.10) : 2.4
Medium Sand (-No.10 + No.40) : 8.0
Fine Sand (-No.40 + No.200) : 40.9
Silt + Clay (-No.200) : 46.5

Approved By : J.S.

Soil No. 61

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Orange & Gray Sandy Lean Clay

Sample No. : SS-1
Sample Loc. : Boring No. B-173
Sample Depth : 4.9' to 6.4'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	94.2
1/4		6.3	mm	
No.4		4.75	mm	89.8
No.6		3.35	mm	
No.10		2	mm	82.9

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	76.6
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	56.7
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} = 0.0343 mm

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

Natural Moisture (%) (AASHTO T265) : 18.2
Liquid Limit (AASHTO T89) : 30
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 12
Liquidity Index : 0.02
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-6 (4)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 17.1
Coarse Sand (-No.10 + No.40) : 6.3
Fine Sand (-No.40 + No.200) : 19.9
Silt + Clay (-No.200) : 56.7

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 10.2
Coarse Sand (-No.4 + No.10) : 6.9
Medium Sand (-No.10 + No.40) : 6.3
Fine Sand (-No.40 + No.200) : 19.9
Silt + Clay (-No.200) : 56.7

Approved By : J.S.

Soil No. 62

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Silty Sand

Sample No. : SS-2
Sample Loc. : Boring No. B-173
Sample Depth : 11.9' to 13.4'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
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	98.9
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	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} = 0.1248 mm

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

Natural Moisture (%) (AASHTO T265) : 20.9
Liquid Limit (AASHTO T89) : NP
Plastic Limit (AASHTO T90) : NP
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.1
Coarse Sand (-No.10 + No.40) : 1.0
Fine Sand (-No.40 + No.200) : 69.2
Silt + Clay (-No.200) : 29.7

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.1
Medium Sand (-No.10 + No.40) : 1.0
Fine Sand (-No.40 + No.200) : 69.2
Silt + Clay (-No.200) : 29.7

Approved By : J.S.

Soil No. 63

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Dark Gray Clayey Sand

Sample No. : SS-4
Sample Loc. : Boring No. B-173
Sample Depth : 19.9' to 20.2'
Date Tested : 02/09/16
Date Reported : 02/29/16

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	
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	88.6

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	49.4
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	20.9
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} = 0.4352 mm

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

Natural Moisture (%) (AASHTO T265) : 11.4
Liquid Limit (AASHTO T89) : 33
Plastic Limit (AASHTO T90) : 20
Plasticity Index : 13
Liquidity Index : -0.63
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-6 (1)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 11.4
Coarse Sand (-No.10 + No.40) : 39.2
Fine Sand (-No.40 + No.200) : 28.5
Silt + Clay (-No.200) : 20.9

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) : 11.4
Medium Sand (-No.10 + No.40) : 39.2
Fine Sand (-No.40 + No.200) : 28.5
Silt + Clay (-No.200) : 20.9

Approved By : J.S.

Soil No. 64

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Tan & Gray Silty, Clayey Sand

Sample No. : ST-1
Sample Loc. : Boring No. B-100
Sample Depth : 5.7' to 6.4'
Date Tested : 02/12/16
Date Reported : 02/29/16

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	
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	99.7

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	98.5
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	49.4
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	

AASHTO T88

D_{50} = 0.0766 mm

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

Natural Moisture (%) (AASHTO T265) : 21.1
Liquid Limit (AASHTO T89) : 22
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 6
Liquidity Index : 0.81
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SC-SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.3
Coarse Sand (-No.10 + No.40) : 1.2
Fine Sand (-No.40 + No.200) : 49.1
Silt + Clay (-No.200) : 49.4

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.1
Coarse Sand (-No.4 + No.10) : 0.2
Medium Sand (-No.10 + No.40) : 1.2
Fine Sand (-No.40 + No.200) : 49.1
Silt + Clay (-No.200) : 49.4

Approved By : J.S.

Soil No. 65

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Tan & Gray Sandy Elastic Silt

Sample No. : ST-2
Sample Loc. : Boring No. B-100
Sample Depth : 14.5' to 15.9'
Date Tested : 02/05/16
Date Reported : 02/29/16

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	
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	79.0
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	61.8
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} = 0.0212 mm

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

Natural Moisture (%) (AASHTO T265) : 39.8
Liquid Limit (AASHTO T89) : 85
Plastic Limit (AASHTO T90) : 42
Plasticity Index : 43
Liquidity Index : -0.06
Activity : NA
Sp. Gr. (AASHTO T100) : 2.744
AASHTO Classification: M145 : A-7-5 (27)
ASTM Classification: D2487 : MH

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 1.1
Coarse Sand (-No.10 + No.40) : 19.9
Fine Sand (-No.40 + No.200) : 17.2
Silt + Clay (-No.200) : 61.8

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) : 19.9
Fine Sand (-No.40 + No.200) : 17.2
Silt + Clay (-No.200) : 61.8

Approved By : J.S.

Soil No. 66

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown Sandy Silt

Sample No. : ST-1
Sample Loc. : Boring No. B-135A
Sample Depth : 4.2' to 5.5'
Date Tested : 02/05/16
Date Reported : 02/29/16

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	
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	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} = 0.0214 mm

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

Natural Moisture (%) (AASHTO T265) : 20.2
Liquid Limit (AASHTO T89) : 20
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 4
Liquidity Index : 0.98
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.2
Coarse Sand (-No.10 + No.40) : 2.1
Fine Sand (-No.40 + No.200) : 36.0
Silt + Clay (-No.200) : 61.7

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.2
Medium Sand (-No.10 + No.40) : 2.1
Fine Sand (-No.40 + No.200) : 36.0
Silt + Clay (-No.200) : 61.7

Approved By : J.S.

Soil No. 67

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HDR | ICA

SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Tan & Gray Sandy Lean Clay

Sample No. : ST-1
Sample Loc. : Boring No. B-140
Sample Depth : 4.7' to 5.4'
Date Tested : 02/12/16
Date Reported : 02/29/16

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	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.4
No.6		3.35	mm	
No.10		2	mm	97.0

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	69.7
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} = 0.0115 mm

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

Natural Moisture (%) (AASHTO T265) : 20.8
Liquid Limit (AASHTO T89) : 27
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 11
Liquidity Index : 0.43
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-6 (5)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 3.0
Coarse Sand (-No.10 + No.40) : 5.3
Fine Sand (-No.40 + No.200) : 22.0
Silt + Clay (-No.200) : 69.7

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.6
Coarse Sand (-No.4 + No.10) : 2.4
Medium Sand (-No.10 + No.40) : 5.3
Fine Sand (-No.40 + No.200) : 22.0
Silt + Clay (-No.200) : 69.7

Approved By : J.S.

Soil No. 68

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Gray & Brown Silty, Clayey Sand

Sample No. : ST-2
Sample Loc. : Boring No. B-140
Sample Depth : 14.7' to 15.2'
Date Tested : 02/12/16
Date Reported : 02/29/16

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	98.0
1/4		6.3	mm	
No.4		4.75	mm	94.2
No.6		3.35	mm	
No.10		2	mm	91.0

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	49.5
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} = 0.0768 mm

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

Natural Moisture (%) (AASHTO T265) : 17.0
Liquid Limit (AASHTO T89) : 20
Plastic Limit (AASHTO T90) : 14
Plasticity Index : 6
Liquidity Index : 0.49
Activity : NA
Sp. Gr. (AASHTO T100) : 2.697
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SC-SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 9.0
Coarse Sand (-No.10 + No.40) : 5.3
Fine Sand (-No.40 + No.200) : 36.2
Silt + Clay (-No.200) : 49.5

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 5.8
Coarse Sand (-No.4 + No.10) : 3.2
Medium Sand (-No.10 + No.40) : 5.3
Fine Sand (-No.40 + No.200) : 36.2
Silt + Clay (-No.200) : 49.5

Approved By : J.S.

Soil No. 69

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown & Gray Silty Sand

Sample No. : ST-1
Sample Loc. : Boring No. B-151
Sample Depth : 9.1' to 9.4'
Date Tested : 02/05/16
Date Reported : 02/29/16

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	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.9
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	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	26.8
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} = 0.1405 mm

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

Natural Moisture (%) (AASHTO T265) : 30.9
Liquid Limit (AASHTO T89) : NP
Plastic Limit (AASHTO T90) : NP
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : 2.645
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 3.1
Coarse Sand (-No.10 + No.40) : 6.0
Fine Sand (-No.40 + No.200) : 64.1
Silt + Clay (-No.200) : 26.8

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) : 1.0
Medium Sand (-No.10 + No.40) : 6.0
Fine Sand (-No.40 + No.200) : 64.1
Silt + Clay (-No.200) : 26.8

Approved By : J.S.

Soil No. 70

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Tan & Gray Sandy Silt

Sample No. : ST-1
Sample Loc. : Boring No. B-169
Sample Depth : 9.5' to 10.8'
Date Tested : 02/05/16
Date Reported : 02/29/16

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	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.0
No.6		3.35	mm	
No.10		2	mm	95.1

AASHTO T88

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	86.0
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} = 0.0214 mm

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

Natural Moisture (%) (AASHTO T265) : 19.2
Liquid Limit (AASHTO T89) : 21
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 3
Liquidity Index : 0.39
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 4.9
Coarse Sand (-No.10 + No.40) : 9.1
Fine Sand (-No.40 + No.200) : 24.3
Silt + Clay (-No.200) : 61.7

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) : 3.9
Medium Sand (-No.10 + No.40) : 9.1
Fine Sand (-No.40 + No.200) : 24.3
Silt + Clay (-No.200) : 61.7

Approved By : J.S.

Soil No. 71

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Tan & Gray Silty Clay with Sand

Sample No. : ST-1
Sample Loc. : Boring No. B-170
Sample Depth : 4.6' to 5.9'
Date Tested : 02/05/16
Date Reported : 02/29/16

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	
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	90.3
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	72.2
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} = 0.0098 mm

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

Natural Moisture (%) (AASHTO T265) : 24.2
Liquid Limit (AASHTO T89) : 25
Plastic Limit (AASHTO T90) : 19
Plasticity Index : 6
Liquidity Index : 0.89
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (2)
ASTM Classification: D2487 : CL-ML

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.7
Coarse Sand (-No.10 + No.40) : 9.0
Fine Sand (-No.40 + No.200) : 18.1
Silt + Clay (-No.200) : 72.2

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.7
Medium Sand (-No.10 + No.40) : 9.0
Fine Sand (-No.40 + No.200) : 18.1
Silt + Clay (-No.200) : 72.2

Approved By : J.S.

Soil No. 72

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SOIL CLASSIFICATION

Project Name : North Cabot Interchange
Project No. : 251539
Project County : Lonoke
Project State : Arkansas
Laboratory No. : 251539
Submitted By : HDR | ICA
Soil Type : Brown, Tan & Gray Sandy Lean Clay

Sample No. : ST-1
Sample Loc. : Boring No. B-171
Sample Depth : 4.5' to 5.8'
Date Tested : 02/05/16
Date Reported : 02/29/16

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	
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	99.3

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	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} = 0.0137 mm

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

Natural Moisture (%) (AASHTO T265) : 23.4
Liquid Limit (AASHTO T89) : 25
Plastic Limit (AASHTO T90) : 17
Plasticity Index : 8
Liquidity Index : 0.79
Activity : NA
Sp. Gr. (AASHTO T100) : 2.686
AASHTO Classification: M145 : A-4 (3)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 0.7
Coarse Sand (-No.10 + No.40) : 6.1
Fine Sand (-No.40 + No.200) : 25.9
Silt + Clay (-No.200) : 67.3

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) : 6.1
Fine Sand (-No.40 + No.200) : 25.9
Silt + Clay (-No.200) : 67.3

Approved By : J.S.

Soil No. 73

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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-100
Project State	: Arkansas	Sample Depth	: 5.7' to 6.2'
Laboratory #	: 251539	Date Tested	: 02/11/16
Submitted By	: HDR | ICA	Date Reported	: 03/01/16

Soil Type	: Tan & Gray Silty, Clayey Sand				
Wet Density	: 132.6	pcf	Initial Height	: 5.72	in
Dry Density	: 109.5	pcf	Initial Diameter	: 2.79	in
Moisture	: 21.1	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	2.9	0.04	0.3	0.07
3	3.8	0.04	0.5	0.09
4	5.8	0.04	0.8	0.13
5	7.7	0.04	1.0	0.18
6	9.6	0.04	1.3	0.22
7	10.6	0.04	1.6	0.25
8	11.5	0.04	1.8	0.27
9	12.5	0.04	2.1	0.29
10	13.5	0.04	2.4	0.31
11	15.4	0.04	2.8	0.35
12	16.4	0.04	3.1	0.37
13	17.3	0.04	3.5	0.39
14	18.3	0.04	3.8	0.41
15	19.2	0.04	4.2	0.43
16	19.2	0.04	4.5	0.43
17	20.2	0.04	4.9	0.45
18	20.2	0.04	5.2	0.45
19	20.2	0.05	5.7	0.45
20	21.2	0.05	6.1	0.47
21	21.2	0.05	6.6	0.47
22	21.2	0.05	7.0	0.46
23	21.2	0.05	7.4	0.46
24	21.2	0.05	7.9	0.46
25	22.1	0.05	8.3	0.48
26	22.1	0.05	8.7	0.47
27	22.1	0.05	9.6	0.47
28	22.1	0.05	10.5	0.47
29	21.2	0.05	11.4	0.44
30	21.2	0.05	12.2	0.44
31	20.2	0.05	13.1	0.41

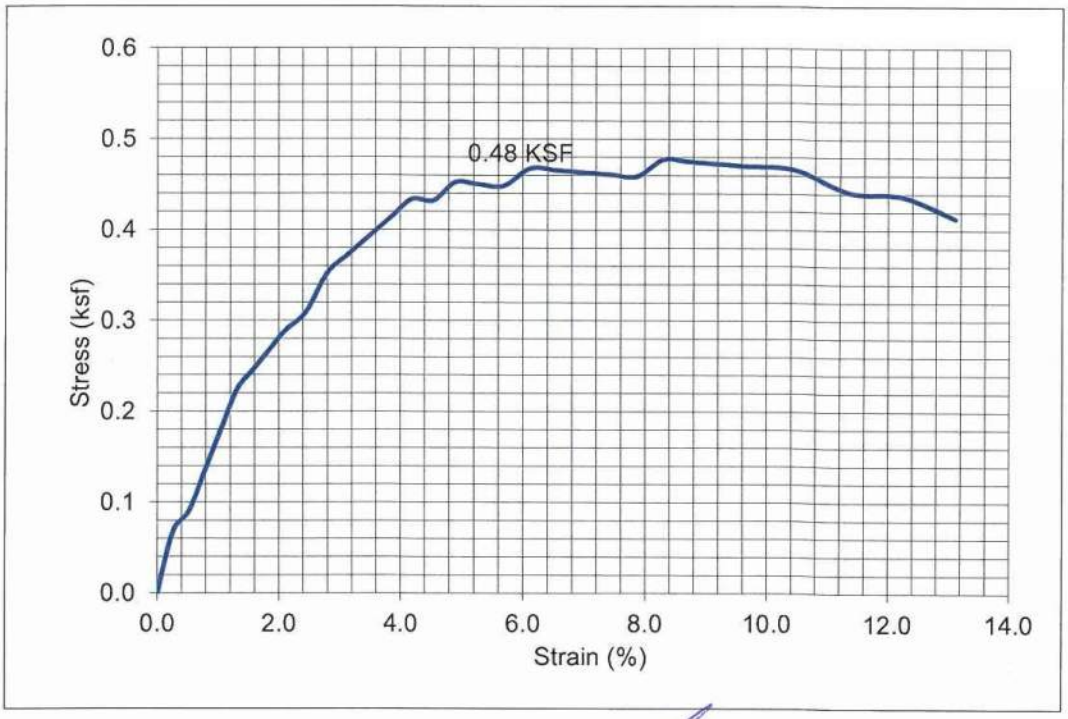
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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-100
Project State	: Arkansas	Sample Depth	: 5.7' to 6.2'
Laboratory #	: 251539	Date Tested	: 02/11/16
Submitted By	: HDR | ICA	Date Reported	: 03/01/16
Soil Type	: Tan & Gray Silty, Clayey Sand		
Wet Density	: 132.6 pcf	Initial Height	: 5.72 in
Dry Density	: 109.5 pcf	Initial Diameter	: 2.79 in
Moisture	: 21.1 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-104
Project State	: Arkansas	Sample Depth	: 5.0' to 5.5'
Laboratory #	: 251539	Date Tested	: 10/19/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15

Soil Type	: Gray, Brown & Tan Clayey Sand				
Wet Density	: 131.5	pcf	Initial Height	: 5.77	in
Dry Density	: 113.7	pcf	Initial Diameter	: 2.83	in
Moisture	: 15.6	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	28.9	0.04	0.3	0.66
3	63.5	0.04	0.5	1.45
4	97.1	0.04	0.8	2.21
5	129.9	0.04	1.0	2.94
6	156.8	0.04	1.3	3.54
7	177.9	0.04	1.6	4.01
8	194.3	0.04	1.8	4.37
9	203.9	0.04	2.1	4.57
10	204.9	0.04	2.4	4.58
11	182.8	0.04	2.8	4.07
12	164.5	0.05	3.1	3.65
13	135.6	0.05	3.5	3.00

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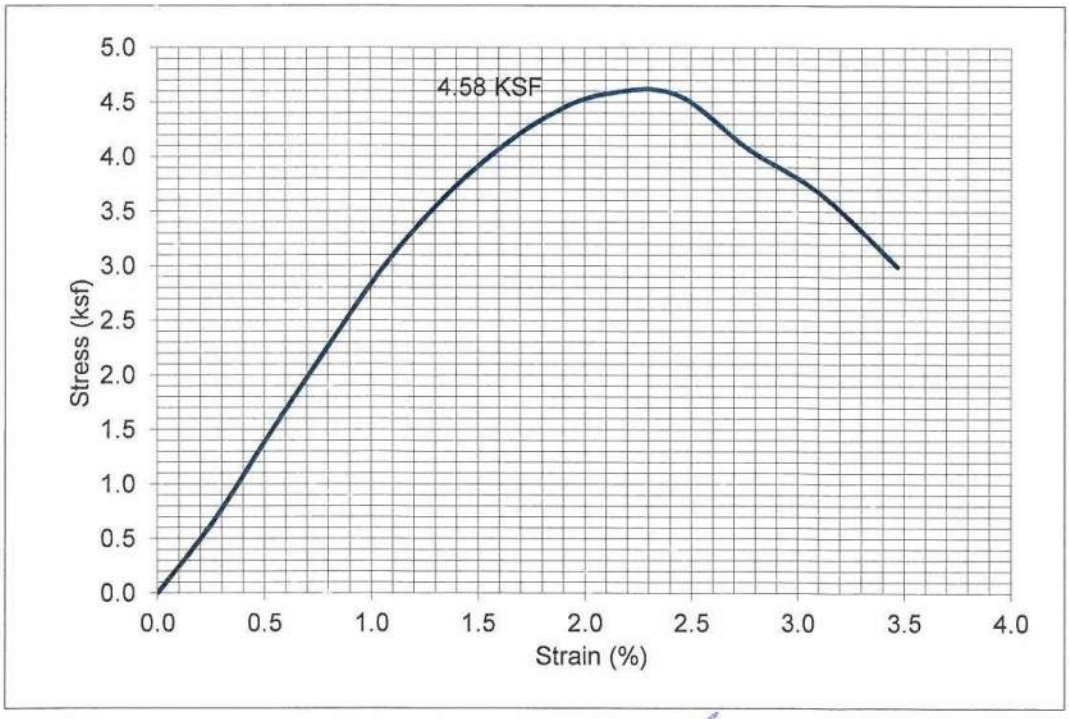
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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-104
Project State	: Arkansas	Sample Depth	: 5.0' to 5.5'
Laboratory #	: 251539	Date Tested	: 10/19/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15
Soil Type	: Gray, Brown & Tan Clayey Sand		
Wet Density	: 131.5 pcf	Initial Height	: 5.77 in
Dry Density	: 113.7 pcf	Initial Diameter	: 2.83 in
Moisture	: 15.6 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





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AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-135
Project State	: Arkansas	Sample Depth	: 5.5' to 6.0'
Laboratory #	: 251539	Date Tested	: 10/20/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15

Soil Type	: Brown Sandy, Silty Clay				
Wet Density	: 131.2	pcf	Initial Height	: 5.91	in
Dry Density	: 113.6	pcf	Initial Diameter	: 2.80	in
Moisture	: 15.5	%	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	14.4	0.04	0.5	0.34
4	20.2	0.04	0.8	0.47
5	22.1	0.04	1.0	0.51
6	26.0	0.04	1.3	0.60
7	27.9	0.04	1.5	0.64
8	29.8	0.04	1.8	0.69
9	32.7	0.04	2.0	0.75
10	36.6	0.04	2.4	0.84
11	39.4	0.04	2.7	0.90
12	43.3	0.04	3.0	0.98
13	45.2	0.04	3.4	1.02
14	50.0	0.04	3.7	1.13
15	52.9	0.04	4.1	1.19
16	56.8	0.04	4.4	1.27
17	59.6	0.04	4.7	1.33
18	63.5	0.04	5.1	1.41
19	68.3	0.05	5.5	1.51
20	73.1	0.05	5.9	1.61
21	76.9	0.05	6.3	1.69
22	80.8	0.05	6.8	1.77
23	83.7	0.05	7.2	1.82
24	87.5	0.05	7.6	1.90
25	89.5	0.05	8.0	1.93
26	84.6	0.05	8.5	1.82
27	61.6	0.05	9.3	1.31

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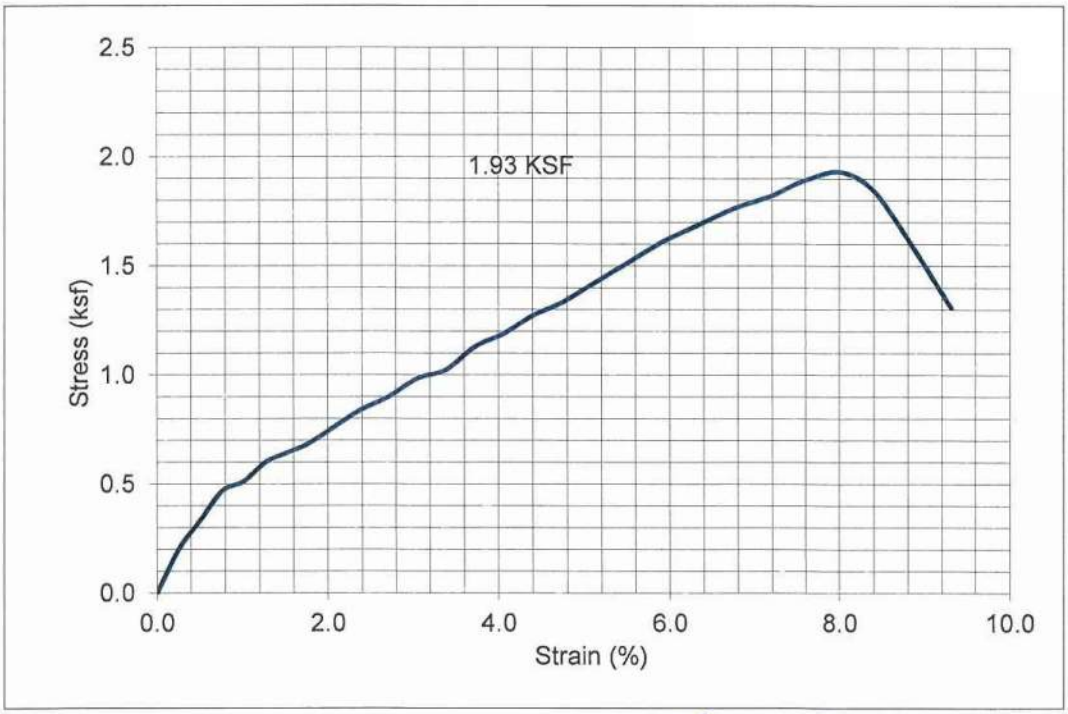
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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-135
Project State	: Arkansas	Sample Depth	: 5.5' to 6.0'
Laboratory #	: 251539	Date Tested	: 10/20/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15
Soil Type	: Brown Sandy, Silty Clay		
Wet Density	: 131.2 pcf	Initial Height	: 5.91 in
Dry Density	: 113.6 pcf	Initial Diameter	: 2.80 in
Moisture	: 15.5 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-2
Project County	: Lonoke	Sample Loc.	: Boring No. B-135
Project State	: Arkansas	Sample Depth	: 11.3' to 11.8'
Laboratory #	: 251539	Date Tested	: 10/20/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15

Soil Type	: Gray, Brown & Tan Sandy Silt				
Wet Density	: 128.5	pcf	Initial Height	: 5.84	in
Dry Density	: 106.8	pcf	Initial Diameter	: 2.85	in
Moisture	: 20.2	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	4.8	0.04	0.3	0.11
3	7.7	0.04	0.5	0.17
4	13.5	0.04	0.8	0.30
5	18.3	0.04	1.0	0.41
6	22.1	0.04	1.3	0.49
7	26.0	0.04	1.5	0.58
8	29.8	0.04	1.8	0.66
9	33.7	0.05	2.1	0.75
10	35.6	0.05	2.4	0.79
11	36.6	0.05	2.7	0.80
12	36.6	0.05	3.1	0.80
13	37.5	0.05	3.4	0.82
14	36.6	0.05	3.8	0.80
15	33.7	0.05	4.1	0.73

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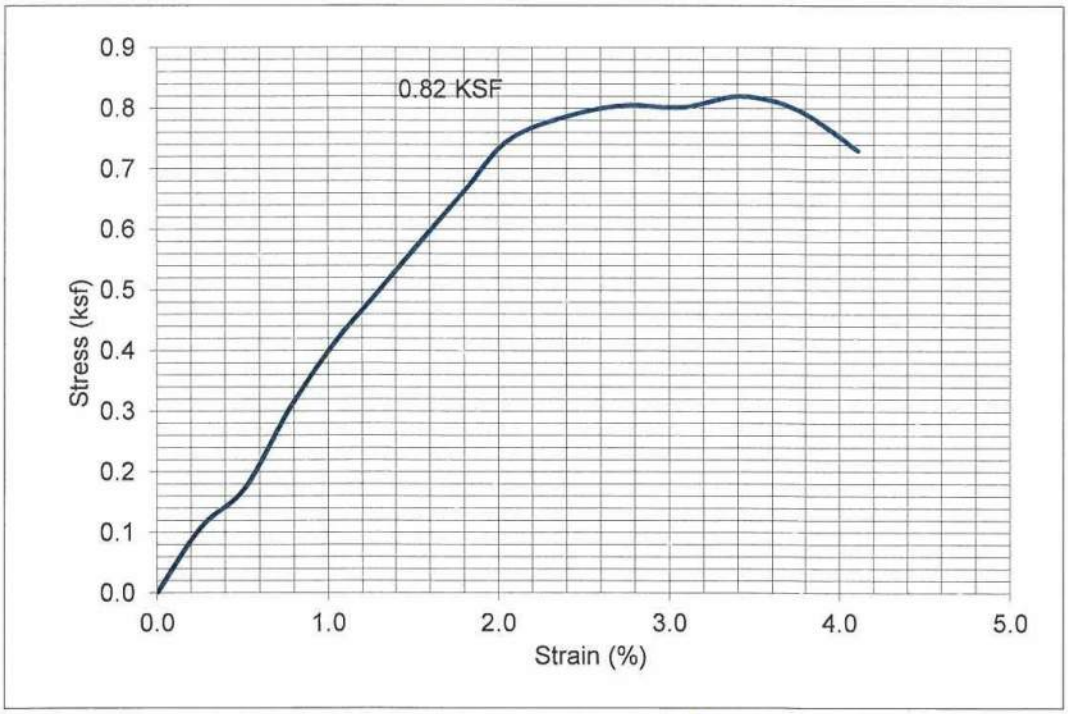
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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-2
Project County	: Lonoke	Sample Loc.	: Boring No. B-135
Project State	: Arkansas	Sample Depth	: 11.3' to 11.8'
Laboratory #	: 251539	Date Tested	: 10/20/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15
Soil Type	: Gray, Brown & Tan Sandy Silt		
Wet Density	: 128.5 pcf	Initial Height	: 5.84 in
Dry Density	: 106.8 pcf	Initial Diameter	: 2.85 in
Moisture	: 20.2 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-135A
Project State	: Arkansas	Sample Depth	: 4.7' to 5.2'
Laboratory #	: 251539	Date Tested	: 02/01/16
Submitted By	: HDR | ICA	Date Reported	: 03/01/16

Soil Type	: Brown Sandy Silt				
Wet Density	: 130.8	pcf	Initial Height	: 5.76	in
Dry Density	: 108.8	pcf	Initial Diameter	: 2.84	in
Moisture	: 20.2	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	1.9	0.04	0.3	0.04
3	3.8	0.04	0.5	0.09
4	5.8	0.04	0.8	0.13
5	6.7	0.04	1.0	0.15
6	9.6	0.04	1.3	0.22
7	12.5	0.04	1.6	0.28
8	13.5	0.04	1.8	0.30
9	15.4	0.05	2.1	0.34
10	19.2	0.05	2.4	0.43
11	21.2	0.05	2.8	0.47
12	24.0	0.05	3.1	0.53
13	26.9	0.05	3.5	0.59
14	28.9	0.05	3.8	0.63
15	30.8	0.05	4.2	0.67
16	33.7	0.05	4.5	0.73
17	35.6	0.05	4.9	0.77
18	37.5	0.05	5.2	0.81
19	38.5	0.05	5.6	0.82
20	41.4	0.05	6.1	0.88
21	43.3	0.05	6.5	0.92
22	44.2	0.05	7.0	0.93
23	46.2	0.05	7.4	0.97
24	47.1	0.05	7.8	0.99
25	50.0	0.05	8.3	1.04
26	51.0	0.05	8.7	1.06
27	51.9	0.05	9.6	1.07
28	53.9	0.05	10.4	1.09
29	57.7	0.05	11.3	1.16
30	59.6	0.05	12.2	1.19
31	60.6	0.05	13.0	1.20
32	61.6	0.05	13.9	1.20
33	62.5	0.05	14.8	1.21
34	61.6	0.05	15.6	1.18
35	60.6	0.05	16.5	1.15
36	57.7	0.05	17.4	1.08

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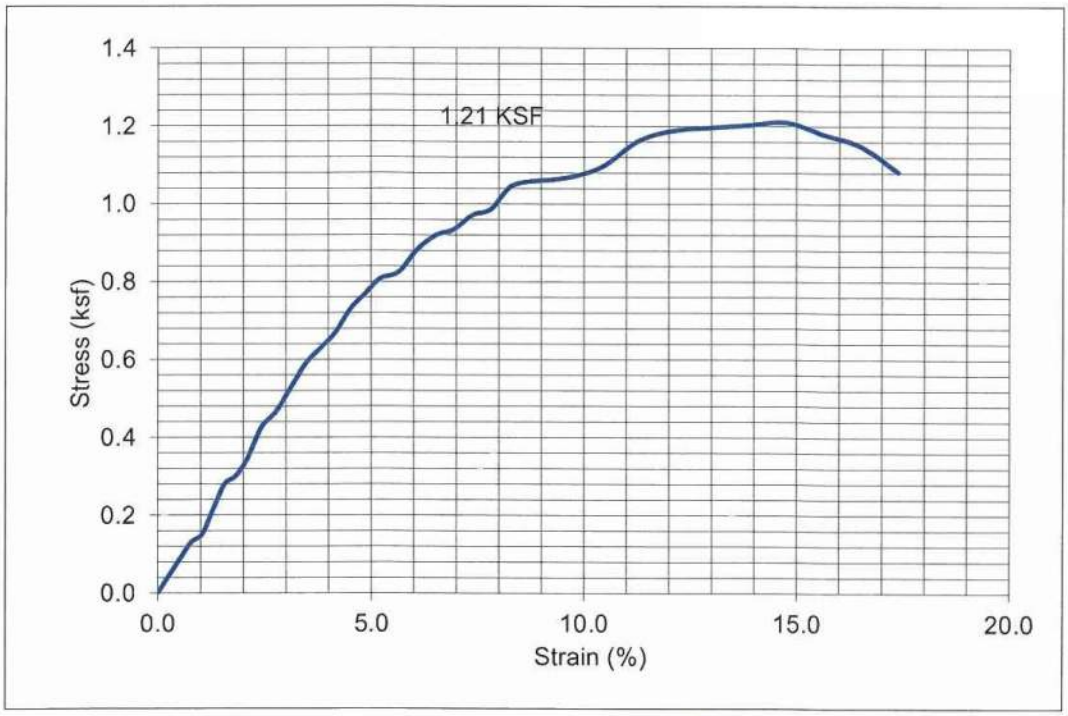
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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-135A
Project State	: Arkansas	Sample Depth	: 4.7' to 5.2'
Laboratory #	: 251539	Date Tested	: 02/01/16
Submitted By	: HDR | ICA	Date Reported	: 03/01/16
Soil Type	: Brown Sandy Silt		
Wet Density	: 130.8 pcf	Initial Height	: 5.76 in
Dry Density	: 108.8 pcf	Initial Diameter	: 2.84 in
Moisture	: 20.2 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-139
Project State	: Arkansas	Sample Depth	: 9.3' to 9.9'
Laboratory #	: 251539	Date Tested	: 10/19/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15

Soil Type	: Gray & Tan Silty Sand				
Wet Density	: 121.4	pcf	Initial Height	: 5.78	in
Dry Density	: 101.2	pcf	Initial Diameter	: 2.87	in
Moisture	: 19.9	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	2.9	0.04	0.3	0.06
3	6.7	0.05	0.5	0.15
4	8.7	0.05	0.8	0.19
5	12.5	0.05	1.0	0.28
6	15.4	0.05	1.3	0.34
7	18.3	0.05	1.6	0.40
8	21.2	0.05	1.8	0.46
9	23.1	0.05	2.1	0.50
10	26.9	0.05	2.4	0.59
11	28.9	0.05	2.8	0.63
12	29.8	0.05	3.1	0.65
13	30.8	0.05	3.5	0.66
14	30.8	0.05	3.8	0.66
15	30.8	0.05	4.2	0.66
16	29.8	0.05	4.5	0.64

