GEOTECHNICAL DESIGN REPORT

SAN JUAN SCHOOL DISTRICT

LYMAN MIDDLE SCHOOL

BLANDING, UTAH 84511

JULY 25, 2025

Moab Geotechnical Group

July 25, 2025

Tyrel Pemberton
San Juan School District, Business Administrator
200 N Main Street
Blanding UT, 84511

Mr. Pemberton,

We prepared this design-level geotechnical report for the proposed security upgrades and building addition to the Lyman Middle School, in Blanding, Utah in general conformance with the 2021 International Building Council (IBC). The following design recommendations and construction considerations were prepared based on findings from the field studies and subsequent laboratory testing. Based on our findings, the proposed development is feasible provided the following recommendations and considerations are followed.

We appreciate the opportunity to provide this service for you. If there are any questions or comments related to the information contained within, please call and we will be glad to discuss them with you.

Sincerely,

REGISTERED PROFESSIONAL ENGINEER
0113401-2202
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ELECTRONIC SEAL
STATE OF UTAH

Taylor Hall, PE
Principal

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INTRODUCTION

This report provides design recommendations and construction considerations for security upgrades and building addition at the San Juan School District (SJSD) Albert R Lyman Middle School, located at 525 North 100 East, in Blanding, Utah (the Project), see Figure 1.

The recommendations are based on the findings from the field investigation and subsequent laboratory testing. Should the structures and proposed site development change from what has been detailed in this report, Moab Geotechnical Group (MGG) should be contacted immediately to determine the relevance of the following recommendations and considerations.

1.1 Scope of Services

The following scope of services were performed in accordance with the Professional Services Agreement, signed and dated July 3, 2025.

- Performed field logging services for five test pits on the property near the proposed addition and improvements,
- Perform DCP testing in the pavement area,
- A licensed Professional Engineer logged the test pits, classified soil samples in the field, and collected representative soil samples for supplemental testing,
- Representative soil samples were tested for additional classification and soil properties,
- Findings from the field investigation and laboratory testing were used to quantify potential geological hazards that may exist at the site, and
- This report was prepared to summarize recommendations and construction considerations for the Project.

Additional services to support the construction of the project are discussed later in this report for your consideration. Experience has shown these additional services help ensure the following recommendations are consistent with findings during construction. Subsurface conditions are inherently heterogenous and often change over short distances.

1.2 Project Description

Based on the MHTN Architects plans dated Jun 5, 2025, the security upgrades at the middle school will include a driveway access along the southern limits of the existing school, additional parking, and a single-story structure addition located on the north side of the existing structure. The addition will be about 3,200 square feet and contain two classrooms and a hallway that exits onto the existing patio area.

1.3 Existing and Historic Information

Based on conversations with the SJSD personnel at the time of the field exploration, the area where the driveway access and parking will be constructed is in place of a prior parking lot that requires imported fill to construct. Based on a review of publicly available historical ariels, the property remained used for agricultural purposes from 1953 until between 1955 and 1963 when the school structure appears. In 1980 imagery, the an area between 500 North and the structure appears paved with asphalt. Between 1997 and 2004, the school appears in its current state the previously paved area is absent.

2 SITE CHARACTERIZATION

Moab Geotechnical Group (MGG) performed a field investigation for the Project using exploratory test pits, drop cone penetrometers (DCP) and by collecting representative soil samples using a variety of sampling techniques. Laboratory testing was performed to further characterize the subsurface soils and rock following the field studies.

2.1 Exploratory Test Pits

San Juan School District provided the equipment and operator to excavate and backfill the exploratory test pits. Three test pits were excavated in the area of the proposed driveway and parking areas and two were performed in the proposed structure footprint, see Figure 2. The test pits were excavated using a Kubota KX040-4 with a one-foot-wide bucket to their terminal depths.

Representative samples of the subsurface soils were collected by a Professional Engineer and logged in the field in general accordance with the Unified Soil Classification System. Disturbed samples were collected into plastic bags and sealed at the time of excavation. A five-gallon-bucket bulk sample of native soils was collected from TP-02. Test pits were backfilled with spoils upon completion.

Logs of the test pits are provided in Appendix A. The test pit locations were not surveyed at the time of this report being prepared and should be considered approximate. The reported latitude and longitude of the test pits have been estimated using handheld GPS units with reported accuracy of 10 feet and the elevations have been estimated using a USGS digital elevation model with a resolution of 1/3rd arc-second (USGS, 2022).

2.2 Dynamic Cone Penetrometer

Four Dynamic Cone Penetrometer (DCP) tests (DCP-01 through DCP-04) were conducted in accordance with ASTM D6951 using a hand-held 17.6-pound drop hammer and sacrificial 60° cone tips with a diameter of 0.79 inches. The purpose of the testing was to characterize the near-surface soils across the pavement areas. Exploration locations are illustrated in Figure 2.

DCP testing provides empirical correlations to California Bearing Ratio (CBR), elastic modulus, and allowable bearing capacity, as summarized in Exhibit 2-2. Correlation charts and interpreted plots are presented in Appendix C.

Exhibit 2-1 DCP Correlations

Parameter	Correlation	Reference
Depth per Impact (DPI)	Calculated in inches/blow	N/A
California Bearing Ratio (CBR)	CBR (%) = 292 / $(DPI*25.4)^{1.12}$ [DPI in in/blow]	ASTM, 2023
Elastic Modulus	E_{DPI} (MPa) = $10^{3.04758-[1.06166\log(DPI)]}$ [DPI in mm/blow]	Lockwood et al., 1992
Bearing Capacity	q (psi) = 3.794 *$CBR^{0.664}$	Packard, R.G., 1973

2.3 Laboratory Testing

Laboratory testing was performed on select soil samples by MGG and by Chemtech-Ford Laboratories in Sandy, Utah. Laboratory testing consisted of the following:

- Index Testing
  - Moisture Content (ASTM D2216)
  - Density and Unit Weight of Soil (ASTM D7263)
  - Atterberg Limits (ASTM D4318)
  - Material Finer than No. 200 Sieve (ASTM D1140)
- Compaction Characteristics
  - Modified Proctor (ASTM D1557)

Results of the laboratory tests are provided in Appendix B. Select properties are summarized on the test pit logs provided in Appendix A.

2.4 Surface Conditions

The area of the proposed driveway and parking lot is currently a relatively flat area with a slight slope south towards 500 North. The ground consists of grasses that are irrigated and concrete sidewalks. The area of the proposed structural addition is flat and contains a chipped asphalt surface. The area to the north of the addition is a previous cut slope that is currently irrigated grasses. A concrete-lined v-ditch is present along the toe of the slope but is broken along several joints.

2.5 Subsurface Conditions

Subsurface conditions were generally consistent between the two test pits. Surficial soil consisted of lean clay with sand and sandy lean clay (USCS CL) and silty clay with sand (USCS CL-ML). Six and a half feet of fill was encountered in TP-01 and two feet of fill was encountered in TP-02 Boulder size fragments of concrete were encountered in TP-01 at six feet. Clayey sandstone bedrock was encountered at ten feet in TP-02. Bedrock was not encountered at the maximum depth explored in TP-01, about 11 feet.

2.6 Groundwater

Groundwater was not encountered in either of the exploratory test pits. It is possible for groundwater levels to fluctuate seasonally and from year to year. Changes in irrigation, runoff and precipitation can affect the groundwater level.

3 GEOLOGICAL AND GEOTECHNICAL HAZARDS AND FINDINGS

Geological and geotechnical hazards exist at nearly every site in the world. Due to the chaotic environment in which the soil and rock are deposited, uplifted, faulted, and compressed, hazards are to be expected. The following hazards are prevalent throughout the Colorado Plateau and Southwest Regions. Results of the site characterization and experience were used to characterize the risk that each of the following hazards will impose on the future development.

3.1 Geologic Setting

Figure 3 illustrates the Project relative to the most recent mapping performed by the USGS (Haynes, et al., 1972). The site is mapped as Alluvial and Eolian Deposits of Pleistocene and Holocene age. Bedrock in the area is mapped as Dakota and Burro Canyon Formations of Lower Cretaceous age, with a mapped outcrop approximately 0.6 miles west of the site, and as Morrison Formation of Upper Jurassic age, with a mapped outcrop approximately 0.8 miles west of the site. The mapping is consistent with the results of the test pits.

3.2 Landslide and Slope Stability

Landslides, the movement of soil down a slope, can be triggered by either an increase in stress or a decrease in soil strength. The site is relatively flat and not located in the vicinity of any slopes. Additionally, there is no mapped landslide susceptibility in the Project Boundary by either the Utah Geological Survey Landslide database or the US Landslide Inventory database. Slope instability is not expected to impact the proposed structure.

The area north of the proposed structure is a soil slope anticipated to consist of cut bedrock that is a claystone. Shallow slope failures could occur but are not anticipated to load the structure.

3.3 Radon

Radon is the most significant geologic risk to Utah residents and represents nearly 93 percent of all known geologic-related fatalities in the state (Bowman and Lund, 2020). This gas is often a result of particle decay associated with naturally occurring radioactive elements within bedrock and alluvial soils.

New construction should consider the current ANSI/AARST Randon Standards, which provide prescriptive minimum requirements to address radon. An updated standard for New Construction of Multifamily, School, Commercial and Mixed-Use buildings in 2023 (ANSI/AARST, 2023) to provide guidance and resources on how to reduce occupant exposure to radon and other hazardous soil gases. Additional recommendations to address Radon can be provided at your request.

3.4 Problematic Soils

Problematic soils generally consist of soluble, collapsible, and expansive soils in the Southwest and Colorado Plateau Regions. The following subsections detail each hazard as it relates to the Project.

3.4.1 Collapsible Soils

Collapsible soils are soils that have the potential to undergo significant volumetric change once loaded or wetted. Generally, the soils are deposited during flood, debris flow, or landslides and can become cemented from naturally occurring processes. Once wetted, or loaded beyond the compressive strength of the soil, the soils can break down and collapse. Often this does not occur uniformly, and differential settlement can occur. MGG did not observe any potentially collapsible soils in the test pits for this Project.

3.4.2 Expansive Soils

Expansive soils generally occur when cohesive soils or weathered shales become wet. The plate-like nature of the material and its mineralogy determines how expansive these materials are. Wetting due to irrigation practices, site drainage, precipitation, and utilities often occurs irregularly around structures and can lead to differential movement of expansive soils. This differential settlement if often presented by ‘heaving’ flatwork, cracking foundations, jamming windows and doors, and inoperable utilities. The Atterberg limits of the alluvial clays and weathered bedrock for the proposed structure are moderately expansive.

MGG walked the classrooms near the proposed structure improvement and did not observe any cracking within the brick façade but did observe cracked slabs within the floor slab that were covered in carpet. Provided the recommendations in Section 4.0 and 5.0 are followed, the potential for expansive soil to impact the structure is low.

3.4.3 Soluble Soils and Rock

Soluble soil and rock are a hazard of known significance in the Colorado Plateau area. Soluble soil and rock are a result of prehistoric ocean environments that have resulted in numerous soluble minerals that have been transported, accumulated, and redistributed throughout the area. These minerals are chaotically transported up to surficial soils through springs, flooding events, and fluctuations in the groundwater. Given the depositional nature of the minerals, the hazard is difficult to address due to its unpredictable presence in the subsurface. MGG did not observe any potentially soluble soils in the test pits for this Project.

3.5 Corrosive Soil and Rock

Potentially corrosive environments exist in nearly every soil and rock regime. Corrosion can damage unprotected steel and concrete. Improvements are anticipated to be constructed on imported structural fill. Imported material should be tested or determined by an engineer to be free of sulfates that may require the need for specialized concrete.

3.6 Piping and Erosion

Erosional gullies can form when slope runoff, especially from heavy rains, becomes channelized. Piping, or tunnel erosion, is subsurface erosion that moves through permeable soil layers and exits at a free face. Piping requires a hydraulic gradient to exist for the phenomenon to take place. Soil and bedrock with high silt and clay content and soluble soil are highly susceptible to piping and erosion. Additionally in highly expansive clays, dry desiccation cracks allow surface water to infiltrate the subsurface soil; as the soil hydrates and the clay expands, the cracks close and can result in subsurface voids, susceptible to sink-holes and ground subsidence (Castleton, 2018). Recommendations to mitigate these risks are discussed in Section 4.5 Drainage and Landscaping.

3.7 Shallow Bedrock

Shallow bedrock is not anticipated to impact the proposed driveway and parking area. Bedrock was encountered at 5½ feet in TP-03, which could impact utilities improvements if are deeper than this. The bedrock in TP-03 was observed to be a sandstone and may require larger excavators (300 series or larger) to install improvements.

Shallow bedrock will impact the proposed structure. The bedrock for the structure was observed to be a claystone and could slowly be excavated through using the backhoe. Larger equipment (300 series or larger) will be suitable to support the construction of the proposed structure and associated improvements.

3.8 Seismic

The USGS U.S. Quaternary Faults interactive fault map does not show any fault lines within the Project boundary. The risk of fault rupture hazard to the property is considered low. Although the risk of fault rupture is low, the structure will be subject to seismic shaking during an earthquake event. The proposed structure should be designed using the seismic design parameters in Section 4.1 of this report.

Liquefaction is the phenomenon where saturated soils can effectively lose strength due to the increase of pore pressures during a seismic event. The result of liquefaction often results in settlement of the surface soils, lateral spreading where there is gently sloping ground, or slope instability where free faces are present. In addition to settlement associated liquefaction, prolonged seismic loading can result in the densification of loose sands that are not saturated. Given that groundwater was not encountered in the test pits and site soils are not saturated, the potential for liquefaction and seismic settlement at the structure is considered low to negligible.

4 GEOTECHNICAL DESIGN RECOMMENDATIONS

The following geotechnical design recommendations have been developed based on the results of the field studies, laboratory testing, review of publicly available information, knowledge of the proposed structures, and experience. The performance of the planned structures and infrastructure is dependent on conformance with the following recommendations. If changes are made to the Project, Moab Geotechnical Group should be contacted immediately to determine the validity of the following recommendations.

4.1 Seismic Design Parameters

The site is located within a seismically active area. In general accordance with IBC 2021 and ASCE 7-16, seismic design parameters for the structure have been developed using online Seismic Design Map Tool by the American Society of Civil Engineers ASCE 7 Hazard Tool (ASCE, 2025). Site Class B is recommended for the new addition, based on the findings from the field investigation. Risk category III was assumed for the Project. Exhibit 4-1 provides a summary of the Seismic Design Parameters for use in the design of the structures.

Exhibit 4-1 Seismic Design Parameters

Period (seconds)	Spectral Acceleration (g)
Site Modified Peak Ground Acceleration, PGA_M	0.097
MCE_R Spectral Response Acceleration at Short Periods, S_{MS} (g)	0.185
MCE_R Spectral Response Acceleration at 1-second Period, S_{M1} (g)	0.057
Design Spectral Response Acceleration at Short Period, S_{DS} (g)	0.123
Design Spectral Response Acceleration at 1-second Period, S_{D1} (g)	0.038

Note: Based on assumed site location of Latitude: 37.632581° & Longitude: -109.477488°

4.2 Lateral Earth Pressures

Lateral earth pressures will impart loads onto structures retaining earth loads. Exhibit 4-2 provides a summary of the lateral earth pressures for use in the design of walls, buried structures and other elements of the project. Active earth pressures are the earth pressures to be used for conditions where movements greater than 0.003H (H is the height of the wall in feet) are allowed for the structure. At rest pressures should otherwise be used as the earth pressures in the design of structures.

Passive earth pressures are to be used to resist the lateral earth pressures. Passive earth pressures should be ignored in the upper 30 inches of the ground surface due to the potential for frost to impact these soils. Passive earth pressures can be assumed to increase linearly in the frost susceptible zone. Exhibit 4-2 provides a summary for both native and imported structural fill soils. Earth pressures assume a horizontal slope in front of the wall equal to at least four feet prior to any slope beginning and a horizontal

Exhibit 4-2 Summary of Lateral Earth Pressures

Earth Pressure Condition	Native Soil Earth Pressure Coefficient	Native Soil Equivalent Fluid Pressure (psf/ft)	Structural Fill* Earth Pressure Coefficient	Structural Fill* Equivalent Fluid Pressure (psf/ft)
Active	0.36	45	0.25	35
At Rest	0.58	70	0.44	60
Passive	2.46	250	3.54	420
Seismic Active	0.06	5	0.05	5
Seismic At Rest	0.13	16	0.13	18
Seismic Passive	2.34	240	3.39	405

* The lateral earth pressures provided for Structural Fill are based Granular Base per Utah APWA.

