ATTACHMENT H: GEOTECHNICAL ENGINEERING REPORTS

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Attachment H-1: Stage I Report of Expected Geotechnical Conditions

Badger Mountain Solar

Wenatchee, Washington

Avangrid Renewables
Portland, Oregon

Terracon Project No. GR205090
April 24, 2020

STAGE1
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REPORT TOPICS

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The opinion included with this stamp, dated April 24, 2020, is our recommended exploration plan only. Opinions of the expected conditions and foundation or construction considerations, and **any related opinions are preliminary and cannot be considered an engineer's work product until confirmed by the TERRACON EXPLORATION PLAN**.

REPORT SUMMARY

Topic	Overview Statement
Project Description	We understand the proposed developments include an approximate 3,551-acre siting area. Pending other due diligence reports the siting area will include solar arrays and adjoining switchyard and gen-tie.
Anticipated Foundation Design	Development of the photovoltaic solar project can be considered feasible from a geotechnical engineering standpoint though the foundation systems will be challenging due to the potential for shallow bedrock. Understanding that driven piles are the preferred foundation system for a typical solar project, the amount of soil overburden on the bedrock is anticipated to be relatively thin. In the western portion of the proposed development, driven piles may be more feasible whereas the east portion will likely encounter bedrock at shallow depths. Pile installation using predrilled holes should be assumed. Pile installation will require specialty drilling equipment to advance into basalt bedrock for the eastern portion and likely for some of the west portion as well.
Civil Design Considerations	Near-surface soils are predominantly windblown sand and silt with shallow bedrock anticipated in the eastern portion. Farming activities may result in a thicker topsoil unit requiring deeper clearing and grubbing to remove organic-rich soils. Anticipated road sections will consist of one to two feet of structural fill and 6 inches to 1 foot of ballast and possible geosynthetic reinforcement in areas of softer/looser subgrades. Drainage valleys and swales are expected to require filling to level grades for access roads. Suitable borrow sources are anticipated onsite and in the general vicinity of where filling is needed. Gravel pits are available near the City of Wenatchee, just west of the site roughly 8 miles; however, it may be more economical to produce crushed rock onsite, particularly in the eastern portion where bedrock anticipated at shallow depths Subgrade stabilization of the soils may be required in areas where near-surface windblown deposits are loose. This is anticipated for the eastern portion of the site.
Anticipated Electrical Design	The soils are anticipated to have high electrical resistivity. The soils and bedrock on site are anticipated to have moderate to high thermal resistivity.
Proposed Geotechnical Investigation	A preliminary investigation is recommended for this site. This investigation would help delineate areas of concern on site related to shallow bedrock, collapsible soils, corrosive soils, and potential geologic hazards.
Purpose and Scope	The scope of services for this project includes development and delivery of a Stage1 Report of Expected Geotechnical Conditions (REGC) at the site. The Stage1 REGC provides an expectation of subsurface properties from a geotechnical engineering perspective to aid in a preliminary assessment of the potential project challenges and risks. It also provides preliminary concepts for site development and conceptual foundation design parameters, and construction considerations for the project. Additionally, we will provide two work scopes for future exploration to confirm or modify the expectations given in the REGC. One scope would be a preliminary scope, designed to confirm and modify the findings of the REGC. The second scope would be for a final, design-level geotechnical report.

PLANNED CONSTRUCTION

INFORMATION PROVIDED

- Our understanding of the project was developed based upon information provided by Avangrid Renewables.

SITE CONDITIONS AND PROJECT DESCRIPTION

- The project site is located on Badger Mountain Road in Wenatchee, Washington. The approximate center of the site is located at 47.4560° N, 120.2455° W.
- We understand the proposed development includes an approximate 3,551-acre siting area. Pending other due diligence reports the siting area will include solar arrays and adjoining switchyard and gen-tie.
- We anticipate the solar array field grade will follow the existing site grade with minimum grading required to bring the site to finished grade. Where roadway are proposed, more substantial grading via cuts and fills may be necessary.
- We anticipate the power plant will consist of solar panels installed on steel W-section, or other proprietary sections, pile foundations and various other equipment and appurtenances associated with the power plant (e.g. switchgear, transformers, inverters, and overhead and underground electrical conveyance) which will be supported on shallow spread footings, mat foundations/equipment slabs, and drilled shaft foundations.

GEOTECHNICAL CHARACTERIZATION

GEOLOGIC SETTING

The western portion of the site is primarily located within an area mapped as Quaternary-age mass wasting deposits mostly from landslides. The vast majority of this portion of the site is mapped as having a depth to bedrock greater than 10 feet; however, the northernmost part appears to have shallow bedrock, roughly 1 to 3 feet.

The eastern portion of the site is mapped as having both bedrock at the surface and Quaternary-age eolian deposits, primarily loess (i.e. wind-deposited silt). The exposed bedrock and shallow bedrock is mapped as Miocene-age basalt (i.e. Columbia River basalt; Grande Ronde Basalt; Basalt of Beaver Creek; Basalt of Keane Ranch).

SURFICIAL GEOLOGY

Surficial soils within the western portion of the site are anticipated to largely be silt/sandy silt (ML) and silty sand (SM). In the northern part, soils may be more gravelly, and possible contain cobbles and boulder. The eastern portion of the site consists primarily of low-plasticity silt and clay with variable sand and gravel composition. Soil overburden is expected to be shallow in the eastern region.

BEDROCK GEOLOGY

Bedrock encountered in both the western and eastern portions of the site is expected to be Miocene-age basalt.

FAULTING

The United States Geological Survey (USGS) Quaternary Fault and Fold Database of the United States published a report containing descriptions of a fault system approximately 18 miles southwest of the site called Frenchman Hills structure fault (Class A) No. 561. This is the nearest fault system to the site.

Frenchman Hills Structures fault (Class A) No. 561

Information	Description
Length	~10 km
Dip (degrees)	W
Sense of Movement	Right lateral, Reverse
Dip Direction	Unknown
Slip-rate Category	Less than 0.2 mm/yr
Most recent prehistoric deformation	Undifferentiated Quaternary (<1.6 Ma)

Based on our review of the available fault information, it is our opinion that the risk of surface rupture due to ground faulting is low.

USDA SOILS

The United States Department of Agriculture Natural Resources Conservation Service provides information on soils through its Web Soil Survey website (WSS). According to the WSS the site is mapped with a variety of soil series. The USDA characterizes the mapped soils as having the following characteristics:

NRCS Soil Series	% of Siting Area	Corrosivity		Soil Classification		
		Concrete	Steel	% Silt & Clay	Liquid Limit	USCS
Broadax-Morrow-Spofford and Broadax-Titchenal	30.0	Low	Moderate	60 - 90	NP – 15	ML, CL
Renslow and Ritzville	27.6	Moderate	Moderate	70 - 95	NP – 5	ML, CL
Alstown-Cheviot and Cheviot-Ralls-Grinrod	22.0	Low	Moderate	20 - 70	NP – 5	GC-GM, GM, SC-SM, SM
Bagdad	7.8	Moderate	Moderate	70 - 90	NP – 5	ML, CL

- NP = Non-plastic
- The remaining 12.6 percent of the site soils consist of soils with less than 2% of the total siting area.

GROUNDWATER

The site is not mapped with a known depth to water; however, based on review of nearby well logs from the Washington State Department of Ecology we understand groundwater to be greater than 120 to 180 feet below the ground surface. Shallow, perched groundwater, particularly in areas with shallow bedrock may exist. Surface water is expected to be present within drainage channels. Although the site is near the Columbia River, it is at sufficiently high elevation that it is not classified as having a potential for flooding.

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors such as irrigation that may not be evident at the time a boring is performed. Groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated during subsurface exploration. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

ECONOMIC GEOLOGY

Areas of shallow bedrock in the eastern portion and gravelly soils in the northern portion are potential aggregate sources for generating ballast and surfacing for access roads and possibly structural fill for subgrades. These areas may not be economical for a commercial quarry due to the remoteness of the site, and established rock and gravel quarries closer to Wenatchee.

GEOLOGIC AND GEOTECHNICAL RISKS

Hazard	Present on Site?	Comments
Flooding/High Groundwater	No	The site is at least 600 feet above the Columbia River. The Columbia River stage is regulated by releasing water from dams.
Slope Failure	Yes	The western portion of the site largely consists of relic mass wasting deposits (i.e. landslides). Future mass wasting events are difficult to predict but are more commonly associated with steeper terrain.
Subsidence – Pumping	No	Proper site preparation for road subgrades will mitigate the potential for pumping.
Subsidence – Mining	No	There are no publicly documented mines within the project site.
Subsidence – Caves/Karst	No	These features are not typical in Washington state.
Earthquake – Seismicity	Yes	This region of Washington is seismically active with a mapped, site-modified peak ground accelerations (PGA_M) of 0.242 for a seismic event with a 2475-year return period.
Earthquake – Ground Rupture	No	The closest active fault is approximately 18 miles to the southwest (Frenchman Hills structures).
Liquefaction	No	Regional groundwater is expected to be deep relative to the majority of the site. Lower elevations may be subject to isolated areas of potential liquefaction; however, the risk of wide spread liquefaction is low.
Swelling/Shrinking Soil	No	Cohesive soils, where present, are generally non-to low plastic silts.
Excessive Settlement	No	Thick deposits of soft, cohesive soils that would result in excessive settlement are not associated with this site.
Seiche, tsunami	No	The site is located sufficiently far from such large water body sources.
Corrosive Soil	Yes	Moderate concrete and steel corrosion is estimated for the site.
Made Ground	No	Level and gently sloping areas are actively farmed; however, areas of significant fill placement does not appear to exist.
Collapsible Soil	Yes	The eastern portion consists of large areas of loess deposits (i.e. wind-deposited silt) which are known to be collapsible.
Volcanic Activity	No	The site is over 80 miles from Mt. Rainier, which is the closest known region of potential volcanic activity.
Quick Clay	No	Cohesive soils where present are generally non- to low plastic silts.
Frost Action	Yes	The average frost depth for Douglas County is 24 inches.

GEOLOGIC HAZARD TABLE

Hazard	Likelihood	Potentially Fatal Flaw	Significance	Potential Mitigation Measures	Recommended Next Steps	Timing	Estimated Cost for Next Steps
Shallow Rock	High	Possibly	Pile foundations may require pre-drilling for sufficient embedment	Pre-drill pile locations, configure array area to avoid shallow bedrock areas	Perform test pits/probing to assess soil overburden	Preliminary Geotechnical Investigation	See Preliminary Geotechnical Investigation section
Shallow cobbles and boulders	High	No	Can generally be excavated/removed from near-surfaces to mitigate impacts; pile foundations may require pre-drilling	Pre-drill pile locations, excavation, sieving for soil reuse	Perform test pits/probing to assess overburden	Preliminary Geotechnical Investigation	
Shrink-Swell	Low	No	Potential vertical rise of foundation and roadway subgrade	Shrink-swell soils are not anticipated to be present	Obtain shallow, surface samples for laboratory testing	Preliminary Geotechnical Investigation	
Collapse Potential	High	Possibly	Sudden ground loss reducing subgade support, high risk for ancillary structures supported on mat foundations	Advance pile foundations through the full depth of these soils, remove and recompact soils in significant depth below mat foundations	Perform test pits in regions mapped with loess, conduct collapse laboratory testing	Preliminary Geotechnical Investigation	
Landslides	High	Possibly	Mass wasting from landslides can catastrophically failures structure above, on, or below slopes	Development features should be sufficient setback from slopes, avoid construction on slopes and below slopes	Perform site survey to identify sloping ground. Site reconnaissance during preliminary geotechnical investigation to identify surface expressions of active slides	Site Survey and Preliminary Geotechnical Investigation	
Seismicity	High	Possibly	Damage to infrastructure through inertial effects and ground displacements	Setback from slopes, proper structural design	Characterized seismicity via geotechnical engineering report to support structural design	Geotechnical Engineering Report/Later design phases	
Faulting	Low	No	Ground displacements/offsets	Surface-fault rupture is not of concern for this site	None	Geotechnical Engineering Report	
Liquefaction	Low	No	Loss of bearing capacity of foundation elements	Overexcavation of potential liquefiable soils, ground	Perform test pits/probing in low elevation areas	Preliminary Geotechnical Investigation	

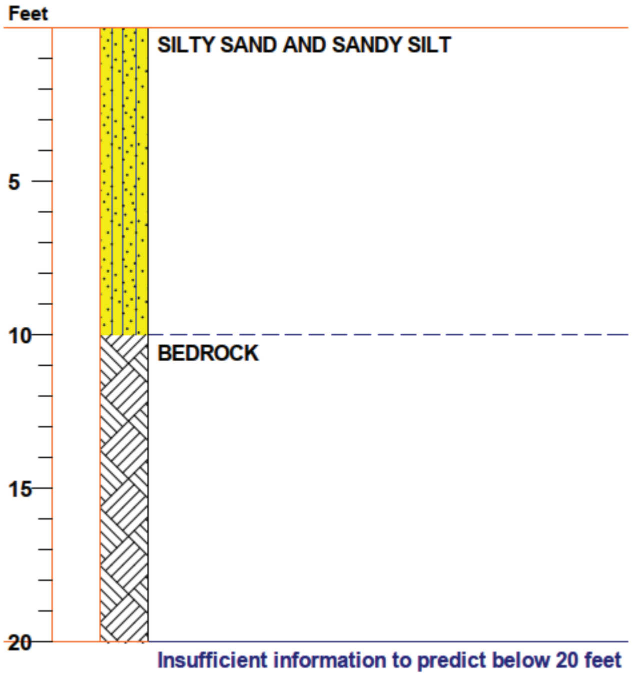
Hazard	Likelihood	Potentially Fatal Flaw	Significance	Potential Mitigation Measures	Recommended Next Steps	Timing	Estimated Cost for Next Steps
				improvement, reconfigure to avoid liquefiable areas			
Corrosive Soil	Moderate to High	Possibly	Deterioration of foundation systems over time, shortened design life	Epoxy coating of rebar, concrete type/additives	Obtain shallow, surface samples for laboratory testing	Preliminary Geotechnical Investigation	
Frost Action	Moderate	No	Potential uplift of the support system	Set foundations beneath the frost depth	None	Geotechnical Engineering Report	

CONCEPTUAL GEOTECHNICAL MODEL

The following opinion of expected geotechnical conditions must be validated with a geotechnical engineering evaluation, fieldwork, and testing. See LIMITATIONS for additional information. This discussion is preliminary in nature and not for design purposes. In no case should the information or opinions provided in this report be utilized for final design.

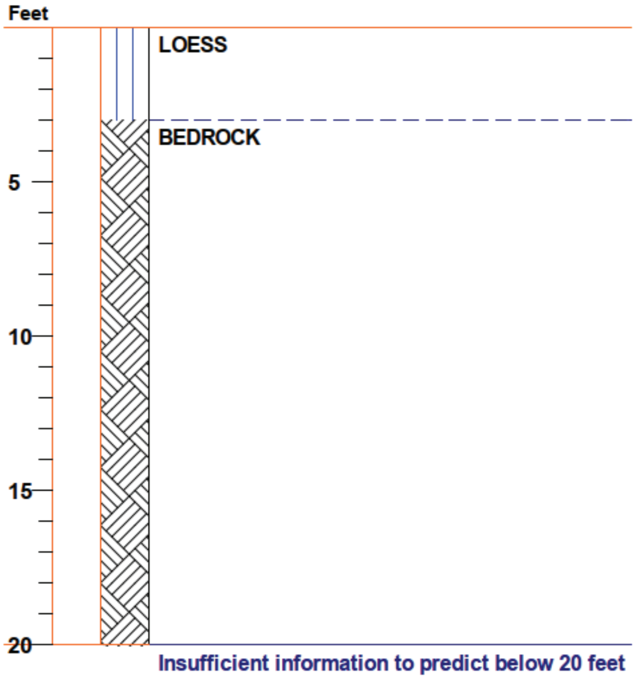
EXPECTED LITHOLOGY 1

AREA REPRESENTED: Western Portion of Site (approx. 1,600 acres; see Exhibit 1)



EXPECTED LITHOLOGY 2

AREA REPRESENTED: Eastern Portion of Site (approx. 1,960 acres; see Exhibit 1)



CONFIDENCE

The project geotechnical engineer has assigned confidence estimates for the datasets below. For information regarding the confidence levels below, see CONFIDENCE ESTIMATE.

LOCAL EXPERIENCE: LOW	Local practitioners have at least 3 years of experience in the vicinity of the site.
PUBLIC DATA: MODERATE	Little to no data exists for this site.
HISTORICAL DATA: LOW	2 exploration projects were reviewed within 5-miles of the site.
OVERALL CONFIDENCE:	LOW

PILE DRIVEABILITY

- Development of the photovoltaic solar project can be considered feasible from a geotechnical engineering standpoint provided the array is planned with sufficient set back from slopes.
- Understanding that driven piles are the preferred foundation system for a typical solar project, we anticipate large areas, particularly in the eastern region, will have shallow bedrock thereby limiting pile drive depths.
- We anticipate pile installation via conventional methods, such as driving into a virgin subgrade, will encounter shallow bedrock resulting in early refusal, or else may cause excessive pile deflection, rotation or torsional rotation.
- Pile installation is likely to require pre-drilling to achieve sufficient pile embedment.

SUBSTATION AREA FOUNDATIONS

- In the proposed solar array field, stripping of topsoil, vegetation may not be necessary if final grades are the same as the existing grades. Keeping existing topsoil and vegetation at the array field could reduce storm water erosion during construction and maintain overall ground surface stability for the life span of the solar-energy development. The site preparation recommendations provided below are generally for areas of ancillary structures, access roads and substations.
- Areas within the limits of construction should be stripped and cleared of any surface vegetation, trees, topsoil and soft soils before fill is to be placed. Given the remoteness of the site, it is unlikely that substantial manmade disturbance has occurred although farming activities may result in a thicker organic topsoil layer. Actual stripping depths should be evaluated by a representative of the Geotechnical Engineer of Record during construction to aid in preventing removal of excess material.

CONSTRUCTABILITY CONSIDERATIONS

Our opinion of constructability for the project geologic setting is based upon the determination of expected subsurface conditions, and is, therefore, subject to the same confidence criteria as noted in our CONFIDENCE ESTIMATE section above. The opinion is also based on a limited understanding of the proposed construction, and therefore, it may not address all constructability issues and risk considerations.

- The primary constructability and risk considerations at this site include shallow bedrock and loess deposits. Shallow bedrock will likely limit pile embedment and conventional pile driving activities while loess deposits can be collapsible leading to loss of subgrade support for foundations and roadways.
- Though the ground may freeze at this site, due to the anticipated depth to groundwater being more than 15 feet, we consider the frost heave potential to be very low, with no requirement to consider frost heave loads.
- Though silts and some clayey soils are present at this site, the plasticity is anticipated to be low such that we don’t anticipate an expansive heave load will be required for the near surface soils.
- Mass wasting deposits may include large rock clasts that would be difficult to remove via excavation or fracturing. The inclusion of such clasts would be random and largely undiscoverable before construction; although geophysics can be used during the design phase to help identify potential clasts.
- The constructability and risk considerations at this site include potential for moderately corrosive soil properties for steel and concrete in both the western and eastern region of the site.
- New roadway cuts may require blasting if bedrock is not rippable with conventional equipment

CIVIL DESIGN CONSIDERATIONS

- We assume civil infrastructure will primarily be planned within or on more level to gently sloping areas of the site and that areas with high topographic relief such a deep drainage channels and steep slopes will be avoided.
- Sloping topography is prominent throughout the site. Cuts and fills to level site grades are feasible where soil overburdens are relatively thick. Where shallow bedrock is anticipated, importing of structural fill from a borrow source elsewhere onsite may be necessary to level grades.
- Bridges or culverts may be necessary for access over deep drainage channels.
- Permanent infrastructure should be set back from slopes sufficiently far to reduce the risk of sliding from seismic activity, particularly in the western portion where mass-wasting deposits are prominent. Stability evaluations may be necessary where setbacks are not feasible.
- Repetitive construction traffic over the on-site surficial soil could lead to softening and disturbance of the native subgrade, especially after significant precipitation events. Site preparation and construction activities in general should be scheduled for the warmer and drier time of the year.

- Stormwater detention ponds are typically used on these projects to prevent stormwater run-off. Silty soils generally have low permeability and may significantly reduce the effectiveness of the detention ponds. Shallow bedrock may limit the depth of detention ponds, particularly in the eastern portion of the site.

CORROSION CONSIDERATIONS

Ferrous metal and concrete elements in contact with soil, whether part of a foundation or part of the supported structure, are subject to degradation due to corrosion or chemical attack. In general, we understand concrete elements are largely impacted by water-soluble sulfate contents, while ferrous metals are impacted by a multitude of factors, including:

- pH
- Electrical resistivity
- Oxidation-reduction potential
- Water-soluble sulfate
- Sulfides
- Chlorides
- Total salts

Based on our research, we understand soil pH and electrical resistivity are published in the USDA NRCS-NCGC SSURGO database. Based on these and other parameters, the USDA also expresses corrosion potential of concrete and steel. These diagrams are expressed in the FIGURES section of this report. In general, we consider these diagrams to be conservative and recommend site specific corrosion testing be conducted.

The table below expresses the range of pH and electrical resistivity values from the site-specific USDA web soil survey:

pH	Soil Resistivity (Ω-cm)
6.9 to 7.8	667 to 1,250

The corrosion susceptibility of ferrous metal from soil should be derived by a corrosion engineer from site specific soil testing. However, based on the generalized American Society for Testing and Materials (ASTM) standards as compared to the USDA data above the corrosion susceptibility falls into the following orange highlighted ratings:

pH [1]	Soil Resistivity [2]
Low	Very mildly corrosive
Moderate	Mildly corrosive
High	Moderately corrosive
Very High	Severely corrosive
	Extremely corrosive

1. pH ratings based on Veleva, L. Soils and Corrosion (Chapter 32). In Corrosion Tests and Standards: Application and Interpretation, 2nd ed.; ASTM International: West Conshohocken, PA, USA, 2005
2. Corrosivity ratings based on soil resistivity according to American Society for Testing and Materials (ASTM G187-12a: Standard Test Method for Measurement of Soil Resistivity Using the Two-Electrode Soil Box Method).

In general, the USDA data reflects moderate to high corrosion to steel based on pH and soil resistivity data. However, we anticipate field electrical resistivity testing results will be more reflective of very mildly to mildly corrosive.

The degradation of concrete or cement grout can be caused by chemical agents in the soil that react with concrete to either dissolve the cement paste or precipitate larger compounds within the concrete, causing cracking and flaking. The concentration of water-soluble sulfates in the soils is a good indicator of the potential for chemical attack of concrete or cement grout. The American Concrete Institute (ACI) in their publication ACI Building Code Requirements for

Structural Concrete (ACI 318-19) provides guidelines for this assessment. Although we do not have site specific water-soluble sulfate information, based on our experience in the area we anticipate the potential for deterioration of concrete ranges from not applicable to low. To confirm this assumption, we recommend site specific soil testing be conducted and a certified corrosion engineer be employed to determine the need for corrosion protection and to design appropriate protective measures, if required

SEISMIC DESIGN PARAMETERS

The seismic design parameters, according to the 2018 International Building Code (IBC) are provided in the following table.

Description	Value
Assumed Site Class per 2018 IBC [1]	C [2]
Mapped Spectral Acceleration Parameters [3]	S_S = 0.456 and S_1 = 0.186
Site Coefficients [3]	F_A = 1.3 and F_V = 1.5
Adjusted Maximum Considered Earthquake Spectral Response Parameters Design Spectral Acceleration Parameters [3]	SM_S = 0.593 and SM_1 = 0.28
Design Spectral Acceleration Parameters [3]	SD_S = 0.395 and SD_1 = 0.186
Site Modified Peak Ground Acceleration [3]	0.242g

1. Seismic site classification in general accordance with the 2018 International Building Code, which refers to ASCE 7-16.
2. The 2018 International Building Code (CBC) uses a site profile extending to a depth of 100 feet for seismic site classification. The site properties to a depth of 100 feet are not known. The site class is inferred based on our experience and knowledge of geologic conditions of the general area.
3. These values were obtained using online seismic design maps and tools provided by OSHPD (https://seismicmaps.org/).

ELECTRICAL DESIGN

SOIL ELECTRICAL RESISTIVITY

Soil electrical resistivity testing results are utilized to assist the designers of electrical grounding components and corrosion protection for concrete and ferrous steel foundation elements. Soil electrical resistivity is dependent on multiple atmospheric and subsurface soil structure parameters, including:

- Water content/saturation
- Salinity of water
- Soil permeability
- Temperature
- Clay content

In general, soil electrical resistivity decreases when each of the above listed parameters increase.

Climatic data largely impacts shallow electrical resistivity values since significant soil moistures and temperatures typically occur within the upper 3 to 7 feet of the soil. We understand from the United States Climate Data website Wenatchee, Washington receives an annual average precipitation of approximately 9.08 inches of rain and 16 inches of snowfall. Additionally, the USDA classifies the surface soils as silt loams, and nearby well logs express the water table is likely more than 120 to 180 feet deep, so it is anticipated that the soils will have low moisture contents. The unconsolidated deposits appear to be at least 6 feet thick under most the project area, but thin in places so placement of grounding may be restricted. Additionally, AASHTO's diagram of the Six Climatic Regions in the United States expresses the site is located in a region of dry, freeze-thaw cycling. Therefore, the near surface electrical resistivity values will experience seasonal fluctuations. In general, soil electrical resistivity values decrease when soils are warm, increase when cold and are significantly higher when soils are frozen.

Based on data from a USDA Web Soil Survey of the site, we understand the site soils to generally consist of varying silt loams with clay contents between 5.6 and 21.6 percent. The USDA NRCS-NCGC SSURGO database correlates clay percentage to an assumed electrical resistivity. The following table, comprised of the USDA's correlations, expresses the near surface soils (0-100 cm below the surface) as having electrical resistivity values of greater the 10,000 Ω-cm.

USDA Defined Percent Clay	USDA Assumed Electrical Resistivity (Ω-cm)
<20	>10,000
20-25	2,000-10,000
25-30	~2,000
>30	<2,000

Additionally, the USDA conducts electrical conductivity testing as part of their soil classifications. The testing is conducted on a saturated, soil paste at 25°C. This test condition should produce the highest potential electrical conductivity for the near surface site soils. USDA test results expressed the soils highest conductivity would be between 0.0008 and 0.0015 Ω/cm (electrical resistivity between 667 and 1,250 Ω-cm).

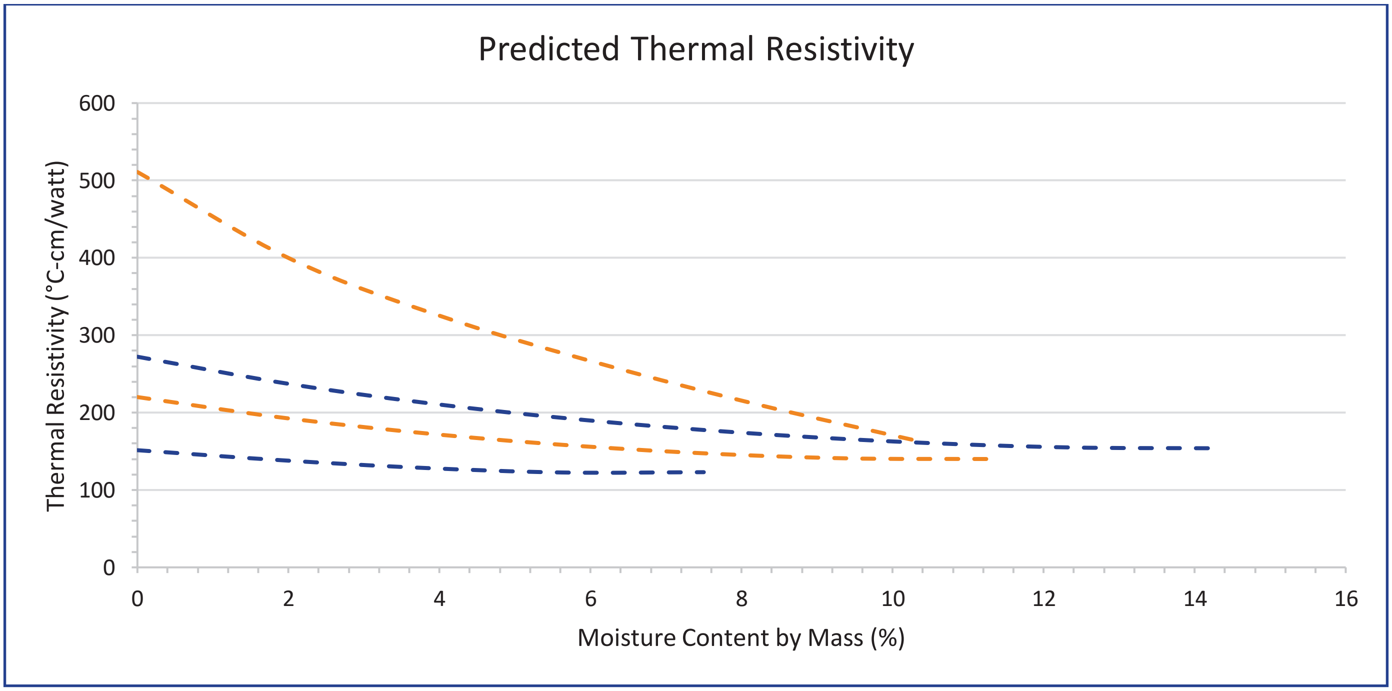
Overall, we would anticipate the field electrical resistivity testing should produce relatively high values; greater than 10,000 Ω-cm. To confirm this assumption we recommend field electrical resistivity testing be conducted in general accordance with ASTM G57 – Standard Test Method Field Measurement of Soil Resistivity Using the Wenner Four-Electrode Method (equivalent to IEEE St. 81). The number of test locations and maximum probe to probe "a" spacing we recommend are expressed in the Preliminary and Design-Level Investigation scopes defined below.

SOIL THERMAL RESISTIVITY

Thermal resistivity is utilized by electrical engineers to design buried power transmission cables. We understand lower thermal resistivity values can result in a decrease in overall power transmission cable size and provide a significant cost savings. Thermal resistivity of soils is influenced by the degree of compaction, chemical and mineral constituents, moisture content, groundwater conditions, and variability of the particle size and distribution among many other contributing factors.

G.S. Campbell[1] published an empirical method in 1985 to predict thermal conductivity of soils using readily available information based on work of McInnes (1981). The equation utilizes volumetric fractions of quartz, minerals other than quartz and total solids, as well as clay mass fraction and soil bulk density to determine thermal conductivity at varying volumetric moisture contents.

We collected information of the variables within Campbell's empirical equation from the USDA NRCS-NCGC SSURGO database and Geochemical and Mineralogical Data for Soils of the Conterminous United States – Data Series 801 published by the U.S. Department of the Interior and U.S. Geologic Survey. Site-specific USDA data was utilized, while data from Data Series 801 was utilized from the reports closest test sites that have the same or similar USDA soil units. To reflect the approximate depth burial depth of the power transmission cables we have utilized depth weighted values in our computation of thermal conductivity utilizing Campbell's empirical method. To compute the predicted range of thermal resistivity values expressed in the graph below, we have utilized a range of bulk densities (90 to 100 pounds per cubic foot) from the USDA data and the range of volumetric quartz content (0.03 to 0.13) from the Data Series 801.



The data expressed in ORANGE above is utilized to predict silty loam soils onsite, while the BLUE data is utilized to predict onsite sandy loam soils. Overall, due to anticipated low moisture contents and low specific gravities of the onsite loess soils we anticipate thermal resistivity values to be moderate to high with dry thermal resistivities values of greater than 300°C-cm/watt.

To determine the viability of this prediction, we recommend site-specific bulk and/or in-situ thermal resistivity testing be conducted in general accordance with ASTM D5334 – Standard Test Method for Determination of Thermal Conductivity of Soil and Soft Rock by Thermal Needle Probe Procedure (similar to IEEE 442). The number of test locations and sample depths we recommend are expressed in the Preliminary and Design-Level Investigation scopes defined below.

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[1] Campbell, G.S. (1985), *Soil Physics with Basic-Transport Models for Soil-Plant Systems*, Elsevier, New York

GEOTECHNICAL INVESTIGATION CONSIDERATIONS

In order to characterize the subsurface conditions, we recommend both a preliminary and a design-level geotechnical investigation, as described below.

PRELIMINARY INVESTIGATION

A preliminary investigation is utilized to broadly characterize the geotechnical concerns and design recommendations to provide a refined overall project cost estimate. The preliminary investigation testing frequencies are usually a product of familiarity of the geotechnical setting and owner/developer acceptable risk with information "gaps" as they move closer to construction.

FIELDWORK

Recommended minimum exploratory program for characterizing the variability of geotechnical properties for preliminary design and planning purposes:

- 1 exploration per 100 acres to bedrock refusal or 15 feet, whichever is shallower. To be performed using a combination of soil borings, test pits, and Dynamic Cone Penetrometer (DCP) explorations to determine depth to bedrock and rippability.
  - Soil borings: Approximately 25 percent of explorations; SPT sampling should be conducted at 2½ foot intervals, up to five feet of rock coring should be conducted at a minimum of four soil borings
  - Test pits: Approximately 75 percent of explorations
  - DCPs: Approximately 25 percent of test pit explorations; be performed to provide correlated SPT values at test pits
- 1 soil boring within each substation area with 5 feet of bedrock coring or 35 feet below the ground surface, whichever is shallower (if substation area is known);
- 1 boring within substation area to a depth of about 35 feet (if substation area is known);
- 1 field electrical resistivity test per 100 acres, and 1 field electrical resistivity test per substation;
  - Field electrical resistivity testing should be conducted according to Wenner Four Point method (ASTM G57) consistent with the schedule in the following table to assist in grounding design.

In Situ Resistivity Test Location	"A"-spacing Interval
Proposed Array Areas	1, 2, 4, 8, 15, 25, 50, 75, 100, 150, and 200 feet
Proposed Substation Area	1, 2, 4, 8, 15, 25, 50, 75, 100, 150, 200, 300, and 400 feet

- 1 pile load test per 200 acres to determine the pile capacity under axial (uplift) and lateral loading; load testing typically conducted on W6X9 pile size or similar, at each location with at least 2 pile pre-drill diameters and assumes 2 piles tested per location at different embedment depths
  - Suggested axial testing protocol

Two test piles at each location should be tested under axial tensile load using procedures generally outlined in the following paragraphs. These tests should be performed on piles embedded to depths ranging from 5 feet to 8 feet.

The load should be applied using a reaction frame supported at an appropriate distance from the test pile. A locking "E"- plate clamp should be used to grip the top of the W-section web. The load should be applied using a pump and hydraulic jack or chain fall device which is connected to the E-clamp using appropriately rated chain and/or shackles.

A load cell should be used to record the load which should be applied in increments of 500 lbs each sustained for a period of at least 30 seconds up to 7,000 lbs (our equipment's maximum safe working load). The test should be unloaded and the test ended after the conclusion of the test load schedule or after the pile reaches ¾ inch of axial displacement.

Deflections should be recorded using a pair of displacement indicators secured to either side of the test pile flange with a magnetic mounting bracket. The needle of each indicator should rest on a reference beam supported at each end with wood and/or masonry blocks at the surface.

- Suggested lateral testing protocol

  Two test piles at each location should be tested under lateral load following the completion of testing under axial tensile load. These tests should be performed on piles embedded to depths ranging from 6 feet to 10 feet. Each pair of test piles should be connected using a system of appropriately-rated shackles and chain to allow each pile to effectively serve as a reaction for the other. Simultaneous load displacement testing across the strong axis should be performed for each pair of piles. The test procedure is generally outlined in the following paragraphs.

  A chain system should be connected to the test piles using a flange clamp. The load should be recorded using a load cell or equivalent and applied with a hydraulic pull cylinder or chain fall in cyclical increments of 500 lbs, each sustained for a period of at least 30 seconds. The loads should be applied in 500 lb. increments and cycled such that 5 cycles of loading should occur if the maximum lateral load of 7,000 lbs. is obtained during the test. The test should be unloaded and the test ended after the conclusion of the test load schedule or after the pile reaches 1 inch of lateral displacement measured at 6 inches above the ground surface. Displacement indicators and reference beams supported at each end with wood blocks should be used to measure deflection.

  The lateral load should be applied at a height of 36 to 48 inches above the ground surface (ags) and the lateral displacement should be measured at a height of 6 inches ags.

LABORATORY TESTING SERVICES

- Moisture content
- Atterberg limits
- Sieve analysis
- Consolidation
- CBR
- Corrosion testing (pH value, sulfate, chloride, sulfide, total salt, box electrical resistivity, and redox potential) of on-site soils: 1 test per 100 acres of array area
- Thermal resistivity: 1 test per 200 acres of array area

GEOTECHNICAL ENGINEERING & REPORTING

The preliminary geotechnical engineering report should include the following recommendations and considerations:

- Description of project site and proposed development
- Discussion of site geologic background
- Summary of encountered subsurface soil and groundwater conditions
- General discussion of geotechnical considerations for development
- Preliminary geotechnical considerations for pile foundations to support panel racking including:
  - Foundation type and appropriate installation methods;
  - Design parameters for axial capacity;
  - P-Y model parameters for evaluation of soil-structure interaction under lateral load (LPile Analysis);
  - Considerations for construction including QA/QC;
  - Frost heave potential
- Preliminary geotechnical considerations for other project aspects including:

  - Site preparation and earthwork
  - Preliminary design recommendations for drilled shafts
  - Preliminary design recommendations for mat foundations
  - Preliminary design recommendations for shallow spread footing foundations
  - Preliminary design and construction of access roadways
  - Seismic considerations and seismic site classification

- Field and laboratory testing documentation including:
  - Site plan indicating field testing and sampling locations
  - Description of field and laboratory test procedures
  - Computer generated logs of the soil test borings
  - Results of in-situ electrical resistivity
  - Laboratory testing results and description of procedures

- Discussion of preliminary design and construction considerations including:
  - Geologic concerns
  - Corrosion to steel (based on laboratory testing)
  - Frost heave potential
  - Excavation difficulty
  - Expansive soils
  - Slope stability
  - Pile drivability difficulty

ESTIMATED COST

Based on the expressed testing frequencies and scope above we anticipate the Preliminary Geotechnical Investigation would cost between $134,555 and $182,045. The following is an approximate line item breakdown, however actual fees will likely vary due to additional factors such as difference in defined scope, mobilization, per diem and more fees not considered in this estimate.

Explorations	$24,480 to $33,120
Field Electrical Resistivity	$25,500 to $34,500
Corrosion Testing	$6,885 to $9,315
Thermal Resistivity Testing	$12,240 to $16,650
Index and Other Laboratory Testing	$5,100 to $6,900
Predrilling, Pile Installation and Load Testing	$48,450 to $65,550
Geotechnical Engineering Report	$5,950 to $8,050
Pile Load Testing Report	$5,950 to $8,050

DESIGN-LEVEL INVESTIGATION

A design-level investigation is utilized to refine preliminary recommendations by investigating information “gaps” and provide additional value to further assist with constructability and cost refinement. At this time in the project the siting area has usually been reduced to a near final array area. Prior to conducting the design-level investigation a “gap analysis” is usually conducted to as to determine the overlap within the defined array area of the preliminary investigation with the design-level investigation frequencies expressed below.

FIELDWORK

- 1 exploration per 25 acres to bedrock refusal or 15 feet, whichever is shallower;
  - Soil borings: Approximately 25 percent of explorations; SPT sampling should be conducted at 2½ foot intervals, up to five feet of rock coring should be conducted at a minimum of four soil borings
  - Test pits: Approximately 75 percent of explorations
  - DCPs: Approximately 25 percent of test pit explorations; be performed to provide correlated SPT values at test pits

- 2 exploration within substation area to bedrock refusal or 35 feet, whichever is shallower (1 if one conducted in preliminary investigation);
  - Soil borings: up to 10 feet of coring for one of the two locations
- Geophysical exploration(s) at a frequency of the following:
  - Multi-Channel Ground Penetrating Radar and FDEMI – Single direction lines at approximate 400 foot offsets across areas of the site where depth to bedrock needs to be delineated further; provides value when there is high variability in bedrock depths
- Infiltration testing, when required, should be performed in accordance with local agency requirements at the anticipated infiltration depth. Testing frequency should be a minimum of 1 per detention pond location and 2 per location for larger ponds. In general, we understand pilot infiltration testing is the local standard where infiltration testing is conducted within a small test pit of known measurements
- 1 field electrical resistivity test per 50 acres and 1 per substation (if not conducted in preliminary investigation);
  - Field electrical resistivity testing should be conducted according to Wenner Four Point method (ASTM G57) consistent with the schedule in the following table to assist in grounding design.

In Situ Resistivity Test Location	“A”-spacing Interval
Proposed Array Areas	1, 2, 4, 8, 15, 25, 50, 75, 100, 150, and 200 feet
Proposed Substation Area	1, 2, 4, 8, 15, 25, 50, 75, 100, 150, 200, 300, and 400 feet

- Pile load testing at 1 location per 100 acres to determine axial and lateral pile capacity and pile construction variability; load testing typically conducted on W6X9 pile size or similar, at each location with at least 2 pile pre-drill diameters and assumes 2 piles tested per location at different embedment depths; testing protocols should be confirmed by racking contractor if selected prior to time of investigation
  - Suggested axial testing protocol

Two test piles at each location should be tested under axial tensile load using procedures generally outlined in the following paragraphs. These tests should be performed on piles embedded to depths ranging from 5 feet to 8 feet.

The load should be applied using a reaction frame supported at an appropriate distance from the test pile. A locking “E”- plate clamp should be used to grip the top of the W-section web. The load should be applied using a pump and hydraulic jack or chain fall device which is connected to the E-clamp using appropriately rated chain and/or shackles.

A load cell should be used to record the load which should be applied in increments of 500 lbs each sustained for a period of at least 30 seconds up to 7,000 lbs (our equipment’s maximum safe working load). The test should be unloaded and the test ended after the conclusion of the test load schedule or after the pile reaches ¾ inch of axial displacement.