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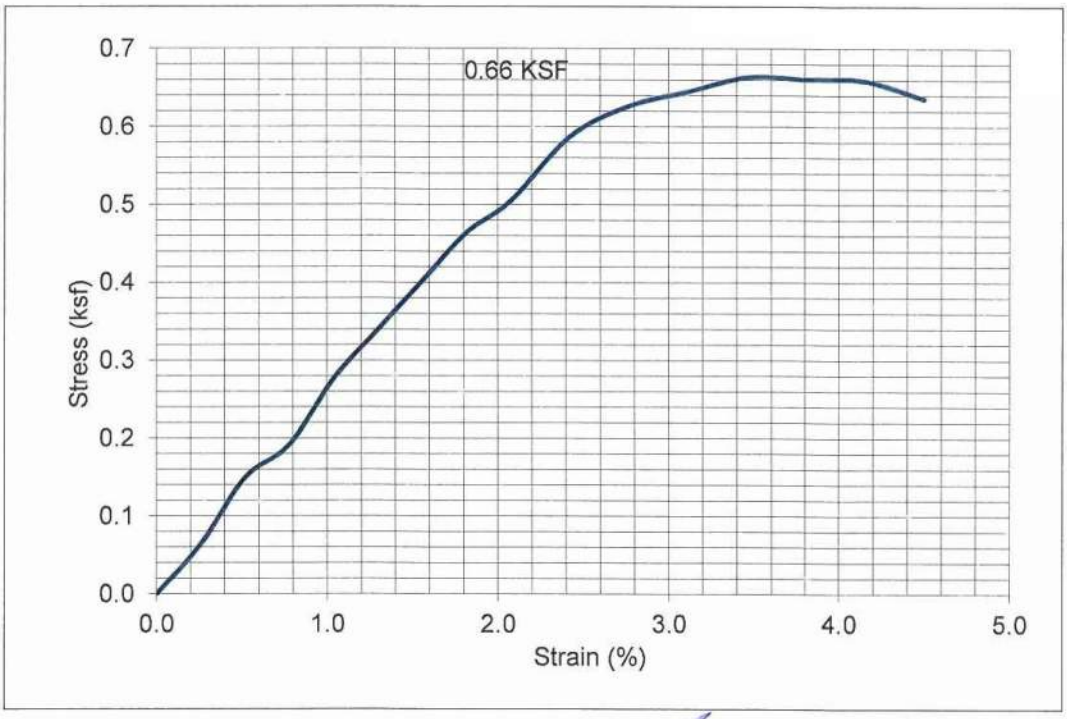
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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-139
Project State	: Arkansas	Sample Depth	: 9.3' to 9.9'
Laboratory #	: 251539	Date Tested	: 10/19/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15
Soil Type	: Gray & Tan Silty Sand		
Wet Density	: 121.4 pcf	Initial Height	: 5.78 in
Dry Density	: 101.2 pcf	Initial Diameter	: 2.87 in
Moisture	: 19.9 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-140
Project State	: Arkansas	Sample Depth	: 4.7' to 5.2'
Laboratory #	: 251539	Date Tested	: 02/11/16
Submitted By	: HDR | ICA	Date Reported	: 03/01/16
Soil Type	: Brown Sandy Silt		
Wet Density	: 129.7 pcf	Initial Height	: 5.82 in
Dry Density	: 107.3 pcf	Initial Diameter	: 2.85 in
Moisture	: 20.8 %	Proving Ring	: #22734

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	3.8	0.04	0.3	0.09
3	9.6	0.04	0.5	0.22
4	12.5	0.04	0.8	0.28
5	18.3	0.04	1.0	0.41
6	22.1	0.04	1.3	0.49
7	26.9	0.04	1.5	0.60
8	31.7	0.04	1.8	0.71
9	34.6	0.05	2.1	0.77
10	41.4	0.05	2.4	0.91
11	46.2	0.05	2.8	1.02
12	50.0	0.05	3.1	1.10
13	54.8	0.05	3.4	1.20
14	57.7	0.05	3.8	1.26
15	63.5	0.05	4.1	1.38
16	66.4	0.05	4.5	1.43
17	70.2	0.05	4.8	1.51
18	73.1	0.05	5.2	1.57
19	78.9	0.05	5.6	1.69
20	81.8	0.05	6.0	1.74
21	85.6	0.05	6.4	1.81
22	87.5	0.05	6.9	1.84
23	90.4	0.05	7.3	1.90
24	94.3	0.05	7.7	1.97
25	96.2	0.05	8.2	2.00
26	98.1	0.05	8.6	2.03
27	101.0	0.05	9.5	2.07
28	102.9	0.05	10.3	2.09
29	102.9	0.05	11.2	2.07
30	102.9	0.05	12.0	2.05
31	102.0	0.05	12.9	2.01
32	101.0	0.05	13.8	1.97

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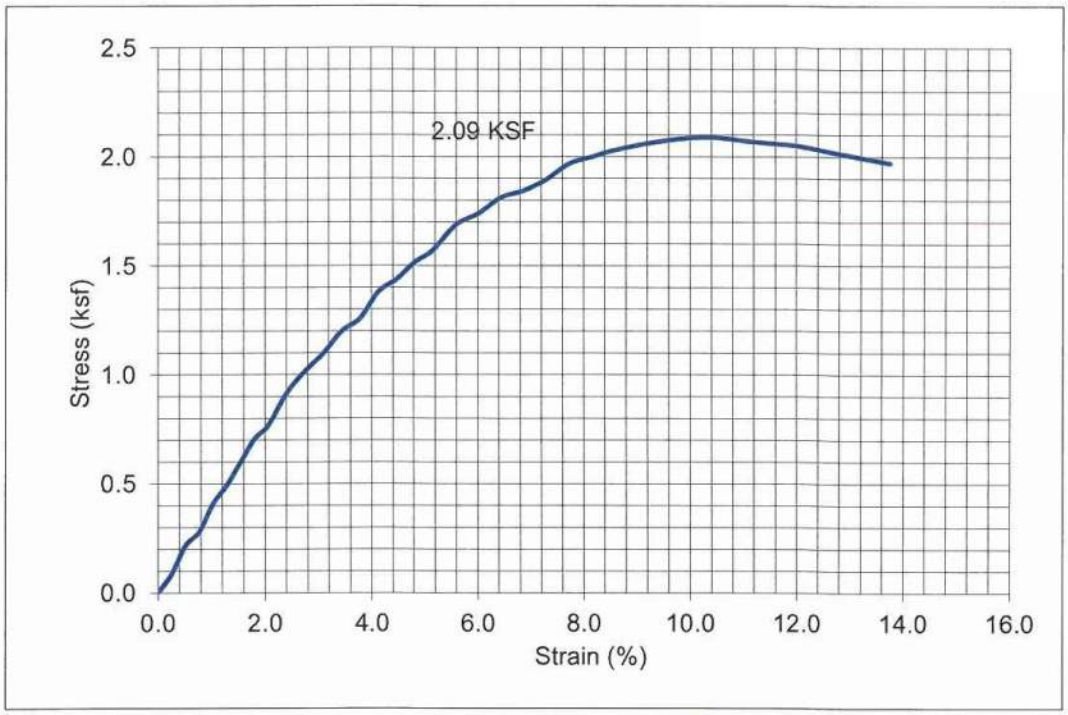
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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-140
Project State	: Arkansas	Sample Depth	: 4.7' to 5.2'
Laboratory #	: 251539	Date Tested	: 02/11/16
Submitted By	: HDR | ICA	Date Reported	: 03/01/16
Soil Type	: Brown Sandy Silt		
Wet Density	: 129.7 pcf	Initial Height	: 5.82 in
Dry Density	: 107.3 pcf	Initial Diameter	: 2.85 in
Moisture	: 20.8 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-2
Project County	: Lonoke	Sample Loc.	: Boring No. B-147
Project State	: Arkansas	Sample Depth	: 15.5' to 16.0'
Laboratory #	: 251539	Date Tested	: 10/20/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15
Soil Type	: Black, Tan & Gray Lean Clay		
Wet Density	: 115.7 pcf	Initial Height	: 5.87 in
Dry Density	: 93.1 pcf	Initial Diameter	: 2.85 in
Moisture	: 24.2 %	Proving Ring	: #22734

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	5.8	0.04	0.3	0.13
3	10.6	0.04	0.5	0.24
4	15.4	0.04	0.8	0.35
5	21.2	0.04	1.0	0.47
6	26.0	0.04	1.3	0.58
7	30.8	0.04	1.5	0.69
8	34.6	0.05	1.8	0.77
9	37.5	0.05	2.0	0.83
10	40.4	0.05	2.4	0.89
11	42.3	0.05	2.7	0.93
12	43.3	0.05	3.1	0.95
13	44.2	0.05	3.4	0.97
14	46.2	0.05	3.8	1.00
15	49.1	0.05	4.1	1.06
16	51.0	0.05	4.4	1.10
17	51.9	0.05	4.8	1.12
18	52.9	0.05	5.1	1.14
19	54.8	0.05	5.5	1.17
20	56.8	0.05	6.0	1.21
21	58.7	0.05	6.4	1.24
22	59.6	0.05	6.8	1.26
23	60.6	0.05	7.2	1.27
24	61.6	0.05	7.7	1.29
25	62.5	0.05	8.1	1.30
26	63.5	0.05	8.5	1.31
27	64.4	0.05	9.4	1.32
28	65.4	0.05	10.2	1.33
29	66.4	0.05	11.1	1.33
30	66.4	0.05	11.9	1.32
31	66.4	0.05	12.8	1.31
32	65.4	0.05	13.6	1.28

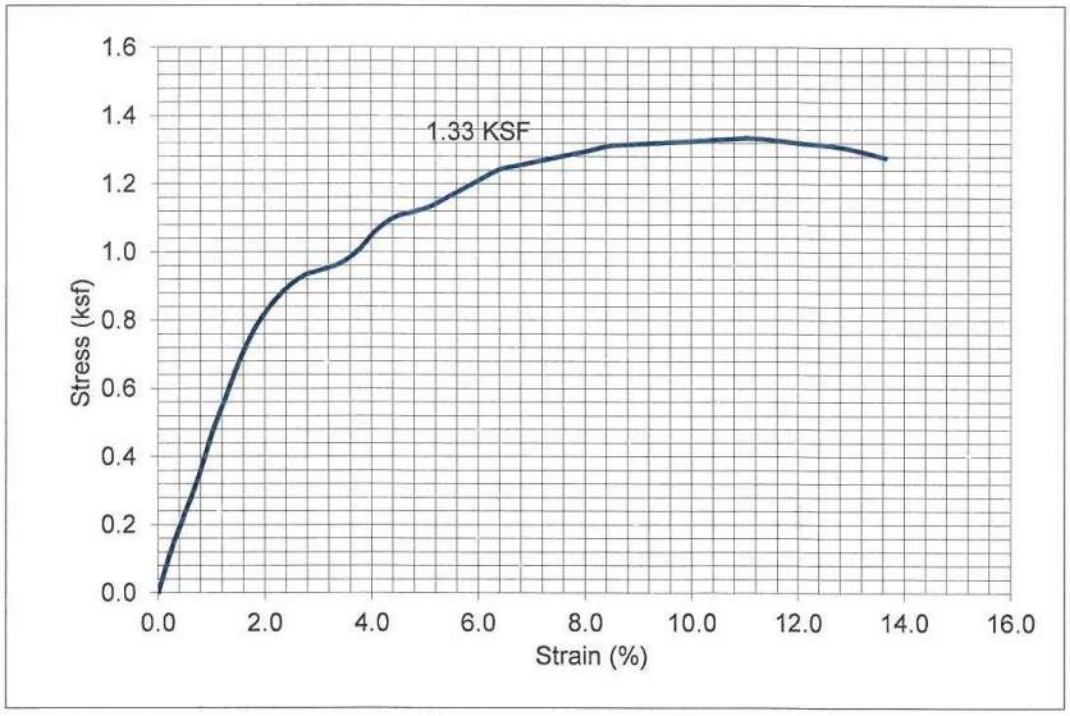
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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-2
Project County	: Lonoke	Sample Loc.	: Boring No. B-147
Project State	: Arkansas	Sample Depth	: 15.5' to 16.0'
Laboratory #	: 251539	Date Tested	: 10/20/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15
Soil Type	: Black, Tan & Gray Lean Clay		
Wet Density	: 115.7 pcf	Initial Height	: 5.87 in
Dry Density	: 93.1 pcf	Initial Diameter	: 2.85 in
Moisture	: 24.2 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-168
Project State	: Arkansas	Sample Depth	: 5.1' to 5.6'
Laboratory #	: 251539	Date Tested	: 10/19/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15

Soil Type	: Gray, White & Tan Lean Clay with Sand				
Wet Density	: 129.6	pcf	Initial Height	: 5.87	in
Dry Density	: 108.9	pcf	Initial Diameter	: 2.85	in
Moisture	: 19.0	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	4.8	0.04	0.3	0.11
3	18.3	0.04	0.5	0.41
4	50.0	0.04	0.8	1.12
5	88.5	0.04	1.0	1.98
6	121.2	0.04	1.3	2.70
7	151.0	0.05	1.5	3.35
8	177.0	0.05	1.8	3.92
9	199.1	0.05	2.0	4.40
10	218.3	0.05	2.4	4.81
11	231.8	0.05	2.7	5.09
12	231.8	0.05	3.1	5.07
13	157.7	0.05	3.4	3.44
14	35.6	0.05	3.7	0.77

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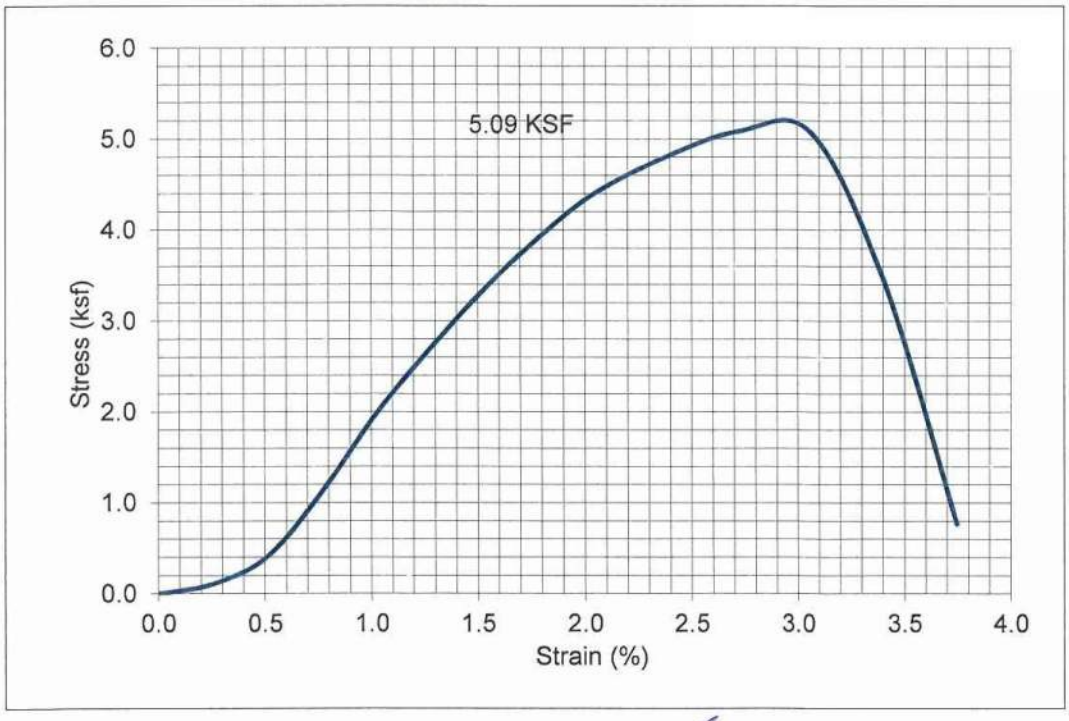
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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-168
Project State	: Arkansas	Sample Depth	: 5.1' to 5.6'
Laboratory #	: 251539	Date Tested	: 10/19/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15
Soil Type	: Gray, White & Tan Lean Clay with Sand		
Wet Density	: 129.6 pcf	Initial Height	: 5.87 in
Dry Density	: 108.9 pcf	Initial Diameter	: 2.85 in
Moisture	: 19.0 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-167
Project State	: Arkansas	Sample Depth	: 4.9' to 5.4'
Laboratory #	: 251539	Date Tested	: 10/19/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15

Soil Type	: Brown, Tan, Yellow, Black & Gray Sandy Lean Clay				
Wet Density	: 136.4	pcf	Initial Height	: 5.86	in
Dry Density	: 124.0	pcf	Initial Diameter	: 2.81	in
Moisture	: 9.9	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	22.1	0.04	0.3	0.51
3	101.0	0.04	0.5	2.33
4	172.2	0.04	0.8	3.97
5	230.8	0.04	1.0	5.31
6	294.3	0.04	1.3	6.75
7	375.1	0.04	1.5	8.58
8	477.1	0.04	1.8	10.88
9	555.0	0.04	2.0	12.62
10	586.3	0.04	2.4	13.29
11	681.3	0.04	2.7	15.39
12	765.3	0.04	3.1	17.23
13	802.9	0.04	3.4	18.01
14	760.9	0.04	3.8	17.01
15	621.6	0.04	4.1	13.84
16	539.6	0.05	4.4	11.97

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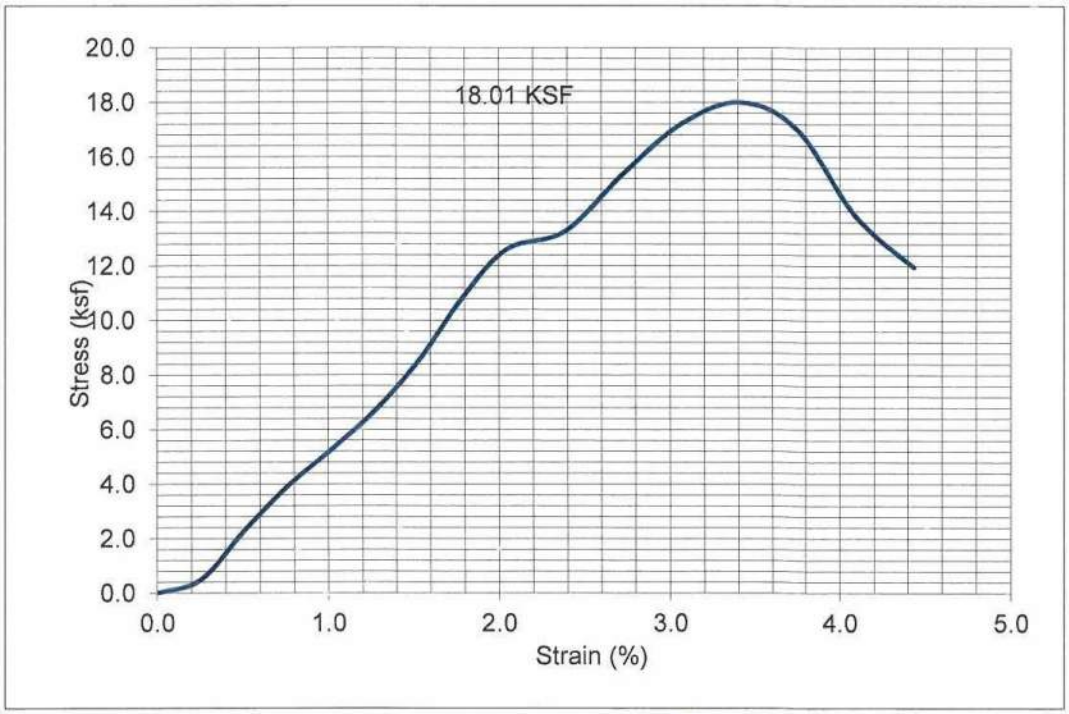
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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-167
Project State	: Arkansas	Sample Depth	: 4.9' to 5.4'
Laboratory #	: 251539	Date Tested	: 10/19/15
Submitted By	: HDR | ICA	Date Reported	: 11/04/15
Soil Type	: Brown, Tan, Yellow, Black & Gray Sandy Lean Clay		
Wet Density	: 136.4 pcf	Initial Height	: 5.86 in
Dry Density	: 124.0 pcf	Initial Diameter	: 2.81 in
Moisture	: 9.9 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-169
Project State	: Arkansas	Sample Depth	: 10.0' to 10.5'
Laboratory #	: 251539	Date Tested	: 02/01/16
Submitted By	: HDR | ICA	Date Reported	: 03/01/16

Soil Type	: Tan & Gray Sandy Silt				
Wet Density	: 128.5	pcf	Initial Height	: 5.79	in
Dry Density	: 107.8	pcf	Initial Diameter	: 2.84	in
Moisture	: 19.2	%	Proving Ring	: #22734	

RESULTS:

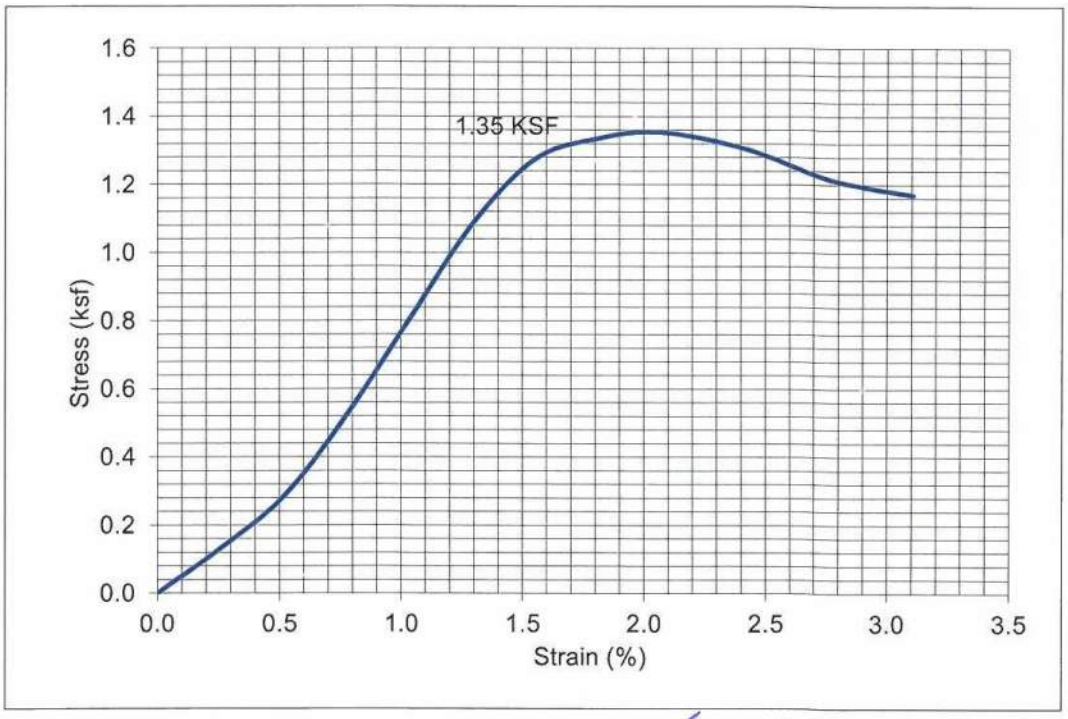
#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	5.8	0.04	0.3	0.13
3	12.5	0.04	0.5	0.28
4	23.1	0.04	0.8	0.52
5	35.6	0.04	1.0	0.80
6	48.1	0.04	1.3	1.08
7	56.8	0.04	1.6	1.27
8	59.6	0.04	1.8	1.34
9	60.6	0.04	2.1	1.35
10	58.7	0.04	2.4	1.31
11	54.8	0.05	2.8	1.22
12	52.9	0.05	3.1	1.17

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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-169
Project State	: Arkansas	Sample Depth	: 10.0' to 10.5'
Laboratory #	: 251539	Date Tested	: 02/01/16
Submitted By	: HDR | ICA	Date Reported	: 03/01/16
Soil Type	: Tan & Gray Sandy Silt		
Wet Density	: 128.5 pcf	Initial Height	: 5.79 in
Dry Density	: 107.8 pcf	Initial Diameter	: 2.84 in
Moisture	: 19.2 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





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UNCONFINED COMPRESSION TEST

AASHTO: T-208

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-170
Project State	: Arkansas	Sample Depth	: 5.1' to 5.6'
Laboratory #	: 251539	Date Tested	: 02/01/16
Submitted By	: HDR | ICA	Date Reported	: 03/01/16

Soil Type	: Tan & Gray Silty Clay with Sand				
Wet Density	: 126.4	pcf	Initial Height	: 5.71	in
Dry Density	: 101.8	pcf	Initial Diameter	: 2.85	in
Moisture	: 24.2	%	Proving Ring	: #22734	

RESULTS:

#	Axial Load lbs	Corrected Area sf	Unit Strain %	Stress Ksf
1	0.0	0.04	0.0	0.00
2	3.8	0.04	0.3	0.09
3	6.7	0.04	0.5	0.15
4	11.5	0.04	0.8	0.26
5	14.4	0.04	1.1	0.32
6	20.2	0.04	1.3	0.45
7	24.0	0.04	1.6	0.53
8	28.9	0.05	1.8	0.64
9	33.7	0.05	2.1	0.74
10	36.6	0.05	2.5	0.81
11	41.4	0.05	2.8	0.91
12	45.2	0.05	3.2	0.99
13	49.1	0.05	3.5	1.07
14	51.0	0.05	3.9	1.11
15	51.9	0.05	4.2	1.12
16	54.8	0.05	4.6	1.18
17	56.8	0.05	4.9	1.22
18	58.7	0.05	5.3	1.26
19	59.6	0.05	5.7	1.27
20	59.6	0.05	6.1	1.26
21	59.6	0.05	6.6	1.26
22	59.6	0.05	7.0	1.25

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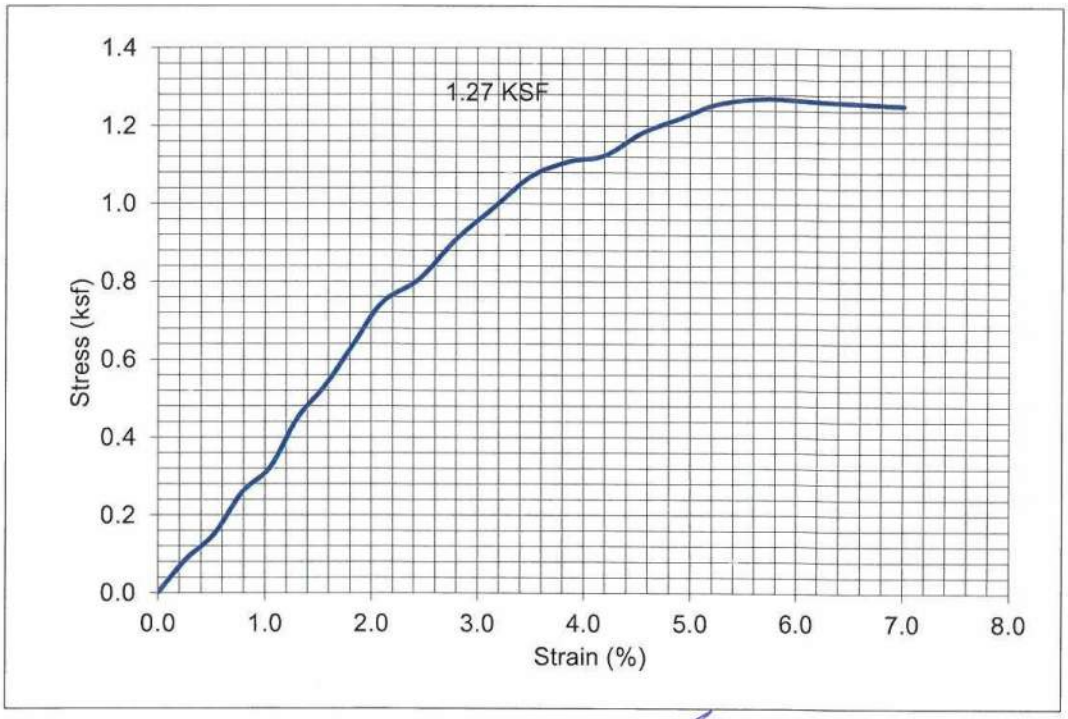
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UNCONFINED COMPRESSION TEST

Project Name	: North Cabot Interchange		
Project #	: 251539	Sample #	: ST-1
Project County	: Lonoke	Sample Loc.	: Boring No. B-170
Project State	: Arkansas	Sample Depth	: 5.1' to 5.6'
Laboratory #	: 251539	Date Tested	: 02/01/16
Submitted By	: HDR | ICA	Date Reported	: 03/01/16
Soil Type	: Tan & Gray Silty Clay with Sand		
Wet Density	: 126.4 pcf	Initial Height	: 5.71 in
Dry Density	: 101.8 pcf	Initial Diameter	: 2.85 in
Moisture	: 24.2 %	Proving Ring	: #22734
Deg. of Sat.	: NA		
Comments	: AASHTO: T-208		





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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: North Cabot Interchange		
PROJECT #	: 251539	POINT #	: 1
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-100
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 14.6' to 15.2'
LABORATORY #	: 251539	DATE TESTED	: 02/01/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/01/16
SOIL TYPE	: Tan & Gray Sandy Elastic Silt		
WET DENSITY	: 113.89 pcf	DELTA HEIGHT	: 0.45 cm
DRY DENSITY	: 81.49 pcf	DELTA VOLUME	: NA
MOISTURE	: 39.75 %	CHAMBER PRES.	: 9.73 psi
		INITIAL HEIGHT	: 14.89 cm
		INITIAL DIAMETER	: 7.25 cm
		COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	9.73	9.73	1.00
2	0.09	9.73	11.04	1.13
3	0.18	9.73	12.57	1.29
4	0.26	9.73	14.09	1.45
5	0.35	9.73	15.61	1.6
6	0.44	9.73	17.12	1.76
7	0.53	9.73	18.42	1.89
8	1.06	9.73	24.94	2.56
9	1.58	9.73	28.2	2.9
10	2.11	9.73	28.73	2.95
11	2.64	9.73	28.01	2.88
12	3.17	9.73	27.5	2.82
13	3.52	9.73	27.23	2.8

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Unconsolidated Undrained

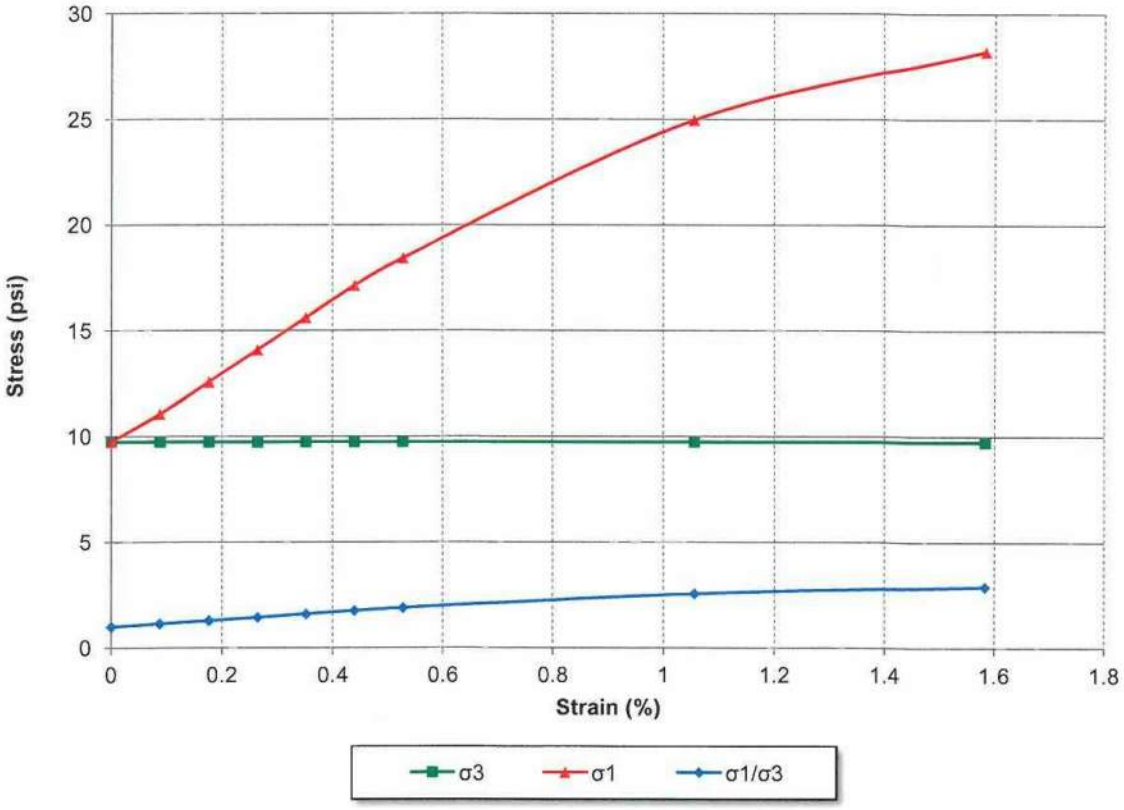
TRIAXIAL COMPRESSION TEST

PROJECT NAME	: North Cabot Interchange		
PROJECT #	: 251539	POINT #	: 1
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-100
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 14.6' to 15.2'
LABORATORY #	: 251539	DATE TESTED	: 02/01/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/01/16

FINAL MOISTURE	: 39.75 %	EFF. CONS. STRESS	: 9.73 psi
FINAL HEIGHT	: 11.52 cm	SPECIFIC GRAVITY	: 2.74
FINAL DIAMETER	: 8.08 cm	COMMENTS	: AASHTO T-296

RESULTS:





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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: North Cabot Interchange		
PROJECT #	: 251539	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-100
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 14.6' to 15.2'
LABORATORY #	: 251539	DATE TESTED	: 02/01/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/01/16

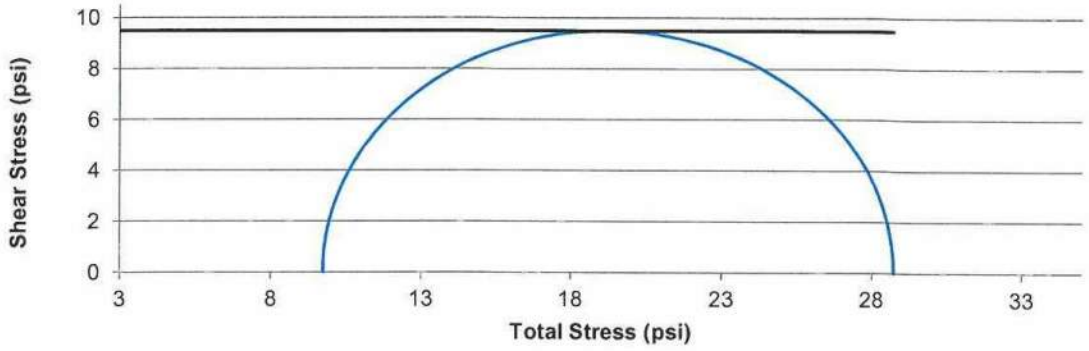
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	9.73 psi	28.73 psi

Compressive Strength =	2735 psf
Cohesion =	1368 psf
Phi =	0 deg
Tan (Phi) =	0

Maximum Deviator Stress

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



Approved By: Jeremy Sobo

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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: North Cabot Interchange		
PROJECT #	: 251539	POINT #	: 1
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-171
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 5.0' to 5.5'
LABORATORY #	: 251539	DATE TESTED	: 02/01/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/01/16
SOIL TYPE	: Brown, Tan & Gray Sandy Lean Clay		
WET DENSITY	: 128.54 pcf	DELTA HEIGHT	: 0.45 cm
DRY DENSITY	: 104.2 pcf	DELTA VOLUME	: NA
MOISTURE	: 23.35 %	CHAMBER PRES.	: 4.95 psi
		INITIAL HEIGHT	: 14.67 cm
		INITIAL DIAMETER	: 7.19 cm
		COMMENTS	: AASHTO T-296

RESULTS:

	ε a	σ 3 (psi)	σ 1 (psi)	σ1/σ3
1	0.00	4.95	4.95	1.00
2	0.09	4.95	5.17	1.04
3	0.18	4.95	5.39	1.09
4	0.27	4.95	5.62	1.13
5	0.36	4.95	5.84	1.18
6	0.45	4.95	6.06	1.22
7	0.54	4.95	6.28	1.27
8	1.07	4.95	6.93	1.4
9	1.61	4.95	8.01	1.62
10	2.14	4.95	8.64	1.75
11	2.68	4.95	9.49	1.92
12	3.22	4.95	9.89	2
13	3.57	4.95	10.3	2.08
14	4.47	4.95	11.1	2.24
15	5.36	4.95	11.67	2.36
16	6.25	4.95	12.02	2.43
17	7.15	4.95	12.57	2.54
18	8.04	4.95	12.71	2.57
19	8.93	4.95	13.03	2.63
20	9.83	4.95	13.15	2.66
21	10.72	4.95	13.27	2.68
22	11.61	4.95	13.58	2.74
23	12.51	4.95	13.69	2.76
24	13.40	4.95	13.6	2.75
25	14.29	4.95	13.7	2.77
26	15.18	4.95	13.8	2.79
27	16.08	4.95	13.89	2.8
28	16.97	4.95	13.98	2.82
29	17.86	4.95	13.88	2.8
30	18.76	4.95	13.96	2.82
31	19.65	4.95	14.21	2.87
32	20.54	4.95	14.28	2.88