The seismic earth pressures were calculated using the Mononobe Okabe methodology (Mononobe, 1929) (Okabe, 1926). The seismic active and at rest earth pressure coefficients should be added to their respective static term. The seismic passive earth pressure coefficient is the discounted static term and does not require any further factoring. The static passive resistance can be increased by 1/3 to address other extreme events due to wind or snow loading.

4.3 Foundations

Loads for the structure are unknown at this time but are anticipated to be typical and on the order of 3 to 5 kips per foot along the exterior walls. Given the presence of shallow bedrock at the site, the structure may be supported by conventional shallow footings.

4.3.1 Spread and Isolated Footings

It is expected for the shallow foundation to consist of conventional spread and isolated footings. The following recommendations can be used for the design of these systems.

- Footings bearing on at least six inches of properly compacted Structural Fill overlying bedrock can be designed for an allowable bearing resistance of 4,000 pounds per square foot (psf), provided the following:
    - Foundations should be protected from frost. The City of Blanding design criteria specifies a frost depth of 30 inches below proposed finish grade.
    - Continuous spread footings should be no more than six (6) feet wide. Isolated footings should be no more than eight (8) feet square.
    - The foundation system should be reinforced to span an unsupported length of 10 feet.
    - The allowable bearing resistance may be increased by 1/3 for temporary (seismic and wind) loading conditions.
    - Footings should be designed to settle up to ½ inch. The structure should be designed to settle differentially up to ½ inch over 30 feet.

4.3.2 Slab on Grade

The slab on grade should be supported on structural fill overlying bedrock. The subgrade for the footings should be maintained throughout the entirety of the building (about 36 inches below grade) and the annulus between the subgrade and slab on grade should consist of the necessary vapor reduction and imported structural fill. The slab on grade should be at least five inches thick and contain reinforcement. Slabs should be designed and constructed in accordance with the current ACI 302.1-R04 Guide to Concrete Floor and Slab Construction or structural engineer selected guidance documents. Control joints should also be provided throughout the slab. Slabs should be isolated from foundation walls using expansion joints or bond breakers to accommodate differential movement. Where plumbing lines enter through the slab, positive breaks should be provided. Connections to mechanical equipment should be flexible.

Slabs-on-grade supported on properly prepared subgrade, see Section 5.2, and vapor reduction systems, see Section 4.4, can be designed assuming a modulus of subgrade reaction of between 30 to 40 pounds per square inch per inch.

4.3.3 Sliding Resistance

For footings founded on properly prepared structural fill, a coefficient of friction of 0.42 can be used. These values can be increased by 1/3 for temporary loading conditions. Additional lateral support can be accommodated by utilizing the passive lateral earth pressures provided in Section 4.2. Note that the local frost depth should be considered when utilizing lateral earth pressures.

4.4 Vapor Reduction

Water from beneath the slab will migrate through the slab into the building over time. This water vapor can be reduced but not stopped. Vapor transmission can negatively affect floor coverings and lead to increased moisture within a building. The following should be used to reduce, but not stop, water vapor transmission upward through the slab-on-grade.

- Install a vapor retarder membrane directly beneath the slab. Seal the vapor retarder at all seams and pipe penetrations. Vapor retarders should conform to class A vapor retarder per ASTM E 1745-11 "Standard Specification for Plastic Water Vapor Retarders used in Contact with Soil or Granular Fill under Concrete Slabs".
- Place 4-inches of clean, crushed rock below the vapor retarder membrane. Crushed rock should have 100 percent passing the ¾-inch sieve and less than 5 percent passing the No. 4 Sieve.
- Concrete should have a concrete water-cement ratio of no more than 0.50.
- Provide inspection and testing during concrete placement to check that the proper concrete and water-cement ratio are used.
- Moist cure slabs for a minimum of 3 days or use the equivalent curing specified by the structural engineer.

4.5 Drainage and Landscaping

Excessive wetting of the foundation subgrade and sub-floor soils should be avoided. Roof downspouts should discharge directly to a closed storm drain system. Water should not be allowed to pond near foundations, pavements, or exterior flatwork. Landscaping adjacent to the structures should consist of dry-scaping or consist of vegetation that does not require frequent watering. Finished grade and flatwork should be designed to drain away from the structure in accordance with 2021 IBC where a minimum of 5 percent is specified for native soils. A minimum 2% slope should be used on concrete flatwork.

The Owner must maintain the surface grading and drainage recommended in this report to help prevent water from being directed toward and/or ponding near the foundations. Any settling of foundation backfill should be re-graded to maintain the slopes noted above. Failure to maintain positive surface drainage away from the structure may result in localized differential vertical movement of foundations and slabs.

The concrete v-ditch north of the proposed improvements should be reconstructed to help reduce infiltration towards the improvement.

4.6 Pavement

Pavement will be constructed in an area that contains undocumented fill. The area of the undocumented fill can be viewed in 1980's historical aerials of the property. The fill thickness varied between two and three feet thick when encountered.

Exhibit 4-3 Recommended Pavement Sections

Application	Surface Course	Base Course
Heavy-Duty Rigid Pavement	6-inch Portland Cement Concrete	4-inch Granular Borrow
Heavy-Duty Flexible Pavement	3.5-inch Hot Mix Asphalt	4-inch Granular Borrow
Light-Duty Flexible Pavement	2.5-inch Hot Mix Asphalt	4-inch Granular Borrow
Light-Duty Rigid Pavement	4-inch Portland Cement Concrete	4-inch Granular Borrow

Subgrade preparation should consist of the removal of all undocumented fill, construction debris, organics greater than 1-inch in diameter and 5% by volume, and all other deleterious material. Subgrade should be scarified at least 12-inches and engineered in general accordance with the recommendations provided in Section 5. A Geotechnical Engineer familiar with this report and potential hazards discussed in Section 3 should be onsite during subgrade preparation to determine the validity of the recommendations made for the Project. Subgrade, the lowest depth to which soil is excavated, will vary across the site, and expected to consist of native silty sand under the driveway and parking areas.

Isolated soft subgrade treatment should be treated by either:

- Removal to depth of disturbed area and replacement with Granular Borrow. Horizontal extent of the over excavation should be at least two feet beyond the soft subgrade area.
- Placement of Mirafi RS280i or Engineer Approved Equivalent geotextile across the soft subgrade area and extend laterally at least three feet beyond.

Subgrade should be proof rolled using onsite compaction equipment under the supervision of a Geotechnical Engineer.

4.6.1 Granular Borrow

Granular Borrow should conform to Section 31 05 13 of the current Utah APWA Standard Specifications and relevant addendums.

4.6.2 Asphalt

Asphalt should conform to Plant-Mix Bituminous Paving Section 32 12 16.13 of the current Utah APWA Standard Specifications and relevant addendums.

4.7 Concrete Flatwork

Concrete flatwork includes exterior walkways, driveways, and steps. Concrete flatwork should be designed specifically for their intended use and loading requirements. Cracking of the exterior flatwork is normal as it is part of the concrete curing process and should be expected. Frequent control joints should be provided during slab construction for control of cracking. It is recommended that concrete flatwork meet the requirements set forth in the current Utah APWA Standards and Specifications.

5 CONSTRUCTION CONSIDERATIONS

The success of the project and the recommendations provided in the report have been prepared assuming the following construction considerations are incorporated into the development of the Project. Where the recommendations cannot be followed, or alternative construction methods are to be employed to construct the Project, (MGG) should be notified.

5.1 Site Preparation and Remedial Grading

Prior to site development, undocumented fill, weeds and organic material should be cleaned to a firm, undisturbed soil surface determined by a Geotechnical Engineer.

5.2 Subgrade Preparation

Subgrade, the lowest depth to which soil is excavated, will vary across the site, and is expected to consist of silty sand in the pavement and parking areas and claystone for the building addition. Prior to placing Structural Fill for footings and the vapor barrier system for the slab on grade, the subgrade preparation should consist of moisture conditioning and compacting the material in place. A Geotechnical Engineer should observe the subgrade prior to fill placement to verify that the subgrade is firm, unyielding and that the soil and rock is consistent with the findings of the subsurface investigation.

Where soft or loose zones are identified, additional excavation or installation of a geotextile reinforcing material can be used. Over-excavation should extend at least two foot laterally from any areas identified as being soft or loose. If the over-excavation required becomes too large, the geotextile reinforcing material can help limit the required over-excavation volume. A Mirafi HP270 or an MGG approved equivalent is recommended to reinforce soft or loose material.

5.3 Fill Placement

Fill materials will be required to accomplish site grading and to balance earth work for the project. The upper two to three feet of onsite soils under the driveway and parking areas that consist of undocumented fill is not suitable to support structural improvements. This material can be used elsewhere on the site to support grading requirements.

Fill material consisting of structural fill and granular borrow should placed at 95% of the modified proctor (ASTM D1557) and within one percentage point of the optimum moisture content. Fill placement should be performed in horizontal lifts with uniform thickness and compaction effort. Each lift should be tested for moisture content and density prior to placement of subsequent lifts.

Where fill is placed adjacent to existing structures or utilities, care should be taken to avoid differential settlement. Compaction equipment should be selected to minimize vibration near sensitive structures.

The height of the loose lifts to be used as the fill material is placed is dependent on the machinery used to compact the soils. Where hand-held jumping jacks or walk-behind compactors are used, we recommend that loose lifts not exceed 8 inches. For excavators outfitted with a wheel compactor, 10-inch loose lifts should be used. For large sheep foot or drum rollers, 12-inch loose lifts can be used. Larger lift thicknesses can be used provided that the contractor can demonstrate adequate compaction through the compacted lift.

Fill material should be free of frozen material or free water. Where free water is present, blend the material with dry material to reach the required moisture content. Frozen soils should be set aside and not utilized until they are unfrozen.

5.3.1 Structural Fill

Structural Fill should consist of 3-inch minus material with no more than 15 percent fines. The Atterberg Limit (ASTM 4318) of the material should result in a Plasticity Index less than 7. The material should not be open graded or well-rounded and should be free of organic and deleterious materials. It is recommended that any imported fill material be approved by a Geotechnical Engineer familiar with the project prior to use.

5.4 Utilities

Utilities should be designed and installed in accordance with the City of Blanding and the current Utah APWA Standards and Specifications. The following geotechnical considerations should also be incorporated into utility design and installation:

Utility trenches should be backfilled with approved structural fill or granular borrow compacted to at least 95% of the Modified Proctor maximum dry density (ASTM D1557). Native soils may be reused as trench backfill outside of structural areas if they meet compaction and moisture criteria and are free of organics and debris.

Bedding and pipe zone materials should be free-draining, non-expansive, and conform to the pipe manufacturer's recommendations. A minimum bedding thickness of 6 inches is recommended beneath the pipe.

Where trench excavation encounters soft, loose, or unsuitable material, over-excavation and replacement with compacted structural fill or placement of a geotextile separator (e.g., Mirafi HP270 or equivalent) may be required.

Bedrock was encountered at depths as shallow as 5½ feet in TP-03. Utility alignments should be reviewed to avoid deep trenching in these areas or plan for mechanical excavation using larger equipment (e.g., 300-series excavators).

5.5 Excavations

Trench and excavation safety is the requirement of the contractor installing the utilities and performing excavations. We recommend the contractor be familiar with the necessary OSHA 1926 standards and have a person onsite who can perform the necessary duties of the Competent Person as defined by OSHA. Soil conditions can vary from those explored as part of this investigation and therefore soil types, in accordance with OSHA, should be assessed by the onsite Competent Person.

6 Additional Services

Moab Geotechnical Group (MGG) strongly encourages our continued involvement with the project leading up to and during construction. The additional services we can provide will help ensure the recommendations and construction considerations are followed and that adverse conditions encountered during construction are properly addressed.

6.1 Project Progression

As the design of the project advances, we recommend we be informed of changes that differ from those assumed or detailed in this report. Successful performance of the future structures and infrastructure are dependent on the findings used to prepare this report. This report can be revised from its current state with subsequent changes and evolution of the project.

6.2 Plan and Specification Review

It is recommended that MGG review the final plans and specifications for the project. The adherence to the recommendations and construction considerations will help the long-term performance of the proposed structures and associated improvements. The review can also check if any changes in the nature, design or location of the proposed improvements and provide opportunity to prepare a written response with updated recommendations, if needed.

6.3 Testing and Observation Services

Testing and observation services can be performed by moisture / density testing and by onsite observation and testing. These services should be considered in the future construction costs of the project. All earthwork operations should be performed under the fulltime to temporary observation of our representative to check that the site properly prepared, the selected fill materials are satisfactory, and that placement and compaction of the fills have been performed in accordance with our recommendations and project specifications. Site observations also aid in addressing potentially problematic soils that were not found during the site characterization and field investigation phase.

7 LIMITATIONS

This report is intended for the exclusive use of San Juan School District and their design consultants. Third-party reliance on this report is not authorized without written permission from Moab Geotechnical Group.

Moab Geotechnical Group (MGG) strived to perform our professional services in accordance with generally accepted geotechnical engineering principles and practices currently employed in the area; no warranty is expressed or implied. There are risks of earth movement and property damages inherent in land development. MGG is unable to eliminate all risks or provide insurance; therefore, MGG is unable to guarantee or warrant the results of the work.

This report is based upon field and other conditions discovered at the time of preparation of our work. This document must not be subject to unauthorized reuse, that is, reuse without our written authorization. Such authorization is essential because it requires us to evaluate the document's applicability given new circumstances, not the least of which is passage of time.

Actual field or other conditions will necessitate clarifications, adjustments, modifications, to other changes to our work. Therefore, we must be engaged to prepare the necessary clarifications, adjustment modifications, or other changes before construction activities commence or further activity proceeds.

REFERENCES

American Concrete Institute [ACI], 2019, Building Code Requirements for Structural Concrete, ACI 318

American Concrete Institute [ACI], *Current Edition*, Guide to Concrete Floor and Slab Construction

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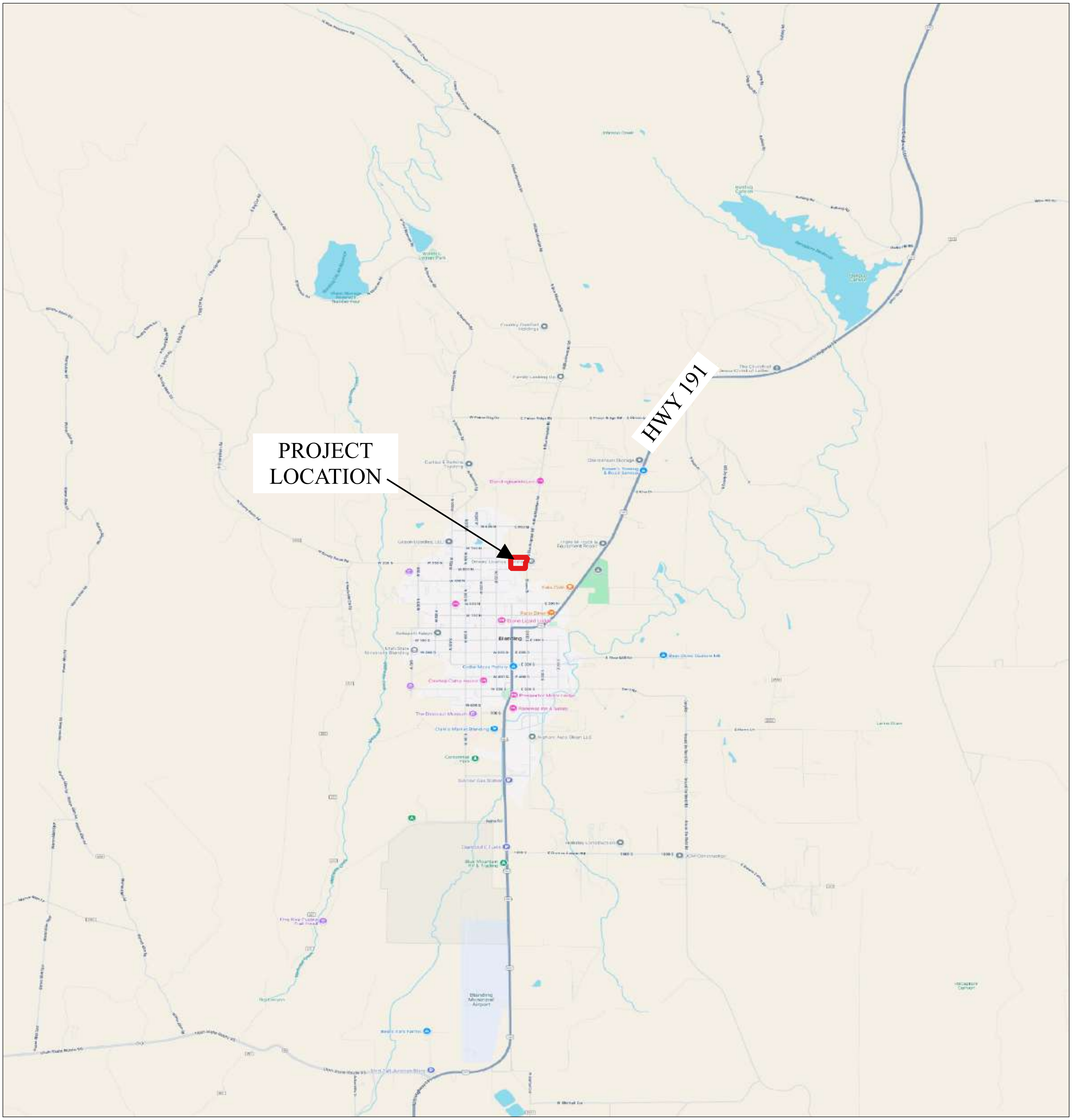


