

November 20, 2015  
Project No. 15-019

Bridgefarmer & Associates, Inc.  
12801 North Central Expressway, Suite 400  
Dallas, Texas 75243

Attn: Mr. Shahriar Azad, P.E.

**RESULTS of GEOTECHNICAL INVESTIGATION  
INTERSTATE 30 ROADWAY WIDENING  
CA0601: HWY 70 – SEVIER ST (WIDENING) (S)  
I-30 ROADWAY, SALINE COUNTY, ARKANSAS**

**INTRODUCTION**

This report presents the results of the geotechnical investigation performed for the roadway portion of the Job CA0601: Hwy 70 – Sevier St (Widening) (S), on I-30 in Saline County, Arkansas. These services were authorized on behalf of Bridgefarmer & Associates, Inc. by the Subconsultant Agreement dated October 15, 2013. Notice to proceed with the field studies in the roadway alignment was received on February 20, 2015.

The project consists of widening I-30 from the Hwy 70 interchange to the Sevier Street intersection, a total length of about 4.9 miles. The west end of the project begins at approximately Sta 248+88 and ends to the east at approximately Sta 531+75. For the most part, the widened main lane roadway section will consist of three (3), 12-ft-wide traffic lanes, as 12-ft-wide inside shoulder and, generally, a 10-ft-wide outside shoulder for each directional lane. The directional main lanes will be separated by a concrete median barrier. The roadway portion of the CA0601 project will also include new, widened and/or replaced ramps. The widened main lanes will be developed by widening the roadway to both the inside and outside lanes. The roadway ramps associated with the CA0601 project will include both widening of existing ramps, re-configured existing ramps, and new ramps.

Site grading in the widened roadway is generally expected to be minor with existing grades utilized to the extent possible and fills generally less than about 5 feet. However, site grading will include some areas with fills on the order of 5 to 10 ft near the Saline River Relief bridge ends, i.e.,



Sta 395 to Sta 405. In addition, fill will be used to raise grades in the existing medians and drainage swales. Some fills slightly in excess of 10 ft are anticipated for the Hwy 67 interchange, near Ramp 3 Sta 303, and fills of 10 to 15 ft near Ramp 4 Sta 406 to Sta 410. Fills on the order of 10 ft are also expected near Sta 514 to Sta 520 in the vicinity of the South Street interchange. Some cuts on the order of 15 to 20 ft are expected near Hwy 67 Sta 530, in the South Street interchange area.

The purposes of this study phase have been to develop geotechnical recommendations related to development of project roadways. To accomplish these purposes, the following multi-phased study has been performed.

- Sample borings were drilled along the proposed roadway widening and ramp alignments to define soil, rock, and groundwater conditions.
- Bulk samples were obtained from representative locations along the project alignment for use in laboratory testing used to develop subgrade support parameter recommendations.
- A laboratory testing program was performed to establish general soil classification and basic engineering properties for use in developing geotechnical parameters for roadway design and construction.
- The results of the field and laboratory studies were utilized in engineering analyses performed to develop conclusions and recommendations related to roadway design and site grading planning.

The results of the roadway study are discussed in the following report sections. Recommendations for design and construction are provided in subsequent report sections.

### **SUBSURFACE EXPLORATION**

Subsurface conditions in the CA0601, Interstate 30 (I-30) project alignment was explored by drilling 79 sample borings. These include four (4) wall borings (Borings W21, W22, W23 and W24) drilled in close proximity to Ramp 5. In addition, bulk samples were obtained from three (3) test pits. The site vicinity is shown in Attachment 1. The approximate boring and test pit locations are shown on the Plans of Borings, Plates 2 through 21 of Attachment 1. Logs of the roadway borings, presenting descriptions of the subsurface conditions encountered and the results of field and laboratory tests, are included as Plates 1 through 79 of Attachment 2. The approximate boring locations are noted as station and centerline offset on each log. The approximate ground surface elevation at the borehole locations, as inferred from the available plan and profile drawings, are also shown the logs. It should be noted that the location and surface elevation information shown on the



logs is approximate and based on the available topographic information. Actual surface elevations and horizontal location could vary from that shown on the logs. Keys to the terms and symbols used on the logs are also included in Attachment 2. A summary of the subsurface exploration program is provided in Attachment 3.

The borings were drilled with SIMCO 2400, SIMCO 2800 and Mobile B-53 truck-mounted drilling rigs. Sample borings were advanced using dry-auger drilling procedures. Samples were obtained at approximately 2-ft intervals to 10-ft depth and at 5-ft intervals thereafter. The boring completion depths are shown on the summary in Attachment 3.

Soil and weathered rock samples were obtained using a 2-in.-diameter split-barrel sampler driven into the strata by the blows of a 140-lb safety hammer or automatic hammer dropped 30 in. in accordance with Standard Penetration Test (SPT) procedures. The number of blows required to drive the standard split-barrel sampler the final 12 in. of an 18-in. total drive or portion thereof is defined as the Standard Penetration Number (N). Recorded N-values are shown on the boring logs in the "Blows Per Ft" column. Where rock hardness or obstructions precluded recovery via the SPT, cuttings were obtained for use in visual classification.

To obtain bulk samples for use in laboratory tests, test pits were hand excavated at representative locations along the alignment. The approximate test pit locations are also shown on the Plan of Borings.

All samples were removed from sampling tools in the field. Samples were then visually classified by the geologist, engineer, or geotechnical technician and placed into appropriate containers to prevent moisture loss and/or disturbance during transfer to our laboratory for further examination.

As noted, the roadway borings were advanced using dry-auger drilling procedures to facilitate evaluation of groundwater conditions. Observations regarding groundwater are noted in the lower-right portion of the logs and are discussed in subsequent sections of this report. All boreholes were backfilled after final water level readings. Where borings were drilled in existing pavements, the pavements were patched.

### **LABORATORY TESTING**

To evaluate pertinent properties of the soil and weathered rock encountered in the roadway borings, laboratory tests consisting of classification and natural water content determinations were



performed. A total of 263 natural water content determinations were performed to develop information on *in-situ* soil water content for each boring. Water content results are plotted on the log forms in accordance with the scale and symbols shown in the legend located in the upper-right corner of the logs.

To verify field classification and to evaluate soil plasticity, 108 Atterberg limit (liquid and plastic limits) determinations and 106 sieve analyses were performed on selected representative soil and weathered rock samples. The Atterberg limits are plotted on the boring logs as plus signs connected with a dashed line. The percentage by weight of soil passing the No. 200 sieve is noted in the “- No. 200%” column on the far right side of the log forms. In addition, a summary of laboratory test results and classification by the Unified Soil Classification System and AASHTO classification is presented in Attachment 4. Grain-size distribution curves are also included in Attachment 4.

To develop information on the range of subgrade support properties, three (3) laboratory Moisture-Density Relationship (Proctor) tests were performed on representative bulk samples. These tests were performed in accordance with AASHTO T-99 methods. Pavement subgrade support properties were evaluated by performing three (3) California Bearing Ratio (CBR) tests (AASHTO T-193), with one (1) test performed on samples obtained from each of the test pits. For the CBR tests, the specimens were molded at approximately the optimum water content and 95 percent of the maximum dry density as determined by the laboratory Proctor tests.

Classification test results, Proctor test results, and CBR test results are summarized in Attachment 5. The test results for both the Proctor and CBR tests are also shown graphically in Attachment 5.

## **GENERAL SITE and SUBSURFACE CONDITIONS**

### **Site Conditions**

The project begins at the Interstate 30 and Highway 70 interchange, Sta 248+88.06, and extends east to the I-30 and Sevier Street/South Street, Sta 531+75.78. The alignment locale is a mixture of undeveloped areas and commercial development. The existing I-30 is an interstate highway with two traffic lanes each direction and an asphalt concrete pavement section. Outside the existing roadway and west of Benton, Arkansas, the north and south sides of the roadway alignment are predominantly undeveloped pasture and woodlands with scattered residential and commercial



developments. In the rural areas, the roadway is bordered by both shallow ditches and steep hillsides. The alignment also crosses the Saline River and Saline River Relief between Haskell (Hwy 67 interchange) and Benton. Surface drainage of the project area is highly variable. Surface drainage of the existing roadway is good and drainage of the surrounding terrain varies from poor to fair.

#### Site Geology

The Geologic Map of Arkansas<sup>1</sup> indicates that the roadway alignment crosses mapped exposures of Quaternary Alluvium, the Tertiary Period Wilcox and Midway groups, the middle Ordovician Period Womble Shale Formation, and the lower Ordovician Mazarn Shale Formation. The alluvial deposits are comprised of variable sand, silt, gravel and clay units, and mixtures of any or all of these clastic materials and are underlain by the Tertiary Wilcox and Midway groups and the Ordovician Womble and Mazarn Formations.

#### Subsurface Conditions

The subsurface conditions revealed by the roadway borings are shown in detail on the boring logs presented in Attachment 2. The surficial soils in the roadway alignment consist primarily of variable on-site fill. The fill ranges from localized areas of clay (A-7-6) to sandy fine to coarse gravel (A-1-a). However, the majority of the subgrade soils consist of clayey fine sand, fine sandy clay, silty clay, and fine sandy silt/silty fine sand with variable amounts of gravel. The highly variable on-site fill exhibits poor to good compaction.

The on-site fill is underlain by variable firm to very stiff to hard silty clay and soft to stiff clay units with localized and discontinuous units of very soft to very stiff fine sandy clay, dense clayey gravel, medium dense to dense clayey fine to medium sand, medium dense to dense clayey fine to coarse gravel, dense to very dense sandy fine to coarse gravel, medium dense silty fine sand, and medium dense clayey, fine sandy silt. Shear strength of the cohesive soils varies from low to moderate and relative density of the granular soils varies from medium to high. Auger refusal in very dense gravel was locally encountered near Sta 511 (see Boring R3). The predominant silty clay and granular soils exhibit low plasticity. However, the localized clay units have high to very high plasticity. The high to very high plasticity clay units appear to be predominantly in the alignment vicinity between approximately Sta 345 to Sta 395.

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<sup>1</sup> Geologic Map of Arkansas, Arkansas Geologic Commission and U.S. Geologic Survey; 1993



The existing embankment fill and natural soils are underlain by weathered shale and sandstone at variable depths of 6 in. to in excess of 10-ft depth. The low hardness to moderately hard highly weathered shale, weathered shale and shale exhibit low compressibility and moderate to high shear strength. Hard shale and hard sandstone, as indicated by auger refusal, was locally encountered at 6.5-ft depth (see Borings R8 and R19) to 8-ft depth (see Boring 16).

Based on the results of the borings, the subgrade soil classification varies from AASHTO Soil Classification A-1-a to A-6 with some areas of A-3 and A-2-6 soils. In addition, there are localized areas of A-7-6 subgrade soils. Specifically, the A-7-6 subgrade soils appear to be localized between approximately Sta 345 to Sta 395. The predominant subgrade soils in the project alignment appear to be A-2-4 and A-6 soils, which correlate with variable excellent to poor soils. Given these classifications and the determination of CBR values ranging from approximately 8 to 16 for the on-site soils, subgrade conditions are considered to be medium to good.

#### Groundwater Conditions

The roadway borings were advanced by dry-auger procedures to facilitate observation of groundwater conditions. Groundwater was locally encountered at 8.5- to 8.8-ft depth in June through August 2015 (see Borings 5 and R7). Shallow groundwater was not encountered in the remaining borings within the maximum 10-ft exploration depth. Groundwater conditions will vary with seasonal precipitation, surface runoff and infiltration, and water levels in nearby ponds, streams, and drainage features.

### **ANALYSES and RECOMMENDATIONS**

#### General Considerations

It is understood that the scope of the roadway phase of this project includes site grading, subgrade preparation, and pavement construction. The conclusions and recommendations developed in this study phase are discussed in the following report sections.

#### Pavement Subgrade Support

Site grading is expected to generally consist of raising grades along the widened roadway alignment. Based on the results of the borings and test pits, the on-site subgrade soils are expected to be predominantly variable on-site fill comprised predominantly of silty clay, sandy clay, clayey sand, and silty fine sand/fine sand with various amounts of rock fragments and fine to coarse gravel. The predominant subgrade soil classification will be AASHTO A-2-4, A-6, A-2-6 and A-4 and



with very minor amounts of A-7-6. Locally available borrow used for unclassified embankment fill is expected to be comprised predominantly of A-2-4, A-6, and A-2-6 soils.

Based on the results of the laboratory CBR tests and correlation with the AASHTO classification of the on-site and anticipated subgrade soils, subgrade support in the road widening and ramp alignments is expected to be medium to good. In light of the correlation with medium to good subgrade support and factoring for environmental and serviceability criteria, the following subgrade support parameters are recommended.

- Effective resilient modulus ( $M_R$ ): 3500 lbs per sq in.
- Modulus of subgrade reaction ( $k$ ): 130 lb per sq in. per in.
- R value: 10

Subgrade preparation and site grading should be performed in accordance with AHTD criteria (AHTD Standard Specifications Sections 210 and 214) and the recommendations of the Site Grading and Subgrade Preparation section of this report. We recommend that soils classifying as A-7-5 or A-7-6 with a plasticity index (PI) in excess of 18 be excluded from use as subgrade within 18 in. of the plan subgrade elevation. The top 18 in. of subgrade soils should have a maximum plasticity index (PI) of 18. The as-built pavement subgrade should be evaluated by the Engineer. Areas of unsuitable subgrade should be improved by undercut and replacement or addition of stabilization additives.

#### Site Grading and Subgrade Preparation

Site preparation will begin with stripping the zone of organic-containing surface soils. All organic soils and saturated soils in the existing drainage swales and highway median should be completely mucked out. In general, the stripping depth is estimated to be about 6 to 9 inches. Subgrade preparation, including required undercuts or soil treatment, should extend at least 5 ft beyond the roadway shoulder edges and embankment toes to the extent possible. Site preparation is expected to include demolition of some existing pavements. All areas where abandoned utilities or culverts are removed should be properly backfilled.

Where the existing pavements are abandoned and will be covered with fill, the existing pavement surface should be scarified to a minimum depth of 6 inches. The scarified and processed pavement material should be recompact to a stable condition. Where pavements are to be demolished, consideration may be given to utilizing the processed asphalt concrete and aggregate



base for embankment fill. In this case, the demolished materials should be thoroughly blended and processed to a reasonably well-graded mixture with a maximum particle size of 2 inches.

Following demolition, stripping, and any cut, and prior to placing fill or otherwise continuing with subgrade preparation, the extent of weak and/or unsuitable soils should be determined. Proof-rolling is recommended to evaluate subgrade stability. Proof-rolling should be performed with a pneumatic-tired roller, loaded tandem-wheel dump truck, or similar equipment. Soft soils or soils exhibiting a tendency to rut and/or pump should be undercut, processed, and re-compacted or replaced with embankment fill, whichever is appropriate. Care must be taken that undercuts, stump holes, etc. are properly backfilled with controlled fill. Based on the results of the borings, soil in the upper 4 to 6 ft, more or less, are locally unstable. The extent of unstable soils will be greater during wet seasons of the year.

At locations where excavations or undercuts encounter shallow water or seepage, backfill should be comprised of clean sand (AHTD Standard Specifications Section 302, SM-1), stone backfill (AHTD Standard Specifications Section 207), or an approved alternate placed to an elevation above the inflow of seepage.

Undercutting or improvement by stabilization of unsuitable surface soils in the roadway alignments will be required in some alignment areas. Actual undercut or improvement requirements will depend on seasonal site conditions and final site grading plans.

In areas of deeper fill, the potential exists for use of thick initial lifts ("bridging"), as per AHTD criteria. Bridge lifts will be subject to some consolidation. Settlement of a primarily granular fill suitable for use in bridging would be expected to be relatively rapid and long-term post-construction settlement would not be expected to be a significant concern. Where clayey soils are placed in thick lifts, long term settlement will be more significant. We recommend that the use of "bridging" techniques be limited to granular borrow soils, i.e., sand, gravel, or crushed stone. Where fill amounts are limited to less than about 3 ft, bridging will be less effective and the need for undercut is considered more likely. Use of bridging techniques and thickened fill lifts should be specifically approved by the Engineer.

Based on the results of the borings, the depth of weak subgrade soils is expected to vary from minimal to 6 ft, or more or less, below existing grades. The average undercut depths range from minimal to approximately 2 ft below existing grades. The estimated depths of weak soils that will warrant undercut or improvement are summarized in the table provided in Attachment 6.



The undercut/improvement depths are summarized in the table in Attachment 6 are provided for estimation purposes only. The depths summarized in that table have been estimated based on the results of the borings drilled in June, July and August 2015. The required depth of improvement will vary with seasonal site conditions and final grading plans and must be field verified.

In lieu of undercutting and replacing unsuitable soils, consideration may be given to using additives to improve soil workability and stabilize weak areas. Hydrated lime, quick lime, Portland cement, fly ash, or suitable alternate materials may be used as verified by appropriate testing and approved by the Engineer. Additives can be effective where the depth of unstable soils is relatively shallow. Treatment will be less effective in areas where the zone of unstable soils is deep. The optimum application rate of stabilization additive must be determined by specific laboratory tests performed on the alignment subgrade soils.

The as-built undercut or improvement depth requirements will vary with specific site conditions, seasonal precipitation, and construction methods. During dry periods of the year, it is feasible that the depth of unstable soils will be reduced. Undercut of localized low-lying areas and abandoned drainage features is considered likely even during dry conditions. All roadway subgrade should be evaluated by the Engineer or Department during site grading operations. Specific improvement requirements must be field verified. Subgrade improvement, including any undercut, should extend at least 5 ft outside pavement limits to the extent possible.

Positive surface drainage should be established at the start of the work and maintained throughout construction to prevent surface water ponding and subsequent saturation of subgrade soils. Temporary ditches can be very beneficial in controlling surface water and reducing undercut requirements. In addition, subgrade preparation should extend outside the limits of embankment toes to reduce the effects of loss of subgrade support at roadway edges.

Embankment fill may consist of the on-site soils free of significant amounts of organics and debris as per AHTD Standard Specifications Section 210.06. We recommend that the top 18 in. of embankment fill comprising the roadway subgrade is low-plasticity soils with a maximum plasticity index (PI) of 18. Where highly-plastic clay, i.e., with a PI of 25 or more, is encountered at the subgrade elevation, we recommend that it be undercut as required to provide at least 18 in. of pavement subgrade with a PI of 18 or less. Alternatively, lime treatment or other suitable additive may be utilized to develop a stable, low-plasticity subgrade.



Embankment fill should be placed and compacted as specified in AHTD Standard Specifications Section 210. The on-site soils are silty clay and sandy clay to clayey sand and silty sand with varying amounts of rock fragments and fine to coarse gravel. Some water content adjustment will likely be required to achieve suitable compaction with the use of on-site materials. Additives such as hydrated lime, quick lime, fly ash, or other approved materials can be utilized to improve workability of fine-grained soils. The fine-grained silty clay and sandy clay are not well suited for use in thick initial fill lifts, i.e., “bridge” lifts. Fill should typically be placed in nominal 6- to 10-in. loose lifts. Density and water content of all earthwork should be maintained until pavement construction is completed.

### **CONSTRUCTION CONSIDERATIONS**

Positive surface drainage should be established at the start of construction and maintained throughout the project. Water should not be allowed to pond in subgrade areas. Subgrade soils that become saturated or otherwise disturbed should be excavated, processed and recompact, replaced with approved fill, or stabilized with additives approved by the Engineer and compacted to the recommended water content range and density.

Construction planning should anticipate areas where subgrade improvement will be required. Localized improvement depths are expected to range from 2 to 4 ft, more or less. Undercuts and other excavations should be backfilled with suitable material.

Where seepage into undercuts or excavations is a problem, undercuts should be backfilled with a basal fill layer of clean sand (AHTD Standard Specifications Section 302, SM-1), SM-1, stone backfill (AHTD Standard Specifications Section 207), or an alternate approved by the Engineer is recommended for areas of standing water or poor surface drainage where surface water will tend to pond.

Where surface seeps or springs are encountered during site grading, we recommend the seepage be directed via French drains or blanket drains to positive discharge at daylight or to storm drainage lines. We also recommend that blanket drains be constructed in all existing drainage features prior to fill placement, to direct groundwater seepage to positive discharge. Blanket drains should consist of at least 8 to 12 in. of clean aggregate (AHTD Standard Specifications Section 403, Class 3 Mineral Aggregate or an approved alternate) fully encapsulated



by a filter fabric (AHTD Standard Specifications Subsection 625.02, Type 2 or an approved alternate). Drains should direct water to positive discharge at daylight or into storm drain lines.

The results of the roadway borings indicate that the sandy/silty clay and clayey/silty sand overburden soils can be excavated with conventional heavy-duty excavation equipment. The low hardness to moderately hard weathered shale can also typically be excavated with conventional heavy-duty excavation equipment. There can be harder zones within the weathered shale that are more resistant. There are also localized and discontinuous seams and layers of hard sandstone in the weathered shale which could require rock excavation methods.

### **CLOSURE**

The Engineer or Department should monitor site grading, subgrade preparation, and all pavement construction. Subsurface conditions significantly at variance with those encountered in the borings should be brought to the attention of the Geotechnical Engineer. The conclusions and recommendations of this report should then be reviewed in light of the new information.

The following illustrations are attached and complete this submittal.

Attachment 1	Site Vicinity Map and Plan of Borings
Attachment 2	Boring Logs
Attachment 3	Subsurface Exploration Summary
Attachment 4	Classification Test Results
Attachment 5	Subgrade Support Laboratory Test Results
Attachment 6	Summary of Estimated Subgrade Improvement Depths

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We appreciate the opportunity to be of service to you on this project. Should you have any questions regarding this report, or if we may be of additional assistance during final design or construction, please call on us.

Sincerely,

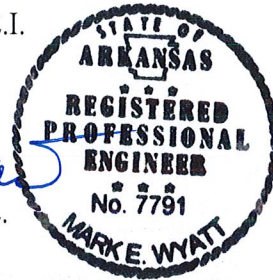
**GRUBBS, HOSKYN,  
BARTON & WYATT, INC.**

*Jay R. McKiever (cw)*

Jay R. McKiever, E.I.  
Staff Engineer

*Mark E. Wyatt*

Mark E. Wyatt, P.E.  
President



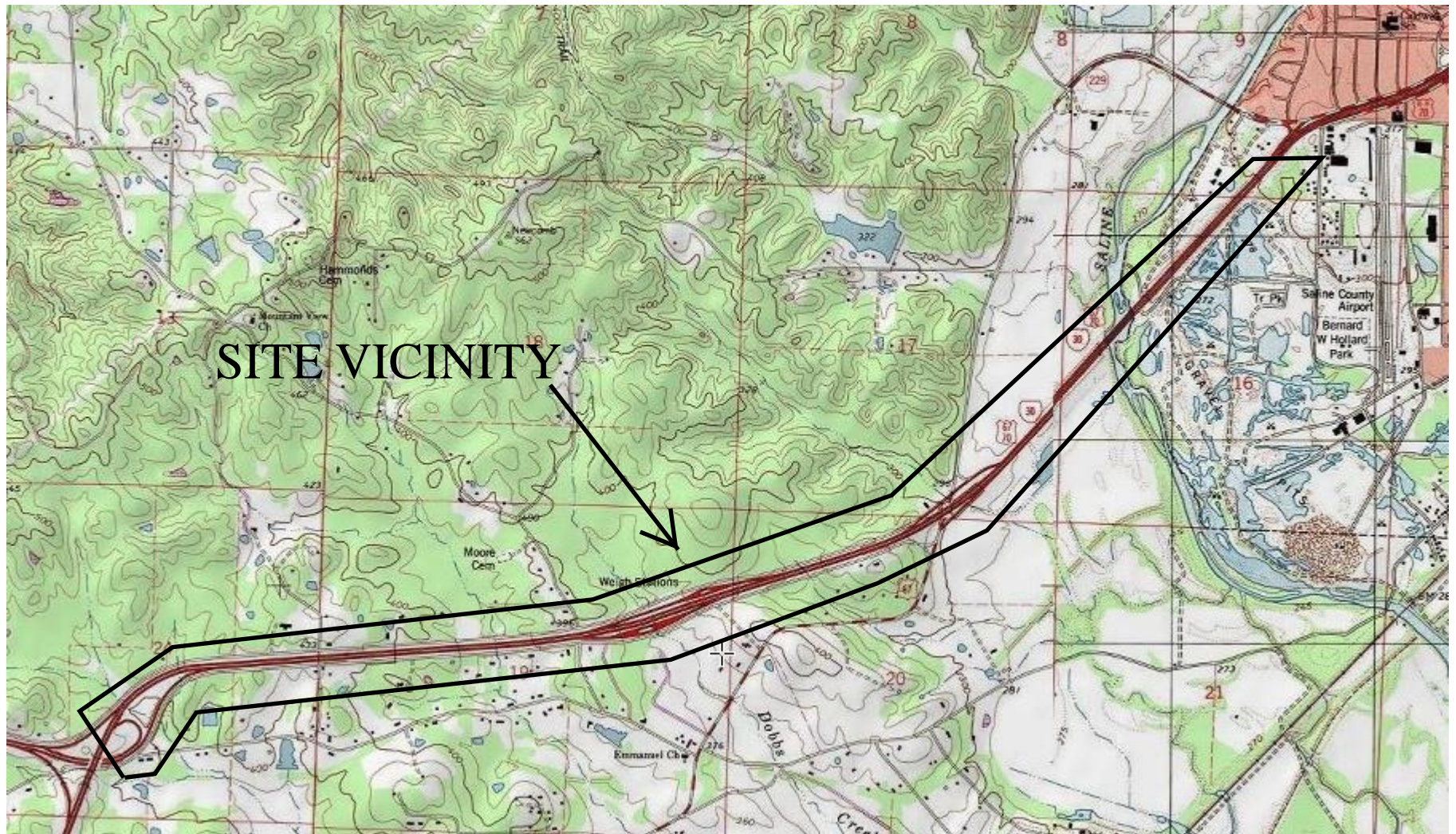
JRM/MEW:jw

Copies Submitted: Bridgefarmer & Associates, Inc.  
Attn: Mr. Shahriar Azad, P.E. (1+email)



## **ATTACHMENT 1**





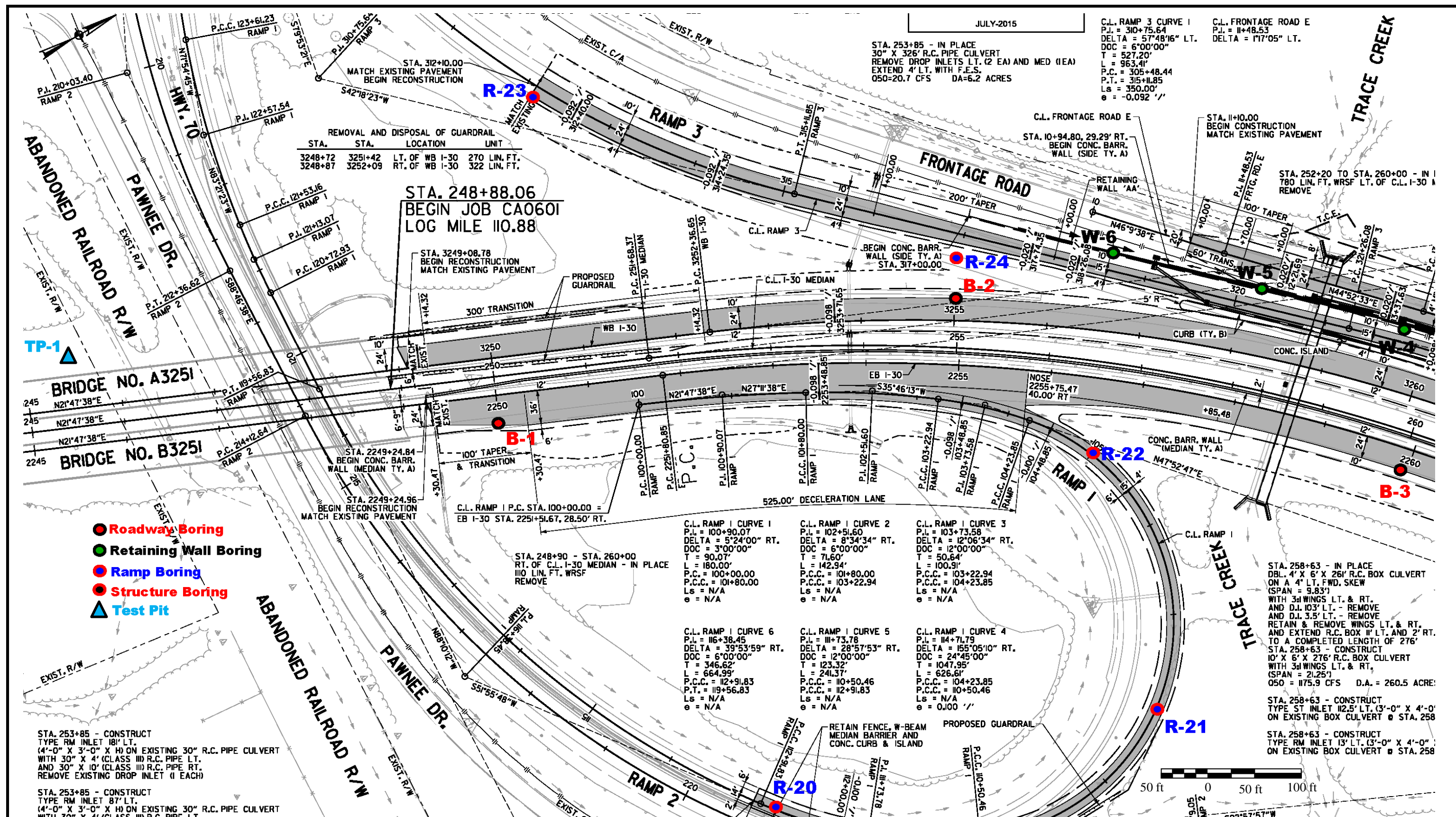
**Grubbs, Hoskyn,  
Barton & Wyatt, INC.**  
CONSULTING ENGINEERS

Site Vicinity Map  
CA0601: Hwy 70 – Sevier St (Widening)(S)  
I-30 - Saline County, Arkansas

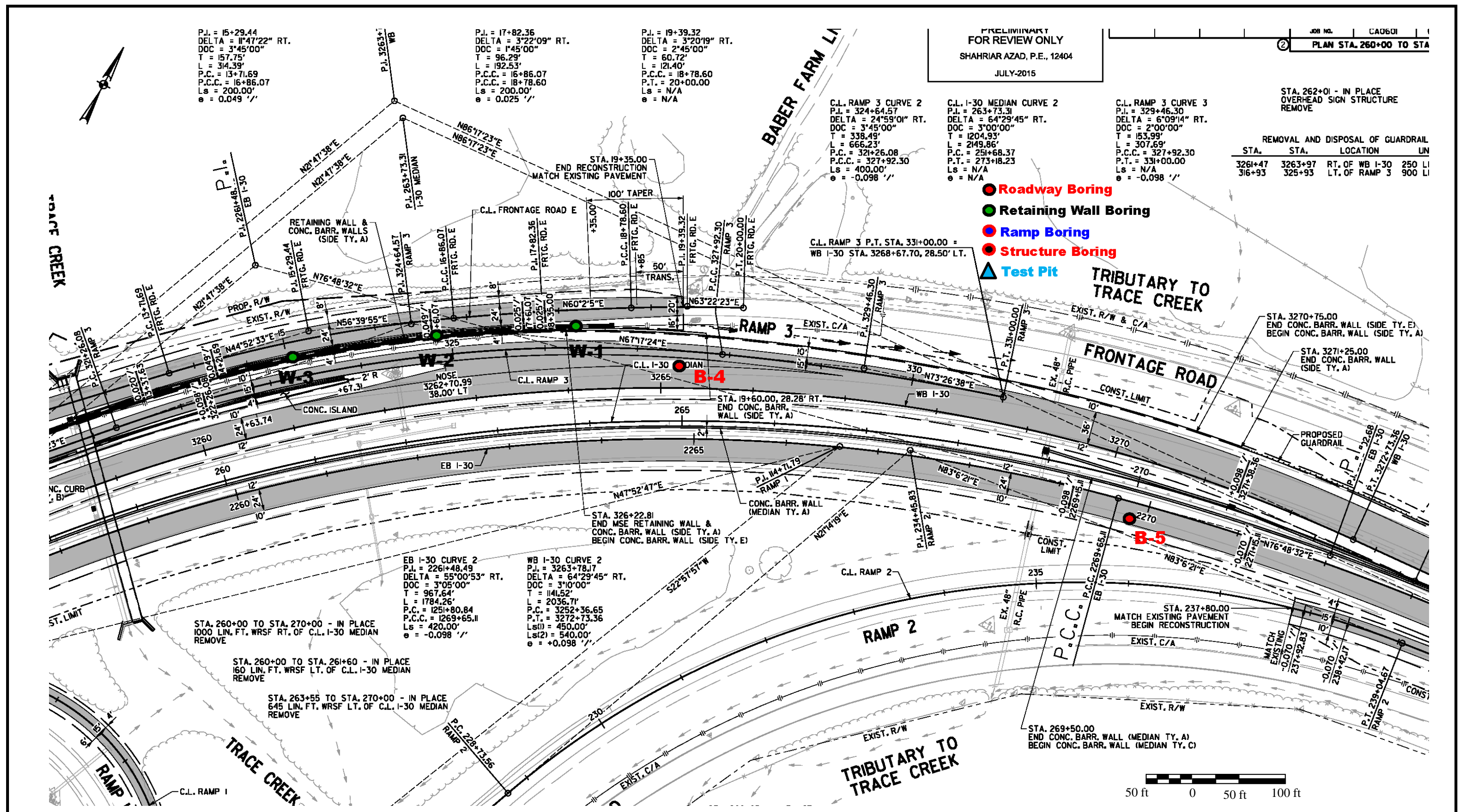
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Plate 1













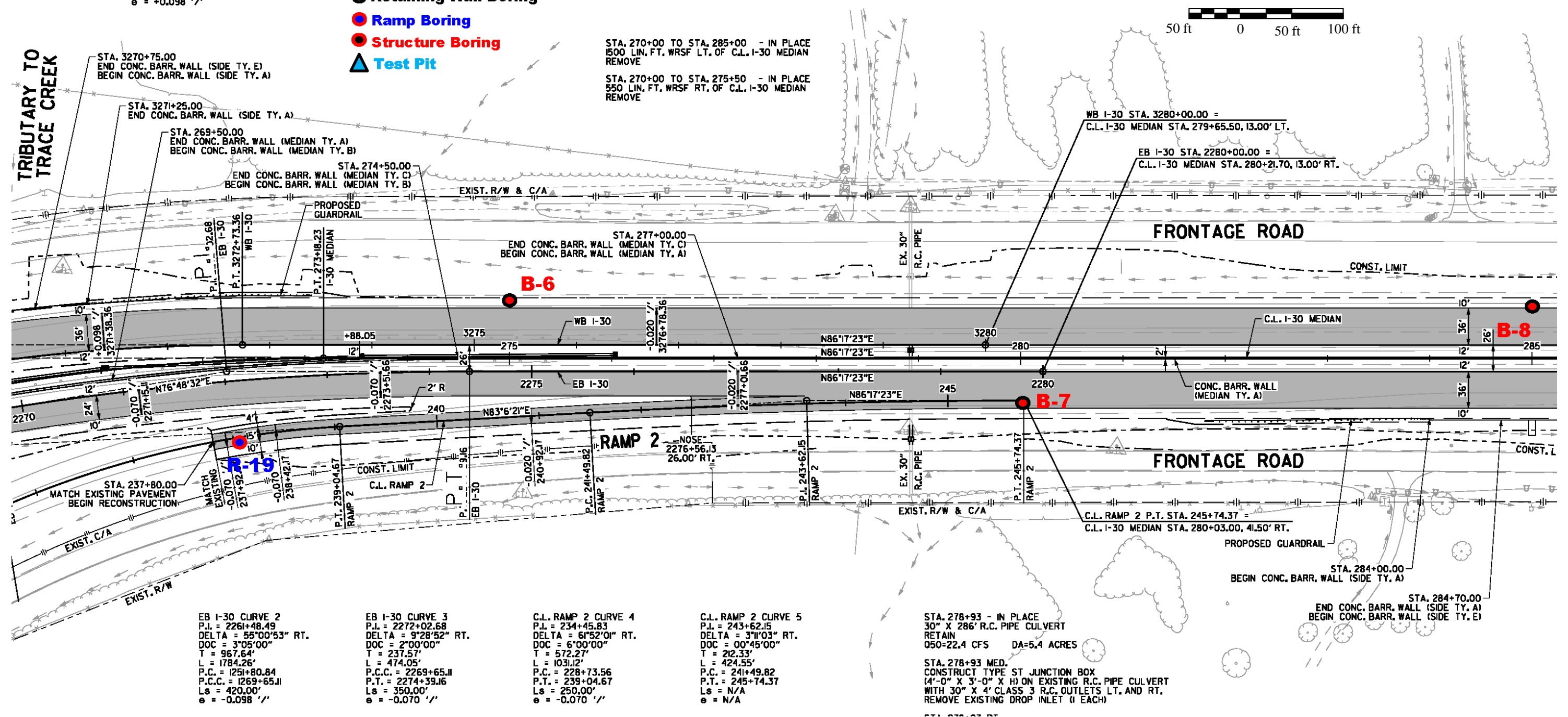
WB I-30 CURVE 2  
P.I. = 3263+78.17  
DELTA = 64°29'45" RT.  
DOC = 3°10'00"  
T = 1141.52'  
L = 2036.71'  
P.C. = 3252+36.65  
P.T. = 3272+73.36  
Ls(1) = 450.00'  
Ls(2) = 540.00'  
e = +0.098 %