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Unconsolidated Undrained

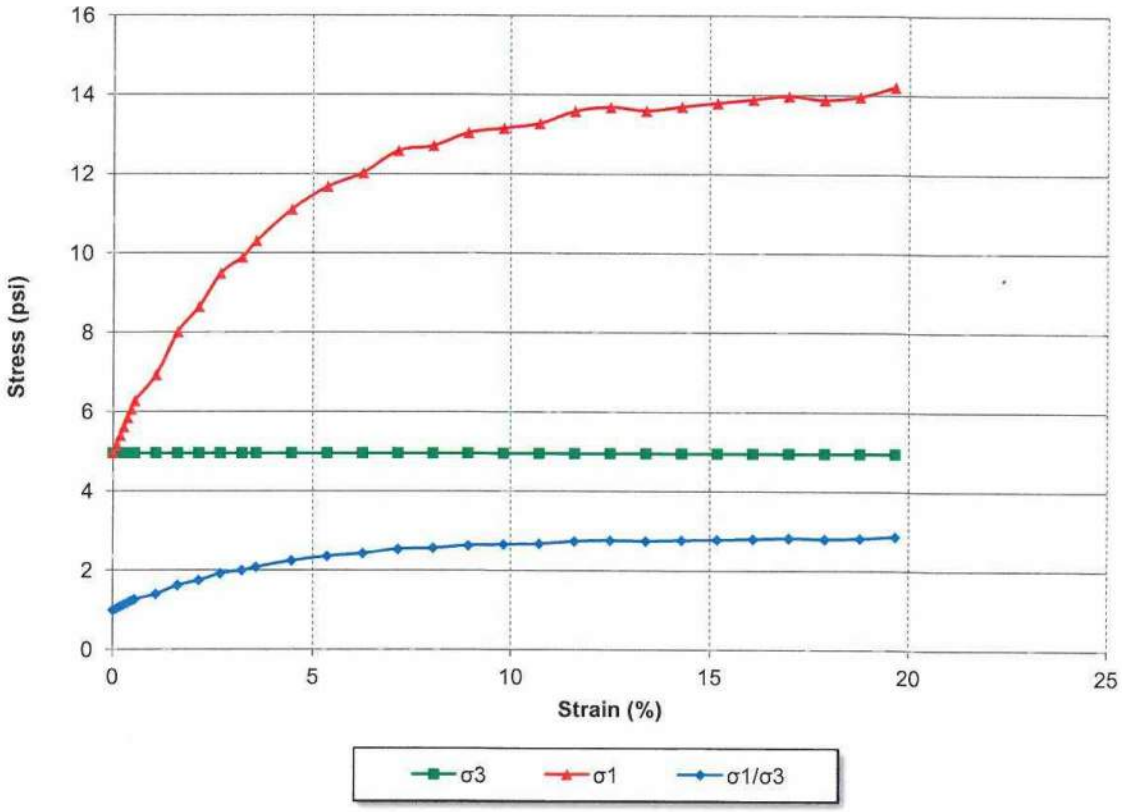
TRIAXIAL COMPRESSION TEST

PROJECT NAME	: North Cabot Interchange		
PROJECT #	: 251539	POINT #	: 1
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-171
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 5.0' to 5.5'
LABORATORY #	: 251539	DATE TESTED	: 02/01/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/01/16

FINAL MOISTURE	: 23.35 %	EFF. CONS. STRESS	: 4.95 psi
FINAL HEIGHT	: 11.3 cm	SPECIFIC GRAVITY	: 2.69
FINAL DIAMETER	: 8.03 cm	COMMENTS	: AASHTO T-296

RESULTS:





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TRIAXIAL COMPRESSION TEST

PROJECT NAME	: North Cabot Interchange		
PROJECT #	: 251539	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-171
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 5.0' to 5.5'
LABORATORY #	: 251539	DATE TESTED	: 02/01/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/01/16

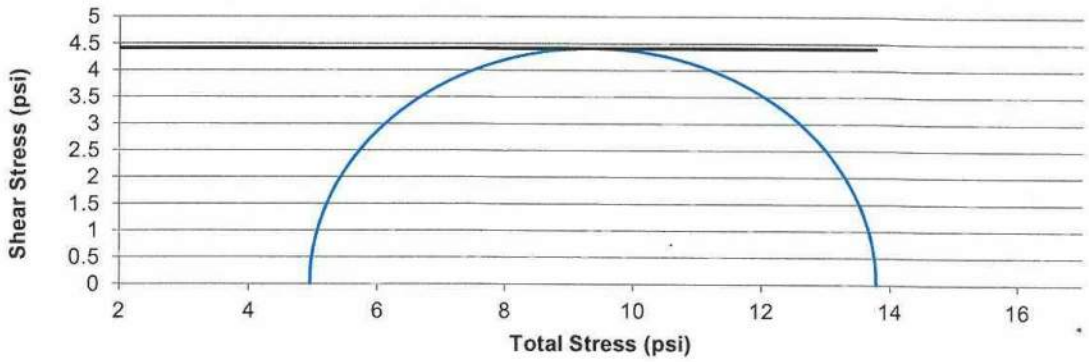
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total
1	4.95 psi	13.78 psi

Compressive Strength =	1271 psf
Cohesion =	635 psf
Phi =	0 deg
Tan (Phi) =	0

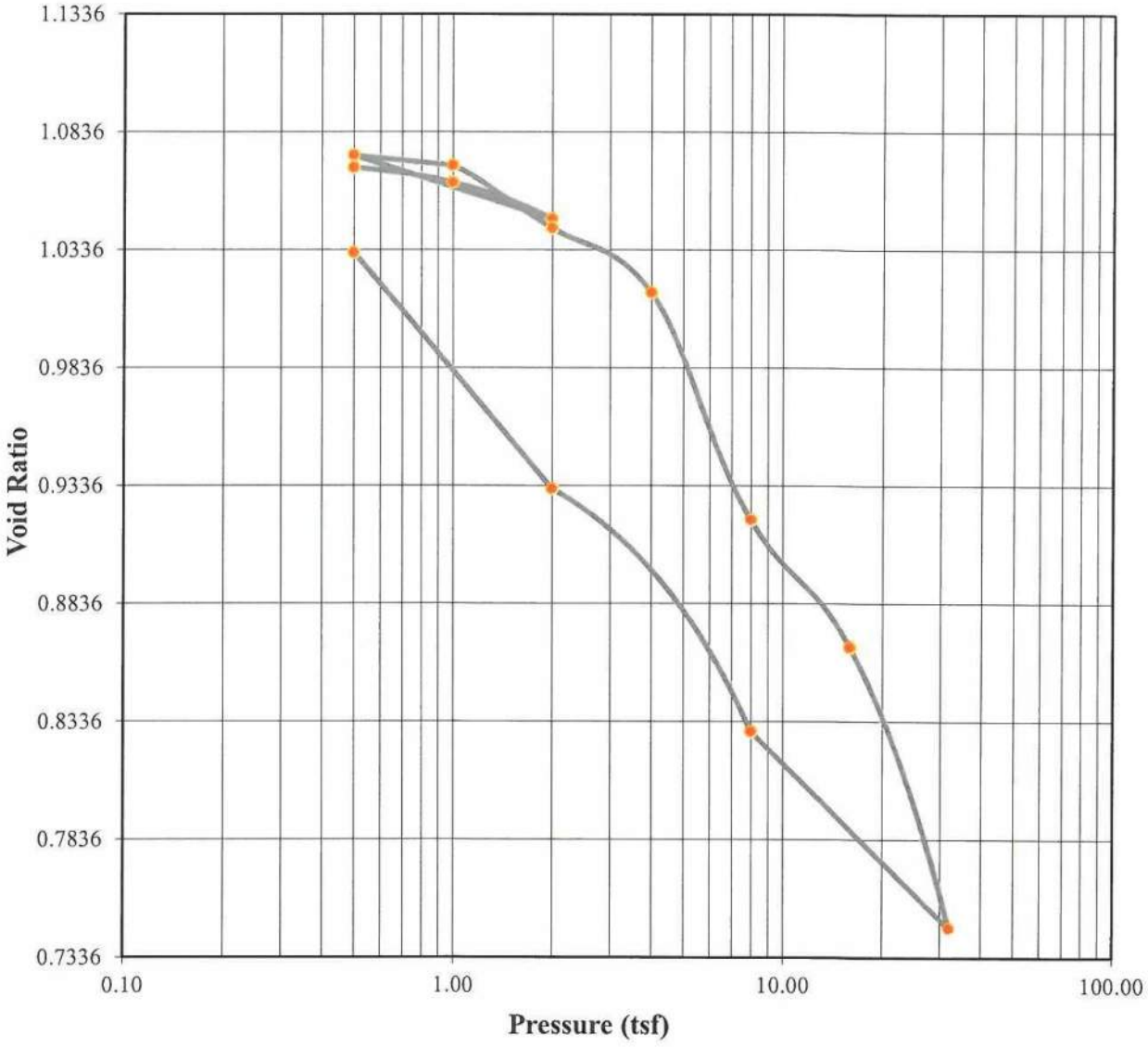
At Maximum Deviator Stress 15%

Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test



Approved By: Jeremy Sabo

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Test Date: 02/02/16

Summary of Consolidation Test Results

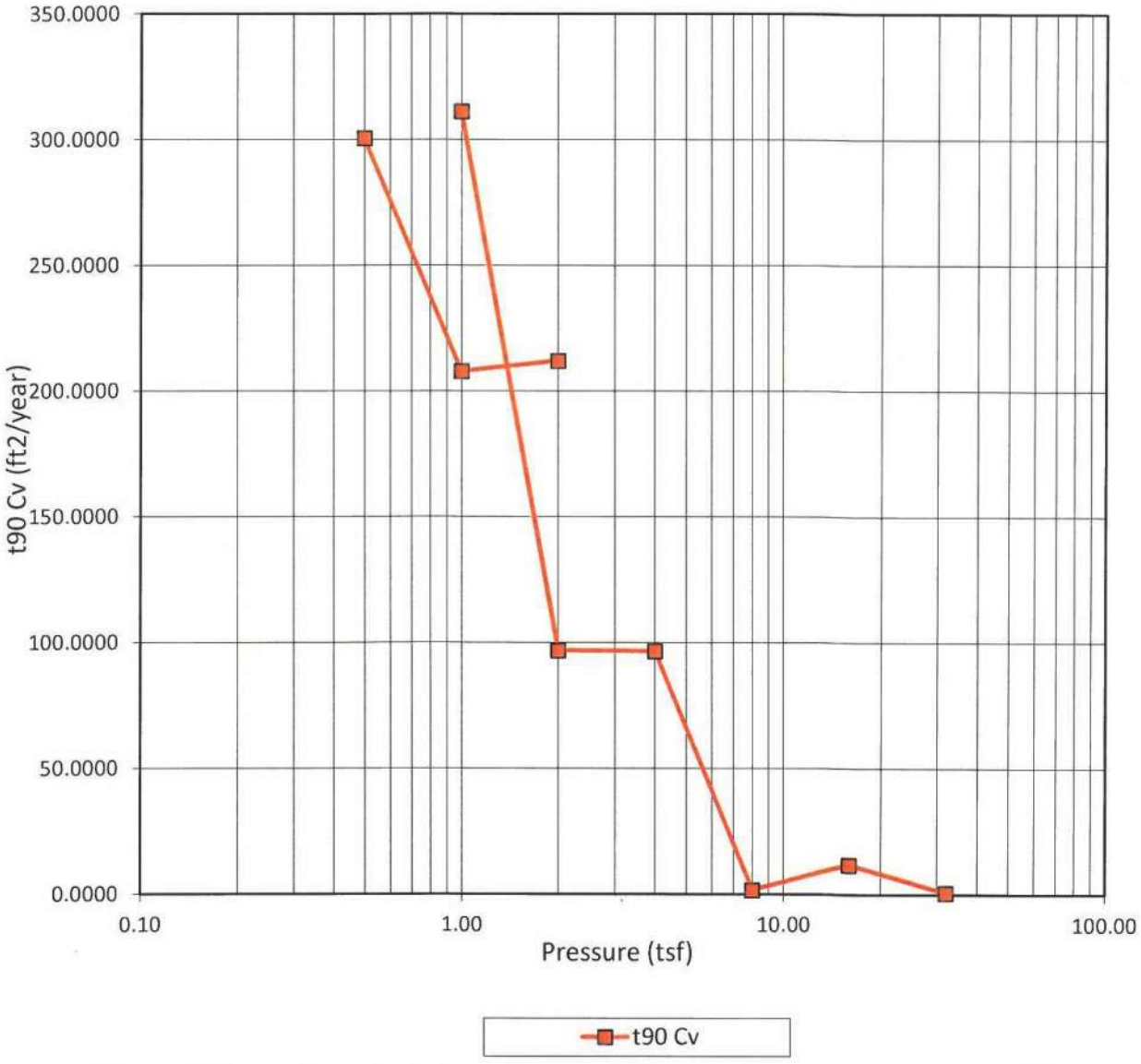
Overburden Press. (tsf)	0.93	Compression Index, C_c	0.25
Preconsol. Press., P_c (tsf)	4.00	Rebound Index, C_r	0.05
Over Consolidation Ratio	4.30		

Soil Description:	Tan & Gray Sandy Elastic Silt		
Project Number:	251539	Depth: 15.2' to 15.8'	Remarks:
Sample Number:	ST-2	Boring Number: B-100	
Project:	North Cabot Interchange		
Client:			
Location:	B-100 ST-2 15.2' to 15.8'		

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CONSOLIDATION TEST



	Before	After				
			Liquid Limits:	85	Test Date:	02/02/16
Moisture (%):	36.98	39.58	Plastic Limits:	42		
Dry Density (pcf):	82.62	97.66	Plasticity Index (%):	43		
Saturation (%):	94.53	144.05				
Void Ratio:	1.0696	0.7335	Specific Gravity:	2.744	Measured	

Soil Description:	Tan & Gray Sandy Elastic Silt		
Project Number:	251539	Depth: 15.2' to 15.8'	Remarks:
Sample Number:	ST-2	Boring Number: B-100	
Project:	North Cabot Interchange		
Client:			
Location:	B-100 ST-2 15.2' to 15.8'		

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CONSOLIDATION TEST

Test Summary

Project: North Cabot Interchange
Location: B-100 ST-2 15.2' to 15.8'
Job Number: 251539

Project Number: 251539

Sample Number: ST-2
Boring Number: B-100
Depth: 15.2' to 15.8'
Sample Type: Undisturbed

Sample Description:
Tan & Gray Sandy Elastic Silt
Remarks:

Test Number:
Test Date: 02/02/16

Index	Load Sequenc (tsf)	Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	-0.0010	1.0050	0.5204	-0.10	1.0697	0.000	0.000	0.000	0.000
1	0.500	-0.0004	1.0044	0.5198	-0.04	1.0685	2.599	* 1.4439	300.354	125.596
2	1.000	0.0027	1.0013	0.5167	0.27	1.0621	3.735	* 2.0752	207.698	86.850
3	2.000	0.0102	0.9938	0.5092	1.01	1.0467	3.607	* 2.0040	211.865	88.593
4	0.500	-0.0029	1.0069	0.5223	-0.29	1.0736	0.000	0.000	0.000	0.000
5	1.000	-0.0008	1.0048	0.5202	-0.08	1.0693	2.512	* 1.3953	311.067	130.074
6	2.000	0.0121	0.9919	0.5073	1.20	1.0428	7.876	* 4.3755	96.664	40.421
7	4.000	0.0254	0.9786	0.4940	2.53	1.0154	7.680	* 4.2668	96.486	40.347
8	8.000	0.0722	0.9318	0.4472	7.18	0.9190	437.456	* 243.0313	1.536	0.642
9	16.000	0.0984	0.9056	0.4210	9.79	0.8650	54.597	* 30.3319	11.623	4.860
10	32.000	0.1562	0.8478	0.3632	15.54	0.7460	936.955	* 520.5307	0.594	0.248
11	8.000	0.1158	0.8882	0.4036	11.52	0.8292	0.000	0.000	0.000	0.000
12	2.000	0.0658	0.9382	0.4536	6.55	0.9322	0.000	0.000	0.000	0.000
13	0.500	0.1632	0.8418	0.3562	1.80	1.0323	0.000	0.000	0.000	0.000

Predicted value indicated with *

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CONSOLIDATION TEST

Consolidation Specimen Information

Project: North Cabot Interchange
Location: B-100 ST-2 15.2' to 15.8'
Job Number: 251539

Project Number: 251539
Test Date: 02/02/16

Sample Number: ST-2
Boring Number: B-100
Depth: 15.2' to 15.8'
Sample Type: Undisturbed

Sample Description: Tan & Gray Sandy Elastic Silt
Remarks:

Test Number:
Liquid Limit: 85.0000
Plastic Limit: 42.0000
Specific Gravity: 2.7440 Measured

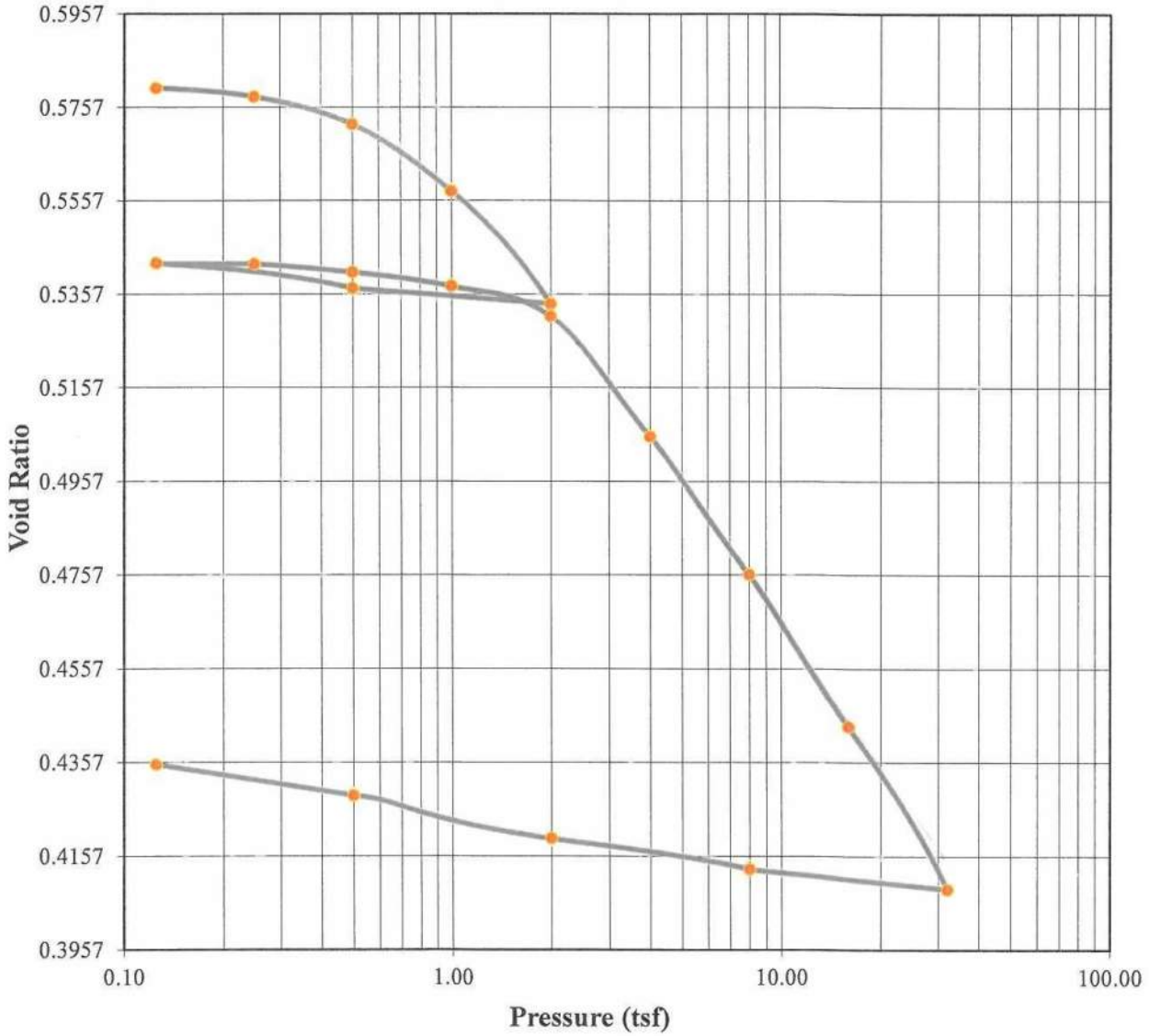
Initial Void Ratio: 1.0696
Plasticity Index (%): 43.0000
Weight of Ring (g): 110.8400

Initial Height (in): 1.0050
Initial Diameter (in): 2.4965

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	398.19	221.41
Dry Soil + Container (g)	310.41	179.83
Weight of Container (g)	73.06	74.78
Moisture Content (%)	36.98	39.58
Void Ratio	1.0696	0.7335
Saturation (%)	94.53	144.05
Dry Density (pcf)	82.62	97.66

Tested By: Jesus Soto

Checked By: S. Bowden



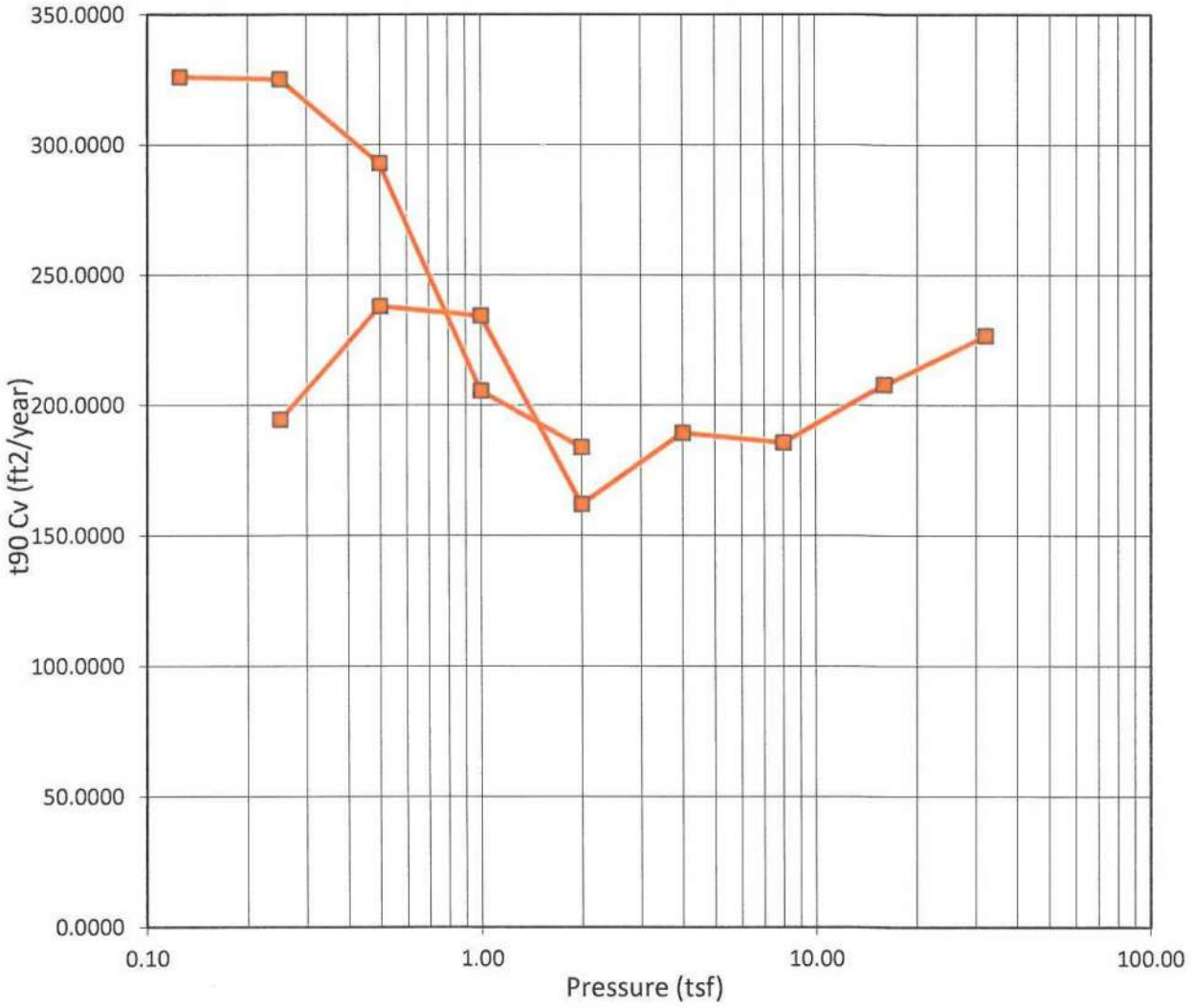
Test Date: 10/21/15

Summary of Consolidation Test Results

Overburden Press. (tsf)	0.37	Compression Index, C_c	0.10
Preconsol. Press., P_c (tsf)	1.00	Rebound Index, C_r	0.01
Over Consolidation Ratio	2.69		
Soil Description:	Brown Sandy Silty Clay		
Project Number:	251539	Depth: 6.0' to 6.4'	Remarks:
Sample Number:	ST-1	Boring Number: B-135	
Project:	North Cabot Interchange		
Client:			
Location:	B-135 ST-1 6.0' to 6.4'		

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	Before	After				
			Liquid Limits:	19	Test Date:	10/21/15
Moisture (%):	17.74	15.09	Plastic Limits:	14		
Dry Density (pcf):	107.97	122.29	Plasticity Index (%):	5		
Saturation (%):	83.20	103.70				
Void Ratio:	0.5814	0.3957	Specific Gravity:	2.740	Measured	

Soil Description:	Brown Sandy Silty Clay		
Project Number:	251539	Depth: 6.0' to 6.4'	Remarks:
Sample Number:	ST-1	Boring Number: B-135	
Project:	North Cabot Interchange		
Client:			
Location:	B-135 ST-1 6.0' to 6.4'		

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CONSOLIDATION TEST

Test Summary

Project: North Cabot Interchange
Location: B-135 ST-1 6.0' to 6.4'
Job Number: 251539

Project Number: 251539

Sample Number: ST-1
Boring Number: B-135
Depth: 6.0' to 6.4'
Sample Type: Undisturbed

Sample Description: Brown Sandy Silty Clay
Remarks:

Test Number:
Test Date: 10/21/15

Index	Load Sequence (tsf)	Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0033	0.3689	0.00	0.5814	0.000	0.000	0.000	0.000
1	0.125	0.0010	1.0023	0.3679	0.10	0.5799	2.384	* 1.3246	326.036	136.336
2	0.250	0.0022	1.0011	0.3667	0.22	0.5780	2.384	* 1.3246	325.256	136.009
3	0.500	0.0059	0.9974	0.3630	0.59	0.5721	2.629	* 1.4607	292.770	122.427
4	1.000	0.0150	0.9883	0.3539	1.50	0.5578	3.679	* 2.0436	205.464	85.917
5	2.000	0.0303	0.9730	0.3386	3.02	0.5337	3.986	* 2.2143	183.804	76.858
6	0.500	0.0282	0.9751	0.3407	2.81	0.5370	0.000	0.000	0.000	0.000
7	0.125	0.0248	0.9785	0.3441	2.47	0.5423	0.000	0.000	0.000	0.000
8	0.250	0.0249	0.9784	0.3440	2.48	0.5422	3.811	* 2.1172	194.373	81.277
9	0.500	0.0260	0.9773	0.3429	2.59	0.5404	3.106	* 1.7255	237.962	99.504
10	1.000	0.0279	0.9754	0.3410	2.78	0.5374	3.143	* 1.7460	234.251	97.954
11	2.000	0.0320	0.9713	0.3369	3.19	0.5310	4.508	* 2.5043	161.948	67.720
12	4.000	0.0483	0.9550	0.3206	4.81	0.5053	3.725	* 2.0697	189.434	79.213
13	8.000	0.0670	0.9363	0.3019	6.68	0.4758	3.655	* 2.0307	185.580	77.604
14	16.000	0.0876	0.9157	0.2813	8.73	0.4433	3.123	* 1.7349	207.771	86.882
15	32.000	0.1096	0.8937	0.2593	10.92	0.4087	2.727	* 1.5152	226.611	94.757
16	8.000	0.1069	0.8964	0.2620	10.65	0.4129	0.000	0.000	0.000	0.000
17	2.000	0.1027	0.9006	0.2662	10.24	0.4195	0.000	0.000	0.000	0.000
18	0.500	0.0969	0.9064	0.2720	9.66	0.4287	0.000	0.000	0.000	0.000
19	0.125	0.1178	0.8855	0.2511	9.24	0.4353	0.000	0.000	0.000	0.000

Predicted value indicated with *

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CONSOLIDATION TEST

Consolidation Specimen Information

Project: North Cabot Interchange
Location: B-135 ST-1 6.0' to 6.4'
Job Number: 251539

Project Number: 251539
Test Date: 10/21/15

Sample Number: ST-1
Boring Number: B-135
Depth: 6.0' to 6.4'
Sample Type: Undisturbed

Sample Description: Brown Sandy Silty Clay
Remarks:

Test Number:
Liquid Limit: 19.0000
Plastic Limit: 14.0000
Specific Gravity: 2.7400 Measured

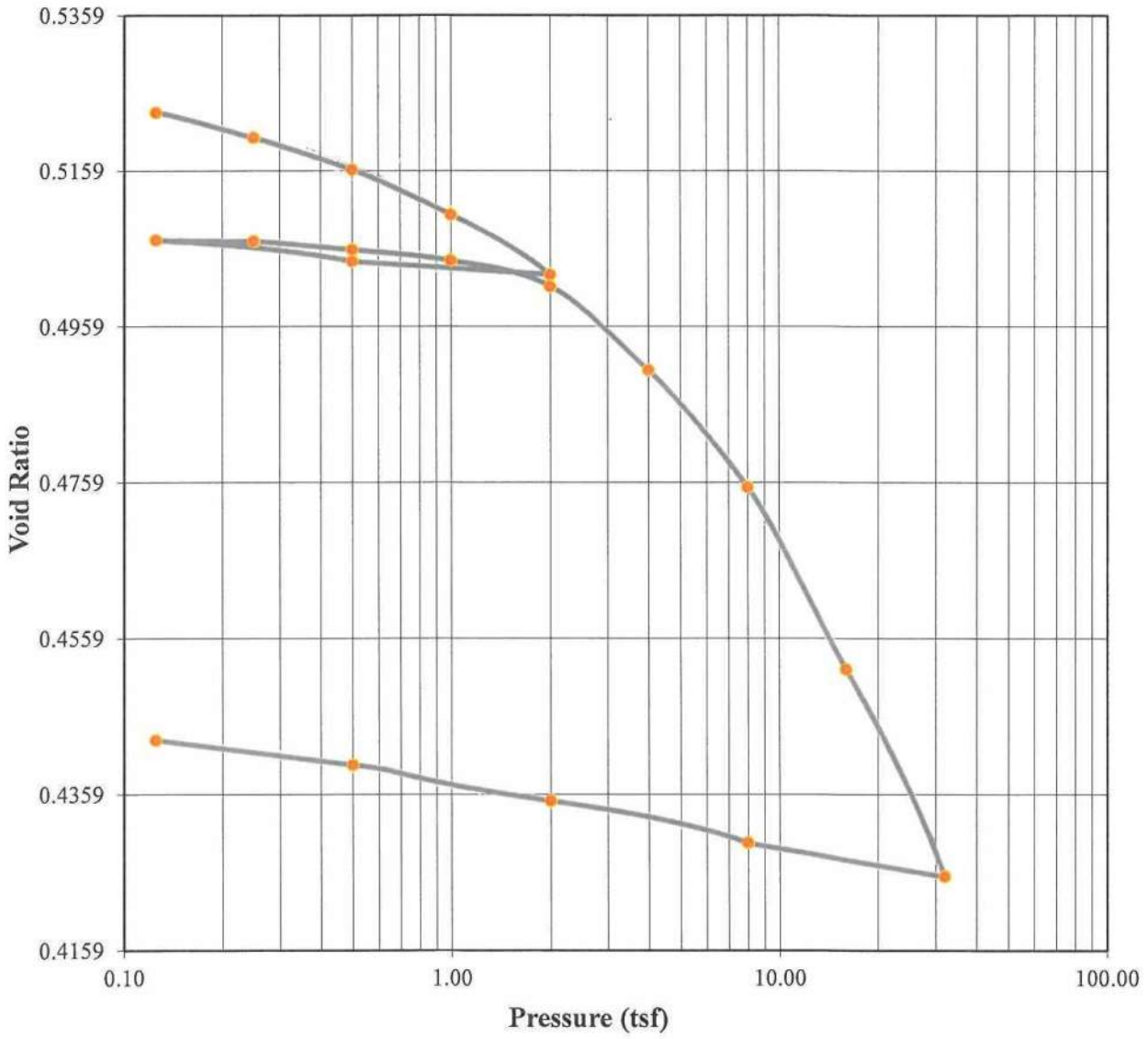
Initial Void Ratio: 0.5814
Plasticity Index (%): 5.0000
Weight of Ring (g): 109.6400

Initial Height (in): 1.0033
Initial Diameter (in): 2.4983

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	261.24	219.46
Dry Soil + Container (g)	233.11	198.47
Weight of Container (g)	74.52	59.36
Moisture Content (%)	17.74	15.09
Void Ratio	0.5814	0.3957
Saturation (%)	83.20	103.70
Dry Density (pcf)	107.97	122.29

