Western Technologies Inc.
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2400 East Huntington Drive
Flagstaff, Arizona 86004-8934
(928) 774-8700 • fax 774-6469

March 11, 2021

R.D. Olson Development
5202 Newport Center Drive, Suite 600
Newport Beach, California 92660

Attn: Mr. Dustin Schmidt, Vice President of Real Estate

Re: Sedona Hotel Lodging Complex
115 Schnebly Hill Road
Sedona, Arizona

Job No. 2521JB002
Addendum No. 1

Attached are the results of the shear strength testing performed for the above referenced project. Test results indicate that the soils tested exhibit moderate to high shear strengths at water contents approaching saturation. These results correlate well with the analysis performed for the original report so that all of the recommendations contained in the original report remain applicable. The laboratory test results are attached.

This addendum should be attached to and become part of the original report. If you have any questions concerning this information, or require additional consultation, design, observation, or testing services, please contact us.

Sincerely,
WESTERN TECHNOLOGIES INC.
Geotechnical Engineering Services

Craig P. Wiedeman, P.E.
Senior Geotechnical Engineer

Registered Professional Engineer (Civil) CERTIFICATE NO. 11860 CRAIG P. WIEDEMAN Date Signed 3/11/21 ARIZONA U.S.A.

Copies to: Addressee (emailed)

Western Technologies Inc.

GEOTECHNICAL EVALUATION REPORT

SEDONA HOTEL LODGING COMPLEX
APN # 401-11-001C, 002F, 401-12-016C, 401-18-001A, 002C, 031D, 031G, 031B
115 Schnebly Hill Road
Sedona, Arizona
WT Reference No. 2521JB002

PREPARED FOR:
R.D. Olson Development
5202 Newport Center Drive, Suite 600
Newport Beach, California 92660
Attn: Mr. Dustin Schmidt, Vice President of Real Estate
February 22, 2021

Gregory L. E. Burr, R.G., E.I.T.
Geotechnical Project Manager

Craig P. Wiedeman, P.E.
Senior Geotechnical Engineer

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February 22, 2021

R.D. Olson Development
5202 Newport Center Drive, Suite 600
Newport Beach, California 92660

Attn: Mr. Dustin Schmidt, Vice President of Real Estate

Re: Geotechnical Evaluation
Sedona Hotel Lodging Complex
APN # 401-11-001C, 002F, 401-12-016C,
401-18-001A, 002C, 031D, 031G, 031B
115 Schnebly Hill Road
Sedona, Arizona

Job No. 2521JB002

Western Technologies Inc. has completed the geotechnical evaluation for the proposed hotel lodging complex to be located in Sedona, Arizona. This study was performed in general accordance with our proposal number 2520PW262R3 dated December 22, 2020. The results of our study, including the boring/test pit location diagram, laboratory test results, boring/test pit logs, and the geotechnical recommendations are attached.

We have appreciated being of service to you in the geotechnical engineering phase of this project and are prepared to assist you during the construction phases as well. If design conditions change, or if you have any questions concerning this report or any of our testing, inspection, design and consulting services, please do not hesitate to contact us. We look forward to working with you on future projects.

Sincerely,
WESTERN TECHNOLOGIES, INC.
Geotechnical Engineering Services

Gregory L. E. Burr, R.G., E.I.T.
Geotechnical Project Manager

Copies to: Addressee (emailed)

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APN # 401-11-001C, 002F, 401-12-016C, 401-18-001A, 002C, 031D, 031G, 031B
115 SCHNEBLY HILL ROAD
SEDONA, ARIZONA
JOB NO. 2521JB002

1.0 PURPOSE

This report contains the results of our geotechnical evaluation for the proposed hotel lodging complex to be located at 115 Schnebly Hill Road in Sedona, Arizona. The purpose of these services is to provide information and recommendations regarding:

- foundation design parameters
- slab-on-grade support
- on-site pavements
- lateral earth pressures
- seismic considerations
- earthwork
- drainage
- corrosivity to concrete
- shallow field infiltration rates

Results of the field exploration, field tests, and laboratory testing program are presented in the Appendices.

2.0 PROJECT DESCRIPTION

Based on information provided by Mr. Dustin Schmidt, Vice President of Real Estate, the proposed project will consist of eleven, one to three-story structures with plan areas ranging from approximately 1,500 to 5,000 square feet to be constructed on a 11.41-acre site. The structures are assumed to be of wood frame and/or masonry construction with slab-on-grade and suspended floors. It is assumed that the structures located adjacent to Oak Creek will be constructed very close to the near-vertical creek bank. Maximum wall and column loads for the structures are assumed to be 3.0 kips per linear foot and 45 kips, respectively. We anticipate no extraordinary slab-on-grade criteria and that the finished floor levels will be within about 2 to 3

feet of the existing site grades. Preliminary site grading plans were not available at the time of this report. On-site pavements and retention and/or detention basins will be included as part of the proposed development. Should any of our information or assumptions not be correct, we request that the Client notify Western Technologies (WT) immediately.

3.0 SCOPE OF SERVICES

3.1 Field Exploration

Sixteen borings and seven test pits were drilled/excavated to depths of about 1 to 17 feet below existing site grades at the approximate locations shown on the attached boring/test pit location diagram. Logs of the borings/test pits are presented in Appendix A. Subsoils encountered during drilling/excavating were examined visually and sampled at selected depth intervals. A field log was prepared for each boring/test pit. These logs contain visual classifications of the materials encountered during drilling/excavating as well as interpolation of the subsurface conditions between samples. Final logs, included in Appendix A, represent our interpretation of the field logs and include modifications based on laboratory observations and tests of the field samples. The final logs describe the materials encountered, their thicknesses, and the locations where samples were obtained. The Unified Soil Classification System was used to classify soils. The soil classification symbols appear on the boring/test pit logs and are briefly described in Appendix A. Shallow field infiltration tests were performed in four of the borings. Local and regional geologic characteristics were used to estimate the seismic design criteria and liquefaction potential.

3.2 Laboratory Analyses

Laboratory analyses were performed on representative soil samples to aid in material classification and to estimate pertinent engineering properties of the on-site soils for preparation of this report. Testing was performed in general accordance with applicable standard test methods. The following tests were performed and the results are presented in Appendix B.

- Water content
- Dry density
- Compression

- Shear strength (in progress)
- Gradation
- Expansion
- Plasticity
- Soluble salt/sulfate/chloride content

Test results were utilized in the development of the recommendations contained in this report.

3.3 Analyses and Report

This geotechnical engineering report includes a description of the project, a discussion of the field and laboratory testing programs, a discussion of the subsurface conditions, and design recommendations as appropriate to the purpose. The scope of services for this project does not include, either specifically or by implication, any environmental assessment of the site, discovery of underground storage tanks or other underground structures, or identification of contaminated or hazardous materials or conditions. If there is concern about the potential for such contamination, other studies should be undertaken. We are available to discuss the scope of such studies with you.

4.0 SITE CONDITIONS

4.1 Surface

The site is bordered on the north by Bear Wallow Lane, on the south by a developed lot, on the west by Oak Creek, and on the east by Schnebly Hill Road. Previous development on the site consisted of four wood frame and masonry houses with exteriors that appeared to be in good to fair condition. Paved and gravel surfaced access drives and exterior concrete slabs-on-grade also appeared to be in good to fair condition. Vegetation on the site consisted of planted grasses and trees, a sparse to moderate growth of native trees, bushes, cacti, grasses and weeds. A sandstone-lined drainage channel about 5 feet wide and 4 feet deep crosses through the south-central portion of the site. No water was present in the channel at the time of our exploration. A relatively small existing fill area about 10 feet deep is located near the extreme south end of the site. An old, small sandstone block structure housing a seepage pit to collect creek water in past times is also located in this area. The central portion of the site has been graded and landscaped in the

past with cuts of up to about 5 feet along Schnebly Hill Road and fills of about 2 to 3 feet toward the western side of the area. The northeastern portion of the site has been less disturbed and landscaped. The ground surface in this area contains numerous embedded basalt and sandstone gravels, cobbles and boulders. Evidence of numerous overhead and underground utilities were observed throughout the site.

The approximate southern half of the west property line borders an active flow channel of Oak Creek. The current water surface elevation was located about 10 to 20 feet below the ground surface along the tops of the slopes in this area. The slope faces are terraced in some areas and near-vertical in others. Throughout most of this area, the slope faces have been covered with grouted/concreted basalt and sandstone cobbles and boulders to help resist slope face erosion during higher flow events in the creek. Several concrete stairways descend from the tops of the slopes down to near the low flow creek areas. This previously developed cliffside area is about 700 feet long. We anticipate that it will be desirable to retain this existing slope face covered area as part of the new development.

4.2 Subsurface

As presented on the boring/test pit logs, surface and subsoils extending to the full depth of exploration were found to be non-plastic SILTS with variable amounts of sand and gravel; Silty GRAVELS and Poorly Graded GRAVELS with variable amounts of silt and sand; and Silty SANDS and Poorly Graded SANDS with variable amounts of silt and gravel. All of the soils encountered contained random amounts of cobbles and boulders. Existing fill soils were encountered in two of the borings and three of the test pits to depths of about 2 to 8 feet. Refusal to auger penetration/backhoe excavation occurred in all but three of the borings and four of the test pits at depths of about 1 to 17 feet on cobbles and boulders. Groundwater was not encountered in any boring or test pit at the time of exploration. The logs in Appendix A show details of the subsurface conditions encountered during the field exploration.

The boring/test pit logs included in this report are indicators of subsurface conditions only at the specific location and date noted. Variations from the field conditions represented by the borings/test pits may become evident during construction. If variations appear, we should be contacted to re-evaluate our recommendations.

5.0 GEOTECHNICAL PROPERTIES AND ANALYSIS

5.1 Laboratory Tests

Laboratory test results (see Appendix B) indicate that native subsoils exhibit low to moderate compressibility at existing water contents. Moderate to very high additional compression occurs when the water content is increased. Laboratory testing for direct shear in progress. Results will be presented in an addendum to the report as soon as the testing is completed.

Near-surface native soils are of nil plasticity. These soils exhibit no to low expansion potential when recompacted, confined by loads approximating floor loads and saturated in accordance with standard Arizona test methods. Slabs-on-grade supported on recompacted native soils have a low potential for heaving if the water content of the soil increases. Densification of the soil by the passage of construction equipment will increase the expansion potential of the native soil.

5.2 Field Tests

Native subsoils located near and below anticipated shallow foundation levels exhibited low to high resistance to penetration using the standard penetration test method (ASTM D1586) and test method ASTM D3550. The penetration resistances also exhibited significant variability between test locations and with depth. This represents a potential for differential movements within structures supported on native soils in their existing condition. Four shallow field infiltration tests were performed at depths of about 2 to 4 feet below existing site grades in proposed storm water retention basin areas. The infiltration tests were performed in 7-inch diameter unlined bore holes. The following tabulation presents the infiltration test results:

Infiltration Test Location	Test Depth (feet)	Infiltration Rate (Minutes/inch)
Boring 2	4 – 5	6
Boring 4	2 – 3	20
Boring 6	2 – 3	10
Boring 16	4 – 5	5

The boring logs and infiltration test results included in this report are indicators of subsurface conditions only at the specific location and date noted. Variations from the field conditions represented by the borings may become evident during construction. If variations appear, we should be contacted to re-evaluate infiltration rates.

6.0 RECOMMENDATIONS

6.1 General

Recommendations contained in this report are based on our understanding of the project criteria described in Section 2.0 and the assumption that the soil and subsurface conditions are those disclosed by the explorations. Others may change the plans, final elevations, number and type of structures, foundation loads, and floor levels during design or construction. Substantially different subsurface conditions from those described herein may be encountered or become known. Any changes in the project criteria or subsurface conditions shall be brought to our attention in writing.

6.2 Design Considerations

We anticipate that the major geotechnical concern for the development of the site will be support of the structures to be located along the western property line adjacent to the tops of the existing slopes along the previously developed cliffside area. The existing grouted/concreted cobble/boulder slope face coverings will provide no significant lateral resistance to any new surcharge loads imposed near the tops of the existing slopes. The most positive method to reduce possible slope stability problems is to keep any new development back from the tops of the existing slopes for a distance at least equal to the heights of the existing slopes. However, we understand that it will likely be desirable to develop units as close as possible to the tops of the existing slopes for aesthetic and ambiance reasons. It is recommended that all new fill surcharge loads be terminated at a horizontal distance back from the tops of the existing slopes equal to or greater than the heights of the existing slopes.

New shallow foundations located close to the tops of the existing slopes will impose lateral surcharge loads on the unsupported slope faces that could create mass stability problems. To avoid this condition, we recommend that any new building foundations located near the tops of the existing slopes consist of deeper foundation elements that

extend to depths at or below the existing toe of slope elevations. Deep foundation elements with connecting grades beams supporting a suspended first floor is the typical approach for this type of situation.