Deflections should be recorded using a pair of displacement indicators secured to either side of the test pile flange with a magnetic mounting bracket. The needle of each indicator should rest on a reference beam supported at each end with wood and/or masonry blocks at the surface.

  - Suggested lateral testing protocol

Two test piles at each location should be tested under lateral load following the completion of testing under axial tensile load. These tests should be performed on piles embedded to depths ranging from 6 feet to 10 feet. Each pair of test piles should be connected using a system of appropriately-rated shackles and chain to allow each pile to effectively serve as a reaction for the other. Simultaneous load displacement testing across the strong axis should be performed for each pair of piles. The test procedure is generally outlined in the following paragraphs.

A chain system should be connected to the test piles using a flange clamp. The load should be recorded using a load cell or equivalent and applied with a hydraulic pull cylinder or chain fall in cyclical increments of 500 lbs, each sustained for a period of at least 30 seconds. The loads should be applied in 500 lb. increments and cycled such that 5 cycles of loading should occur if the maximum lateral load of 7,000 lbs. is obtained during the test. The test should be unloaded and the test ended after the conclusion of the test load schedule or after the pile reaches 1 inch of lateral displacement measured at 6 inches above the ground surface. Displacement indicators and reference beams supported at each end with wood blocks should be used to measure deflection.

The lateral load should be applied at a height of 36 to 48 inches above the ground surface (ags) and the lateral displacement should be measured at a height of 6 inches ags.

LABORATORY TESTING SERVICES

- Moisture content
- Atterberg limits
- Sieve analysis
- Consolidation
- CBR
- Corrosion testing (pH value, sulfate, chloride, sulfide, total salt, box electrical resistivity, and redox potential) of on-site soils: 1 test per 100 acres of array area
- Thermal resistivity: 1 test per 200 acres of array area

GEOTECHNICAL ENGINEERING & REPORTING

- Description of project site and proposed development
- Discussion of site geologic background
- Summary of encountered subsurface soil and groundwater conditions
- General discussion of geotechnical considerations for development
- Geotechnical considerations for pile foundations to support panel racking including:
    - Foundation type and appropriate installation methods;
    - Design parameters for axial capacity;
    - P-Y model parameters for evaluation of soil-structure interaction under lateral load (LPile Analysis);
    - Considerations for construction including QA/QC;
    - Frost heave potential

- Geotechnical considerations for other project aspects including:
    - Site preparation and earthwork
    - Design recommendations for drilled shafts
    - Design recommendations for mat foundations
    - Design recommendations for shallow spread footing foundations
    - Design and construction of access roadways
    - Seismic considerations and seismic site classification

- Field and laboratory testing documentation including:
    - Site plan indicating field testing and sampling locations
    - Description of field and laboratory test procedures
    - Computer generated logs of the soil test borings
    - Results of in-situ electrical resistivity
    - Laboratory testing results and description of procedures

- Discussion of design and construction considerations including:
    - Geologic concerns

- Corrosion to steel (based on laboratory testing)
- Frost heave potential
- Excavation difficulty
- Expansive soils
- Slope stability
- Pile drivability difficulty

ESTIMATED COST OF EXAMPLE SCOPE OF FIELDWORK

Based on the expressed testing frequencies and scope above we anticipate the Design-Level Geotechnical Investigation would cost between $313,100 and $599,700 without any frequency reduction caused by previous work being conducted on the site. The following is an approximate line item breakdown, however actual fees will likely vary due to additional factors such as difference in defined scope, mobilization, per diem and more fees not considered in this estimate.

Explorations	$57,600 to $114,400
Field Electrical Resistivity	$30.000 to $58,800
Corrosion Testing	$8,100 to $16,200
Thermal Resistivity Testing	$14,400 to $28,800
Index and Other Laboratory Testing	$10,000 to $12,500
Predrilling, Pile Installation and Load Testing	$114,000 to $219,000
Geophysics Study	$65,000 to $130,000
Geotechnical Engineering Report	$7,000 to $10,000
Pile Load Testing Report	$7,000 to $10,000

The above estimates are based on the current understanding of the project development, review of information provided in this report and assumption the array area could be reduced to around half of the total siting area. See **Limitations** section.

INFORMATION SOURCES

TERRACON HISTORICAL PROJECTS

Terracon has approximately 30 geotechnical projects within 5-miles of your project site. Of those, the local practitioner reviewed select xploration projects to gain a better understanding of potential subsurface conditions. The geotechnical project locations are illustrated on the *GeoReport* platform, and on the **SITE LOCATION MAP**.

PUBLIC DATA SOURCES

USGS
science for a changing world

TOPOGRAPHY
GEOLOGY

NRCS

Soil Survey Geographic U.S. Database

DEPTH TO BEDROCK
DEPTH TO WATER
FLOOD FREQUENCY
SOIL HYDRO GROUP
SOIL PARENT MATERIAL

OTHER
BING MAPS
GOOGLE MAPS
GOOGLE EARTH PRO™ (Historical Aerial Images)

METHOD

The CONCEPTUAL GEOTECHNICAL MODEL developed for the subject site provides expected subsurface (lithology and groundwater) conditions as well as site preparation and foundation options based upon the expected subsurface conditions and our understanding of the planned construction.

It is based upon Terracon's review of information from selected sources within the public domain, historical subsurface exploration and testing data in the vicinity of the project site and the experience of Terracon's local practitioners.

If sufficient site development plans are available, a work plan required to confirm the Conceptual Geotechnical Model is included. The work plan is intended to be executed by Terracon to confirm our Conceptual Geotechnical Model. The work plan may not be sufficient in scope for other geotechnical engineers.

CONFIDENCE ESTIMATE

Terracon has assigned confidence estimates for the datasets based on upon the engineer's local practice in the vicinity of your site. The engineer assigned a subjective confidence opinion of low, moderate, or high for each of the following categories:

- Local Experience
- Public Data
- Historical Project Data

Using a weighted averaging approach, we derived an overall confidence interval for all the combined information sources. Low confidence implies that the level of available data and/or consistency is such that little confidence can be placed in the Conceptual Geotechnical Model. Conversely, a high confidence ranking implies that sufficient data and consistency exists to derive a high confidence in the statement of expected conditions.

Regardless of the confidence ranking, actual conditions may vary significantly from the predicted conditions, and the expected conditions must be confirmed with site-specific exploration data, and significant variations from the expected conditions are possible.

The CONCEPTUAL GEOTECHNICAL MODEL is preliminary in nature and not for design purposes. Any opinions regarding the subsurface conditions for this project may not represent actual conditions encountered during project exploration, or construction. In no case should the information or opinions provided in this Custom Stage1 be utilized for final design.

LIMITATIONS

The sources of publicly available information as provided in this Custom Stage1 are identified in the Project Map Viewer and referenced in INFORMATION SOURCES. Terracon makes no warranty as to accuracy of any public information, as displayed in the viewer.

Confirmation of opinions stated in this document is essential. Confirmation should include performing a site-specific geotechnical evaluation consisting of exploratory soil borings and/or related exploration methods consistent with the guidelines set forth in the TERRACON EXPLORATION PLAN.

This Custom Stage1 ***GeoReport*** addresses a preliminary, unverified opinion of geotechnical conditions only. The report does not include either specifically, or by implication, any environmental assessment of the site or identification or prevention of pollutants, hazardous materials, or conditions.

Furthermore, given the limitations described above, and based on the preliminary nature of this report, all parties are advised that any decisions or actions taken by any party based on the information contained herein, including decisions with financial implications are done solely at the risk of that party. By providing this information in this preliminary form, Terracon expressly disclaims any duties or obligations associated with the usage of this information for decision-making purposes.

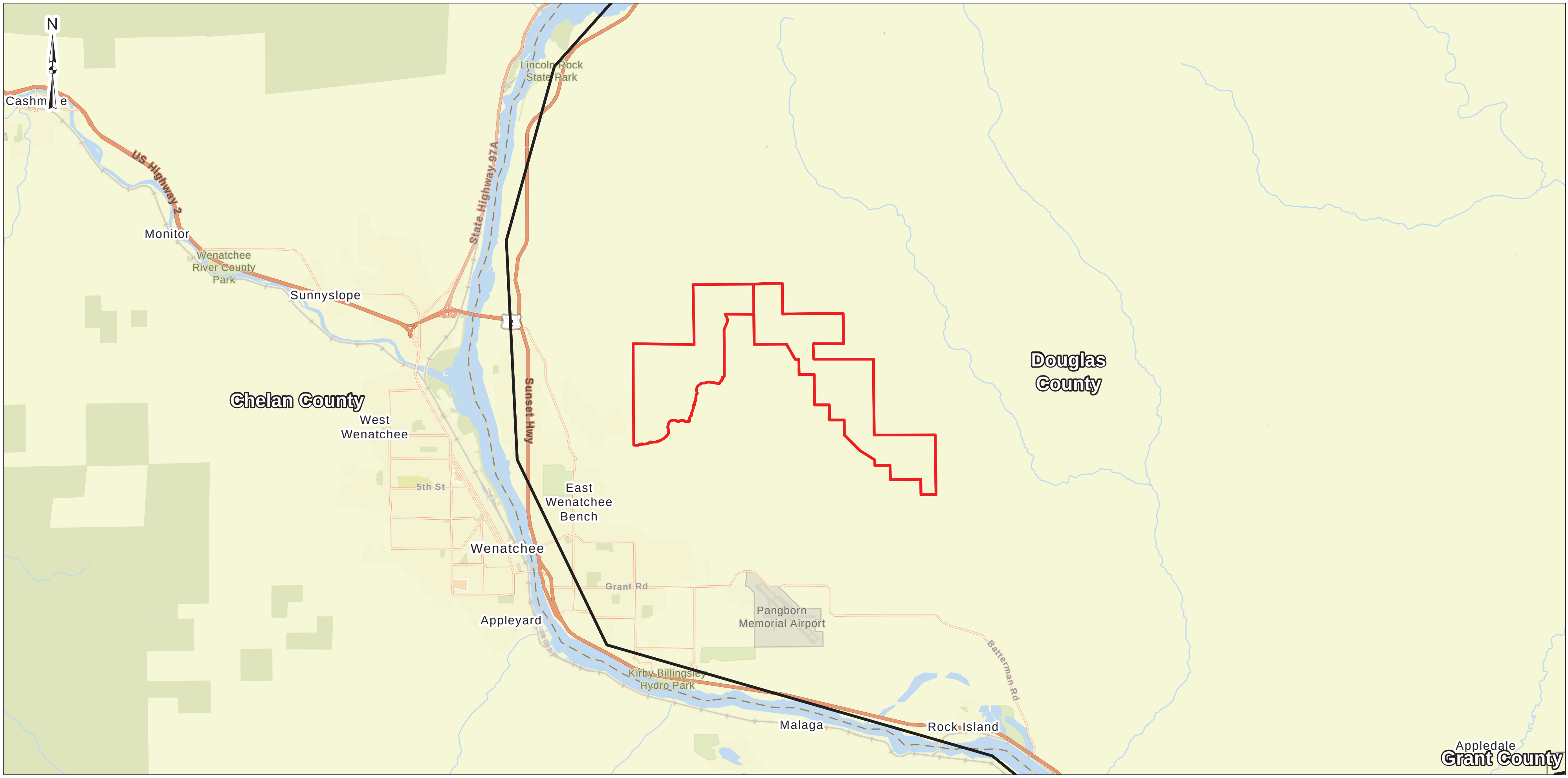
In the event that changes the nature, design, or location of the project as outlined in this report are planned, the preliminary conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing. In the event the project moves into the design phase, Terracon should be retained to develop and complete a scope of work that includes site specific explorations to confirm or to modify this preliminary report.

Terracon and Avangrid Renewables recognize that we have entered into an agreement that may contain certain confidential or non-disclosure obligations relating to our services. Avangrid Renewables recognizes, however, that while Terracon will not violate any such obligations, none of these create an exclusivity obligation to Terracon relating to the service or data in question. Terracon has the unfettered ability to provide similar services to any other party and use any public or previously available data for the service of others, even if included as part of this report.

The review of historical aerial imagery is limited to the images available from Google Earth Pro™. Terracon does not represent the imagery reviewed to be a complete historical record of previous site usage.

FIGURES

Contents:



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🟥 Project Site

DATA SOURCES:
ESRI WMS - Streets, Topographic

Scale: 1:102,000

Miles

0 0.75 1.5 3

Project No.:	GR205090
Date:	Apr 2020
Drawn By:	PNM
Reviewed By:	JRG

Terracon

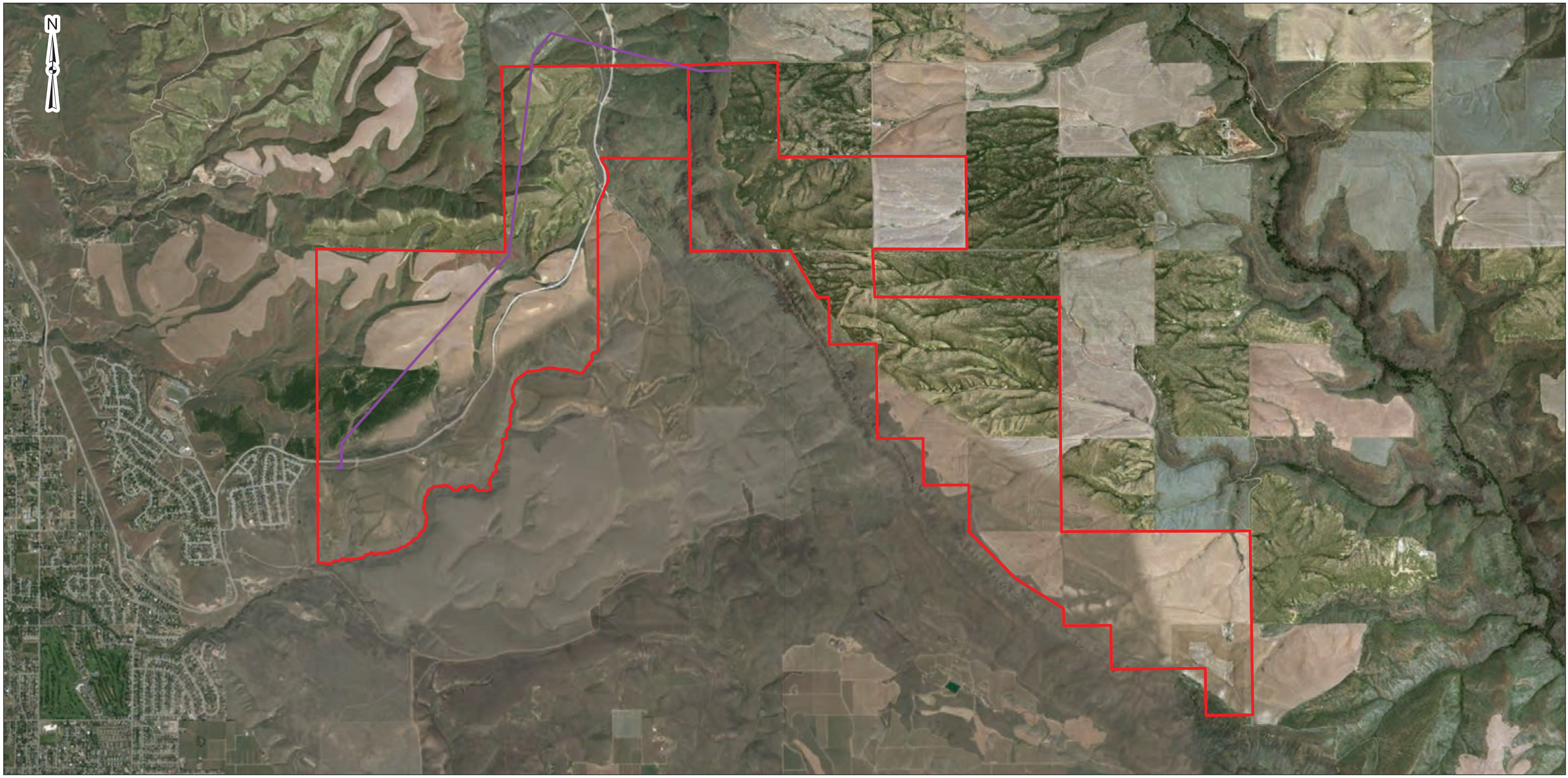
10841 S. Ridgeview Road Olathe, KS 66061
PH. (800) 593-7777 terracon.com

Site Location

Badger Mountain Solar
Avangrid Renewables, LLC
Badger Mountain Road
Wenatchee, WA

Exhibit

1



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🟥 Project Site

— Gen-Tie Line

DATA SOURCES:
ESRI WMS - Topographic
Bing - Imagery

Scale: 1:33,000

Feet

0 1,250 2,500 5,000

Project No.:	GR205090
Date:	Apr 2020
Drawn By:	PNM
Reviewed By:	JRG

Terracon

10841 S. Ridgeview Road Olathe, KS 66061

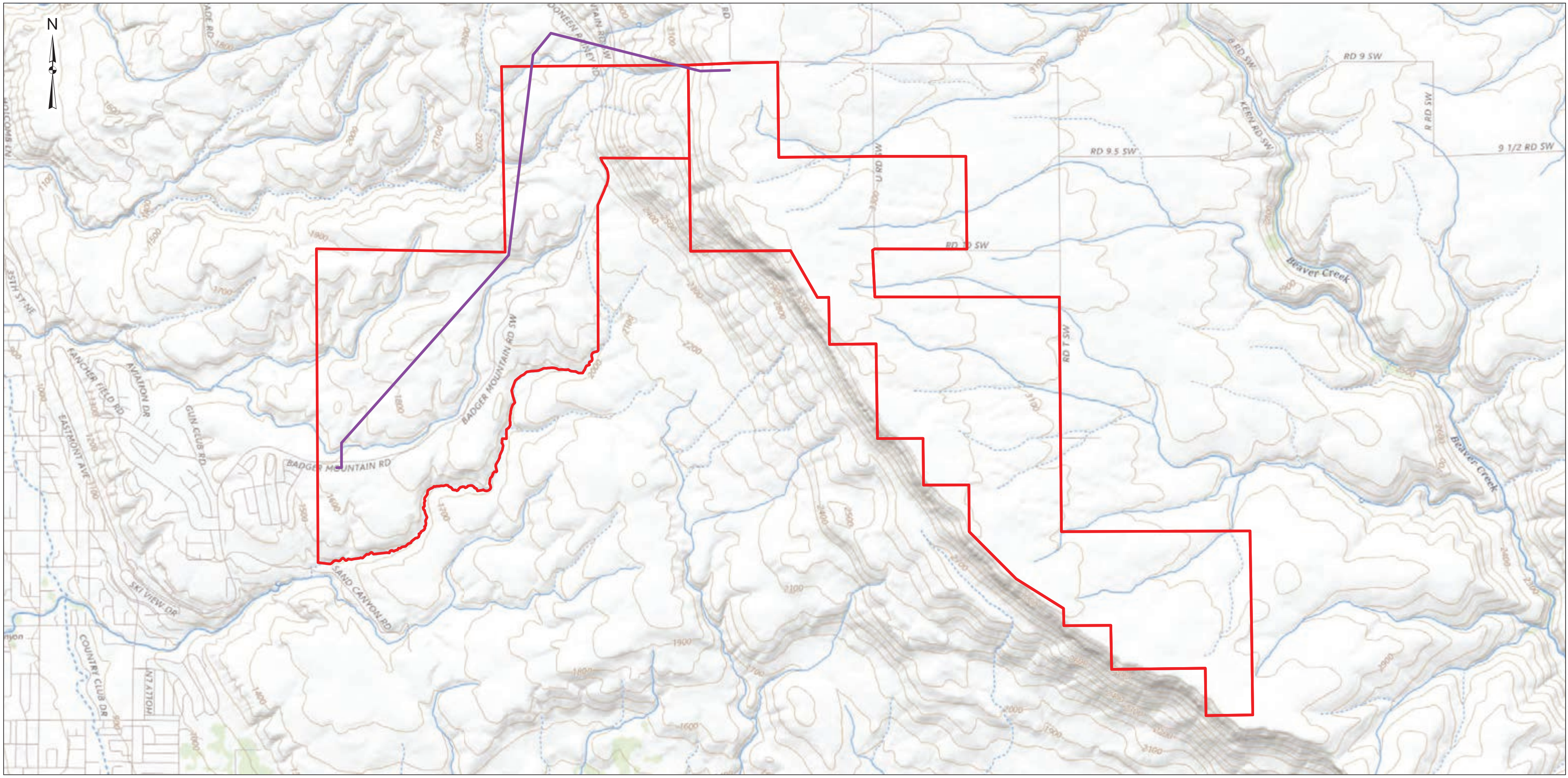
PH. (800) 593-7777 terracon.com

Site Layout

Badger Mountain Solar
Avangrid Renewables, LLC
Badger Mountain Road
Wenatchee, WA

Exhibit

2



🟥 Project Site

Gen-Tie Line

DATA SOURCES:
ESRI WMS - Topographic
USGS - Topographic Basemap

Scale: 1:33,000

0	1,250	2,500	5,000	Feet

Project No.: GR205090
Date: Apr 2020
Drawn By: PNM
Reviewed By: JRG

Terracon
10841 S. Ridgeview Road Olathe, KS 66061
PH. (800) 593-7777 terracon.com

Site Topography

Badger Mountain Solar
Avangrid Renewables, LLC
Badger Mountain Road
Wenatchee, WA

Exhibit

3

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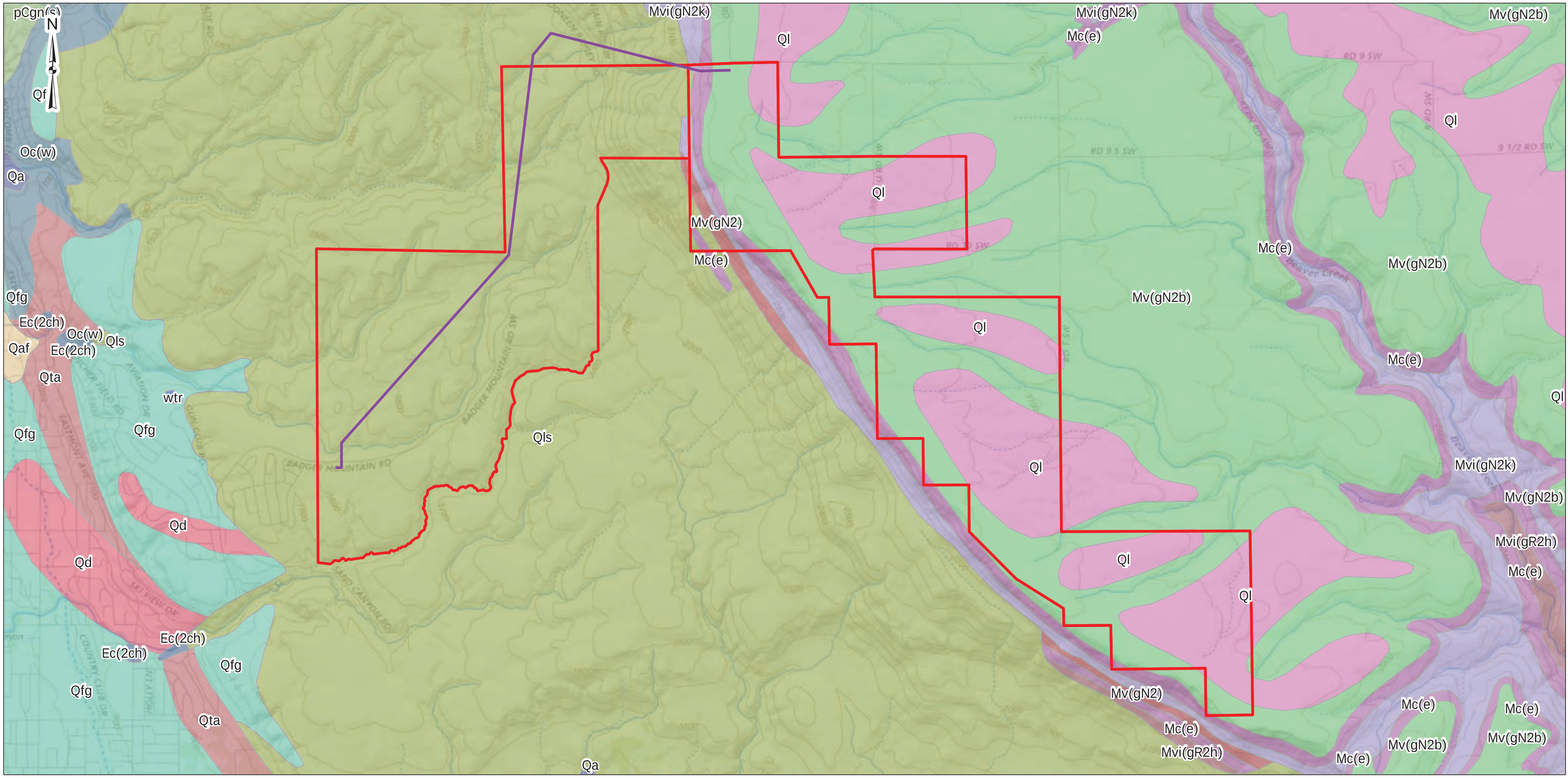

- 🟥 Project Site
- — Gen-Tie Line

Surficial Geology

- ▨ Ec(2ch),Tertiary sedimentary rocks and deposits,Tertiary sedimentary rocks and deposits
- ▨ Mc(e),Tertiary sedimentary rocks and deposits
- ▨ Mv(gN2),Miocene Columbia River Basalt Group, Grande Ronde Basalt
- ▨ Mv(gN2b),Miocene Columbia River Basalt Group, Grande Ronde Basalt
- ▨ Mvi(gN2k),Miocene Columbia River Basalt Group, Grande Ronde Basalt
- ▨ Mvi(gR2h),Miocene Columbia River Basalt Group, Grande Ronde Basalt
- ▨ Oc(w),Tertiary sedimentary rocks and deposits
- ▨ Qa,Quaternary alluvium
- ▨ Qaf,Quaternary alluvium
- ▨ Qd,Quaternary dune sand
- ▨ Qfg,Pleistocene outburst flood deposits
- ▨ Ql,Quaternary eolian deposits, loess
- ▨ Qls,Quaternary mass-wasting deposits
- ▨ Qta,Quaternary mass-wasting deposits
- ▨ pCgn(s),Precambrian heterogeneous metamorphic rocks
- ▨ wtr,Water

DATA SOURCES:
ESRI WMS - Topographic
USGS - Topographic Basemap
WADNR - Surficial Geology, 1:100,000

Scale: 1:33,000

0 1,250 2,500 5,000 Feet

Project No.:	GR205090
Date:	Apr 2020
Drawn By:	PNM
Reviewed By:	JRG

Terracon
10841 S. Ridgeview Road Olathe, KS 66061
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Surficial Geology

Badger Mountain Solar
Avangrid Renewables, LLC
Badger Mountain Road
Wenatchee, WA

Exhibit
4

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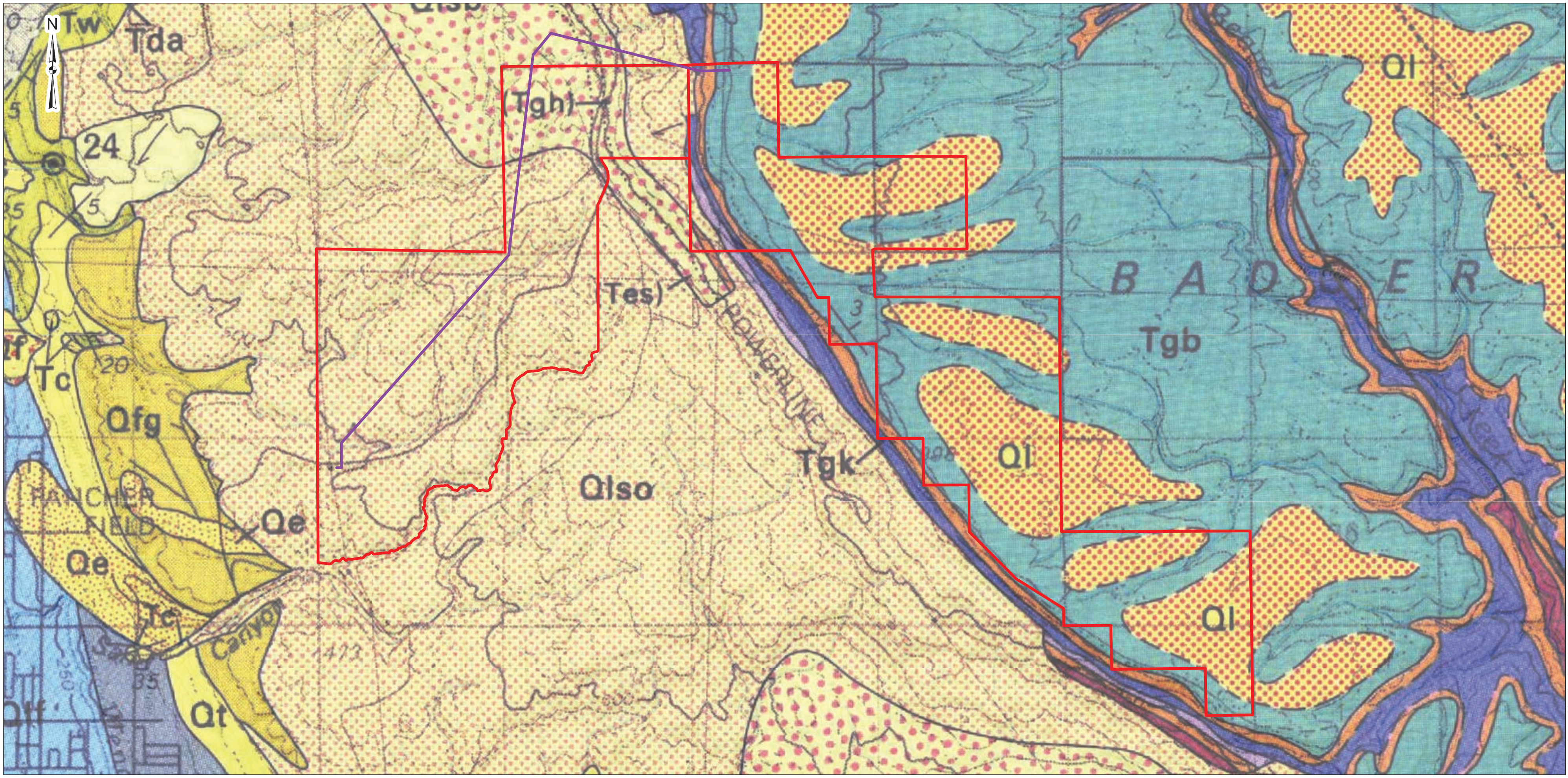

🟥 Project Site

Gen-Tie Line

See Geologic Map Legend on next page

DATA SOURCES:
ESRI WMS - Topographic
USGS - Topographic Basemap
USGS - Geologic map of the Wenatchee 1:100,000 quadrangle, central Washington

Scale: 1:33,000

Feet

0 1,250 2,500 5,000

Project No.:	GR205090
Date:	Apr 2020
Drawn By:	PNM
Reviewed By:	JRG

Terracon

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Geologic Map

Badger Mountain Solar
Avangrid Renewables, LLC
Badger Mountain Road
Wenatchee, WA

Exhibit

5A

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Ql	LOESS—Deposits of wind-deposited silt
Qlsb	LANDSLIDE OF LARGE BLOCKS—Mainly large intact blocks whose original internal stratigraphy is partly to wholly preserved (where mapped, internal stratigraphy designated in parentheses); slides occur mainly as the headward parts of large landslides derived from regional escarpment of the Yakima Basalt Subgroup; large incipient slide near Mission Peak includes nonrotated blocks, of which the largest, essentially in place, measures 2000 x 1000 x 150 m. Elsewhere blockslides are of older rock units
Qlso	OLDER LANDSLIDE DEPOSITS—Hummocky diamicton underlying **Qlfo**, **Qlfy**, **Qsa**, **Qcgu**, **Qcgl** and **Qmc**; upper surface of toe of slide along and in Columbia River near Malaga and Rock Island has high erosional relief; huge slide complexes on both sides of Columbia River valley between Wenatchee and Rock Island Dam are sparsely strewn up to altitude 325 m with very angular light-colored granodiorite boulders ice-rafted by great floods. Landslide complex northeast of East Wenatchee consists near mountain front of huge rotated, somewhat deformed blocks (**Qlsb**) of the Grande Ronde Basalt and Ellensburg Formation; to southwest is highly fractured deformed blocks and divided debris of the Grande Ronde Basalt deposited in valleys cut into Wenatchee Formation (**Tw**); east of river is thickly mantled with loess and eolian sand
Tes	Sandstone, siltstone, and conglomerate—Micaceous feldspathic sandstone, siltstone, and very minor amount of pebble conglomerate and dark mudstone. Weakly indurated. Interbedded with Grande Ronde and, locally, Wanapum Basalt. Includes:
Tgb	Basalt of Beaver Creek—Youngest flow in unit in northeastern part of mapped area. Well-developed colonnade; pillowed base in places
Tgk	Basalt of Keane Ranch—Several invasive flows and associated hyaloclastite and peperite. Includes flows of at least three different chemical compositions

Project No.: GR205090
Date: Apr 2020
Drawn By: PNM
Reviewed By: JRG

Terracon
10841 S. Ridgeview Road Olathe, KS 66061
PH. (800) 593-7777 terracon.com

Geologic Map Legend

Badger Mountain Solar
Avangrid Renewables, LLC
Badger Mountain Road
Wenatchee, WA

Exhibit
5B

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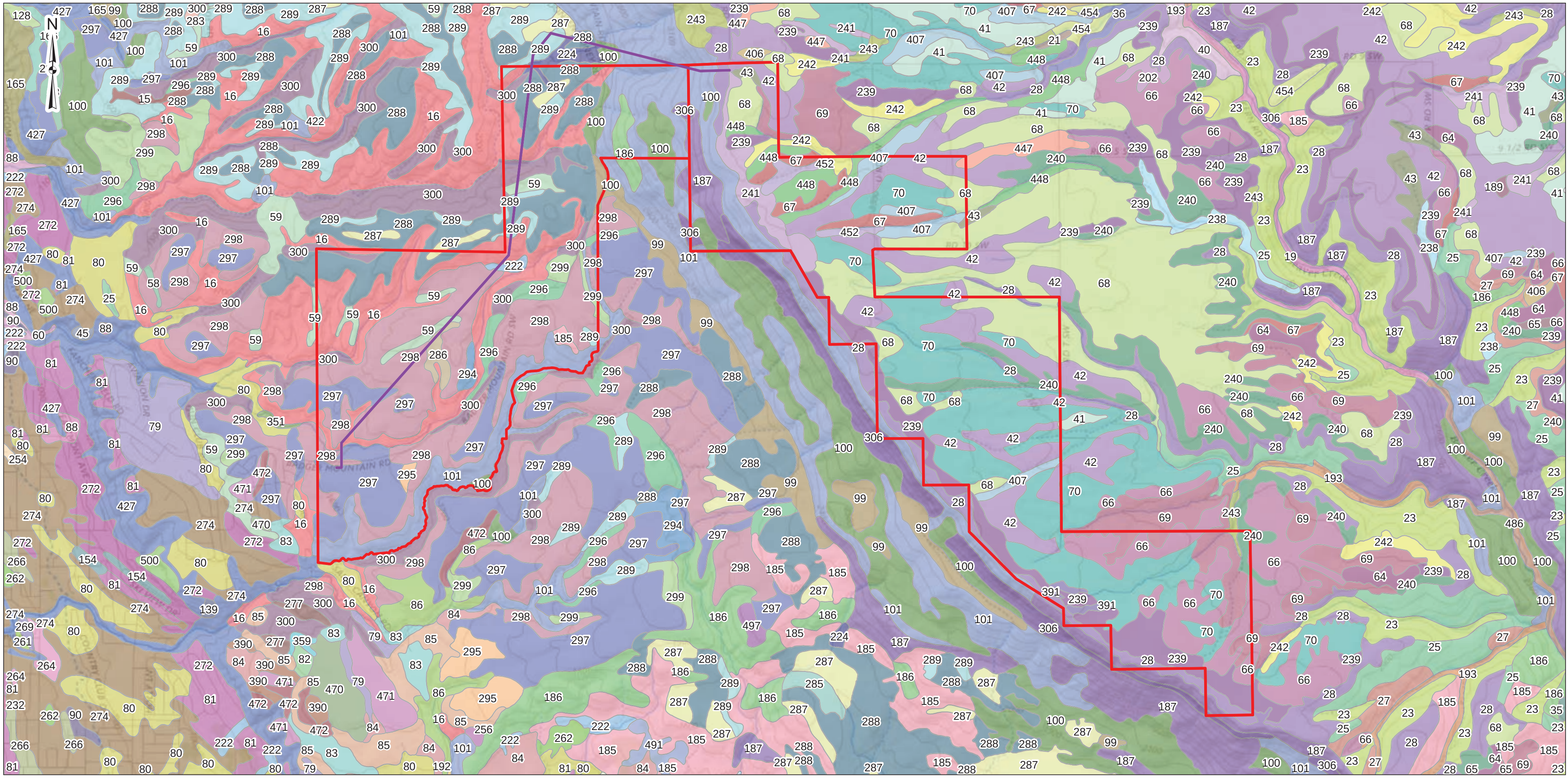

🟥 Project Site

— Gen-Tie Line

See Soil Map Unit Name Legend on next page

DATA SOURCES:
ESRI WMS - Topographic
USGS - Topographic Basemap
NRCS - USCS Soil Classifications

Scale: 1:33,000

Feet

0 1,250 2,500 5,000

Project No.:	GR205090
Date:	Apr 2020
Drawn By:	PNM
Reviewed By:	JRG

Terracon

10841 S. Ridgeview Road Olathe, KS 66061

PH. (800) 593-7777 terracon.com

USDA Soil Map Unit Names

Badger Mountain Solar
Avangrid Renewables, LLC
Badger Mountain Road
Wenatchee, WA

Exhibit

6A

USDA Soil Map Units

- ▨ 100,Cheviot-Ralls-Grinrod complex, 15 to 30 percent slopes
- ▨ 101,Cheviot-Ralls-Rubble land complex, 30 to 65 percent slopes
- ▨ 128,Dinkels-Rock outcrop complex, 35 to 70 percent slopes
- ▨ 139,Drysel silt loam, 5 to 15 percent slopes
- ▨ 15,Alstown silt loam, 8 to 15 percent slopes
- ▨ 154,Ellisforde fine sandy loam, 3 to 8 percent slopes
- ▨ 16,Alstown-Cheviot complex, 30 to 65 percent slopes
- ▨ 165,Entiat-Rock outcrop-Torriorthents complex, 30 to 70 percent slopes
- ▨ 166,Entiat-Roosevelt-Rock outcrop complex, 8 to 30 percent slopes
- ▨ 185,Grinrod-Ralls-Argabak complex, 8 to 50 percent slopes
- ▨ 186,Grinrod-Ralls-Rubble land complex, 30 to 70 percent slopes
- ▨ 187,Grinrod-Rock outcrop-Rubble land complex, 30 to 70 percent slopes
- ▨ 189,Hanning silt loam, 3 to 8 percent slopes
- ▨ 19,Aquolls, nearly level
- ▨ 192,Haploxerolls, nearly level to gently sloping
- ▨ 193,Haploxerolls, moderately well drained, nearly level to gently sloping
- ▨ 202,Jordy ashy fine sandy loam, 8 to 15 percent slopes
- ▨ 21,Argabak very cobbly loam, 0 to 20 percent slopes
- ▨ 222,Logy cobbly sandy loam, 3 to 15 percent slopes
- ▨ 224,Logy very stony sandy loam, 3 to 15 percent slopes
- ▨ 23,Argabak-Camaspatch-Badge complex, 30 to 65 percent slopes
- ▨ 232,Malaga cobbly fine sandy loam, 0 to 8 percent slopes
- ▨ 238,Morrow silt loam, 0 to 3 percent slopes
- ▨ 239,Morrow silt loam, 3 to 8 percent slopes
- ▨ 240,Morrow silt loam, 8 to 15 percent slopes
- ▨ 241,Morrow-Argabak complex, 3 to 8 percent slopes
- ▨ 242,Morrow-Argabak complex, 8 to 15 percent slopes
- ▨ 243,Morrow-Argabak-Badge complex, 15 to 30 percent slopes
- ▨ 25,Argabak-Horseflat complex, 0 to 30 percent slopes
- ▨ 254,Peshastin fine sandy loam, 3 to 8 percent slopes
- ▨ 256,Peshastin fine sandy loam, 15 to 30 percent slopes
- ▨ 261,Pogue fine sandy loam, 0 to 3 percent slopes
- ▨ 262,Pogue fine sandy loam, 3 to 8 percent slopes
- ▨ 264,Pogue gravelly fine sandy loam, 8 to 15 percent slopes
- ▨ 266,Pogue cobbly fine sandy loam, 0 to 15 percent slopes
- ▨ 269,Pogue bouldery fine sandy loam, 3 to 8 percent slopes
- ▨ 27,Argabak-Horseflat-Zen complex, 0 to 20 percent slopes
- ▨ 272,Quincy fine sand, 15 to 30 percent slopes
- ▨ 274,Quincy loamy fine sand, 0 to 15 percent slopes
- ▨ 277,Quincy-Ellisforde-Cashmere complex, 30 to 60 percent slopes
- ▨ 28,Argabak-Morrow complex, 0 to 30 percent slopes
- ▨ 283,Renslow silt loam, 0 to 8 percent slopes
- ▨ 285,Renslow silt loam, 15 to 30 percent north slopes
- ▨ 286,Renslow silt loam, 15 to 30 percent south slopes
- ▨ 287,Renslow silt loam, cemented substratum, 0 to 8 percent slopes
- ▨ 288,Renslow silt loam, cemented substratum, 8 to 15 percent slopes
- ▨ 289,Renslow silt loam, cemented substratum, 15 to 30 percent slopes
- ▨ 294,Renslow-Alstown-Kester complex, 15 to 30 percent slopes
- ▨ 295,Ritzville silt loam, 3 to 8 percent slopes
- ▨ 296,Ritzville silt loam, 15 to 30 percent north slopes
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- ▨ 299,Ritzville silt loam, cemented substratum, 15 to 30 percent slopes
- ▨ 300,Ritzville silt loam, cemented substratum, 30 to 65 percent slopes
- ▨ 306,Rubble land-Rock outcrop complex, very steep
- ▨ 35,Badge very cobbly silt loam, 15 to 30 percent slopes
- ▨ 351,Slusser ashy fine sandy loam, cemented substratum, 0 to 8 percent slopes
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Project No.:	GR205090
Date:	Apr 2020
Drawn By:	PNM
Reviewed By:	JRG

