

# GEOTECHNICAL ENGINEERING REPORT

Casper College Wheeler Terrace Demolition  
475 College Drive  
Casper, Wyoming

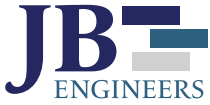
April 3, 2026

Prepared For:

Amundsen Associates  
Attn: Ron Shosh, Jr., AIA  
212 East Second Street  
Casper, Wyoming 82601

Prepared by:

JB Engineers  
341 East E Street, Suite 115  
Casper, Wyoming 82601



April 3, 2026

Mr. Ron Shosh, Jr., AIA  
Amundsen Associates  
212 East Second Street  
Casper, WY 82601  
P. 307.234.9999  
E. [rshosh@amundsenassociates.com](mailto:rshosh@amundsenassociates.com)

**RE: Geotechnical Engineering Report (02-25123)**  
Casper College Wheeler Terrace Demolition  
Casper, Wyoming

Greetings,

This report presents the results of the geotechnical engineering study for the proposed new apartment building or athletic courts to be located on College Drive in Casper, Wyoming. The geotechnical engineering report was prepared to evaluate the subsurface condition at the site and to provide geotechnical opinions and recommendations to support the proposed planning, design and construction of the project. We completed our services referencing our proposal dated November 14, 2025 (Revised November 21, 2025).

The report has been prepared to summarize the data obtained during this study, and to present conclusions and recommendations based on the proposed construction and subsurface conditions encountered. A discussion of geotechnical engineering considerations, opinions and recommendations related to construction is included in this report.

JB Engineers,

Jarron Mortimore  
Field Engineer  
205 Co. Rd. 128A, Suite 400  
Cheyenne, WY 82007  
P. 307.275.8706 / C. 307-921-8822  
E. [jarron.mortimore@jb-engineers.com](mailto:jarron.mortimore@jb-engineers.com)

Jared J. Jung, PE  
Principal Engineer  
341 East E Street, Suite 115  
Casper, WY 82601  
P. 307.333.4374 / C. 307.259.4302  
E. [jared.jung@jb-engineers.com](mailto:jared.jung@jb-engineers.com)



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                  Key to Symbols  
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## PURPOSE AND SCOPE OF STUDY

This report presents the results of the geotechnical engineering study for the proposed new apartment building or athletic courts to be located on College Drive in Casper, Wyoming. The geotechnical engineering report was prepared to evaluate the subsurface condition at the site and to provide geotechnical opinions and recommendations to support the proposed planning, design and construction of the project. We completed our services referencing our proposal dated November 21, 2025. Additional borings will be required once the building has been razed around the proposed project. In addition, grading information and development information will need to be reviewed for this report to be valid.

The field exploration program consisted of drilling five (5) exploratory borings to obtain information on the subsurface conditions at the site. The borings were generally located as shown on the Boring Location Diagram in **Appendix A**. Samples of the soil obtained during the field exploration were tested in our laboratory to determine physical and engineering characteristics and analyzed to develop design opinions and recommendations. The results of the field and laboratory testing are presented herein.

The report has been prepared to summarize the data obtained during this study, and to present conclusions and recommendations based on the proposed construction and subsurface conditions encountered. A discussion of geotechnical engineering considerations, opinions and recommendations related to construction is included in this report.

## PROJECT INFORMATION

### EXISTING SITE CONDITIONS

The site is located at 475 College Drive on the Casper College campus in Casper, Wyoming. There is an existing apartment/dorm building located on site. To the north of the proposed development area there is a slope viewed with water drainage. To the south of the borings there is a large hill with a parking lot located at the top. To the east of the borings is the campus of the college. To the west runs College Drive. The lot where the borings were placed is undeveloped and has vegetation. A photograph of the site is provided below:



**Photograph 1. View of Site**

## PROPOSED CONSTRUCTION

This project will include demolition of the existing building and foundations, sidewalks, stairs and south drive adjacent to building out to parking lot at the Casper College Wheeler Terrace in Casper, Wyoming. New construction will include a new apartment building or athletic courts. We expect that the apartment building will be a multiple story, metal framed structure. Athletic courts/concession building is also being considered for development at the site. We expect that the courts will be post-tensioned slabs.

## FIELD EXPLORATION

JB Engineers conducted the field exploration on March 2 and 3, 2026. Five (5) borings were drilled at the site to approximate depths ranging from 20 feet to 31.5 feet. The boring locations are shown on the Boring Location Diagram in **Appendix A**. A temporary piezometer was installed in each boring to monitor groundwater over extended periods.

The bore holes were advanced through the on-site soils with a CME-45 truck-mounted drill rig using 4-inch diameter solid-stem auger. A JB Engineers personnel logged the borings. Samples of the subsurface soils were obtained using a 1-3/8 inch inside diameter split barrel samplers. The samplers were driven into the various strata using a 140 lb. hammer falling 30 inches. The total number of blows required to advance the samplers each of three consecutive 6-inch increments was recorded and the sum of the second and third 6-inch increments was recorded as the penetration resistance value or SPT-N value. The testing was performed in accordance with ASTM D1586, Split Barrel Sampling. Penetration resistance values provide an indication of the relative density of granular soils or consistency of fine-grained soils. Depths at which the samples were obtained, and the penetration resistance values are shown on the boring logs.

Groundwater was checked during drilling. In addition, groundwater was checked on March 6, 2026 and April 1, 2026. The piezometers were backfilled with sand/auger cuttings and capped near the surface with a bentonite plug.

## LABORATORY TESTING

Samples of soil obtained during the field exploration were observed and visually classified in accordance with ASTM D2487, which is based on the Unified Soil Classification System. Samples were selected for testing to determine the engineering and physical properties in general accordance with ASTM or other generally recognized procedures. The following table summarizes the tests performed for this project:

<u>Test</u>	<u>ASTM Designation</u>
Natural Water Content	D2216
Particle Size Analysis	D1140
Atterberg Limits	D4318
Standard Proctor	D698
Consolidation/Swell Test	D4546
Water Soluble Sulfate	

Results of all laboratory tests are summarized on the Laboratory Test Summary in **Appendix B**, presented on the figures provided in **Appendix B**, and shown on the boring logs in **Appendix A**. The laboratory data, along with the visual field logging information, were used to prepare the final exploratory boring logs.

## **SUBSURFACE CONDITIONS**

Topsoil was encountered at the surface in each boring. Topsoil was noted at a depth of 6 inches at the bore hole locations. Contractors shall verify topsoil stripping depths as it may vary between boring locations. In general, the soils extending below the topsoil consisted of lean clay (CL) to fat clay (CH) overlaying bedrock consisting of claystone. Descriptions of each soil/bedrock type are provided below:

### **LEAN CLAY (CL), FAT CLAY(CH)**

Lean clay (CL) and fat clay (CH) were observed in each boring below the topsoil layer and extended to depths ranging from 1 to 10 feet. The clay appears to be highly decomposed claystone bedrock. The clays were brown in color and had a moist in-situ moisture content. The consistency of the clays were medium stiff to very stiff as indicated by SPT-N blow counts ranging from 5 to 22 blows per foot. Laboratory testing indicates plasticity index values on the order of approximately 17 to 33, indicating high plasticity. The clays had moderate to high swell potential based on the Atterberg limits and swell/consolidation testing. Laboratory tests are presented in **Appendix B**.

### **BEDROCK**

Bedrock consisting of claystone was encountered at the site with depth. The bedrock was slightly to highly cemented. Thin sand seams were observed within the stratum that were saturated. The bedrock was firm to very hard as indicated by SPT-N blow counts ranging from 23 to greater than 50 blows per foot. The bedrock was generally dark brown to light gray in color. Based on laboratory test results the bedrock is moderately to highly expansive. Laboratory tests are presented in **Appendix B**.

### **GROUNDWATER**

Groundwater was not encountered at the time of drilling. Subsequent groundwater readings were performed to date per the following table:

Boring No.	Depth to Groundwater, feet (3/6/26)	Depth to Groundwater, feet (4/1/26)
BH-1	27.7	27.7
BH-2	24.2	12.5
BH-3	12.8	13.0
BH-4	19.2	19.2
BH-5	16.3	16.3

Several thin and saturated sand seams were encountered within the claystone bedrock stratum. In addition, based on our experience with projects in the vicinity of the project site, springs and groundwater are erratic and prevalent. Numerous factors contribute to fluctuations of groundwater levels, and evaluation of such factors is beyond the scope of this study. Groundwater is expected to be encountered during construction during drilled pier excavations and/or utility excavations.

## **GEOTECHNICAL ENGINEERING OPINIONS AND RECOMMENDATIONS**

The recommended design and construction criteria presented below must be observed for the geotechnical engineering aspects of the project. The following construction details should be considered when preparing the project documents.

## EARTHWORK

### Site Grading

Grading plans were not complete at the time of this report. Final grading plans will be needed to review the recommendations in this report. We expect that fills of less than 4 feet will be required to establish design grades. Grade slopes in the area to a minimum of 3:1 (horizontal: vertical). Moisture condition, process and compact all fill per the **Compaction Requirements** section of this report.

### Site Preparation

Prepare the site by following the general recommendations provided below:

- Strip and remove topsoil and any deleterious material from the building or athletic court footprints, pavement areas, concrete flatwork areas, and any area to receive cuts and/or fills. Topsoil depths are noted at 6 inches on the boring logs in **Appendix A**. Contractors shall verify topsoil stripping depths when bidding on the project as variations are anticipated between bore hole locations.
- Proof roll any areas to receive fill with a loaded 10-ton dump truck or fully loaded water truck (or engineer approved equivalent) to check for loose or soft areas prior to placing new fill or structures.
- All fill and backfill must be approved by the geotechnical engineer. On-site soils can be used as fill material. All material must be processed into pieces smaller than 3 inches prior to being used as fill.