Tested By: Jerry Soto

Checked By: S. Bodum



Test Date: 10/26/15

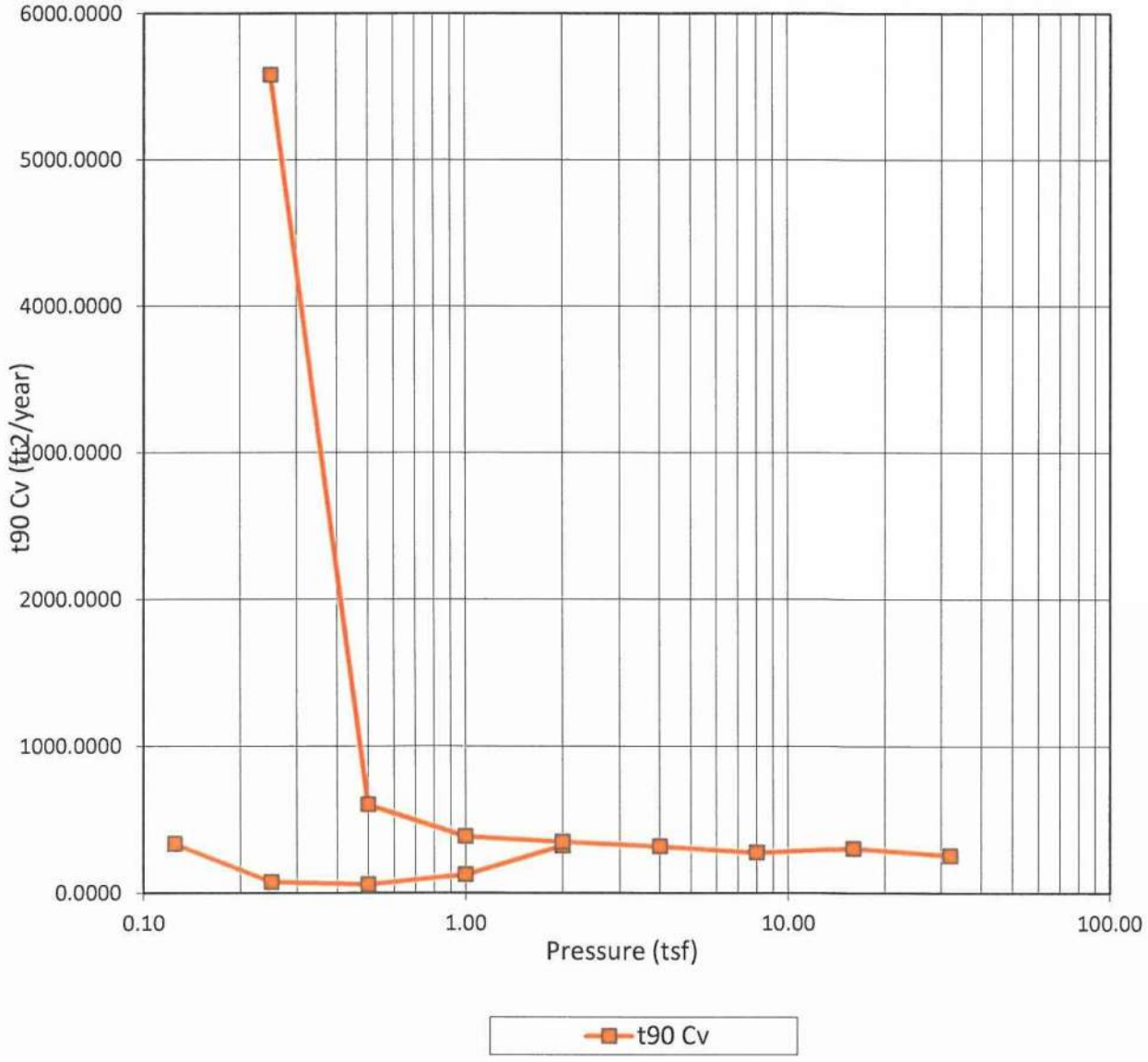
Summary of Consolidation Test Results

Overburden Press. (tsf)	0.66	Compression Index, C_c	0.06
Preconsol. Press., P_c (tsf)	3.00	Rebound Index, C_r	0.004
Over Consolidation Ratio	4.52		

Soil Description:	Gray, Brown & Tan Sandy Silt		
Project Number:	251539	Depth: 10.8' to 11.3'	Remarks:
Sample Number:	ST-2	Boring Number: B-135	
Project:	North Cabot Interchange		
Client:			
Location:	B-135 ST-2 10.8' to 11.3'		

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CONSOLIDATION TEST



	Before	After				
			Liquid Limits:	19	**Test Date:**	10/26/15
Moisture (%):	17.43	15.88	**Plastic Limits:**	15		
Dry Density (pcf):	110.84	120.32	**Plasticity Index (%):**	4		
Saturation (%):	88.93	104.76				
Void Ratio:	0.5295	0.4146	**Specific Gravity:**	2.723	Measured	

Soil Description:	Gray, Brown & Tan Sandy Silt		
Project Number:	251539	**Depth:** 10.8' to 11.3'	**Remarks:**
Sample Number:	ST-2	**Boring Number:** B-135	
Project:	North Cabot Interchange		
Client:			
Location:	B-135 ST-2 10.8' to 11.3'		

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CONSOLIDATION TEST

Test Summary

Project: North Cabot Interchange
Location: B-135 ST-2 10.8' to 11.3'
Job Number: 251539

Project Number: 251539

Sample Number: ST-2
Boring Number: B-135
Depth: 10.8' to 11.3'
Sample Type: Undisturbed

Sample Description: Gray, Brown & Tan Sandy Silt
Remarks:

Test Number:
Test Date: 10/26/15

Index	Load Sequence (tsf)	Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	0.9980	0.3461	0.00	0.5310	0.000	0.000	0.000	0.000
1	0.125	0.0049	0.9931	0.3412	0.49	0.5235	2.272	* 1.2620	335.952	140.484
2	0.250	0.0070	0.9910	0.3391	0.70	0.5202	10.190	* 5.6612	74.575	31.184
3	0.500	0.0097	0.9883	0.3364	0.97	0.5161	12.967	* 7.2038	58.287	24.373
4	1.000	0.0135	0.9845	0.3326	1.35	0.5103	5.940	* 3.3002	126.254	52.795
5	2.000	0.0185	0.9795	0.3276	1.85	0.5026	2.303	* 1.2792	322.436	134.825
6	0.500	0.0174	0.9806	0.3287	1.74	0.5043	0.000	0.000	0.000	0.000
7	0.125	0.0156	0.9824	0.3305	1.56	0.5070	0.000	0.000	0.000	0.000
8	0.250	0.0157	0.9823	0.3304	1.57	0.5069	0.134	* 0.0743	5579.965	2334.526
9	0.500	0.0164	0.9816	0.3297	1.64	0.5058	1.239	* 0.6882	601.870	251.683
10	1.000	0.0173	0.9807	0.3288	1.73	0.5044	1.927	* 1.0706	386.202	161.490
11	2.000	0.0195	0.9785	0.3266	1.95	0.5011	2.125	* 1.1806	348.638	145.787
12	4.000	0.0265	0.9715	0.3196	2.66	0.4903	2.303	* 1.2792	317.190	132.631
13	8.000	0.0363	0.9617	0.3098	3.64	0.4753	2.606	* 1.4477	274.641	114.842
14	16.000	0.0515	0.9465	0.2946	5.16	0.4520	2.272	* 1.2620	305.162	127.609
15	32.000	0.0688	0.9292	0.2773	6.89	0.4254	2.599	* 1.4439	257.064	107.493
16	8.000	0.0660	0.9320	0.2801	6.61	0.4297	0.000	0.000	0.000	0.000
17	2.000	0.0625	0.9355	0.2836	6.26	0.4351	0.000	0.000	0.000	0.000
18	0.500	0.0595	0.9385	0.2866	5.96	0.4397	0.000	0.000	0.000	0.000
19	0.125	0.0750	0.9230	0.2711	5.66	0.4429	0.000	0.000	0.000	0.000

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CONSOLIDATION TEST

Consolidation Specimen Information

Project: North Cabot Interchange
Location: B-135 ST-2 10.8' to 11.3'
Job Number: 251539

Project Number: 251539
Test Date: 10/26/15

Sample Number: ST-2
Boring Number: B-135
Depth: 10.8' to 11.3'
Sample Type: Undisturbed

Sample Description: Gray, Brown & Tan Sandy Silt
Remarks:

Test Number:
Liquid Limit: 19.0000
Plastic Limit: 15.0000
Specific Gravity: 2.7230 Measured

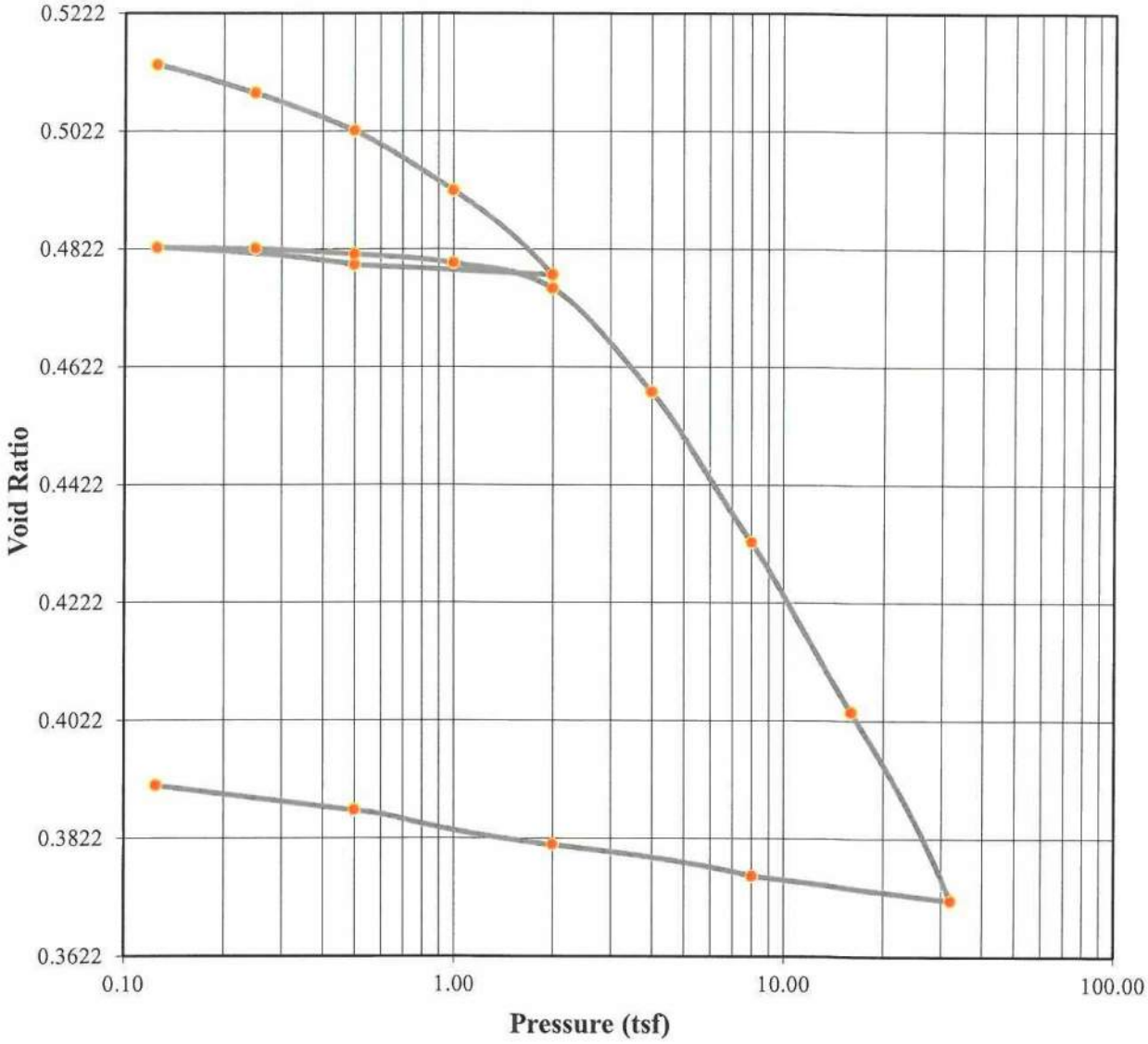
Initial Void Ratio: 0.5295
Plasticity Index (%): 4.0000
Weight of Ring (g): 109.2500

Initial Height (in): 0.9980
Initial Diameter (in): 2.4955

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	427.83	241.04
Dry Soil + Container (g)	375.59	218.42
Weight of Container (g)	75.96	76.01
Moisture Content (%)	17.43	15.88
Void Ratio	0.5295	0.4146
Saturation (%)	88.93	104.76
Dry Density (pcf)	110.84	120.32

Tested By: Jeremy Soto

Checked By: S. Boulton



Test Date: 02/11/16

Summary of Consolidation Test Results

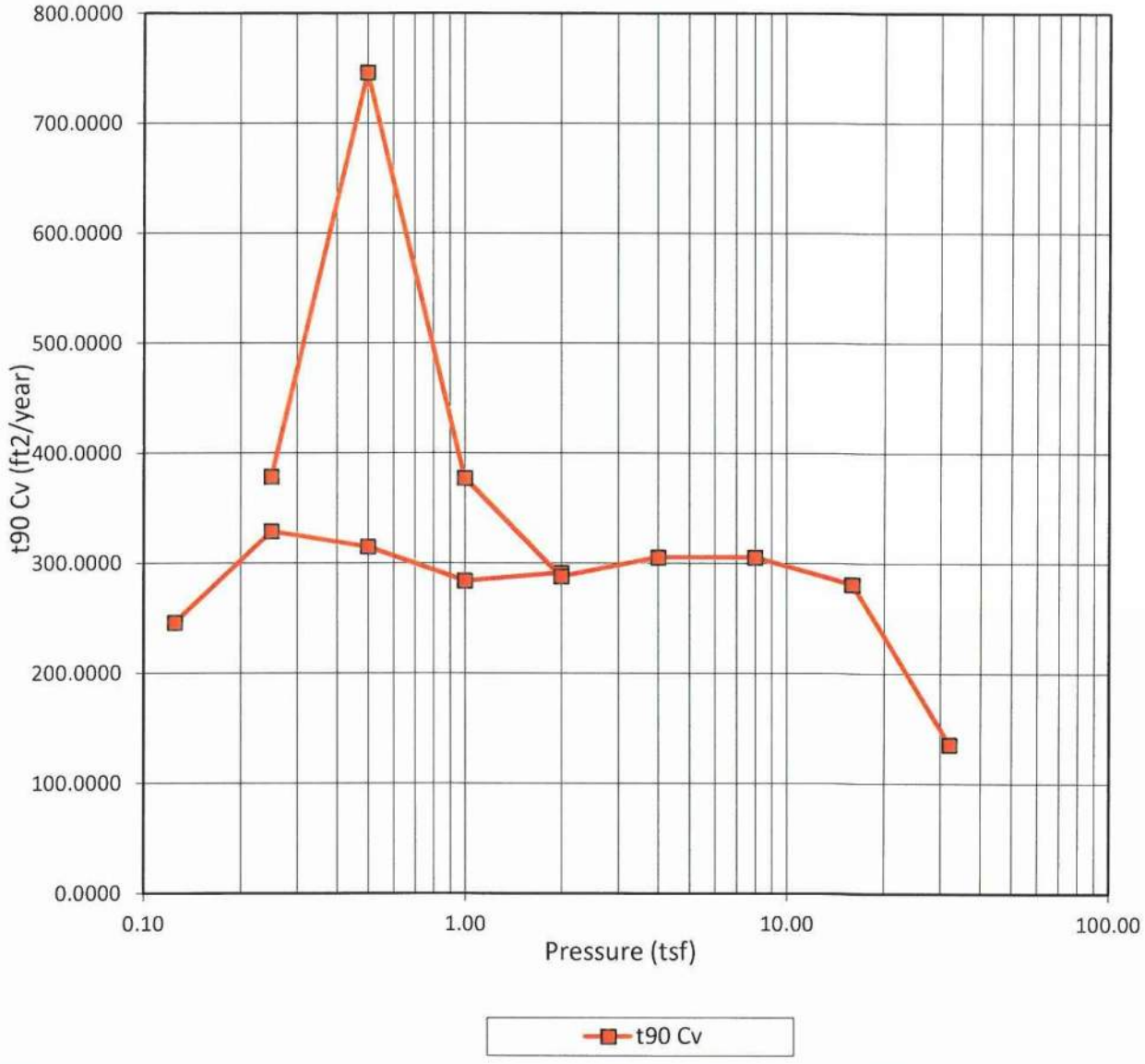
Overburden Press. (tsf)	0.90	Compression Index, C_c	0.09
Preconsol. Press., P_c (tsf)	1.50	Rebound Index, C_r	0.004
Over Consolidation Ratio	1.67		

Soil Description:	Gray & Brown Silty, Clayey Sand			
Project Number:	251539	Depth:	14.7' to 15.2'	Remarks:
Sample Number:	ST-2	Boring Number:	B-140	
Project:	North Cabot Interchange			
Client:				
Location:	B-140 ST-2 14.7' to 15.2'			

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	Before	After				
Moisture (%):	16.99	15.00	**Liquid Limits:**	20	**Test Date:**	02/11/16
Dry Density (pcf):	110.71	123.19	**Plastic Limits:**	14		
Saturation (%):	87.98	110.32	**Plasticity Index (%):**	6		
Void Ratio:	0.5200	0.3639	**Specific Gravity:**	2.697	Measured	

Soil Description:	Gray & Brown Silty, Clayey Sand		
Project Number:	251539	**Depth:** 14.7' to 15.2'	**Remarks:**
Sample Number:	ST-2	**Boring Number:** B-140	
Project:	North Cabot Interchange		
Client:			
Location:	B-140 ST-2 14.7' to 15.2'		

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CONSOLIDATION TEST

Test Summary

Project: North Cabot Interchange
Location: B-140 ST-2 14.7' to 15.2'
Job Number: 251539

Project Number: 251539

Sample Number: ST-2
Boring Number: B-140
Depth: 14.7' to 15.2'
Sample Type: Undisturbed

Sample Description: Gray & Brown Silty, Clayey Sand
Remarks:

Test Number:
Test Date: 02/11/16

Index	Load Sequenc (tsf)	Change in Height (in)	Specime n Height (in)	Height of Void (in)	Vertica l Strain (%)	Void Ratio	t90 Fitting (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	0.9943	0.3393	0.00	0.5181	0.000	0.000	0.000	0.000
1	0.125	0.0031	0.9912	0.3362	0.31	0.5134	3.095	* 1.7192	245.668	102.730
2	0.250	0.0062	0.9881	0.3331	0.62	0.5086	2.300	* 1.2776	328.518	137.374
3	0.500	0.0104	0.9839	0.3289	1.05	0.5022	2.381	* 1.3225	314.664	131.585
4	1.000	0.0170	0.9773	0.3223	1.71	0.4921	2.606	* 1.4477	283.627	118.598
5	2.000	0.0264	0.9679	0.3129	2.66	0.4778	2.489	* 1.3829	291.228	121.778
6	0.500	0.0253	0.9690	0.3140	2.54	0.4795	0.000	0.000	0.000	0.000
7	0.125	0.0234	0.9709	0.3159	2.35	0.4824	0.000	0.000	0.000	0.000
8	0.250	0.0235	0.9708	0.3158	2.36	0.4822	1.927	* 1.0706	378.444	158.246
9	0.500	0.0241	0.9702	0.3152	2.42	0.4813	0.977	* 0.5426	745.787	311.847
10	1.000	0.0251	0.9692	0.3142	2.52	0.4798	1.927	* 1.0706	377.197	157.724
11	2.000	0.0279	0.9664	0.3114	2.81	0.4755	2.512	* 1.3953	287.743	120.322
12	4.000	0.0394	0.9549	0.2999	3.96	0.4579	2.312	* 1.2846	305.136	127.599
13	8.000	0.0561	0.9382	0.2832	5.64	0.4324	2.232	* 1.2398	305.196	127.626
14	16.000	0.0750	0.9193	0.2643	7.54	0.4036	2.331	* 1.2952	280.494	117.294
15	32.000	0.0959	0.8984	0.2434	9.64	0.3717	4.620	* 2.5665	135.195	56.532
16	8.000	0.0932	0.9011	0.2461	9.37	0.3758	0.000	0.000	0.000	0.000
17	2.000	0.0897	0.9046	0.2496	9.02	0.3811	0.000	0.000	0.000	0.000
18	0.500	0.0859	0.9084	0.2534	8.64	0.3869	0.000	0.000	0.000	0.000
19	0.125	0.1021	0.8922	0.2372	8.48	0.3911	0.000	0.000	0.000	0.000

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CONSOLIDATION TEST

Consolidation Specimen Information

Project: North Cabot Interchange
Location: B-140 ST-2 14.7' to 15.2'
Job Number: 251539

Project Number: 251539
Test Date: 02/11/16

Sample Number: ST-2
Boring Number: B-140
Depth: 14.7' to 15.2'
Sample Type: Undisturbed

Sample Description: Gray & Brown Silty, Clayey Sand
Remarks:

Test Number:
Liquid Limit: 20.0000
Plastic Limit: 14.0000
Specific Gravity: 2.6970 Measured

Initial Void Ratio: 0.5200
Plasticity Index (%): 6.0000
Weight of Ring (g): 109.2500

Initial Height (in): 0.9943
Initial Diameter (in): 2.4955

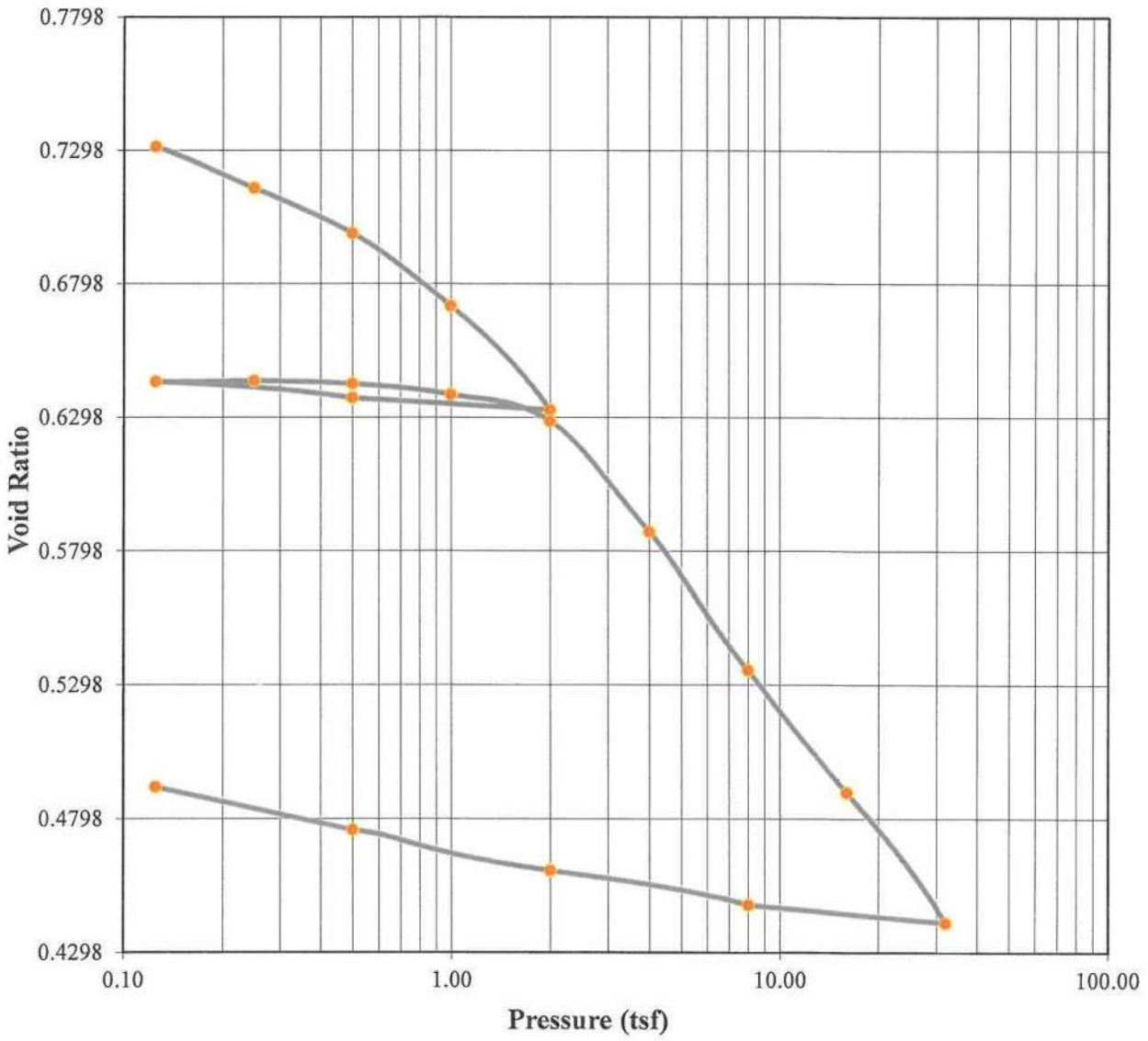
Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	413.77	237.91
Dry Soil + Container (g)	364.19	216.79
Weight of Container (g)	72.32	75.97
Moisture Content (%)	16.99	15.00
Void Ratio	0.5200	0.3639
Saturation (%)	87.98	110.32
Dry Density (pcf)	110.71	123.19

Tested By: Jeremy Soto

Checked By: S. Boulos

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Test Date: 10/22/15

Summary of Consolidation Test Results

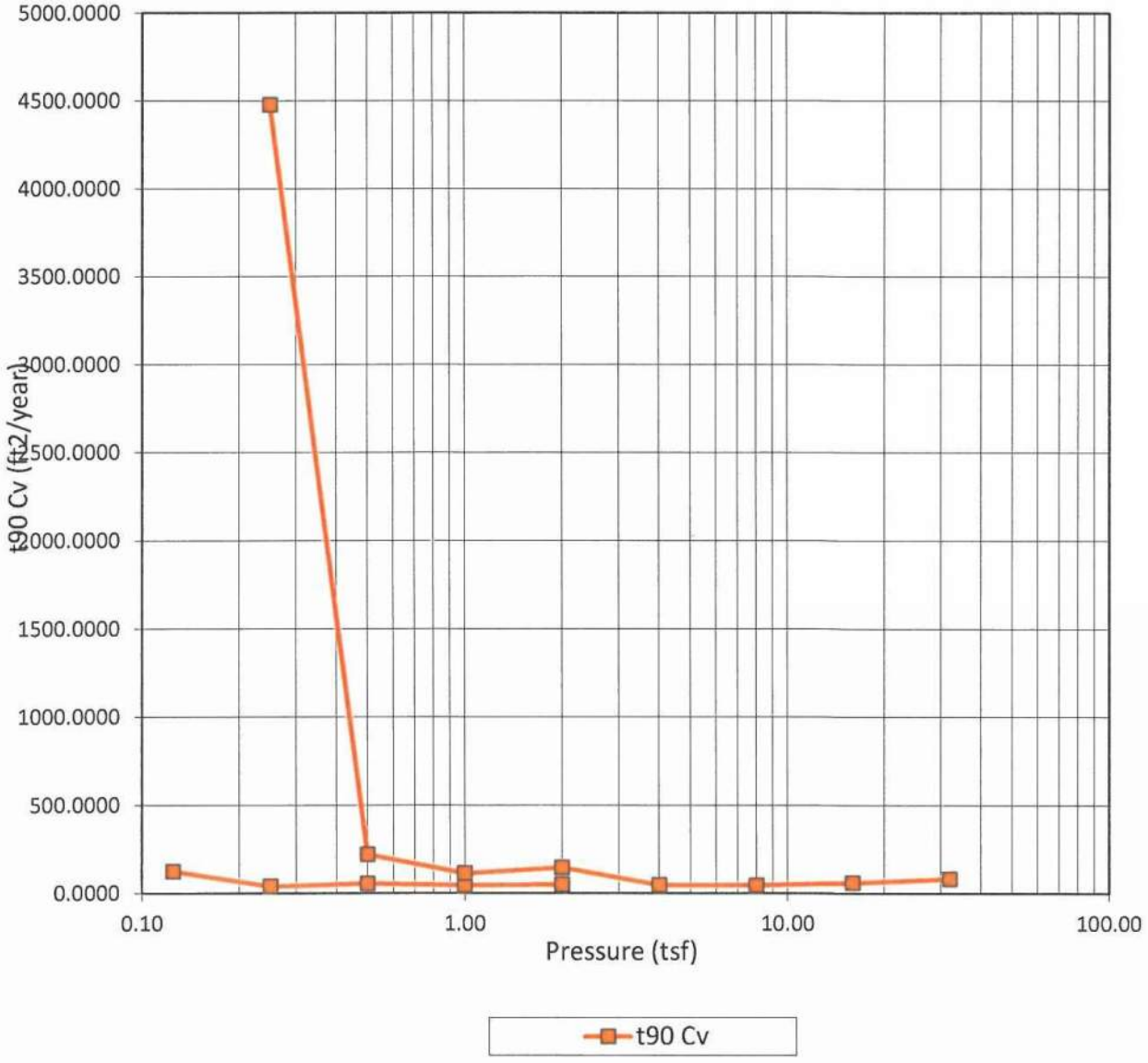
Overburden Press. (tsf)	0.31	Compression Index, C_c	0.16
Preconsol. Press., P_c (tsf)	1.05	Rebound Index, C_r	0.01
Over Consolidation Ratio	3.37		

Soil Description:	Gray, Brown & Tan Lean Clay			
Project Number:	251539	Depth:	5.0' to 5.4'	Remarks:
Sample Number:	ST-1	Boring Number:	B-147	
Project:	North Cabot Interchange			
Client:				
Location:	B-147 ST-1 5.0' to 5.4'			

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	Before	After				
			Liquid Limits:	31	Test Date:	10/22/15
Moisture (%):	27.05	19.55	Plastic Limits:	18		
Dry Density (pcf):	96.78	117.29	Plasticity Index (%):	13		
Saturation (%):	98.05	119.85				
Void Ratio:	0.7452	0.4305	Specific Gravity:	2.709	Measured	

Soil Description:	Gray, Brown & Tan Lean Clay		
Project Number:	251539	Depth: 5.0' to 5.4'	Remarks:
Sample Number:	ST-1	Boring Number: B-147	
Project:	North Cabot Interchange		
Client:			
Location:	B-147 ST-1 5.0' to 5.4'		

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CONSOLIDATION TEST

Test Summary

Project: North Cabot Interchange
Location: B-147 ST-1 5.0' to 5.4'
Job Number: 251539

Project Number: 251539

Sample Number: ST-1
Boring Number: B-147
Depth: 5.0' to 5.4'
Sample Type: Undisturbed

Sample Description: Gray, Brown & Tan Lean Clay
Remarks:

Test Number:
Test Date: 10/22/15

Index	Load Sequence (tsf)	Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	0.9905	0.4226	0.00	0.7443	0.000	0.000	0.000	0.000
1	0.125	0.0075	0.9830	0.4151	0.76	0.7311	6.026	* 3.3480	124.075	51.882
2	0.250	0.0163	0.9742	0.4063	1.65	0.7156	18.556	* 10.3091	39.576	16.549
3	0.500	0.0259	0.9646	0.3967	2.61	0.6987	13.044	* 7.2467	55.196	23.081
4	1.000	0.0414	0.9491	0.3812	4.18	0.6714	15.268	* 8.4823	45.653	19.090
5	2.000	0.0634	0.9271	0.3592	6.40	0.6326	13.026	* 7.2364	51.061	21.352
6	0.500	0.0609	0.9296	0.3617	6.15	0.6370	0.000	0.000	0.000	0.000
7	0.125	0.0575	0.9330	0.3651	5.81	0.6430	0.000	0.000	0.000	0.000
8	0.250	0.0573	0.9332	0.3653	5.78	0.6434	0.151	* 0.0836	4476.819	1872.588
9	0.500	0.0579	0.9326	0.3647	5.85	0.6423	3.059	* 1.6992	220.039	92.012
10	1.000	0.0602	0.9303	0.3624	6.08	0.6383	5.929	* 3.2941	112.944	47.229
11	2.000	0.0658	0.9247	0.3568	6.64	0.6284	4.532	* 2.5175	146.010	61.056
12	4.000	0.0893	0.9012	0.3333	9.02	0.5870	13.445	* 7.4694	46.743	19.546
13	8.000	0.1187	0.8718	0.3039	11.98	0.5352	12.764	* 7.0908	46.078	19.268
14	16.000	0.1446	0.8459	0.2780	14.60	0.4896	9.270	* 5.1501	59.728	24.976
15	32.000	0.1723	0.8182	0.2503	17.40	0.4409	6.310	* 3.5057	82.091	34.328
16	8.000	0.1685	0.8220	0.2541	17.01	0.4475	0.000	0.000	0.000	0.000
17	2.000	0.1612	0.8293	0.2614	16.27	0.4604	0.000	0.000	0.000	0.000
18	0.500	0.1526	0.8379	0.2700	15.41	0.4755	0.000	0.000	0.000	0.000
19	0.125	0.1786	0.8119	0.2440	14.53	0.4916	0.000	0.000	0.000	0.000

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CONSOLIDATION TEST

Consolidation Specimen Information

Project: North Cabot Interchange
Location: B-147 ST-1 5.0' to 5.4'
Job Number: 251539

Project Number: 251539
Test Date: 10/22/15

Sample Number: ST-1
Boring Number: B-147
Depth: 5.0' to 5.4'
Sample Type: Undisturbed

Sample Description: Gray, Brown & Tan Lean Clay
Remarks:

Test Number:
Liquid Limit: 31.0000
Plastic Limit: 18.0000
Specific Gravity: 2.7090 Measured

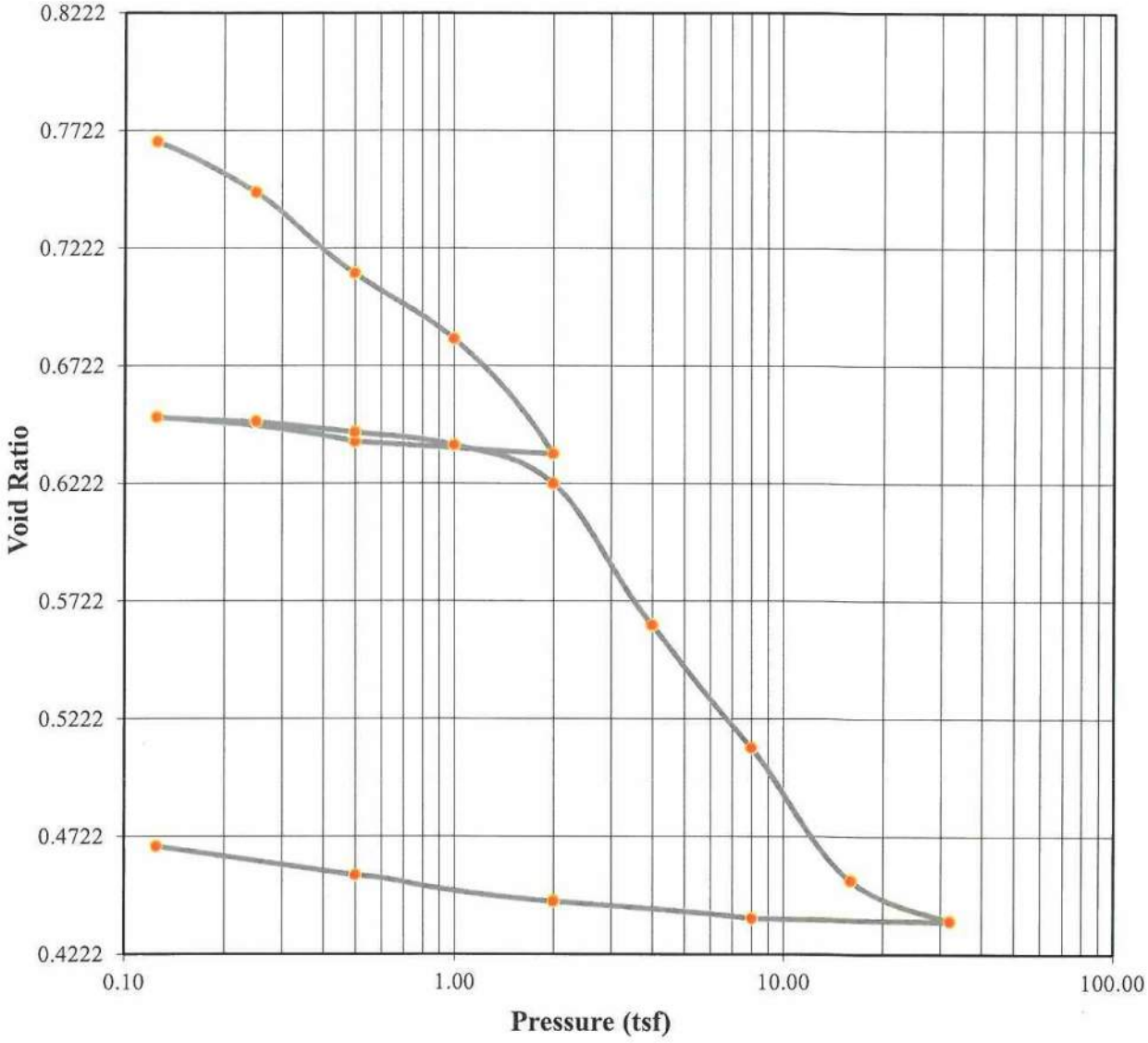
Initial Void Ratio: 0.7452
Plasticity Index (%): 13.0000
Weight of Ring (g): 109.2600