- Roadway Boring
- Retaining Wall Boring
- Ramp Boring
- Structure Boring
- ▲ Test Pit

STA.	STA.	LOCATION	GUARDRAIL (TY. A) LIN. FT.	GUARDRAIL TERMINAL (TY. 2)	THRE BEAM GUARDRAIL TERMINAL
3271+25.00	3273+43.75	LT. OF WB I-30	= 150	EACH	EACH
281+81.25	284+00.00	RT. OF EB I-30	= 150	EACH	EACH

FOR REVIEW ONLY  
SHAHRIAR AZAD, P.E., 12404  
JULY-2015

② PLAN STA. 270+00 TO STA. 285+00







FOR REVIEW ONLY  
SHAHRIAR AZAD, P.E., 12404  
JULY-2015

② PLAN STA. 285+00 TO STA. 300+00

STA. 288+91 - IN PLACE  
30" X 218' R.C. PIPE CULVERT  
RETAIN  
Q50 = 34.0 CFS D.A. = 9.4 ACRES

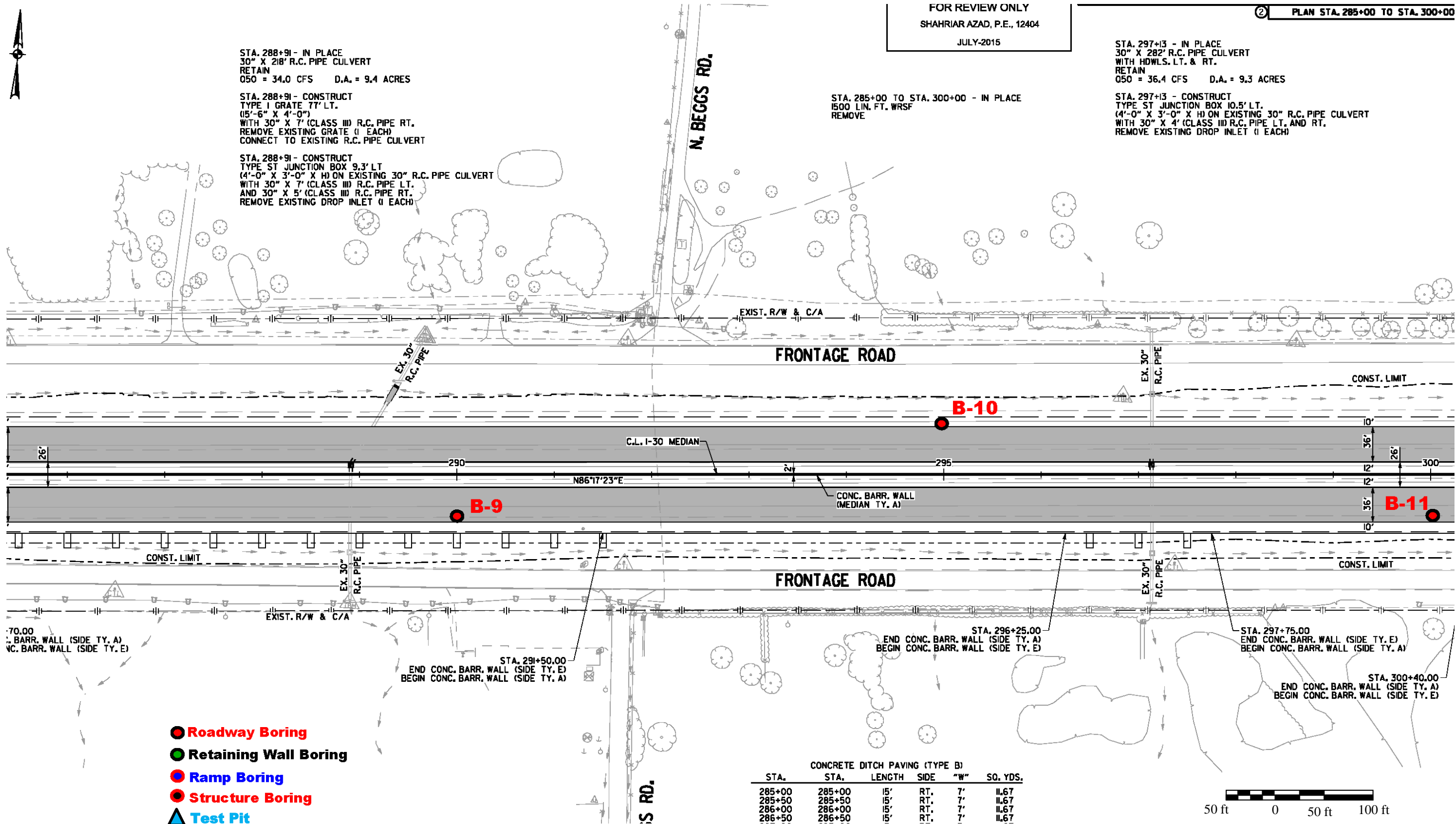
STA. 288+91 - CONSTRUCT  
TYPE I GRATE 77' LT.  
(15'-6" X 4'-0")  
WITH 30" X 7' (CLASS III) R.C. PIPE RT.  
REMOVE EXISTING GRATE (1 EACH)  
CONNECT TO EXISTING R.C. PIPE CULVERT

STA. 288+91 - CONSTRUCT  
TYPE ST JUNCTION BOX 9.3' LT.  
(4'-0" X 3'-0" X H) ON EXISTING 30" R.C. PIPE CULVERT  
WITH 30" X 7' (CLASS III) R.C. PIPE LT.  
AND 30" X 5' (CLASS III) R.C. PIPE RT.  
REMOVE EXISTING DROP INLET (1 EACH)

STA. 285+00 TO STA. 300+00 - IN PLACE  
1500 LIN. FT. WRSF  
REMOVE

STA. 297+13 - IN PLACE  
30" X 282' R.C. PIPE CULVERT  
WITH HDWLS. LT. & RT.  
RETAIN  
Q50 = 36.4 CFS D.A. = 9.3 ACRES

STA. 297+13 - CONSTRUCT  
TYPE ST JUNCTION BOX 10.5' LT.  
(4'-0" X 3'-0" X H) ON EXISTING 30" R.C. PIPE CULVERT  
WITH 30" X 4' (CLASS III) R.C. PIPE LT. AND RT.  
REMOVE EXISTING DROP INLET (1 EACH)







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SHAHRIAR AZAD, P.E., 12404  
JULY-2015

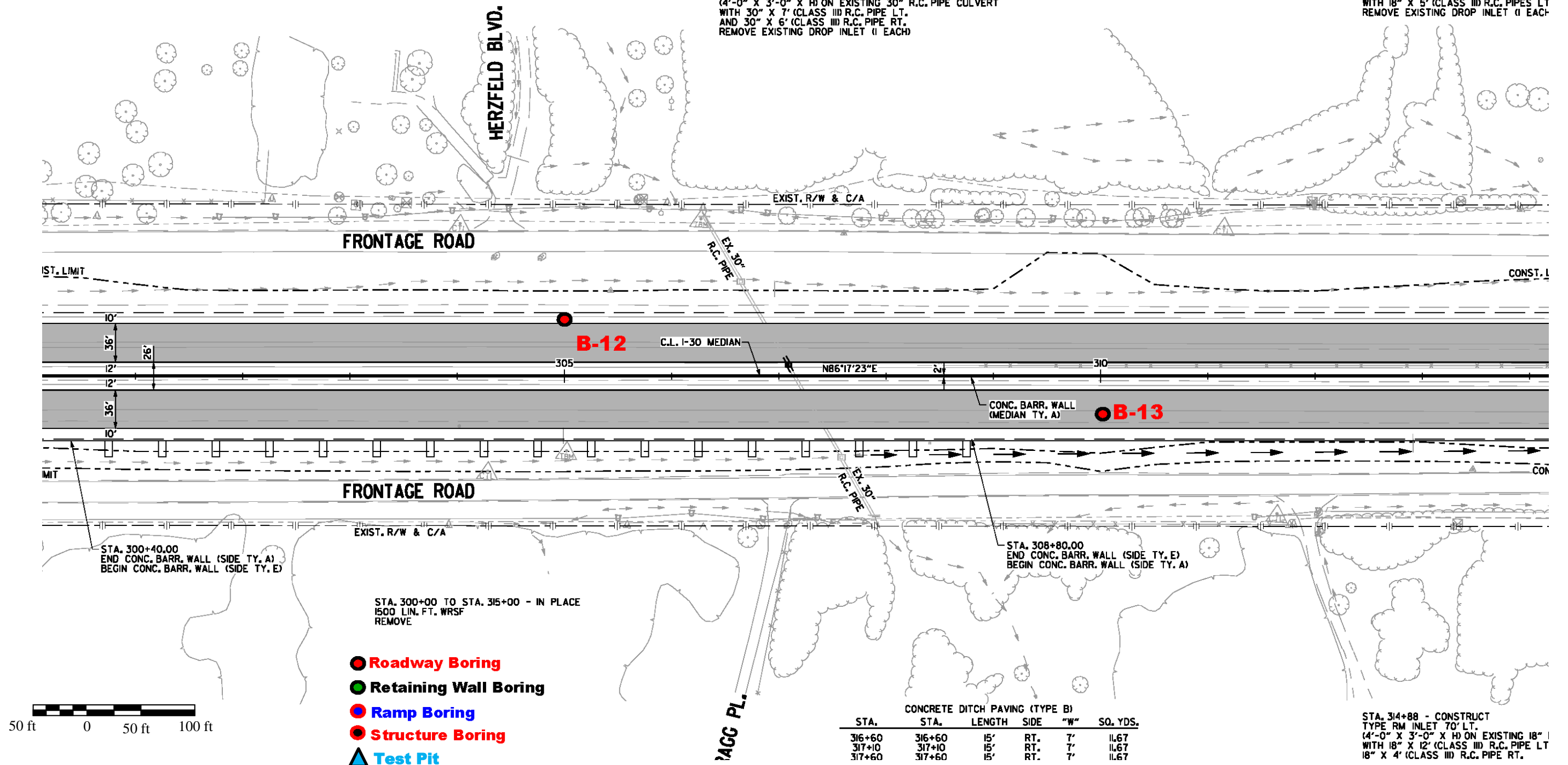
2 PLAN STA. 3

STA. 307+15 - IN PLACE  
30" X 32" R.C. PIPE CULVERT  
ON A 50'30" RT. FWD. SKEW  
RETAIN  
Q50 = 50.2 CFS D.A. = 13.8 ACRES

STA. 307+15 - CONSTRUCT  
TYPE ST JUNCTION BOX 7.5' LT.  
(4'-0" X 3'-0" X H) ON EXISTING 30" R.C. PIPE CULVERT  
WITH 30" X 7' (CLASS III) R.C. PIPE LT.  
AND 30" X 6' (CLASS III) R.C. PIPE RT.  
REMOVE EXISTING DROP INLET (1 EACH)

STA. 314+88 - IN PLACE  
18" X 269" R.C. PIPE CULVERT  
RETAIN  
Q50 = 22.7 CFS D.A. = 4.4 ACRES

STA. 314+88 - CONSTRUCT  
TYPE ST JUNCTION BOX 10' LT.  
(4'-0" X 3'-0" X H) ON EXISTING 18" X  
WITH 18" X 5' (CLASS III) R.C. PIPES LT  
REMOVE EXISTING DROP INLET (1 EACH)





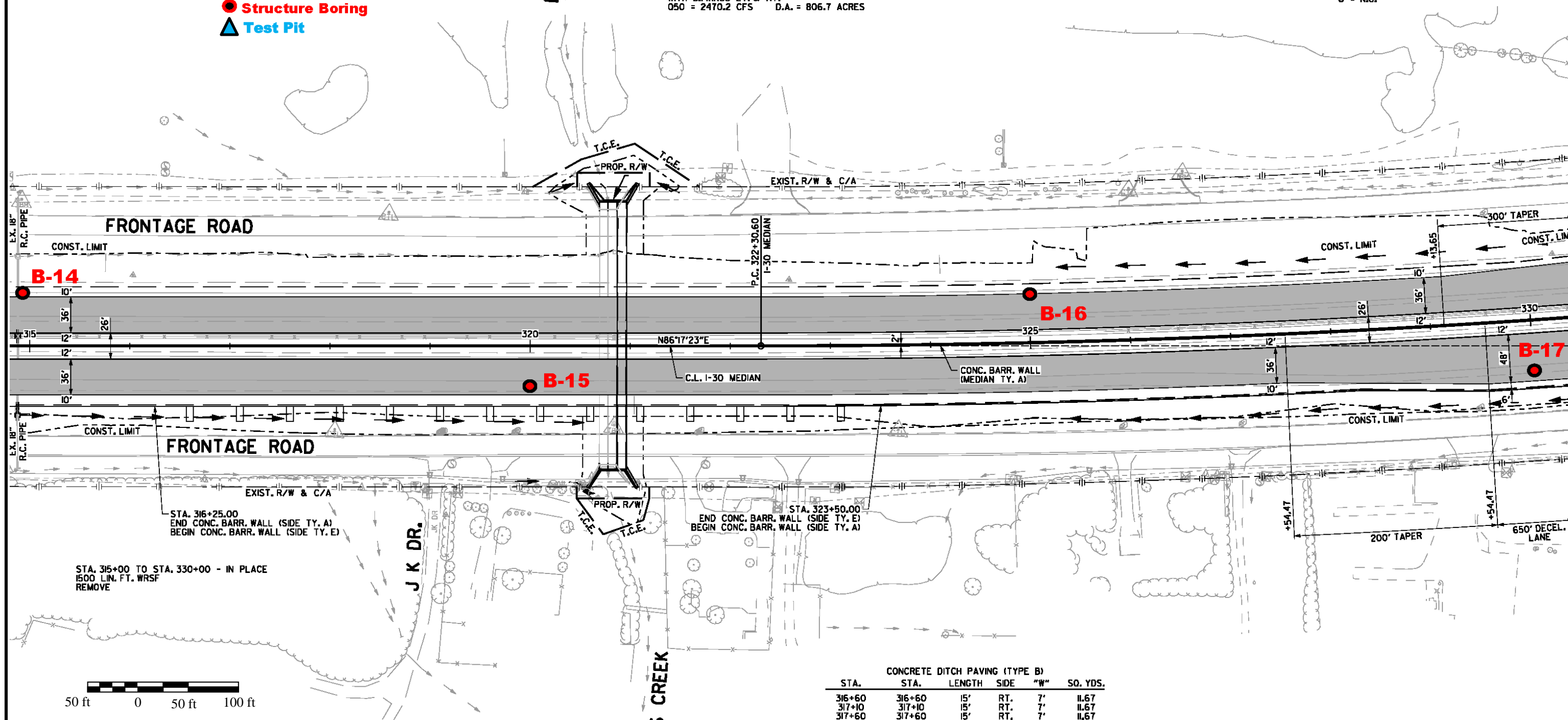


FOR REVIEW ONLY  
SHAHRIAR AZAD, P.E., 12404  
JULY-2015

2 PLAN STA. 315+00 TO STA. 330+00

C.L. 1-30 MEDIAN CURVE 3  
P.I. = 335+56.36  
DELTA = 13°11'56" LT.  
DOC = 0°30'00"  
T = 1325.76'  
L = 2639.78'  
P.C. = 322+30.60  
P.T. = 348+70.38  
Ls = N/A  
e = N.C.

STA. 320+87 - IN PLACE  
DBL. 8' X 8' X 256' R.C. BOX CULVERT  
(SPAN = 17.79')  
WITH 3d WINGS LT. & RT.  
AND DROP INLETS 94' LT., 8' LT. & 77' RT.  
RETAIN, REMOVE WINGS LT. & RT. & D.J. 8' LT.  
& EXTEND R.C. BOX 8' LT. AND 6' RT.  
TO A COMPLETED LENGTH OF 269'  
& STA. 320+87 - CONSTRUCT  
8' X 8' X 269' R.C. BOX CULVERT  
(SPAN = 27.54')  
WITH 3d WINGS LT. & RT.  
Q50 = 2470.2 CFS D.A. = 806.7 ACRES



CONCRETE DITCH PAVING (TYPE B)					
STA.	STA.	LENGTH	SIDE	"W"	SQ. YDS.
316+60	316+60	15'	RT.	7'	11.67
317+10	317+10	15'	RT.	7'	11.67
317+60	317+60	15'	RT.	7'	11.67



**PLAN OF BORINGS**  
**CA0601: Hwy 70 – Sevier St (Widening)(S)**  
**I-30 - Saline County, Arkansas**

**Scale: As Shown**

**Job No. 15-019**

## PLATE 7





C.L. I-30 MEDIAN CURVE 3  
P.I. = 335+56.36  
DELTA = 13°11'56" LT.  
DOC = 0°30'00"  
T = 1325.76'  
L = 2639.78'  
P.C. = 322+30.60  
P.T. = 348+70.38  
Ls = N/A  
e = N.C.

- Roadway Boring
- Retaining Wall Boring
- Ramp Boring
- Structure Boring
- ▲ Test Pit

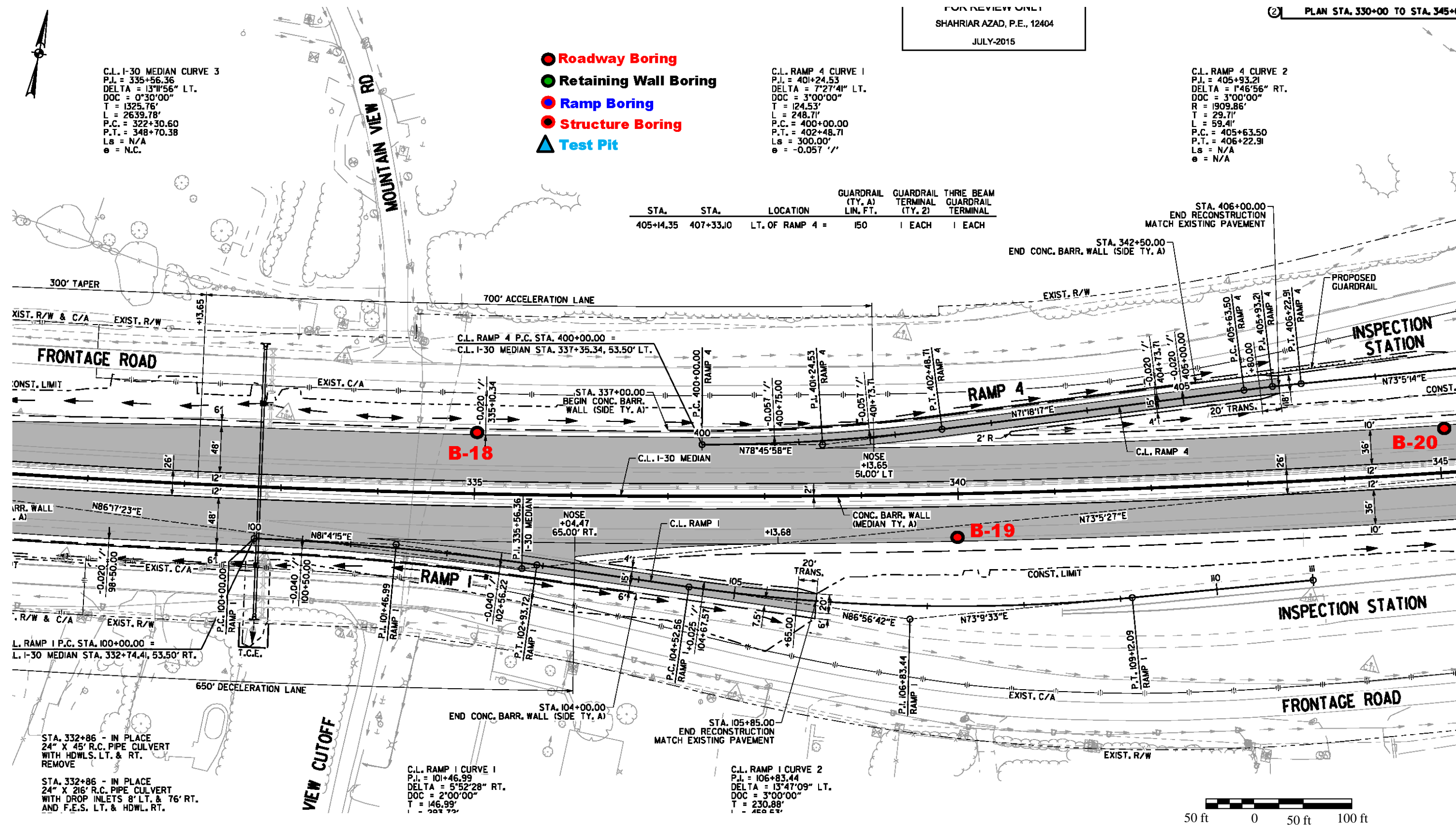
C.L. RAMP 4 CURVE 1  
P.I. = 401+24.53  
DELTA = 7°27'41" LT.  
DOC = 3°00'00"  
T = 124.53'  
L = 248.71'  
P.C. = 400+00.00  
P.T. = 402+48.71  
Ls = 300.00'  
e = -0.057'/'

C.L. RAMP 4 CURVE 2  
P.I. = 405+93.21  
DELTA = 1°46'56" RT.  
DOC = 3°00'00"  
R = 1909.86'  
T = 29.71'  
L = 59.41'  
P.C. = 405+63.50  
P.T. = 406+22.91  
Ls = N/A  
e = N/A

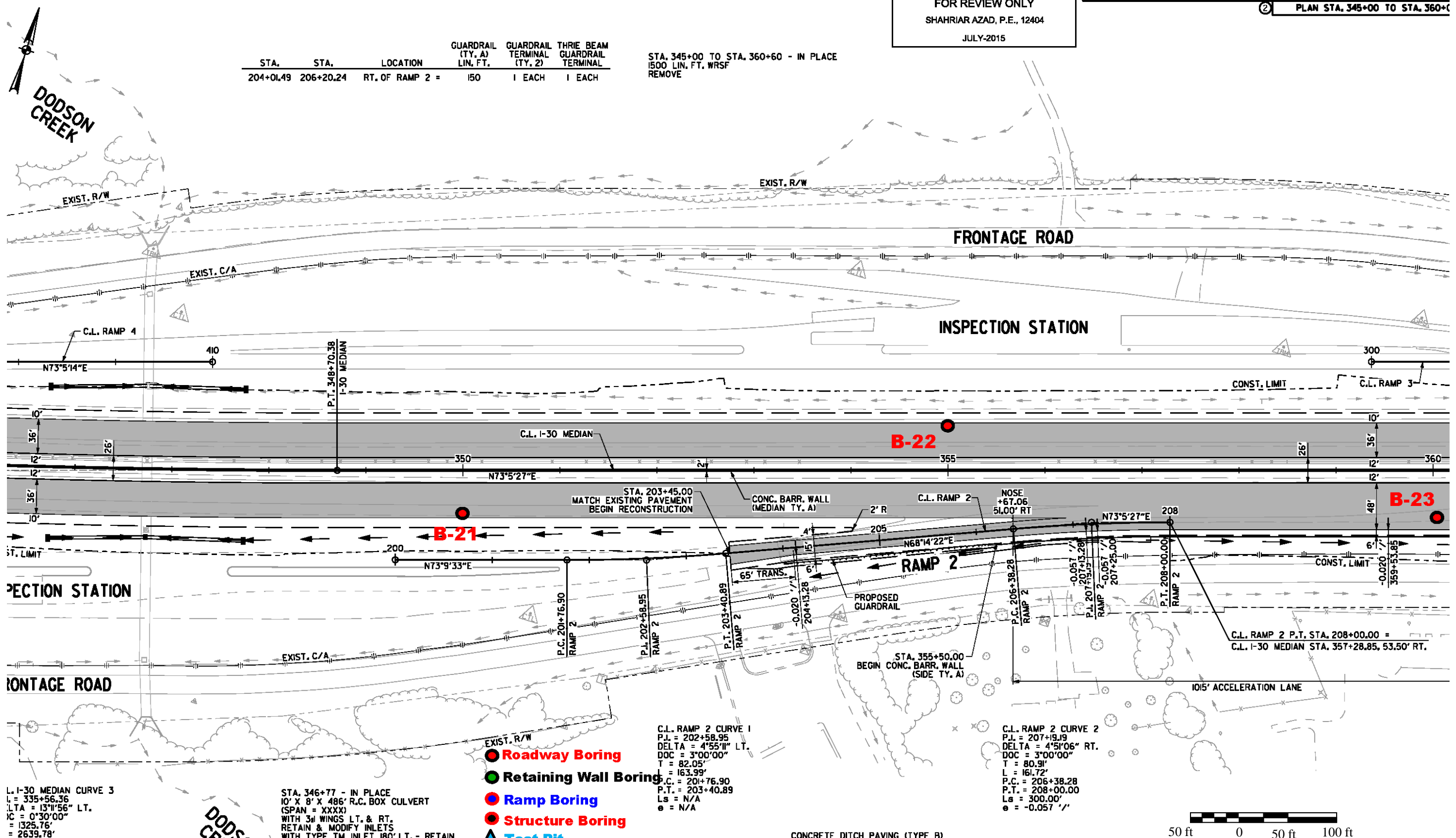
FOR REVIEW ONLY  
SHAHRIAR AZAD, P.E., 12404  
JULY-2015

② PLAN STA. 330+00 TO STA. 345+00

STA.	STA.	LOCATION	GUARDRAIL (TY. A) LIN. FT.	GUARDRAIL TERMINAL (TY. 2)	THREE BEAM GUARDRAIL TERMINAL
405+14.35	407+33.10	LT. OF RAMP 4 =	150	1 EACH	1 EACH











FOR REVIEW ONLY  
SHAHRIAR AZAD, P.E., 12404  
JULY-2015

② PLAN STA. 360+00 TO STA. 375+00

C.L. RAMP 3 CURVE 1  
P.I. = 303+05.50  
DELTA = 5°33'51" RT.  
DOC = 3°00'00"  
T = 92.81'  
L = 185.48'  
P.C. = 302+12.69  
P.T. = 303+98.17  
Ls = 250.00'  
e = +0.025 %

STA. 364+84 - IN PLACE  
30" X 293' R.C. PIPE CULVERT  
REMOVE

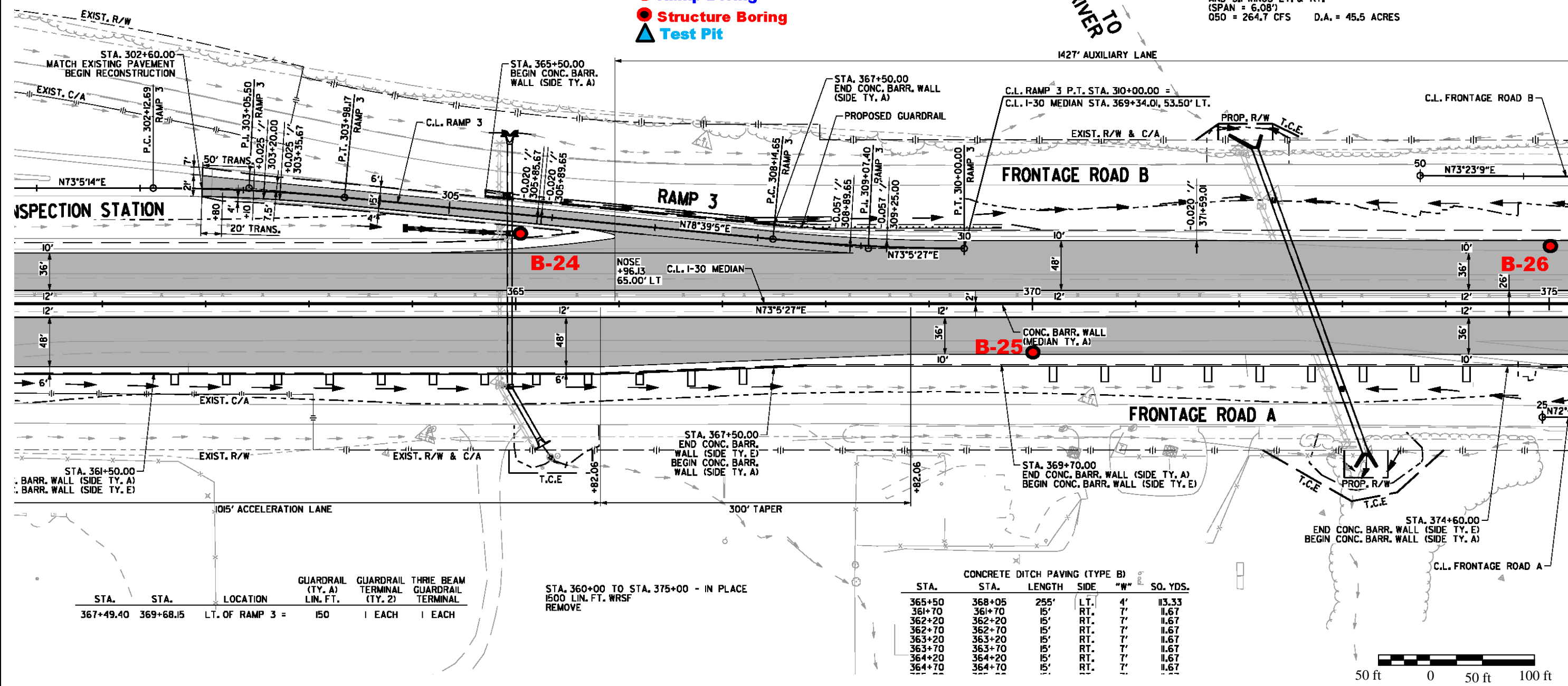
STA. 364+94 - CONSTRUCT  
48" X 293' R.C. PIPE CULVERT  
WITH RM INLET 105' LT. (4'-10" X 3'-0" X H)  
AND RM INLET 68' RT. (4'-10" X 3'-0" X H)  
AND RM INLET 80' RT. (5'-7" X 3'-0" X H)  
AND F.E.S. LT. & RT. (2 EACH)  
QSO = 97.3 CFS D.A. = 17.0 ACRES

C.L. RAMP 3 CURVE 2  
P.I. = 309+07.40  
DELTA = 5°33'38" LT.  
DOC = 3°00'00"  
T = 92.75'  
L = 185.35'  
P.C. = 308+14.65  
P.T. = 310+00.00  
Ls = 300.00'  
e = -0.057 %

STA. 372+56 - IN PLACE  
48" X 301' R.C. PIPE CULVERT  
WITH HDWLS. LT. & RT.  
REMOVE

STA. 372+70 - CONSTRUCT  
5' X 5' X 310' R.C. BOX CULVERT  
ON A 20°00'00" RT. FWD. SKEW  
WITH TYPE TM INLET 100' LT. (2'-6" X 3'-0" X H)  
AND TYPE TM INLET 82' RT. (2'-6" X 3'-0" X H)  
AND 3rd WINGS LT. & RT.  
(SPAN = 6.08')  
QSO = 264.7 CFS D.A. = 45.5 ACRES

- Roadway Boring
- Retaining Wall Boring
- Ramp Boring
- Structure Boring
- ▲ Test Pit



STA.	STA.	LOCATION	GUARDRAIL (TY. A) LIN. FT.	GUARDRAIL TERMINAL (TY. 2) EACH	THREE BEAM GUARDRAIL TERMINAL EACH
367+49.40	369+68.15	LT. OF RAMP 3 =	150	1 EACH	1 EACH

STA. 360+00 TO STA. 375+00 - IN PLACE  
1500 LIN. FT. WRSF  
REMOVE

CONCRETE DITCH PAVING (TYPE B)					
STA.	STA.	LENGTH	SIDE	"W"	SQ. YDS.
365+50	368+05	255'	LT.	4'	113.33
361+70	361+70	15'	RT.	7'	11.67
362+20	362+20	15'	RT.	7'	11.67
362+70	362+70	15'	RT.	7'	11.67
363+20	363+20	15'	RT.	7'	11.67
363+70	363+70	15'	RT.	7'	11.67
364+20	364+20	15'	RT.	7'	11.67
364+70	364+70	15'	RT.	7'	11.67



PLAN OF BORINGS  
CA0601: Hwy 70 – Sevier St (Widening)(S)  
I-30 - Saline County, Arkansas

Scale: As Shown

Job No. 15-019

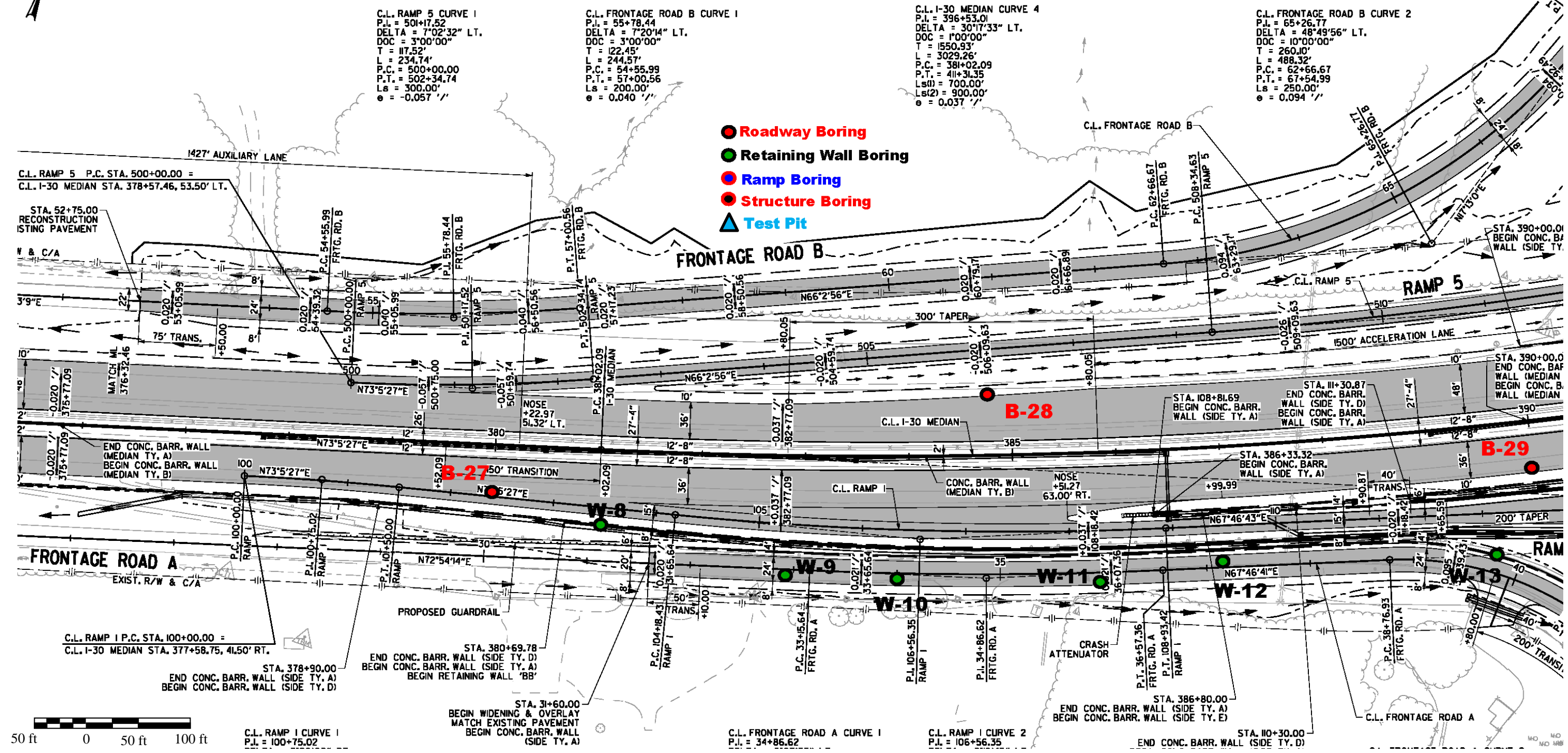
PLATE 10





FOR REVIEW ONLY  
SHAHRIAR AZAD, P.E., 12404  
JULY-2015

PLAN STA. 375+00 TO STA. 390+00





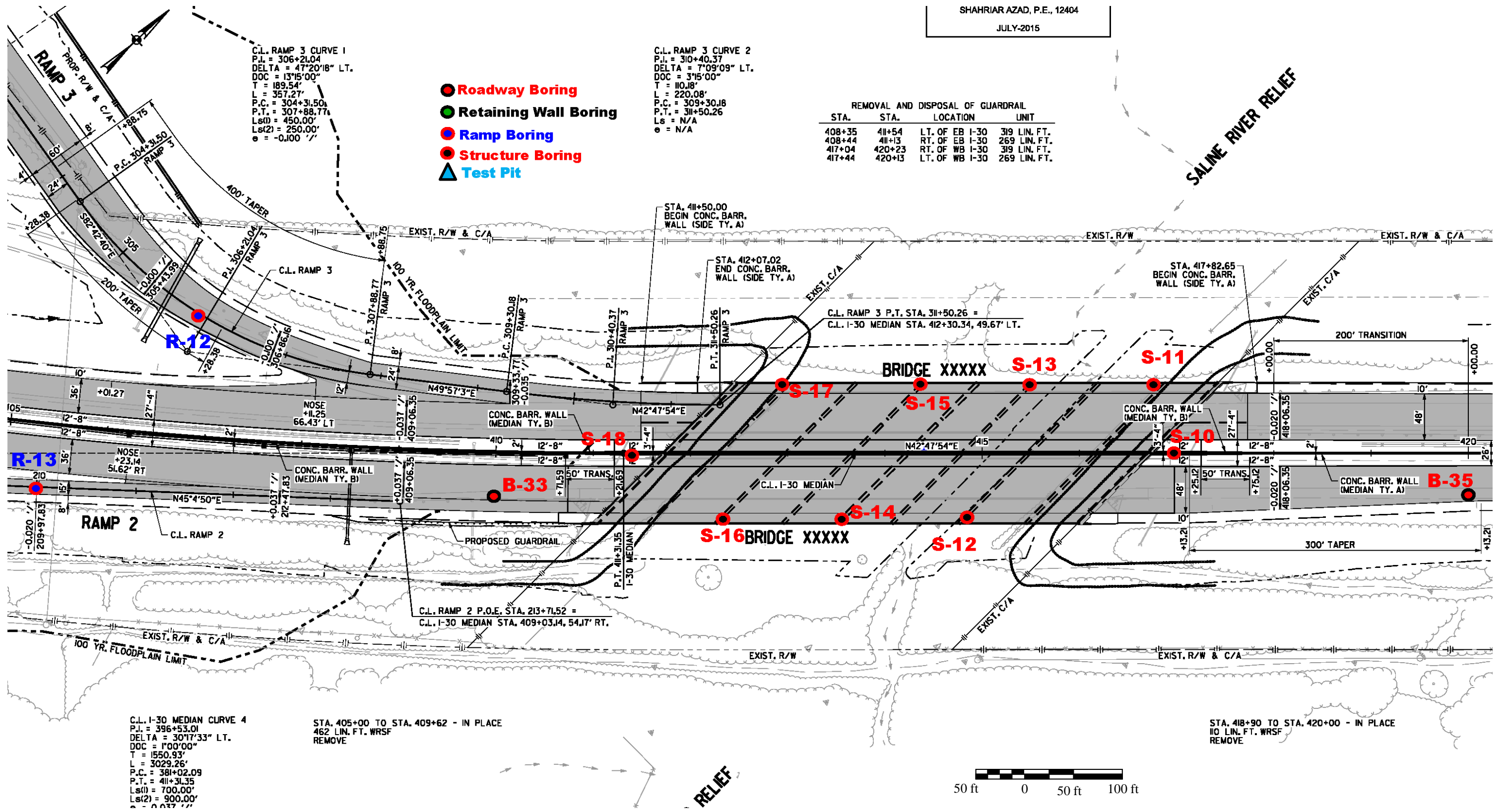




SHAHRIAR AZAD, P.E., 12404  
JULY-2015

- Roadway Boring
- Retaining Wall Boring
- Ramp Boring
- Structure Boring
- ▲ Test Pit

REMOVAL AND DISPOSAL OF GUARDRAIL				
STA.	STA.	LOCATION	UNIT	
408+35	411+54	LT. OF EB I-30	319	LIN. FT.
408+44	411+13	RT. OF EB I-30	269	LIN. FT.
417+04	420+23	RT. OF WB I-30	319	LIN. FT.
417+44	420+13	LT. OF WB I-30	269	LIN. FT.