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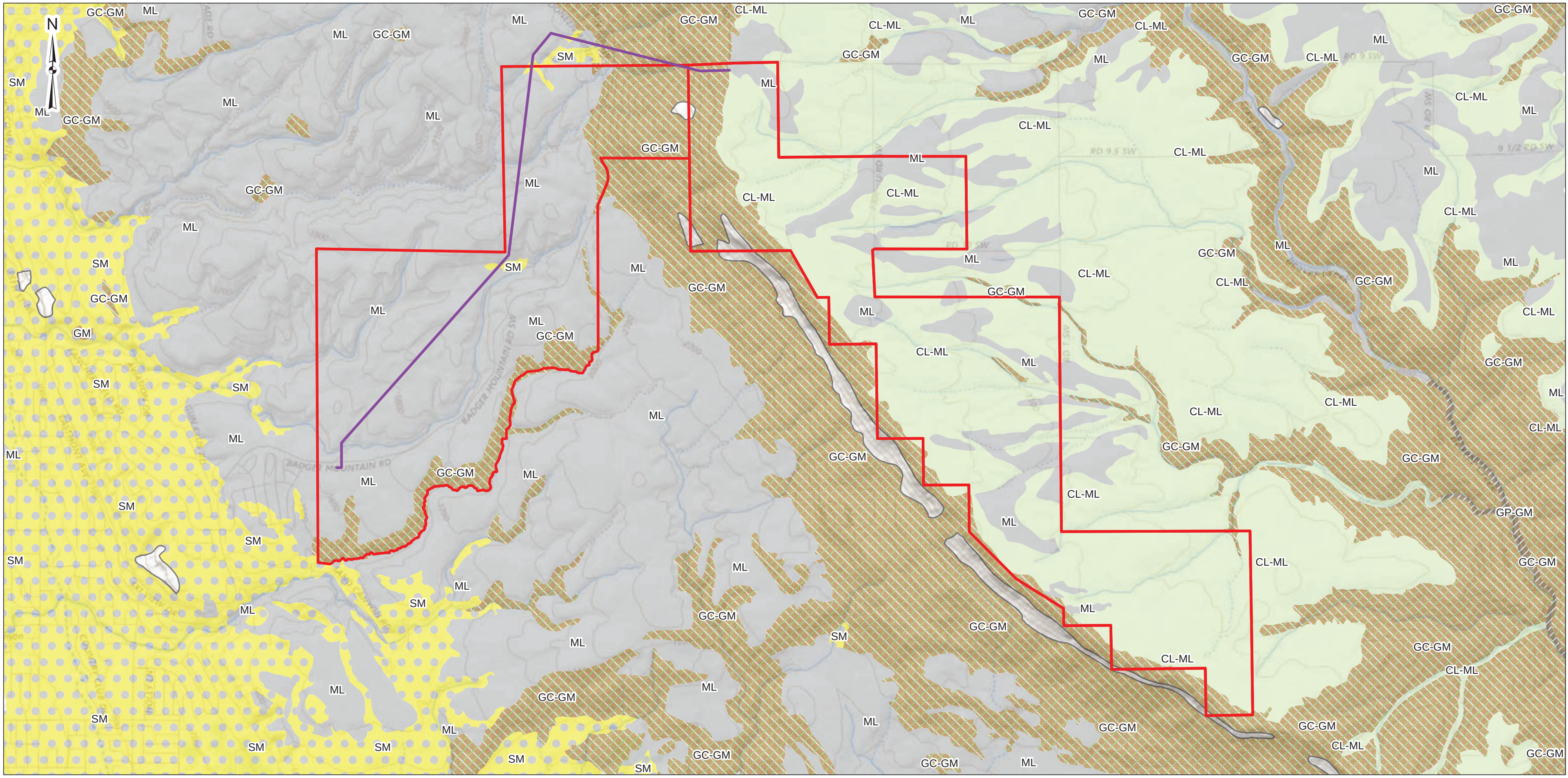
USDA Soil Map Unit Names Legend

Badger Mountain Solar
Avangrid Renewables, LLC
Badger Mountain Road
Wenatchee, WA

Exhibit

6B



- 🟥 Project Site
- Gen-Tie Line

USCS Soil Classification

- ▨ CL-ML: Clay of Low Plasticity, Lean Clay, Silt
- ▨ GC-GM: Clayey Gravel, Silty Gravel
- ▨ GM: Silty Gravel
- ▨ GP-GM: Poorly Graded Gravel, Silty Gravel
- ▨ ML: Silt
- ▨ SM: Silty Sand
- ☐ Null

DATA SOURCES:
ESRI WMS - Topographic
USGS - Topographic Basemap
NRCS - USCS Soil Classifications

Scale: 1:33,000
0 1,250 2,500 5,000 Feet

Project No.:	GR205090
Date:	Apr 2020
Drawn By:	PNM
Reviewed By:	JRG

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USCS Soil Classifications

Badger Mountain Solar
Avangrid Renewables, LLC
Badger Mountain Road
Wenatchee, WA

Exhibit

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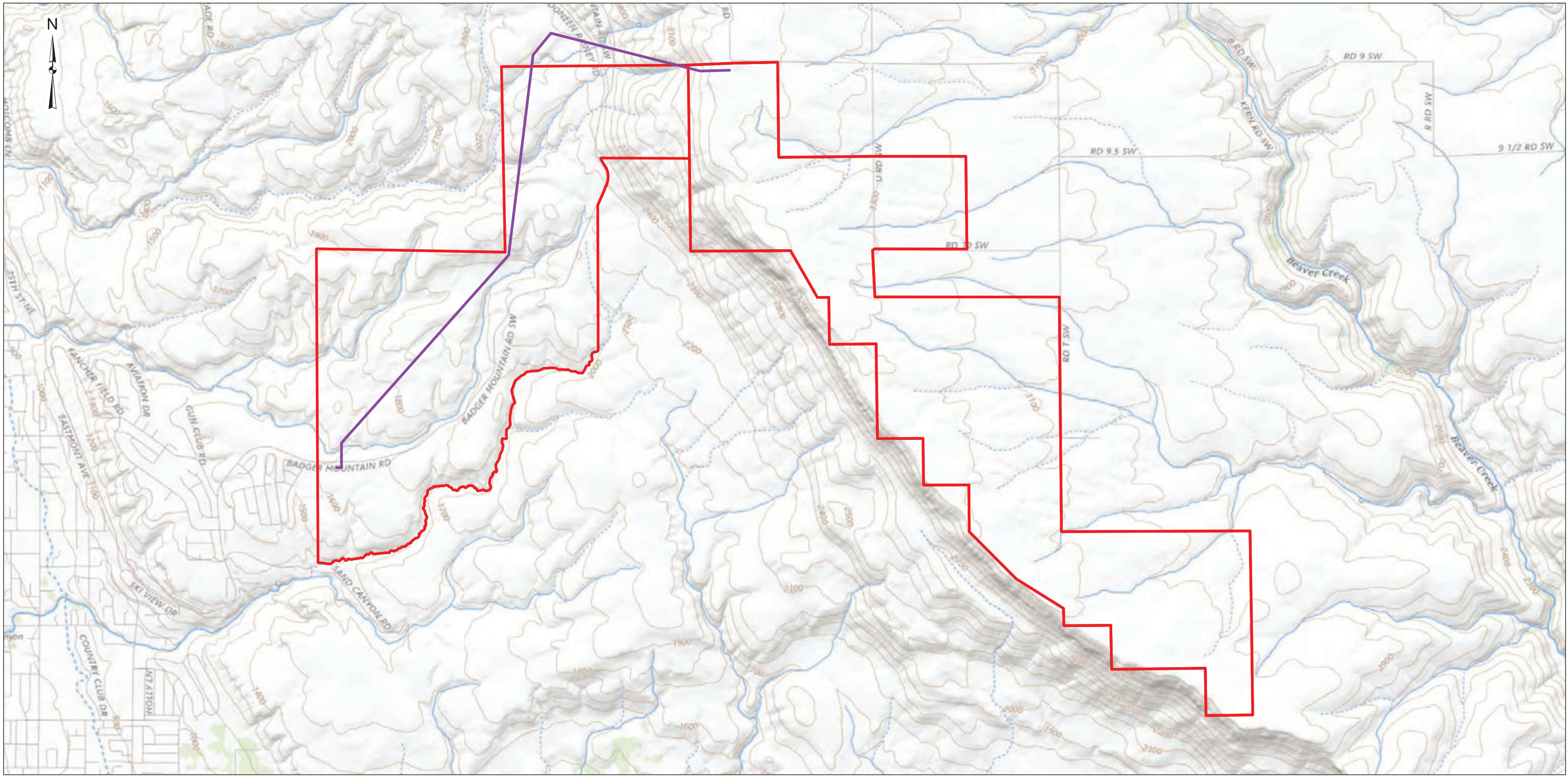

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🟥 Project Site

Gen-Tie Line

Flood Hazard Zones

- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Special Floodway
- 0.2% Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Risk Due to Levee
- X,AREA OF MINIMAL FLOOD HAZARD
- Area of Undetermined Flood Hazard

DATA SOURCES:
ESRI WMS - Topographic
USGS - Topographic Basemap
FEMA - National Flood Hazard Layer

Scale: 1:33,000

Feet
0 1,250 2,500 5,000

Project No.:	GR205090
Date:	Apr 2020
Drawn By:	PNM
Reviewed By:	JRG

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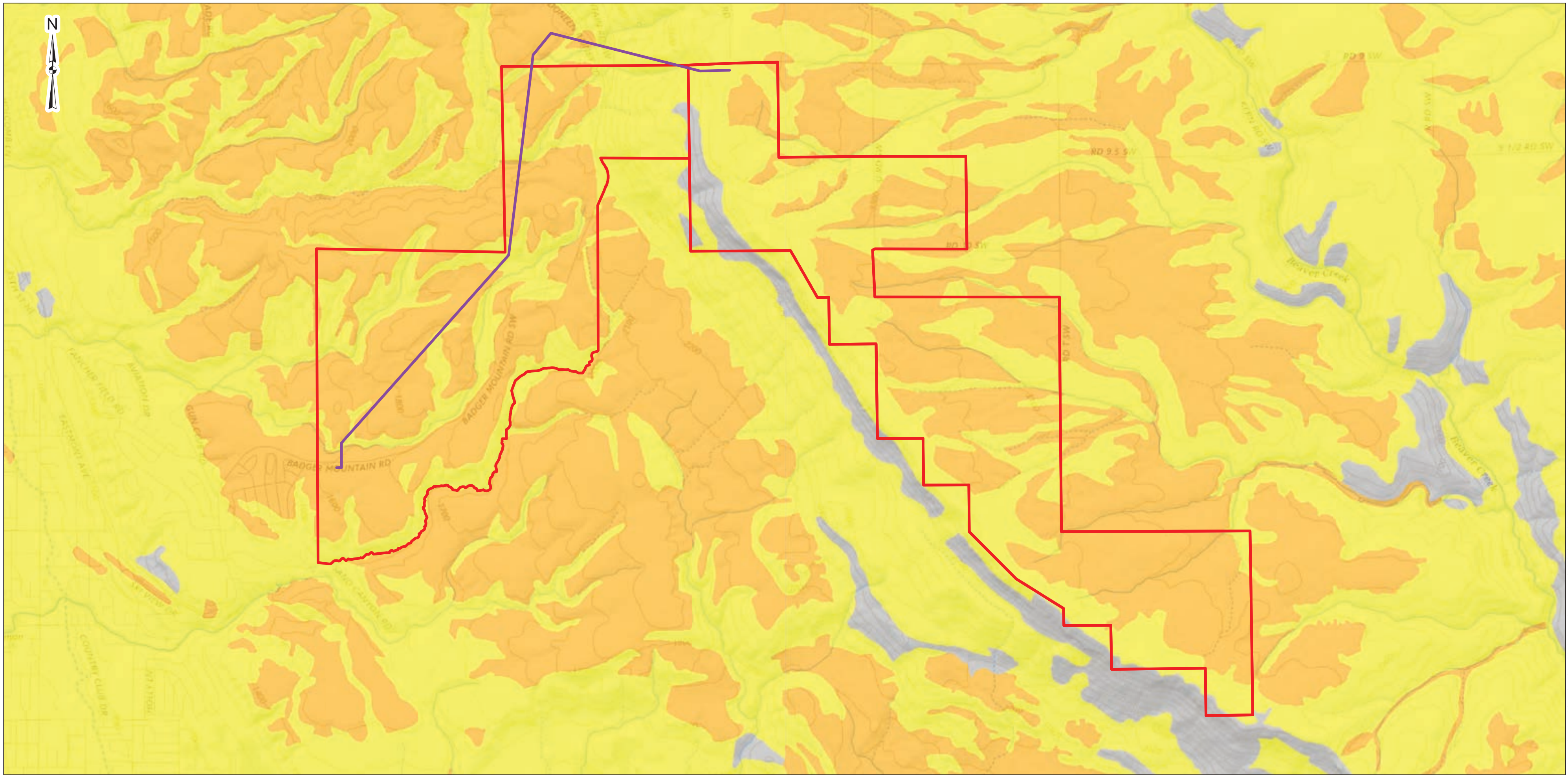
FEMA Flood Zones

Badger Mountain Solar
Avangrid Renewables, LLC
Badger Mountain Road
Wenatchee, WA

Exhibit

8



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🟥 Project Site

— Gen-Tie Line

Concrete Corrosion Risk

🟥 High

🟧 Moderate

🟨 Low

⬜ Null

DATA SOURCES:
ESRI WMS - Topographic
NRCS - Corrosion of Concrete

Scale: 1:33,000

Feet

0 1,250 2,500 5,000

Project No.:	GR205090
Date:	Apr 2020
Drawn By:	PNM
Reviewed By:	JRG

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Concrete Corrosion Risk

Badger Mountain Solar
Avangrid Renewables, LLC
Badger Mountain Road
Wenatchee, WA

Exhibit

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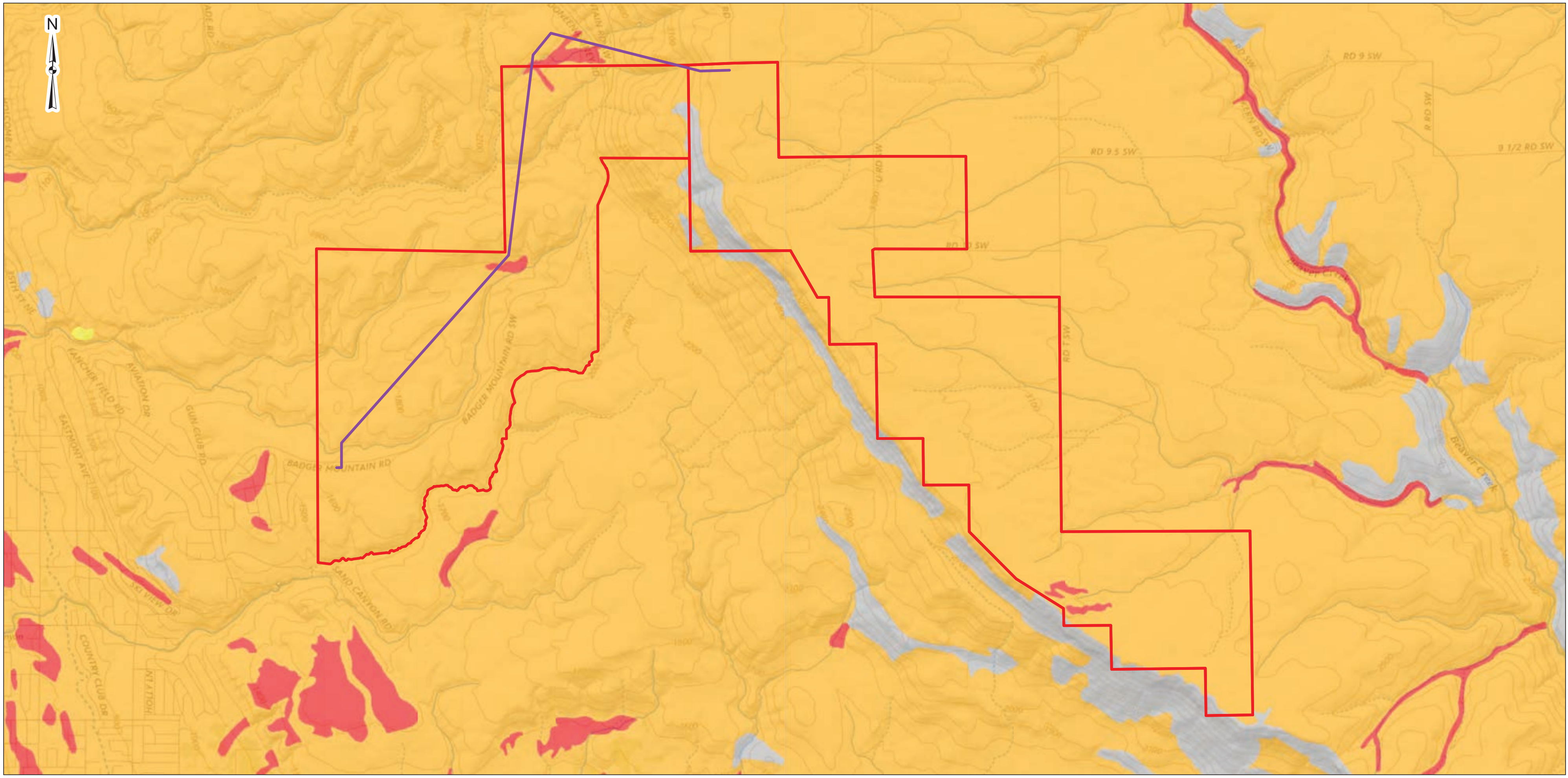

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▭ Project Site

— Gen-Tie Line

Steel Corrosion Risk

🟥 High

🟧 Moderate

🟨 Low

⬜ Null

DATA SOURCES:
ESRI WMS - Topographic
NRCS - Corrosion of Steel

Scale: 1:33,000

Feet

0 1,250 2,500 5,000

Project No.:	GR205090
Date:	Apr 2020
Drawn By:	PNM
Reviewed By:	JRG

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Steel Corrosion Risk

Badger Mountain Solar
Avangrid Renewables, LLC
Badger Mountain Road
Wenatchee, WA

Exhibit

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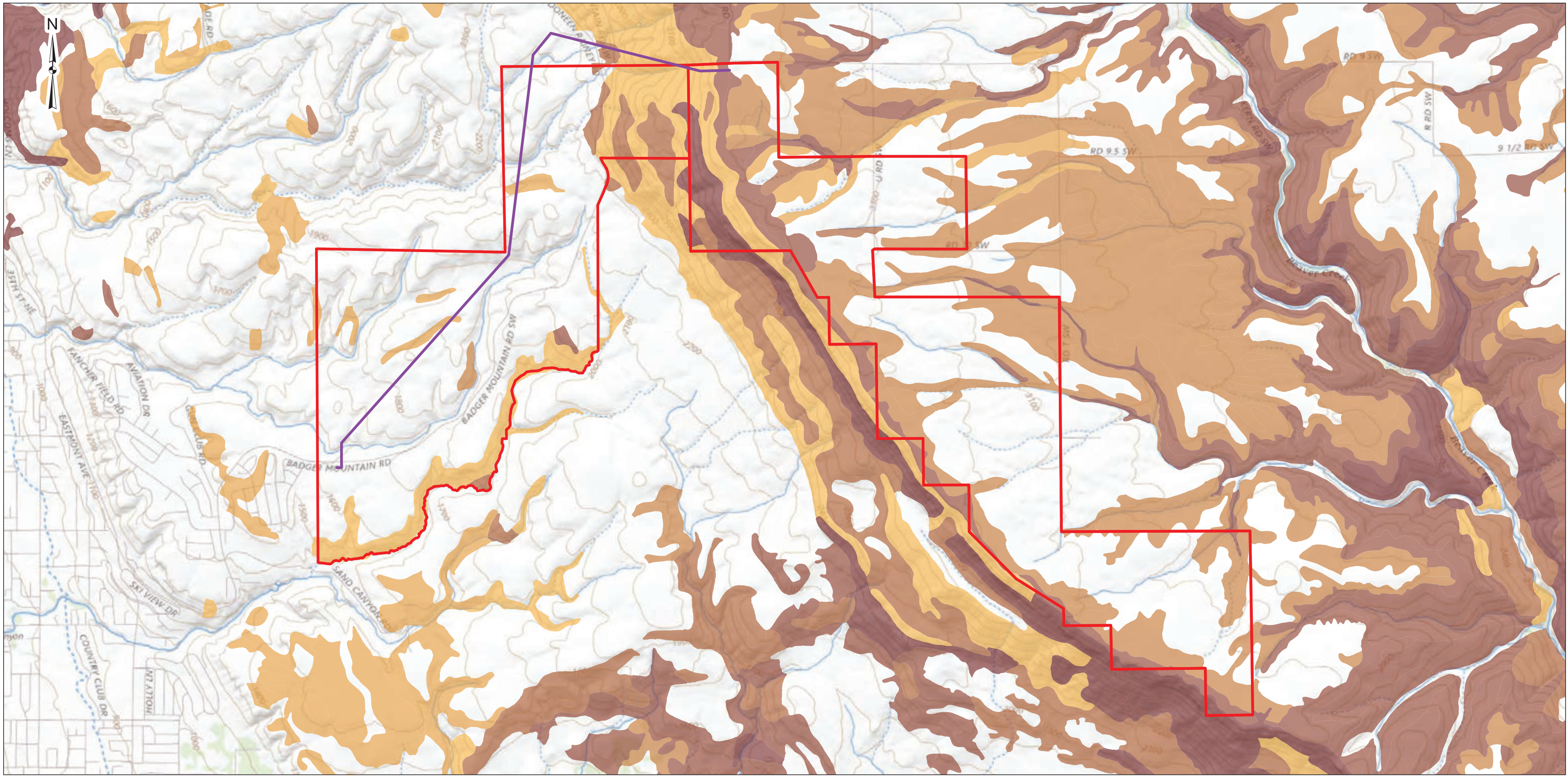

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🟥 Project Site

— Gen-Tie Line

Minimum Depth to Bedrock

- ▨ Exposed bedrock
- ▨ Shallow rock (depth not defined)
- ▨ Less than 1 foot
- ▨ 1 to 2 feet
- ▨ 2 to 3 feet
- ▨ 3 to 4 feet
- ▨ 4 to 5 feet
- ▨ 5 to 6 feet
- ▨ 6 to 7 feet
- ▨ 7 to 8 feet
- ▨ 8 to 9 feet
- ▨ More than 9 feet
- No bedrock identified

DATA SOURCES:
ESRI WMS - Topographic
USGS - Topographic Basemap
NRCS - Depth to Bedrock

Scale: 1:33,000
Feet
0 1,250 2,500 5,000

Project No.:	GR205090
Date:	Apr 2020
Drawn By:	PNM
Reviewed By:	JRG

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Depth to Bedrock

Badger Mountain Solar
Avangrid Renewables, LLC
Badger Mountain Road
Wenatchee, WA

Exhibit

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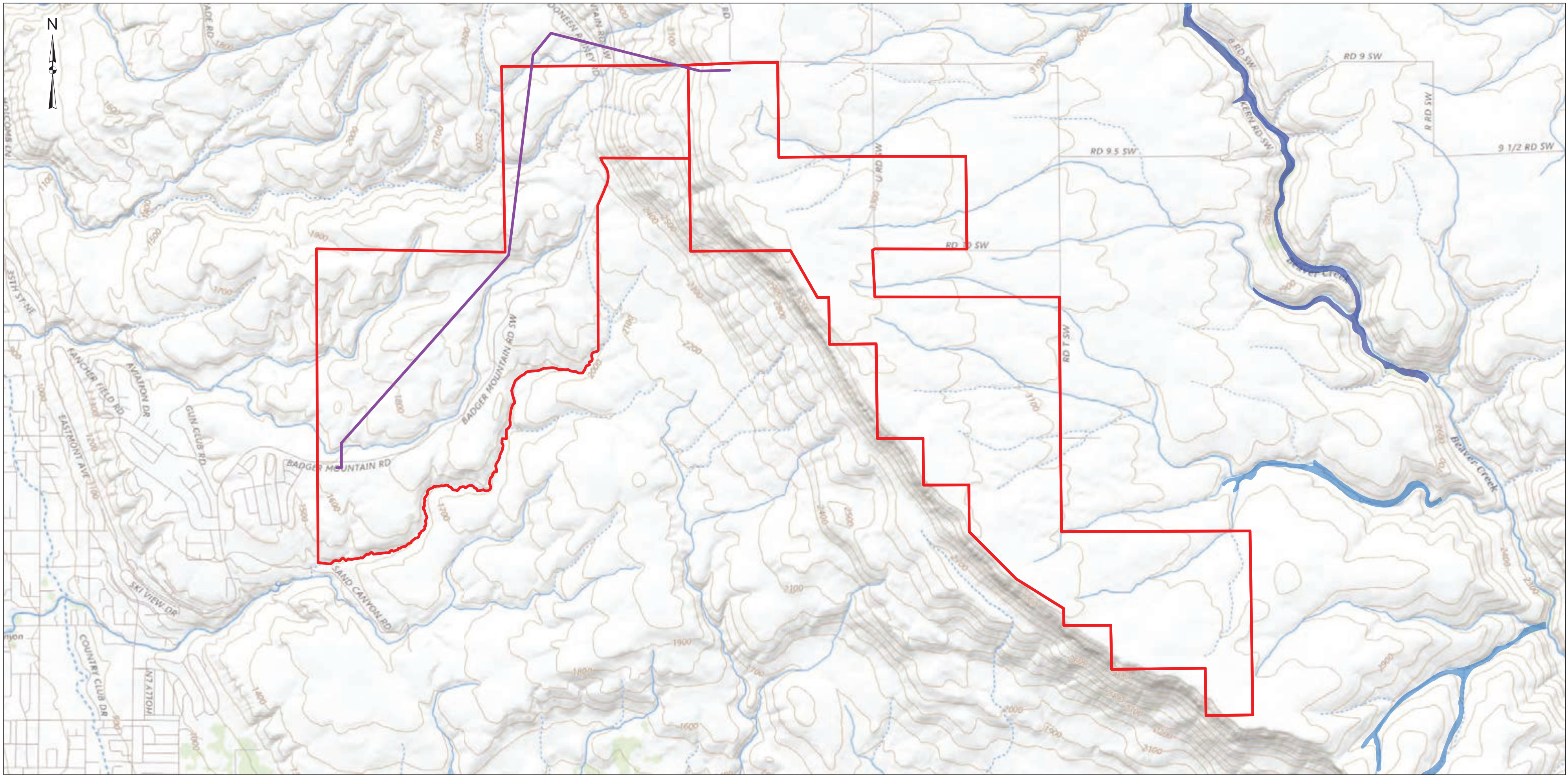

🟥 Project Site

— Gen-Tie Line

Depth to Water

- ▨ Surface Water
- ▨ Less than 1 ft
- ▨ 1 ft - 2 ft
- ▨ 2 ft to 3 ft
- ▨ 3 ft - 4 ft
- ▨ 4 ft - 5 ft
- ▨ 5 ft - 6 ft
- ▨ 6 ft - 7 ft
- ▨ 7 ft - 8 ft

DATA SOURCES:
ESRI WMS - Topographic
USGS - Topographic Basemap
NRCS - Depth to Groundwater

Scale: 1:33,000

Feet
0 1,250 2,500 5,000

Project No.: GR205090
Date: Apr 2020
Drawn By: PNM
Reviewed By: JRG

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Depth to Groundwater

Badger Mountain Solar
Avangrid Renewables, LLC
Badger Mountain Road
Wenatchee, WA

Exhibit
12

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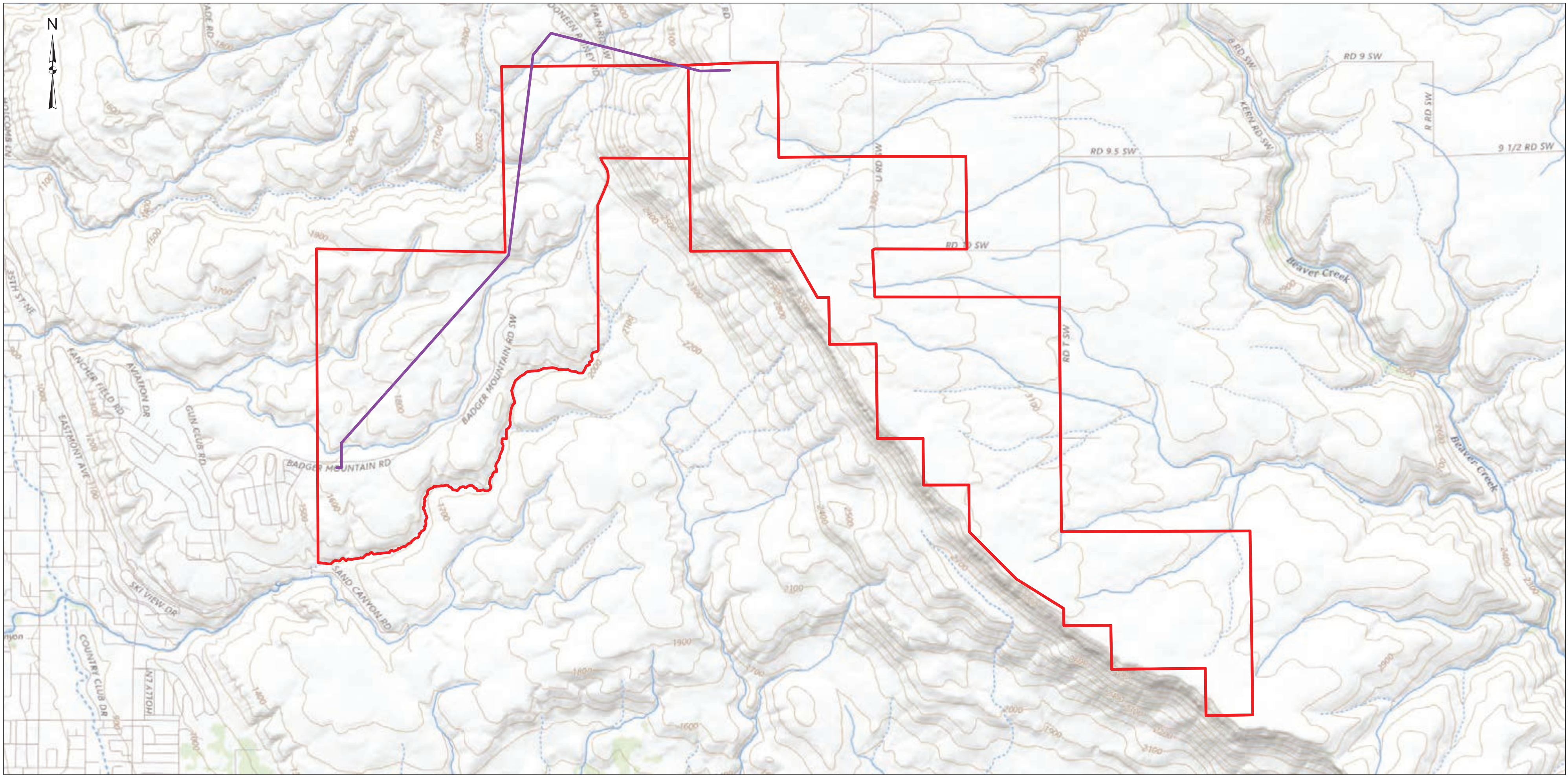

▭ Project Site

— Gen-Tie Line

DATA SOURCES:
ESRI WMS - Topographic
USGS - Topographic Basemap, Karst

Scale: 1:33,000

Feet

0 1,250 2,500 5,000

Project No.: GR205090
Date: Apr 2020
Drawn By: PNM
Reviewed By: JRG

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Karst Hazards

Badger Mountain Solar
Avangrid Renewables, LLC
Badger Mountain Road
Wenatchee, WA

Exhibit

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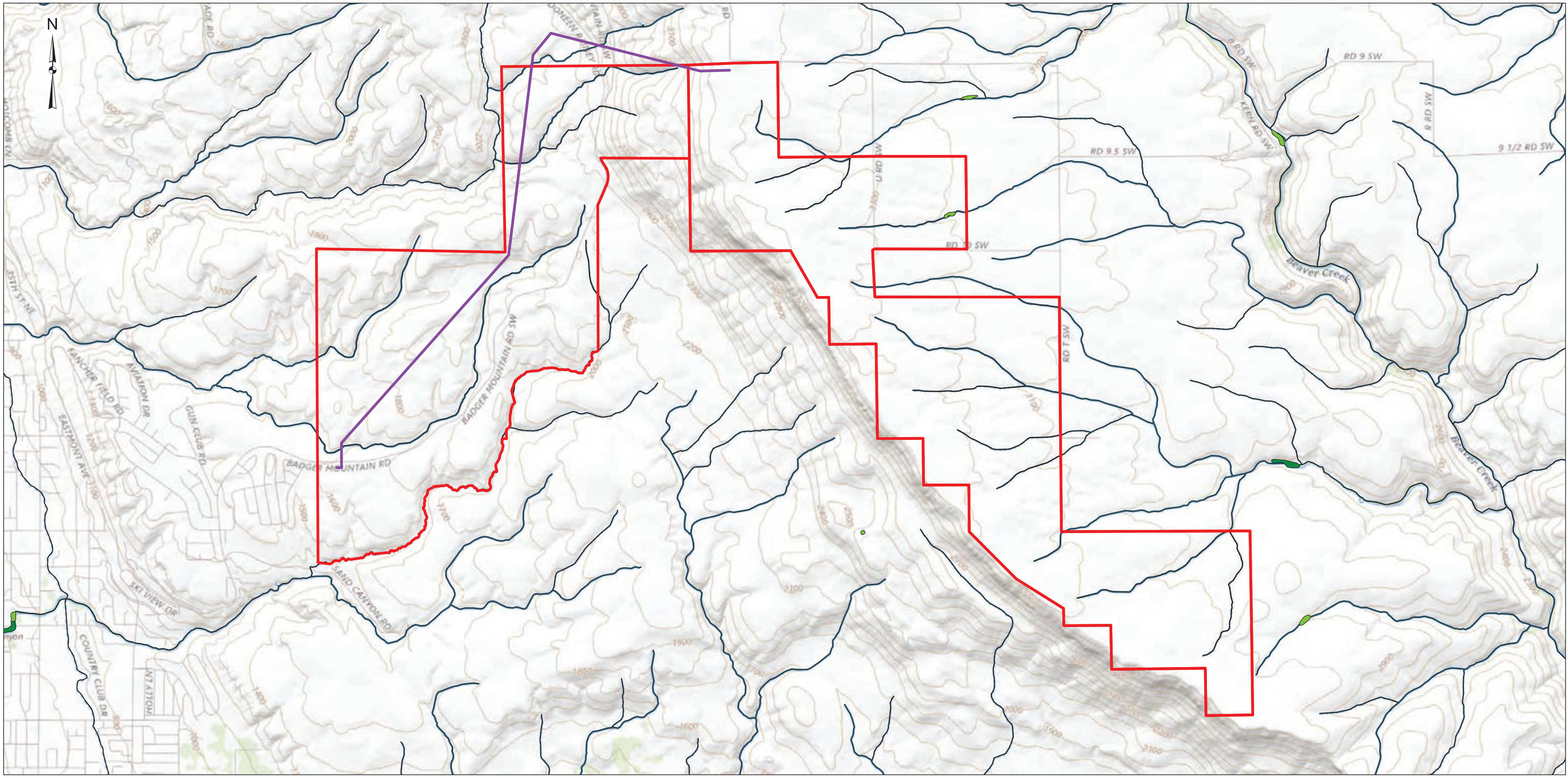

🟥 Project Site

— Gen-Tie Line

Wetlands

🟦 Estuarine and Marine Deepwater

🟩 Estuarine and Marine Wetland

🟩 Freshwater Emergent Wetland

🟩 Freshwater Forested/ Shrub Wetland

🟦 Freshwater Pond

🟦 Lake

🟫 Other

🟦 Riverine

DATA SOURCES:
ESRI WMS - Topographic
USFWS - National Wetlands Inventory

Scale: 1:33,000

Feet

0 1,250 2,500 5,000

Project No.:	GR205090
Date:	Apr 2020
Drawn By:	PNM
Reviewed By:	JRG

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National Wetlands Inventory

Badger Mountain Solar
Avangrid Renewables, LLC
Badger Mountain Road
Wenatchee, WA

Exhibit

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Attachment H-2: Geotechnical Engineering Report

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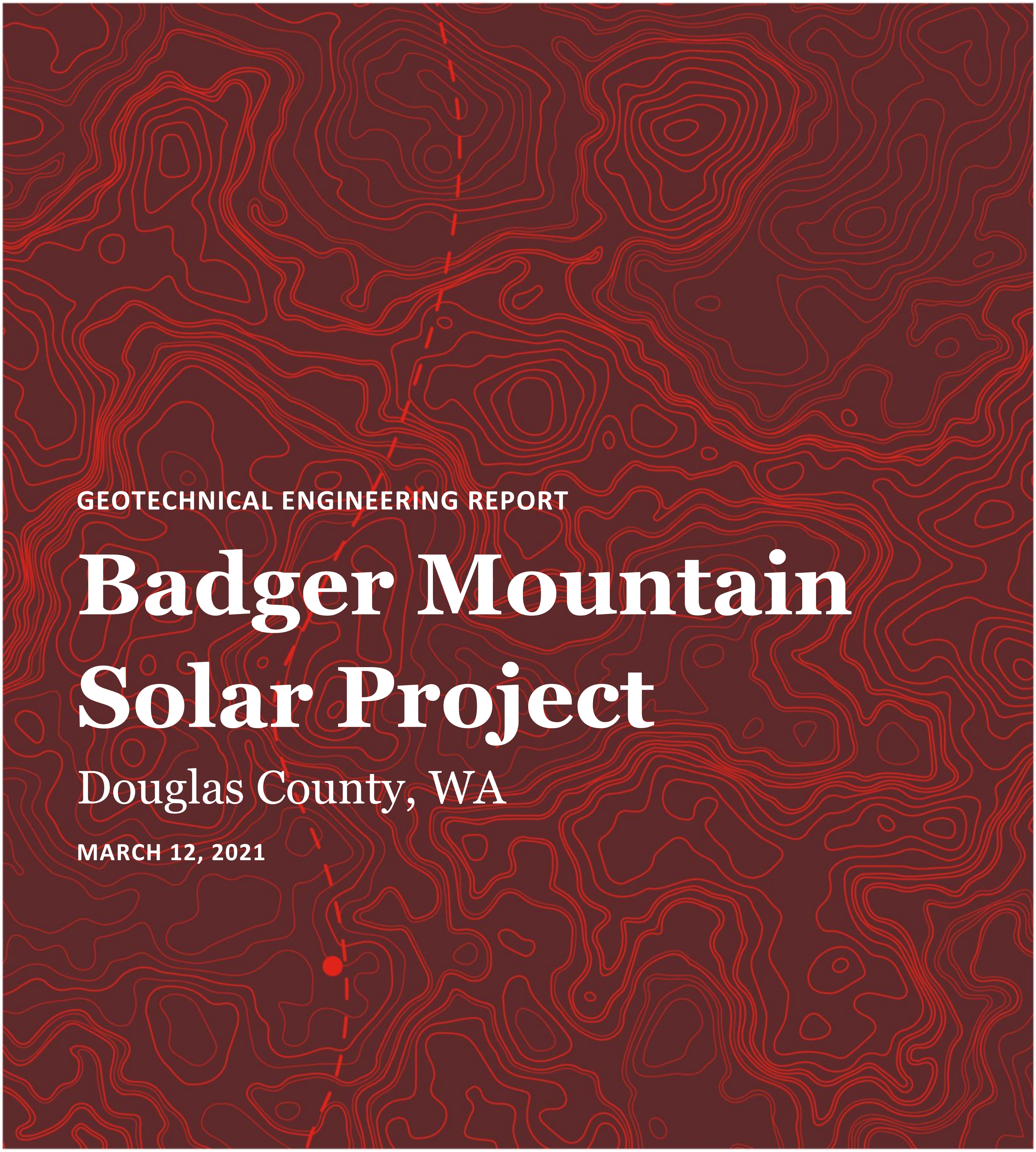

GEOTECHNICAL ENGINEERING REPORT

Badger Mountain Solar Project

Douglas County, WA

MARCH 12, 2021

PREPARED FOR:

AVANGRID
RENEWABLES

PREPARED BY:

Westwood

Westwood

Geotechnical Engineering Report

Badger Mountain Solar Project

Douglas County, WA

Prepared For:

Avangrid Renewables
1125 NW Couch Street, Suite 700
Portland, OR 97209

Prepared By:

Westwood Professional Services
12701 Whitewater Drive, Suite 300
Minnetonka, MN 55343
(952) 937-5150

Project Number: R0025965.01
Date: March 12, 2021

Table of Contents

Attachments

Exhibits

Appendices

Executive Summary

Westwood Professional Services (Westwood) is pleased to present this geotechnical engineering report to Avangrid Renewables for the proposed Badger Mountain Solar Project located in Douglas County, Washington. The scope of work for this investigation included subsurface exploration, pile load testing, field and laboratory testing, engineering analysis, and preparation of this report. The geotechnical investigation has generally revealed no subsurface conditions that would preclude development of the proposed solar energy facility; however, the shallow bedrock encountered throughout portions of the site may warrant alternative foundations to the typical driven pile used to support the PV racks.