Initial Height (in): 0.9905
Initial Diameter (in): 2.4955

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	371.07	220.62
Dry Soil + Container (g)	307.63	196.76
Weight of Container (g)	73.08	74.70
Moisture Content (%)	27.05	19.55
Void Ratio	0.7452	0.4305
Saturation (%)	98.05	119.85
Dry Density (pcf)	96.78	117.29

Tested By: Jerry Soto

Checked By: S. Bordens



Test Date: 02/01/16

Summary of Consolidation Test Results

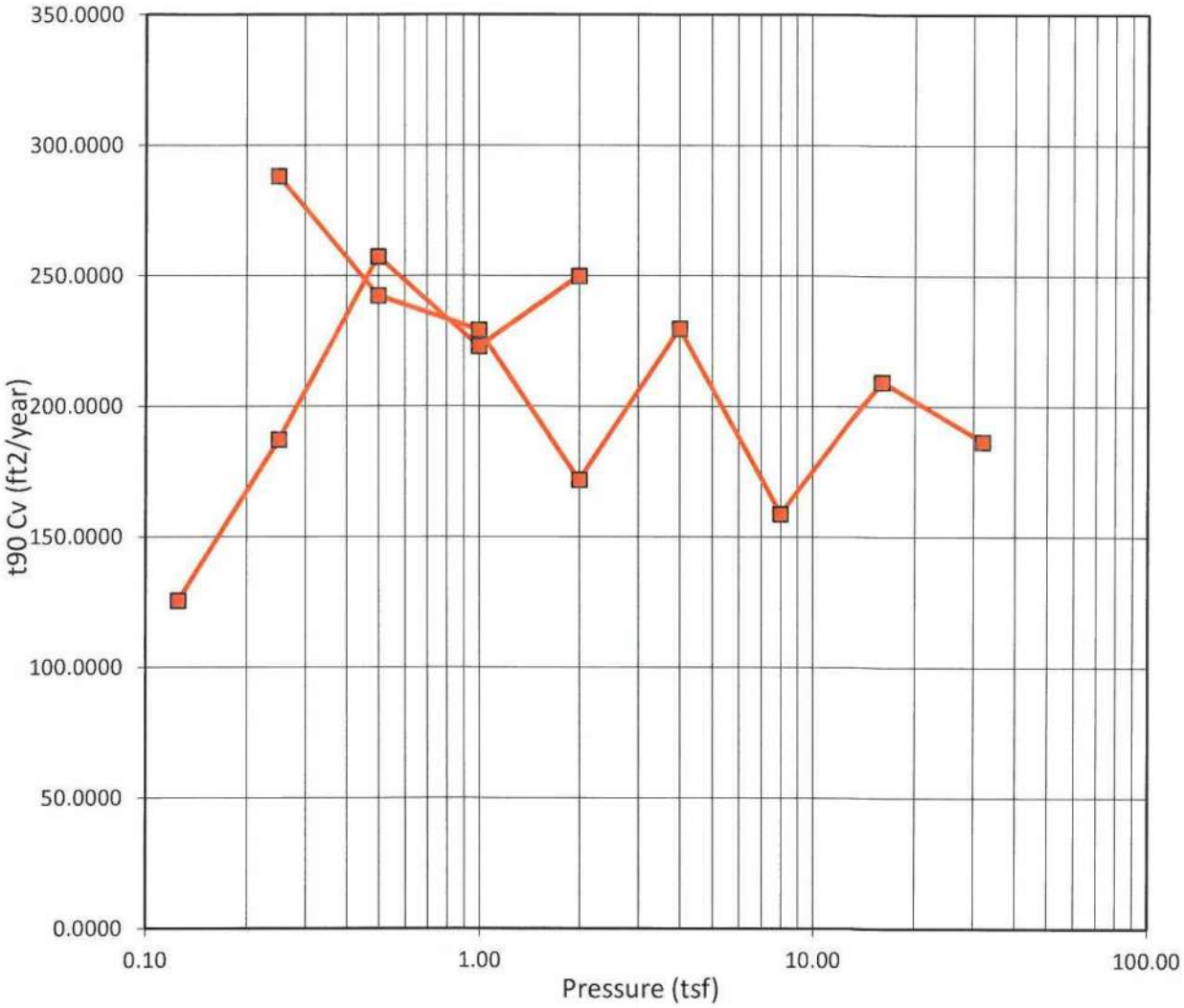
Overburden Press. (tsf)	0.56	Compression Index, C_c	0.18
Preconsol. Press., P_c (tsf)	0.51	Rebound Index, C_r	0.016
Over Consolidation Ratio	0.92		

Soil Description:	Brown & Gray Silty Sand		
Project Number:	251539	Depth: 9.1' to 9.4'	Remarks:
Sample Number:	ST-1	Boring Number: B-151	
Project:	North Cabot Interchange		
Client:			
Location:	B-151 ST-1 9.1' to 9.4'		

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CONSOLIDATION TEST



	Before	After				
			Liquid Limits:	0	Test Date:	02/01/16
Moisture (%):	30.91	21.91	Plastic Limits:	0		
Dry Density (pcf):	90.42	115.18	Plasticity Index (%):	0		
Saturation (%):	98.97	133.67				
Void Ratio:	0.8262	0.4249	Specific Gravity:	2.645	Measured	

Soil Description:	Brown & Gray Silty Sand		
Project Number:	251539	Depth: 9.1' to 9.4'	Remarks:
Sample Number:	ST-1	Boring Number: B-151	
Project:	North Cabot Interchange		
Client:			
Location:	B-151 ST-1 9.1' to 9.4'		

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CONSOLIDATION TEST

Test Summary

Project: North Cabot Interchange
Location: B-151 ST-1 9.1' to 9.4'
Job Number: 251539

Project Number: 251539

Sample Number: ST-1
Boring Number: B-151
Depth: 9.1' to 9.4'
Sample Type: Undisturbed

Sample Description: Brown & Gray Silty Sand
Remarks:

Test Number:
Test Date: 02/01/16

Index	Load Sequenc (tsf)	Change in Height (in)	Specime n Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0015	0.4521	0.00	0.8228	0.000	0.000	0.000	0.000
1	0.125	0.0305	0.9710	0.4216	3.05	0.7673	5.815	* 3.2307	125.456	52.462
2	0.250	0.0423	0.9592	0.4098	4.22	0.7458	3.805	* 2.1137	187.125	78.248
3	0.500	0.0612	0.9403	0.3909	6.11	0.7114	2.659	* 1.4775	257.261	107.573
4	1.000	0.0765	0.9250	0.3756	7.64	0.6836	2.972	* 1.6513	222.751	93.144
5	2.000	0.1034	0.8981	0.3487	10.32	0.6346	2.498	* 1.3879	249.827	104.470
6	0.500	0.1005	0.9010	0.3516	10.03	0.6399	0.000	0.000	0.000	0.000
7	0.125	0.0949	0.9066	0.3572	9.48	0.6501	0.000	0.000	0.000	0.000
8	0.250	0.0959	0.9056	0.3562	9.58	0.6483	2.204	* 1.2242	287.999	120.426
9	0.500	0.0983	0.9032	0.3538	9.82	0.6439	2.606	* 1.4476	242.259	101.302
10	1.000	0.1013	0.9002	0.3508	10.11	0.6384	2.736	* 1.5201	229.177	95.831
11	2.000	0.1103	0.8912	0.3418	11.01	0.6221	3.580	* 1.9890	171.660	71.782
12	4.000	0.1434	0.8581	0.3087	14.32	0.5618	2.482	* 1.3788	229.578	96.001
13	8.000	0.1720	0.8295	0.2801	17.17	0.5098	3.356	* 1.8646	158.639	66.336
14	16.000	0.2030	0.7985	0.2491	20.27	0.4533	2.358	* 1.3097	209.280	87.514
15	32.000	0.2125	0.7890	0.2396	21.22	0.4360	2.583	* 1.4350	186.487	77.983
16	8.000	0.2118	0.7897	0.2403	21.15	0.4373	0.000	0.000	0.000	0.000
17	2.000	0.2078	0.7937	0.2443	20.75	0.4446	0.000	0.000	0.000	0.000
18	0.500	0.2017	0.7998	0.2504	20.14	0.4557	0.000	0.000	0.000	0.000
19	0.125	0.2201	0.7814	0.2320	19.62	0.4679	0.000	0.000	0.000	0.000

Predicted value indicated with *

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CONSOLIDATION TEST

Consolidation Specimen Information

Project: North Cabot Interchange
Location: B-151 ST-1 9.1' to 9.4'
Job Number: 251539

Project Number: 251539
Test Date: 02/01/16

Sample Number: ST-1
Boring Number: B-151
Depth: 9.1' to 9.4'
Sample Type: Undisturbed

Sample Description: Brown & Gray Silty Sand
Remarks:

Test Number:
Liquid Limit: 0.0000
Plastic Limit: 0.0000
Specific Gravity: 2.6450 Measured

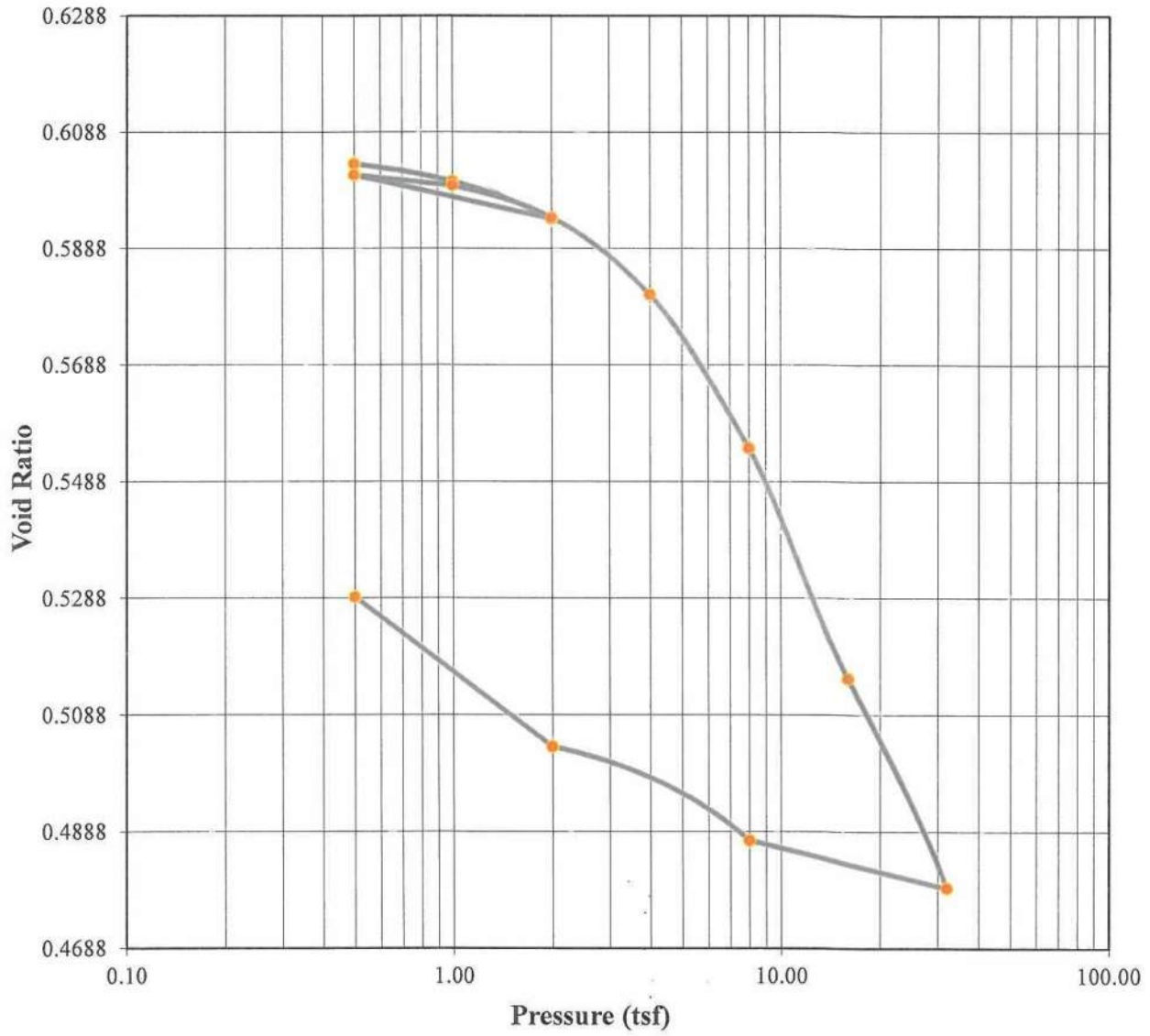
Initial Void Ratio: 0.8262
Plasticity Index (%): 0.0000
Weight of Ring (g): 109.6200

Initial Height (in): 1.0015
Initial Diameter (in): 2.4983

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	550.89	218.00
Dry Soil + Container (g)	438.34	192.75
Weight of Container (g)	74.21	77.48
Moisture Content (%)	30.91	21.91
Void Ratio	0.8262	0.4249
Saturation (%)	98.97	133.67
Dry Density (pcf)	90.42	115.18

Tested By: Jerry Sebo

Checked By: S. Boulware



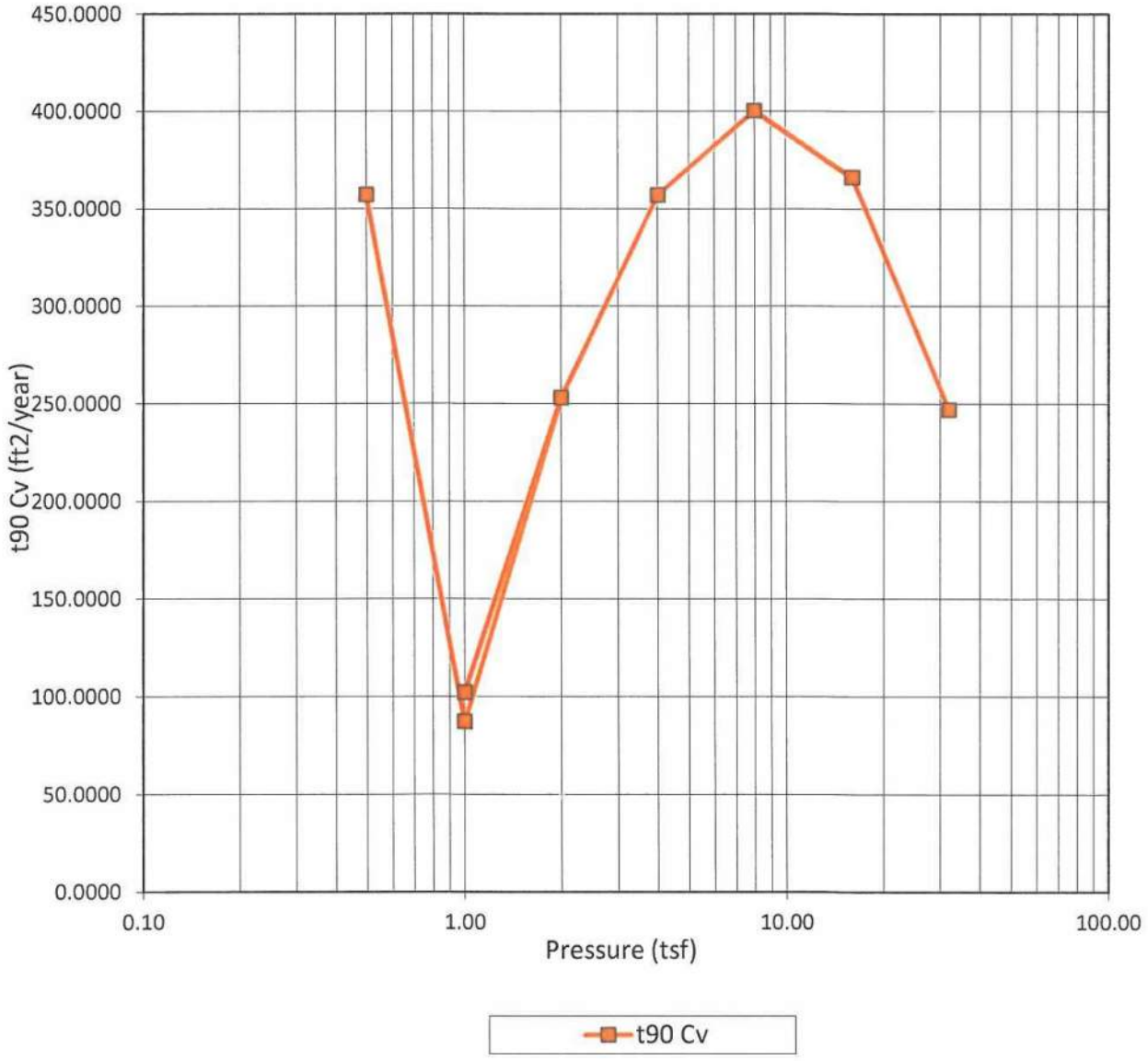
Test Date: 10/26/15

Summary of Consolidation Test Results

Overburden Press. (tsf)	0.34	Compression Index, C_c	0.13
Preconsol. Press., P_c (tsf)	3.30	Rebound Index, C_r	0.02
Over Consolidation Ratio	9.73		

Soil Description:	Brown, Tan, Yellow, Black & Gray Sandy Lean Clay		
Project Number:	251539	Depth: 5.4' to 5.9'	Remarks:
Sample Number:	ST-1	Boring Number: B-167	
Project:	North Cabot Interchange		
Client:			
Location:	B-167 ST-1 5.4' to 5.9'		

CONSOLIDATION TEST



	Before	After				
			Liquid Limits:	28	**Test Date:**	10/26/15
Moisture (%):	16.64	16.92	**Plastic Limits:**	15		
Dry Density (pcf):	105.71	119.01	**Plasticity Index (%):**	13		
Saturation (%):	74.51	107.54				
Void Ratio:	0.6034	0.4671	**Specific Gravity:**	2.723	Measured	

Soil Description:	Brown, Tan, Yellow, Black & Gray Sandy Lean Clay		
Project Number:	251539	**Depth:** 5.4' to 5.9'	**Remarks:**
Sample Number:	ST-1	**Boring Number:** B-167	
Project:	North Cabot Interchange		
Client:			
Location:	B-167 ST-1 5.4' to 5.9'		

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CONSOLIDATION TEST

Test Summary

Project: North Cabot Interchange
Location: B-167 ST-1 5.4' to 5.9'
Job Number: 251539

Project Number: 251539

Sample Number: ST-1
Boring Number: B-167
Depth: 5.4' to 5.9'
Sample Type: Undisturbed

Sample Description:
Brown, Tan, Yellow, Black & Gray Sandy Lean Clay
Remarks:

Test Number:
Test Date: 10/26/15

Index	Load Sequence (tsf)	Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	-0.0004	1.0070	0.3801	-0.04	0.6052	0.000	0.000	0.000	0.000
1	0.500	0.0008	1.0058	0.3789	0.08	0.6033	2.192	* 1.2177	357.128	149.342
2	1.000	0.0027	1.0039	0.3770	0.27	0.6003	8.938	* 4.9653	87.256	36.487
3	2.000	0.0067	0.9999	0.3730	0.67	0.5939	3.059	* 1.6992	252.941	105.771
4	0.500	0.0020	1.0046	0.3777	0.20	0.6014	0.000	0.000	0.000	0.000
5	1.000	0.0031	1.0035	0.3766	0.31	0.5996	7.616	* 4.2309	102.320	42.786
6	2.000	0.0066	1.0000	0.3731	0.66	0.5941	3.059	* 1.6992	252.992	105.792
7	4.000	0.0149	0.9917	0.3648	1.48	0.5808	2.131	* 1.1841	357.041	149.304
8	8.000	0.0314	0.9752	0.3483	3.12	0.5545	1.838	* 1.0212	400.341	167.408
9	16.000	0.0562	0.9504	0.3235	5.58	0.5150	1.910	* 1.0611	365.957	153.023
10	32.000	0.0787	0.9279	0.3010	7.82	0.4791	2.699	* 1.4995	246.843	103.218
11	8.000	0.0736	0.9330	0.3061	7.31	0.4873	0.000	0.000	0.000	0.000
12	2.000	0.0635	0.9431	0.3162	6.31	0.5034	0.000	0.000	0.000	0.000
13	0.500	0.0856	0.9214	0.2941	4.64	0.5290	0.000	0.000	0.000	0.000

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CONSOLIDATION TEST

Consolidation Specimen Information

Project: North Cabot Interchange
Location: B-167 ST-1 5.4' to 5.9'
Job Number: 251539

Project Number: 251539
Test Date: 10/26/15

Sample Number: ST-1
Boring Number: B-167
Depth: 5.4' to 5.9'
Sample Type: Undisturbed

Sample Description: Brown, Tan, Yellow, Black & Gray Sandy Lean Clay
Remarks:

Test Number:
Liquid Limit: 28.0000
Plastic Limit: 15.0000
Specific Gravity: 2.7230 Measured

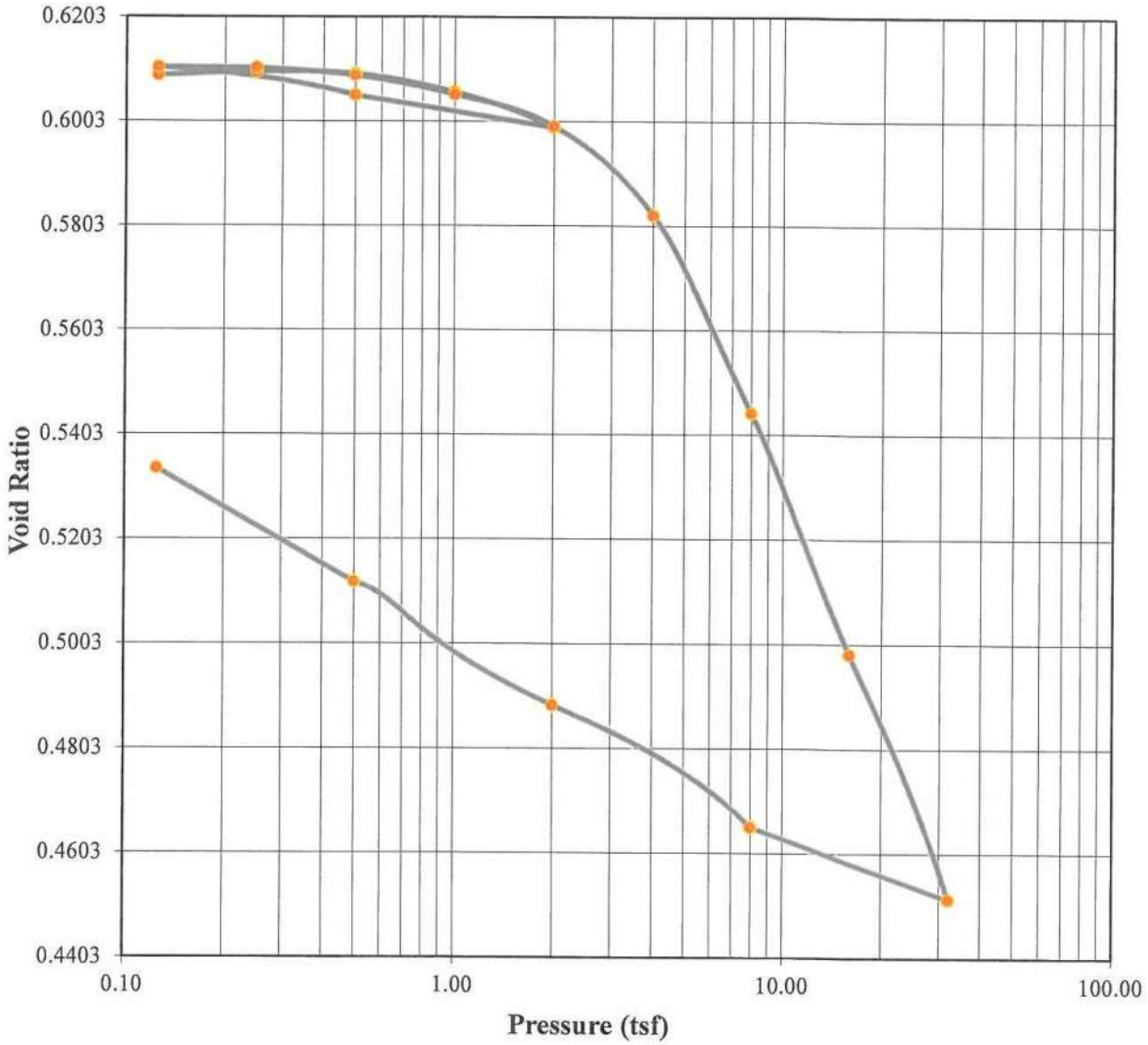
Initial Void Ratio: 0.6034
Plasticity Index (%): 13.0000
Weight of Ring (g): 109.6300

Initial Height (in): 1.0070
Initial Diameter (in): 2.4983

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	486.60	239.24
Dry Soil + Container (g)	427.95	215.39
Weight of Container (g)	75.41	74.45
Moisture Content (%)	16.64	16.92
Void Ratio	0.6034	0.4671
Saturation (%)	74.51	107.54
Dry Density (pcf)	105.71	119.01

Tested By: Jeremy Sides

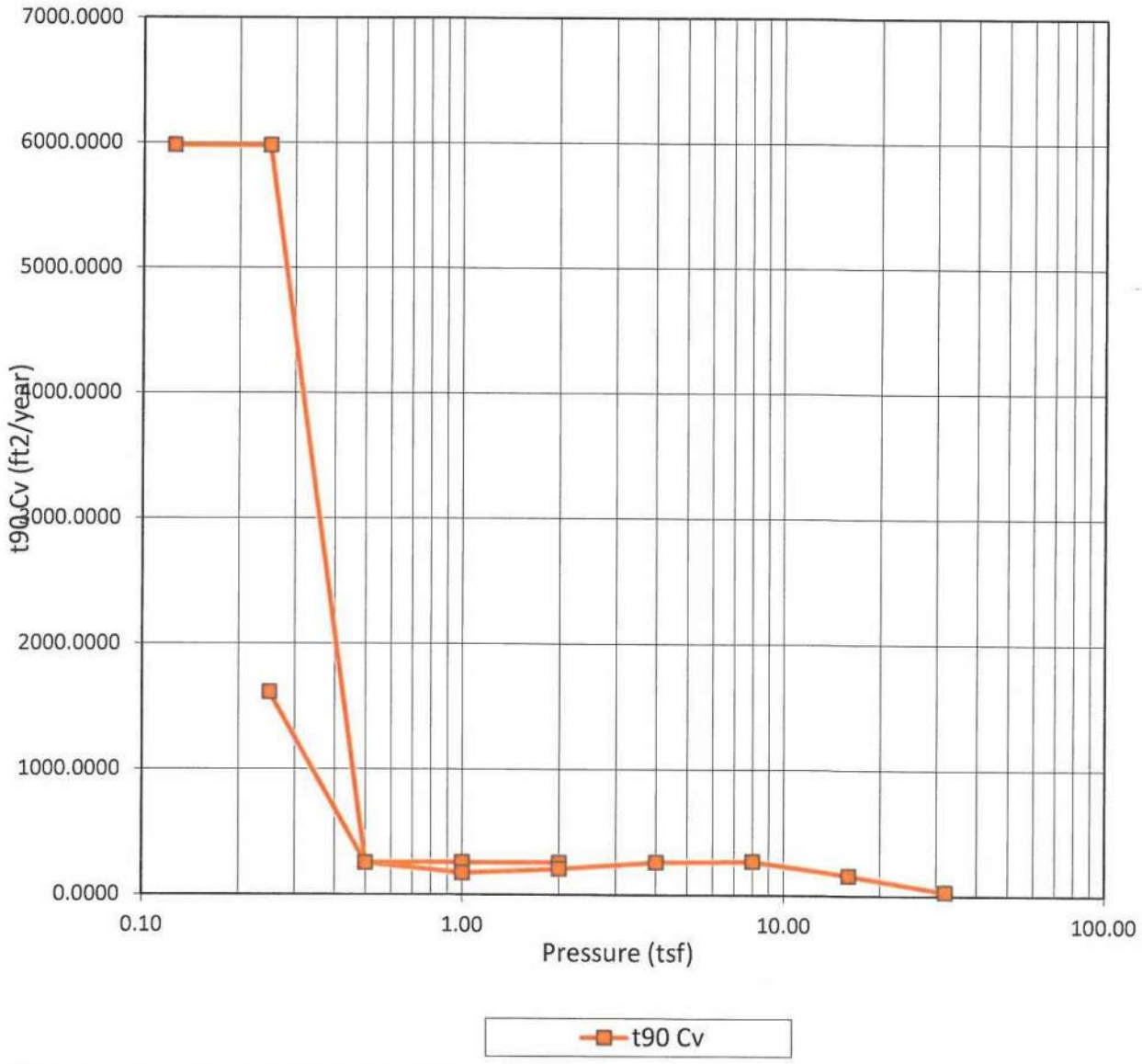
Checked By: S. Baldwin



Summary of Consolidation Test Results				Test Date: 10/21/15
Overburden Press. (tsf)	0.35	Compression Index, C_c	0.15	
Preconsol. Press., P_c (tsf)	3.00	Rebound Index, C_r	0.01	
Over Consolidation Ratio	8.70			
Soil Description:	Gray, White & Tan Lean Clay with Sand			
Project Number:	251539	Depth: 5.6' to 5.9'	Remarks:	
Sample Number:	ST-1	Boring Number: B-168		
Project:	North Cabot Interchange			
Client:				
Location:	B-168 ST-1 5.6' to 5.9'			

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	Before	After				
			Liquid Limits:	37	Test Date:	10/21/15
Moisture (%):	16.93	20.34	Plastic Limits:	19		
Dry Density (pcf):	105.35	115.81	Plasticity Index (%):	18		
Saturation (%):	75.40	118.94				
Void Ratio:	0.6113	0.4439	Specific Gravity:	2.717	Measured	

Soil Description:	Gray, White & Tan Lean Clay with Sand		
Project Number:	251539	Depth: 5.6' to 5.9'	Remarks:
Sample Number:	ST-1	Boring Number: B-168	
Project:	North Cabot Interchange		
Client:			
Location:	B-168 ST-1 5.6' to 5.9'		

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CONSOLIDATION TEST

Test Summary

Project: North Cabot Interchange
Location: B-168 ST-1 5.6' to 5.9'
Job Number: 251539

Project Number: 251539

Sample Number: ST-1
Boring Number: B-168
Depth: 5.6' to 5.9'
Sample Type: Undisturbed

Sample Description: Gray, White & Tan Lean Clay with Sand
Remarks:

Test Number:
Test Date: 10/21/15

Index	Load Sequence (tsf)	Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0093	0.3813	0.00	0.6072	0.000	0.000	0.000	0.000
1	0.125	-0.0012	1.0105	0.3825	-0.12	0.6091	0.132	* 0.0734	5977.616	2500.781
2	0.250	-0.0016	1.0109	0.3829	-0.16	0.6098	0.132	* 0.0735	5978.658	2499.356
3	0.500	-0.0014	1.0107	0.3827	-0.14	0.6094	3.106	* 1.7254	254.513	106.427
4	1.000	0.0008	1.0085	0.3805	0.08	0.6059	3.043	* 1.6904	258.649	108.159
5	2.000	0.0050	1.0043	0.3763	0.50	0.5992	3.043	* 1.6904	256.499	107.260
6	0.500	0.0012	1.0081	0.3801	0.12	0.6053	0.000	0.000	0.000	0.000
7	0.125	-0.0022	1.0115	0.3835	-0.22	0.6107	0.000	0.000	0.000	0.000
8	0.250	-0.0021	1.0114	0.3834	-0.21	0.6105	0.491	* 0.2726	1613.131	674.558
9	0.500	-0.0012	1.0105	0.3825	-0.12	0.6091	3.105	* 1.7252	254.443	106.398
10	1.000	0.0011	1.0082	0.3802	0.11	0.6055	4.508	* 2.5043	174.486	72.964
11	2.000	0.0049	1.0044	0.3764	0.49	0.5994	3.778	* 2.0988	206.636	86.405
12	4.000	0.0156	0.9937	0.3657	1.55	0.5824	2.923	* 1.6239	261.398	109.308
13	8.000	0.0394	0.9699	0.3419	3.90	0.5445	2.709	* 1.5049	268.722	112.369
14	16.000	0.0683	0.9410	0.3130	6.77	0.4984	4.284	* 2.3801	159.936	66.878
15	32.000	0.0977	0.9116	0.2836	9.68	0.4516	20.401	* 11.3339	31.520	13.180
16	8.000	0.0891	0.9202	0.2922	8.83	0.4653	0.000	0.000	0.000	0.000
17	2.000	0.0745	0.9348	0.3068	7.38	0.4886	0.000	0.000	0.000	0.000
18	0.500	0.0597	0.9496	0.3216	5.91	0.5121	0.000	0.000	0.000	0.000
19	0.125	0.1048	0.9045	0.2765	4.81	0.5338	0.000	0.000	0.000	0.000

Predicted value indicated with *

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CONSOLIDATION TEST

Consolidation Specimen Information

Project: North Cabot Interchange
Location: B-168 ST-1 5.6' to 5.9'
Job Number: 251539

Project Number: 251539
Test Date: 10/21/15

Sample Number: ST-1
Boring Number: B-168
Depth: 5.6' to 5.9'
Sample Type: Undisturbed

Sample Description: Gray, White & Tan Lean Clay with Sand
Remarks:

Test Number:
Liquid Limit: 37.0000
Plastic Limit: 19.0000
Specific Gravity: 2.7170 Measured

