



GEOTECHNICAL INVESTIGATION BWHS ATHLETICS AND ARTS EXPANSION CENTERTON, ARKANSAS

Prepared for:

**HIGHT JACKSON ASSOCIATES
ROGERS, ARKANSAS**

Prepared by:

**UES PROFESSIONAL SOLUTIONS 25, LLC
SPRINGDALE, ARKANSAS**

Date:

JANUARY 26, 2026

UES Project No.:

A25186.00135.000

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January 26, 2026

Michelle McClafin, AIA, NCARB, LEED AP BD+C
Hight Jackson Associates
5201 West Village Parkway, Suite 300
Rogers, Arkansas 72758

Re: Geotechnical Investigation
BWHS Athletics and Arts Expansion
Centerton, Arkansas
Project No. A25186.00135.000

Dear Ms. McClafin:

Presented in this report are the results of the geotechnical investigation performed by UES Professional Solutions 25, LLC (UES) for the above referenced project at Bentonville West High School (BWHS) in Centerton, Arkansas. The report includes our understanding of the project, observed site conditions, conclusions and recommendations, and support data as listed in the Table of Contents.

We appreciate the opportunity to provide geotechnical services for this project. If you have any questions regarding this report, or if we can be of any additional service to you, please do not hesitate to contact us.

Respectfully submitted,

UES Professional Solutions 25, LLC

A handwritten signature in blue ink, appearing to read "Yancy Schrader".

Yancy Schrader, P.E.
Geotechnical Engineer

A handwritten signature in black ink, appearing to read "Subrahmanya Bhat".

Subra T. Bhat, Ph.D., P.E.
Principal Geotechnical Engineer

YS/STB:ys

Copies submitted: client (email)



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**GEOTECHNICAL INVESTIGATION
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1.0 INTRODUCTION

UES has prepared this geotechnical investigation report for Hight Jackson Associates for the proposed expansion to Bentonville West High School (BWHS) in Centerton, Arkansas. Our services documented in this report were provided in general accordance with the scope of services described in our proposal A25186.00135, dated December 8, 2025. Our services were authorized by Mr. Brian Jackson of Hight Jackson Associates on December 9, 2025.

The purposes of the geotechnical investigation were to develop a general subsurface profile at the site and prepare recommendations for the geotechnical aspects of the design and construction of the project as defined in our proposal. Our scope of services included site reconnaissance, geotechnical borings, laboratory testing, engineering analyses, and preparation of this report. Unless noted otherwise, all dimensions, measurements, depths, and locations in this report should be considered approximate.

2.0 PROJECT INFORMATION

Based on our review of the provided information¹, we understand the project will include the design and construction of a new locker room building to the west of the existing field house, new artificial turf at the existing natural grass practice field, and a new building addition to the music classrooms at the south end of the high school. The locker room and music classroom additions will be single-story and constructed with shallow foundations, concrete slabs-on-grade, metal framing, and load bearing CMU walls ranging in height from 14 feet at the locker room to 22 to 30 feet at the music classroom addition. The new locker room will be approximately 14,000 square feet and the new music room will be approximately 5,200 square feet. Additionally, a new artificial turf field will be constructed west of the proposed locker room expansion.

Structural loads were not provided. We assumed light to moderate loads based on our experience with similar structures. Based on the preliminary grading plans² furnished to us, finish floor elevation of the locker room is planned at EL 1353.00. Site grading for the locker room is expected to include 1 foot of fill. Finished floor elevation of the music classroom addition will match that of the existing high school building at EL 1357.86. Site grading for the music classroom addition is

¹ Request for Geotech Proposal, Bentonville School District – Bentonville West High School Athletics and Arts Expansions, dated November 25, 2025 and prepared by Hight Jackson Associates.

² Sheets C4.0 and C4.1, Locker Room and Band Room Grading Plans, dated January 16, 2026 and prepared by Halff.



estimated to require up to 3 feet of fill at the west end with minor grading at the east end. Finish grade at the artificial turf area will be generally at EL 1353. Site grading is expected to be minor at the east end, with cuts of 1 foot across the majority of the footprint, and a cut of up to 2 feet at the southwest corner of the site.

3.0 GEOTECHNICAL EXPLORATION

The geotechnical exploration consisted of eight boring locations, designated as Borings B-1 through B-8. Boring locations were selected by Hight Jackson. The borings were marked in the field by a UES representative. Approximate locations of the borings are shown in Figure 2 of Appendix A; elevations were estimated from client-provided topographic information. If more precise locations or elevations are required, the client should retain a registered surveyor to establish boring locations and elevations.

The borings were drilled in January 2026, using a track-mounted rotary drill rig (Geoprobe 7720DT). Solid-stem auger drilling methods were used as indicated on the boring logs presented in Appendix B. Sampling of the soils was accomplished ahead of the augers at the depths indicated on the boring logs, using 2-inch-outside-diameter (O.D.) split-spoon samplers in general accordance with the procedures outlined by ASTM D1586. Standard Penetration Tests (SPTs) were performed using an automatic hammer to obtain the standard penetration resistance, or N-value³, of the sampled material.

The drill crew recorded the subsurface profile noting the soil types and stratifications, groundwater, SPT results, and other pertinent data. Observations for groundwater were made in the borings during drilling. Representative portions of the split-spoon and grab samples were placed in containers to preserve sample moisture. The containers were marked and labeled in the field for identification, then returned to our laboratory in Springdale.

4.0 LABORATORY REVIEW AND TESTING

To evaluate pertinent physical properties and engineering characteristics of the foundation and subgrade soils, laboratory tests consisting of natural water content determinations and soil classification tests were performed on selected representative samples. Testing included 43 natural water content determinations (ASTM D2216) performed to complete a water content profile for each boring.

To verify field classification and to evaluate soil plasticity, eight liquid and plastic limit determinations (Atterberg limits – ASTM D4318) and eight sieve analyses (ASTM D6913) were

³ The standard penetration resistance, or N-value, is defined as the number of blows required to drive the split-spoon sampler 12 inches with a 140-pound hammer falling 30 inches. Since the split-spoon sampler is driven 18 inches or until refusal, the blows for the first 6 inches are for seating the sampler, and the number of blows for the final 12 inches is the N-value. Additionally, “refusal” of the split-spoon sampler occurs when the sampler is driven less than 6 inches with 50 blows of the hammer.



performed on selected representative samples. The laboratory test results are presented in Appendix C as well as on the boring logs in Appendix B.

The boring logs were prepared by a geotechnical engineer from the field logs, visual classifications of the soil samples in the laboratory, and laboratory test results. Terms and symbols used on the boring logs are presented in the Boring Log: Terms and Symbols in Appendix B. Stratification lines on the boring logs indicate approximate changes in strata. The actual transition between strata could be abrupt or gradual.

5.0 SITE AND SUBSURFACE CONDITIONS

5.1 Site Description

The project is located at the existing Bentonville West High School (BHWS) at 1351 Gamble Road in Centerton, Arkansas. The site is part of a larger parcel with total area of about 91 acres.

The proposed artificial turf area is currently a grass covered playfield that slopes down from southwest to northeast. The proposed locker room addition area is relatively level and generally grass covered with some concrete sidewalks. Existing elevations in the planned artificial turf and locker room addition areas range from EL 1355 to EL 1351. The planned music classroom addition area is located at the southeast corner of the high school. The site is grass covered and it gently slopes to the south and west. Existing elevations in the planned music classroom addition area range from EL 1354 to EL 1356. Surface drainage conditions are considered good.

5.2 Site Geology

As described and mapped by the United States Geological Survey and shown on the Geologic Map of Arkansas⁴, the project site is underlain by the Boone Formation. The Boone Formation consists of gray, fine- to coarse-grained fossiliferous limestone interbedded with chert. Some sections may be predominantly limestone or chert. The cherts are dark in color in the lower part of the sequence and light in the upper part. The quantity of chert varies considerably both vertically and horizontally. The Boone Formation is well known for dissolutional features, such as sinkholes, caves, and enlarged fissures. The thickness of the Boone Formation is typically 300 to 350 feet in northern Arkansas.

