ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

SUBSURFACE INVESTIGATION

STATE JOB NO. CA0101

FEDERAL AID PROJECT NO. 9991

CO. RD. 375-HWY. 147 (WIDENING) (S)

STATE HIGHWAY 64 SECTION 17

IN CRITTENDEN COUNTY

LETTING OF AUGUST 10, 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.

Shoulder Survey Report

AHTD Job No. CA0101
Cross County Line - Highway 147 (Widening) (S)
FAP NO.9991
Crittenden County, Arkansas
August 21, 2014
Terracon Project No. 35135123

Prepared for:
Buchart Horn, Inc.
Memphis, Tennessee

Prepared by:
Terracon Consultants, Inc.
Little Rock, Arkansas

August 21, 2014

Terracon

Buchart Horn, Inc.
3150 Lenox Park Boulevard, Suite 300
Memphis, Tennessee 38115

Attn: Mr. Andy Pinkley, P.E., CPESC
P: [901] 363 6355

Re: Shoulder Survey Report
AHTD Job No. CA0101
Cross County Line – Highway 147 (Widening) (S)
FAP No. 9991
Crittenden County, Arkansas
Terracon Report No. 35135123

Dear Mr. Pinkley:

Terracon Consultants, Inc. (Terracon) has completed the shoulder survey services for the above-referenced project. The scope of our services was performed as Buchart Horn, Inc.'s sub consultant for Connecting Arkansas Program (CAP) On-Call Design Services (2011-2016), Task Order No. C044.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.
Certificate of Authorization #223, Expires 12/31/2015

Kimberley A Dargert for

Richa A. Sonawane, E.I
Senior Staff Engineer

Shaun P. Baker, P.E.
Department Manager ■ Geotechnical Services
Arkansas No. 11817

STATE OF ARKANSAS 8/21/2014 LICENSED PROFESSIONAL ENGINEER No.11817 SHAUN P. BAKER

APR Reviewed by Craig K. Denny, Ph.D., P.E. (KS)
Copies to: Addressee (3 via mail, 1 via email)

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AHTD JOB NO. CA0101, CROSS COUNTY LINE – HIGHWAY 147 (WIDENING) (S)
FAP NO. 9991
CRITTENDEN COUNTY, ARKANSAS

Terracon Project No. 35135123

August 21, 2014

1.0 INTRODUCTION

This report presents the results of the shoulder survey performed for the planned Highway 64 widening starting near Cross County Line and continuing to Highway 147 in Crittenden County, Arkansas. Ninety-two (92) exploratory borings extending to depths of approximately 10 feet below existing ground surface were drilled within the planned widening. The boring logs, site plan and boring location plans are attached.

2.0 PROJECT INFORMATION

2.1 Project Description

Item	Description
Site layout	See Appendix A, Exhibit A-2 to A-8, Boring Location Plans
Structures	We understand the project involves widening about 14.3 miles of Highway 64 between Wynne and Marion in Crittenden County, Arkansas. The planned widening will change the road configuration from a two-lane highway to a four-lane highway (two lanes each direction). Construction options include: ■ overlaying the existing asphalt pavement or rubblizing it as a base material; ■ constructing a new asphalt pavement section; ■ widening or constructing new bridges; and ■ extending and/or replacing culverts.

2.2 Site Location and Description

Item	Description
Location	See Appendix A, Exhibit A-1, Site Location Plan. Begin STA 21+75.26, End STA 776+00 Approximately 14.3 miles of Highway 64 between Cross County Line (Road 819) and State Highway 147 near Earle, Crittenden County, Arkansas.
Existing improvements	Two lane highway. The existing section consists of asphaltic cement concrete.
Grading	Based on the 30% Plans and Profiles, most of the highway will remain near existing grade. We estimate up to about 15 feet of fill depth could be required for grading between STA 377+00 and STA 498+00. Fill will likely be required adjacent to the existing highway where widened.

3.0 SUBSURFACE CONDITIONS

3.1 Geology

Formation [1]	Description [2]
Alluvium (Channel Meander) **Quaternary Period** **Holocene Epoch**	This unit represents more recent channel meanders and current flood plain deposits of significant streams. Channel meander scars are distinct in this unit. The partition of this unit from other Holocene alluvial deposits was based more on geomorphic consideration than lithic or age consideration. The lower contact is unconformable. The thickness is variable
Alluvium (Local Streams or Overbank Flow) **Quaternary Period** **Holocene Epoch**	These deposits are alluvial deposits of small streams, the overbank deposits of major streams, or older meander belt deposits of major streams. The partition of this unit from other Holocene alluvial deposits was based more on geomorphic considerations than lithology or age. Fossils are rare. The lower contact is unconformable and the thickness is variable.

1. "Geologic Map of Arkansas", published by the United States Geological Survey, 1993.
2. "Stratigraphic Summary of Arkansas", published by the Arkansas Geological Commission, 1998.

Based on the results of our borings and information published in the USDA Natural Resources Conservation Service "Soil Survey of Crittenden County, Arkansas" the site can be broadly divided into four soil map units.

Alligator Silty Clay – This consists of poorly drained level soils in old slack-water areas on bottom land along the Mississippi river. These soils formed in thick beds of clayey

sediments. In a representative profile, the surface layers are grayish brown silty clays. The subsoil is grayish-brown clay to gray silty clay. The underlying material is mottled gray and yellowish-brown silt loam. This level soil is the largest acreage of Alligator soils in the county.

Dubbs Silt Loam – The Dubbs series consists of well-drained, level and gently undulating soils on older natural levees along bayous and abandoned river channels. These soils formed in stratified beds of loamy sediments. In a representative profile, the surface layer is grayish-brown silt loam. The upper portion of the subsoil is silty clay loam and the underlying material is stratified, mottled yellowish-brown, brown, gray, and light brownish-gray silt-loam, loamy fine sand, and fine sandy loam.

Dundee Silt Loam – The Dundee series consists of somewhat poorly drained soils on the lower parts of the older natural levees along bayous and abandoned river channels. These soils formed in stratified beds of loamy sediments. In a representative profile, the surface layer is dark grayish-brown silt loam about 8 inches thick. The sub-soil is grayish-brown and light grayish-brown silt loam mottled with yellowish-brown. Below this is mottled gray silt loam that is underlain by mottled gray silty clay.

Sharkey Silty Clay – The Sharkey series consists of poorly drained, level and gently undulating soils in slack-water areas. These soils formed in thick beds of clayey sediments. In a representative profile, the surface layer is mottled very dark grayish-brown and very dark gray silty clay. The subsoil is mottled dark-gray and gray clay. Below the subsoil is mottled gray silty clay loam underlain by mottled gray clay.

The soil map units described in this section were obtained by locating the subject site on available large-scale soil survey maps. Due to the scales involved, precise location of the borings can be difficult to determine. In addition, the large scale soil survey maps describe only general trends. Local variations are possible and site-specific soil conditions may differ from those described above. A site-specific detailed soil survey was not included in our scope of work for this project.

3.2 Typical Profile

Based on the results of the borings, subsurface conditions at the pavement borings are comprised of fat clays, lean clays, silty lean clays, or sands. Conditions and details observed at the boring locations are indicated on the boring logs included in Appendix A. Stratification boundaries on the boring logs represent the approximate location of changes in soil types; in-situ, the transition between materials may be gradual.

Atterberg limits (liquid limit and plastic limit) tests were performed on representative samples of cohesive native soils. The tested native soils were classified as lean clays, silty lean clays and fat clay soils having low to high plasticity with liquid limit ranging between 22 and 96 and the PI ranging between 4 and 70. The laboratory test results are shown on the boring logs in Appendix A. A description of the laboratory testing program is provided in Appendix B.

3.3 Shoulder Soil Survey

Terracon drilled a total of ninety-seven borings, designated as B-1 through B-97 for this project at the approximate locations shown on the attached boring location plans in Appendix A. The borings were drilled in the proposed widening areas and spaced approximately 800 feet apart on alternating sides of the road.

Water content and classification tests were performed on selected soil samples obtained from the borings. Classification, moisture-density relationship (standard Proctor) and resilient modulus tests were performed on the four composite bulk samples. The results of these tests are in Appendix B. Based on the results of the laboratory testing, the anticipated pavement subgrade soils classify as AASHTO A-6, A-7-5, A-7-6 and A-4.

4.0 RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION

4.1 Geotechnical Considerations

Based upon the field penetration resistance values, moisture content values and the classification test results, it is our opinion that the native soils or new engineered fill should be able to support new pavements.

Low-strength (SPT N-values of 5 blows per foot or less) soils were encountered at several borings to depths of about 3.5 feet below the existing ground surface. A summary of the low-strength areas is presented in the following table:

Boring Locations	Stations	Weak Soil Thickness (ft)
B-9 to B-12	84+00 to 108+00	3.5
B-22 to B-25	188+00 to 212+00	>3.5
B-31 to B-34	260+00 to 284+00	>3.5
B-38 to B-44	316+00 to 364+00	3.5
B-46 to B-49	380+00 to 404+00	2 to 3.5
B-53 to B-55	436+00 to 452+00	3.5
B-59 to B-66	484+00 to 540+00	2
B-69 to B-73	564+00 to 596+00	3.5
B-82 to B-86	676+00 to 700+00	2
B-89 to B-91	724+00 to 740+00	3.5
B-94 to B-97	764+00 to 775+00	>3.5

Additionally, the lean clay/silty lean clay soils encountered at this site are susceptible to further strength loss with moisture content increases. In their present condition, the low-strength soils are not suitable for supporting new fill or pavements. We expect that ground improvement will be required and difficult construction conditions will exist during site preparation and grading due to the presence of the near-surface low-strength soils and shallow groundwater. We strongly recommend the geotechnical engineer be retained to evaluate the site conditions during site grading and construction and provide ground improvement recommendations based on the actual conditions. The pavement subgrade soils should be evaluated, tested and improved as necessary as described in this report.

Fat clay soils were observed in many of the borings. The fat clays have high plasticity and are subject to shrinking and swelling with variations in moisture content. These shrink/swell movements can be detrimental to pavement surfaces. Although it may not be possible to eliminate all shrink/swell movement of the fat clay soils, we recommend replacing at least a 3.5-foot thickness of the fat clays with a low-volume change, engineered fill or chemically treating them to reduce the amount of shrink/swell movement of the subsurface soils.

4.2 Earthwork

Earthwork should be performed as required in the Arkansas State Highway and Transportation Department *"Standard Specifications for Highway Construction"*, current edition. The following presents general recommendations for site preparation, excavation, subgrade preparation and placement of engineered fills on the project. The evaluation of earthwork should include overexcavation operations, observation and testing of engineered fills, subgrade preparation, and other geotechnical conditions exposed during construction of the project.

4.2.1 Site Preparation

Where new pavement is planned, all surface vegetation, topsoil, existing pavements, tree roots and stumps and any surface or subsurface structures from previous site use should be removed full-depth. Excavations resulting from the removal of any surface or subsurface structures should be cleaned of all loose and disturbed material before placing fill. Soils containing organic matter, debris or deleterious matter should not be used as engineered fill.

Areas requiring new fill placement should be initially graded to create a relatively level surface to receive fill and to provide for a relatively uniform thickness of fill beneath the roadway. The exposed subgrade should be proofrolled prior to placing fills to confirm there are no unstable areas that could prevent proper compaction of additional fills. If unstable areas are noted, the geotechnical engineer should be notified to provide supplemental recommendations.

All exposed subgrade areas, once properly cleared and effectively proofrolled, should be scarified to a maximum depth of 12 inches, conditioned to near optimum moisture content and compacted. Subgrade soils exposed to the elements for an extended period of time should be checked for density and moisture content prior to placing additional fill and/or constructing pavements. During construction of the subgrade, exposed surfaces should be graded to prevent water from ponding adjacent to the existing roadway pavement and on the exposed subgrade.

It is anticipated excavations for the proposed construction can be accomplished with conventional earthmoving equipment.

The stability of subgrade soils may also be affected by precipitation, repetitive construction traffic or other factors. If unstable conditions are encountered or develop during construction, workability can be improved by overexcavating the wet, unstable zones and mixing these soils with crushed gravel or recycled concrete and recompaction. Use of lime and fly ash could also be considered as a stabilization technique. Laboratory evaluation is recommended to determine the effect of chemical stabilization on subgrade soils prior to construction.

4.2.2 Import Material Specifications

Fill materials should be free of organic matter and debris. Clean on-site soils or approved imported borrow materials may be used as fill material. While the AHTD has no specific requirements for borrow materials, they do require that the materials must be capable of forming and maintaining a stable embankment when compacted. Therefore, we recommend specifically avoiding elastic silts (MH) and organic soils (OL, OH and PT) when considering materials for use as borrow. Clay soils should exhibit well defined moisture-density relationships.

We suggest that imported soils for borrow (if required) should meet the following material property requirements:

Gradation	Percent finer by weight (ASTM C136)
3”	100
No. 4 Sieve	50-100
No. 200 Sieve	15-50

- Plastic Limit……..20 (max)

4.2.3 Compaction Requirements

Engineered fill should be placed and compacted in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift.

ITEM	DESCRIPTION
Fill Maximum Lift Thickness	10 inches or less in loose thickness
Compaction Requirements [1]	95% of the material’s standard Proctor maximum dry density (AASHTO T 99) This density will not be required immediately adjacent to wingwalls of box culverts.
Moisture Content of Cohesive Material [1]	Within ±2 percentage points of the optimum moisture content value as determined by the standard Proctor test (AASHTO T 99) at the time of compaction
Moisture Content of Granular Material [2]	Workable moisture levels

1. We recommend engineered fill be tested for moisture content and compaction during placement (AASHTO T 310 or AHTD Test Method 347 or 348). Should the results of the in-place density tests indicate the specified moisture or compaction limits have not been met, the area represented by the test should be reworked and retested as required until the specified moisture and compaction requirements are achieved.
2. Specifically, moisture levels should be maintained low enough to allow for satisfactory compaction to be achieved without the fill material pumping when proofrolled.

4.2.4 Lime Treated Subgrade

Low-strength (SPT N-values of 5 blows per foot or less) soils were encountered at several borings to depths of about 3.5 feet below the existing ground surface. To improve the subgrade conditions, use of lime could also be considered as a stabilization technique, as outlined in Section 301 of 'AHTD – Standard Specifications for Highway Construction' manual. Laboratory evaluation is recommended to determine the effect of chemical stabilization on subgrade soils prior to construction.

4.2.5 Excavation and Trench Construction

Excavations into the on-site fill materials and native soils may encounter caving soils and possibly groundwater, depending upon the final depth of excavation. The individual contractor(s) should be made responsible for designing and constructing stable, temporary excavations as required to maintain stability of both the excavation sides and bottom. All excavations should be sloped or shored in the interest of safety following local and federal regulations, including current OSHA excavation and trench safety standards.

Soils penetrated by the proposed excavations may vary significantly across the site. The soil classifications are based solely on the materials encountered in the exploratory test borings. The contractor should verify that similar conditions exist throughout the proposed area of excavation. If different subsurface conditions are encountered at the time of construction, the actual conditions should be evaluated to determine any excavation modifications necessary to maintain safe conditions.

As a safety measure, it is recommended that spoil piles be kept a minimum lateral distance from the crest of the slope equal to no less than the slope height. The exposed slope face should be protected against the elements.

4.2.6 Utility Trench Backfill

All trench excavations should be made with sufficient working space to permit construction including backfill placement and compaction. It is strongly recommended that a qualified person provide full-time observation and compaction testing of trench backfill within pavement areas.

4.3 Pavement Subgrade Preparation

Based on the subsurface conditions encountered at the boring locations and considering the subgrade is prepared as recommended in section **4.2 Earthwork**, the pavement subgrade materials should consist of tested and approved native soils or new engineered fill.

We recommend the moisture content and density of the top 12 inches of the subgrade be re-evaluated and that it be proof-rolled within two days prior to placing aggregate base. Areas not in compliance with the required ranges of moisture or density should be moisture

conditioned and recompacted. Particular attention should be paid to high traffic areas that were rutted and disturbed earlier and to areas where backfilled trenches are located. Areas where unsuitable conditions are located should be repaired by removing and replacing the materials with properly compacted fills.

4.4 Pavement Design Considerations

We understand that the pavement section will be designed by others. Terracon performed resilient modulus tests on representative subgrade soils of the major soil map units. The laboratory test results are presented in Appendix B. For the design pavement subgrade support parameter, we recommend using the average of the five resilient modulus test values performed on the remolded soil having a moisture content at 2 percent above the material's optimum moisture content at a chamber confining pressure of 2 psi.

5.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, pavement construction and other earth-related construction phases of the project.

The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur along the equipment between borings, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations

contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

APPENDIX A
FIELD EXPLORATION

Field Exploration Description

Ninety-two (92) borings, designated as B-1 through B-97, were drilled at the site in January 2014. The borings were drilled to depths of about 10 feet below the ground surface at the approximate locations shown on the preceding Boring Location Plans. Ninety-seven borings were planned; however, five of the borings, B-9, B-15, B-22, B-40 and B-52, were located in flooded fields and could not be offset and drilled. Boring B-23 encountered an apparent concrete structure and was terminated at a depth of about 2 feet below the ground surface. We are scheduling to drill the remaining borings B-9, B-15, B-22, B-23, B-40 and B-52 when site conditions improve.

The boring locations were marked in the field by Terracon using a hand-held GPS at locations determined by Terracon. The borings were spaced approximately 800 feet apart in the proposed highway widening alignment on alternating sides of the existing highway. The locations of the borings in State Plane coordinates and Station and Offset from existing centerline are shown near the top of the boring logs. The locations of the borings should be considered accurate only to the degree implied by the methods used to define them. Ground surface elevations at the boring locations were measured after completion and are shown near the top of the boring logs. The final boring locations and elevations were recorded by NTB Associates, Inc. and are presented in the following summary table.

The boreholes were advanced with a buggy-mounted CME-55 drill rig using solid-stem flight augers. Standard penetration tests were performed with an automatic hammer to collect split-spoon samples. Thin-walled (Shelby) tube samples were also obtained at the borings where thick fills are expected for grading. At the completion of the drilling activities, the boreholes were checked for the presence of groundwater and were backfilled with auger cuttings at the completion of field exploration.

In the split-spoon sampling procedure, the number of blows required to advance a standard 2-inch O.D. split-spoon sampler the last 12 inches of the typical total 18-inch penetration by means of a 140-pound standard hammer with a free fall of 30 inches, is the standard penetration resistance value (SPT-N). This value is used to estimate the in-situ consistency of cohesive soils and relative density of granular soils.

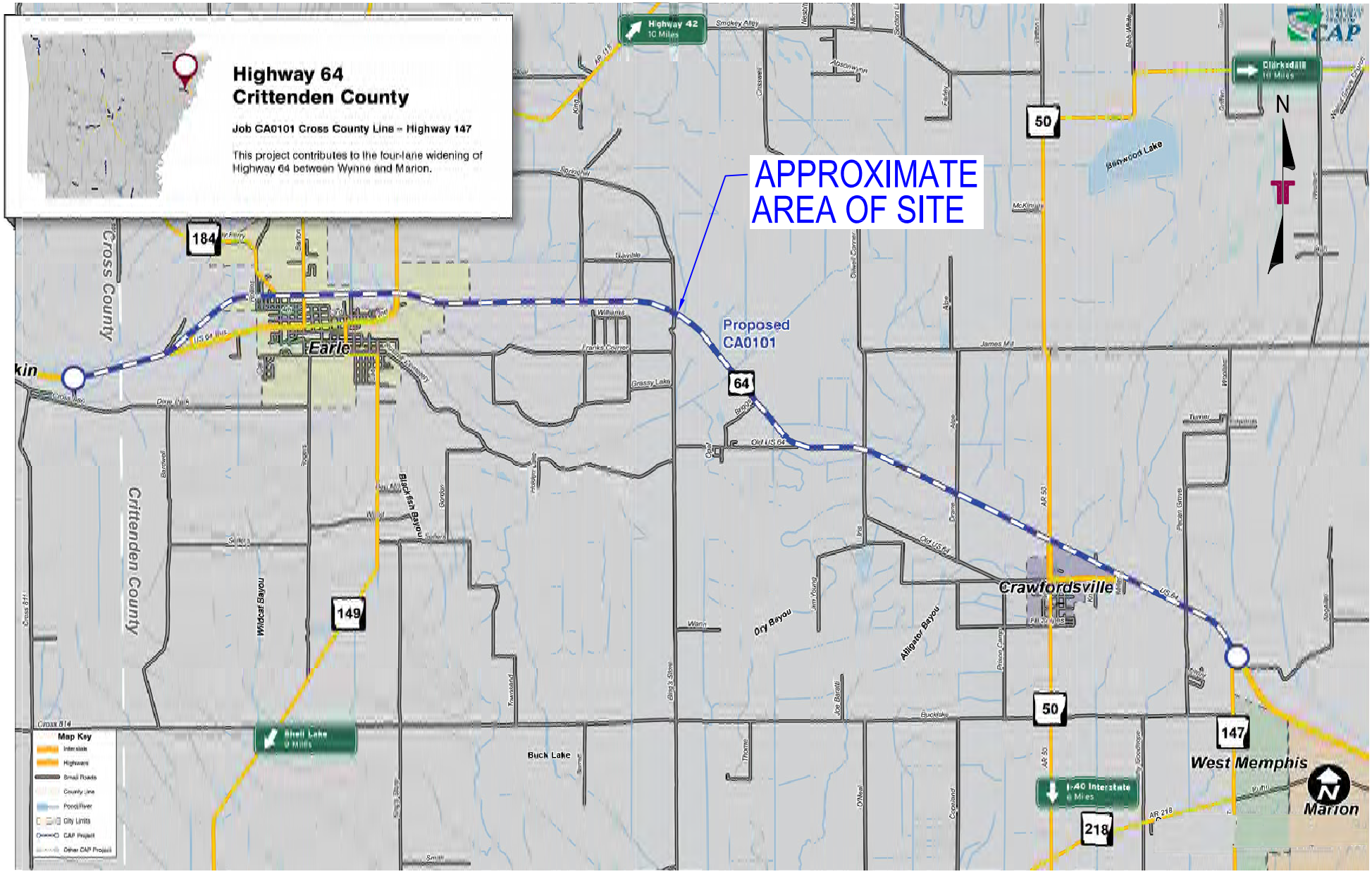
An automatic SPT hammer was used to advance the split-barrel sampler in the borings performed on this site. A significantly greater efficiency is achieved with the automatic hammer compared to the conventional safety hammer operated with a cathead and rope. This higher efficiency has an appreciable effect on the SPT-N value. The effect of the automatic hammer's efficiency has been considered in the interpretation and analysis of the subsurface information for this report.

Relatively undisturbed samples were obtained in thin-walled tube samples. These were obtained by hydraulically pushing tubes into the soil.

The samples were tagged for identification, sealed to reduce moisture loss, and taken to our laboratory for further examination, testing, and classification.

Field logs were prepared by the drill crew. The logs included visual classifications of the materials encountered during drilling as well as the driller's interpretation of the subsurface conditions between samples. The final boring logs included with this report represent the engineer's interpretation of the subsurface conditions at the boring locations based on field and laboratory data and observation of the samples.

Our exploration services include storing the collected soil samples and making them available for inspection until after construction is completed. The samples will then be discarded unless requested otherwise.



Project Mngr: SPB	Project No. 35135123	Terracon Consulting Engineers and Scientists	SITE LOCATION PLAN
Drawn By: PTG	Scale: N.T.S.	25809 I-30 SOUTH BRYANT, AR 72022	GEOTECHNICAL EXPLORATION
Checked By: SPB	File No. 35135123.SLP	PH. (501) 847-9292 FAX. (501) 847-9210	AHTD JOB NO. CA0101 - CROSS COUNTY LINE - HIGHWAY 147 (WIDENING) (S)
Approved By: GWF	Date: 8/21/2014		CRITTENDEN COUNTY, ARKANSAS

EXHIBIT

A-1

Project Mngr:	SPB
Drawn By:	PTG
Checked By:	GWF
Approved By:	SPB

Project No.	35135123
Scale:	AS SHOWN
File No.	35135123.BLP1
Date:	8/212014

Terracon
Consulting Engineers and Scientists
25809 I-30 SOUTH BRYANT, AR 72022
PH. (501) 847-9292 FAX. (501) 847-9210

BORING LOCATION PLAN

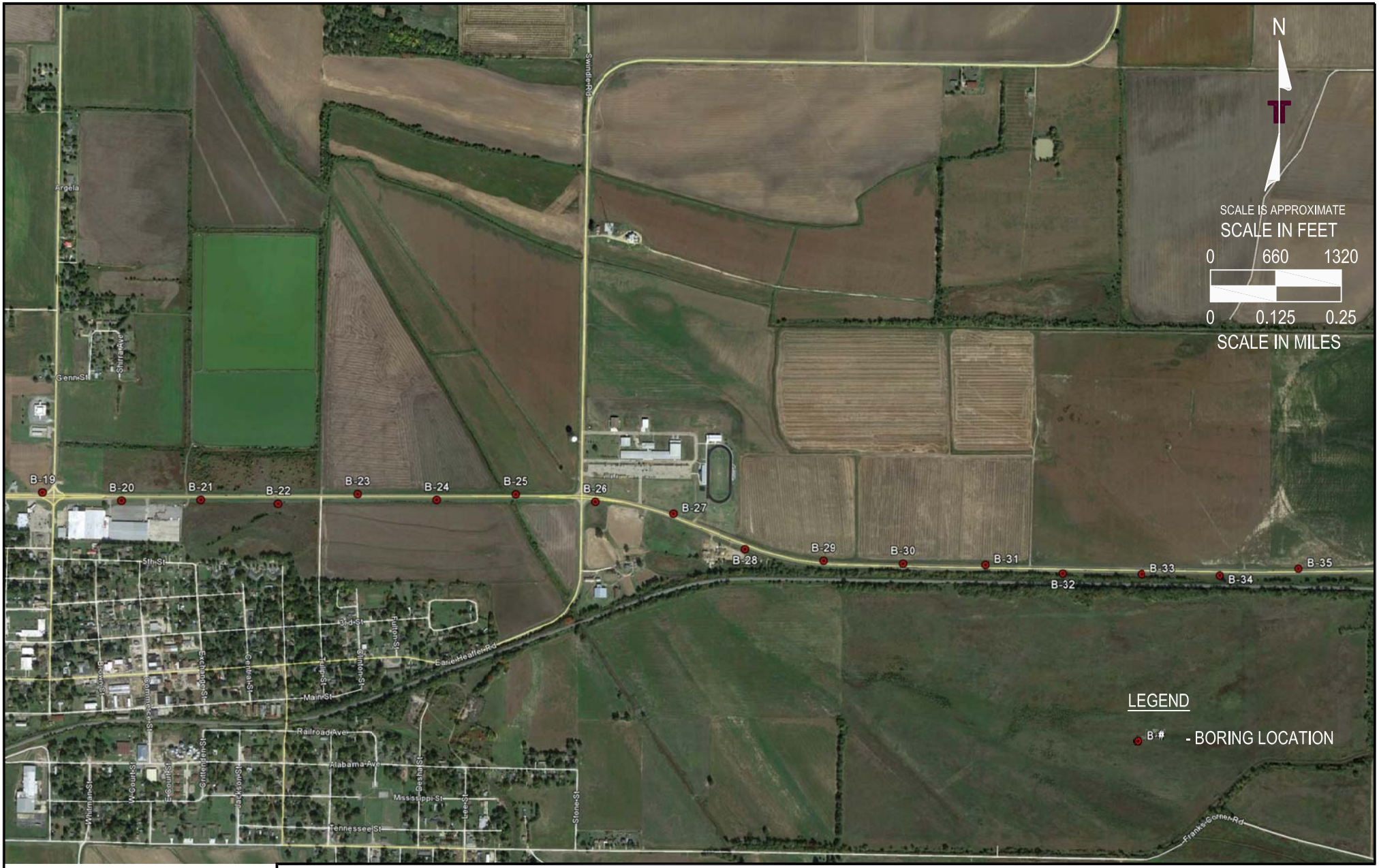
GEOTECHNICAL EXPLORATION

AHTD JOB NO. CA0101 - CROSS COUNTY LINE - HIGHWAY 147 (WIDENING) (S)

CRITTENDEN COUNTY, ARKANSAS

EXHIBIT

A-2



Project Mngr: SPB	Project No. 35135123	Terracon Consulting Engineers and Scientists	BORING LOCATION PLAN
Drawn By: PTG	Scale: AS SHOWN	25809 I-30 SOUTH BRYANT, AR 72022	GEOTECHNICAL EXPLORATION
Checked By: GWF	File No. 35135123.BLP2	PH. (501) 847-9292 FAX. (501) 847-9210	AHTD JOB NO. CA0101 - CROSS COUNTY LINE - HIGHWAY 147 (WIDENING) (S)
Approved By: SPB	Date: 8/21/2014		CRITTENDEN COUNTY, ARKANSAS

EXHIBIT

A-3

Project Mngr:	SPB
Drawn By:	PTG
Checked By:	GWF
Approved By:	SPB

Project No.	35135123
Scale:	AS SHOWN
File No.	35135123.BLP3
Date:	8/21/2014

Terracon
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BORING LOCATION PLAN

GEOTECHNICAL EXPLORATION

AHTD JOB NO. CA0101 - CROSS COUNTY LINE - HIGHWAY 147 (WIDENING) (S)

CRITTENDEN COUNTY, ARKANSAS

EXHIBIT

A-4

Project Mngr:	SPB
Drawn By:	PTG
Checked By:	GWF
Approved By:	SPB

Project No.	35135123
Scale:	AS SHOWN
File No.	35135123.BLP4
Date:	8/21/2014

Terracon
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BORING LOCATION PLAN

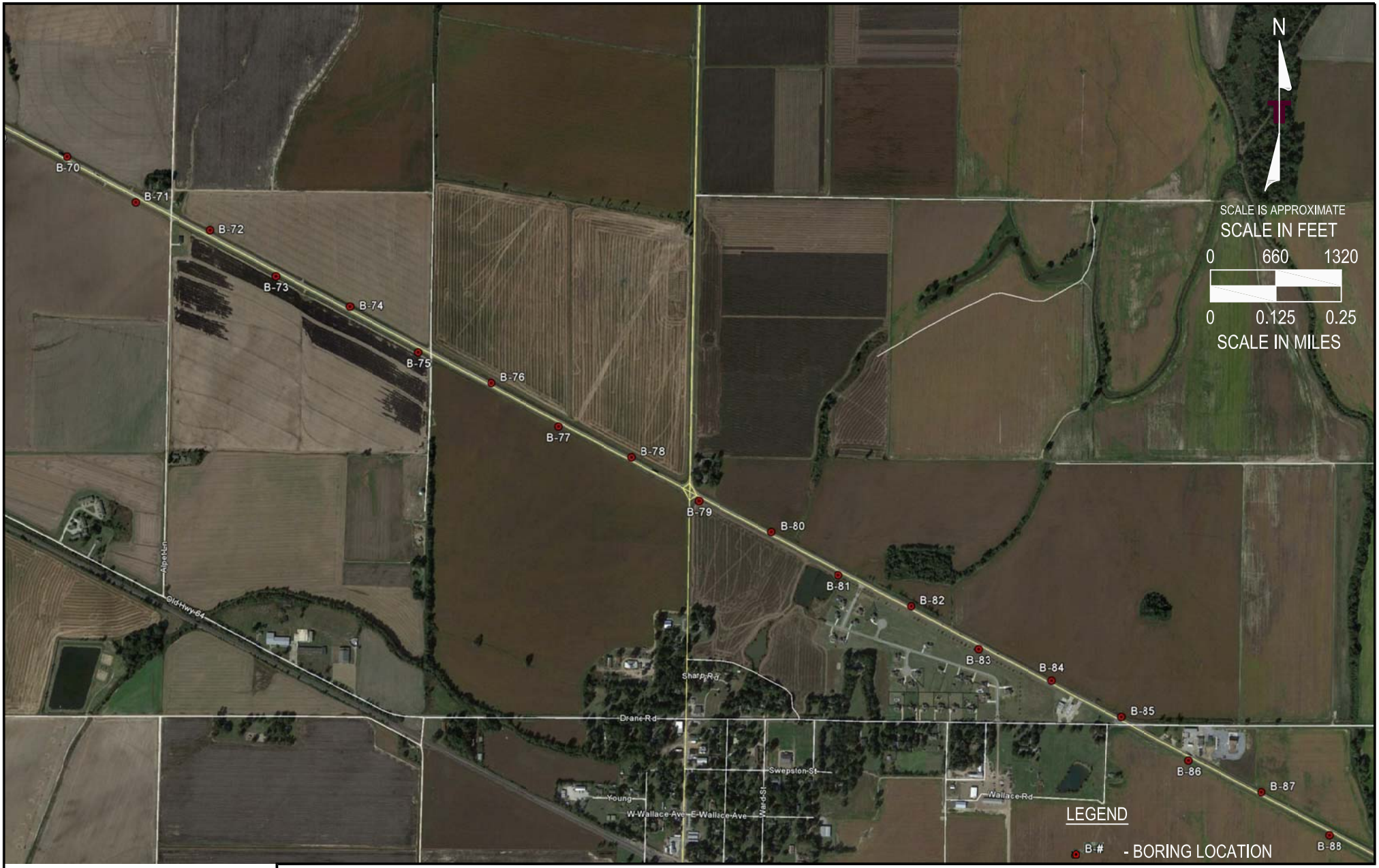
GEOTECHNICAL EXPLORATION

AHTD JOB NO. CA0101 - CROSS COUNTY LINE - HIGHWAY 147 (WIDENING) (S)

CRITTENDEN COUNTY, ARKANSAS

EXHIBIT

A-5



Project Mngr:	SPB
Drawn By:	PTG
Checked By:	GWF
Approved By:	SPB

Project No.	35135123
Scale:	AS SHOWN
File No.	35135123.BLP5
Date:	8/21/2014

Terracon
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BORING LOCATION PLAN