LEGEND

Property Boundary

N

0 0.5 1 mi

Map Source: Google Maps

Moab Geotechnical Group

SAN JUAN SCHOOL DISTRICT
LYMAN MIDDLE SCHOOL
BLANDING, UT 84511

VICINITY MAP

Project No: 2025-061

July 2025

FIG. 1

LEGEND

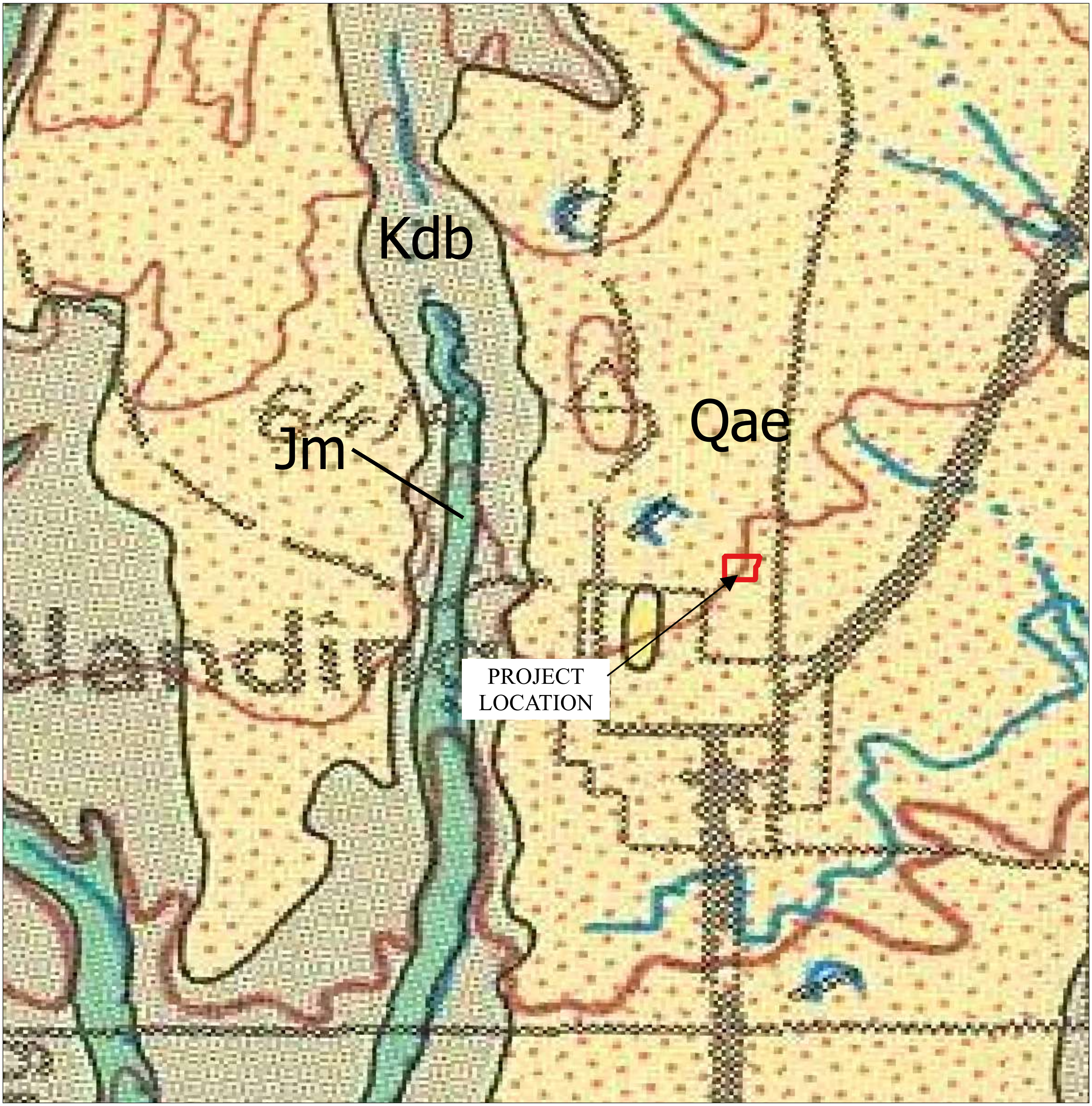
Property Boundary · DCP · Test Pits

N

0 50 100 ft

Map Source: Google Satellite
Note: Exploration locations have been approximately located and do not reflect surveyed locations.

Moab Geotechnical Group	SAN JUAN SCHOOL DISTRICT LYMAN MIDDLE SCHOOL BLANDING, UT 84511	**EXPLORATIONS MAP**	Project No: 2025-061
			July 2025 · **FIG. 2**



LEGEND

Property Boundary

SELECT ABBREVIATED DESCRIPTIONS

Qae: Alluvial and Eolian Deposits
Kdb: Dakota and Burro Canyon Formations
Jm: Morrison Formation

N

0 0.25 0.5 mi

Map Source: Haynes, D.D., Vogel, J.D., and Wyant, D.G., 1972, Geology, structure, and uranium deposits of the Cortez quadrangle, Colorado and Utah, U.S. Geological Survey, Miscellaneous Geologic Investigations Map I-629, 1:250,000

Moab Geotechnical Group	SAN JUAN SCHOOL DISTRICT LYMAN MIDDLE SCHOOL BLANDING, UT 84511	**GEOLOGIC MAP**	Project No: 2025-061
			July 2025 — **FIG. 3**

APPENDIX A – TEST PIT LOGS

RELATIVE CONSISTENCY - COHESIVE SOIL

DESCRIPTION	SPT-N VALUE (# BLOWS/FT)	TORVANE, tsf SHEAR STRAIN	POCKET PENETROMETER, tsf UNCONFINED SHEAR STRAIN
Very Soft (VS)	< 2	< 0.13	<0.25
Soft (S)	2 to 4	0.13 to 0.25	0.25 to 0.5
Medium Stiff (MSt)	4 to 8	0.25 to 0.5	0.5 to 1
Stiff (St)	8 to 15	0.5 to 1	1 to 2
Very Stiff (VSt)	15 to 30	1 to 2	2 to 4
Hard (H)	Over 30	>2	>4

CEMENTATION

DESCRIPTION	FIELD TEST
Weakly	Crumbles of breaks with handling or slight finger pressure
Moderately	Crumbles or breaks with considerable finger pressure
Strongly	Will not crumble or break with finger pressure

MOISTURE CONTENT

CONSISTENCEY	FIELD TEST
Dry (D)	Absence of moisture, dusty, dry to the touch
Moist (M)	Damp but no visible water
Wet (W)	Visible free water, usually soil is below water table

RELATIVE DENSITY - COHESIONLESS SOIL

DESCRIPTION	SPT-N VALUE (# BLOWS/FT)
Very Loose (VL)	< 4
Loose (L)	4 to 10
Medium Dense (MD)	10 to 30
Dense (D)	30 to 50
Very Dense (VD)	> 50

REACTION WITH HCL

DESCRIPTION	FIELD TEST
None	No visible reaction
Weak	Some reaction, with bubbles forming slowly
Strong	Strong reaction, with bubbles forming immediately

GRAIN SIZE

DESCRIPTION		GRAIN SIZE / SIEVE NO.
Boulders (Bo)		>12"
Cobbles (Co)		3 to 12"
Gravel (Gr)	coarse (c)	3/4 to 3"
	fine (f)	No. 4 to 3/4"
Sand (Sa)	coarse (c)	No. 10 to No. 4
	medium (m)	No. 40 to No.10
	fine (f)	No. 200 to No. 40
Fines (Fi)		< No. 200

STRUCTURE

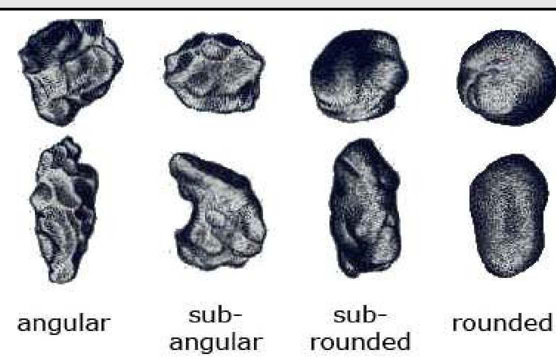
DESCRIPTION	CRITIERIA
Interbedded (int)	Alternating layers of varying material or color with layers at least 1/4-inch thick; note thickness; singular: Bed
Laminated (lam)	Alternating layers of varying material or color with layers less than 1/4-inch thick; note thickness; singular: Lamination
Fissured (fis)	Breaks along definite planes of fracture with little resistance to fracturing
Slickensided (slk)	Fracture planes appear polished or glossy, sometimes striated
Blocky (blky)	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Lensed (lnsd)	Inclusion of small packets of different soils such as small lenses of sand scattered through a mass of clay; note thickness
Homogeneous (hom)	Same color and appearance throughout

PERCENTAGE TERMS

ADJECTIVE	PERCENT RANGE
Trace	<5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

Gravel , sand and silt estimated by mass.
Organics cobbles and boulders estimated by volume.

ANGULARITY



Angularity Figure Source: M.C Powers, 1953, *A New Scale of Particle Roundness for Sedimentary Particles*, p.118

Moab Geotechnical Group	SAN JUAN SCHOOL DISTRICT LYMAN MIDDLE SCHOOL BLANDING, UT	**SOIL REFERENCE STANDARD**	Project No.: 2025-061 July 2025 **FIG. A-01**

FABRIC TERMS
SEDIMENTARY ROCKS
MASSIVE - Rock without significant structure
BEDDED - Regular layering from sedimentation
FISSILE - Tendency to break along laminations
METAMORPHIC ROCKS
FOLIATED - Parallel arrangement or distribution of minerals
SCHISTOSE - Parallel arrangement of tabular minerals giving a planar fissility
GNEISSOSE - Segregation of minerals into bands
CLEAVAGE - Tendency to split along secondary, planar, textures or structures

DISCONTINUITY TERMS
FRACTURE- collective term for any natural break excluding shears, shear zones, and faults
JOINT (JT) - Planar break with little or no displacement
FOLIATION JOINT (FJ) or BEDDING JOINT (BJ) - Joint along foliation or bedding
INCIPIENT JOINT (IJ) or INCIPIENT FRACTURE (IF) - Joint or fracture not evident until wetted and dried; breaks along existing surface
RANDOM FRACTURE (RF) - Natural, very irregular fracture that does not belong to a set
BEDDING PLANE SEPARATION or PARTING - A separation along bedding after extraction from stress relief or slaking
FRACTURE ZONE (FZ) - Planar zone of broken rock without gouge
MECHANICAL BREAK (MB) - Breaks due to drilling or handling; drilling break (DB), hammer break (HB)
SHEAR (SH) - Surface of differential movement evident by presence of slickensides, striations, or polishing
SHEAR ZONE (SZ) - Zone of gouge and rock fragments bounded by planar shear surfaces
FAULT (FT) - Shear zone of significant extent; differentiation from shear zone may be site-specific

SPACING		
DESCRIPTION	SPACING	
Extremely close Spacing	<20 mm	<1 in
Very close Spacing	20 to 60 mm	1 to 1.25 in
Close Spacing	60 to 200 mm	2.5 to 8 in
Moderate Spacing	200 to 600 mm	8 to 24 in
Wide Spacing	600 to 2000 mm	24 in to 6 ft
Very wide Spacing	2000 to 6000 mm	6ft to 20 ft
Extremely wide Spacing	> 6000 mm	<20 ft

PERSISTENCE	
Very low persistence	<1 m
Low persistence	1-3 m
Medium persistence	3-10 m
High persistence	10-20 m
Very high persistence	>20 m

VESICULARITY	
Slightly Vesicular	1 to 10%
Moderately Vesicular	10 to 30%
Highly Vesicular	30 to 50%
Scoriaceous	>50%

Moab Geotechnical Group	SAN JUAN SCHOOL DISTRICT LYMAN MIDDLE SCHOOL BLANDING, UT	**ROCK REFERENCE STANDARD**	Project No.: 2025-061 July 2025 **FIG. A-02**

WEATHERING		
GRADE	TERM	DESCRIPTION
I	Fresh	No visible sign of rock material weathering: perhaps slight discoloration on major discontinuity surfaces.
II	Slightly Weathered	Discoloration indicates weathering of rock material and discontinuity surfaces. All the rock material may be discolored by weathering and may be somewhat weaker externally than in tis fresh condition.
III	Moderately Weathered	Less than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a continuous framework or as corestones.
IV	Highly Weathered	More than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a discontinuous framework or as corestones.
V	Completely Weathered	All rock material is decomposed and/or disintegrated to a soil. The original mass structure is still largely intact.
VI	Residual Soil	All rock material is converted to soil. The mass structure and material fabric are destroyed. There is a large change in volume, but the soil has not been significantly transported.

STRENGTH				
GRADE	DESCRIPTION	FEILD IDENTIFICATION	APPROX. RANGE OF UNIAXIAL COMPRESSIVE STRENGTH	
			(MPa)	(psi)
S1	Very soft clay	Easily penetrated several inches by fist	<0.025	<3.6
S2	Soft clay	Easily penetrated several inches by thumb	0.025 to 0.05	3.6 to 7.3
S3	Firm clay	Can be penetrated by thumb with moderate effort	0.05 to 0.10	7.3 to 14.5
S4	Stiff clay	Readily indented by thumb but penetrated only with great effort	0.10 to 0.25	14.5 to 36
S5	Very stiff clay	Readily indented by thumbnail	0.25 to 0.5	36 to 73
S6	Hard clay	Indented with difficulty by thumbnail	>0.50	>73
R0	Extremely Weak rock	Indented by thumbnail	0.25 to 1.0	36 to 145
R1	Very weak rock	Crumbles under firm blows with point of geological hammer, can be peeled by a pocket knife	1.0 to 5.0	145 to 700
R2	Weak rock	Can be peeled by a pocked knife with difficulty, shallow indentations made by firm blow of geological hammer	5.0 to 25	700 to 3,600
R3	Medium strong rock	Cannot be scraped or peeled or peeled with a pocket knife, specimen can be fractured with single firm blow of geological hammer	25 to 50	3,600 to 7,200
R4	Strong rock	Specimen requires more than one blow of geological hammer to fracture it	50 to 100	7,200 to 14,500
R5	Very strong rock	Specimen requires many blows of geological hammer to fracture it	100 to 250	14,500 to 36,250
R6	Extremely strong rock	Specimen can only be chipped with geological hammer.	>250	>36250

Project: **SJSD Lyman Middle School**	Key to Log of Test Pit
Project Location: **Blanding, UT**	**Sheet 1 of 1**
Project Number: **2025-061**	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Percent Gravel	Percent Sand	Percent Fines	LL, %	PI, %	REMARKS AND OTHER TESTS
1	2	3	4	5	6	7	8	9	10	11	12	13	14

COLUMN DESCRIPTIONS

1. Elevation (feet): Elevation (MSL, feet).
2. Depth (feet): Depth in feet below the ground surface.
3. Sample Type: Type of soil sample collected at the depth interval shown.
4. Sample Number: Sample identification number.
5. Material Type: Type of material encountered.
6. Graphic Log: Graphic depiction of the subsurface material encountered.
7. MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
8. Water Content, %: Water content of the soil sample, expressed as percentage of dry weight of sample.
9. Percent Gravel: The percent gravel (soils retained on No. 4 sieve) in the sample.
10. Percent Sand : The percent sand (soils passing the No. 4 sieve and retained on No. 200 sieve) in the sample.
11. Percent Fines: The percent fines (soil passing the No. 200 Sieve) in the sample. WA indicates a Wash Sieve, SA indicates a Sieve Analysis.
12. LL, %: Liquid Limit, expressed as a water content.
13. PI, %: Plasticity Index, expressed as a water content.
14. REMARKS AND OTHER TESTS: Comments and observations regarding drilling or sampling made by driller or field personnel.