5.3 Site Surface

The surface at the boring locations consisted of grass cover and between 3 and 9 inches of topsoil. The measured thickness of topsoil during the field exploration at each boring location is summarized in Table 1.

⁴ Geologic Map of Arkansas, Arkansas Geologic Commission and United States Geological Survey, 1993.



Table 1. Topsoil Thickness.

Boring	Topsoil Thickness (inches)
B-1	8
B-2	9
B-3	9
B-4	9
B-5	4
B-6	3
B-7	4
B-8	6

5.4 Stratigraphy

Based on the results of the borings, the subsurface conditions in the project area may be generalized into four primary strata as stated below.

Stratum I: A stratum of existing fill was generally encountered beneath the topsoil across the site. The existing fill was found to be a “hillside” borrow consisting of medium stiff to stiff, red and brown, lean clay to sandy clay with variable chert content as well as medium dense to dense, red, reddish brown, and brown clayey chert gravel.

In the artificial turf area (see Borings B-1 through B-4), the depth of fill ranged from about 4 feet at the north end tapering down to a thin veneer or no fill in the southern portion of the site. The medium stiff to stiff lean clay Stratum I fill materials in the artificial turf area exhibited moderate to low shear strength and moderate to high compressibility.

In the locker room area (see Borings B-5 and B-6), the Stratum I fill extended to about 2 to 2½ feet below existing grade. The medium stiff to stiff lean clay to sandy clay Stratum I fill in the locker room area exhibited moderate to low shear strength, and moderate to high compressibility. At Boring B-5, the fill was directly underlain by medium stiff clayey silt that appears to be the original topsoil.

In the music room addition area (see Borings B-7 and B-8), the depth of fill ranged from about 3 to 4 feet. The Stratum I stiff sandy clay with numerous chert fragments and medium dense to dense clayey chert gravel fill appeared to be relatively compact and exhibited moderate shear strength and moderate to low compressibility.

Stratum II: Beneath the existing fill at Borings B-1, B-2, and B-5, and beneath the surficial topsoil at Borings B-4 and B-6 was a stratum of natural, medium stiff to stiff, lean clay and clayey silt with occasional chert fragments. This stratum was not encountered at Borings B-3, B-7, and B-8. These soils extended to depths of 2½ to 8 feet, where encountered. The Stratum II soils generally exhibited moderate shear strength and moderate compressibility. The Stratum II clayey silt was



encountered only at Borings B-1 and B-5. The clayey silt exhibited low shear strength and high compressibility, with SPT N-values ranging from 5 to 7 blows per foot (bpf) recorded.

Stratum III: Beneath the Stratum II soils and the Stratum I fill, where Stratum II is absent (Borings B-7 and B-8), and beneath the surface topsoil at Boring B-3, was a stratum of stiff to hard, red, reddish tan, and brown sandy clay with numerous chert fragments as well as medium dense to dense red and reddish-brown clayey sand with varying amounts of chert fragments. Fractured chert seams and layers were also encountered in this stratum. The Stratum III soils extended to the terminal depths of the borings between 8 and 15 feet below existing grade. This stratum exhibited moderate to high shear strength and low compressibility during drilling and sampling, with SPT N-values ranging from 16 to 45 bpf as well as 50 blows for 5½ inches of penetration. This stratum was not encountered at Boring B-1.

Stratum IIIa: Encountered only at Boring B-1, Stratum II was underlain by very stiff red and tan fat clay with numerous chert fragments (CH) starting at 6 feet and extending to the terminal depth of the boring at 10 feet. The Stratum IIIa fat clay exhibited high plasticity. However, heave potential for the clay is considered negligible due to the depth at which it is present, its chert content, and in-situ moisture content.

5.5 Groundwater

Groundwater was not encountered at any boring location during the field exploration. Groundwater levels will vary over time because of seasonal variation in precipitation or other factors not evident at the time of exploration. The installation and periodic measurement of monitoring wells would be required to establish seasonal piezometric surfaces below this site.

5.6 Seismic Site Classification and Seismic Parameters

It is our understanding the proposed construction site will be designed in accordance with Chapter 20 of ASCE 7-16 and the 2021 International Building Code (IBC). The 2021 IBC/ASCE 7-16 stipulates structures designed based on an earthquake event with a probability of exceedance of 2% in 50 years. Based on the subsurface conditions encountered in the borings, the local geology and the deep borings performed at the site in the past (see GHBW Report No. 14-007), a Seismic Site Class D is considered applicable as per the criteria of the ASCE 7-16. Based on the results of the field and laboratory testing, our understanding of the vicinity, and our interpretations of the 2021 IBC/ASCE 7-16, it is our opinion the seismic parameters in Table 2 are applicable for this project.

The Benton County, Arkansas site is located in Seismic Zone 1, defined by the Arkansas Building Authority (2005) as the zone of least seismic potential. The liquefaction potential of the soils encountered within the exploration depth of the borings is considered negligible.



Table 2. Seismic Parameters – Site Class D (2% Probability of Exceedance in 50 Years).

Category/ Parameter ^a	Designation/ Value	Reference
S _S	0.148	Latitude 36.37746°N/Longitude 94.30131°W
S ₁	0.087	
F _a	1.6	2021 IBC Table 1613.2.3(1)
F _v	2.4	2021 IBC Table 1613.2.3(2)
F _{PGA}	1.6	ASCE 7-16 Table 11.8-1
S _{MS}	0.236	2021 IBC Equation 16-20
S _{M1}	0.209	2021 IBC Equation 16-21
S _{DS}	0.158	2021 IBC Equation 16-22
S _{D1}	0.139	2021 IBC Equation 16-23
PGA	0.070	ASCE 7-16 Figure 22-7
PGA _M	0.112	ASCE 7-16 Equation 11.8-1

^a S_S and S₁ were computed using the web-based U.S. Seismic Design Maps (<https://www.seismicmaps.org>) using the indicated latitude and longitude coordinates of the project site.

5.7 Significant Conditions

Site and subsurface conditions considered significant to design and construction of the project are as follows:

1. The presence of existing fill soils encountered in the majority of the site (except B-3 and B-4 in the artificial turf area), to variable depths ranging from 2 to 4 feet below existing grade;
2. The generally moderate shear strength and moderate compressibility exhibited by the Stratum I fill and Stratum II lean clay soils, and low shear strength and high compressibility exhibited by the Stratum II clayey silt encountered at Boring B-5;
3. The moderate to high shear strength and low compressibility exhibited by the Stratum III very stiff to hard sandy clay with numerous chert fragments and medium dense to dense clay sand with chert fragments;
4. A measured topsoil depth of 8 to 9 inches at Borings B-1 through B-4 (in the planned artificial turf installation area);
5. The potential for encountering discontinuous, localized hard chert intervals in the Stratum III soils;
6. The absence of groundwater in January 2026, but the potential for developing shallow perched groundwater in the near surface soils during wet periods of the year.

The relationship of these factors to the construction of the proposed development is considered in subsequent sections of this report.



6.0 GEOTECHNICAL ANALYSIS AND RECOMMENDATIONS

UES has prepared the following recommendations based on our understanding of the proposed project, the field and laboratory data presented in this report, engineering analyses, and our experience and judgment. UES should be allowed to review final grading and foundation plans to verify that our recommendations have been properly implemented and are suitable for the final design.

6.1 Foundations

Foundations for the building must satisfy two (2) basic and independent design criteria. First, the maximum bearing pressure for foundation elements must not exceed the allowable bearing pressure based on an adequate factor of safety with respect to shear strength. Secondly, foundation movements resulting from consolidation, shrinking, or swelling of the supporting soils must be within tolerable limits for the structure. Construction factors such as foundation construction, excavation procedures, and surface and groundwater conditions must also be considered.