Due to the random, variable locations and sizes of the cobbles and boulders present in these soils, deeper foundation elements such as helical piers or small diameter steel push piles are not effective in these soils. Deep foundation elements will likely require the use of reinforced concrete-filled drilled shafts. Rock coring is usually required to extend shaft excavations through the random cobbles and boulders encountered.

Existing fill soils were encountered to depths of about 2 to 8 feet in the boring and test pit locations show on the attached boring/test pit location diagram. Based on the conditions encountered, the existing fill is considered uncontrolled and should be completely removed within all building and pavement areas.

Laboratory test results indicate that the site soils become weaker and more compressible with an increase in moisture content. These soils are not considered suitable for support of foundations and concrete slabs in their present state and should be over-excavated and/or recompacted as recommended in the **EARTHWORK** section of this report. Proper drainage should be provided to help prevent infiltration of moisture below the foundations and concrete slabs.

Cobbles and boulders were encountered in the borings. These oversized materials, greater than 3 inches, could present construction difficulties for foundation, utility trenches and other excavations. In cut areas and excavations, exposed oversized materials should be removed.

6.3 Foundations for Structures Set Back From Oak Creek

Following removal of all existing fill soils, the proposed structures can be supported by conventional shallow spread footings bearing on a minimum thickness of 2 feet of on-site soils removed and recompacted as engineered fill and/or properly compacted, imported, low expansive, engineered fill. Alternative footing depths and design bearing capacities are presented in the following tabulation:

Footing Depth Below Finished Grade[1] (ft)	Allowable Bearing Capacity[2] (psf)
1.5	2000
2.0[3]	2500

We anticipate that total settlement of the proposed structures, supported as recommended, should be less than 1 inch. Differential settlement should be less than ¾ inch. Additional foundation movements could occur if water from any source infiltrates the foundation soils.

The design bearing capacities apply to dead loads plus design live load conditions. Recommended minimum widths of column and wall footings are 24 inches and 16 inches, respectively. The bearing values given are net bearing values and the weight of the concrete in the footings may be ignored.

All footings, stem walls, and masonry walls should be reinforced to reduce the potential for distress caused by differential foundation movements. The use of joints at openings or other discontinuities in masonry walls is recommended.

Site preparation procedures and foundation excavations should be observed by the geotechnical engineer to assess that adequate bearing conditions exist and that recompaction of native soils and/or placement of engineered fill has been performed satisfactorily. If the soil conditions encountered differ significantly from those presented in this report, supplemental recommendations will be required.

[1] Finished grade is the lowest adjacent grade for perimeter footings and floor level for interior footings.

[2] Allowable bearing capacities assume fulfillment of **EARTHWORK** recommendations. Pounds per square foot (psf).

[3] Minimum perimeter footing depth based on anticipated frost penetration and recommended bearing capacity.

6.4 Foundations for Structures Adjacent to Oak Creek

It is recommended that the proposed structures to be located immediately adjacent to the existing slopes along Oak Creek be supported on drilled shaft foundations. Drilled shafts will derive load capacities from a combination of skin friction and end-bearing.

The downward dead- plus live-load axial capacities and upward capacities of various diameter shafts (1, 1.5 and 2 foot diameters) are presented as a function of shaft length in the appendices. The minimum shaft length should be at least 5 feet deeper than the height of the adjacent existing slope. A one-third increase in downward axial capacity may be used when considering wind or seismic loads.

The quoted capacities are based on the strength of the soils; the compressive and tensile strength of the shaft sections should be designed by a structural engineer to assure the structural capacity of the shafts.

Estimated total settlements for drilled shafts are ½ inch or less for the maximum anticipated loads.

Shafts in groups should be spaced at least two diameters on centers. The recommended group reduction factor in the downward capacities of the shafts due to group action for a spacing of two diameters on-center is 0.67. There will be no reduction in the downward capacities of the shafts due to group action if the shafts are spaced three diameters on-center or greater. The reduction factor for spacing between two and three diameters can be obtained by linear interpolation.

Shafts in groups should be drilled and filled alternately, allowing the concrete to set at least eight hours before drilling an adjacent shaft. Concrete should be placed with special equipment so the concrete does not fall against the excavation walls or reinforcing steel. Shaft excavations should not be allowed to stand open over night; concrete should be placed as soon as possible after inspection.

If a protective steel casing is required to hold the excavation open, it should be removed as the concrete is placed. However, the protective steel casing should not be removed until the concrete is above any groundwater or caving soil level. A minimum head of 5 feet of concrete should be maintained above the bottom of the casing during

withdrawal, and the contractor should prevent concrete from "hanging-up" inside the shell which can cause soil and water intrusion below the shell.

Site preparation procedures and the drilled shaft excavations should be observed by the geotechnical engineer to assess that adequate bearing conditions exist. If the subsurface conditions encountered differ significantly from those presented in this report, supplemental recommendations will be required.

6.5 Lateral Design Criteria

For retaining walls located above any free water surface with no surcharge loads, recommended equivalent fluid pressures and coefficients of base friction for unrestrained elements are:

- Active:
  Undisturbed subsoil .....38 psf/ft
  Compacted granular backfill .....30 psf/ft
  Compacted site soils .....38 psf/ft

- Passive:
  Shallow wall footings .....225 psf/ft
  Shallow column footings.....325 psf/ft
  Drilled shafts .....500 psf/ft

- Coefficient of base friction.....0.30*

  * The coefficient of base friction should be reduced to 0.20 when used in conjunction with passive pressure.

Where the design includes restrained elements, the following equivalent fluid pressures are recommended:

- At-rest:
  Undisturbed subsoil .....62 psf/ft
  Compacted granular backfill .....55 psf/ft

These lateral earth pressures are not applicable for submerged soils. We should be consulted for additional recommendations if such conditions are to be included in the design. Any surcharge from adjacent loadings must also be considered. Walls below grade should be waterproofed.

We recommend a free-draining soil layer or manufactured geocomposite material, be constructed adjacent to the back of the retaining wall. A filter may be required between the soil backfill and drainage layer. This drainage zone should help prevent hydrostatic pressure buildup. This vertical drain should be tied into a gravity drainage system at the base of the retaining wall. It is important that all backfill be properly placed and compacted. Backfill should be mechanically compacted in layers. Flooding or jetting should not be permitted. Care should be taken not to damage the walls when placing the backfill. Backfills should be inspected and tested during placement.

Fill against footings, stem walls and retaining walls should be compacted to densities specified in **EARTHWORK**. Medium to high plasticity clay soils should not be used as backfill against retaining walls. Compaction of each lift adjacent to walls should be accomplished with hand-operated tampers or other lightweight compactors. Overcompaction may cause excessive lateral earth pressures which could result in wall movements.

6.6 Seismic Considerations

Structures should be designed in accordance with applicable building codes. The seismic design parameters presented in the following table, in accordance with the 2018 International Building Code and ASCE 7-16, are applicable to the project site:

Seismic Design Parameters International Building Code 2018, ASCE 7-16	
Soil Site Class	C
Mapped Spectral Response Acceleration at 0.2 sec period (S_s)	0.294g
Mapped Spectral Response Acceleration at 1.0 sec period (S_1)	0.093g
Site Coefficient for 0.2 sec period (F_a)	1.3
Site Coefficient for 1.0 sec period (F_v)	1.5
Design Spectral Response Acceleration at 0.2 sec period (S_{DS})	0.255g
Design Spectral Response Acceleration at 1.0 sec period (S_{D1})	0.093g

The soil site class is based upon conditions identified in shallow exploratory borings/test pits and local knowledge of the geotechnical conditions in the vicinity of the site. Conditions extending beyond the depth of our borings and test pits to a depth of 100 feet were assumed for the purposes of providing the information presented in the table. Based upon the density of the on-site soils, the shallow rock conditions and lack of groundwater, the potential settlement and lateral spread due to liquefaction is not considered to be a significant concern on this site.

6.7 Conventional Slab-on-Grade Support

Following the removal of all existing fill soils, floor slabs can be supported on properly placed and compacted fill or approved, properly recompacted, low expansive potential native soils. For design of interior slabs-on-grade, we recommend using a modulus of subgrade reaction (k) of 225 pounds per cubic inch (pci) for the on-site soils or imported fill material, based on a 30-inch diameter plate. The slab subgrade should be prepared by the procedures outlined in this report. A minimum 4-inch thick layer of base course should be provided beneath all slabs to help prevent capillary rise and a damp slab. The use of vapor retarders is desirable for any slab-on-grade where the floor will be covered by products using water-based adhesives, wood, vinyl backed carpet, impermeable floor coatings (urethane, epoxy, acrylic terrazzo, etc.) or where the floor will be in contact with moisture sensitive equipment or product. When used, the design and installation should be in accordance with the guidance provided in ACI 302.1R and 302.2R. Final determination on the use of a vapor retarder should be left to the slab designer.

All concrete placement and curing operations should follow the American Concrete Institute manual recommendations. Improper curing techniques and/or high slump (water-cement ratio) could cause excessive shrinkage, cracking or curling. The plastic properties of the concrete should be documented at the time of placement and specimens should also be prepared for strength testing to verify compliance with project specifications. Concrete slabs should be allowed to cure adequately before placing vinyl or other moisture sensitive floor covering.

6.8 Drainage

The major cause of soil-related foundation and slab-on-ground problems is moisture increase in soils below structures. Properly functioning conventional foundations and floor slabs-on-ground require appropriately constructed and maintained site drainage

conditions. Therefore, it is extremely important that positive drainage be provided during construction and maintained throughout the life of the structures. It is also important that proper planning and control of landscape and irrigation practices be performed.

Infiltration of water into utility or foundation excavations must be prevented during construction. Backfill against footings, exterior walls, and in utility and sprinkler line trenches should be well compacted and free of all construction debris to minimize the possibility of moisture infiltration. If utility line trenches are backfilled with a granular material, then a clay or concrete plug should be placed in the trench adjacent to the structures to prevent water from following the trench back under the structures.

In areas where sidewalks, patios or driveways do not immediately adjoin the structures, protective slopes should be provided with an outfall of about 5 percent for at least 10 feet from perimeter walls. Scuppers and drain pipes should be designed to provide drainage away from the structures for a minimum distance of 10 feet. Planters or other surface features that could retain water adjacent to structures should be avoided if at all possible. If planters and/or landscaping are adjacent to or near the structures, there will be a greater potential for moisture infiltration, soil movement and structure distress. As a minimum, we recommend the following:

- Grades should slope away from the structures.
- Planters should slope away from the structures and should not pond water. Drains should be installed in enclosed planters to facilitate flow out of the planters.
- Only shallow rooted landscaping should be used.
- Watering should be kept to a minimum. Irrigation systems should be situated on the far side of any planting and away from the structures to minimize infiltration beneath foundations from possible leaks.
- Trees should be planted no closer than a distance equal to three-quarters of their mature height or 15 feet, whichever is greater.

It should be understood that these recommendations will help minimize the potential for soil movement and resulting distress, but will not eliminate this potential.

6.9 Corrosivity to Concrete

The chemical test results indicate that the site soils are negligibly corrosive to concrete. However, in order to be consistent with standard local practice and for reasons of material availability, we recommend that Type II portland cement be used for all concrete on and below grade.

6.10 Pavements

Based on existing subgrade conditions, the following pavement sections are recommended for the areas indicated:

Traffic Area	Asphalt Concrete (in.)	Base Course (in.)
Passenger car parking/drives (low traffic frequency)	3	7
Major access drives (medium traffic frequency)	4	6

Bituminous surfacing should be constructed of dense-graded, central plant-mix, asphalt concrete. Base course and asphalt concrete should conform with City of Sedona or Coconino County specifications.

Material and compaction requirements should conform to recommendations presented under **EARTHWORK**. The gradient of paved surfaces should ensure positive drainage. Water should not pond in areas directly adjoining paved sections. The native subgrade soils will soften and lose stability if subjected to conditions which result in an increase in water content.

Due to the high static loads imposed by parked trucks in loading and unloading areas and at dumpster locations, we recommend that a rigid pavement section be considered for these areas. A minimum 6-inch thick concrete pavement over 4 inches of aggregate base course material is recommended.

6.10.1 Pavement Analyses

The recommended pavement sections are based on the following conditions. This firm should be contacted if any of these conditions change so that revised recommendations can be provided, if necessary.

a. A correlated R-value of 22 for the on-site soils which corresponds to a resilient modulus of approximately 7,500 pounds per square inch. Any required fills should be constructed using on-site or imported materials with subgrade support characteristics equal to or greater than the subgrade soils in the area being filled.

b. Structural coefficients of 0.40 for asphalt concrete and 0.12 for aggregate base course material.

c. A present serviceability index of 4.5, a terminal serviceability index of 2.5, an overall standard deviation of 0.35, a reliability factor of 85 percent, a drainage coefficient of 0.85, a seasonal variation factor of 2.4, and a design life of 20 years.

d. An assumed total 18-kip equivalent single axle load (ESAL) of 50,000 for the passenger car parking areas and 100,000 for the major access drives areas.