### Excavation/Trench Construction

Excavations required for mass grading, deep foundations, and utility trenches will extend into the overburden soils and claystone bedrock encountered at the site. In addition, we expect drilled piers will extend into bedrock. Conventional heavy-duty earth moving equipment will be sufficient for the proposed excavations at the site. It should be noted that the claystone bedrock was cemented in areas. Rock hammers or other means may be necessary to advance through bedrock encountered at the site. While it is the responsibility of the contractor to provide safe working conditions and to comply with OSHA standards in connection with underground excavations, the following guidelines are provided for planning purposes. The subgrade soil and trench conditions must be evaluated during construction by the contractor's competent person.

Plan excavations with water collection points and utilize conventional sumps and pumps to remove nuisance water runoff or precipitation. If site soil excavations are not immediately backfilled, they may degrade when exposed to runoff and require over-excavation and replacement with structural fill. We recommend construction activities and excavation backfilling be performed as rapidly as possible following excavation to reduce the potential for subgrades to degrade under construction traffic.

Groundwater was encountered at variable depths at the site. Dewatering must lower the groundwater level a minimum depth of 18 inches below excavation floors to reduce the potential of groundwater affecting the stability of the soils in the excavation bottoms.

### Compaction Requirements

Place fill in thin (8-inch maximum), uniform lifts and compacted to the following minimum percentages of the maximum dry unit weight as determined by ASTM D698 (Standard Proctor):

Area	Compaction (% of ASTM D698)
Structural Fill	95
Grade Beam Backfill	95
Utility Trenches	95
Overlot Fill (non-structural areas)	90

Place all fill material within minus 2 percent to plus 2 percent of the optimum moisture as determined by ASTM D698. The following shall be implemented during construction:

- **Drilled Pier Observations:** Drilled pier observations must be observed by JB Engineers to document and ensure the soils/bedrock encountered during construction are similar to those observed during this study.
- **Mass Grading / Over-excavation Backfill:** One compaction test every 2,500 square feet per foot lift of backfill.
- **Utility Trench Backfill:** One compaction test every 100 linear feet (lf) of trench per each 16-inch lift of backfill.

The contractor must understand and plan for the time required to process soil to meet the report requirements. Difficulty achieving required compaction may impact construction costs, schedules, and other project aspects. Allowing time and space (i.e., lay-down area) to process excavated site soil and facilitate proper moisture conditioning during dry weather is critical if the contractor plans to re-use the site soil as fill. Proper moisture conditioning or drying can help reduce compaction efforts and the need to import dry soil or aggregate.

### **BUILDING FOUNDATIONS**

Based on the results of our field investigation and laboratory testing, the material at the anticipated foundation bearing elevation has a moderate to high swell potential, which is not suitable for support of the proposed building on shallow foundations. Placing shallow foundations on expansive clay and claystone bedrock soils entails significant risk of differential movements because sufficient dead load cannot be exerted to counter the potential swelling pressures should soils become wetted. Support the building on drilled piers and grade beams. Building loads applied to the drilled piers are transmitted to the bedrock partially through skin friction which develops on the sides of the pier and partially through end bearing. Drilled piers have an advantage of providing high supporting capacity with a relatively small amount of movement.

The design and construction criteria presented below must be observed for drilled piers:

- Design drilled piers for an allowable end bearing pressure of 30,000 psf and an allowable skin friction of 2,500 psf. Skin friction should be neglected in the upper 2 feet of pier penetration into bedrock.
- Design piers for a minimum dead load of 6,000 psf based on pier end area only. If the minimum dead load pressure requirement cannot be achieved and the piers are spaced as far apart as practical, the pier length should be extended beyond the minimum pier length or bedrock penetration to make up for the dead load deficit. This can be accomplished by assuming one-half of the skin friction provided above acts in the direction to resist uplift caused by swelling materials.
- Design piers for a minimum penetration of 6 feet into competent bedrock. Design piers with a minimum length of 18 feet. Anticipated pier lengths are to be on the order of 18 feet based on the depth to bedrock.
- Reinforce piers the full length.

- Design piers for a minimum spacing of three pier diameters from center to center. Using this spacing, no reduction in axial or horizontal capacity is required. Piers that are spaced less than three pier diameters shall be studied on an individual basis to determine the appropriate reductions in both lateral and axial capacity.
- Design drilled piers to resist lateral loads using a modulus of horizontal subgrade reaction of 250 tcf for the portion of pier in bedrock and 25 tcf for the portion of the pier in overburden soils. Neglect the upper 5 feet in the lateral load analysis.
- Use concrete fluid mix with sufficient slump so that it will fill voids between reinforcing steel and the pier hole.
- Install a 4-inch void beneath grade beams and pier caps.
- Properly clean drilled piers prior to placement of concrete. Place concrete the same day the piers are drilled. Failure to place concrete the day of drilling will normally result in the requirement for additional bedrock penetration.
- Care shall be taken to avoid oversizing the tops of the piers. Mushroomed pier tops can reduce the effective dead load pressure on the piers.
- Groundwater was encountered at the site. If groundwater enters the pier hole during excavation, use a tremie pipe from the bottom of the pier hole upward to displace water. In no case shall concrete be placed with more than 3 inches of water using conventional concrete placement methods.

### **INTERIOR FLOOR SLABS**

Floor slabs present a difficult problem where low to moderate expansive materials are present near the floor slab elevation because sufficient dead load cannot be imposed on them to resist uplift pressure when the materials are wetted and expand. We recommend a structural floor for the building. The crawl-space shall be well ventilated.

As an alternative, a slab on-grade floor system can be considered provided additional risk of movement is accepted. We recommend the material beneath the floor slab be over-excavated or provide a minimum depth of 4 feet of separation from the potentially expansive material and the bottom of the slab. Use a non-expansive fill material under floor slabs with a minimum of 15% passing the No. 200 sieve and a Plasticity Index of less than 10 percent. The following recommendations must be followed:

- Scarify and recompact the upper 12 inches below floor slab area as outlined in the **Compaction Requirements** section of this report.
- Separate all bearing walls from columns with expansion joints, which allow for unrestrained vertical movement and reduction in differential movement.
- Floor slab control joints should be used to reduce damage due to shrinkage cracking. Provide joints in accordance with appropriate ACI criteria.
- Use a modulus of subgrade reaction (K) of 125 pci for the prepared on-site soils.
- The requirements for slab reinforcement and thickness should be established by the designer based on experience and the intended use of the slab.
- Floor slabs should not be placed on frozen subgrades.

### **EXTERIOR CONCRETE FLAT WORK**

Exterior flatwork located at doorways should consist of structural stoops to prevent differential movement and potentially cause difficulties with egress and opening doors. Use control joints to reduce damage due to shrinkage cracking. Provide joints a minimum of 12 feet apart and a minimum depth of a quarter of the slab thickness.

### **ATHLETIC COURTS**

Final plans are not completed at the issuance of this report. An alternative is to provide athletic courts. We can provide additional recommendations for athletic courts if needed depending on final design plans. We expect the courts would require an over-excavation on the order of 4 feet and replacement with import soil or post-tensioned slabs.

### **SITE DRAINAGE**

The following drainage precautions must be observed during construction and always maintained after the building has been completed. Detrimental foundation movement may occur if site grading and surface drainage recommendations are not followed since the near-surface soils are active and prone to significant volume change with variations in moisture. Landscaping that may be completed after the building is completed must not alter positive drainage away from the building.

- The ground surface adjacent to exterior foundations should be sloped to drain away from the foundations in all directions. We recommend a minimum slope of 6 inches in the first 10 feet (5%).
- Roof downspouts and drains should discharge well beyond the limits of the foundation wall backfill and should be well maintained over the life of the facility.
- Landscaping that requires irrigation should remain at least 8 feet from the structure.
- Cracks between buildings and exterior concrete flatwork and cracks that develop within exterior flatwork should be sealed and maintained to prevent surface water from infiltrating the subsurface soils.
- Backfill against footings, exterior walls, and in utility and sprinkler line trenches should be well compacted and free of all construction debris to reduce the possibility of moisture infiltration.
- Do not install landscape curbs, flatwork, or other landscaping that impairs drainage away from the structure.

### **SITE CONCRETE/CORROSION**

The concentration of water-soluble sulfates measured in a sample of the on-site lean clay soil obtained at a depth of one foot was 0.22%. This concentration of water-soluble sulfates represents a moderate degree of attack on concrete exposed to these materials. This degree of attack is based on the scale presented in ACI Manual of Concrete Practice, Section 225R, Table 6.5 of mild, moderate, severe, and very severe. We recommend using Type II-modified or Type V cement, and a minimum compressive strength of 4,500 psi.

### **LIMITATIONS**

This study has been conducted in accordance with generally accepted geotechnical engineering practices in this area for use by the client for design purposes. The conclusions and recommendations submitted in this report are based upon the design data submitted to JB Engineers, data obtained from the exploratory borings drilled at the locations indicated on the Boring Location Diagram, and the proposed construction discussed in this report. The nature and extent of subsurface variations across the site may not become evident until construction. During construction, if fill, soil, bedrock or water conditions appear to be different from those described herein, this office should be advised at once so that we may re-evaluate the recommendations made.

This report has been prepared for the exclusive use by our client for design purposes. We are not responsible for technical interpretations by others of our exploratory information which has not been described or documented in this report. As the project evolves, we should provide continued consultation and field services during construction to review and monitor the implementation of our recommendations, and to verify that the recommendations have been appropriately interpreted. Significant design changes may require additional analysis or modifications of the recommendations presented herein. We recommend on-site observation of excavations and foundation bearing strata and testing of all fill by a representative of the geotechnical engineer.

Additional design information must be provided for this report to be valid including final development plans, site grading information, and loading information.