The site is located on agricultural land with rolling topography. Based on the information obtained from soil borings, auger probes, and test pits performed on site, the subsurface conditions consist of loose to medium dense silt with variable amounts of clay, sand, and gravel overlying moderately to highly weathered basalt bedrock, which was encountered at 51 of the 56 boring and auger probe locations. Groundwater was not observed in any of the soil borings, auger probes, or test pits. Seasonal fluctuations in groundwater are expected, and perched groundwater is possible during wet periods, particularly in areas with shallow competent bedrock.

The project site is located near a seismically active area of Washington, with several Quaternary fault systems mapped within 50 miles of the project boundary. A number of magnitude 4.0+ earthquakes have occurred within the last 50 years that are expected to have caused lightly perceived shaking and negligible potential for damage to structures in the area (USGS 2021a). Although the potential for surface fault rupture on the site is considered low, the design of structures on site should account for seismic loads in accordance with the applicable codes and as discussed in this report.

Seventy (70) test piles were installed and tested as a part of this investigation, 16 of which encountered refusal prior to their target depth. Conventional driven pile foundations are likely feasible to support the photovoltaic (PV) racking systems across portions of the site; however, some areas on site, in particular near the western boundary, are likely not conducive to driven pile foundations due to the presence of shallow bedrock. Alternative foundation types or methods, such as screw anchors or pre-drilling holes and backfilling with soil cuttings or concrete, will likely be necessary in these areas with shallow bedrock.

The silty overburden soil encountered on site, particularly within the tilled crop fields, may be weak or susceptible to collapse. Shallow spread footings and mat foundations shall bear a minimum 1 foot below the ground surface and on a minimum 2 feet of structural fill to minimize the effects of differential movement. Native silt on site may be used for general fill within the array area, although the material is sensitive to moisture and may be challenging to compact, especially when wet. Native silt should not be used as structural fill below foundations. The subgrade below shallow foundations, areas to receive fill, and access roads should be prepared in accordance with the recommendations provided in this report. Shallow foundations, such as large slab-on-grade equipment foundations (i.e., 10 to 20 feet wide) and conventional spread and strip footing foundations (i.e., 4 feet wide) bearing on properly compacted subgrade may be designed for an allowable bearing capacity of 2,300 psf.

The shallow silt is generally considered adequate subgrade for access roads if properly compacted. A minimum of 6 inches of aggregate is recommended on access roads, and consideration should be given to incorporating geosynthetic reinforcement to improve performance and limit rutting when saturated.

This executive summary should be read in the context of the entire report for a full understanding of the conclusions and recommendations.

1.0 Introduction

This report presents the findings of the geotechnical investigation conducted by Westwood Professional Services, Inc. (Westwood) for the proposed Badger Mountain Solar Project. The project will consist of photovoltaic (PV) modules and the associated civil and electrical infrastructure. The primary focuses of this report are earthwork considerations, access roads, and foundations for the PV racking, substation, and ancillary electrical equipment. The services provided by Westwood were performed in general conformance with the scope of work and assumptions outlined in Westwood's proposal, dated October 14, 2020. This report is intended for exclusive use by Avangrid Renewables to support foundation, civil, and electrical design efforts for the proposed Badger Mountain Solar Project.

The proposed Badger Mountain Solar Project is located in Douglas County, WA, approximately 6 miles east of Wenatchee (Exhibit 1). The project area primarily consists of agricultural fields. The topography of the proposed PV array area ranges from generally flat in the agricultural areas to regions of moderate topographic relief.

2.0 Methods

A geotechnical exploration program consisting of soil borings, auger probes, test pits, pile load tests, and laboratory tests was performed by Westwood. Holt Services, Inc. was retained by Westwood to perform soil borings with standard penetration tests (SPT). Westwood, Soil Engineering Testing, Inc. (SET), and GeothermUSA performed the laboratory testing services. A Westwood geotechnical representative coordinated the field work, logged the soil samples, performed pile load tests and electrical resistivity tests, and selected samples for laboratory testing. The geotechnical field investigation and pile load testing was performed over three periods (between November 14th and November 16th, 2020; January 18th and January 29th, 2021; and February 3rd and February 8th, 2021) and consisted of the following:

- Conducting soil borings with SPT sampling at 30 locations within the proposed PV array area (B-01 to B-30) to a target depth of 20 ft below ground surface (bgs), or auger refusal, whichever was shallower.
- Conducting soil borings with SPT sampling at three locations at the proposed substation (SUB-01, SUB-02, and SUB-03) to a target depth of 40 ft bgs, or auger refusal, whichever was shallower.
- Conducting a soil boring with SPT sampling at one location at the proposed O&M building location (OM-01) to a target depth of 25 ft bgs, or auger refusal, whichever was shallower.
- Conducting soil borings with SPT sampling at two locations at the proposed batter energy storage system (BESS) area (BESS-01 and BESS-02) to a target depth of 25 ft bgs, or auger refusal, whichever was shallower.
- Conducting auger probes at 20 locations within the proposed PV array area (AP-01 through AP-20) to a target depth of 10 ft bgs, or auger refusal, whichever was shallower.
- Collecting soil samples from the soil borings for laboratory testing.
- Conducting electrical resistivity tests at eight locations on site to a maximum probe spacing of 300 ft.
- Installing and performing pile load tests on 70 driven test piles installed at 30 locations on site. A combination of axial uplift, axial compression, and lateral load tests were performed at each

location. The test piles were driven to target embedment depths of 6 and 8 feet, although pile refusals were encountered at depths as shallow as 3.1 feet. See Exhibit 6 for a summary of pile load test locations.

- Excavating test pits at 30 locations to a target depth of 8 ft bgs, or bucket refusal, whichever was shallower.

Geotechnical test locations are shown on Exhibit 1. Test locations were selected by Westwood after a review of the site accessibility, layout, and local geologic mapping to provide spatial coverage of the proposed site and anticipated subsurface variation. All test locations were surveyed and staked with a hand-held GPS, and as-built coordinates are provided on the associated logs (Appendix A) and electrical resistivity test results (Appendix C). Refer to the Pile Load Test Report in Appendix E for additional information on the pile load test methods and results.

2.1 Soil Borings

Soil borings were sampled using SPT sampling and hollow stem auger drilling techniques, in general accordance with American Society for Testing and Materials (ASTM) Standard D1586. The efficiency of the automatic hammer is assumed to be 80% based on typical published values. In general, soil samples were collected every 2.5 feet to 15 ft and every 5 ft thereafter. A geotechnical representative classified the samples and selected soil samples for laboratory testing. Soil samples collected with split-spoon samplers were stored in sealed plastic bags and transported to the geotechnical laboratories for testing. Laboratory test results are provided in Appendix D, and soil boring logs are included in Appendix A.

2.2 Laboratory Testing

Laboratory tests were conducted on representative soil samples to aid in classification and evaluation of the physical properties and engineering characteristics of the material. Results of the laboratory tests are included in Appendix D.

Westwood, SET, and GeothermUSA performed the following laboratory tests:

- Moisture content (ASTM D2216)
- Sieve analysis (ASTM D6913 and D1140)
- Hydrometer (ASTM D7928)
- Atterberg limits (ASTM D4318)
- Modified Proctor moisture-density relationship (ASTM D1557)
- pH (ASTM D4972)
- Sulfates (ASTM C1580)
- Chlorides (ASTM D512)
- Soil Box Resistivity (ASTM G187)
- Thermal resistivity with dry-out curves (ASTM D5334)
- California Bearing Ratio (ASTM D1883)

Bulk samples collected for thermal resistivity tests were compacted to approximately 85% of the modified Proctor maximum dry density (MDD), representing the compaction conditions typical of a backfilled utility trench. Specimens were prepared near the as-received moisture contents, compacted to 85% MDD, and subsequently dried out to zero moisture. Thermal resistivity measurements were taken at the compacted moisture content, zero moisture, and at several intermediate moisture contents during drying. Results of the thermal resistivity tests are discussed in Section 4.1.5 and test reports are included in Appendix D.

2.3 Electrical Resistivity Testing

Electrical resistivity measurements are used to design the electrical grounding systems and to assess corrosion potential (Section 4.3.2). Electrical resistivity measurements were recorded at eight test locations shown in Exhibit 1 (ER-01 to ER-08) using the Wenner Four-Electrode Method and an AEMC Instruments Model 6470-B Multi-Function Digital Ground Resistance Tester, in general accordance with ASTM G57. Resistivity tests were performed at the proposed substation location along two perpendicular profiles with an electrode spacing of 1, 1.5, 2, 3, 4.5, 7, 10, 15, 22.5, 35, 50, 75, 100, 150, 225, and 300 feet. Resistivity tests were performed at two locations along two perpendicular profiles with an electrode spacing of 1, 1.5, 2, 3, 4.5, 7, 10, 15, 22.5, 35, 50, 75, and 100 feet. Resistivity tests were performed at five locations along two perpendicular profiles with an electrode spacing of 2, 4, 6, 10, and 20 feet. Refer to Appendix C for results of the electrical resistivity tests.

3.0 Site Conditions

3.1 Local Geology

The Badger Mountain Solar Project is located within the Northern Cascade Mountains section within the Cascade-Sierra Mountains Province in the Pacific Mountain System Physiographic Region (USGS, 1946). The Cascade-Sierra Mountains province stretches from British Columbia to southern California along the west coast of North America. The province is one of the youngest and most tectonically active in North America and is characterized by intrusive and extrusive volcanic rocks (NPS, 2018).

According to the Geologic Map of Washington (Schuster, J.E., *et al*, 1997), the project is mapped within two primary geologic formations: Quaternary non-marine deposits and Miocene volcanic rocks. The Quaternary non-marine deposits are Pleistocene in age and described as eolian (i.e. wind-blown) deposits of silt. The primary lithologic constituent is mapped as silt with minor inclusions of gravel and sand. The Miocene volcanic rocks are middle Miocene in age and described as dark-gray to black, dense basalt flows. The primary lithologic constituent is mapped as basalt with minor units of siltstone, sandstone and other igneous rocks. Mapped geologic units are shown in Exhibit 4.

Based on Web Soil Survey data available through the United States Department of Agriculture (USDA, 2021), one major soil unit and several minor soil units are mapped across the site, as shown on Exhibit 3. The primary soil unit is Broadax-Titchenal complex (approximately 28% of the area). This unit is classified as lean clay (CL) and silt (ML) derived from loess over hardpan. The remaining area is comprised of Broadax-Morrow-Spofford complex (14%), Bagdad silt loams (14%). Morrow silt loam (11%) and Broadax silt loam (10%). These units are also primarily mapped as CL and ML derived from loess over basalt and hardpan. The majority of the site is mapped as ML, CL, and CL-ML with isolated regions of clayey gravel (GC) and silty gravel (GM) within the proposed PV array, substation, and O&M footprint. Publically available water well construction data (WDE, 2021) reported overburden consisting of clay, sand, gravel and boulders. Mapped surficial soils are shown in Exhibit 3.

3.2 Geohazards

3.2.1 Soil Collapse

Soil collapse occurs when a relatively loose, dry, low density material is inundated with water and subjected to a load. Loess and alluvially deposited silty material are particularly prone to collapse, as their depositional environment facilitates a loose, low density profile. Silt is mapped on site and the shallow soil encountered during the investigation and was typically silty and not saturated. In addition, the silty topsoil within the agricultural field was typically tilled and loose. Collapse potential is generally considered moderate to high. The subgrade preparation and compaction recommendations in Sections 4.2.4 and 4.2.5 should be followed to mitigate the risks associated with collapsible soil.

3.2.2 Seismicity and Liquefaction

Washington is historically a seismically active state. In the last 50 years, there have been approximately 82 recorded seismic events greater than 3.0 magnitude on the Richter scale within 50 miles of the project site (USGS, 2021a). According to the USGS earthquake catalog, the nearest and largest of these events was a 4.3 magnitude earthquake located approximately 5 miles north of the project site, recorded in 1984. The most recent of these events was a 3.5 magnitude earthquake located approximately 50 miles northeast of the project site, recorded in 2019. The 4.3 magnitude event would have been classified at the project site as a 3.0 to 4.0 on the Modified Mercalli Intensity scale (MMI). This classification corresponds to weak to light shaking that would generally be felt indoors by many and outside by few with negligible potential for damage to structures in the area.

The site sits north and east of several mapped fault zones, including the Frenchman Hills structures (30 miles south of the project site), the Kittias Valley faults (35 miles south), and the Saddle Mountains structures (40 miles south), among other smaller mapped fault zones (USGS, 2021b; WDGER, 2016). The potential for surface fault rupture within the project site is considered low due to the relative distance of the active fault zones and lack of large earthquake events mapped near the project site. Refer to Section 4.3.1 for seismic considerations for use in design of site infrastructure.

Although the seismicity of the region is relatively high, groundwater is expected to be deep and shallow rock was encountered consistently throughout the site. Therefore, the liquefaction potential on site is considered low. Please see Exhibit 5 for a map of nearby earthquake events and fault zones.

3.2.3 Landslides

According to the Washington Department of Natural Resources (WA DNR), Washington is a region with widespread landslide risk (WA DNR, 2021a). Regions of gently to moderately undulating topographic relief are present throughout the project area, in addition to a steep cliff located along the western boundary of the project site. According to the Washington DNR, the immediate site area classifies as having a low to medium landslide potential. Risk of a global slope failure on site is relatively low, although it should be noted that small sloughing and erosion events may occur near the top of the slope along the western boundary of the site, which may encroach on the project site over time. The proposed PV array, substation, O&M

building, and BESS facility are located on relatively flat land and most borings encountered shallow bedrock, which help mitigate the risk of potential landslides. Although the potential for landslides to impact the proposed PV array, BESS, O&M, and substation is generally considered low, consideration should be given to providing adequate setbacks from the top of the slope along the western boundary of the site. A global slope stability analysis was outside the scope of this investigation.

3.2.4 Volcanoes

Washington lies within the Cascade Volcano chain, a volcanically active region in the northwestern United States. The Cascade Volcanoes run from Lassen Peak in northern California up through Oregon and Washington to its northernmost peak, Mount Baker, near the Canadian border. The Cascade Volcanoes are considered active and expected to erupt again (USGS, 2021d). The most recent major eruption occurred in 1980 at Mount St. Helens, when the volcano erupted and subsequently collapsed. A smaller lava eruption occurred at Mount St. Helens in 2004. The nearest mapped volcanic feature to the site is the Edgar Rock volcano vent which lies approximately 55 miles southwest of the project site (WA DNR, 2021b). The WA DNR does not map the region surrounding the project site within a volcanic hazard zone. The nearest mapped volcanic hazard zone in Washington is Mount Rainier approximately 85 miles west of the project site (WA DNR, 2021b). While the project site does not fall within a mapped hazard zone, an eruption could subject the project to secondary effects, such as the deposition of ash and seismic shaking. See Sections 3.2.2 and 4.3.1 for further discussion on the impacts of seismicity on the project.

3.2.5 Mine Subsidence

Washington began mining coal and metallic minerals in the 1800's. In 2006, Washington ceased all coal production; however metallic and mineral mining still occurs, primarily in the northeastern part of the state. There are 10 active gravel pits and three active clay pits within 5 miles of the site (USGS, 2021e). There is one open pit, one underground mine and approximately 10 adits mapped approximately 7 miles southwest of the project site. Field observations, local mine mapping, and aerial imagery suggest that there is no active mining in the immediate vicinity of the project site. The potential for mine subsidence is generally considered low.

3.3 Subsurface Stratigraphy

Based on the conditions encountered at the soil boring locations, the general stratigraphic profile is described as follows:

- **Silt, Silt with Sand, Sandy Silt, Silty Clay, Lean Clay, Sandy Lean Clay (ML, CL-ML, CL).** Silt and/or clay with varying amounts of sand was encountered in every boring, auger probe, and test pit, extending from the ground surface to the underlying bedrock. This soil overburden was typically brown, damp, and medium stiff to stiff where cohesive and loose to medium dense where granular. Rock fragments were sometimes encountered near the transition between the soil overburden and underlying basalt bedrock.

- **Basalt.** Underlying the silt and clay at 51 of the 56 boring and auger probe locations was moderately- to highly-weathered basalt bedrock. Where encountered, the basalt was observed between depths of 0.5 to 18 feet and has undergone varying degrees of weathering. See Exhibit 7 for a summary of depths to rock.

More detailed descriptions of the subsurface conditions are provided on the boring, auger probe, and test pit logs found in Appendices A and B.

3.4 Groundwater

Boreholes were observed during drilling for the presence and level of groundwater. A static groundwater level was not observed in any of the test borings during this field exploration. Publically available groundwater data (WDE, 2021) indicates that groundwater may be encountered as shallow as approximately 140 ft bgs. Shallow/perched groundwater fluctuations may occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed; therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than those observed during the investigation.

4.0 Discussion and Recommendations

4.1 Soil Properties

4.1.1 Moisture and Unit Weight

The in situ gravimetric moisture content of the soil on site ranges from approximately 4% to 43%, with an average moisture content of 18%. The recommended design moist unit weight of the silty and clayey soil overburden is 105 pcf. A dry density of 165 pcf is recommended for the basalt bedrock based on laboratory tests performed on two rock core samples.

4.1.2 Shear Strength

The friction angle of the shallow silty/sandy soils encountered on site was estimated to range from approximately 28^{o} to greater than 40^{o} using correlations to SPT blowcounts, indicative of loose to very dense. The recommended design friction angle of loose to medium dense silt is 30^{o}. A design friction angle of 40^{o} is recommended for the dense, highly weathered rock underlying the silt, which given its high degree of weathering, is considered to behave more like a granular soil than rock.

The basalt bedrock sampled on site was too fractured to adequately test the unconfined compressive strength. Based on our experience in the region with similar basalt units, we estimate an unconfined compressive strength of approximately 1,000 psi.

4.1.3 Compressibility

The compressibility of the loose surficial silty soil encountered was estimated using typical published values and correlations to test results. It is expected that the loose silty soil may be susceptible to elastic settlement upon loading. An elastic modulus of 250,000 psf is recommended for this material based on correlations to SPT blowcounts. Refer to Section 4.5.1 for a discussion on the settlement of shallow foundations.

4.1.4 Electrical Resistivity

Electrical resistivity measurements were collected at eight locations on site using the Wenner Four-Electrode Method in accordance with ASTM G57 at the electrode spacings described in Section 2.3. Electrical resistivity varies with material type and moisture content, and ranges on site between 2,870 ohm-cm (Ω-cm) and 45,200 Ω-cm based on test results. The shallow soil conditions during testing were generally wet. These observed values are within typical published values for silty soil and rock (Palacky, 1987). Results of the electrical resistivity tests are presented in Appendix B. Refer to Section 2.3 for additional information on the electrical resistivity test method.

Laboratory soil box electrical resistivity testing of select soil samples yielded resistivity values between 1,200 Ω-cm (saturated) and 113,300 Ω-cm (as-received moisture). Results are included in Appendix D.

4.1.5 Thermal Resistivity

Thermal resistivity dry-out curves were developed for five shallow soil samples collected at borings B-01, B-10, B-17, B-27, and SUB-03 between 2 and 5 feet during the geotechnical field investigation. The thermal resistivity of the soil varied with soil type and moisture content, and ranged from 75°C·cm/W (wet) to 256°C·cm/W (dry). Results of the thermal resistivity tests are included in Appendix D. The underground cable designer shall choose an appropriate thermal resistivity (rho) value for trench backfill with consideration for soil drying due to environmental factors as well as cable heat generation.

4.1.6 California Bearing Ratio

The field strength of access road subgrade may be assessed using the California Bearing Ratio (CBR). Three shallow soil samples were collected between 1 ft and 4 ft bgs at boring locations B-15, B-26, and Sub-02. The silt specimens were prepared at approximately 90% and 92% of the Modified Proctor maximum dry density (MDD) and at optimum moisture content (ASTM D1557). Test results demonstrated CBR values between 8.5 and 14.7 at 90% MDD and between 8.6 and 20.9 at 92% MDD. A design CBR of 8.5 may be assumed for 92% compaction effort. Refer to Section 4.6 for recommendations on access road design.

4.2 General Earthwork Considerations

4.2.1 Clearing and Grubbing

Prior to site grading activities, existing vegetation, brush, large roots, boulders, cobbles, uncontrolled fill, and abandoned underground utilities, if encountered, should be removed from the proposed concrete foundation and PV array areas, as well as areas to receive fill. Grassy vegetation may remain in PV array areas. Any shallow soil with organic material encountered should not be used for structural fill and shall be stockpiled away from native excavated soil. This material may be used as fill in non-structural areas outside of the array area where soil strength and compressibility would not impact site infrastructure. Areas disturbed during clearing and grubbing should be properly backfilled and compacted as described in Sections 4.2.4 and 4.2.5.

The loose surficial soil within the tilled agricultural fields may remain in place within the PV array area, although if left uncompacted it will reduce axial and lateral pile capacity (Section 4.4), increase erosion/scour potential (prior to stabilization), and present challenges with off-road access during construction. Alternatively, the loose soil within the tilled zone may be moisture conditioned and compacted in accordance with Section 4.2.4 to improve pile capacity and reduce erosion.

4.2.2 Excavation Safety

Shallow overburden soil at the site can generally be excavated with conventional excavation equipment, such as backhoes, dozers, loaders, or scrapers. Tracked equipment is recommended for accessibility. Excavations extending into bedrock may require specialized ripping equipment or rock hammers.

Excavations should be constructed using safe side slopes unless adequately shored and/or braced as necessary for construction and safety. Per Occupational Safety and Health Administration (OSHA) Part 1926, the overburden soil at the site may generally be inferred to be a Type C soil, and the weathered basalt may be Type B. It is the responsibility of the competent field personnel to verify in situ conditions during construction. Excavations should be constructed in conformance with applicable federal, state, and local standards.

4.2.3 Water and Erosion Control

It is not anticipated that groundwater will accumulate in the excavations on site unless work is performed during a period of high precipitation; however, should any precipitation, ground water, or surface water collect in the excavations, the water should be removed prior to the placement of fill or foundations. Temporary sumps and pumps may be required to remove any collected water. The foundation subgrade should be inspected by the construction-phase geotechnical engineer, or their representative, after excavation and before placement of materials to verify water control.

After clearing and grubbing activities, portions of the site will have little to no vegetation remaining and disturbed surface soils will be susceptible to significant erosion, particularly in areas with steeper slopes. Site-specific erosion control measures will be dictated by local regulations associated with storm water pollution prevention requirements. Throughout earthwork activities, the ground surface may be tracked or roughened to slow down sheet flow and promote the infiltration of surface water. Disturbed areas may need to be temporarily stabilized with wood mulch, hydromulch, straw, or hay before proceeding with construction activities. Perimeter sediment control, such as silt fence or mulch berm, will also be needed during clearing activities. Additional erosion control measures, such as temporary sediment basins and check dams, may also be needed to limit sediment transport off site depending on site-specific requirements and characteristics. The flow of water should also be averted away from the cliff along the western boundary of the site to mitigate the potential for long-term erosion and shallow slope failure.

4.2.4 Subgrade Preparation

After clearing and grubbing, exposed areas to receive fill, including the subgrade below road aggregate and foundation over-excavations, should be scarified, moisture conditioned to within

3% of optimum, and compacted to 92% of the modified Proctor maximum dry density (ASTM D1557). The depth of subgrade compaction should extend at least 1 foot below fill areas and access roads or to basalt, whichever occurs first. Where possible, subgrade below fill areas should be proof-rolled prior to placing fill to identify soft areas. Proof-rolling can be performed with a 15 ton roller or fully loaded dump truck. Soft areas with rutting greater than 1.5 inches should be removed or re-compacted prior to placing fill.

Subgrade below shallow foundations should have a minimum of 2 feet of native soil over-excavated and replaced with structural fill as defined in Section 4.2.5 to minimize differential movement/settlement. Excavations may terminate shallower where rock is encountered within the excavation depth. Subgrade should be protected from standing water and should be inspected by the construction-phase geotechnical engineer, or their representative, to ensure adequate bearing capacity and water control. Subgrade shall be uniform, such that the foundation does not bear on part soil and part rock.

Disturbance to subgrades prepared for foundations, access roads, and other areas to be filled should be minimized. Repeated traffic loading and excessive moisture due to precipitation may degrade subgrade soil. Native silty soils are expected to be sensitive to the addition of water and may become unstable if not carefully monitored. Where unsuitable subgrade, such as soil with organics, soft clay, or loose silt or sand, is encountered, non-organic subgrade should be moisture conditioned and re-compacted as described above, or unsuitable subgrade should be over-excavated as recommended by the construction-phase geotechnical engineer and replaced with structural fill in accordance with Section 4.2.5.

4.2.5 Fill Placement and Compaction

The native clay and silt encountered throughout the site may be used as general fill within the array areas and may be suitable for backfilling around and above foundations, provided that all compaction requirements are met; however, this fine-grained material is expected to be sensitive to moisture conditioning and may be challenging to work with, especially when wet. Native material used as general fill or foundation backfill should be free of foreign debris, organics, frozen material, and particles or clods larger than 3 inches. General fill and foundation backfill shall be moisture conditioned to within 3% of optimum, placed in loose lifts no more than 9 inches thick, and compacted to a minimum 90% of the modified Proctor maximum dry density (ASTM D1557).

Imported structural fill should consist of sand or gravel with less than 70% passing the No. 40 sieve and less than 5% passing the No. 200 sieve. The fill should be sampled and tested prior to use on site. Structural fill placed beneath foundations and slabs shall be moisture conditioned as needed, placed in loose lifts no more than 12 inches thick, and compacted to a minimum 95% of the modified Proctor maximum dry density (ASTM D1557).

Trenches may be backfilled using native material, provided that it is screened of particles larger than 3/8” and moisture conditioned to near optimum moisture content and compacted to a minimum of 85% of the modified Proctor maximum dry density (ASTM D1557) in non-structural areas and 92% of the maximum dry density in structural areas (i.e., within 5 feet of pile foundations and below access roads).

4.2.6 Cut and Fill Slopes

Although significant cut and fill slopes are not anticipated on site, any slopes constructed using native soil may be designed at an inclination of 4H:1V or flatter. Fill slopes should be constructed in horizontal lifts in accordance with the recommendations in Section 4.2.5. Any fill slopes greater than 5 feet in height should be benched into the existing slope to prevent movement between the fill and native soils. Benches should be approved by the construction-phase geotechnical engineer prior to placement of fill. Appropriate erosion control measures (e.g., vegetation or erosion control matting) should be implemented immediately after cut and fill slopes are constructed to reduce the potential for erosion. Steeper slopes may be allowed pending validation with detailed slope stability analyses, which was beyond the scope of this investigation.

4.3 General Foundation Considerations

4.3.1 Seismic Considerations

At the time of this report the State of Washington has adopted the 2018 Washington State Bulding Code, which is based on the 2018 International Building Code with ammendments. The maximum considered earthquake spectral response accelerations are presented in Table 4.3.1 below (ATC, 2021).

Table 4.3.1 Seismic Design Parameters

Parameter	Design Value
Reference	2018 WBC
Coordinates	47.45358°N, 120.18972°W
Site Class	B
Occupancy Category	I
Peak Ground Acceleration (PGA)	0.198
Mapped Spectral Acceleration for Short (0.2 sec) Periods, S_s	0.448 g
Mapped Spectral Acceleration for 1-second Periods, S_1	0.183 g
Acceleration-Based Site Coefficient, F_a	0.9
Velocity-Based Site Coefficient, F_v	0.8
Max. Considered Spectral Response Acceleration, S_{MS}	0.403 g
Max. Considered Spectral Response Acceleration, S_{M1}	0.147 g
Design Spectral Response Acceleration (Short Periods), S_{DS}	0.269 g
Design Spectral Response Acceleration (1-second Period), S_{D1}	0.098 g

4.3.2 Soil Corrosivity

The chemical constituent test results performed on eight soil samples indicated that the soil has a pH ranging from 7.4 to 8.4, contains up to 437 mg/kg of soluble sulfates and up to 288 mg/kg soluble chlorides. These values, along with other soil properties such as moisture content, soil type, and electrical resistivity, indicate that the subsurface conditions are moderately corrosive to steel piles. This data should be used by the foundation engineer to determine the corrosion potential of native soils in contact with steel and concrete structures. Test results are presented in Appendix D.

4.3.3 Frost Depth

Frost action can result in differential heaving and a reduction in soil strength during periods of thaw. The degree of frost action ranges from low to high based on frost depth, availability of water, and frost-susceptibility of shallow soil. The most severe effects of frost heave occur when ice lenses form in the voids of soil containing fine particles (i.e., silt and clay). Three conditions must be present to cause frost heaving:

1. Frost-susceptible soils
2. Soil temperatures below freezing
3. Subsurface water

Differential heaving occurs when these conditions occur non-uniformly. Shallow foundations (or the structures they support) can be damaged if the foundations bear above soils that experience frost heave. Frozen soil can also bond (adfreeze) to pile foundations and the subsequent formation of ice lenses and associated heaving can incrementally "jack" the pile up, potentially causing damage to the structure they support, especially if the heaving is non-uniform. The bearing capacity of soil is also reduced during periods of thaw, which can reduce the lateral capacity of pile foundations and cause bearing capacity and/or settlement issues for foundations bearing above the frost depth.

The potential for growth of significant ice lenses within the frost zone is generally considered moderate on this site due to the relatively high silt and clay fraction within shallow soils but deep water table (FHWA, 2006). Although shallow groundwater is generally not expected, shallow soil may become saturated during periods of heavy precipitation and mid-winter thaw, increasing the potential for localized ice lenses. Foundation designers should consider the potential effects of frost heave and thaw on their design, and critical foundations that cannot tolerate the potential for differential movement should be designed to resist or prevent frost heave.

The recommended design frost depth for the area is 18 inches (NFEC, 1985). Critical foundations and pipes should be placed a minimum of 18 inches below final grade, on bedrock, or on non-frost susceptible structural fill extending to a depth of 18 inches or to bedrock for protection against frost, unless they are designed to accommodate the effects of frost heave. Pile foundations, if designed to fully resist frost heave, should consider an adfreeze bond value of 1,000 psf within a reduced frost depth of 12 inches. A lower adfreeze bond value and/or frost depth value may be considered if some risk of differential movement of the rack system due to frost heave is acceptable to the owner and design team.

4.4 PV Array Foundations

It is expected that PV modules will be supported by steel racking systems mounted on shallow steel wide-flange (W-section) piles; however, it may not be feasible to drive these piles across portions of the site due to the presence of very dense soil, shallow bedrock, gravel, cobbles, and boulders. Consideration should be given to pre-drilling holes prior to installing piles, as discussed in greater detail in Section 4.4.1. Consideration should also be given to scour potential due to surface water runoff on un-stabilized surficial soil, in particular where grubbing activities have disturbed the ground surface and where topographic relief is steeper. A detailed hydrologic study should be performed to better quantify hydrologic scour potential on site.

The axial and lateral capacity recommendations provided in this section are based on the pile load test results (Appendix E). The discussion and recommendations in this section only apply to piles embedded a minimum of 6 feet bgs. Shallower embedment depths may be acceptable provided the piles meet practical refusal and pass production pile load testing. The discussion and recommendations may also be used for design of driven W-section pile foundations for inverter skids and battery containers on site. Refer to the Pile Load Testing Report in Appendix E for additional information on test pile installation and capacity.

4.4.1 Constructability

A total of 70 test piles were installed across the project area at 30 locations for pile load testing. A total of 16 test piles installed at 11 test locations encountered shallow refusal prior to their target embedment depths of 6 feet or 8 feet. The average drive time on site was approximately 52 seconds, with values ranging between 11 and 325 seconds.

Although it appears feasible to successfully drive piles across large portions of the project site, shallow pile refusals and/or longer drive times due to bedrock are likely to occur throughout the site during construction. In general shallow bedrock was more prevalent along the western boundary of the project site; however, there was notable scatter in the locations of successfully driven piles and shallow bedrock, making zoning of the site challenging without additional field investigations.

A grid of targeted auger probes across the site may provide a more comprehensive map of depth to bedrock. The resolution of the map will largely be determined by the spacing of the auger probes within the grid. Alternative methods may also be used to evaluate depth to rock across the site, such as test pits, pile drivability tests, or geophysical tests (e.g. seismic refraction).

Although not tested as part of this investigation, pre-drilling will likely be required across portions of the site to achieve sufficient embedment of the piles. Pre-drilling consists of drilling pilot holes at pile locations and backfilling with either compacted native soil cuttings (with oversized particles removed or crushed), lean concrete, or controlled low strength material (CLSM). The exact diameter and depth of pre-drilled holes will depend on drilling equipment, subsurface conditions, backfill material, and pile installation method. Shallow screw anchors may also be a feasible foundation option. A supplemental comprehensive pile load test program is recommended to assess constructability and capacity of pre-drilled piles and/or alternative foundation types. Refer to the Pile Load Test Report in Appendix E for additional information on test pile installation.

4.4.2 Axial Capacity

Deep foundations will develop their capacity through a combination of skin friction and end bearing when in compression and skin friction alone when in uplift. The table below provides recommended skin friction and end bearing values for design of the driven pile foundations embedded at least 6 feet. Shallower embedment depths may be acceptable provided the piles meet practical refusal and pass production pile load testing.

Skin friction and end bearing values provided below are ultimate and do not include a safety factor. A safety factor of 2.0 is recommended when determining load bearing and uplift capacity, unless the controlling load case is due to wind or seismic loading, in which case a safety factor of 1.5 should be applied. An even lower safety factor may be considered by the foundation engineer for resistance to frost heave loads. Skin friction should be applied to the surface area of a wide-flange beam based on the “rectangular” perimeter of the pile, taken as twice the sum of the flange width and web depth. End bearing should be applied to the full “rectangular” area at the bottom of the pile (i.e., flange width times web depth).

Table 4.4.2 Driven Pile Axial Capacity Parameters

Depth (ft)	Ultimate Skin Friction (psf)	Ultimate End Bearing (psf)
0 – 1	Ignore (scour/erosion/frost)	
1 – 6	150	N/A
6 – 15	150	10,000
Basalt (varies)	NA	60,000

Consideration should be given to neglecting skin friction within the upper 12 inches of embedment to account for the potential for erosion/scour; however, alternative scour depths may be applied based on results of a final hydrologic study.

4.4.3 Lateral Capacity

The lateral capacity of driven pile foundations was evaluated with data obtained from the soil borings and pile load testing program. The lateral response of the piles may be modeled using the software program LPile by Ensoft, Inc. The recommended LPile soil model input parameters for design of driven wide-flange beam foundations embedded at least 6 feet and in all soil are provided in the table below. Shallower embedment depths may be acceptable provided the piles meet practical refusal and pass production pile load testing.

Table 4.4.3 Driven Pile LPile Soil Model Parameters

Depth (ft)	LPile Soil Model	Effective Unit Weight (pcf)	Undrained Shear Strength (psf)	Friction Angle (deg)	Strain Factor, E50	Soil Modulus Factor, k (pci)	p-Multiplier
0 – 1	Ignore due to moisture change and scour						
1 – 5	Silt	105	300	28	Default	25	1.0 to 2.0(1)
5 – 15	Silt	110	500	30	Default	7	2.0

(1) Varies linearly from 1.0 at ground surface to 2.0 at 5 feet bgs.

4.5 Substation, O&M, and BESS Foundation Recommendations

4.5.1 Shallow Foundations

Results of the investigation suggest that shallow spread/strip footings and mat foundations are feasible at the proposed substation, O&M, and BESS location. It is assumed that the pads and mat foundations supporting electrical equipment will bear at least 12 inches below grade and on a minimum of 2 feet of structural fill. Provided the recommendations of this report are followed, including pads bearing on at least 2 feet of structural fill, the design of large slab-on-grade equipment foundations (i.e., 10 to 20 feet wide) and conventional spread and strip footing foundations (i.e., 4 feet wide) may use a maximum allowable gross bearing capacity of 2,300 psf.

A total estimated settlement of less than 1 inch is anticipated for shallow foundations. Differential settlement can generally be assumed to be ½ to ¾ of the total settlement. Proper drainage should be provided around foundations to minimize the potential for foundation movement. Shallow foundations should be reinforced as necessary to reduce the potential for damage caused by differential movement.

A friction factor of 0.3 may be used for the ultimate frictional resistance to lateral sliding along the base of footings founded on compacted select structural fill. A minimum factor of safety of 1.5 is recommended to determine the allowable frictional resistance to lateral sliding. A vertical modulus of subgrade reaction of 125 pounds per cubic inch (pci) may be used for mat foundations bearing on 2 feet of compacted structural fill. This vertical modulus of subgrade reaction represents a 1 foot square foundation and should be modified as needed for larger foundation sizes.

4.5.2 Drilled Piers

4.5.2.1 Constructability

Various substation, O&M, and BESS structures may be supported on concrete piers with a minimum diameter of 18 inches. The shallow soil profile across the site generally consists of silt with varying quantities of clay, sand, and gravel. Weathered basalt bedrock was encountered at depths between 0.5 and 10 ft bgs. Drilled excavations may require casing to maintain sidewall stability through the silty soil. The relative ease of drilling will depend on the soil’s density and the depth to and competency of the bedrock. Conventional auger drilling may be used on the overburden soil, although special considerations should be made for drilling through bedrock, where required.

Significant accumulation of groundwater within the excavations is generally not anticipated; however, should any precipitation or surface water runoff collect within the excavations, the bottom of foundation excavations should be cleaned of any water and loose material prior to the placement of concrete or pole. Place concrete as soon as possible after foundation excavation to minimize the potential for sidewall disturbance and water accumulation.

4.5.2.2 Axial Capacity

Deep foundations will develop their capacity through a combination of skin friction and end bearing when in compression and skin friction alone when in uplift. Table 4.5.2.2 provides recommended skin friction and end bearing values for the design of drilled pier foundations based on the soil encountered in the substation, O&M building, and BESS borings. Skin friction and end bearing values provided are ultimate and do not include a safety factor. Appropriate safety factors or resistance factors should be applied by the foundation designer, in accordance with industry standards.

Table 4.5.2.2 Axial Capacity Parameters for Drilled Piers.

Depth (ft)	Material	Ultimate Skin Friction[2] (psf)	Ultimate End Bearing (psf)
0 – 1	Ignore (scour/erosion)		
Varies*	Silt	100	8,000
Varies*	Basalt Bedrock	500	60,000

*Refer to boring logs for depth of silt and basalt.

4.5.2.3 Lateral Capacity

The lateral response of the drilled piers may be modeled using the software program LPile or MFAD. The recommended LPile and MFAD soil model input parameters for design of drilled pier foundations are provided in the table below.

Table 4.5.2.3a: Lateral Capacity Parameters for Drilled Piers

Depth[1] (ft)	Material	LPile Soil Model	Effective Unit Weight (pcf)	Undrained Cohesion (psf)	Friction Angle (deg)	Modulus of Deformation (psi)
0 – 1	Ignore due to moisture change and scour					
Varies*	Silt	Silt	105	300	29	300
Varies* (top 5' of Basalt)	Weathered Basalt	Silt	130	1,000	40	5,000
Competent Basalt	See Table 4.5.2.3b for competent basalt rock parameters					

*Refer to boring logs for depth of silt and basalt.

Table 4.5.2.3b: Lateral Capacity Parameters for Drilled Piers in Competent Basalt

LPile Soil Model	Effective Unit Weight (pcf)	Strain Factor, k_{rm}	Uniaxial Compress. Strength, q_u (psi)	Initial Modulus of Rock Mass (psi)	RQD (%)
Weak Rock	165	0.00005	1,000	400,000	30

*Refer to boring logs for depth of basalt. Competent basalt is assumed to begin 5 ft below the top of weathered basalt.

4.6 Access Roads

Access roads will be required during construction to accommodate construction equipment and deliveries. The access roads will also facilitate long-term operation and maintenance of the facility. These roads will be subjected to heavy loads, but only for limited duration and frequency. The suitability of the shallow site soil for use as access roads will depend primarily on the strength and moisture condition of the soil at the time the traffic occurs. The shallow soil on site below the root zone is generally considered adequate subgrade for gravel access roads, although special consideration should be given to the softer/looser surficial soil present in the agricultural fields and moisture sensitivity of silty soil. Access roads should have an aggregate surface to help ensure accessibility during wet conditions. In general, at least 6 inches of aggregate may be suitable to support construction traffic depending on subgrade moisture, strength, compaction effort, and soil type based on a laboratory-measured CBR of 8.5. Access road design criteria, such as traffic loads, were not known at the time of this report. The project geotechnical/civil engineer should be contacted for road section design once final design criteria are known.

Loose and saturated subgrade material are typically the limiting conditions for access roads. Strengthening the subgrade with crushed rock, geosynthetics, or other suitable material, and/or mixing the base material with additives such as cement will minimize damage to the subgrade. Project specific tests are recommended to more accurately define the mix design and access road cross section. Establishing adequate side ditches and other surface water control features will help to reduce damage caused by surface water and saturated road subgrade conditions.

It is expected that aggregate-surfaced access roads will require ongoing maintenance to keep them in a serviceable condition, regardless of the aggregate thickness and subgrade preparation. It is not practical to design an aggregate section of adequate thickness that prevents ongoing maintenance. Ruts, depressions, and soft/loose subgrade should be repaired as needed to facilitate traffic. Additional aggregate may be placed in ruts and depressions, or the entire aggregate section and soft subgrade may be removed and replaced with a new aggregate section.

Surface vegetation root zones and other soft or otherwise unsuitable material should be stripped from access roadways and the surface graded to provide positive drainage. In order to identify potentially unsuitable soil, the road subgrade should be compacted and subsequently proof-rolled with a fully loaded tandem axle or tri-axle truck with a minimum gross weight of 25 tons and minimum axle loading of 10 tons. Subgrade preparation should be monitored by a representative of the construction-phase geotechnical engineer at the time of construction. At locations where pumping or unacceptable rutting of the subgrade occurs, the soft soil should be removed and replaced with properly compacted fill in accordance with Section 4.2.5.

4.7 Construction Considerations

To a large degree, satisfactory foundation and earthwork performance depends on construction quality control; therefore, subgrade preparation, subgrade compaction, proof-rolling, and placement and compaction of fill and backfill material should be observed and tested by qualified personnel. In addition, qualified staff who are experienced with the foundation design requirements should monitor and document foundation preparation and construction activities.