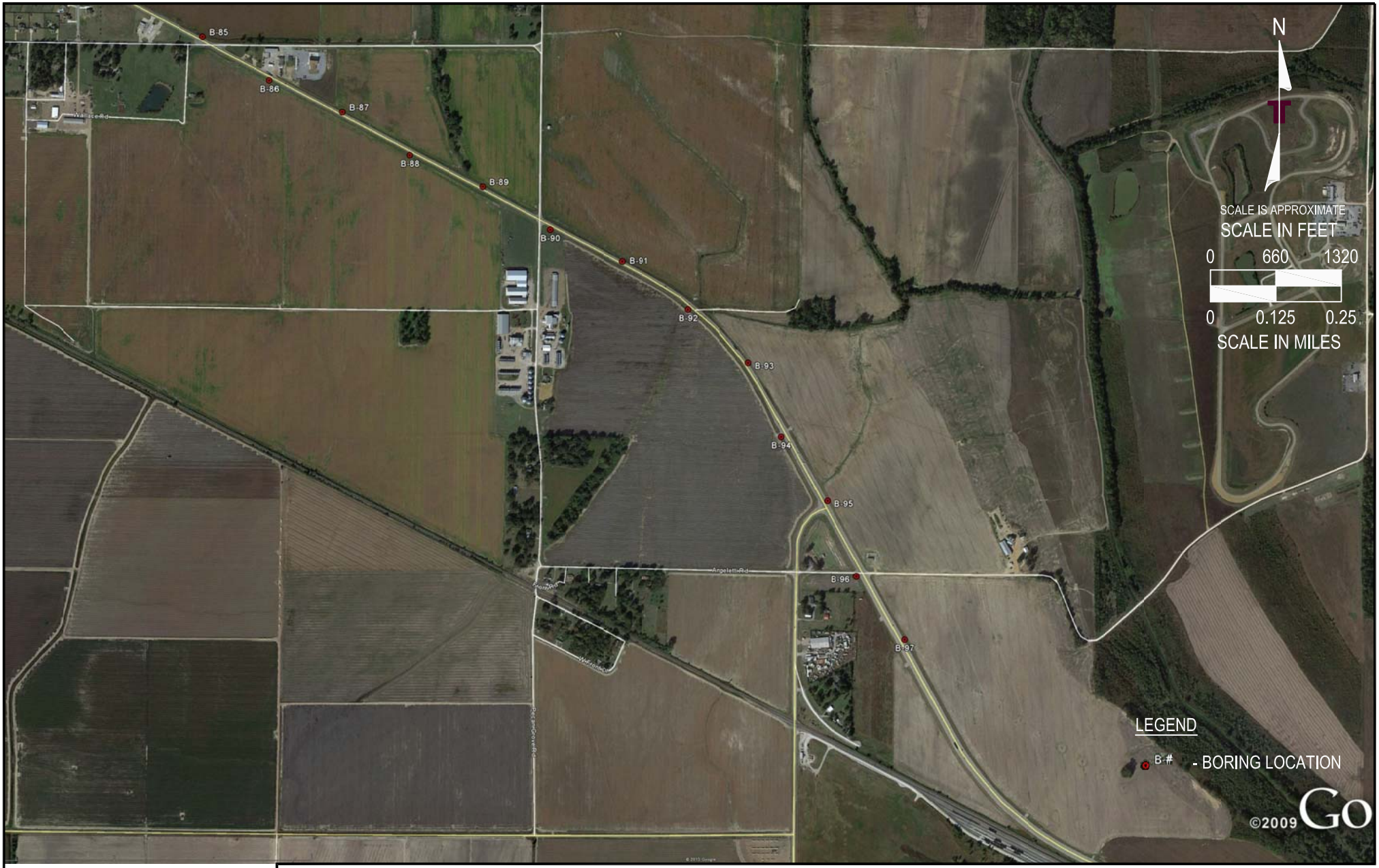
GEOTECHNICAL EXPLORATION

AHTD JOB NO. CA0101 - CROSS COUNTY LINE - HIGHWAY 147 (WIDENING) (S)

CRITTENDEN COUNTY, ARKANSAS

EXHIBIT

A-6



Project Mngr:	SPB
Drawn By:	PTG
Checked By:	GWF
Approved By:	SPB

Project No.	35135123
Scale:	AS SHOWN
File No.	35135123.BLP6
Date:	8/21/2014

Terracon
Consulting Engineers and Scientists
25809 I-30 SOUTH BRYANT, AR 72022
PH. (501) 847-9292 FAX. (501) 847-9210

BORING LOCATION PLAN

GEOTECHNICAL EXPLORATION

AHTD JOB NO. CA0101 - CROSS COUNTY LINE - HIGHWAY 147 (WIDENING) (S)

CRITTENDEN COUNTY, ARKANSAS

EXHIBIT

A-7

Boring Location Summary Table

Boring	Station	Offset (feet)	Northing	Easting	Elevation (feet)
B-1	14+00	50 R	341872.84	1756136.51	212.8
B-2	22+00	43 L	342157.21	175941.38	210.0
B-3	30+00	40 R	342216.13	1757745.2	209.9
B-4	38+00	35 L	342524.58	1758451.88	209.7
B-5	46+00	30 R	342617.69	1759296.27	213.4
B-6	54+00	47 L	342973.31	1760028.15	214.7
B-7	62+00	32 R	343049.41	1760878.43	213.3
B-8	70+00	26 L	343348.28	1761562.52	215.8
B-9 *	78+00	40 L	343924.53	1762116.98	215.5
B-10	86+00	40 R	344447.76	1762897.22	216.0
B-11	94+00	32 L	344887.05	1763446.60	216.0
B-12	102+00	36 R	345392.38	1764030.91	216.0
B-13	110+00	30 L	346038.74	1764609.62	212.5
B-14	118+00	33 R	346288.62	1765350.93	211.5
B-15 *	126+00	27 L	346569.90	1766111.30	212.2
B-16	134+00	28 R	346505.81	1766966.89	216.0
B-17	142+00	28 L	346594.67	1767688.22	216.0
B-18	150+00	34 L	346605.54	1768489.29	212.0
B-19	158+00	41 L	346633.96	1769266.83	208.0
B-20	166+00	33 R	346552.57	1769995.45	208.1
B-21	174+00	30 L	346520.38	1770762.74	203.5
B-22 *	182+00	36 R	Boring location could not be found to survey		
B-23 *	190+00	30 L	346553.97	1772454.37	201.3
B-24	198+00	30 R	346562.92	1773282.32	201.3
B-25	206+00	30 L	346724.38	1774084.62	202.2
B-26	214+00	32 R	346553.85	1774958.24	212.4
B-27	222+00	33 L	346517.85	1775690.21	210.8
B-28	230+00	30 R	346210.59	1776267.36	213.2

Boring	Station	Offset (feet)	Northing	Easting	Elevation (feet)
B-29	238+00	37 L	346091.43	1777181.03	210.9
B-30	246+00	40 L	346081.50	1777972.20	211.2
B-31	246+00	29 L	346080.26	1778805.95	211.2
B-32	254+00	46 R	345958.16	1779616.89	210.6
B-33	270+00	28 L	345964.36	1780381.44	212.0
B-34	278+00	39 R	345947.77	1781195.76	212.5
B-35	286+00	34 L	346070.16	1781986.74	213.2
B-36	294+00	36 R	346106.46	1782769.67	211.3
B-37	302+00	35 L	346103.33	1783578.27	208.5
B-38	310+00	42 R	346081.45	1784403.23	209.1
B-39	318+00	31 L	346059.99	1785177.08	207.7
B-40 *	326+00	35 R	Boring location could not be found to survey		
B-41	324+00	47 L	345970.17	1786808.27	205.3
B-42	342+00	26 R	345969.64	1787553.33	205.0
B-43	350+00	35 L	346043.38	1788409.90	207.4
B-44	358+00	34 R	345820.80	1789177.32	214.0
B-45	366+00	33 L	345717.00	1789953.91	215.5
B-46	374+00	38 R	345276.10	1790714.15	212.7
B-47	382+00	40 L	344940.13	1791423.53	206.0
B-48	390+00	34 R	344409.89	1791878.41	204.8
B-49	398+00	33 L	343751.52	1792576.28	214.4
B-50	406+00	36 R	343185.58	1792913.26	213.1
B-51	414+00	35 L	342490.65	1793595.17	204.9
B-52 *	422+00	30 R	Boring location could not be found to survey		
B-53	430+00	35 L	341288.21	1794530.24	207.3
B-54	438+00	28 R	340689.40	1795016.04	204.9
B-55	446+00	30 L	340055.38	1795525.58	208.5
B-56	454+00	25 R	339321.61	1795943.13	213.7
B-57	462+00	34 R	338834.98	1796343.90	215.8
B-58	470+00	32 R	338201.75	1796879.38	213.9

Boring	Station	Offset (feet)	Northing	Easting	Elevation (feet)
B-59	478+00	35 L	337781.38	1797722.00	212.8
B-60	486+00	39 R	337468.44	1798534.09	212.7
B-61	494+00	31 L	337616.70	1798952.89	214.3
B-62	502+00	32 R	337464.50	1800057.62	214.1
B-63	510+00	33 L	337601.70	1800764.86	214.3
B-64	518+00	49 L	337468.83	1801678.02	215.3
B-65	526+00	30 R	337008.27	1802324.68	214.5
B-66	534+00	24 L	336745.43	1803119.91	214.3
B-67	542+00	38 R	336251.73	1803794.77	215.1
B-68	550+00	41 L	335979.13	1804662.99	215.0
B-69	558+00	47 R	Boring location could not be found to survey		
B-70	566+00	42 L	335312.38	1805952.48	215.4
B-71	574+00	45 R	334853.78	1806534.19	216.7
B-72	582+00	60 L	334571.69	1807413.21	218.0
B-73	590+00	36 R	334107.73	1808011.76	219.6
B-74	598+00	44 L	333869.56	1809463.88	219.0
B-75	606+00	39 R	333367.08	1809463.88	219.0
B-76	614+00	32 L	333121.17	1810275.29	221.7
B-77	622+00	38 R	332630.81	1810932.64	221.0
B-78	630+00	35 L	332392.71	1811690.62	223.3
B-79	638+00	38 R	331909.14	1812338.57	222.0
B-80	646+00	30 L	331689.91	1813048.43	222.0
B-81	654+00	39 R	331216.72	1813709.50	220.4
B-82	662+00	27 L	330833.72	1814449.58	222.7
B-83	670+00	33 R	330482.59	1815142.80	222.5
B-84	678+00	30 L	330188.44	1815996.02	222.5
B-85	686+00	33 L	329908.57	1816594.87	223.5
B-86	694+00	34 R	329406.70	1817285.90	224.6
B-87	702+00	29 L	329139.29	1818077.68	225.2
B-88	710+00	37 R	328659.40	1818723.39	223.6

Boring	Station	Offset (feet)	Northing	Easting	Elevation (feet)
B-89	718+00	27 L	328403.47	1819508.14	223.2
B-90	726+00	39 R	327942.83	1820140.81	223.4
B-91	734+00	22 L	327688.87	1820922.08	223.5
B-92	742+00	44 R	327179.45	1821522.88	222.9
B-93	750+00	31 L	326611.51	1822249.96	225.4
B-94	758+00	54 R	325951.08	1822468.08	225.1
B-95	766+00	46 L	325347.49	1823019.47	222.7
B-96	774+00	65 R	324526.33	1823302.27	224.1
B-97	782+00	50 L	323732.51	1823762.10	223.2

Note: Borings B-9, B-15, B-22, B-40 and B-52, marked with an asterisk, have not been completed because of flooding and inaccessibility. The borings are planned to be drilled, offsetting if necessary, when the fields dry. Boring B-23 encountered a buried concrete object when originally drilled and will be drilled at an offset location. The results of the borings will be included in a final geotechnical engineering report

BORING LOG NO. B-1

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 341872.84° Longitude: 1756136.51°

Station: 14+00 Surface Elev.: 212.8 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	FAT CLAY (CH), with sand, brown, stiff					4-4-5 N=9	5000 (HP)	26	50-23-27	76
						2-4-5 N=9	3000 (HP)	24		
						5-5-10 N=15	2000 (HP)	24		
			5							
	8.5	204.5								
	POORLY GRADED SAND (SP), trace clay, brown, loose					2-2-3 N=5		14		
	10.0	203	10							
	Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/14/2014 Boring Completed: 1/14/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-10

BORING LOG NO. B-2

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 342157.21° Longitude: 1756941.38°

Station: 22+00 Surface Elev.: 210.0 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		LEAN CLAY (CL), with gravel, dark brown, medium stiff to stiff								
						6-17-10 N=27	3000 (HP)	13	25-13-12	
						2-5-5 N=10	3000 (HP)	12		
						2-3-3 N=6	3000 (HP)	18		
	8.5	201.5	5							
		POORLY GRADED SAND (SP), brown, loose				3-3-3 N=6		13		
	10.0	200	10							
		Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/15/2014 Boring Completed: 1/15/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-11

BORING LOG NO. B-3

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 342216.13° Longitude: 1757745.2°

Station: 30+00 Surface Elev.: 209.9 (Ft.)

DEPTH ELEVATION (Ft.)

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
FAT CLAY (CH), brown, medium stiff to very stiff								
				3-3-5 N=8	6000 (HP)	27	56-22-34	
				4-5-6 N=11	5000 (HP)	26		
	5			8-8-8 N=16	4000 (HP)	33		
10.0 200				5-5-7 N=12	5000 (HP)	38		
Boring Terminated at 10 Feet	10							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/16/2014 Boring Completed: 1/16/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-12

BORING LOG NO. B-4

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 342524.58° Longitude: 1758451.88°

Station: 38+00 Surface Elev.: 209.7 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), with sand, brown, medium stiff to stiff					2-3-4 N=7	3000 (HP)	28	49-22-27	
						3-5-5 N=10	3000 (HP)	16		
						4-4-6 N=10	1000 (HP)	25		
			5							
	8.5	201								
	POORLY GRADED SAND (SP), loose					3-2-3 N=5		18		
	10.0	199.5	10							
	Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/17/2014 Boring Completed: 1/17/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-13

BORING LOG NO. B-5

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 342617.69° Longitude: 1759296.27°

Station: 46+00 Surface Elev.: 213.4 (Ft.)

DEPTH ELEVATION (Ft.)

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
LEAN CLAY (CL), brown, stiff to very stiff								
				4-4-6 N=10	4000 (HP)	18	25-21-4	
				5-6-7 N=13	2000 (HP)	16		
				8-10-10 N=20	1000 (HP)	22		
	5							
				5-7-7 N=14	1000 (HP)	25		
10.0 203.5	10							
Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/17/2014 Boring Completed: 1/17/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-14

BORING LOG NO. B-6

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 342973.31° Longitude: 1760028.15°

Station: 54+00 Surface Elev.: 214.7 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), with sand, brown, medium stiff to stiff					2-4-5 N=9	8000 (HP)	27	27-21-6	
						3-2-3 N=5	2000 (HP)	23		
	3.5	211								
	POORLY GRADED SAND (SP), loose					3-4-5 N=9		20		
			5							
						2-2-3 N=5		13		
	10.0	204.5	10							
	Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/18/2014 Boring Completed: 1/18/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-15

BORING LOG NO. B-7

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 343049.41° Longitude: 1760878.43°

Station: 62+00 Surface Elev.: 213.3 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		SILTY LEAN CLAY (CL-ML), brown, medium stiff				3-3-4 N=7	3000 (HP)	19	27-20-7	
						3-3-3 N=6	3000 (HP)	20		
						3-2-4 N=6	1000 (HP)	9		
			5							
						2-4-4 N=8	3000 (HP)	18		
	10.0	203.5	10							
		Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/19/2014 Boring Completed: 1/19/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-16

BORING LOG NO. B-8

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 343348.28° Longitude: 1761562.52°

Station: 70+00 Surface Elev.: 215.8 (Ft.)

DEPTH ELEVATION (Ft.)

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		3-4-4 N=8	2000 (HP)	23	25-16-9	
		3-4-5 N=9	2000 (HP)	27		
		4-4-5 N=9	3000 (HP)	26		
5						
		2-2-2 N=4	2000 (HP)	30		
10						

SILTY LEAN CLAY (CL-ML), brown, medium stiff to stiff

10.0 206

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/20/2014 Boring Completed: 1/20/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-17

BORING LOG NO. B-9

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 343924.53° Longitude: 1762116.98°

Station: 78+00 Surface Elev.: 215.5 (Ft.)

DEPTH ELEVATION (Ft.)

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
Boring could not be drilled because of flooded field.	5						
Boring Terminated at 10 Feet	10						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/22/2014 Boring Completed: 1/22/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-18

BORING LOG NO. B-10

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 344447.76° Longitude: 1762897.22°

Station: 86+00 Offset: 50' East Surface Elev.: 216.0 (Ft.)

DEPTH ELEVATION (Ft.)

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		2-2-2 N=4	9000 (HP)	25	30-21-9	
		2-3-4 N=7	2000 (HP)	24		
		2-3-5 N=8	2000 (HP)	30		
5						
		3-3-5 N=8	2000 (HP)	37		
10						

SILTY LEAN CLAY (CL-ML), brown, medium stiff

10.0 206

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/14/2014 Boring Completed: 1/14/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-19

BORING LOG NO. B-11

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 344887.05° Longitude: 1763446.6°

Station: 94+00 Surface Elev.: 216.0 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		LEAN CLAY (CL), brown, medium stiff to stiff				2-2-2 N=4	2000 (HP)	19	42-20-22	
						1-2-2 N=4	3000 (HP)	23		
						4-5-4 N=9	4000 (HP)	26		
			5							
	10.0	206				1-3-4 N=7	4000 (HP)	36		
			10							
		Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/14/2014 Boring Completed: 1/14/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-20

BORING LOG NO. B-12

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 345392.38° Longitude: 1764030.91°

Station: 102+00 Surface Elev.: 216.0 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
						4-8-9 N=17	2000 (HP)	17	27-19-8	
						6-4-4 N=8	4000 (HP)	19		
						5-4-5 N=9	3000 (HP)	28		
			5							
						2-2-3 N=5	2000 (HP)	34		
	10.0	206	10							

SILTY LEAN CLAY (CL-ML), brown, medium stiff to very stiff

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/14/2014 Boring Completed: 1/14/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-21

BORING LOG NO. B-13

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346038.74° Longitude: 1764609.62°

Station: 110+00 Surface Elev.: 212.5 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		LEAN CLAY (CL), brown, medium stiff to stiff				3-5-7 N=12	7000 (HP)	26	48-18-30	
						3-4-4 N=8	5000 (HP)	26		
						4-7-6 N=13	4000 (HP)	25		
			5							
	10.0	202.5				2-3-4 N=7	4000 (HP)	34		
		Boring Terminated at 10 Feet	10							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/14/2014 Boring Completed: 1/14/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-22

BORING LOG NO. B-14

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346288.62° Longitude: 1765350.93°

Station: 118+00 Surface Elev.: 211.5 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		LEAN CLAY (CL), brown, medium stiff to stiff				2-4-4 N=8	4000 (HP)	27	27-19-8	
						1-3-3 N=6	3000 (HP)	28		
						3-5-6 N=11	3000 (HP)	28		
			5							
	10.0	201.5				2-4-4 N=8	3000 (HP)	34		
		Boring Terminated at 10 Feet	10							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/14/2014 Boring Completed: 1/14/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-23

BORING LOG NO. B-15

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346569.9° Longitude: 1766111.3°

Station: 126+00 Surface Elev.: 212.2 (Ft.)

DEPTH ELEVATION (Ft.)

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
Boring could not be drilled because of flooded field.	5						
Boring Terminated at 10 Feet	10						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/14/2014 Boring Completed: 1/14/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-24

BORING LOG NO. B-16

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346505.81° Longitude: 1766966.89°

Station: 134+00 Surface Elev.: 216.0 (Ft.)

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
					3-4-6 N=10	6000 (HP)	21	40-18-22	
					3-5-6 N=11	8000 (HP)	22		
					8-10-13 N=23	8000 (HP)	27		
		5							
					3-3-5 N=8	3000 (HP)	27		
10.0	206	10							

LEAN CLAY (CL), brown, medium stiff to very stiff

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/14/2014 Boring Completed: 1/14/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-25

BORING LOG NO. B-17

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346594.67° Longitude: 1767688.22°

Station: 142+00 Surface Elev.: 216.0 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
						2-2-6 N=8	9000 (HP)	19	37-22-15	72
						3-3-3 N=6	5000 (HP)	27		
						3-4-5 N=9	4000 (HP)	29		
			5							
						3-4-7 N=11	6000 (HP)	34		
	10.0	206	10							

LEAN CLAY (CL), with sand, brown, medium stiff to stiff

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/14/2014 Boring Completed: 1/14/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-26

BORING LOG NO. B-18

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346605.54° Longitude: 1768489.29°

Station: 150+00 Surface Elev.: 212.0 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		SILTY LEAN CLAY (CL-ML), with sand, brown, soft to medium stiff								
						2-2-4 N=6	2000 (HP)	27	31-22-9	73
				▽		1-2-3 N=5	2000 (HP)	28		
						2-2-3 N=5	5000 (HP)	29		
			5							
	10.0	202				1-1-2 N=3	2000 (HP)	34		
		Boring Terminated at 10 Feet	10							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *3 ft While Sampling*

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/14/2014 Boring Completed: 1/14/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-27

BORING LOG NO. B-19

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346633.96° Longitude: 1769266.83°

Station: 158+00 Surface Elev.: 208.0 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		FAT CLAY (CH), brown, medium stiff to stiff				1-2-3 N=5	3000 (HP)	39	78-24-54	98
						2-4-5 N=9	4000 (HP)	31		
						3-4-5 N=9	8000 (HP)	25		
			5							
		medium stiff, -with fine grained sand below 8.5 feet				6-6-7 N=13	2000 (HP)	5		
	10.0	198	10							
		Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

0 ft While Drilling

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/14/2014 Boring Completed: 1/14/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-28

BORING LOG NO. B-20

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346552.57° Longitude: 1769995.45°

Station: 166+00 Surface Elev.: 208.1 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
						5-7-8 N=15		14		
						3-6-7 N=13	2000 (HP)	24		
						3-6-6 N=12	9000 (HP)	23		
			5							
						3-4-6 N=10	6000 (HP)	33		
	10.0	198	10							

POORLY GRADED SAND WITH CLAY (SP-SC), trace roots, brown, medium dense

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/15/2014 Boring Completed: 1/15/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-29

BORING LOG NO. B-21

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346520.38° Longitude: 1770762.74°

Station: 174+00 Surface Elev.: 203.5 (Ft.)

DEPTH	ELEVATION (Ft.)	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	PERCENT FINES
POORLY GRADED GRAVEL WITH SAND (SP), brown and gray, very loose to medium dense		6-12-4 N=16		8	
-with gravel between 0.5 and 2 feet		3-2-2 N=4	2000 (HP)	382	
		2-2-3 N=5		7	
10.0	193.5	1-1-1 N=2	1000 (HP)	33	
Boring Terminated at 10 Feet					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/15/2014 Boring Completed: 1/15/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-30

BORING LOG NO. B-22

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

GRAPHIC LOG	LOCATION See Exhibit A-2 Station: 182+00 DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	Boring could not be drilled because of flooded field.	5						
	Boring Terminated at 10 Feet	10						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/15/2014 | Boring Completed: 1/15/2014
Drill Rig: CME 55 | Driller: SP
Project No.: 35135123 | Exhibit: A-31

BORING LOG NO. B-23

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346553.97° Longitude: 1772454.37°

Station: 190+00 Surface Elev.: 201.3 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		FAT CLAY (CH), dark brown, medium stiff								
	2.0	199.5				1-2-2 N=4	3000 (HP)	66	82-32-50	93
		Split-Spoon Refusal on Apparent Concrete at 2 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/15/2014 Boring Completed: 1/15/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-32

BORING LOG NO. B-24

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346562.92° Longitude: 1773282.32°

Station: 198+00 Surface Elev.: 201.3 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
						2-2-2 N=4	2000 (HP)	60	84-31-53	89
						1-2-2 N=4	1000 (HP)	68		
				▽		1-2-2 N=4	1000 (HP)	74		
			5							
						0-1-0 N=1		54		
	10.0	191.5	10							

FAT CLAY (CH), trace roots, dar to gray, very soft to medium stiff

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *5 ft While Sampling*

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/15/2014 Boring Completed: 1/15/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-33

BORING LOG NO. B-25

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346724.38° Longitude: 1774084.62°

Station: 206+00 Surface Elev.: 202.2 (Ft.)

DEPTH	ELEVATION (Ft.)	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
FAT CLAY (CH), brown, medium stiff to very stiff		2-3-4 N=7	6000 (HP)	45	93-30-63	98
		2-4-4 N=8	9000 (HP)	42		
		4-6-7 N=13	9000 (HP)	37		
-with fine grained sand below 8.5 feet, brown and grayish-brown		2-3-3 N=6	2000 (HP)	36		
10.0	192					
Boring Terminated at 10 Feet						

DEPTH (Ft.): 5, 10

WATER LEVEL OBSERVATIONS

SAMPLE TYPE

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/15/2014 Boring Completed: 1/15/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-34

BORING LOG NO. B-26

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346553.85° Longitude: 1774958.24°

Station: 214+00 Surface Elev.: 212.4 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		FAT CLAY (CH), trace roots, brown and grayish brown, medium stiff to very stiff				4-4-4 N=8	7000 (HP)	30	54-22-32	96
						3-5-6 N=11	4000 (HP)	28		
						6-7-9 N=16	4000 (HP)	27		
			5							
	8.5	204								
		LEAN CLAY (CL), with sand, brown, stiff				4-4-5 N=9	4000 (HP)	15		
	10.0	202.5	10							
		Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/15/2014 Boring Completed: 1/15/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-35

BORING LOG NO. B-27

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346517.85° Longitude: 1775690.21°

Station: 222+00 Surface Elev.: 210.8 (Ft.)

DEPTH ELEVATION (Ft.)

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
LEAN CLAY (CL), trace sand, brown, medium stiff to very stiff								
				2-2-9 N=11	3000 (HP)	32	28-14-14	82
				2-4-8 N=12	9000 (HP)	30		
				6-11-13 N=24	9000 (HP)	19		
	5							
medium stiff, -with fine grained sand below 8.5 feet								
10.0 201		▽		2-2-3 N=5	1000 (HP)	31		
Boring Terminated at 10 Feet	10							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *10 ft While Sampling*

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/15/2014 Boring Completed: 1/15/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-36

BORING LOG NO. B-28

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346210.59° Longitude: 1776267.36°

Station: 230+00 Surface Elev.: 213.2 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		SANDY SILTY CLAY (CL-ML), trace roots, brown and grayish brown, medium stiff to stiff				4-6-7 N=13	3000 (HP)	16	22-15-7	70
						2-2-3 N=5	3000 (HP)	37		
						5-5-6 N=11	4000 (HP)	29		
			5							
	8.5	204.5								
		LEAN CLAY (CL), with sand, brown, medium stiff				2-3-3 N=6	1000 (HP)	26		
	10.0	203	10							
		Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/15/2014 Boring Completed: 1/15/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-37

BORING LOG NO. B-29

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346091.43° Longitude: 1777181.03°

Station: 238+00 Surface Elev.: 210.9 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	FAT CLAY (CH), brown, medium stiff to stiff									
						3-3-4 N=7	4000 (HP)	26	52-19-33	96
						4-5-4 N=9	9000 (HP)	27		
						7-10-14 N=24	9000 (HP)	20		
			5							
						5-4-3 N=7		12		
	10.0	201	10							
	Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/15/2014 Boring Completed: 1/15/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-38

BORING LOG NO. B-30

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346081.5° Longitude: 1777972.2°

Station: 246+00 Surface Elev.: 211.2 (Ft.)

DEPTH ELEVATION (Ft.)

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
LEAN CLAY (CL), trace sand, brown, medium stiff to stiff								
				2-3-5 N=8	4000 (HP)	33	44-19-25	91
				3-4-5 N=9	5000 (HP)	23		
	5			4-4-7 N=11	2000 (HP)	25		
				1-2-2 N=4	2000 (HP)	28		
10.0 201	10	▽						
Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *10 ft While Sampling*

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/16/2014 Boring Completed: 1/16/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-39

BORING LOG NO. B-31

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346080.26° Longitude: 1778805.95°

Station: 254+00 Surface Elev.: 211.2 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
						3-3-3 N=6	6000 (HP)	23	41-17-24	93
						5-6-7 N=13	9000 (HP)	22		
						8-9-10 N=19	5000 (HP)	20		
			5							
						3-3-3 N=6	1000 (HP)	26		
	10.0	201	10							

LEAN CLAY (CL), trace sand, brown and gray, medium stiff to very stiff

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/16/2014 Boring Completed: 1/16/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-40

BORING LOG NO. B-32

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 345958.16° Longitude: 1779616.89°

Station: 262+00 Surface Elev.: 210.6 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
						2-2-2 N=4	5000 (HP)	26	40-20-20	89
						0-0-0 N = WOH		25		
						1-1-3 N=4		24		
			5							
						2-1-2 N=3		29		
	10.0	200.5	10							

LEAN CLAY (CL), trace sand, brown, very soft to soft

-with fine-grained sand below 3.5 feet

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

5 ft While Sampling

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/16/2014 Boring Completed: 1/16/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-41

BORING LOG NO. B-33

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 345964.36° Longitude: 1780381.44°

Station: 270+00 Surface Elev.: 212.0 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), brown, soft to very stiff									
						3-2-3 N=5	4000 (HP)	26	34-20-14	
						3-3-5 N=8	4000 (HP)	26		
	-with fine grained sand below 3.5 feet					7-7-9 N=16	1000 (HP)	26		
			5							
						1-1-2 N=3	1000 (HP)	27		
	10.0	202	10							
	Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/16/2014 Boring Completed: 1/16/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-42

BORING LOG NO. B-34

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 345947.77° Longitude: 1781195.76°

Station: 278+00 Surface Elev.: 212.5 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		LEAN CLAY (CL), trace sand, brown, stiff								
	2.5	210				2-3-6 N=9	3000 (HP)	27	40-22-18	93
		POORLY GRADED SAND (SP), brown, loose to medium dense				2-5-5 N=10	4000 (HP)	8		
						5-5-6 N=11		6		
			5							
	10.0	202.5				3-3-4 N=7		20		
		Boring Terminated at 10 Feet	10							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/16/2014 Boring Completed: 1/16/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-43

BORING LOG NO. B-35

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346070.16° Longitude: 1781986.74°

Station: 286+00 Surface Elev.: 213.2 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	SILTY LEAN CLAY (CL-ML), with sand, brown, stiff									
						2-4-7 N=11	4000 (HP)	22	28-21-7	72
						3-5-6 N=11	2000 (HP)	27		
						4-5-7 N=12	5000 (HP)	28		
	5.0	208	5							
	POORLY GRADED SAND (SP), trace clay, brown, loose to medium dense									
						2-3-3 N=6	3000 (HP)	31		
	10.0	203	10							
	Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/16/2014 Boring Completed: 1/16/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-44

BORING LOG NO. B-36

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346106.46° Longitude: 1782769.67°

Station: 294+00 Surface Elev.: 211.3 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	SILTY LEAN CLAY (CL-ML), with sand, dark brown, medium stiff									
	2.0	209.5				2-3-3 N=6	2000 (HP)	22	28-21-7	76
	POORLY GRADED SAND (SP), trace clay, brown, loose to medium dense					2-2-5 N=7	6000 (HP)	29		
						4-3-2 N=5	2000 (HP)	27		
			5							
				▽						
	10.0	201.5				2-4-8 N=12		27		
	Boring Terminated at 10 Feet		10							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *8.5 ft While Sampling*

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/16/2014 Boring Completed: 1/16/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-45

BORING LOG NO. B-37

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346103.33° Longitude: 1783578.27°

Station: 302+00 Surface Elev.: 208.5 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	FAT CLAY (CH), brown and gray, stiff					2-5-7 N=12	6000 (HP)	29	74-32-42	99
						4-5-8 N=13	7000 (HP)	18		
	3.5	205								
	POORLY GRADED SAND (SP), trace clay, brown, loose		5			7-8-7 N=15	3000 (HP)	21		
						2-3-3 N=6	1000 (HP)	26		
	10.0	198.5	10							
	Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/16/2014 Boring Completed: 1/16/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-46

BORING LOG NO. B-38

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346081.45° Longitude: 1784403.23°

Station: 310+00 Surface Elev.: 209.1 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		LEAN CLAY (CL), trace sand, brown and gray, stiff								
						3-6-7 N=13	9000 (HP)	22	36-20-16	92
						4-6-8 N=14	2000 (HP)	18		
	3.5	205.5								
		POORLY GRADED SAND (SP), trace clay, brown				4-6-5 N=11		24		
			5							
						2-3-3 N=6		34		
	10.0	199	10							
		Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/16/2014 Boring Completed: 1/16/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-47

BORING LOG NO. B-39

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346059.99° Longitude: 1785177.08°

Station: 318+00 Surface Elev.: 207.7 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		FAT CLAY (CH), trace sand, brown and gray, medium stiff to stiff								
						1-2-3 N=5	4000 (HP)	34	72-22-50	90
						2-2-3 N=5	4000 (HP)	36		
						3-4-6 N=10	6000 (HP)	28		
			5							
		- with fine grained sand below 8.5 feet								
	10.0	197.5				2-3-3 N=6	6000 (HP)	28		
			10							
		Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/16/2014 Boring Completed: 1/16/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-48

BORING LOG NO. B-40

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

GRAPHIC LOG	LOCATION See Exhibit A-2 Station: 326+00 DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	Boring could not be drilled because of flooded field.	5		X				
	Boring Terminated at 10 Feet	10		X				

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/17/2014 | Boring Completed: 1/17/2014
Drill Rig: CME 55 | Driller: SP
Project No.: 35135123 | Exhibit: A-49

BORING LOG NO. B-41

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 345970.17° Longitude: 1786808.27°

Station: 334+00 Surface Elev.: 205.3 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	FAT CLAY (CH), trace sand, brown and gray, stiff					2-3-3 N=6	2000 (HP)	31	53-20-33	91
						1-2-4 N=6	2000 (HP)	26		
						3-4-4 N=8	1000 (HP)	32		
			5							
	8.5	197								
	POORLY GRADED SAND (SP), trace clay, brown, loose					2-3-3 N=6		18		
	10.0	195.5	10	▽						
	Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *10 ft While Sampling*

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/17/2014 Boring Completed: 1/17/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-50

BORING LOG NO. B-42

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 345969.64° Longitude: 1787553.33°

Station: 342+00 Offset: 20' West Surface Elev.: 205.0 (Ft.)