In view of the anticipated site grading, the expected light to moderate foundation loads, and the results of the borings, a shallow foundation system is considered suitable for both the new locker room and the music classroom addition, provided footings are founded on the natural Stratum II or Stratum III soils or on new engineered fill. For the music room addition, as an alternative to footing undercut, footings may be founded in the Stratum II on-site fill utilizing a reduced bearing capacity as described below. Recommendations for shallow footings are discussed below.

6.1.1 Shallow Foundations

Shallow foundations and slab-on-grade are recommended in the planned building footprints provided subgrade soils are prepared as described in the Site Preparation and Grading section of this report. The footings should be founded on natural, stiff to very stiff, lean clay, sandy lean clay, and sandy clay soils (Stratum II and III). The recommended bearing soils are expected to be encountered within 2 to 4 feet of existing grade in the locker room footprint, and within 3 to 4 feet of existing grade in the music classroom addition footprint. Foundation trenches should extend through any existing fill materials (Stratum I) and any remains of the original topsoil horizon (see medium stiff brown clayey silt at Boring B-5 from 2½ to 4 feet), to bear on suitable, natural soils. Flowable fill, lean concrete or new engineered fill can be used to backfill foundation trenches up to plan bottom of foundation elevation. Footing undercuts backfilled with engineered fill should have a minimum width determined by a 1-horizontal to 2-vertical (1H:2V) projection from the edge of footings to the undercut bottom. Widening of the foundation trenches is not required if flowable fill or lean concrete is used as backfill.

For the music classroom addition, as an alternative to footing undercut as described above, footings may be founded in the Stratum I on-site fill. Based on the results of the borings, the on-site fill was found to be in a relatively compact condition in the addition area. It appears this area was built as part of the mass grading performed for the high school building to the north. Footings founded in the on-site fill shall utilize a reduced bearing capacity as provided below.



Shallow footings should bear at a minimum depth of 2 feet below final adjacent grade. Footings so founded in suitable natural soils in conjunction with footing undercut may be designed using a net allowable bearing pressure of 2,000 and 2,500 psf for continuous and individual footings, respectively. Similarly, footings founded in the Stratum I fill at the music classroom may be designed using a net allowable bearing pressure of 1,500 and 1,800 psf for continuous and individual footings, respectively. Localized footing undercut of Stratum I on-site fill may be required. Continuous footings should have a minimum width of 18 inches and individual footings should have a minimum dimension of 24 inches. Post-construction settlement of foundations supported as recommended should be less than 1 inch total and less than $\frac{3}{4}$ inch in 50 feet differential.

6.1.2 Shallow Foundation Uplift and Sliding Resistance

Uplift resistance will be provided by the weight of the structure and foundation units. Resistance to lateral forces will be developed by the passive resistance of the foundation soils and sliding resistance at the footing bottom. The passive resistance of the soil within the upper 2 feet should be neglected. Below a 2-foot depth, an ultimate passive resistance value of 100 lbs per sq ft per ft depth increasing at 100 lbs per sq ft per ft depth may be assumed for the stable on-site soils. Resistance to sliding may be evaluated using an ultimate friction value of 0.35 for concrete on natural stiff soils and compacted fill. An appropriate factor of safety must be included in analysis of sliding.

6.1.3 Interaction with Existing Foundations

As-built information regarding the existing school's foundation type and bearing depth was not available. We assume the existing high school building is founded on a shallow foundation bearing within 2 to 3 feet of existing grade.

Care should be exercised when constructing excavations adjacent to existing foundations to minimize the disturbance of existing foundation bearing materials. It is recommended, where possible, that temporary excavations below existing footings not extend below an imaginary plane extending out and down from outside edge of footings at a slope of approximately 1-horizontal to 2-vertical (1H:2V). Excavations extending below the level of the existing floor slab/foundations should be backfilled the same day they are excavated. Where this is impractical, underpinning or shoring of existing foundations may be required.

Some overlap in stress distribution from new and existing footings may occur, which may cause minor movement of the existing footings and supported structures. Connections between the new music classroom addition and existing structures should be designed to allow for the anticipated differential movement which may be as high as the total anticipated settlement for the new addition.

6.2 Floor Slabs

Slab-on-grade construction is recommended for the new buildings. Subgrade preparation must include stripping of topsoil and proof-rolling as further described in the Site Preparation and Grading section of this report. The Stratum I on-site fill is considered suitable to support the floor



slab provided it passes a thorough proof roll. We also recommend that the at-grade floor slab be supported on a 4- to 6-inch-thick, clean crushed stone or gravel layer placed on a properly prepared subgrade. The granular layer should be densified with vibrating equipment prior to floor slab construction. Impervious sheeting should be placed between the slab and granular course to act as a vapor barrier.

6.3 Artificial Turf

Site grading for the artificial turf is generally expected to include cuts of about 1 foot with minor grading at the west end and localized cuts of about 2 feet at the southwest portion of the site. Upon stripping topsoil and cutting as dictated by site grading requirements, the exposed subgrade is expected to consist of Stratum I on-site fill or natural soils in the southern portion of the site. These soils are considered suitable to provide adequate subgrade support to the artificial turf provided subgrade preparation is done as described in the Site Preparation and Grading section below.

6.4 Site Preparation and Grading

We recommend that a pre-site grading meeting be held to review site and subgrade conditions at the time of construction. This meeting should include the Engineer, Geotechnical Engineer, General Contractor, Site Grading Contractor and Owner. At that time, specific site grading procedures, such as temporary drainage, type of equipment to be used and potential for undercut should be reviewed.

6.4.1 Artificial Turf Area

Subgrade preparation in the artificial turf area should begin by stripping all topsoil. The measured thickness of topsoil at the boring locations is provided in Table 1. We estimate an average topsoil thickness of 9 inches in the planned turf area (vicinity of Borings B-1 through B-4). Following stripping and cutting as dictated by site grading requirements, the exposed subgrade soils should be scarified to a minimum depth of 9 inches, then recompact with moisture adjustment. Following scarification, moisture adjustment, and compaction, the exposed subgrade soils should be proof-rolled with a loaded tandem-wheel dump truck or similar equipment. All soft or loose soils encountered in the construction area should be excavated, reprocessed and recompact or replaced with engineered fill, whichever is appropriate. It should be noted that multiple laboratory Proctors may be required for the purpose of performing density testing as the material is expected to vary across the site.

6.4.2 Locker Room and Music Classroom Addition

Subgrade preparation in the building areas should begin with stripping all soft and/or organic-containing soils, including topsoil. Grading should extend out a minimum of 5 foot offset from the building lines. A topsoil stripping depth of 3 to 6 inches is expected in the locker room and music classroom addition areas. Additional undercutting may be required if other unsuitable materials or soft soils are encountered at the site.

Following stripping, cutting as dictated by site grading requirements and undercutting as described above, and prior to any fill placement, the subgrade should be proof-rolled with a loaded



tandem-wheel dump truck or similar equipment. All soft or loose soils encountered in the construction area should be excavated, reprocessed and recompacted or replaced with engineered fill, whichever is appropriate. Based on the results of the borings, mass undercut is not expected; however, localized undercuts may be warranted particularly under wet site conditions.

6.4.3 Suitable Fill and Compaction

On-site soils undercut from the site (e.g. topsoil) are not considered suitable for use as engineered fill; however, these soils may be used in greenspace areas. Fill material, if required, should consist of imported material meeting the following requirements. Imported borrow for use as engineered fill or backfill should consist of “hillside” sandy clay, silty/clayey gravel that classifies as CL, SC, GC or GM by the Unified Soil Classification System having a liquid limit (LL) less than 45. Fill proposed for use at the site that does not meet the plasticity requirements should be evaluated by the Geotechnical Engineer on a case-by-case basis.