5.0 Limitations

This report has been prepared in accordance with generally accepted geotechnical engineering practice for the exclusive use of Avangrid Renewables for the proposed Badger Mountain Solar Project. The primary focuses of this report are the typical site grading activities, pile foundations for the PV racking, shallow foundations for electrical infrastructure within the general project area, foundations for the proposed substation, O&M building, and BESS, and access roads. Additional investigations and analyses may be necessary for other site infrastructure not specifically addressed in this report.

The borings are representative of the subsurface conditions at the sampled locations and intervals, and therefore do not necessarily reflect strata variations that may exist between sampled locations and intervals. If variations from the subsurface conditions described in this study are noted during construction, recommendations in this report must be re-evaluated. Any user of this report should verify all boring locations against the final location of the respective infrastructure to determine if infrastructure has moved prior to using the recommendations provided by Westwood. In the event that any changes in the nature, design, or location of the facilities are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed and the conclusions of this report are modified or verified in writing by Westwood. Westwood is not responsible for any claims, damages, or liability associated with the interpretation of subsurface data by others.

After plans for the facility are completed in sufficient detail, a geotechnical engineer should be consulted regarding any additional subsurface information that may be required to arrive at additional recommendations for design and construction.

6.0 References

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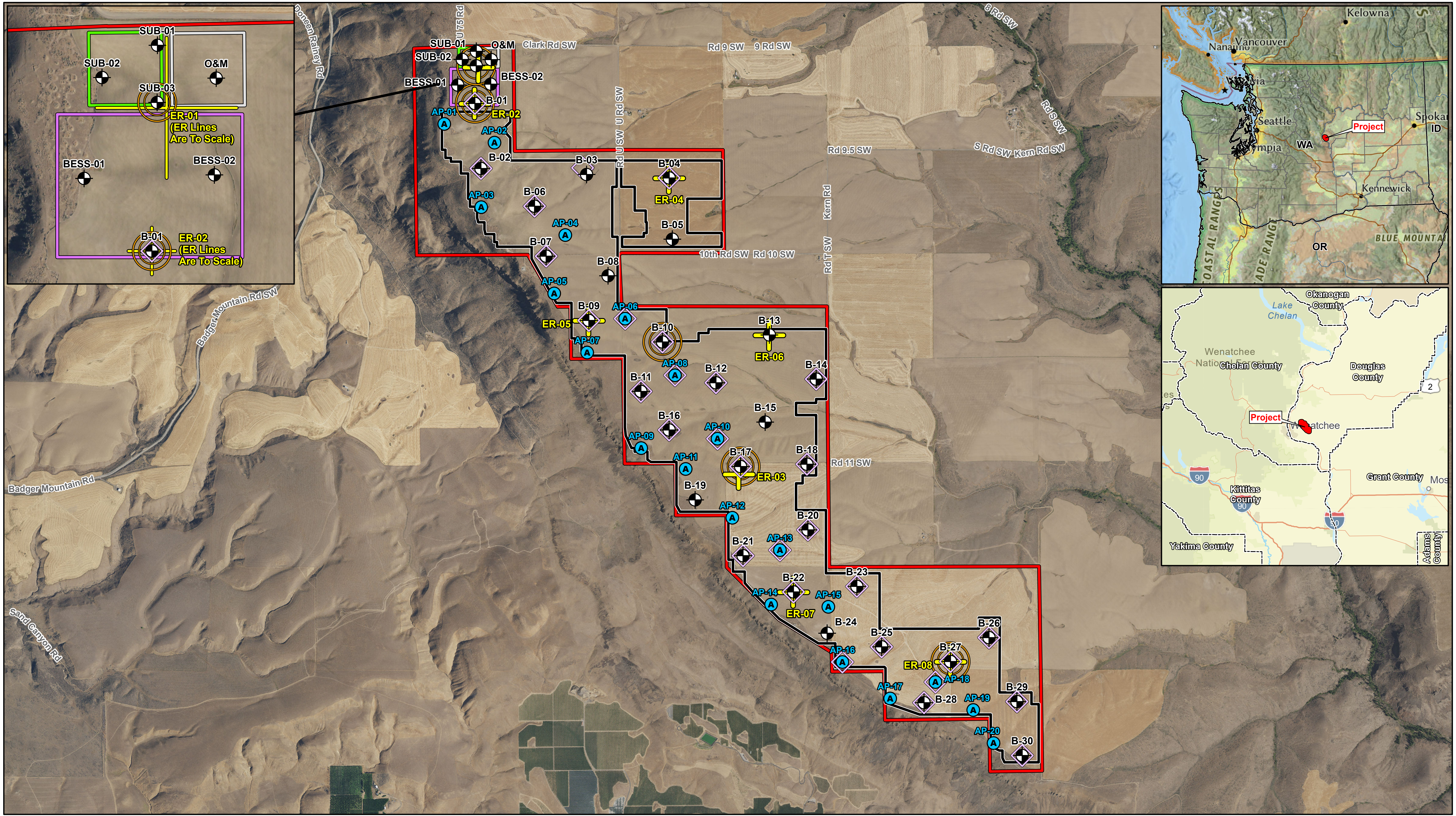
Exhibits



Data Source(s): Westwood (2021); Washington NAIP Imagery (2019); ESRI WMS World Imagery, National Geographic, & World Streets Basemaps (Accessed 2021); Census Bureau (2019).

Legend

⊕	Boring Location	Ⓐ	Auger Probe	+	Electrical Resistivity Test Location	🟩	Substation
☐	PV Array Area Boundary	◇	Test Pit Location	◎	Thermal Test Location	☐	O&M Building
🟥	Project Boundary					🟪	BESS

N

0 2,300 Feet

Badger Mountain Solar Project

Douglas County, Washington

Geotechnical Investigation Overview Map

EXHIBIT 1

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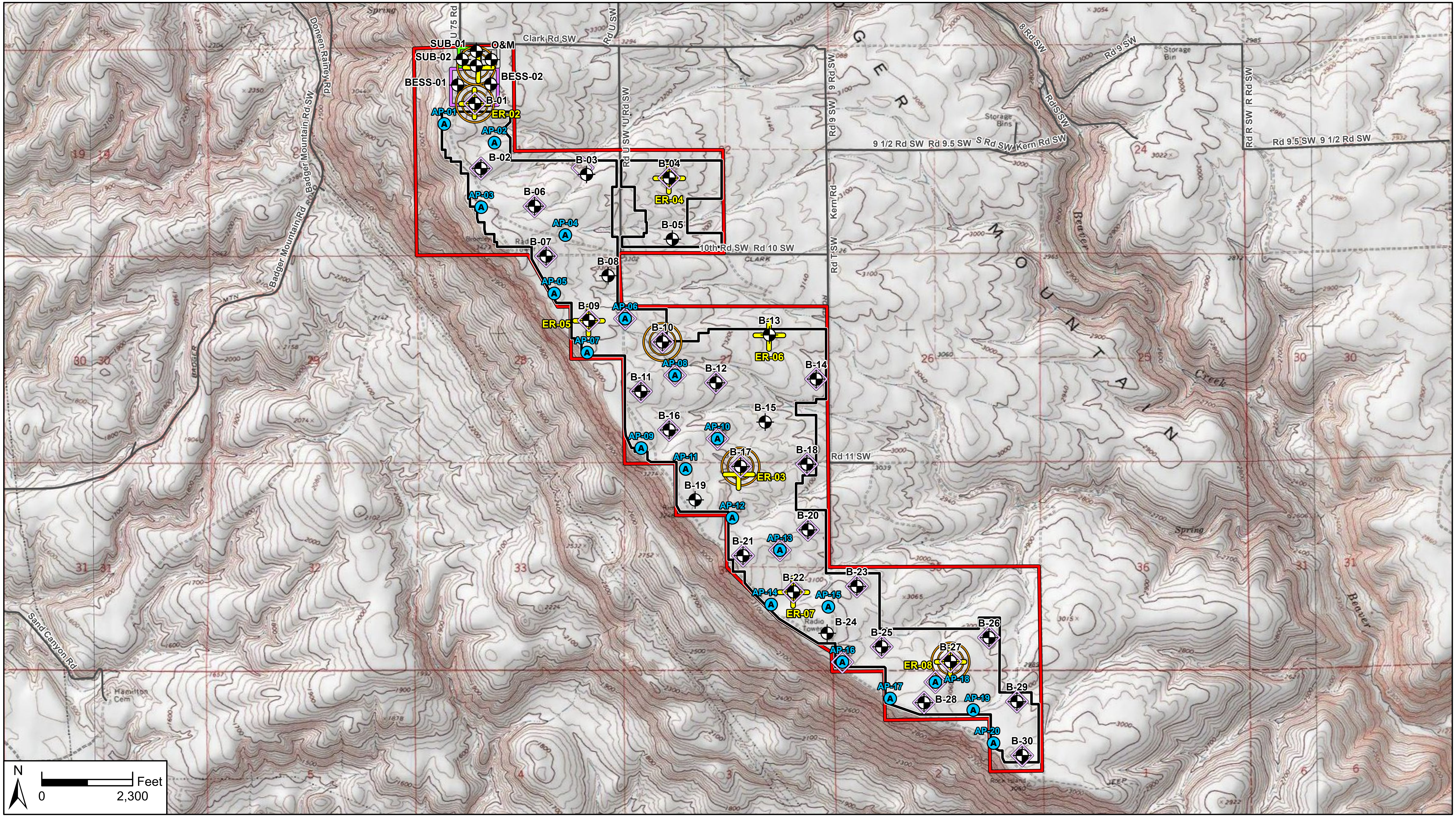

Data Source(s): Westwood (2021); ESRI WMS USA Topo Basemap (Accessed 2021); Census Bureau (2019).

Legend

⌖ Boring Location

Ⓐ Auger Probe

\+ Electrical Resistivity Test Location (20ft)

🟩 Substation

— Named Census Road

▭ PV Array Area Boundary

◇ Test Pit Location

◎ Thermal Test Location

▭ O&M Building

🟥 Project Boundary

🟪 BESS

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Badger Mountain Solar Project

Douglas County, Washington

USGS Topography Map

EXHIBIT 2

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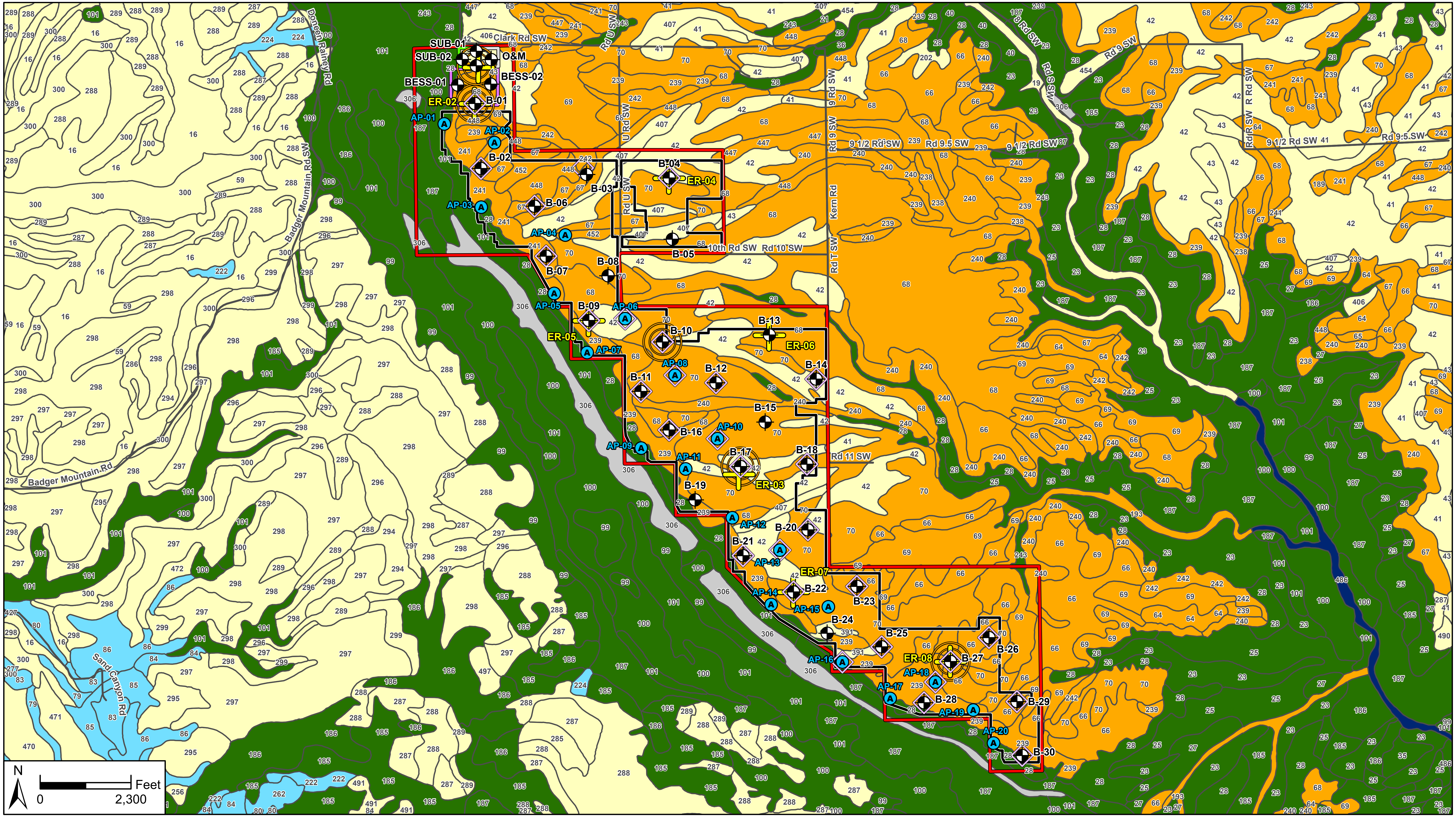

Data Source(s): Westwood (2021); Census Bureau (2019); U.S. Department of Agriculture, Natural Resources Conservation Service (2021).

Legend

⊕ Boring Location
Ⓐ Auger Probe
🟩 Substation
◇ Test Pit Location
☐ PV Array Area Boundary
✛ Electrical Resistivity Test Location
☐ O&M Building
— Named Census Road
🟥 Project Boundary
◎ Thermal Test Location
🟪 BESS

Unified Soil Classification

🟧 CL-ML
🟨 ML
🟩 GC-GM
🟦 SM
■ GP-GM
⬜ No Classification Given

Badger Mountain Solar Project

Douglas County, Washington

Surficial Soils Map

EXHIBIT 3

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Map Unit Symbol | Map Unit Name

100 | Cheviot-Ralls-Grinrod complex, 15 to 30 percent slopes
101 | Cheviot-Ralls-Rubble land complex, 30 to 65 percent slopes
16 | Alstown-Cheviot complex, 30 to 65 percent slopes
185 | Grinrod-Ralls-Argabak complex, 8 to 50 percent slopes
186 | Grinrod-Ralls-Rubble land complex, 30 to 70 percent slopes
187 | Grinrod-Rock outcrop-Rubble land complex, 30 to 70 percent slopes
189 | Hanning silt loam, 3 to 8 percent slopes
19 | Aquolls, nearly level
193 | Haploxerolls, moderately well drained, nearly level to gently sloping
202 | Jordy ashy fine sandy loam, 8 to 15 percent slopes
21 | Argabak very cobbly loam, 0 to 20 percent slopes
222 | Logy cobbly sandy loam, 3 to 15 percent slopes
224 | Logy very stony sandy loam, 3 to 15 percent slopes
23 | Argabak-Camaspatch-Badge complex, 30 to 65 percent slopes
238 | Morrow silt loam, 0 to 3 percent slopes
239 | Morrow silt loam, 3 to 8 percent slopes
240 | Morrow silt loam, 8 to 15 percent slopes
241 | Morrow-Argabak complex, 3 to 8 percent slopes
242 | Morrow-Argabak complex, 8 to 15 percent slopes
243 | Morrow-Argabak-Badge complex, 15 to 30 percent slopes
25 | Argabak-Horseflat complex, 0 to 30 percent slopes
256 | Peshastin fine sandy loam, 15 to 30 percent slopes
262 | Pogue fine sandy loam, 3 to 8 percent slopes
27 | Argabak-Horseflat-Zen complex, 0 to 20 percent slopes
277 | Quincy-Ellisforde-Cashmere complex, 30 to 60 percent slopes
28 | Argabak-Morrow complex, 0 to 30 percent slopes
285 | Renslow silt loam, 15 to 30 percent north slopes
286 | Renslow silt loam, 15 to 30 percent south slopes
287 | Renslow silt loam, cemented substratum, 0 to 8 percent slopes
288 | Renslow silt loam, cemented substratum, 8 to 15 percent slopes
289 | Renslow silt loam, cemented substratum, 15 to 30 percent slopes
294 | Renslow-Alstown-Kester complex, 15 to 30 percent slopes
295 | Ritzville silt loam, 3 to 8 percent slopes
296 | Ritzville silt loam, 15 to 30 percent north slopes
297 | Ritzville silt loam, cemented substratum, 0 to 8 percent slopes
298 | Ritzville silt loam, cemented substratum, 8 to 15 percent slopes
299 | Ritzville silt loam, cemented substratum, 15 to 30 percent slopes
300 | Ritzville silt loam, cemented substratum, 30 to 65 percent slopes
306 | Rubble land-Rock outcrop complex, very steep
35 | Badge very cobbly silt loam, 15 to 30 percent slopes
359 | Sprauer ashy fine sandy loam, 8 to 30 percent slopes
36 | Badge very cobbly silt loam, 30 to 65 percent slopes
390 | Taunton-Scoon complex, 8 to 15 percent slopes
391 | Terlan silt loam, 0 to 8 percent slopes
40 | Badge-Stemilt complex, 30 to 65 percent slopes
406 | Titchenal silt loam, 3 to 8 percent slopes
407 | Titchenal silt loam, 8 to 15 percent slopes
41 | Bagdad silt loam, 0 to 8 percent slopes
42 | Bagdad silt loam, cemented substratum, 0 to 8 percent slopes
422 | Toler-Horseflat complex, 15 to 30 percent slopes
427 | Torriorthents, very steep
43 | Bagdad silt loam, cemented substratum, 8 to 15 percent slopes
447 | Van Nostern silt loam, 3 to 8 percent slopes
448 | Van Nostern silt loam, 8 to 15 percent slopes
452 | Van Nostern-Camaspatch complex, 8 to 15 percent slopes
454 | Vitrandic Argixerolls-Argabak complex, 30 to 60 percent slopes
470 | Willis silt loam, 0 to 3 percent slopes
471 | Willis silt loam, 3 to 8 percent slopes
472 | Willis silt loam, 8 to 15 percent slopes
486 | Xerofluvents-Beverly association, 0 to 15 percent slopes
490 | Zen silt loam, 3 to 8 percent slopes
491 | Zen silt loam, 8 to 15 percent slopes
497 | Zen-Horseflat-Ralls complex, 8 to 15 percent slopes
59 | Benwy-Selah-Alstown complex, 15 to 30 percent slopes
64 | Broadax silt loam, 0 to 8 percent slopes
65 | Broadax silt loam, 8 to 15 percent slopes
66 | Broadax silt loam, cemented substratum, 3 to 8 percent slopes
67 | Broadax silt loam, cemented substratum, 8 to 15 percent slopes
68 | Broadax-Morrow-Spofford complex, 3 to 8 percent slopes
69 | Broadax-Morrow-Spofford complex, 8 to 15 percent slopes
70 | Broadax-Titchenal complex, 3 to 15 percent slopes
79 | Cashmere fine sandy loam, 0 to 3 percent slopes
80 | Cashmere fine sandy loam, 3 to 8 percent slopes
82 | Cashmere fine sandy loam, cemented substratum, 0 to 3 percent slopes
83 | Cashmere fine sandy loam, cemented substratum, 3 to 8 percent slopes
84 | Cashmere fine sandy loam, cemented substratum, 8 to 15 percent slopes
85 | Cashmere-Willis complex, 15 to 30 percent slopes
86 | Cashmere-Willis complex, 30 to 45 percent slopes
99 | Cheviot-Ralls-Dougville complex, 8 to 15 percent slopes

Data Source(s): Westwood (2021); U.S. Department of Agriculture, Natural Resources Conservation Service (2020).

Badger Mountain Solar Project

Douglas County, Washington

Surficial Soils List

EXHIBIT 3b

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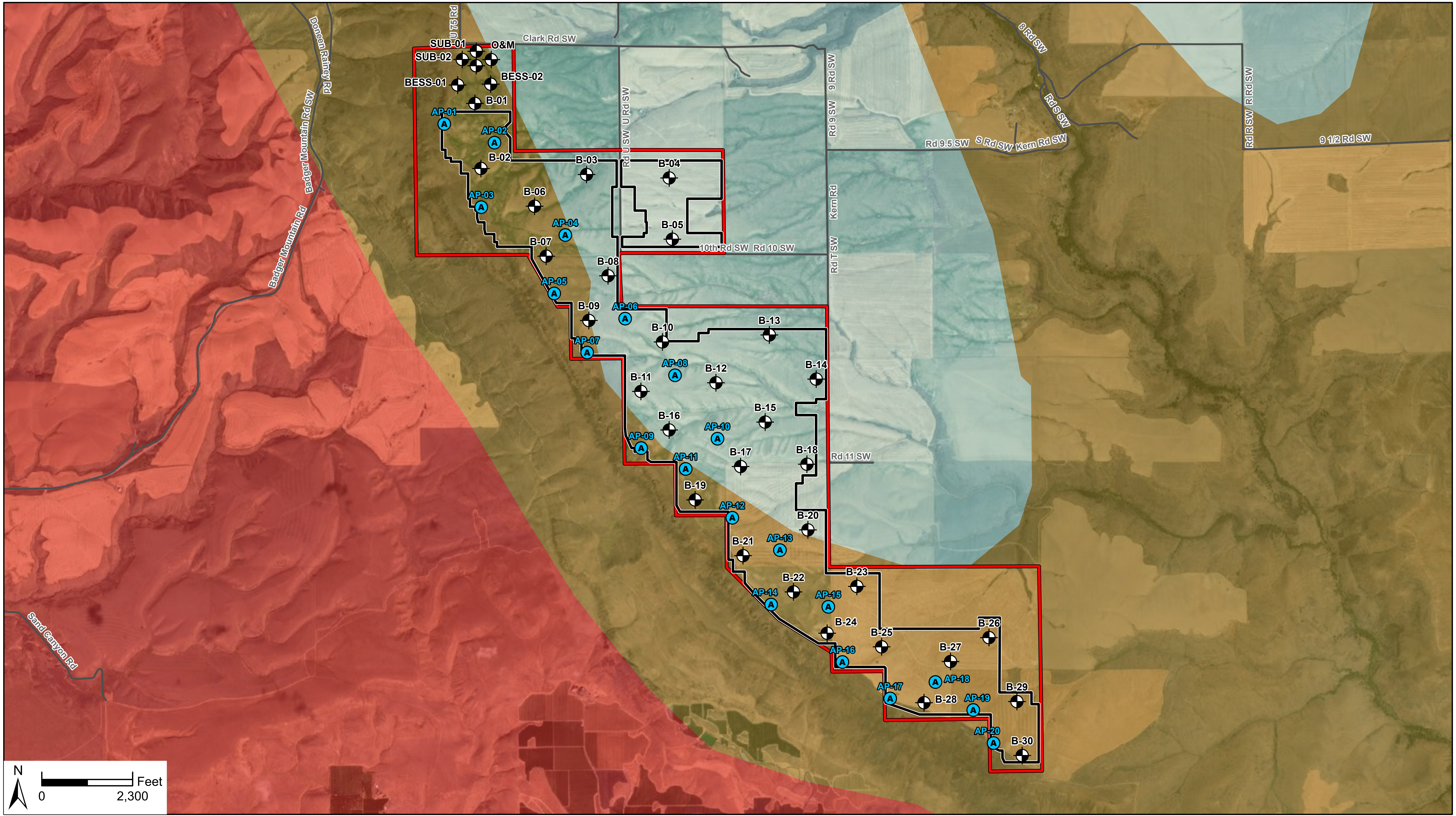

Data Source(s): Westwood (2021); ESRI WMS World Imagery (Accessed 2021); Census Bureau (2019); USGS (2018).

Legend

▭	PV Array Area Boundary	⊕	Boring Location
▭	Project Boundary	Ⓐ	Auger Probe
—	Named Census Road		

Geologic Unit Symbol | Geologic Unit Name | Geologic Unit Age

🟥 EPKc | Paleocene-Cretaceous nonmarine rocks | Phanerozoic - Cenozoic - Tertiary-Paleogene - Eocene

🟫 Mv | Miocene volcanic rocks | Phanerozoic - Cenozoic - Tertiary-Neogene - Early-Pliocene

🟦 Qce | Quaternary nonmarine deposits | Phanerozoic - Cenozoic - Quaternary - Pleistocene

Badger Mountain Solar Project

Douglas County, Washington

Local Geology Map

EXHIBIT 4

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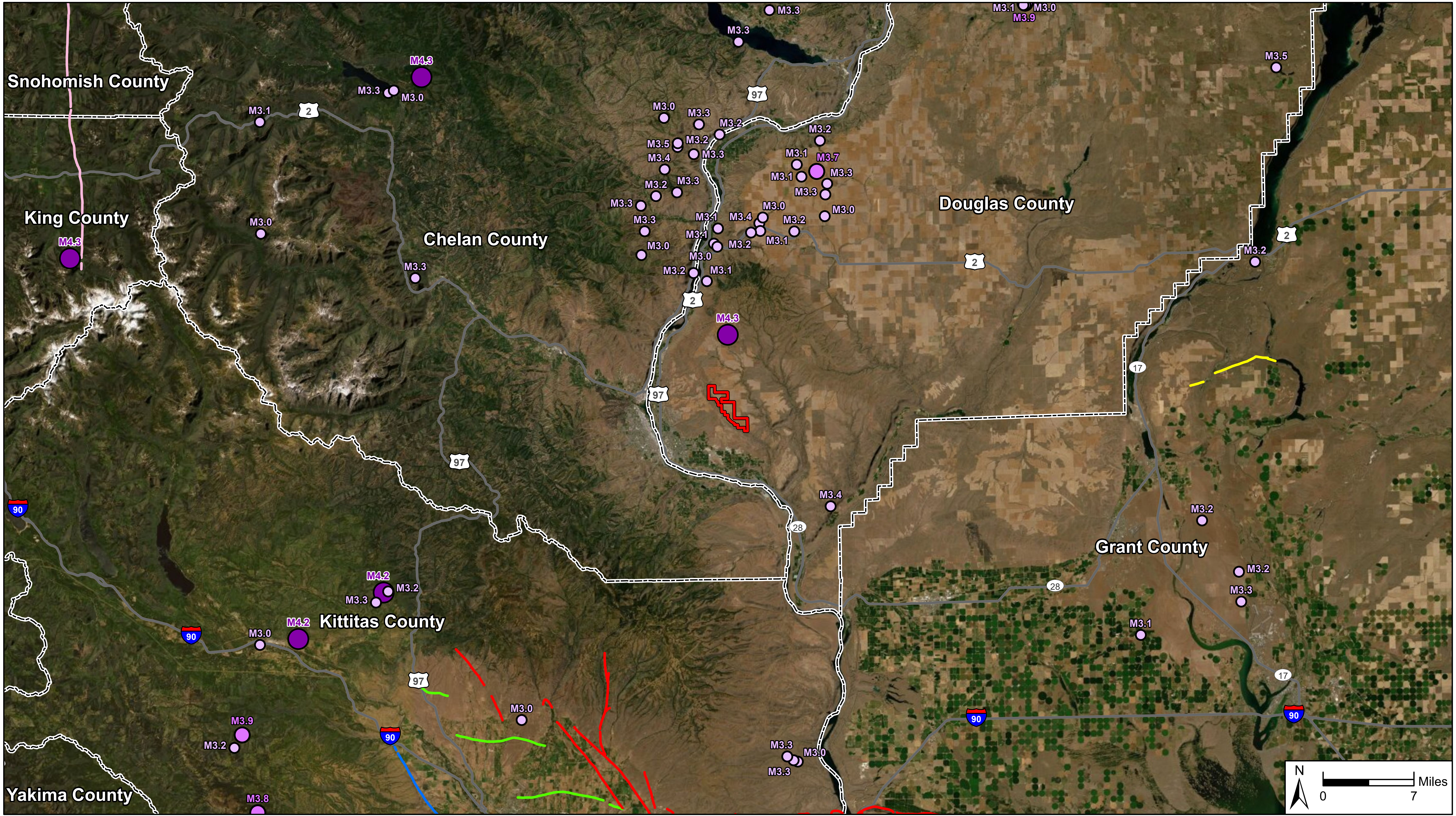

Data Source(s): Westwood (2021); ESRI WMS World Imagery Basemap (Accessed 2021); Census Bureau (2018); Department of Conservation, California Geological Survey (2010); USGS (2021).

Legend

🟥 Project Boundary

▭ County Boundary

— Major Highway

Fault Name | Fault Age

- Frenchman Hills Structure | Undifferentiated Quaternary
- Kittitas Valley Fault | Class B
- Pinto Fault | Class B
- Saddle Mountains Structure | Undifferentiated Quaternary
- Straight Creek Fault | Class B

Earthquakes by Magnitude From 1971 to 2021

● 3.0-3.5

● 3.6-4.0

● 4.1-4.5

Badger Mountain Solar Project

Douglas County, Washington

Earthquake & Fault Map

EXHIBIT 5

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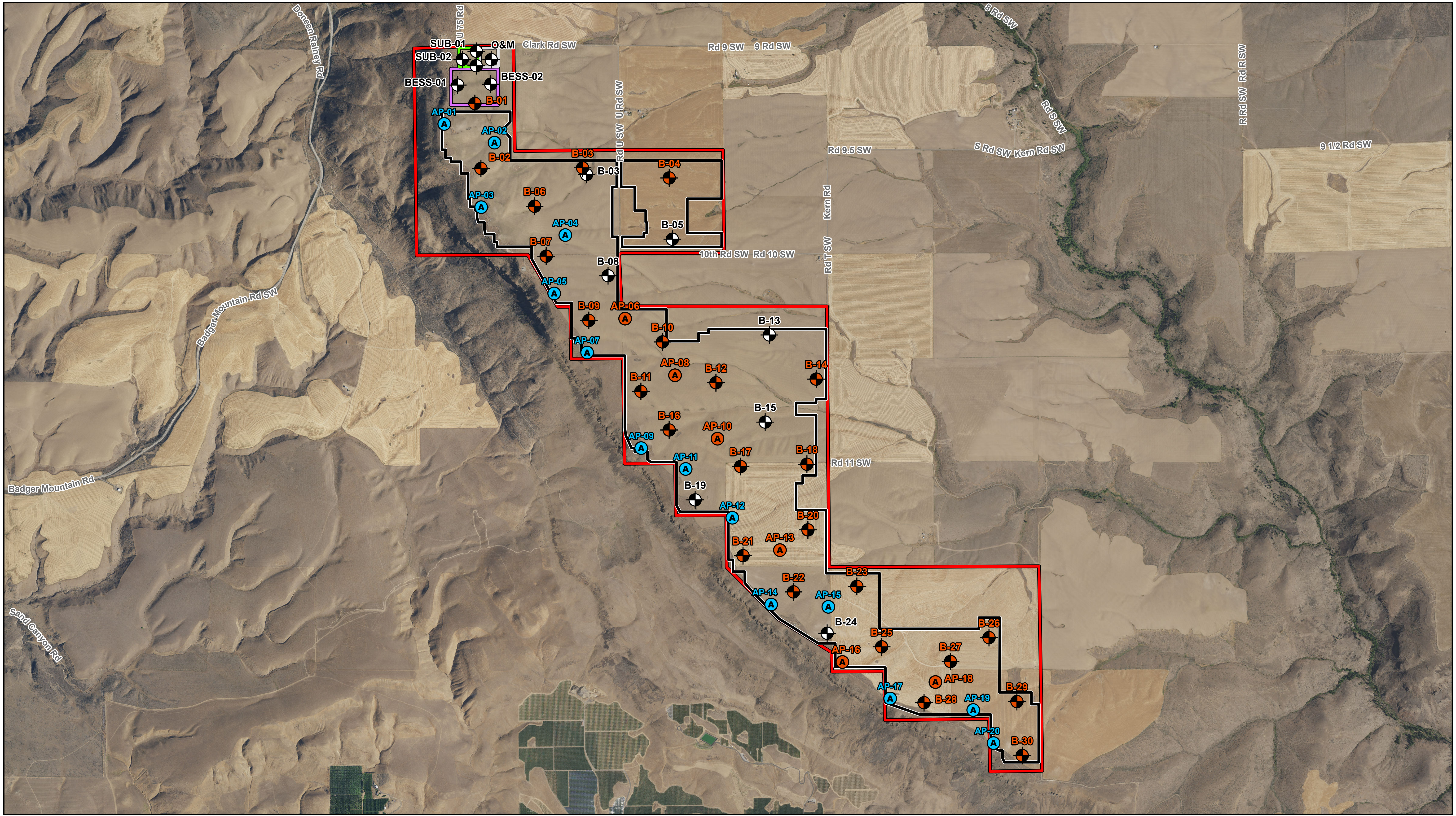

Data Source(s): Westwood (2021); Washington NAIP Imagery (2019); Census Bureau (2019).

Legend

🟥 Project Boundary

⬜ PV Array Area Boundary

⊕ Boring & Pile Load Test Location

Ⓐ Auger Probe & Pile Load Test Location

⊕ Boring Location

Ⓐ Auger Probe

🟩 Substation

⬜ O&M Building

🟪 BESS

N

0 2,300 Feet

Badger Mountain Solar Project

Douglas County, Washington

Pile Load Testing Summary Map

EXHIBIT 6

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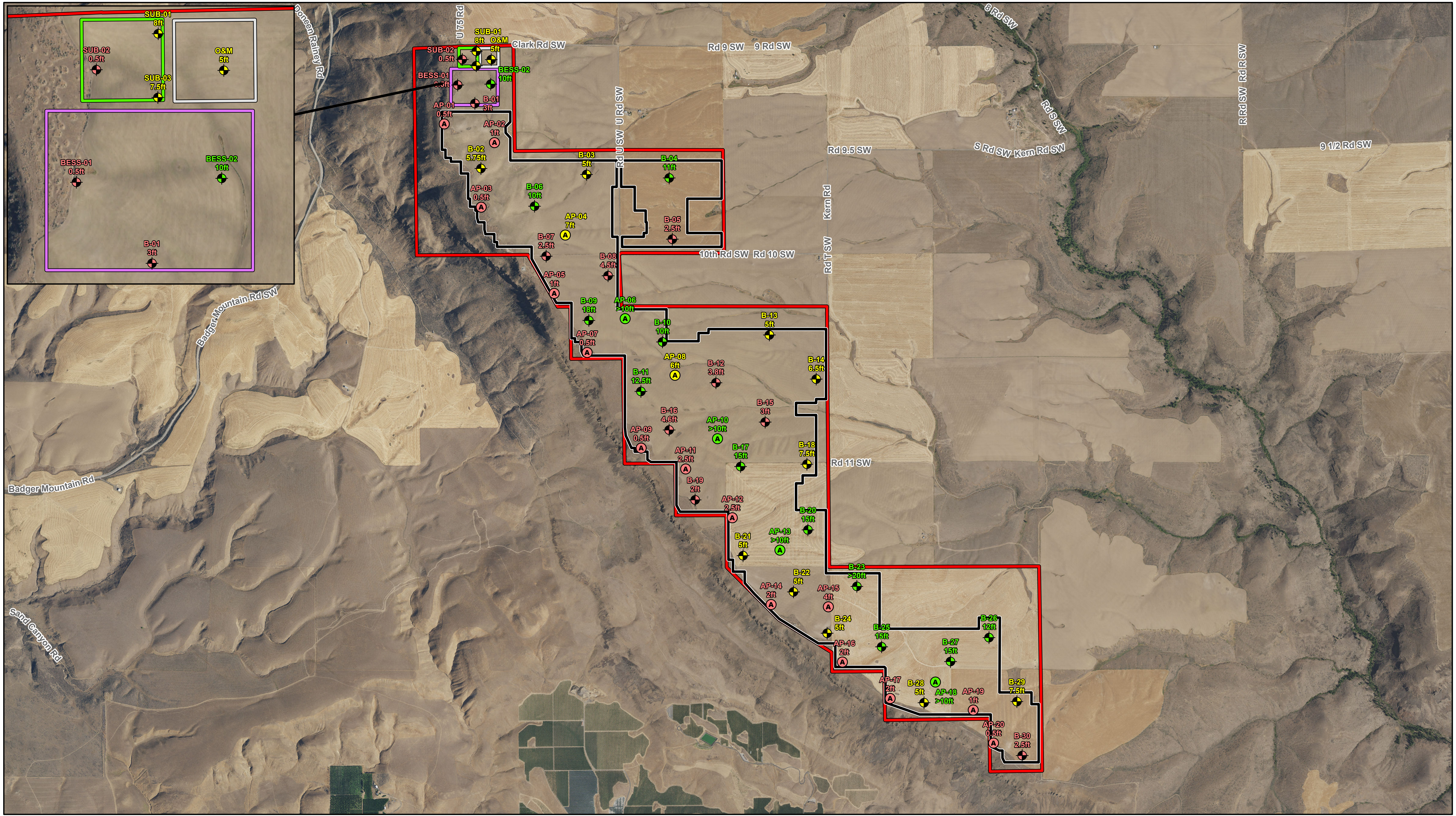

Data Source(s): Westwood (2021); Washington NAIP Imagery (2019); Census Bureau (2019).

Legend

▭ PV Array Area Boundary

🟥 Project Boundary

▭ BESS

▭ O&M Building

🟩 Substation

Boring Location Depth To Bedrock
- ⊕ < 5 Feet
- ⊕ 5 - 8 Feet
- ⊕ > 8 Feet

Auger Probe Depth To Bedrock
- Ⓐ < 5 Feet
- Ⓐ 5 - 8 Feet
- Ⓐ > 8 Feet

N

0 2,300 Feet

Badger Mountain Solar Project

Douglas County, Washington

Depth To Bedrock Map

EXHIBIT 7

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Appendix A

Soil Boring and Auger Probe Logs

Westwood

SOIL BORING LOG

BORING NO. AP-01

Page 1 of 1

Facility/Project Name: Badger Mountain Solar Douglas County, Washington	Boring Location: Lat: 47.472704 Long: -120.214817	Surface Elev. (ft): ---	Total Depth (ft bgs): 1.5	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/28/21	Date Completed: 1/28/21
				Water Depth (ft bgs): DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
				SILTY CLAY (CL-ML)	CL-ML	▨								Coordinates are NAD83 Datum.
				BASALT - highly to moderately weathered.		⬡								Auger scraping at 0.5 ft
			2	BORING TERMINATED AT 1.5 FEET DUE TO AUGER REFUSAL.										
			4											
			6											
			8											
			10											
			12											
			14											

Checked By:	Date:	Approved By:	Date:	Firm:
C. Acker	2/22/21	S. Jorgensen	3/11/21	Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

SOIL BORING LOG

BORING NO. AP-02

Page 1 of 1

Facility/Project Name:	Boring Location:	Surface Elev. (ft):	Total Depth (ft bgs):	Borehole Dia. (in):
Badger Mountain Solar Douglas County, Washington	Lat: 47.471378 Long: -120.209688	---	4.5	8 in

Drilling Firm:	Drilling Method:	Personnel:	Date Started:	Date Completed:	Water Depth (ft bgs):
Holt Services, Inc.	Hollow Stem Auger (HSA) Auto-Hammer	Logger - C. Acker Driller - M. McCarley	1/28/21	1/28/21	DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
				SILTY CLAY (CL-ML)	CL-ML	▨								Coordinates are NAD83 Datum.
			2 4	**BASALT** - highly to moderately weathered.		⬡								Auger scraping at 1 ft
			6 8 10 12 14	BORING TERMINATED AT 4.5 FEET DUE TO AUGER REFUSAL.										

Checked By:	Date:	Approved By:	Date:	Firm:
C. Acker	2/22/21	S. Jorgensen	3/11/21	Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

SOIL BORING LOG

BORING NO. AP-03

Page 1 of 1

Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.466903 Long: -120.211102	Surface Elev. (ft): ---	Total Depth (ft bgs): 2.0	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/27/21	Date Completed: 1/27/21	Water Depth (ft bgs): DNE

SAMPLE														
NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
				SILTY CLAY (CL-ML)	CL-ML	▨								Coordinates are NAD83 Datum.
				BASALT - highly to moderately weathered.		⬡								Auger scraping at 0.5 ft
			2	BORING TERMINATED AT 2 FEET DUE TO AUGER REFUSAL.										
			4											
			6											
			8											
			10											
			12											
			14											

Checked By: C. Acker	Date: 2/22/21	Approved By: S. Jorgensen	Date: 3/11/21	Firm: Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

SOIL BORING LOG

BORING NO. AP-04

Page 1 of 1

Facility/Project Name:	Boring Location:	Surface Elev. (ft):	Total Depth (ft bgs):	Borehole Dia. (in):
Badger Mountain Solar Douglas County, Washington	Lat: 47.46492 Long: -120.202515	---	10.0	8 in

Drilling Firm:	Drilling Method:	Personnel:	Date Started:	Date Completed:	Water Depth (ft bgs):
Holt Services, Inc.	Hollow Stem Auger (HSA) Auto-Hammer	Logger - C. Acker Driller - M. McCarley	1/27/21	1/27/21	DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
			0–7	**SILTY CLAY (CL-ML)**	CL-ML	▨								Coordinates are NAD83 Datum.
			7–10	**BASALT** - highly to moderately weathered.		⬡								Auger scraping at 7 ft Increased density at 9 ft
			10	BORING TERMINATED. TARGET DEPTH REACHED.										