**PLAN OF BORINGS**  
CA0601: Hwy 70 – Sevier St (Widening)(S)  
I-30 - Saline County, Arkansas

Scale: As Shown

Job No. 15-019

PLATE 13

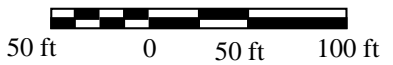
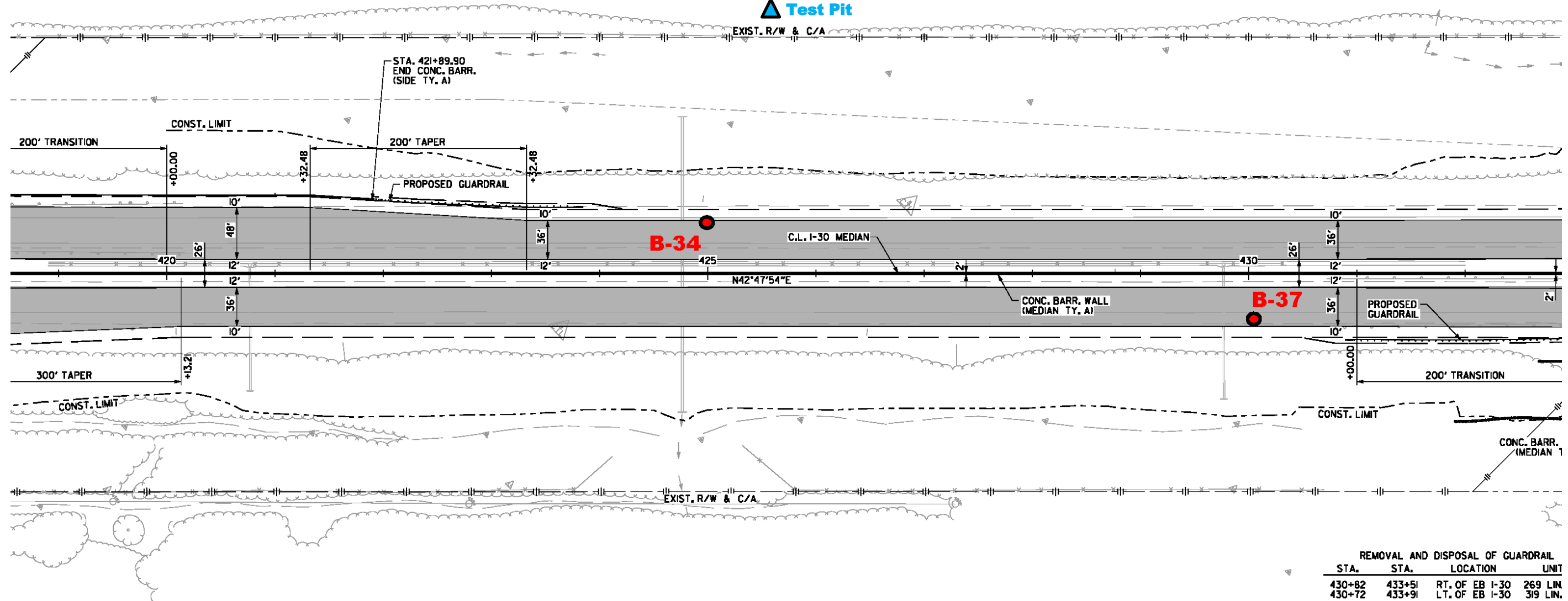




SHAHRIAR AZAD, P.E., 12404  
JULY-2015

PROPOSED GUARDRAIL (TY. A)			GUARDRAIL	THREE BEAM
STA.	STA.	LOCATION	(TY. A)	GUARDRAIL
421+89.90	423+83.65	LT. OF WB I-30 = 125 LIN. FT.	(TY. 2)	TERMINAL
			1 EACH	1 EACH

- Roadway Boring
- Retaining Wall Boring
- Ramp Boring
- Structure Boring
- ▲ Test Pit



STA. 420+00 TO STA. 432+00 - IN PLACE  
1200 LIN. FT. WRSF  
REMOVE

REMOVAL AND DISPOSAL OF GUARDRAIL			
STA.	STA.	LOCATION	UNIT
430+82	433+51	RT. OF EB I-30	269 LIN.
430+72	433+91	LT. OF EB I-30	319 LIN.



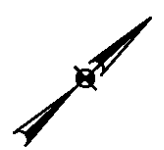
**PLAN OF BORINGS**  
**CA0601: Hwy 70 – Sevier St (Widening)(S)**  
**I-30 - Saline County, Arkansas**

Scale: As Shown

Job No. 15-019

PLATE 14

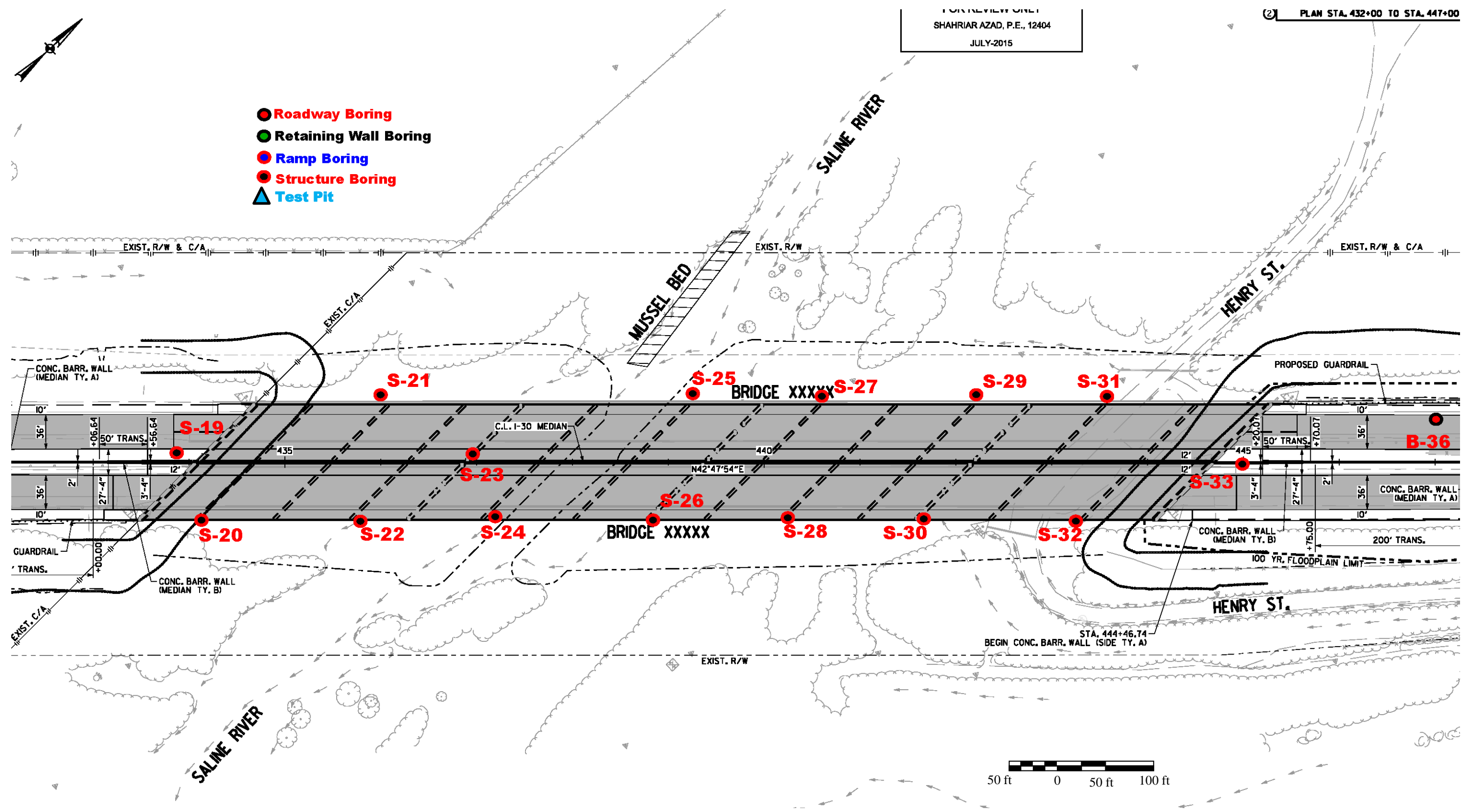




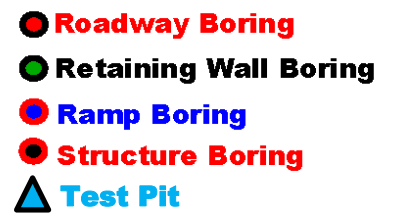
FOR REVIEW ONLY  
SHAHRIAR AZAD, P.E., 12404  
JULY-2015

PLAN STA. 432+00 TO STA. 447+00

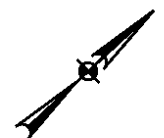
- Roadway Boring
- Retaining Wall Boring
- Ramp Boring
- Structure Boring
- ▲ Test Pit











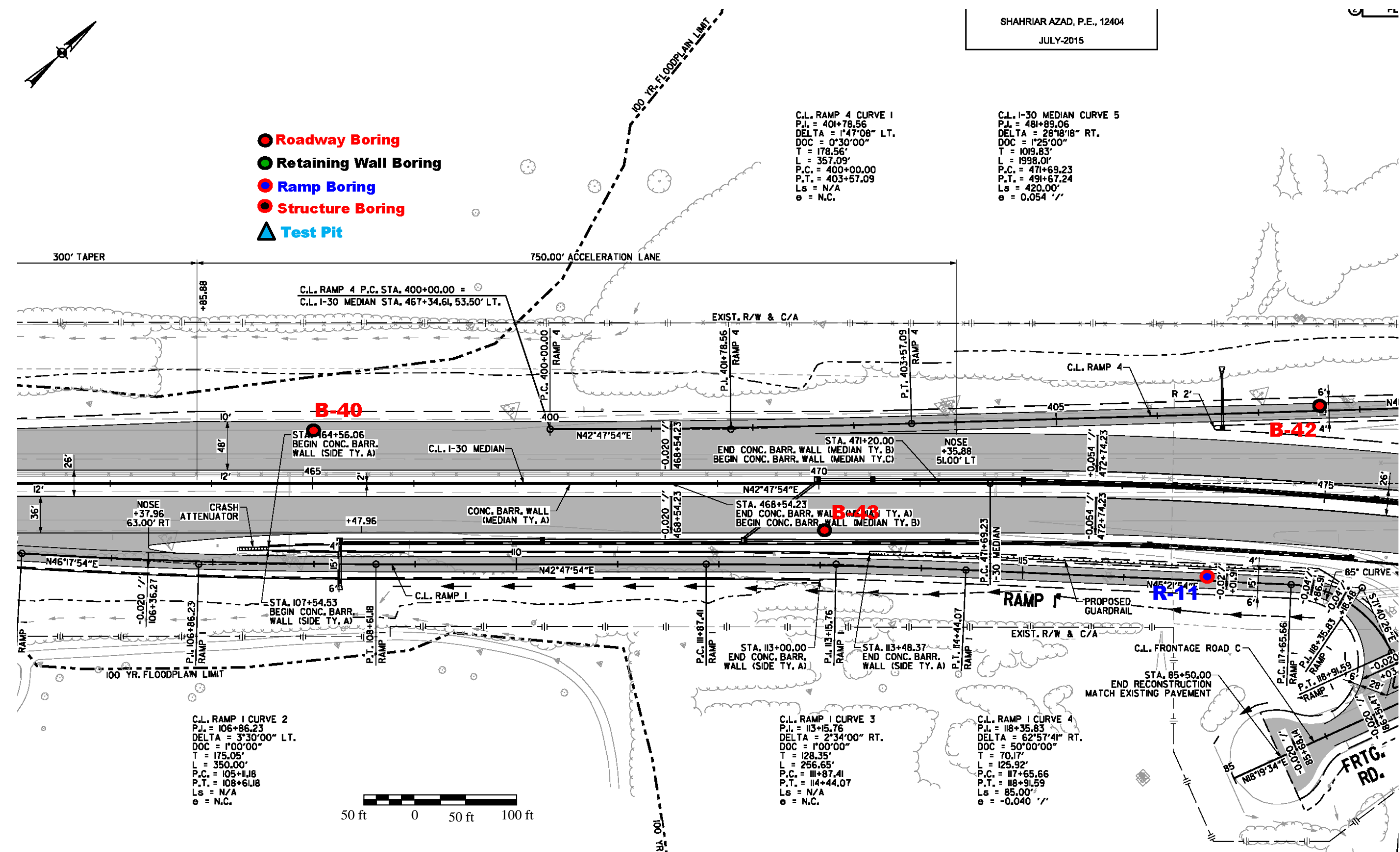
SHAHRIAR AZAD, P.E., 12404  
JULY-2015



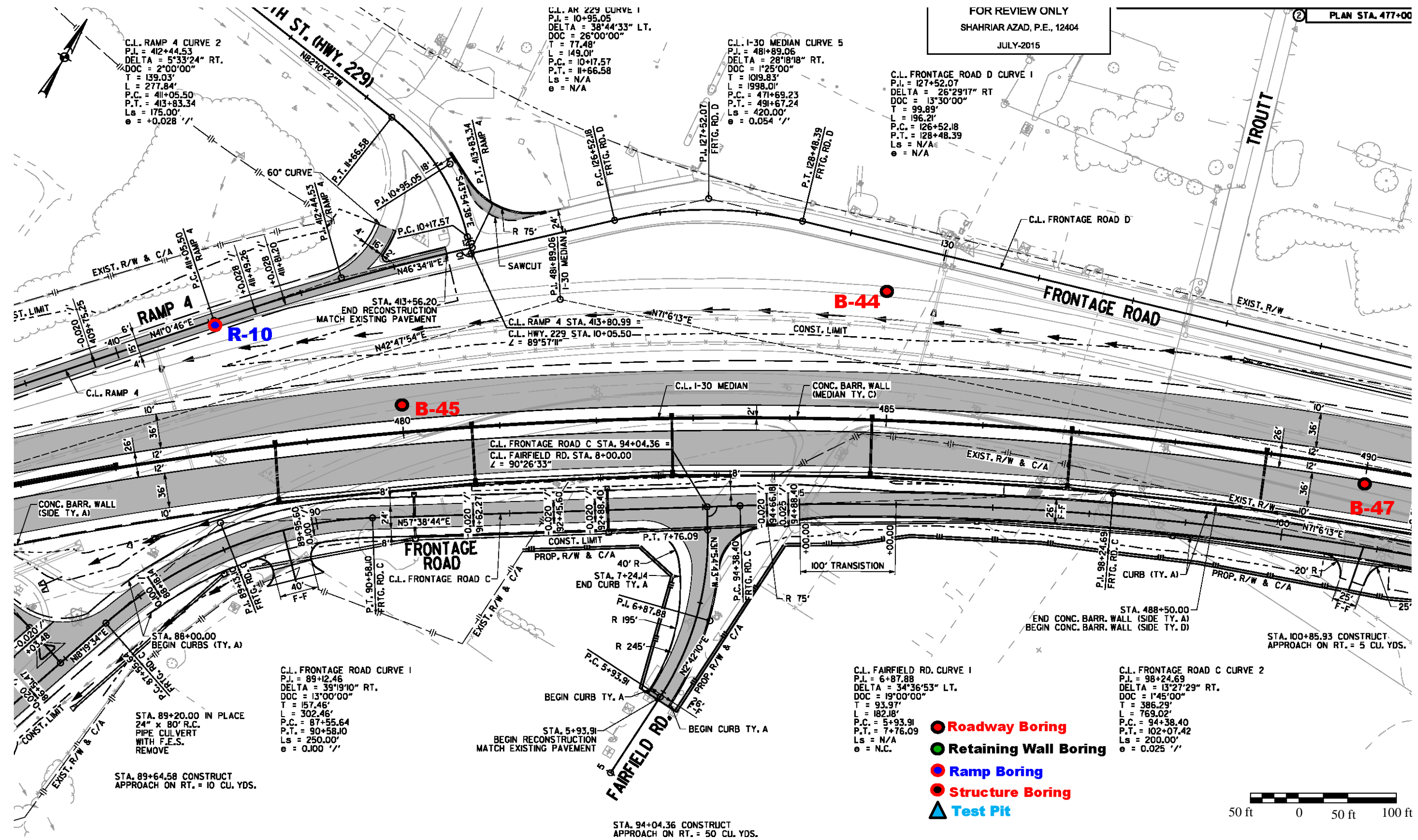
- Roadway Boring
- Retaining Wall Boring
- Ramp Boring
- Structure Boring
- ▲ Test Pit

C.L. RAMP 4 CURVE 1  
P.I. = 401+78.56  
DELTA = 1°47'08" LT.  
DOC = 0°30'00"  
T = 178.56'  
L = 357.09'  
P.C. = 400+00.00  
P.T. = 403+57.09  
Ls = N/A  
e = N.C.

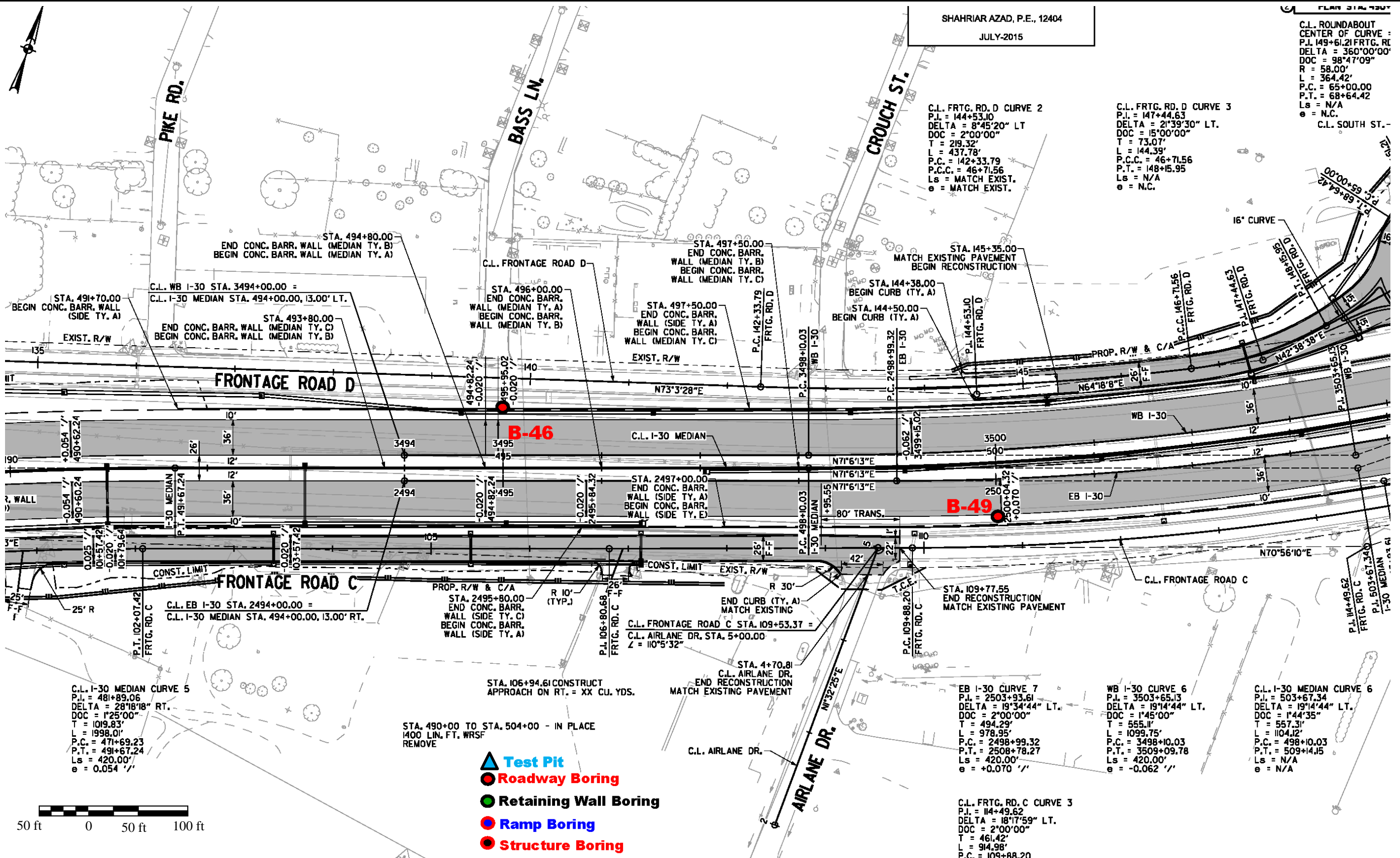
C.L. I-30 MEDIAN CURVE 5  
P.I. = 481+89.06  
DELTA = 28°18'18" RT.  
DOC = 1°25'00"  
T = 1019.83'  
L = 1998.01'  
P.C. = 471+69.23  
P.T. = 491+67.24  
Ls = 420.00'  
e = 0.054 '/'



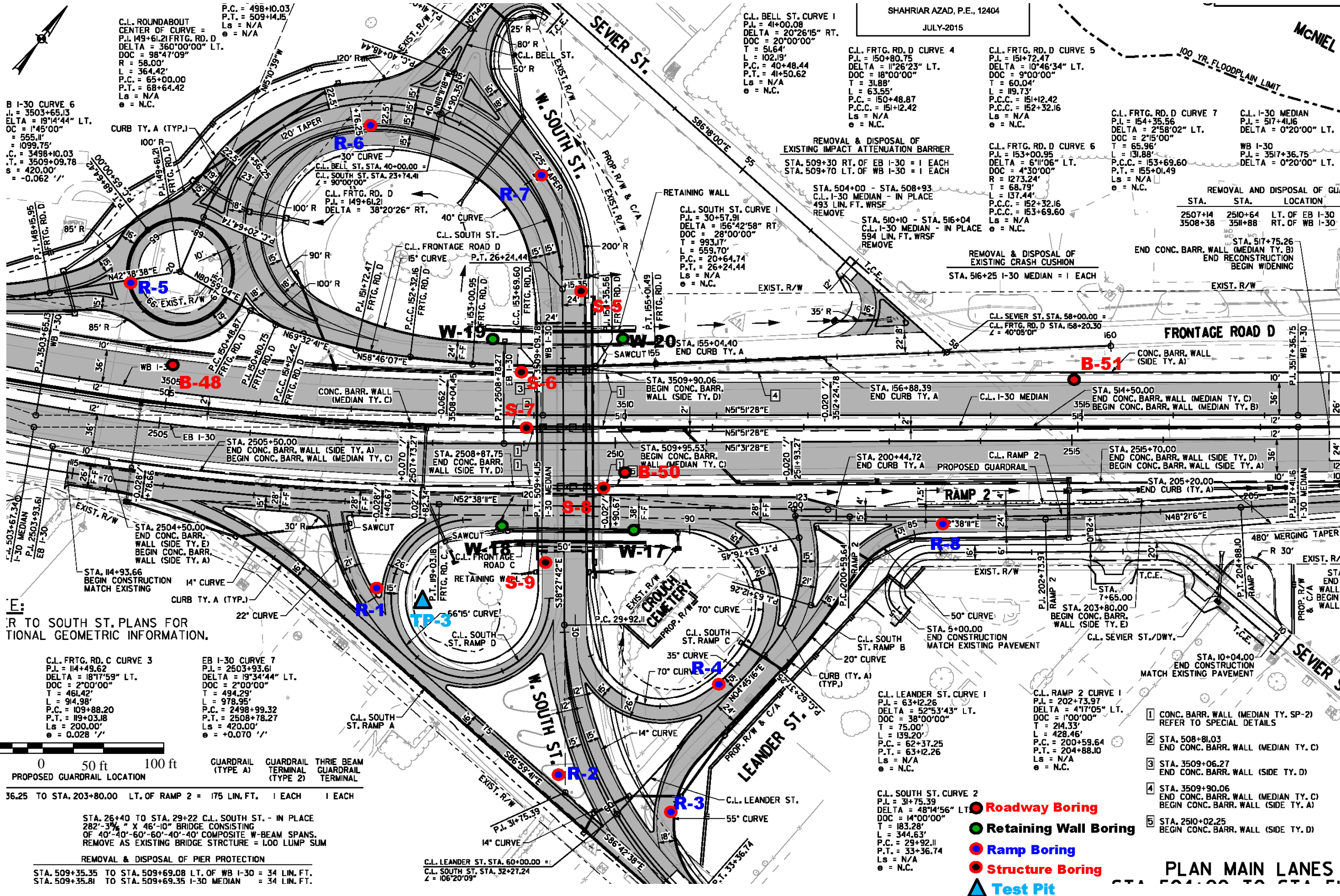




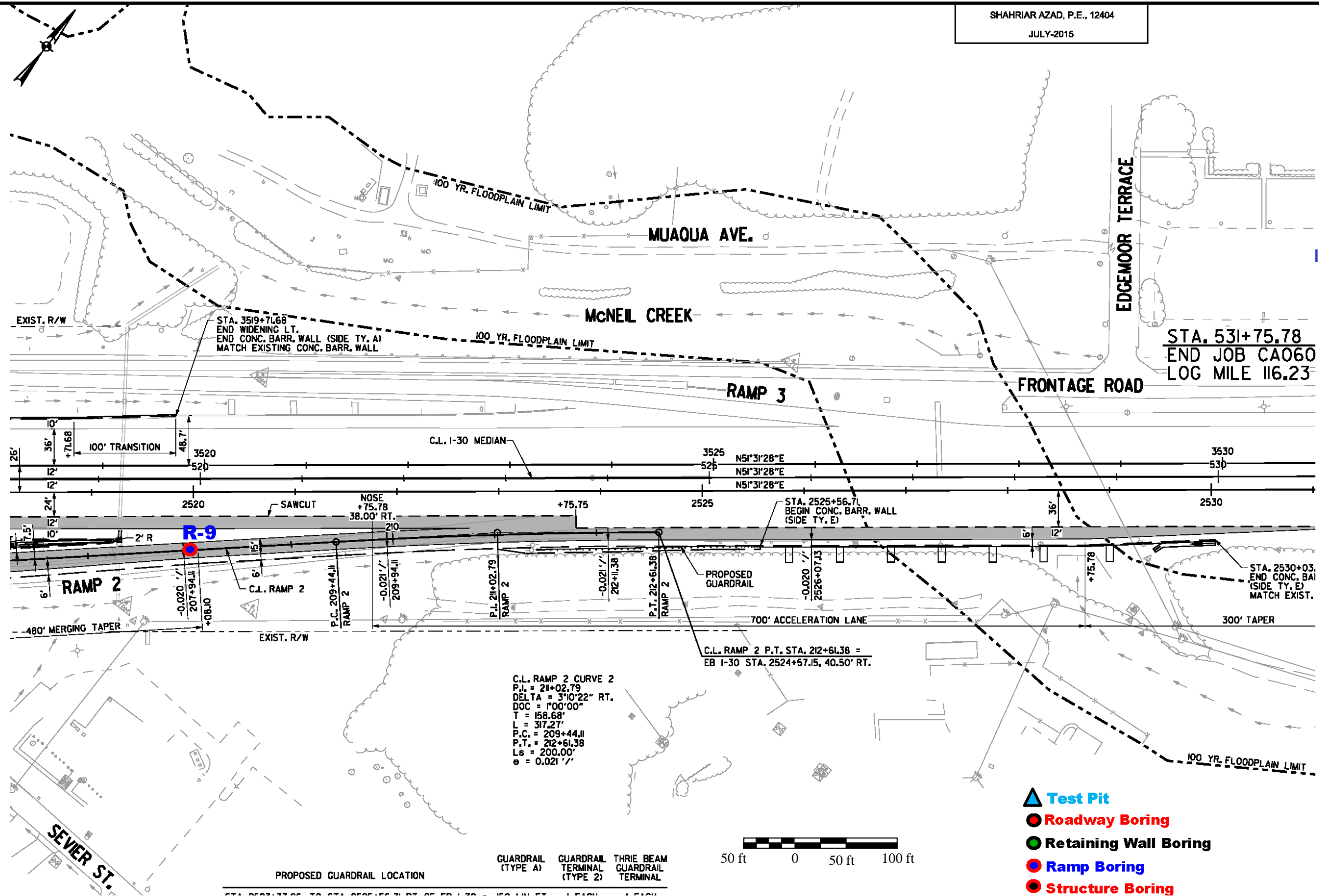














## **ATTACHMENT 2**





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 1

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 250+00, 55 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT										- No. 200 %
						<div><div></div><div>0.20.40.60.81.01.21.4</div></div>										
						PLASTIC LIMIT	WATER CONTENT								LIQUID LIMIT	
			SURF. EL: 446±			10	20	30	40	50	60	70				
			Medium dense dark gray and brown silty fine to medium sand, slightly clayey w/fine to coarse gravel and some organics (fill)	16		●	++							19		
			Firm to stiff gray, brown and tan silty clay w/some shale fragments and some silt pockets (fill)	10			●									
5			- stiff below 4 ft	14			●									
			Stiff tan and dark gray silty clay w/some fine to coarse gravel	22			●									
			Medium dense reddish tan clayey fine to coarse sand w/some fine to coarse gravel	30		●										
10																
15																
COMPLETION DEPTH: 10.0 ft																
DATE: 6-9-15																
DEPTH TO WATER																
IN BORING: Dry																
DATE: 9/9/2015																





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 2

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 255+00, 60 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
						PLASTIC LIMIT	WATER CONTENT					LIQUID LIMIT	
			SURF. EL: 423±			10	20	30	40	50	60	70	
			Crushed Stone Base (fill)	50									
				28									
5			Medium dense gray, tan and reddish tan sandy fine to coarse gravel, slightly silty (fill)	23		●			-NON-PLASTIC-				10
			Stiff light gray, tan and reddish tan silty clay w/shale fragments and trace fine quartz gravel (fill)	11		●							
			- very stiff below 8 ft										
10			Very stiff dark olive gray silty clay w/a little fine gravel	26		●							
15													

COMPLETION DEPTH: 10.0 ft

DATE: 6-23-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 6/23/2015

\_GBNEW 15-019.GPJ 11-23-15





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

## LOG OF BORING NO. 3

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 260+00, 40 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
			SURF. EL: 409±			PLASTIC LIMIT: 10    WATER CONTENT: 40    LIQUID LIMIT: 70							
			Medium dense reddish brown, reddish tan and gray clayey fine sand w/trace fine gravel (fill)	12		●							16
			- with some fine to coarse gravel below 2 ft	12		●							
5			Stiff tan and gray silty clay w/shale fragments (fill)	14			●						
			- firm to stiff below 7.5 ft	10				●					
			Firm olive gray and brown silty clay w/trace fine gravel and occasional organics	8			●						
10													
15													

COMPLETION DEPTH: 10.0 ft  
DATE: 6-9-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 6/9/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 4

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 265+00, 50 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
SURF. EL: 413±						PLASTIC LIMIT	WATER CONTENT				LIQUID LIMIT		
						+						+	
						10	20	30	40	50	60	70	
			Dense brown fine to medium sand w/fine to coarse gravel and crushed stone (fill)	50									
				50									
5			Stiff gray, reddish tan and tan fine sandy clay, silty w/numerous shale fragments (fill)	21			●	+	-	+			37
			Low hardness gray, tan and reddish tan highly weathered shale w/silty clay seams	41			●						
			- moderately hard below 8 ft										
10				50/7"			●						
15													

COMPLETION DEPTH: 10.0 ft  
DATE: 6-23-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 6/23/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

## LOG OF BORING NO. 5

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 270+00, 50 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
			SURF. EL: 418±										
			Medium dense dark gray clayey fine sand w/fine to coarse gravel (fill)	16									16
			Stiff light gray, tan and reddish tan silty clay, slightly sandy w/fine to coarse gravel and some shale fragments (fill)	12									34
5			- soft at 4 to 6 ft	6									
			- firm with occasional clay seams below 6 ft	8									
10			Stiff brown and dark gray silty clay w/some organic stains and trace fine to coarse gravel - water at 8.8 ft	16									
15													
COMPLETION DEPTH: 10.0 ft				DEPTH TO WATER IN BORING: 8.8 ft				DATE: 6/9/2015					