DRAFT

**Appendix A – Boring Location Diagram  
Key to Symbols  
Subsurface Diagram  
Boring Logs (BH-1 through BH-5)**

DRAFT





**BORING LOCATION DIAGRAM**

**Wheeler Terrace**  
 475 College Drive  
 Casper, Wyoming

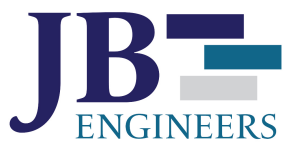
Project No. 02-25123

Legend

 BORING LOCATION



NOT TO SCALE







CLIENT Amundsen Associates

PROJECT NAME Wheeler Terrace




PROJECT NUMBER 02-25123

PROJECT LOCATION 475 College Drive, Casper, WY

**LITHOLOGIC SYMBOLS**  
*(Unified Soil Classification System)*

-  CH: USCS High Plasticity Clay
-  CL: USCS Low Plasticity Clay
-  CLAYSTONE: ROCK
-  TOPSOIL: Topsoil




**SAMPLER SYMBOLS**

-  Bulk Sample
-  California Sampler
-  Split Spoon

**WELL CONSTRUCTION SYMBOLS**

**ABBREVIATIONS**

- LL - LIQUID LIMIT (%)
- PI - PLASTIC INDEX (%)
- W - MOISTURE CONTENT (%)
- DD - DRY DENSITY (PCF)
- NP - NON PLASTIC
- 200 - PERCENT PASSING NO. 200 SIEVE
- PP - POCKET PENETROMETER (TSF)

- TV - TORVANE
- PID - PHOTOIONIZATION DETECTOR
- UC - UNCONFINED COMPRESSION
- ppm - PARTS PER MILLION
-  Water Level at Time Drilling, or as Shown
-  Water Level at End of Drilling, or as Shown
-  Water Level After 24 Hours, or as Shown