Checked By:	Date:	Approved By:	Date:	Firm:
C. Acker	2/22/21	S. Jorgensen	3/11/21	Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

SOIL BORING LOG

BORING NO. AP-05

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Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.460873 Long: -120.203703	Surface Elev. (ft): ---	Total Depth (ft bgs): 2.5	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/26/21	Date Completed: 1/26/21	Water Depth (ft bgs): DNE

SAMPLE														
NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
				SILTY CLAY (CL-ML)	CL-ML	▨								Coordinates are NAD83 Datum.
			2	**BASALT** - highly to moderately weathered.		⬡								Auger scraping at 1 ft
				BORING TERMINATED AT 2.5 FEET DUE TO AUGER REFUSAL.										
			4											
			6											
			8											
			10											
			12											
			14											

Checked By: C. Acker	Date: 2/22/21	Approved By: S. Jorgensen	Date: 3/11/21	Firm: Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

SOIL BORING LOG

BORING NO. AP-06

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Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.459081 Long: -120.196462	Surface Elev. (ft): ---	Total Depth (ft bgs): 10.0	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/25/21	Date Completed: 1/25/21	Water Depth (ft bgs): DNE

SAMPLE															
NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
			0–10	**SILTY CLAY (CL-ML)**	CL-ML	▨								Coordinates are NAD83 Datum.
			10	BORING TERMINATED. TARGET DEPTH REACHED.										

Depth scale: 2, 4, 6, 8, 10, 12, 14

WW_BORING LOG_PP 2021-03-01_BADGER MOUNTAIN SOLAR_BORING LOGS.GPJ RMT_CORP.GDT 3/12/21

Checked By: C. Acker	Date: 2/22/21	Approved By: S. Jorgensen	Date: 3/11/21	Firm: Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

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SOIL BORING LOG

BORING NO. AP-07

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Facility/Project Name:	Boring Location:	Surface Elev. (ft):	Total Depth (ft bgs):	Borehole Dia. (in):
Badger Mountain Solar Douglas County, Washington	Lat: 47.456751 Long: -120.200381	---	2.0	8 in

Drilling Firm:	Drilling Method:	Personnel:	Date Started:	Date Completed:	Water Depth (ft bgs):
Holt Services, Inc.	Hollow Stem Auger (HSA) Auto-Hammer	Logger - C. Acker Driller - M. McCarley	1/26/21	1/26/21	DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
				SILTY CLAY (CL-ML)	CL-ML	▨								Coordinates are NAD83 Datum.
				BASALT - highly to moderately weathered.		⬡								Auger scraping at 0.5 ft
			2	BORING TERMINATED AT 2 FEET DUE TO AUGER REFUSAL.										
			4											
			6											
			8											
			10											
			12											
			14											

Checked By:	Date:	Approved By:	Date:	Firm:
C. Acker	2/22/21	S. Jorgensen	3/11/21	Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

SOIL BORING LOG

BORING NO. AP-08

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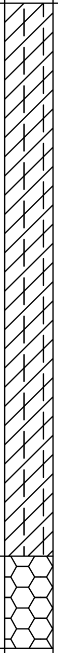
Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.455121 Long: -120.191407	Surface Elev. (ft): ---	Total Depth (ft bgs): 7.0	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/23/21	Date Completed: 1/23/21	Water Depth (ft bgs): DNE

SAMPLE														
NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
			0	**SILTY CLAY (CL-ML)**	CL-ML									Coordinates are NAD83 Datum.
			2											
			4											
			6	**BASALT** - highly to moderately weathered.										Auger scraping at 6 ft
			8	BORING TERMINATED AT 7 FEET DUE TO AUGER REFUSAL.										
			10											
			12											
			14											

Checked By:	Date:	Approved By:	Date:	Firm:
C. Acker	2/22/21	S. Jorgensen	3/11/21	Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

SOIL BORING LOG

BORING NO. AP-09

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Facility/Project Name:	Boring Location:	Surface Elev. (ft):	Total Depth (ft bgs):	Borehole Dia. (in):
Badger Mountain Solar Douglas County, Washington	Lat: 47.450082 Long: -120.194931	---	2.0	8 in

Drilling Firm:	Drilling Method:	Personnel:	Date Started:	Date Completed:	Water Depth (ft bgs):
Holt Services, Inc.	Hollow Stem Auger (HSA) Auto-Hammer	Logger - C. Acker Driller - M. McCarley	1/22/21	1/22/21	DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
				SILTY CLAY (CL-ML)	CL-ML									Coordinates are NAD83 Datum.
				BASALT - highly to moderately weathered.										Heavy auger scraping at 0.5 ft
			2											
				BORING TERMINATED AT 2 FEET DUE TO AUGER REFUSAL.										
			4											
			6											
			8											
			10											
			12											
			14											

WW_BORING LOG_PP 2021-03-01_BADGER MOUNTAIN SOLAR_BORING LOGS.GPJ RMT_CORP.GDT 3/12/21

Checked By:	Date:	Approved By:	Date:	Firm:
C. Acker	2/22/21	S. Jorgensen	3/11/21	Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

SOIL BORING LOG

BORING NO. AP-10

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Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.45069 Long: -120.187112	Surface Elev. (ft): ---	Total Depth (ft bgs): 10.0	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/22/21	Date Completed: 1/22/21	Water Depth (ft bgs): DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
			0–10	**SILTY CLAY (CL-ML)**	CL-ML	▨								Coordinates are NAD83 Datum.
			10	BORING TERMINATED. TARGET DEPTH REACHED.										

Depth scale: 2, 4, 6, 8, 10, 12, 14

Checked By:	Date:	Approved By:	Date:	Firm:
C. Acker	2/22/21	S. Jorgensen	3/11/21	Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

SOIL BORING LOG

BORING NO. AP-11

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Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.448608 Long: -120.190395	Surface Elev. (ft): ---	Total Depth (ft bgs): 4.0
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/22/21	Date Completed: 1/22/21

Borehole Dia. (in): 8 in

Water Depth (ft bgs): DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
			0–2.5	**SILTY CLAY (CL-ML)**	CL-ML	▨								Coordinates are NAD83 Datum.
			2.5–4	**BASALT** - highly to moderately weathered.		⬡								Auger scraping at 2.5 ft
			4	BORING TERMINATED AT 4 FEET DUE TO AUGER REFUSAL.										

Depth scale: 2, 4, 6, 8, 10, 12, 14

Checked By:	Date:	Approved By:	Date:	Firm:
C. Acker	2/22/21	S. Jorgensen	3/11/21	Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

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SOIL BORING LOG

BORING NO. AP-12

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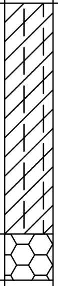
Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.445192 Long: -120.185666	Surface Elev. (ft): ---	Total Depth (ft bgs): 3.0	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/19/21	Date Completed: 1/19/21	Water Depth (ft bgs): DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
			0–2.5	**SILTY CLAY (CL-ML)**	CL-ML									Coordinates are NAD83 Datum.
			2.5–3	**BASALT** - highly to moderately weathered.										Auger scraping at 2.5 ft
				BORING TERMINATED AT 3 FEET DUE TO AUGER REFUSAL.										

Depth scale: 2, 4, 6, 8, 10, 12, 14



Checked By: C. Acker	Date: 2/22/21	Approved By: S. Jorgensen	Date: 3/11/21	Firm: Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

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SOIL BORING LOG

BORING NO. AP-13

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Facility/Project Name:	Boring Location:	Surface Elev. (ft):	Total Depth (ft bgs):	Borehole Dia. (in):
Badger Mountain Solar Douglas County, Washington	Lat: 47.442917 Long: -120.180822	---	10.0	8 in

Drilling Firm:	Drilling Method:	Personnel:	Date Started:	Date Completed:	Water Depth (ft bgs):
Holt Services, Inc.	Hollow Stem Auger (HSA) Auto-Hammer	Logger - C. Acker Driller - M. McCarley	1/19/21	1/19/21	DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
			0–10	**SILTY CLAY (CL-ML)**	CL-ML	▨								Coordinates are NAD83 Datum.
			10	BORING TERMINATED. TARGET DEPTH REACHED.										

Depth scale: 2, 4, 6, 8, 10, 12, 14

Checked By:	Date:	Approved By:	Date:	Firm:
C. Acker	2/22/21	S. Jorgensen	3/11/21	Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

SOIL BORING LOG

BORING NO. AP-14

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Facility/Project Name:	Boring Location:	Surface Elev. (ft):	Total Depth (ft bgs):	Borehole Dia. (in):
Badger Mountain Solar Douglas County, Washington	Lat: 47.439143 Long: -120.181772	---	2.0	8 in

Drilling Firm:	Drilling Method:	Personnel:	Date Started:	Date Completed:	Water Depth (ft bgs):
Holt Services, Inc.	Hollow Stem Auger (HSA) Auto-Hammer	Logger - C. Acker Driller - M. McCarley	1/19/21	1/19/21	DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
				SILTY CLAY (CL-ML)	CL-ML	▨								Coordinates are NAD83 Datum.
			2	BORING TERMINATED AT 2 FEET DUE TO AUGER REFUSAL.										
			4											
			6											
			8											
			10											
			12											
			14											

Checked By:	Date:	Approved By:	Date:	Firm:
C. Acker	2/22/21	S. Jorgensen	3/11/21	Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

SOIL BORING LOG

BORING NO. AP-15

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Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.433664 Long: -120.165029	Surface Elev. (ft): ---	Total Depth (ft bgs): 5.0	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/20/21	Date Completed: 1/20/21	Water Depth (ft bgs): DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
				SILTY CLAY (CL-ML)	CL-ML	▨								Coordinates are NAD83 Datum.
			2											
			4	**BASALT** - highly to moderately weathered.		⬡								Auger scraping at 4 ft
			6	BORING TERMINATED AT 5 FEET DUE TO AUGER REFUSAL.										
			8											
			10											
			12											
			14											

Checked By: C. Acker	Date: 2/22/21	Approved By: S. Jorgensen	Date: 3/11/21	Firm: Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

SOIL BORING LOG

BORING NO. AP-16

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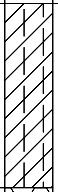
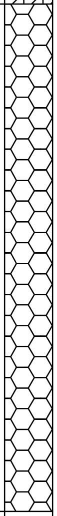
Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.438951 Long: -120.175918	Surface Elev. (ft): ---	Total Depth (ft bgs): 7.5	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/20/21	Date Completed: 1/20/21	Water Depth (ft bgs): DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
				SILTY CLAY (CL-ML)	CL-ML									Coordinates are NAD83 Datum.
			2	**BASALT** - highly to moderately weathered.										Auger scraping at 2 ft
			4											
														Heavy auger scraping at 5 ft
			6											
			8	BORING TERMINATED AT 7.5 FEET DUE TO AUGER REFUSAL.										
			10											
			12											
			14											

Checked By: C. Acker	Date: 2/22/21	Approved By: S. Jorgensen	Date: 3/11/21	Firm: Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

SOIL BORING LOG

BORING NO. AP-17

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Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.435109 Long: -120.174528	Surface Elev. (ft): ---	Total Depth (ft bgs): 2.5	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/20/21	Date Completed: 1/20/21	Water Depth (ft bgs): DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
				SILTY CLAY (CL-ML)	CL-ML	▨								Coordinates are NAD83 Datum.
			2	**BASALT** - highly to moderately weathered.		⬡								Auger scraping at 2 ft
				BORING TERMINATED AT 2.5 FEET DUE TO AUGER REFUSAL.										
			4											
			6											
			8											
			10											
			12											
			14											

Checked By: C. Acker	Date: 2/22/21	Approved By: S. Jorgensen	Date: 3/11/21	Firm: Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

SOIL BORING LOG

BORING NO. AP-18

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Facility/Project Name:	Boring Location:	Surface Elev. (ft):	Total Depth (ft bgs):	Borehole Dia. (in):
Badger Mountain Solar Douglas County, Washington	Lat: 47.432551 Long: -120.169674	---	10.0	8 in

Drilling Firm:	Drilling Method:	Personnel:	Date Started:	Date Completed:	Water Depth (ft bgs):
Holt Services, Inc.	Hollow Stem Auger (HSA) Auto-Hammer	Logger - C. Acker Driller - M. McCarley	1/21/21	1/21/21	DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
			0–10	**SILTY CLAY (CL-ML)**	CL-ML									Coordinates are NAD83 Datum.
			10	BORING TERMINATED. TARGET DEPTH REACHED.										

Depth scale: 2, 4, 6, 8, 10, 12, 14

Checked By:	Date:	Approved By:	Date:	Firm:
C. Acker	2/22/21	S. Jorgensen	3/11/21	Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

SOIL BORING LOG

BORING NO. AP-19

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Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.431698 Long: -120.161186	Surface Elev. (ft): ---	Total Depth (ft bgs): 7.0	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/21/21	Date Completed: 1/21/21	Water Depth (ft bgs): DNE

SAMPLE		BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
NUMBER AND TYPE	RECOVERY (%)													
				SILTY CLAY (CL-ML)	CL-ML	▨								Coordinates are NAD83 Datum.
			2 4 6	**BASALT** - highly to moderately weathered.		⬡								Auger scraping at 1 ft
			8 10 12 14	BORING TERMINATED AT 7 FEET DUE TO AUGER REFUSAL.										

Checked By: C. Acker	Date: 2/22/21	Approved By: S. Jorgensen	Date: 3/11/21	Firm: Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

SOIL BORING LOG

BORING NO. AP-20

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Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.42939 Long: -120.159139	Surface Elev. (ft): ---	Total Depth (ft bgs): 5.0	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/21/21	Date Completed: 1/21/21	Water Depth (ft bgs): DNE

SAMPLE		BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
NUMBER AND TYPE	RECOVERY (%)													
				SILTY CLAY (CL-ML)	CL-ML	▨								Coordinates are NAD83 Datum.
				BASALT - highly to moderately weathered.										Auger scraping at 0.5 ft
			2											
			4											
			6	BORING TERMINATED AT 5 FEET DUE TO AUGER REFUSAL.										
			8											
			10											
			12											
			14											

Checked By:	Date:	Approved By:	Date:	Firm:
C. Acker	2/22/21	S. Jorgensen	3/11/21	Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

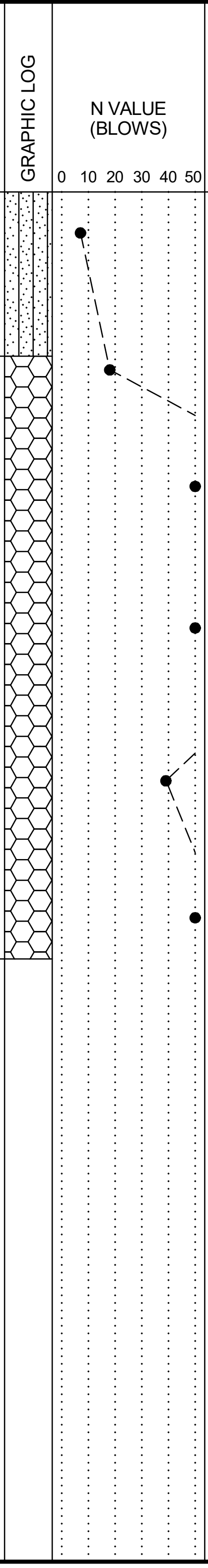
SOIL BORING LOG

BORING NO. B-01

Page 1 of 1

Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.47411 Long: -120.211662	Surface Elev. (ft): ---	Total Depth (ft bgs): 14.0	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/28/21	Date Completed: 1/28/21	Water Depth (ft bgs): DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	56	5 3 4		**SANDY SILT (ML)** - dark brown, damp, loose.	ML							Coordinates are NAD83 Datum. 4 in frost depth
AU								13.7			63	Bulk sample taken from auger cuttings 2 to 5 ft bgs
2 SS	72	3 3 15		- brown **BASALT** - moderately weathered, gray.				7.8				
AU												
3 SS	67	26 50/3	5									
4 SS	45	16 50/5										
			10									
5 SS	78	16 16 23		- highly weathered, yellowish brown, damp								
6 SS	89	6 18 42		- very dark gray to yellow								
			15	BORING TERMINATED AT 14 FEET DUE TO AUGER REFUSAL.								
			20									



Checked By: C. Acker	Date: 2/22/21	Approved By: S. Jorgensen	Date: 3/11/21	Firm: Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

WW_BORING LOG_PP 2021-03-01_BADGER MOUNTAIN SOLAR_BORING LOGS.GPJ RMT_CORP.GDT 3/12/21

Westwood

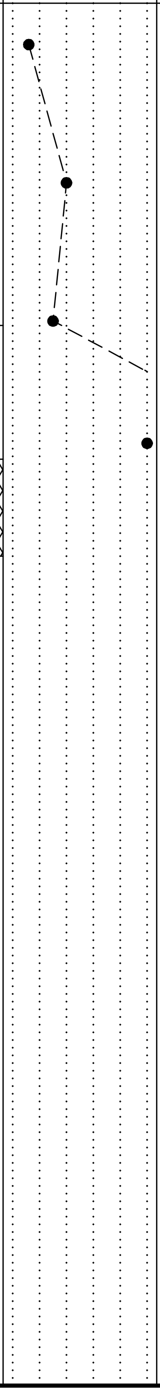
SOIL BORING LOG

BORING NO. B-02

Page 1 of 1

Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.469591 Long: -120.211096	Surface Elev. (ft): ---	Total Depth (ft bgs): 10.0	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/28/21	Date Completed: 1/28/21	Water Depth (ft bgs): DNE

SAMPLE														
NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	50	4 2 4		**SILT (ML)** - dark brown, damp, loose.										Coordinates are NAD83 Datum. 4 in frost depth
2 SS	56	4 10 10		- white mottling, dense	ML									
3 SS	72	1 3 12	5							14.5				Sat. ER* = 3,000 Moist ER* = 14,000 pH = 8.4
				SILT w/ SAND (ML) - very pale brown, damp, loose.	ML									Auger scraping at 7 ft
4 SS	100	15 50/5												
				BASALT - moderately weathered.										
			10	BORING TERMINATED AT 10 FEET DUE TO AUGER REFUSAL.										
			15											
			20											* ER = Electrical Resistivity in Ohm-cm.



Checked By: C. Acker	Date: 2/22/21	Approved By: S. Jorgensen	Date: 3/11/21	Firm: Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

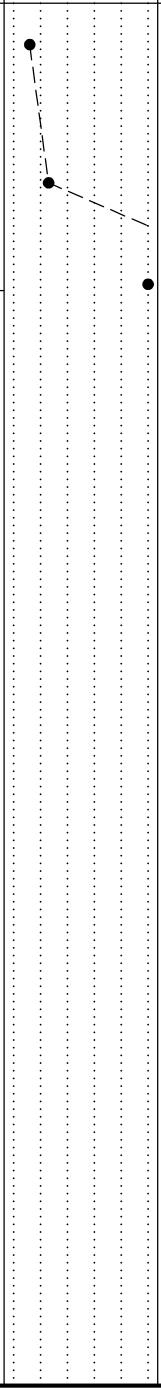
SOIL BORING LOG

BORING NO. B-03

Page 1 of 1

Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.469121 Long: -120.200303	Surface Elev. (ft): ---	Total Depth (ft bgs): 5.2	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/27/21	Date Completed: 1/27/21	Water Depth (ft bgs): DNE

SAMPLE															
NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	50	2 3 3		**SILT (ML)** - dark brown, damp, loose.										Coordinates are NAD83 Datum.
2 SS	50	3 5 8		- yellowish brown, medium dense	ML									Auger scraping at 4 ft
3 SS	0	50/2	5	BORING TERMINATED AT 5.2 FEET DUE TO AUGER REFUSAL.										
			10											
			15											
			20											



WW_BORING LOG_PP 2021-03-01_BADGER MOUNTAIN SOLAR_BORING LOGS.GPJ RMT_CORP.GDT 3/12/21

Checked By:	Date:	Approved By:	Date:	Firm:
C. Acker	2/22/21	S. Jorgensen	3/11/21	Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

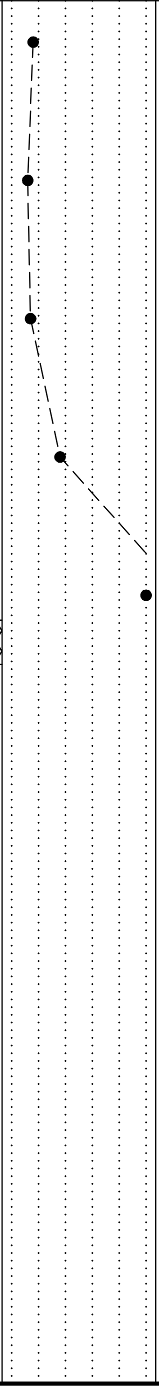
SOIL BORING LOG

BORING NO. B-04

Page 1 of 1

Facility/Project Name:	Boring Location:	Surface Elev. (ft):	Total Depth (ft bgs):	Borehole Dia. (in):
Badger Mountain Solar Douglas County, Washington	Lat: 47.468826 Long: -120.191833	---	12.0	8 in

Drilling Firm:	Drilling Method:	Personnel:	Date Started:	Date Completed:	Water Depth (ft bgs):
Holt Services, Inc.	Hollow Stem Auger (HSA) Auto-Hammer	Logger - C. Acker Driller - M. McCarley	1/26/21	1/26/21	DNE



SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS)	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	61	7 3 5		**SILT (ML)** - dark yellowish brown, damp, loose.						22.2				Coordinates are NAD83 Datum. 5 in frost depth
2 SS	39	4 3 3												
3 SS	56	2 1 6	5		ML					16.7				Sat. ER* = 1,700 Moist ER* = 46,700 pH = 8.2
4 SS	61	8 9 9		- medium dense										
5 SS	89	5 14 50/6	10											
				BASALT - moderately weathered, pale brown.										
				BORING TERMINATED AT 12 FEET DUE TO AUGER REFUSAL.										
			15											
			20											* ER = Electrical Resistivity in Ohm-cm.

Checked By:	Date:	Approved By:	Date:	Firm:
C. Acker	2/22/21	S. Jorgensen	3/11/21	Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

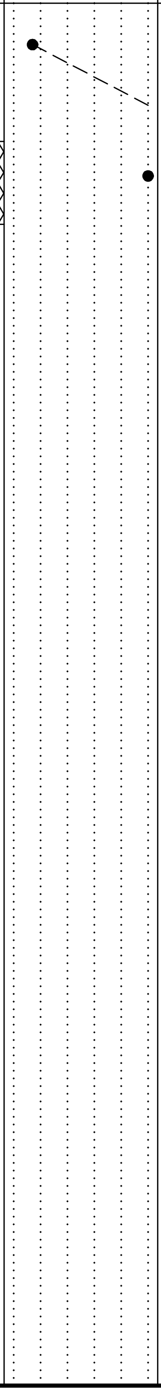
SOIL BORING LOG

BORING NO. B-05

Page 1 of 1

Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.464573 Long: -120.191565	Surface Elev. (ft): ---	Total Depth (ft bgs): 4.0	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/26/21	Date Completed: 1/26/21	Water Depth (ft bgs): DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	61	1 3 4		**SILT (ML)** - dark yellowish brown, damp, loose.	ML									Coordinates are NAD83 Datum. Auger scraping on cobbles at 1 ft
2 SS	60	10 34 50/3		**BASALT** - moderately weathered, very dark gray to pale brown.						12.4				
			5 10 15 20	BORING TERMINATED AT 4 FEET DUE TO AUGER REFUSAL.										



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Westwood

SOIL BORING LOG

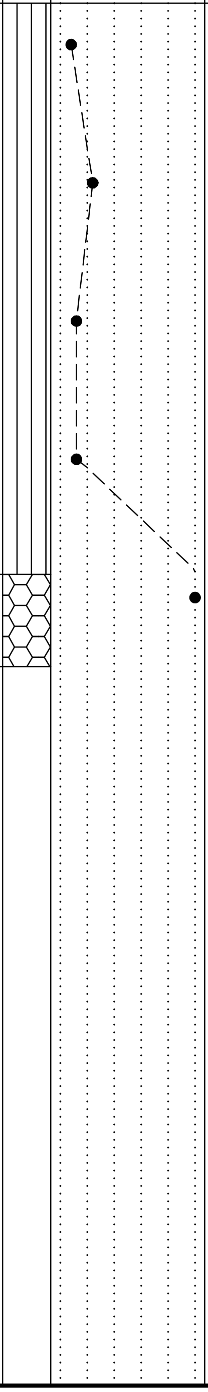
BORING NO. B-06

Page 1 of 1

Facility/Project Name:	Boring Location:	Surface Elev. (ft):	Total Depth (ft bgs):	Borehole Dia. (in):
Badger Mountain Solar Douglas County, Washington	Lat: 47.466941 Long: -120.205639	---	12.0	8 in

Drilling Firm:	Drilling Method:	Personnel:	Date Started:	Date Completed:	Water Depth (ft bgs):
Holt Services, Inc.	Hollow Stem Auger (HSA) Auto-Hammer	Logger - C. Acker Driller - M. McCarley	1/27/21	1/27/21	DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	50	3 2 2		**SILT (ML)** - dark yellowish brown, damp, loose.								Coordinates are NAD83 Datum. 3 in frost depth
2 SS	56	6 7 5		- yellowish brown, medium dense								
3 SS	56	3 3 3	5	- loose	ML							
4 SS	61	3 3 3		- dark grayish brown								
5 SS	72	22 26 34	10	**BASALT** - moderately weathered, dark grayish brown.								
				BORING TERMINATED AT 12 FEET DUE TO AUGER REFUSAL.								
			15									
			20									



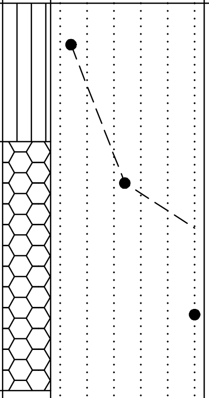
Checked By:	Date:	Approved By:	Date:	Firm:
C. Acker	2/22/21	S. Jorgensen	3/11/21	Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

SOIL BORING LOG

BORING NO. B-07

Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.463465 Long: -120.204495	Surface Elev. (ft): ---	Total Depth (ft bgs): 7.0	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/27/21	Date Completed: 1/27/21	Water Depth (ft bgs): DNE



SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS)	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	44	3 2 2		**SILT (ML)** - brown, damp, loose.	ML									Coordinates are NAD83 Datum. 1 in frost depth Auger scraping at 1 ft
2 SS	39	7 9 15		**BASALT** - moderately weathered, pale brown.										
3 SS	80	29 32 50/3	5	- highly weathered, dark grayish brown with orange to gray mottling, damp						15.8				Sat. ER* = 3,500 Moist ER* = 24,700 pH = 8.1
			10 15 20	BORING TERMINATED AT 7 FEET DUE TO AUGER REFUSAL.										* ER = Electrical Resistivity in Ohm-cm.

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C. Acker	2/22/21	S. Jorgensen	3/11/21	8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

SOIL BORING LOG

BORING NO. B-08

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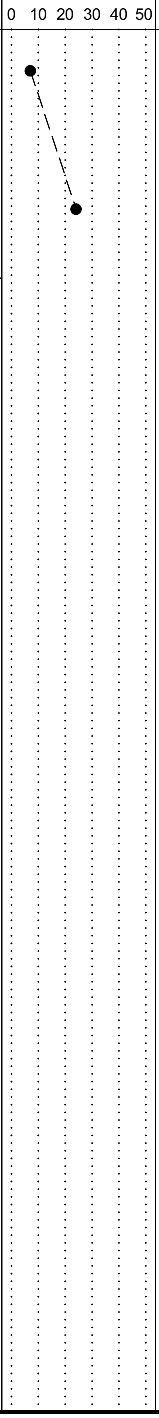
Facility/Project Name:	Boring Location:	Surface Elev. (ft):	Total Depth (ft bgs):	Borehole Dia. (in):
Badger Mountain Solar Douglas County, Washington	Lat: 47.46207 Long: -120.198175	---	4.5	8 in

Drilling Firm:	Drilling Method:	Personnel:	Date Started:	Date Completed:	Water Depth (ft bgs):
Holt Services, Inc.	Hollow Stem Auger (HSA) Auto-Hammer	Logger - C. Acker Driller - M. McCarley	1/26/21	1/26/21	DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS)	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	56	4 4 3		**SILT (ML)** - dark brown, damp, loose.	ML									Coordinates are NAD83 Datum. 5 in frost depth
2 SS	44	4 9 15		- dark yellowish brown, medium dense, weathered rock fragments										Auger scraping at 3 ft
			5	BORING TERMINATED AT 4.5 FEET DUE TO AUGER REFUSAL.										
			10											
			15											
			20											



Checked By:	Date:	Approved By:	Date:	Firm:
C. Acker	2/22/21	S. Jorgensen	3/11/21	Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

SOIL BORING LOG

BORING NO. B-09

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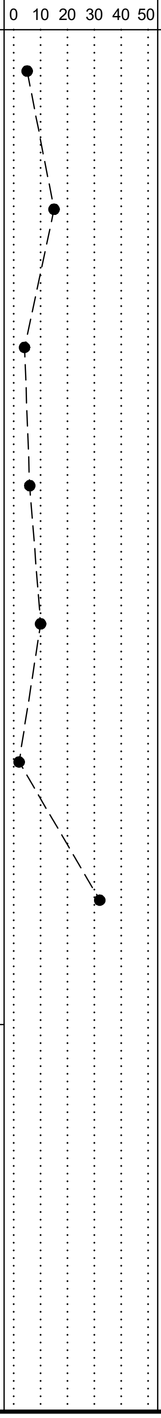
Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.458978 Long: -120.200178	Surface Elev. (ft): ---	Total Depth (ft bgs): 18.0	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/26/21	Date Completed: 1/26/21	Water Depth (ft bgs): DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	56	7 3 2		**SILT (ML)** - dark yellowish brown, damp, loose to medium dense.										Coordinates are NAD83 Datum. 5 in frost depth
2 SS	44	7 8 7		- yellowish brown, medium dense										
3 SS	50	2 2 2	5											
4 SS	33	2 3 3			ML									
5 SS	50	3 4 6	10											
6 SS	11	1 1 1		- very loose						14.9				
7 SS	89	2 10 22	15	- dark brown with white mottling, dense										
			20	BORING TERMINATED AT 18 FEET DUE TO AUGER REFUSAL.										



WW_BORING LOG_PP 2021-03-01_BADGER MOUNTAIN SOLAR_BORING LOGS.GPJ RMT_CORP.GDT 3/12/21

Checked By:	Date:	Approved By:	Date:	Firm:
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Westwood

SOIL BORING LOG

BORING NO. B-10

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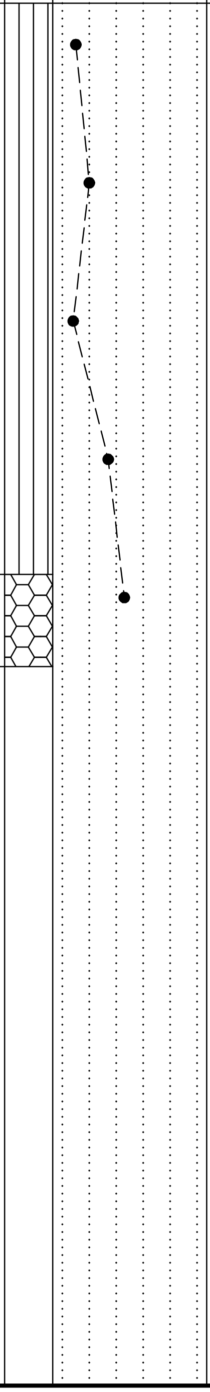
Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.457442 Long: -120.192661	Surface Elev. (ft): ---	Total Depth (ft bgs): 12.0	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/25/21	Date Completed: 1/25/21	Water Depth (ft bgs): DNE

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	61	3 2 5		**SILT w/ SAND (ML)** - dark brown, damp, loose.								Coordinates are NAD83 Datum. 4 in frost depth
AU								10.7			82	Bulk sample taken from auger cuttings 2 to 5 ft bgs
2 SS	39	5 5 5		- yellowish brown								
AU												
3 SS	56	2 2 2	5		ML							
4 SS	56	5 9 8		- medium dense								
5 SS	78	3 11 12	10	**BASALT** - moderately weathered, very pale brown.								Auger scraping at 10 ft
				BORING TERMINATED AT 12 FEET DUE TO AUGER REFUSAL.								
			15									
			20									

GRAPHIC LOG

N VALUE (BLOWS)



Checked By: C. Acker	Date: 2/22/21	Approved By: S. Jorgensen	Date: 3/11/21	Firm: Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

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Westwood

SOIL BORING LOG

BORING NO. B-11

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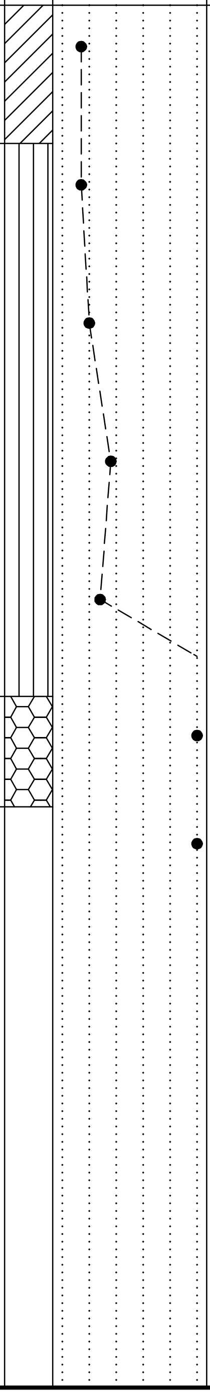
Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.454019 Long: -120.19491	Surface Elev. (ft): ---	Total Depth (ft bgs): 14.5	Borehole Dia. (in): 8 in	
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/22/21	Date Completed: 1/22/21	Water Depth (ft bgs): DNE	



SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	50	0 2 5		**LEAN CLAY (CL)** - brown, damp, loose.	CL							Coordinates are NAD83 Datum. 1 in frost depth
2 SS	39	2 4 3		**SILT w/ SAND (ML)** - yellowish brown, damp, medium stiff.								
3 SS	50	2 3 7	5	- dark yellowish brown, medium dense								
4 SS	72	4 7 11			ML			17.4	27.7	4.0	76	
5 SS	78	4 7 7	10									
6 SS	12	40 32 50/5		**BASALT** - moderately weathered, very dark gray.								Auger scraping at 12.5 ft
7 SS	0	50/4	15	BORING TERMINATED AT 14.5 FEET DUE TO AUGER REFUSAL.								
			20									

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Westwood

SOIL BORING LOG

BORING NO. B-12

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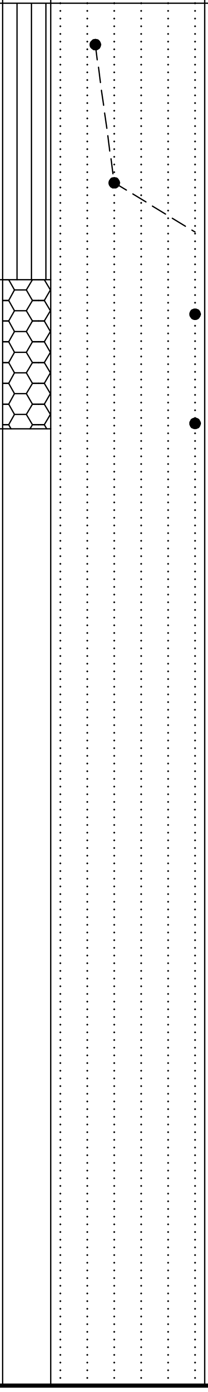
Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.454577 Long: -120.187223	Surface Elev. (ft): ---	Total Depth (ft bgs): 7.7	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/23/21	Date Completed: 1/23/21	Water Depth (ft bgs): DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS)	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	61	3 3 10		**SILT (ML)** - dark yellowish brown, damp, medium dense.	ML									Coordinates are NAD83 Datum. 3 in frost depth
2 SS	39	7 10 10		- yellowish brown										
3 SS	80	4 24 50/3	5	**BASALT** - moderately weathered, very pale brown.										Auger scraping at 5 ft
4 SS	42	50/2		- grayish brown										
				BORING TERMINATED AT 7.7 FEET DUE TO AUGER REFUSAL.										
			10											
			15											
			20											



Checked By:	Date:	Approved By:	Date:	Firm:
C. Acker	2/22/21	S. Jorgensen	3/11/21	Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

SOIL BORING LOG

BORING NO. B-13

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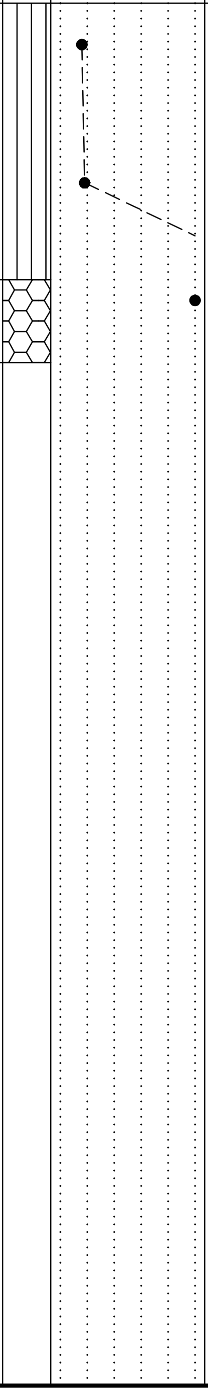
Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.457865 Long: -120.181715	Surface Elev. (ft): ---	Total Depth (ft bgs): 6.5	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/25/21	Date Completed: 1/25/21	Water Depth (ft bgs): DNE

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	56	4 3 5		**SILT (ML)** - brown, damp, loose.										Coordinates are NAD83 Datum. 4 in frost depth
2 SS	44	3 5 4		- yellowish brown	ML					9.1				Sat. ER* = 4,200 Moist ER* = 100,000 pH = 7.7
3 SS	133	17 30 50/3	5	**BASALT** - moderately weathered, very pale brown.										
			10	BORING TERMINATED AT 6.5 FEET DUE TO AUGER REFUSAL.										
			15											
			20											* ER = Electrical Resistivity in Ohm-cm.



Checked By: C. Acker	Date: 2/22/21	Approved By: S. Jorgensen	Date: 3/11/21	Firm: Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

SOIL BORING LOG

BORING NO. B-14

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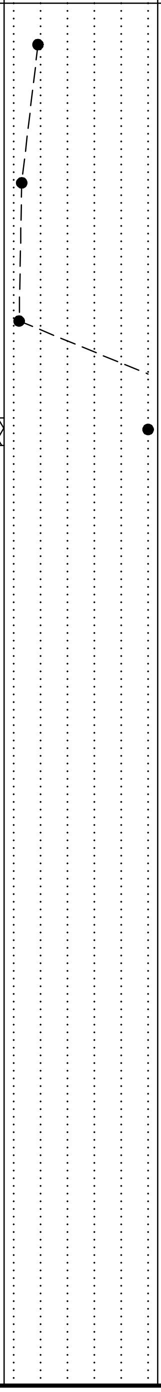
Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.454772 Long: -120.176961	Surface Elev. (ft): ---	Total Depth (ft bgs): 8.0	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/23/21	Date Completed: 1/23/21	Water Depth (ft bgs): DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	50	3 3 6		**SILT (ML)** - dark brown, damp, loose.						21.1				Coordinates are NAD83 Datum. 3 in frost depth
2 SS	44	2 2 1		- yellowish brown, very loose	ML									
3 SS	50	2 1 1	5											
4 SS	99	50/5		**BASALT** - highly weathered, very pale brown, damp.										
				BORING TERMINATED AT 8 FEET DUE TO AUGER REFUSAL.										
			10											
			15											
			20											



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SOIL BORING LOG

BORING NO. B-15

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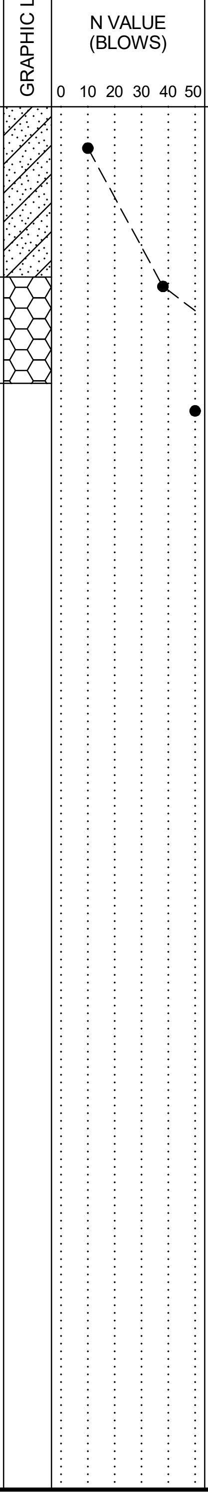
Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.451818 Long: -120.182221	Surface Elev. (ft): ---	Total Depth (ft bgs): 5.0	Borehole Dia. (in): 8 in	
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/22/21	Date Completed: 1/22/21	Water Depth (ft bgs): DNE	

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	50	4 4 6		**SANDY LEAN CLAY (CL)** - dark brown, damp, medium dense.	CL							Coordinates are NAD83 Datum. 4 in frost depth
AU								11.2	30	9		Bulk sample taken from auger cuttings 1 to 4 ft bgs
2 SS	61	3 8 30		**BASALT** - moderately weathered, very dark grayish brown.								
3 SS	75	24 50/6	5	BORING TERMINATED AT 5 FEET DUE TO AUGER REFUSAL.								
			10									
			15									
			20									



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SOIL BORING LOG

BORING NO. B-16

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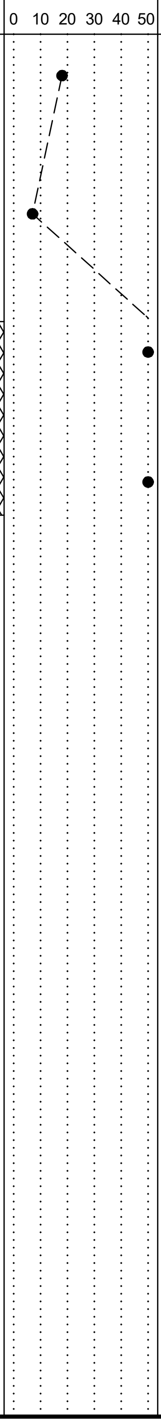
Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.451325 Long: -120.192055	Surface Elev. (ft): ---	Total Depth (ft bgs): 8.7	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/22/21	Date Completed: 1/22/21	Water Depth (ft bgs): DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	61	3 5 13		**SILT (ML)** - brown, damp, medium dense.										Coordinates are NAD83 Datum. 3 in frost depth
2 SS	33	1 2 5		- yellowish brown, loose	ML					8.5				Sat. ER* = 3,000 Moist ER* = 113,300 pH = 7.5
3 SS	67	11 21 43	5	**BASALT** - moderately weathered, very dark gray.										
4 SS	69	15 32 50/2												
			10	BORING TERMINATED AT 8.7 FEET DUE TO AUGER REFUSAL.										
			15											
			20											* ER = Electrical Resistivity in Ohm-cm.