LGBNEW 15-019.GPJ 11-23-15





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 6

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 275+00, 60 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT										- No. 200 %
						<div><div></div><div>0.20.40.60.81.01.21.4</div></div>										
						PLASTIC LIMIT	WATER CONTENT								LIQUID LIMIT	
			SURF. EL: 426±			10	20	30	40	50	60	70				
			Crushed Stone Base (fill)	17												
			Dense tan fine to medium sand, slightly silty w/some fine to coarse gravel and crushed stone (fill)	50/1"									9			
5			Stiff tan, reddish brown and reddish tan silty clay w/fine sandy clay seams and layers and silt pockets	18												
			- with weathered shale seams and sandstone fragments below 6 ft	21									50			
			- very stiff with more shale fragments below 8 ft	30												
10																





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

## LOG OF BORING NO. 7

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 280+00, 50 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
			SURF. EL: 442±			PLASTIC LIMIT: 10    WATER CONTENT: 40    LIQUID LIMIT: 70							
			Medium dense reddish tan and brown clayey fine sand w/fine to coarse gravel (fill)	17		●	+	+					22
			- reddish brown with a little fine to coarse gravel and occasional clay pockets below 2 ft	13		●							
5			Stiff tan, reddish tan and light gray silty clay w/some weathered shale seams and occasional clay laminations and seams	13				●	+				53
			Low hardness tan, reddish tan and light gray highly weathered shale w/some silty clay seams, flat bedded	40			●						
			Moderately hard tan and gray moderately weathered shale w/occasional silty clay laminations and seams	50/6"		●							
10													
15													

COMPLETION DEPTH: 9.5 ft  
DATE: 6-9-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 6/9/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 8

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 285+00, 60 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						<div><div></div><div>0.20.40.60.81.01.21.4</div></div>							
						PLASTIC LIMIT +	WATER CONTENT ●				LIQUID LIMIT +		
			SURF. EL: 433±			10	20	30	40	50	60	70	
			Dense brown and dark gray fine sand w/fine to coarse gravel and some crushed stone fragments and some clay pockets (fill)	31									
			Firm reddish tan, tan and gray silty clay w/shale fragments and some silt pockets	9			●	+	- - -	+			48
5			- stiff below 4 ft	22			●						
			Low hardness dark gray, gray, reddish tan and tan highly weathered shale w/occasional silty clay seams, flat bedded	38			●						
			- moderately hard below 8 ft	50/6"			●						
10													
					</								





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

## LOG OF BORING NO. 9

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 290+00, 50 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
			SURF. EL: 430±			PLASTIC LIMIT: 10    WATER CONTENT: 40    LIQUID LIMIT: 70							
			Medium dense light gray, dark gray and reddish brown clayey fine to coarse gravel, sandy (fill)	23		●	+	+					15
			Very stiff light gray, reddish tan and tan silty clay w/weathered shale seams and fragments (completely weathered shale)	36		●	+	---	+				
5			Moderately hard tan and gray highly weathered shale w/occasional silty clay seams and layers, flat bedded	50/11"		●							
			- moderately hard below 6 ft	50/9"		●							
			- less silty clay seams and layers below 8 ft	50/9"		●							
10													
15													

COMPLETION DEPTH: 10.0 ft  
DATE: 6-10-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 6/10/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 10

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 295+00, 50 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
			SURF. EL: 423±			PLASTIC LIMIT: 10    WATER CONTENT: 40    LIQUID LIMIT: 70							
			6 inches: Crushed Stone Base										
			Stiff gray, reddish tan and tan silty clay w/numerous shale fragments (fill)	19		●	+	+					20
			Low hardness gray and reddish tan highly weathered shale w/silty clay seams and layers, apparent dip = 30°±	19		●	+	-	+				
5			- with some ferrous concretions below 4 ft	39		●							
			- moderately hard below 6 ft	50/7"		●							
10			- with fewer silty clay seams below 8 ft	50/4"		●							
15													
COMPLETION DEPTH: 10.0 ft      DEPTH TO WATER IN BORING: Dry      DATE: 6/23/2015													





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 11

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 300+00, 50 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %	
						0.2    0.4    0.6    0.8    1.0    1.2    1.4								
						PLASTIC LIMIT +	WATER CONTENT ●					LIQUID LIMIT +		
SURF. EL: 412±						10	20	30	40	50	60	70		
			Medium dense tan and brown clayey fine to medium sand w/some fine to coarse gravel (fill)	14		●	+	+						15
			Firm reddish brown, dark gray and light gray silty clay w/shale fragments	9			+	●	- - -	+				54
5			- stiff, less silty with weathered shale seams below 4 ft	19				●						
			Low hardness light gray dark gray and tan highly weathered shale w/some silty clay seams, flat bedded	29				●						
				50/11"				●						
10														





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 12

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 305+00, 60 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
SURF. EL: 400±						PLASTIC LIMIT +	WATER CONTENT ●				LIQUID LIMIT +		
						10	20	30	40	50	60	70	
			6 inches: Crushed Stone Base										
			Dense reddish brown clayey fine sand w/some fine to coarse gravel (fill)	34			●	+	- - -	+			42
			Stiff reddish tan, gray and tan silty clay w/shale fragments (fill)	14			●						
5			Firm reddish tan and gray clay w/some shale fragments and highly weathered shale seams - with occasional decayed organics at 5 to 8 ft  - stiff, silty below 6 ft	9			●						
				21					●				
			Low hardness gray and reddish tan highly weathered shale w/silty clay seams and layers	34					●				
10													





# LOG OF BORING NO. 13

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 310+00, 50 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
SURF. EL: 389±						PLASTIC LIMIT +	WATER CONTENT ●				LIQUID LIMIT +		
						10	20	30	40	50	60	70	
			Medium dense light gray, tan and reddish brown clayey fine sand w/some crushed stone and fine to coarse gravel (fill)	27		●	+	+					14
			Low hardness light gray, dark gray and reddish tan highly weathered shale w/some silty clay seams	47			●	+	-	+			
5			- moderately hard with fewer silty clay seams below 4 ft	50/7"		●							
				50/8"		●							
10				50/6"		●							
15													

COMPLETION DEPTH: 10.0 ft  
DATE: 6-10-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 6/10/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 14

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 315+00, 50 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT										- No. 200 %
						<div><div></div><div>0.20.40.60.81.01.21.4</div></div>										
						PLASTIC LIMIT +	WATER CONTENT ●								LIQUID LIMIT +	
			SURF. EL: 378±			10	20	30	40	50	60	70				
			Medium dense brown and reddish brown silty fine to medium sand, slightly clayey w/fine to coarse gravel (fill)	19		●	++							14		
			Firm gray, reddish tan, and tan silty clay w/shale and sandstone fragments	9		●										
5				9		●		+	--	+				31		
			- stiff below 6 ft	12		●										
			Stiff olive gray silty clay w/some silt seams and layers and trace quartz fragments and organic stains	14												
10																





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 15

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Aprox Sta 320+00, 50 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2    0.4    0.6    0.8    1.0    1.2    1.4							
						PLASTIC LIMIT	WATER CONTENT					LIQUID LIMIT	
			SURF. EL: 368±			10	20	30	40	50	60	70	
			5 inches: Asphalt Concrete										
			5 inches: Crushed Stone Base										
			Medium dense reddish brown silty fine sand w/trace fine gravel (fill)	16		●			-NON-PLASTIC-				21
			Firm light gray, brown, reddish tan and tan silty clay w/shale fragments (fill)	9		●	+	- - -	+				34
5			- soft with trace fine to coarse gravel at 4 to 6 ft	6			●						
			- stiff at 6 to 8 ft	12				●					
			- firm below 8 ft	9			●						
10													





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 16

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 325+00, 60 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT								- No. 200 %
						0.2    0.4    0.6    0.8    1.0    1.2    1.4								
						PLASTIC LIMIT +	WATER CONTENT ●						LIQUID LIMIT +	
			SURF. EL: 375±			10	20	30	40	50	60	70		
			Dense dark gray, brown and reddish brown fine to medium sand w/fine to coarse gravel and occasional clayey fine sand pockets and asphalt concrete debris (fill)	35		●								
			Moderately hard gray, brown and tan highly weathered shale w/occasional silty clay laminations and seams, flat bedded	50/8"		●	+	+					41	
5			- with some silty clay seams below 5 ft	50/7"		●								
				50/4"		●								
			- auger refusal at 8 ft											
10														
15														
COMPLETION DEPTH: 8.0 ft      DEPTH TO WATER IN BORING: Dry      DATE: 6/22/2015														

COMPLETION DEPTH: 8.0 ft  
DATE: 6-22-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 6/22/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 17

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 327+70, 50 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
			SURF. EL: 383±			PLASTIC LIMIT +			WATER CONTENT ●			LIQUID LIMIT +	
						10	20	30	40	50	60	70	
			Medium dense brown fine sand w/some crushed stone and some organics (fill)	12		●							
			Loose reddish brown silty fine sand, slightly clayey w/a little fine to coarse gravel (fill)	7		●			-NON-PLASTIC-				21
5			Firm reddish tan and brown silty clay, sandy w/some shale fragments and some fine to coarse gravel (fill)	8		●							
			- stiff, with more sand below 6 ft	18		●							
10			Low hardness light gray, tan and reddish tan highly weathered shale w/occasional silty clay seams, flat bedded	44		●							
15													

COMPLETION DEPTH: 10.0 ft  
DATE: 6-10-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 6/10/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 18

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 335+00, 70 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT										- No. 200 %
						0.2    0.4    0.6    0.8    1.0    1.2    1.4										
						PLASTIC LIMIT    WATER CONTENT    LIQUID LIMIT										
SURF. EL: 393±						10	20	30	40	50	60	70				
			Dense crushed stone base w/some asphalt concrete debris and occasional clay pockets (fill)	39												
			Very stiff gray and tan silty clay w/shale fragments and highly weathered shale seams and layers (completely weathered shale)	27			●	+	-	-	+			33		
5			- stiff below 4 ft	15			●									
				20			●									
			Low hardness gray, tan and light pale red highly weathered shale w/some silty clay seams, flat bedded	50			●									
10																





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 19

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 340+00, 50 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
			SURF. EL: 385±										
			5 inches: Asphalt Concrete (Shoulder)										
			Crushed Stone Base	50/9"									
			Medium dense reddish brown clayey fine sand (fill)										
			Stiff reddish tan, gray and tan silty clay w/numerous shale fragments (fill)	13									50
			Moderately hard gray and tan highly weathered shale w/occasional silty clay seams	50/8"									
5													
				50/11"									
			- low hardness, gray, tan and light pale red below 8 ft	50									
10													
15													

COMPLETION DEPTH: 9.5 ft  
DATE: 6-12-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 6/12/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 20

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 345+00, 60 ft Lt

[illegible]





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 21

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 350+00, 50 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
SURF. EL: 373±						PLASTIC LIMIT +	WATER CONTENT ●				LIQUID LIMIT +		
						10	20	30	40	50	60	70	
			Medium dense brown clayey fine to coarse gravel, sandy (fill)	19		●							
			Stiff dark gray, reddish tan and tan silty clay w/numerous shale fragments (fill)	13			●	+	-	-	+		38
5			firm with occasional clay pockets and seams below 4 ft	7			●						
			Medium dense brown silty fine sand, slightly clayey w/a little fine to coarse gravel	16		●	++						36
			Firm to stiff light gray, tan and reddish tan silty clay w/occasional weathered shale seams and sandstone partings	10			●						
10													





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 22

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 355+00, 60 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT						- No. 200 %	
						0.2    0.4    0.6    0.8    1.0    1.2    1.4							
						PLASTIC LIMIT	WATER CONTENT				LIQUID LIMIT		
			SURF. EL: 383±			10	20	30	40	50	60	70	
			9 Inches: Asphalt Concrete										
			3 Inches: Crushed Stone Base										
			Medium dense reddish brown clayey fine sand w/some fine to coarse gravel (fill)	17									
			Firm tan and brown clay	9			+		●				82
5			- stiff with occasional calcareous inclusions and trace fine gravel below 4 ft	20					●				
			- with occasional highly weathered shale seams below 6 ft	18					●				
				15					●				
10													





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 23

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 360+00, 55 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %	
						0.2	0.4	0.6	0.8	1.0	1.2	1.4		
						PLASTIC LIMIT	WATER CONTENT					LIQUID LIMIT		
			SURF. EL: 379±			+								
						10	20	30	40	50	60	70		
			Medium dense crushed stone base (fill)	24										
			Loose red silty fine sand, slightly clayey w/trace fine gravel (fill)											
			Soft tan and olive gray clay w/trace shale fragments and occasional fine sand pockets	5			+		●				+	
			- stiff at 4 to 6 ft										81	90
5				13					●					
			- firm with organic stains below 6 ft	8										
			Stiff gray and tan clay w/calcareous nodules	14										
10														





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 24

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 365+10, 65 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						<div><div></div><div>0.20.40.60.81.01.21.4</div></div>							
						PLASTIC LIMIT	WATER CONTENT					LIQUID LIMIT	
			SURF. EL: 378±			10	20	30	40	50	60	70	
			Dense crushed stone base (fill)										
				50/7"									
			Medium dense reddish brown clayey fine to coarse sand w/some fine to coarse gravel (fill)				+	-	-	+			19
			Stiff reddish tan and gray clay	11				+	-	-	-	+	95
			- slightly blocky below 4 ft										
5				13									
			- firm with medium close quartz veins below 7 ft	9									
			Moderately hard gray and tan weathered shale w/occasional silty clay seams	50/9"									
10													





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 25

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 370+00, 50 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %		
						0.2	0.4	0.6	0.8	1.0	1.2	1.4			
SURF. EL: 358±						PLASTIC LIMIT +	10	20	30	40	50	60	70		
			Medium dense reddish brown silty fine sand w/trace fine gravel (fill)	12		●				-NON-PLASTIC-					17
			Stiff light gray and tan silty clay w/some silt seams and occasional highly weathered shale seams and trace sandstone fragments	19				●							
5			- very stiff with occasional quartz fragments below 4 ft	50/5"		●	+		+						43
			Low hardness gray and tan highly weathered shale w/silty clay seams and layers, flat bedded	38		●									
			- moderately hard with medium close sandstone partings below 8 ft	50/9"		●									
10															





# LOG OF BORING NO. 26

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 375+00, 60 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %	
						0.2    0.4    0.6    0.8    1.0    1.2    1.4								
						PLASTIC LIMIT +	WATER CONTENT ●					LIQUID LIMIT +		
			SURF. EL: 362±			10	20	30	40	50	60	70		
			Dense crushed stone base (fill)	33										
			Loose reddish brown silty fine sand w/a little fine gravel (fill)	9		●		-NON-PLASTIC-					14	
5			Stiff tan, reddish tan and olive gray clay w/ferrous stains and nodules  - with occasional shale fragments and organic stains below 6 ft	14			+		●			+		
				12						●				
				19						●				
10														





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 27

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 380+00, 50 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
			SURF. EL: 362±			PLASTIC LIMIT +			WATER CONTENT ●			LIQUID LIMIT +	
						10	20	30	40	50	60	70	
			Dense brown tan silty fine sand w/some crushed stone and fine to coarse gravel and occasional fine sandy clay pockets (fill)	30		●			-NON-PLASTIC-				13
			- medium dense below 2 ft	12		●							
5			Stiff gray and tan clay w/ferrous conclusions and nodules and occasional silt partings	11				+	●			87	91
				12					●				
10			Moderately hard reddish tan and dark gray moderately weathered shale w/occasional silty clay laminations	50/8"		●							
15													

COMPLETION DEPTH: 10.0 ft  
DATE: 6-12-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 6/12/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 28

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 384+30, 65 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
			SURF. EL: 353±			PLASTIC LIMIT	WATER CONTENT				LIQUID LIMIT		
						+	10	20	30	40	50	60	70
			Medium dense crushed stone base (fill)	20									
			Moderately hard gray, reddish tan and dark gray highly weathered shale w/occasional silty clay seams, flat bedded	50/10"		●	+	+	+				
5			Moderately hard, tan and dark gray moderately weathered shale	50/5"		●							
				50/5"		●							
10			Moderately hard to hard dark gray shale, slightly weathered	50/2"		●							
15													

COMPLETION DEPTH: 10.0 ft  
DATE: 6-22-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 6/22/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 29

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 390+00, 50 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %		
						<div><div></div><div>0.20.40.60.81.01.21.4</div></div>									
						PLASTIC LIMIT	WATER CONTENT					LIQUID LIMIT			
			SURF. EL: 336±			10	20	30	40	50	60	70			
			Firm to stiff gray and brown clay w/a little crushed stone (fill)	10				+	●				+	80	
			- stiff, reddish brown with trace fine sand pockets below 2 ft	11					●						
5			Stiff tan and gray clay w/occasional ferrous stains	14					+	●				80 →	92
			Very stiff tan and brownish gray clay w/some calcareous nodules and inclusions	32						●					
			- very stiff to hard with organic stains and calcareous sand pockets below 8 ft	50/7"					●						
10															
15															
COMPLETION DEPTH: 10.0 ft														DEPTH TO WATER	
DATE: 6-12-15														IN BORING: Dry	
														DATE: 6/12/2015	





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 30

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 393+00, 65 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2    0.4    0.6    0.8    1.0    1.2    1.4							
						PLASTIC LIMIT +	WATER CONTENT					LIQUID LIMIT +	
			SURF. EL: 327±			10	20	30	40	50	60	70	
			9 Inches: Asphalt Concrete										
			4 Inches: Crushed Stone Base										
			Medium dense reddish brown silty fine sand w/trace fine gravel (fill)	19		●			-NON-PLASTIC-				17
			- less gravel below 2 ft	23		●							
5			Soft light gray, reddish tan and tan clay w/some shale fragments	5			+		●			+	70
			- with occasional weathered shale seams below 6 ft	6					●				
			Moderately hard tan and gray weathered shale w/silty clay seams and layers	50/2"									
10													





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 31

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 401+00, 55 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT										- No. 200 %
						<div><div></div><div>0.20.40.60.81.01.21.4</div></div>										
						PLASTIC LIMIT +	WATER CONTENT ●						LIQUID LIMIT +			
			SURF. EL: 305±			10	20	30	40	50	60	70				
			Dense brown fine to medium sand, slightly silty w/crushed stone and fine to coarse gravel (fill)	31		●				-NON-PLASTIC-				9		
					Medium dense reddish brown silty fine sand w/trace crushed stone and fine gravel (fill)	17		●								
					Dense tan sandy fine to coarse gravel, slightly silty	50/7"		●								11
5			- with more sand below 6 ft													
				29		●										
			Stiff brownish tan and gray fine sandy clay w/trace fine gravel	20		●										
10																
							</									





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 32

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 405+00, 60 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT										- No. 200 %
						<div><div></div><div>0.20.40.60.81.01.21.4</div></div>										
						PLASTIC LIMIT	WATER CONTENT								LIQUID LIMIT	
			SURF. EL: 295±			10	20	30	40	50	60	70				
			Medium dense crushed stone base (fill)	19												
			Medium dense reddish tan and reddish brown silty fine sand w/some fine to coarse gravel and occasional fine sandy clay pockets (fill)	16												
5			Stiff brown and gray fine sandy clay w/some fine to coarse gravel and some fine to medium sand pockets and clay seams (fill)	21												
			Stiff brown, tan and gray silty clay slightly sandy w/some fine to coarse gravel, some silt pockets and clay seams and trace organic inclusions	18												
				19												
10																









**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 33

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 408+20, 60 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT											- No. 200 %
						<div><div></div><div>0.20.40.60.81.01.21.4</div></div>											
						PLASTIC LIMIT +	WATER CONTENT ●								LIQUID LIMIT +		
			SURF. EL: 294±			10	20	30	40	50	60	70					
			Stiff brown fine sandy clay w/some crushed stone (fill)	12		●											
			Medium dense reddish brown silty fine sand w/trace fine gravel (fill)	17		●											
										-NON-PLASTIC-							
5			Very stiff brownish gray fine sandy clay w/occasional clay laminations, trace fine gravel and crushed stone (fill)	26		●											
			- stiff with some medium to coarse sand and fine to coarse gravel below 6 ft	14		●											
			Medium dense brown clayey fine sand w/interbedded clay seams and layers and trace fine gravel	16		●											
10																	
15																	

COMPLETION DEPTH: 10.0 ft  
DATE: 6-12-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 6/12/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 34

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 425+00, 60 ft Lt

DEPTH, FT	SYMBOL SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
					PLASTIC LIMIT	WATER CONTENT	LIMIT					
		SURF. EL.: 294±			0.2	0.4	0.6	0.8	1.0	1.2	1.4	
		6 Inches: Medium dense Crushed Stone Base (fill)										
		Medium dense reddish tan silty fine sand w/trace fine to coarse gravel and occasional asphalt concrete debris (fill)	11				-NON-PLASTIC-					19
		Very stiff tan and gray fine sandy clay w/some fine to coarse gravel and clay pockets	35			+ • +						58
5		- more sandy below 4 ft	53			•						
		Dense brown and reddish brown clayey fine gravel w/some fine to medium sand pockets and coarse gravel	35			•						
		Stiff grayish brown fine sandy clay w/a little fine to coarse gravel and occasional clayey fine gravel seams	22			•						
10												
15												

COMPLETION DEPTH: 10.0 ft      DEPTH TO WATER IN BORING: Dry      DATE: 6/19/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 35

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 420+00, 55 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
			SURF. EL: 294±			PLASTIC LIMIT +			WATER CONTENT ●			LIQUID LIMIT +	
						10	20	30	40	50	60	70	
			Medium dense brown silty fine sand w/occasional sand clay pockets and some crushed stone and fine to coarse gravel (fill)	17		●							
			- slightly clayey below 2 ft										
				15		●	++						31
			- with more gravel below 4 ft										
5			- tan and brown below 4.5 ft	17		●							
			Stiff brown fine sandy clay w/occasional clay pockets, fine sand pockets and trace fine gravel	15		●	+						68
10													
15													
COMPLETION DEPTH: 7.5 ft													
DATE: 6-12-15													
DEPTH TO WATER													
IN BORING: Dry													
DATE: 6/12/2015													

LGBNEW 15-019.GPJ 11-23-15





**Grubbs, Hoskyn,  
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Consulting Engineers

# LOG OF BORING NO. 36

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 447+00, 60 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
SURF. EL: 293±						PLASTIC LIMIT +	WATER CONTENT ●				LIQUID LIMIT +		
						10	20	30	40	50	60	70	
			Medium dense brown sandy fine to coarse gravel, slightly clayey w/some asphalt concrete debris (fill)	25		●							
			Stiff reddish brown fine to medium sandy clay w/fine to coarse gravel and some fine to coarse sand pockets	25		●	+	-	+				19
5			- stiff with occasional clay pockets below 4 ft	18		●							
			Stiff tan and gray fine sandy clay w/occasional silt partings and seams and some fine to coarse gravel	12			●						
				19			●						
10													





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 37

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 430+00, 50 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT											- No. 200 %
						<div><div></div><div>0.20.40.60.81.01.21.4</div></div>											
						PLASTIC LIMIT	WATER CONTENT								LIQUID LIMIT		
			SURF. EL: 294±			+									+		
				10	20	30	40	50	60	70							
			Medium dense brown and dark gray sandy fine gravel w/a little coarse gravel, slightly silty (fill)	19		●	++								8		
			Very stiff brown and dark gray fine sandy clay w/some fine sand pockets and some fine to coarse gravel (fill)	26		●											
5			- with some silt seams and layers below 4 ft	28		●											
			- more sandy with some crushed stone below 6 ft	41		●											
			Very stiff brown fine sandy clay w/some medium to coarse sand and fine to coarse gravel and occasional organic inclusions	50													
10																	
		</															





**Grubbs, Hoskyn,  
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Consulting Engineers

# LOG OF BORING NO. 38

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 455+00, 60 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
			SURF. EL: 294±			PLASTIC LIMIT +			WATER CONTENT ●			LIQUID LIMIT +	
						10	20	30	40	50	60	70	
			Loose clayey fine to coarse sand w/fine to coarse gravel and some fine sandy clay pockets (fill)	8		●							
			Medium dense brown fine to coarse sand, slightly silty w/fine gravel, moist	16		●	+						10
5			Stiff light gray and tan fine sandy clay w/a little fine to coarse gravel and some fine to coarse sand pockets and clay pockets	19		●	+	+					40
			- with clay seams and layers below 6 ft	20					●				
			Stiff tan and gray fine sandy clay w/trace fine to coarse gravel and some silt pockets	19					●				
10													
15													

COMPLETION DEPTH: 10.0 ft  
DATE: 6-19-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 6/19/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 39

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 450+00, 55 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT						- No. 200 %
						<div><div></div><div>0.20.40.60.81.01.21.4</div></div>						
			SURF. EL: 293±			PLASTIC LIMIT +	WATER CONTENT ●	LIQUID LIMIT +				
						10	20	30	40	50	60	70
			Medium dense crushed stone base (fill)	16								
			Medium dense tan and gray silty fine sand w/occasional fine sandy clay pockets and some fine to coarse gravel (fill)	24		●	++					
5			- medium dense to dense, gray below 4 ft	30		●						
			Stiff tan and reddish tan fine sandy clay w/some medium to coarse sand and fine gravel and occasional clayey fine to coarse sand seams	18		●						
				20		●						
10												





**Grubbs, Hoskyn,  
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Consulting Engineers

# LOG OF BORING NO. 40

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 465+00, 60 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						<div><div></div><div>0.20.40.60.81.01.21.4</div></div>							
						PLASTIC LIMIT	WATER CONTENT					LIQUID LIMIT	
			SURF. EL: 293±			10	20	30	40	50	60	70	
			Medium dense brown fine to medium sand w/some fine to coarse gravel and occasional clay pockets (fill)	14									
			Medium dense reddish brown silty fine to coarse sand, slightly clayey w/some fine to coarse gravel (fill)	29		●	++						13
5			- stiff fine sandy clay with some fine to coarse sand and fine to coarse gravel below 4 ft	21		●							
			Stiff tan and brownish gray fine sandy clay w/some fine to coarse gravel and some fine to medium sand pockets	19		●							
			Stiff reddish tan fine sandy clay w/some ferrous stains and trace fine gravel	18		●							
10													





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 41

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 460+00, 55 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT										- No. 200 %
						<div><div></div><div>0.20.40.60.81.01.21.4</div></div>										
						PLASTIC LIMIT	WATER CONTENT						LIQUID LIMIT			
			SURF. EL: 293±			10	20	30	40	50	60	70				
			Medium dense crushed stone base (fill)	14												
			Dense tan and reddish tan silty fine sand w/some fine to coarse gravel and occasional fine sandy clay pockets (fill)	31												
5			Stiff brown and gray fine sandy clay w/some fine to medium sand pockets and seams and some fine to coarse gravel	22												
			Medium dense brown and tan clayey fine to medium sand w/a little fine to coarse gravel	29												
			Very stiff brown fine sandy clay w/some fine to medium sand pockets and a little fine to coarse gravel	36												
10																





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 42

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 475+00, 50 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
			SURF. EL: 310±			PLASTIC LIMIT: 10    WATER CONTENT: 40    LIQUID LIMIT: 70							
			5 inches: Asphalt Concrete										
			12 inches: Crushed Stone Base										
				50/6"									
			Dense reddish brown silty fine sand w/occasional fine sandy clay pockets and some fine to coarse gravel (fill)										
				34									20
5			Medium dense tan and reddish brown clayey fine to coarse gravel, sandy	27									
			- dense with numerous quartz fragments below 6.5 ft	50/5"									
			Very stiff reddish brown fine sandy clay w/fine to coarse gravel and some medium to coarse sand	37									
10													
15													

COMPLETION DEPTH: 10.0 ft  
DATE: 6-19-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 6/19/2015





**Grubbs, Hoskyn,  
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Consulting Engineers

# LOG OF BORING NO. 43

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 470+00, 50 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
			SURF. EL: 298±			PLASTIC LIMIT +			WATER CONTENT ●			LIQUID LIMIT +	
						10	20	30	40	50	60	70	
			Medium dense reddish brown clayey fine to medium sand w/some coarse sand and fine to coarse gravel and some crushed stone (fill) - with some fine sandy clay pockets to 2 ft	25		●	+	-	+				25
				50		●							
5			Medium dense brown clayey fine sand, silty w/some fine to coarse gravel	23		●	+	+					26
			Medium dense to dense tan clayey fine to coarse gravel, sandy w/occasional cobbles	30					●				
			- medium dense below 8 ft	27					●				
10													
15													

COMPLETION DEPTH: 10.0 ft  
DATE: 6-16-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 6/16/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 44

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 485+00, 135 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
			SURF. EL: 320±			PLASTIC LIMIT      WATER CONTENT      LIQUID LIMIT +-----+-----+ 10   20   30   40   50   60   70							
5			Soft reddish tan and reddish brown fine sandy clay w/some fine to coarse gravel, some fine sand seams and trace organics (fill)	6									45
			- firm at 2 to 4 ft	9									
			- stiff with some fine to coarse sand seams below 4 ft	12									
			Medium dense gray fine sandy silt, slightly clayey w/some ferrous stains and occasional silty clay pockets and organic inclusions	11									71
10			Firm tan and gray clay, slightly silty w/a little fine gravel and occasional organic inclusions	7									
15													
COMPLETION DEPTH: 10.0 ft				DEPTH TO WATER				DATE: 6/19/2015					
DATE: 6-19-15				IN BORING: Dry									

LGBNEW 15-019.GPJ 11-23-15





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 45

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 480+00, 40 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
			SURF. EL: 315±			PLASTIC LIMIT +			WATER CONTENT ●			LQUID LIMIT +	
						10	20	30	40	50	60	70	
			Medium dense brown and dark gray clayey fine to medium sand w/some fine to coarse gravel (fill)	17		●							
			Stiff reddish brown, reddish tan and tan silty clay w/some fine to coarse gravel and occasional fine to coarse sand pockets and clay pockets (fill)	17		●	+	- - - -	+				44
5			Stiff reddish brown fine sandy clay w/some ferrous stains and fine to coarse gravel and occasional clay pockets	15		●							
			Stiff light gray and tan silty clay w/some clay seams and layers and trace fine gravel	23				●					
10			Very stiff reddish brown and gray fine sandy clay w/fine to coarse gravel and some medium to coarse sand	37		●							
15													

COMPLETION DEPTH: 10.0 ft  
DATE: 6-17-15
DEPTH TO WATER  
IN BORING: Dry
DATE: 6/17/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 46

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 495+00, 60 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %	
						0.2	0.4	0.6	0.8	1.0	1.2	1.4		
			SURF. EL: 325±			PLASTIC LIMIT +			WATER CONTENT ●				LIQUID LIMIT +	
				10	20	30	40	50	60	70				
			Soft reddish tan and reddish brown fine sandy clay w/some fine to coarse gravel (fill)	6			●							
			Soft gray and tan fine sandy clay, silty w/occasional fine sandy silt pockets and trace fine gravel and occasional clay laminations	5			●	+						
5			- firm with some ferrous stains and nodules and fine to coarse sand seams below 4 ft	7			●							60
			- very soft, moist, with fewer sand seams below 6 ft	3			●							
			Stiff light pale red, tan and gray fine sandy clay w/occasional fine to medium sand pockets and trace fine gravel and occasional clay pockets	23			●							
10														
									</					





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 47

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 490+00, 20 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL  SURF. EL: 324±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
						PLASTIC LIMIT +	WATER CONTENT ●					LQUID LIMIT +	
						10	20	30	40	50	60	70	
		X	Firm to stiff brown fine sandy clay w/some fine to coarse gravel and clayey fine sand seams (fill)	10			+	-	+				43
		X	Medium dense reddish tan silty fine sand w/trace fine gravel	21			●	-NON-PLASTIC-					23
5		X	Firm reddish brown fine sandy clay w/trace fine gravel	8				●					
		X	- stiff with clay pockets and some fine to coarse gravel at 6 to 8 ft	24				●					
		X	- firm with clay seams below 8 ft	8			●						
10													
15													

COMPLETION DEPTH: 10.0 ft      DEPTH TO WATER IN BORING: Dry      DATE: 6/17/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 48

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 505+00, 50 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT			- No. 200 %				
						PLASTIC LIMIT	WATER CONTENT	LIQUID LIMIT					
SURF. EL: 344±						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
						10	20	30	40	50	60	70	
			Very loose to loose reddish brown clayey fine sand w/some fine to coarse sand and fine to coarse gravel (fill)	4		15	18						32
			- loose, moist below 2 ft	7			20						
							25						
5			Medium dense reddish tan clayey fine sand w/some shale and sandstone fragments and occasional clay pockets (fill)	29			25						
			Very stiff brownish yellow and reddish brown fine sandy clay, silty w/occasional fine sand pockets and trace sandstone partings	33			25	28					65
			- less sandy with clay seams and layers below 8 ft	33			30						
10													
15													

COMPLETION DEPTH: 10.0 ft  
DATE: 6-17-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 6/17/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 49

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 500+00, 60 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
			SURF. EL: 330±			PLASTIC LIMIT: 10    WATER CONTENT: 40    LIQUID LIMIT: 70							
			Loose reddish brown silty fine to medium sand, slightly clayey w/some fine to coarse gravel and trace organics (fill)	6		●	++						19
			Medium dense reddish brown clayey fine sand w/some fine to coarse gravel and occasional fine sand pockets	13		●	+	--	+				33
5			- less sandy with occasional clay seams before 4 ft	21		●							
			Firm to stiff brownish gray silty clay w/some fine gravel and ferrous stains	10		●							
			Stiff light gray and tan silty clay, slightly sandy w/occasional clay pockets	20			●						
10													
15													

COMPLETION DEPTH: 10.0 ft  
DATE: 6-17-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 6/17/2015





# LOG OF BORING NO. 50

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 515+00, 55 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
SURF. EL: 344±						PLASTIC LIMIT +	WATER CONTENT ●				LIQUID LIMIT +		
						10	20	30	40	50	60	70	
			Loose tan, gray and brown clayey fine to coarse sand w/some fine to coarse gravel and occasional clay pockets (fill)	8			●						
			Medium dense reddish brown clayey fine sand w/occasional fine sandy clay pockets and some fine to coarse gravel	13			●	---	+				
5			- with some clayey gravel seams below 4 ft	13			●						
			Stiff dark gray silty clay, slightly sandy w/some fine to coarse gravel and occasional clay pockets	13			●						
			Stiff tan and gray silty clay w/some fine to coarse gravel	9				●					
10													





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. 51

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 510+00, 55 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT			- No. 200 %				
						PLASTIC LIMIT	WATER CONTENT	LIQUID LIMIT					
			SURF. EL: 346±			0.2	0.4	0.6	0.8	1.0	1.2	1.4	
						10	20	30	40	50	60	70	
			Stiff light gray, tan and reddish tan silty clay w/fine to coarse sand and some fine to coarse gravel and crushed stone (fill)	18			15	25	35				44
			- clayey fine to coarse sand with some fine to coarse gravel below 2 ft	18			15	25	45				19
5			- dense with occasional clay pockets below 4 ft	50			15						
				35			15						
				50			15						
10													
15													

COMPLETION DEPTH: 10.0 ft  
DATE: 6-17-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 6/17/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. R1

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 507+30, 150 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						<div><div></div><div>0.20.40.60.81.01.21.4</div></div>							
						PLASTIC LIMIT +	WATER CONTENT ●					LIQUID LIMIT +	
			SURF. EL: 345±			10	20	30	40	50	60	70	
			2 Inches: Asphalt Concrete										
			10 inches: Crushed Stone Base										
			Medium dense reddish brown fine sand, slightly clayey w/concrete debris (fill)	28		●							
			Medium dense tan, reddish tan and reddish brown clayey fine sand w/some medium to coarse sand and a little gravel	15		●	+						39
5			Dense to very dense gray and reddish brown clayey fine to coarse sand w/some fine gravel and numerous fine quartz fragments	50/9"		●							
			- with fine to coarse gravel below 6 ft										
			- less clayey below 7 ft	50/10"		●							
				50/6"		●							
10													
15													
COMPLETION DEPTH: 8.0 ft													
DATE: 7-27-15													
DEPTH TO WATER													
IN BORING: Dry													
DATE: 7/27/2015													

LGBNEW 15-019.GPJ 11-23-15





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. R2

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 509+40, 370 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %		
						0.2	0.4	0.6	0.8	1.0	1.2	1.4			
						PLASTIC LIMIT	WATER CONTENT					LIQUID LIMIT			
			SURF. EL: 355±			+									
			3 inches: Asphalt Concrete												
			12 inches: Crushed Stone Base												
			Stiff brown and tan fine sandy clay w/some fine gravel and occasional fine sand pockets (fill)	12		+	-	+							51
			Firm reddish tan and brownish gray silty clay, slightly sandy w/some silt pockets and seams and organic inclusions	7		+	-	+							76
5			Firm tan and reddish brown silty clay, slightly sandy w/some silt partings and fine sand pockets and a little fine gravel	8											
			Medium dense gray and reddish brown clayey fine to coarse gravel, sandy w/some clay pockets	25											
10			- dense, less clayey with fine sand pockets below 9 ft	46											