DEPTH ELEVATION (Ft.)

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		2-2-3 N=5	3000 (HP)	52	85-31-54	98
		1-2-2 N=4	3000 (HP)	64		
		2-3-4 N=7	1000 (HP)	57		
5						
		1-1-2 N=3	1000 (HP)	41		
10						

FAT CLAY (CH), dark brown, soft to medium stiff

10.0 195

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *16 ft While Sampling*

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/17/2014 Boring Completed: 1/17/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-51

BORING LOG NO. B-43

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 346043.38° Longitude: 1788409.9°

Station: 350+00 Surface Elev.: 207.4 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		LEAN CLAY (CL), trace sand, brown, medium stiff to very stiff								
						1-2-2 N=4	3000 (HP)	20	42-19-23	93
						2-3-5 N=8	4000 (HP)	32		
						6-8-9 N=17	6000 (HP)	25		
			5							
						2-3-5 N=8	3000 (HP)	29		
	10.0	197.5	10							
		Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/17/2014 Boring Completed: 1/17/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-52

BORING LOG NO. B-44

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 345820.8° Longitude: 1789177.32°

Station: 358+00 Surface Elev.: 214.0 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), with sand, brown, soft to stiff									
						2-3-3 N=6	6000 (HP)	17	30-18-12	76
						3-4-6 N=10	3000 (HP)	19		
						5-5-6 N=11	1000 (HP)	23		
			5							
				▽						
						2-2-1 N=3		27		
	10.0	204	10							
	Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *6 ft While Sampling*

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/17/2014 Boring Completed: 1/17/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-53

BORING LOG NO. B-45

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 345717° Longitude: 1789953.91°

Station: 366+00 Surface Elev.: 215.5 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		LEAN CLAY (CL), brown, medium stiff to very stiff								
						3-7-7 N=14	6000 (HP)	22	41-19-22	95
						4-6-6 N=12	5000 (HP)	17		
						7-8-10 N=18	3000 (HP)	18		
			5							
						1-2-3 N=5		27		
	10.0	205.5	10	▽						
		Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *10 ft While Sampling*

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/17/2014 Boring Completed: 1/17/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-54

BORING LOG NO. B-46

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 345276.1° Longitude: 1790714.15°

Station: 374+00 Surface Elev.: 212.7 (Ft.)

DEPTH ELEVATION (Ft.)

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
LEAN CLAY (CL), brown, medium stiff to stiff								
				5-5-7 N=12	4000 (HP)	25	25-19-6	
				5-5-6 N=11	3000 (HP)	23		
				7-6-6 N=12		23		
	5							
				2-2-2 N=4		34		
10.0 202.5	10	▽						
Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *10 ft While Sampling*

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/17/2014 Boring Completed: 1/17/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-55

BORING LOG NO. B-47

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 344940.13° Longitude: 1791423.53°

Station: 382+00 Surface Elev.: 206.0 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), with sand, brown, medium stiff									
						1-2-3 N=5	3000 (HP)	25	33-18-15	85
						1-3-3 N=6	3000 (HP)	28		
						3-3-4 N=7	3000 (HP)	32		
			5							
	8.5	197.5								
	POORLY GRADED SAND (SP), trace clay, brown, loose					1-2-3 N=5		25		
	10.0	196	10							
	Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/17/2014 Boring Completed: 1/17/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-56

BORING LOG NO. B-48

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 344409.89° Longitude: 1791878.41°

Station: 390+00 Surface Elev.: 204.8 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		LEAN CLAY (CL), brown, medium stiff to stiff					4000 (HP)			
							1000 (HP)			
			5				1000 (HP)			
	8.5	196.5								
		POORLY GRADED SAND (SP), brown, medium dense				1-2-8	1000 (HP)			
	10.0	195	10							
		Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/17/2014 Boring Completed: 1/17/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-57

BORING LOG NO. B-49

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 343751.52° Longitude: 1792576.28°

Station: 398+00 Surface Elev.: 214.4 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		FAT CLAY (CH), brown, stiff					9000 (HP)			
							2000 (HP)			
			5							
	10.0	204.5				3-3-5 N=8				
		Boring Terminated at 10 Feet	10							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/17/2014 Boring Completed: 1/17/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-58

BORING LOG NO. B-50

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 343185.58° Longitude: 1792913.26°

Station: 406+00 Surface Elev.: 213.1 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		LEAN CLAY (CL), brown, stiff								
							2000 (HP)			
							9000 (HP)			
							9000 (HP)			
			5							
						5-6-7 N=13	4000 (HP)			
	10.0	203	10							
		Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/18/2014 Boring Completed: 1/18/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-59

BORING LOG NO. B-51

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 342490.65° Longitude: 1793595.17°

Station: 414+00 Surface Elev.: 204.9 (Ft.)

DEPTH ELEVATION (Ft.)

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
FAT CLAY (CH), brown, stiff					9000 (HP)			
					3000 (HP)			
	5				3000 (HP)			
8.5 196.5								
POORLY GRADED SAND (SP), trace clay, brown, loose				2-3-5 N=8				
10.0 195	10							
Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/18/2014 Boring Completed: 1/18/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-60

BORING LOG NO. B-52

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

GRAPHIC LOG	LOCATION See Exhibit A-2 Station: 422+00 DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	Boring could not be drilled because of flooded field.	5						
	Boring Terminated at 10 Feet	10						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/18/2014 | Boring Completed: 1/18/2014
Drill Rig: CME 55 | Driller: SP
Project No.: 35135123 | Exhibit: A-61

BORING LOG NO. B-53

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 341288.21° Longitude: 1794530.24°

Station: 430+00 Surface Elev.: 207.3 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		FAT CLAY (CH), brown, stiff					4000 (HP)			
							2000 (HP)			
							2000 (HP)			
			5							
						1-1-3 N=4				
	10.0	197.5	10							
		Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Rope and Cathead

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/18/2014 Boring Completed: 1/18/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-62

BORING LOG NO. B-54

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 340689.4° Longitude: 1795016.04°

Station: 438+00 Surface Elev.: 204.9 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), brown, stiff						9000 (HP)		32-21-11	
							2000 (HP)		30-22-8	
			5							
	8.5	196.5		▽						
	POORLY GRADED SAND (SP), trace clay, brown, loose					3-4-7 N=11	5000 (HP)			
	10.0	195	10							
	Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *8.5 ft While Sampling*

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/18/2014 Boring Completed: 1/18/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-63

BORING LOG NO. B-55

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 340055.38° Longitude: 1795525.58°

Station: 446+00 Surface Elev.: 208.5 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	FAT CLAY (CH), trace sand, brown, stiff						2000 (HP)			
							4000 (HP)			
							4000 (HP)			
			5							
	8.5	200								
	POORLY GRADED SAND (SP), trace clay, brown, medium dense					2-4-6 N=10				
	10.0	198.5	10							
	Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/18/2014 Boring Completed: 1/18/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-64

BORING LOG NO. B-56

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 339321.61° Longitude: 1795943.13°

Station: 454+00 Surface Elev.: 213.7 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		LEAN CLAY (CL), brown, stiff								
							3000 (HP)		45-21-24	
							8000 (HP)			
							9000 (HP)			
			5							
						2-3-4 N=7	4000 (HP)			
	10.0	203.5	10							
		Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/18/2014 Boring Completed: 1/18/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-65

BORING LOG NO. B-57

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 338834.98° Longitude: 1796343.9°

Station: 462+00 Surface Elev.: 215.8 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
						2-3-3 N=6	4000 (HP)	33	36-18-18	77
						1-2-3 N=5	2000 (HP)	23		
						2-3-5 N=8	2000 (HP)	28		
			5							
						3-3-3 N=6	2000 (HP)	27		
	10.0	206	10							

LEAN CLAY (CL), with sand, brown and grayish brown, medium stiff

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/18/2014 Boring Completed: 1/18/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-66

BORING LOG NO. B-58

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 338201.75° Longitude: 1796879.38°

Station: 470+00 Surface Elev.: 213.9 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	FAT CLAY (CH), trace sand, brown and grayish brown, medium stiff					2-2-4 N=6	3000 (HP)	36	50-22-28	87
						2-2-5 N=7	4000 (HP)	32		
	4.0	210				4-5-7 N=12	2000 (HP)	25		
	LEAN CLAY (CL), trace roots, brown and grayish brown, medium stiff to stiff		5							
						2-3-3 N=6	2000 (HP)	29		
	10.0	204	10							
	Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/18/2014 Boring Completed: 1/18/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-67

BORING LOG NO. B-59

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 337781.38° Longitude: 1797722°

Station: 478+00 Surface Elev.: 212.8 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	FAT CLAY (CH), brown and gray, stiff									
						3-5-7 N=12	4000 (HP)	28	73-36-37	83
						2-3-4 N=7	4000 (HP)	35		
						2-3-6 N=9	6000 (HP)	33		
			5							
						2-3-5 N=8	3000 (HP)	27		
	10.0	203	10							
	Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/18/2014 Boring Completed: 1/18/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-68

BORING LOG NO. B-60

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 337468.44° Longitude: 1798534.09°

Station: 486+00 Surface Elev.: 212.7 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		FAT CLAY (CH), trace roots, brown and grayish brown, soft to stiff								
						1-1-2 N=3	2000 (HP)	34	82-25-57	
						1-2-4 N=6	2000 (HP)	35		
						4-5-7 N=12	5000 (HP)	36		
			5							
	10.0	202.5				2-3-3 N=6	5000 (HP)	33		
			10							
		Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/19/2014 Boring Completed: 1/19/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-69

BORING LOG NO. B-61

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 337616.7° Longitude: 1798952.89°

Station: 494+00 Offset: 10' West Surface Elev.: 214.3 (Ft.)

DEPTH ELEVATION (Ft.)

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		2-2-2 N=4	5000 (HP)	25	49-21-28	71
		3-5-6 N=11	9000 (HP)	32		
5		6-11-12 N=23	6000 (HP)	29		
		4-7-9 N=16	5000 (HP)	23		
10						

LEAN CLAY (CL), with sand, brown and grayish brown, medium stiff to very stiff

10.0 204.5

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/19/2014 Boring Completed: 1/19/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-70

BORING LOG NO. B-62

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 337464.5° Longitude: 1800057.62°

Station: 502+00 Surface Elev.: 214.1 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	FAT CLAY (CH), trace roots, gray and brown, medium stiff									
						2-3-4 N=7	2000 (HP)	41	96-26-70	91
						2-3-4 N=7	2000 (HP)	39		
						5-7-8 N=15	9000 (HP)	28		
			5							
	8.5	205.5								
	LEAN CLAY (CL), trace sand, gray, stiff					2-4-6 N=10	2000 (HP)	28		
	10.0	204	10							
	Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/19/2014 Boring Completed: 1/19/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-71

BORING LOG NO. B-63

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 337601.7° Longitude: 1800764.86°

Station: 510+00 Surface Elev.: 214.3 (Ft.)

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	FAT CLAY (CH), trace roots, brown and grayish brown, soft to stiff								
					1-1-1 N=2		42	92-27-65	94
					1-1-2 N=3	2000 (HP)	42		
		5			3-4-5 N=9	9000 (HP)	29		
	10.0 204.5	10			4-5-5 N=10	4000 (HP)	26		
	Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/19/2014 Boring Completed: 1/19/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-72

BORING LOG NO. B-64

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 337468.83° Longitude: 1801678.02°

Station: 518+00 Surface Elev.: 215.3 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		FAT CLAY (CH), trace sand, brown and grayish brown, medium stiff to very stiff								
						3-3-4 N=7	5000 (HP)	36	83-25-58	89
						2-3-14 N=17	4000 (HP)	29		
						5-6-9 N=15	5000 (HP)	29		
	8.0	207.5	5							
		POORLY GRADED SAND (SP), brown to grayish brown, loose								
						3-3-4 N=7		19		
	10.0	205.5	10							
		Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/19/2014 Boring Completed: 1/19/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-73

BORING LOG NO. B-65

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 337008.27° Longitude: 1802324.68°

Station: 526+00 Surface Elev.: 214.5 (Ft.)

DEPTH ELEVATION (Ft.)

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
FAT CLAY (CH), trace roots, brown, medium stiff to stiff								
				2-2-3 N=5	5000 (HP)	35	61-22-39	96
				1-3-3 N=6	2000 (HP)	32		
	5			5-7-7 N=14	5000 (HP)	34		
8.0 206.5								
LEAN CLAY (CL), brown, stiff								
				5-6-5 N=11	6000 (HP)	17		
10.0 204.5	10							
Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/19/2014 Boring Completed: 1/19/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-74

BORING LOG NO. B-66

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 336745.43° Longitude: 1803119.91°

Station: 534+00 Surface Elev.: 214.3 (Ft.)

DEPTH ELEVATION (Ft.)

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
FAT CLAY (CH), trace roots, brown and grayish brown								
				4-7-10 N=17	9000 (HP)	23	62-21-41	96
				4-8-9 N=17	9000 (HP)	23		
				4-8-10 N=18	9000 (HP)	22		
	5							
8.0 206.5								
POORLY GRADED SAND (SP), brown to grayish brown, loose								
				4-4-3 N=7		16		
10.0 204.5	10							
Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/19/2014 Boring Completed: 1/19/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-75

BORING LOG NO. B-67

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 336251.73° Longitude: 1803794.77°

Station: 542+00 Surface Elev.: 215.1 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
						2-3-5 N=8	2000 (HP)	33	52-24-28	94
						2-5-5 N=10	4000 (HP)	28		
						6-7-10 N=17	2000 (HP)	42		
			5							
	10.0	205				2-3-3 N=6	4000 (HP)	35		
			10							

FAT CLAY (CH), trace roots, brown and gray, medium stiff to very stiff

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/19/2014 Boring Completed: 1/19/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-76

BORING LOG NO. B-68

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 335979.13° Longitude: 1804662.99°

Station: 550+00 Surface Elev.: 215.0 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		FAT CLAY (CH), with sand, brown and grayish brown, medium stiff to stiff								
						2-2-4 N=6	4000 (HP)	38	87-22-65	78
						2-4-6 N=10	9000 (HP)	29		
						6-8-11 N=19	9000 (HP)	28		
	6.0	209	5							
		LEAN CLAY (CL), brown, stiff to very stiff								
						4-6-5 N=11	5000 (HP)	25		
	10.0	205	10							
		Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/19/2014 Boring Completed: 1/19/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-77

BORING LOG NO. B-69

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Station: 558+00

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	FAT CLAY (CH), trace roots, brown, medium stiff to stiff									
						1-2-5 N=7	3000 (HP)	34	82-24-58	98
						1-3-5 N=8	3000 (HP)	32		
						6-6-7 N=13	5000 (HP)	33		
			5							
						5-5-6 N=11	6000 (HP)	35		
	10.0		10							
	Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/19/2014 | Boring Completed: 1/19/2014

Drill Rig: CME 55 | Driller: SP

Project No.: 35135123 | Exhibit: A-78

BORING LOG NO. B-70

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 335312.38° Longitude: 1805952.48°

Station: 566+00 Surface Elev.: 215.4 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
						2-2-3 N=5	4000 (HP)	21	31-14-17	89
						1-2-2 N=4	2000 (HP)	25		
						3-5-7 N=12	7000 (HP)	33		
			5							
						3-5-4 N=9	4000 (HP)	34		
	10.0	205.5	10							

LEAN CLAY (CL), trace roots, brown and grayish brown, medium stiff to stiff

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/19/2014 Boring Completed: 1/19/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-79

BORING LOG NO. B-71

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 334853.78° Longitude: 1806534.19°

Station: 574+00 Surface Elev.: 216.7 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		FAT CLAY (CH), trace roots, brown, medium stiff to stiff								
						2-2-3 N=5	2000 (HP)	28	51-24-27	95
						1-2-3 N=5	2000 (HP)	29		
						4-5-7 N=12	4000 (HP)	31		
			5							
						2-4-8 N=12	5000 (HP)	32		
	10.0	206.5	10							
		Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/19/2014 Boring Completed: 1/19/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-80

BORING LOG NO. B-72

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 334571.69° Longitude: 1807413.21°

Station: 582+00 Surface Elev.: 218.0 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
					X	2-2-3 N=5	3000 (HP)	28	35-21-14	73
					X	1-2-3 N=5	3000 (HP)	29		
					X	4-5-8 N=13	4000 (HP)	31		
			5							
					X	1-1-7 N=8	2000 (HP)	30		
	10.0	208	10							

LEAN CLAY (CL), with sand, brown and grayish brown

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/20/2014 Boring Completed: 1/20/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-81

BORING LOG NO. B-73

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 334107.73° Longitude: 1808011.76°

Station: 590+00 Surface Elev.: 219.6 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), trace roots, brown, stiff to very stiff									
					X	2-5-5 N=10	6000 (HP)	24		93
					X	4-6-8 N=14	7000 (HP)	24		
					X	7-9-10 N=19	9000 (HP)	26		
			5							
					X	3-3-6 N=9	6000 (HP)	27		
	10.0	209.5	10							
	Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/20/2014 Boring Completed: 1/20/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-82

BORING LOG NO. B-74

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 333869.56° Longitude: 1808804.9°

Station: 598+00 Surface Elev.: 219.1 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		LEAN CLAY (CL), brown, medium stiff								
	2.0	217				3-3-4 N=7	3000 (HP)	24	39-17-22	99
		SILTY LEAN CLAY (CL-ML), brown and grayish-brown, medium stiff				1-3-2 N=5	3000 (HP)	25		
						2-3-4 N=7	3000 (HP)	30		
			5							
						2-3-3 N=6	2000 (HP)	25		
	10.0	209	10							
		Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/20/2014 Boring Completed: 1/20/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-83

BORING LOG NO. B-75

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 333367.08° Longitude: 1809463.88°

Station: 606+00 Surface Elev.: 219.0 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
						5-5-6 N=11	6000 (HP)	24	30-16-14	60
						2-4-5 N=9	6000 (HP)	21		
						5-6-7 N=13	1000 (HP)	24		
			5							
						2-3-4 N=7	3000 (HP)	33		
	10.0	209	10							
	Boring Terminated at 10 Feet									

SANDY LEAN CLAY (CL), trace roots, brown and grayish brown, medium stiff to stiff

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/20/2014 Boring Completed: 1/20/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-84

BORING LOG NO. B-76

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 333121.17° Longitude: 1810275.29°

Station: 614+00 Surface Elev.: 221.7 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
					X	2-3-3 N=6	3000 (HP)	13	28-16-12	
					X	3-3-4 N=7	2000 (HP)	22		
					X	3-5-6 N=11	2000 (HP)	25		
			5							
					X	5-5-6 N=11	6000 (HP)	28		
	10.0	211.5	10							

LEAN CLAY (CL), trace roots, brown, medium stiff to stiff

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/20/2014 Boring Completed: 1/20/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-85

BORING LOG NO. B-77

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 332630.81° Longitude: 1810932.64°

Station: 622+00 Surface Elev.: 221.0 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), trace roots, brown and grayish brown, medium stiff to stiff									
						2-3-5 N=8	3000 (HP)	24	32-20-12	93
						3-6-6 N=12	3000 (HP)	35		
						3-4-5 N=9	3000 (HP)	23		
			5							
						2-5-5 N=10	4000 (HP)	25		
	10.0	211	10							
	Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/20/2014 Boring Completed: 1/20/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-86

BORING LOG NO. B-78

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 332392.71° Longitude: 1811690.62°

Station: 630+00 Surface Elev.: 223.3 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		LEAN CLAY (CL), trace roots, brown, stiff to very stiff								
						8-10-9 N=19	3000 (HP)	20		89
						6-7-6 N=13	7000 (HP)	26		
						8-7-6 N=13	6000 (HP)	23		
			5							
	10.0	213.5				3-4-5 N=9	4000 (HP)	25		
		Boring Terminated at 10 Feet	10							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/20/2014 Boring Completed: 1/20/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-87

BORING LOG NO. B-79

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 331909.14° Longitude: 1812338.57°

Station: 638+00 Surface Elev.: 222.0 (Ft.)

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), trace roots, brown and grayish brown, medium stiff to stiff								
					2-4-4 N=8	7000 (HP)	24		93
					2-3-5 N=8	3000 (HP)	22		
					3-4-6 N=10	3000 (HP)	24		
		5							
					1-2-2 N=4		30		
	10.0 212	10	▽						
	Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *10 ft While Sampling*

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/20/2014 Boring Completed: 1/20/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-88

BORING LOG NO. B-80

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 331689.91° Longitude: 1813048.43°

Station: 646+00 Surface Elev.: 222.0 (Ft.)

DEPTH ELEVATION (Ft.)

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
LEAN CLAY (CL), trace roots, brown, medium stiff to stiff								
				2-3-3 N=6	5000 (HP)	24	31-17-14	90
				2-4-5 N=9	5000 (HP)	24		
				4-5-6 N=11	4000 (HP)	23		
	5							
10.0 212				2-2-4 N=6	3000 (HP)	30		
	10							
Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/20/2014 Boring Completed: 1/20/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-89

BORING LOG NO. B-81

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 331216.72° Longitude: 1813709.5°

Station: 654+00 Surface Elev.: 220.4 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
						2-4-4 N=8	4000 (HP)	26	32-18-14	96
						2-4-5 N=9	4000 (HP)	30		
						3-4-6 N=10	1000 (HP)	27		
			5							
						1-2-3 N=5	1000 (HP)	47		
	10.0	210.5	10							

LEAN CLAY (CL), trace roots, brown and grayish brown, medium stiff to stiff

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/21/2014 Boring Completed: 1/21/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-90

BORING LOG NO. B-82

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 330833.72° Longitude: 1814449.58°

Station: 662+00 Surface Elev.: 222.7 (Ft.)

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), trace roots, brown and grayish brown, medium stiff to stiff								
					2-3-3 N=6	3000 (HP)	31	33-16-17	94
					2-2-5 N=7	3000 (HP)	22		
					3-4-5 N=9	2000 (HP)	22		
		5							
	10.0 212.5				1-3-3 N=6	1000 (HP)	25		
		10							
	Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/21/2014 Boring Completed: 1/21/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-91

BORING LOG NO. B-83

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 330482.59° Longitude: 1815142.8°

Station: 670+00 Surface Elev.: 222.5 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		LEAN CLAY (CL), trace sand, brown and grayish brown, medium stiff to stiff								
						2-2-2 N=4	3000 (HP)	25	29-15-14	88
						1-2-4 N=6	2000 (HP)	25		
						4-5-6 N=11	2000 (HP)	25		
			5							
	10.0	212.5				2-3-5 N=8	4000 (HP)	35		
		Boring Terminated at 10 Feet	10							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/21/2014 Boring Completed: 1/21/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-92

BORING LOG NO. B-84

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 330188.44° Longitude: 1815996.02°

Station: 678+00 Surface Elev.: 222.5 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
					X	2-2-2 N=4	2000 (HP)	23	27-13-14	84
					X	3-4-5 N=9	1000 (HP)	23		
					X	5-4-5 N=9	2000 (HP)	22		
			5							
					X	2-2-2 N=4	4000 (HP)	25		
	10.0	212.5	10							

LEAN CLAY (CL), trace sand, brown, medium stiff to stiff

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/21/2014 Boring Completed: 1/21/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-93

BORING LOG NO. B-85

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 329908.57° Longitude: 1816594.87°

Station: 686+00 Surface Elev.: 223.5 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		LEAN CLAY (CL), trace sand, brown, soft to medium stiff								
						2-2-3 N=5	5000 (HP)	33	37-20-17	87
						1-2-3 N=5	1000 (HP)	27		
						2-3-4 N=7	1000 (HP)	29		
			5							
				▽						
	10.0	213.5				1-1-1 N=2	1000 (HP)	30		
		Boring Terminated at 10 Feet	10							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *8.5 ft While Sampling*

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/21/2014 Boring Completed: 1/21/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-94

BORING LOG NO. B-86

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 329406.7° Longitude: 1817285.9°

Station: 694+00 Surface Elev.: 224.6 (Ft.)

DEPTH ELEVATION (Ft.)

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
LEAN CLAY (CL), trace sand, brown and grayish brown, soft to very stiff								
				3-4-4 N=8	3000 (HP)	21	25-14-11	87
				1-3-4 N=7	6000 (HP)	24		
				4-7-8 N=15	4000 (HP)	21		
	5							
10.0 214.5		▽		1-1-1 N=2	1000 (HP)	36		
Boring Terminated at 10 Feet	10							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *10 ft While Sampling*

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/21/2014 Boring Completed: 1/21/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-95

BORING LOG NO. B-87

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 329139.29° Longitude: 1818077.68°

Station: 702+00 Surface Elev.: 225.2 (Ft.)

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), trace roots, brown and gray, soft to very stiff								
					3-5-6 N=11	3000 (HP)	18	27-16-11	89
					3-4-5 N=9	4000 (HP)	22		
					5-6-8 N=14	2000 (HP)	21		
		5							
			▽						
	10.0 215				1-1-1 N=2		30		
		10							
	Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *8.5 ft While Sampling*

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/22/2014 Boring Completed: 1/22/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-96

BORING LOG NO. B-88

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 328659.4° Longitude: 1818723.39°

Station: 710+00 Surface Elev.: 223.6 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
						2-4-6 N=10	3000 (HP)	20		91
						3-5-4 N=9	3000 (HP)	23		
						3-5-7 N=12	3000 (HP)	26		
			5							
						2-2-2 N=4	3000 (HP)	26		
	10.0	213.5	10							

LEAN CLAY (CL), trace roots, brown and grayish brown, medium stiff to stiff

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/22/2014 Boring Completed: 1/22/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-97

BORING LOG NO. B-89

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 328403.47° Longitude: 1819508.14°

Station: 718+00 Surface Elev.: 223.2 (Ft.)

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	SANDY LEAN CLAY (CL), trace roots, brown, medium stiff to very stiff			X	4-4-4 N=8	1000 (HP)	19		68
				X	2-4-4 N=8	1000 (HP)	20		
				X	7-10-10 N=20	9000 (HP)	18		
		5							
8.5	214.5								
	POORLY GRADED SAND WITH CLAY (SP), brown and gray, loose			X	2-4-4 N=8		16		
10.0	213	10							
	Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/22/2014 Boring Completed: 1/22/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-98

BORING LOG NO. B-90

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 327942.83° Longitude: 1820140.81°

Station: 726+00 Surface Elev.: 223.4 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	SANDY LEAN CLAY (CL), trace sand, brown and grayish brown, medium stiff					2-3-3 N=6	2000 (HP)	16		57
	2.5	221				1-2-2 N=4	2000 (HP)	19		
	POORLY GRADED SAND WITH CLAY (SP), brown, very loose to loose		5			3-2-4 N=6		19		
	10.0	213.5		▽		1-1-2 N=3		24		
	Boring Terminated at 10 Feet		10							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *10 ft While Sampling*

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/22/2014 Boring Completed: 1/22/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-99

BORING LOG NO. B-91

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 327688.87° Longitude: 1820922.08°

Station: 734+00 Surface Elev.: 223.5 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		LEAN CLAY (CL), trace roots, gray and brown, medium stiff to stiff								
						3-3-5 N=8	8000 (HP)	25	39-18-21	94
						2-5-6 N=11	9000 (HP)	20		
						7-8-11 N=19	9000 (HP)	23		
			5							
						4-4-4 N=8	6000 (HP)	17		
	10.0	213.5	10							
		Boring Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/22/2014 Boring Completed: 1/22/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-100

BORING LOG NO. B-92

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 327179.45° Longitude: 1821522.88°

Station: 742+00 Surface Elev.: 222.9 (Ft.)

DEPTH	ELEVATION (Ft.)	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
SANDY LEAN CLAY (CL), trace roots, dark brown and grayish brown, medium stiff to very stiff						
		3-10-6 N=16	7000 (HP)	16	30-18-12	63
		5-4-4 N=8	3000 (HP)	21		
		3-3-3 N=6	3000 (HP)	22		
5						
		2-2-2 N=4	1000 (HP)	32		
10.0	213					
10						
Boring Terminated at 10 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

5 ft While Sampling

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/22/2014 Boring Completed: 1/22/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-101

BORING LOG NO. B-93

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 326611.51° Longitude: 1822249.96°

Station: 750+00 Surface Elev.: 225.4 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
						2-3-3 N=6	4000 (HP)	24	35-15-20	87
						1-3-5 N=8	4000 (HP)	22		
				▽		5-5-6 N=11	3000 (HP)	26		
			5							
						1-2-2 N=4	1000 (HP)	33		
	10.0	215.5	10							

LEAN CLAY (CL), trace roots, grayish-brown and brown, medium stiff to stiff

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *5 ft While Sampling*

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/22/2014 Boring Completed: 1/22/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-102

BORING LOG NO. B-94

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 325951.08° Longitude: 1822468.08°

Station: 758+00 Surface Elev.: 225.1 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
						5-6-8 N=14	9000 (HP)	16	26-15-11	72
						5-5-6 N=11	5000 (HP)	16		
						6-6-6 N=12	4000 (HP)	22		
			5							
						1-1-1 N=2	2000 (HP)	28		
	10.0	215	10							

LEAN CLAY (CL), trace roots, brown and grayish-brown, soft to stiff

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/22/2014 Boring Completed: 1/22/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-103

BORING LOG NO. B-95

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 325347.49° Longitude: 1823019.47°

Station: 766+00 Surface Elev.: 222.7 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), trace roots, brown and gray, soft to medium stiff									
						2-2-2 N=4	4000 (HP)	23	33-21-12	92
						2-2-2 N=4	3000 (HP)	24		
	-with sand below 3.5 feet					1-1-2 N=3	2000 (HP)	26		
			5	▽						
	8.5	214								
	SANDY LEAN CLAY (CL), brown and grayish-brown, medium stiff					1-2-2 N=4	1000 (HP)	28		
	10.0	212.5	10							
	Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *5 ft While Sampling*

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/22/2014 Boring Completed: 1/22/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-104

BORING LOG NO. B-96

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 324526.33° Longitude: 1823302.27°

Station: 774+00 Surface Elev.: 224.1 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), trace roots, brown, soft to stiff									
						3-4-3 N=7	4000 (HP)	26	35-15-20	88
						2-2-3 N=5	3000 (HP)	19		
						3-4-5 N=9	2000 (HP)	23		
			5							
				▽						
	10.0	214				1-1-1 N=2		43		
	Boring Terminated at 10 Feet		10							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *8.5 ft While Sampling*

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/22/2014 Boring Completed: 1/22/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-105

BORING LOG NO. B-97

PROJECT: CA0101 Highway 147 (Widening) (S)

CLIENT: Buchart Horn, Inc.
Memphis Tenneessee

SITE: Cross Co. Line - Highway 147
Earle, Arkansas

LOCATION See Exhibit A-2

Latitude: 323732.51° Longitude: 1823762.1°

Station: 782+00 Surface Elev.: 223.2 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
						2-2-2 N=4	4000 (HP)	23	33-21-12	93
						2-4-4 N=8	3000 (HP)	22		
				▽		3-3-4 N=7	2000 (HP)	27		
			5							
						1-1-1 N=2	1000 (HP)	31		
	10.0	213	10							

LEAN CLAY (CL), trace roots, brown and grayish-brown, soft to stiff

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10: Solid stem auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *5 ft While Sampling*

Terracon
25809 I-30 South
Bryant, Arkansas

Boring Started: 1/22/2014 Boring Completed: 1/22/2014

Drill Rig: CME 55 Driller: SP

Project No.: 35135123 Exhibit: A-106

APPENDIX B
LABORATORY TESTING

Laboratory Testing Description

Samples retrieved during the field exploration were taken to the laboratory for further observation by the project geotechnical engineer and were classified in accordance with the Unified Soil Classification System (USCS) and the AASHTO Classification System described in **Appendix C**. At that time, the field descriptions were confirmed or modified as necessary and a limited laboratory testing program was formulated.