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WW_BORING LOG_PP 2021-03-01_BADGER MOUNTAIN SOLAR_BORING LOGS.GPJ RMT_CORP.GDT 3/12/21

SOIL BORING LOG

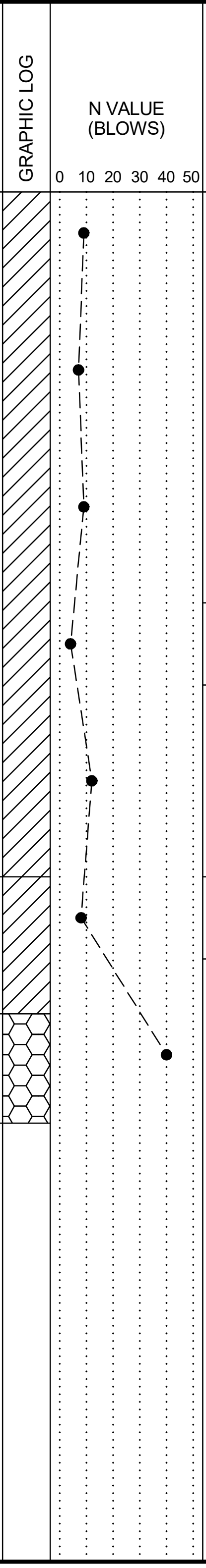
Westwood

BORING NO. B-17

Page 1 of 1

Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.448746 Long: -120.184773	Surface Elev. (ft): ---	Total Depth (ft bgs): 17.0	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/19/21	Date Completed: 1/19/21	Water Depth (ft bgs): DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	33	7 5 4		**LEAN CLAY w/ SAND (CL)** - brown, damp, medium stiff to stiff.				24.2				Coordinates are NAD83 Datum. 5 in frost depth
AU								18.1	28.2	8.4	83	Bulk sample taken 2 to 5 ft bgs
2 SS	33	3 3 4		- dark yellowish brown								
AU			5									
3 SS	44	3 3 6			CL							
4 SS	56	1 2 2				3.0 2.25						
5 SS	56	3 5 7	10									
6 SS	83	7 2 6		**LEAN CLAY (CL)** - light brownish gray, damp, stiff.	CL	1.25 1.5						
7 SS	39	9 16 24	15	**BASALT** - highly weathered, dark gray with black mottling.								
			20	BORING TERMINATED AT 17 FEET DUE TO AUGER REFUSAL.								



WW_BORING LOG_PP 2021-03-01_BADGER MOUNTAIN SOLAR_BORING LOGS.GPJ RMT_CORP.GDT 3/12/21

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SOIL BORING LOG

BORING NO. B-18

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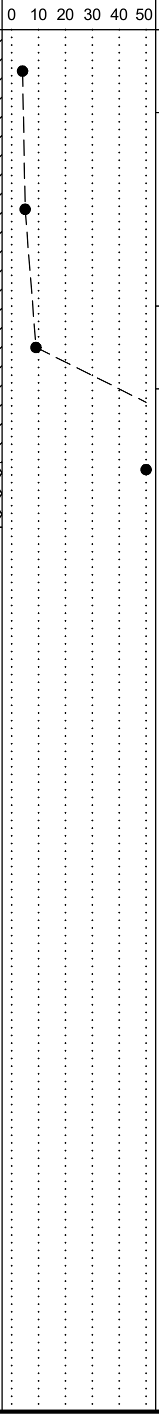
Facility/Project Name:	Boring Location:	Surface Elev. (ft):	Total Depth (ft bgs):	Borehole Dia. (in):
Badger Mountain Solar Douglas County, Washington	Lat: 47.448868 Long: -120.177983	---	9.0	8 in

Drilling Firm:	Drilling Method:	Personnel:	Date Started:	Date Completed:	Water Depth (ft bgs):
Holt Services, Inc.	Hollow Stem Auger (HSA) Auto-Hammer	Logger - C. Acker Driller - M. McCarley	1/18/21	1/18/21	DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS)	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	50	2 2 2		**SILTY CLAY (CL-ML)** - dark brown, damp, soft.		▨		1.5 1.5		22.5	27.3	6.0		Coordinates are NAD83 Datum.
2 SS	44	1 2 3		- dark yellowish brown, medium stiff	CL- ML	▨								
3 SS	50	1 4 5	5	- dark yellowish brown		▨		2.25						
4 SS	100	6 50/5		**BASALT** - highly weathered, dark grayish brown, damp.		⬡								
			10	BORING TERMINATED AT 9 FEET DUE TO AUGER REFUSAL.										
			15											
			20											



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Westwood

SOIL BORING LOG

BORING NO. B-19

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Facility/Project Name:	Boring Location:	Surface Elev. (ft):	Total Depth (ft bgs):	Borehole Dia. (in):
Badger Mountain Solar Douglas County, Washington	Lat: 47.446455 Long: -120.189454	---	2.0	8 in

Drilling Firm:	Drilling Method:	Personnel:	Date Started:	Date Completed:	Water Depth (ft bgs):
Holt Services, Inc.	Hollow Stem Auger (HSA) Auto-Hammer	Logger - C. Acker Driller - M. McCarley	1/22/21	1/22/21	DNE

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	50	2 3 4		**SILT (ML)** - brown, damp, loose.	ML		●							Coordinates are NAD83 Datum. 3 in frost depth
				BORING TERMINATED AT 2 FEET DUE TO AUGER REFUSAL.										
			5											
			10											
			15											
			20											

Checked By:	Date:	Approved By:	Date:	Firm:
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Westwood

SOIL BORING LOG

BORING NO. B-20

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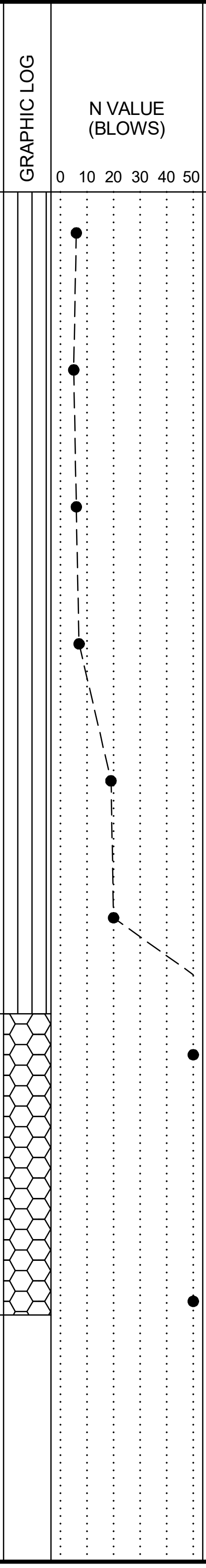
Facility/Project Name:	Boring Location:	Surface Elev. (ft):	Total Depth (ft bgs):	Borehole Dia. (in):
Badger Mountain Solar Douglas County, Washington	Lat: 47.444307 Long: -120.17794	---	20.0	8 in

Drilling Firm:	Drilling Method:	Personnel:	Date Started:	Date Completed:	Water Depth (ft bgs):
Holt Services, Inc.	Hollow Stem Auger (HSA) Auto-Hammer	Logger - C. Acker Driller - M. McCarley	1/19/21	1/19/21	DNE

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	67	5 2 4		**SILT (ML)** - dark yellowish brown, damp, loose.	ML							Coordinates are NAD83 Datum. 4 in frost depth
2 SS	56	3 2 3										
3 SS	50	2 3 3	5									
4 SS	50	4 3 4										
5 SS	61	4 6 13	10	- yellowish brown, medium dense								
6 SS	72	4 9 11		- pale brown seam				24.4				Sat. ER* = 1,200 Moist ER* = 10,700 pH = 7.7
7 SS	94	18 42 50/6	15	**BASALT** - moderately weathered, pale brown.								
8 SS	83	50/6	20	- brownish yellow								
				BORING TERMINATED. TARGET DEPTH REACHED.								* ER = Electrical Resistivity in Ohm-cm.



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Westwood

SOIL BORING LOG

BORING NO. B-21

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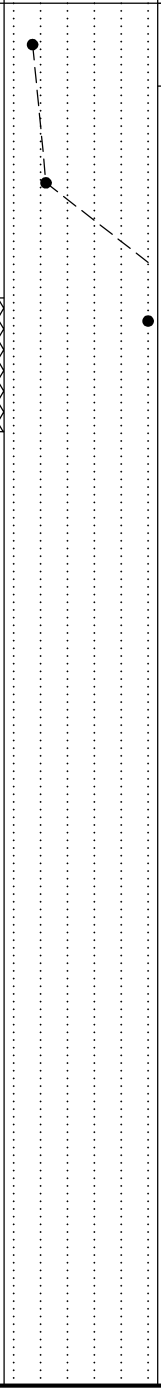
Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.442553 Long: -120.184602	Surface Elev. (ft): ---	Total Depth (ft bgs): 7.5	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/19/21	Date Completed: 1/19/21	Water Depth (ft bgs): DNE

SAMPLE														
NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	67	4 2 5		**SILT (ML)** - dark brown, damp, loose.				3.75 3.75						Coordinates are NAD83 Datum. 2 in frost depth
2 SS	50	3 5 7		- yellowish brown	ML									
3 SS	83	7 28 50/6	5	**BASALT** - moderately weathered, grayish brown.										
4 SS	0	50/3		BORING TERMINATED AT 7.5 FEET DUE TO AUGER REFUSAL.										
			10											
			15											
			20											

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SOIL BORING LOG

BORING NO. B-22

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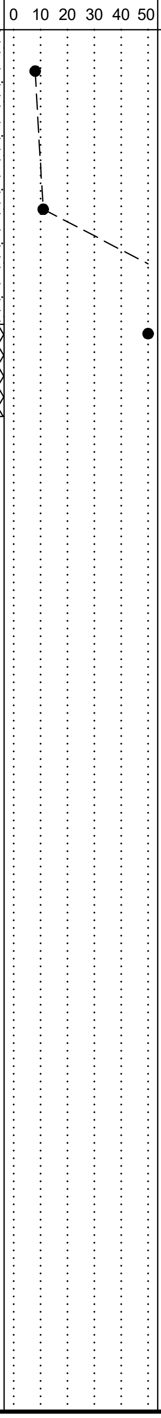
Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.440008 Long: -120.179471	Surface Elev. (ft): ---	Total Depth (ft bgs): 7.0	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/20/21	Date Completed: 1/20/21	Water Depth (ft bgs): DNE

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS)	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	50	3 3 5		**SANDY SILT (ML)** - dark yellowish brown, damp, loose.	ML									Coordinates are NAD83 Datum. 3 in frost depth
2 SS	33	2 4 7		- yellowish brown, medium dense						21.1			62	
3 SS	50	15 50/6	5	**BASALT** - moderately weathered, light brownish gray to pale brown.										
				BORING TERMINATED AT 7 FEET DUE TO AUGER REFUSAL.										
			10											
			15											
			20											



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SOIL BORING LOG

BORING NO. B-23

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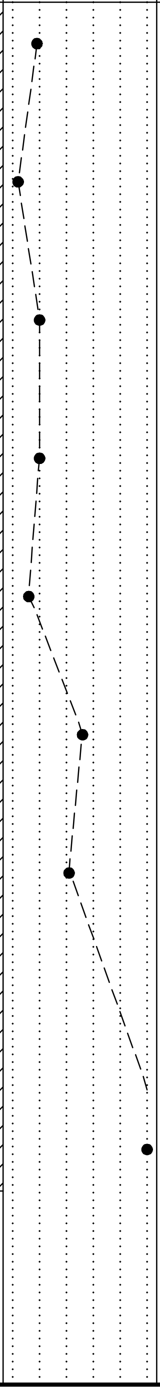
Facility/Project Name:	Boring Location:	Surface Elev. (ft):	Total Depth (ft bgs):	Borehole Dia. (in):
Badger Mountain Solar Douglas County, Washington	Lat: 47.440353 Long: -120.172981	---	20.0	8 in

Drilling Firm:	Drilling Method:	Personnel:	Date Started:	Date Completed:	Water Depth (ft bgs):
Holt Services, Inc.	Hollow Stem Auger (HSA) Auto-Hammer	Logger - C. Acker Driller - M. McCarley	1/20/21	1/20/21	DNE



SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	56	4 3 6		**LEAN CLAY (CL)** - dark yellowish brown, damp, stiff.		▨							Coordinates are NAD83 Datum. 3 in frost depth
2 SS	6	3 1 1		- soft		▨							
3 SS	61	3 5 5	5	- stiff		▨			14.5	26.3	7.9		
4 SS	39	1 4 6				▨							
5 SS	56	3 3 3	10	- medium stiff	CL	▨							
6 SS	56	9 15 11		- light yellowish brown, very stiff		▨							
7 SS	78	7 8 13	15	- white mottling		▨							
8 SS	83	4 24 32	20	- dark yellowish brown, hard		▨							
				BORING TERMINATED. TARGET DEPTH REACHED.									

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Westwood

SOIL BORING LOG

BORING NO. B-24

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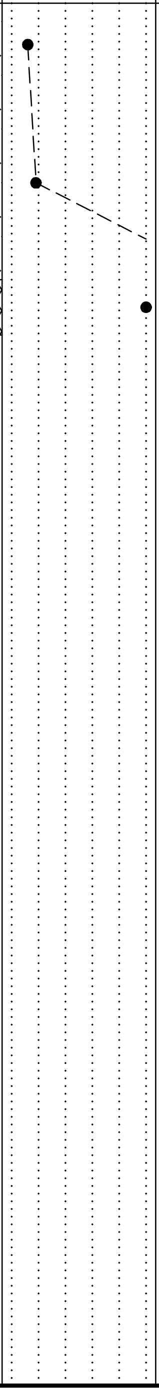
Facility/Project Name:	Boring Location:	Surface Elev. (ft):	Total Depth (ft bgs):	Borehole Dia. (in):
Badger Mountain Solar Douglas County, Washington	Lat: 47.437119 Long: -120.176064	---	5.0	8 in

Drilling Firm:	Drilling Method:	Personnel:	Date Started:	Date Completed:	Water Depth (ft bgs):
Holt Services, Inc.	Hollow Stem Auger (HSA) Auto-Hammer	Logger - C. Acker Driller - M. McCarley	1/20/21	1/20/21	DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS ▨	61	1 3 3		**SILT w/ SAND (ML)** - dark yellowish brown, damp, medium dense.			●							Coordinates are NAD83 Datum. 2 in frost depth
2 SS ▨	22	1 2 7		- light yellowish brown	ML		●			9.6			79	
3 SS ▨	58	30 50/6	5	**BASALT** - moderately weathered, gray.			●							Auger scraping at 5 ft
			10 15 20	BORING TERMINATED AT 6 FEET DUE TO AUGER REFUSAL.										



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Westwood

SOIL BORING LOG

BORING NO. B-25

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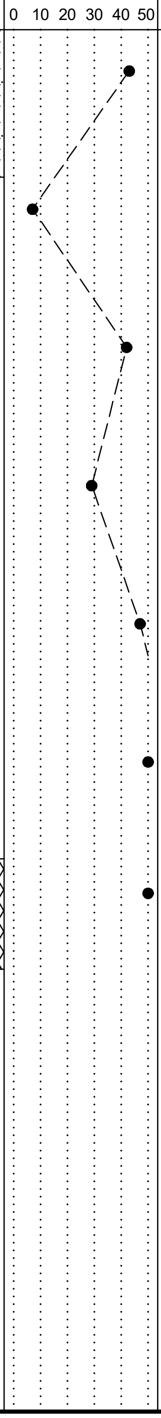
Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.436142 Long: -120.170501	Surface Elev. (ft): ---	Total Depth (ft bgs): 17.0	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/20/21	Date Completed: 1/20/21	Water Depth (ft bgs): DNE

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS)	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	83	8 11 32		**SILTY SAND (SM)** - brown, moist, dense.	SM					42.4			27	Coordinates are NAD83 Datum. 8 in frost depth
2 SS	33	10 3 4		**SILT (ML)** - yellowish brown, damp, loose.										
3 SS	78	18 20 22	5	- dense										
4 SS	72	4 12 17		- dark yellowish brown	ML									
5 SS	89	13 19 28	10	- yellowish brown, partial iron oxide staining and orange mottling										
6 SS	100	14 24 36		- very dense, iron oxide staining and orange mottling						17.2				Sat. ER* = 1,500 Moist ER* = 30,000 pH = 7.6
7 SS	107	22 44 50/3	15	**BASALT** - moderately weathered, yellowish brown.										
				BORING TERMINATED AT 17 FEET DUE TO AUGER REFUSAL.										Auger scraping at 17 ft
			20											* ER = Electrical Resistivity in Ohm-cm.



Checked By: C. Acker	Date: 2/22/21	Approved By: S. Jorgensen	Date: 3/11/21	Firm: Westwood Professional Services (608) 821-6600 8401 Greenway Boulevard, Suite 400 Middleton, WI 53562

Westwood

SOIL BORING LOG

BORING NO. B-26

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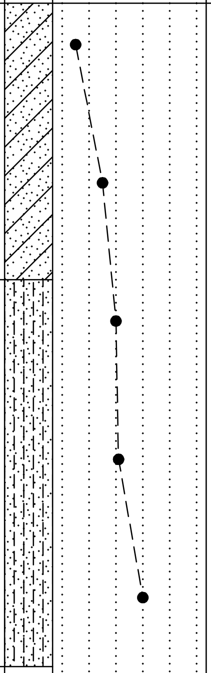
Facility/Project Name:	Boring Location:	Surface Elev. (ft):	Total Depth (ft bgs):	Borehole Dia. (in):
Badger Mountain Solar Douglas County, Washington	Lat: 47.436717 Long: -120.159508	---	12.0	8 in

Drilling Firm:	Drilling Method:	Personnel:	Date Started:	Date Completed:	Water Depth (ft bgs):
Holt Services, Inc.	Hollow Stem Auger (HSA) Auto-Hammer	Logger - C. Acker Driller - M. McCarley	1/21/21	1/21/21	DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	67	4 3 2		**SANDY LEAN CLAY (CL)** - brown, damp, medium stiff.										Coordinates are NAD83 Datum. 3 in frost depth
AU										19.9	29	11		
2 SS	50	3 4 11		- yellowish brown, stiff	CL									Bulk sample taken from auger cuttings 1 to 4 ft bgs
3 SS	78	8 11 9	5	**SILTY SAND (SM)** - brown to pale brown, damp, medium dense.						21.1	32.1	4.5	49	Sat. ER* = 5,200 Moist ER* = 14,000 pH = 7.8
4 SS	78	13 13 8		- dark yellowish brown with white mottling	SM									
5 SS	83	8 12 18	10											
				BORING TERMINATED AT 12 FEET DUE TO AUGER REFUSAL.										
			15											
			20											* ER = Electrical Resistivity in Ohm-cm.



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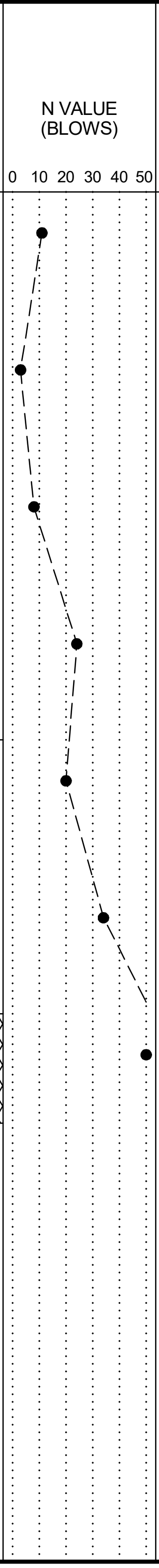
Westwood

SOIL BORING LOG

BORING NO. B-27

Page 1 of 1

Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.435081 Long: -120.163467	Surface Elev. (ft): ---	Total Depth (ft bgs): 17.0	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/21/21	Date Completed: 1/21/21	Water Depth (ft bgs): DNE



SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	67	7 4 7		**SILT w/ SAND (ML)** - dark yellowish brown to yellowish brown, damp, medium dense.								Coordinates are NAD83 Datum. 3 in frost depth
AU								17.7			82	Bulk sample taken from auger cuttings 2 to 5 feet bgs
2 SS	39	2 2 1		- very loose								
AU												
3 SS	56	1 2 6	5	- loose	ML							
4 SS	67	1 8 16		- medium dense								
5 SS	78	6 8 12	10	**SILT (ML)** - very pale brown, damp, medium dense.				29.1	43.3	7.4		
6 SS	83	14 18 16		- white mottling, dense	ML							
7 SS	94	14 18 42	15	**BASALT** - moderately weathered, light gray.								
				BORING TERMINATED AT 17 FEET DUE TO AUGER REFUSAL.								
			20									

WW_BORING LOG_PP 2021-03-01_BADGER MOUNTAIN SOLAR_BORING LOGS.GPJ RMT_CORP.GDT 3/12/21

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Westwood

SOIL BORING LOG

BORING NO. B-28

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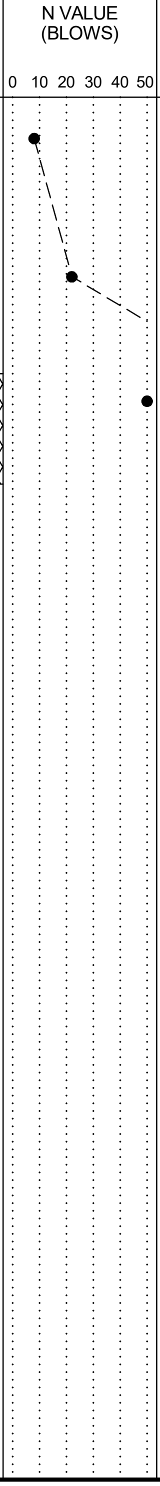
Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.432237 Long: -120.166213	Surface Elev. (ft): ---	Total Depth (ft bgs): 7.0	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/20/21	Date Completed: 1/20/21	Water Depth (ft bgs): DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS)	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	61	4 2 6		**SILT (ML)** - dark brown, damp, loose.										Coordinates are NAD83 Datum. 6 in frost depth
2 SS	56	2 8 14		- light gray, medium dense	ML									
3 SS	83	9 50/6	5	**BASALT** - moderately weathered, light brownish gray.										
				BORING TERMINATED AT 7 FEET DUE TO AUGER REFUSAL.										
			10											
			15											
			20											



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SOIL BORING LOG

BORING NO. B-29

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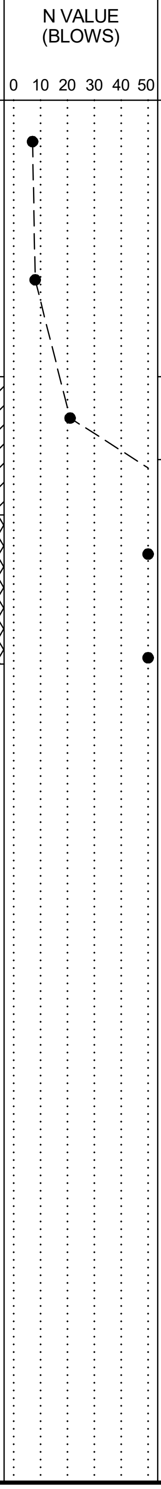
Facility/Project Name:	Boring Location:	Surface Elev. (ft):	Total Depth (ft bgs):	Borehole Dia. (in):
Badger Mountain Solar Douglas County, Washington	Lat: 47.432258 Long: -120.156709	---	10.2	8 in

Drilling Firm:	Drilling Method:	Personnel:	Date Started:	Date Completed:	Water Depth (ft bgs):
Holt Services, Inc.	Hollow Stem Auger (HSA) Auto-Hammer	Logger - C. Acker Driller - M. McCarley	1/21/21	1/21/21	DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	67	2 3 4		**SILT (ML)** - dark brown, damp, loose.	ML							Coordinates are NAD83 Datum. 2 in frost depth
2 SS	39	3 3 5		- brown				9.4				
3 SS	89	4 4 17	5	**LEAN CLAY (CL)** - dark brown, damp, very stiff.	CL	3.5 3.25		23.4	38.0	14.5		Auger scraping at 7 ft
4 SS	106	7 24 50/5		**BASALT** - moderately weathered, very dark gray.								
5 SS	98	50/2	10	BORING TERMINATED AT 10.2 FEET DUE TO AUGER REFUSAL.								
			15									
			20									



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Westwood

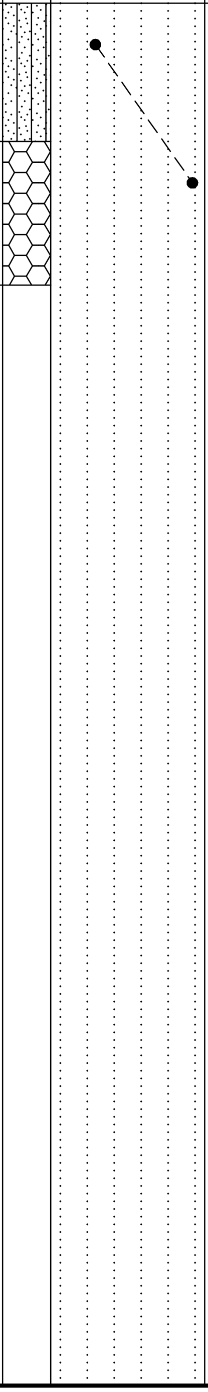
SOIL BORING LOG

BORING NO. B-30

Page 1 of 1

Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.42851 Long: -120.156219	Surface Elev. (ft): ---	Total Depth (ft bgs): 5.1	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/21/21	Date Completed: 1/21/21	Water Depth (ft bgs): DNE

SAMPLE														
NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	72	5 4 9		**SANDY SILT (ML)** - brown, damp, medium dense.	ML					22.0			69	Coordinates are NAD83 Datum. 2 in frost depth Sat. ER* = 4,300 Moist ER* = 13,300 pH = 7.4 Auger scraping at 3 ft
2 SS	61	7 16 33		**MODERATELY WEATHERED ROCK** - dark yellowish brown.						15.3			40	
3 SS	0	50/1	5	BORING TERMINATED AT 5.1 FEET DUE TO AUGER REFUSAL.										
			10											
			15											
			20											* ER = Electrical Resistivity in Ohm-cm.



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Westwood

SOIL BORING LOG

BORING NO. BESS-01

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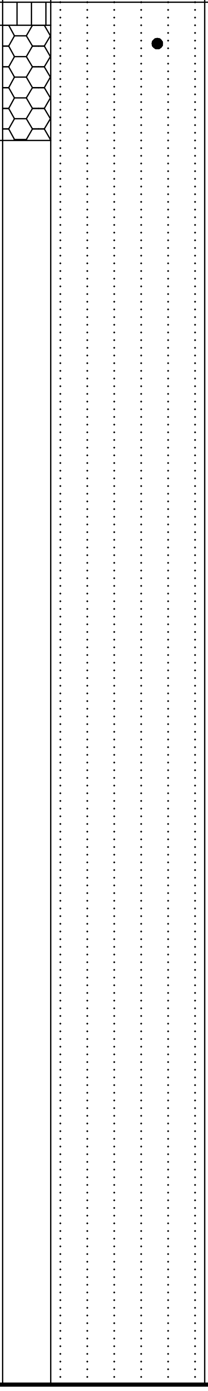
Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.475399 Long: -120.213406	Surface Elev. (ft): ---	Total Depth (ft bgs): 2.5	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/28/21	Date Completed: 1/28/21	Water Depth (ft bgs): DNE

SAMPLE														
NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	50	3 20 16		**SILT (ML)** - dark brown, damp, loose. **BASALT** - moderately weathered, very dark gray.	ML					4.6	28.3	5.4		Coordinates are NAD83 Datum.
				BORING TERMINATED AT 2.5 FEET DUE TO AUGER REFUSAL.										
			5											
			10											
			15											
			20											

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Westwood

SOIL BORING LOG

BORING NO. BESS-02

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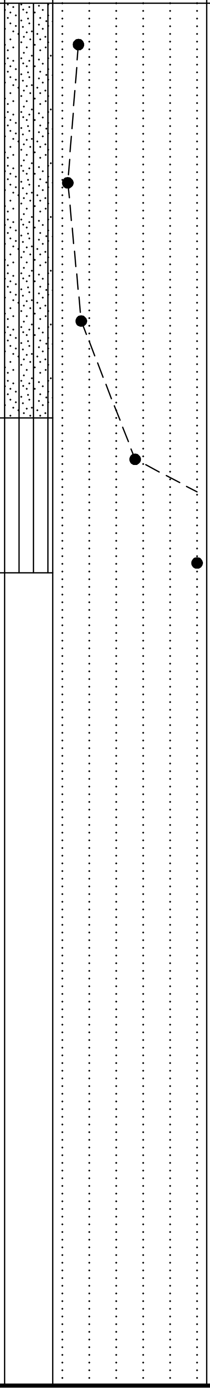
Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.475442 Long: -120.210023	Surface Elev. (ft): ---	Total Depth (ft bgs): 10.3	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/28/21	Date Completed: 1/28/21	Water Depth (ft bgs): DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS)	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	61	3 2 4		**SANDY SILT (ML)** - dark brown, damp, very loose to loose.										Coordinates are NAD83 Datum.
2 SS	50	2 1 1		- yellowish brown	ML									
3 SS	50	6 4 3	5							16.7	30.4	5.8	62	
4 SS	78	5 14 13		**SILT (ML)** - yellowish brown with white mottling, damp, medium dense.	ML					19.0				Sat. ER* = 1,500 Moist ER* = 9,300 pH = 8.1 Auger scraping at 9 ft
5 SS	33	50/3	10											
				BORING TERMINATED AT 10.3 FEET DUE TO AUGER REFUSAL.										
			15											
			20											* ER = Electrical Resistivity in Ohm-cm.



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Westwood

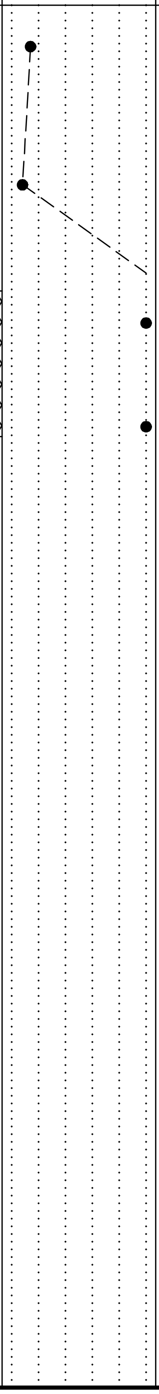
SOIL BORING LOG

BORING NO. O&M

Page 1 of 1

Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.477146 Long: -120.209955	Surface Elev. (ft): ---	Total Depth (ft bgs): 7.8	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/28/21	Date Completed: 1/28/21	Water Depth (ft bgs): DNE

SAMPLE														
NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	56	1 3 4		**SILT (ML)** - dark yellowish brown, damp, loose.	ML									Coordinates are NAD83 Datum.
2 SS	44	1 3 1		- yellowish brown						11.5	24.5	6.9		
3 SS	56	6 26 50/6	5	**BASALT** - moderately weathered, grayish brown.										Auger scraping at 5.5 ft
4 SS	0	50/3												
			10	BORING TERMINATED AT 7.8 FEET DUE TO AUGER REFUSAL.										
			15											
			20											



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Westwood

SOIL BORING LOG

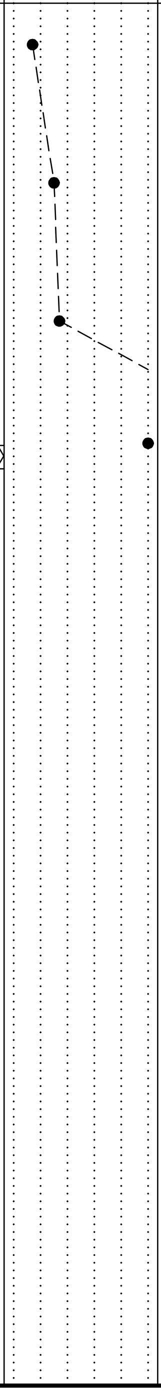
BORING NO. SUB-01

Page 1 of 1

Facility/Project Name:	Boring Location:	Surface Elev. (ft):	Total Depth (ft bgs):	Borehole Dia. (in):
Badger Mountain Solar Douglas County, Washington	Lat: 47.477733 Long: -120.211474	---	8.4	8 in

Drilling Firm:	Drilling Method:	Personnel:	Date Started:	Date Completed:	Water Depth (ft bgs):
Holt Services, Inc.	Hollow Stem Auger (HSA) Auto-Hammer	Logger - C. Acker Driller - M. McCarley	1/29/21	1/29/21	DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	33	4 3 4		**SILT (ML)** - dark brown, damp, loose.						34.7				Coordinates are NAD83 Datum. 2 in frost depth
2 SS	50	2 7 8		- dark yellowish brown, medium dense	ML									
3 SS	61	3 7 10	5											
4 SS	100	12 50/5		**BASALT** - moderately weathered, gray to yellowish brown.										
			10	BORING TERMINATED AT 8.4 FEET DUE TO AUGER REFUSAL.										
			15											
			20											



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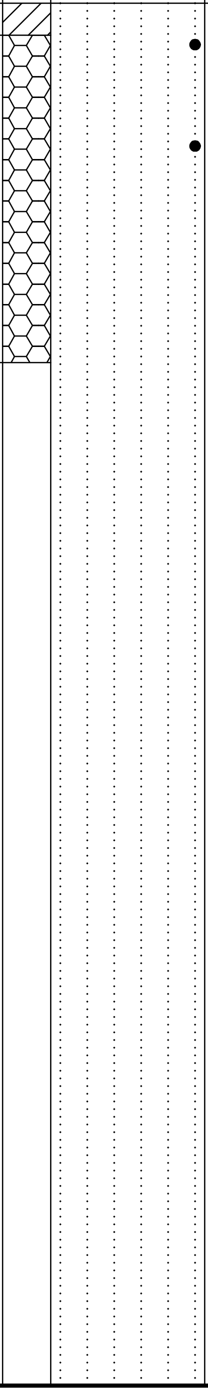
Westwood

SOIL BORING LOG

BORING NO. SUB-02

Facility/Project Name: Badger Mountain Solar Douglas County, Washington		Boring Location: Lat: 47.477196 Long: -120.213014	Surface Elev. (ft): ---	Total Depth (ft bgs): 6.5	Borehole Dia. (in): 8 in
Drilling Firm: Holt Services, Inc.	Drilling Method: Hollow Stem Auger (HSA) Auto-Hammer	Personnel: Logger - C. Acker Driller - M. McCarley	Date Started: 1/29/21	Date Completed: 1/29/21	Water Depth (ft bgs): DNE

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%) (RQD)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	56	3 6 50/4		**LEAN CLAY (CL)** - dark brown, damp, medium stiff.	CL							Coordinates are NAD83 Datum. Auger scraping at 1 ft
				BASALT - moderately weathered, gray.								
AU								13.7	30	12		Bulk sample taken from auger cuttings 1 to 2.5 ft bgs
2 SS	0	50/2		- gray with orange coloration, slightly weathered, moderate rock field hardness, moderately to extremely discountinuous.								
RC	83 (0)		5									
				BORING TERMINATED AT 6.5 FEET.								
			10									
			15									
			20									



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Westwood

SOIL BORING LOG

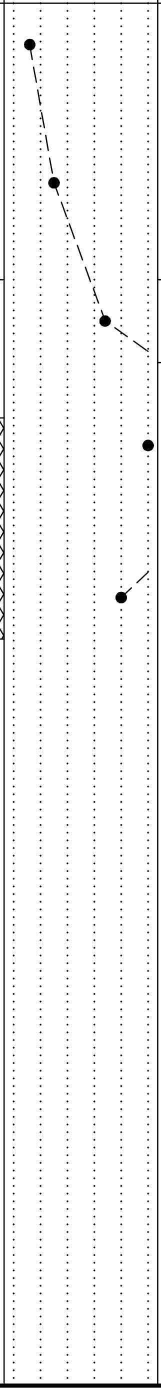
BORING NO. SUB-03

Page 1 of 1

Facility/Project Name:	Boring Location:	Surface Elev. (ft):	Total Depth (ft bgs):	Borehole Dia. (in):
Badger Mountain Solar Douglas County, Washington	Lat: 47.476727 Long: -120.211494	---	11.5	8 in

Drilling Firm:	Drilling Method:	Personnel:	Date Started:	Date Completed:	Water Depth (ft bgs):
Holt Services, Inc.	Hollow Stem Auger (HSA) Auto-Hammer	Logger - C. Acker Driller - M. McCarley	1/29/21	1/29/21	DNE

SAMPLE														
NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	N VALUE (BLOWS) 0 10 20 30 40 50	POCKET PEN (tsf)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	P 200 (%)	COMMENTS
1 SS	56	2 2 4		**SILT w/ SAND (ML)** - dark brown, damp, loose.	ML									Coordinates are NAD83 Datum. 2 in frost depth
AU										19.8			80	Bulk sample taken from auger cutting 2 to 5 ft bgs
2 SS	39	3 6 9		- yellowish brown, medium dense										
AU														
3 SS	67	7 10 24	5	**SILT (ML)** - yellowish brown, damp, dense.	ML			4.5+ 4.5+		15.2			87	
														Auger scraping at 7 ft
4 SS	17	13 50/6		**BASALT** - highly weathered, gray.										
5 SS	67	16 24 16	10											
				BORING TERMINATED AT 11.5 FEET DUE TO AUGER REFUSAL.										
			15											
			20											



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Appendix B

Test Pit Logs

Westwood

TEST PIT LOG

Project Name: Badger Mountain	**Date:** 02/06/21	**TP-AP06**
Location: Douglas County, WA	**Logged By:** B. Pierce	
Latitude: 47.459081	**Longtitude:** -120.196462	

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML)** - light to dark brown, damp	DNE	0
1			1
2			2
3			3
4			4
5			5
6			6
7			7
8	Test Pit Terminated		8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain
Date: 02/06/21
Location: Douglas County, WA
Logged By: B. Pierce
Latitude: 47.455121
Longtitude: -120.191407

TP-AP08

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML)** - brown to dark brown, damp	DNE	0
1	- white mottling		1
2			2
3			3
4			4
5			5
6			6
7			7
8	Test Pit Terminated		8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain	**Date:** 02/06/21	**TP-AP10**
Location: Douglas County, WA	**Logged By:** B. Pierce	
Latitude: 47.450690	**Longtitude:** -120.187112	

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML)** - light to dark brown, damp	DNE	0
1			1
2			2
3			3
4			4
5			5
6			6
7			7
8	Test Pit Terminated		8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain
Date: 02/07/21
Location: Douglas County, WA
Logged By: B. Pierce
Latitude: 47.442917
Longtitude: -120.180822

TP-AP13

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML)** - light to dark brown, damp	DNE	0
1			1
2			2
3			3
4			4
5			5
6			6
7			7
8	Test Pit Terminated		8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain	**Date:** 02/08/21	**TP-AP16**
Location: Douglas County, WA	**Logged By:** B. Pierce	
Latitude: 47.435109	**Longtitude:** -120.174528	

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**SILT (ML) -** dark brown, damp	DNE	0
1			1
2			2
3	**Weathered Rock** - dark brown, reddish tint		3
4			4
5			5
6	Test Pit Terminated due to Refusal		6
7			7
8			8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain

Date: 02/08/21

Location: Douglas County, WA

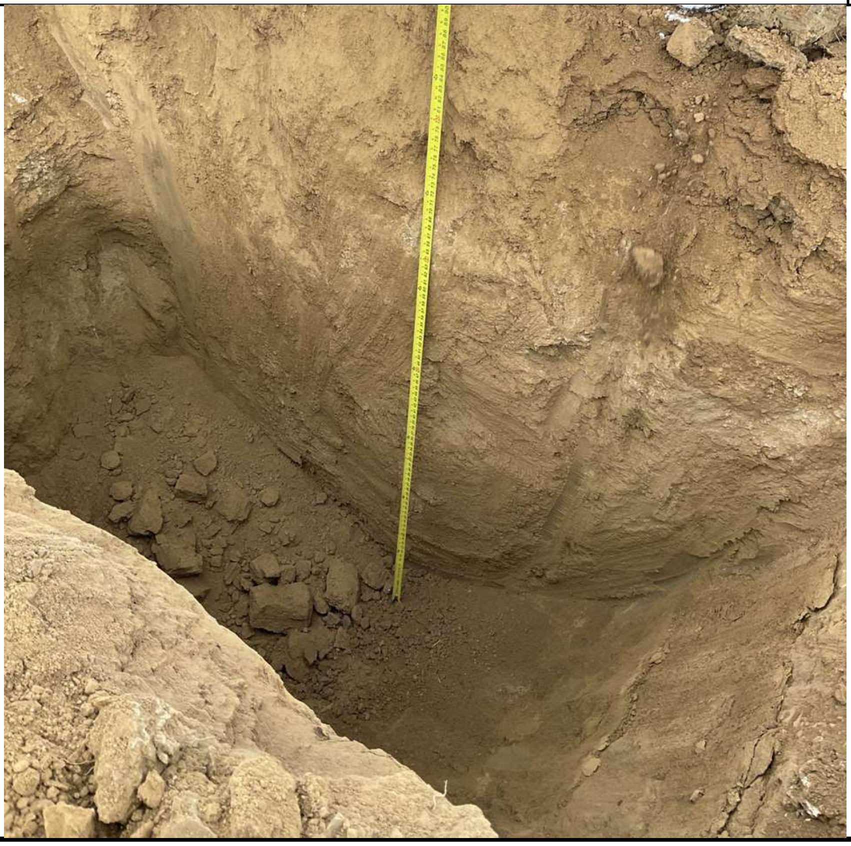
Logged By: B. Pierce

Latitude: 47.433664

Longtitude: -120.165029

TP-AP18

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML) -** light brown	DNE	0
1			1
2			2
3			3
4			4
5			5
6			6
7			7
8	Test Pit Terminated		8
9			9
10			10