7.0 EARTHWORK

7.1 General

The conclusions contained in this report for the proposed construction are contingent upon compliance with recommendations presented in this section. Any excavating, trenching, or disturbance that occurs after completion of the earthwork must be backfilled, compacted and tested in accordance with the recommendations contained herein. It is not reasonable to rely upon our conclusions and recommendations if any future unobserved and untested trenching, earthwork activities or backfilling occurs.

7.2 Site Clearing

Strip and remove all vegetation, demolition debris, structural remnants, existing fill, and any other deleterious materials from the building and pavement areas. The building area is defined as that area within the building footprint plus 5 feet beyond the perimeter of that footprint. All exposed surfaces should be free of mounds and depressions that could prevent uniform compaction.

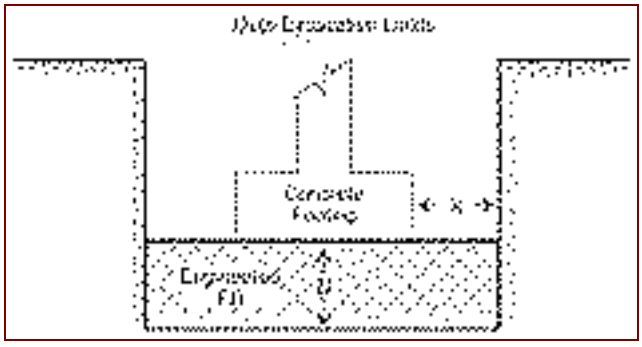
7.3 Excavation

We anticipate that excavations into the site soils for the proposed construction can be accomplished with conventional equipment. Any excavations penetrating the underlying cobbles and boulders will require the use of heavy-duty, specialized equipment to facilitate rock break up and removal.

On-site soils may pump or become unworkable at high water contents. Workability may be improved by scarifying and drying. Overexcavation of wet zones and replacement with drier granular materials may be necessary. The use of lightweight excavation and compaction equipment may be required to minimize subgrade pumping.

7.4 Foundation Preparation

Following removal of all existing fill soils, in footing areas remove existing soils to a minimum depth of 2 feet below the bottom of the footing (depth D in the diagram below). Removal should extend a minimum of 1 foot beyond the footing edges (length X in the diagram below). Replace with engineered fill material.



7.5 Conventional Interior Slab Preparation

Following removal of all existing fill soils, scarify, moisten or dry as required, and compact all subgrade soils to a minimum depth of 8 inches. The subgrade preparation should be accomplished in a manner that will result in uniform water contents and densities after compaction. All subgrade preparation in the building area should extend a minimum of 5 feet beyond perimeter footings.

7.6 Materials

a. Clean on-site soils with low expansive potentials and maximum dimension of 6 inches or imported materials may be used as fill material for the following:

- Foundation areas
- Interior slab areas
- Pavement areas
- Backfill

b. Frozen soils should not be used as fill or backfill.

c. Imported soils should conform to the following:

- Gradation (ASTM C136): percent finer by weight

6"	100
4"	85-100
¾"	70-100
No. 4 Sieve	50-100
No. 200 Sieve	40 (max)

- Maximum expansive potential (%)[4] 1.5

- Maximum soluble sulfates (%) 0.10

[4] Measured on a sample compacted to approximately 95 percent of the ASTM D698 maximum dry density at about 3 percent below optimum water content. The sample is confined under a 100 psf surcharge and submerged.

d. Base course should conform to current City of Sedona or Coconino County specifications.

7.7 Placement and Compaction

a. Place and compact fill in horizontal lifts, using equipment and procedures that will produce recommended water contents and densities throughout the lift.

b. Uncompacted lift thickness should not exceed 8 inches.

c. No fill should be placed over frozen ground.

d. Materials should be compacted to the following:

Material	Minimum Percent Compaction (ASTM D698)
• On-site or imported soils, reworked and fill:	
Below footings	95
Below slabs-on-grade	90
Pavement areas	95
• Aggregate base:	
Below slabs-on-grade	95
Below pavements	100
• Structural backfill	95
• Nonstructural backfill	90

e. On-site and imported soils with low expansive potential and aggregate base course materials should be compacted with a moisture content in the range of 3 percent below to 3 percent above optimum.

7.8 Compliance

Recommendations for foundations, slabs-on-grade and pavements supported on compacted fills or prepared subgrade depend upon compliance with the **EARTHWORK** recommendations. To assess compliance, observation and testing should be performed under the direction of a WT geotechnical engineer. Please contact us to provide these observation and testing services.

8.0 ADDITIONAL SERVICES

The recommendations provided in this report are based on the assumption that a sufficient schedule of tests and observations will be performed during construction to verify compliance. At a minimum, these tests and observations should be comprised of the following:

- Observations and testing during site preparation and earthwork,
- Observation of foundation excavations, and
- Consultation as may be required during construction.

Retaining the geotechnical engineer who developed your report to provide construction observation is the best way to verify compliance and to help you manage the risks associated with unanticipated conditions.

9.0 LIMITATIONS

This report has been prepared assuming the project criteria described in **2.0 PROJECT DESCRIPTION**. If changes in the project criteria occur, or if different subsurface conditions are encountered or become known, the conclusions and recommendations presented herein shall become invalid. In any such event, WT should be contacted in order to assess the effect that such variations may have on our conclusions and recommendations. If WT is not retained for the construction observation and testing services to determine compliance with this report, our professional responsibility is accordingly limited.

The recommendations presented are based entirely upon data derived from a limited number of samples obtained from widely spaced explorations. The attached logs are indicators of subsurface conditions only at the specific locations and times noted. This report assumes the

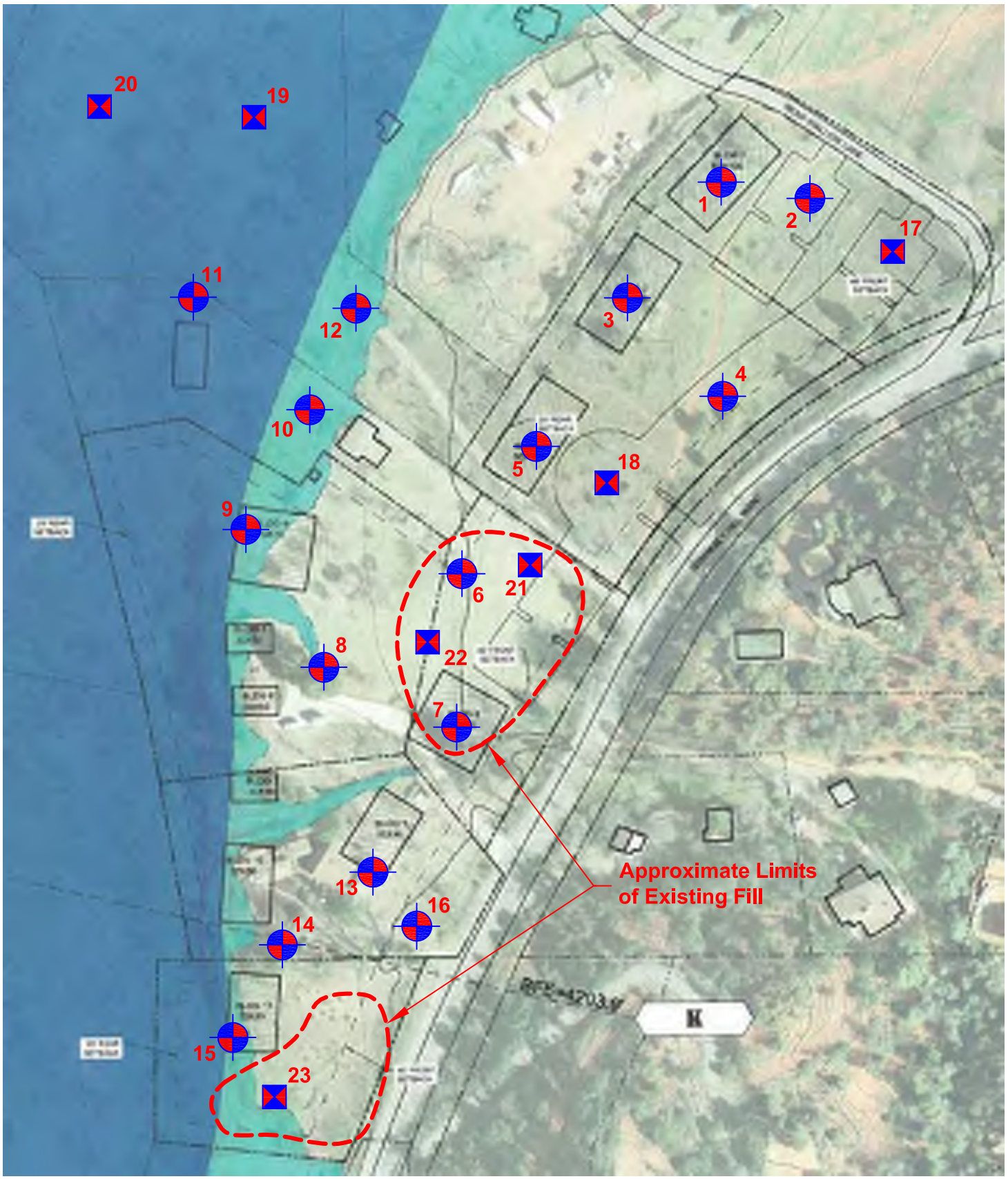
uniformity of the geology and soil structure between explorations, however variations can and often do exist. Whenever any deviation, difference, or change is encountered or becomes known, WT should be contacted.

This report is for the exclusive benefit of our client alone. There are no intended third-party beneficiaries of our contract with the client or this report, and nothing contained in the contract or this report shall create any express or implied contractual or any other relationship with, or claim or cause of action for, any third party against WT.

This report is valid for the earlier of one year from the date of issuance, a change in circumstances, or discovered variations. After expiration, no person or entity shall rely on this report without the express written authorization of WT.

10.0 CLOSURE

We prepared this report as an aid to the designers of the proposed project. The comments, statements, recommendations and conclusions set forth in this report reflect the opinions of the authors. These opinions are based upon data obtained at the location of the explorations, and from laboratory tests. Work on your project was performed in accordance with generally accepted standards and practices utilized by professionals providing similar services in this locality. No other warranty, express or implied, is made.



Not to Scale

Approximate Test Boring Location

Approximate Test Pit Location

SEDONA HOTEL LODGING COMPLEX	
Boring/Test Pit Location Diagram	
Western Technologies Inc.	
Job No.: 2521JB002	Plate: 1

Allowable Soil Bearing Capacity	The recommended maximum contact stress developed at the interface of the foundation element and the supporting material.
Backfill	A specified material placed and compacted in a confined area.
Base Course	A layer of specified aggregate material placed on a subgrade or subbase.
Base Course Grade	Top of base course.
Bench	A horizontal surface in a sloped deposit.
Caisson/Drilled Shaft	A concrete foundation element cast in a circular excavation which may have an enlarged base (or belled caisson).
Concrete Slabs-On-Grade	A concrete surface layer cast directly upon base course, subbase or subgrade.
Crushed Rock Base Course	A base course composed of crushed rock of a specified gradation.
Differential Settlement	Unequal settlement between or within foundation elements of a structure.
Engineered Fill	Specified soil or aggregate material placed and compacted to specified density and/or moisture conditions under observations of a representative of a soil engineer.
Existing Fill	Materials deposited through the action of man prior to exploration of the site.
Existing Grade	The ground surface at the time of field exploration.
Expansive Potential	The potential of a soil to expand (increase in volume) due to absorption of moisture.
Fill	Materials deposited by the actions of man.
Finished Grade	The final grade created as a part of the project.
Gravel Base Course	A base course composed of naturally occurring gravel with a specified gradation.
Heave	Upward movement.
Native Grade	The naturally occurring ground surface.
Native Soil	Naturally occurring on-site soil.
Rock	A natural aggregate of mineral grains connected by strong and permanent cohesive forces. Usually requires drilling, wedging, blasting or other methods of extraordinary force for excavation.
Sand and Gravel Base Course	A base course of sand and gravel of a specified gradation.
Sand Base Course	A base course composed primarily of sand of a specified gradation.
Scarify	To mechanically loosen soil or break down existing soil structure.
Settlement	Downward movement.
Soil	Any unconsolidated material composed of discrete solid particles, derived from the physical and/or chemical disintegration of vegetable or mineral matter, which can be separated by gentle mechanical means such as agitation in water.
Strip	To remove from present location.
Subbase	A layer of specified material placed to form a layer between the subgrade and base course.
Subbase Grade	Top of subbase.
Subgrade	Prepared native soil surface.