Selected soil samples obtained from the site were tested for the following engineering properties:

- Water content
- Atterberg limits
- Sieve analysis
- Standard Proctor
- Remolded resilient modulus
- One-dimensional consolidation

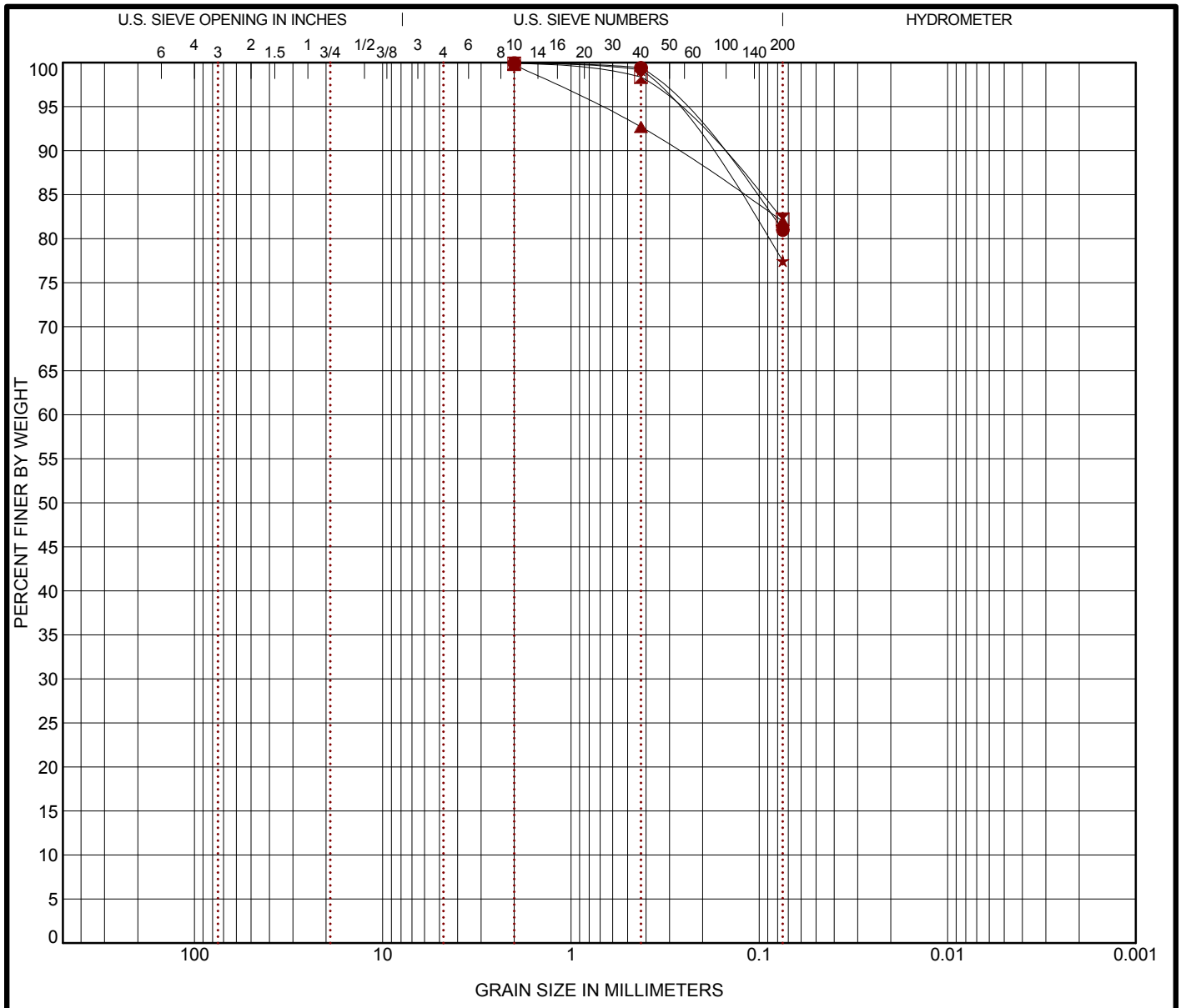
The laboratory test results are reported on the boring logs and on report forms in this Appendix. They have been used for the geotechnical engineering analyses, and the development pavement recommendations. Laboratory tests were performed in general accordance with the applicable ASTM, local or other accepted standards.

Boring No.	Sample No	Depth	LL	PL	PI	Percent Fines	AASHTO Classification	USCS Classification
B-1	1	0.5-2	50	23	27	81	A-7-6	CH
B-2	1	0.5-2	25	13	12	--	A-6	CL
B-3	1	0.5-2	56	22	34	82	A-7-6	CH
B-4	1	0.5-2	49	22	27	82	A-7-6	CL
B-5	1	0.5-2	25	21	4	--	A-4	CL-ML
B-6	1	0.5-2	27	21	6	77	A-4	CL-ML
B-7	1	0.5-2	27	20	7	74	A-4	CL-ML
B-8	1	0.5-2	25	16	9	87	A-4	CL
B-10	1	0.5-2	30	21	9	86	A-4	CL
B-11	1	0.5-2	42	20	22	85	A-7-6	CL
B-12	1	0.5-2	27	19	8	83	A-4	CL
B-13	1	0.5-2	48	18	30	95	A-7-6	CL
B-14	1	0.5-2	27	19	8	93	A-4	CL
B-16	1	0.5-2	40	18	22	88	A-6	CL
B-17	1	0.5-2	37	22	15	72	A-6	CL
B-18	1	0.5-2	31	22	9	73	A-4	CL
B-19	1	0.5-2	78	24	54	98	A-7-6	CH
B-23	1	0.5-2	82	32	50	93	A-7-5	CH
B-24	1	0.5-2	84	31	53	89	A-7-5	CH
B-25	1	0.5-2	93	30	63	98	A-7-5	CH
B-26	1	0.5-2	54	22	32	96	A-7-6	CH
B-27	1	0.5-2	28	14	14	82	A-6	CL
B-28	1	0.5-2	22	15	7	70	A-4	CL-ML
B-29	1	0.5-2	52	19	33	96	A-7-6	CH
B-30	1	0.5-2	44	19	25	91	A-7-6	CL
B-31	1	0.5-2	41	17	24	93	A-7-6	CL
B-32	1	0.5-2	40	20	20	89	A-6	CL
B-33	1	0.5-2	34	20	14	--	A-6	CL
B-34	1	0.5-2	40	22	18	93	A-6	CL
B-35	1	0.5-2	28	21	7	72	A-4	CL-ML
B-36	1	0.5-2	28	21	7	76	A-4	CL-ML

Boring No.	Sample No	Depth	LL	PL	PI	Percent Fines	AASHTO Classification	USCS Classification
B-37	1	0.5-2	74	32	42	99	A-7-5	CH
B-38	1	0.5-2	36	20	16	92	A-6	CL
B-39	1	0.5-2	72	22	50	90	A-7-6	CH
B-41	1	0.5-2	53	20	33	91	A-7-6	CH
B-42	1	0.5-2	85	31	54	98	A-7-5	CH
B-43	1	0.5-2	42	19	23	93	A-7-6	CL
B-44	1	0.5-2	30	18	12	76	A-6	CL
B-45	1	0.5-2	41	19	22	95	A-7-6	CL
B-46	1	0.5-2	25	19	6	--	A-4	CL-ML
B-47	1	0.5-2	33	18	15	85	A-6	CL
B-54	1	0.5-2	32	21	11	--	A-6	CL
B-54	3	3.5-5	30	22	8	--	A-4	CL
B-56	1	0.5-2	45	21	24	--	A-7-6	CL
B-57	1	0.5-2	36	18	18	77	A-6	CL
B-58	1	0.5-2	50	22	28	87	A-7-6	CH
B-59	1	0.5-2	73	36	37	83	A-7-5	CH
B-60	1	0.5-2	82	25	57	--	A-7-6	CH
B-61	1	0.5-2	49	21	28	71	A-7-6	CL
B-62	1	0.5-2	96	26	70	91	A-7-6	CH
B-63	1	0.5-2	92	27	65	94	A-7-6	CH
B-64	1	0.5-2	83	25	58	89	A-7-6	CH
B-65	1	0.5-2	61	22	39	96	A-7-6	CH
B-66	1	0.5-2	62	21	41	96	A-7-6	CH
B-67	1	0.5-2	52	24	28	94	A-7-6	CH
B-68	1	0.5-2	87	22	65	78	A-7-6	CH
B-69	1	0.5-2	82	24	58	98	A-7-6	CH
B-70	1	0.5-2	31	14	17	89	A-6	CL
B-71	1	0.5-2	51	24	27	95	A-7-6	CH
B-72	1	0.5-2	35	21	14	73	A-6	CL
B-74	1	0.5-2	39	17	22	99	A-6	CL
B-75	1	0.5-2	30	16	14	60	A-6	CL

Boring No.	Sample No	Depth	LL	PL	PI	Percent Fines	AASHTO Classification	USCS Classification
B-76	1	0.5-2	28	16	12	--	A-6	CL
B-77	1	0.5-2	32	20	12	93	A-6	CL
B-80	1	0.5-2	31	17	14	90	A-6	CL
B-81	1	0.5-2	32	18	14	96	A-6	CL
B-82	1	0.5-2	33	16	17	94	A-6	CL
B-83	1	0.5-2	29	15	14	88	A-6	CL
B-84	1	0.5-2	27	13	14	84	A-6	CL
B-85	1	0.5-2	37	20	17	87	A-6	CL
B-86	1	0.5-2	25	14	11	86	A-6	CL
B-87	1	0.5-2	27	16	11	89	A-6	CL
B-91	1	0.5-2	39	18	21	94	A-6	CL
B-92	1	0.5-2	30	18	12	63	A-6	CL
B-93	1	0.5-2	35	15	20	87	A-6	CL
B-94	1	0.5-2	26	15	11	72	A-6	CL
B-95	1	0.5-2	33	21	12	92	A-6	CL
B-96	1	0.5-2	35	15	20	88	A-6	CL
B-97	1	0.5-2	33	21	12	93	A-6	CL

ASTM D422



	Boring ID	Depth	USCS Classification	AASHTO Classification	LL	PL	PI	Cc	Cu
●	B-1	0.5	FAT CLAY with SAND(CH)	23(A-7-6)	50	23	27		
⊠	B-3	0.5	FAT CLAY with SAND(CH)	29(A-7-6)	56	22	34		
▲	B-4	0.5	LEAN CLAY with SAND(CL)	23(A-7-6)	49	22	27		
★	B-6	0.5	SILTY CLAY with SAND(CL-ML)	3(A-4)	27	21	6		

	Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	B-1	0.5	2				0.0	19.0	81.0	
⊠	B-3	0.5	2				0.0	17.7	82.2	
▲	B-4	0.5	2				0.0	17.8	82.0	
★	B-6	0.5	2				0.0	22.5	77.5	

PROJECT: CA0101 Highway 147 Widening

SITE: Cross Co. Line Highway 147
, Arkansas

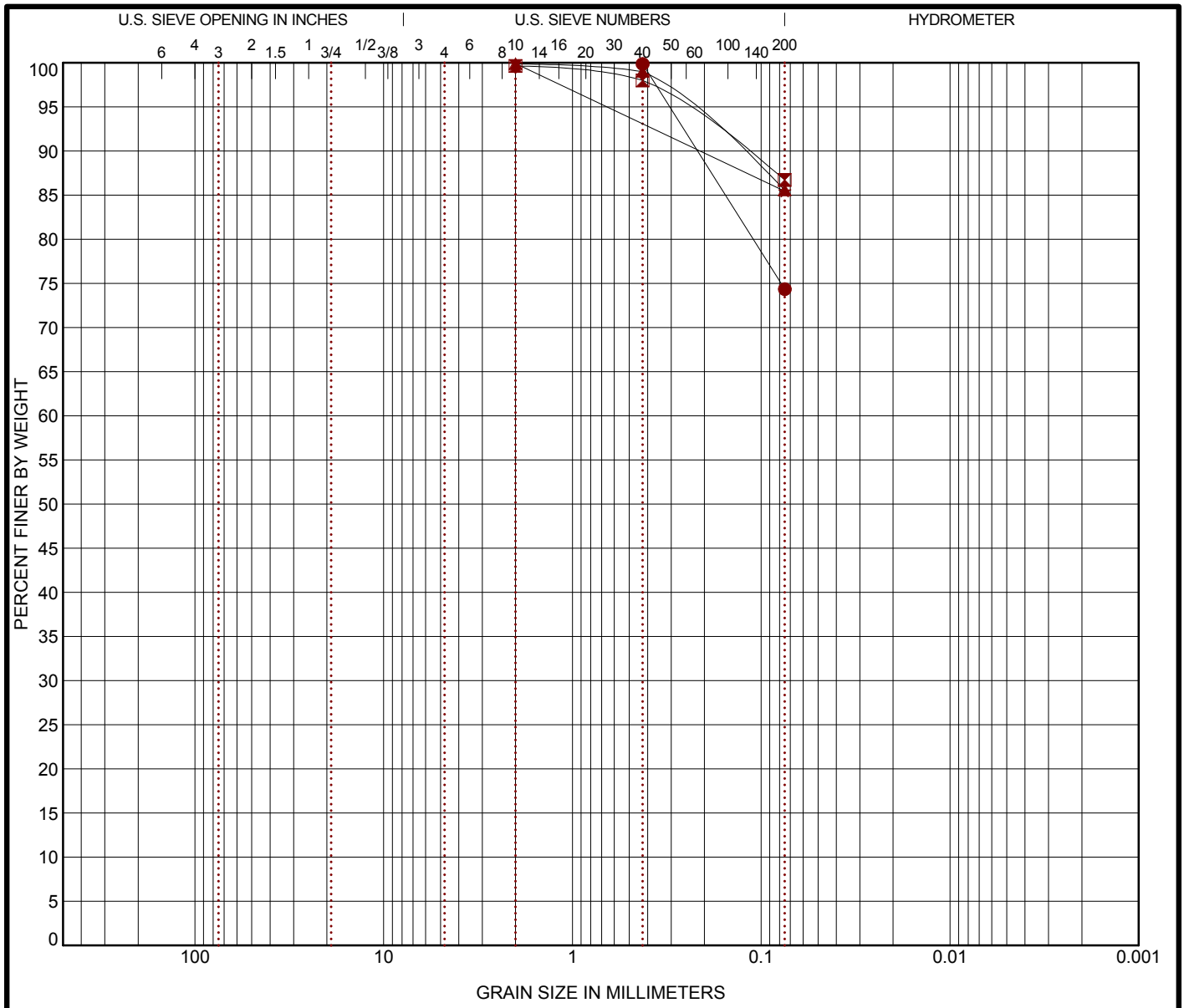
Terracon
25809 I-30 South
Bryant, Arkansas

PROJECT NUMBER: 35135123

CLIENT: Buchart Horn,Inc.
Memphis Tenneessee

EXHIBIT: B-1

ASTM D422



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth	USCS Classification	AASHTO Classification	LL	PL	PI	Cc	Cu
●	B-7	0.5	SILTY CLAY with SAND(CL-ML)	3(A-4)	27	20	7		
⊠	B-8	0.5	LEAN CLAY(CL)	6(A-4)	25	16	9		
▲	B-10	0.5	LEAN CLAY(CL)	7(A-4)	30	21	9		
★	B-11	0.5	LEAN CLAY(CL)	19(A-7-6)	42	20	22		

	Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	B-7	0.5	0.425				0.0	25.5	74.3	
⊠	B-8	0.5	2				0.0	12.9	86.7	
▲	B-10	0.5	2				0.0	14.3	85.6	
★	B-11	0.5	2				0.0	14.5	85.5	

PROJECT: CA0101 Highway 147 Widening

SITE: Cross Co. Line Highway 147
, Arkansas

Terracon
25809 I-30 South
Bryant, Arkansas

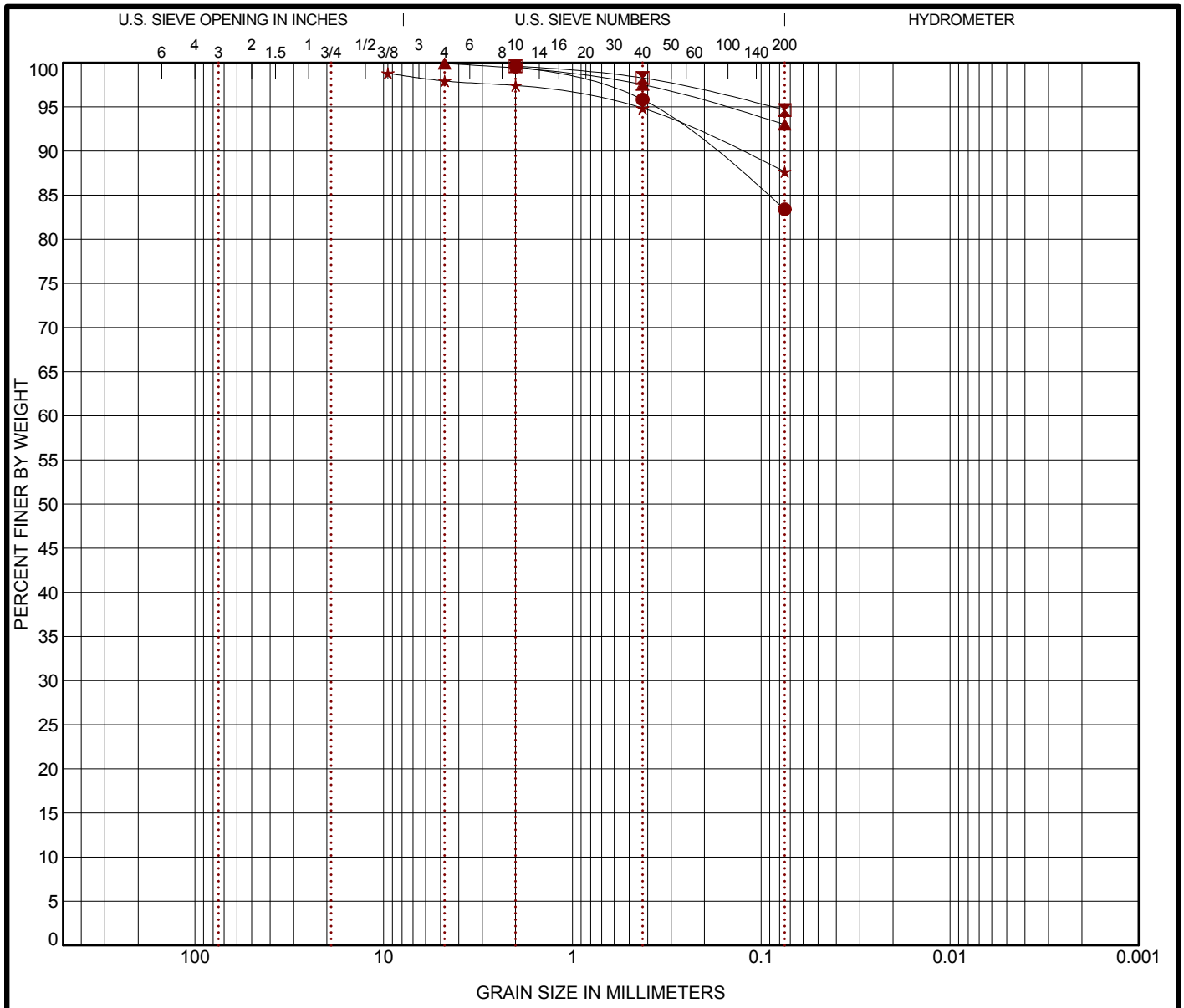
PROJECT NUMBER: 35135123

CLIENT: Buchart Horn,Inc.
Memphis Tenneessee

EXHIBIT: B-2

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO COMBINED 35135123.GPJ TERRACON2012.GDT 3/17/14

ASTM D422



	Boring ID	Depth	USCS Classification	AASHTO Classification	LL	PL	PI	Cc	Cu
●	B-12	0.5	LEAN CLAY with SAND(CL)	5(A-4)	27	19	8		
⊠	B-13	0.5	LEAN CLAY(CL)	30(A-7-6)	48	18	30		
▲	B-14	0.5	LEAN CLAY(CL)	6(A-4)	27	19	8		
★	B-16	0.5	LEAN CLAY(CL)	19(A-6)	40	18	22		

	Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	B-12	0.5	2				0.0	16.2	83.4	
⊠	B-13	0.5	2				0.0	5.0	94.7	
▲	B-14	0.5	4.75				0.0	6.9	93.0	
★	B-16	0.5	9.5				0.9	10.3	87.7	

PROJECT: CA0101 Highway 147 Widening

SITE: Cross Co. Line Highway 147
, Arkansas

Terracon
25809 I-30 South
Bryant, Arkansas

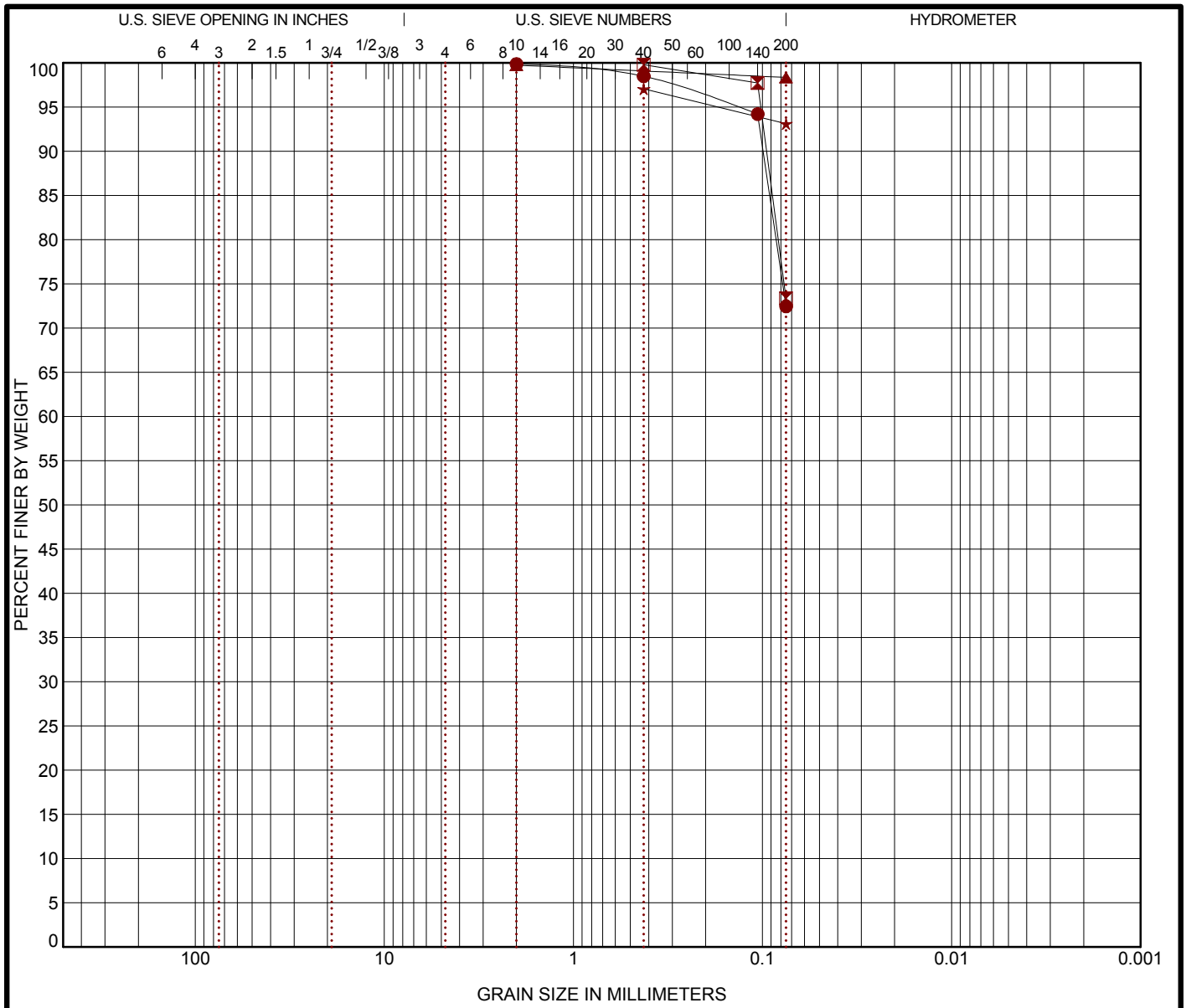
PROJECT NUMBER: 35135123

CLIENT: Buchart Horn,Inc.
Memphis Tenneessee

EXHIBIT: B-3

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO COMBINED 35135123.GPJ TERRACON2012.GDT 3/17/14

ASTM D422



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth	USCS Classification	AASHTO Classification	LL	PL	PI	Cc	Cu
●	B-17	0.5	LEAN CLAY with SAND(CL)	10(A-6)	37	22	15		
⊠	B-18	0.5	LEAN CLAY with SAND(CL)	5(A-4)	31	22	9		
▲	B-19	0.5	FAT CLAY(CH)	61(A-7-6)	78	24	54		
★	B-23	0.5	FAT CLAY(CH)	55(A-7-5)	82	32	50		

	Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	B-17	0.5	2				0.0	27.4	72.5	
⊠	B-18	0.5	0.425				0.0	26.4	73.4	
▲	B-19	0.5	2				0.0	1.4	98.4	
★	B-23	0.5	0.425				0.0	3.9	93.1	

PROJECT: CA0101 Highway 147 Widening

SITE: Cross Co. Line Highway 147
, Arkansas

Terracon
25809 I-30 South
Bryant, Arkansas

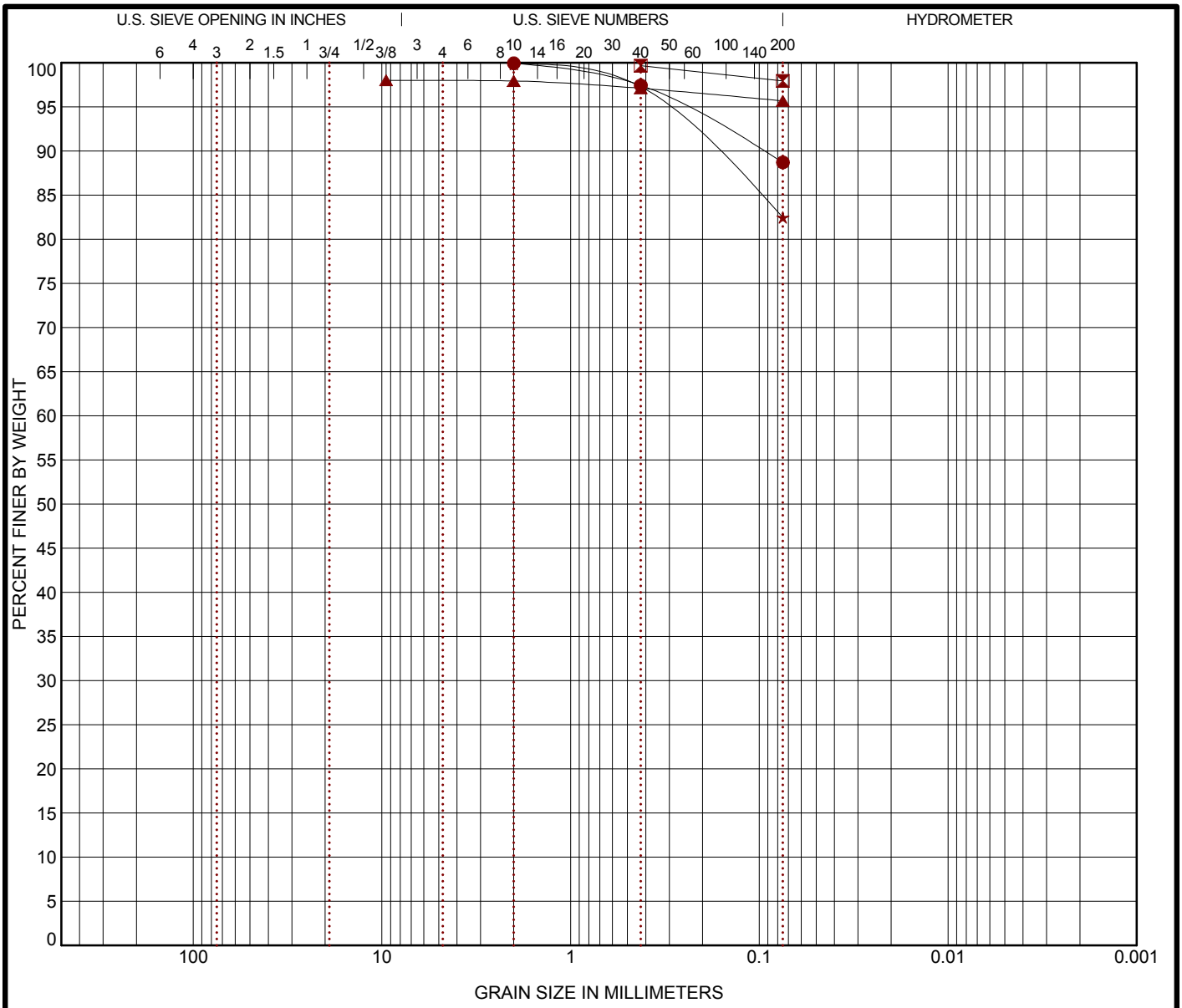
PROJECT NUMBER: 35135123

CLIENT: Buchart Horn,Inc.
Memphis Tenneessee

EXHIBIT: B-4

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO COMBINED 35135123.GPJ TERRACON2012.GDT 3/17/14

ASTM D422



	Boring ID	Depth	USCS Classification	AASHTO Classification	LL	PL	PI	Cc	Cu
●	B-24	0.5	FAT CLAY(CH)	55(A-7-5)	84	31	53		
⊠	B-25	0.5	FAT CLAY(CH)	73(A-7-5)	93	30	63		
▲	B-26	0.5	FAT CLAY(CH)	34(A-7-6)	54	22	32		
★	B-27	0.5	LEAN CLAY with SAND(CL)	9(A-6)	28	14	14		

	Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	B-24	0.5	2				0.0	11.2	88.7	
⊠	B-25	0.5	0.425				0.0	1.7	97.9	
▲	B-26	0.5	9.5				0.0	2.3	95.7	
★	B-27	0.5	2				0.0	17.4	82.5	

PROJECT: CA0101 Highway 147 Widening

SITE: Cross Co. Line Highway 147
, Arkansas

Terracon
25809 I-30 South
Bryant, Arkansas

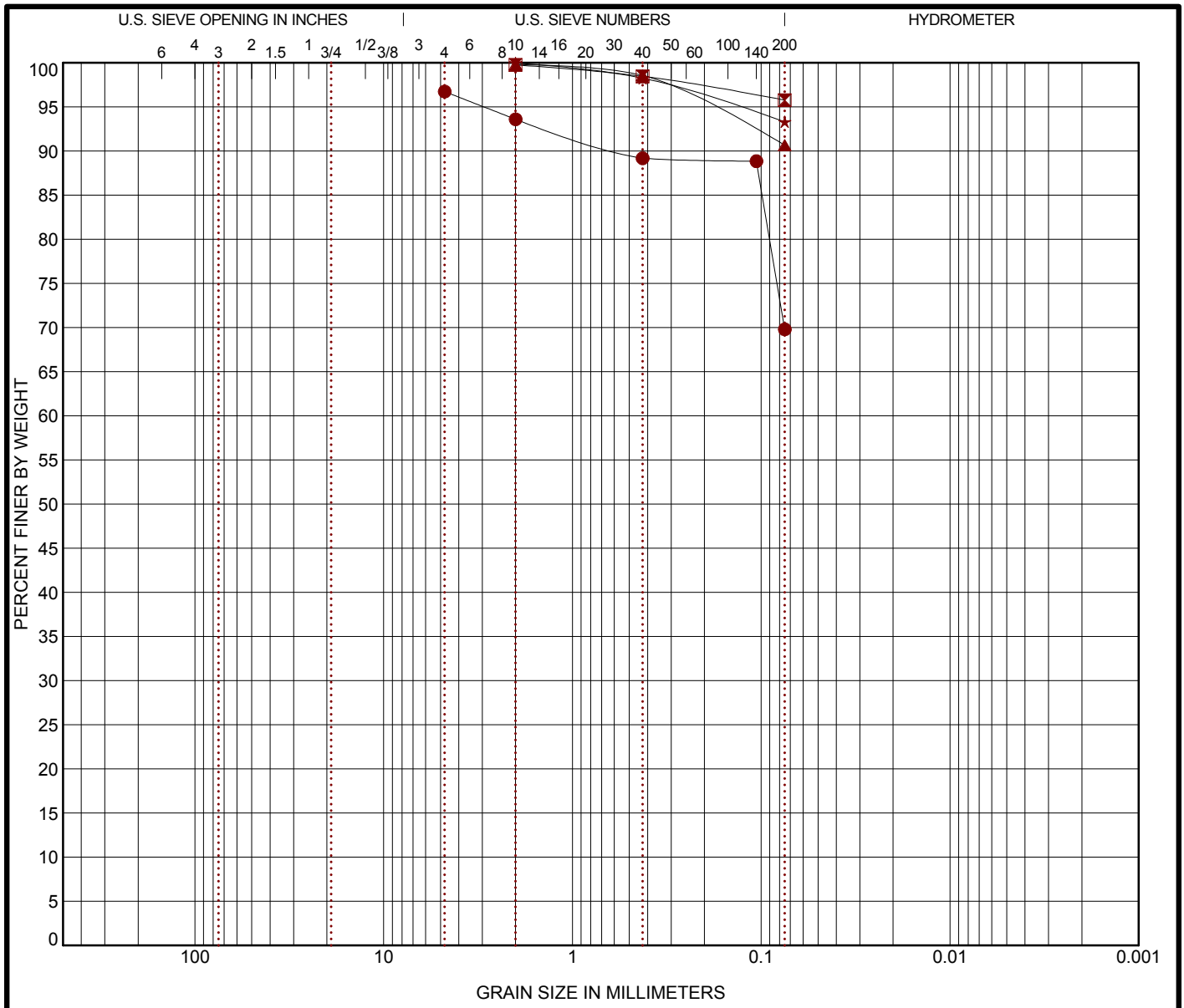
PROJECT NUMBER: 35135123

CLIENT: Buchart Horn,Inc.
Memphis Tenneessee

EXHIBIT: B-5

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO COMBINED 35135123.GPJ TERRACON2012.GDT 3/17/14

ASTM D422



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth	USCS Classification	AASHTO Classification	LL	PL	PI	Cc	Cu
●	B-28	0.5	SANDY SILTY CLAY(CL-ML)	2(A-4)	22	15	7		
⊠	B-29	0.5	FAT CLAY(CH)	34(A-7-6)	52	19	33		
▲	B-30	0.5	LEAN CLAY(CL)	24(A-7-6)	44	19	25		
★	B-31	0.5	LEAN CLAY(CL)	23(A-7-6)	41	17	24		

	Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	B-28	0.5	4.75				0.0	26.9	69.8	
⊠	B-29	0.5	2				0.0	4.0	95.8	
▲	B-30	0.5	2				0.0	9.1	90.7	
★	B-31	0.5	2				0.0	6.7	93.3	