Fill and backfill should be placed in level lifts, up to 8 inches in loose thickness. For soils that exhibit a well-defined moisture density relationship, each lift should be compacted to a minimum of 98% of Standard Proctor (ASTM D698) maximum dry density in the structure areas and a minimum of 95% of Standard Proctor (ASTM D698) maximum dry density in the artificial turf areas at a moisture content range of +/- 3% of optimum value. Crushed stone base should be compacted to a minimum of 95% of Modified Proctor (ASTM D1557) maximum dry density at a moisture content close to optimum.

6.5 Construction Considerations

Positive surface drainage should be established at the start of work, be maintained during construction and following completion of the project to prevent surface water ponding and subsequent saturation of subgrade soils. Density and water content of all earthwork should be maintained until the structures are completed. Foundation or subgrade soils that become saturated by ponding water or runoff should be excavated to stable and undisturbed soils. Concrete or fill should not be placed over frozen or saturated soils, and frozen or saturated soils should not be used as compacted fill or backfill. The Geotechnical Engineer must observe all footing excavations and foundation undercuts to verify suitable bearing and adequate undercut. Concrete should be placed in footing excavations expeditiously following final clean up and approval to limit changes in foundation conditions. Footing excavations should be clean and dry at the time of concrete placement. Where footing excavations will be left open for extended periods, the bearing stratum should be protected with a thin layer of seal concrete.

Utility trenches backfilled with clean gravel are a common source of water infiltration under buildings, pavements, and other structures. To reduce the potential for surface water conveyance and infiltration, we recommend the top 18 inches of utility trench backfill should be capped with a cohesive engineered fill beyond the building.

We anticipate that the on-site soils can generally be excavated using conventional earthwork equipment. The potential exists at the site for encountering localized hard chert intervals and



fractured chert layers in the Stratum III soils beginning at a depth of 8 feet below existing grade. Rock excavation techniques may be required to penetrate such discontinuous hard, resistant chert intervals. Greater rock excavation effort is expected for limited access excavations, such as utility trenches and foundations. Rock excavation may include techniques such as blasting, hoe ram, jack hammering, or other means.

7.0 CLOSURE

Site preparation, grading work, undercuts, and pavement construction should be monitored by the Architect or a designated representative thereof. 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. Additionally, UES Professional Solutions 25, LLC, should be retained to provide testing and observation during excavation, grading and construction phases of the project based on our familiarity with the project, the subsurface conditions, and the intent of the recommendations in this report.



APPENDIX A – FIGURES

Figure 1 – Site Location

Figure 2 – Boring Locations – Artificial Turf and Locker Room

Figure 3 – Boring Locations – Music Classroom Addition

Figure 4 – Boring Locations – Artificial Turf and Locker Room (Grading Plan)

Figure 5 – Boring Locations – Music Classroom Addition (Grading Plan)



Boring Locations - Artificial Turf and
Locker Room

Bentonville West High School
Centerton, Arkansas

Notes:

Drawn By: MSE
Date: 1-20-2026

Ck'd By:
Date:

App'vd By:
Date:

Date:

1-20-2026

Job No:

A25186.00135

Figure 2



Boring Locations - Music Classroom
Addition

Bentonville West High School
Centerton, Arkansas

Notes:

Date:

1-20-2026

Job No:

A25186.00135

Figure 3

Drawn By: MSE

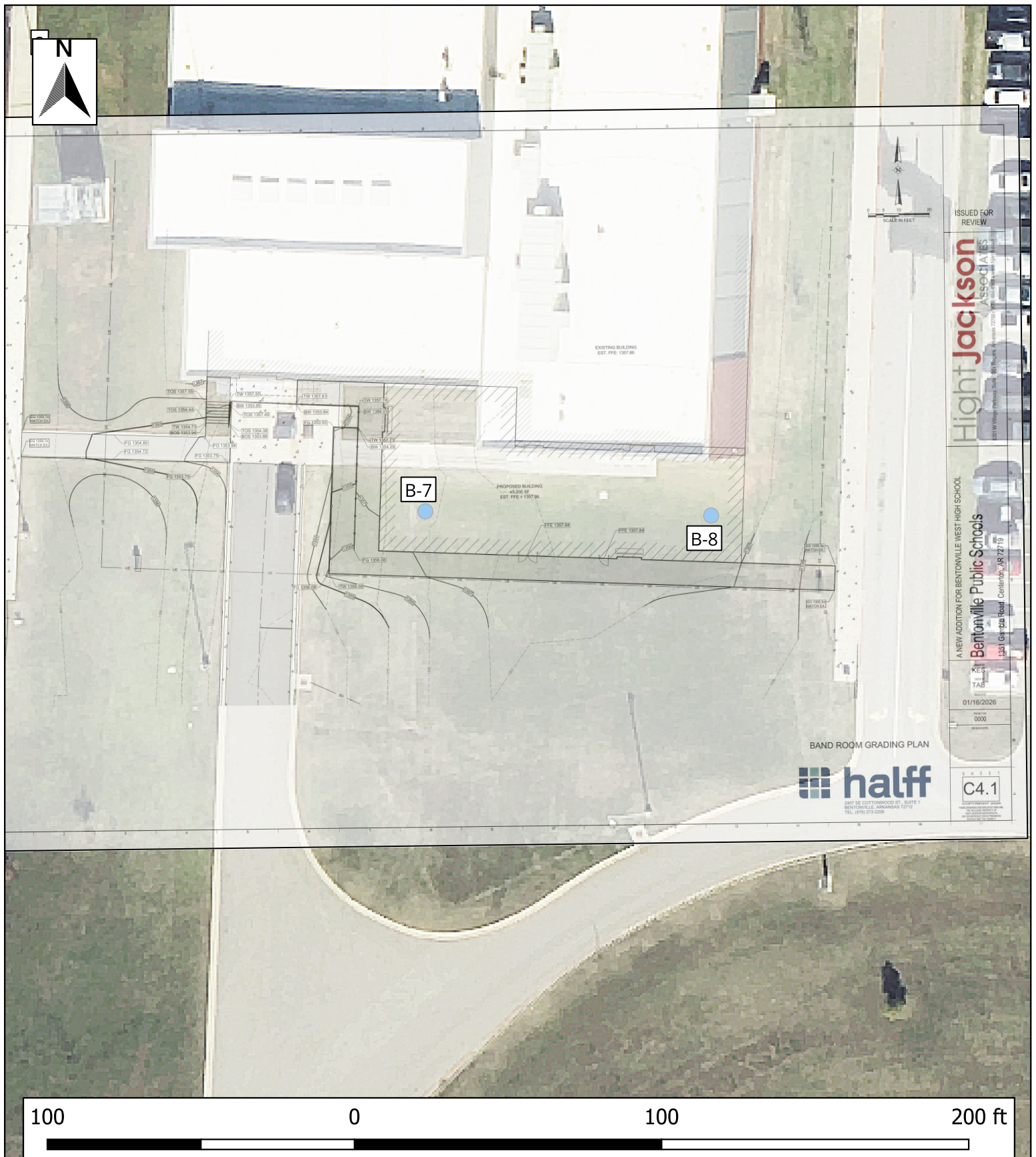
Ck'd By:

App'vd By:

Date: 1-20-2026

Date:

Date:



Boring Locations - Music Classroom
Addition (Grading Plan)

Bentonville West High School
Centerton, Arkansas

Notes:

Date:

1-26-2026

Job No:

A25186.00135

Figure 5

Drawn By: MSE

Ck'd By:

App'vd By:

Date: 1-26-2026

Date:

Date:



APPENDIX B – BORING INFORMATION

Boring Logs

Boring Log Terms and Symbols



**Bentonville West High School Athletics and Arts Expansion****1351 Gamble Road, Centerton, Arkansas****Log of Soil Boring
B-1**