COARSE-GRAINED SOILS

LESS THAN 50% FINES

GROUP SYMBOLS	DESCRIPTION	MAJOR DIVISIONS
GW	WELL-GRADED GRAVEL OR WELL-GRADED GRAVEL WITH SAND, LESS THAN 5% FINES	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE
GP	POORLY-GRADED GRAVEL OR POORLY-GRADED GRAVEL WITH SAND, LESS THAN 5% FINES	
GM	SILTY GRAVEL OR SILTY GRAVEL WITH SAND, MORE THAN 12% FINES	
GC	CLAYEY GRAVEL OR CLAYEY GRAVEL WITH SAND, MORE THAN 12% FINES	
SW	WELL-GRADED SAND OR WELL-GRADED SAND WITH GRAVEL, LESS THAN 5% FINES	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE
SP	POORLY-GRADED SAND OR POORLY-GRADED SAND WITH GRAVEL, LESS THAN 5% FINES	
SM	SILTY SAND OR SILTY SAND WITH GRAVEL, MORE THAN 12% FINES	
SC	CLAYEY SAND OR CLAYEY SAND WITH GRAVEL, MORE THAN 12% FINES	

NOTE: Coarse-grained soils receive dual symbols if they contain 5% to 12% fines (e.g., SW-SM, GP-GC).

FINE-GRAINED SOILS

MORE THAN 50% FINES

GROUP SYMBOLS	DESCRIPTION	MAJOR DIVISIONS
ML	SILT, SILT WITH SAND OR GRAVEL, SANDY SILT, OR GRAVELLY SILT	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50
CL	LEAN CLAY OF LOW TO MEDIUM PLASTICITY, SANDY CLAY, OR GRAVELLY CLAY	
OL	ORGANIC SILT OR ORGANIC CLAY OF LOW TO MEDIUM PLASTICITY	
MH	ELASTIC SILT, SANDY ELASTIC SILT, OR GRAVELLY ELASTIC SILT	SILTS AND CLAYS LIQUID LIMIT MORE THAN 50
CH	FAT CLAY OF HIGH PLASTICITY, SANDY FAT CLAY, OR GRAVELLY FAT CLAY	
OH	ORGANIC SILT OR ORGANIC CLAY OF HIGH PLASTICITY	
PT	PEAT AND OTHER HIGHLY ORGANIC SOILS	HIGHLY ORGANIC SOILS

NOTE: Fine-grained soils may receive dual classification based upon plasticity characteristics (e.g. CL-ML).

SOIL SIZES

COMPONENT	SIZE RANGE
BOULDERS	Above 12 in.
COBBLES	3 in. – 12 in.
GRAVEL	No. 4 – 3 in.
Coarse	¾ in. – 3 in.
Fine	No. 4 – ¾ in.
SAND	No. 200 – No. 4
Coarse	No. 10 – No. 4
Medium	No. 40 – No. 10
Fine	No. 200 – No. 40
Fines (Silt or Clay)	Below No. 200

NOTE: Only sizes smaller than three inches are used to classify soils

CONSISTENCY

CLAYS & SILTS	BLOWS PER FOOT
VERY SOFT	0 – 2
SOFT	3 – 4
FIRM	5 – 8
STIFF	9 – 15
VERY STIFF	16 – 30
HARD	OVER 30

RELATIVE DENSITY

SANDS & GRAVELS	BLOWS PER FOOT
VERY LOOSE	0 – 4
LOOSE	5 – 10
MEDIUM DENSE	11 – 30
DENSE	31 – 50
VERY DENSE	OVER 50

NOTE: Number of blows using 140-pound hammer falling 30 inches to drive a 2-inch-OD (1⅜-inch ID) split-barrel sampler (ASTM D1586).

PLASTICITY OF FINE GRAINED SOILS

PLASTICITY INDEX	TERM
0	NON-PLASTIC
1 – 7	LOW
8 – 20	MEDIUM
Over 20	HIGH

DEFINITION OF WATER CONTENT

DRY
SLIGHTLY DAMP
DAMP
MOIST
WET
SATURATED

Geotechnical Environmental Inspections Materials

Western Technologies Inc.

The Quality People

Since 1953

METHOD OF CLASSIFICATION

PLATE

A-2

The number shown in **"BORING NO."** or "**TEST PIT NO.**" refers to the approximate location of the same number indicated on the "Boring/Test Pit Location Diagram" as positioned in the field by pacing or measurement from property lines and/or existing features.

"DRILLING TYPE" refers to the exploratory equipment used in the boring wherein **HSA = hollow stem auger**, and the dimension presented is the outside diameter of the HSA used.

"EQUIPMENT TYPE" refers to the equipment used in the excavation of the test pit, and may include the width of the bucket on the excavator and the use of "rock" teeth or attachments.

"N" in "BLOW COUNTS" refers to a 2-in. outside diameter split-barrel sampler driven into the ground with a 140 lb. drop-hammer dropped 30 in. repeatedly until a penetration of 18 in. is achieved or until refusal. The number of blows, or "blow count", of the hammer is recorded for each of three 6-in. increments totaling 18 in. The number of blows required for advancing the sampler for the last 12 in. (2^{nd} and 3^{rd} increments) is defined as the Standard Penetration Test (SPT) "N"-Value. Refusal to penetration is considered more than 50 blows for a 6-inch increment. (Ref. ASTM D1586). A double vertical line within the symbol indicates no sample recovery.

"R" in "BLOW COUNTS" refers to a 3-in. outside diameter ring-lined split spoon sampler driven into the ground with a 140 lb. drop-hammer dropped 30 inches repeatedly until a penetration of 12 inches is achieved or until refusal. The number of blows required to advance the sampler 12 inches is defined as the "R" blow count. The "R" blow count requires an engineered conversion to an equivalent SPT N-Value. Refusal to penetration is considered more than 50 blows for a 6-inch increment. (Ref. ASTM D3550). A double vertical line within the symbol indicates no sample recovery. A circle within the symbol indicates sample disturbance.

"SAMPLE TYPE" refers to the form of sample recovery, in which **N** = Split-barrel sample, **R** = Ring-lined sample, **G** = Grab sample.

"DRY DENSITY (LBS/CU FT)" refers to the laboratory-determined dry density in pounds per cubic foot. The symbol **"NR"** indicates that no sample was recovered.

"WATER (MOISTURE) CONTENT (% OF DRY WT.)" refers to the laboratory-determined water content in percent using the standard test method ASTM D2216.

"USCS" refers to the "Unified Soil Classification System" Group Symbol for the soil type as defined by ASTM D2487 and D2488. The soils were classified visually in the field, and where appropriate, classifications were modified by visual examination of samples in the laboratory and/or by appropriate tests.

These notes and boring/test pit logs are intended for use in conjunction with the purposes of our services defined in the text. Boring/test pit log data should not be construed as part of the construction plans nor as defining construction conditions.

Boring/test pit logs depict our interpretations of subsurface conditions at the locations and on the date(s) noted. Variations in subsurface conditions and characteristics may occur between borings/test pits. Groundwater levels may fluctuate due to seasonal variations and other factors.

The stratification lines shown on the boring/test pit logs represent our interpretation of the approximate boundary between soil or rock types based upon visual field classification at the boring/test pit location. The transition between materials is approximate and may be more or less gradual than indicated.

DATE DRILLED: **1-21-21**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 1

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **J. Quinlan**

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G				ML		Sandy SILT; trace gravel, cobbles and boulders, red, hard, slightly damp
5.9	110	R		40				
					5			
4.8	105	R		50/7''				
								Auger Refusal at 6 Feet on Cobbles and Boulders
					10			
					15			
					20			

N- STANDARD PENETRATION TEST
R- RING SAMPLE
CA- CALIFORNIA MODIFIED SAMPLER
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

WESTERN TECHNOLOGIES INC.
2400 Huntington Drive
Flagstaff, AZ 86004-8934

PROJECT: **SEDONA HOTEL LODGE COMPLEX**
PROJECT NO.: **2521JB002**

PLATE **A-4**

BORING LOG

DATE DRILLED: **1-21-21**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 2

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **J. Quinlan**

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G			0	ML		Sandy SILT; trace gravel, cobbles and boulders, red, slightly damp
					5			**Boring Stopped at 5 Feet**
					10			
					15			
					20			

N- STANDARD PENETRATION TEST
R- RING SAMPLE
CA- CALIFORNIA MODIFIED SAMPLER
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

WESTERN TECHNOLOGIES INC.
2400 Huntington Drive
Flagstaff, AZ 86004-8934

PROJECT: **SEDONA HOTEL LODGE COMPLEX**
PROJECT NO.: **2521JB002**

PLATE **A-5**

BORING LOG

DATE DRILLED: **1-21-21**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 3

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **J. Quinlan**

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G				ML		Sandy SILT; trace gravel, cobbles and boulders, red, hard, slightly damp
5.9	110	R		50/11''				
4.8	105	R		50	5			
		N		50/2''				**Auger Refusal at 8 Feet on Cobbles and Boulders**
					10			
					15			
					20			

N- STANDARD PENETRATION TEST
R- RING SAMPLE
CA- CALIFORNIA MODIFIED SAMPLER
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

WESTERN TECHNOLOGIES INC.
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Flagstaff, AZ 86004-8934

PROJECT: **SEDONA HOTEL LODGE COMPLEX**
PROJECT NO.: **2521JB002**

PLATE **A-6**

BORING LOG

DATE DRILLED: **1-21-21**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 4

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **J. Quinlan**

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G				ML		Sandy SILT; trace gravel, cobbles and boulders, red, slightly damp
					5			**Boring Stopped at 5 Feet**
					10			
					15			
					20			

N- STANDARD PENETRATION TEST
R- RING SAMPLE
CA- CALIFORNIA MODIFIED SAMPLER
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

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Flagstaff, AZ 86004-8934

PROJECT: **SEDONA HOTEL LODGE COMPLEX**
PROJECT NO.: **2521JB002**

PLATE **A-7**

BORING LOG

DATE DRILLED: **1-21-21**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 5

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **J. Quinlan**

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G				ML		Sandy SILT; trace gravel, cobbles and boulders, red, very stiff to hard, slightly damp
2.7	97	R		47				
5.0	103	R		25	5			
		N		50/1''				**Auger Refusal at 7 Feet on Cobbles and Boulders**
					10			
					15			
					20			

N- STANDARD PENETRATION TEST
R- RING SAMPLE
CA- CALIFORNIA MODIFIED SAMPLER
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

WESTERN TECHNOLOGIES INC.
2400 Huntington Drive
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PROJECT: **SEDONA HOTEL LODGE COMPLEX**
PROJECT NO.: **2521JB002**

PLATE **A-8**

BORING LOG

DATE DRILLED: **1-21-21**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 6

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **J. Quinlan**

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G				ML		Sandy SILT (FILL); trace gravel, cobbles and boulders, red, slightly damp
								Auger Refusal at 3 Feet on Cobbles and Boulders

5
10
15
20

N- STANDARD PENETRATION TEST
R- RING SAMPLE
CA- CALIFORNIA MODIFIED SAMPLER
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

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PROJECT: **SEDONA HOTEL LODGE COMPLEX**
PROJECT NO.: **2521JB002**

PLATE
A-9

BORING LOG

DATE DRILLED: **1-21-21**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 7

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **J. Quinlan**

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G				ML		Sandy SILT (FILL); trace gravel, cobbles and boulders, red, slightly damp
4.3	99	R		6				
6.8	101	R		10	5	ML		Sandy SILT; trace gravel, cobbles and boulders, hard, red, slightly damp
		N		50/1''				**Auger Refusal at 8 Feet on Cobbles and Boulders**
					10			
					15			
					20			

N- STANDARD PENETRATION TEST
R- RING SAMPLE
CA- CALIFORNIA MODIFIED SAMPLER
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

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PROJECT: **SEDONA HOTEL LODGE COMPLEX**
PROJECT NO.: **2521JB002**

PLATE
A-10

BORING LOG

DATE DRILLED: **1-21-21**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 8

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **J. Quinlan**

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G				ML		Sandy SILT; trace gravel, cobbles and boulders, red, firm to stiff, slightly damp
4.5	87	R		8				
3.4	90	R		7	5			
		N		50/5''	10			**Auger Refusal at 10 Feet on Cobbles and Boulders**
					15			
					20			

N- STANDARD PENETRATION TEST
R- RING SAMPLE
CA- CALIFORNIA MODIFIED SAMPLER
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

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Flagstaff, AZ 86004-8934

PROJECT: **SEDONA HOTEL LODGE COMPLEX**
PROJECT NO.: **2521JB002**

PLATE
A-11

BORING LOG

DATE DRILLED: **1-21-21**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 9

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **J. Quinlan**

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G			0	ML		Sandy SILT; trace gravel, cobbles and boulders, red, stiff to hard, slightly damp
		R		9				
		N		95	5			**Auger Refusal at 5 Feet on Cobbles and Boulders**
					10			
					15			
					20			