PROJECT: CA0101 Highway 147 Widening

SITE: Cross Co. Line Highway 147
, Arkansas

Terracon
25809 I-30 South
Bryant, Arkansas

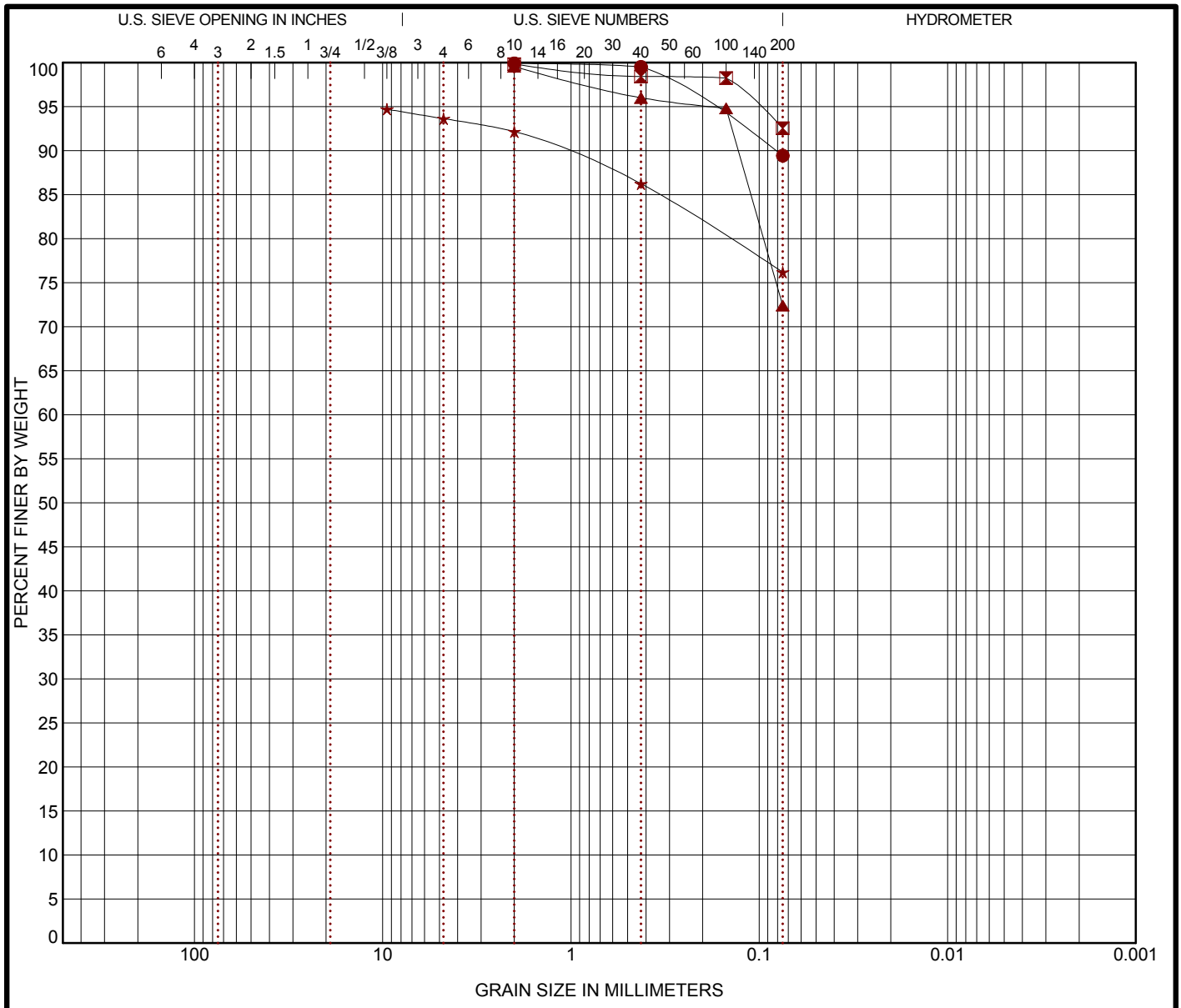
PROJECT NUMBER: 35135123

CLIENT: Buchart Horn,Inc.
Memphis Tenneessee

EXHIBIT: B-6

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO COMBINED 35135123.GPJ TERRACON2012.GDT 3/17/14

ASTM D422



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth	USCS Classification	AASHTO Classification	LL	PL	PI	Cc	Cu
●	B-32	0.5	LEAN CLAY(CL)	18(A-6)	40	20	20		
⊠	B-34	0.5	LEAN CLAY(CL)	18(A-6)	40	22	18		
▲	B-35	0.5	SILTY CLAY with SAND(CL-ML)	3(A-4)	28	21	7		
★	B-36	0.5	SILTY CLAY with SAND(CL-ML)	4(A-4)	28	21	7		

	Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	B-32	0.5	2				0.0	10.5	89.4	
⊠	B-34	0.5	2				0.0	7.3	92.6	
▲	B-35	0.5	2				0.0	27.1	72.4	
★	B-36	0.5	9.5				1.1	17.4	76.2	

PROJECT: CA0101 Highway 147 Widening

SITE: Cross Co. Line Highway 147
, Arkansas

Terracon
25809 I-30 South
Bryant, Arkansas

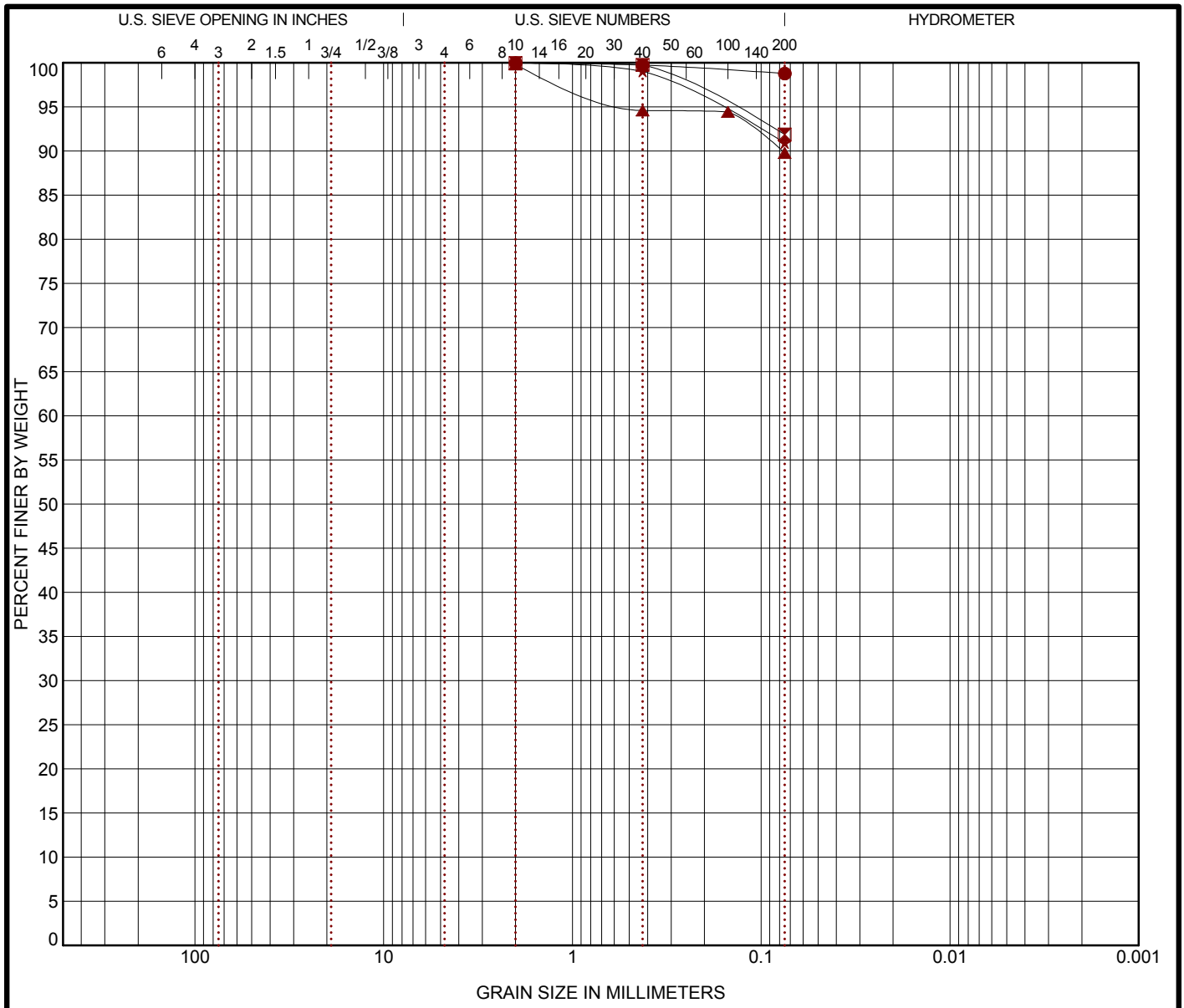
PROJECT NUMBER: 35135123

CLIENT: Buchart Horn,Inc.
Memphis Tenneessee

EXHIBIT: B-7

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO COMBINED 35135123.GPJ TERRACON2012.GDT 3/17/14

ASTM D422



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth	USCS Classification	AASHTO Classification	LL	PL	PI	Cc	Cu
●	B-37	0.5	FAT CLAY(CH)	51(A-7-5)	74	32	42		
⊠	B-38	0.5	LEAN CLAY(CL)	15(A-6)	36	20	16		
▲	B-39	0.5	FAT CLAY(CH)	50(A-7-6)	72	22	50		
★	B-41	0.5	FAT CLAY(CH)	32(A-7-6)	53	20	33		

	Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	B-37	0.5	2				0.0	1.2	98.8	
⊠	B-38	0.5	2				0.0	8.1	91.9	
▲	B-39	0.5	2				0.0	10.0	89.8	
★	B-41	0.5	2				0.0	9.1	90.9	

PROJECT: CA0101 Highway 147 Widening

SITE: Cross Co. Line Highway 147
, Arkansas

Terracon
25809 I-30 South
Bryant, Arkansas

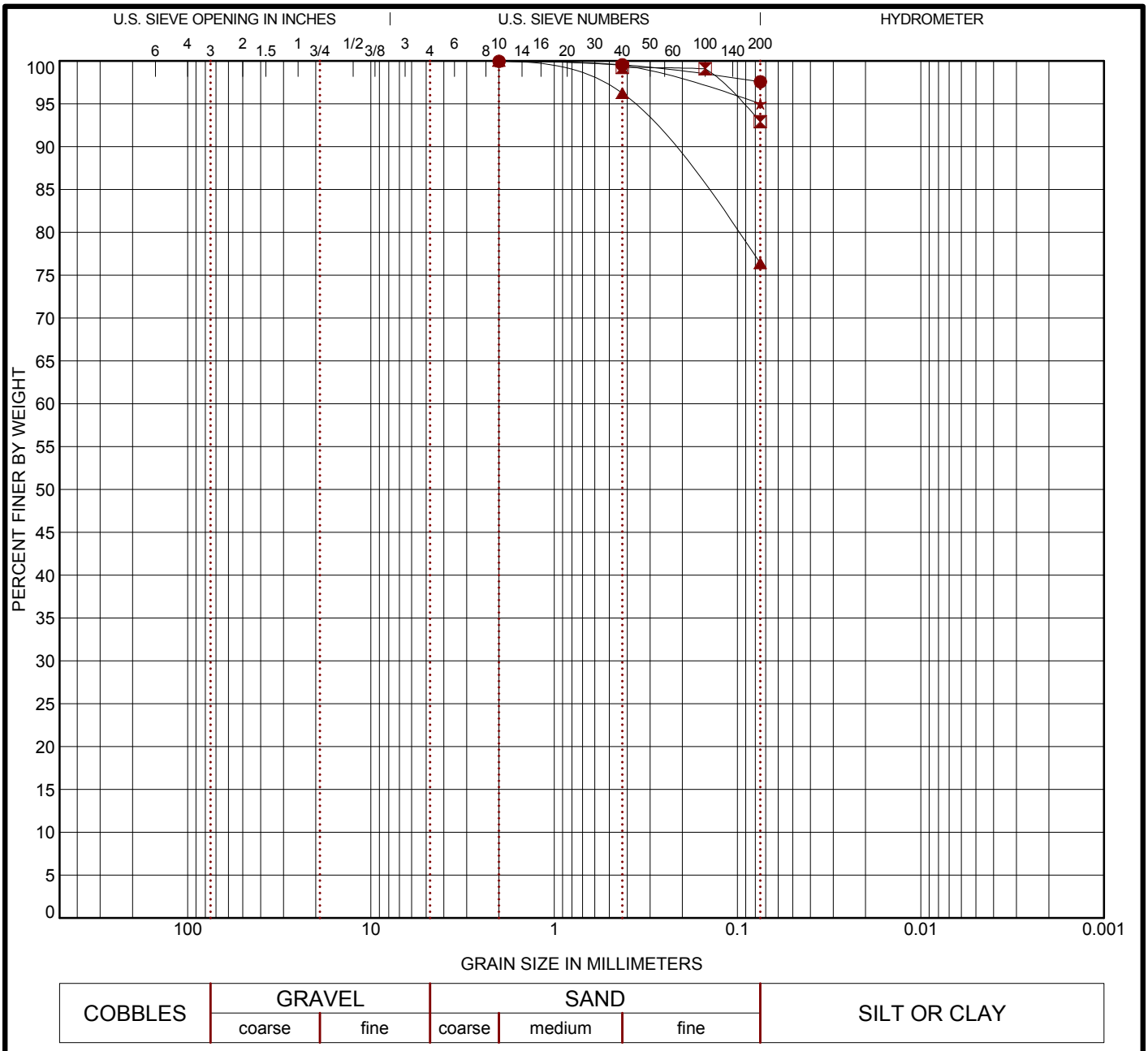
PROJECT NUMBER: 35135123

CLIENT: Buchart Horn,Inc.
Memphis Tenneessee

EXHIBIT: B-8

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO COMBINED 35135123.GPJ TERRACON2012.GDT 3/17/14

ASTM D422



	Boring ID	Depth	USCS Classification	AASHTO Classification	LL	PL	PI	Cc	Cu
●	B-42	0.5	FAT CLAY(CH)	63(A-7-5)	85	31	54		
⊠	B-43	0.5	LEAN CLAY(CL)	22(A-7-6)	42	19	23		
▲	B-44	0.5	LEAN CLAY with SAND(CL)	7(A-6)	30	18	12		
★	B-45	0.5	LEAN CLAY(CL)	22(A-7-6)	41	19	22		

	Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	B-42	0.5	2				0.0	2.4	97.6	
⊠	B-43	0.5	0.425				0.0	6.3	92.9	
▲	B-44	0.5	2				0.0	23.6	76.4	
★	B-45	0.5	2				0.0	4.9	95.0	

PROJECT: CA0101 Highway 147 Widening

SITE: Cross Co. Line Highway 147
, Arkansas

Terracon
25809 I-30 South
Bryant, Arkansas

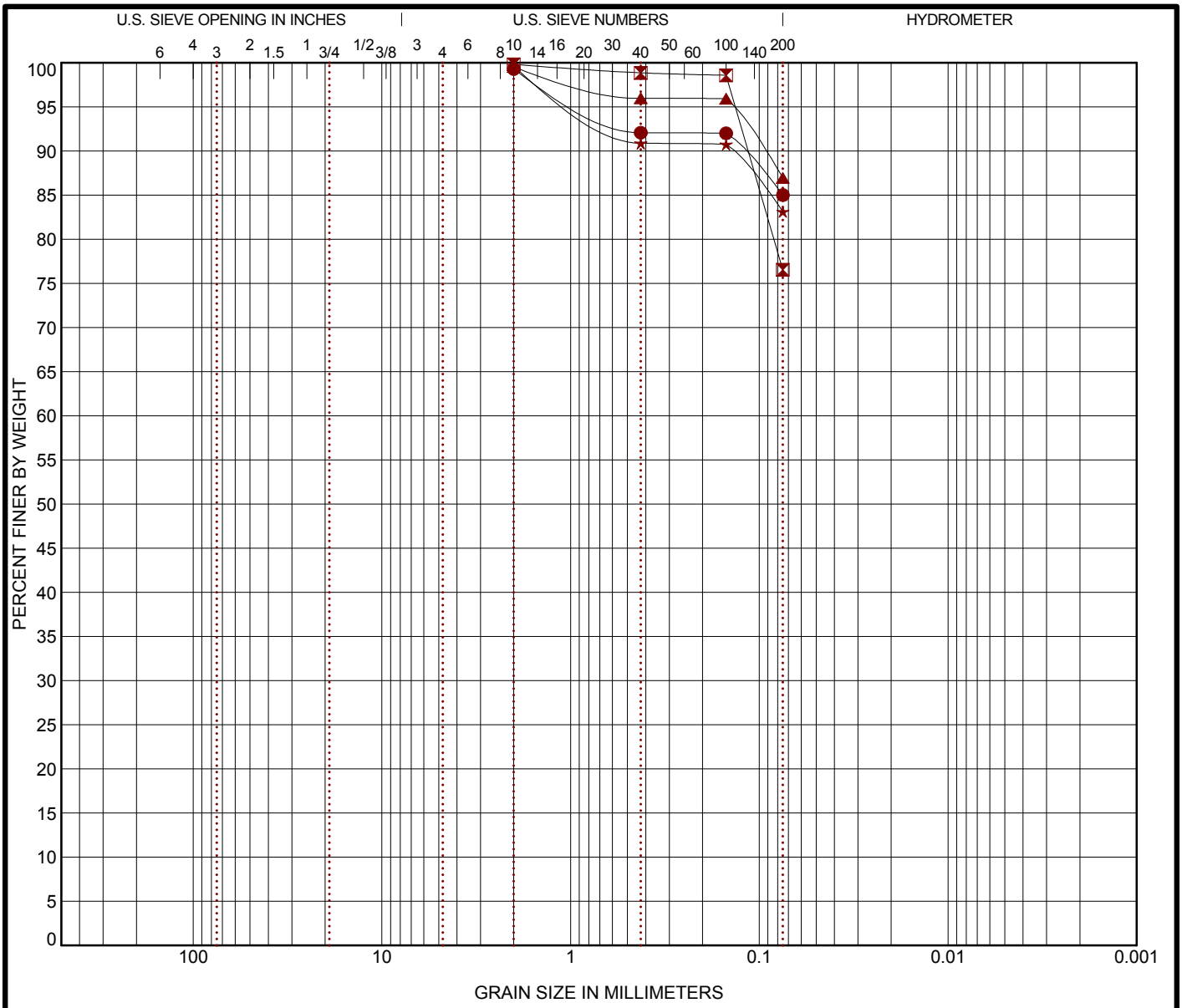
PROJECT NUMBER: 35135123

CLIENT: Buchart Horn,Inc.
Memphis Tenneessee

EXHIBIT: B-9

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO COMBINED 35135123.GPJ TERRACON2012.GDT 3/17/14

ASTM D422



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth	USCS Classification	AASHTO Classification	LL	PL	PI	Cc	Cu
●	B-47	0.5	LEAN CLAY(CL)	12(A-6)	33	18	15		
⊠	B-57	0.5	LEAN CLAY with SAND(CL)	13(A-6)	36	18	18		
▲	B-58	0.5	FAT CLAY(CH)	26(A-7-6)	50	22	28		
★	B-59	0.5	ELASTIC SILT with SAND(MH)	36(A-7-5)	73	36	37		

	Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	B-47	0.5	2				0.0	14.3	85.0	
⊠	B-57	0.5	2				0.0	23.3	76.6	
▲	B-58	0.5	2				0.0	12.6	87.0	
★	B-59	0.5	2				0.0	16.5	83.1	

PROJECT: CA0101 Highway 147 Widening

SITE: Cross Co. Line Highway 147
, Arkansas

Terracon
25809 I-30 South
Bryant, Arkansas

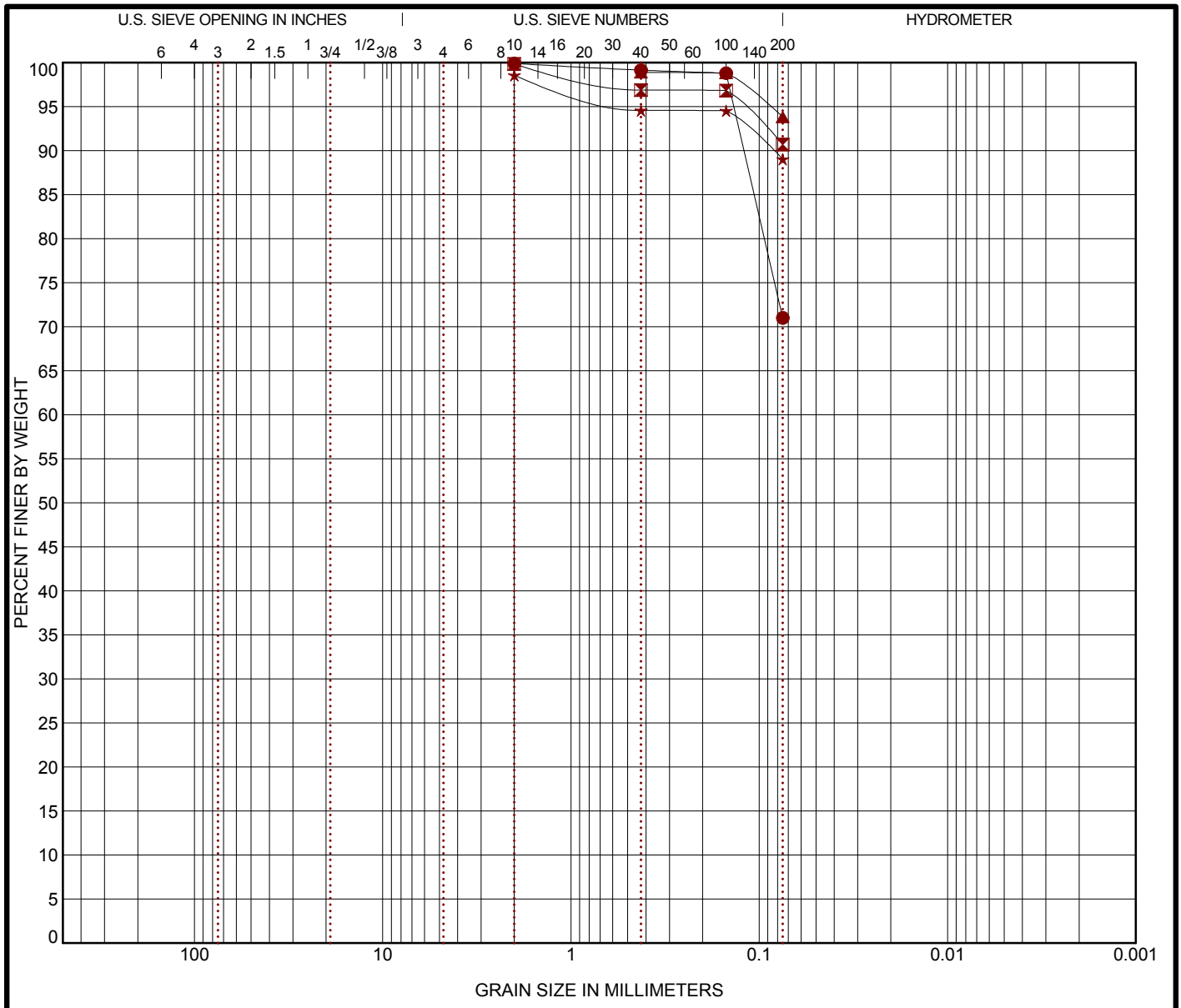
PROJECT NUMBER: 35135123

CLIENT: Buchart Horn,Inc.
Memphis Tenneessee

EXHIBIT: B-10

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO COMBINED 35135123.GPJ TERRACON2012.GDT 3/17/14

ASTM D422



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth	USCS Classification	AASHTO Classification	LL	PL	PI	Cc	Cu
●	B-61	0.5	LEAN CLAY with SAND(CL)	19(A-7-6)	49	21	28		
⊠	B-62	0.5	FAT CLAY(CH)	72(A-7-6)	96	26	70		
▲	B-63	0.5	FAT CLAY(CH)	71(A-7-6)	92	27	65		
★	B-64	0.5	FAT CLAY(CH)	58(A-7-6)	83	25	58		

	Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	B-61	0.5	2				0.0	28.9	71.0	
⊠	B-62	0.5	2				0.0	9.1	90.7	
▲	B-63	0.5	0.425				0.0	5.1	93.8	
★	B-64	0.5	2				0.0	9.5	89.0	

PROJECT: CA0101 Highway 147 Widening

SITE: Cross Co. Line Highway 147
, Arkansas

Terracon
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Bryant, Arkansas

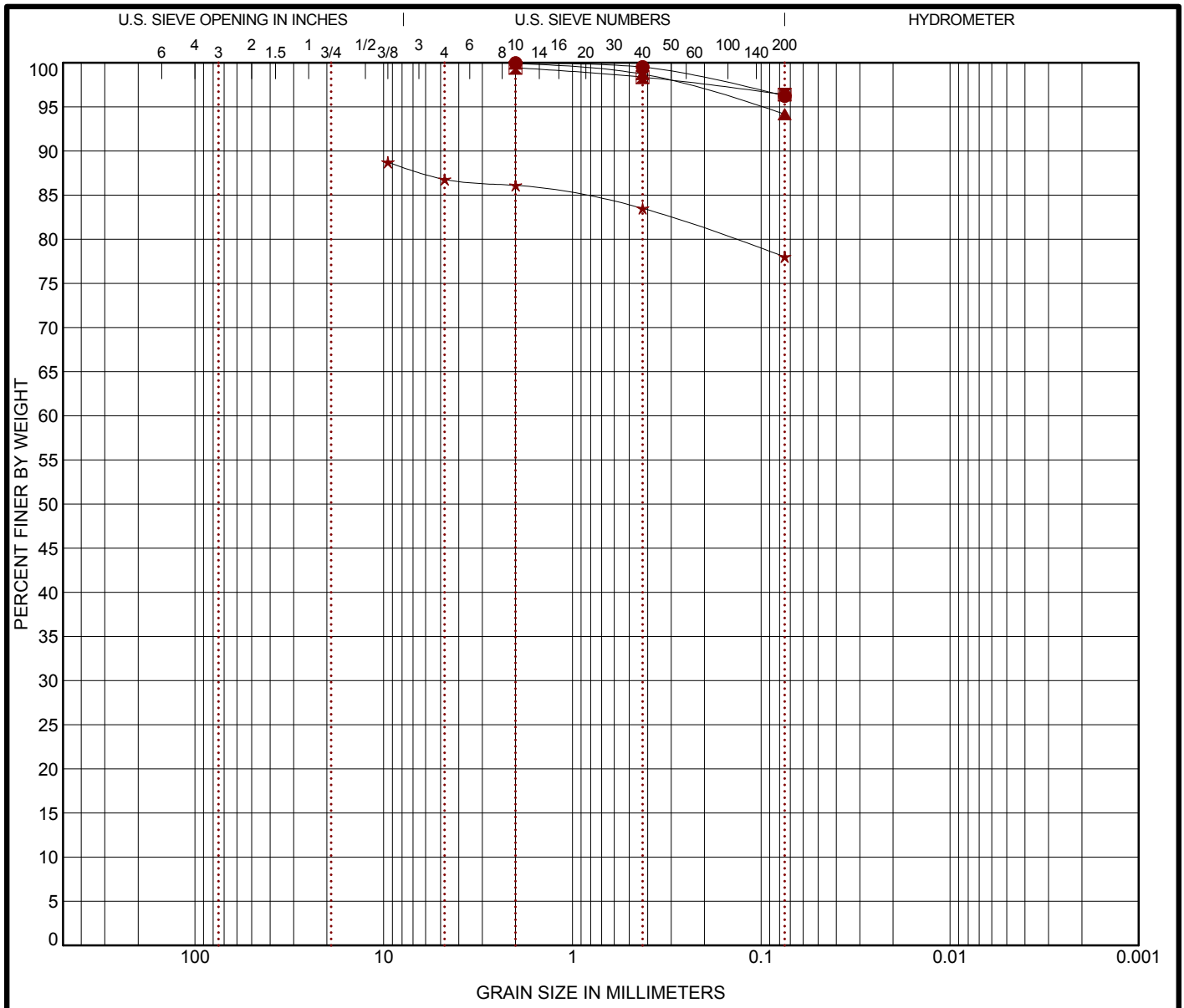
PROJECT NUMBER: 35135123

CLIENT: Buchart Horn,Inc.
Memphis Tenneessee

EXHIBIT: B-11

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO COMBINED 35135123.GPJ TERRACON2012.GDT 3/17/14

ASTM D422



	Boring ID	Depth	USCS Classification	AASHTO Classification	LL	PL	PI	Cc	Cu
●	B-65	0.5	FAT CLAY(CH)	42(A-7-6)	61	22	39		
⊠	B-66	0.5	FAT CLAY(CH)	44(A-7-6)	62	21	41		
▲	B-67	0.5	FAT CLAY(CH)	30(A-7-6)	52	24	28		
★	B-68	0.5	FAT CLAY with GRAVEL(CH)	53(A-7-6)	87	22	65		

	Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	B-65	0.5	2				0.0	3.7	96.2	
⊠	B-66	0.5	2				0.0	3.1	96.4	
▲	B-67	0.5	2				0.0	5.7	94.2	
★	B-68	0.5	9.5				2.0	8.8	78.0	

PROJECT: CA0101 Highway 147 Widening

SITE: Cross Co. Line Highway 147
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Terracon
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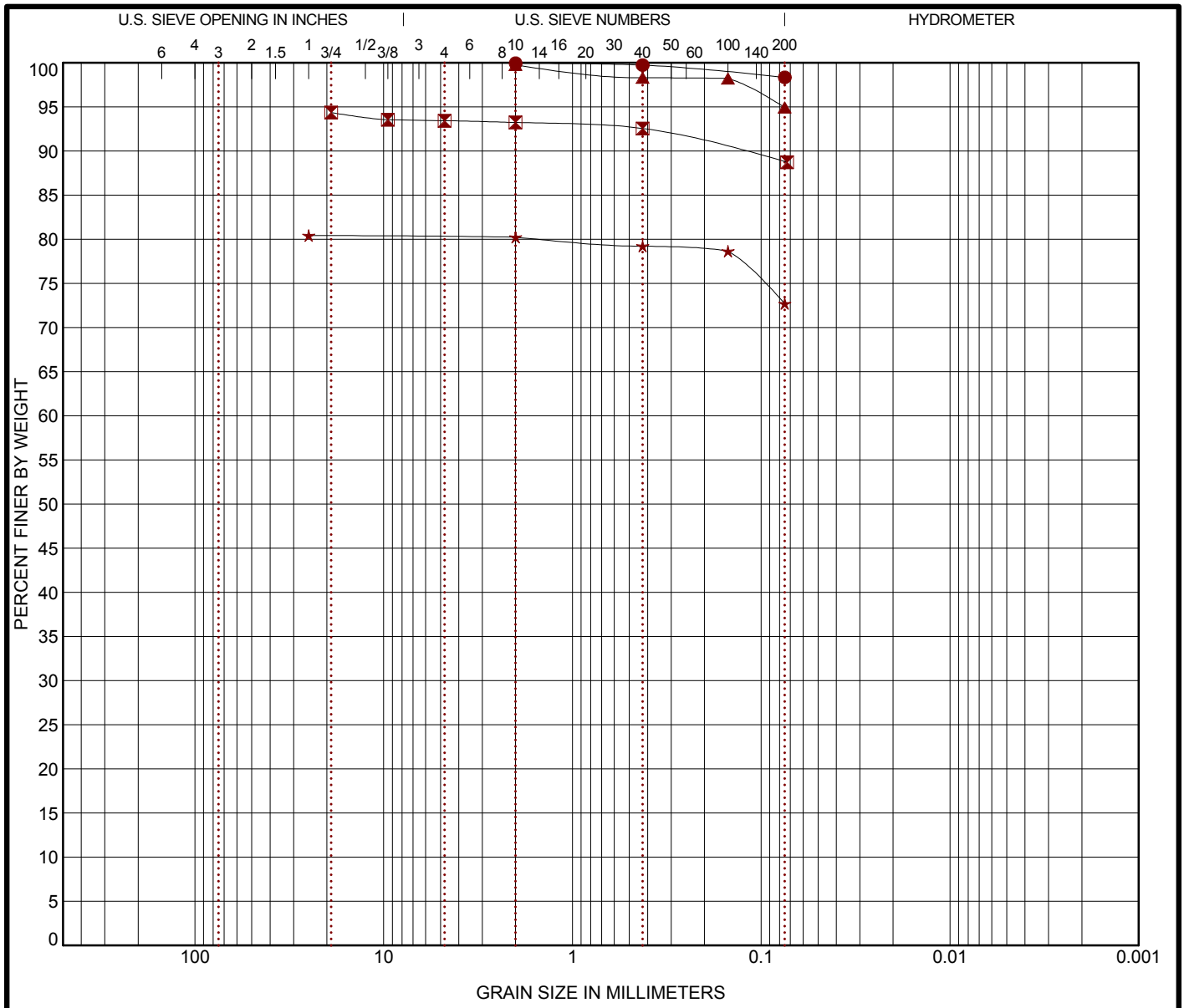
Bryant, Arkansas

PROJECT NUMBER: 35135123

CLIENT: Buchart Horn,Inc.
Memphis Tenneessee

EXHIBIT: B-12

ASTM D422



	Boring ID	Depth	USCS Classification	AASHTO Classification	LL	PL	PI	Cc	Cu
●	B-69	0.5	FAT CLAY(CH)	66(A-7-6)	82	24	58		
⊠	B-70	0.5	LEAN CLAY(CL)	14(A-6)	31	14	17		
▲	B-71	0.5	FAT CLAY(CH)	29(A-7-6)	51	24	27		
★	B-72	0.5	LEAN CLAY with GRAVEL(CL)	9(A-6)	35	21	14		

	Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	B-69	0.5	2				0.0	1.6	98.3	
⊠	B-70	0.5	19				0.9			
▲	B-71	0.5	2				0.0	4.8	94.9	
★	B-72	0.5	25				0.1	7.6	72.7	