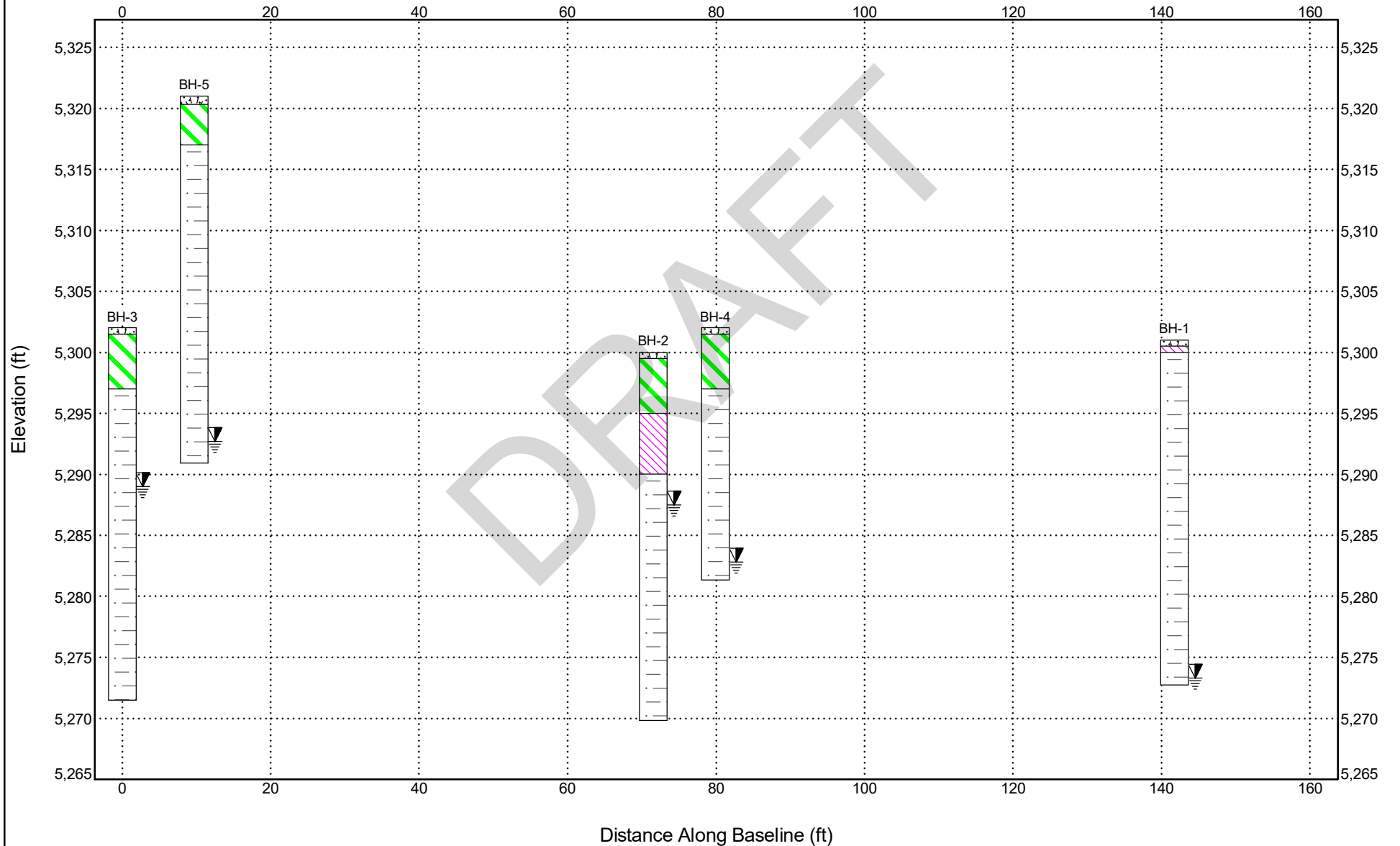
# SUBSURFACE DIAGRAM Wheeler Terrace

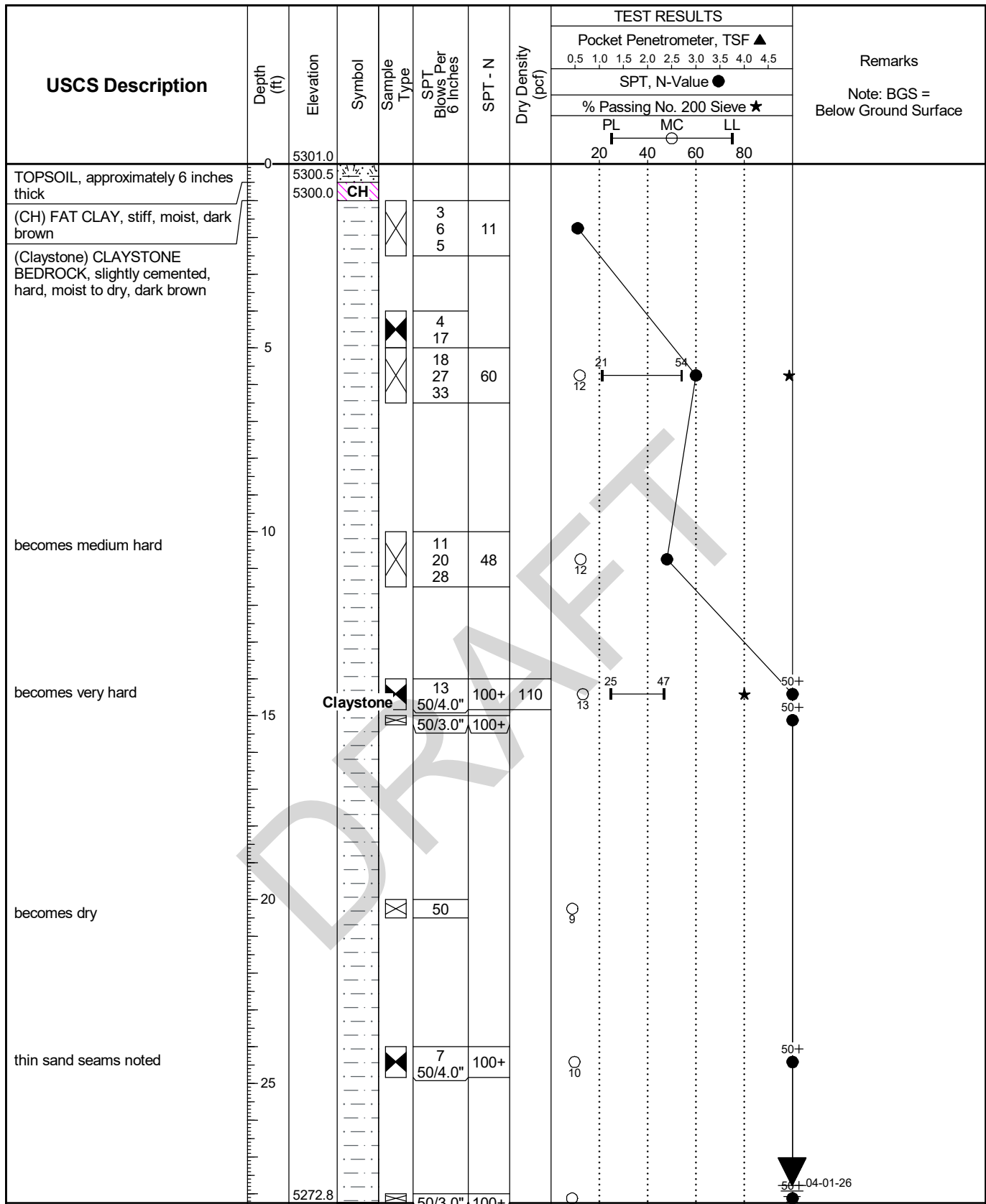
CLIENT Amundsen Associates

PROJECT NAME Wheeler Terrace

PROJECT NUMBER 02-25123

PROJECT LOCATION 475 College Drive, Casper, WY



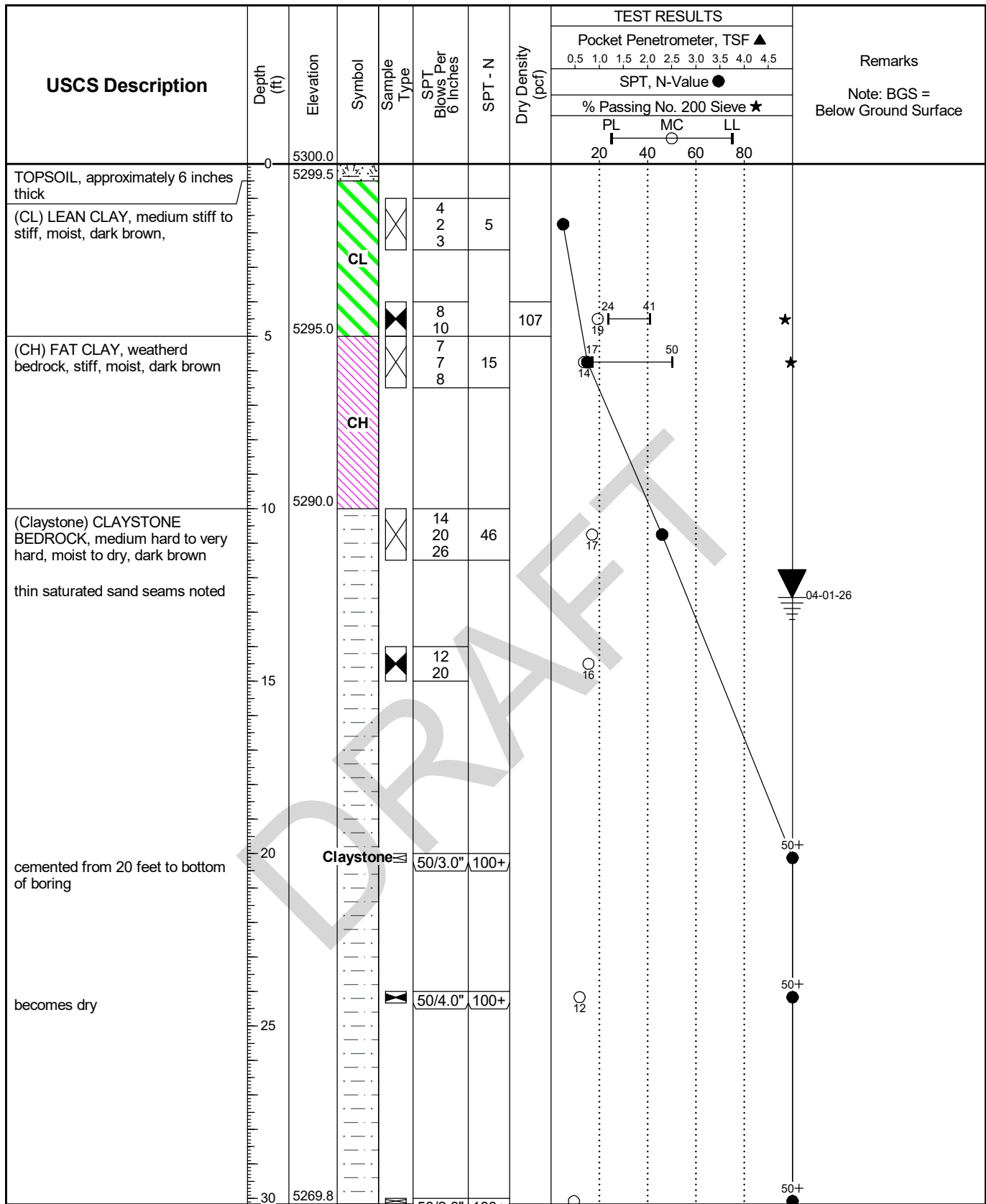


Borehole Terminated at 28.3 Feet.

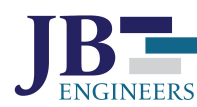
<b>Project Name:</b> Wheeler Terrace, 475 College Drive, Casper, WY			
<b>Project Number:</b> 02-25123		<b>Client:</b> Amundsen Associates	
<b>Date Drilled:</b> 3/2/2026	<b>Drill Rig:</b> CME-45	<b>Borehole Dia.:</b> 4"	
<b>Groundwater Depth:</b> N.E.	<b>Drilled By:</b> JB Drilling	<b>Logged By:</b> T. James	



## BORING LOG BH-1



**Project Name:** Wheeler Terrace, 475 College Drive, Casper, WY  
**Project Number:** 02-25123    **Client:** Amundsen Associates  
**Date Drilled:** 3/2/2026    **Drill Rig:** CME-45    **Borehole Dia.:** 4"  
**Groundwater Depth:** N.E.    **Drilled By:** JB Drilling    **Logged By:** T. James



**BORING LOG  
BH-2**

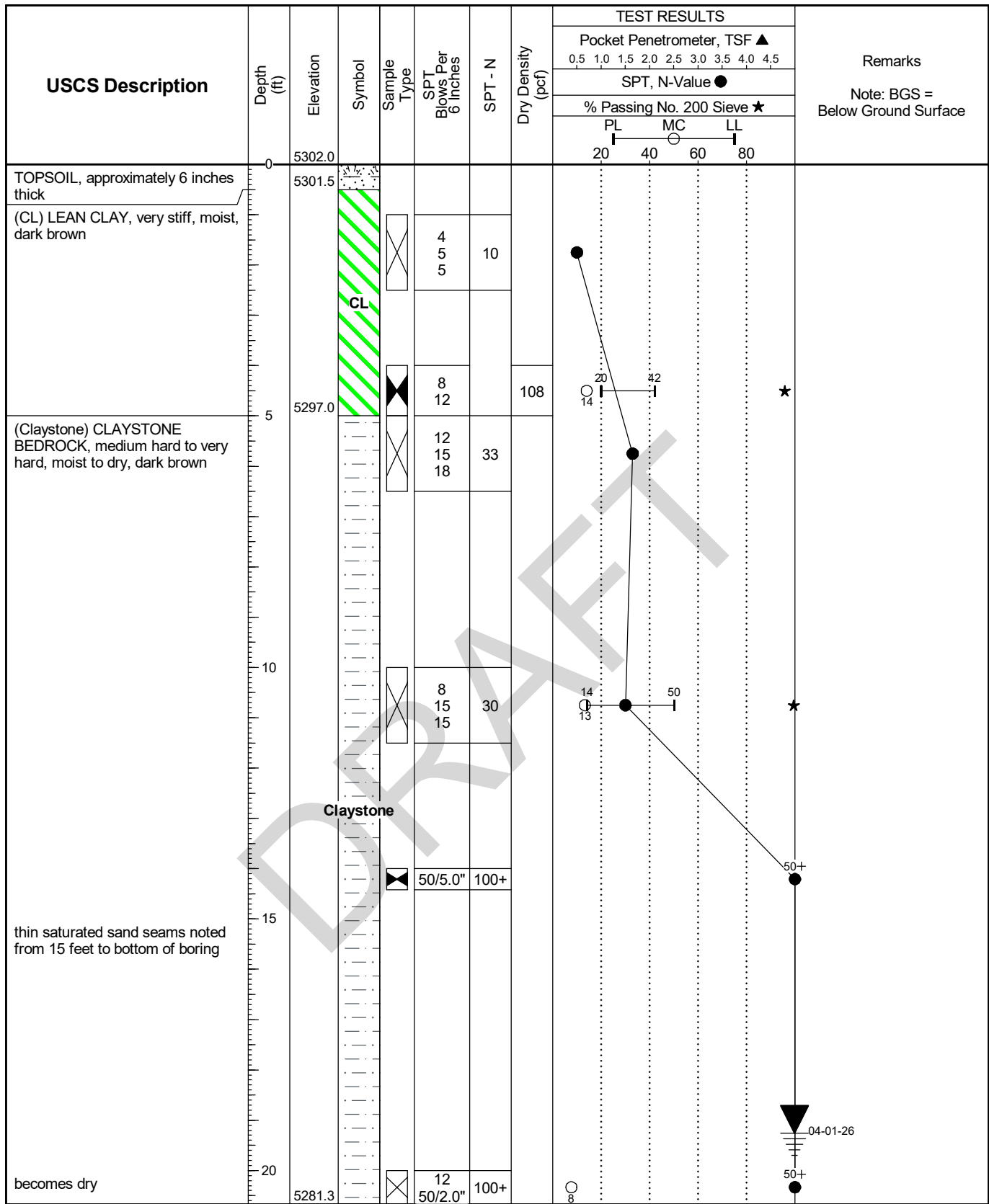
USCS Description	Depth (ft)	Elevation	Symbol	Sample Type	SPT Blows Per 6 Inches	SPT - N	Dry Density (pcf)	TEST RESULTS			Remarks
								Pocket Penetrometer, TSF ▲			
								SPT, N-Value ●			
								% Passing No. 200 Sieve ★			
								PL	MC	LL	
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5											
20 40 60 80											
TOPSOIL, approximately 6 inches thick	0	5302.0									
(CL) LEAN CLAY, very stiff, moist, dark brown	0 - 5	5301.5	CL	⊗	7 9 10	19					
(Claystone) CLAYSTONE BEDROCK, firm to very hard, moist to dry, dark brown	5	5297.0		⊗	6 8 8 10 13	23	114			★	
thin saturated sand seams noted below 10 feet	10			⊗	12 19 33	52		22	51	★	
	15			⊗	20 50/3.0"	100+				★	
becomes dry	20		Claystone	⊗	50/4.0"	100+		12 9	58	★	
	25			⊗	6 50/4.0"	100+				★	
	30	5271.5		⊗	50					★	

Borehole Terminated at 30.5 Feet.