N- STANDARD PENETRATION TEST
R- RING SAMPLE
CA- CALIFORNIA MODIFIED SAMPLER
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

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Flagstaff, AZ 86004-8934

PROJECT: **SEDONA HOTEL LODGE COMPLEX**
PROJECT NO.: **2521JB002**

PLATE **A-12**

BORING LOG

DATE DRILLED: **1-21-21**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 10

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **J. Quinlan**

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G				GM		Silty GRAVEL; with sand, cobbles and boulders, red, very dense, slightly damp
		N		50/2''				**Auger Refusal at 2 Feet on Cobbles and Boulders**

5
10
15
20

N- STANDARD PENETRATION TEST
R- RING SAMPLE
CA- CALIFORNIA MODIFIED SAMPLER
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

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PROJECT: **SEDONA HOTEL LODGE COMPLEX**
PROJECT NO.: **2521JB002**

PLATE
A-13

BORING LOG

DATE DRILLED: **1-21-21**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 11

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **J. Quinlan**

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G				GW-GM		Well Graded GRAVEL; with silt, sand, cobbles and boulders, brown, slightly damp
								Auger Refusal at 1 Foot on Cobbles and Boulders
					5			
					10			
					15			
					20			

N- STANDARD PENETRATION TEST
R- RING SAMPLE
CA- CALIFORNIA MODIFIED SAMPLER
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

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Flagstaff, AZ 86004-8934

PROJECT: **SEDONA HOTEL LODGE COMPLEX**
PROJECT NO.: **2521JB002**

PLATE
A-14

BORING LOG

DATE DRILLED: **1-21-21**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 12

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **J. Quinlan**

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G				ML		Sandy SILT; trace gravel, cobbles and boulders, red, very stiff to hard, slightly damp
3.8	99	R		21				
1.9	121	R		40	5			
								Auger Refusal at 6 Feet on Cobbles and Boulders
					10			
					15			
					20			

N- STANDARD PENETRATION TEST
R- RING SAMPLE
CA- CALIFORNIA MODIFIED SAMPLER
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

WESTERN TECHNOLOGIES INC.
2400 Huntington Drive
Flagstaff, AZ 86004-8934

PROJECT: **SEDONA HOTEL LODGE COMPLEX**
PROJECT NO.: **2521JB002**

PLATE **A-15**

BORING LOG

DATE DRILLED: **1-21-21**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 13

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **J. Quinlan**

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G				SM		Silty SAND; with gravel, cobbles and boulders, red, loose to medium dense, slightly damp
7.3	100	R		6				
		R		17	5			
6.2	108	R		23	10			
		N		50/1''				**Auger Refusal at 14 Feet on Cobbles and Boulders**
					15			
					20			

N- STANDARD PENETRATION TEST
R- RING SAMPLE
CA- CALIFORNIA MODIFIED SAMPLER
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

WESTERN TECHNOLOGIES INC.
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PROJECT: **SEDONA HOTEL LODGE COMPLEX**
PROJECT NO.: **2521JB002**

PLATE **A-16**

BORING LOG

DATE DRILLED: **1-21-21**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 14

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **J. Quinlan**

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G				SM		Silty SAND; with gravel, cobbles and boulders, red, medium dense to dense, slightly damp
2.4	96	R		13				
		R		21	5			
		R		35	10			
		R		41	15			
		N		50/1''				**Auger Refusal at 17 Feet on Cobbles and Boulders**
					20			

N- STANDARD PENETRATION TEST
R- RING SAMPLE
CA- CALIFORNIA MODIFIED SAMPLER
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

WESTERN TECHNOLOGIES INC.
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PROJECT: **SEDONA HOTEL LODGE COMPLEX**
PROJECT NO.: **2521JB002**

PLATE **A-17**

BORING LOG

DATE DRILLED: **1-21-21**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 15

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **J. Quinlan**

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G				SM		Silty SAND; with gravel, cobbles and boulders, red, loose to dense, slightly damp
3.0	91	R		9				
3.8	91	R		14	5			
		N		50/10''	10			**Auger Refusal at 11 Feet on Cobbles and Boulders**
					15			
					20			

N- STANDARD PENETRATION TEST
R- RING SAMPLE
CA- CALIFORNIA MODIFIED SAMPLER
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

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PROJECT: **SEDONA HOTEL LODGE COMPLEX**
PROJECT NO.: **2521JB002**

PLATE **A-18**

BORING LOG

DATE DRILLED: **1-21-21**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

BORING NO. 16

EQUIPMENT TYPE: **CME-75**
DRILLING TYPE: **7"HSA**
FIELD ENGINEER: **J. Quinlan**

MOISTURE CONTENT (% OF DRY WT)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G				ML		SILT; with sand, trace gravel, red, slightly damp
					5			**Boring Stopped at 5 Feet**
					10			
					15			
					20			

N- STANDARD PENETRATION TEST
R- RING SAMPLE
CA- CALIFORNIA MODIFIED SAMPLER
G- GRAB SAMPLE
B- BUCKET SAMPLE

NOTES: **Groundwater Not Encountered**

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PROJECT: **SEDONA HOTEL LODGE COMPLEX**
PROJECT NO.: **2521JB002**

PLATE **A-19**

BORING LOG

DATE EXCAVATED: **1-25-21**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

TEST PIT NO. 17

EQUIPMENT: **DEERE 310L**
EXCAVATION TYPE: **24'' BUCKET**
FIELD ENGINEER: **J. Quinlan**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G			0	ML		SILT; with sand, trace to some gravel, cobbles and boulders, red, slightly damp
4.7	93	R		Push				
					5			
					10			**Excavator Stopped at 10 Feet**
					15			
					20			

N- **STANDARD PENETRATION TEST**
R- **RING SAMPLE**
C- **CORE: %RECOVERY/RQD**
G- **GRAB SAMPLE**
B- **BUCKET SAMPLE**

NOTES: **Groundwater Not Encountered**

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PROJECT: **SEDONA HOTEL LODGE COMPLEX**
PROJECT NO.: **2521JB002**

PLATE **A-20**

TEST PIT LOG

DATE EXCAVATED: **1-25-21**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

TEST PIT NO. 18

EQUIPMENT: **DEERE 310L**
EXCAVATION TYPE: **24'' BUCKET**
FIELD ENGINEER: **J. Quinlan**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G			0	ML		Sandy SILT; trace gravel, cobbles and boulders, red, slightly damp
7.2	96	R		Push				
					5			
					10			**Excavator Stopped at 10 Feet**
					15			
					20			

N- **STANDARD PENETRATION TEST**
R- **RING SAMPLE**
C- **CORE: %RECOVERY/RQD**
G- **GRAB SAMPLE**
B- **BUCKET SAMPLE**

NOTES: **Groundwater Not Encountered**

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PROJECT: **SEDONA HOTEL LODGE COMPLEX**
PROJECT NO.: **2521JB002**

PLATE **A-21**

TEST PIT LOG

DATE EXCAVATED: **1-25-21**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

TEST PIT NO. 19

EQUIPMENT: **DEERE 310L**
EXCAVATION TYPE: **24'' BUCKET**
FIELD ENGINEER: **J. Quinlan**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G			0	GP-GM		Poorly Graded GRAVEL; with silt, sand, cobbles and boulders, brown, slightly damp
					5			**Excavator Refusal at 4 Feet on Cobbles and Boulders**
					10			
					15			
					20			

N- **STANDARD PENETRATION TEST**
R- **RING SAMPLE**
C- **CORE: %RECOVERY/RQD**
G- **GRAB SAMPLE**
B- **BUCKET SAMPLE**

NOTES: **Groundwater Not Encountered**

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PROJECT: **SEDONA HOTEL LODGE COMPLEX**
PROJECT NO.: **2521JB002**

PLATE **A-22**

TEST PIT LOG

DATE EXCAVATED: **1-25-21**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

TEST PIT NO. 20

EQUIPMENT: **DEERE 310L**
EXCAVATION TYPE: **24'' BUCKET**
FIELD ENGINEER: **J. Quinlan**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G			0	SP-SM		Poorly Graded SAND; with silt, gravel, cobbles and boulders, brown, slightly damp
					5			**Excavator Refusal at 4 Feet on Cobbles and Boulders**
					10			
					15			
					20			

N- **STANDARD PENETRATION TEST**
R- **RING SAMPLE**
C- **CORE: %RECOVERY/RQD**
G- **GRAB SAMPLE**
B- **BUCKET SAMPLE**

NOTES: **Groundwater Not Encountered**

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PROJECT: **SEDONA HOTEL LODGE COMPLEX**
PROJECT NO.: **2521JB002**

PLATE **A-23**

TEST PIT LOG

DATE EXCAVATED: **1-25-21**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

TEST PIT NO. 21

EQUIPMENT: **DEERE 310L**
EXCAVATION TYPE: **24'' BUCKET**
FIELD ENGINEER: **J. Quinlan**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G				ML		Sandy SILT (FILL); trace gravel, red, slightly damp
10.2	93	R		Push				
						ML		Sandy SILT; trace gravel, cobbles and boulders, red, slightly damp
					5			**Excavator Refusal at 6 Feet on Cobbles and Boulders**
					10			
					15			
					20			

N- **STANDARD PENETRATION TEST**
R- **RING SAMPLE**
C- **CORE: %RECOVERY/RQD**
G- **GRAB SAMPLE**
B- **BUCKET SAMPLE**

NOTES: **Groundwater Not Encountered**

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PROJECT: **SEDONA HOTEL LODGE COMPLEX**
PROJECT NO.: **2521JB002**

PLATE **A-24**

TEST PIT LOG

DATE EXCAVATED: **1-25-21**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

TEST PIT NO. 22

EQUIPMENT: **DEERE 310L**
EXCAVATION TYPE: **24'' BUCKET**
FIELD ENGINEER: **J. Quinlan**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G			0	ML		Sandy SILT (FILL); trace gravel, red, slightly damp
3.1	101	R		Push		ML		Sandy SILT; trace gravel, cobbles and boulders, red, slightly damp
					5			
					10			**Excavator Stopped at 10 Feet**
					15			
					20			

N- **STANDARD PENETRATION TEST**
R- **RING SAMPLE**
C- **CORE: %RECOVERY/RQD**
G- **GRAB SAMPLE**
B- **BUCKET SAMPLE**

NOTES: **Groundwater Not Encountered**

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PROJECT: **SEDONA HOTEL LODGE COMPLEX**
PROJECT NO.: **2521JB002**

PLATE
A-25

TEST PIT LOG

DATE EXCAVATED: **1-25-21**
LOCATION: **See Location Diagram**
ELEVATION: **Not Determined**

TEST PIT NO. 23

EQUIPMENT: **DEERE 310L**
EXCAVATION TYPE: **24'' BUCKET**
FIELD ENGINEER: **J. Quinlan**

MOISTURE CONTENT (% OF DRY WT.)	DRY DENSITY (LBS/CU FT)	SAMPLE TYPE	SAMPLE	BLOWS/FT.	DEPTH (FEET)	USCS	GRAPHIC	SOIL DESCRIPTION
		G				ML		Sandy SILT (FILL); trace gravel, cobbles and boulders, construction debris, red, slightly damp
3.6	88	R		Push	5			
						SM		Silty SAND; with gravel, cobbles and boulders, red, slightly damp
					10			**Excavator Stopped at 10 Feet**
					15			
					20			

N- **STANDARD PENETRATION TEST**
R- **RING SAMPLE**
C- **CORE: %RECOVERY/RQD**
G- **GRAB SAMPLE**
B- **BUCKET SAMPLE**

NOTES: **Groundwater Not Encountered**

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Flagstaff, AZ 86004-8934

PROJECT: **SEDONA HOTEL LODGE COMPLEX**
PROJECT NO.: **2521JB002**

PLATE **A-26**

TEST PIT LOG

Boring/ Test Pit No.	Depth (ft)	USCS Class.	Particle Size Distribution (%) Passing by Weight							Atterberg Limits		Laboratory Compaction Characteristics			Remarks
			3"	¾"	#4	#10	#40	#200	2µ	LL	PI	Dry Density (pcf)	Optimum Moisture (%)	Method	
2	0-5	ML	100	96	93	90	87	66.6			NP				2
4	0-5	ML		100	98	95	90	62.1			NP				2
5	0-5	ML		100	96	94	92	60.6			NP				2
6	0-3	ML		100	99	97	95	68.6			NP				2
9	0-5	ML			100	99	96	66.3			NP				2
14	0-5	SM	100	98	81	73	67	45.0			NP				2
16	0-5	ML	100	99	96	92	89	70.5			NP				2
17	0-5	ML	100	97	95	93	90	72.3			NP				2
20	0-4	SP-SM	100	85	72	66	54	8.8			NP				2
23	0-5	ML	100	97	88	84	79	55.7			NP				2

NOTE: NP = Non-plastic
µ = microns (2µ = 0.002mm)

REMARKS

Classification / Particle Size / Moisture-Density Relationship

1. Visual
2. Laboratory Tested
3. Minus #200 Only
4. Test Method ASTM D698/AASHTO T99
5. Test Method ASTM D1557/AASHTO T180
6. From the ADOT Family of Curves

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PROJECT: SEDONA HOTEL LODGING COMPLEX

JOB NO.: 2521JB002

PLATE

B-1

SOIL PROPERTIES

Boring/ Test Pit No.	Depth (ft.)	USCS Class.	Initial Dry Density (pcf)	Initial Water Content (%)	Compression Properties			Expansion Properties		Plasticity		Percent Passing #200	Soluble		Remarks
					Surcharge (ksf)	Total Compression (%)		Surcharge (ksf)	Expansion (%)	LL	PI		Salts (ppm)	Sulfate (ppm)	
						In-Situ	After Saturation								
5	0-5	ML	120.3	10.5				0.1	0						1,2
9	0-5	ML	115.7	11.9				0.1	0						1,2
14	0-5	SM	120.3	10.5				0.1	0						1,2
17	0-5	ML	115.7	11.9				0.1	0.6						1,2
20	0-4	SP-SM	120.3	10.5				0.1	0						1,2
23	0-5	ML	115.7	11.9				0.1	0						1,2

Notes: Initial Dry Density and Initial Water Content are remolded.