FIELD AND LABORATORY TEST ABBREVIATIONS

CHEM: Chemical tests to assess corrosivity
COMP: Compaction test
CONS: One-dimensional consolidation test
LL: Liquid Limit, percent
PI: Plasticity Index, percent
SA: Sieve analysis (percent passing No. 200 Sieve)
UC: Unconfined compressive strength test, Qu, in ksf
WA: Wash sieve (percent passing No. 200 Sieve)

MATERIAL GRAPHIC SYMBOLS

Asphaltic Concrete (AC)
Lean CLAY, CLAY w/SAND, SANDY CLAY (CL)
SILTY CLAY (CL-ML)
Claystone
SILT, SILT w/SAND, SANDY SILT (ML)
Sandstone
Clayey SAND (SC)

TYPICAL SAMPLER GRAPHIC SYMBOLS

Bulk Sample
Grab Sample

OTHER GRAPHIC SYMBOLS

Water level (at time of drilling, ATD)
Water level (after waiting, AW)
Minor change in material properties within a stratum
Inferred/gradational contact between strata
? Queried contact between strata

GENERAL NOTES

1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.
3: psf = pounds per square foot, RQD = Rock Quality Designation, psi = pounds per square inch, N/F = Not Found, N/A = Not Applicable

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Project: **SJSD Lyman Middle School**	Log of Boring TP-01
Project Location: **Blanding, UT**	**Sheet 1 of 1**
Project Number: **2025-061**	

Date(s) Drilled **7/10/2025**	Logged By **TQH**	Checked By **CAV**
Drilling Method **Test Pits**	Drill Bit Size/Type **1-foot-wide bucket**	Total Depth of Borehole **6 feet bgs**
Drill Rig Type **Kuduto KX-040**	Drilling Contractor **SJSD**	Approximate Surface Elevation **N/A**
Groundwater Level and Date Measured **N/A**	Sampling Method(s) **Grab**	Hammer Data **N/A**
Borehole Backfill **Cuttings**	Location **Lat: 37.632462, Long: -109.477286**	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Percent Gravel	Percent Sand	Percent Fines	LL, %	PI, %	REMARKS AND OTHER TESTS
	0		GB-01	ML		SILT (ML) - brown to dark brown, moist to wet, with roots [FILL]	8.0	10	22	68			
			GB-02	CL		SANDY LEAN CLAY (CL) - light brown to tan, moist, cemented [FILL]	8.3	14	30	56			
				ML		SILT (ML) - brown to orange-brown, moist [NATIVE]							
	5		GB-03				6.6	0	18	82			
	10												
	15												

Figure A-05

Project: **San Juan County Middle School**	Log of Boring TP-02
Project Location: **Blanding, UT**	**Sheet 1 of 1**
Project Number: **2025-061**	

Date(s) Drilled **7/10/2025**	Logged By **TQH**	Checked By **CAV**
Drilling Method **Test Pits**	Drill Bit Size/Type **1-foot-wide bucket**	Total Depth of Borehole **6 feet bgs**
Drill Rig Type **Kuduto KX-040**	Drilling Contractor **SJSD**	Approximate Surface Elevation **N/A**
Groundwater Level and Date Measured **N/A**	Sampling Method(s) **Bulk**	Hammer Data **N/A**
Borehole Backfill **Cuttings**	Location **Lat: 37.632593, Long: -109.476940**	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Percent Gravel	Percent Sand	Percent Fines	LL, %	PI, %	REMARKS AND OTHER TESTS
	0			ML		SILT (ML) - brown to dark brown, moist, some roots [FILL]							
						asphalt debris for next 6 inches, some cementation, becomes more coarse-grained							
				CL-ML		SANDY SILTY CLAY (CL-ML) - brown to orange brown, moist [NATIVE]							
		Bulk	BULK-01				10.8	0	33.9	66.1	24	6	
	5												
	10												
	15												

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Project: **San Juan County Middle School**	Log of Boring TP-03
Project Location: **Blanding, UT**	**Sheet 1 of 1**
Project Number: **2025-061**	

Date(s) Drilled **7/10/2025**	Logged By **TQH**	Checked By **CAV**
Drilling Method **Test Pits**	Drill Bit Size/Type **1-foot-wide bucket**	Total Depth of Borehole **6 feet bgs**
Drill Rig Type **Kuduto KX-040**	Drilling Contractor **SJSD**	Approximate Surface Elevation **N/A**
Groundwater Level and Date Measured **N/A**	Sampling Method(s) **Grab**	Hammer Data **N/A**
Borehole Backfill **Cuttings**	Location **Lat: 37.632392, Long: -109.476653**	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Percent Gravel	Percent Sand	Percent Fines	LL, %	PI, %	REMARKS AND OTHER TESTS
	0			SC		LEAN CLAY (CL) with sand - light brown to tan, moist [FILL]							
			GB-01				8.2	4	17	79			
				ML		SANDY SILT (ML) - brown to orange brown, moist [NATIVE]							
			GB-02				7.6	1	36	63			
	5												
				Sandstone		SANDSTONE - light brown to tan, medium strong (R3) to weak (R2), moderately weathered (W3)							
	10												
	15												

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Figure A-07

Project: **San Juan County Middle School** Project Location: **Blanding, UT** Project Number: **2025-061**	# Log of Boring TP-04 **Sheet 1 of 1**

Date(s) Drilled **7/10/2025**	Logged By **TQH**	Checked By **CAV**
Drilling Method **Test Pits**	Drill Bit Size/Type **1-foot-wide bucket**	Total Depth of Borehole **3 feet bgs**
Drill Rig Type **Kuduto KX-040**	Drilling Contractor **SJSD**	Approximate Surface Elevation **N/A**
Groundwater Level and Date Measured **N/A**	Sampling Method(s) **Grab**	Hammer Data **N/A**
Borehole Backfill **Cuttings**	Location **Lat: 37.633474, Long: -109.477082**	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Percent Gravel	Percent Sand	Percent Fines	LL, %	PI, %	REMARKS AND OTHER TESTS
	0			Asphalt		2- to 3-inches of Asphalt with chip surface							
			GB-01	CL		LEAN CLAY (CL) - dark gray to reddish gray, moist	16.6				30	15	
			GB-02	Claystone		CLAYSTONE - light gray to gray, some oxidation staining, very weak (R1) to weak (R2), highly weathered (W4)	16.0				37	14	
	5												
	10												
	15												

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Project: **San Juan County Middle School**	# Log of Boring TP-05
Project Location: **Blanding, UT**	**Sheet 1 of 1**
Project Number: **2025-061**	

Date(s) Drilled **7/10/2025**	Logged By **TQH**	Checked By **CAV**
Drilling Method **Test Pits**	Drill Bit Size/Type **1-foot-wide bucket**	Total Depth of Borehole **3 feet bgs**
Drill Rig Type **Kuduto KX-040**	Drilling Contractor **SJSD**	Approximate Surface Elevation **N/A**
Groundwater Level and Date Measured **N/A**	Sampling Method(s) **Grab**	Hammer Data **N/A**
Borehole Backfill **Cuttings**	Location **Lat: 37.633314, Long: -109.477084**	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Percent Gravel	Percent Sand	Percent Fines	LL, %	PI, %	REMARKS AND OTHER TESTS
	0			Asphalt		1- to 2-inches of Asphalt with chip surface							
				Claystone		CLAYSTONE - light gray to gray, some oxidation staining, very weak (R1) to weak (R2), highly weathered (W4)							
			GB-01	Claystone		moderately weathered (W3)	19.2				45	23	
	5												
	10												
	15												

APPENDIX B – LABORATORY TEST RESULTS

Job Name:	SJSD Lyman Middle School
Job Number:	2025-061
Location:	Blanding, UT

Exploration:	Sample ID:	Depth (ft):	Description:	Moisture Content (%):	Gravel (%):	Sand (%):	Fines (%):	Silt (%):	Clay (%):	LL	PI	USCS	Group Name
TP-01	GB-02	1-2	Red Silt w/ Clods	8.3	14	30	56					CL/ML	Silt or Clay w/ Gravel
TP-01	GB-03	5-6	Brown Silt w/ Clods	6.6	0	18	82					CL/ML	Silt or Clay w/ Gravel
TP-02	Bulk-01	2.5-5	Red Silt	10.8	0	34	66			24	6	SC-SM	Silty, Clayey Sand
TP-03	GB-01	1-3	Br Silt w/ Clods	8.2	4	17	79					CL/ML	Silt or Clay w/ Gravel
TP-03	GB-02	3-5	Red/Brown Silt w/ Clods	7.6	1	36	63					CL/ML	Silt or Clay w/ Gravel
TP-04	GB-01	0.25-1.25	Redish-brown, Greenish Gray Clay	16.6		13	87	58	29	30	15	CL	Lean Clay
TP-04	GB-02	1.25-3	Red, Brown, Gray Clay	16.0		16.8	83.2	56.1	27.1	37	14	CL	Grey, Brown, Red
TP-05	GB-01	2.5-3	Brown Red Clay	19.2		11.3	88.7	49.6	39.1	45	23	CL	Brown, Red Clay

Water Content of Soil and Rock by Mass

ASTM D2216

Project:	SJSD Lyman Middle School
Project No:	2025-061
Location:	Blanding, UT

Test Number	Exploration	Sample ID	Depth	Sample Date	Sample Description	Test Date	Tested By	Water Content (%)
1	TP-01	GB-01	0-1	7/10/2025	Red/Brown Silt w/ Clods	45853	DP	8.0
2	TP-01	GB-02	1-2	7/10/2025	Red Silt w/ Clods	7/15/2025	DP	8.3
3	TP-01	GB-03	5-6	7/10/2025	Brown Silt w/ Clods	7/15/2025	DP	6.6
4	TP-02	Bulk-01	2.5-5	7/10/2025	Red Silt	7/18/2025	DP	10.8
5	TP-03	GB-01	1-3	7/10/2025	Br Silt w/ Clods	7/15/2025	DP	8.2
6	TP-03	GB-02	3-5	7/10/2025	Red/Brown Silt w/ Clods	7/15/2025	DP	7.6
7	TP-04	GB-01	0.25-1.25	7/10/2025	Redish-brown, Greenish Gray Clay	7/18/2025	DP	16.6
8	TP-04	GB-02	1.25-3	7/10/2025	Red, Brown, Gray Clay	7/18/2025	DP	16.0
9	TP-05	GB-01	2.5-3	7/10/2025	Brown Red Clay	7/18/2025	DP	19.2

Reviewed By: TQH

Project:	SJSD Lyman Middle School	**Liquid Limit, Plastic Limit, and Plasticity Index of Soils (Atterberg)**
Project No:	2025-061	Standard: ASTM D4318
Location:	Blanding, UT	

Test:	Sample Source:	Sample ID:	Depth (ft):	Description:	Liquid Limit (%):	Plastic Limit (%):	Plasticity Index:	USCS	Test Notes
1	TP-02	Bulk-01	2.5-5	Brown Clay	24	18	6	CL-ML	
2	TP-04	GB-01	0.25-1.25	Red/Brown,	30	15	15	CL	
3	TP-04	GB-02	1.25-3	Grey,Brown, Red Clay	37	23	14	CL	
4	TP-05	GB-01	2.5-3	Brown, Red Clay	45	22	23	CL	

Liquid Limit, Plastic Limit, and Plasticity Index of Soils

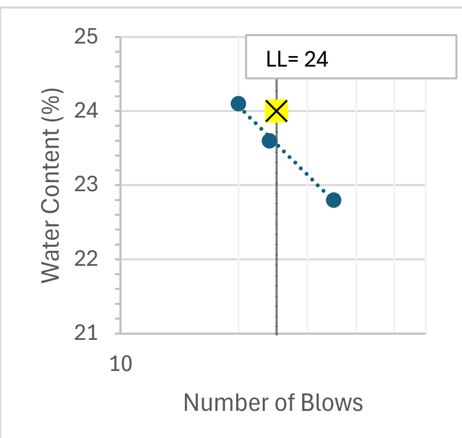
ASTM D4318

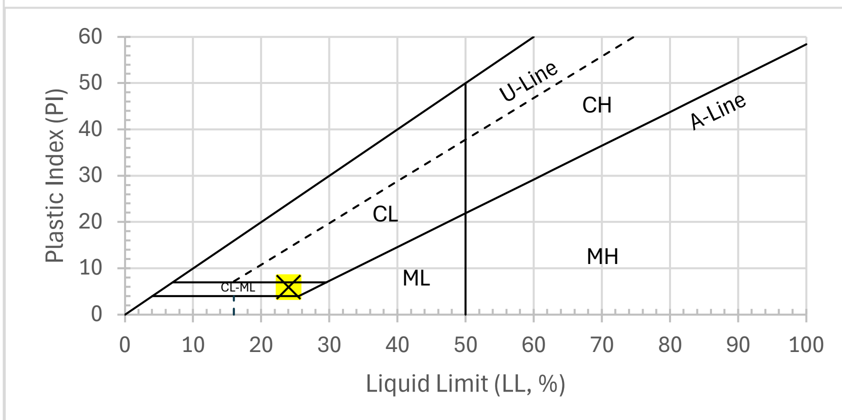
Moab Geotechnical Group

Project:	SJSD Lyman Middle School
Project No:	2025-061
Location:	Blanding, UT
Exploration Name:	TP-02
Sample ID:	Bulk-01
Depth (ft) :	2.5-5
Sample Date:	7/10/2025
Description:	Brown Clay
Test Date:	7/21/2025
Tested By:	DP
Test Notes:	

USCS Soil Classification:	CL-ML
Liquid Limit (%):	24
Plastic Limit (%):	18
Plasticity Index:	6
Sample Preparation:	Dry
Liquid Limit Procedure:	Multi-Point (3)
Plastic Limit Procedure:	Rolling Device

	Liquid Limit				Plastic Limit	
	15-25	20-30	25-35			
Number of Blows:	20	24	35			
Tare (g):	20.98	21.08	21.15		21.02	21.1
Wet Sample + Tare (g):	35.22	35.2	36.99		33.93	30.97
Dry Sample + Tare (g):	32.45	32.5	34.05		31.93	29.53
Water Content (%):	24.1	23.6	22.8		18.3	17.1





Reviewed By: _TQH_

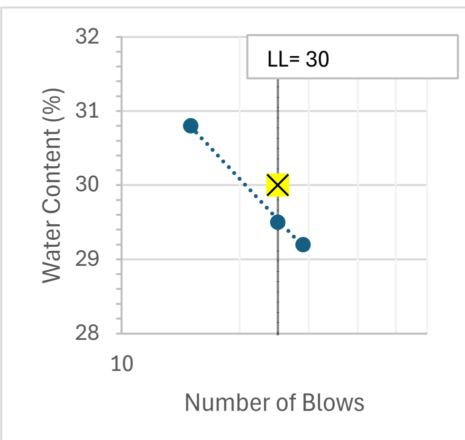
Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D4318