PROJECT: CA0101 Highway 147 Widening

SITE: Cross Co. Line Highway 147
, Arkansas

Terracon
25809 I-30 South
Bryant, Arkansas

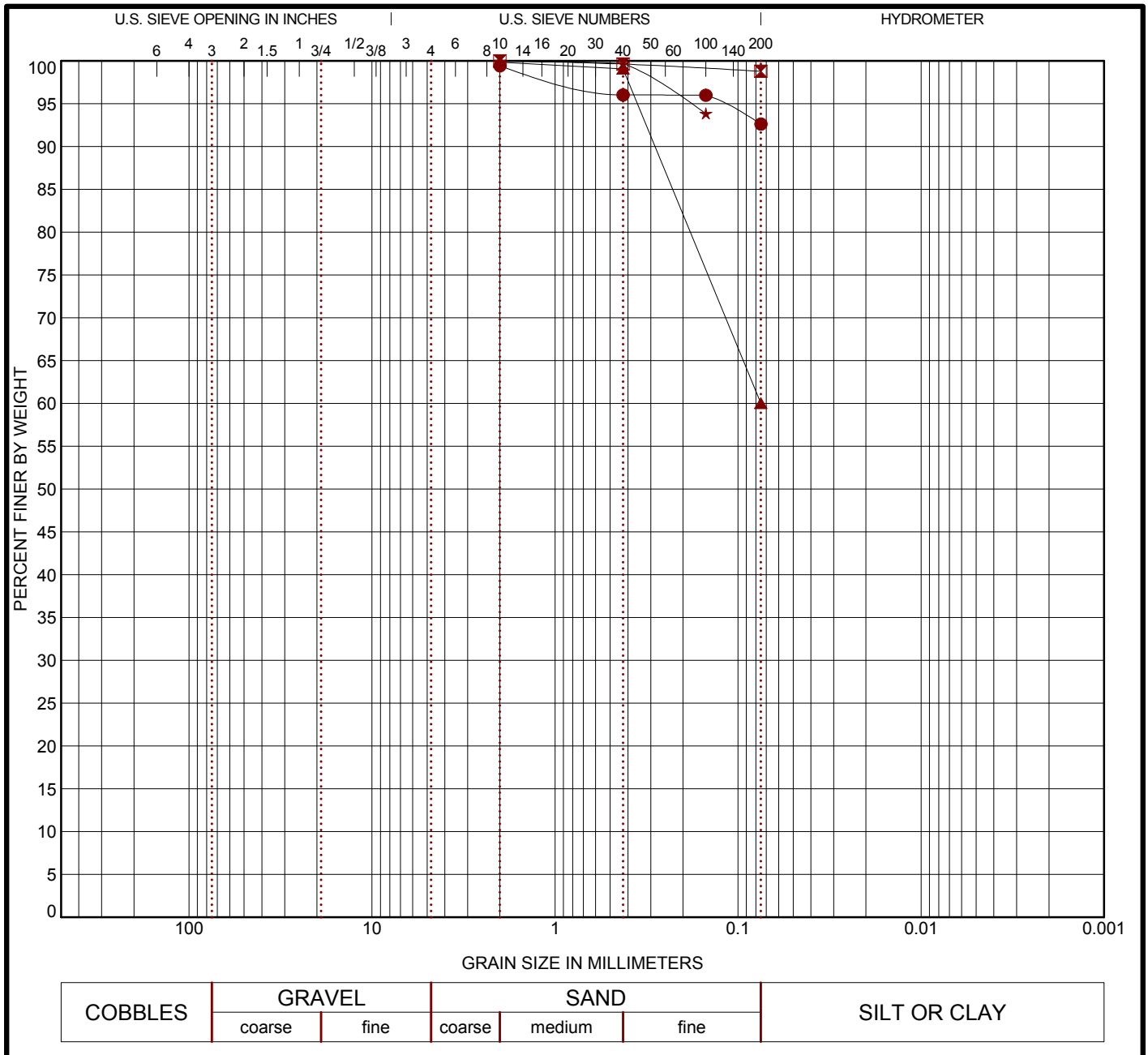
PROJECT NUMBER: 35135123

CLIENT: Buchart Horn,Inc.
Memphis Tenneessee

EXHIBIT: B-13

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO COMBINED 35135123.GPJ TERRACON2012.GDT 3/17/14

ASTM D422



	Boring ID	Depth	USCS Classification	AASHTO Classification	LL	PL	PI	Cc	Cu
●	B-73	0.5							
⊠	B-74	0.5	LEAN CLAY(CL)	23(A-6)	39	17	22		
▲	B-75	0.5	SANDY LEAN CLAY(CL)	6(A-6)	30	16	14		
★	B-76	0.5		11(A-6)	28	16	12		

	Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	B-73	0.5	2				0.0	6.8	92.6	
⊠	B-74	0.5	2				0.0	1.2	98.8	
▲	B-75	0.5	2				0.0	39.8	60.0	
★	B-76	0.5	2				0.0			

PROJECT: CA0101 Highway 147 Widening

SITE: Cross Co. Line Highway 147
, Arkansas

Terracon
25809 I-30 South
Bryant, Arkansas

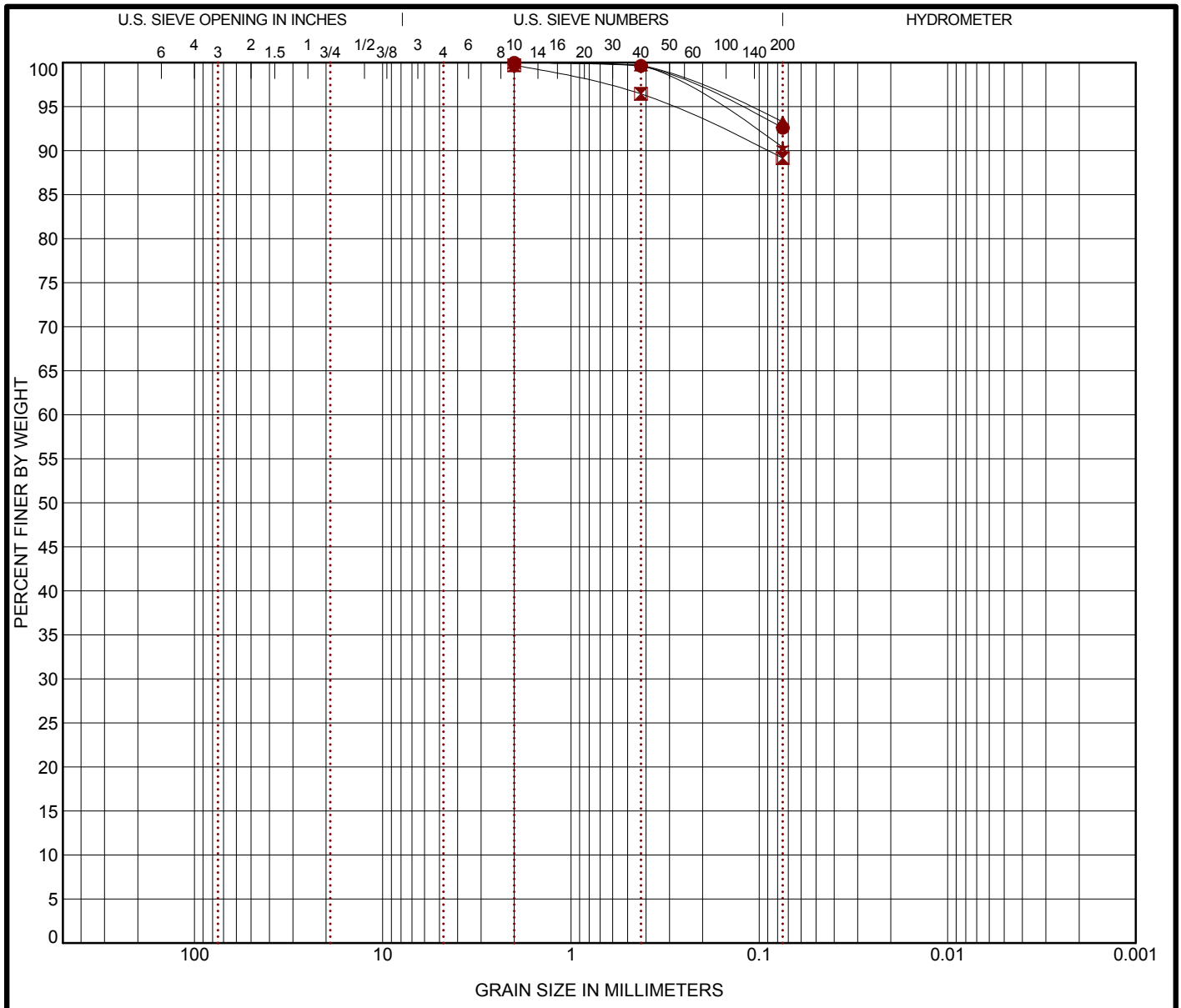
PROJECT NUMBER: 35135123

CLIENT: Buchart Horn,Inc.
Memphis Tenneessee

EXHIBIT: B-14

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO COMBINED 35135123.GPJ TERRACON2012.GDT 3/17/14

ASTM D422



	Boring ID	Depth	USCS Classification	AASHTO Classification	LL	PL	PI	Cc	Cu
●	B-77	0.5	LEAN CLAY(CL)	11(A-6)	32	20	12		
⊠	B-78	0.5							
▲	B-79	0.5							
★	B-80	0.5	LEAN CLAY(CL)	12(A-6)	31	17	14		

	Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	B-77	0.5	2				0.0	7.4	92.6	
⊠	B-78	0.5	2				0.0	10.5	89.2	
▲	B-79	0.5	2				0.0	6.7	93.3	
★	B-80	0.5	2				0.0	9.6	90.4	

PROJECT: CA0101 Highway 147 Widening

SITE: Cross Co. Line Highway 147
, Arkansas

Terracon
25809 I-30 South
Bryant, Arkansas

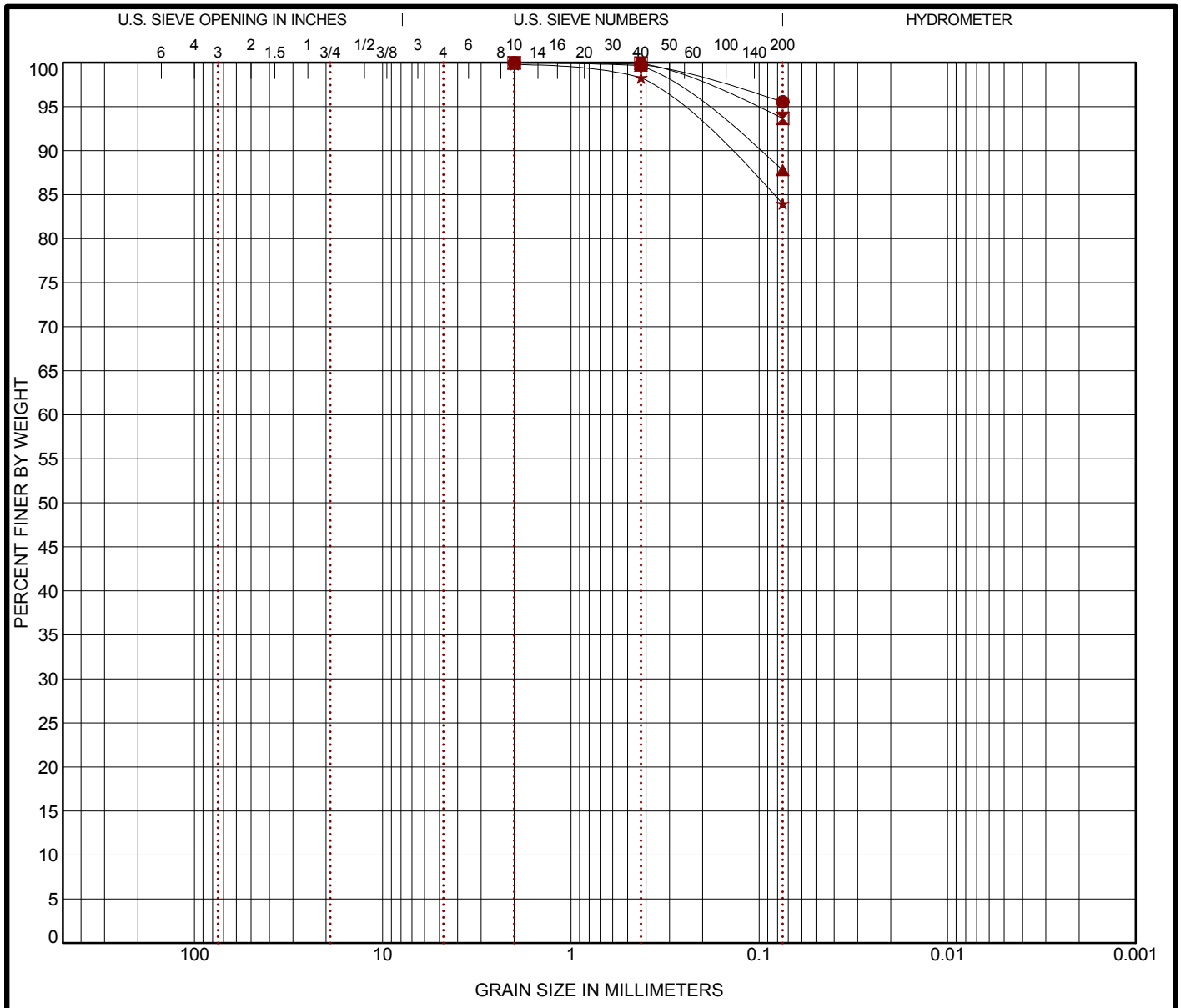
PROJECT NUMBER: 35135123

CLIENT: Buchart Horn,Inc.
Memphis Tenneessee

EXHIBIT: B-15

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO COMBINED 35135123.GPJ TERRACON2012.GDT 3/17/14

ASTM D422



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth	USCS Classification	AASHTO Classification	LL	PL	PI	Cc	Cu
●	B-81	0.5	LEAN CLAY(CL)	13(A-6)	32	18	14		
⊠	B-82	0.5	LEAN CLAY(CL)	15(A-6)	33	16	17		
▲	B-83	0.5	LEAN CLAY(CL)	11(A-6)	29	15	14		
★	B-84	0.5	LEAN CLAY with SAND(CL)	9(A-6)	27	13	14		

	Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	B-81	0.5	2				0.0	4.4	95.5	
⊠	B-82	0.5	2				0.0	6.3	93.7	
▲	B-83	0.5	2				0.0	12.2	87.8	
★	B-84	0.5	2				0.0	15.8	84.0	

PROJECT: CA0101 Highway 147 Widening

SITE: Cross Co. Line Highway 147
, Arkansas

Terracon
25809 I-30 South
Bryant, Arkansas

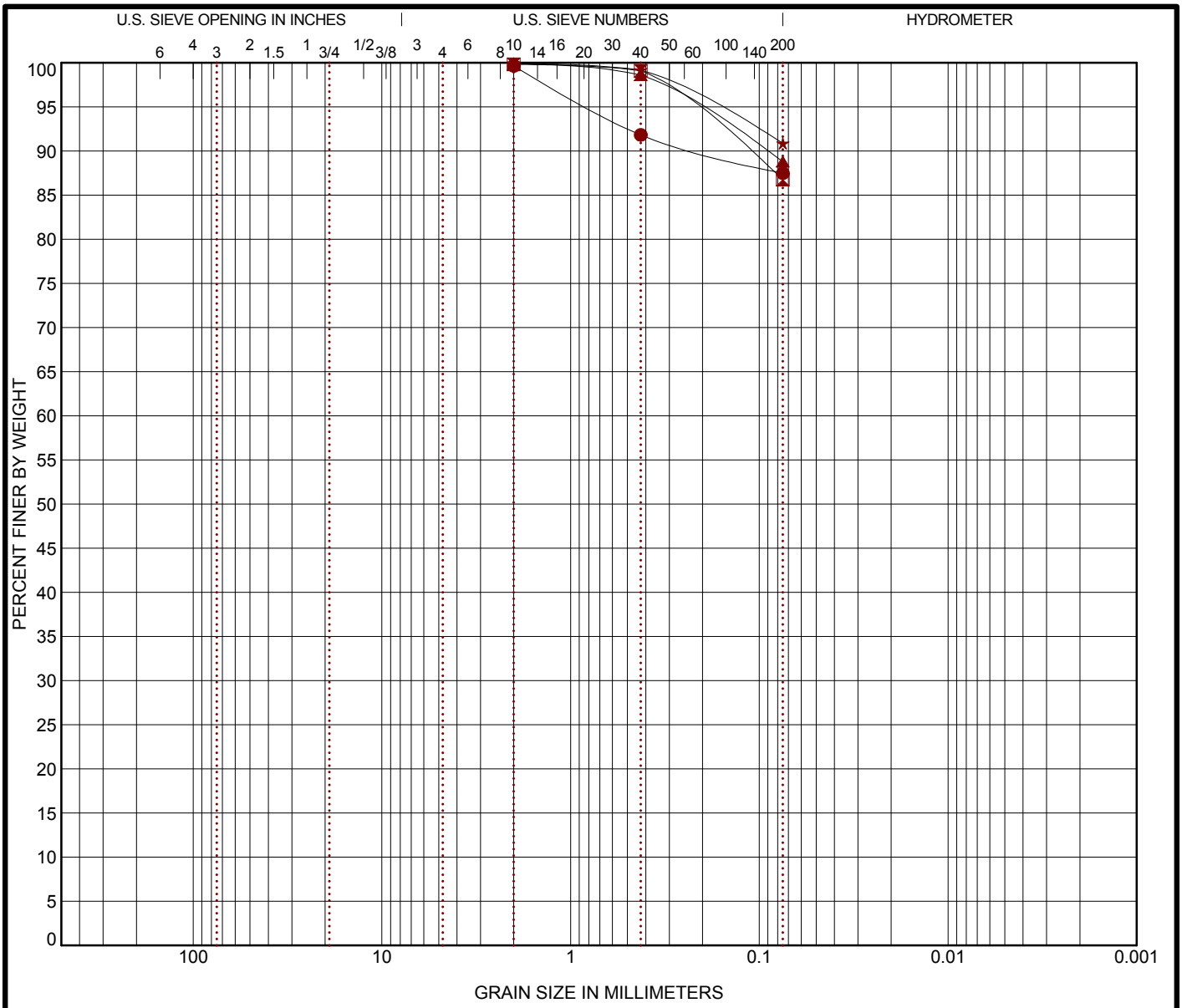
PROJECT NUMBER: 35135123

CLIENT: Buchart Horn,Inc.
Memphis Tenneessee

EXHIBIT: B-16

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO COMBINED 35135123.GPJ TERRACON2012.GDT 3/17/14

ASTM D422



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth	USCS Classification	AASHTO Classification	LL	PL	PI	Cc	Cu
●	B-85	0.5	LEAN CLAY(CL)	15(A-6)	37	20	17		
⊠	B-86	0.5	LEAN CLAY(CL)	7(A-6)	25	14	11		
▲	B-87	0.5	LEAN CLAY(CL)	8(A-6)	27	16	11		
★	B-88	0.5							

	Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	B-85	0.5	2				0.0	12.2	87.5	
⊠	B-86	0.5	2				0.0	13.1	86.8	
▲	B-87	0.5	2				0.0	11.1	88.8	
★	B-88	0.5	2				0.0	9.0	90.9	

PROJECT: CA0101 Highway 147 Widening

SITE: Cross Co. Line Highway 147
, Arkansas

Terracon
25809 I-30 South
Bryant, Arkansas

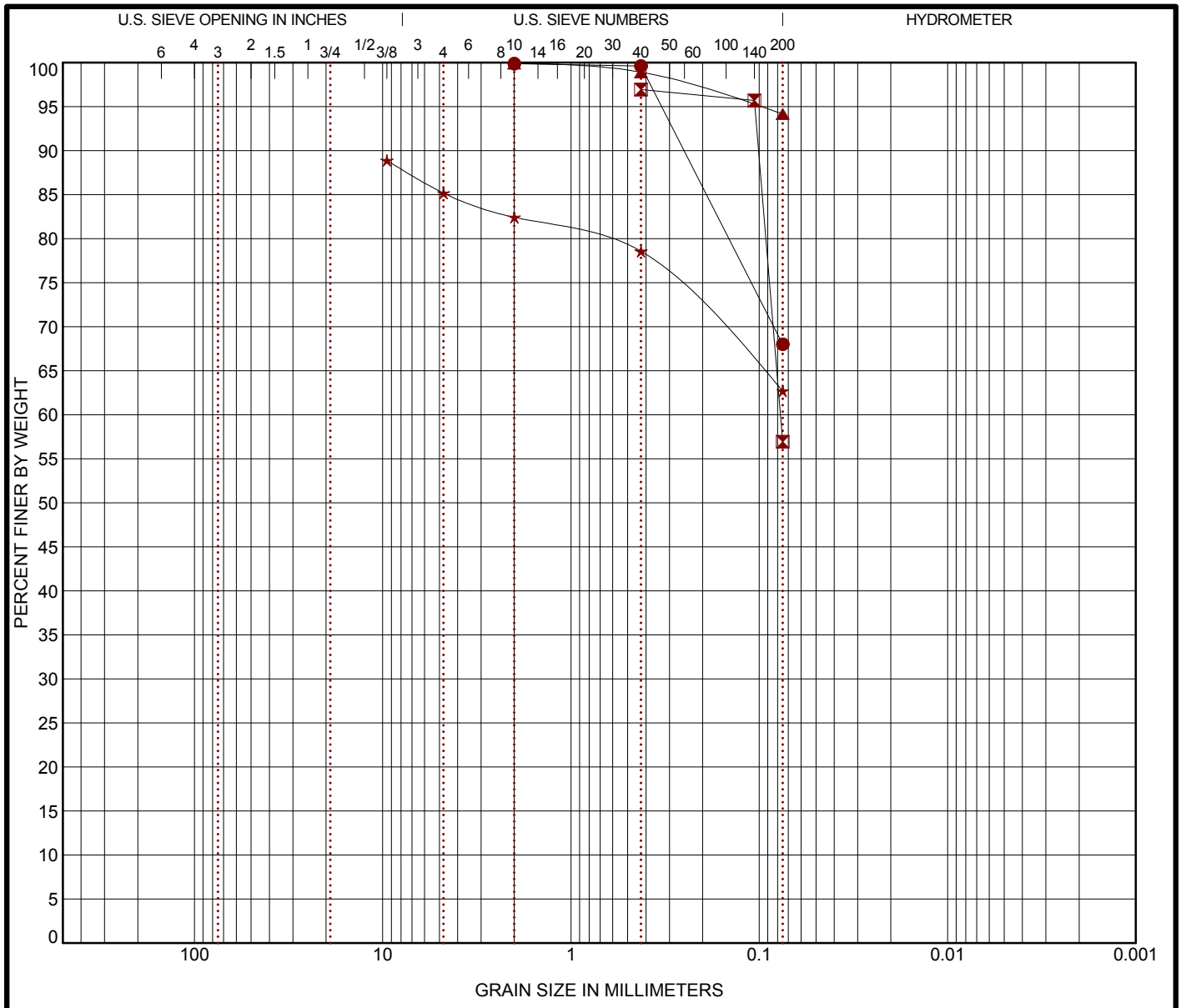
PROJECT NUMBER: 35135123

CLIENT: Buchart Horn,Inc.
Memphis Tenneessee

EXHIBIT: B-17

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO COMBINED 35135123.GPJ TERRACON2012.GDT 3/17/14

ASTM D422



	Boring ID	Depth	USCS Classification	AASHTO Classification	LL	PL	PI	Cc	Cu
●	B-89	0.5							
⊠	B-90	0.5							
▲	B-91	0.5	LEAN CLAY(CL)	20(A-6)	39	18	21		
★	B-92	0.5	SANDY LEAN CLAY(CL)	5(A-6)	30	18	12		

	Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	B-89	0.5	2				0.0	31.9	68.0	
⊠	B-90	0.5	0.425	0.077			0.0	40.0	56.9	
▲	B-91	0.5	2				0.0	5.7	94.2	
★	B-92	0.5	9.5				3.7	22.5	62.7	

PROJECT: CA0101 Highway 147 Widening

SITE: Cross Co. Line Highway 147
, Arkansas

Terracon
25809 I-30 South
Bryant, Arkansas

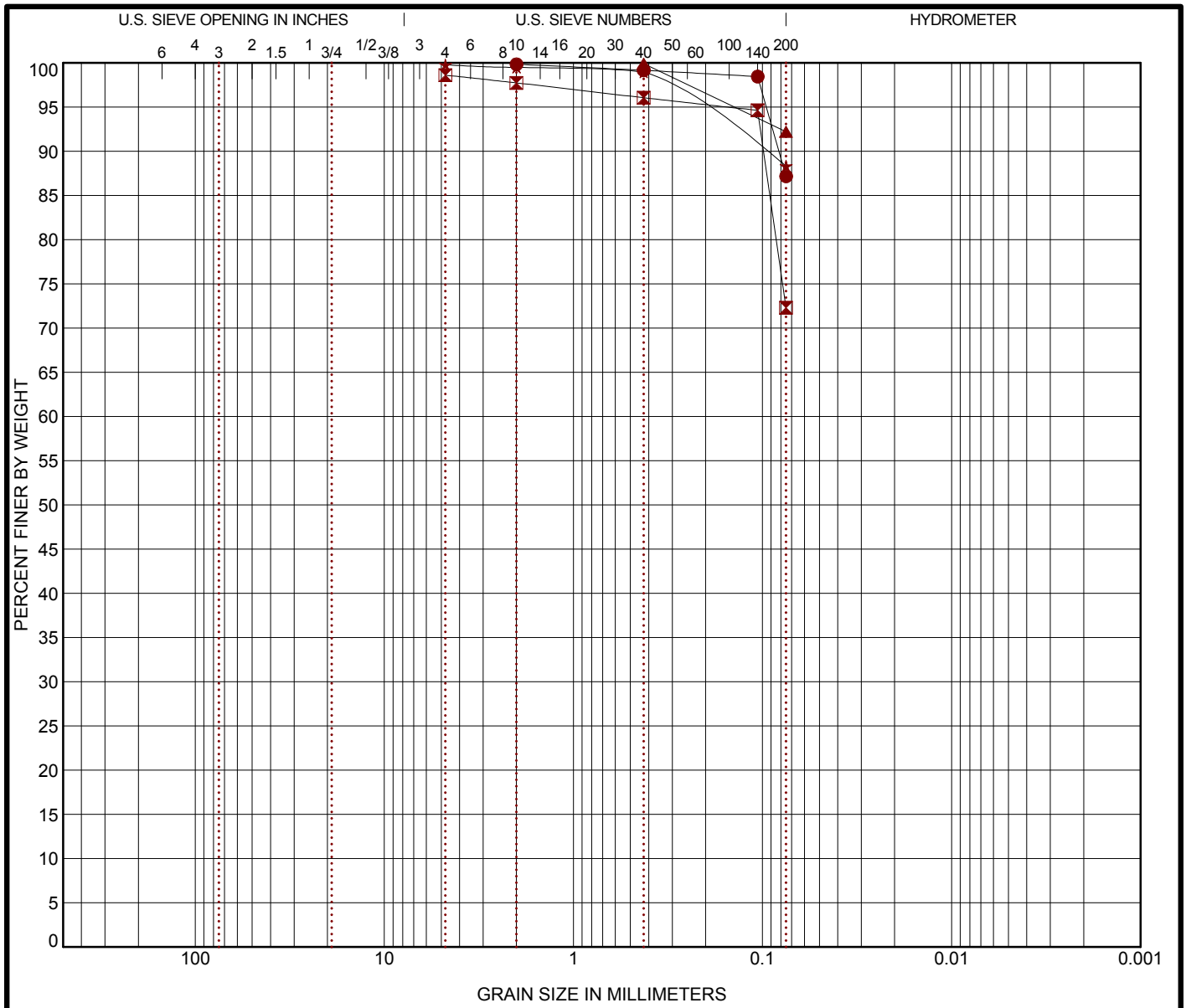
PROJECT NUMBER: 35135123

CLIENT: Buchart Horn,Inc.
Memphis Tenneessee

EXHIBIT: B-18

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO COMBINED 35135123.GPJ TERRACON2012.GDT 3/17/14

ASTM D422



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth	USCS Classification	AASHTO Classification	LL	PL	PI	Cc	Cu
●	B-93	0.5	LEAN CLAY(CL)	16(A-6)	35	15	20		
⊠	B-94	0.5	LEAN CLAY with SAND(CL)	5(A-6)	26	15	11		
▲	B-95	0.5	LEAN CLAY(CL)	11(A-6)	33	21	12		
★	B-96	0.5	LEAN CLAY(CL)	17(A-6)	35	15	20		

	Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
●	B-93	0.5	2				0.0	12.7	87.2	
⊠	B-94	0.5	4.75				0.0	26.3	72.3	
▲	B-95	0.5	0.425				0.0	7.7	92.2	
★	B-96	0.5	4.75				0.0	11.4	88.3	

PROJECT: CA0101 Highway 147 Widening

SITE: Cross Co. Line Highway 147
, Arkansas

Terracon
25809 I-30 South
Bryant, Arkansas

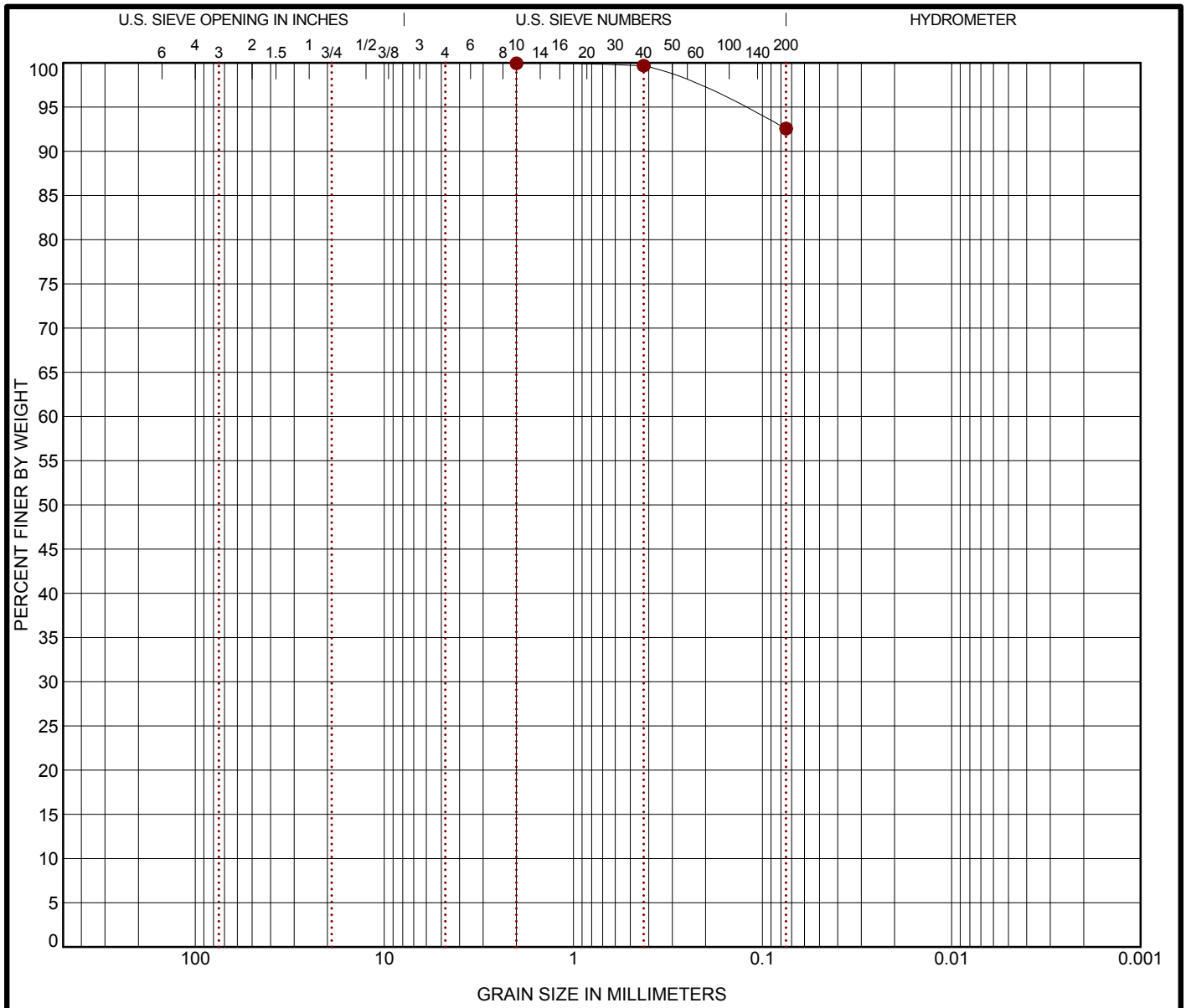
PROJECT NUMBER: 35135123

CLIENT: Buchart Horn,Inc.
Memphis Tenneessee

EXHIBIT: B-19

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO COMBINED 35135123.GPJ TERRACON2012.GDT 3/17/14

ASTM D422



Boring ID	Depth	USCS Classification	AASHTO Classification	LL	PL	PI	Cc	Cu
B-97	0.5	LEAN CLAY(CL)	11(A-6)	33	21	12		

Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Clay
B-97	0.5	2				0.0	7.4	92.6	