Remarks

1. Compacted density (approx. 95% of ASTM D698 max. density at moisture content slightly below optimum.)
2. Submerged to approximate saturation.

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PROJECT: SEDONA HOTEL LODGING COMPLEX
JOB NO.: 2521JB002

SOIL PROPERTIES

PLATE
B-2

Boring No.	Depth (ft.)	USCS Class.	Initial Dry Density (pcf)	Initial Water Content (%)	Compression Properties			Direct Shear		Plasticity		Percent Passing #200	Soluble Salts (ppm)	Remarks
					Surcharge (ksf)	Total Compression (%)		Cohesion (ksf)	Φ Angle (deg.)	Liquid Limit	Plasticity Index			
						In-Situ	After Saturation							
9	2-3	ML												2,4,5
13	5-6	ML												2,4,5
14	10-11	SM												2,4,5
14	15-16	SM												2,4,5

Note: Initial Dry Density and Initial Water Content are in-situ values unless otherwise noted.
NP = Non-Plastic

Remarks

1. Compacted density (approx. 95% of ASTM D698 max. density at moisture content slightly below optimum.)
2. Submerged to approximate saturation.
3. Slight rebound after saturation.
4. Testing in progress.
5. ASTM D3080 Procedure

Western Technologies Inc.

PROJECT: SEDONA HOTEL LODGING COMPLEX
JOB NO.: 2521JB002

SOIL PROPERTIES

PLATE **B-3**

Laboratory Analysis Report

Western Technologies - Flagstaff
Gregory L. E. Burr
2400 East Huntington
Flagstaff, AZ 86004-8934

Project: 2521JB002
Date Received: 2/4/2021
Date Reported: 2/9/2021
PO Number: 2521P002

Lab Number: 935476-1 **5 (0-5)**

Test Parameter	Method	Result	Units	Levels
Soluble Salts	ARIZ 237b	177	ppm	
Sulfate	ARIZ 733b	9	ppm	
Chloride	ARIZ 736b	16	ppm	

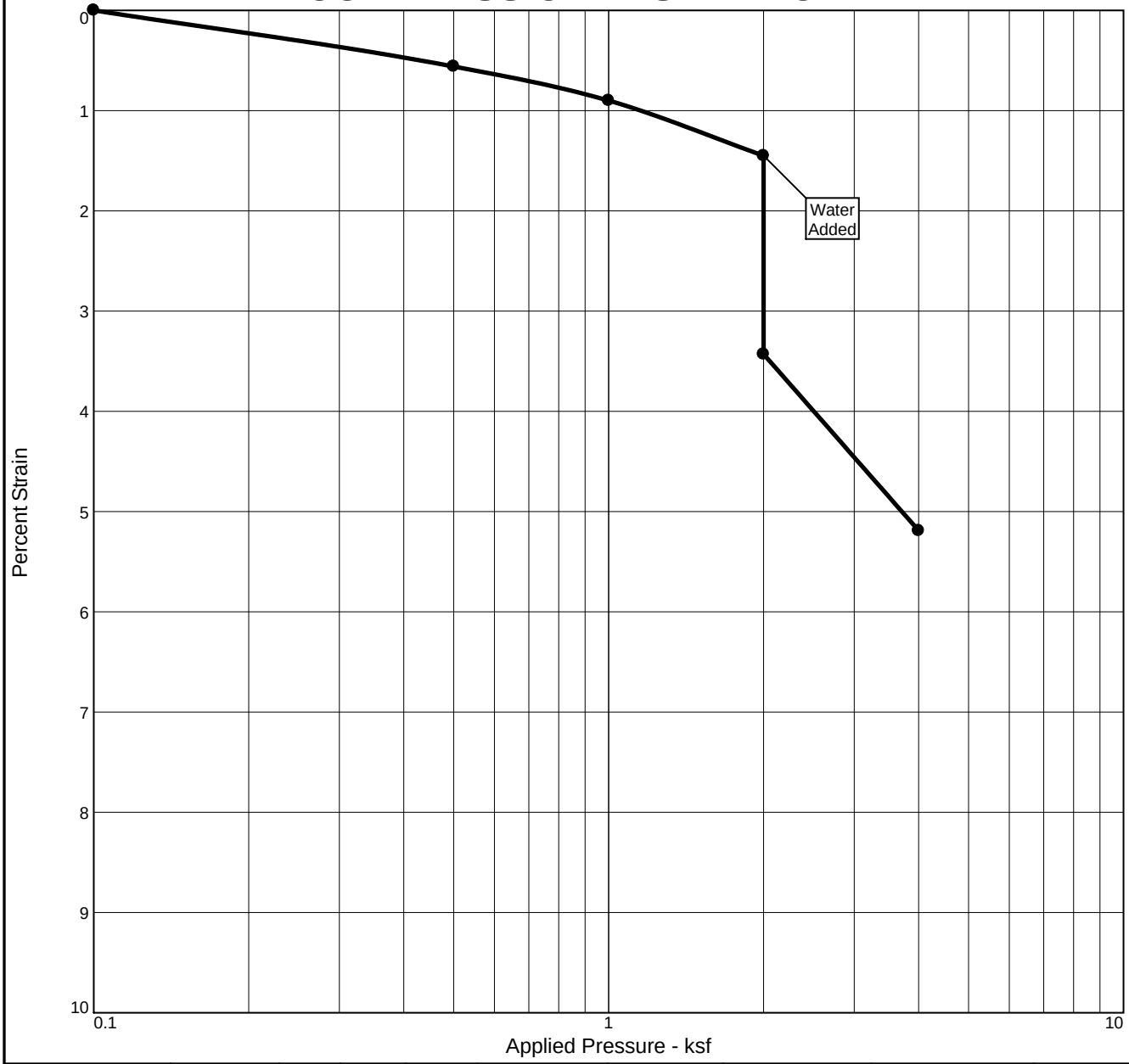
Lab Number: 935476-2 **14 (0-5)**

Test Parameter	Method	Result	Units	Levels
Soluble Salts	ARIZ 237b	169	ppm	
Sulfate	ARIZ 733b	9	ppm	
Chloride	ARIZ 736b	19	ppm	

Lab Number: 935476-3 **17 (0-5)**

Test Parameter	Method	Result	Units	Levels
Soluble Salts	ARIZ 237b	262	ppm	
Sulfate	ARIZ 733b	8	ppm	
Chloride	ARIZ 736b	19	ppm	

COMPRESSION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	e_o	Swell Press. (ksf)	Clpse. %	C_r
Sat.	Moist.									
31.3 %	5.9 %	110.4			2.65		0.503		2.0	

MATERIAL DESCRIPTION	USCS	AASHTO
SANDY SILT	ML	

Project No. 2521JB002 **Client:** R.D. OLSON DEVELOPMENT

Project: SEDONA HOTEL LODGING COMPLEX

Source: RING SAMPLE **Depth:** 2-3 FEET **Sample No.:** BORING 1

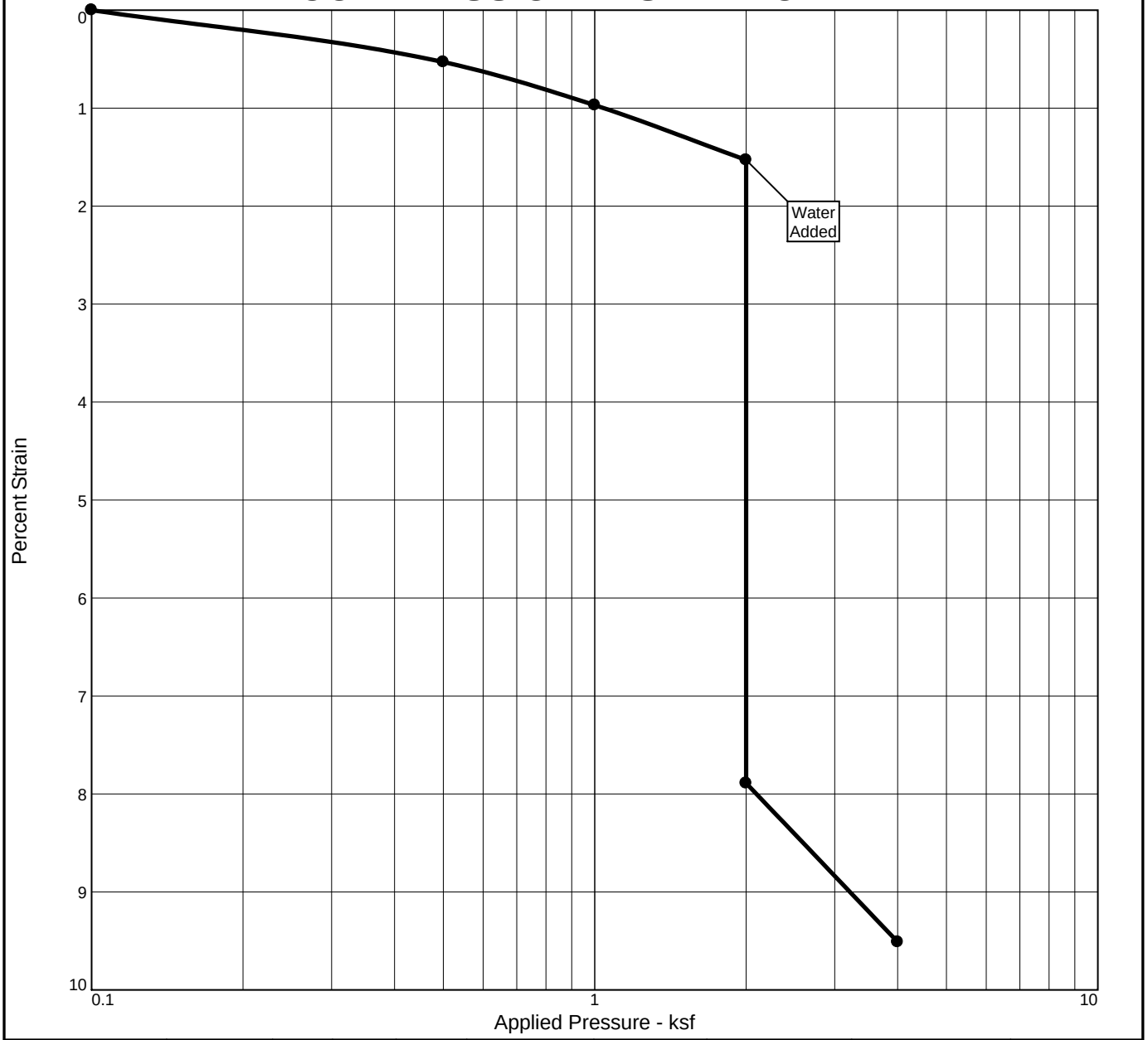
Remarks:

Western Technologies, Inc.