Project Name: Wheeler Terrace, 475 College Drive, Casper, WY			
Project Number: 02-25123		Client: Amundsen Associates	
Date Drilled: 3/2/2026	Drill Rig: CME-45	Borehole Dia.: 4"	
Groundwater Depth: N.E.	Drilled By: JB Drilling	Logged By: T. James	



**BORING LOG  
BH-3**

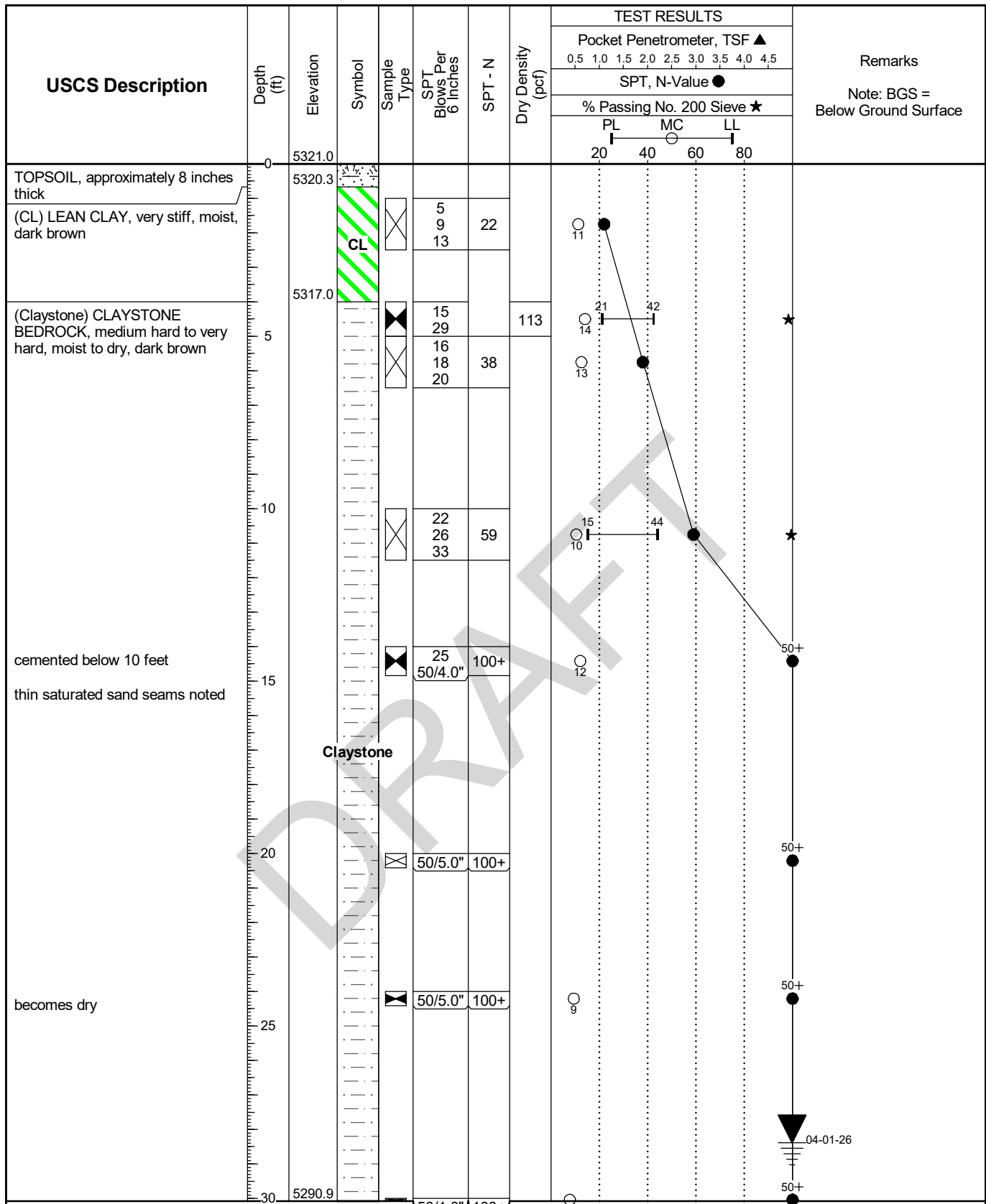


Borehole Terminated at 20.7 Feet.

, Project Name: Wheeler Terrace, 475 College Drive, Casper, WY			
Project Number: 02-25123		Client: Amundsen Associates	
Date Drilled: 3/2/2026	Drill Rig: CME-45	Borehole Dia.: 4"	
Groundwater Depth: N.E.	Drilled By: JB Drilling	Logged By: T. James	

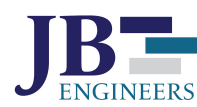


## BORING LOG BH-4



Borehole Terminated at 30.1 Feet.

<b>Project Name:</b> Wheeler Terrace, 475 College Drive, Casper, WY			
<b>Project Number:</b> 02-25123		<b>Client:</b> Amundsen Associates	
<b>Date Drilled:</b> 3/3/2026	<b>Drill Rig:</b> CME-45	<b>Borehole Dia.:</b> 4"	
<b>Groundwater Depth:</b> N.E.	<b>Drilled By:</b> JB Drilling	<b>Logged By:</b> T. James	



## BORING LOG BH-5

**Appendix B – Laboratory Test Results**

DRAFT



# SUMMARY OF LABORATORY RESULTS

CLIENT Amundsen Associates

PROJECT NAME Wheeler Terrace

PROJECT NUMBER 02-25123

PROJECT LOCATION 475 College Drive, Casper, WY

Borehole	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%-#200 Sieve	Classification	Water Content (%)	Dry Density (pcf)	Saturation (%)	Void Ratio
BH-1	5.0	54	21	33	1.18	99	CH	11.9			
BH-1	10.0							12.2			
BH-1	14.0	47	25	22	1.18	80	CL	13.2	110.1		
BH-1	20.0							8.8			
BH-1	24.0							9.7			
BH-1	28.0							8.7			
BH-2	4.0	41	24	17	2.36	97	CL	19.3	107.4		
BH-2	5.0	50	17	33	2.36	99	CH	13.6			
BH-2	10.0							17.0			
BH-2	14.0							15.5			
BH-2	24.0							11.8			
BH-2	30.0							9.5			
BH-3	1.0							13.6			
BH-3	4.0	32	16	16	0.3	99	CL	16.3	114.0		
BH-3	10.0	51	22	29	0.6	99	CH	11.4			
BH-3	20.0	58	12	46	0.3	100	CH	8.6			
BH-3	24.0							10.4			
BH-4	4.0	42	20	22	9.5	96	CL	14.0	107.8		
BH-4	10.0	50	14	36	0.6	99	CH	13.3			
BH-4	20.0							7.7			
BH-5	1.0							11.3			
BH-5	4.0	42	21	21	9.5	98	CL	14.1	112.7		
BH-5	5.0							12.6			
BH-5	10.0	44	15	29	1.18	99	CL	10.5			
BH-5	14.0							12.1			
BH-5	24.0							9.4			
BH-5	30.0							7.8			
BULK 1-4	1.0	42	17	25	4.75	91	CL				