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. R3

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 510+80, 250 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
			SURF. EL: 350±			PLASTIC LIMIT      WATER CONTENT      LIQUID LIMIT +-----+-----+ 10    20    30    40    50    60    70							
			Firm tan and reddish brown fine sandy clay - with trace organics to 1 ft	8			●		+				74
			Stiff tan, reddish tan and reddish brown fine sandy clay w/some medium sand	13			●	+	+				66
5			- very stiff with occasional clay pockets and trace fine gravel below 4 ft	26			●						
			Dense to very dense gray and reddish brown clayey fine to coarse sand w/fine to coarse gravel	50/4"			●						
			- refusal in very dense gravel at 7 ft	50/4"			●						
10													
15													

COMPLETION DEPTH: 7.0 ft  
DATE: 7-29-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 7/29/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. R4

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 511+05, 250 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
						PLASTIC LIMIT +	WATER CONTENT ●					LIQUID LIMIT +	
			SURF. EL: 348±			10	20	30	40	50	60	70	
			2 inches: Asphalt Concrete										
			Medium dense gray fine sandy silt, slightly clayey w/some silty clay pockets and trace fine gravel	11			●+						64
			Medium dense gray, tan and reddish brown clayey fine sand w/occasional clay partings and some fine to coarse gravel	27			●						
5				50/9"			●	+ - - - +					29
			Dense to very dense reddish brown and reddish tan clayey fine gravel w/some clay pockets and fine to medium sand pockets with occasional completely weathered shale	50			●						
				50/10"			●						
10													
15													
COMPLETION DEPTH: 10.0 ft DATE: 7-22-15				DEPTH TO WATER IN BORING: Dry				DATE: 7/22/2015					





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. R5

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 504+70, 140 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT						- No. 200 %	
						0.2    0.4    0.6    0.8    1.0    1.2    1.4							
						PLASTIC LIMIT +	WATER CONTENT ●				LIQUID LIMIT +		
			SURF. EL: 336±			10	20	30	40	50	60	70	
			3 inches: Asphalt										
			Dense gray crushed stone base (fill)										
				40		●							
			- medium dense with occasional fine sandy clay pockets below 2 ft										
				15		●							
			- loose below 4 ft										
5				7		●							
			Firm to stiff gray and tan fine sandy clay w/some silty fine sand pockets and occasional clay pockets and trace fine gravel	10		●	+						54
			- stiff below 8 ft										
				21		●							
10													
15													
COMPLETION DEPTH: 10.0 ft				DEPTH TO WATER									
DATE: 7-27-15				IN BORING: Dry				DATE: 7/27/2015					





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. R6

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 507+20, 320 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
SURF. EL: 341±						PLASTIC LIMIT	WATER CONTENT				LIQUID LIMIT		
						+	●				+		
						10	20	30	40	50	60	70	
			Medium dense crushed stone base (fill)	26									
			Medium dense tan and brown clayey fine sand w/silt pockets and some fine gravel (fill)	20		●	+	-	+				42
5			Firm reddish brown silty clay, slightly sandy w/some fine to coarse gravel	7		●							
			- very stiff with more gravel and some weakly cemented sand pockets below 6 ft	45		●							
			Very stiff to hard reddish brown, gray and tan silty clay w/some silt seams and layers	50/9"					●				
10													
15													

COMPLETION DEPTH: 10.0 ft  
DATE: 7-23-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 7/23/2015





# LOG OF BORING NO. R7

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 509+35, 275 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT			- No. 200 %				
						PLASTIC LIMIT	WATER CONTENT	LIQUID LIMIT					
SURF. EL: 355±						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
						10	20	30	40	50	60	70	
			Medium dense crushed stone base (fill)	20									
			Stiff reddish tan and reddish brown clay, sandy w/some fine gravel	13			+	●	- - - - -	+			
5				13				●					
			Stiff reddish brown fine sandy clay w/fine gravel and occasional clayey fine gravel seams	14				●					
			Dense to very dense tan and reddish brown clayey fine gravel w/some fine sand pockets	50/10"				●					
10													
15													

COMPLETION DEPTH: 10.0 ft  
DATE: 7-23-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 7/23/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. R8

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 513+50, 100 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
			SURF. EL: 347±			PLASTIC LIMIT	WATER CONTENT				LIQUID LIMIT		
						+	10	20	30	40	50	60	70
			Dense crushed stone base (fill)										
			Dense brownish yellow and reddish brown clayey fine sand w/some medium to coarse sand and fine gravel and occasional clay pockets	46									
				33		●	+	---	+				35
5			Dense tan and reddish brown sandy fine to coarse gravel, slightly clayey	40		●							
			Friable tan weathered fine-grained sandstone - auger refusal in hard sandstone at 6.5 ft	50/3"		●							
10													
15													

COMPLETION DEPTH: 6.5 ft  
DATE: 8-7-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 8/7/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. R9

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 520+20, 80 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT										- No. 200 %
						0.2    0.4    0.6    0.8    1.0    1.2    1.4										
						PLASTIC LIMIT    WATER CONTENT    LIQUID LIMIT										
			SURF. EL: 350±													
			Dense tan silty fine sand w/numerous shale and sandstone fragments and some crushed stone (fill)	36												
			Firm gray and tan fine sandy clay w/some clay pockets and trace fine gravel	8												
			- slightly sandy with more gravel below 4 ft													
5			Dense tan and gray clayey fine gravel	30/0"												
			Very stiff tan, maroon and reddish brown silty clay w/some fine sandy clay seams, weathered shale seams and quartz fragments (completely weathered shale)	26												
			Low hardness tan and dark gray weathered shale, slightly arenaceous with occasional sandstone partings	50												
10																





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. R10

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 478+05, 125 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT										- No. 200 %
						0.2 0.4 0.6 0.8 1.0 1.2 1.4										
						PLASTIC LIMIT WATER CONTENT LIQUID LIMIT										
			SURF. EL: 318±			10	20	30	40	50	60	70				
			4 inches: Asphalt Concrete 8 inches: Crushed Stone Base													
			Medium dense reddish brown clayey fine sand w/some fine to coarse gravel and crushed stone fragments (fill) - less gravel below 2 ft	25		●										
				16		●	+	+						46		
5			Stiff gray, tan and reddish brown fine sandy clay, silty w/a little fine to coarse gravel and occasional clay pockets and seams (fill)	21			●									
			Medium dense tan and reddish brown clayey fine to coarse gravel, sandy	15		●										
			Very stiff gray and reddish brown fine sandy clay w/clay seams and fine to coarse gravel and some fine sand pockets	50/7"		●										
10																
15																
COMPLETION DEPTH: 9.5 ft																
DATE: 8-7-15																
DEPTH TO WATER																
IN BORING: Dry																
DATE: 8/7/2015																

LGBNEW 15-019.GPJ 11-23-15





# LOG OF BORING NO. R11

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 473+80, 80 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %	
						0.2	0.4	0.6	0.8	1.0	1.2	1.4		
			SURF. EL: 304±			PLASTIC LIMIT +			WATER CONTENT ●				LIQUID LIMIT +	
				10	20	30	40	50	60	70				
			Dense crushed stone base (fill)	50/6"										
			Medium dense reddish brown clayey fine gravel, sandy w/a little coarse gravel	27		●	+	-	+					22
			- with clay pockets and seams below 4 ft											
5				11		●								
			- dense with less clay seams below 6 ft											
				31		●								
			Dense to very dense tan and reddish tan sandy fine to coarse gravel, slightly clayey, moist											
				50/9"		●								
10														





**Grubbs, Hoskyn,  
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Consulting Engineers

# LOG OF BORING NO. R12

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 406+90, 120 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						<div><div></div><div>0.20.40.60.81.01.21.4</div></div>							
						PLASTIC LIMIT +	WATER CONTENT ●				LIQUID LIMIT +		
			SURF. EL: 294±			10	20	30	40	50	60	70	
			Dense tan fine sandy silt w/some organic and shale fragments (fill)	50		●							
			Dense brown fine to medium sand w/some fine to coarse gravel and fine sandy clay pockets (fill)	34		●			-NON-PLASTIC-				30
			- slightly clayey below 4 ft										
5				27		●							
			- with some sandstone fragments and trace crushed stone below 6 ft										
				32		●							
			- clayey fine sand w/trace fine gravel and shale fragments below 8 ft										
				29		●							
10													





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. R13

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 405+30, 60 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2    0.4    0.6    0.8    1.0    1.2    1.4							
						PLASTIC LIMIT +	WATER CONTENT					LIQUID LIMIT +	
			SURF. EL: 297±			10	20	30	40	50	60	70	
			Dense crushed stone base (fill)	50/11"									
			Dense tan, brown and reddish brown fine to coarse sand, slightly clayey w/some clayey fine to coarse gravel seams and fine sandy clay pockets (fill)	40		●	++						29
5			Medium dense brown fine to coarse sand, slightly clayey w/some fine to coarse gravel	22		●							
			Stiff tan and gray clay w/occasional fine sand pockets and a little fine to coarse gravel	24			●						
			- with clayey fine to coarse gravel layer at 7 ft										
			- with occasional silty clay pockets and trace shale fragments below 8 ft	19			●						
10													





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. R14

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 402+40, 125 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
SURF. EL: 295±						PLASTIC LIMIT +	WATER CONTENT ●					LIQUID LIMIT +	
						10	20	30	40	50	60	70	
			Dense tan and brown silty fine sand, slightly clayey w/some fine to coarse gravel and crushed stone (fill)	45		●	++						37
			Medium dense tan fine to coarse sand w/some fine gravel	17		●		-NON-PLASTIC-					20
5			Stiff tan and reddish tan silty clay w/occasional fine sand partings and a little fine to coarse gravel - with some decayed organics at 5 ft  - slightly sandy with some shale fragments below 6 ft	15			●						
				11			●						
10			Stiff tan, reddish tan and gray fine sandy clay w/clay seams and layers and a little fine to coarse gravel and numerous ferrous stains and nodules	15				●					





# LOG OF BORING NO. R15

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 402+80, 220 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
SURF. EL: 294±						PLASTIC LIMIT +	WATER CONTENT ●				LIQUID LIMIT +		
				10	20	30	40	50	60	70			
			Dense reddish brown fine sand w/some fine to coarse gravel, slightly clayey (fill)	50/6"		●							
			Stiff gray and brown fine sandy clay w/some fine to medium sand pockets and clay seams with occasional organic inclusions	15			+	+				64	
5			Stiff tan and gray clay w/some fine to coarse gravel and ferrous stains and nodules	19			●						
			- firm to stiff with occasional fine to medium sand pockets and seams at 6 to 8 ft	10			●						
			- stiff, brown, tan and gray below 8 ft	11			●						
10													





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. R16

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 402+25, 440 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %	
						0.2   0.4   0.6   0.8   1.0   1.2   1.4								
						PLASTIC LIMIT +	WATER CONTENT ●					LQUID LIMIT +		
			SURF. EL: 295±			10	20	30	40	50	60	70		
			Very stiff light brown and gray silty clay w/shale fragments and some crushed stone and quartz fragments (fill)	33		●								
					23		●	+	---	+				43
5			Stiff gray and tan silty clay w/some shale and quartz fragments and clay pockets and seams	20			●							
			Stiff reddish brown and gray silty clay w/occasional silt partings and some shale and sandstone fragments and ferrous stains and nodules	20				●						
			- more ferrous stains and nodules with occasional organic inclusions below 8 ft											
				22			●							
10														
										</				





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. R17

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 398+95, 120 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2    0.4    0.6    0.8    1.0    1.2    1.4							
						PLASTIC LIMIT	WATER CONTENT				LIQUID LIMIT		
			SURF. EL: 294±			+	●				+		
				10		20	30	40	50	60	70		
			Crushed stone Base	40									
			Firm gray, tan and reddish tan clay, slightly silty w/occasional fine sand partings and some shale and quartz fragments	8		●	- - - -				+	81	
5				7		●							
			- stiff with occasional silt partings, organic stains and calcareous inclusions below 6 ft	17		●							
			- slightly silty below 8 ft	19		●							
10													





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. R18

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 394+70, 160 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
			SURF. EL: 305±			PLASTIC LIMIT +			WATER CONTENT ●			LIQUID LIMIT +	
						10	20	30	40	50	60	70	
			Medium dense to dense brown silty fine sand, slightly clayey w/some shale fragments and crushed stone and occasional fine sandy clay pockets (fill)	40		●	+	+					37
			Low hardness gray and tan highly weathered shale w/occasional silty clay laminations and seams	50/9"			●	+	-	+			
5				40			●						
			- with ferrous concretions and occasional friable sandstone seams and more silty clay laminations below 6 ft	40			●						
			- slightly moist with silty clay seams below 8 ft	50/11"			●						
10													
			NOTE: Water at 5.7 ft at completion.										
15													

COMPLETION DEPTH: 10.0 ft  
DATE: 8-6-15

DEPTH TO WATER  
IN BORING: 8.5 ft

DATE: 8/6/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. R19

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 272+30, 70 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
			SURF. EL: 420±			PLASTIC LIMIT: 10    WATER CONTENT: 40    LIQUID LIMIT: 70							
			Crushed Stone Base										
			Dense reddish brown silty fine to medium sand w/some quartz fragments and crushed stone (fill)	32		●							
			Medium dense gray, reddish brown and tan clayey fine sand w/occasional clay seams and some shale and quartz fragments	18			●	+	-	-	+		38
5			Low hardness gray, dark gray, tan and reddish tan highly weathered shale w/silty clay seams and layers and some quartz fragments	30				●					
			- moderately hard below 6 ft	50/6"				●					
			Moderately hard tan and gray weathered shale w/occasional weathered fine-grained sandstone seams and layers	50/6"		●							
			- auger refusal at 7 ft										
10													
15													

COMPLETION DEPTH: 7.0 ft  
DATE: 8-10-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 8/10/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. R20

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 253+05, 475 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT										- No. 200 %
						<div><div></div><div>0.20.40.60.81.01.21.4</div></div>										
						PLASTIC LIMIT +		WATER CONTENT ●				LIQUID LIMIT +				
			SURF. EL: 410±			10	20	30	40	50	60	70				
			Crushed Stone Base													
			Medium dense reddish tan silty fine to medium sand w/numerous quartz and sandstone fragments (fill)	27		●	+						11			
			Low hardness gray, tan, reddish brown and reddish tan highly weathered shale w/silty clay seams and layers and some ferrous partings	31			●									
5			- with occasional clay seams and ferrous stains and nodules below 4 ft	28			●									
			- tan and reddish tan with more silty clay seams below 6 ft	20			●									
				13			●									
10																
15																
COMPLETION DEPTH: 10.0 ft																
DATE: 8-10-15																
DEPTH TO WATER																
IN BORING: Dry																
DATE: 8/10/2015																





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. R21

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 256+15, 350 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT										- No. 200 %
						<div><div></div><div>0.20.40.60.81.01.21.4</div></div>										
						PLASTIC LIMIT +		WATER CONTENT ●				LIQUID LIMIT +				
			SURF. EL: 400±			10	20	30	40	50	60	70				
			Dense light reddish tan silty fine sand w/numerous quartz fragments and some crushed stone (fill)	50		●										
			Stiff tan, reddish tan and gray clay, slightly sandy w/trace fine gravel and some shale fragments	11			●	+	- - - - -	+			54			
5			Firm to stiff tan, reddish tan and gray silty clay w/shale fragments and occasional clay seams and trace fine sand partings	10			●									
			- firm, less silt with occasional highly weathered shale seams below 6 ft	8			●									
			- stiff, slightly silty with some ferrous stains and nodules and a little fine to coarse gravel below 8 ft	21		●										
10																
</																





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. R22

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 256+50, 100 ft Rt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
			SURF. EL: 411±										
			Crushed Stone Base										
			Low hardness light gray, tan and reddish tan highly weathered shale w/occasional silty clay partings	28			●	+	---	+			
			- with some clay seams, silt partings and ferrous stains and nodules below 2 ft	50/11"			●						
			- less clay seams below 4 ft				●						
5				47									
			- with some silty clay seams and layers below 6 ft										
				48			●						
				43			●						
10													
15													

COMPLETION DEPTH: 10.0 ft  
DATE: 8-10-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 8/10/2015





# LOG OF BORING NO. R23

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 250+55, 290 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT			- No. 200 %				
						PLASTIC LIMIT	WATER CONTENT	LIQUID LIMIT					
SURF. EL: 436±						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
						10	20	30	40	50	60	70	
			Dense reddish tan fine sand w/some fine to coarse gravel (fill)	50/10"		●							56
			Stiff gray, reddish tan and tan silty clay w/shale and sandstone fragments and occasional clay partings	17			●	---	+				
5			Low hardness gray and tan highly weathered shale w/occasional silty clay partings and seams	17			●						
				38			●						
			- low hardness to moderately hard with medium spaced sandstone partings and occasional fine sand partings below 8 ft	50			●						
10													





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. R24

CA0601: I-30 - Roadway Widening  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 254+90, 95 ft Lt

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						0.2	0.4	0.6	0.8	1.0	1.2	1.4	
			SURF. EL: 425±			PLASTIC LIMIT: 10    WATER CONTENT: 40    LIQUID LIMIT: 70							
			Crushed Stone Base (fill)	50/8"									
			Dense reddish brown silty fine sand, slightly clayey w/occasional shale fragments and quartz fragments (fill)	35		●	++						26
5			Firm reddish tan, tan and gray fine sandy clay w/shale fragments and quartz fragments	7			●	+	---	+			64
			Stiff brown and gray clay, slightly silty w/some shale fragments and occasional silty clay pockets	19					●				
			- with shale and quartz fragments below 8 ft	17			●						
10													
15													

COMPLETION DEPTH: 10.0 ft  
DATE: 8-13-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 8/13/2015





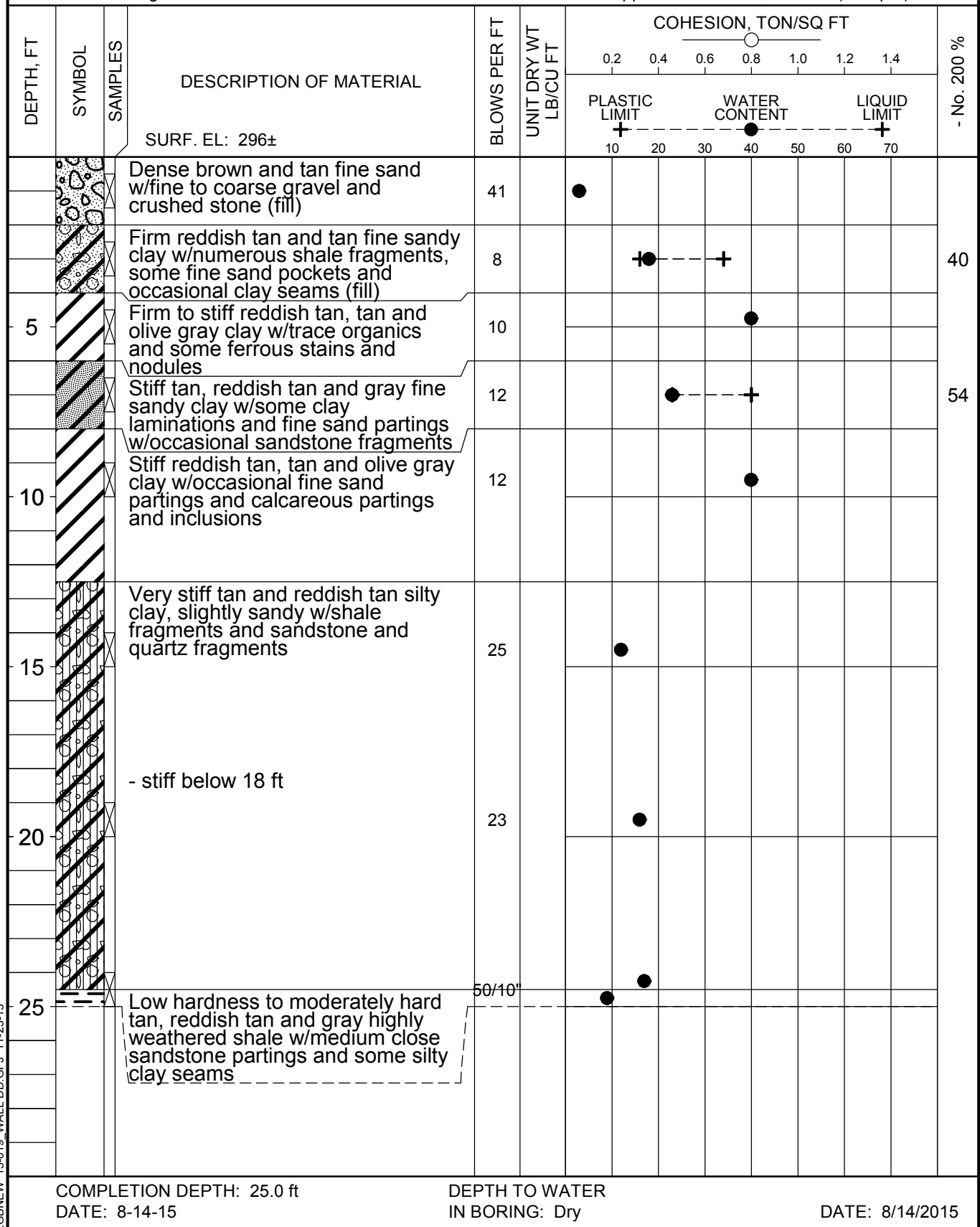
**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. W21

CA0601: I-30 Widening - Wall DD  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 396+40, 120 ft Lt (Ramp 5)



LGBNEW 15-019 WALL DD.GPJ 11-23-15












**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. W22

CA0601: I-30 Widening - Wall DD  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 394+85, 120 ft Lt (Ramp 5)

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT							- No. 200 %
						<div><div></div><div>0.20.40.60.81.01.21.4</div></div>							
						PLASTIC LIMIT +	WATER CONTENT ●					LIQUID LIMIT +	
			SURF. EL: 306±			10	20	30	40	50	60	70	
			Dense to very dense tan and reddish tan fine sand w/fine to coarse gravel and some crushed stone (fill)	51		●							
			Stiff gray, reddish tan and tan silty clay w/numerous shale fragments and sandstone fragments (fill)	11			●						
5			Firm to stiff tan and olive gray clay, slightly blocky w/occasional silt partings and calcareous inclusions and trace fine gravel - stiff, slightly silty with some shale fragments at 6 to 8 ft	10				+	●				91
				19					●				
10			- firm to stiff, with more silt and some decayed organics and trace sandstone below 8 ft	10					●				
15			Stiff reddish tan and gray silty clay, slightly sandy w/some fine gravel and quartz fragments, ferrous stains and nodules and occasional fine sand pockets and clay laminations	20			●						
20			Moderately hard brown, gray and tan highly weathered shale w/medium close sandstone seams and occasional silty clay seams	50/8"			●						
			Moderately hard gray, reddish tan and dark gray weathered shale										
25				50/3"		●							

COMPLETION DEPTH: 25.0 ft  
DATE: 8-13-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 8/13/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. W23

CA0601: I-30 Widening - Wall DD  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 393+20, 90 ft Lt (Ramp 5)

[illegible]

COMPLETION DEPTH: 25.0 ft  
DATE: 8-17-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 8/17/2015





**Grubbs, Hoskyn,  
Barton & Wyatt, Inc.**  
Consulting Engineers

# LOG OF BORING NO. W24

CA0601: I-30 Widening - Wall DD  
Saline County, Arkansas

TYPE: Auger

LOCATION: Approx Sta 392+70, 80 ft Lt (Ramp 5)

[illegible]

COMPLETION DEPTH: 20.0 ft  
DATE: 8-17-15

DEPTH TO WATER  
IN BORING: Dry

DATE: 8/17/2015





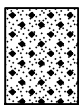
## SYMBOLS AND TERMS USED ON BORING LOGS

### SOIL TYPES

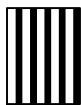
(SHOWN IN SYMBOLS COLUMN)



Gravel



Sand



Silt

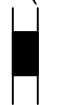


Clay

Predominant type shown heavy

### SAMPLER TYPES

(SHOWN ON SAMPLES COLUMN)



Shelby  
Tube



Rock  
Core



Split  
Spoon



No  
Recovery



Cutting

### TERMS DESCRIBING CONSISTENCY OR CONDITION

**COARSE GRAINED SOILS** (major portion retained on No. 200 sieve): Includes (1) Clean gravels and sands, and (2) silty or clayey gravels and sands. Condition is rated according to relative density, as determined by laboratory tests.

#### DESCRIPTIVE TERM

VERY LOOSE

LOOSE

MEDIUM DENSE

DENSE

VERY DENSE

#### N-VALUE

0-4

4-10

10-30

30-50

50 and above

#### RELATIVE DENSITY

0-15%

15-35%

35-65%

65-85%

85-100%

**FINE GRAINED SOILS** (major portion passing No. 200 sieve): Includes (1) Inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as indicated by penetrometer readings or by unconfined compression tests.

#### DESCRIPTIVE TERM

VERY SOFT

SOFT

FIRM

STIFF

VERY STIFF

HARD

#### UNCONFINED COMPRESSIVE STRENGTH TON/SQ. FT.

Less than 0.25

0.25-0.50

0.50-1.00

1.00-2.00

2.00-4.00

4.00 and higher

NOTE: Slickensided and fissured clays may have lower unconfined compressive strengths than shown above, because of planes of weakness or cracks in the soil. The consistency ratings of such soils are based on penetrometer readings.

### TERMS CHARACTERIZING SOIL STRUCTURE

**SLICKENSIDED** - having inclined planes of weakness that are slick and glossy in appearance.

**FISSURED** - containing shrinkage cracks, frequently filled with fine sand or silt; usually more or less vertical.

**LAMINATED** - composed of thin layers of varying color and texture.

**INTERBEDDED** - composed of alternate layers of different soil types.

**CALCAREOUS** - containing appreciable quantities of calcium carbonate.

**WELL GRADED** - having a wide range in grain sizes and substantial amounts of all intermediate particle sizes.

**POORLY GRADED** - predominantly of one grain size, or having a range of sizes with some intermediate sizes missing.

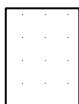
Terms used on this report for describing soils according to their texture or grain size distribution are in accordance with the UNIFIED SOIL CLASSIFICATION SYSTEM, as described in Technical Memorandum No.3-357, Waterways Experiment Station, March 1953



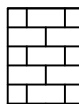


## BORING LOG TERMS – ROCK

### ROCK TYPES (SHOWN IN SYMBOLS COLUMN)



Sandstone



Limestone



Siltstone



Coal



Shale

Joint Characteristics -	<u>Spacing</u>		Degree of Weathering -	Fresh - No visible signs of decomposition or discoloration. Rings under hammer impact.
	Very Close	0.75 to 2.5 in.		
Bedding Characteristics -	Close	2.5 to 8 in.	Slightly Weathered - Slight discoloration inwards from open fractures, otherwise similar to fresh.	Moderately Weathered - Discoloration throughout. Weaker minerals such as feldspar decomposed. Strength somewhat less than fresh rock, but cores cannot be broken by hand or scraped by knife. Texture preserved.
	Moderately Close	8 to 24 in.		
Lithologic Characteristics -	Wide	2 to 6 ft	Highly Weathered - Most minerals somewhat decomposed. Specimens can be broken by hand with effort or shaved with knife. Core stones present in rock mass. Texture becoming indistinct but fabric	Completely Weathered - Minerals decomposed to soil but fabric and structure preserved (Saprolite). Specimens easily crumbled or penetrated.
	Very Wide	More than 6 ft		
Parting -	Very Thin	0.75 to 2.5 in.	Residual Soil - Advanced state of decomposition resulting in plastic soils. Rock fabric and structure completely destroyed. Large volume change.	Solid, contains no voids
	Thin	2.5 to 8 in.		
Seam -	Medium	8 to 24 in.	Vuggy (pitted)	Vesicular (igneous)
	Thick	2 to 6 ft		
Layer -	Massive	More than 6 ft	Porous	Cavities
	Clayey			
Stratum -	Shaly		Cavernous	Nonswelling
	Calcareous (limy)			
Hardness-	Siliceous		Swelling Properties -	Nonslaking
	Sandy (Arenaceous)			
Hardness-	Silty		Slaking Properties -	Slakes slowly on exposure
	Plastic Seams			
Hardness-	Less than 1/16 inch		Rock Quality Designation (RQD) -	RQD (Percent)
	1/16 to 1/2 inch			
Hardness-	1/2 to 12 inches		Greater than 90	Excellent
	Greater than 12 inches			
Hardness-	Soft (S) - Reserved for plastic material alone.		75 - 90	Good
	Friable (F) - Easily crumbled by hand, pulverized or reduced to powder and is too soft to be cut with a pocket knife.			
Hardness-	Low Hardness (LH) - Can be gouged deeply or carved with a pocket knife.		50 - 75	Fair
	Moderately Hard (MH) - Can be readily scratched by a knife blade; scratch leaves a heavy trace of dust and scratch is readily visible after the powder has been blown away.			
Hardness-	Hard (H) - Can be scratched with difficulty; scratch produces little powder and is often faintly visible; traces of the knife steel may be visible.		25 - 50	Poor
	Very hard (VH) - Cannot be scratched with a pocket knife. Knife steel marks left on surface.			
Hardness-			Less than 25	Very Poor
Texture -	Fine - Barely seen with naked eye		Diagnostic Description	
	Medium - Barely seen up to 1/8 in.			
Structure -	Coarse - 1/8 in. to 1/4 in.			
	Bedding			
Structure -	Flat - 0° - 5°			
	Gently Dipping - 5° - 35°			
Structure -	Moderately Dipping - 35° - 55°			
	Steeply Dipping - 55° - 85°			
Structure -	Fractures, scattered			
	Open			
Structure -	Cemented or Tight			
	Fractures, closely spaced			
Structure -	Open			
	Cemented or Tight			
Structure -	Brecciated (Sheared and Fragmented)			
	Open			
Structure -	Cemented or Tight			
	Joints			
Structure -	Faulted			
	Slickensides			



## **ATTACHMENT 3**



# **SUBSURFACE EXPLORATION SUMMARY**

## **ROADWAY BORINGS**

PROJECT: CA0601: Hwy 70 - Sevier St (Widening) (S)

LOCATION: Saline County, Arkansas

GHBW JOB No.: 15-019

<b>Boring No.</b>	<b>Centerline Station</b>	<b>Offset from Centerline, ft</b>		<b>Approx Surface El, ft</b>	<b>Completion Depth, ft</b>
1	250+00	55	RT	446	10
2	255+00	60	LT	423	10
3	260+00	40	RT	409	10
4	265+00	50	LT	413	10
5	270+00	50	RT	418	10
6	275+00	60	LT	426	10
7	280+00	50	RT	442	9.5
8	285+00	60	LT	433	10
9	290+00	50	RT	430	10
10	295+00	50	LT	423	10
11	300+00	50	RT	412	10
12	305+00	60	LT	400	10
13	310+00	50	RT	389	10
14	315+00	50	LT	378	10
15	320+00	50	RT	368	10
16	325+00	60	LT	375	8
17	327+70	50	RT	383	10
18	335+00	70	LT	393	10
19	340+00	50	RT	385	9.5
20	345+00	60	LT	372	10
21	350+00	50	RT	373	10
22	355+00	60	LT	383	10
23	360+00	55	RT	379	10
24	365+10	65	LT	378	10
25	370+00	50	RT	358	10
26	375+00	60	LT	362	10
27	380+00	50	RT	362	10
28	384+30	70	LT	353	10
29	390+00	50	RT	336	10
30	393+00	65	LT	327	10
31	401+00	55	RT	305	10
32	405+00	60	LT	295	10
33	408+20	60	RT	294	10
34	425+00	60	LT	294	10
35	420+00	55	RT	294	7.5



# **SUBSURFACE EXPLORATION SUMMARY**

## **ROADWAY BORINGS**

PROJECT: CA0601: Hwy 70 - Sevier St (Widening) (S)

LOCATION: Saline County, Arkansas

GHBW JOB No.: 15-019

<b>Boring No.</b>	<b>Centerline Station</b>	<b>Offset from Centerline, ft</b>		<b>Approx Surface El, ft</b>	<b>Completion Depth, ft</b>
36	447+00	50	LT	293	10
37	430+00	50	RT	294	10
38	455+00	60	LT	294	10
39	450+00	50	RT	293	10
40	465+00	60	LT	293	10
41	460+00	55	RT	293	10
42	475+00	50	LT	310	10
43	470+00	60	RT	298	10
44	485+00	135	LT	320	10
45	480+00	40	RT	315	10
46	495+00	60	LT	325	10
47	490+00	20	RT	324	10
48	505+00	50	LT	344	10
49	500+00	60	RT	330	10
50	515+00	60	LT	344	10
51	510+00	55	RT	346	10
R1	507+30	150	RT	345	8
R2	509+40	370	RT	355	10.5
R3	510+80	250	RT	350	7
R4	511+05	250	RT	348	10
R5	504+70	140	LT	336	10
R6	507+20	320	LT	341	10
R7	509+35	275	LT	355	10
R8	513+50	100	RT	347	6.5
R9	520+20	80	RT	350	10
R10	478+05	125	LT	318	9.5
R11	473+80	80	RT	304	10
R12	406+90	120	LT	294	10
R13	405+30	60	RT	297	10
R14	402+40	125	LT	295	10
R15	402+80	220	LT	294	10
R16	402+25	440	LT	295	10
R17	398+95	120	RT	294	10
R18	394+70	160	RT	400	10
R19	272+30	70	RT	420	7



# **SUBSURFACE EXPLORATION SUMMARY**

## **ROADWAY BORINGS**

PROJECT: CA0601: Hwy 70 - Sevier St (Widening) (S)

LOCATION: Saline County, Arkansas

GHBW JOB No.: 15-019

<b>Boring No.</b>	<b>Centerline Station</b>	<b>Offset from Centerline, ft</b>		<b>Approx Surface El, ft</b>	<b>Completion Depth, ft</b>
R20	253+05	475	RT	410	10
R21	256+15	350	RT	400	10
R22	256+50	100	RT	411	10
R23	250+55	290	LT	436	10
R24	254+90	95	LT	425	10
W21	396+40	120	LT	296	25
W22	394+85	120	LT	306	25
W23	393+20	90	LT	302	25
W24	392+70	80	LT	310	20



## **ATTACHMENT 4**



# SUMMARY OF CLASSIFICATION TEST RESULTS

PROJECT: CA0601 - Hwy 70 - Sevier St. (Widening) (S)

LOCATION: Saline County, Arkansas

JOB NUMBER: 15-019

BORING NO.	SAMPLE DEPTH (ft)	WATER CONTENT (%)	ATTERBERG LIMITS			SIEVE ANALYSIS								UNIFIED CLASS.	AASHTO CLASS.
			LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	PERCENT PASSING									
						1 in.	3/4 in.	3/8 in.	#4	#10	#40	#200			
Roadway Borings															
1	0.5-1.5	9	22	19	3	---	---	---	---	---	---	19	SC	A-1-b	
2	4.5-5.5	5	- Non Plastic -			---	---	---	---	---	---	10	SM	A-3	
3	0.5-1.5	7	---	---	---	---	---	---	---	---	---	16	GC	A-2-4	
4	4.5-5.5	16	35	21	14	---	---	---	---	---	---	37	SC	A-2-4	
5	0.5-1.5	8	31	21	10	---	---	---	---	---	---	16	SC	A-2-4	
5	2.5-3.5	12	34	19	15	---	---	---	---	---	---	34	GC	A-2-4	
6	2.5-3.5	10	- Non Plastic -			---	---	---	---	---	---	9	SP	A-3	
6	6.5-7.5	19	48	26	22	---	---	---	---	---	---	50	CL	A-7-6	
7	0.5-1.5	8	21	16	5	---	---	---	---	---	---	21	SC	A-2-4	
7	4.5-5.5	24	37	23	14	---	---	---	---	---	---	53	CL	A-6	
8	2.5-3.5	18	41	26	15	---	---	---	---	---	---	48	SC	A-2-6	
9	0.5-1.5	5	23	15	8	---	---	---	---	---	---	15	GC	A-2-4	
9	2.5-3.5	14	42	26	16	---	---	---	---	---	---	---	GC	A-7-6	



# SUMMARY OF CLASSIFICATION TEST RESULTS

PROJECT: CA0601 - Hwy 70 - Sevier St. (Widening) (S)