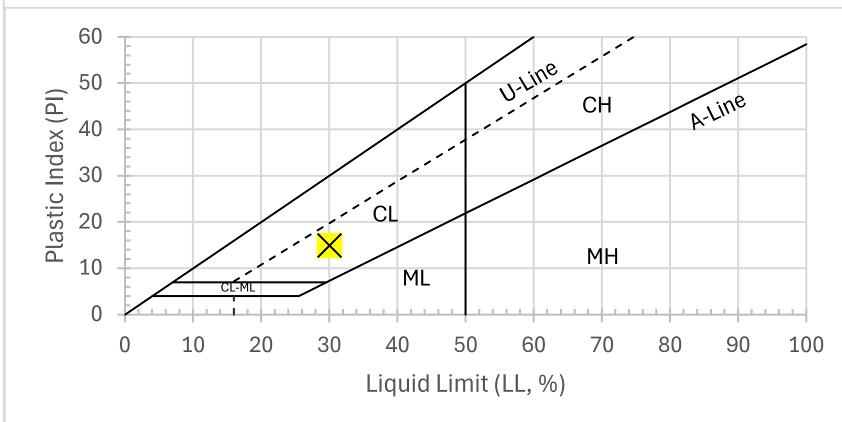
Moab Geotechnical Group

Project:	SJSD Lyman Middle School
Project No:	2025-061
Location:	Blanding, UT
Exploration Name:	TP-04
Sample ID:	GB-01
Depth (ft) :	0.25-1.25
Sample Date:	7/10/2025
Description:	Red/Brown, Green/Gray Clay
Test Date:	7/22/2025
Tested By:	DP
Test Notes:	

USCS Soil Classification:	CL
Liquid Limit (%):	30
Plastic Limit (%):	15
Plasticity Index:	15
Sample Preparation:	Dry
Liquid Limit Procedure:	Multi-Point (3)
Plastic Limit Procedure:	Rolling Device

	Liquid Limit				Plastic Limit	
	15-25	20-30	25-35			
Number of Blows:	15	25	29			
Tare (g):	21.1	21.19	21.03		21.11	21.13
Wet Sample + Tare (g):	32.3	32.66	33.01		29.66	30.52
Dry Sample + Tare (g):	29.66	30.05	30.3		28.5	29.34
Water Content (%):	30.8	29.5	29.2		15.7	14.4





Reviewed By: _TQH_

Atterberg Test 2

Liquid Limit, Plastic Limit, and Plasticity Index of Soils

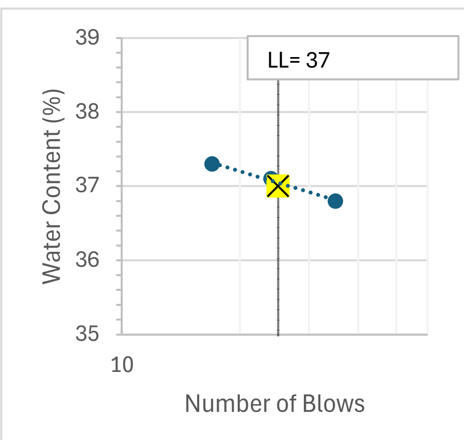
ASTM D4318

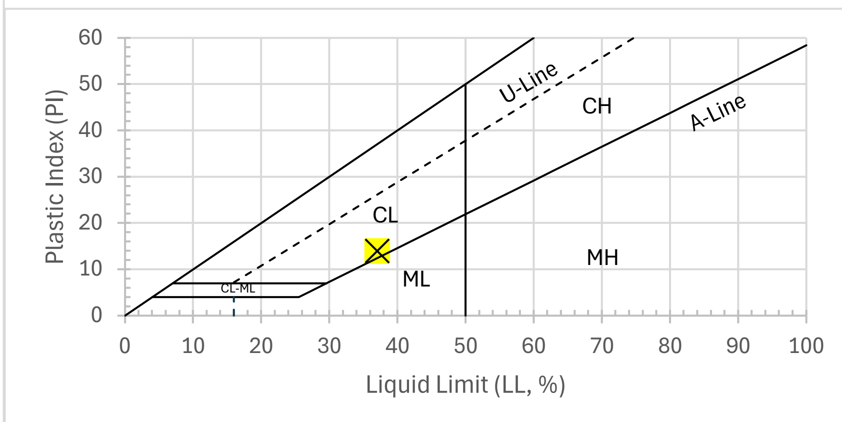
Moab Geotechnical Group

Project:	SJSD Lyman Middle School
Project No:	2025-061
Location:	Blanding, UT
Exploration Name:	TP-04
Sample ID:	GB-02
Depth (ft) :	1.25-3
Sample Date:	7/10/2025
Description:	Grey,Brown, Red Clay
Test Date:	
Tested By:	DP
Test Notes:	

USCS Soil Classification:	CL
Liquid Limit (%):	37
Plastic Limit (%):	23
Plasticity Index:	14
Sample Preparation:	Dry
Liquid Limit Procedure:	Multi-Point (3)
Plastic Limit Procedure:	Rolling Device

	Liquid Limit				Plastic Limit	
	15-25	20-30	25-35			
Number of Blows:	17	24	35			
Tare (g):	21.06	21.1	21.1		21.14	21.11
Wet Sample + Tare (g):	29.93	30.27	31.61		30.67	30.86
Dry Sample + Tare (g):	27.52	27.79	28.78		28.94	29.04
Water Content (%):	37.3	37.1	36.8		22.2	23.0





Reviewed By: _TQH_

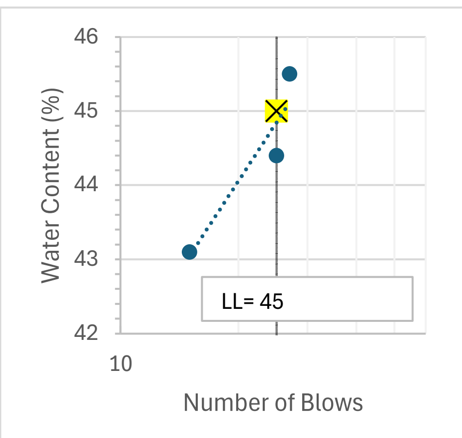
Atterberg Test 3

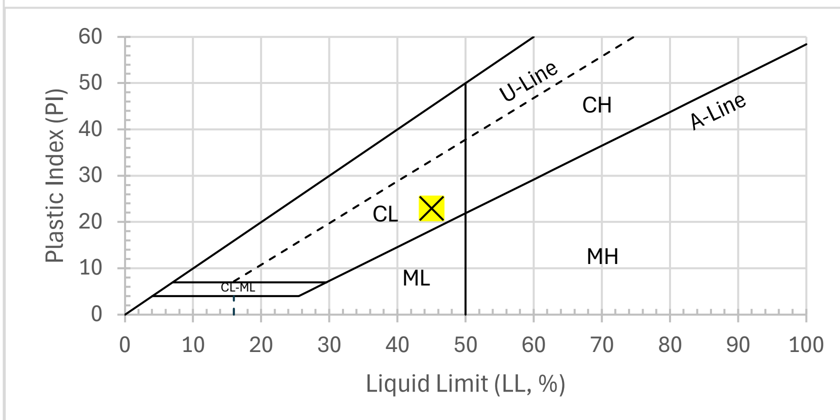
Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D4318

Project:	SJSD Lyman Middle School
Project No:	2025-061
Location:	Blanding, UT
Exploration Name:	TP-05
Sample ID:	GB-01
Depth (ft) :	2.5-3
Sample Date:	7/10/2025
Description:	Brown, Red Clay
Test Date:	
Tested By:	DP
Test Notes:	

USCS Soil Classification:	CL
Liquid Limit (%):	45
Plastic Limit (%):	22
Plasticity Index:	23
Sample Preparation:	Dry
Liquid Limit Procedure:	Multi-Point (3)
Plastic Limit Procedure:	Rolling Device

	Liquid Limit				Plastic Limit	
	15-25	20-30	25-35			
Number of Blows:	15	25	27			
Tare (g):	21.13	20.99	21.12		21.08	21.03
Wet Sample + Tare (g):	32.85	27.95	28.44		29.86	30.01
Dry Sample + Tare (g):	29.32	25.81	26.15		28.22	28.43
Water Content (%):	43.1	44.4	45.5		23.0	21.4





Reviewed By: _TQH_

Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
ASTM D6913

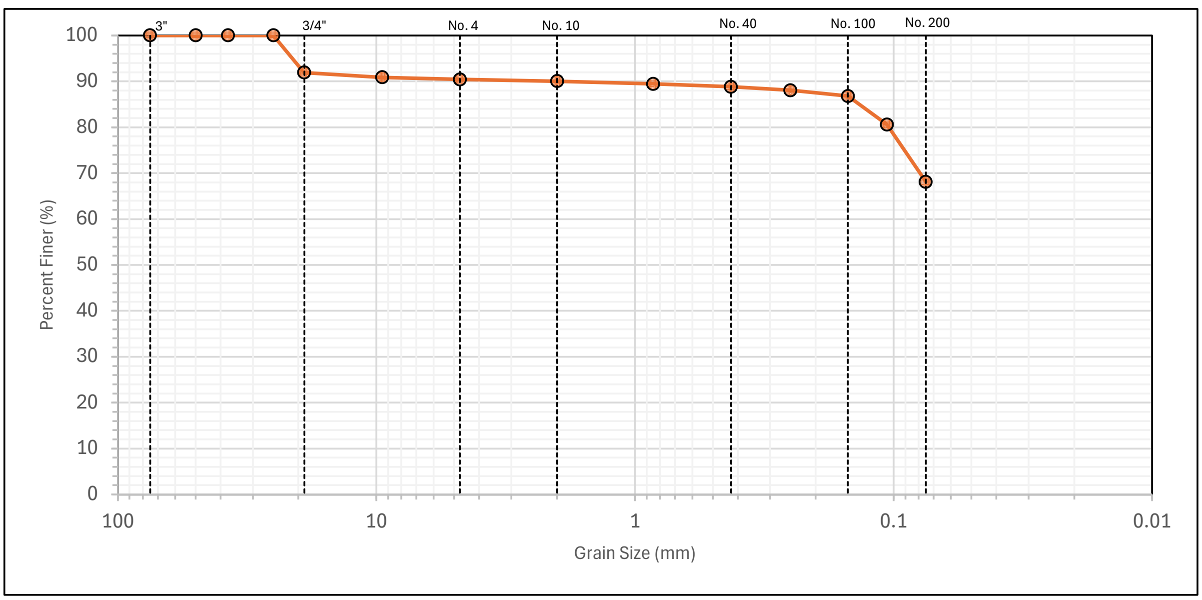
Moab Geotechnical Group

Project:	SJSD Lyman Middle School
Project No:	2025-061
Location:	Blanding, UT
Exploration:	TP-01
Sample ID:	GB-01
Depth:	0-1
Sample Date:	7/10/2025
Sample Description:	Red/Brown Silt
Prep Method:	Moist
Test Method:	A
Number of Separtions:	0
Sample	
Dry Mass (g):	237.5
> 200 Mass (g):	78.2
Dispersion Apparatus:	None
Water Content (%):	8

Test Date:	7/16/2025
Tested By:	DP
Test Notes:	

Gravel (%):	10
Sand (%):	22
Fines (%):	68

Sieve	Sieve Opening (mm)	Percent Finer (%)	Percent Retained (%)
3"	75	100	0
2"	50	100	0
1.5"	37.5	100	0
1.0"	25	100	0
3/4"	19	92	8
3/8"	9.5	91	9
No. 4	4.75	90	10
No. 10	2	90	10
No. 20	0.85	89	11
No. 40	0.425	89	11
No. 60	0.25	88	12
No. 100	0.15	87	13
No. 140	0.106	81	19
No. 200	0.075	68	32
Pan	-	0	100



Reviewed By: TQH_

Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
ASTM D6913

Moab Geotechnical Group

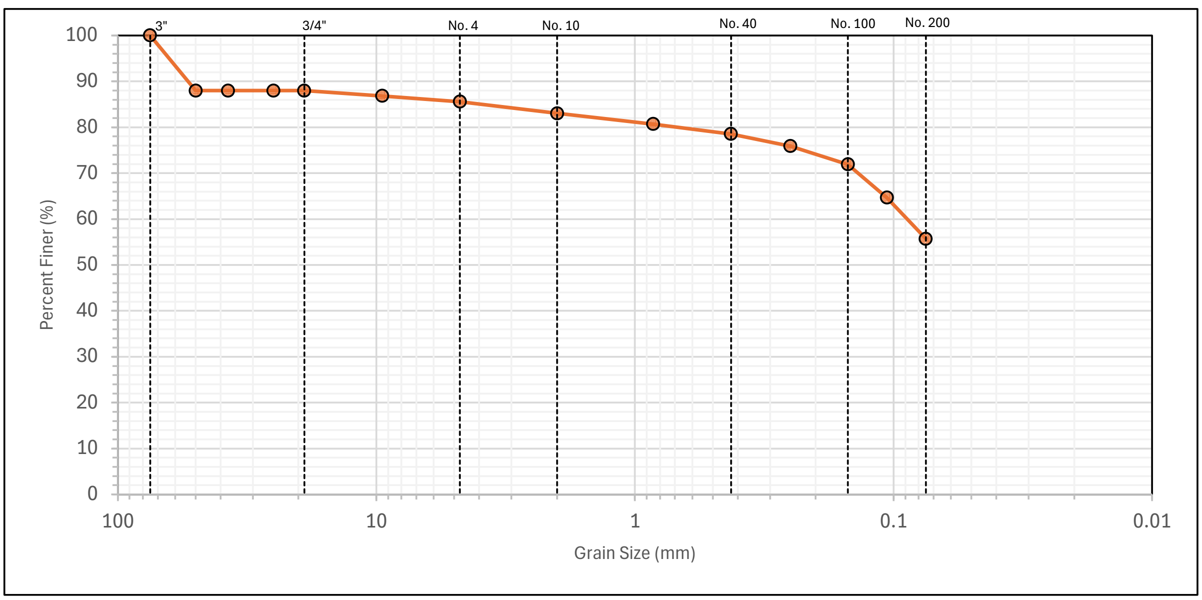
Project:	SJSD Lyman Middle School
Project No:	2025-061
Location:	Blanding, UT
Exploration:	TP-01
Sample ID:	GB-02
Depth:	1-2
Sample Date:	7/10/2025
Sample Description:	Red Silt
Prep Method:	Moist
Test Method:	A
Number of Separtions:	0

Sample	
Dry Mass (g):	351.6
> 200 Mass (g):	342.9
Dispersion Apparatus:	None
Water Content (%):	2

Test Date: 7/16/2025
Tested By: DP
Test Notes: Not Enough Sample. One >2" cobble in sample.