PROJECT: CA0101 Highway 147 Widening

SITE: Cross Co. Line Highway 147
, Arkansas

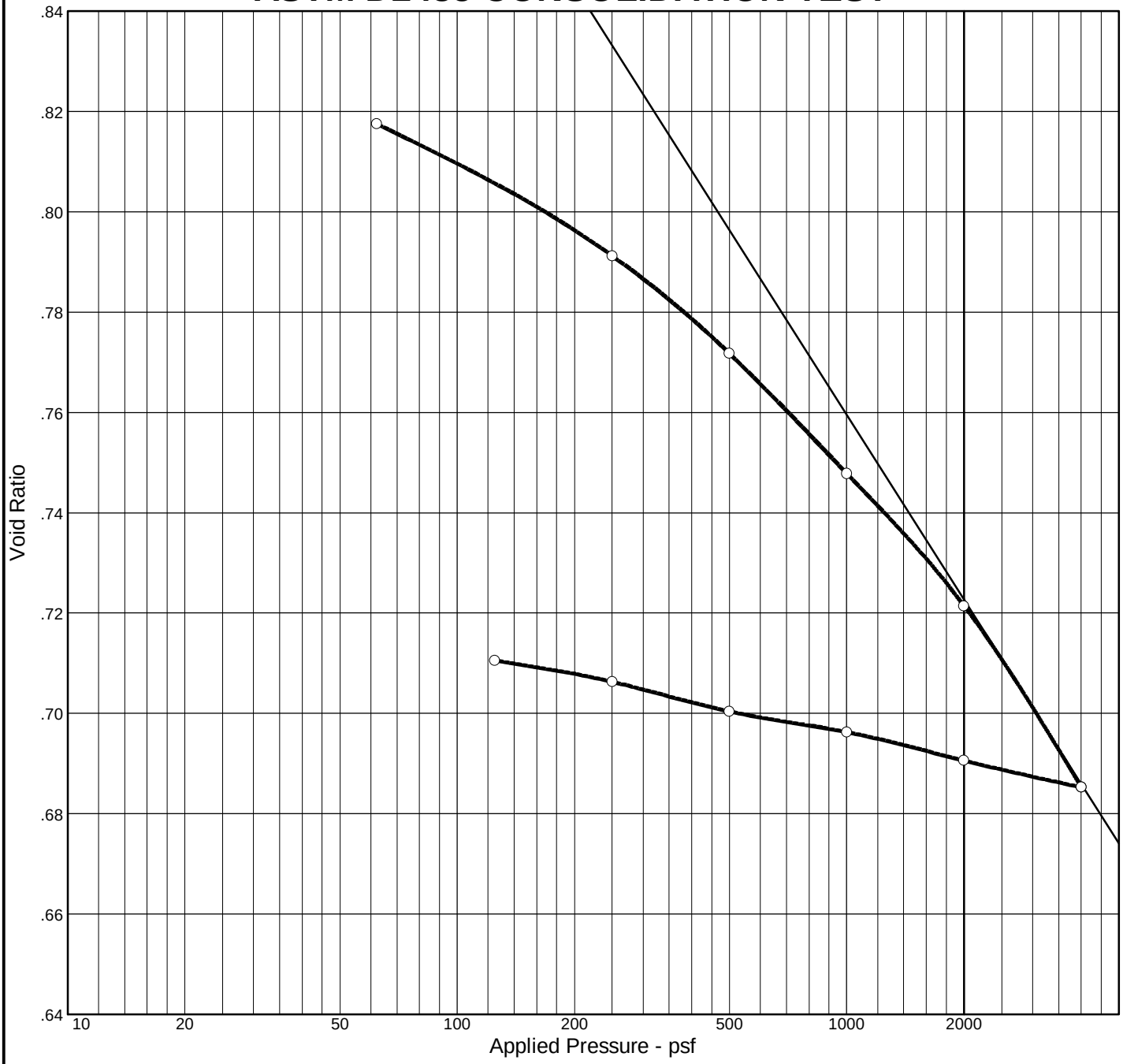
Terracon
25809 I-30 South
Bryant, Arkansas

PROJECT NUMBER: 35135123

CLIENT: Buchart Horn,Inc.
Memphis Tenneessee

EXHIBIT: B-20

ASTM D2435 CONSOLIDATION TEST



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_r	Initial Void Ratio
Saturation	Moisture									
90.1 %	27.3 %	92.7	32	11	2.7		2084	0.12	0.02	0.818

MATERIAL DESCRIPTION	USCS	AASHTO
lean clay with sand	CL	A-6(9)

Project No. 35135123 **Client:** Buchart Horn

Project: Proposed Highway 64 Widening

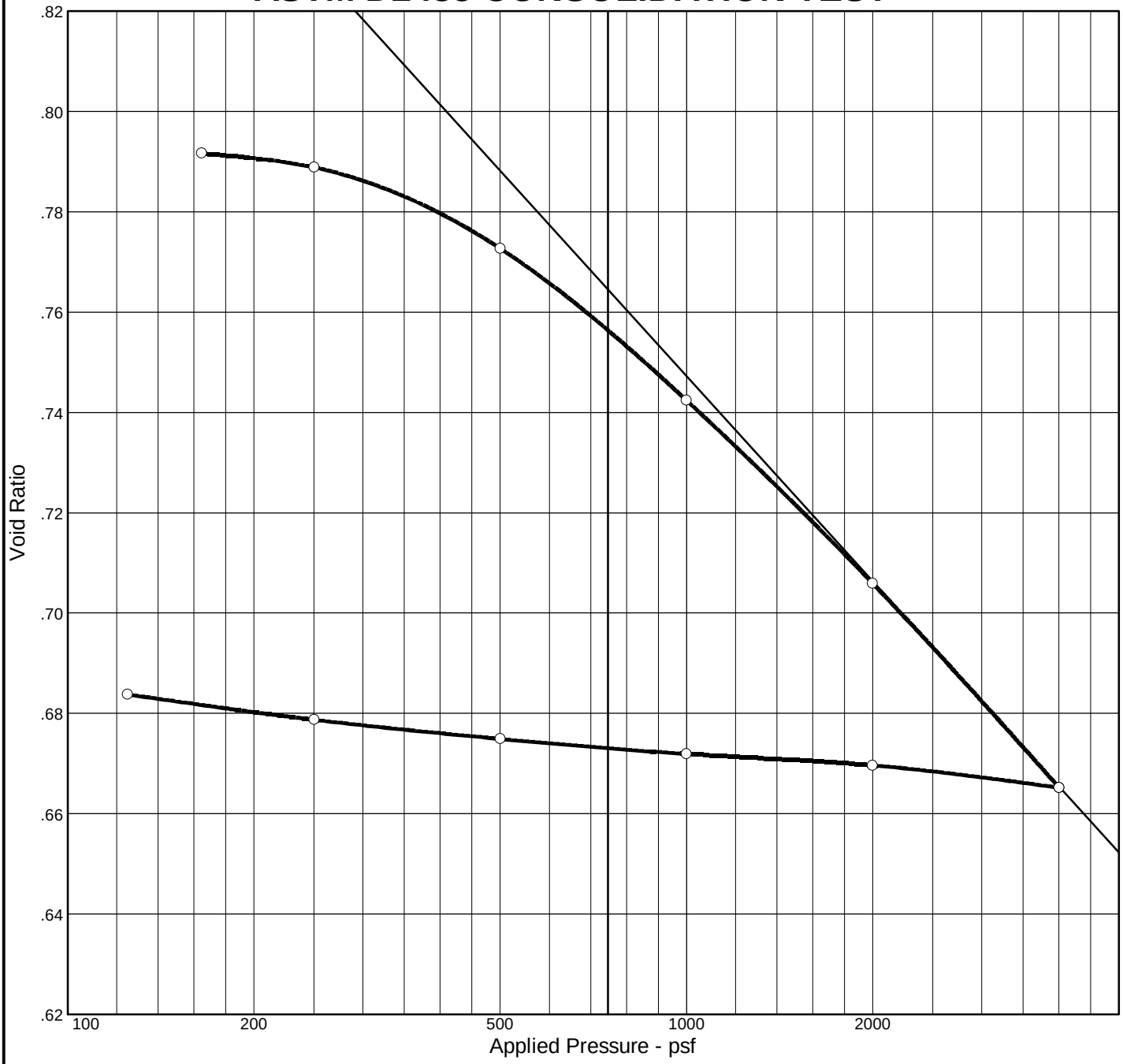
Source: B-54 **Sample No.:** S-1 **Elev./Depth:** 0.5-2 ft

Terracon Consultants, Inc.

Chattanooga, TN

Remarks:

ASTM D2435 CONSOLIDATION TEST



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_r	Initial Void Ratio
Saturation	Moisture									
89.8 %	26.3 %	94.2	30	8	2.7		934	0.14	0.01	0.790

MATERIAL DESCRIPTION	USCS	AASHTO
lean clay with sand	CL	A-4(6)

Project No. 35135123 **Client:** Buchart Horn

Project: Proposed Highway 64 Widening

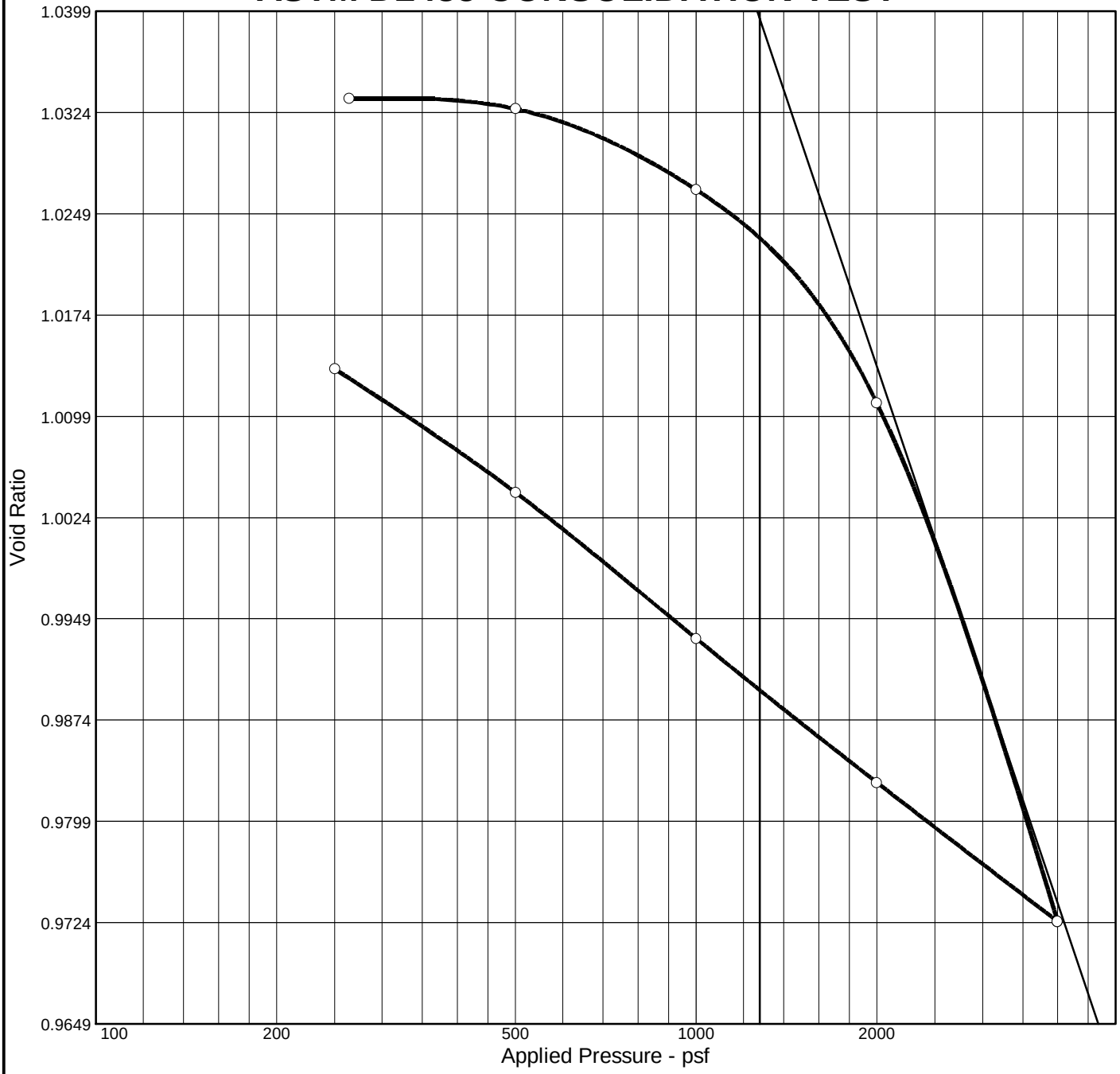
Source: B-54 **Sample No.:** S-3 **Elev./Depth:** 3.5-5.0 ft

Terracon Consultants, Inc.

Chattanooga, TN

Remarks:

ASTM D2435 CONSOLIDATION TEST



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_r	Initial Void Ratio
Saturation	Moisture									
96.6 %	37.0 %	82.8	45	24	2.7		1785	0.13	0.03	1.035

MATERIAL DESCRIPTION	USCS	AASHTO
lean clay	CL	A-7-6(25)

Project No. 35135123 **Client:** Buchart Horn

Project: Proposed Highway 64 Widening

Source: B-56 **Sample No.:** S-1 **Elev./Depth:** 0.5-2.0 ft

Terracon Consultants, Inc.

Chattanooga, TN

Remarks:

Swell Pressure of 264 psf

Laboratory Compaction Characteristics of Soil

4701 North Stiles Ave.
Oklahoma City, OK 73105
(405) 525 0453

Client Name: Buchart Horn
Project Name: AHTD Job No. CA0101
Location: Cross County Line - Highway 147 (Widening)(S)

Source Material: Bulk 1 - B 28 + B 59
Sample Description:

Material Designation: CH Sample date:
Test Method: Method A
Test Procedure: ASSHTO T-99
Sample Preparation: Dry
Rammer: X Mechanical ____ Manual

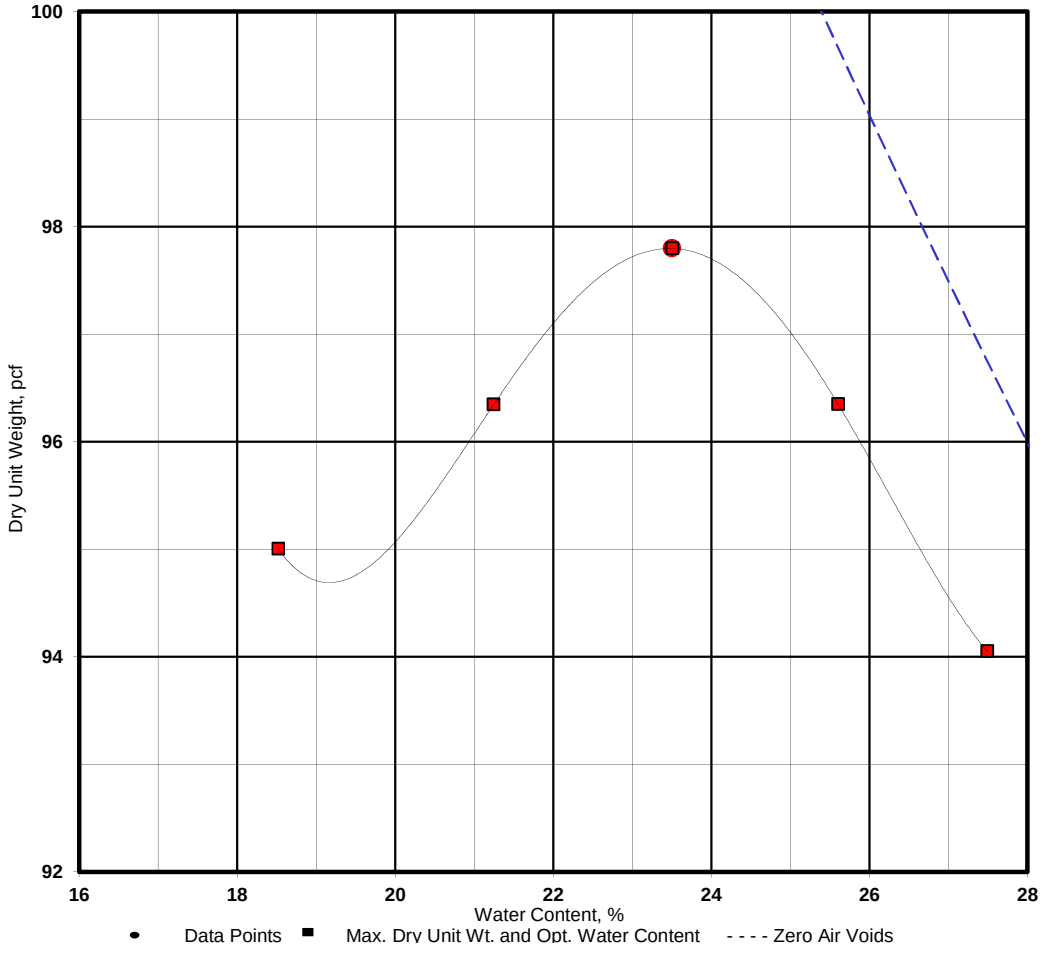
Project No.: 35135123 Date: 02/05/14

TEST RESULTS

Maximum Dry Unit Wt.: 97.8 pcf
Optimum Water Content: 23.5 %

Liquid Limit: 57 Plastic Limit: 22
Plasticity Index: 35
% passing # 200 sieve: 86.3
AASHTO Class. A-7-6 USCS: CH
Reviewed by: RAS

Zero air voids for specific gravity of 2.70



Terracon

Resilient Modulus Testing - AASHTO T 307-99 English Units

Report Date: 17-Mar-14
Lab No.: B28 & B59 Bulk1_OMC
Project No.: 35135123

Soil Map Unit:	AIA
Soil Symbol:	A-7-6(32)/CH
Depth (in.)	12-60
Compaction Method	Static
Max. Dry Density (pcf)	97.5
Opt. Moisture Content (%)	23.5
Inside Mold Diameter (in)	3.94

Weight of Wet Soil (lb)	6.36
Initial Sample Diameter (in)	3.94
Initial Sample Height (in)	7.88
Initial Sample Area (in^2)	12.18
Sample Volume (in^3)	95.96
Compacted Moisture Content(%)	23.5
Wet Density (pcf)	114.5
Dry Density (pcf)	92.7

Test Date: February 11, 2014

Final Sample Height (in)	7.9
Final Sample Wet Weight (lb)	6.36
Final Moisture Content (%)	23.2
Accumulated Strain (%)	0.04
Percent Passing No. 10	100
Percent Passing No. 200	86.3
Liquid Limit	57
Plasticity Index	35

Chamber Confining Pressure (S_3) psi	Nominal Maximum Axial Stress (S_{cyclic}) psi	Actual Applied Max. Axial Load (P_{max}) lb	Actual Applied Cyclic Load (P_{cyclic}) lb	Actual Applied Contact Load ($P_{contact}$) lb	Actual Applied Max. Axial Stress (S_{max}) psi	Actual Applied Cyclic Stress (S_{cyclic}) psi	Actual Applied Contact Stress ($S_{contact}$) psi	Recov. Def. LVDT #1 Reading (H_1) in	Recov. Def. LVDT #2 Reading (H_2) in	Average Recov. Def. LVDT 1 and 2 (H_{avg}) in	Resilient Strain (ϵ_r) in/in	Resilient Modulus (M_r) psi
6.01	2.00	23.6	20.8	2.9	1.94	1.70	0.235	0.0008	0.0009	0.0008	0.000102	16,628
6.01	4.00	47.6	42.4	5.2	3.91	3.48	0.428	0.0016	0.0018	0.0017	0.000210	16,581
6.00	6.00	72.0	64.1	7.9	5.91	5.26	0.648	0.0025	0.0028	0.0026	0.000333	15,811
6.01	8.00	96.5	86.2	10.3	7.92	7.08	0.844	0.0035	0.0039	0.0037	0.000471	15,041
6.01	10.00	121.0	108.1	12.9	9.93	8.88	1.058	0.0047	0.0052	0.0049	0.000625	14,195
4.00	2.00	23.9	20.9	3.0	1.96	1.72	0.246	0.0008	0.0009	0.0009	0.000108	15,876
4.01	4.00	48.1	42.6	5.4	3.95	3.50	0.447	0.0017	0.0019	0.0018	0.000223	15,714
4.01	6.00	72.4	64.8	7.7	5.95	5.32	0.630	0.0026	0.0029	0.0027	0.000348	15,270
4.02	8.00	96.7	86.5	10.2	7.94	7.10	0.840	0.0036	0.0040	0.0038	0.000486	14,612
4.02	10.00	120.9	108.2	12.8	9.93	8.88	1.048	0.0047	0.0053	0.0050	0.000637	13,942
2.03	2.00	24.0	21.1	2.9	1.97	1.73	0.237	0.0009	0.0010	0.0010	0.000121	14,366
2.00	4.00	48.1	42.8	5.3	3.95	3.52	0.435	0.0018	0.0020	0.0019	0.000241	14,574
2.01	6.00	72.5	64.9	7.6	5.96	5.33	0.625	0.0028	0.0032	0.0030	0.000378	14,106
1.98	8.00	96.9	86.7	10.2	7.96	7.12	0.838	0.0038	0.0043	0.0041	0.000515	13,821
2.02	10.00	121.2	108.5	12.7	9.95	8.91	1.040	0.0050	0.0056	0.0053	0.000667	13,355

Terracon

Resilient Modulus Testing - AASHTO T 307-99 English Units

Report Date: 17-Mar-14
Lab No.: B28 & B59 Bulk 1_OMC+2
Project No.: 35135123

Soil Map Unit:	AIA
Soil Symbol:	A-7-6(32)/CH
Depth (in.)	12-60
Compaction Method	Static
Max. Dry Density (pcf)	97.5
Opt. Moisture Content (%)	23.5
Inside Mold Diameter (in)	3.94

Weight of Wet Soil (lb)	6.36
Initial Sample Diameter (in)	3.94
Initial Sample Height (in)	7.88
Initial Sample Area (in^2)	12.18
Sample Volume (in^3)	95.96
Compacted Moisture Content(%)	23.5
Wet Density (pcf)	114.5
Dry Density (pcf)	92.7

Test Date: February 11, 2014

Final Sample Height (in)	7.9
Final Sample Wet Weight (lb)	6.36
Final Moisture Content (%)	23.2
Accumulated Strain (%)	0.06
Percent Passing No. 10	100
Percent Passing No. 200	86.3
Liquid Limit	57
Plasticity Index	35

Chamber Confining Pressure (S_3) psi	Nominal Maximum Axial Stress (S_{cyclic}) psi	Actual Applied Max. Axial Load (P_{max}) lb	Actual Applied Cyclic Load (P_{cyclic}) lb	Actual Applied Contact Load ($P_{contact}$) lb	Actual Applied Max. Axial Stress (S_{max}) psi	Actual Applied Cyclic Stress (S_{cyclic}) psi	Actual Applied Contact Stress ($S_{contact}$) psi	Recov. Def. LVDT #1 Reading (H_1) in	Recov. Def. LVDT #2 Reading (H_2) in	Average Recov. Def. LVDT 1 and 2 (H_{avg}) in	Resilient Strain (ϵ_r) in/in	Resilient Modulus (M_r) psi
5.99	2.00	23.3	19.4	3.9	1.91	1.59	0.321	0.0009	0.0010	0.0009	0.000120	13,224
6.01	4.00	46.8	40.6	6.1	3.84	3.34	0.505	0.0020	0.0021	0.0021	0.000262	12,709
5.99	6.00	71.4	62.2	9.2	5.87	5.11	0.758	0.0033	0.0037	0.0035	0.000443	11,518
6.00	8.00	96.1	84.8	11.4	7.90	6.96	0.932	0.0053	0.0057	0.0055	0.000700	9,948
6.01	10.00	120.7	106.9	13.8	9.92	8.78	1.133	0.0080	0.0084	0.0082	0.001037	8,471
4.00	2.00	23.8	19.6	4.2	1.96	1.61	0.344	0.0010	0.0010	0.0010	0.000129	12,514
3.99	4.00	47.9	41.3	6.6	3.93	3.39	0.542	0.0022	0.0023	0.0022	0.000284	11,959
4.00	6.00	71.9	62.9	9.1	5.91	5.16	0.744	0.0036	0.0038	0.0037	0.000470	10,975
3.99	8.00	96.2	84.8	11.4	7.90	6.97	0.933	0.0056	0.0057	0.0057	0.000718	9,703
4.02	10.00	120.1	106.6	13.5	9.86	8.75	1.109	0.0080	0.0082	0.0081	0.001024	8,549
2.02	2.00	23.7	19.6	4.1	1.95	1.61	0.341	0.0011	0.0011	0.0011	0.000137	11,691
2.00	4.00	47.6	41.4	6.2	3.91	3.40	0.511	0.0023	0.0024	0.0024	0.000300	11,326
1.98	6.00	71.7	63.1	8.6	5.89	5.18	0.707	0.0038	0.0039	0.0039	0.000492	10,525
1.98	8.00	96.2	85.3	10.9	7.90	7.00	0.896	0.0058	0.0058	0.0058	0.000738	9,493
2.01	10.00	120.4	106.9	13.4	9.88	8.78	1.103	0.0081	0.0082	0.0082	0.001035	8,483

Laboratory Compaction Characteristics of Soil

4701 North Stiles Ave.
Oklahoma City, OK 73105
(405) 525 0453

Client Name: Buchart Horn
Project Name: AHTD Job No. CA0101
Location: Cross County Line - Highway 147 (Widening)(S)

Source Material: B 7+ B 94
Sample Description: Light Brown Clay with sand

Material Designation: CL-ML Sample date:
Test Method: Method A
Test Procedure: ASSHTO T-99
Sample Preparation: Dry
Rammer: X Mechanical ____ Manual

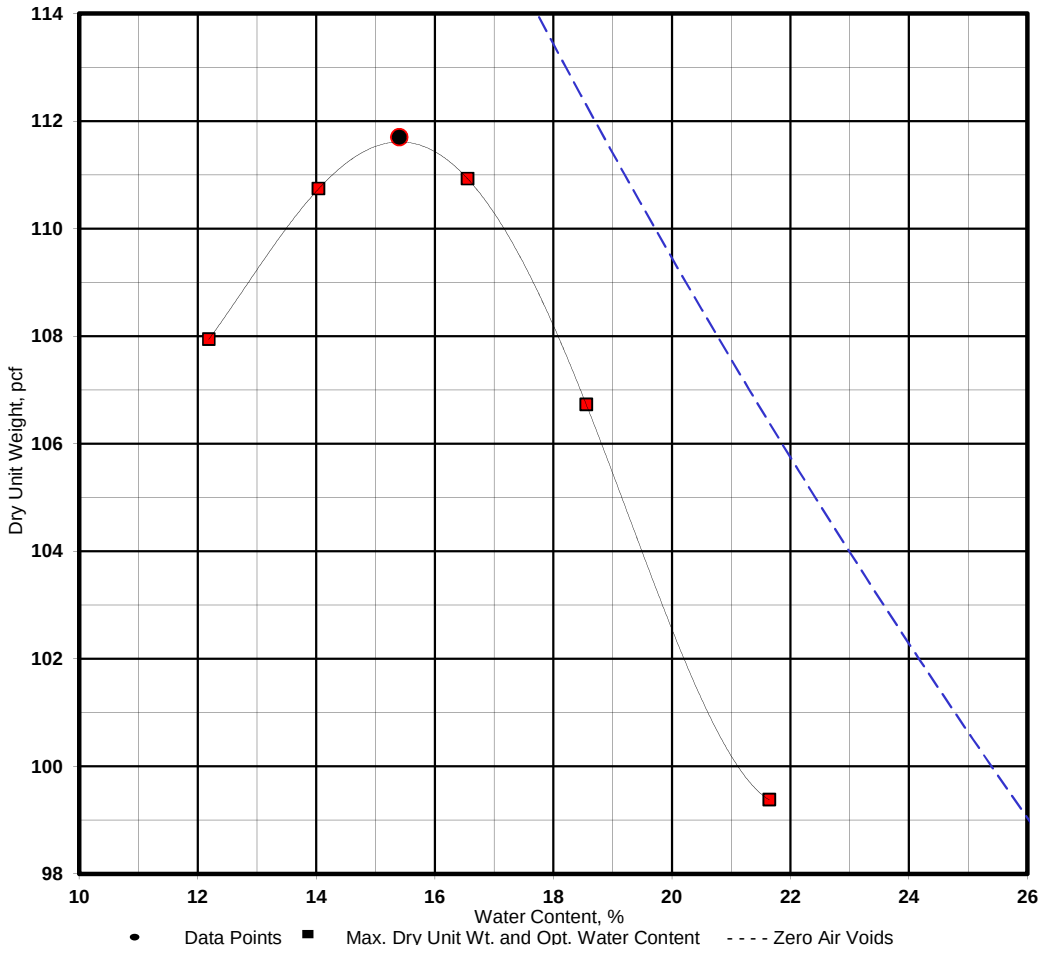
Project No.: 35135123 Date: 02/05/14

TEST RESULTS

Maximum Dry Unit Wt.: 111.7 pcf
Optimum Water Content: 15.4 %

Liquid Limit: 27 Plastic Limit: 21
Plasticity Index: 6
% passing # 200 sieve: 72.8
AASHTO Class. A-4(3) USCS: CL-ML
Reviewed by: RAS

Zero air voids for specific gravity of 2.70



Terracon

Resilient Modulus Testing - AASHTO T 307-99 English Units

Report Date: 17-Mar-14
Lab No.: B7-B94 Bulk 2_OMC
Project No.: 35135123

Soil Map Unit:	DsA/DsU
Soil Symbol:	A-4(3)/CL-ML
Depth (in.)	12-60
Compaction Method	Static
Max. Dry Density (pcf)	111.7
Opt. Moisture Content (%)	15.4
Inside Mold Diameter (in)	3.94

Weight of Wet Soil (lb)	6.79
Initial Sample Diameter (in)	3.94
Initial Sample Height (in)	7.89
Initial Sample Area (in^2)	12.18
Sample Volume (in^3)	96.17
Compacted Moisture Content(%)	15.5
Wet Density (pcf)	122.0
Dry Density (pcf)	105.6

Test Date: February 10, 2014

Final Sample Height (in)	7.9
Final Sample Wet Weight (lb)	6.79
Final Moisture Content (%)	15.6
Accumulated Strain (%)	0.22
Percent Passing No. 10	97
Percent Passing No. 200	70.0
Liquid Limit	27
Plasticity Index	6

Chamber Confining Pressure (S_3) psi	Nominal Maximum Axial Stress (S_{cyclic}) psi	Actual Applied Max. Axial Load (P_{max}) lb	Actual Applied Cyclic Load (P_{cyclic}) lb	Actual Applied Contact Load ($P_{contact}$) lb	Actual Applied Max. Axial Stress (S_{max}) psi	Actual Applied Cyclic Stress (S_{cyclic}) psi	Actual Applied Contact Stress ($S_{contact}$) psi	Recov. Def. LVDT #1 Reading (H_1) in	Recov. Def. LVDT #2 Reading (H_2) in	Average Recov. Def. LVDT 1 and 2 (H_{avg}) in	Resilient Strain (ϵ_r) in/in	Resilient Modulus (M_r) psi
5.99	2.00	23.0	20.4	2.5	1.89	1.68	0.209	0.0012	0.0013	0.0013	0.000159	10,578
6.00	4.00	46.6	41.8	4.8	3.83	3.43	0.396	0.0027	0.0029	0.0028	0.000352	9,746
6.00	6.00	71.0	63.5	7.5	5.83	5.21	0.617	0.0045	0.0047	0.0046	0.000582	8,954
6.00	8.00	95.7	85.8	9.9	7.86	7.05	0.813	0.0064	0.0069	0.0066	0.000842	8,372
6.01	10.00	120.0	107.5	12.4	9.85	8.83	1.020	0.0083	0.0089	0.0086	0.001088	8,111
4.01	2.00	23.2	20.6	2.6	1.90	1.69	0.210	0.0014	0.0015	0.0014	0.000184	9,219
4.00	4.00	47.2	42.2	5.0	3.88	3.47	0.409	0.0033	0.0035	0.0034	0.000429	8,075
4.02	6.00	71.5	64.3	7.2	5.87	5.28	0.591	0.0055	0.0058	0.0056	0.000712	7,415
4.01	8.00	95.9	86.1	9.8	7.88	7.07	0.807	0.0077	0.0081	0.0079	0.000998	7,082
4.01	10.00	120.1	107.7	12.4	9.86	8.84	1.015	0.0097	0.0103	0.0100	0.001263	7,002
2.03	2.00	23.2	20.6	2.6	1.91	1.69	0.215	0.0018	0.0019	0.0018	0.000232	7,304
2.00	4.00	47.3	42.1	5.2	3.88	3.45	0.425	0.0042	0.0044	0.0043	0.000543	6,362
2.03	6.00	71.4	64.1	7.4	5.86	5.26	0.604	0.0069	0.0072	0.0071	0.000894	5,881
2.04	8.00	95.7	85.8	9.9	7.86	7.04	0.812	0.0093	0.0099	0.0096	0.001216	5,791
2.01	10.00	120.0	107.6	12.4	9.85	8.83	1.022	0.0117	0.0124	0.0120	0.001525	5,790

Terracon

Resilient Modulus Testing - AASHTO T 307-99 English Units

Report Date: 17-Mar-14
Lab No.: B7-B94 Bulk 2_OMC+2
Project No.: 35135123

Soil Map Unit:	DsA/DsU
Soil Symbol:	A-4(3)/CL-ML
Depth (in.)	12-60
Compaction Method	Static
Max. Dry Density (pcf)	111.7
Opt. Moisture Content (%)	15.4
Inside Mold Diameter (in)	3.94

Weight of Wet Soil (lb)	6.91
Initial Sample Diameter (in)	3.94
Initial Sample Height (in)	7.87
Initial Sample Area (in^2)	12.19
Sample Volume (in^3)	95.95
Compacted Moisture Content(%)	17.5
Wet Density (pcf)	124.4
Dry Density (pcf)	105.9

Test Date: February 10, 2014

Final Sample Height (in)	7.9
Final Sample Wet Weight (lb)	6.91
Final Moisture Content (%)	17.6
Accumulated Strain (%)	0.25
Percent Passing No. 10	97
Percent Passing No. 200	70.0
Liquid Limit	27
Plasticity Index	6