LOCATION: Saline County, Arkansas

JOB NUMBER: 15-019

BORING NO.	SAMPLE DEPTH (ft)	WATER CONTENT (%)	ATTERBERG LIMITS			SIEVE ANALYSIS								UNIFIED CLASS.	AASHTO CLASS.
			LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	PERCENT PASSING									
						1 in.	3/4 in.	3/8 in.	#4	#10	#40	#200			
10	0.5-1.5	7	24	17	7	---	---	---	---	---	---	20	SC	A-2-4	
11	0.5-1.5	7	26	19	7	---	---	---	---	---	---	15	SC	A-2-4	
11	2.5-3.5	28	43	22	21	---	---	---	---	---	---	54	CL	A-7-6	
12	0.5-1.5	16	36	20	16	---	---	---	---	---	---	42	SC	A-2-6	
13	0.5-1.5	6	22	16	6	---	---	---	---	---	---	14	SC	A-2-6	
13	2.5-3.5	16	30	22	8	---	---	---	---	---	---	---	SHALE		
14	0.5-1.5	8	18	16	2	---	---	---	---	---	---	14	SC	A-2-4	
14	4.5-5.5	14	39	27	12	---	---	---	---	---	---	31	GC	A-2-6	
15	0.9-1.9	11	- Non Plastic -			---	---	---	---	---	---	21	SC	A-2-4	
15	3-4	14	39	23	16	---	---	---	---	---	---	34	GC	A-2-6	
16	2.5-3.5	12	32	25	7	---	---	---	---	---	---	42	SC	A-2-4	
17	2.5-3.5	13	- Non Plastic -			---	---	---	---	---	---	22	SM	A-2-4	



# SUMMARY OF CLASSIFICATION TEST RESULTS

PROJECT: CA0601 - Hwy 70 - Sevier St. (Widening) (S)

LOCATION: Saline County, Arkansas

JOB NUMBER: 15-019

BORING NO.	SAMPLE DEPTH (ft)	WATER CONTENT (%)	ATTERBERG LIMITS			SIEVE ANALYSIS PERCENT PASSING							UNIFIED CLASS.	AASHTO CLASS.
			LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	1 in.	3/4 in.	3/8 in.	#4	#10	#40	#200		
18	2.5-3.5	17	36	23	13	---	---	---	---	---	---	33	GC	A-2-6
19	2.5-3.5	21	33	19	14	---	---	---	---	---	---	50	CL	A-6
20	2.5-3.5	23	42	23	19	---	---	---	---	---	---	45	GC	A-7-6
21	2.5-3.5	20	36	24	12	---	---	---	---	---	---	38	GC	A-6
21	6.5-7.5	11	20	16	4	---	---	---	---	---	---	36	SM	A-4
22	2.5-3.5	38	82	22	60	---	---	---	---	---	---	72	CH	A-7-6
23	2.5-3.5	39	81	22	59	---	---	---	---	---	---	90	CH	A-7-6
24	1-1.5	9	29	17	12	100	79	66	50	39	29	19	GC	A-2-6
24	2.5-3.5	35	74	25	49	---	---	---	---	---	---	95	CH	A-7-6
25	0.5-1.5	8	- Non Plastic -			---	---	---	---	---	---	17	SM	A-2-4
25	4.5-5.5	13	38	23	15	---	---	---	---	---	---	43	GC	A-6
26	2.5-3.5	11	- Non Plastic -			---	---	---	---	---	---	14	SM	A-2-4
26	4.5-5.5	42	74	24	50	---	---	---	---	---	---	94	CH	A-7-6



# SUMMARY OF CLASSIFICATION TEST RESULTS

PROJECT: CA0601 - Hwy 70 - Sevier St. (Widening) (S)

LOCATION: Saline County, Arkansas

JOB NUMBER: 15-019

BORING NO.	SAMPLE DEPTH (ft)	WATER CONTENT (%)	ATTERBERG LIMITS			SIEVE ANALYSIS PERCENT PASSING							UNIFIED CLASS.	AASHTO CLASS.
			LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	1 in.	3/4 in.	3/8 in.	#4	#10	#40	#200		
27	0.5-1.5	5	- Non Plastic -			100	90	84	61	45	33	13	GM	A-1-b
27	4.5-5.5	36	87	27	60	---	---	---	---	---	---	91	CH	A-7-6
28	2.5-3	11	34	25	9	---	---	---	---	---	---	---	SHALE	
29	0.5-1.5	32	77	24	53	---	---	---	---	---	---	80	CH	A-7-6
29	4.5-5.5	39	80	24	56	---	---	---	---	---	---	92	CH	A-7-6
30	0.5-1.5	10	- Non Plastic -			---	---	---	---	---	---	17	SM	A-2-4
30	4.5-5.5	33	74	21	53	---	---	---	---	---	---	70	CH	A-7-6
31	0.5-1.5	3	- Non Plastic -			---	---	---	---	---	---	9	SP	A-3
31	4.5-5.5	4	---	---	---	---	---	---	---	---	---	11	GW	A-2-4
32	2.5-3.5	13	- Non Plastic -			---	---	---	---	---	---	17	SM	A-2-4
33	2.5-3.5	14	- Non Plastic -			---	---	---	---	---	---	19	SM	A-2-4
34	0.5-1.5	12	- Non Plastic -			---	---	---	---	---	---	19	SM	A-2-4
34	2.5-3.5	12	23	16	7	---	---	---	---	---	---	58	CL-ML	A-4
35	2.5-3.5	9	20	16	4	---	---	---	---	---	---	31	SM-SC	A-2-4



# SUMMARY OF CLASSIFICATION TEST RESULTS

PROJECT: CA0601 - Hwy 70 - Sevier St. (Widening) (S)

LOCATION: Saline County, Arkansas

JOB NUMBER: 15-019

BORING NO.	SAMPLE DEPTH (ft)	WATER CONTENT (%)	ATTERBERG LIMITS			SIEVE ANALYSIS							UNIFIED CLASS.	AASHTO CLASS.
			LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	PERCENT PASSING								
						1 in.	3/4 in.	3/8 in.	#4	#10	#40	#200		
35	6.5-7.5	17	27	17	10	---	---	---	---	---	---	68	CL	A-4
36	2.5-3.5	8	26	17	9	---	---	---	---	---	---	19	SC	A-2-4
37	0.5-1.5	5	22	20	2	100	79	60	39	30	20	8	GP	A-1-a
38	2.5-3.5	9	18	17	1	100	100	82	61	49	20	10	SP	A-1-a
38	4.5-5.5	13	29	13	16	---	---	---	---	---	---	40	SC	A-6
39	2.5-3.5	10	20	16	4	---	---	---	---	---	---	43	SM	A-2-4
40	2.5-3.5	7	18	16	2	---	---	---	---	---	---	13	SM	A-2-4
41	2.5-3.5	8	- Non Plastic -			---	---	---	---	---	---	18	SM	A-2-4
42	3-4	10	- Non Plastic -			---	---	---	---	---	---	20	SM	A-2-4
43	0.5-1.5	9	28	16	12	100	90	78	60	48	36	25	GC	A-2-6
43	4.5-5.5	7	22	15	7	---	---	---	---	---	---	26	SM-SC	A-2-4
44	0.5-1.5	14	23	14	9	---	---	---	---	---	---	45	SC	A-6



# SUMMARY OF CLASSIFICATION TEST RESULTS

PROJECT: CA0601 - Hwy 70 - Sevier St. (Widening) (S)

LOCATION: Saline County, Arkansas

JOB NUMBER: 15-019

BORING NO.	SAMPLE DEPTH (ft)	WATER CONTENT (%)	ATTERBERG LIMITS			SIEVE ANALYSIS							UNIFIED CLASS.	AASHTO CLASS.
			LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	PERCENT PASSING								
						1 in.	3/4 in.	3/8 in.	#4	#10	#40	#200		
44	6.5-7.5	14	---	---	---	---	---	---	---	---	---	71	ML	A-4
45	2.5-3.5	12	34	17	17	---	---	---	---	---	---	44	GC	A-6
46	2.5-3.5	14	20	14	6	---	---	---	---	---	---	60	CL-ML	A-4
47	0.5-1.5	10	21	12	9	---	---	---	---	---	---	43	GC	A-4
47	2.5-3.5	10	- Non Plastic -			100	100	100	98	94	90	23	SM	A-2-4
48	0.5-1.5	11	21	13	8	---	---	---	---	---	---	32	SC	A-2-4
48	6.5-7.5	21	31	24	7	---	---	---	---	---	---	65	CL-ML	A-4
49	0.5-1.5	9	18	16	2	---	---	---	---	---	---	19	SM	A-2-4
49	2.5-3.5	11	26	14	12	---	---	---	---	---	---	33	SC	A-2-4
50	2.5-3.5	13	28	13	15	100	94	91	82	69	54	36	SC	A-6
51	0.5-1.5	14	30	19	11	---	---	---	---	---	---	44	SC	A-6
51	2.5-3.5	11	43	18	25	---	---	---	---	---	---	19	SC	A-2-7



# SUMMARY OF CLASSIFICATION TEST RESULTS

PROJECT: CA0601 - Hwy 70 - Sevier St. (Widening) (S)

LOCATION: Saline County, Arkansas

JOB NUMBER: 15-019

BORING NO.	SAMPLE DEPTH (ft)	WATER CONTENT (%)	ATTERBERG LIMITS			SIEVE ANALYSIS								UNIFIED CLASS.	AASHTO CLASS.
			LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	PERCENT PASSING									
						1 in.	3/4 in.	3/8 in.	#4	#10	#40	#200			
Ramp Borings															
R1	2.5-3.5	14	24	14	10	---	---	---	---	---	---	39	SC	A-4	
R2	1.7-2.7	10	22	13	9	---	---	---	---	---	---	51	CL	A-4	
R2	3.5-4.5	18	24	16	8	---	---	---	---	---	---	76	CL	A-4	
R3	0.5-1.5	16	28	16	12	---	---	---	---	---	---	74	CL	A-6	
R3	2.5-3.5	17	32	21	11	---	---	---	---	---	---	66	CL	A-6	
R4	1-2	14	17	14	3	---	---	---	---	---	---	64	ML	A-4	
R4	4-4.8	11	40	23	17	---	---	---	---	---	---	29	SC	A-2-6	
R5	6.5-7.5	16	24	17	7	---	---	---	---	---	---	54	CL-ML	A-4	
R6	2.5-3.5	10	22	14	8	---	---	---	---	---	---	42	SC	A-4	
R7	2.5-3.5	20	50	16	34	---	---	---	---	---	---	70	CH	A-7-6	
R8	2.5-3.5	14	35	18	17	---	100	98	86	75	54	35	SC	A-2-6	
R9	2.5-3.5	22	28	15	13	---	---	---	---	---	---	60	CL	A-6	



# SUMMARY OF CLASSIFICATION TEST RESULTS

PROJECT: CA0601 - Hwy 70 - Sevier St. (Widening) (S)

LOCATION: Saline County, Arkansas

JOB NUMBER: 15-019

BORING NO.	SAMPLE DEPTH (ft)	WATER CONTENT (%)	ATTERBERG LIMITS			SIEVE ANALYSIS							UNIFIED CLASS.	AASHTO CLASS.
			LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	PERCENT PASSING								
						1 in.	3/4 in.	3/8 in.	#4	#10	#40	#200		
R10	2.5-3.5	11	24	14	10	---	100	95	83	77	65	46	SC	A-4
R11	2.5-3.5	9	36	19	17	---	89	69	54	43	28	22	GC	A-2-6
R12	2.5-3.5	8	- Non Plastic -			---	100	83	75	65	52	30	SM	A-2-4
R13	2.5-3.5	9	18	14	4	---	94	84	72	63	50	29	SM-SC	A-2-4
R14	0.5-1.5	6	21	17	4	---	92	88	78	72	61	37	SM-SC	A-4
R14	2.5-3.5	10	24	14	10	---	100	91	71	55	36	20	SC	A-2-4
R15	2.5-3.5	18	22	16	6	---	---	---	---	---	---	64	CL-ML	A-4
R16	2.5-3.5	13	34	19	15	---	---	---	---	---	---	43	GC	A-6
R17	2.5-3.5	20	40	19	21	100	100	100	95	92	88	81	CL	A-6
R18	0.5-1.5	8	24	17	7	---	---	---	---	---	---	37	SM-SC	A-4
R18	2-2.8	16	37	28	9	---	---	---	---	---	---	---	SHALE	
R19	2.5-3.5	18	36	23	13	100	100	86	73	61	49	38	SC	A-6



# SUMMARY OF CLASSIFICATION TEST RESULTS

PROJECT: CA0601 - Hwy 70 - Sevier St. (Widening) (S)

LOCATION: Saline County, Arkansas

JOB NUMBER: 15-019

BORING NO.	SAMPLE DEPTH (ft)	WATER CONTENT (%)	ATTERBERG LIMITS			SIEVE ANALYSIS							UNIFIED CLASS.	AASHTO CLASS.
			LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	PERCENT PASSING								
						1 in.	3/4 in.	3/8 in.	#4	#10	#40	#200		
R20	0.5-1.5	3	15	14	1	100	100	69	43	27	18	11	SC	A-1-a
R21	2.5-3.5	22	49	27	22	---	---	---	---	---	---	54	CL	A-7-6
R22	0.5-1.5	13	44	25	19	---	---	---	---	---	---	---	SHALE	
R23	2.5-3.5	20	39	21	18	---	---	---	---	---	---	56	CL	A-6
R24	2.5-3.5	11	20	18	2	100	100	90	87	83	77	26	SM	A-2-4
R24	4.5-5.5	20	43	23	20	---	---	---	---	---	---	64	CL	A-7-6
Wall Borings														
W21	2.5-3.5	18	34	16	18	---	---	---	---	---	---	40	GC	A-6
W21	6.5-7.5	23	40	23	17	---	---	---	---	---	---	54	CL	A-6
W22	4.5-5.5	38	91	23	68	---	---	---	---	---	---	91	CH	A-7-6
W23	4.5-5.5	34	58	22	36	---	---	---	---	---	---	94	CH	A-7-6
W24	4.5-5.5	35	65	20	45	---	---	---	---	---	---	83	CH	A-7-6



15-019

# GRAIN SIZE CURVE



GRAVEL		SAND			SILT	OR	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE			

Sample: B-24, 1-1.5 ft; LL = 24, PL = 19, PI = 5;

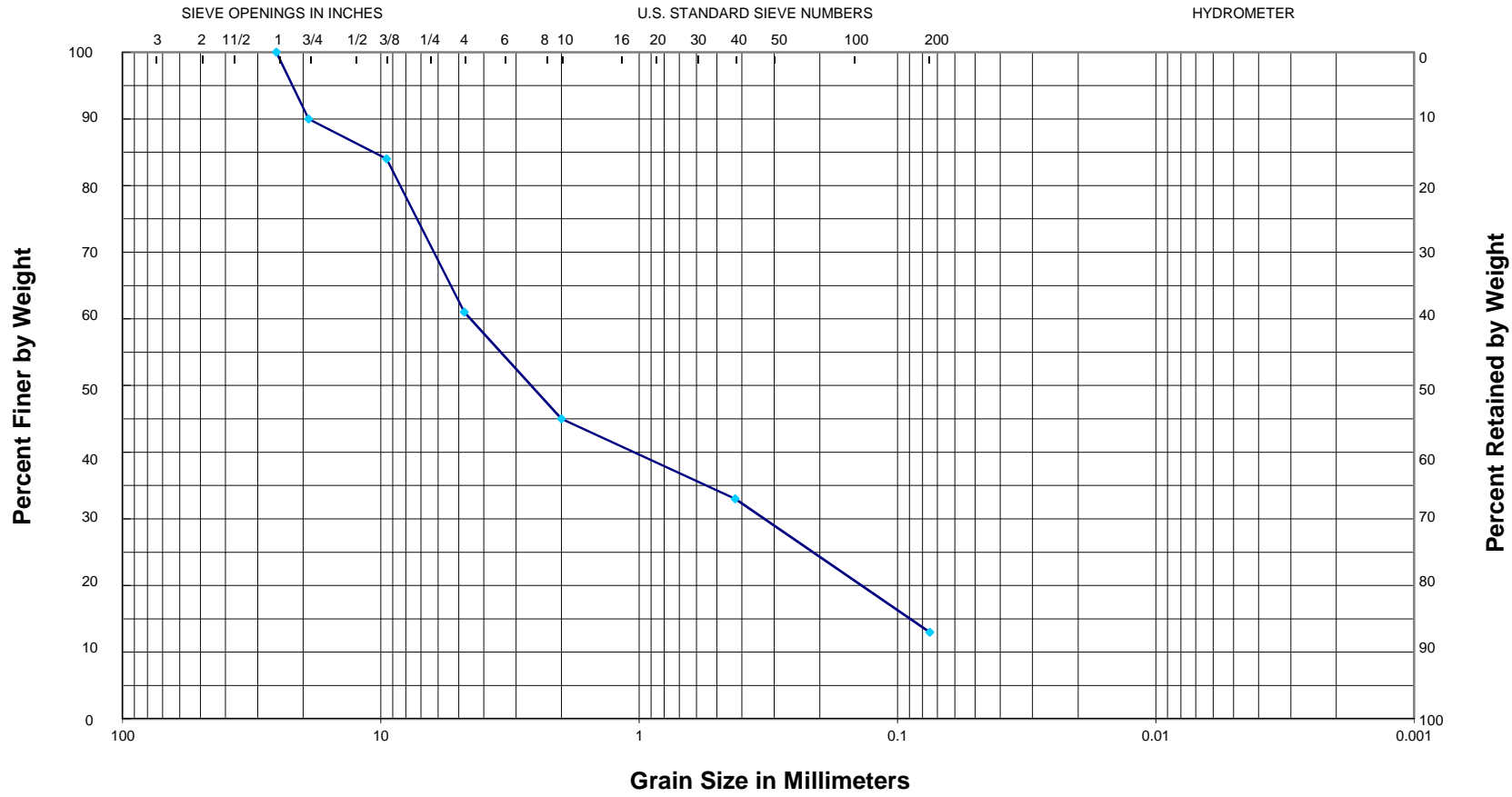
Description: Reddish brown clayey fine to coarse sand with some fine to coarse gravel

**USCS = CL-ML    AASHTO = A-4**



15-019

# GRAIN SIZE CURVE



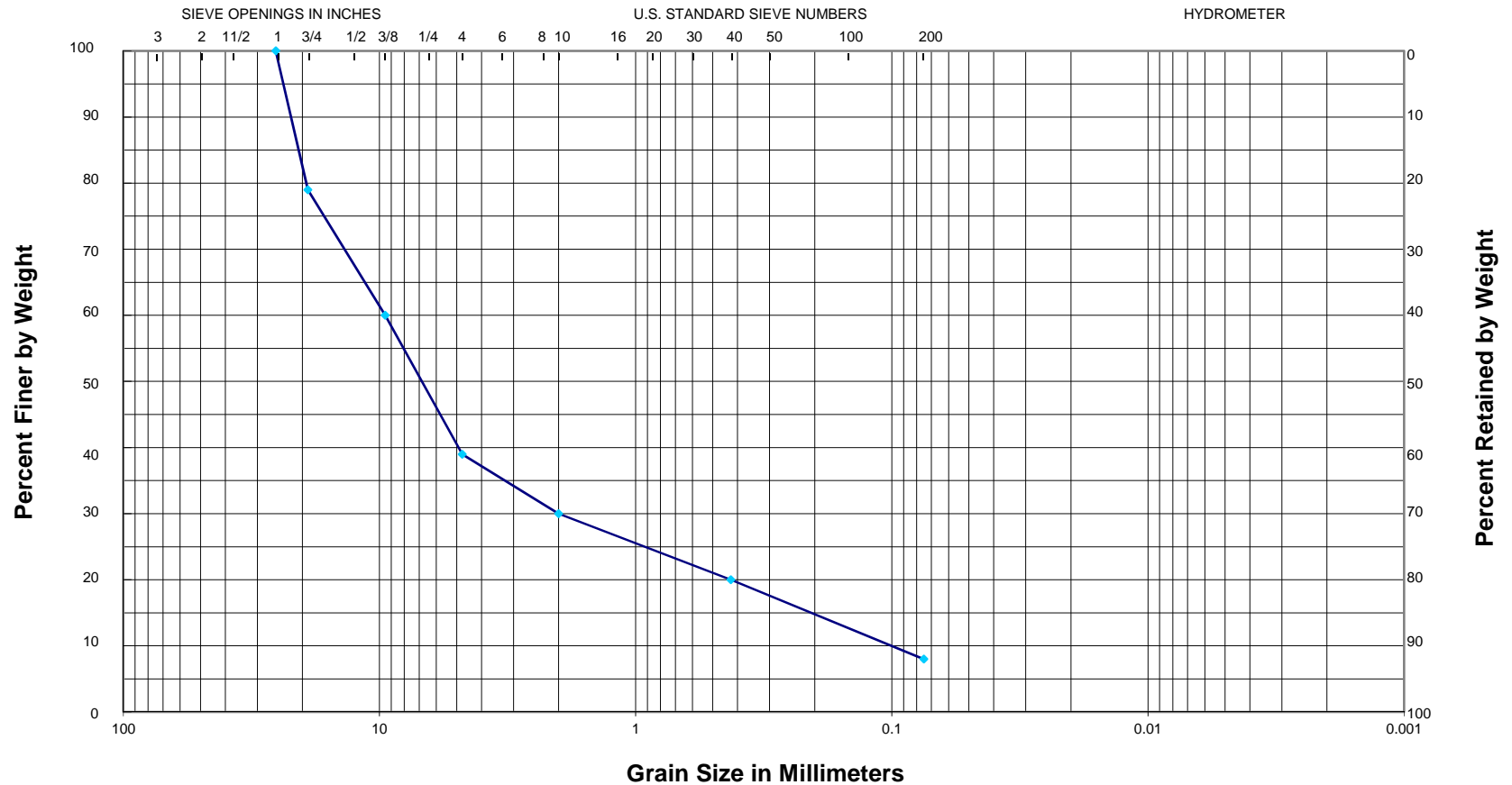
GRAVEL		SAND			SILT	OR	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE			

Sample: B-27, 0.5-1.5 ft; Non Plastic  
Description: Brown and tan fine sand, slightly silty with some crushed stone and fine to coarse gravel and occasional fine sandy clay pockets  
**USCS = GM      AASHTO = A-1-b**



15-019

# GRAIN SIZE CURVE



GRAVEL		SAND			SILT	OR	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE			

Sample: B-37, 0.5-1.5 ft; LL = 22, PL = 20, PI = 2

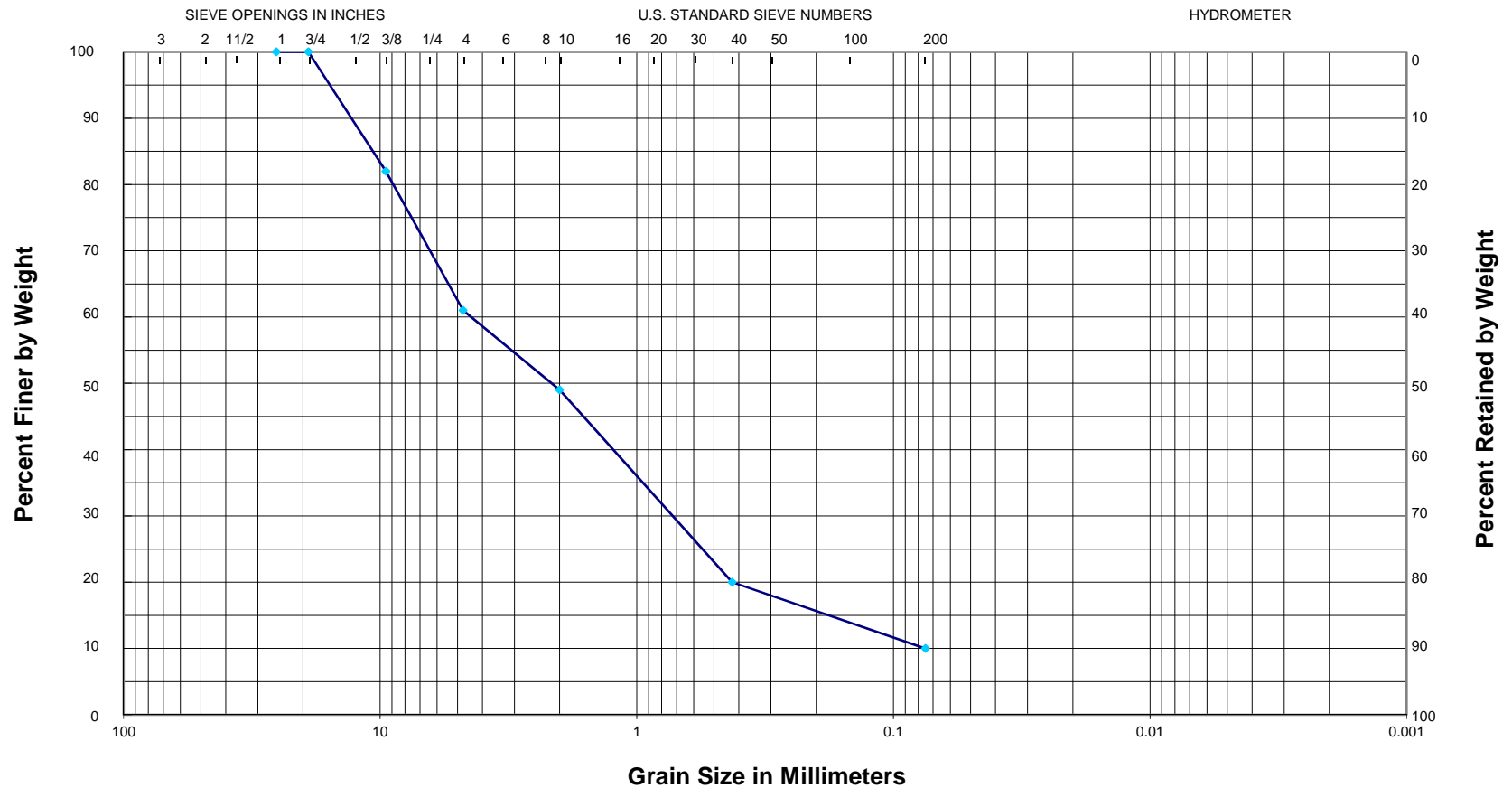
Description: Brown and dark gray fine to medium sand, slightly clayey with some fine to coarse gravel

**USCS = GP      AASHTO = A-1-a**



15-019

# GRAIN SIZE CURVE



GRAVEL		SAND			SILT	OR	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE			

Sample: B-38, 2.5-3.5 ft; LL = 18, PL = 17, PI = 1

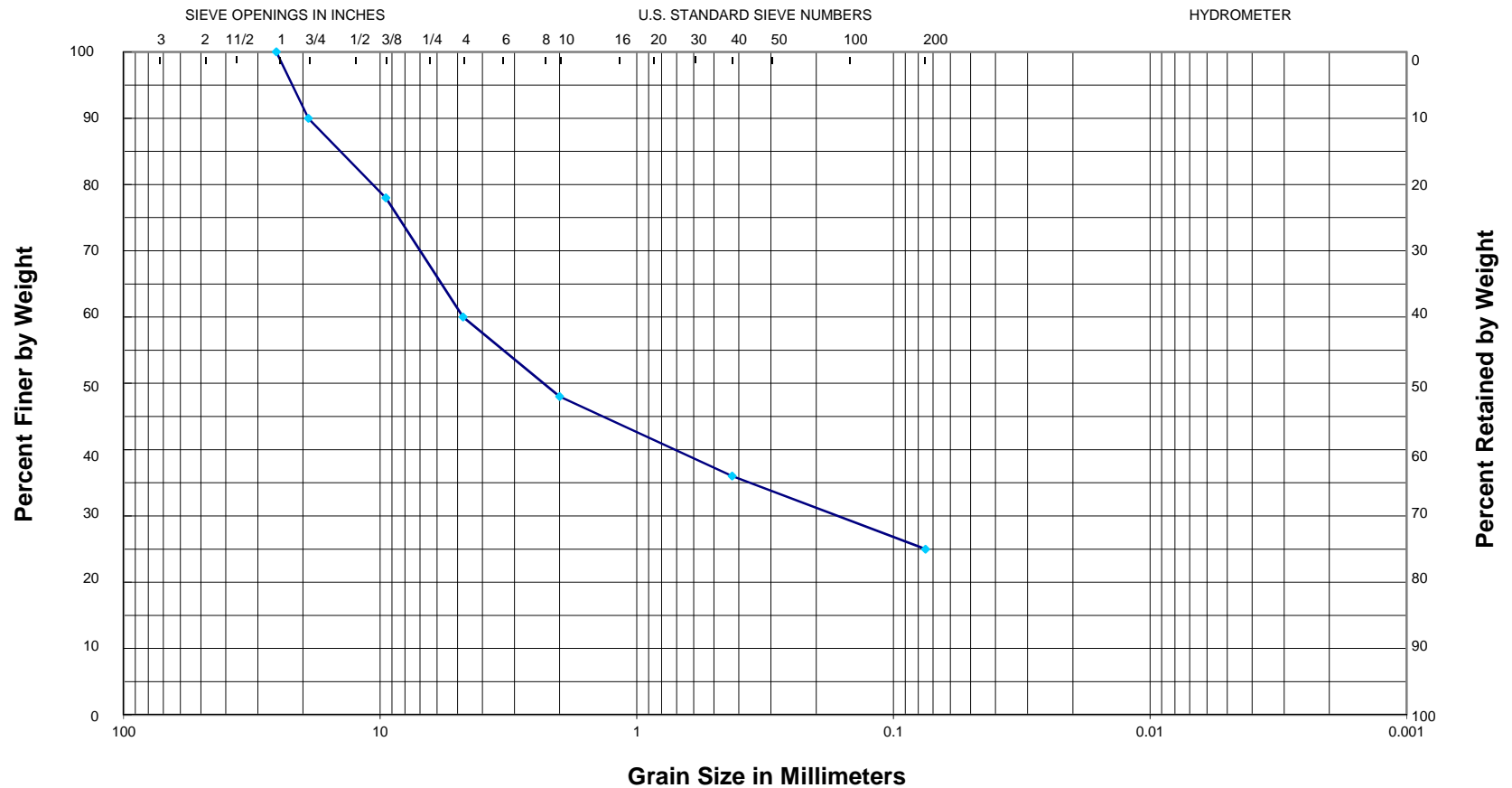
Description: Brown fine to coarse sand, slightly clayey with fine gravel

**USCS = SP    AASHTO = A-1-a**



15-019

# GRAIN SIZE CURVE



GRAVEL		SAND			SILT	OR	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE			

Sample: B-43, 0.5-1.5 ft; LL = 28, PL = 16, PI = 12

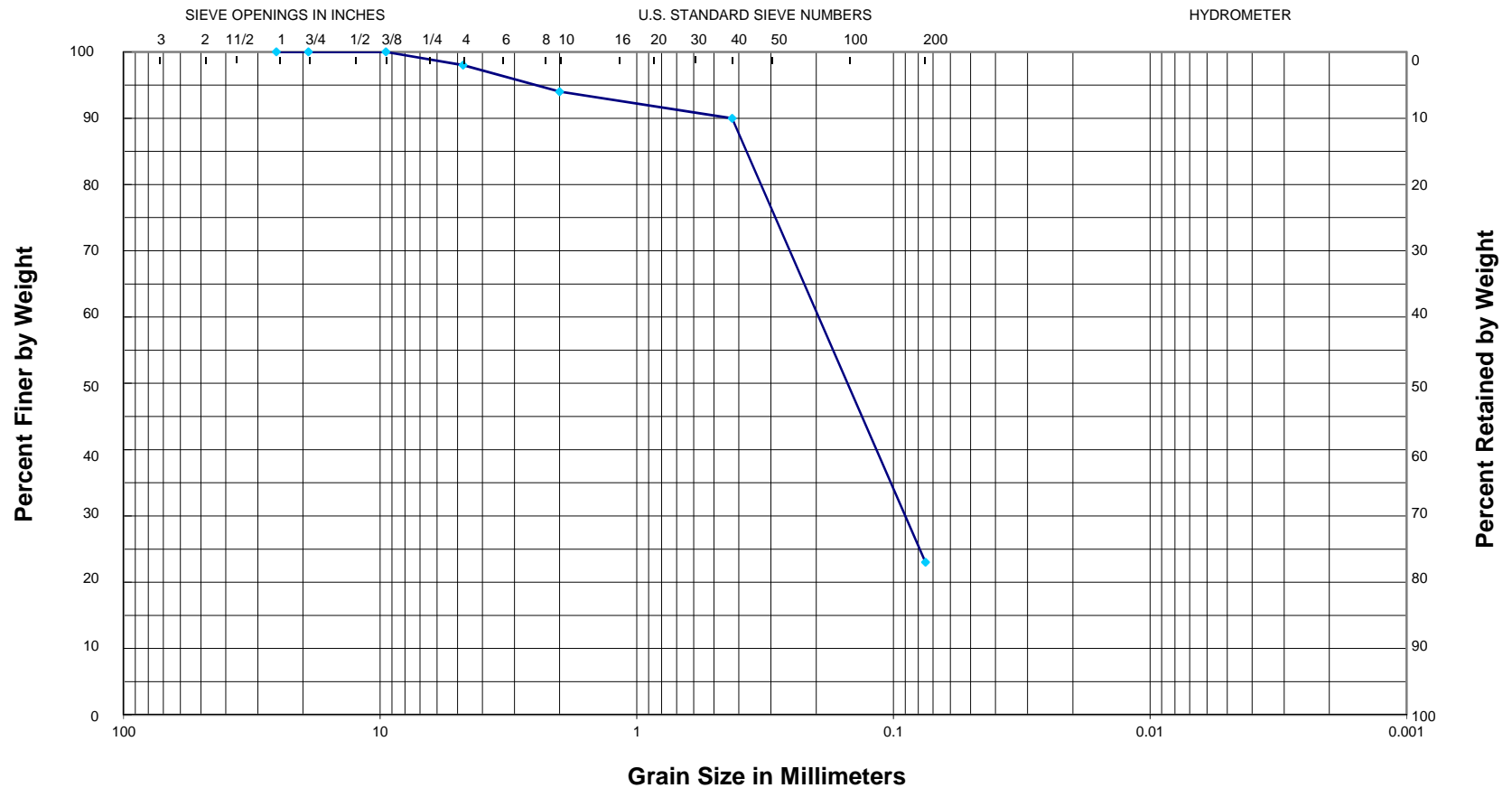
Description: Reddish brown clayey fine to medium sand with some coarse sand and fine to coarse gravel and some crushed stone

**USCS = GC    AASHTO = A-2-6**



15-019

# GRAIN SIZE CURVE



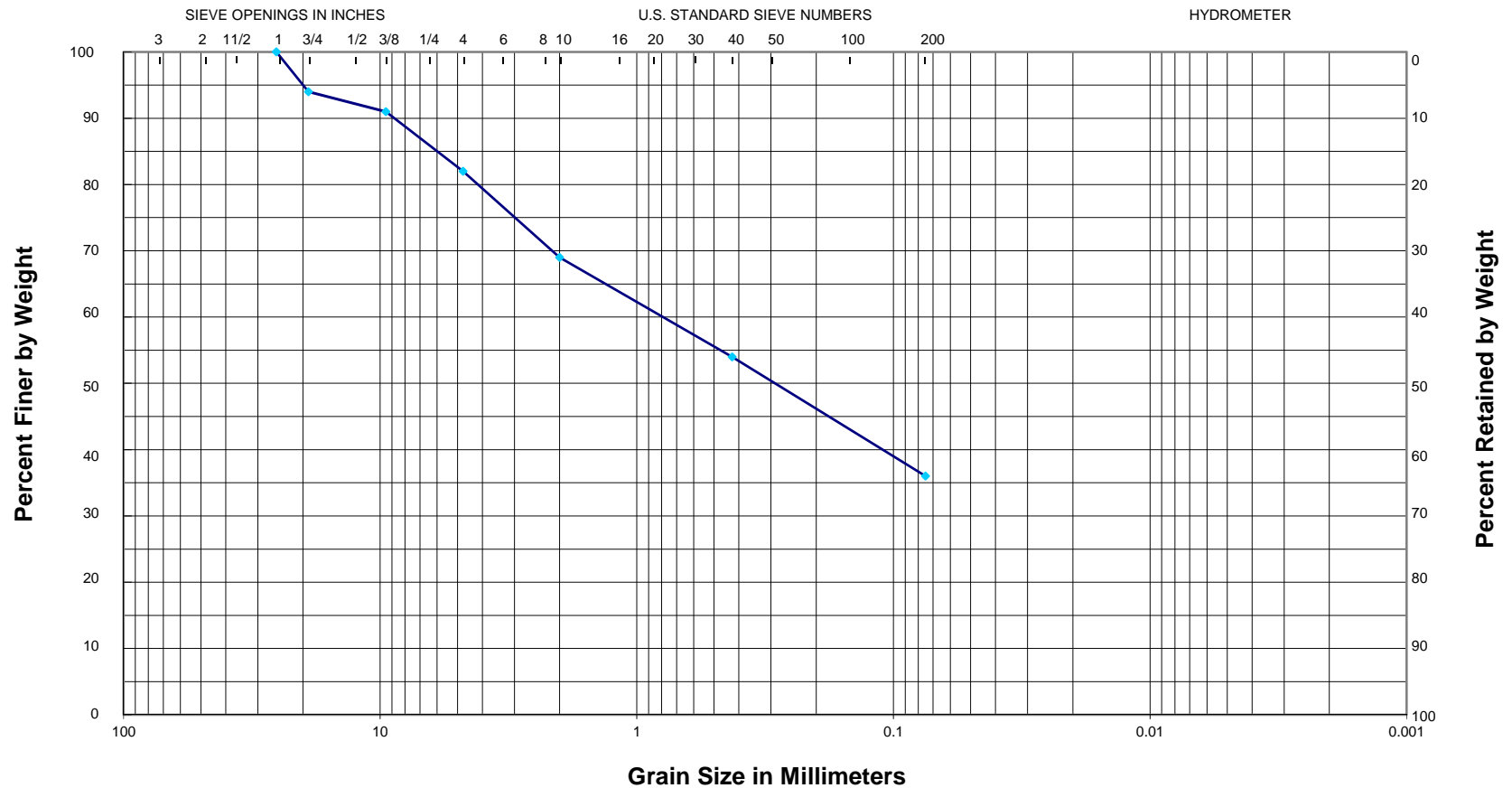
GRAVEL		SAND			SILT	OR	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE			