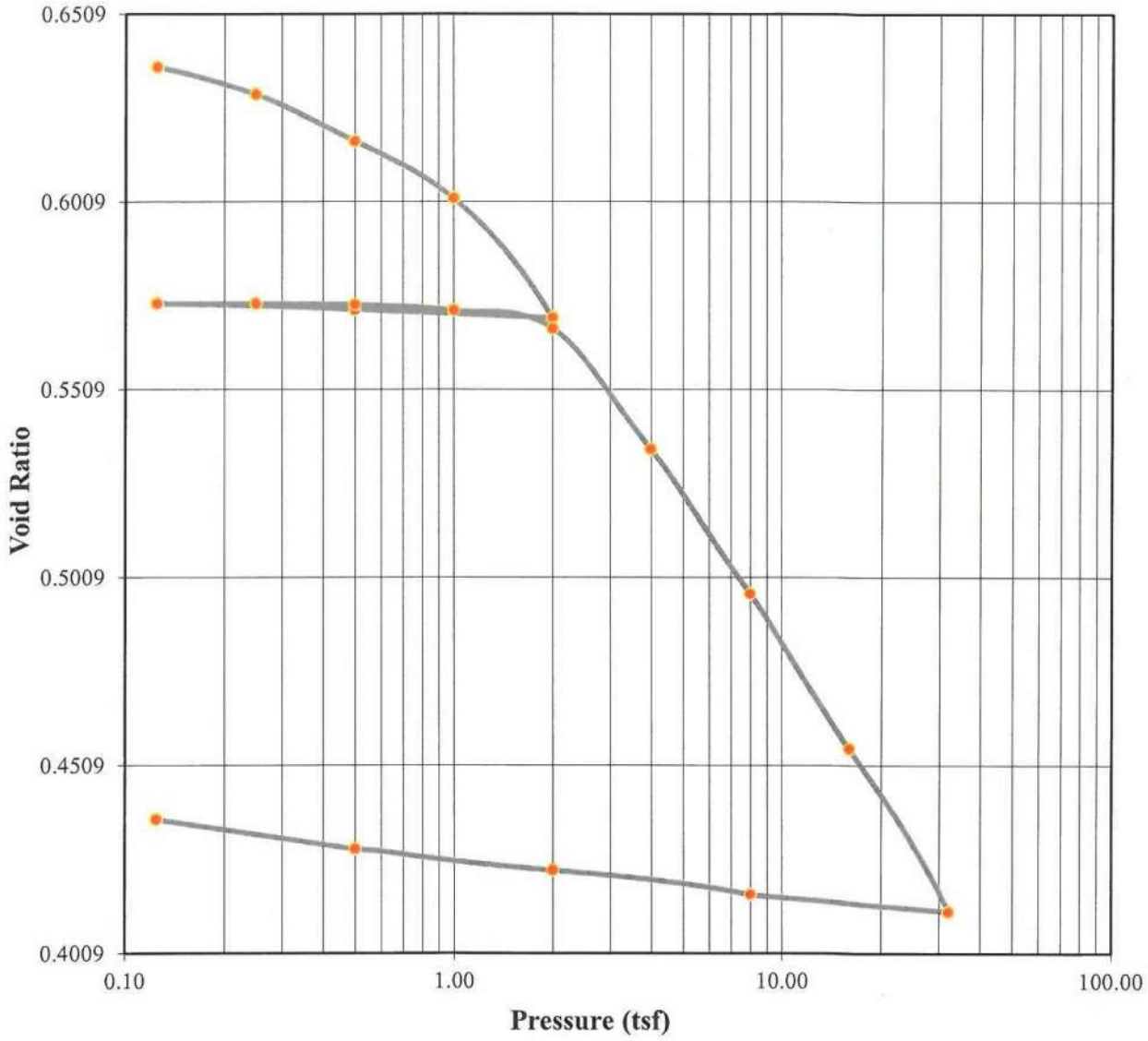
Initial Void Ratio: 0.6113
Plasticity Index (%): 18.0000
Weight of Ring (g): 110.8600

Initial Height (in): 1.0093
Initial Diameter (in): 2.4965

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	514.55	237.94
Dry Soil + Container (g)	450.83	210.60
Weight of Container (g)	74.51	76.17
Moisture Content (%)	16.93	20.34
Void Ratio	0.6113	0.4439
Saturation (%)	75.40	118.94
Dry Density (pcf)	105.35	115.81

Tested By: Jeremy Sebo

Checked By: S. Bradley



Test Date: 02/01/16

Summary of Consolidation Test Results

Overburden Press. (tsf)	0.34	Compression Index, C_c	0.13
Preconsol. Press., P_c (tsf)	0.90	Rebound Index, C_r	0.003
Over Consolidation Ratio	2.65		

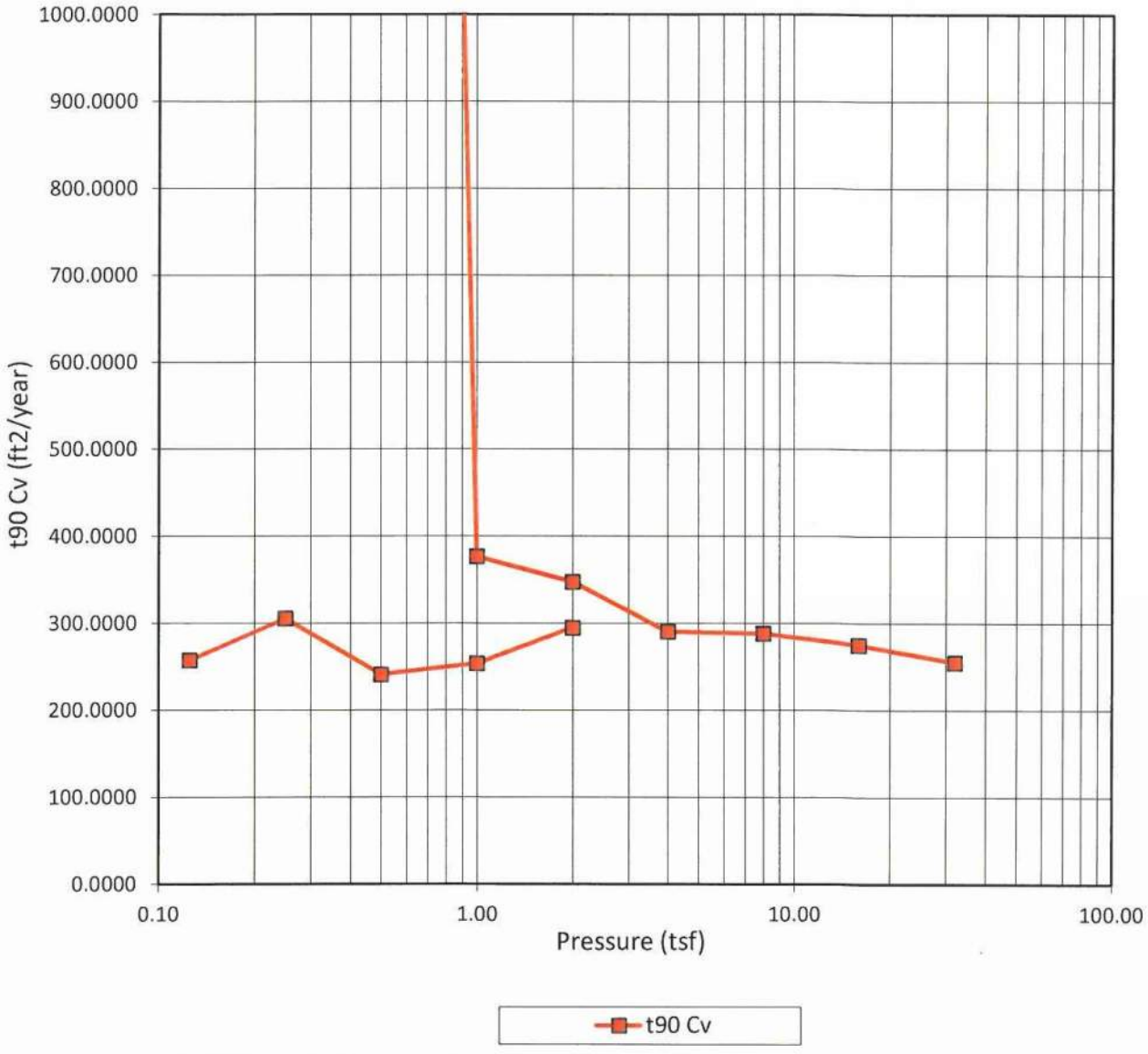
Soil Description:	Brown, Tan & Gray Sandy Lean Clay		
Project Number:	251539	Depth: 5.5' to 5.8'	Remarks:
Sample Number:	ST-1	Boring Number: B-171	
Project:	North Cabot Interchange		
Client:			
Location:	B-171 ST-1 5.5' to 5.8'		

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	Before	After				
			Liquid Limits:	25	**Test Date:**	02/01/16
Moisture (%):	22.13	16.85	**Plastic Limits:**	17		
Dry Density (pcf):	101.56	119.47	**Plasticity Index (%):**	8		
Saturation (%):	91.30	112.17				
Void Ratio:	0.6509	0.4032	**Specific Gravity:**	2.686	Measured	

Soil Description:	Brown, Tan & Gray Sandy Lean Clay		
Project Number:	251539	**Depth:** 5.5' to 5.8'	**Remarks:**
Sample Number:	ST-1	**Boring Number:** B-171	
Project:	North Cabot Interchange		
Client:			
Location:	B-171 ST-1 5.5' to 5.8'		

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Test Summary

Project: North Cabot Interchange
Location: B-171 ST-1 5.5' to 5.8'
Job Number: 251539

Project Number: 251539

Sample Number: ST-1
Boring Number: B-171
Depth: 5.5' to 5.8'
Sample Type: Undisturbed

Sample Description: Brown, Tan & Gray Sandy Lean Clay
Remarks:

Test Number:
Test Date: 02/01/16

Index	Load Sequence (tsf)	Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	0.9945	0.3911	0.00	0.6481	0.000	0.000	0.000	0.000
1	0.125	0.0069	0.9876	0.3842	0.69	0.6367	2.937	* 1.6318	256.950	107.447
2	0.250	0.0113	0.9832	0.3798	1.14	0.6294	2.453	* 1.3628	304.941	127.512
3	0.500	0.0188	0.9757	0.3723	1.89	0.6170	3.062	* 1.7012	240.572	100.595
4	1.000	0.0280	0.9665	0.3631	2.82	0.6017	2.855	* 1.5858	253.220	105.890
5	2.000	0.0472	0.9473	0.3439	4.75	0.5699	2.359	* 1.3106	294.341	123.085
6	0.500	0.0459	0.9486	0.3452	4.62	0.5721	0.000	0.000	0.000	0.000
7	0.125	0.0449	0.9496	0.3462	4.51	0.5737	0.000	0.000	0.000	0.000
8	0.250	0.0449	0.9496	0.3462	4.51	0.5737	0.134	* 0.0744	5209.210	2178.750
9	0.500	0.0451	0.9494	0.3460	4.53	0.5734	0.136	* 0.0758	5114.264	2137.609
10	1.000	0.0460	0.9485	0.3451	4.63	0.5719	1.850	* 1.0279	376.267	157.334
11	2.000	0.0489	0.9456	0.3422	4.92	0.5671	1.993	* 1.1074	347.105	145.147
12	4.000	0.0683	0.9262	0.3228	6.87	0.5349	2.290	* 1.2719	289.933	121.243
13	8.000	0.0915	0.9030	0.2996	9.20	0.4965	2.192	* 1.2180	287.794	120.345
14	16.000	0.1164	0.8781	0.2747	11.70	0.4552	2.173	* 1.2071	274.603	114.827
15	32.000	0.1425	0.8520	0.2486	14.33	0.4120	2.206	* 1.2253	254.689	106.497
16	8.000	0.1398	0.8547	0.2513	14.06	0.4164	0.000	0.000	0.000	0.000
17	2.000	0.1359	0.8586	0.2552	13.67	0.4229	0.000	0.000	0.000	0.000
18	0.500	0.1325	0.8620	0.2586	13.32	0.4285	0.000	0.000	0.000	0.000
19	0.125	0.1492	0.8453	0.2419	12.99	0.4364	0.000	0.000	0.000	0.000

Predicted value indicated with *

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CONSOLIDATION TEST

Consolidation Specimen Information

Project: North Cabot Interchange
Location: B-171 ST-1 5.5' to 5.8'
Job Number: 251539

Project Number: 251539
Test Date: 02/01/16

Sample Number: ST-1
Boring Number: B-171
Depth: 5.5' to 5.8'
Sample Type: Undisturbed

Sample Description: Brown, Tan & Gray Sandy Lean Clay
Remarks:

Test Number:
Liquid Limit: 25.0000
Plastic Limit: 17.0000
Specific Gravity: 2.6860 Measured

Initial Void Ratio: 0.6509
Plasticity Index (%): 8.0000
Weight of Ring (g): 109.2400

Initial Height (in): 0.9945
Initial Diameter (in): 2.4955

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	347.20	224.62
Dry Soil + Container (g)	297.60	202.78
Weight of Container (g)	73.42	73.19
Moisture Content (%)	22.13	16.85
Void Ratio	0.6509	0.4032
Saturation (%)	91.30	112.17
Dry Density (pcf)	101.56	119.47

Tested By: Jeremy Sides

Checked By: S. Bradley

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UNCONFINED COMPRESSION TEST (ROCK CORE)

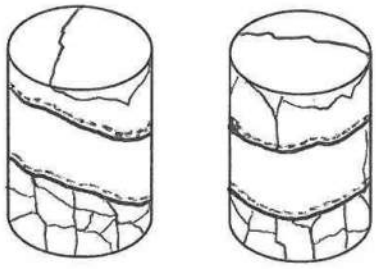
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-F
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-148
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 28.7' to 29.1'
LABORATORY NO.	: 251539	DATE TESTED	: 07/17/15
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 11/03/15

ROCK DESCRIPTION : v. thinly laminated, v.f. grain Shale, sli. wthd.

Diameter :	1.96 in	Area :	3.02 in^2
Height :	3.95 in	Volume :	0.0069 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	158	lbs/$ft.^3$
Maximum Stress :	460	psi
Elapsed Time :	4:40	min.
Rate of Loading :	10	lb/sec



--------- Existing Fractures

Comments :

Approved By : Jeremy Sabo

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UNCONFINED COMPRESSION TEST (ROCK CORE)

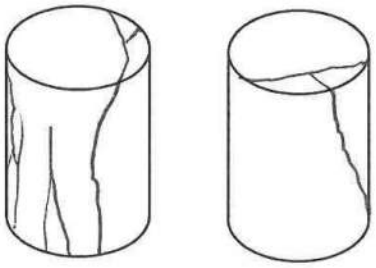
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-G
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-132
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 10.4' to 10.8'
LABORATORY NO.	: 251539	DATE TESTED	: 07/17/15
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 11/03/15

ROCK DESCRIPTION : f. grain, well cemented Sandstone w/heavy iron stain, mod. 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 :	154.76	lbs/$ft.^3$
Maximum Stress :	8251	psi
Elapsed Time :	6:42	min.
Rate of Loading :	90	lb/sec



Comments :

Approved By : Jeremy Sides

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UNCONFINED COMPRESSION TEST (ROCK CORE)

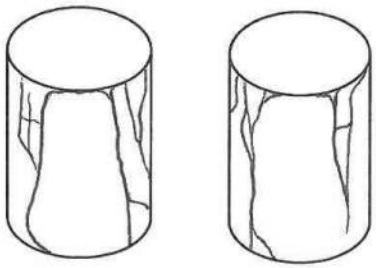
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-H
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-132
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 19.2' to 19.6'
LABORATORY NO.	: 251539	DATE TESTED	: 07/17/15
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 11/03/15

ROCK DESCRIPTION : f. grain, well cemented Sandstone w/healed jts., fresh

Diameter :	1.99 in	Area :	3.10 in^2
Height :	4.01 in	Volume :	0.0072 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	156.29	lbs/ft.^{3}
Maximum Stress :	7071	psi
Elapsed Time :	5:44	min.
Rate of Loading :	60	lb/sec



Comments :

Approved By : Jacob Sabo

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UNCONFINED COMPRESSION TEST (ROCK CORE)

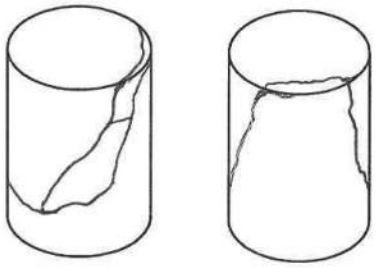
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-I
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-130
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 27.7' to 28.1'
LABORATORY NO.	: 251539	DATE TESTED	: 07/17/15
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 11/03/15

ROCK DESCRIPTION : v. thinly laminated, v.f. grain Shale w/Sandstone pebble, sli. wthd.

Diameter :	1.98 in	Area :	3.07 in^2
Height :	4.05 in	Volume :	0.0072 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	162.98	lbs/ft.^{3}
Maximum Stress :	1366	psi
Elapsed Time :	4:00	min.
Rate of Loading :	20	lb/sec



Comments :

Approved By : Jeremy Sobo

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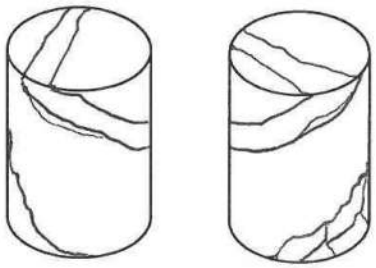
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-J
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-147
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 26.9' to 27.2'
LABORATORY NO.	: 251539	DATE TESTED	: 07/17/15
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 11/03/15

ROCK DESCRIPTION : v. thinly laminated, v.f. grain Shale, mod. wthd.

Diameter :	1.93 in	Area :	2.91 in^2
Height :	3.85 in	Volume :	0.0065 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	160.41	lbs/ft.³
Maximum Stress :	597	psi
Elapsed Time :	2:32	min.
Rate of Loading :	30	lb/sec



Comments :

Approved By : Jeremy Sides

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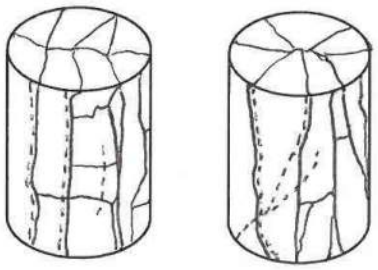
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-K
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-147
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 34.4' to 34.7'
LABORATORY NO.	: 251539	DATE TESTED	: 07/17/15
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 11/03/15

ROCK DESCRIPTION : v. thinly laminated, v.f. grain Shale, sli. to mod. wthd.

Diameter :	1.96 in	Area :	3.03 in²
Height :	4.02 in	Volume :	0.0071 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	162.43	lbs/ft.³
Maximum Stress :	7123	psi
Elapsed Time :	9:55	min.
Rate of Loading :	50	lb/sec



--------- Existing Fracture w/gypsum infill

Comments :

Approved By : Jeremy Sides

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UNCONFINED COMPRESSION TEST (ROCK CORE)

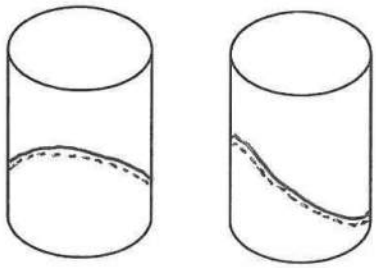
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-L
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-139
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 24.0' to 24.4'
LABORATORY NO.	: 251539	DATE TESTED	: 07/17/15
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 11/03/15

ROCK DESCRIPTION : v. thinly laminated, v.f. grain Shale, f. breaks along bedding, sli. wthd.

Diameter :	1.98 in	Area :	3.08 in²
Height :	4.04 in	Volume :	0.0072 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	162.43	lbs/ft.³
Maximum Stress :	172	psi
Elapsed Time :	0:45	min.
Rate of Loading :	20	lb/sec



--------- Existing Bedding Plane Discontinuity

Comments :

Approved By : Jerry Sides

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UNCONFINED COMPRESSION TEST (ROCK CORE)

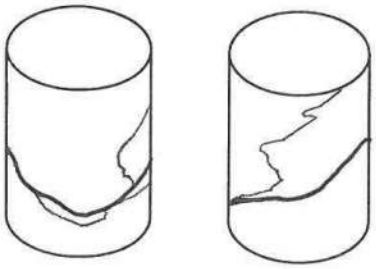
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-M
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-139
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 16.6' to 17.0'
LABORATORY NO.	: 251539	DATE TESTED	: 07/17/15
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 11/03/15

ROCK DESCRIPTION : v. thinly laminated, v.f. grain Shale, f. breaks along bedding, sli. wthd.

Diameter :	1.98 in	Area :	3.07 in^2
Height :	3.90 in	Volume :	0.0069 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	157.79	lbs/ft.³
Maximum Stress :	534	psi
Elapsed Time :	3:20	min.
Rate of Loading :	10	lb/sec



Comments :

Approved By : Jeremy Sobo

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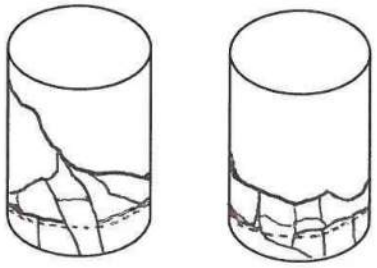
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-N
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-131
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 13.1' to 13.5'
LABORATORY NO.	: 251539	DATE TESTED	: 07/17/15
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 11/03/15

ROCK DESCRIPTION : v. thinly laminated, v.f. grain Shale, iron stain along bedding, mod. wthd.

Diameter :	1.98 in	Area :	3.08 in²
Height :	3.98 in	Volume :	0.0071 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	139.41	lbs/ft.³
Maximum Stress :	130	psi
Elapsed Time :	2:38	min.
Rate of Loading :	10	lb/sec



--------- Existing Fracture

Comments :

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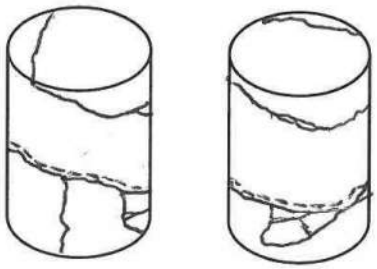
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-O
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-131
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 21.1' to 21.5'
LABORATORY NO.	: 251539	DATE TESTED	: 07/17/15
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 11/03/15

ROCK DESCRIPTION : v. thinly laminated, v.f. grain Shale, f. breaks along bedding, trcs. f. grain Sandstone laminae, fresh

Diameter :	1.98 in	Area :	3.07 in^2
Height :	3.96 in	Volume :	0.007 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	156.19	lbs/ft.^{3}
Maximum Stress :	369	psi
Elapsed Time :	3:32	min.
Rate of Loading :	20	lb/sec



--------- Existing Bedding Plane Discontinuity

Comments :

Approved By : Jerry Sato

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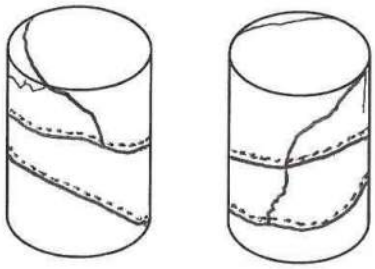
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-P
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-131
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 38.1' to 38.5'
LABORATORY NO.	: 251539	DATE TESTED	: 07/17/15
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 11/03/15

ROCK DESCRIPTION : v. thinly laminated, v.f. grain Shale, f. breaks along bedding, fresh

Diameter :	1.99 in	Area :	3.11 in^2
Height :	4.07 in	Volume :	0.0073 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	159.84	lbs/ft.³
Maximum Stress :	382	psi
Elapsed Time :	4:57	min.
Rate of Loading :	10	lb/sec



--------- Existing Bedding Plane Discontinuities

Comments :

Approved By : Jeremy Sisko

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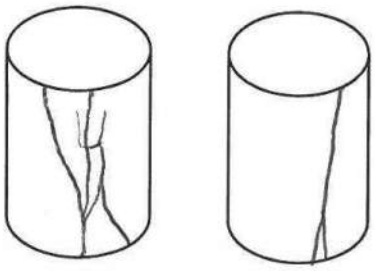
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-Q
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-133
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 4.6' to 5.0'
LABORATORY NO.	: 251539	DATE TESTED	: 02/03/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : f. grain, well cemented Sandstone, mod. weathered to fresh

Diameter :	1.98 in	Area :	3.07 in^2
Height :	4.07 in	Volume :	0.0072 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	163.58	lbs/ft.^{3}
Maximum Stress :	14078	psi
Elapsed Time :	10:25	min.
Rate of Loading :	100	lb/sec



Comments :

Approved By : Jerry Sabo

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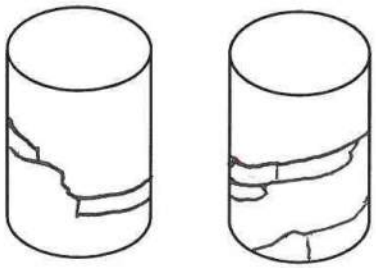
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-R
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-134
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 14.5' to 14.9'
LABORATORY NO.	: 251539	DATE TESTED	: 2/3/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 3/2/2016

ROCK DESCRIPTION : v. thinly laminated, v.f. sandy to silty in part, Shale mod. weathered to fresh

Diameter :	1.99 in	Area :	3.09 in^2
Height :	4.04 in	Volume :	0.0072 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	157.54	lbs/$ft.^3$
Maximum Stress :	255	psi
Elapsed Time :	2:00	min.
Rate of Loading :	10	lb/sec



Comments :

Approved By : Jerry Soto

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UNCONFINED COMPRESSION TEST (ROCK CORE)

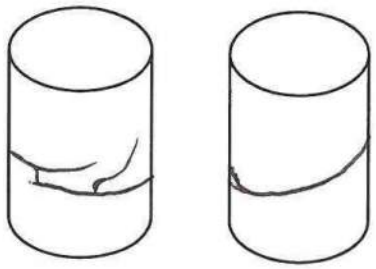
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-S
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-134
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 23.3' to 23.7'
LABORATORY NO.	: 251539	DATE TESTED	: 2/3/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 3/2/2016

ROCK DESCRIPTION : v. thinly laminated, v.f. sandy to silty in part, Shale sli. weathered to fresh

Diameter :	1.98 in	Area :	3.09 in^2
Height :	4.08 in	Volume :	0.0073 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	158.94	lbs/ft.^{3}
Maximum Stress :	191	psi
Elapsed Time :	1:50	min.
Rate of Loading :	10	lb/sec



Comments :

Approved By : Jeremy Solo

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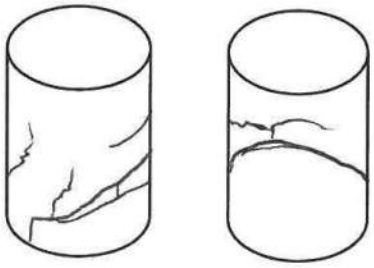
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-T
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-134
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 31.9' to 32.2'
LABORATORY NO.	: 251539	DATE TESTED	: 2/3/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 3/2/2016

ROCK DESCRIPTION : v. thinly laminated, silty in part, Shale fresh

Diameter :	1.98 in	Area :	3.08 in^2
Height :	3.99 in	Volume :	0.0071 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	161.91	lbs/ft.^{3}
Maximum Stress :	551	psi
Elapsed Time :	2:45	min.
Rate of Loading :	20	lb/sec



Comments :

Approved By : Jerry Sebo

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UNCONFINED COMPRESSION TEST (ROCK CORE)

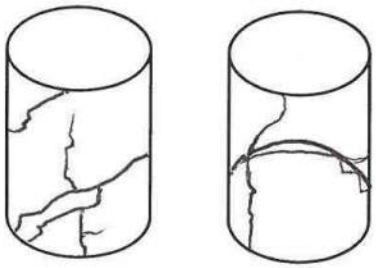
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-U
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-135A
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 27.7' to 28.1'
LABORATORY NO.	: 251539	DATE TESTED	: 2/3/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 3/2/2016

ROCK DESCRIPTION : v. thinly laminated, silty in part, Shale mod. weathered

Diameter :	1.99 in	Area :	3.11 in^2
Height :	4.04 in	Volume :	0.0073 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	164.65	lbs/ft.^{3}
Maximum Stress :	280	psi
Elapsed Time :	5:10	min.
Rate of Loading :	10	lb/sec



Comments :

Approved By : Jerry Sale

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UNCONFINED COMPRESSION TEST (ROCK CORE)

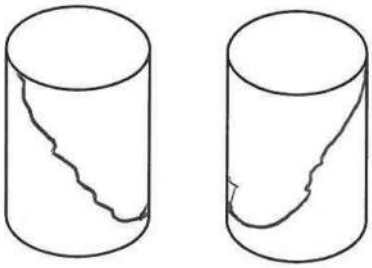
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-V
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-135A
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 39.1' to 39.4'
LABORATORY NO.	: 251539	DATE TESTED	: 02/03/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : v. thinly laminated, mod. hard Shale, fresh to sli. wthd.

Diameter :	1.98 in	Area :	3.09 in^2
Height :	4.04 in	Volume :	0.0072 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	165.74	lbs/$ft.^3$
Maximum Stress :	411	psi
Elapsed Time :	3:02	min.
Rate of Loading :	10	lb/sec



Comments :

Approved By : Jerry Sabo

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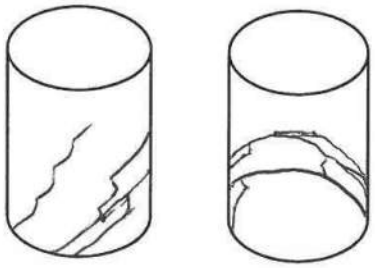
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-W
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-169
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 17.6' to 18.0'
LABORATORY NO.	: 251539	DATE TESTED	: 02/03/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : v. thinly laminated, med. to mod. hard Shale, fresh to sli. wthd.

Diameter :	1.98 in	Area :	3.09 in^2
Height :	4.04 in	Volume :	0.0072 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	156.81	lbs/$ft.^3$
Maximum Stress :	184	psi
Elapsed Time :	3:52	min.
Rate of Loading :	1	lb/sec



Comments :

Approved By : Jeremy Sobo

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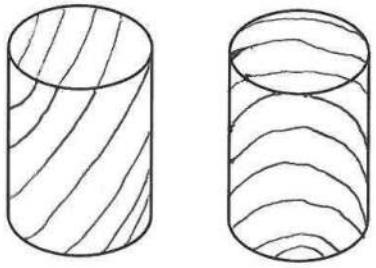
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-X
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-169
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 26.4' to 26.8'
LABORATORY NO.	: 251539	DATE TESTED	: 02/03/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : v. thinly laminated, med. to mod. hard Shale, fresh to sli. wthd.

Diameter :	1.99 in	Area :	3.11 in^2
Height :	4.06 in	Volume :	0.0073 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	155.42	lbs/ft.^{3}
Maximum Stress :	154	psi
Elapsed Time :	5:00	min.
Rate of Loading :	10	lb/sec



Comments :

Approved By : Jerry Sabo

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UNCONFINED COMPRESSION TEST (ROCK CORE)

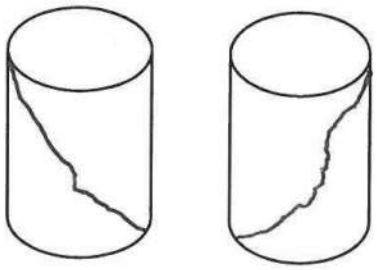
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-Y
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-136
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 16.7' to 17.1'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : f. grain, w/interbedded shale, f. micaceous Sandstone, sli. wthd.

Diameter :	1.99 in	Area :	3.10 in^2
Height :	4.10 in	Volume :	0.0074 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	161.92	lbs/ft.^{3}
Maximum Stress :	729	psi
Elapsed Time :	1:52	min.
Rate of Loading :	30	lb/sec



Comments :

Approved By : Jerry Sato

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HDR | ICA

UNCONFINED COMPRESSION TEST (ROCK CORE)

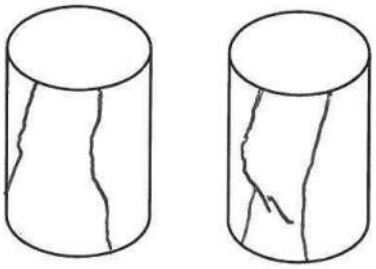
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-Z
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-137
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 14.0' to 14.4'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : f. grain, w/trc. shale pebbles, f. micaceous Sandstone, sli. wthd.

Diameter :	1.99 in	Area :	3.11 in^2
Height :	4.11 in	Volume :	0.0074 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	161.54	lbs/$ft.^3$
Maximum Stress :	9626	psi
Elapsed Time :	12:05	min.
Rate of Loading :	40	lb/sec



Comments :

Approved By : Jeremy Solo

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UNCONFINED COMPRESSION TEST (ROCK CORE)

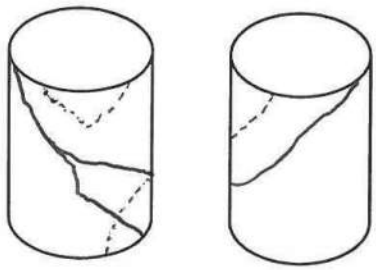
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-AA
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-137
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 27.5' to 27.8'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : v. thinly laminated, med. to mod. hard Shale w/f. grain sandstone laminae, sli. wthd.

Diameter :	1.95 in	Area :	2.99 in^2
Height :	4.07 in	Volume :	0.0071 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	153.59	lbs/$ft.^3$
Maximum Stress :	70	psi
Elapsed Time :	0:46	min.
Rate of Loading :	20	lb/sec



------ Sample Fractured During Preparation

Comments :

Approved By : Jeremy Sodo

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UNCONFINED COMPRESSION TEST (ROCK CORE)

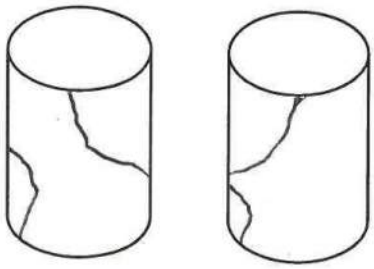
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-AB
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-138
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 15.9' to 16.3'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : v. thinly laminated, med. to mod. hard Shale, trc. quartz veins, fresh to sli. wthd.

Diameter :	1.98 in	Area :	3.08 in²
Height :	4.17 in	Volume :	0.0074 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	156.57	lbs/ft.³
Maximum Stress :	153	psi
Elapsed Time :	1:06	min.
Rate of Loading :	30	lb/sec



Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

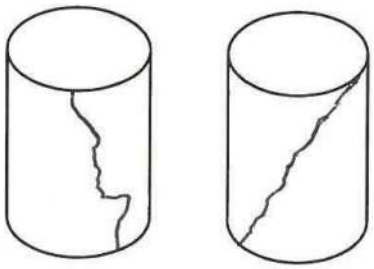
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-AC
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-138
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 25.1' to 25.5'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : v. thinly laminated, med. to mod. hard Shale, trc. pyrite nodule, fresh to sli. wthd.

Diameter :	1.99 in	Area :	3.10 in^2
Height :	4.08 in	Volume :	0.0073 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	160.3	lbs/$ft.^3$
Maximum Stress :	161	psi
Elapsed Time :	1:13	min.
Rate of Loading :	20	lb/sec



Comments :

Approved By : Jerry Sides

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UNCONFINED COMPRESSION TEST (ROCK CORE)

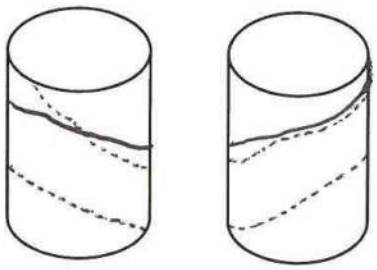
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-AD
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-140
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 20.2' to 20.6'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : v. thinly laminated, med. hard Shale, sli. silty in parts, sli. wthd.

Diameter :	1.99 in	Area :	3.12 in^2
Height :	4.08 in	Volume :	0.0074 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	156.91	lbs/ft.^{3}
Maximum Stress :	208	psi
Elapsed Time :	1:19	min.
Rate of Loading :	20	lb/sec



------- Sample Fractured During Preparation

Comments :

Approved By : Jerry Sabo

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UNCONFINED COMPRESSION TEST (ROCK CORE)

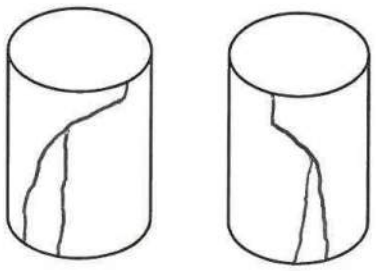
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-AE
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-149
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 13.4' to 13.7'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : v. thinly laminated, med. to mod. hard Shale, fissile in parts, sli. to mod. wthd.