Flagstaff, AZ

Plate B-5

COMPRESSION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	e_o	Swell Press. (ksf)	Clpse. %	C_r
Sat.	Moist.									
10.0 %	2.7 %	97.3			2.65		0.713		6.4	

MATERIAL DESCRIPTION	USCS	AASHTO
SANDY SILT	ML	

Project No. 2521JB002 **Client:** R.D. OLSON DEVELOPMENT

Project: SEDONA HOTEL LODGING COMPLEX

Source: RING SAMPLE **Depth:** 2-3 FEET **Sample No.:** BORING 5

Remarks:

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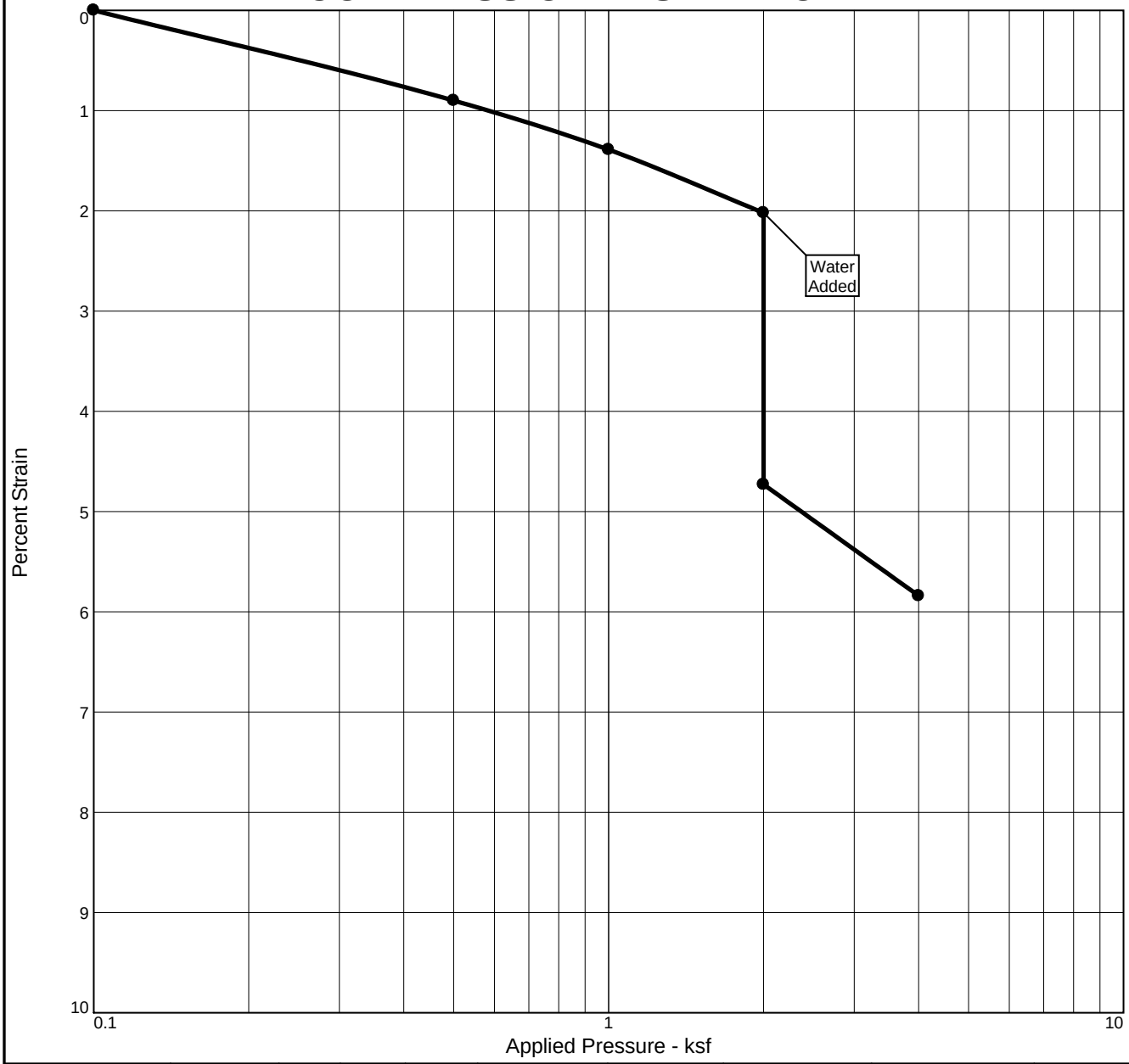
Plate B-6

COMPRESSION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	e_o	Swell Press. (ksf)	Clpse. %	C_r
Sat.	Moist.									
14.6 %	4.3 %	99.1			2.65		0.783		2.7	

MATERIAL DESCRIPTION	USCS	AASHTO
SANDY SILT	ML	

Project No. 2521JB002 **Client:** R.D. OLSON DEVELOPMENT

Project: SEDONA HOTEL LODGING COMPLEX

Source: RING SAMPLE **Depth:** 2-3 FEET **Sample No.:** BORING 7

Remarks:

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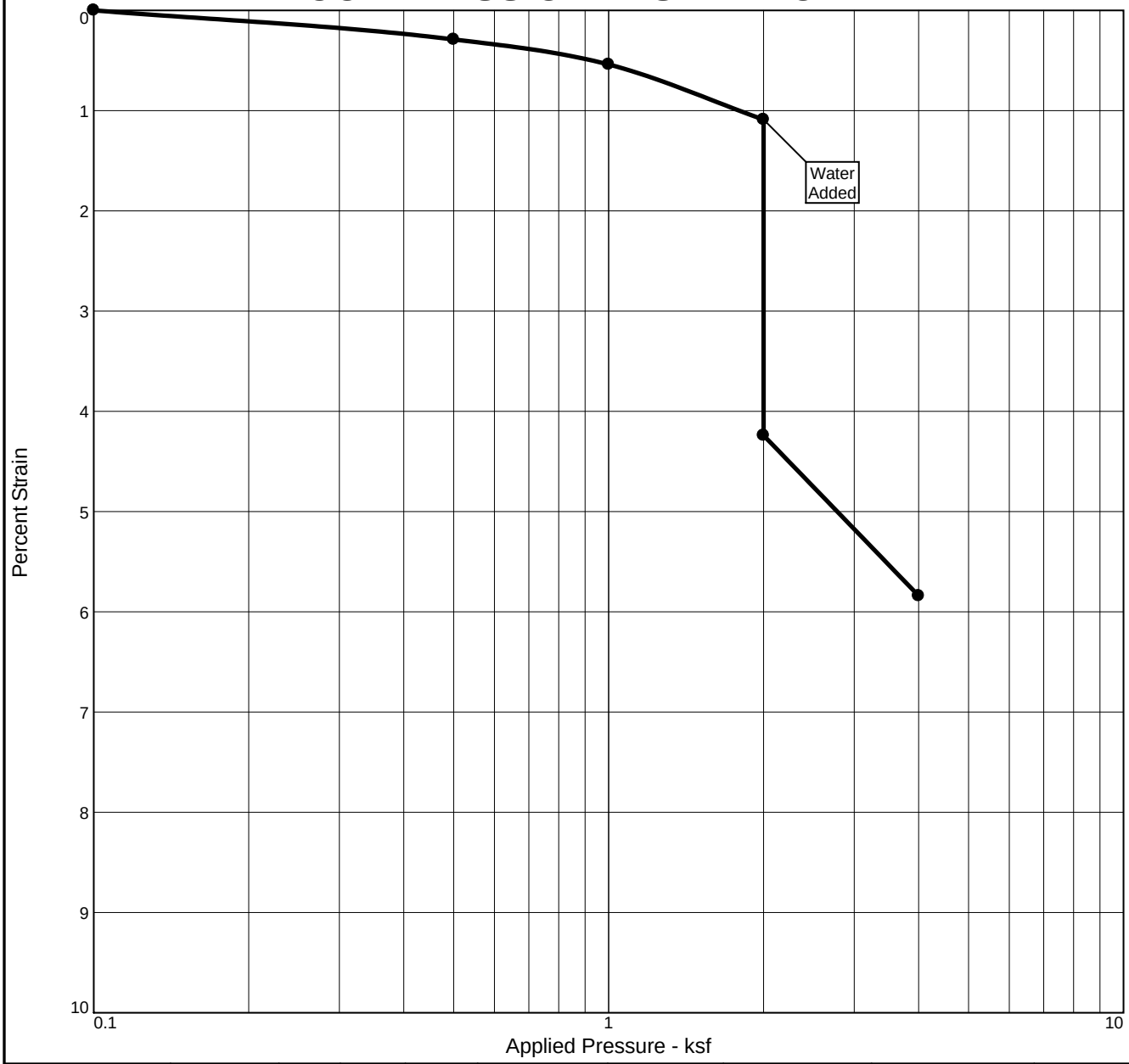
Plate B-7

COMPRESSION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	e_o	Swell Press. (ksf)	Clpse. %	C_r
Sat.	Moist.									
29.2 %	7.3 %	99.5			2.65		0.667		3.1	

MATERIAL DESCRIPTION	USCS	AASHTO
SILTY SAND WITH GRAVEL	SM	

Project No. 2521JB002 **Client:** R.D. OLSON DEVELOPMENT

Project: SEDONA HOTEL LODGING COMPLEX

Source: RING SAMPLE **Depth:** 2-3 FEET **Sample No.:** BORING 13

Remarks:

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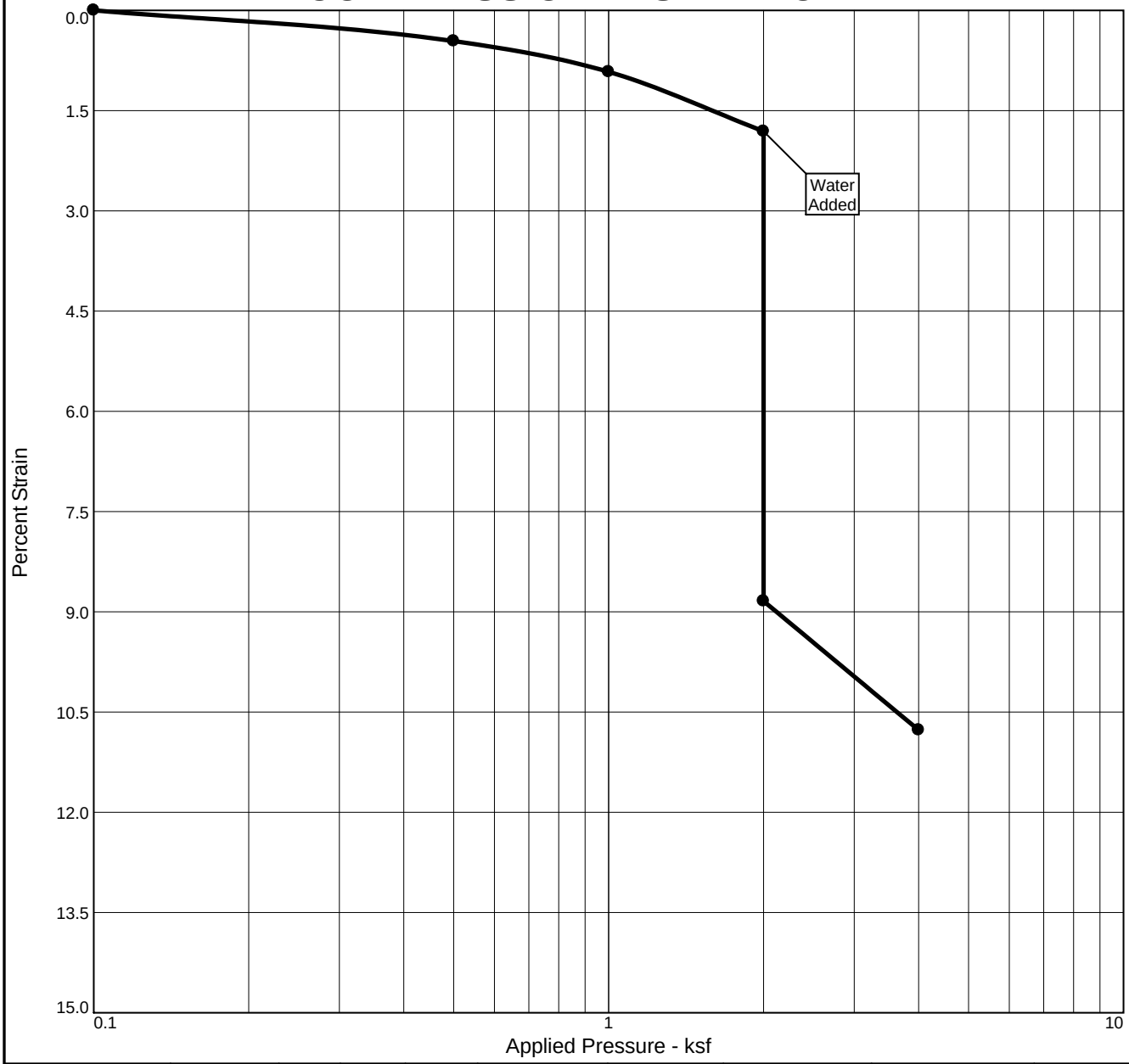
Plate B-8

COMPRESSION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	e_o	Swell Press. (ksf)	Clpse. %	C_r
Sat.	Moist.									
9.7 %	3.0 %	91.1			2.65		0.830		7.0	