Sample: B-47, 2.5-3.5 ft; Non Plastic  
 Description: Reddish tan silty fine sand with trace fine gravel  
**USCS = SM    AASHTO = A-2-4**



15-019

# GRAIN SIZE CURVE



GRAVEL		SAND			SILT	OR	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE			

Sample: B-50, 2.5-3.5 ft; LL = 28; PL = 13; PI = 15

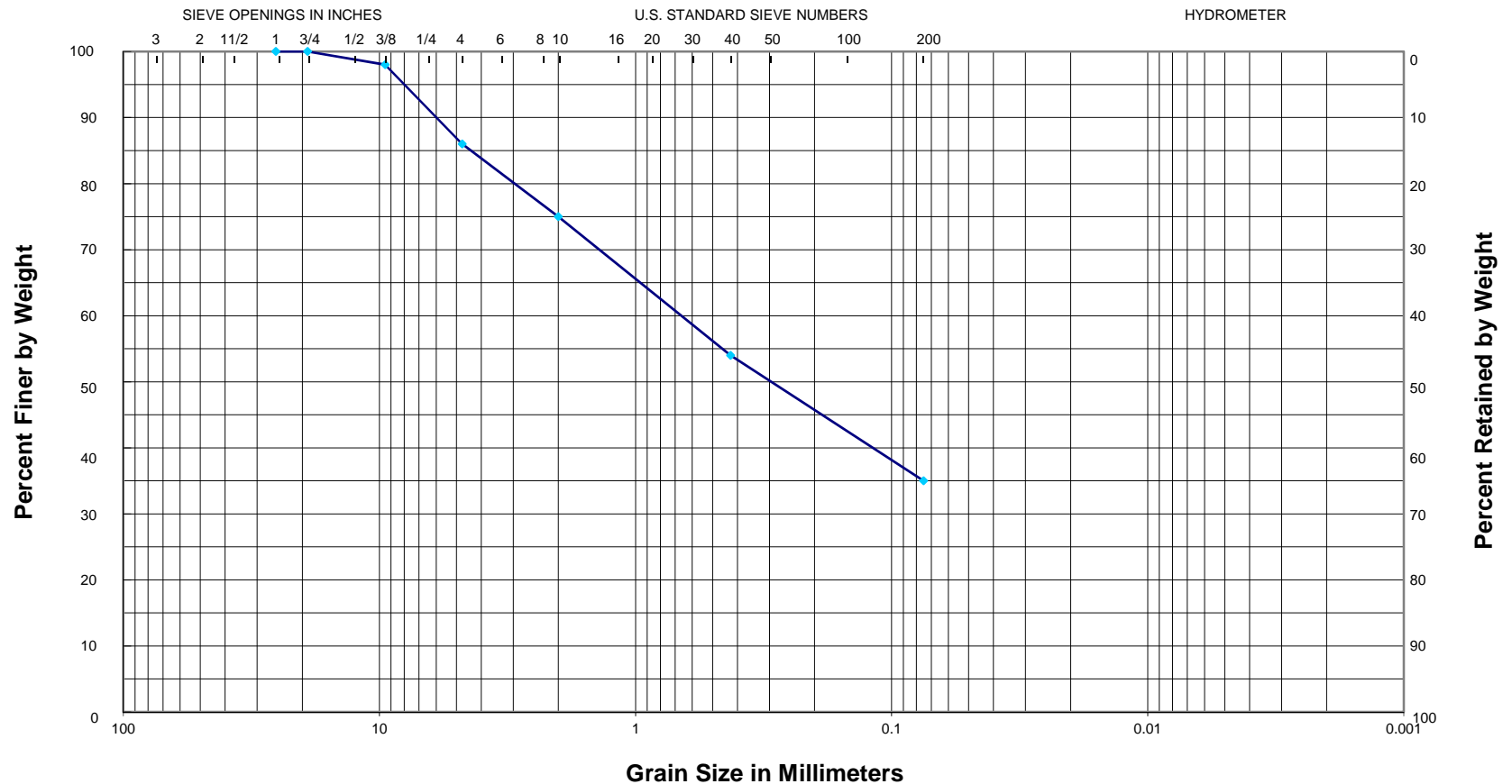
Description: Reddish brown clayey fine sand with occasional fine sandy clay pockets and some fine gravel

**USCS = SC    AASHTO = A-6**



15-019

# GRAIN SIZE CURVE



GRAVEL		SAND			SILT	OR	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE			

Sample: R10, 2.5-3.5 ft; LL = 35; PL = 18; PI = 17

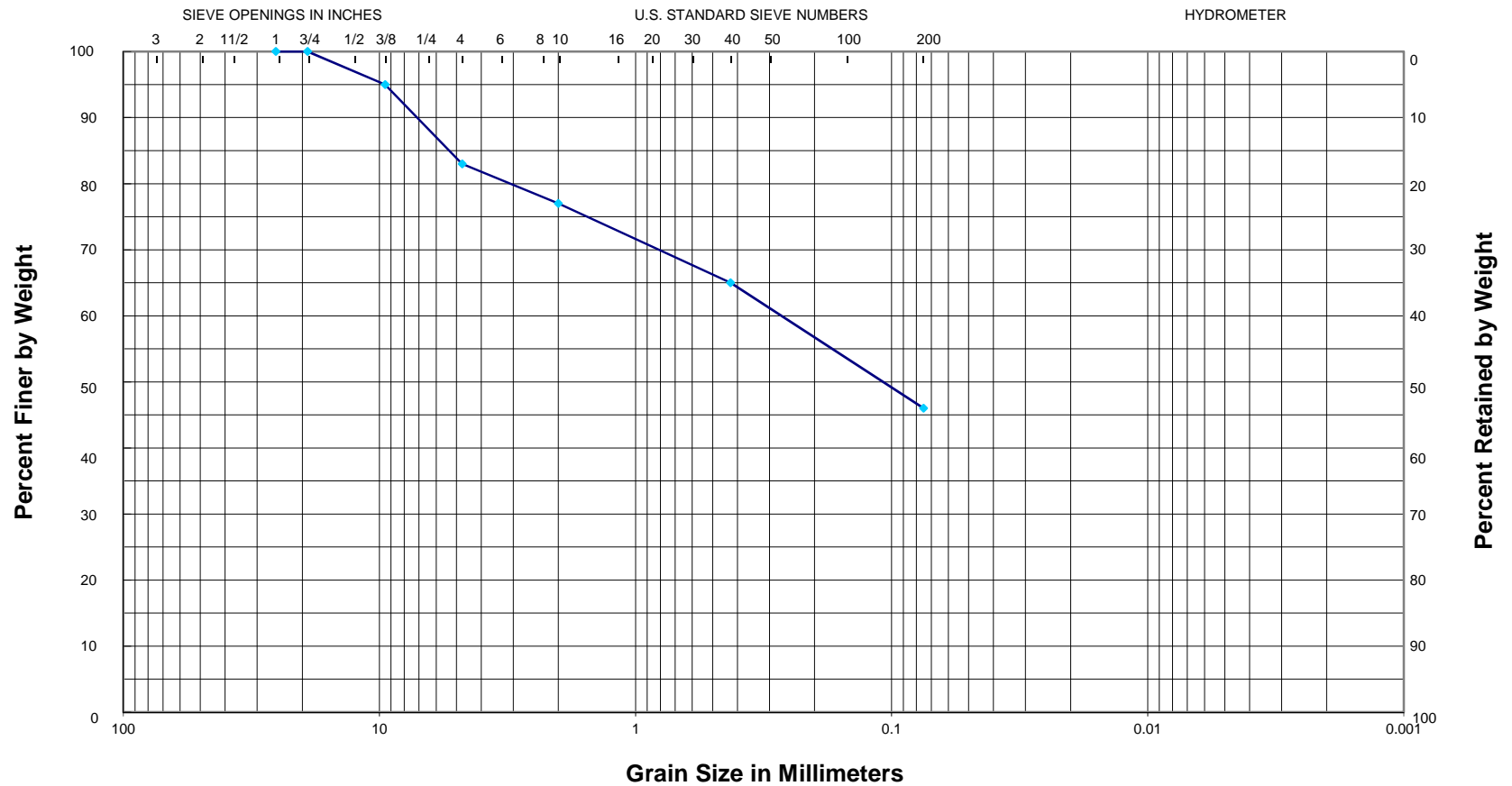
Description: Brownish yellow and reddish brown clayey fine sand with some medium to coarse sand and fine gravel and occasional clay pockets

**USCS = SC    AASHTO = A-2-6**



15-019

# GRAIN SIZE CURVE



GRAVEL		SAND			SILT	OR	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE			

Sample: R10, 2.5-3.5 ft; LL = 24; PL = 14; PI = 10

Description: Reddish brown clayey fine sand with some fine to coarse gravel and crushed stone

**USCS = SC    AASHTO = A-4**



15-019

# GRAIN SIZE CURVE



GRAVEL		SAND			SILT	OR	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE			

Sample: R11, 2.5-3.5 ft; LL = 36; PL = 19; PI = 18

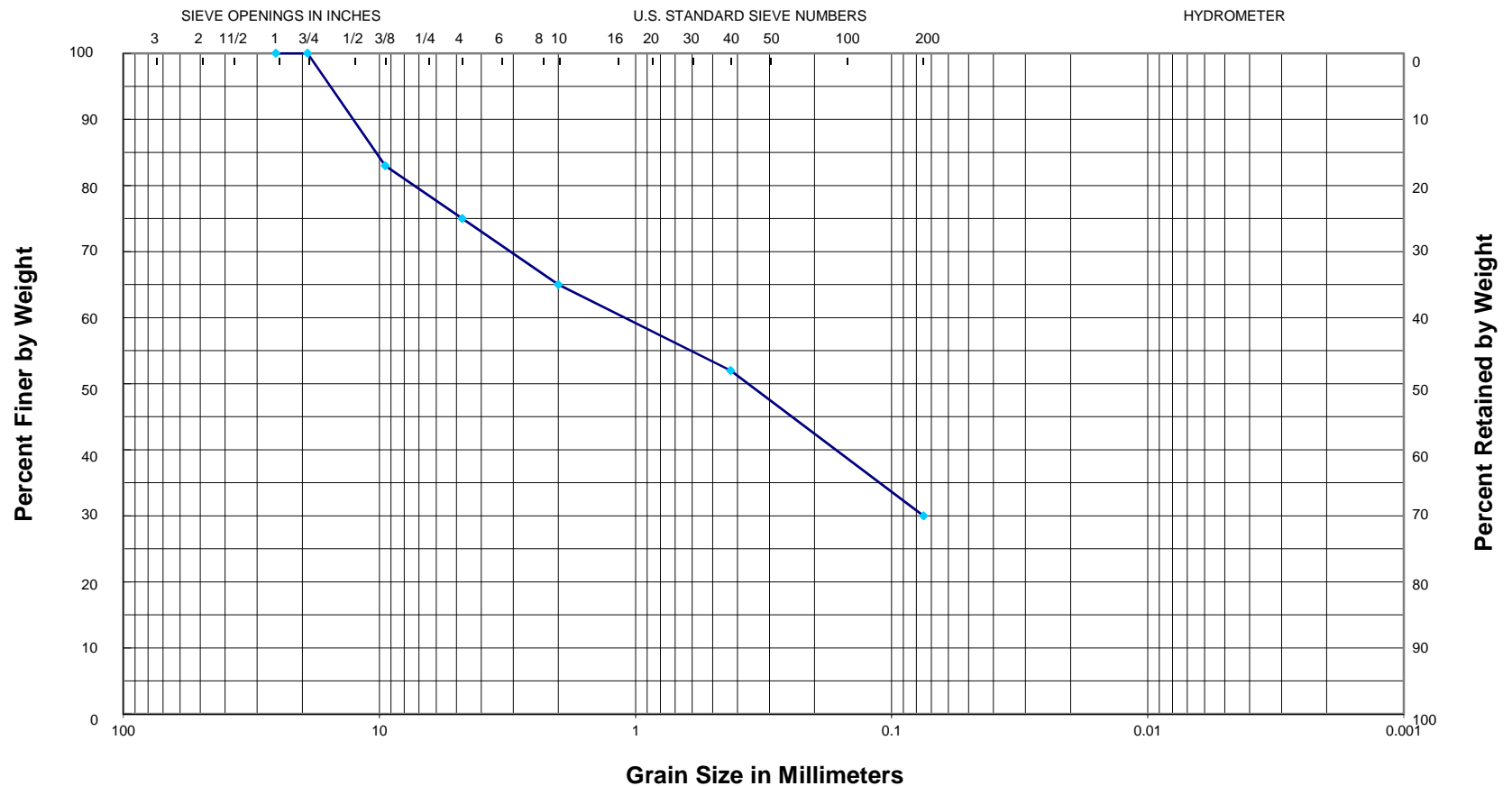
Description: Reddish brown clayey fine gravel, sandy with a little coarse gravel

**USCS = GC    AASHTO = A-6**



15-019

## GRAIN SIZE CURVE



GRAVEL		SAND			SILT	OR	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE			

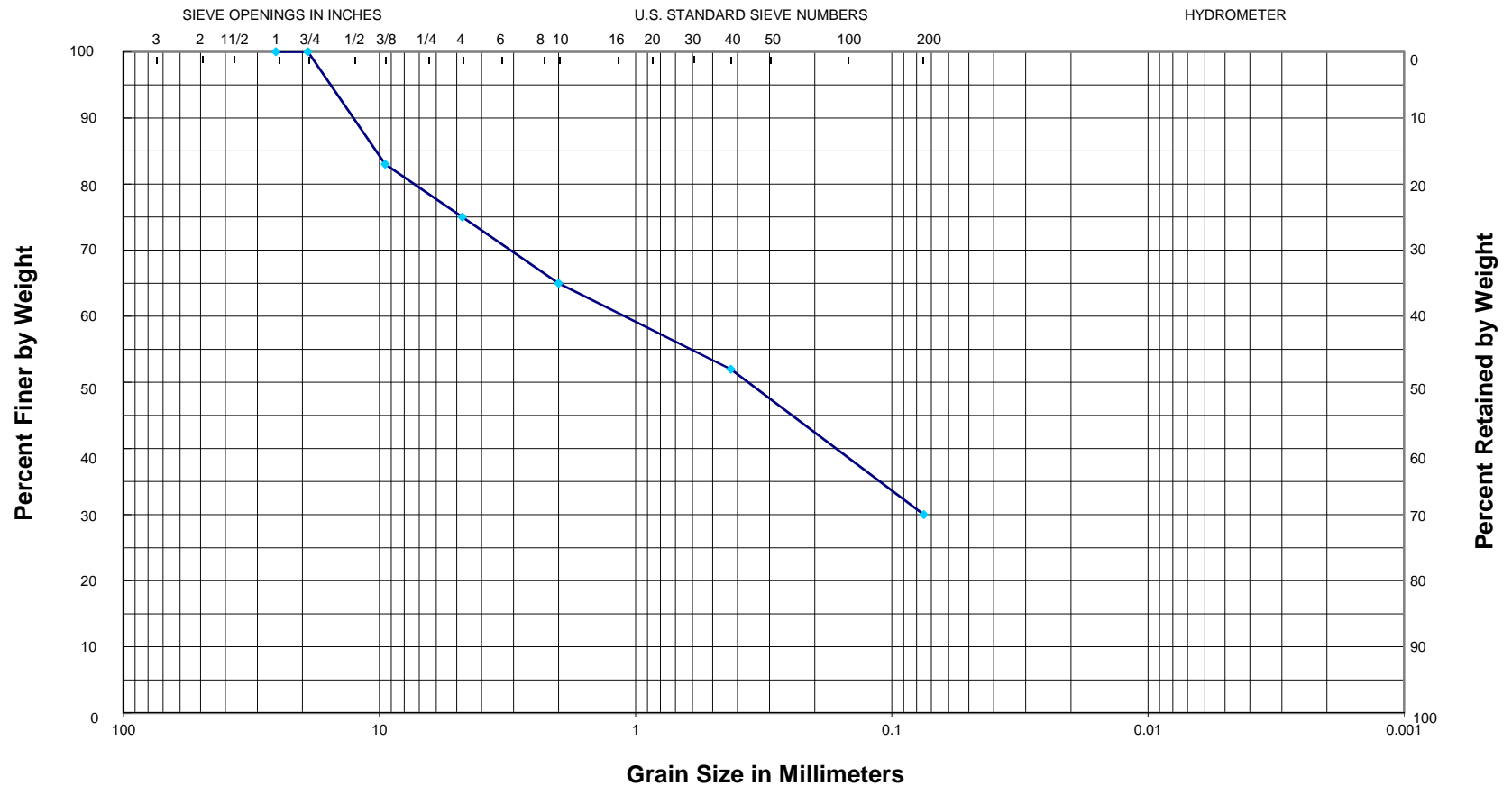
Sample: R12, 2.5-3.5 ft; LL = 36; PL = 19; PI = 18

Description: Brown fine to medium sand w/ some fine gravel and fine sandy clay pockets

**USCS = SM      AASHTO = A-2-4**



15-019

**GRAIN SIZE CURVE**

GRAVEL		SAND			SILT	OR	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE			

Sample: R13, 2.5-3.5 ft; LL = 18; PL = 14; PI = 4

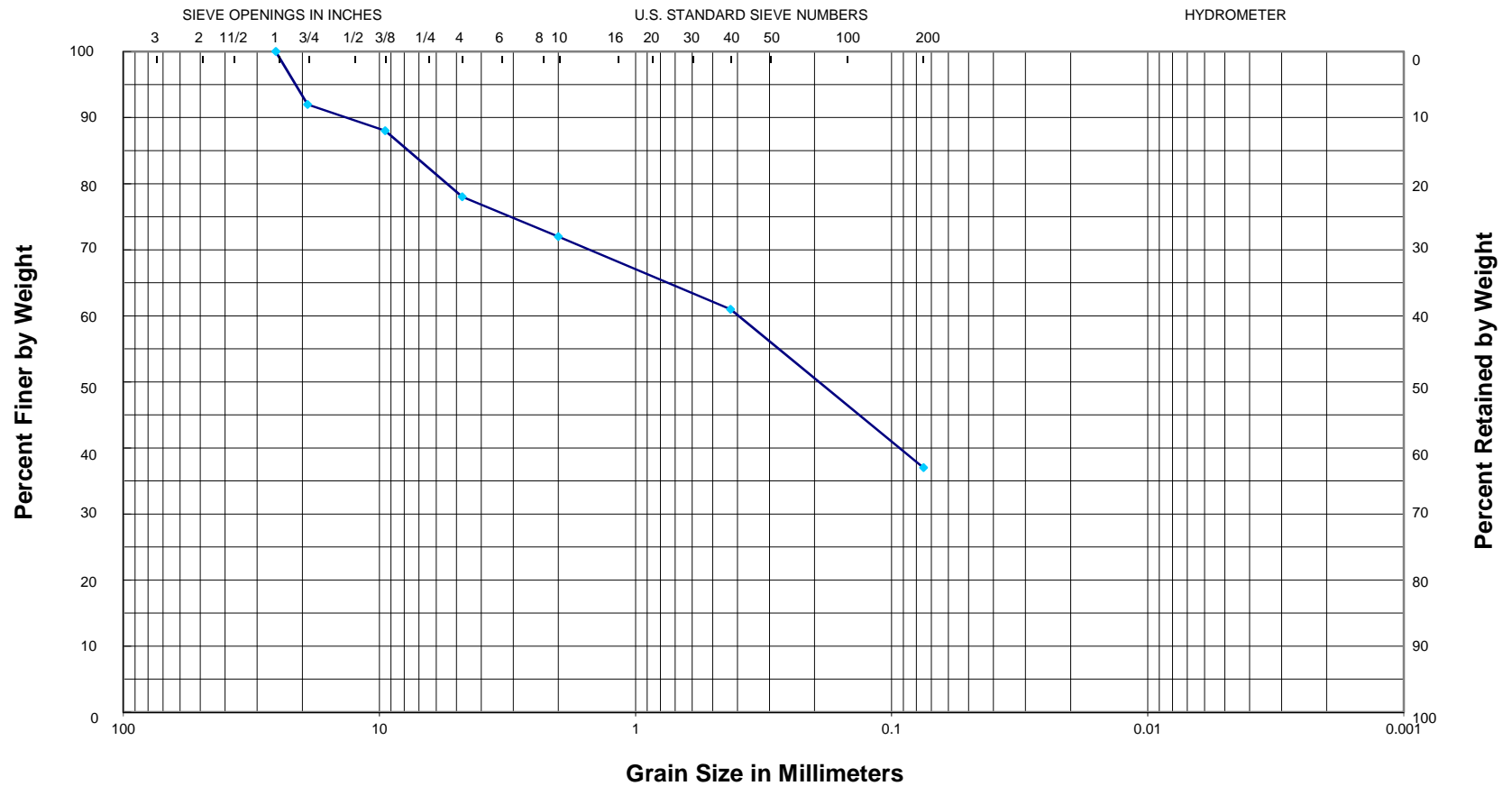
Description: Tan, brown and reddish brown fine to coarse sand, slightly clayey with some clayey fine to coarse gravel seams and fine sandy clay pockets

**USCS = SM-SC    AASHTO = A-2-4**



15-019

# GRAIN SIZE CURVE



GRAVEL		SAND			SILT	OR	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE			

Sample: R14, 0.5 -1.5 ft; LL = 21; PL = 17; PI = 4

Description: Tan and brown silty fine sand, slightly clayey with some fine to coarse gravel and crushed stone

**USCS = SM-SC      AASHTO = A-2-4**



15-019

# GRAIN SIZE CURVE



GRAVEL		SAND			SILT	OR	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE			

Sample: R14, 2.5 -3.5 ft; LL = 24; PL = 14; PI = 10

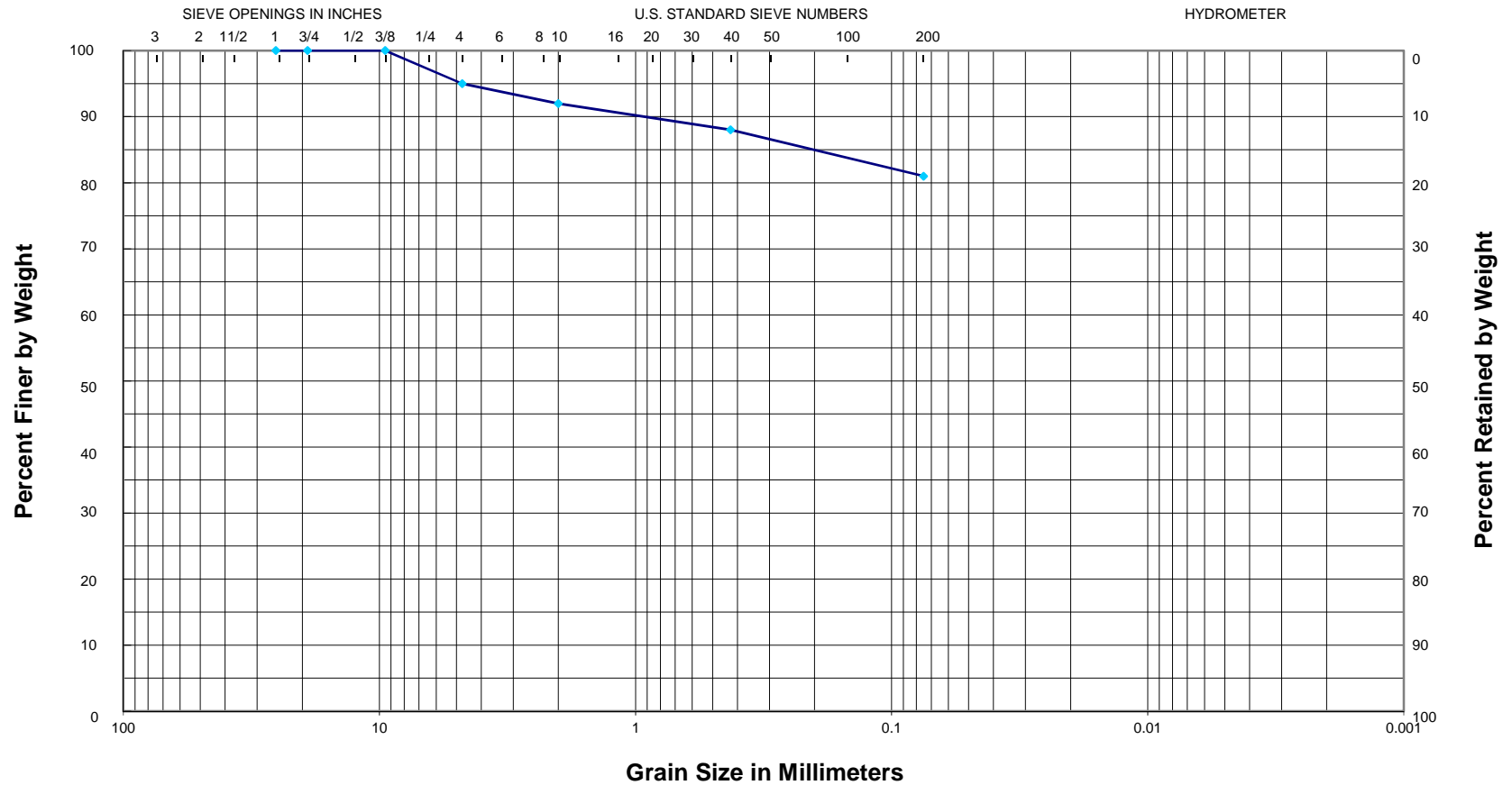
Description: Tan fine to coarse sand, slightly clayey with some fine gravel

**USCS = SC    AASHTO = A-2-4**



15-019

# GRAIN SIZE CURVE



GRAVEL		SAND			SILT	OR	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE			

Sample: R17, 2.5 - 3.5 ft; LL = 40; PL = 19; PI = 21

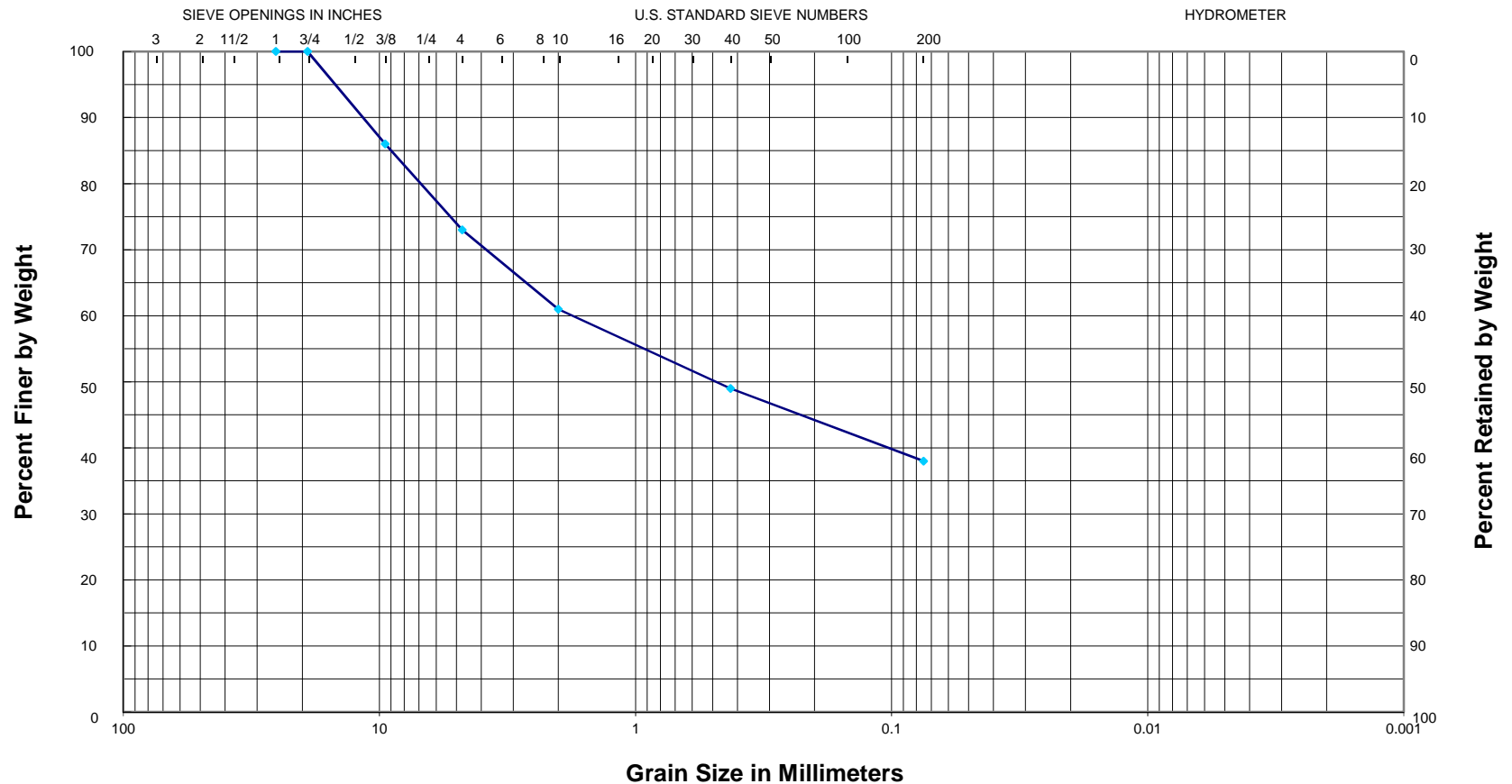
Description: Gray, tan and reddish tan clay, slightly silty with occasional fine sand partings and some shale and quartz fragments

**USCS = CL    AASHTO = A-6**



15-019

# GRAIN SIZE CURVE



GRAVEL		SAND			SILT	OR	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE			

Sample: R19, 2.5 - 3.5 ft; LL = 36; PL = 23; PI = 13

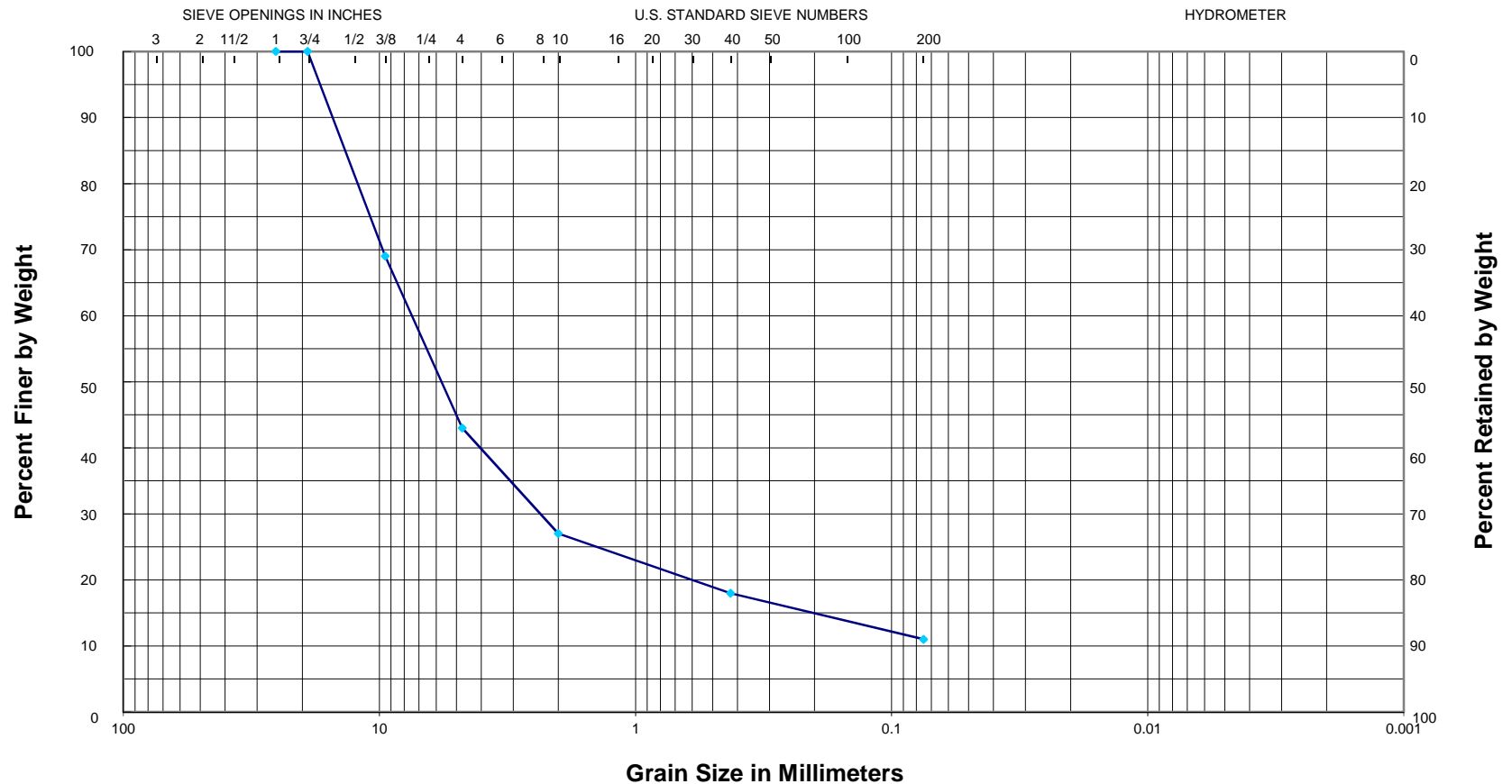
Description: Gray, reddish brown and tan clayey fine sand with occasional clay seams and some shale and quartz fragments