Diameter :	1.99 in	Area :	3.11 in^2
Height :	4.07 in	Volume :	0.0073 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	161.77	lbs/$ft.^3$
Maximum Stress :	2390	psi
Elapsed Time :	5:51	min.
Rate of Loading :	20	lb/sec



Comments :

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UNCONFINED COMPRESSION TEST (ROCK CORE)

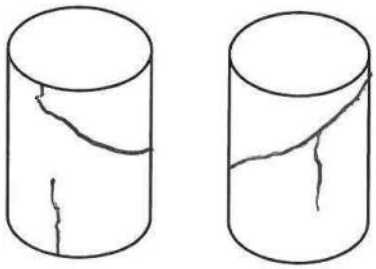
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-AF
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-150
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 22.1' to 22.5'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : thinly laminated, med. to mod. hard Shale, fissile in parts, trcs. sandstone laminae, sli. t

Diameter :	1.98 in	Area :	3.09 in^2
Height :	4.10 in	Volume :	0.0073 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	156.68	lbs/$ft.^3$
Maximum Stress :	376	psi
Elapsed Time :	2:35	min.
Rate of Loading :	20	lb/sec



Comments :

Approved By : Jerry Sdro

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UNCONFINED COMPRESSION TEST (ROCK CORE)

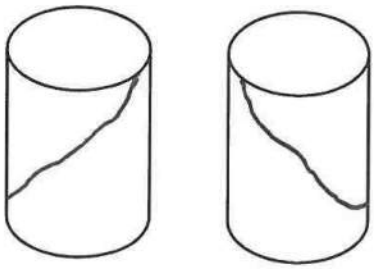
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-AG
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-150
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 33.2' to 33.6'
LABORATORY NO.	: 251539	DATE TESTED	: 2/25/2016
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 3/2/2016

ROCK DESCRIPTION : thinly laminated, Shale, fissile in parts, trcs. sandstone laminae, sli. to mod. 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 :	164.64	lbs/$ft.^3$
Maximum Stress :	742	psi
Elapsed Time :	1:27	min.
Rate of Loading :	30	lb/sec



Comments :

Approved By : Jerry Sabo

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UNCONFINED COMPRESSION TEST (ROCK CORE)

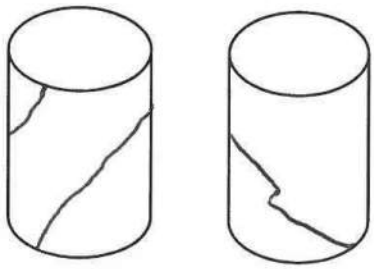
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-AH
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-151
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 22.7' to 23.1'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : thinly laminated, med. to mod. hard Shale, trcs. sandstone laminae, mod. wthd.

Diameter :	1.98 in	Area :	3.08 in^2
Height :	4.10 in	Volume :	0.0073 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	165.5	lbs/$ft.^3$
Maximum Stress :	516	psi
Elapsed Time :	2:14	min.
Rate of Loading :	20	lb/sec



Comments :

Approved By : Jeremy Sides

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HDR | ICA

UNCONFINED COMPRESSION TEST (ROCK CORE)

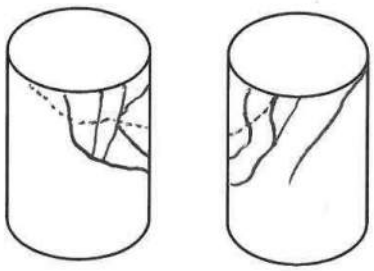
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-AI
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-152
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 21.7' to 22.1'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : thinly laminated, med. hard, poorly fissile Shale, mod. wthd.

Diameter :	1.97 in	Area :	3.04 in^2
Height :	4.06 in	Volume :	0.0071 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	158.37	lbs/ft.^{3}
Maximum Stress :	306	psi
Elapsed Time :	2:12	min.
Rate of Loading :	20	lb/sec



------- Sample Fractured During Preparation

Comments :

Approved By : Jeremy Sobo

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UNCONFINED COMPRESSION TEST (ROCK CORE)

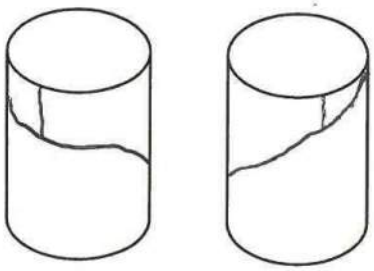
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-AJ
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-170
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 23.1' to 23.5'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : thinly laminated, med. to mod. hard, poorly fissile Shale, silty in parts, sli. to mod. wthd.

Diameter :	1.99 in	Area :	3.11 in^2
Height :	4.08 in	Volume :	0.0074 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	155.16	lbs/$ft.^3$
Maximum Stress :	315	psi
Elapsed Time :	1:32	min.
Rate of Loading :	20	lb/sec



Comments :

Approved By : Jeremy Sabo

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UNCONFINED COMPRESSION TEST (ROCK CORE)

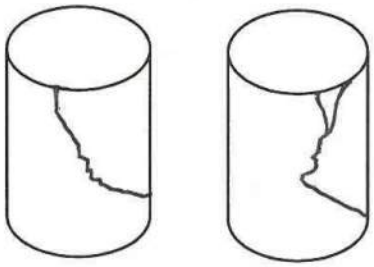
PROJECT NAME	: North Cabot Interchange		
PROJECT NO.	: 251539	SAMPLE NO.	: RS-AK
PROJECT COUNTY	: Lonoke	SAMPLE LOC.	: B-171
PROJECT STATE	: Arkansas	SAMPLE DEPTH	: 21.3' to 21.7'
LABORATORY NO.	: 251539	DATE TESTED	: 02/25/16
SUBMITTED BY	: HDR | ICA	DATE REPORTED	: 03/02/16

ROCK DESCRIPTION : thinly laminated, med. to mod. hard, poorly fissile Shale, silty in part, sli. to mod. wthd.

Diameter :	1.97 in	Area :	3.04 in^2
Height :	4.11 in	Volume :	0.0072 ft^3

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	158.07	lbs/$ft.^3$
Maximum Stress :	415	psi
Elapsed Time :	1:47	min.
Rate of Loading :	20	lb/sec



Comments :

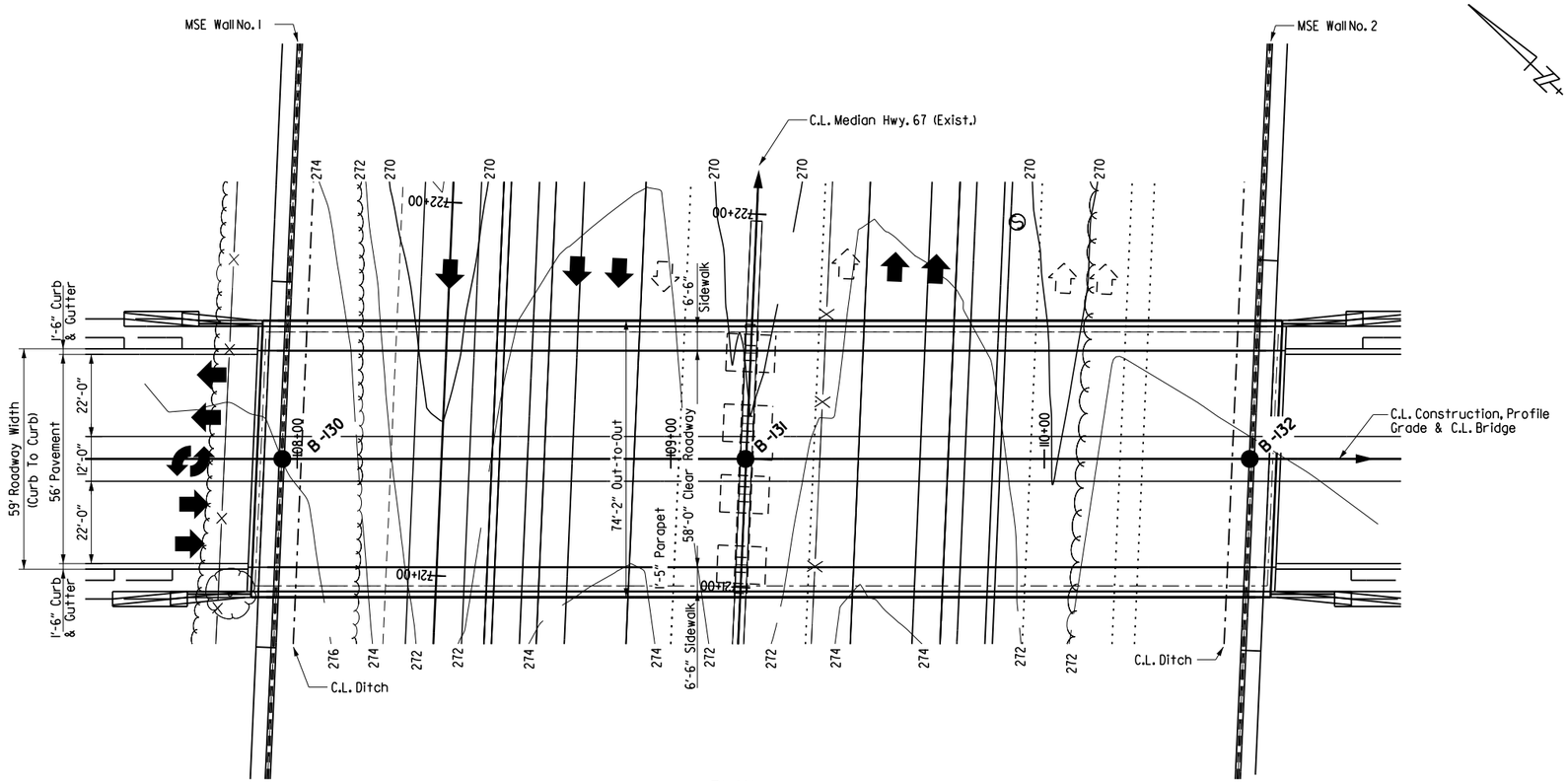
Approved By : Jeremy Soto

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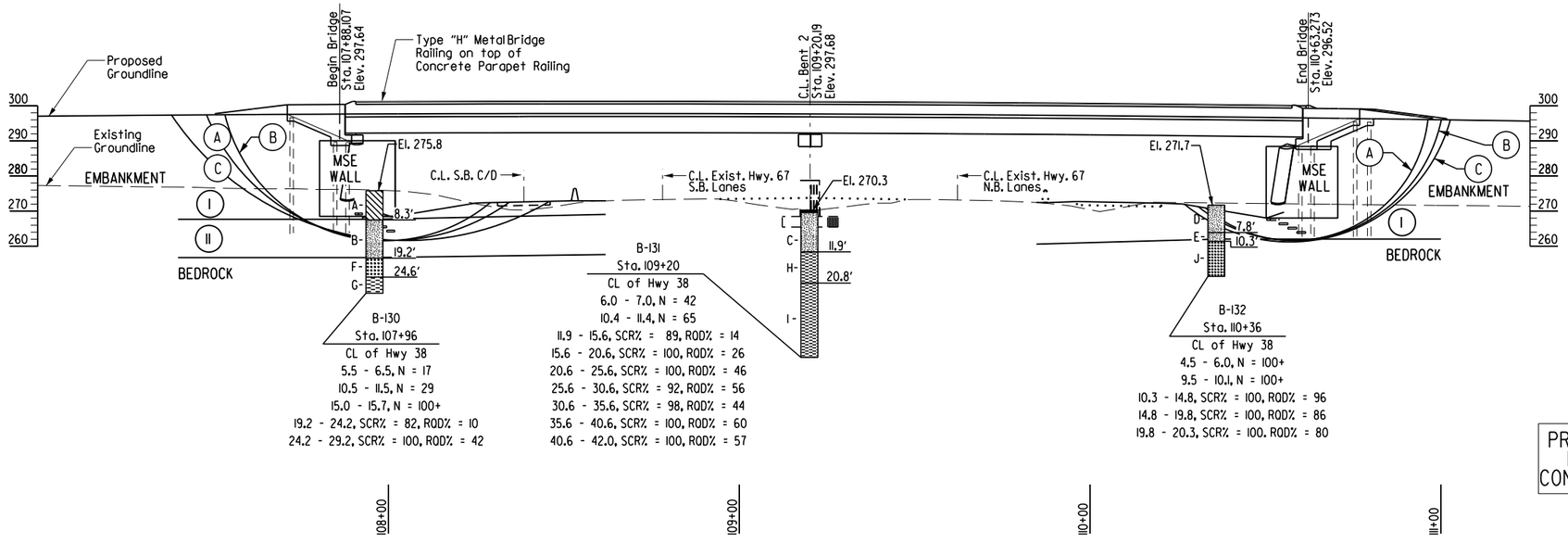
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Appendix C. PROFILE AND PLAN SHEETS FOR BRIDGES AND RETAINING WALLS

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.		061102		
				(1)		LAYOUT		



PLAN



ELEVATION

END BENT 1

ASSUMED SOIL STRENGTH PARAMETERS			
Soil	Embankment	I	II
Short Term	c = 800 PSF Φ = 0° γ = 120 PCF	c = 1250 PSF Φ = 0° γ = 115 PCF	c = 0 PSF Φ = 33° γ = 120 PCF
Long Term	c̄ = 160 PSF Φ̄ = 26° γ = 120 PCF	c̄ = 250 PSF Φ̄ = 26° γ = 115 PCF	c̄ = 0 PSF Φ̄ = 33° γ = 120 PCF

FACTORS OF SAFETY		
Short Term	A	2.1
Long Term	B	2.0
Seismic	C	1.4

END BENT 3

ASSUMED SOIL STRENGTH PARAMETERS		
Soil	Embankment	I
Short Term	c = 800 PSF Φ = 0° γ = 120 PCF	c = 0 PSF Φ = 33° γ = 120 PCF
Long Term	c̄ = 160 PSF Φ̄ = 26° γ = 120 PCF	c̄ = 0 PSF Φ̄ = 33° γ = 120 PCF

FACTORS OF SAFETY		
Short Term	A	2.2
Long Term	B	2.1
Seismic	C	1.5

BORING LEGEND

A - Very stiff, light brown & gray, sandy, lean clay.
B - Very stiff to very hard, light brown & gray, silty, clayey sand.
C - Dense to very dense, brown, gray & black, silty, clayey sand.
D - Very dense, tan & gray, silty sand with gravel.
E - Very dense, tan & gray, silty sand.
F - Sandstone: Medium to dark gray, orange-brown stain, fine grain with interbedded Shale, slightly weathered with Shale severely weathered, highly fractured, hard with soft seams.
G - Shale (Claystone): Dark gray to black, scattered light gray, very fine grain with fine grain Sandstone pebbles & cobbles, silty laminations, slightly weathered with seams severely weathered, very thinly laminated, medium hard with soft seams.
H - Shale (Claystone): Black, dark gray, dark brown, orange-brown stain, very fine grain, moderately to moderately severely weathered with seams severely to completely (clay) weathered, very thinly laminated, low to medium hardness, slightly silty in parts, iron stain, clay seams.
I - Shale (Claystone): Black, dark gray, very fine grain, fresh to slightly weathered with seams severely weathered, very thinly laminated, medium hard with soft seams, slightly silty in parts, very finely micaceous.
J - Sandstone: Light to medium gray, traces of black grains, orange-brown stain, fine grain with traces of medium grain, well cemented, massive bedded, slightly weathered to fresh, hard, widely scattered gypsum infill of healed joints.

PRELIMINARY NOT FOR CONSTRUCTION

04-27-16
DATE
BRIDGE ENGINEER

LAYOUT OF HWY. 38 BRIDGE OVER HWY. 67 HWY. 67 INTERCHANGE (N. OF CABOT) (F) LONOKE COUNTY

ROUTE 67 SEC. II

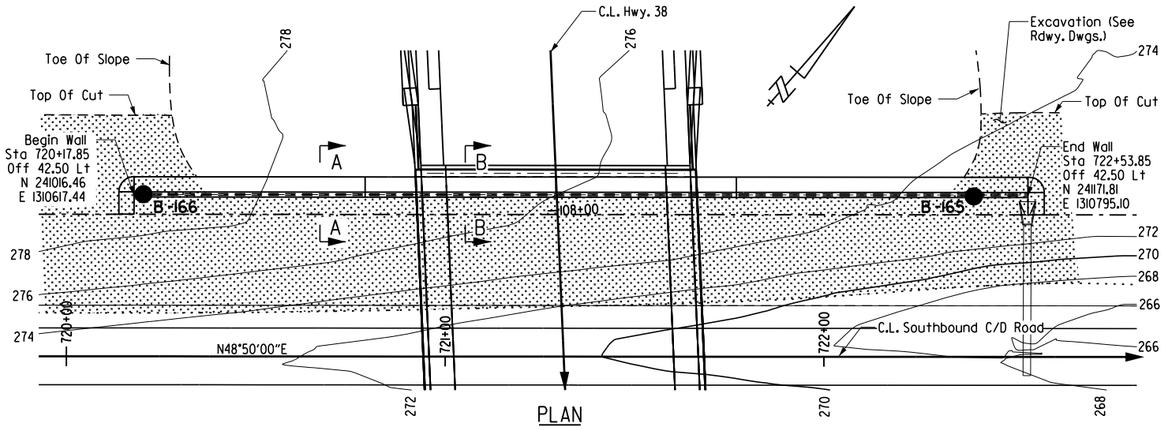
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

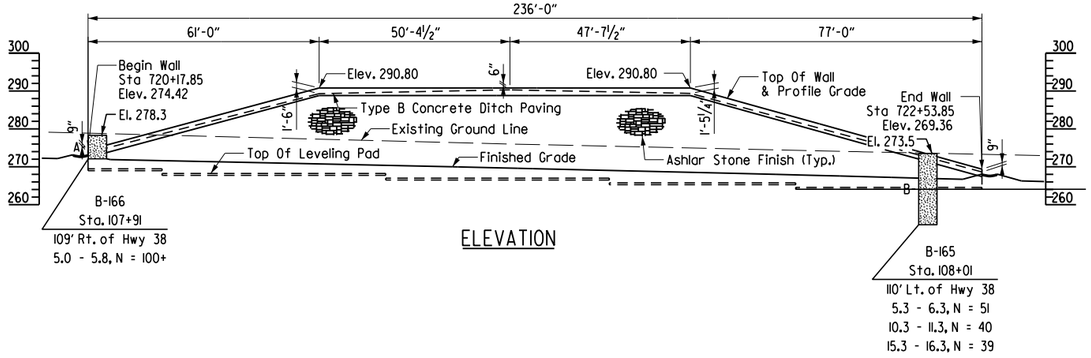
DRAWN BY: TSS DATE: 3-16
CHECKED BY: MLM DATE: 4-16
DESIGNED BY: DLC DATE:
FILENAME: Bridge B061102MLL1.dgn
SCALE: 1" = 40'-0"

BRIDGE NO. DRAWING NO.

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.		061102		
				(1)		RETAINING WALL		



PLAN



ELEVATION

BORING LEGEND

A - Tan & gray, silty sand.
B - Tan & gray, silty sand with gravel.

PRELIMINARY
NOT FOR
CONSTRUCTION

04-27-16
DATE
BRIDGE ENGINEER

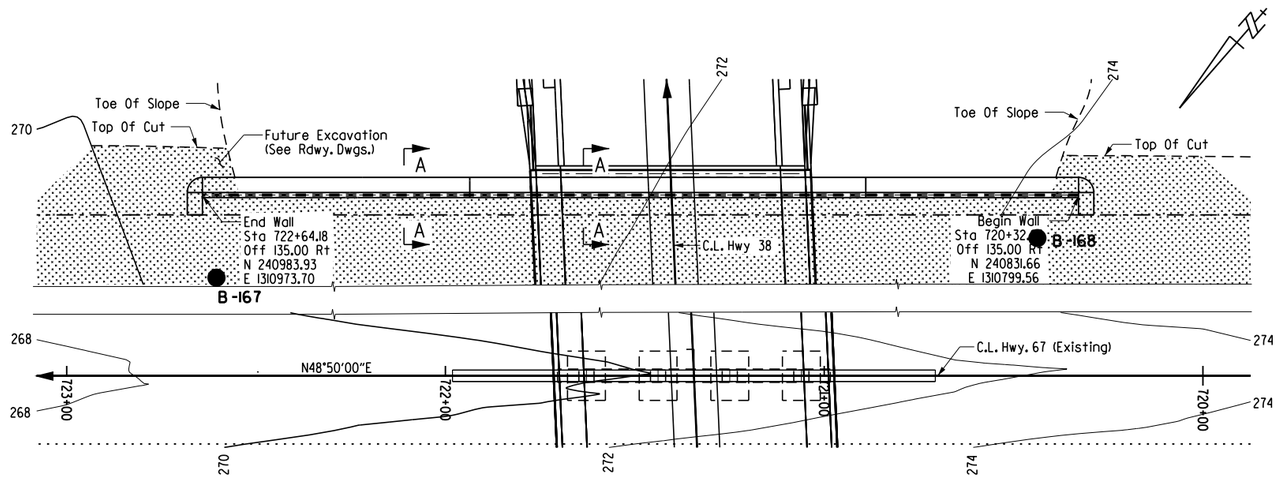
LAYOUT OF MSE RETAINING WALL NO. 1
HWY. 67 INTERCHANGE (N. OF CABOT) (F)
LONOKE COUNTY
ROUTE 67 SEC. II

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

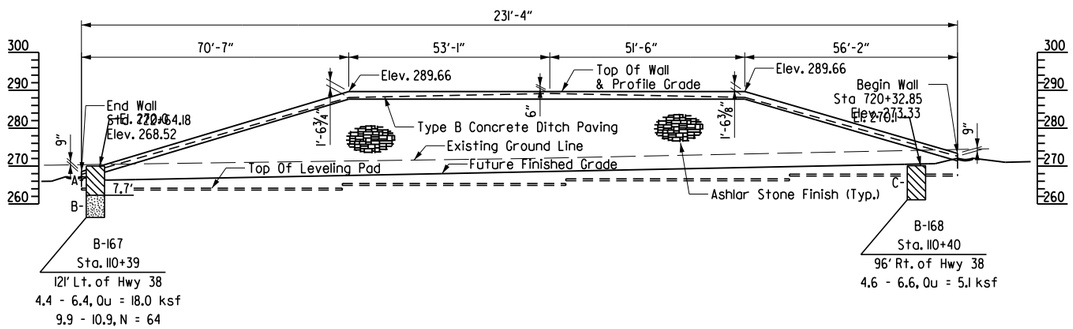
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CHECKED BY: MLM DATE: 04-16 SCALE: 1" = 20'-0"
DESIGNED BY: DLC DATE:

BRIDGE NO. DRAWING NO.

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.		061102		
				(1)		RETAINING WALL		



PLAN



ELEVATION

BORING LEGEND

A - Brown, tan, yellow, black & gray, sandy, lean clay.
B - Light brown, black & gray, silty, clayey sand.
C - Gray, white & tan, lean clay with sand.

PRELIMINARY
NOT FOR
CONSTRUCTION

04-27-16
DATE
BRIDGE ENGINEER

LAYOUT OF MSE RETAINING WALL NO. 2
HWY. 67 INTERCHANGE (N. OF CABOT) (F)
LONOKE COUNTY
ROUTE 67 SEC. 11

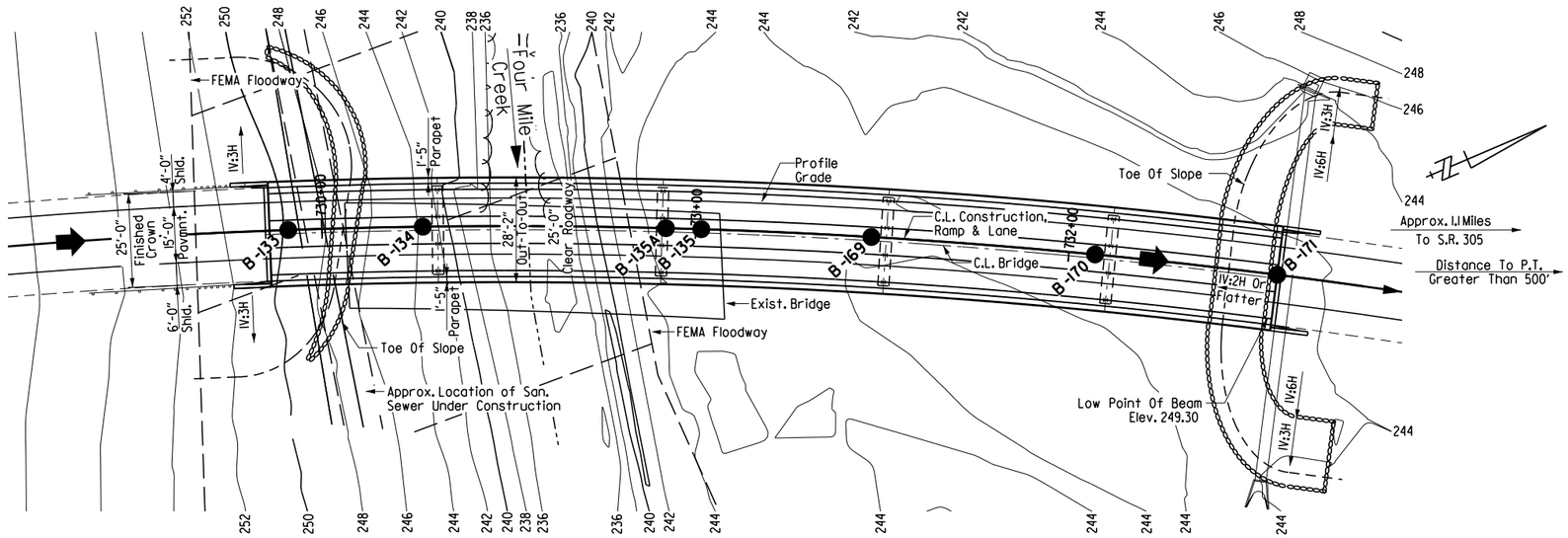
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: WDS DATE: 03-16 FILENAME: B06II02MI_W2.dgn
CHECKED BY: MLM DATE: 04-16 SCALE: 1" = 20'-0"
DESIGNED BY: LWM DATE:

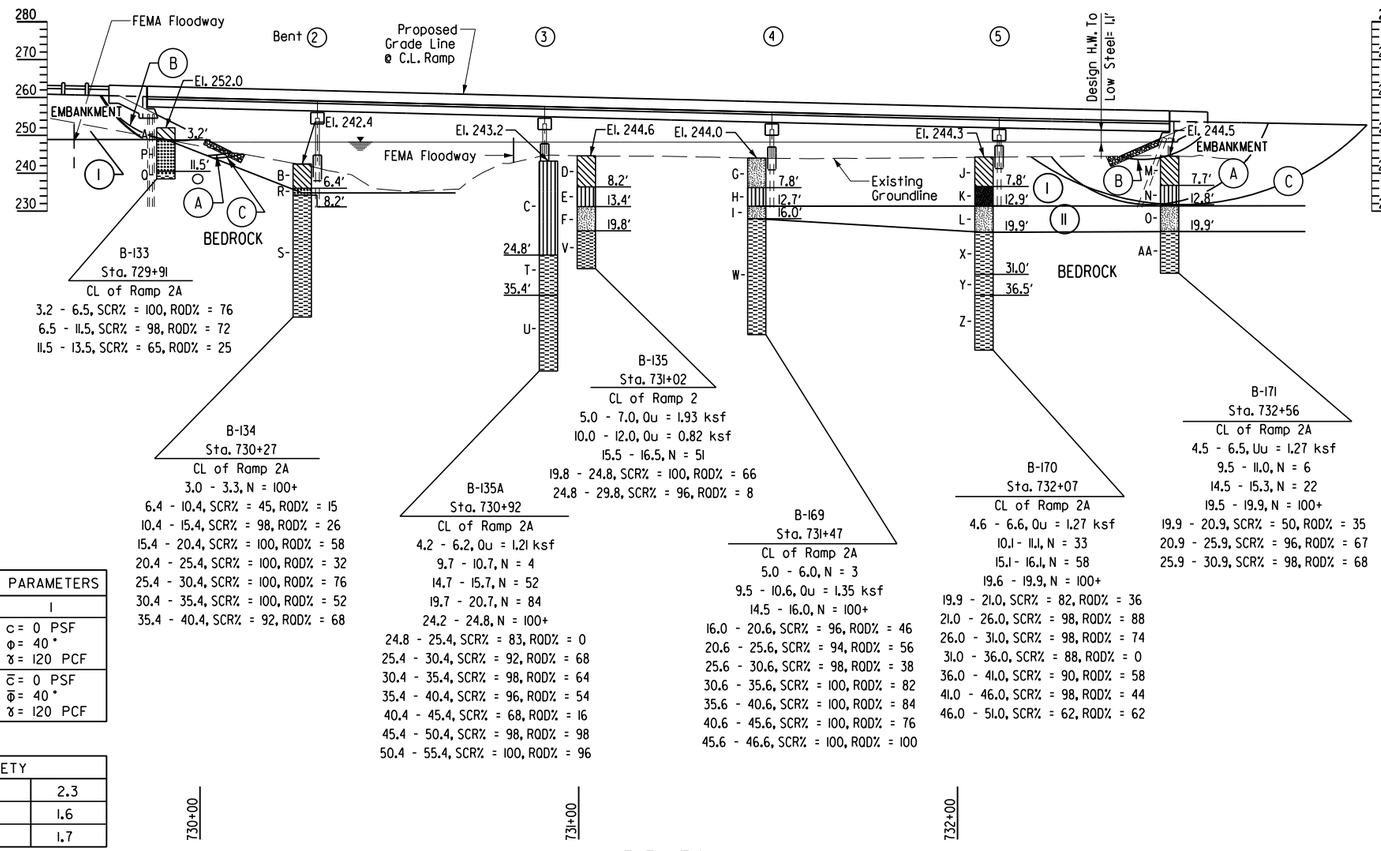
BRIDGE NO. DRAWING NO.

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.		061102		
(1)		LAYOUT		



PLAN



ELEVATION

END BENT 6

ASSUMED SOIL STRENGTH PARAMETERS			
Soil	Embankment	I	II
Short Term	c= 800 PSF Φ= 0° γ= 120 PCF	c= 635 PSF Φ= 0° γ= 120 PCF	c= 0 PSF Φ= 32° γ= 110 PCF
Long Term	c̄= 160 PSF Φ̄= 26° γ= 120 PCF	c̄= 127 PSF Φ̄= 26° γ= 120 PCF	c̄= 0 PSF Φ̄= 32° γ= 110 PCF

FACTORS OF SAFETY		
Short Term	A	2.6
Long Term	B	1.7
Seismic	C	1.4

END BENT 1

ASSUMED SOIL STRENGTH PARAMETERS		
Soil	Embankment	I
Short Term	c= 800 PSF Φ= 0° γ= 120 PCF	c= 0 PSF Φ= 40° γ= 120 PCF
Long Term	c̄= 160 PSF Φ̄= 26° γ= 120 PCF	c̄= 0 PSF Φ̄= 40° γ= 120 PCF

FACTORS OF SAFETY		
Short Term	A	2.3
Long Term	B	1.6
Seismic	C	1.7

BORING LEGEND

A - Interpereted as sandy, silty clay with rock fragments.
B - Interpereted as very hard, sandy, silty clay with rock fragments.
C - Soft to very hard, brown, sandy silt.
D - Soft, brown, sandy, silty clay.
E - Soft, gray, brown & tan, sandy silt.
F - Very dense, brown & black, clayey sand.
G - Soft, brown, silty clay with sand.
H - Hard, tan & gray, sandy silt.
I - Very dense, brown, gray & black, clayey sand.
J - Soft, tan & gray, silty clay with sand.
K - Dense, brown, silty, clayey gravel with sand.
L - Very dense, brown & gray, clayey sand.
M - Soft, brown, tan & gray, sandy lean clay.
N - Medium stiff, brown, tan & gray, sandy silt.
O - Medium dense to very dense, dark gray & brown, clayey sand.
P - Sandstone: Light to medium gray, orange-brown stain, fine grain, well cemented, massive bedded, moderately weathered to fresh, hard.
Q - Sandstone & Shale: Gray, black, very fine to fine grain, interlayered, contacts sharp, moderately to slightly weathered.
R - Sandstone: Light to medium gray, scattered black, orange-brown stain, fine grain, well cemented, massive bedded moderately to slightly weathered, hard, clay infill, traces of quartz veining, shale laminations.
S - Shale (Claystone): Dark gray to black, traces of light gray, very fine grain to silty in parts, moderately weathered to fresh with seams severely weathered, very thinly laminated, medium hard with scattered soft seams, clay seams and infill.
T - Shale (Claystone): Dark gray to black, traces of light gray, very fine grain to silty inparts, moderately weathered with seams severely weathered, very thinly laminated, medium hard with soft seams.
U - Shale (Claystone): Dark gray to black, very fine grain in parts, fesh to slightly weathered, very thinly laminated, moderately hard.
V - Shale (Claystone): Dark gray to black, traces of light gray, very fine grain, silty laminations, slightly weathered with seams severely weathered, very thinly laminated, medium hard with soft seams.
W - Shale (Claystone): Black, very fine grain, fresh to slightly weathered with seams severely weathered, very thinly laminated, medium to moderately hard.
X - Shale (Claystone): Black, traces of white, very fine grain, silty laminations in parts, slightly to moderately weathered, thinly laminated, medium to moderately hard.
Y - Shale (Claystone): Black, very fine grain, severely weathered with fragments moderately weathered, soft with medium hard fragments, highly fractured - severely to completely weathered.
Z - Shale (Claystone): Black, very fine grain, silty laminations in parts, slightly to moderately weathered, very thinly laminated, medium to moderate hardness.
AA - Shale (Claystone): Black, very fine grain, silty laminations, slightly to moderately weathered with seams, very thinly laminated, medium hard with soft seams.