Page 1 of 1

Project Number: A25186.00135.000	Date Completed: 01/09/2026	Remarks:
Driller: T. Robinson	Boring Depth: 10'	
Logged By: M. Edwards	Surface Elev.: 1354'	
Equipment: Geoprobe 7720DT	Geology: -	
Hammer: Auto	Coordinates: N/A	
Drilling Method: 5-inch S.S.A	▽ Water Level At Time Of Drilling N/A Cave-in At Time Of Drilling N/A	▼ Delayed Water Level N/A Delayed Water Observation Date N/A

Sample ID	Elevation (ft)	Depth (ft)	Visual Classification and Remarks	Graphic Log	USCS	Blow Counts (N/Refusal)	◇ Raw N-Value ● Moisture Content PL-LL	Lab Passing #200 (%)
SS-1			Medium stiff, brown, CLAYEY SILT, with organics (8in Topsoil)		ML	2-3-4 (7)		
			Medium stiff, red, reddish brown, LEAN CLAY, with some chert fragments and sand (FILL)					
SS-2			Stiff below 2ft		CL	2-2-6 (8)		71
	1350							
SS-3		5	Medium stiff, brown, CLAYEY SILT		ML	2-2-5 (7)		
			Stiff, reddish brown, LEAN CLAY, with occasional chert fragments		CL			
SS-4			Very stiff, red, tan, FAT CLAY, with numerous chert fragments and lean clay seams			9-8-8 (16)		77
					CH			
SS-5	1345					8-9-17 (26)		
		10	Boring terminated at 10ft					
	1340							
		15						

**Bentonville West High School Athletics and Arts Expansion****1351 Gamble Road, Centerton, Arkansas****Log of Soil Boring
B-2**

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Project Number: A25186.00135.000	Date Completed: 01/09/2026	Remarks:
Driller: T. Robinson	Boring Depth: 10'	
Logged By: M. Edwards	Surface Elev.: 1354'	
Equipment: Geoprobe 7720DT	Geology: -	
Hammer: Auto	Coordinates: N/A	
Drilling Method: 5-inch S.S.A	▽ Water Level At Time Of Drilling N/A Cave-in At Time Of Drilling N/A	▼ Delayed Water Level N/A Delayed Water Observation Date N/A

Sample ID	Elevation (ft)	Depth (ft)	Visual Classification and Remarks	Graphic Log	USCS	Blow Counts (N/Refusal)	◇ Raw N-Value ● Moisture Content	PL-LL	Lab Passing #200 (%)
SS-1			Stiff, brown, CLAYEY SILT, with rootlets and organics (9in Topsoil)		ML	2-4-4 (8)	◇ ●		
			Stiff, brown, reddish brown, SANDY LEAN CLAY, with some chert fragments (FILL)						
SS-2			Medium stiff, reddish brown, LEAN CLAY			2-2-3 (5)	◇ ●		90
	1350								
SS-3		5	Hard, red, reddish tan, SANDY LEAN CLAY, with numerous chert fragments		CL	4-17-13 (30)	◇ ●		
SS-4						11-27-18 (45)	◇ ●		
	1345		Auger refusal at 8ft						
		10							
	1340								
		15							

**Bentonville West High School Athletics and Arts Expansion****1351 Gamble Road, Centerton, Arkansas****Log of Soil Boring B-3**

Page 1 of 1

Project Number: A25186.00135.000	Date Completed: 01/09/2026	Remarks:
Driller: T. Robinson	Boring Depth: 10'	
Logged By: M. Edwards	Surface Elev.: 1354'	
Equipment: Geoprobe 7720DT	Geology: -	
Hammer: Auto	Coordinates: N/A	
Drilling Method: 5-inch S.S.A	▽ Water Level At Time Of Drilling N/A	▼ Delayed Water Level N/A
	Cave-in At Time Of Drilling N/A	Delayed Water Observation Date N/A

Sample ID	Elevation (ft)	Depth (ft)	Visual Classification and Remarks	Graphic Log	USCS	Blow Counts (N/Refusal)	◇ Raw N-Value ● Moisture Content	PL-LL	Lab Passing #200 (%)
SS-1			Stiff, brown, CLAYEY SILT, with organics (9in Topsoil)		ML	3-4-4 (8)	◇		
			Medium dense, red, tan, CLAYEY SAND, with gravel and numerous chert fragments				●		
SS-2			Fractured chert layer at 2ft			26-14-10 (24)	◇		
	1350								
SS-3		5	with more chert below 4ft		SC	33-17-9 (26)	●		30
			Lean clay seams below 6ft			9-10-15 (25)	●		
SS-4									
			Dense below 8ft			8-10-23 (33)	◇		
SS-5	1345								
		10	Boring terminated at 10ft						
	1340								
		15							

**Bentonville West High School Athletics and Arts Expansion****1351 Gamble Road, Centerton, Arkansas****Log of Soil Boring
B-4**

Page 1 of 1

Project Number: A25186.00135.000	Date Completed: 01/09/2026	Remarks:
Driller: T. Robinson	Boring Depth: 10'	
Logged By: M. Edwards	Surface Elev.: 1355'	
Equipment: Geoprobe 7720DT	Geology: -	
Hammer: Auto	Coordinates: N/A	
Drilling Method: 5-inch S.S.A	▽ Water Level At Time Of Drilling N/A Cave-in At Time Of Drilling N/A	▼ Delayed Water Level N/A Delayed Water Observation Date N/A

Sample ID	Elevation (ft)	Depth (ft)	Visual Classification and Remarks	Graphic Log	USCS	Blow Counts (N/Refusal)	◇ Raw N-Value ● Moisture Content PL-LL	Lab Passing #200 (%)
SS-1			Stiff, brown, CLAYEY SILT, with organics (9in Topsoil)		ML	x-5-4 (9)		
			Stiff, red, reddish brown, LEAN CLAY		CL			
SS-2			Dense, red and reddish tan, CLAYEY SAND, with gravel and numerous chert fragments			6-16-17 (33)		
SS-3	1350	5				9-19-18 (37)		
SS-4					SC	17-29-16 (45)		
SS-5			Very dense below 8ft			50/5.5" (50/5.5")		
	1345	10	Boring terminated at 10ft					
	1340	15						

**Bentonville West High School Athletics and Arts Expansion****Log of Soil Boring
B-5****1351 Gamble Road, Centerton, Arkansas**

Page 1 of 1

Project Number: A25186.00135.000	Date Completed: 01/08/2026	Remarks:
Driller: T. Robinson	Boring Depth: 15'	
Logged By: M. Edwards	Surface Elev.: 1352'	
Equipment: Geoprobe 7720DT	Geology: -	
Hammer: Auto	Coordinates: N/A	
Drilling Method: 5-inch S.S.A	▽ Water Level At Time Of Drilling N/A	▼ Delayed Water Level N/A
	Cave-in At Time Of Drilling N/A	Delayed Water Observation Date N/A

Sample ID	Elevation (ft)	Depth (ft)	Visual Classification and Remarks	Graphic Log	USCS	Blow Counts (N/Refusal)	◇ Raw N-Value ● Moisture Content PL-LL	Lab Passing #200 (%)
SS-1	1350		Stiff, brown, CLAYEY SILT, with organics (4in Topsoil)		ML	4-8-10 (18)		66
			Very stiff, red, brown, tan, SANDY LEAN CLAY (FILL)		CL			
			Medium stiff below 1.5ft					
SS-2			Medium stiff, brown, CLAYEY SILT		ML	2-2-3 (5)		
SS-3	1345	5	Stiff, brown and gray, LEAN CLAY			3-6-7 (13)		
			Very stiff, red, reddish brown, and gray below 6ft					
SS-4	1340					5-6-10 (16)		
SS-5		10	Very stiff, red, tan, reddish tan, SANDY LEAN CLAY, with numerous chert fragments and some fat clay seams		CL	5-6-15 (21)		
SS-6		15	Boring terminated at 15ft			8-16-10 (26)		