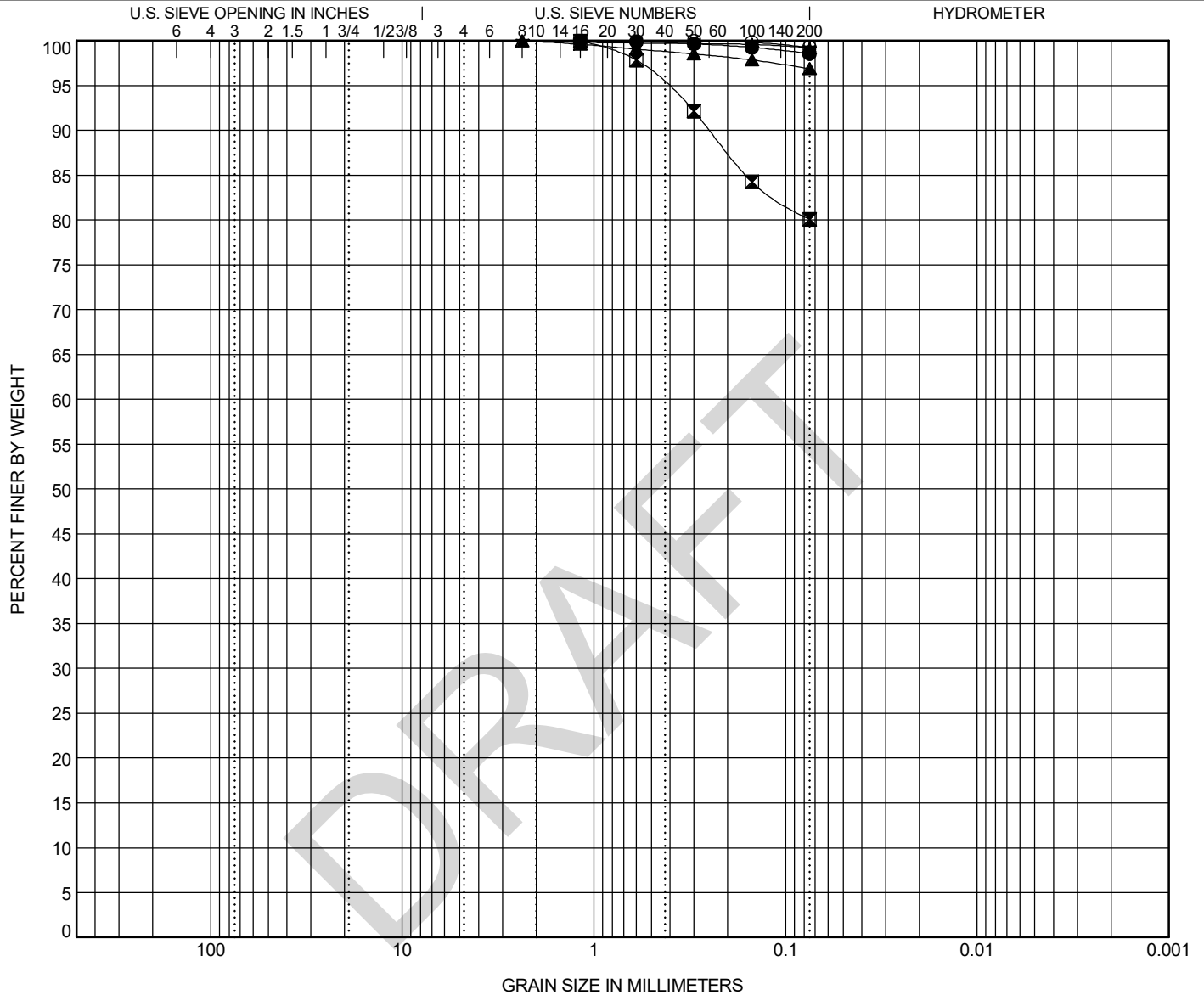
# GRAIN SIZE DISTRIBUTION

CLIENT Amundsen Associates

PROJECT NAME Wheeler Terrace

PROJECT NUMBER 02-25123

PROJECT LOCATION 475 College Drive, Casper, WY





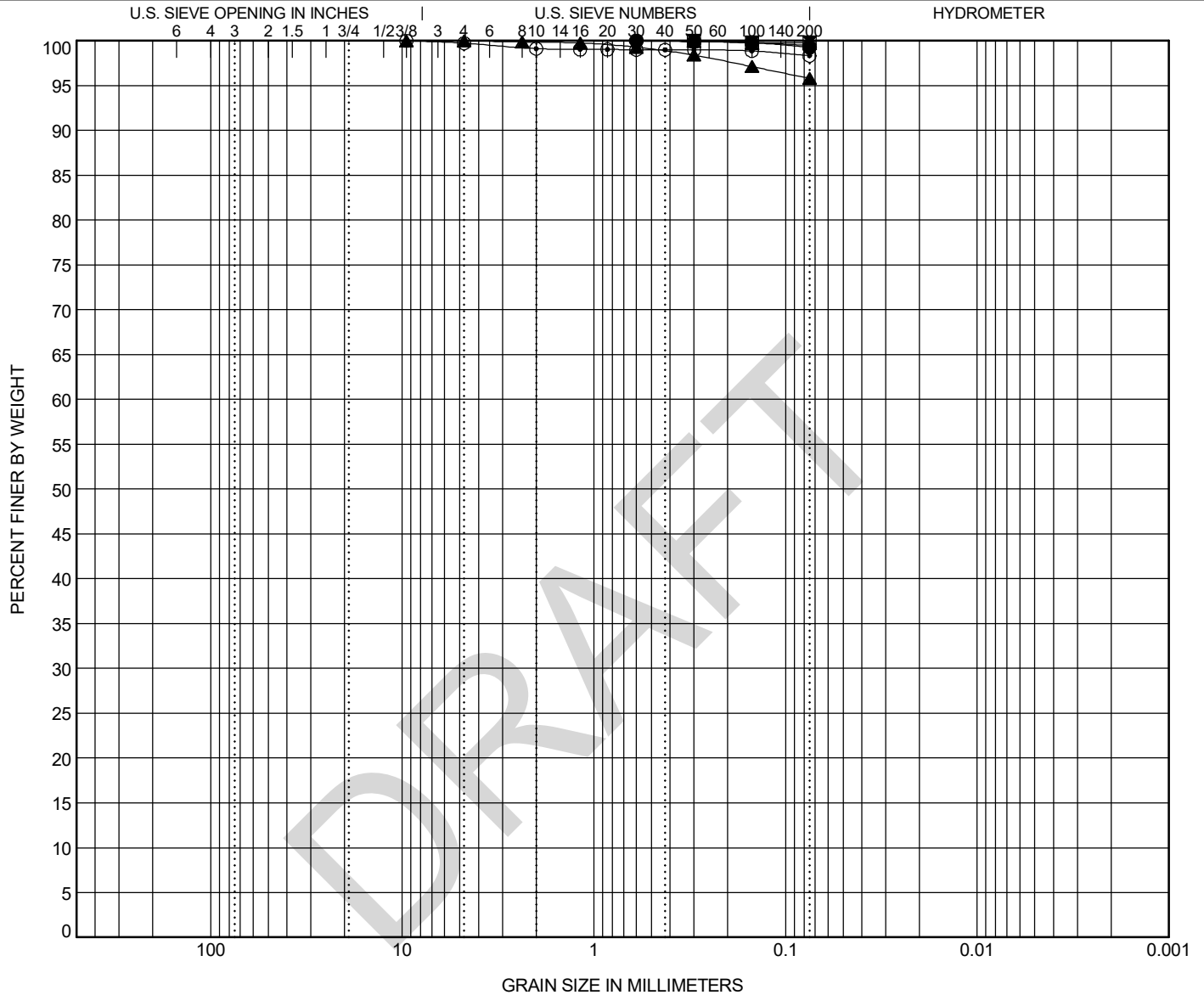
# GRAIN SIZE DISTRIBUTION

CLIENT Amundsen Associates

PROJECT NAME Wheeler Terrace

PROJECT NUMBER 02-25123

PROJECT LOCATION 475 College Drive, Casper, WY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification					LL	PL	PI	Cc	Cu
● BH-3	10.0	CLAYSTONE BEDROCK					51	22	29		
☒ BH-3	20.0	CLAYSTONE BEDROCK					58	12	46		
▲ BH-4	4.0	LEAN CLAY(CL)					42	20	22		
★ BH-4	10.0	CLAYSTONE BEDROCK					50	14	36		
◎ BH-5	4.0	CLAYSTONE BEDROCK					42	21	21		
BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
● BH-3	10.0	0.6				0.0	0.7	99.3			
☒ BH-3	20.0	0.3				0.0	0.2	99.8			
▲ BH-4	4.0	9.5				0.0	4.2	95.8			
★ BH-4	10.0	0.6				0.0	0.5	99.5			
◎ BH-5	4.0	9.5				0.3	1.4	98.4			