LAYOUT OF RAMP 2A BRIDGE OVER FOUR MILE CREEK HWY. 67 INTERCHANGE (N. OF CABOT) (F) LONOKE COUNTY

PRELIMINARY NOT FOR CONSTRUCTION

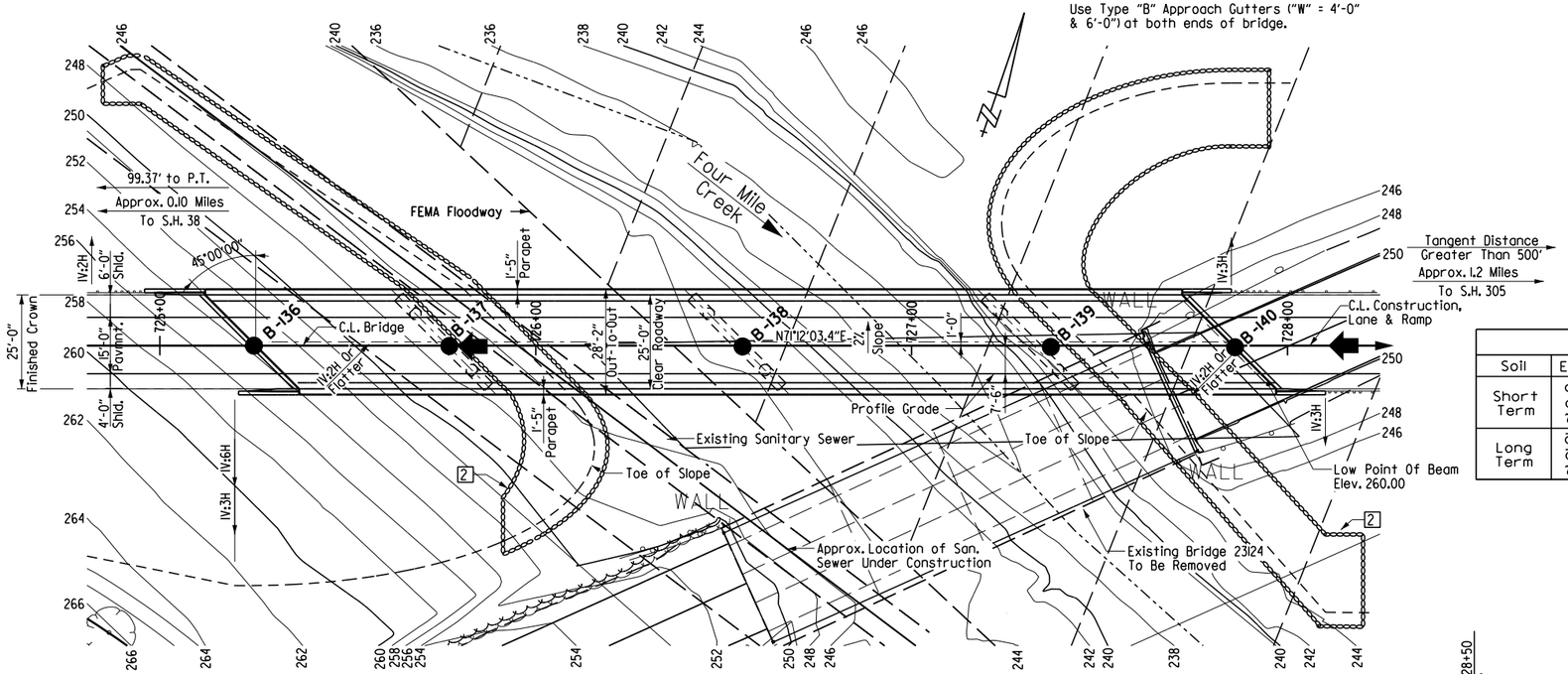
04-27-16
DATE
BRIDGE ENGINEER

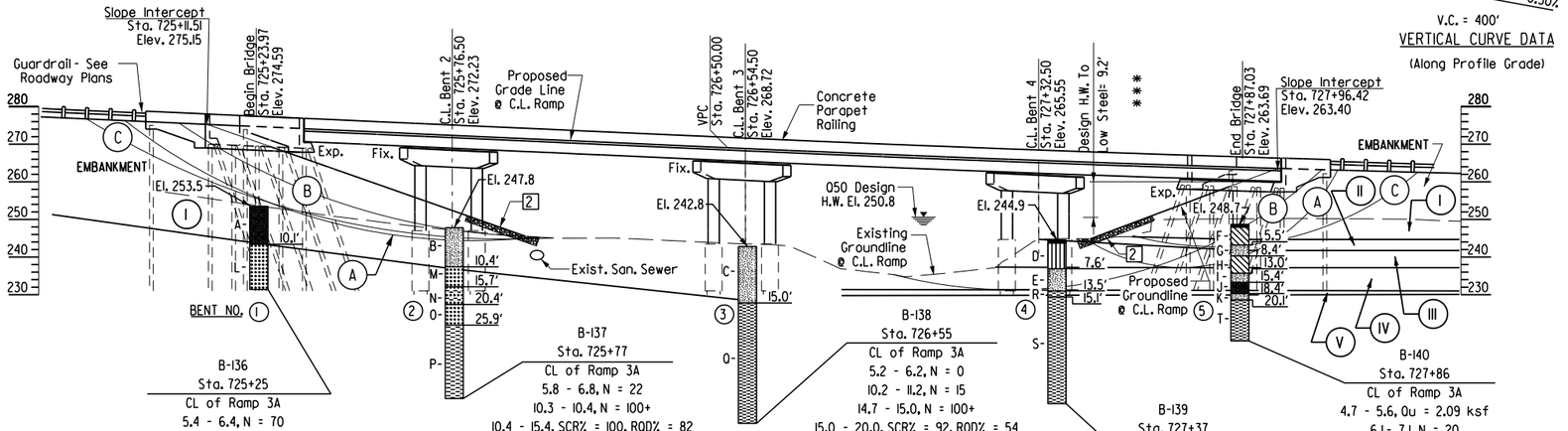
ROUTE 67 SEC. II
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: TSS DATE: 3-16
CHECKED BY: MLM DATE: 4-16
DESIGNED BY: DLC DATE:
FILENAME: Bridge B06II02M2_LI.dgn
SCALE: 1" = 40'-0"

BRIDGE NO. DRAWING NO.

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.		061102		
				①		LAYOUT		





VERTICAL CURVE DATA
(Along Profile Grade)

END BENT 1

ASSUMED SOIL STRENGTH PARAMETERS		
Soil	Embankment	I
Short Term	c = 800 PSF Φ = 0° ɣ = 120 PCF	c = 0 PSF Φ = 32° ɣ = 115 PCF
Long Term	c̄ = 60 PSF Φ̄ = 26° ɣ = 120 PCF	c̄ = 0 PSF Φ̄ = 32° ɣ = 115 PCF

FACTORS OF SAFETY		
Short Term	A	2.1
Long Term	B	1.7
Seismic	C	1.2

END BENT 5

ASSUMED SOIL STRENGTH PARAMETERS						
Soil	Embankment	I	II	III	IV	V
Short Term	c = 800 PSF Φ = 0° ɣ = 120 PCF	c = 1045 PSF Φ = 0° ɣ = 110 PCF	c = 0 PSF Φ = 30° ɣ = 115 PCF	c = 500 PSF Φ = 0° ɣ = 120 PCF	c = 0 PSF Φ = 32° ɣ = 120 PCF	c = 0 PSF Φ = 36° ɣ = 120 PCF
Long Term	c̄ = 60 PSF Φ̄ = 26° ɣ = 120 PCF	c̄ = 209 PSF Φ̄ = 26° ɣ = 110 PCF	c̄ = 0 PSF Φ̄ = 30° ɣ = 115 PCF	c̄ = 100 PSF Φ̄ = 26° ɣ = 120 PCF	c̄ = 0 PSF Φ̄ = 32° ɣ = 120 PCF	c̄ = 0 PSF Φ̄ = 36° ɣ = 120 PCF

FACTORS OF SAFETY		
Short Term	A	1.8
Long Term	B	1.9
Seismic	C	1.0

BORING LEGEND

A - Very dense, brown & gray, silty, clayey gravel with sand.
B - Medium dense, gray & brown, clayey sand.
C - Very loose to very dense, brown, gray & black, clayey sand with gravel.
D - Soft, brown, sandy silt.
E - Very loose, gray & tan, silty sand.
F - Very stiff, tan & gray, sandy lean clay.
G - Medium dense, gray & brown, clayey sand with gravel.
H - Soft, brown, sandy lean clay.
I - Medium dense, gray & brown, silty, clayey sand.
J - Medium dense, brown & black, clayey gravel with sand.
K - Very dense, gray & brown, clayey sand.
L - Sandstone: Light to dark gray, traces of white, black, fine grain, fine micaceous, slightly to severely weathered, highly fractured in intervals, hard with medium hard to soft seams.
M - Sandstone: Gray, traces of white, black, fine grain, fine micaceous, slightly weathered, hard.
N - Sandstone & Shale (Claystone): Gray, black, very fine grain & fine grain, fine micaceous, slightly weathered, fractured in intervals, hard & medium hard.
O - Sandstone: Light to dark gray, traces of white, black, fine grain, fine micaceous, slightly weathered, hard.
P - Shale (Claystone): Black, traces of light gray, very fine grain, slightly weathered, very thinly laminated, medium to moderate hardness with soft seams.
Q - Shale (Claystone): Black-dark gray, traces of light gray, very fine grain to silty in parts, fresh to slightly weathered with seams severely weathered, very thinly laminated, medium to moderate hardness with soft seams.
R - Shale (Claystone): Black, dark gray, dark brown, traces of orange-brown stain, very fine grain, moderately severely weathered, very thinly laminated, soft.
S - Shale (Claystone): Black, dark gray, very fine grain, moderately weathered grading to fresh with seams severely weathered, very thinly laminated, low to medium hard, slightly silty in parts.
T - Shale (Claystone): Black, very fine grain, slightly weathered grading to fresh, very thinly laminated, medium hardness, slightly silty in parts.

PRELIMINARY NOT FOR CONSTRUCTION

04-27-16
DATE
BRIDGE ENGINEER

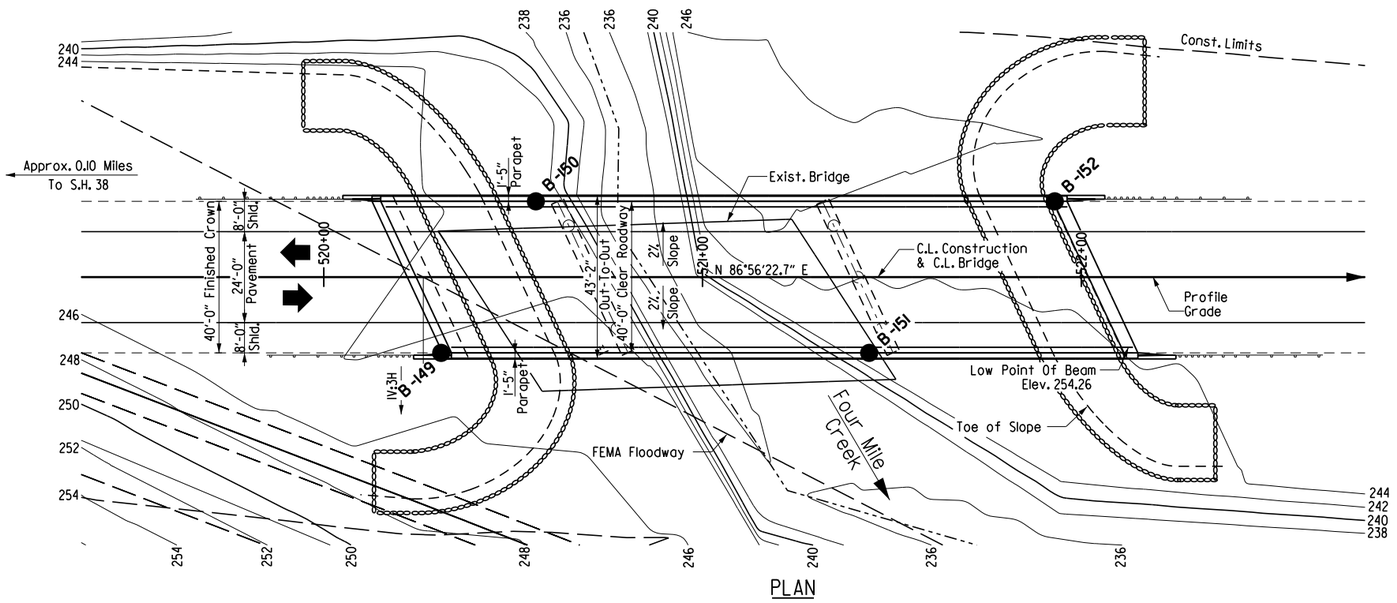
LAYOUT OF RAMP 3A BRIDGE OVER FOUR MILE CREEK
HWY. 67 INTERCHANGE (N. OF CABOT) (F)
LONOKE COUNTY
ROUTE 67 SEC. II

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

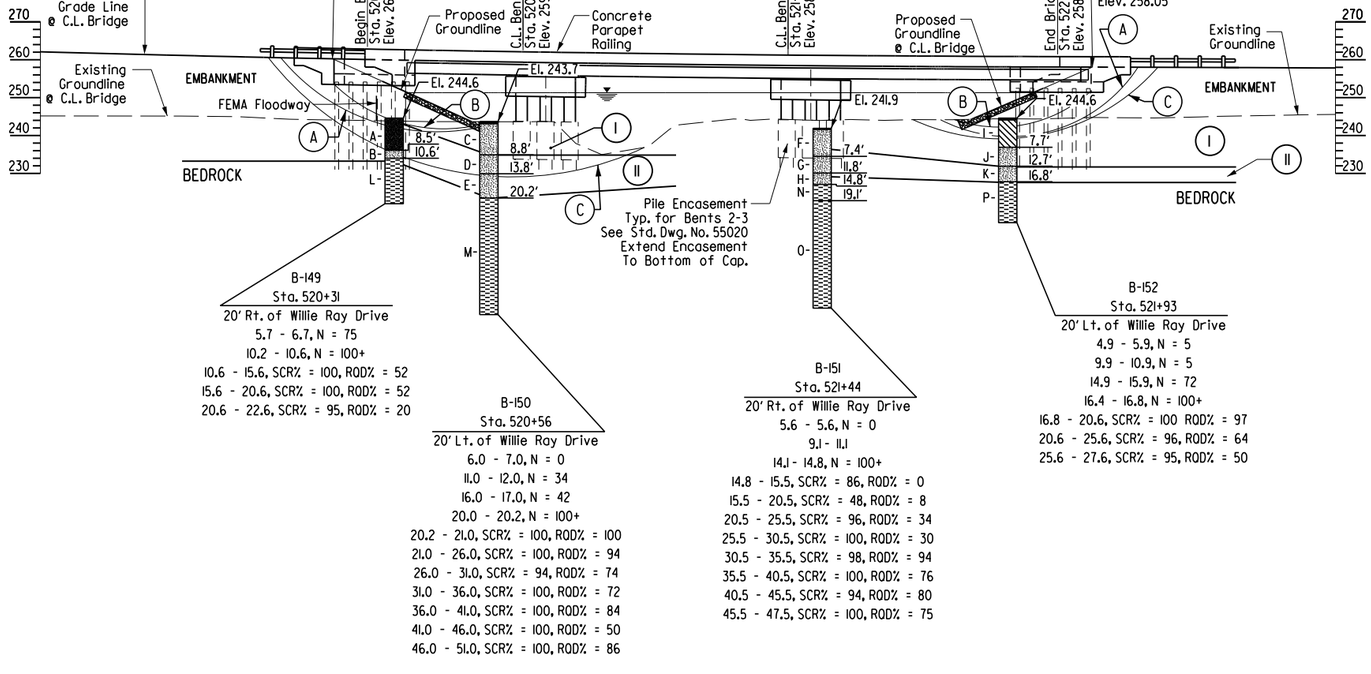
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CHECKED BY: MLM DATE: 4-16
DESIGNED BY: DLC DATE:
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SCALE: 1" = 40'-0"

BRIDGE NO. DRAWING NO.

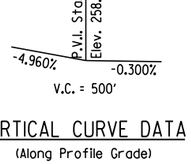
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061102		
				①		LAYOUT		



PLAN



ELEVATION



VERTICAL CURVE DATA

(Along Profile Grade)

END BENT 1

ASSUMED SOIL STRENGTH PARAMETERS			
Soil	Embankment	I	II
Short Term	c = 800 PSF Φ = 0° γ = 120 PCF	c = 0 PSF Φ = 27° γ = 110 PCF	c = 0 PSF Φ = 33° γ = 120 PCF
Long Term	c̄ = 160 PSF Φ̄ = 26° γ = 120 PCF	c̄ = 0 PSF Φ̄ = 27° γ = 110 PCF	c̄ = 0 PSF Φ̄ = 33° γ = 120 PCF

FACTORS OF SAFETY		
Short Term	A	2.2
Long Term	B	1.7
Seismic	C	1.2

END BENT 4

ASSUMED SOIL STRENGTH PARAMETERS			
Soil	Embankment	I	II
Short Term	c = 800 PSF Φ = 0° γ = 120 PCF	c = 0 PSF Φ = 27° γ = 110 PCF	c = 0 PSF Φ = 33° γ = 120 PCF
Long Term	c̄ = 160 PSF Φ̄ = 26° γ = 120 PCF	c̄ = 0 PSF Φ̄ = 27° γ = 110 PCF	c̄ = 0 PSF Φ̄ = 33° γ = 120 PCF

FACTORS OF SAFETY		
Short Term	A	2.1
Long Term	B	1.6
Seismic	C	1.3

BORING LEGEND

A - Very dense, brown & gray, poorly graded gravel with silt.
B - Very dense, black & brown, clayey sand.
C - Very loose, brown, silty sand.
D - Dense, gray & brown, poorly graded sand.
E - Dense, dark gray clayey sand.
F - Very loose, brown & gray, silty sand.
G - Medium dense, brown & gray, silty sand.
H - Very dense, dark gray, clayey sand with gravel.
I - Medium stiff, brown, sandy, silty clay.
J - Loose, brown & gray, silty sand.
K - Very dense, gray & brown, clayey sand.
L - Shale (Claystone): Black with traces of brown-orange-yellow stain, very fine grain, slightly weathered to moderately weathered, very thinly laminated, medium to moderate hardness, fissile within limited intervals, clay seams.
M - Shale (Claystone): Black, dark gray with traces of light gray-white & brown-orange stain, very fine grain, slightly weathered to moderately weathered with seams severely weathered, thinly laminated, medium to moderate hardness, fissile within limited intervals, fine micaceous, clay seams.
N - Shale (Claystone): Black, very fine grain, silty laminations, severely weathered with fragments moderately weathered, soft with medium hard seams.
O - Shale (Claystone): Black with traces of light gray, very fine grain, silty to fine sandy laminations, moderately weathered grading to slightly weathered & fresh, thinly laminated, medium to moderate hardness, fissile within limited intervals.
P - Shale (Claystone): Black, very fine grain, slightly weathered grading to moderately weathered, thinly laminated, medium hard to soft, poorly fissile within limited intervals.

PRELIMINARY NOT FOR CONSTRUCTION

04-27-16
DATE
BRIDGE ENGINEER

LAYOUT OF WILLIE RAY DRIVE BRIDGE OVER FOUR MILE CREEK HWY. 67 INTERCHANGE (N. OF CABOT) (F) LONOKE COUNTY

ROUTE 67 SEC. II

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: TSS DATE: 3-16
CHECKED BY: MLM DATE: 4-16
DESIGNED BY: DLC DATE:
FILENAME: Bridge B061102M4_LI.dgn
SCALE: 1" = 40'-0"

BRIDGE NO. DRAWING NO.

Appendix D. SPECIAL PROVISIONS

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

SPECIAL PROVISION

JOB NO. 061102

DRILLED SHAFT FOUNDATIONS (ROCK-SOCKETED)

DESCRIPTION: This work includes the furnishing of all materials and the construction of foundations consisting of reinforced concrete shafts placed within drilled excavations. Drilled shafts shall be constructed in accordance with the details and governing dimensions shown on the plans, the Standard Specifications, this special provision, and as directed by the Engineer.

SPECIALTY CONTRACTOR: The drilled shafts on this project shall be constructed by a contractor or subcontractor experienced in drilled shaft foundations. The Contractor shall employ a drilled shaft specialty subcontractor unless he can demonstrate sufficient experience in the construction of drilled shaft foundations by his own forces. In particular, information shall be supplied showing his experience in the kind of work shown in the plans and showing that he has equipment capable of performing the work.

MATERIALS: (a) Concrete. All concrete shall be Class S with a minimum 28-day compressive strength of 3500 psi and shall conform to Section 802 unless modified herein.

The slump of the drilled shaft concrete, at time of placement, shall be 7 inches ± 1 inch for concrete placed in the dry or 8 inches ± 1 inch for concrete placed underwater. The maximum water cement ratio specified in subsection 802.05 shall not be increased. The maximum aggregate size shall not be greater than 1 inch. Approved admixtures may be used to obtain desired workability.

(b) Reinforcing Steel. Reinforcing steel shall be Grade 60 conforming to the requirements of Section 804.

(c) Casing. Permanent casings shall conform to ASTM A 252, Grade 2 or Grade 3, or shall be zinc coated (galvanized) corrugated steel pipe conforming to AASHTO M 36 and M 218. The walls and interior surfaces of the casings shall be carefully washed and cleaned of all sand, gravel, bonded concrete or foreign materials before use.

All casing shall be steel, watertight and of ample strength to withstand handling and/or driving stresses and the pressure of both concrete and the surrounding earth materials. All casing shall be selected by the Contractor to control dimensions and alignment of excavations within tolerances and to execute all other construction operations.

SP JOB NO. 061102- DRILLED SHAFT FOUNDATIONS (ROCK-SOCKETED)

CONSTRUCTION: (a) Work Plan. At least 30 days prior to beginning construction of the drilled shafts, the Contractor shall submit a Work Plan for each shaft of similar type and setting to the Engineer for information and record purposes. Where drilled shafts are to be constructed at multiple sites, a separate Work Plan shall be submitted for each site. The Work Plan shall include:

1. A thorough and complete description of the proposed drilling equipment including cranes, drills, augers, tremies, concrete pumps, casings, etc.
2. The method of drilling and achieving shaft alignment tolerances and removing obstructions.
3. The method of installation for any permanent casings and the method of installation and removal for any temporary casings.
4. Details of methods to clean and inspect the shaft excavation including the bottom of the shaft.
5. The method of supporting and centralizing the reinforcing steel.
6. The method and anticipated time required for concrete placement in each shaft.
7. The sequence of drilling and time schedule for completion of each shaft including any non-destructive testing.
8. Preventative measures for working around any structures, railroad tracks, and utilities in the immediate vicinity.
9. The location of any work roads, detours, and traffic control devices.
10. A pollution prevention plan that shows the method of controlling the discharge of any pollutants including any water that may be used as a drilling fluid. The Contractor's pollution prevention plan will become part of the Department's Stormwater Pollution Prevention Plan. The Contractor shall ensure compliance with Section 110 of the Standard Specifications.

The drilled shafts shall be constructed in accordance with the Work Plan and no deviation shall be allowed without the written permission of the Engineer. Any change in the Work Plan shall be submitted to the Engineer at least three (3) business days before any work is begun. Acceptance of the Work Plan shall not relieve the Contractor of any other requirements in the Plans and Specifications.

(b) Protection of Existing Structures. The Contractor shall control operations to prevent damage to any existing structures, utilities, and railroad tracks. Preventative measures shall include, but are not limited to, selecting construction methods and procedures that will prevent caving of the shaft excavation and monitoring and controlling the vibrations from construction activities such as driving of casing or sheeting, or drilling of the shaft. Blasting will not be permitted.

(c) Construction Tolerances. The following construction tolerances apply to drilled shafts unless otherwise shown on the plans:

1. The center of the drilled shaft shall be within 3 inches of plan position in the horizontal plane at the plan elevation for the top of the shaft.

2. The vertical alignment of a vertical shaft excavation shall not vary from the plan alignment by more than 1/4 inch per foot of depth.

3. After all the concrete in a shaft is placed, the top of the reinforcing steel cage shall be no more than 4 inches above and no more than 2 inches below plan position.

SP JOB NO. 061102- DRILLED SHAFT FOUNDATIONS (ROCK-SOCKETED)

4. The top elevation of the shaft shall have a tolerance of plus 1 inch or minus 3 inches from the plan top of shaft elevation.

5. Excavation equipment and methods shall be designed so that the completed shaft excavation will have a planar bottom. The cutting edges of the excavation equipment shall be normal to the vertical axis of the equipment within a tolerance of ± 3/8 inch per foot of diameter.

6. The finished diameter of the shaft shall be no less than the specified diameter along the entire length of the drilled shaft.

Drilled shaft excavations and completed shafts not constructed within the required tolerances are unacceptable. The Contractor shall be responsible for correcting all unacceptable shaft excavations and completed shafts to the satisfaction of the Engineer. Materials and work necessary, including engineering analysis and redesign by a Professional Engineer registered in the State of Arkansas to complete corrections for out of tolerance drilled shaft excavations shall be furnished without either cost to the Department or an extension of the completion date of the project.

(d) Permanent Casing: Permanent casing shall be used when shown in the plans. The casing shall be continuous between top and bottom as shown in the plans. The diameter of the permanent casing shall be sufficient to produce a finished drilled shaft with a diameter no less than the specified diameter along the entire length of the shaft. The inside diameter of permanent casing shall not be greater than the specified diameter of the shaft plus 12 inches unless otherwise approved by the Engineer. Lengths of permanent casing shown on the plans are for estimating quantities only; actual lengths are to be determined in the field. All casings shall be watertight and of ample strength to withstand handling and/or driving stresses and the pressure of both concrete and the surrounding earth materials. All casings used shall be selected by the Contractor to control the dimensions and alignment of excavations within tolerances and to execute all other construction operations. Where indicated on the plans, the upper 10 feet of the permanent steel casing shall be painted using two coats of Series 46H-413,Tneme-Tar, 10 mils/coat, or approved equal. Any damaged areas shall be repaired as directed by the Engineer.

(e) Excavations. The Contractor shall perform the excavation required for the shafts through whatever materials encountered, to the dimensions and elevations shown on the plans or required by the site conditions. The Contractor's methods and equipment shall be suitable for the intended purpose and materials encountered.

Bottom of shafts shall not be founded at an elevation above that shown on the plans without the approval of the Engineer. The depth that is to be drilled shall be considered an approximation and the Engineer may order such changes in depth as may be necessary to secure a satisfactory foundation.

SP JOB NO. 061102- DRILLED SHAFT FOUNDATIONS (ROCK-SOCKETED)

The excavation shall be made without the use of drilling mud. Water may be used as a drilling fluid and to prevent a hydrostatic head from occurring. Unless obstructions are encountered, the excavation shall be completed in a continuous operation and the concrete shall be placed without undue delay. If the excavation will be subjected to vibrations from nearby activities that may cause caving, casing shall be advanced as drilling proceeds to prevent caving.

Material excavated from shafts and not used in the backfill around the compacted pier or abutment shall be disposed of in a manner approved by the Engineer and shall not be placed in a waterway or otherwise impair the efficiency or appearance of the bridge or other parts of the work. Any excavation for the shaft beyond the lines required by the plans shall be filled with Class S Concrete at the Contractor's expense.

Drilled shaft excavation shall begin only if the Contractor can complete the excavation, perform foundation inspection and testing, and place the reinforcement and concrete as a continuous operation. No two adjacent shafts shall be excavated at the same time and shafts shall not be constructed within 24 hours of an adjacent shaft if the center-to-center spacing is less than 3 shaft diameters.

When the elevation of the top of the shaft is below ground level at the time of concrete placement, an oversize temporary surface casing from ground elevation to a point below the top of the shaft will be required to control caving of any substance into freshly placed concrete and to facilitate construction. The oversized temporary surface casing shall be removed and backfill placed in accordance with subsection 801.08.

When drilled shafts are to be installed in conjunction with embankment placement, the Contractor shall construct drilled shafts after the placement of fills unless otherwise approved by the Engineer.

No open excavation shall be left unattended. During non-working hours excavations shall be protected by the use of solid, safe covers that are firmly fastened in place.

The Contractor shall provide suitable access, lighting, and equipment for checking the dimensions and alignment of each permanent shaft excavation and for inspecting the excavation. Any mechanical equipment used within the excavation shall be operated by air or electricity. The use of gasoline driven engines or any device that produces toxic fumes or uses atmospheric oxygen, within the excavation for any purpose will not be permitted. All lighting shall be electric and precautions shall be taken in regard to potential short circuits of electric current within ground water. At any time when a person is in the hole, the Contractor shall make provisions for pumping fresh air to the workmen and protecting against possible collapse of the excavation by adequate casing.

The Contractor shall check the dimensions and alignment of the shaft excavation under the direction of the Engineer. Final shaft depths shall be measured with suitable weighted tape or other approved methods after final cleaning of the excavation.

SP JOB NO. 061102- DRILLED SHAFT FOUNDATIONS (ROCK-SOCKETED)

No concrete shall be placed until the Engineer approves the condition of the excavation. Prior to placing concrete, the shaft excavation shall be cleaned so that a minimum of 50 percent of the base area will have less than 1/2 inch of loose sediment. The maximum depth of sediment at any place on the base of the shaft shall not exceed 1-1/2 inches. The Contractor shall be responsible for showing that the excessive loose material has been removed from the excavation. Inspection of the bottom of shaft shall be performed by video equipment or other suitable means approved by the Engineer. When the shaft inspection is by camera, it shall be capable of viewing the bottom of the excavation at a resolution suitable for determining the bottom condition whether wet or dry construction methods are used.

(f) Reinforcing Steel. The reinforcing steel cage shall be completely assembled and shall be placed as a unit immediately after the shaft excavation is inspected and accepted, and prior to concrete placement. The cage will consist of the reinforcing shown in the plans, cage stiffener bars as required, spacing devices, non-destructive testing pipes, and any other appurtenances required to maintain alignment, shape, and clearances. Any internal stiffeners shall be removed as the cage is lowered in the excavation.

The minimum clearance between the edge of the drilled shaft and the reinforcing steel shall be as shown in the plans.

The Contractor shall be responsible for the proper bracing of the reinforcing cage. This bracing shall be sufficient to permit assembly above ground and placing in the shaft as a unit without inducing deforming, twisting, or bending stress. Welding of reinforcing bars will not be permitted. Bars in the shaft shall be tied at all intersections regardless of spacing.

Concrete spacer blocks shall not be used on the reinforcing cages. Epoxy coated metal "chair" type spacers or bent pieces of steel bars shall be placed at sufficient intervals around the steel cage and not exceeding 5 feet along the shaft to ensure concentric spacing of the cage inside the shaft. When the diameter of the longitudinal reinforcing steel exceeds 1 inch, the maximum spacing may be increased to 10 feet. The spacers shall be of adequate dimension to maintain the minimum clearance between the outside of the reinforcing cage and the side of the cased and uncased sections of the shaft as shown in the plans.

The cage shall be supported from the top by some positive method to minimize uplift or downward slump during concrete placement and/or extraction of the casing. A minimum of one-half of the vertical bars shall be supported from the top. The support shall be concentric with the cage to prevent racking and distortion of the steel. Setting the cage on the socket bottom without support will not be permitted.

The elevation of the top of the steel cage shall be carefully checked before and after the concrete is placed. Displacement of the steel beyond the specified tolerances will be cause for rejection.

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(g) Concrete. The work shall be performed in accordance with the provisions of Section 802 and in conformance with the requirements herein.

The maximum sub lot size for acceptance sampling and testing of drilled shaft concrete by the Contractor shall be 100 cubic yards or one drilled shaft.
At the time concrete is placed, the excavation shall be free from accumulated seepage water (less than 3 inches of water above bottom of shaft and less than 12" per hour inflow) unless an underwater pour is authorized by the Engineer. Concrete shall be placed as soon as possible after completion of the excavation, inspection and setting of the reinforcing cage, and shall proceed in a continuous operation from the bottom of the shaft to the required top elevation. The elapsed time from beginning of concrete placement in the shaft to the completion of placement shall not exceed 2 hours. The Contractor may request a longer placement time provided a concrete mix is supplied that will meet the slump requirements at the time of placement and maintain a slump of 4 inches or greater over the requested placement time as demonstrated by trial batch and slump loss test. Admixtures such as retarders and plasticizers may be used if included in the trial batch and slump loss test, and approved by the Engineer.

After the concrete level has reached the required top elevation, it will be forced to overflow until only fresh uncontaminated concrete is left in the shaft. The concrete waste shall not enter the waterway as required by Special Provision Section 404 Nationwide Permit 23 requirements. The top 10 feet of each drilled shaft shall be vibrated except when more than 10 feet is to be exposed above the ground line or the channel bottom. When more than 10 feet is exposed, the entire exposed portion shall be vibrated. Exposed portions of each drilled shaft shall be cured and any construction joint area shall be treated as prescribed in Section 802.

Placement of drilled shaft concrete underwater shall be done only with permission of the Engineer in strict conformance with the procedures outlined below for underwater pour.

1. Concrete Placed in the Dry. All drilled shaft concrete placed in the dry shall be placed through a suitable rigid tremie or by pumping through a suitable rigid tube to prevent segregation of materials. The tremie shall consist of a suitable rigid tube with a diameter of not more than 14 inches or less than 10 inches. The tremie shall not contain aluminum parts that may come in contact with the concrete. It shall be constructed and supported so that it can be moved horizontally to cover the work area and moved vertically to control the concrete flow as the level of the concrete in the shaft is raised. **The bottom of the tremie or pump pipe shall be near the bottom of the shaft at the beginning of concrete placement, but shall not remain at the bottom of the shaft during the entire pour. The bottom of the tremie or pump pipe must remain below the top of the concrete at all times.**

2. Concrete Placed Underwater. If it becomes apparent that pumping and other dewatering methods are not adequate to dry the holes, the Engineer may authorize underwater placement of concrete. In this case, the water in the hole shall be permitted to seek its natural hydrostatic head to prevent any possibility of pressure washing of the concrete being placed.

The tremie and pump line requirements shall be the same as specified above for concrete placed in the dry except tremie and pump lines shall be watertight and constructed so that the discharge end can be sealed closed at the start of work to prevent water from entering the tremie or pump line before the tremie or pump line is filled with concrete. If a plug is used to separate the concrete from the fluid in the hole the plug shall be removed from the excavation after placement has begun. Concrete placement shall be done in one continuous operation. **The discharge orifice shall be at the bottom of the shaft at the beginning of the concrete placement and shall remain at least five (5) feet below the top surface of the fluid concrete. At no time shall concrete be discharged above the surface of deposited concrete. The initial surge of concrete shall not cause any significant displacement of the discharge orifice. If, in the opinion of the Engineer, there is significant displacement, the Contractor shall remove the reinforcing cage and concrete, complete any necessary sidewall cleaning or overreaming as directed by the Engineer, and repour the shaft.** The Contractor shall provide equipment and personnel to sound the top of the concrete in the presence of the Engineer in order to verify the location of the concrete surface and the discharge orifice at all times. After concrete placement has started, the concrete level in the tremie shall be maintained above the water level in the bore hole to prevent water intrusion into the shaft concrete. When lifting the pump line during concreting, the Contractor shall temporarily reduce line pressure until the orifice has been repositioned at a higher elevation in the excavation**. If at any time during the concrete pour the orifice is removed from the fluid concrete and discharges concrete above the rising concrete surface, the entire drilled shaft will be considered defective.** In such case, the Contractor shall remove the reinforcing cage and concrete, complete any necessary sidewall cleaning or overreaming as directed by the Engineer, and repour the shaft.

(h) Drilled Shaft Log. A record of each shaft construction shall be furnished by the Contractor to the Engineer prior to acceptance of the shaft. This Drilled Shaft Log shall include: Information about the drilling procedures and equipment; the as-constructed elevations and lengths of all vertical elements of the shaft including reinforcing and casings; depth of final excavation; concrete volume and a concreting curve showing depth vs. volume; and the date and time of beginning and completion of drilling and concrete placement.

METHOD OF MEASUREMENT: Acceptable drilled shafts complete in place and of the specified diameter will be measured by the linear foot as constructed to the dimensions shown on the plans or approved by the Engineer from bottom to top of shaft. No additional payment will be made for any excavation or concrete provided beyond the lines required by the plans.

Permanent casing for the specified diameter will be measured by the linear foot of the actual accepted length left in place. Measurement will be along the casing from top of casing or top of shaft, whichever is lower, to the bottom of the casing at each shaft location where permanent casing is authorized and used.

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BASIS OF PAYMENT: Drilled shafts, measured as provided above, will be paid for at the contract unit price bid per linear foot for "Drilled Shaft (72" Dia.)" which shall be full compensation for making and inspecting shaft excavations; for furnishing and placing all concrete and reinforcing steel; for keeping the Drilled Shaft Log; for performing mix designs and quality control and acceptance sampling and testing; for preparing trial batches and performing slump loss test; for all backfilling; and for furnishing all tools, labor, equipment and incidentals necessary to complete the work.

When drilled shafts are carried below elevations shown on the plans at the direction of the Engineer, the additional length of drilled shaft will be measured as provided above and will be paid for in accordance with the following price schedule:

Depth Below Planned Elevation	**Price**
Not more than 5 feet	Contract Price
Excess of 5 feet and not more than 15 feet	Contract Price + 15%
More than 15 feet	Contract Price + 25%

Permanent casing will be paid for at the contract unit price bid per linear foot for "Permanent Steel Casing (84" Dia.)". Such payment shall be full compensation for furnishing and placing the casing above the costs attributed to the work paid for under associated pay items.

Pay Item	**Pay Unit**
Rock Socketed Drilled Shaft (48" Dia.)	Linear Foot
Permanent Steel Casing (54" Dia.)	Linear Foot

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

SPECIAL PROVISION

JOB NO. 061102

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. A factored bearing resistance of 8000 PSF is recommended for MSE Walls at End Bent 1 and End Bent 3 of Highway 38 over Highway 67 for the existing foundation material based on an estimated width of the reinforced zone. 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

RETAINING WALLS

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.

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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 28 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.

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

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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.

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 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).

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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**
Retaining Wall	Square Foot
Select Granular Backfill	Cubic Yard