**Bentonville West High School Athletics and Arts Expansion****Log of Soil Boring
B-6****1351 Gamble Road, Centerton, Arkansas**

Page 1 of 1

Project Number: A25186.00135.000	Date Completed: 01/08/2026	Remarks:
Driller: T. Robinson	Boring Depth: 15'	
Logged By: M. Edwards	Surface Elev.: 1352'	
Equipment: Geoprobe 7720DT	Geology: -	
Hammer: Auto	Coordinates: N/A	
Drilling Method: 5-inch S.S.A	▽ Water Level At Time Of Drilling N/A	▼ Delayed Water Level N/A
	Cave-in At Time Of Drilling N/A	Delayed Water Observation Date N/A

Sample ID	Elevation (ft)	Depth (ft)	Visual Classification and Remarks	Graphic Log	USCS	Blow Counts (N/Refusal)	◇ Raw N-Value ● Moisture Content		PL-LL	Lab			
										Passing #200 (%)			
SS-1	1350		Stiff, brown, SILTY CLAY, with organics (3in Topsoil)		SL-ML	7-17-15 (32)			68				
			Dense, gray, SANDY GRAVEL (8in Base)		GP								
	1345		Very stiff, brown, red, SANDY CLAY, with numerous chert fragments (FILL)		CL	3-5-8 (13)							
SS-2			Stiff, red, reddish brown, tan, SANDY LEAN CLAY, slightly silty, with trace chert	5-8-16 (24)									
				11-17-22 (39)									
SS-3	1340					14-21-13 (34)							
						5-11-24 (35)							
SS-4			Very stiff, red, reddish tan SANDY CLAY, with numerous chert fragments										
			Fractured chert and sandstone layer at 6ft										
SS-5													
SS-6													
			Boring terminated at 15ft										

**Bentonville West High School Athletics and Arts Expansion****1351 Gamble Road, Centerton, Arkansas****Log of Soil Boring
B-7**

Page 1 of 1

Project Number: A25186.00135.000	Date Completed: 01/09/2026	Remarks:
Driller: T. Robinson	Boring Depth: 15'	
Logged By: M. Edwards	Surface Elev.: 1356'	
Equipment: Geoprobe 7720DT	Geology: -	
Hammer: Auto	Coordinates: N/A	
Drilling Method: 5-inch S.S.A	▽ Water Level At Time Of Drilling N/A Cave-in At Time Of Drilling N/A	▼ Delayed Water Level N/A Delayed Water Observation Date N/A

Sample ID	Elevation (ft)	Depth (ft)	Visual Classification and Remarks	Graphic Log	USCS	Blow Counts (N/Refusal)	◇ Raw N-Value ● Moisture Content	PL-LL	Lab Passing #200 (%)
SS-1	1355		Stiff, brown, CLAYEY SILT (4in Topsoil)		ML	3-6-8 (14)			19
			Medium dense, brown, red, reddish brown, CLAYEY GRAVEL, with numerous chert fragments (FILL)						
SS-2			Dense, with sandy seams and layers below 2ft		GC	7-7-28 (35)			
SS-3		5	Very stiff, red, reddish tan, and tan SANDY CLAY, with numerous chert fragments			14-14-7 (21)			
SS-4	1350		Fractured chert layer at 6ft			22-17-14 (31)			
SS-5		10			CL	24-14-10 (24)			
	1345								
SS-6		15				6-11-14 (25)			
	1340		Boring terminated at 15ft						

**Bentonville West High School Athletics and Arts Expansion****1351 Gamble Road, Centerton, Arkansas****Log of Soil Boring
B-8**

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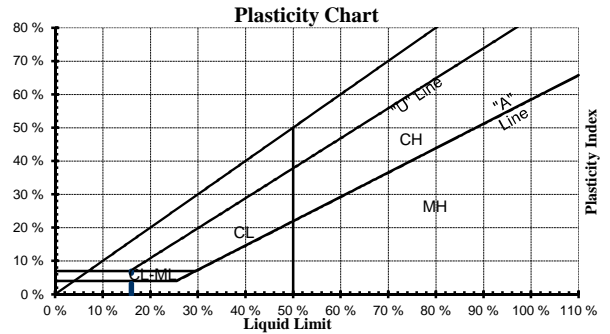
Project Number: A25186.00135.000	Date Completed: 01/09/2026	Remarks:
Driller: T. Robinson	Boring Depth: 15'	
Logged By: M. Edwards	Surface Elev.: 1357'	
Equipment: Geoprobe 7720DT	Geology: -	
Hammer: Auto	Coordinates: N/A	
Drilling Method: 5-inch S.S.A	▽ Water Level At Time Of Drilling N/A	▼ Delayed Water Level N/A
	Cave-in At Time Of Drilling N/A	Delayed Water Observation Date N/A

Sample ID	Elevation (ft)	Depth (ft)	Visual Classification and Remarks	Graphic Log	USCS	Blow Counts (N/Refusal)	◇ Raw N-Value ● Moisture Content	PL-LL	Lab Passing #200 (%)
SS-1	1355		Stiff, brown, CLAYEY SILT, with organics (6in Topsoil)		ML	3-6-8 (14)			
			Stiff, red, brown, SANDY CLAY, with numerous chert fragments (FILL)						
SS-2						6-5-6 (11)			
			Stiff, red and reddish brown SANDY CLAY, with numerous chert fragments						
SS-3		5				5-6-8 (14)			
			Very stiff below 6ft						
SS-4	1350					4-9-11 (20)			
					CL				
SS-5		10				16-18-17 (35)			
			Hard below 8.5ft						
	1345								
SS-6		15				13-17-20 (37)			
			Boring terminated at 15ft						

BORING LOG: TERMS AND SYMBOLS

LEGEND

CS	Continuous Sampler
GB	Grab Sample
NQ	NQ Rock Core
PST	Three-Inch Diameter Piston Tube Sample
SS	Split-Spoon Sample (Standard Penetration Test)
ST	Three-Inch Diameter Shelby Tube Sample
*	Sample Not Recovered
PL	Plastic Limit (ASTM D4318)
LL	Liquid Limit (ASTM D4318)
SV	Shear Strength from Field Vane (ASTM D2573)
UU	Shear Strength from Unconsolidated-Undrained Triaxial Compression Test (ASTM D2850)
QU	Shear Strength from Unconfined Compression Test (ASTM D2166)



SOIL GRAIN SIZE

US STANDARD SIEVE

	12"	3"	3/4"	4	10	40	200		
BOULDERS		COBBLES	GRAVEL		SAND			SILT	CLAY
			COARSE	FINE	COARSE	MEDIUM	FINE		
	300	76.2	19.1	4.76	2.00	0.42	0.074	0.005	
SOIL GRAIN SIZE IN MILLIMETERS									

UNIFIED SOIL CLASSIFICATION SYSTEM

Major Divisions			Symbol	Description
Coarse-Grained Soils (More than 50% Larger than No. 200 Sieve Size)	Gravel and Gravelly Soil	Clean Gravels Little or no Fines	GW	Well-Graded Gravel, Gravel- Sand Mixture
			GP	Poorly-Graded Gravel, Gravel-Sand Mixture
		Gravels with Appreciable Fines	GM	Silty Gravel, Gravel-Sand-Silt Mixture
			GC	Clayey-Gravel, Gravel-Sand-Clay Mixture
	Sand and Sandy Soils	Clean Sands Little or no Fines	SW	Well-Graded Sand, Gravelly Sand
			SP	Poorly-Graded Sand, Gravelly Sand
		Sands with Appreciable Fines	SM	Silty Sand, Sand-Silt Mixture
			SC	Clayey-Sand, Sand-Clay Mixture
Fine-Grained Soils (More than 50% Smaller than No. 200 Sieve Size)	Silts and Clays	Liquid Limit Less Than 50	ML	Silt, Sandy Silt, Clayey Silt, Slight Plasticity
			CL	Lean Clay, Sandy Clay, Silty Clay, Low to Medium Plasticity
			OL	Organic Silts or Lean Clays, Low Plasticity
	Silts and Clays	Liquid Limit Greater Than 50	MH	Silt, High Plasticity
			CH	Fat Clay, High Plasticity
			OH	Organic Clay, Medium to High Plasticity
	Highly Organic Soils		PT	Peat, Humus, Swamp Soil