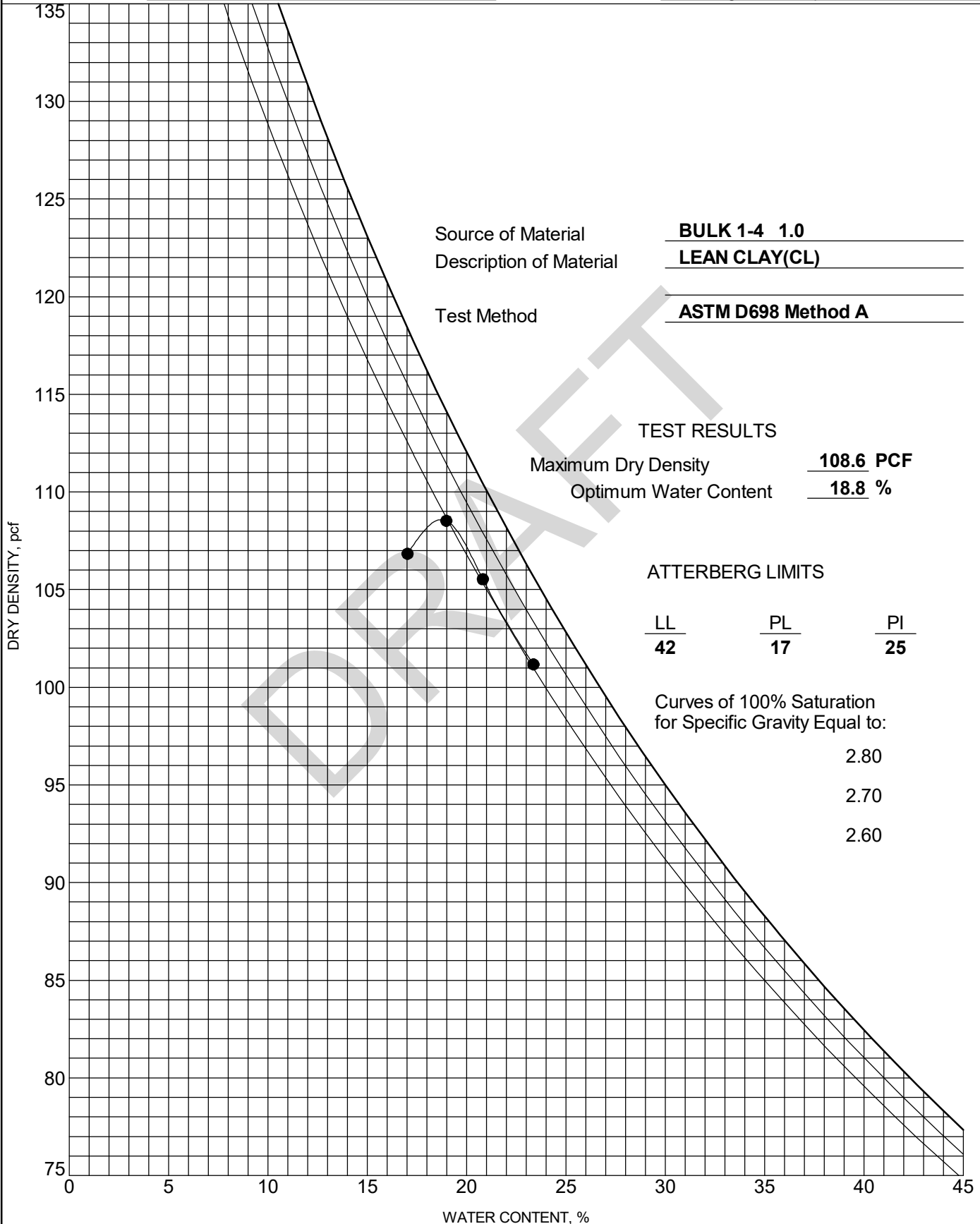
# MOISTURE-DENSITY RELATIONSHIP

CLIENT Amundsen Associates

PROJECT NAME Wheeler Terrace

PROJECT NUMBER 02-25123

PROJECT LOCATION 475 College Drive, Casper, WY





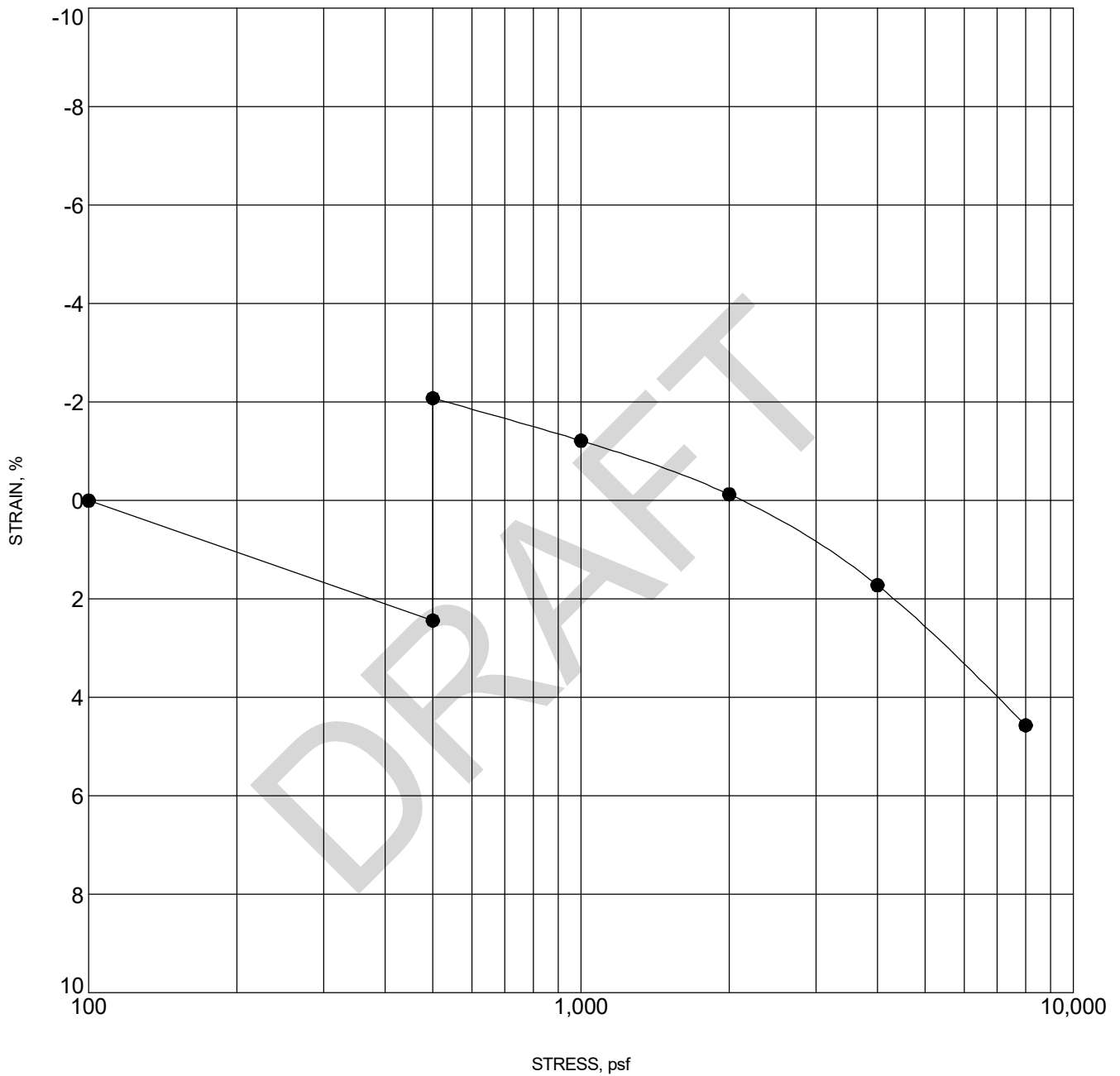
# CONSOLIDATION TEST

CLIENT Amundsen Associates

PROJECT NAME Wheeler Terrace

PROJECT NUMBER 02-25123

PROJECT LOCATION 475 College Drive, Casper, WY



BOREHOLE	DEPTH	Classification	$\gamma_d$	MC%
● BH-1	14.0	CLAYSTONE BEDROCK	110	13