MATERIAL DESCRIPTION	USCS	AASHTO
SILTY SAND WITH GRAVEL	SM	

Project No. 2521JB002 **Client:** R.D. OLSON DEVELOPMENT

Project: SEDONA HOTEL LODGING COMPLEX

Source: RING SAMPLE **Depth:** 2-3 FEET **Sample No.:** BORING 15

Remarks:

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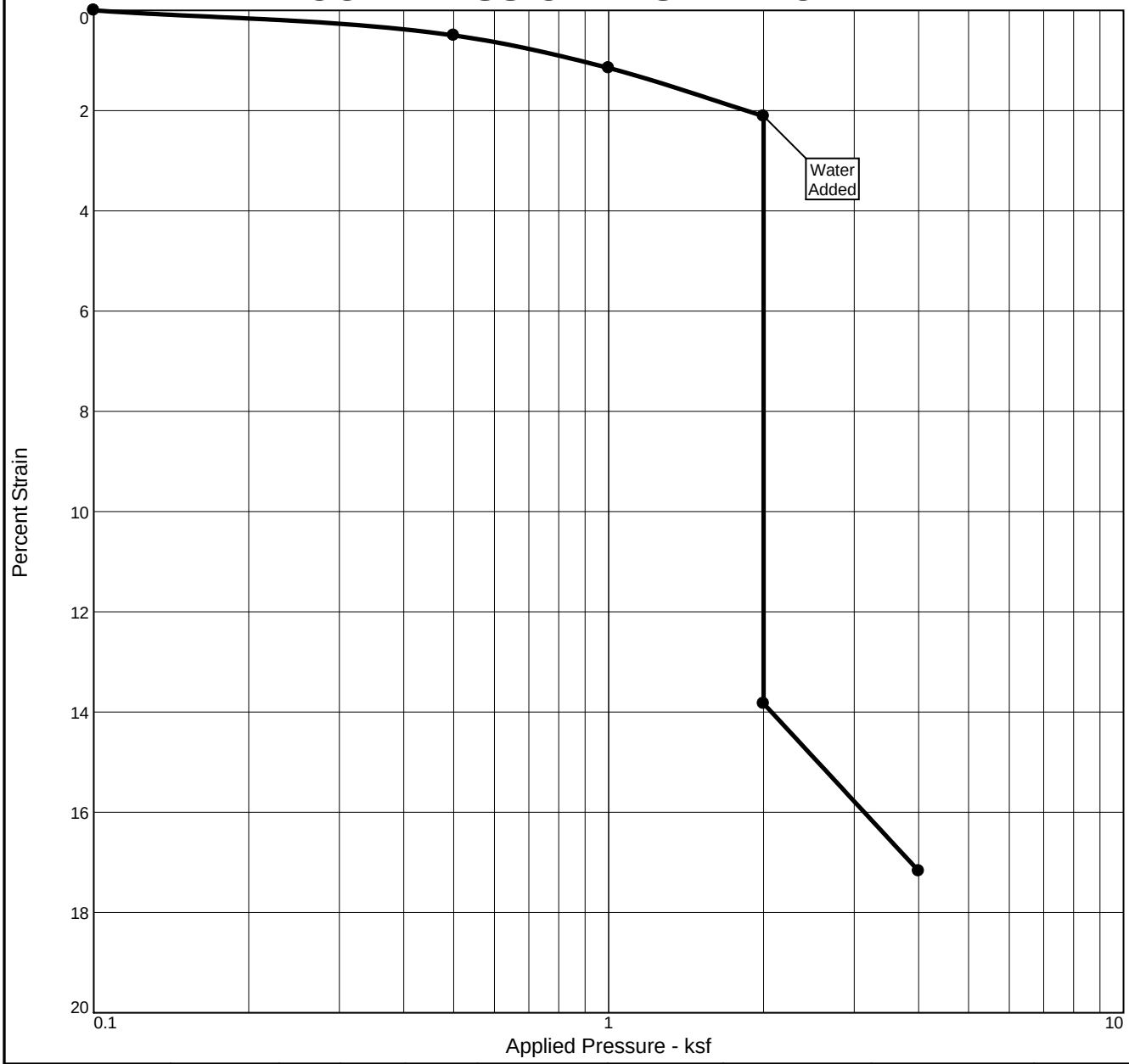
Plate B-9

COMPRESSION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	e_o	Swell Press. (ksf)	Clpse. %	C_r
Sat.	Moist.									
12.0 %	3.8 %	91.0			2.65		0.834		11.7	

MATERIAL DESCRIPTION	USCS	AASHTO
SILTY SAND WITH GRAVEL	SM	

Project No. 2521JB002 **Client:** R.D. OLSON DEVELOPMENT

Project: SEDONA HOTEL LODGING COMPLEX

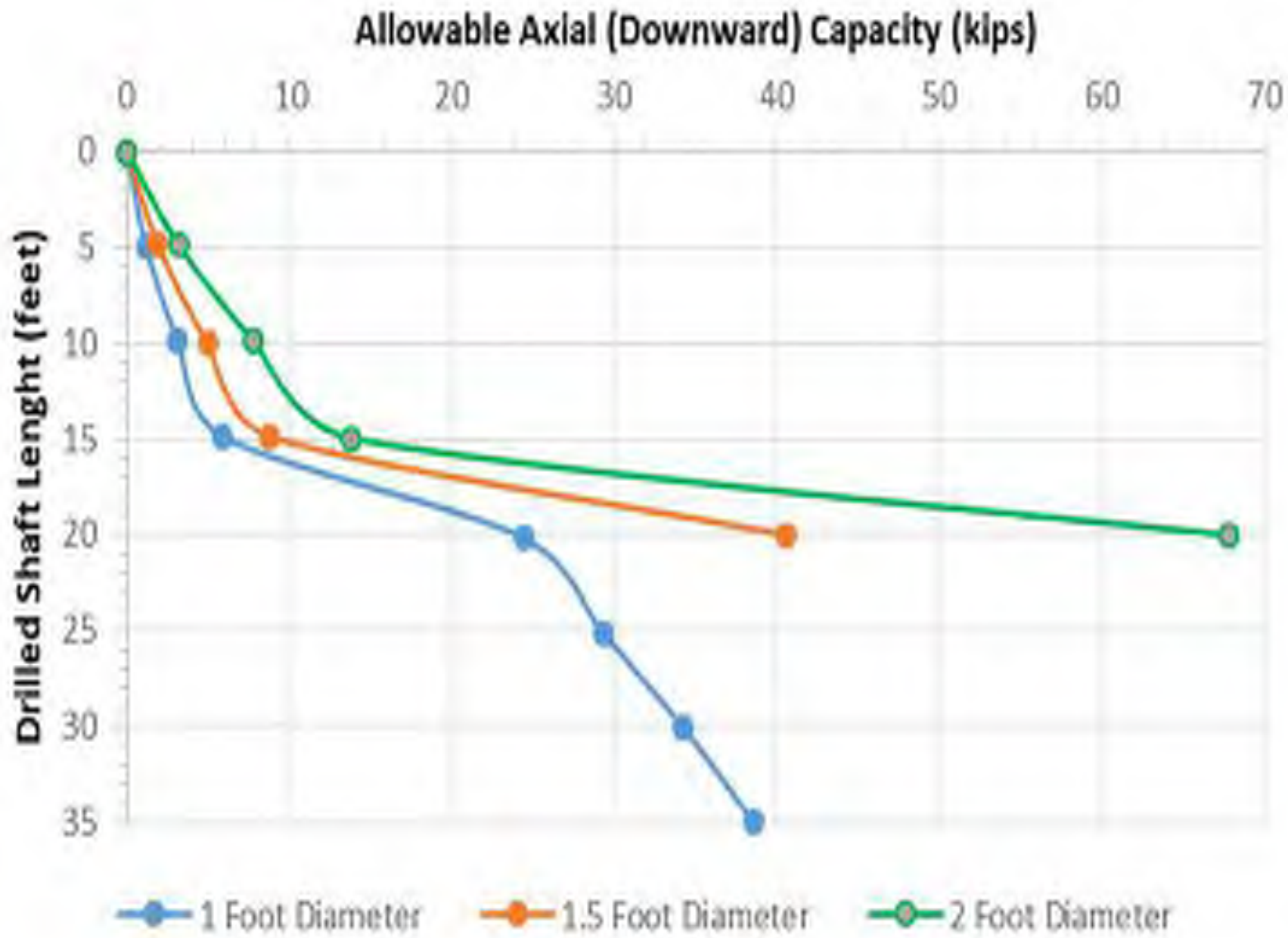
Source: RING SAMPLE **Depth:** 5-6 FEET **Sample No.:** BORING 15

Remarks:

Western Technologies, Inc.

Flagstaff, AZ

Plate B-10



Geotechnical Environmental Inspections Materials

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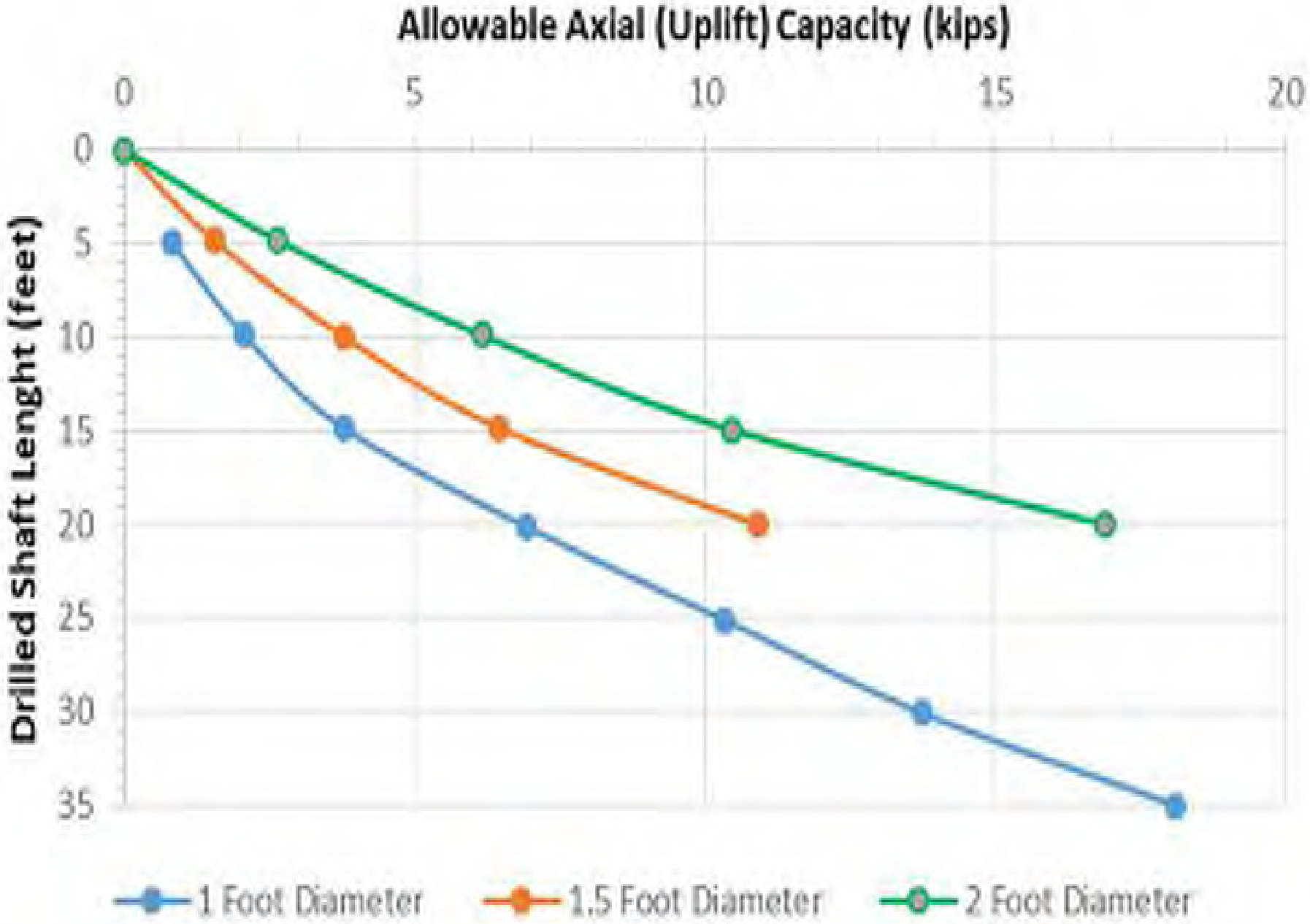
JOB NO.: 2521JB002

DRILLED SHAFT CAPACITY

PLATE

C-1



Geotechnical
Environmental
Inspections
Materials

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DRILLED SHAFT CAPACITY

PLATE

C-2