STRENGTH OF COHESIVE SOILS

DENSITY OF GRANULAR SOILS

Consistency	Undrained Shear Strength (tsf)	Unconfined Comp. Strength (tsf)	Descriptive Term	Approximate N_{60} -Value Range
Very Soft	less than 0.125	less than 0.25	Very Loose	0 to 4
Soft	0.125 to 0.25	0.25 to 0.5	Loose	5 to 10
Medium Stiff	0.25 to 0.5	0.5 to 1.0	Medium Dense	11 to 30
Stiff	0.5 to 1.0	1.0 to 2.0	Dense	31 to 50
Very Stiff	1.0 to 2.0	2.0 to 3.0	Very Dense	>50
Hard	greater than 2.0	greater than 4.0		

N-Value (Blow Count) is the last two, 6-inch drive increments (i.e. 4/7/9, N = 7 + 9 = 16). Values are shown as a summation on the grid plot and shown in the Unit Dry Weight/SPT column.

RELATIVE COMPOSITION

OTHER TERMS

Trace	0 to 10%	Layer - Inclusion greater than 3 inches thick.
Little	10 to 20%	Seam - Inclusion 1/8-inch to 3 inches thick
Some	20 to 35%	Parting - Inclusion less than 1/8-inch thick
And	35 to 50%	Pocket - Inclusion of material that is smaller than sample diameter



Relative composition and Unified Soil Classification System (USCS) designations are based on visual descriptions and are approximate only. If laboratory tests were performed to classify the soil, the USCS designation is shown in parenthesis.