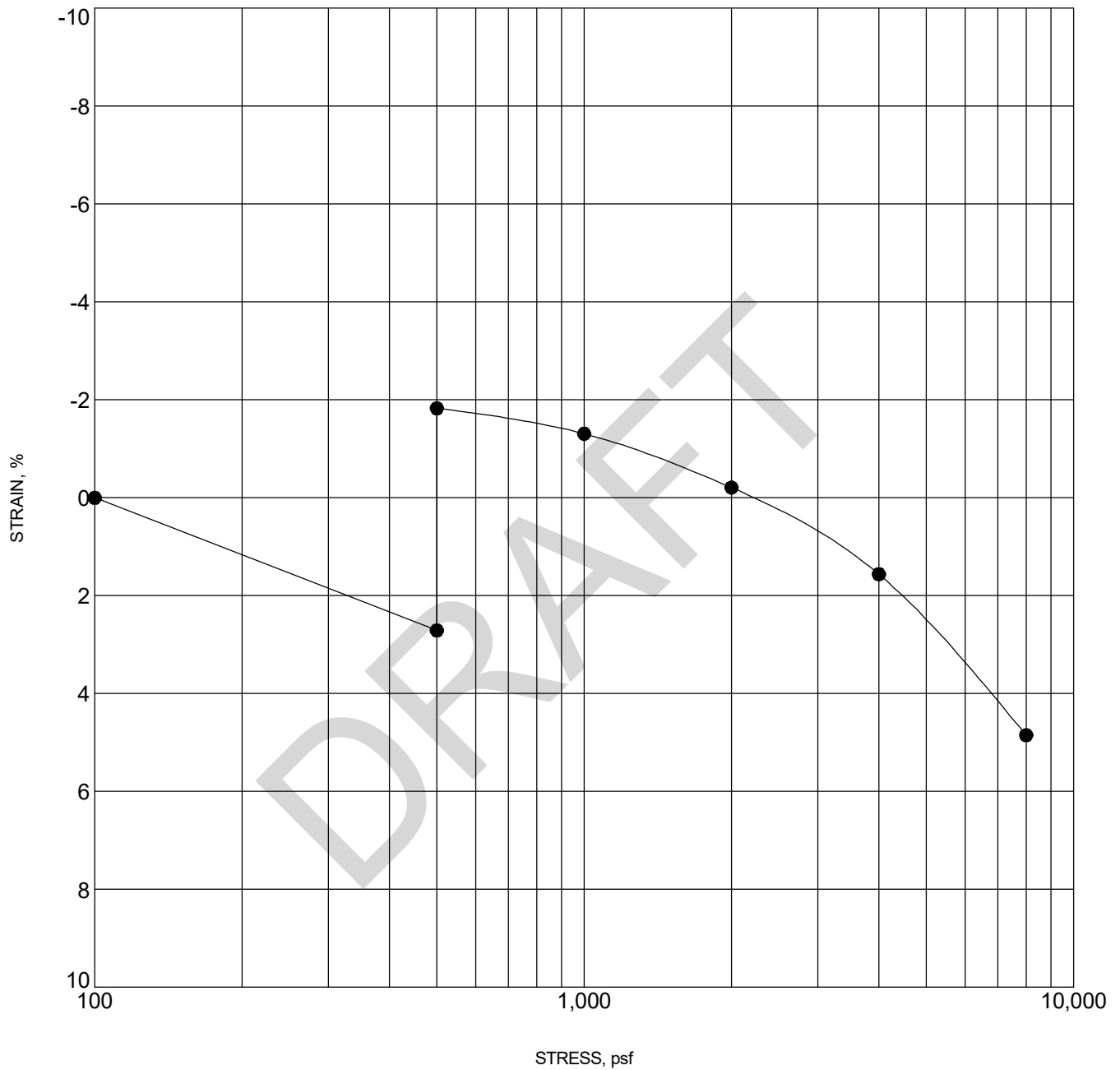
# CONSOLIDATION TEST

CLIENT Amundsen Associates

PROJECT NAME Wheeler Terrace

PROJECT NUMBER 02-25123

PROJECT LOCATION 475 College Drive, Casper, WY



BOREHOLE	DEPTH	Classification	$\gamma_d$	MC%
● BH-2	4.0	LEAN CLAY(CL)	107	19



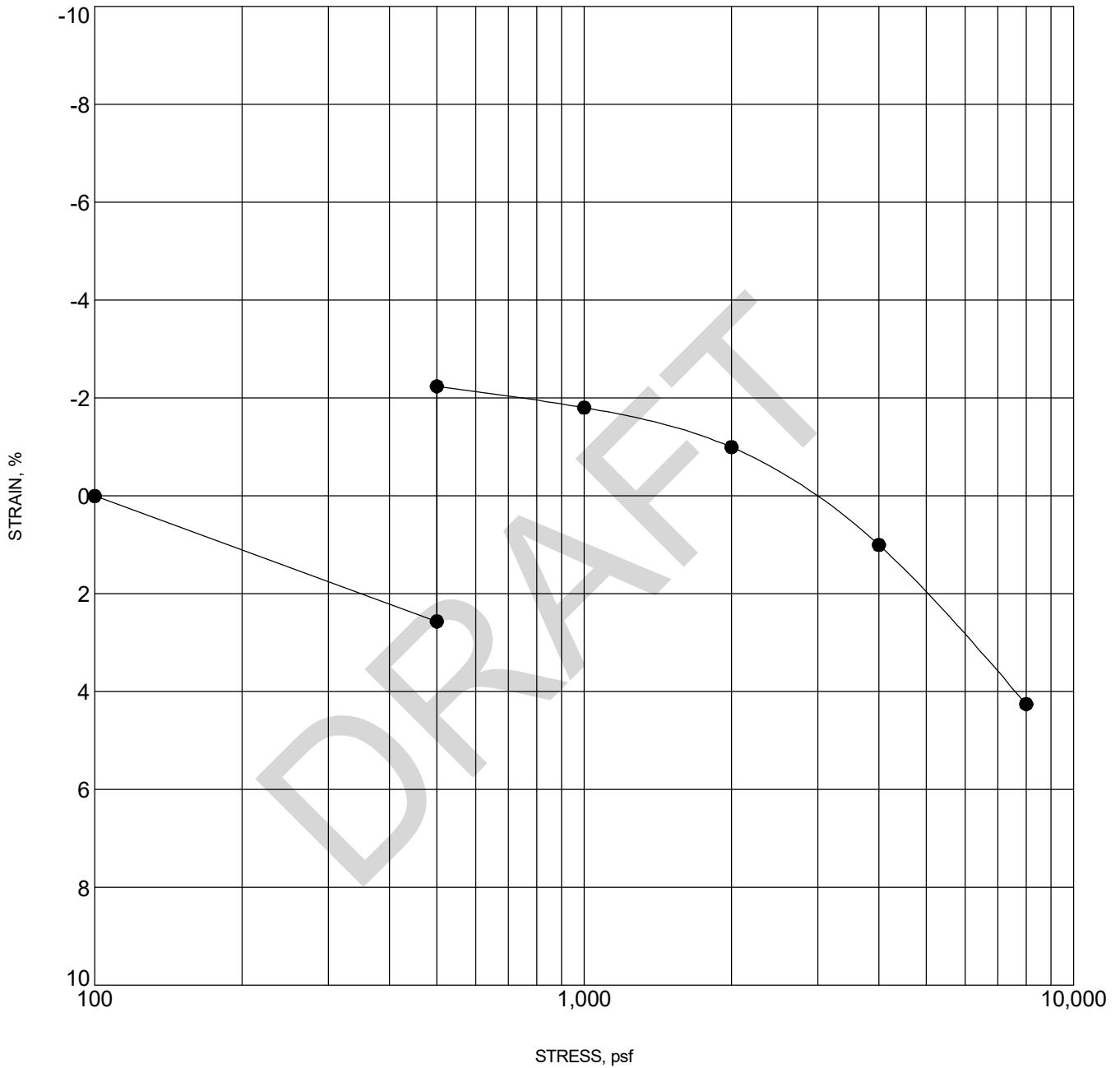
# CONSOLIDATION TEST

CLIENT Amundsen Associates

PROJECT NAME Wheeler Terrace

PROJECT NUMBER 02-25123

PROJECT LOCATION 475 College Drive, Casper, WY



BOREHOLE	DEPTH	Classification	$\gamma_d$	MC%
● BH-3	4.0	LEAN CLAY(CL)	114	16



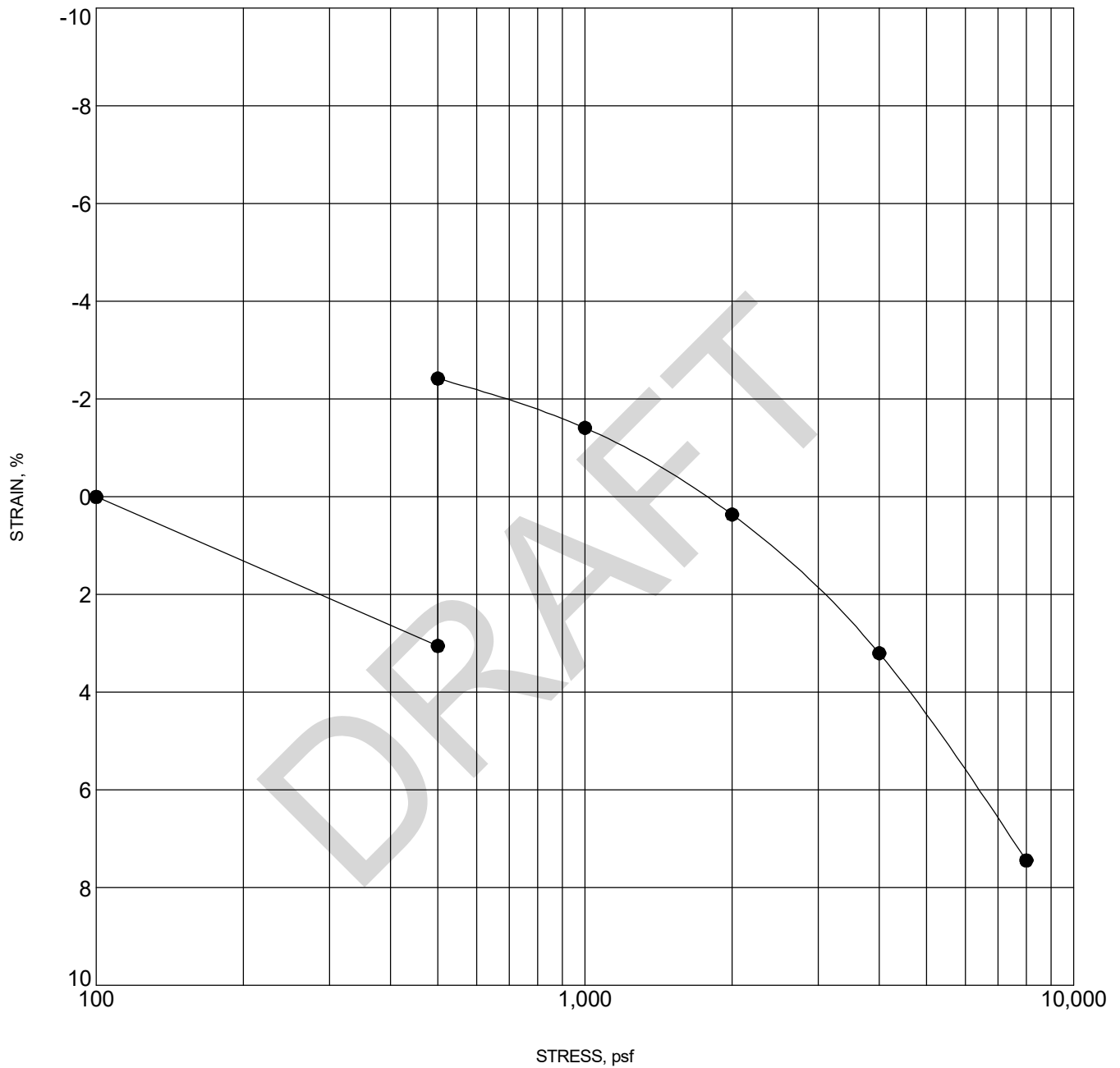
# CONSOLIDATION TEST

CLIENT Amundsen Associates

PROJECT NAME Wheeler Terrace

PROJECT NUMBER 02-25123

PROJECT LOCATION 475 College Drive, Casper, WY



BOREHOLE	DEPTH	Classification	$\gamma_d$	MC%
● BH-4	4.0	LEAN CLAY(CL)	108	14



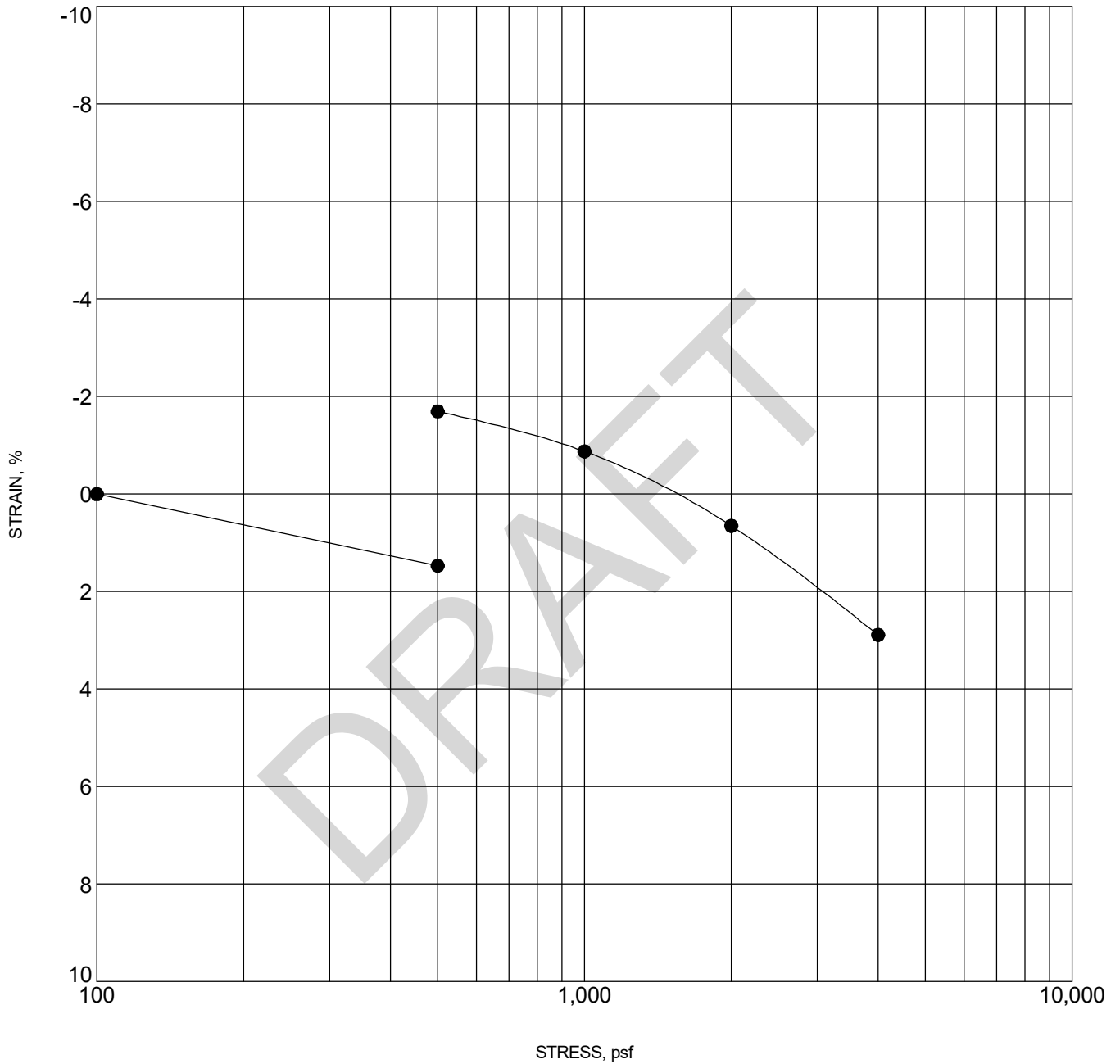
# CONSOLIDATION TEST

CLIENT Amundsen Associates

PROJECT NAME Wheeler Terrace

PROJECT NUMBER 02-25123

PROJECT LOCATION 475 College Drive, Casper, WY



BOREHOLE	DEPTH	Classification	$\gamma_d$	MC%
● BH-5	4.0	CLAYSTONE BEDROCK	113	14