Gravel (%):	14
Sand (%):	30
Fines (%):	56

Sieve	Sieve Opening (mm)	Percent Finer (%)	Percent Retained (%)
3"	75	100	0
2"	50	88	12
1.5"	37.5	88	12
1.0"	25	88	12
3/4"	19	88	12
3/8"	9.5	87	13
No. 4	4.75	86	14
No. 10	2	83	17
No. 20	0.85	81	19
No. 40	0.425	79	21
No. 60	0.25	76	24
No. 100	0.15	72	28
No. 140	0.106	65	35
No. 200	0.075	56	44
Pan	-	0	100



Reviewed By: TQH_

Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
ASTM D6913

Moab Geotechnical Group

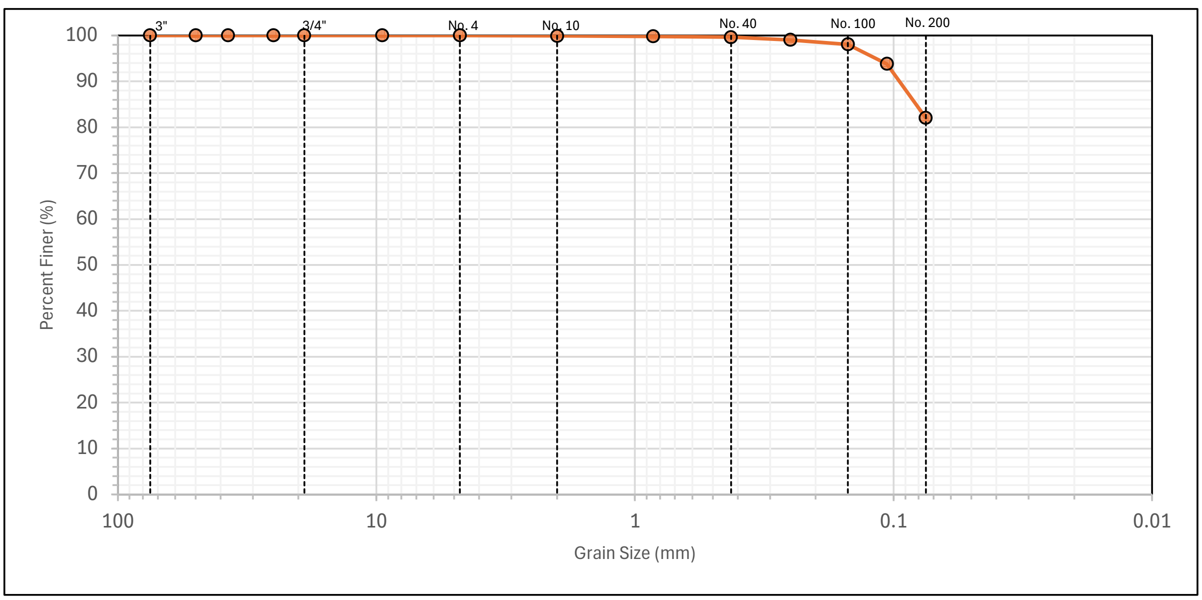
Project:	SJSD Lyman Middle School
Project No:	2025-061
Location:	Blanding, UT
Exploration:	TP-01
Sample ID:	GB-03
Depth:	5-6
Sample Date:	7/10/2025
Sample Description:	Brown Silt
Prep Method:	Moist
Test Method:	B
Number of Separtions:	0

Sample	
Dry Mass (g):	244.8
> 200 Mass (g):	46.6
Dispersion Apparatus:	None
Water Content (%):	6.6

Test Date: 7/16/2025
Tested By: DP
Test Notes:

Gravel (%):	0.0
Sand (%):	18.0
Fines (%):	82.0

Sieve	Sieve Opening (mm)	Percent Finer (%)	Percent Retained (%)
3"	75	100.0	0.0
2"	50	100.0	0.0
1.5"	37.5	100.0	0.0
1.0"	25	100.0	0.0
3/4"	19	100.0	0.0
3/8"	9.5	100.0	0.0
No. 4	4.75	100.0	0.0
No. 10	2	99.9	0.1
No. 20	0.85	99.8	0.2
No. 40	0.425	99.6	0.4
No. 60	0.25	99.0	1.0
No. 100	0.15	98.1	1.9
No. 140	0.106	93.8	6.2
No. 200	0.075	82.0	18.0
Pan	-	0.0	100.0



Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
ASTM D6913

Moab Geotechnical Group

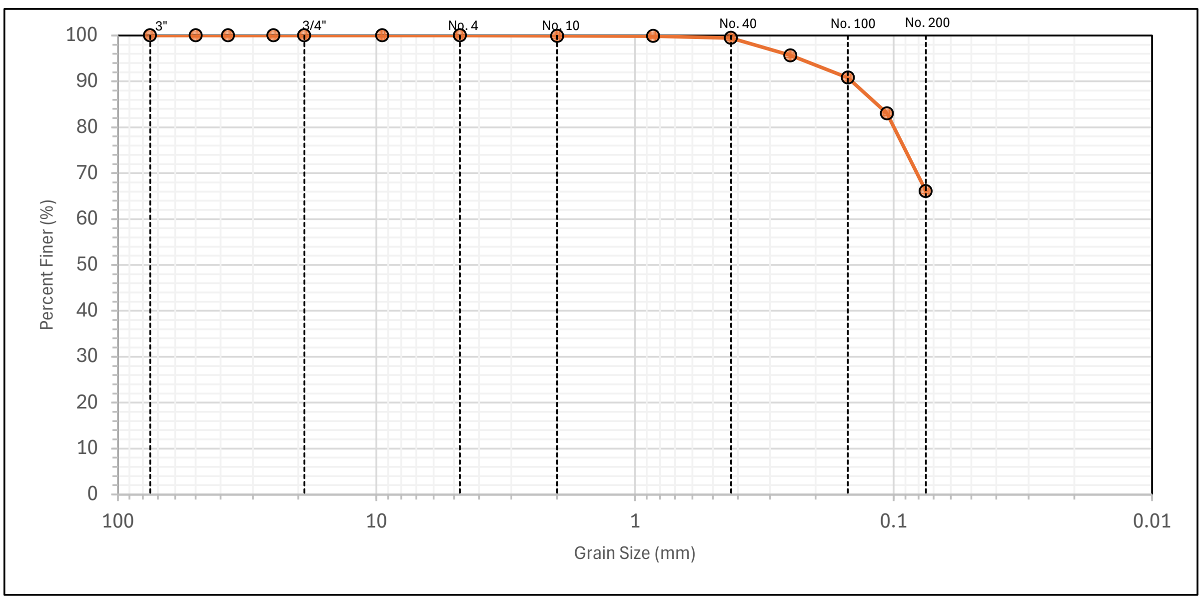
Project:	SJSD Lyman Middle School
Project No:	2025-061
Location:	Blanding, UT
Exploration:	TP-02
Sample ID:	Bulk-01
Depth:	2.5-5
Sample Date:	7/10/2025
Sample Description:	Brown Clay
Prep Method:	Moist
Test Method:	B
Number of Separtions:	0

Sample	
Dry Mass (g):	251.0
> 200 Mass (g):	87.9
Dispersion Apparatus:	None
Water Content (%):	11.2

Test Date:	7/22/2025
Tested By:	DP
Test Notes:	

Gravel (%):	0.0
Sand (%):	33.9
Fines (%):	66.1

Sieve	Sieve Opening (mm)	Percent Finer (%)	Percent Retained (%)
3"	75	100.0	0.0
2"	50	100.0	0.0
1.5"	37.5	100.0	0.0
1.0"	25	100.0	0.0
3/4"	19	100.0	0.0
3/8"	9.5	100.0	0.0
No. 4	4.75	100.0	0.0
No. 10	2	99.9	0.1
No. 20	0.85	99.9	0.1
No. 40	0.425	99.4	0.6
No. 60	0.25	95.7	4.3
No. 100	0.15	90.8	9.2
No. 140	0.106	83.0	17.0
No. 200	0.075	66.1	33.9
Pan	-	0.0	100.0



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Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
ASTM D6913

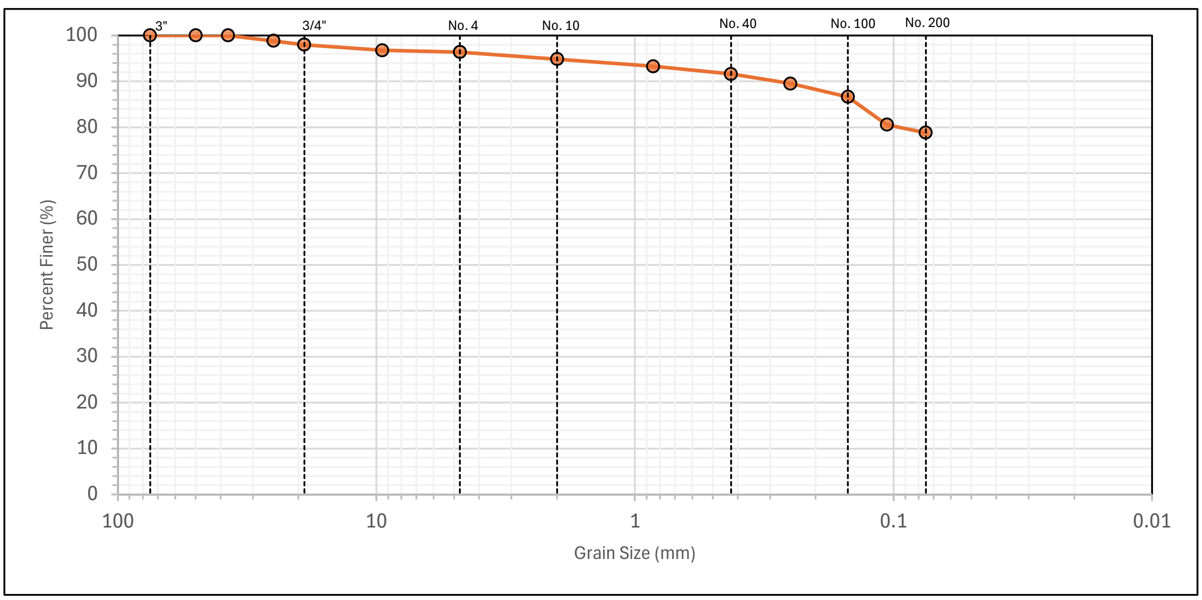
Moab Geotechnical Group

Project:	SJSD Lyman Middle School
Project No:	2025-061
Location:	Blanding, UT
Exploration:	TP-03
Sample ID:	GB-01
Depth:	1-3
Sample Date:	7/10/2025
Sample Description:	Brown Silt
Prep Method:	Moist
Test Method:	A
Number of Separtions:	0
Sample	
Dry Mass (g):	121.3
> 200 Mass (g):	108.0
Dispersion Apparatus:	None
Water Content (%):	3

Test Date:	7/16/2025
Tested By:	DP
Test Notes:	

Gravel (%):	4
Sand (%):	17
Fines (%):	79

Sieve	Sieve Opening (mm)	Percent Finer (%)	Percent Retained (%)
3"	75	100	0
2"	50	100	0
1.5"	37.5	100	0
1.0"	25	99	1
3/4"	19	98	2
3/8"	9.5	97	3
No. 4	4.75	96	4
No. 10	2	95	5
No. 20	0.85	93	7
No. 40	0.425	92	8
No. 60	0.25	90	10
No. 100	0.15	87	13
No. 140	0.106	81	19
No. 200	0.075	79	21
Pan	-	0	100



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Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
ASTM D6913

Moab Geotechnical Group

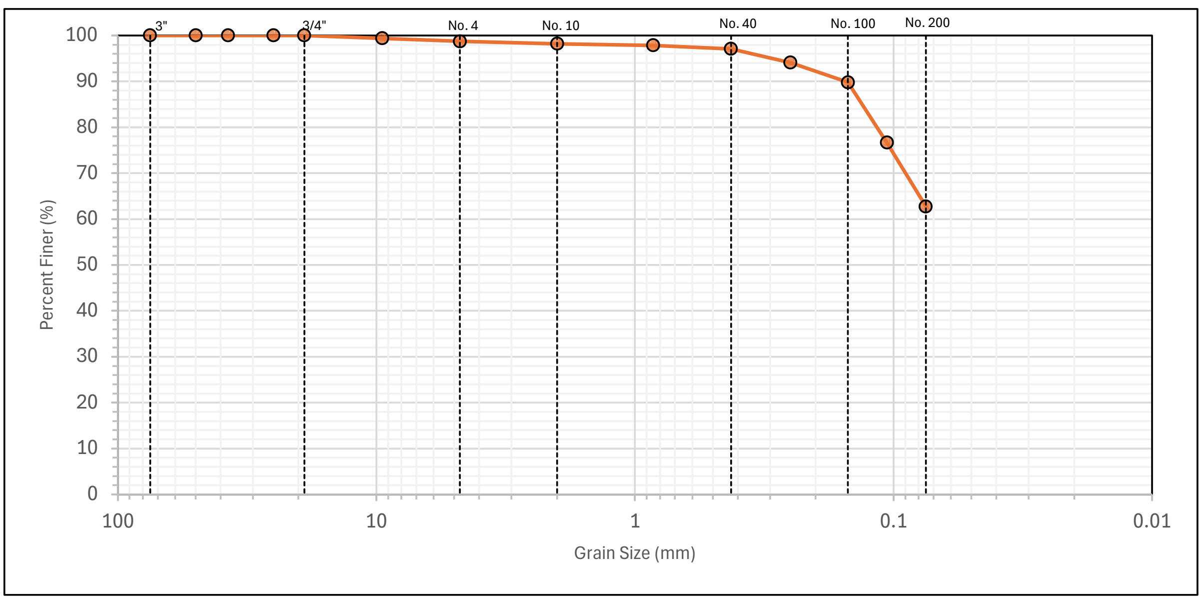
Project:	SJSD Lyman Middle School
Project No:	2025-061
Location:	Blanding, UT
Exploration:	TP-03
Sample ID:	GB-02
Depth:	3-5
Sample Date:	7/10/2025
Sample Description:	Red/Brown Silt
Prep Method:	Moist
Test Method:	A
Number of Separtions:	0

Sample	
Dry Mass (g):	269.7
> 200 Mass (g):	103.2
Dispersion Apparatus:	None
Water Content (%):	8

Test Date:	7/16/2025
Tested By:	DP
Test Notes:	

Gravel (%):	1
Sand (%):	36
Fines (%):	63

Sieve	Sieve Opening (mm)	Percent Finer (%)	Percent Retained (%)
3"	75	100	0
2"	50	100	0
1.5"	37.5	100	0
1.0"	25	100	0
3/4"	19	100	0
3/8"	9.5	99	1
No. 4	4.75	99	1
No. 10	2	98	2
No. 20	0.85	98	2
No. 40	0.425	97	3
No. 60	0.25	94	6
No. 100	0.15	90	10
No. 140	0.106	77	23
No. 200	0.075	63	37
Pan	-	0	100



Reviewed By: TQH_

Project:	SJSD Lyman Middle School	**Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sedimentation (Hydrometer) Analysis**
Project No:	2025-061	
Location:	Blanding, UT	ASTM D7928

Test:	Sample Source:	Sample ID:	Depth (ft):	Description:	Sand:	Fines:	Silt:	Clay:
1	TP-04	GB-01	0.25-1.25	Redish-brown, Greenish Gray Clay	13	87	58	29
2	TP-04	GB-02	1.25-3	Red, Brown, Gray Clay	16.8	83.2	56.1	27.1
3	TP-05	GB-01	2.5-3	Brown Red Clay	11.3	88.7	49.6	39.1

Reviewed By: TQH

Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sedimentation (Hydrometer) Analysis

ASTM D7928

Moab Geotechnical Group

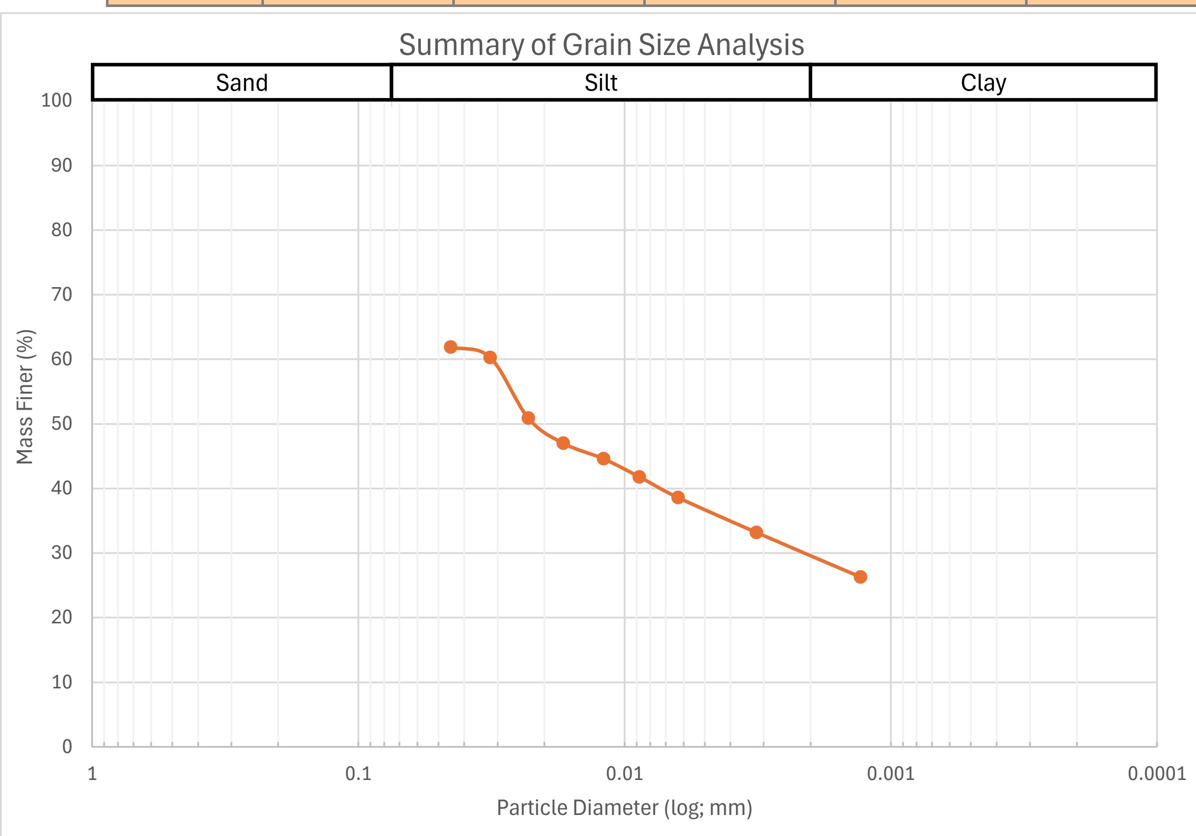
Project:	SJSD Lyman Middle School
Project No:	2025-061
Location:	Blanding, UT
Sample Date:	7/10/2025
Exploration:	TP-04
Sample ID:	GB-01
Depth (ft):	0.25-1.25
Description:	Redish-brown, Greenish Gray Clay
Sample Moist Mass (0.01g):	59.22
Sample Dry Mass (0.01g):	50.8
Sample Water Content (%):	16.6
Companion Sample Used:	Yes