Chamber Confining Pressure (S_3) psi	Nominal Maximum Axial Stress (S_{cyclic}) psi	Actual Applied Max. Axial Load (P_{max}) lb	Actual Applied Cyclic Load (P_{cyclic}) lb	Actual Applied Contact Load ($P_{contact}$) lb	Actual Applied Max. Axial Stress (S_{max}) psi	Actual Applied Cyclic Stress (S_{cyclic}) psi	Actual Applied Contact Stress ($S_{contact}$) psi	Recov. Def. LVDT #1 Reading (H_1) in	Recov. Def. LVDT #2 Reading (H_2) in	Average Recov. Def. LVDT 1 and 2 (H_{avg}) in	Resilient Strain (ϵ_r) in/in	Resilient Modulus (M_r) psi
6.00	2.00	22.7	19.4	3.2	1.86	1.59	0.267	0.0013	0.0013	0.0013	0.000162	9,838
6.00	4.00	46.9	41.5	5.4	3.86	3.41	0.446	0.0029	0.0029	0.0029	0.000369	9,229
5.99	6.00	71.5	63.3	8.2	5.87	5.20	0.670	0.0049	0.0047	0.0048	0.000606	8,579
6.00	8.00	95.9	85.4	10.5	7.87	7.01	0.865	0.0070	0.0067	0.0069	0.000873	8,032
6.01	10.00	120.4	107.3	13.2	9.89	8.81	1.081	0.0090	0.0087	0.0088	0.001121	7,860
4.02	2.00	23.6	20.6	3.0	1.94	1.69	0.244	0.0016	0.0015	0.0016	0.000203	8,335
4.00	4.00	47.6	42.5	5.2	3.91	3.49	0.427	0.0038	0.0036	0.0037	0.000472	7,384
4.01	6.00	72.0	64.0	7.9	5.91	5.26	0.651	0.0063	0.0058	0.0060	0.000768	6,851
4.01	8.00	96.5	86.0	10.4	7.92	7.07	0.857	0.0086	0.0081	0.0084	0.001061	6,661
3.99	10.00	120.3	107.5	12.8	9.88	8.83	1.054	0.0107	0.0102	0.0105	0.001329	6,644
2.00	2.00	23.7	20.4	3.2	1.94	1.68	0.266	0.0020	0.0020	0.0020	0.000257	6,528
2.05	4.00	47.9	42.3	5.5	3.93	3.48	0.455	0.0052	0.0047	0.0049	0.000624	5,566
2.02	6.00	72.2	64.5	7.7	5.93	5.30	0.634	0.0082	0.0076	0.0079	0.001001	5,292
1.99	8.00	96.4	86.2	10.3	7.92	7.08	0.843	0.0107	0.0102	0.0105	0.001331	5,317
2.00	10.00	120.5	107.6	13.0	9.90	8.83	1.066	0.0130	0.0128	0.0129	0.001637	5,396

Laboratory Compaction Characteristics of Soil

4701 North Stiles Ave.
Oklahoma City, OK 73105
(405) 525 0453

Client Name: Buchart Horn
Project Name: AHTD Job No. CA0101
Location: Cross County Line - Highway 147 (Widening)(S)

Source Material: Bulk 3 - B 11 + B 83
Sample Description: Light Brown

Material Designation: CL-ML Sample date:
Test Method: Method A
Test Procedure: ASSHTO T-99
Sample Preparation: Dry
Rammer: X Mechanical ____ Manual

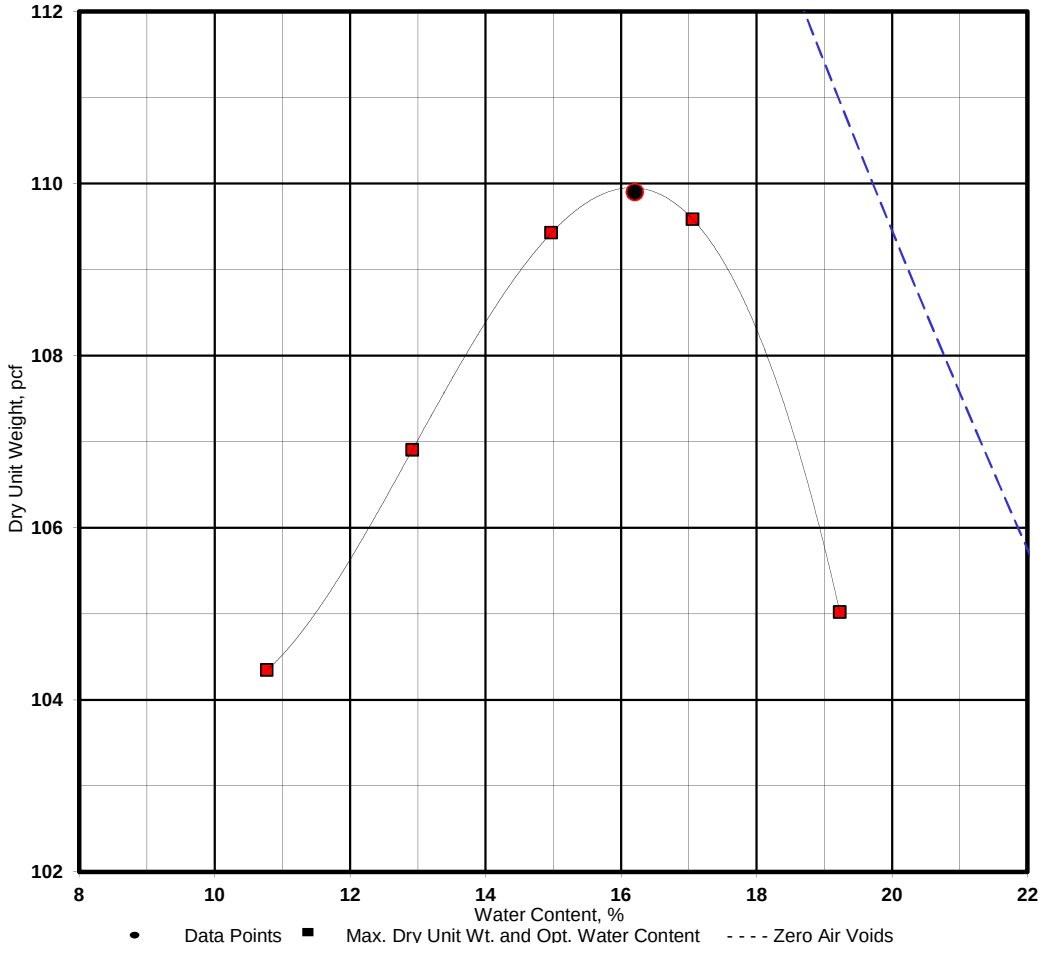
Project No.: 35135123 Date: 02/05/14

TEST RESULTS

Maximum Dry Unit Wt.: 109.9 pcf
Optimum Water Content: 16.2 %

Liquid Limit: 27 Plastic Limit: 22
Plasticity Index: 5
% passing # 200 sieve: 76
AASHTO Class. A-4 (2) USCS: CL-ML
Reviewed by: RAS

Zero air voids for specific gravity of 2.70



Terracon

Resilient Modulus Testing - AASHTO T 307-99 English Units

Report Date: 17-Mar-14
Lab No.: B11 & B83 Bulk 3-OMC
Project No.: 35135123

Soil Map Unit:	DuA/DuU
Soil Symbol:	A-4(2)/ CL-ML
Depth (in.)	12-60
Compaction Method	Static
Max. Dry Density (pcf)	109.9
Opt. Moisture Content (%)	16.2
Inside Mold Diameter (in)	3.94

Weight of Wet Soil (lb)	6.72
Initial Sample Diameter (in)	3.94
Initial Sample Height (in)	7.88
Initial Sample Area (in^2)	12.18
Sample Volume (in^3)	95.92
Compacted Moisture Content(%)	16.2
Wet Density (pcf)	121.1
Dry Density (pcf)	104.2

Test Date: February 7, 2014

Final Sample Height (in)	7.9
Final Sample Wet Weight (lb)	6.72
Final Moisture Content (%)	16.7
Accumulated Strain (%)	0.20
Percent Passing No. 10	100
Percent Passing No. 200	76.0
Liquid Limit	27
Plasticity Index	5

Chamber Confining Pressure (S_3) psi	Nominal Maximum Axial Stress (S_{cyclic}) psi	Actual Applied Max. Axial Load (P_{max}) lb	Actual Applied Cyclic Load (P_{cyclic}) lb	Actual Applied Contact Load ($P_{contact}$) lb	Actual Applied Max. Axial Stress (S_{max}) psi	Actual Applied Cyclic Stress (S_{cyclic}) psi	Actual Applied Contact Stress ($S_{contact}$) psi	Recov. Def. LVDT #1 Reading (H_1) in	Recov. Def. LVDT #2 Reading (H_2) in	Average Recov. Def. LVDT 1 and 2 (H_{avg}) in	Resilient Strain (ϵ_r) in/in	Resilient Modulus (M_r) psi
6.01	2.00	23.4	20.8	2.6	1.92	1.71	0.211	0.0012	0.0013	0.0012	0.000158	10,818
6.01	4.00	47.5	42.5	5.0	3.90	3.49	0.410	0.0027	0.0028	0.0028	0.000351	9,929
6.01	6.00	71.7	64.2	7.5	5.88	5.27	0.612	0.0044	0.0047	0.0046	0.000580	9,085
6.00	8.00	96.3	86.3	10.0	7.91	7.09	0.824	0.0064	0.0068	0.0066	0.000842	8,414
6.00	10.00	121.0	108.0	12.9	9.93	8.87	1.062	0.0083	0.0088	0.0086	0.001086	8,166
4.03	2.00	23.6	20.9	2.7	1.94	1.71	0.222	0.0014	0.0014	0.0014	0.000180	9,517
4.02	4.00	47.8	42.4	5.4	3.93	3.48	0.446	0.0033	0.0034	0.0033	0.000422	8,258
4.03	6.00	72.2	64.2	8.0	5.93	5.27	0.653	0.0054	0.0057	0.0055	0.000703	7,501
4.00	8.00	96.5	86.0	10.5	7.92	7.06	0.861	0.0076	0.0080	0.0078	0.000987	7,151
4.02	10.00	120.9	107.9	13.0	9.92	8.86	1.069	0.0096	0.0101	0.0099	0.001250	7,083
2.02	2.00	23.5	20.2	3.2	1.93	1.66	0.264	0.0017	0.0017	0.0017	0.000215	7,734
2.01	4.00	47.7	42.2	5.5	3.92	3.47	0.454	0.0041	0.0042	0.0041	0.000526	6,583
2.02	6.00	72.2	64.2	8.0	5.92	5.27	0.653	0.0068	0.0070	0.0069	0.000880	5,986
2.02	8.00	96.4	85.9	10.5	7.91	7.05	0.863	0.0093	0.0097	0.0095	0.001204	5,858
2.01	10.00	120.7	107.8	12.8	9.91	8.85	1.054	0.0116	0.0122	0.0119	0.001512	5,853

Terracon

Resilient Modulus Testing - AASHTO T 307-99 English Units

Report Date: 17-Mar-14
Lab No.: B11-B83 Bulk 3_OMC+2
Project No.: 35135123

Soil Map Unit:	DuA/DuU
Soil Symbol:	A-4(2)/ CL-ML
Depth (in.)	12-60
Compaction Method	Static
Max. Dry Density (pcf)	109.9
Opt. Moisture Content (%)	16.2
Inside Mold Diameter (in)	3.94

Weight of Wet Soil (lb)	6.85
Initial Sample Diameter (in)	3.94
Initial Sample Height (in)	7.87
Initial Sample Area (in^2)	12.18
Sample Volume (in^3)	95.88
Compacted Moisture Content(%)	18.1
Wet Density (pcf)	123.3
Dry Density (pcf)	104.4

Test Date: February 11, 2014

Final Sample Height (in)	7.9
Final Sample Wet Weight (lb)	6.84
Final Moisture Content (%)	18.2
Accumulated Strain (%)	0.27
Percent Passing No. 10	100
Percent Passing No. 200	76.0
Liquid Limit	27
Plasticity Index	5

Chamber Confining Pressure (S_3) psi	Nominal Maximum Axial Stress (S_{cyclic}) psi	Actual Applied Max. Axial Load (P_{max}) lb	Actual Applied Cyclic Load (P_{cyclic}) lb	Actual Applied Contact Load ($P_{contact}$) lb	Actual Applied Max. Axial Stress (S_{max}) psi	Actual Applied Cyclic Stress (S_{cyclic}) psi	Actual Applied Contact Stress ($S_{contact}$) psi	Recov. Def. LVDT #1 Reading (H_1) in	Recov. Def. LVDT #2 Reading (H_2) in	Average Recov. Def. LVDT 1 and 2 (H_{avg}) in	Resilient Strain (ϵ_r) in/in	Resilient Modulus (M_r) psi
6.00	2.00	22.7	18.2	4.5	1.86	1.50	0.366	0.0011	0.0013	0.0012	0.000151	9,918
6.00	4.00	46.1	39.6	6.5	3.79	3.25	0.538	0.0026	0.0030	0.0028	0.000359	9,067
6.00	6.00	70.5	61.0	9.5	5.79	5.01	0.780	0.0045	0.0050	0.0048	0.000604	8,302
6.01	8.00	95.4	83.7	11.6	7.83	6.88	0.955	0.0066	0.0074	0.0070	0.000891	7,714
6.01	10.00	119.8	105.8	14.1	9.84	8.68	1.154	0.0086	0.0095	0.0091	0.001151	7,544
3.99	2.00	23.4	19.6	3.8	1.92	1.61	0.315	0.0014	0.0016	0.0015	0.000188	8,525
4.02	4.00	47.3	41.3	6.1	3.89	3.39	0.500	0.0035	0.0038	0.0036	0.000463	7,317
4.01	6.00	71.3	62.6	8.7	5.86	5.14	0.716	0.0058	0.0064	0.0061	0.000772	6,653
4.01	8.00	95.5	84.3	11.3	7.84	6.92	0.925	0.0081	0.0088	0.0085	0.001076	6,432
4.00	10.00	119.5	105.6	13.9	9.81	8.67	1.139	0.0103	0.0110	0.0106	0.001350	6,424
1.99	2.00	23.3	19.9	3.4	1.91	1.63	0.280	0.0018	0.0021	0.0019	0.000247	6,618
2.01	4.00	47.1	41.2	5.9	3.87	3.38	0.482	0.0046	0.0050	0.0048	0.000608	5,566
2.03	6.00	71.0	62.7	8.3	5.83	5.14	0.682	0.0076	0.0082	0.0079	0.001002	5,135
1.99	8.00	98.6	88.3	10.3	8.10	7.25	0.844	0.0107	0.0113	0.0110	0.001400	5,181
2.01	10.00	119.2	105.6	13.5	9.78	8.67	1.112	0.0126	0.0133	0.0130	0.001645	5,270

Laboratory Compaction Characteristics of Soil

4701 North Stiles Ave.
Oklahoma City, OK 73105
(405) 525 0453

Client Name: Buchart Horn
Project Name: AHTD Job No. CA0101
Location: Cross County Line - Highway 147 (Widening)(S)

Source Material: Bulk 4 B 63
Sample Description: Ligth Brown

Material Designation: CH Sample date:
Test Method: Method A
Test Procedure: ASSHTO T-99
Sample Preparation: Dry
Rammer: X Mechanical ____ Manual

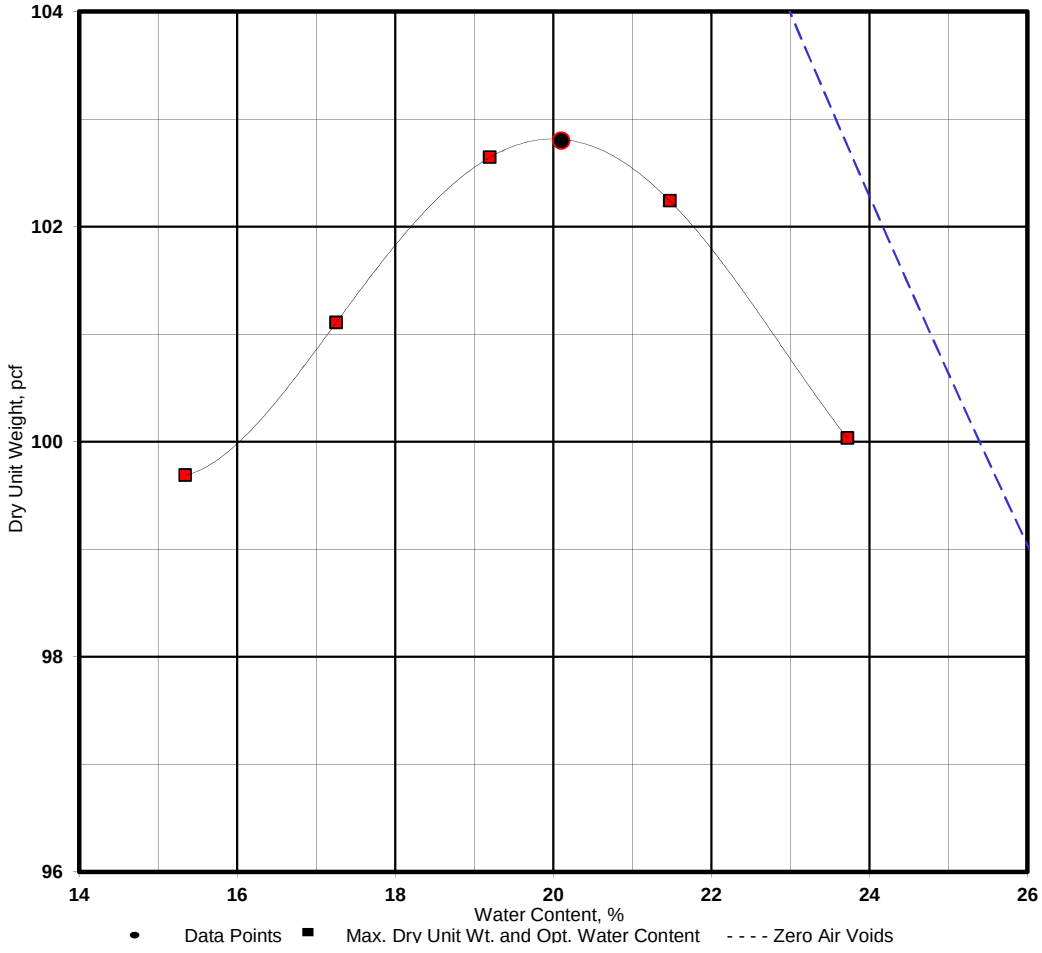
Project No.: 35135123 Date: 02/05/14

TEST RESULTS

Maximum Dry Unit Wt.: 102.8 pcf
Optimum Water Content: 20.1 %

Liquid Limit: 49 Plastic Limit: 20
Plasticity Index: 29
% passing # 200 sieve: 86
AASHTO Class. A-7-6 (26) USCS: ____ CH
Reviewed by: RAS

Zero air voids for specific gravity of 2.70



Terracon

Resilient Modulus Testing - AASHTO T 307-99 English Units

Report Date: 17-Mar-14
Lab No.: B63 Bulk 4_OMC
Project No.: 35135123

Soil Map Unit:	ShA
Soil Symbol:	A-7-6(26)/CH
Depth (in.)	12-60
Compaction Method	Static
Max. Dry Density (pcf)	102.8
Opt. Moisture Content (%)	20.1
Inside Mold Diameter (in)	3.94

Weight of Wet Soil (lb)	6.50
Initial Sample Diameter (in)	3.94
Initial Sample Height (in)	7.87
Initial Sample Area (in^2)	12.17
Sample Volume (in^3)	95.80
Compacted Moisture Content(%)	20.2
Wet Density (pcf)	117.3
Dry Density (pcf)	97.6

Test Date: February 13, 2014

Final Sample Height (in)	7.9
Final Sample Wet Weight (lb)	6.50
Final Moisture Content (%)	20.2
Accumulated Strain (%)	0.03
Percent Passing No. 10	100
Percent Passing No. 200	86.0
Liquid Limit	49
Plasticity Index	29

Chamber Confining Pressure (S_3) psi	Nominal Maximum Axial Stress (S_{cyclic}) psi	Actual Applied Max. Axial Load (P_{max}) lb	Actual Applied Cyclic Load (P_{cyclic}) lb	Actual Applied Contact Load ($P_{contact}$) lb	Actual Applied Max. Axial Stress (S_{max}) psi	Actual Applied Cyclic Stress (S_{cyclic}) psi	Actual Applied Contact Stress ($S_{contact}$) psi	Recov. Def. LVDT #1 Reading (H_1) in	Recov. Def. LVDT #2 Reading (H_2) in	Average Recov. Def. LVDT 1 and 2 (H_{avg}) in	Resilient Strain (ϵ_r) in/in	Resilient Modulus (M_r) psi
6.00	2.00	23.8	20.5	3.3	1.96	1.69	0.271	0.0010	0.0010	0.0010	0.000121	13,900
6.01	4.00	47.8	42.2	5.5	3.93	3.47	0.456	0.0020	0.0020	0.0020	0.000255	13,608
5.99	6.00	72.2	63.8	8.3	5.93	5.25	0.683	0.0032	0.0033	0.0032	0.000412	12,717
6.00	8.00	96.7	85.9	10.8	7.94	7.06	0.887	0.0046	0.0048	0.0047	0.000600	11,763
6.00	10.00	120.8	107.3	13.4	9.92	8.82	1.104	0.0064	0.0066	0.0065	0.000820	10,750
3.99	2.00	23.8	20.4	3.4	1.95	1.68	0.276	0.0010	0.0010	0.0010	0.000132	12,674
4.02	4.00	47.9	42.0	5.8	3.93	3.45	0.480	0.0022	0.0022	0.0022	0.000278	12,402
4.02	6.00	72.3	64.2	8.1	5.94	5.28	0.665	0.0034	0.0035	0.0035	0.000444	11,893
4.02	8.00	96.6	85.9	10.6	7.93	7.06	0.874	0.0048	0.0050	0.0049	0.000625	11,286
4.01	10.00	120.8	107.5	13.3	9.93	8.83	1.095	0.0064	0.0067	0.0066	0.000833	10,604
1.99	2.00	23.6	20.3	3.2	1.94	1.67	0.265	0.0012	0.0013	0.0012	0.000157	10,646
2.02	4.00	47.8	42.0	5.8	3.93	3.45	0.477	0.0025	0.0025	0.0025	0.000318	10,857
1.99	6.00	72.1	64.0	8.1	5.93	5.26	0.665	0.0038	0.0039	0.0039	0.000490	10,732
1.99	8.00	96.6	86.0	10.5	7.93	7.07	0.864	0.0053	0.0054	0.0053	0.000677	10,438
2.00	10.00	120.8	107.6	13.2	9.92	8.84	1.085	0.0068	0.0070	0.0069	0.000879	10,056

Terracon

Resilient Modulus Testing - AASHTO T 307-99 English Units

Report Date: 17-Mar-14
Lab No.: B63 Bulk 4_OMC+2%
Project No.: 35135123

Soil Map Unit:	ShA
Soil Symbol:	A-7-6(26)/CH
Depth (in.)	12-60
Compaction Method	Static
Max. Dry Density (pcf)	102.8
Opt. Moisture Content (%)	20.1
Inside Mold Diameter (in)	3.94

Weight of Wet Soil (lb)	6.61
Initial Sample Diameter (in)	3.93
Initial Sample Height (in)	7.87
Initial Sample Area (in^2)	12.15
Sample Volume (in^3)	95.66
Compacted Moisture Content(%)	22.5
Wet Density (pcf)	119.4
Dry Density (pcf)	97.5

Test Date: February 13, 2014

Final Sample Height (in)	7.9
Final Sample Wet Weight (lb)	6.61
Final Moisture Content (%)	22.2
Accumulated Strain (%)	0.05
Percent Passing No. 10	100
Percent Passing No. 200	86.0
Liquid Limit	49
Plasticity Index	29

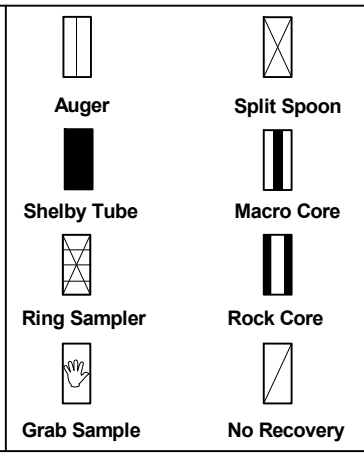
Chamber Confining Pressure (S_3) psi	Nominal Maximum Axial Stress (S_{cyclic}) psi	Actual Applied Max. Axial Load (P_{max}) lb	Actual Applied Cyclic Load (P_{cyclic}) lb	Actual Applied Contact Load ($P_{contact}$) lb	Actual Applied Max. Axial Stress (S_{max}) psi	Actual Applied Cyclic Stress (S_{cyclic}) psi	Actual Applied Contact Stress ($S_{contact}$) psi	Recov. Def. LVDT #1 Reading (H_1) in	Recov. Def. LVDT #2 Reading (H_2) in	Average Recov. Def. LVDT 1 and 2 (H_{avg}) in	Resilient Strain (ϵ_r) in/in	Resilient Modulus (M_r) psi
6.00	2.00	23.9	20.2	3.7	1.97	1.67	0.303	0.0012	0.0012	0.0012	0.000152	10,976
6.00	4.00	48.3	42.2	6.0	3.97	3.47	0.498	0.0026	0.0027	0.0027	0.000339	10,253
6.00	6.00	72.6	64.0	8.6	5.98	5.27	0.709	0.0045	0.0046	0.0046	0.000581	9,067
6.00	8.00	97.1	86.1	11.0	7.99	7.08	0.908	0.0071	0.0073	0.0072	0.000911	7,770
6.00	10.00	121.3	107.7	13.6	9.98	8.86	1.117	0.0102	0.0104	0.0103	0.001309	6,769
3.99	2.00	24.0	20.5	3.5	1.97	1.68	0.287	0.0013	0.0014	0.0013	0.000168	10,032
4.01	4.00	48.2	42.3	5.9	3.97	3.48	0.484	0.0029	0.0030	0.0030	0.000376	9,267
4.02	6.00	72.7	63.8	8.8	5.98	5.25	0.725	0.0049	0.0050	0.0050	0.000629	8,345
4.02	8.00	97.0	86.1	10.9	7.98	7.09	0.894	0.0074	0.0075	0.0075	0.000948	7,478
4.00	10.00	121.1	107.9	13.3	9.97	8.88	1.091	0.0102	0.0105	0.0104	0.001315	6,748
2.00	2.00	23.8	20.4	3.4	1.96	1.68	0.283	0.0014	0.0015	0.0015	0.000186	9,007
1.99	4.00	48.4	42.5	5.9	3.98	3.49	0.485	0.0031	0.0033	0.0032	0.000411	8,495
1.99	6.00	72.6	64.1	8.5	5.97	5.27	0.699	0.0052	0.0054	0.0053	0.000675	7,812
2.00	8.00	97.2	86.3	10.9	8.00	7.10	0.895	0.0077	0.0079	0.0078	0.000990	7,176
1.99	10.00	121.1	107.9	13.2	9.96	8.88	1.085	0.0105	0.0108	0.0107	0.001353	6,560

APPENDIX C
SUPPORTING DOCUMENTS

EXPLANATION OF BORING LOG INFORMATION

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING



WATER LEVEL

Water Initially Encountered

Water Level After a Specified Period of Time

Water Level After a Specified Period of Time

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

(HP)	Hand Penetrometer
(T)	Torvane
(b/f)	Standard Penetration Test (blows per foot)
(PID)	Photo-Ionization Detector
(OVA)	Organic Vapor Analyzer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels, sands and silts.			CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance			
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Ring Sampler Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength, Qu, psf**	**Standard Penetration or N-Value Blows/Ft.**	**Ring Sampler Blows/Ft.**
Very Loose	0 - 3	0 - 6	Very Soft	less than 500	0 - 1	< 3
Loose	4 - 9	7 - 18	Soft	500 to 1,000	2 - 4	3 - 4
Medium Dense	10 - 29	19 - 58	Medium-Stiff	1,000 to 2,000	4 - 8	5 - 9
Dense	30 - 50	59 - 98	Stiff	2,000 to 4,000	8 - 15	10 - 18
Very Dense	> 50	≥ 99	Very Stiff	4,000 to 8,000	15 - 30	19 - 42
			Hard	> 8,000	> 30	> 42

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	Cu ≥ 4 and 1 ≤ Cc ≤ 3 [E]		GW	Well-graded gravel [F]
			Cu ≥ 4 and/or 1 ≥ Cc ≥ 3 [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel [F,G,H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	Cu ≥ 6 and 1 ≤ Cc ≤ 3 [E]		SW	Well-graded sand [I]
			Cu ≥ 6 and/or 1 ≥ Cc ≥ 3 [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G,H,I]
			Fines Classify as CL or CH		SC	Clayey sand [G,H,I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI ≥ 7 and plots on or above "A" line [J]		CL	Lean clay [K,L,M]
			PI ≤ 4 or plots below "A" line [J]		ML	Silt [K,L,M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OL	Organic clay [K,L,M,N] / Organic silt [K,L,M,O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K,L,M]
			PI plots below "A" line		MH	Elastic Silt [K,L,M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OH	Organic clay [K,L,M,P] / Organic silt [K,L,M,Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-in. (75-mm) sieve

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

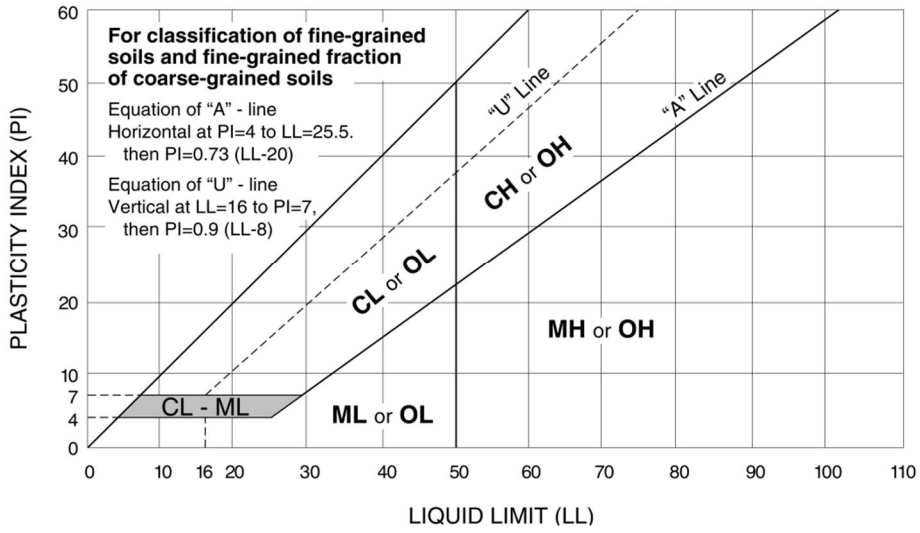
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI ≤ 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



Terracon

Exhibit C-2

AASHTO SOIL CLASSIFICATION SYSTEM

General classification	Silt-clay materials (more than 35% of total sample passing No. 200)			
Group classification	*A-4*	*A-5*	*A-6*	*A-7* *A-7-5** *A-7-6†*
Sieve analysis (percent passing)				
No. 10				
No. 40				
No. 200	36 min.	36 min.	36 min.	36 min.
Characteristics of fraction passing No. 40				
Liquid limit	40 max.	41 min.	40 max.	41 min.
Plasticity index	10 max.	10 max.	11 min.	11 min.
Usual types of significant constituent materials	Silty soils		Clayey soils	
General subgrade rating	Fair to poor			

*For A-7-5, $PI \leq LL - 30$
†For A-7-6, $PI > LL - 30$

General classification	Granular materials (35% or less of total sample passing No. 200)						
	A-1			*A-2*			
Group classification	*A-1-a*	*A-1-b*	*A-3*	*A-2-4*	*A-2-5*	*A-2-6*	*A-2-7*
Sieve analysis (percent passing)							
No. 10	50 max.						
No. 40	30 max.	50 max.	51 min.				
No. 200	15 max.	25 max.	10 max.	35 max.	35 max.	35 max.	35 max.
Characteristics of fraction passing No. 40							
Liquid limit				40 max.	41 min.	40 max.	41 min.
Plasticity index	6 max.		NP	10 max.	10 max.	11 min.	11 min.
Usual types of significant constituent materials	Stone fragments, gravel, and sand		Fine sand	Silty or clayey gravel and sand			
General subgrade rating	Excellent to good						

APPENDIX D

Photographic Log

Box 1: Borings B-1 to B-3

Box 2: Boring B-4 to B-6

Box 3: Borings B-7 to B-10

Box 4: Borings B-11 to B-13

Box 5: Borings B-14 to B-17

Box 6: Borings B-18 to B-20

Box 7: Borings B-21 to B-24

Box 8: Borings B-25 to B-27

Box 9: Borings B-28 to B-30

Box 10: Borings B-31 to B-33

Box 11: Borings B-34 to B-36

Box 12: Borings B-37 to B-39

Box 13: Borings B-41 to B-43

Box 14: Borings B-44 to B-46

Box 15: Borings B-47 to B-49

Box 16: Borings B-50 to B-53

Box 17: Borings B-54 to B-56

Box 18: Borings B-57 to B-59

Box 19: Borings B-60 to B-62

Box 20: Borings B-63 to B-65

Box 21: Borings B-66 to B-69

Box 22: Borings B-69 to B-71

Box 23: Borings B-72 to B-74

Box 24: Borings B-75 to B-77

Box 25: Borings B-78 to B-80

Box 26: Borings B-81 to B-83

Box 27: Borings B-84 to B-86

Box 28: Borings B-87 to B-89

Box 29: Borings B-90 to B-92

Box 30: Borings B-93 to B-95

Box 31: Borings B-96 to B-97