**USCS = SC    AASHTO = A-6**



15-019

# GRAIN SIZE CURVE



GRAVEL		SAND			SILT	OR	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE			

Sample: R20, 0.5 - 1.5 ft; LL = 15; PL = 14; PI = 1

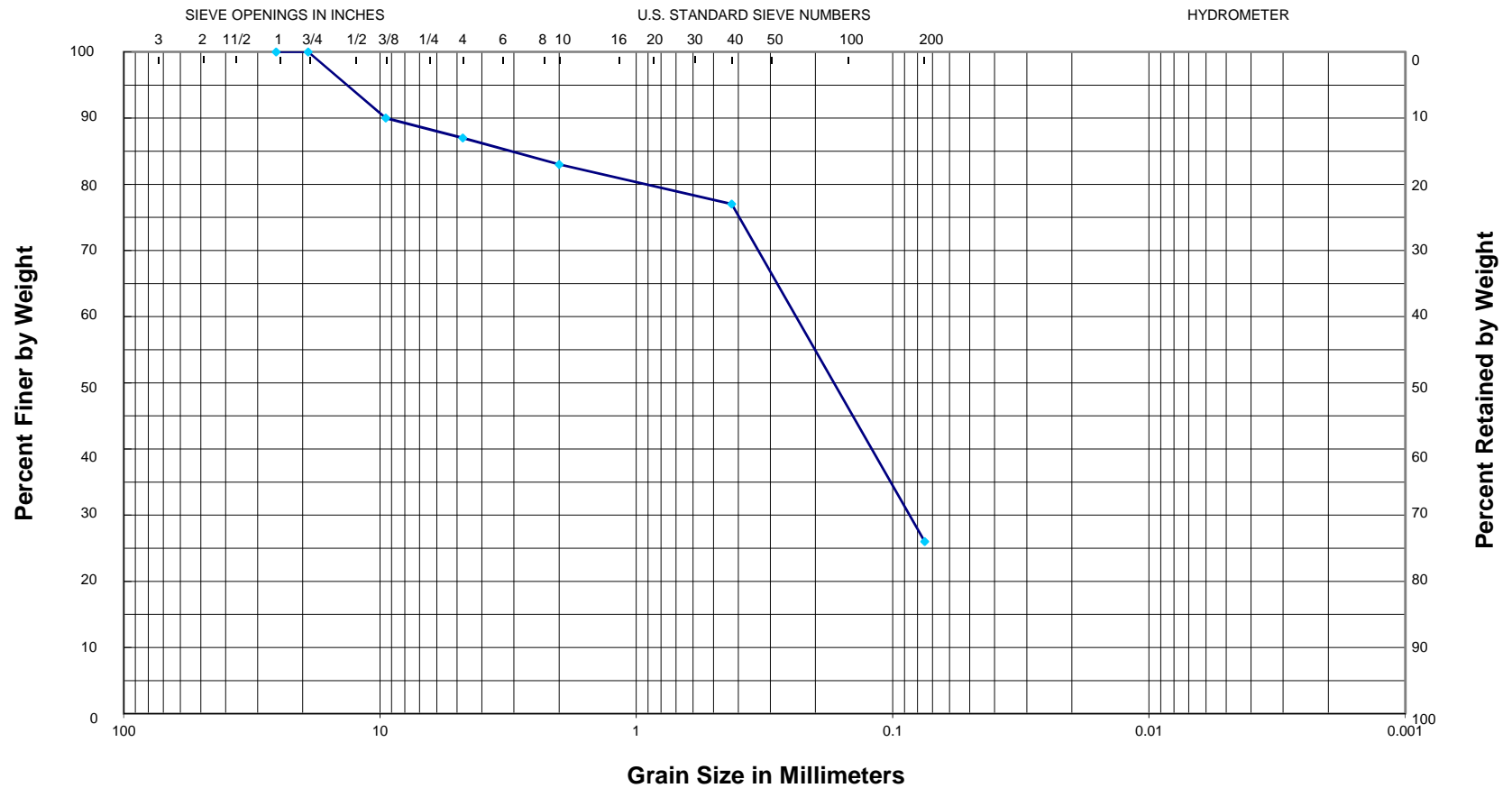
Description: Reddish tan silty fine to medium sand, slightly clayey with numerous quartz and sandstone fragments

**USCS = SC    AASHTO = A-1-a**



15-019

## GRAIN SIZE CURVE



GRAVEL		SAND			SILT	OR	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE			

Sample: R24, 2.5 - 3.5 ft; LL = 20; PL = 18; PI = 2

Description: Reddish brown silty fine sand, slightly clayey with occasional shale fragments and quartz fragments

**USCS = SM      AASHTO = A-2-4**



**ATTACHMENT 5**



## SUMMARY of ROADWAY SUBGRADE SUPPORT

PROJECT: CA0601: Hwy 70 - Sevier St (Widening) (S)

LOCATION: Saline County, Arkansas

GHBW JOB No.: 15-019

TEST PIT NO.	DEPTH, FT	ATTERBERG LIMITS			SIEVE ANALYSIS PERCENT PASSING			Soil Description	UNIFIED CLASS.	AASHTO CLASS.	PROCTOR TEST RESULTS		CBR TEST RESULTS (AASHTO T-193)			
											MAX DRY UNIT WT, pcf	OPTIMUM MOISTURE, %	MOLDED DRY UNIT WT, pcf	MOLDED WATER CONTENT, %	CBR VALUE	
		LIQUID LIMIT	PLASTIC LIMIT	PI	plus #4	#4 to #200	passing #200								TOP	BOTTOM
1	0.5-1.5	34	19	15	18	32	50	Reddish tan clayey fine to coarse SAND with some fine to coarse gravel	CL	A-6	114.7	14.1	110.1	13.4	8.2	12.8
2	0.5-1.5	21	17	4	9	50	41	Brown and tan clayey fine SAND with some fine to coarse gravel	SC-SM	A-4	120.3	12.0	114.9	12.6	10.2	11.2
3	0.5-1.5	21	19	2	29	43	28	Tan and brown clayey fine SAND with fine to coarse gravel	SM	A-2-4	124.8	9.4	120.7	9.6	13.8	15.8



## REPORT OF STANDARD PROCTOR TEST (AASHTO T-99 METHOD C)

Project: CA0601: HIGHWAY 70 - SEVIER ST. I-30 (Widening) (S) Job No: 15-019

Material Description: Reddish tan clayey fine to coarse sand with some fine to coarse gravel

Location Sampled/Source: Test Pit 1

Sample Depth, ft: 0.5-1.5

Date Sampled: 5/29/2015

Date Tested: 6/26/2015

Tested By: RSL

Report Date: 7/7/2015

LAB COMPACTION PROCEDURE: AASHTO T-99 Method: C	
<b>Maximum Unit Dry Wt. (pcf):</b>	114.7
<b>Optimum Water Content (%):</b>	14.1

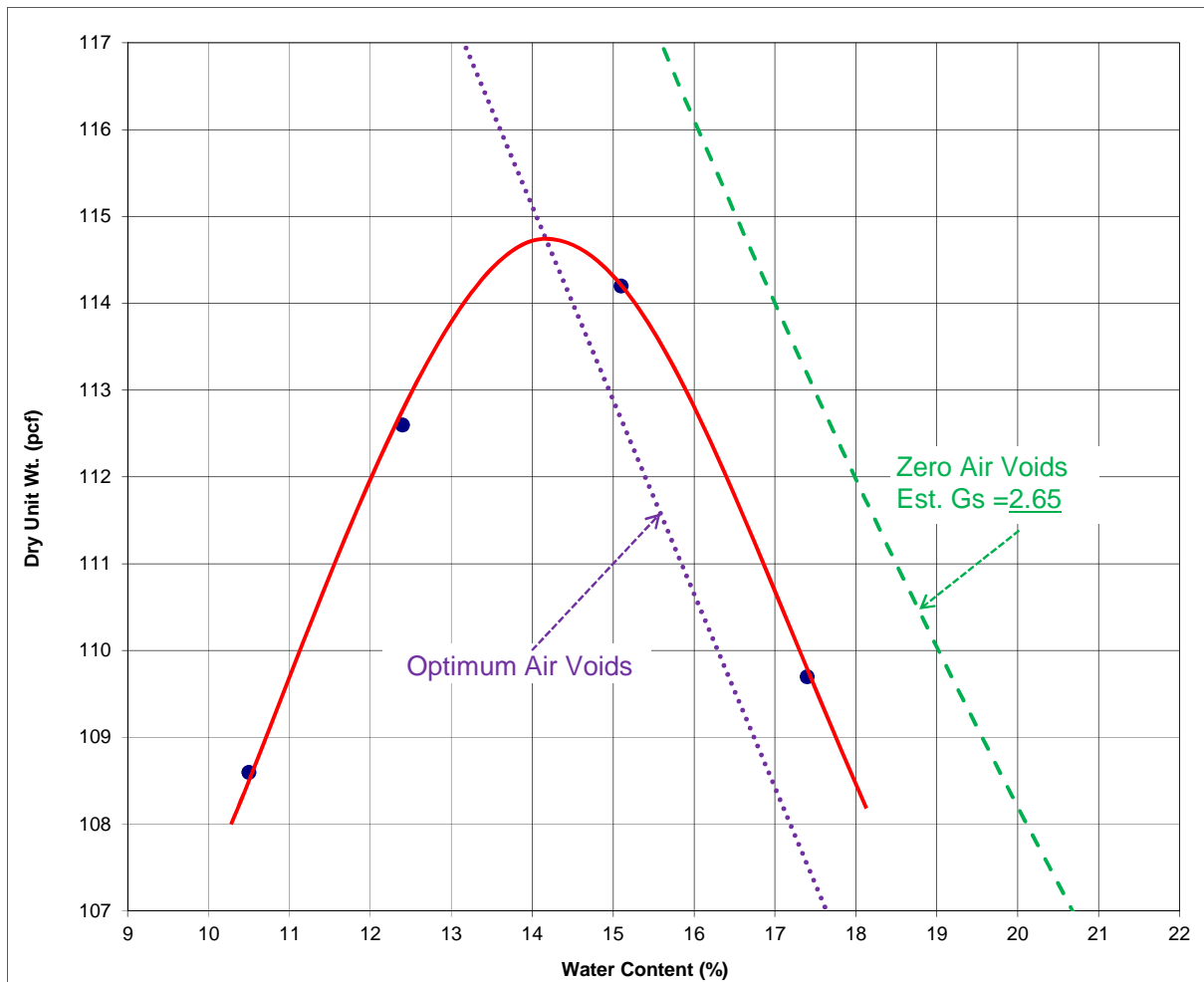
ATTERBERG LIMITS AASHTO T-89 & T-90	
Liquid Limit:	34
Plastic Limit:	19
Plasticity Index:	15

AASHTO Classification:	
CL	

USCS Classification:	
A-6	

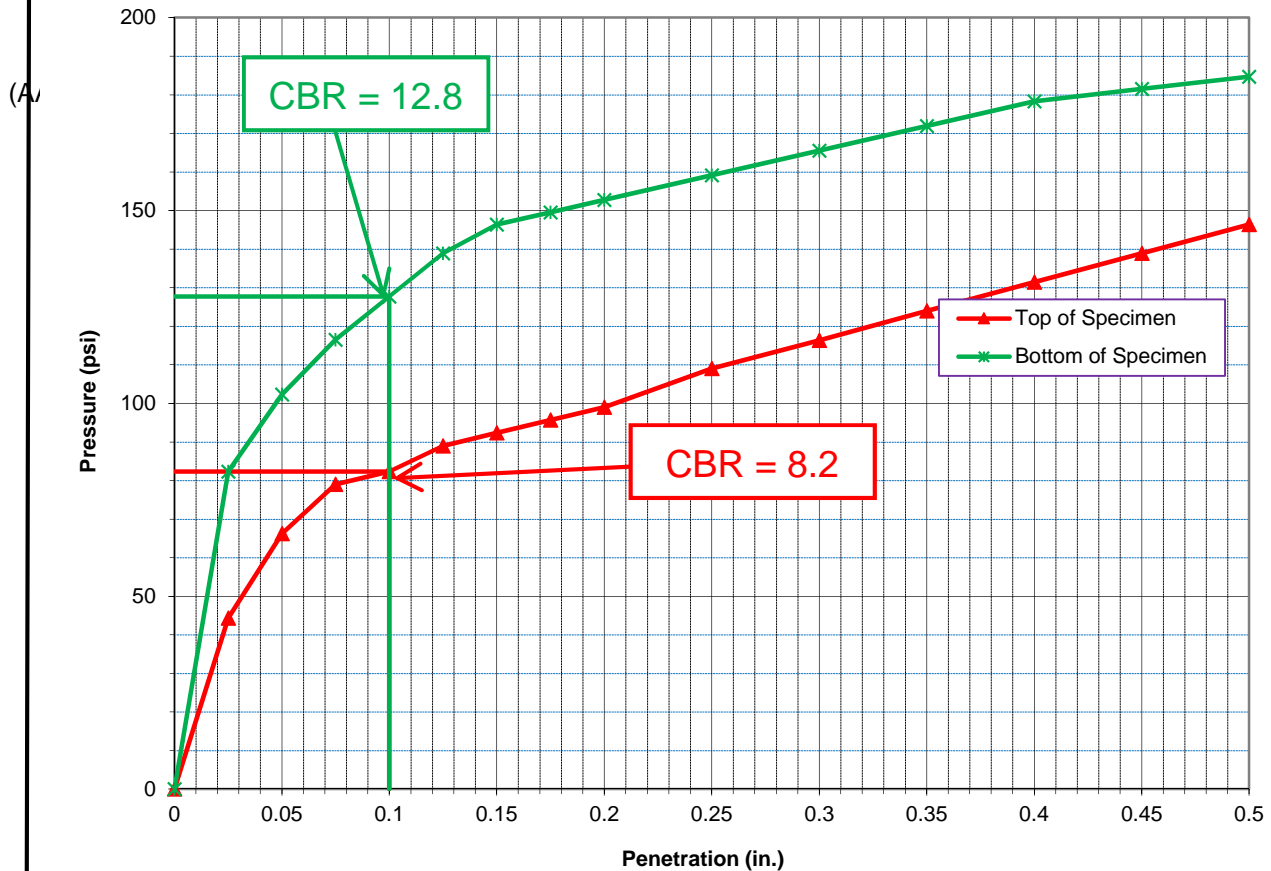
GRADATION AASHTO T-88	
Sieve Number	Percent Passing
3 in.	100
2 in.	98
1 in.	95
3/4 in.	92
3/8 in.	84
#4	82
#10	77
#40	67
#200	50

As Processed Water Content: 17.3 %





## Laboratory CBR Test Report (AASHTO T-193)



Test Pit/Depth, ft	Classification		Natural Moisture Content, %	Assumed Specific Gravity	Liquid Limit, %	Plastic Limit, %	% Retained No.4	% Passing No.200
	USCS	AASHTO						
TP-1/0.5-1.5	CL	A-6	17.3	2.65	34	19	18	50
PROCTOR TEST RESULTS (AASHTO T-99 C)				MATERIAL DESCRIPTION				
Optimum Moisture Content = 14.1% Maximum Dry Density = 114.8 pcf				Reddish tan clayey fine to coarse sand with some fine to coarse gravel				
Remarks:								
As molded: Dry Unit Weight, $\gamma_d$ = 110.1 pcf; Moisture Content, w = 13.4%								



**Grubbs, Hoskyn,  
Barton & Wyatt, INC.**  
CONSULTING ENGINEERS

Project: CA0601: I-30 (Widening) (S)  
GHBW Project No.: 15-019  
Location: I-30 - Saline Co., Arkansas  
Sample Date: 5-29-15  
Test Date: 6-26-15



## REPORT OF STANDARD PROCTOR TEST (AASHTO T-99 METHOD A)

Project: CA0601: HIGHWAY 70 - SEVIER ST. I-30 (Widening) (S) Job No: 15-019

Material Description: Brown and tan clayey fine sand with some fine to coarse gravel  
(Composite sample)

Location Sampled/Source: Test Pit 2

Sample Depth, ft: 0.5-1.5

Date Sampled: 5/29/2015

Date Tested: 6/26/2015

Tested By: RSL

Report Date: 7/7/2015

LAB COMPACTION PROCEDURE: AASHTO T-99 Method: A	
<b>Maximum Unit Dry Wt. (pcf):</b>	120.3
<b>Optimum Water Content (%):</b>	12.0

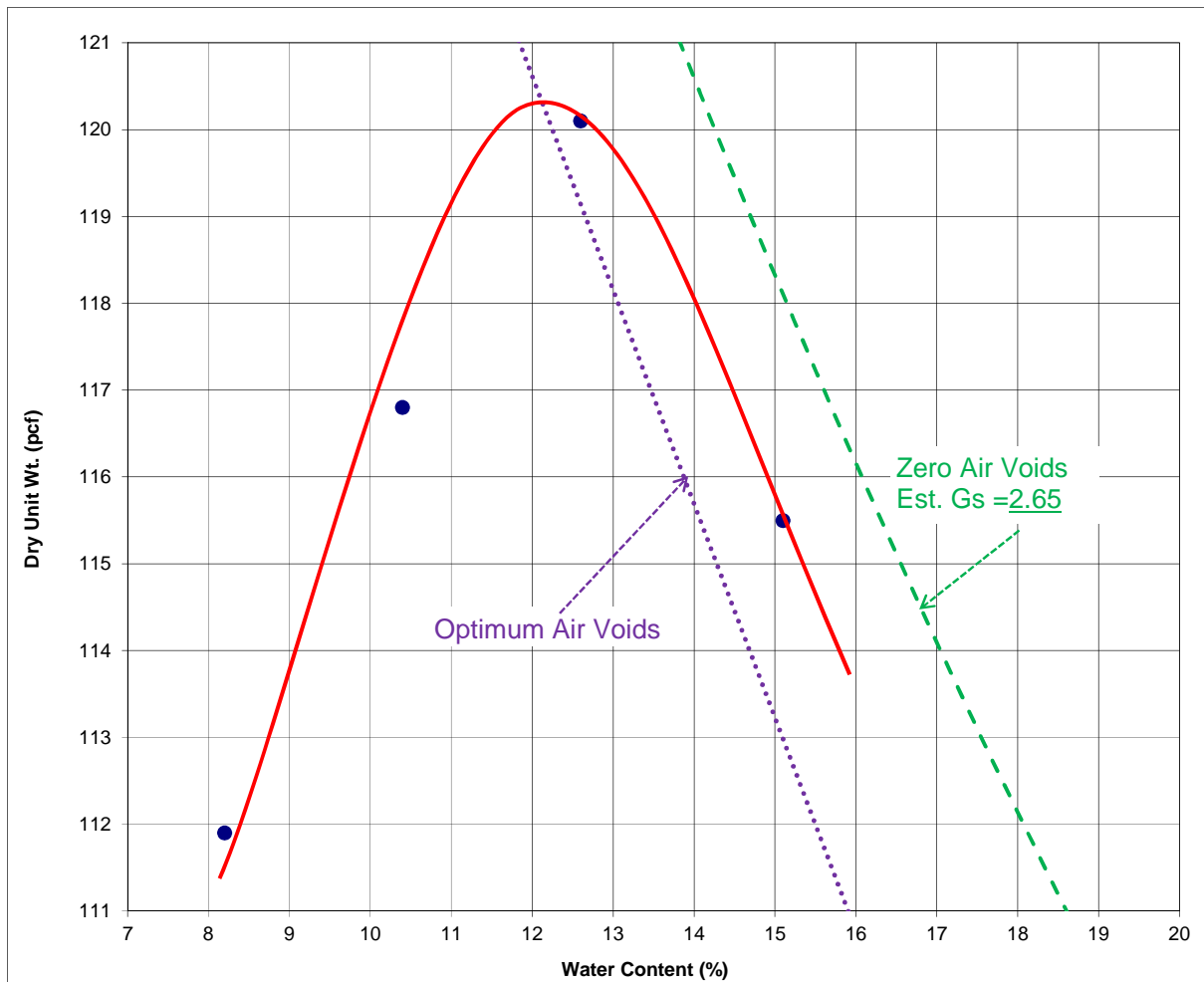
ATTERBERG LIMITS AASHTO T-89 & T-90	
Liquid Limit: 21	
Plastic Limit: 17	
Plasticity Index: 4	

AASHTO Classification:	
SC-SM	

USCS Classification:	
A-4	

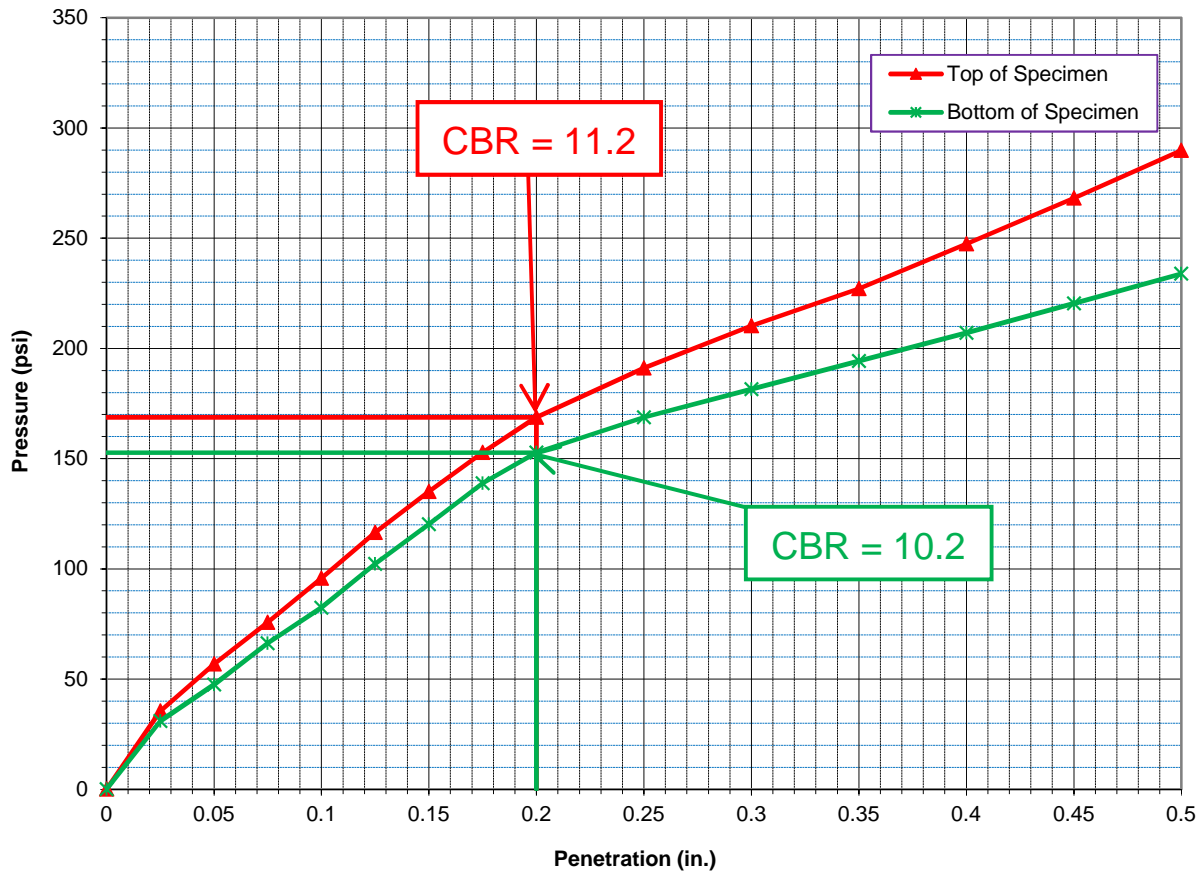
GRADATION AASHTO T-88	
Sieve Number	Percent Passing
3 in.	100
2 in.	100
1 in.	100
3/4 in.	99
3/8 in.	95
#4	91
#10	85
#40	72
#200	41

As Processed Water Content: 14.1 %





## Laboratory CBR Test Report (AASHTO T-193)



Test Pit/Depth, ft	Classification		Natural Moisture Content, %	Assumed Specific Gravity	Liquid Limit, %	Plastic Limit, %	% Retained No.4	% Passing No.200
	USCS	AASHTO						
TP-2/0.5-1.5	SC-SM	A-4	14.1	2.65	21	17	9	41
<b>PROCTOR TEST RESULTS (AASHTO T-99 A)</b>					<b>MATERIAL DESCRIPTION</b>			
Optimum Moisture Content = 12.0% Maximum Dry Density = 120.3 pcf					Brown and tan clayey fine sand with some fine to coarse gravel			

Remarks:

As molded: Dry Unit Weight,  $\gamma_d = 114.9$  pcf; Moisture Content,  $w = 12.6\%$



**Grubbs, Hoskyn,  
Barton & Wyatt, INC.**  
CONSULTING ENGINEERS

Project: CA0601: I-30 (Widening) (S)
GHBW Project No.: 15-019
Location: I-30 - Saline Co., Arkansas
Sample Date: 5-29-15
Test Date: 6-26-15



## REPORT OF STANDARD PROCTOR TEST (AASHTO T-99 METHOD C)

Project: CA0601: HIGHWAY 70 - SEVIER ST. I-30 (Widening) (S) Job No: 15-019

Material Description: Tan and brown clayey fine sand with fine to coarse gravel  
(Composite sample)

Location Sampled/Source: Test Pit 3

Sample Depth, ft: 0.5-1.5

Date Sampled: 5/29/2015

Date Tested: 6/26/2015

Tested By: RSL

Report Date: 7/7/2015

LAB COMPACTION PROCEDURE: AASHTO T-99 Method: C	
<b>Maximum Unit Dry Wt. (pcf):</b>	124.8
<b>Optimum Water Content (%):</b>	9.4

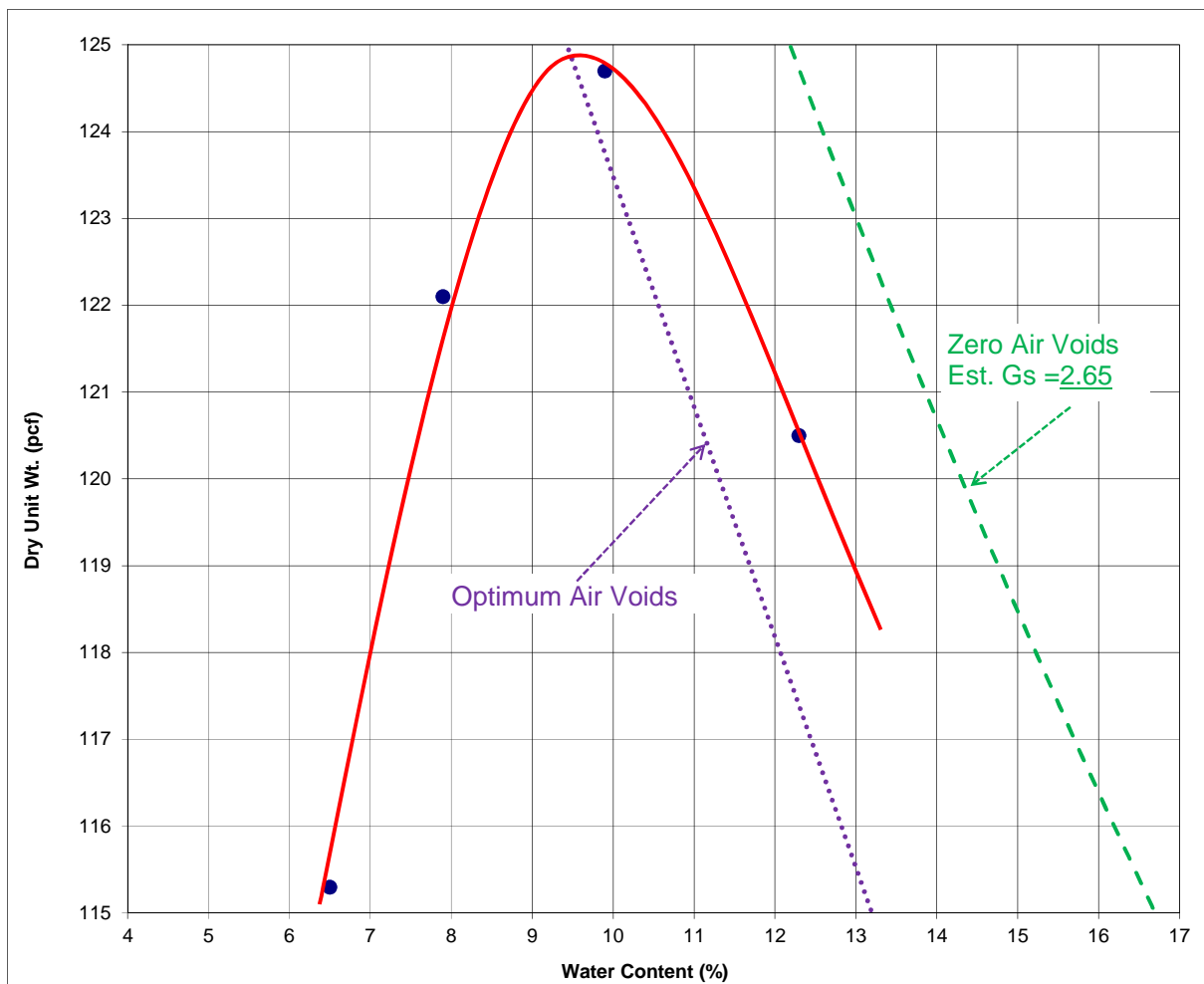
ATTEBERG LIMITS AASHTO T-89 & T-90	
Liquid Limit:	21
Plastic Limit:	19
Plasticity Index:	2

AASHTO Classification:	
SM	

USCS Classification:	
A-2-4	

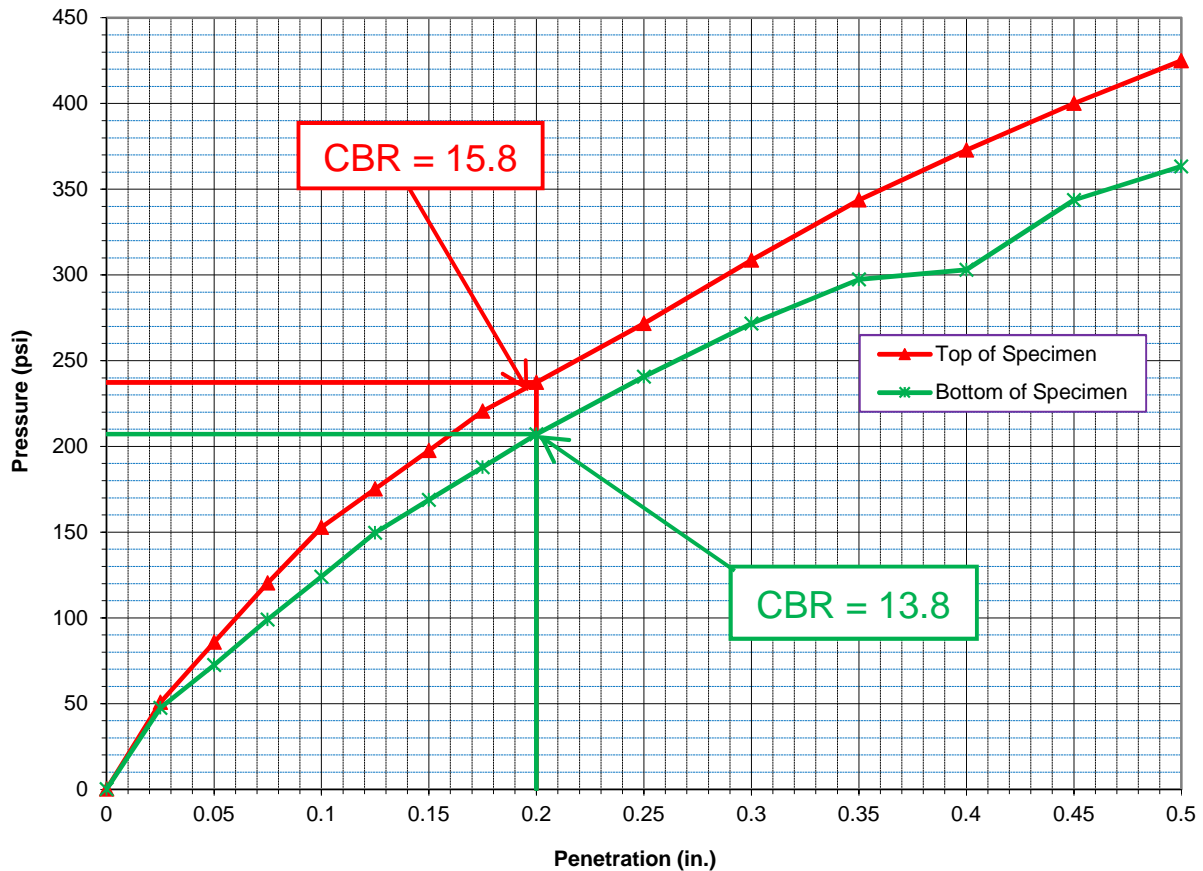
GRADATION AASHTO T-88	
Sieve Number	Percent Passing
3 in.	100
2 in.	100
1 in.	93
3/4 in.	91
3/8 in.	81
#4	71
#10	63
#40	51
#200	28

As Processed Water Content: 11.3 %





## Laboratory CBR Test Report (ASTM D-1883)



Test Pit/Depth, ft	Classification		Natural Moisture Content, %	Assumed Specific Gravity	Liquid Limit, %	Plastic Limit, %	% Retained No.4	% Passing No.200
	USCS	AASHTO						
TP-3/0.5-1.5	SM	A-2-4	11.3	2.65	21	19	29	28
<b>PROCTOR TEST RESULTS (AASHTO T-99 C)</b>				<b>MATERIAL DESCRIPTION</b>				
Optimum Moisture Content = 9.4% Maximum Dry Density = 124.8 pcf				Tan and brown clayey fine sand with fine to coarse gravel				

Remarks:

As molded: Dry Unit Weight,  $\gamma_d = 120.7$  pcf; Moisture Content,  $w = 9.6\%$



**Grubbs, Hoskyn,  
Barton & Wyatt, INC.**  
CONSULTING ENGINEERS

Project: CA0601: I-30 (Widening) (S)  
GHBW Project No.: 15-019  
Location: I-30 - Saline Co., Arkansas  
Sample Date: 5-29-15  
Test Date: 6-26-15



**ATTACHMENT 6**



# SUMMARY of ESTIMATED DEPTH of SUBGRADE IMPROVEMENT

PROJECT: CA0601: Hwy 70 - Sevier St (Widening) (S)

Location: I-30, Saline Co., Arkansas

GHBW Job Number: 15-019

Project Feature	Approx CL Sta	Estimated Improvement Depth, ft	Representative Borings
Main Lane	250+00 to 252+50	2	1
Main Lane	252+50 to 257+50	minimal	2
Main Lane	257+50 to 262+50	3	3
Main Lane	262+50 to 267+50	minimal	4
Main Lane	267+50 to 272+50	2	5
Main Lane	272+50 to 282+50	3	6, 7
Main Lane	282+50 to 297+50	2	8, 9, 10
Main Lane	297+50 to 302+50	3	11
Main Lane	302+50 to 307+50	minimal	12
Main Lane	307+50 to 322+50	3	13, 14, 15
Main Lane	322+50 to 326+00	2	16
Main Lane	326+00 to 337+50	3	17, 18
Main Lane	337+50 to 347+50	minimal	19, 20
Main Lane	347+50 to 352+50	2	21
Main Lane	352+50 to 367+00	3	22, 23, 24
Main Lane	367+00 to 372+50	2	25
Main Lane	372+50 to 382+00	3	26, 27
Main Lane	382+00 to 387+00	minimal	B-28
Main Lane	387+00 to 422+50	3	29 through 33, 35
Main Lane	422+50 to 448+50	2	34, 36, and 37
Main Lane	448+50 to 467+00	3	38 through 41
Main Lane	467+00 to 477+50	minimal	42 and 43
Main Lane	477+50 to 482+50	2	45
Main Lane	482+50 to 507+50	3	46 through 49
Main Lane	507+50 to 512+50	minimal	51
Main Lane	512+50 to 515+00	2	50
Ramp 1	253+00 to 254+00	2	R20
Ramp 1	255+00 to 257+00	minimal	R21 and R22
Ramp 1	394+00 to 395+00	2	R18
Ramp 1	473+00 to 474+00	minimal	R11
Ramp 2	513+00 to 516+60	minimal	R8
Ramp 2	516+60 to 520+20	3	R9
Ramp 2	405+00 to 406+00	minimal	R13
Ramp 2	398+00 to 399+00	3	R17
Ramp 2	272+00 to 273+00	2	R19
Ramp 3	250+00 to 255+00	3	R23 and R24
Ramp 3	402+00 to 407+00	2	R12 and R16
Ramp 3	364+50 to 365+50	minimal	B-24
Ramp 4	402+00 to 403+00	3	R14 and R15
Ramp 4	475+00 to 476+00	minimal	B42
Ramp 4	476+00 to 478+50	3	R10



# **SUMMARY of ESTIMATED DEPTH of SUBGRADE IMPROVEMENT**

PROJECT: CA0601: Hwy 70 - Sevier St (Widening) (S)

Location: I-30, Saline Co., Arkansas

GHBW Job Number: 15-019

<b>Project Feature</b>	<b>Approx CL Sta</b>	<b>Estimated Improvement Depth, ft</b>	<b>Representative Borings</b>
Ramp 5	384+00 to 387+00	minimal	B-28
Ramp 5	387+00 to 396+70	3	W21, W22, W23, W24
West South Street	507+00 to 509+50	2	R6 and R7
South Street Ramp A	509+00 to 510+00	2	R2
South Street Ramp C/ Leander Street	510+00 to 511+50	3	R3 and R4
South Street Ramp D	507+00 to 508+00	3	R1
Frontage Road D	504+00 to 505+00	3	R5

Notes:

1. Maximum undercut depth assumed to be 3 ft with use of stone backfill (AHTD SS 207)
2. Depth estimated from the borings drilled in June, July and August 2015. Actual unstable soil zone depth must be field verified.