Tested By:	DP	
Test Sample Reduction:	Whole	
Prep Method:	Moist	
Separation Sieve:	None	
Sample Specific Gravity:	2.65	Assumed

Summary of Results for Sedimentation Specimen		
Sand	Fines	
13	87	
	Silt	Clay
	58	29

Dispersant Method:	Direct Add	Dispersant (0.01g):	5.01	Dispersion Device:	Cup & Mixer
Foam Inhibitor:	No	Test Cylinder:	1	Hydrometer:	151H
Temp Density Correction:	A/B Constant	Test Start Date:	7/21/2025	Test Start Time:	10:12 AM

Time elapsed (min)	Hydrometer Reading (r_m)	Temp °C	Hydrometer Offset Read ($r_{d,m}$)	Effective Depth (H_m; cm)	Particle Diameter (D; mm)	Mass Finer (N_m;%)
1	1.0225	22.1	1.0028	11	0.045	61.9
2	1.022	22.1	1.0028	11	0.032	60.3
4	1.019	22.1	1.0028	12	0.023	50.9
8	1.01775	22.1	1.0028	12	0.017	47
15	1.017	22.1	1.0028	12	0.012	44.6
30	1.016	22.6	1.0027	13	0.009	41.8
61	1.015	22.5	1.0027	13	0.0063	38.6
246	1.01325	22.6	1.0027	13	0.0032	33.2
1456	1.011	22.8	1.0026	14	0.0013	26.3



Reviewed By: TQH

Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sedimentation (Hydrometer) Analysis

ASTM D7928

Moab Geotechnical Group

Project:	SJSD Lyman Middle School
Project No:	2025-061
Location:	Blanding, UT
Sample Date:	7/10/2025
Exploration:	TP-04
Sample ID:	GB-02
Depth (ft):	1.25-3
Description:	Red, Brown, Gray Clay
Sample Moist Mass (0.01g):	57.76
Sample Dry Mass (0.01g):	49.79
Sample Water Content (%):	16
Companion Sample Used:	Yes

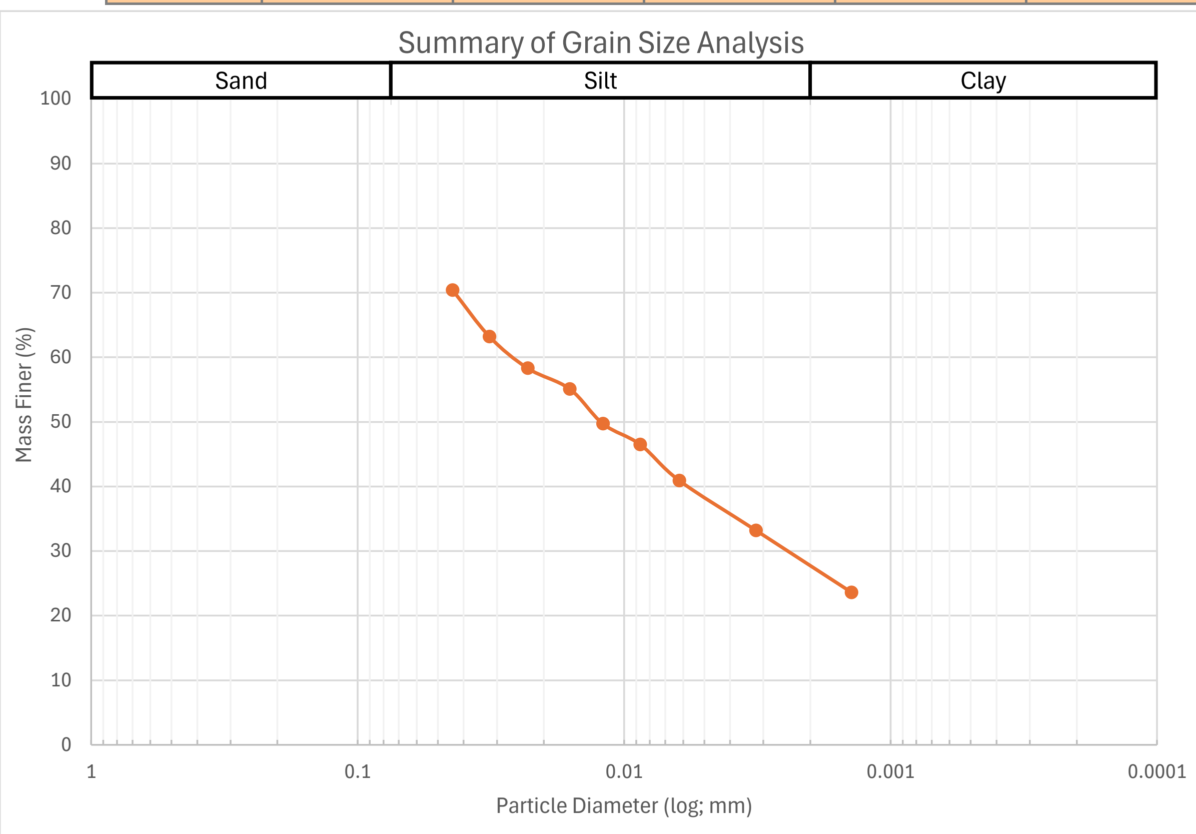
Tested By:	DP	
Test Sample Reduction:	Whole	
Prep Method:	Moist	
Separation Sieve:	None	
Sample Specific Gravity:	2.65	Assumed

Summary of Results for Sedimentation Specimen

Sand	Fines	
16.8	83.2	
	Silt	Clay
	56.1	27.1

Dispersant Method:	Direct Add	Dispersant (0.01g):	4.99	Dispersion Device:	Cup & Mixer
Foam Inhibitor:	No	Test Cylinder:	2	Hydrometer:	151H
Temp Density Correction:	A/B Constant	Test Start Date:	7/21/2025	Test Start Time:	10:22 AM

Time elapsed (min)	Hydrometer Reading (r_m)	Temp °C	Hydrometer Offset Read ($r_{d,m}$)	Effective Depth (H_m; cm)	Particle Diameter (D; mm)	Mass Finer (N_m;%)
1	1.02475	22.1	1.0028	10	0.044	70.4
2	1.0225	22.1	1.0028	11	0.032	63.2
4	1.021	22.1	1.0028	11	0.023	58.3
8	1.02	22.1	1.0028	12	0.016	55.1
15	1.01825	22.3	1.0028	12	0.012	49.7
30	1.01725	22.4	1.0027	12	0.009	46.5
61	1.0155	22.4	1.0027	13	0.0062	40.9
238	1.013	22.8	1.0026	13	0.0032	33.2
1447	1.01	22.8	1.0026	14	0.0014	23.6



Reviewed By: TQH

Hydrometer Analysis Test 2

Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sedimentation (Hydrometer) Analysis

ASTM D7928

Moab Geotechnical Group

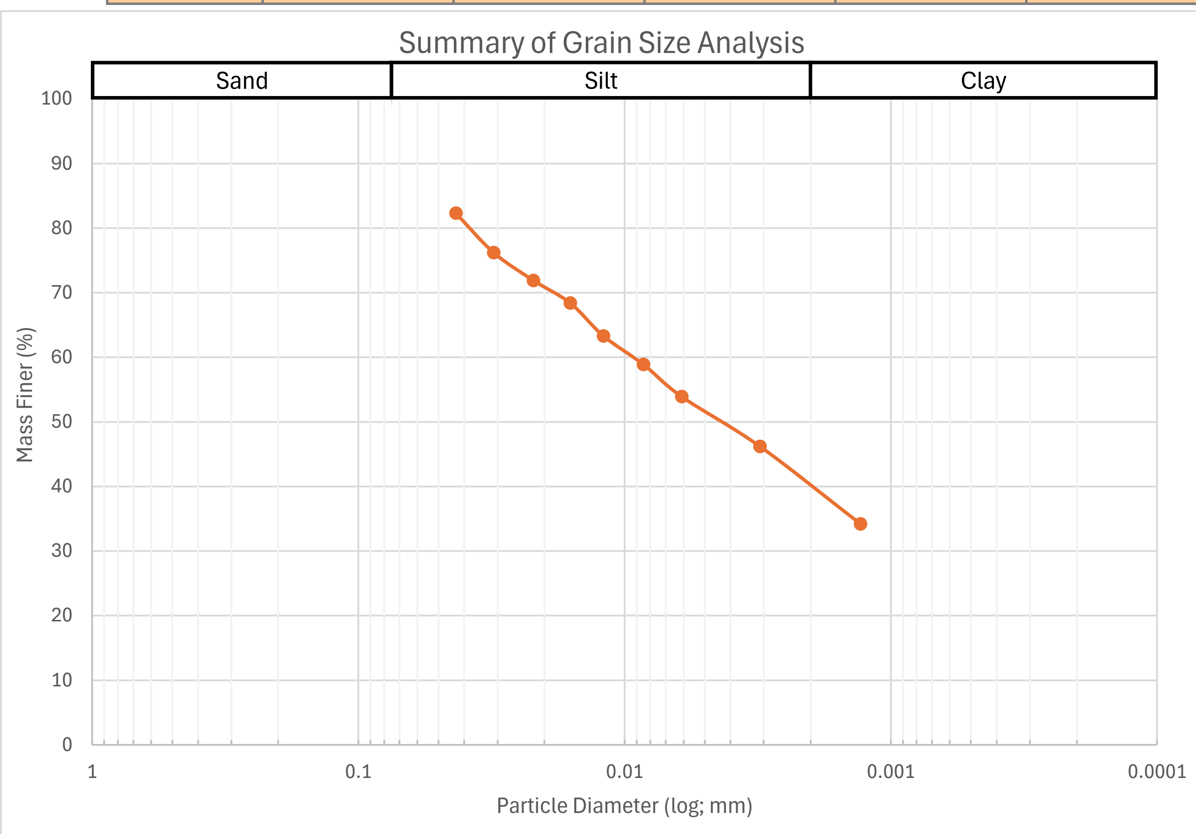
Project:	SJSD Lyman Middle School	Tested By:	DP
Project No:	2025-061	Test Sample Reduction:	Whole
Location:	Blanding, UT	Prep Method:	Moist
Sample Date:	7/10/2025	Separation Sieve:	None
Exploration:	TP-05	Sample Specific Gravity:	2.65 Assumed
Sample ID:	GB-01		
Depth (ft):	2.5-3		
Description:	Brown Red Clay		
Sample Moist Mass (0.01g):	54.75		
Sample Dry Mass (0.01g):	45.94		
Sample Water Content (%):	19.2		
Companion Sample Used:	Yes		

Summary of Results for Sedimentation Specimen

Sand	Fines	
11.3	88.7	
	Silt	Clay
	49.6	39.1

Dispersant Method:	Direct Add	Dispersant (0.01g):	5.03	Dispersion Device:	Cup & Mixer
Foam Inhibitor:	No	Test Cylinder:	3	Hydrometer:	151H
Temp Density Correction:	A/B Constant	Test Start Date:	7/21/2025	Test Start Time:	10:32 AM

Time elapsed (min)	Hydrometer Reading (r_m)	Temp °C	Hydrometer Offset Read ($r_{d,m}$)	Effective Depth (H_m; cm)	Particle Diameter (D; mm)	Mass Finer (N_m;%)
1	1.0265	22.1	1.0028	9.8	0.043	82.3
2	1.02475	22.1	1.0028	10	0.031	76.2
4	1.0235	22.1	1.0028	11	0.022	71.9
8	1.0225	22.1	1.0028	11	0.016	68.4
15	1.021	22.2	1.0028	11	0.012	63.3
30	1.01975	22.2	1.0028	12	0.009	58.9
60	1.01825	22.4	1.0027	12	0.0061	53.9
248	1.016	22.6	1.0027	13	0.0031	46.2
1437	1.0125	22.8	1.0026	14	0.0013	34.2



Reviewed By: TQH

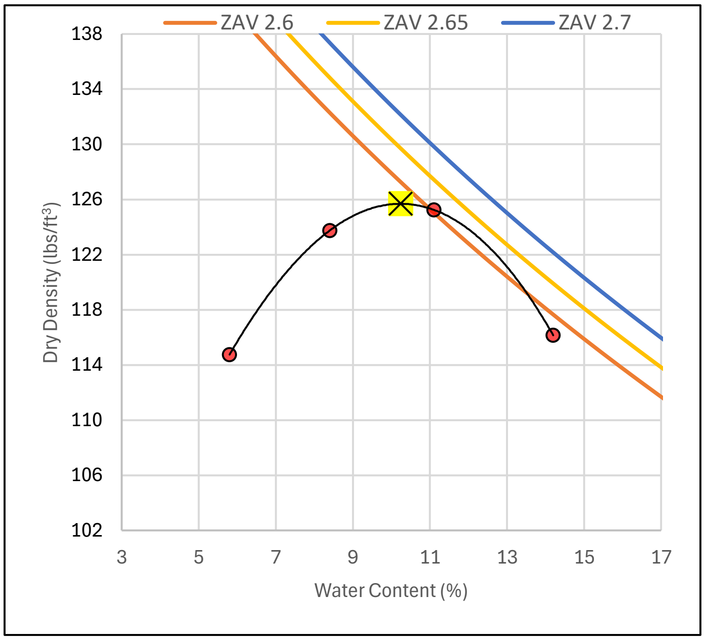
Project:	SJSD Lyman Middle School	**Laboratory Compaction Characterstics of Soil Using Modified Effort**				Min:	125.2	10.5	N/A	N/A
Project No:	2025-061					Max:	125.2	10.5	N/A	N/A
Location:	Blanding, UT	ASTM D1557				Ave:	125.2	10.5	N/A	N/A

Test:	Sample Source:	Sample ID:	Depth (ft):	Sieve:	Retained (%):	Passing (%):	Max Unit Weight	Max Water %	Corr Max Unit Weight	Corr Max Water
1	TP-02	Bulk-01	2.5-5	No. 4	0	100	125.2	10.5	N/A	N/A

Laboratory Compaction Characterstics of Soil Using Modified Effort
ASTM D1557

Project:	2025-061	Exploration Name:	TP-02
Project No:	SJSD Lyman Middle School	Sample ID:	Bulk-01
Location:	Blanding, UT	Depth (ft):	2.5-5
Sample Date:	7/10/2025	Description:	Brown Clay
Test Date:	7/22/2025	Prep Method:	Moist
Tested By:	DP	Test Method:	A
Reduced By:	DP	Rammer:	Manual
Test Notes		Proctor Effort:	Modified
		Percent Retained, Pc (%):	0
		Percent Passing, Pf (%):	100

Maximum Dry Unit Weight (lbf/ft^3):	125.2	**Corrected Dry Unit Weight (lbf/ft^3):**	N/A
Optimum Water Content (%):	10.5	**Corrected Optiumum Water Content (%):**	N/A