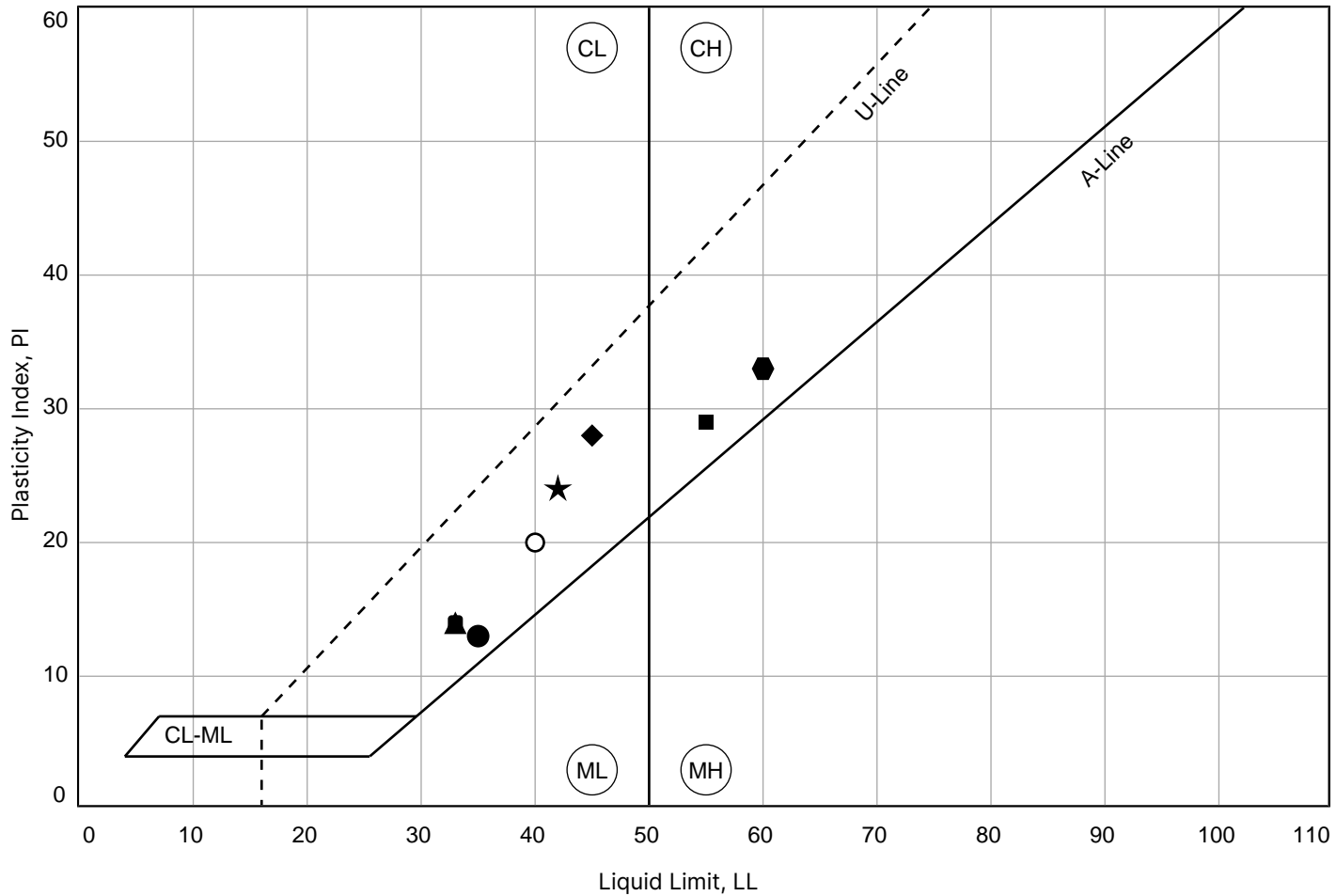
APPENDIX C – LABORATORY TEST DATA

Atterberg Limits Results

Gradation Results

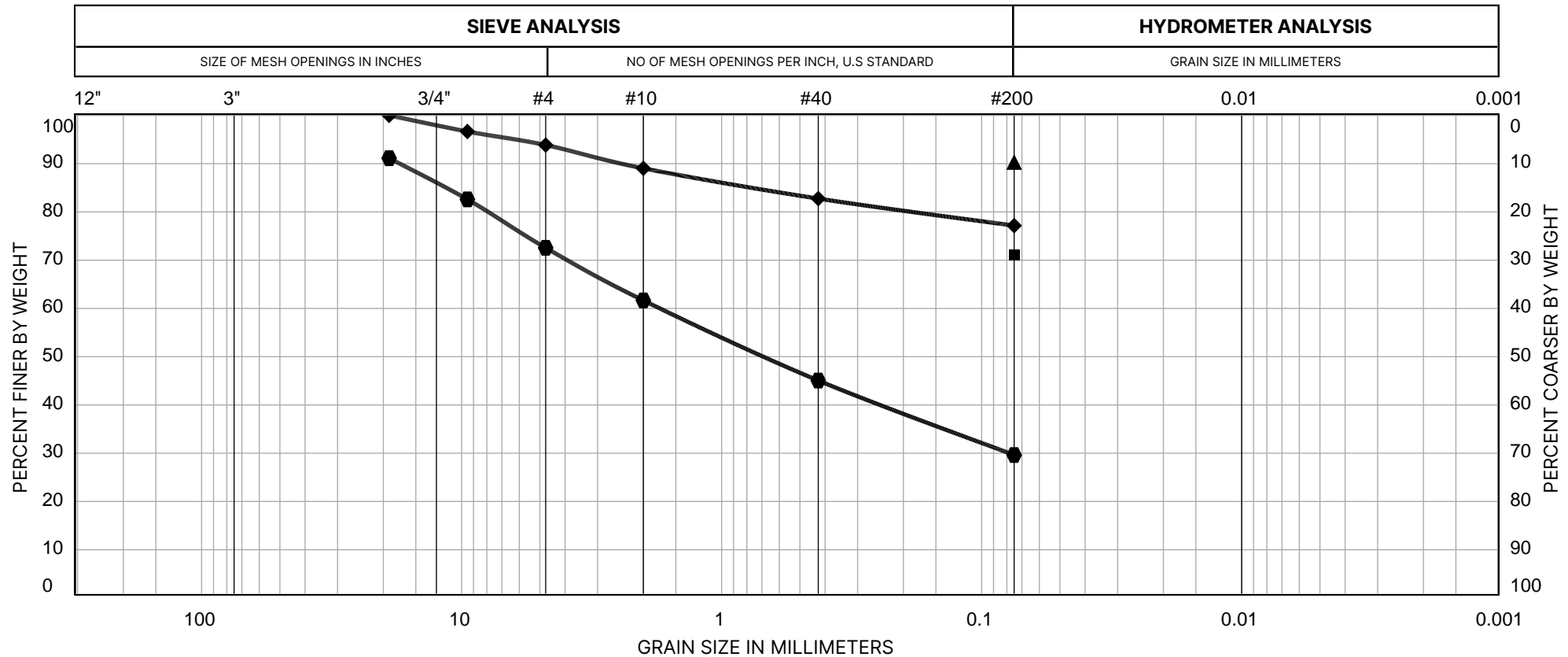


PROJECT	Bentonville West High School Athletics and Arts Expansion	PROJECT NO.	A25186.00135.000
CLIENT	Hight Jackson	LOCATION	1351 Gamble Road, Centerton, Arkansas



EXPLORATION	SAMPLE NUMBER	DEPTH	UNIFIED SOIL CLASSIFICATION SYSTEM (USCS) GROUP NAME	USCS SYMBOL	LL	PL	PI	FINES (%)	NAT MC (%)	TEST BY/RVW	TEST STD	TEST NOTE
B-1	SS-2	2	LEAN CLAY	CL	45	17	28	71	21.6		D4318	
B-1	SS-4	6	FAT CLAY, with sand	CH	55	26	29	77	28.8		D4318	
B-2	SS-2	2	LEAN CLAY	CL	33	19	14	90	23.3		D4318	
B-3	SS-3	4	CLAYEY SAND, with gravel	SC	60	27	33	30	26		D4318	
B-4	SS-2	2	CLAYEY SAND, with gravel	SC	35	22	13	43	18.4		D4318	
B-5	SS-3	4	SANDY LEAN CLAY	CL	42	18	24	66	22.9		D4318	
B-6	SS-2	2	SANDY LEAN CLAY	CL	40	20	20	68	20		D4318	
B-7	SS-2	2	CLAYEY GRAVEL, with sand	GC	33	19	14	19	14.3		D4318	

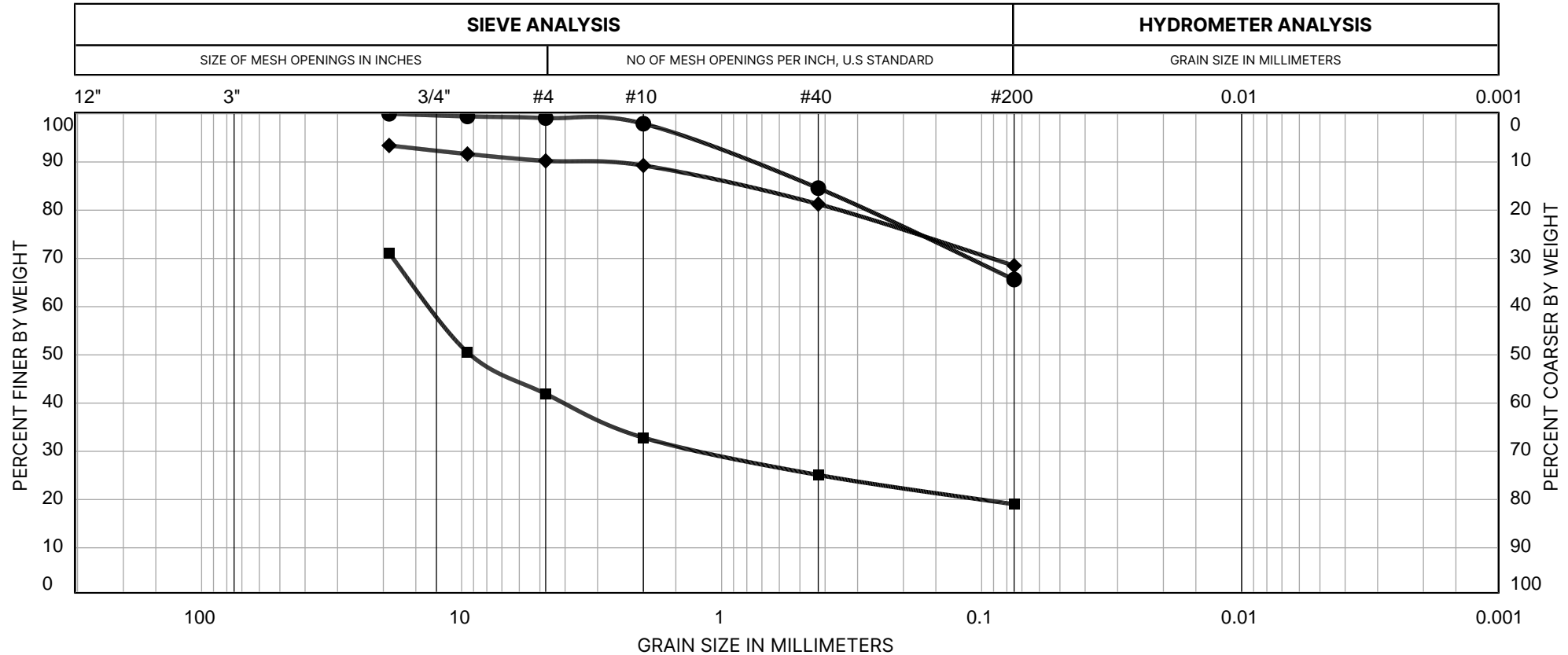
Bentonville West High School Athletics and Arts Expansion
1351 Gamble Road, Centerton, Arkansas



COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	Silt		Clay
	GRAVEL		SAND			FINES		

EXPLORATION	SAMPLE NUMBER	DEPTH	UNIFIED SOIL CLASSIFICATION SYSTEM (USCS) GROUP NAME	USCS SYMBOL	GRAVEL (%)	SAND (%)	FINES (%)	NAT WC (%)	TEST BY/RVW	NOTES
■	B-1	SS-2	2	LEAN CLAY	CL		71	21.6		
◆	B-1	SS-4	6	FAT CLAY, with sand	CH	6	17	77	28.8	
▲	B-2	SS-2	2	LEAN CLAY	CL		90	23.3		
●	B-3	SS-3	4	CLAYEY SAND, with gravel	SC	27	43	30	26	

Bentonville West High School Athletics and Arts Expansion
1351 Gamble Road, Centerton, Arkansas



COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	Silt		Clay
	GRAVEL		SAND			FINES		

EXPLORATION	SAMPLE NUMBER	DEPTH	UNIFIED SOIL CLASSIFICATION SYSTEM (USCS) GROUP NAME	USCS SYMBOL	GRAVEL (%)	SAND (%)	FINES (%)	NAT WC (%)	TEST BY/RVW	NOTES
●	B-5	SS-3	4	SANDY LEAN CLAY	CL	1	33	66	22.9	
◆	B-6	SS-2	2	SANDY LEAN CLAY	CL	10	22	68	20	
■	B-7	SS-2	2	CLAYEY GRAVEL, with sand	GC	58	23	19	14.3	