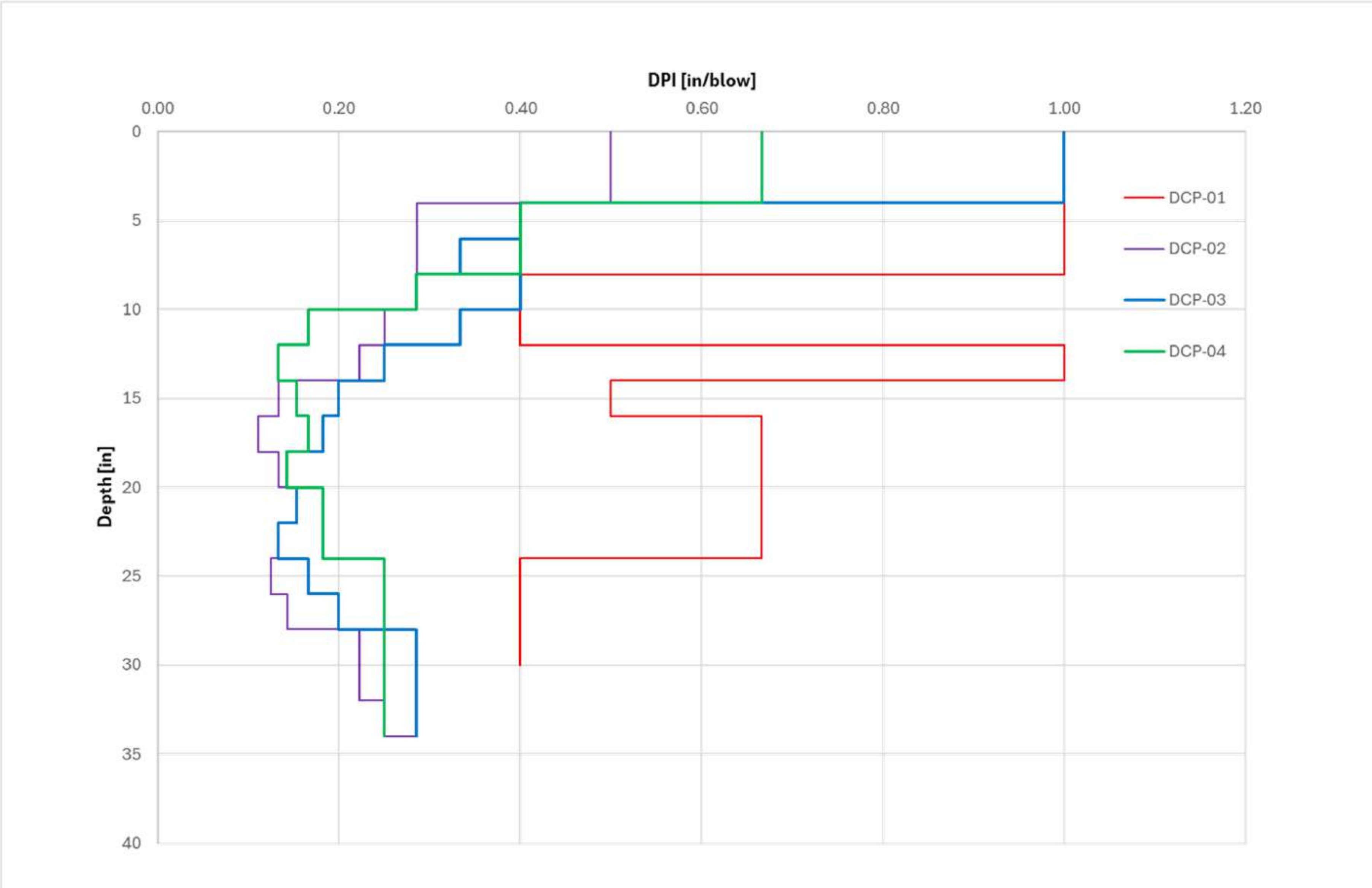


Sieve for Oversized Correction:	No. 4	Mold Size:	4
Oversized Water Content (%):	0.0	Mold Volume (ft^3):	0.0333
Passing Water Content (%):	11.2	Bulk Specific Gravity, Gs:	2.6 Assumed

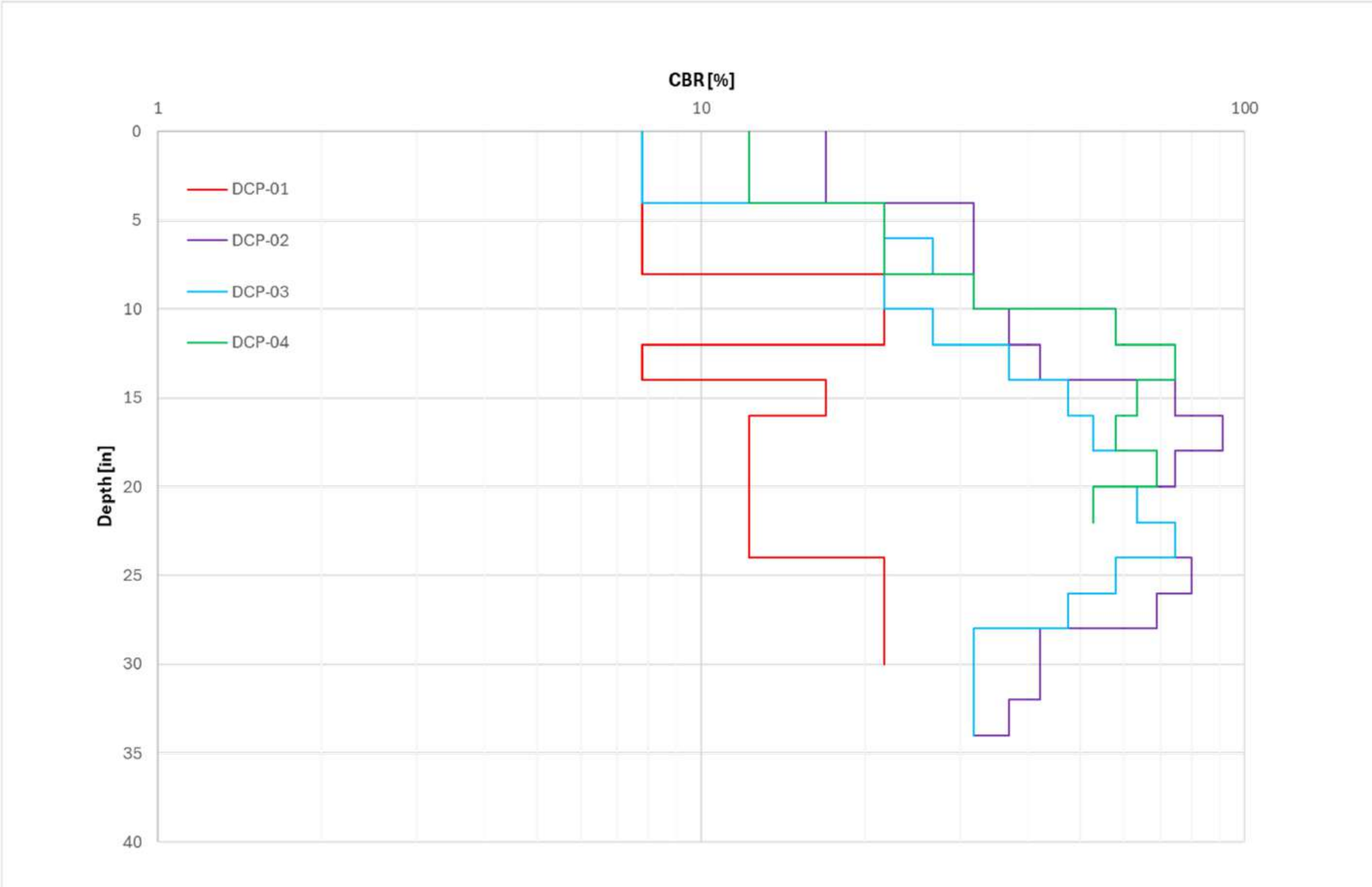
Weight of Mold (g):	4109.9	4109.9	4109.7	4109.8	
Weight of Sample + Mold (g):	5942.8	6134.5	6208.5	6111.3	
Moist Unit Weight (lbf/ft^3):	121.3	134.0	139.0	132.5	
Tare (g):	280.6	282.7	282.6	281.2	
Wet Soil + Tare (g):	2107.8	2298.8	2377.1	2279	
Dry Soil + Tare (g):	2002.6	2137.8	2162.9	2025.5	
Water Content (%):	6.1	8.7	11.4	14.5	
Dry Unit Weight (lbf/ft^3):	114.3	123.3	124.8	115.7	

Reviewed By: __________

APPENDIX C – DCP TEST RESULTS



Moab Geotechnical Group	SAN JUAN SCHOOL DISTRICT LYMAN MIDDLE SCHOOL BLANDING, UT	**DCP INTERPRETATION DPI**	Project No.: 2025-061
			July 2025 — **FIG. C-1**



Moab Geotechnical Group

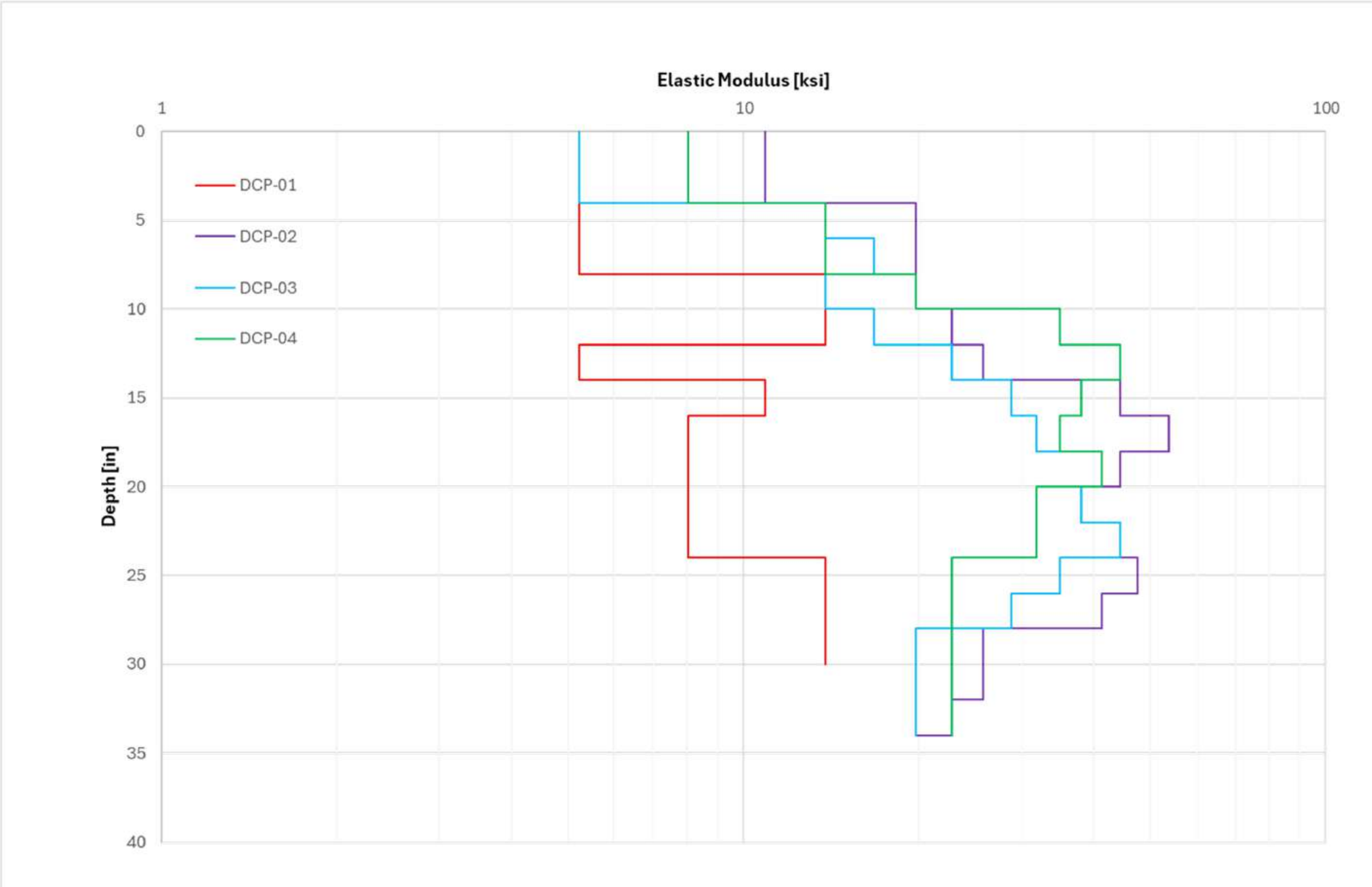
SAN JUAN SCHOOL DISTRICT
LYMAN MIDDLE SCHOOL
BLANDING, UT

DCP INTERPRETATION CBR

Project No.: 2025-061

July 2025

FIG. C-2



Moab Geotechnical Group

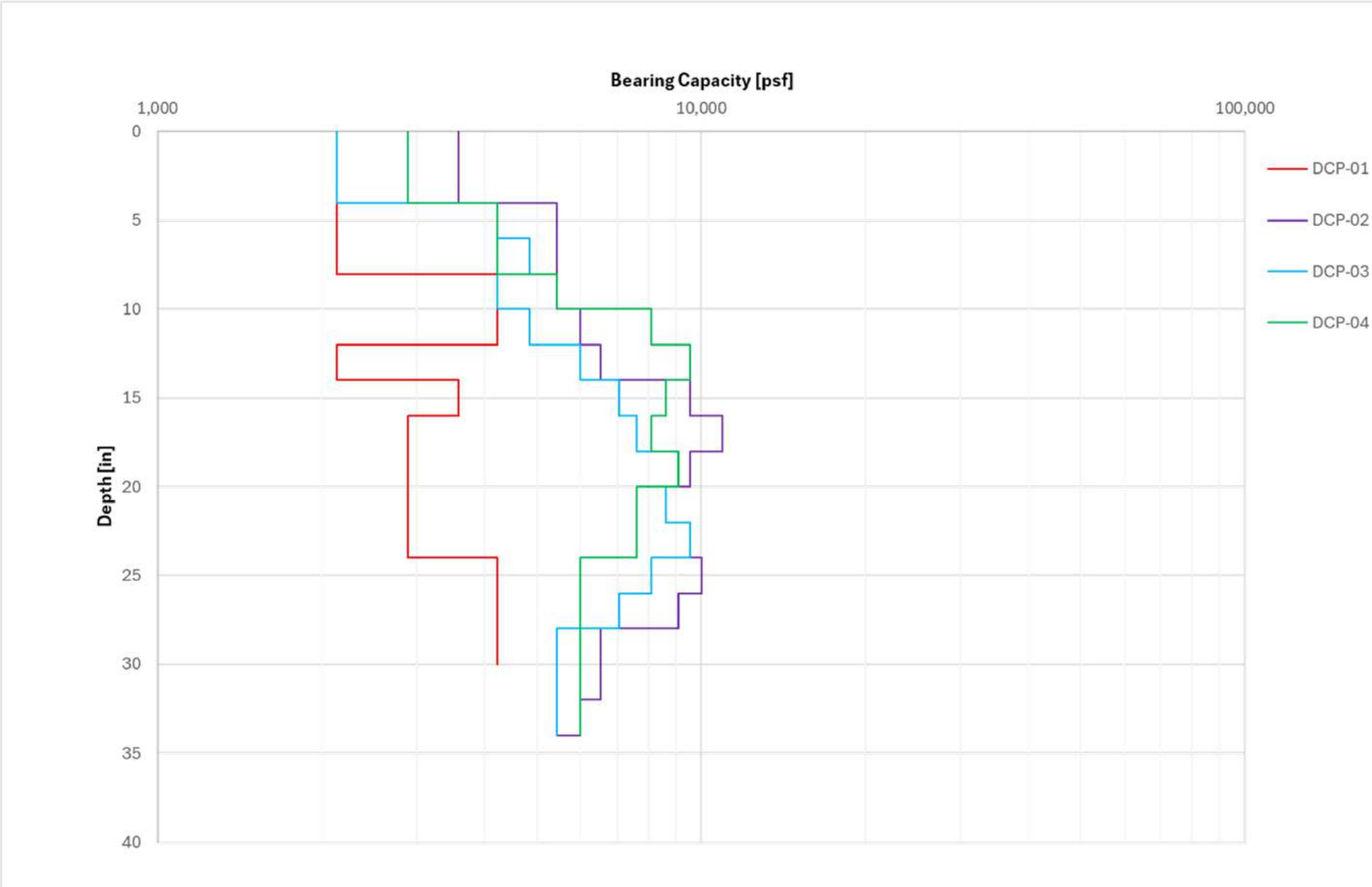
SAN JUAN SCHOOL DISTRICT
LYMAN MIDDLE SCHOOL
BLANDING, UT

DCP INTERPRETATION ELASTIC MODULUS

Project No.: 2025-061

July 2025

FIG. C-3



Moab Geotechnical Group

SAN JUAN SCHOOL DISTRICT
LYMAN MIDDLE SCHOOL
BLANDING, UT

DCP INTERPRETATION BEARING CAPACITY

Project No.: 2025-061

July 2025

FIG. C-4