Westwood

TEST PIT LOG

Project Name: Badger Mountain

Location: Douglas County, WA

Latitude: 47.474110

Date: 02/05/21

Logged By: B. Pierce

Longtitude: -120.211662

TP-B01

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML) -** brown, damp	DNE	0
1			1
2			2
3			3
4	**Silt w/ Gravel (ML) -** dark brown, cobbles up to 2 feet in diameter		4
5			5
6			6
7			7
8	Test Pit Terminated		8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain

Date: 02/06/21

Location: Douglas County, WA

Logged By: B. Pierce

Latitude: 47.469591

Longtitude: -120.211096

TP-B02

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML) -** light brown, damp	DNE	0
1			1
2	**Sandy Silt (ML) -** dark brown		2
3			3
4			4
5	**Sandy Silt w/ Gravel (ML) -** dark brown, cobbles up to 8 inches in diameter		5
6	Test Pit Terminated due to Refusal		6
7			7
8			8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain	**Date:** 02/06/21	**TP-B03**
Location: Douglas County, WA	**Logged By:** B. Pierce	
Latitude: 47.469577	**Longtitude:** -120.200692	

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Sandy Silt (ML) -** light brown, damp	DNE	0
1			1
2			2
3	**Silt (ML) -** brown		3
4			4
5			5
6			6
7			7
8	Test Pit Terminated		8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain

Date: 02/09/21

Location: Douglas County, WA

Logged By: B. Pierce

Latitude: 47.468826

Longtitude: -120.191833

TP-B04

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML) -** dark yellowish brown, damp	DNE	0
1			1
2			2
3			3
4			4
5			5
6			6
7			7
8	Test Pit Terminated		8
9			9
10			10

Westwood

TEST PIT LOG

TP-B06

Project Name: Badger Mountain

Date: 02/06/21

Location: Douglas County, WA

Logged By: B. Pierce

Latitude: 47.466941

Longtitude: -120.205639

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML) -** dark brown, damp	DNE	0
1			1
2	- light brown, white mottling		2
3			3
4			4
5			5
6			6
7	- dark brown		7
8	Test Pit Terminated		8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain	**Date:** 02/06/21	**TP-B07**
Location: Douglas County, WA	**Logged By:** B. Pierce	
Latitude: 47.463465	**Longtitude:** -120.204495	

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML) -** light brown, damp	DNE	0
0.5–2.5	**Poorly Graded Gravel w/ Silt (GP-ML)** - light to dark brown		1 – 2
2.5–8	**Weathered Rock** - light brown and light gray		3 – 7
8–10	Test Pit Terminated		8 – 10

Depth scale: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

Westwood

TEST PIT LOG

Project Name: Badger Mountain	**Date:** 02/06/21	**TP-B09**
Location: Douglas County, WA	**Logged By:** B. Pierce	
Latitude: 47.458978	**Longtitude:** -120.200178	

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML) -** light to dark brown, damp	DNE	0
1			1
2			2
3			3
4			4
5			5
6			6
7			7
8	Test Pit Terminated		8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain	**Date:** 02/06/21	**TP-B10**
Location: Douglas County, WA	**Logged By:** B. Pierce	
Latitude: 47.457442	**Longtitude:** -120.192661	

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML) -** light brown, damp	DNE	0
1			1
2	- white mottling		2
3			3
4			4
5	- dark brown		5
6			6
7			7
8	Test Pit Terminated		8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain	**Date:** 02/06/21	**TP-B11**
Location: Douglas County, WA	**Logged By:** B. Pierce	
Latitude: 47.454019	**Longtitude:** -120.19491	

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML) -** light to dark brown, damp, few gravel	DNE	0
1			1
2			2
3	brown to white		3
4			4
5			5
6			6
7			7
8	Test Pit Terminated		8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain	**Date:** 02/06/21	**TP-B12**
Location: Douglas County, WA	**Logged By:** B. Pierce	
Latitude: 47.454577	**Longtitude:** -120.187223	

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML) -** light brown, damp	DNE	0
1			1
2			2
3			3
4	**Poorly Graded Gravel w/ Silt (GP-GM)** - dark brown, few cobbles		4
5	Test Pit Terminated due to Refusal		5
6			6
7			7
8			8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain

Date: 02/09/21

Location: Douglas County, WA

Logged By: B. Pierce

Latitude: 47.454773

Longtitude: -120.176961

TP-B14

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML) -** light to dark brown, damp	DNE	0
1			1
2			2
3	**Silt w/ Gravel (ML) -** light brown		3
4			4
5			5
6			6
	Weathered Rock - light brown		
7	Test Pit Terminated due to Refusal		7
8			8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain	**Date:** 02/06/21	**TP-B16**
Location: Douglas County, WA	**Logged By:** B. Pierce	
Latitude: 47.451325	**Longtitude:** -120.192055	

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML) -** light brown, damp	DNE	0
1			1
2			2
3	**Poorly Graded Gravel w/ Silt (GP-GM) -** light brown		3
4			4
5			5
6	Test Pit Terminated due to Refusal		6
7			7
8			8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain	**Date:** 02/07/21	**TP-B17**
Location: Douglas County, WA	**Logged By:** B. Pierce	
Latitude: 47.448746	**Longtitude:** -120.184773	

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML) -** dark yellowish brown, damp, white mottling	DNE	0
1			1
2			2
3			3
4			4
5			5
6			6
7			7
8	Test Pit Terminated		8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain

Date: 02/07/21

Location: Douglas County, WA

Logged By: B. Pierce

Latitude: 47.448868

Longtitude: -120.177983

TP-B18

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML) -** light to dark brown, damp, white mottling	DNE	0
1			1
2			2
3			3
4			4
5			5
6			6
7			7
8	Test Pit Terminated		8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain

Date: 02/07/21

Location: Douglas County, WA

Logged By: B. Pierce

Latitude: 47.444307

Longtitude: -120.17794

TP-B20

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML) -** light brown, damp, white mottling	DNE	0
1			1
2	brown, few gravel		2
3			3
4			4
5			5
6			6
7	- dark brown		7
8	Test Pit Terminated		8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain	**Date:** 02/07/21	**TP-B21**
Location: Douglas County, WA	**Logged By:** B. Pierce	
Latitude: 47.442553	**Longtitude:** -120.17794	

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML) -** brown, damp	DNE	0
1			1
2			2
3			3
4			4
5			5
6	**Poorly Graded Gravel w/ Silt (GP-GM)** - brown, few cobbles		6
7			7
8	Test Pit Terminated due to Refusal		8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain
Date: 02/07/21
Location: Douglas County, WA
Logged By: B. Pierce
Latitude: 47.440008
Longtitude: -120.179471

TP-B22

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML) -** light brown, damp	DNE	0
1			1
2			2
3	- dark brown		3
4	**Poorly Graded Gravel w/ Silt (GP-SM)** - dark brown		4
5			5
6	Test Pit Terminated due to Refusal		6
7			7
8			8
9			9
10			10

Westwood

TEST PIT LOG

Project Name:	Badger Mountain	**Date:**	02/07/21	**TP-B23**
Location:	Douglas County, WA	**Logged By:**	B. Pierce	
Latitude:	47.440008	**Longtitude:**	-120.179471	

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML) -** dark yellowish brown, damp	DNE	0
1			1
2			2
3	gravel and cobbles		3
4			4
5			5
6			6
7			7
8	Test Pit Terminated		8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain

Date: 02/08/21

Location: Douglas County, WA

Logged By: B. Pierce

Latitude: 47.436142

Longtitude: -120.170501

TP-B25

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt w/ Gravel (ML) -** brown, damp	DNE	0
1			1
2	**Poorly Graded Gravel w/ Silt (GP-GM) -** light brown		2
3			3
4	**Silt (ML) -** dark brown		4
5			5
6			6
7			7
8	Test Pit Terminated		8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain	**Date:** 02/08/21	**TP-B26**
Location: Douglas County, WA	**Logged By:** B. Pierce	
Latitude: 47.436717	**Longtitude:** -120.159508	

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML) -** dark to light brown, damp	DNE	0
1			1
2			2
3			3
4			4
5	**Poorly Graded Gravel w/ Silt (GP-GM**) - dark brown		5
6			6
7	Test Pit Terminated - no refusal		7
8			8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain	**Date:** 02/08/21	**TP-B27**
Location: Douglas County, WA	**Logged By:** B. Pierce	
Latitude: 47.435081	**Longtitude:** -120.163467	

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML) -** light to dark brown, damp	DNE	0
1			1
2			2
3			3
4			4
5			5
6			6
7			7
8	Test Pit Terminated		8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain	**Date:** 02/08/21	**TP-B28**
Location: Douglas County, WA	**Logged By:** B. Pierce	
Latitude: 47.432237	**Longtitude:** -120.166213	

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML) -** dark brown, damp	DNE	0
1			1
2	**Poorly Graded Gravel w/ Silt (GP-GM) -** brown, few cobbles		2
3			3
4			4
5			5
6	Test Pit Terminated due to Refusal		6
7			7
8			8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain
Date: 02/08/21
Location: Douglas County, WA
Logged By: B. Pierce
Latitude: 47.432258
Longtitude: -120.156709

TP-B29

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML) -** light to dark brown, damp	DNE	0
1			1
2			2
3			3
4			4
5			5
6			6
7			7
8	Test Pit Terminated		8
9			9
10			10

Westwood

TEST PIT LOG

Project Name: Badger Mountain	**Date:** 02/08/21	**TP-B30**
Location: Douglas County, WA	**Logged By:** B. Pierce	
Latitude: 47.428510	**Longtitude:** -120.156219	

Depth (ft)	LITHOLOGIC DESCRIPTION	WATER LEVEL	Depth (ft)
0	**Silt (ML) -** dark brown, damp	DNE	0
1			1
2			2
2.5	**Weathered Rock -** light brown		
3			3
4			4
5			5
6	Test Pit Terminated due to Refusal		6
7			7
8			8
9			9
10			10

Appendix C

Electrical Resistivity Test Results

Electrical Resistivity Test Results

Wenner 4-Electrode Method

Badger Mountain Solar Project - Douglas County, Washington

ER-01 **Latitude** **Longitude**

Location: 47.476636° -120.211263°

Description: 33°F, snowy, snow cover, small rolling hills **Date:** 11/16/2020

North-South Transect

ELECTRODE SPACING		APPARENT RESISTIVITY	
(feet)	(meters)	ohm-feet	ohm-meters
1	0.3	1,112	339
1.5	0.5	1,169	356
2	0.6	1,483	452
3	0.9	1,035	315
4.5	1.4	509	155
7	2.1	470	143
10	3.0	403	123
15	4.6	358	109
22.5	6.9	352	107
35	10.7	394	120
50	15.2	424	129
75	22.9	457	139
100	30.5	515	157
150	45.7	584	178
225	68.6	481	147
300	91.4	490	149

East-West Transect

ELECTRODE SPACING		APPARENT RESISTIVITY	
(feet)	(meters)	ohm-feet	ohm-meters
1	0.3	1,332	406
1.5	0.5	1,282	391
2	0.6	1,150	351
3	0.9	1,054	321
4.5	1.4	704	215
7	2.1	492	150
10	3.0	402	122
15	4.6	330	101
22.5	6.9	312	95.2
35	10.7	365	111
50	15.2	399	122
75	22.9	433	132
100	30.5	465	142
150	45.7	537	164
225	68.6	396	121
300	91.4	547	167

ER-02 **Latitude** **Longitude**

Location: 47.474116° -120.211676°

Description: 38°F, partly sunny, snow cover, small rolling hills **Date:** 11/14/2020

North-South Transect

ELECTRODE SPACING		APPARENT RESISTIVITY	
(feet)	(meters)	ohm-feet	ohm-meters
1	0.3	601	183
1.5	0.5	681	208
2	0.6	625	190
3	0.9	503	153
4.5	1.4	370	113
7	2.1	254	77.4
10	3.0	181	55.2
15	4.6	145	44.2
22.5	6.9	137	41.8
35	10.7	160	48.9
50	15.2	242	73.7
75	22.9	377	115
100	30.5	433	132

East-West Transect

ELECTRODE SPACING		APPARENT RESISTIVITY	
(feet)	(meters)	ohm-feet	ohm-meters
1	0.3	666	203
1.5	0.5	646	197
2	0.6	583	178
3	0.9	486	148
4.5	1.4	413	126
7	2.1	281	85.8
10	3.0	200	60.9
15	4.6	138	42.2
22.5	6.9	144	44.0
35	10.7	180	55.0
50	15.2	245	74.7
75	22.9	386	118
100	30.5	465	142

Electrical Resistivity Test Results

Wenner 4-Electrode Method

Badger Mountain Solar Project - Douglas County, Washington

ER-03 **Latitude** **Longitude**
Location: 47.448227° -120.184964°
Description: 34°F, cloudy, snow cover, small rolling hills
Date: 11/14/2020

North-South Transect

ELECTRODE SPACING		APPARENT RESISTIVITY	
(feet)	(meters)	ohm-feet	ohm-meters
1	0.3	472	144
1.5	0.5	413	126
2	0.6	479	146
3	0.9	390	119
4.5	1.4	320	97.4
7	2.1	227	69.2
10	3.0	180	55.0
15	4.6	162	49.4
22.5	6.9	195	59.5
35	10.7	292	89.1
50	15.2	411	125
75	22.9	457	139
100	30.5	415	126

East-West Transect

ELECTRODE SPACING		APPARENT RESISTIVITY	
(feet)	(meters)	ohm-feet	ohm-meters
1	0.3	385	117
1.5	0.5	352	107
2	0.6	368	112
3	0.9	356	109
4.5	1.4	311	94.8
7	2.1	212	64.5
10	3.0	155	47.3
15	4.6	149	45.4
22.5	6.9	199	60.8
35	10.7	301	91.8
50	15.2	415	126
75	22.9	678	207
100	30.5	867	264

ER-04 **Latitude** **Longitude**
Location: 47.468832° -120.191848°
Description: 34°F, partly sunny, snow cover
Date: 11/15/2020

North-South Transect

ELECTRODE SPACING		APPARENT RESISTIVITY	
(feet)	(meters)	ohm-feet	ohm-meters
2	0.6	343	105
4	1.2	237	72.2
6	1.8	201	61.4
10	3.0	158	48.1
20	6.1	207	63.2

East-West Transect

ELECTRODE SPACING		APPARENT RESISTIVITY	
(feet)	(meters)	ohm-feet	ohm-meters
2	0.6	305	93.1
4	1.2	239	72.7
6	1.8	179	54.7
10	3.0	149	45.4
20	6.1	202	61.7

ER-05 **Latitude** **Longitude**
Location: 47.458984° -120.200192°
Description: 34°F, partly sunny, snow cover
Date: 11/15/2020

North-South Transect

ELECTRODE SPACING		APPARENT RESISTIVITY	
(feet)	(meters)	ohm-feet	ohm-meters
2	0.6	914	279
4	1.2	410	125
6	1.8	260	79.4
10	3.0	180	54.8
20	6.1	172	52.5

East-West Transect

ELECTRODE SPACING		APPARENT RESISTIVITY	
(feet)	(meters)	ohm-feet	ohm-meters
2	0.6	905	276
4	1.2	430	131
6	1.8	268	81.8
10	3.0	169	51.5
20	6.1	166	50.6

Westwood

Electrical Resistivity Test Results

Wenner 4-Electrode Method

Badger Mountain Solar Project - Douglas County, Washington

ER-06	**Latitude**	**Longitude**
Location:	47.457871°	-120.181730°

Description: 38°F, partly sunny, snow cover

Date: 11/15/2020

North-South Transect

ELECTRODE SPACING		APPARENT RESISTIVITY	
(feet)	(meters)	ohm-feet	ohm-meters
2	0.6	555	169
4	1.2	415	126
6	1.8	311	94.9
10	3.0	242	73.7
20	6.1	266	81.2

East-West Transect

ELECTRODE SPACING		APPARENT RESISTIVITY	
(feet)	(meters)	ohm-feet	ohm-meters
2	0.6	612	187
4	1.2	334	102
6	1.8	296	90.2
10	3.0	266	81.0
20	6.1	244	74.3

ER-07	**Latitude**	**Longitude**
Location:	47.440014°	-120.179486°

Description: 38°F, partly sunny, snow cover

Date: 11/15/2020

North-South Transect

ELECTRODE SPACING		APPARENT RESISTIVITY	
(feet)	(meters)	ohm-feet	ohm-meters
2	0.6	583	178
4	1.2	352	107
6	1.8	347	106
10	3.0	422	129
20	6.1	638	195

East-West Transect

ELECTRODE SPACING		APPARENT RESISTIVITY	
(feet)	(meters)	ohm-feet	ohm-meters
2	0.6	608	185
4	1.2	354	108
6	1.8	356	109
10	3.0	405	124
20	6.1	586	179

ER-08	**Latitude**	**Longitude**
Location:	47.435087°	-120.163481°

Description: 38°F, partly sunny, snow cover

Date: 11/15/2020

North-South Transect

ELECTRODE SPACING		APPARENT RESISTIVITY	
(feet)	(meters)	ohm-feet	ohm-meters
2	0.6	195	59.4
4	1.2	116	35.5
6	1.8	120	36.7
10	3.0	100	30.6
20	6.1	95.5	29.1

East-West Transect

ELECTRODE SPACING		APPARENT RESISTIVITY	
(feet)	(meters)	ohm-feet	ohm-meters
2	0.6	102	31.1
4	1.2	125	38.2
6	1.8	129	39.2
10	3.0	109	33.1
20	6.1	94.2	28.7

Appendix D

Laboratory Testing Reports

Westwood

Laboratory Soil Test Data Summary
Badger Mountain Solar Project - Douglas County, Washington

BORING ID	SAMPLE ID	SAMPLE DEPTH (ft)	USCS CLASSIFICATION(2)(3)(4)	GRAIN-SIZE DISTRIBUTION(1)(4)				NATURAL MOISTURE CONTENT (%)	ATTERBERG LIMITS		pH	Sulfate Ions (mg/kg)	Chloride Ions (mg/kg)	Soil Box Electrical Resistivity (Ω-cm)		MODIFIED PROCTOR		THERMAL RESISTIVITY		California Bearing Ratio (CBR) (ASTM D1883)	
				% Gravel	% Sand	% Silt	% Clay		LL	PI				As-Received	Saturated	MAX DRY DENSITY (pcf)	OPTIMUM MOISTURE CONTENT (%)	As-Received (°C-cm/W)	Dry (°C-cm/W)	90% Compaction (%)	95% Compaction (%)
B-01	SS-02	2.5-4	Silt (ML)					7.8													
B-01	Bulk	2-5	Sandy Silt w/ Gravel (ML)	16.0	21.0	55.7	7.3	13.7								114.3	14.4	100	256		
B-02	SS-03	5-6.5	Silt w/ Sand (ML)					14.5			8.4	30.2	16.1	14,000	3,000						
B-04	SS-01	0-1.5	Silt (ML)					22.2													
B-04	SS-03	5-6.5	Silt (ML)					16.7			8.2	437	201	46,700	1,700						
B-05	SS-02	2.5-4	Weathered Rock					12.4													
B-07	SS-03	5-6.5	Weathered Rock					15.8			8.1	44.5	11.5	24,700	3,500						
B-09	SS-06	12.5-14	Silt (ML)					14.9													
B-10	Bulk	2-5	Silt w/ Sand (ML)	0	18	70.6	11.4	10.7								122.3	12.4	88	217		
B-11	SS-04	7.5-9	Silt w/ Sand (ML)	0	24	76		17.4	28	4											
B-13	SS-02	2.5-4	Silt (ML)					9.1			7.7	< 12.9	14.1	100,000	4,200						
B-14	SS-01	0-1.5	Silt (ML)					21.1													
B-15	Bulk	1-4	Sandy Lean Clay (CL)					11.2	30	9						118.6	12.7			8.8	16.5
B-16	SS-02	2.5-4	Silt (ML)					8.5			7.5	< 12.9	< 9.2	113,300	3,000						
B-17	SS-01	0-1.5	Lean Clay w/ Sand (CL)					24.2													
B-17	Bulk	2-5	Lean Clay w/ Sand (CL)	0	17	68.8	14.2	18.1	28	8						120.6	12.5	75	163		
B-18	SS-01	0-1.5	Silt (CL-ML)					22.5	27	6											
B-20	SS-06	12.5-14	Silt (ML)					24.4			7.7	404	288	10,700	1,200						
B-22	SS-02	2.5-4	Silt (ML)	1	37	62		21.1													
B-23	SS-03	5-6.5	Lean Clay (CL)					14.5	26	8											
B-24	SS-02	2.5-4	Silt (ML)	0	21	79		9.6													
B-25	SS-01	0-1.5	Silty Sand (SM)	0	73	27		42.4													
B-25	SS-06	12.5-14	Silt (ML)					17.2			7.6	357	28.7	30,000	1,500						
B-26	SS-03	5-6.5	Silty Sand (SM)	6	45	49		21.1	32	5	7.8	27.9	< 9.2	14,000	5,200						
B-26	Bulk	1-4	Sandy Lean Clay (CL)					19.9	29	11						117.9	13.9			8.5	8.6
B-27	SS-05	10-11.5	Silt (ML)					29.1	43	7											
B-27	Bulk	2-5	Silt w/ Sand (ML)	0	18	69.7	12.3	17.7								120.6	12.0	78	167		
B-29	SS-02	2.5-4	Silt (ML)					9.4													
B-29	SS-03	5-6.5	Lean Clay (CL)					23.4	38	15											
B-30	SS-01	0-1.5	Sandy Silt (ML)	1	30	69		22.0			7.4	< 12.9	< 9.2	13,300	4,300						
B-30	SS-02	2.5-4	Weathered Rock	0	60	40		15.3													
O&M	SS-02	2.5-4	Silt (CL-ML)					11.5	25	7											
BESS-01	SS-01	0-1.5	Silt (ML)					4.6	28	5											
BESS-02	SS-03	5-6.5	Sandy Silt (ML)	0	38	62		16.7	30	6											
BESS-02	SS-04	7.5-9	Silt (ML)					19.0			8.1	168	32.1	9,300	1,500						
SUB-01	SS-01	0-1.5	Silt (ML)					34.7													
SUB-02	Bulk	1-2.5	Sandy Lean Clay w/ Gravel (CL)					13.7	30	12						135.6	8.5			14.7	20.9
SUB-03	SS-03	5-6.5	Silt (ML)	0	13	87		15.2													
SUB-03	Bulk	2-5	Silt w/ Sand (ML)	0	20	66.5	13.5	19.8								119.7	11.5	77	177		

Footnotes:

(1) % Gravel = part. greater than 4.75 mm (#4 sieve); % Sand = part. between 0.075 mm (#200 sieve) and 4.75 mm (#4 sieve); % Silt = part. between 0.002 mm and 0.075 mm (#200 sieve); % Clay = part. smaller than 0.002 mm.

(2) Some samples were combined to achieve sufficient volume and were taken from same soil stratum.

(3) Visual classification, informed where possible by laboratory testing

(4) Represents soil fraction captured in split spoon, does not include cobbles/large gravel that may have been in profile.

Created by:	S. Klinzing
Checked by:	C. Enos

Westwood

1 Systems Drive
Appleton, WI 54914

main (920) 735-6900

LABORATORY TESTS OF SOILS

ASTM: D2216, D4318, D6913

Project: Badger Mountain Solar - Chelan County, WA
Report To: Avangrid Renewables, LLC
Date: 2/15/2021

Westwood Prj. No. R0025965.01, Phase 03
Date Delivered: 2/2/2021

				Atterberg Limits*			Percent Passing	
Boring	Depth	Sample	Moisture Content	LL	PL	PI	#4	#200
B-01	2.5	SS-02	7.8%					
B-02	5	SS-03	14.5%					
B-04	0	SS-01	22.2%					
B-04	5	SS-03	16.7%					
B-05	2.5	SS-02	12.4%					
B-07	5	SS-03	15.8%					
B-09	12.5	SS-06	14.9%					
B-11	7.5	SS-04	17.4%	27.7	23.6	4.0	100	76
B-13	2.5	SS-02	9.1%					
B-14	0	SS-01	21.1%					
B-16	2.5	SS-02	8.5%					
B-17	0	SS-01	24.2%					
B-18	0	SS-01	22.5%	27.3	21.3	6.0		
B-20	12.5	SS-06	24.4%					
B-22	2.5	SS-02	21.1%				99	62
B-23	5	SS-03	14.5%	26.3	18.3	7.9		
B-24	2.5	SS-02	9.6%				100	79
B-25	0	SS-01	42.4%				100	27
B-25	12.5	SS-06	17.2%					
B-26	5	SS-03	21.1%	32.1	27.6	4.5	94	49
B-27	10	SS-05	29.1%	43.3	35.9	7.4		
B-29	2.5	SS-02	9.4%					
B-29	5	SS-03	23.4%	38.0	23.6	14.5		
B-30	0	SS-01	22.0%				99	69
B-30	2.5	SS-02	15.3%				100	40

LABORATORY TESTS OF SOILS

ASTM: D2216, D4318, D6913

Project: Badger Mountain Solar - Chelan County, WA

Report To: Avangrid Renewables, LLC

Date: 2/15/2021

Westwood Prj. No. R0025965.01, Phase 03

Date Delivered: 2/2/2021

			Moisture	Atterberg Limits*			Percent Passing	
Boring	**Depth**	**Sample**	**Content**	**LL**	**PL**	**PI**	**#4**	**#200**
O&M	2.5	SS-02	11.5%	24.5	17.6	6.9		
BESS-01	0	SS-01	4.6%	28.3	22.9	5.4		
BESS-02	5	SS-03	16.7%	30.4	24.6	5.8	100	62
BESS-02	7.5	SS-04	19.0%					
SUB-01	0	SS-01	34.7%					
SUB-03	5	SS-03	15.2%				100	87

* NC = Non-cohesive NP = Non-plastic

Laboratory Test Summary

Project: Badger Mountain Job: 12981

Client: Westwood Surveying & Engineering Date: 2/11/2021

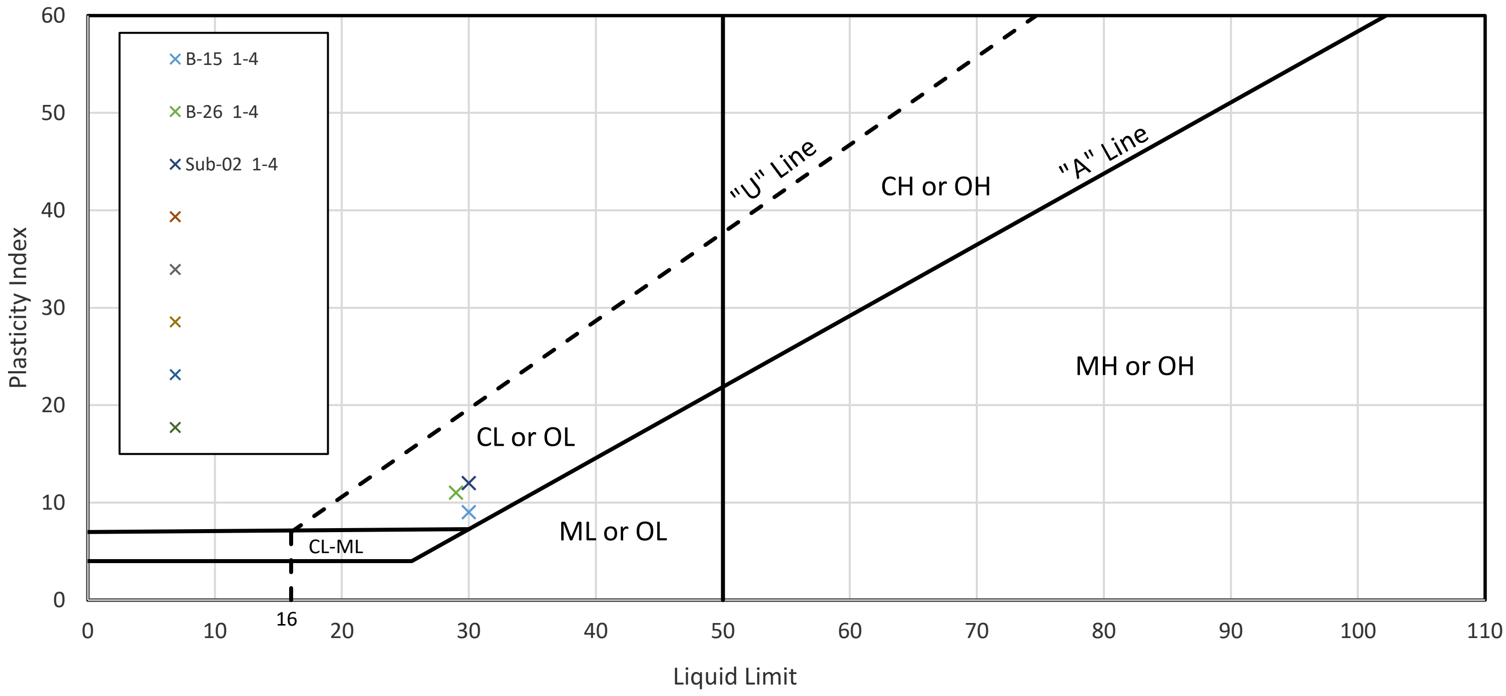
Sample Information & Classification

Boring #	B-15	B-26	Sub-02					
Sample #								
Depth (ft)	1-4	1-4	1-4					
Sample Type	Bulk	Bulk	Bulk					
Material Classification	Sandy Lean Clay (CL)	Sandy Lean Clay (CL)	Sandy Lean Clay w/gravel (CL)					

Atterberg Limits (ASTM:D4318)

Liquid Limit	30	29	30					
Plastic Limit	21	18	18					
Plasticity Index	9	11	12					

Plasticity Chart (ASTM:D2487)



Westwood

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LABORATORY TESTS OF SOILS

ASTM: G187, D4972, D2974 Method C

Project: Badger Mountain Solar - Chelan County, WA

Report To: Avangrid Renewables, LLC

Date: 2/15/2021

Westwood Prj. No. R0025965.01, Phase 03
Date Delivered: 2/2/2021

			Electrical Resistivity								
			As-Received				Saturated				
Boring	**Depth**	**Sample**	**Moist%**	**Temp. °C**	**Resistance (Ohms)**	**Resistivity (Ohms-cm)***	**Moist%**	**Temp. °C**	**Resistance (Ohms)**	**Resistivity (Ohms-cm)***	**pH**
B-02	5	SS-03	14.5	20.7	21,000	14,000	33.5	22.2	4,500	3,000	8.4
B-04	5	SS-03	22.2	20.4	70,000	46,700	29.4	20.2	2,500	1,700	8.2
B-07	5	SS-03	15.8	20.8	37,000	24,700	42.4	21.1	5,200	3,500	8.1
B-13	2.5	SS-02	9.1	21.5	150,000	100,000	27.3	20.8	6,300	4,200	7.7
B-16	2.5	SS-02	8.5	20.5	170,000	113,300	30.2	21.0	4,500	3,000	7.5
B-20	12.5	SS-06	24.4	20.4	16,000	10,700	38.9	20.8	1,800	1,200	7.7
B-25	12.5	SS-06	17.2	21.0	45,000	30,000	30.2	21.4	2,200	1,500	7.6
B-26	5	SS-03	21.1	20.5	21,000	14,000	32.5	20.8	7,800	5,200	7.8
B-30	0	SS-01	22.0	19.0	20,000	13,300	52.1	20.8	6,500	4,300	7.4
BESS-02	7.5	SS-04	19.0	18.9	14,000	9,300	39.1	20.9	2,300	1,500	8.1

* Soil box factor = 0.67

Laboratory Test Summary

Project: Badger Mountain **Job:** 12981
Client: Westwood Surveying & Engineering **Date:** 2/15/21

Sample Information & Classification

Boring #	Sub-02	Sub-02					
Sample #							
Depth (ft)	3	5.5					
Type or BPF	Core	Core					
Classification	Rock Core	Rock Core					

Water Content, Dry Density (ASTM:D7263)

Water Content (%)	4.9	3.6					
Dry Density (pcf)	166.2	168.4					

Sample Information & Classification

Boring #							
Sample #							
Depth (ft)							
Type or BPF							
Classification							

Water Content, Dry Density (ASTM:D7263)

Water Content (%)							
Dry Density (pcf)							

Sample Information & Classification

Boring #							
Sample #							
Depth (ft)							
Type or BPF							
Classification							

Water Content, Dry Density (ASTM:D7263)

Water Content (%)							
Dry Density (pcf)							

MOISTURE-DENSITY CURVE

Project: Badger Mountain Solar - Chelan County, WA **Westwood Prj. No.:** R0025965.01, Phase 03

Report To: Avangrid Renewables, LLC **Date:** 2/5/2021

Boring Number: B-01 **Depth:** 2-5'

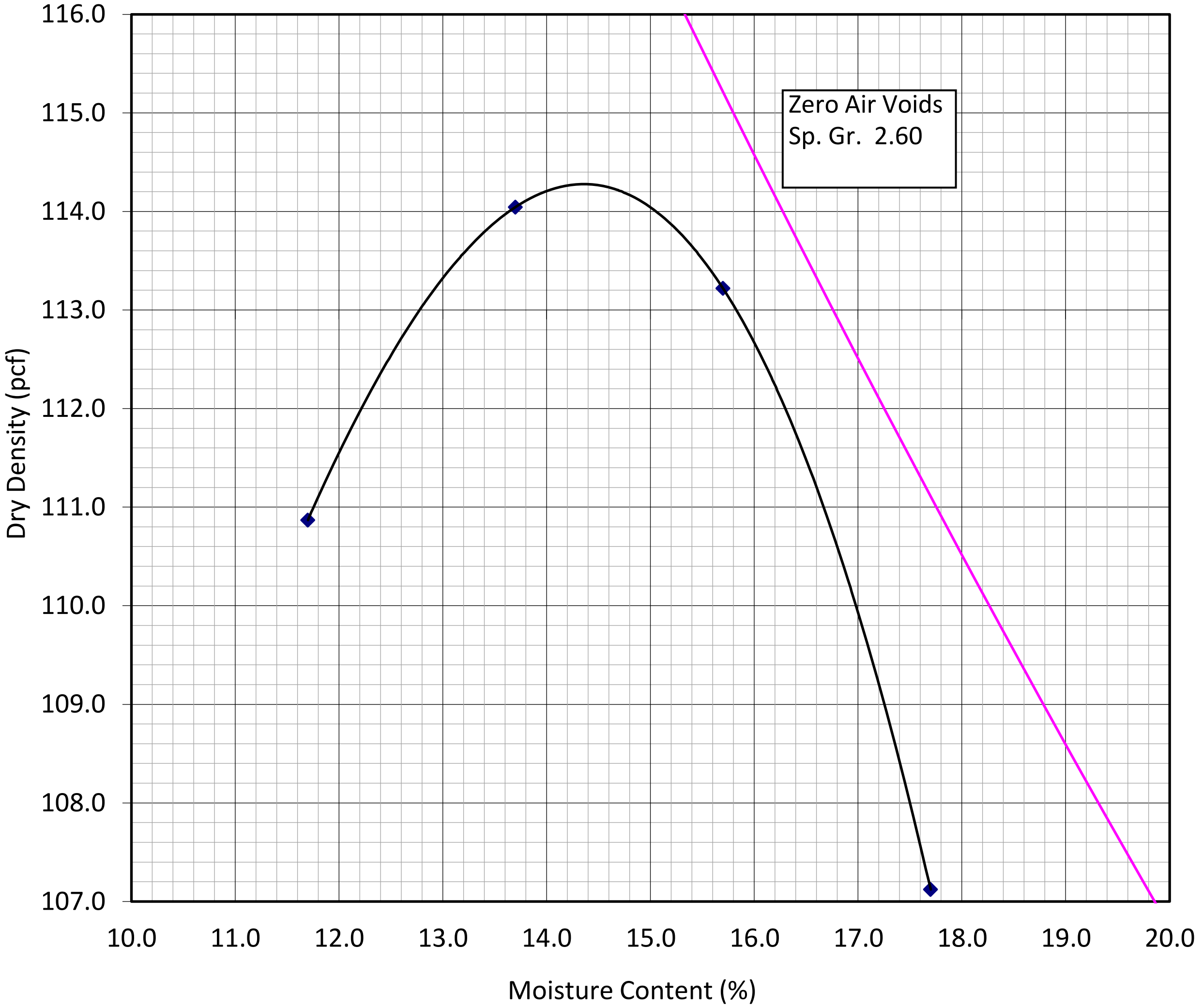
Unified Soils Classification (ASTM:D2487): SANDY SILT w/ GRAVEL, dark brown (ML)

Tests Method: ASTM:D1557, Method B

Preparation: Wet **Manual Hammer**

Max. Dry Density (pcf): 114.3 **Optimum Moisture (%):** 14.4

As-received Moisture (%): 13.7



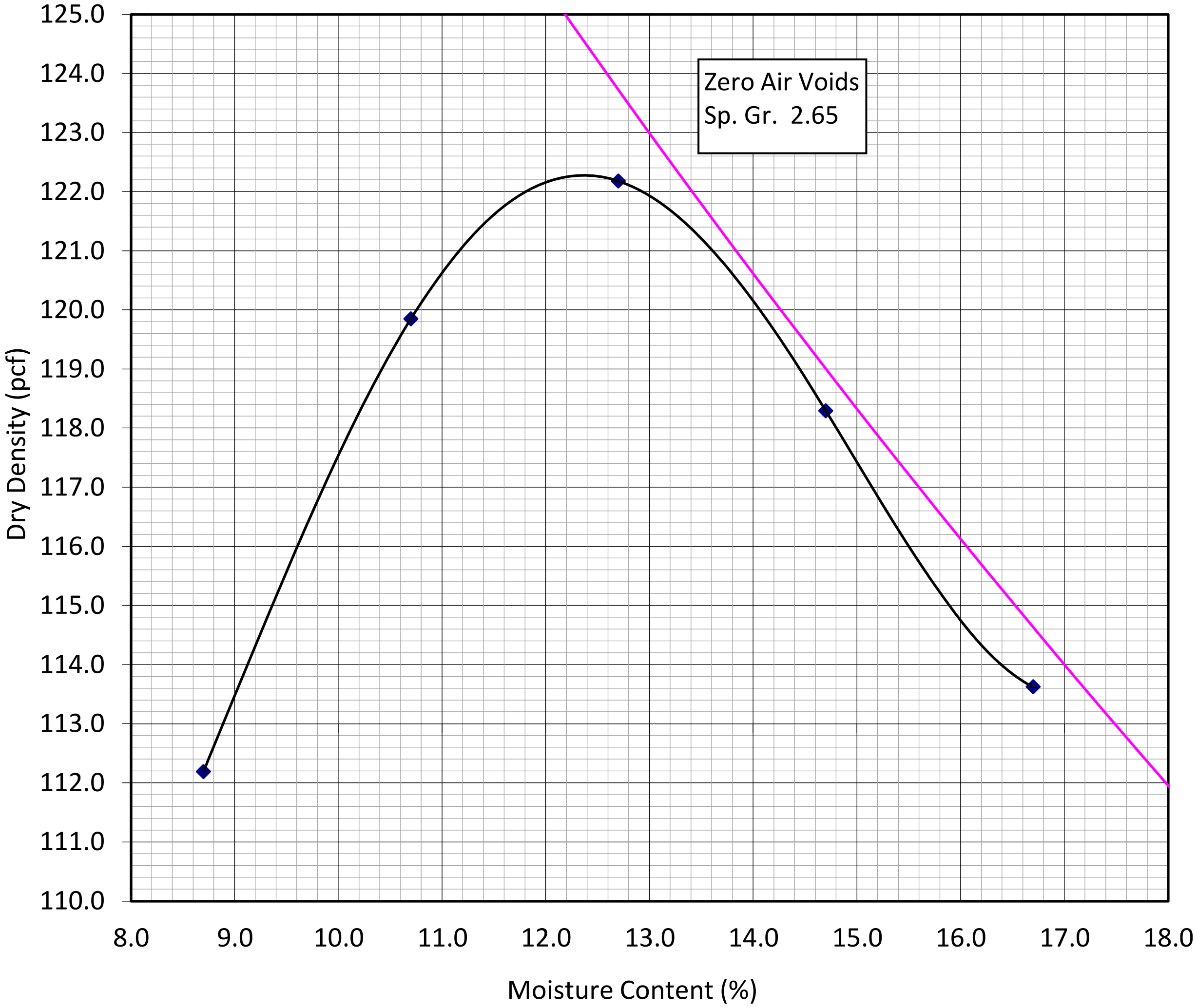
Reviewed By: ____________________

Paul R. Eggen

MOISTURE-DENSITY CURVE

Project: Badger Mountain Solar - Chelan County, WA
Westwood Prj. No.: R0025965.01, Phase 03
Report To: Avangrid Renewables, LLC
Date: 2/5/2021

Boring Number: B-10 **Depth:** 2-5'
Unified Soils Classification (ASTM:D2487): SANDY SILT, dark yellowish brown (ML)
Tests Method: ASTM:D1557, Method B
Preparation: Wet **Manual Hammer**
Max. Dry Density (pcf): 122.3 **Optimum Moisture (%):** 12.4
As-received Moisture (%): 10.7



Reviewed By:
Paul R. Eggen

MOISTURE-DENSITY CURVE

Project: Badger Mountain Solar - Chelan County, WA

Westwood Prj. No.: R0025965.01, Phase 03

Report To: Avangrid Renewables, LLC

Date: 2/5/2021

Boring Number: B-17

Depth: 2-5'

Unified Soils Classification (ASTM:D2487): SANDY SILT, dark yellowish brown (ML)

Tests Method: ASTM:D1557, Method B

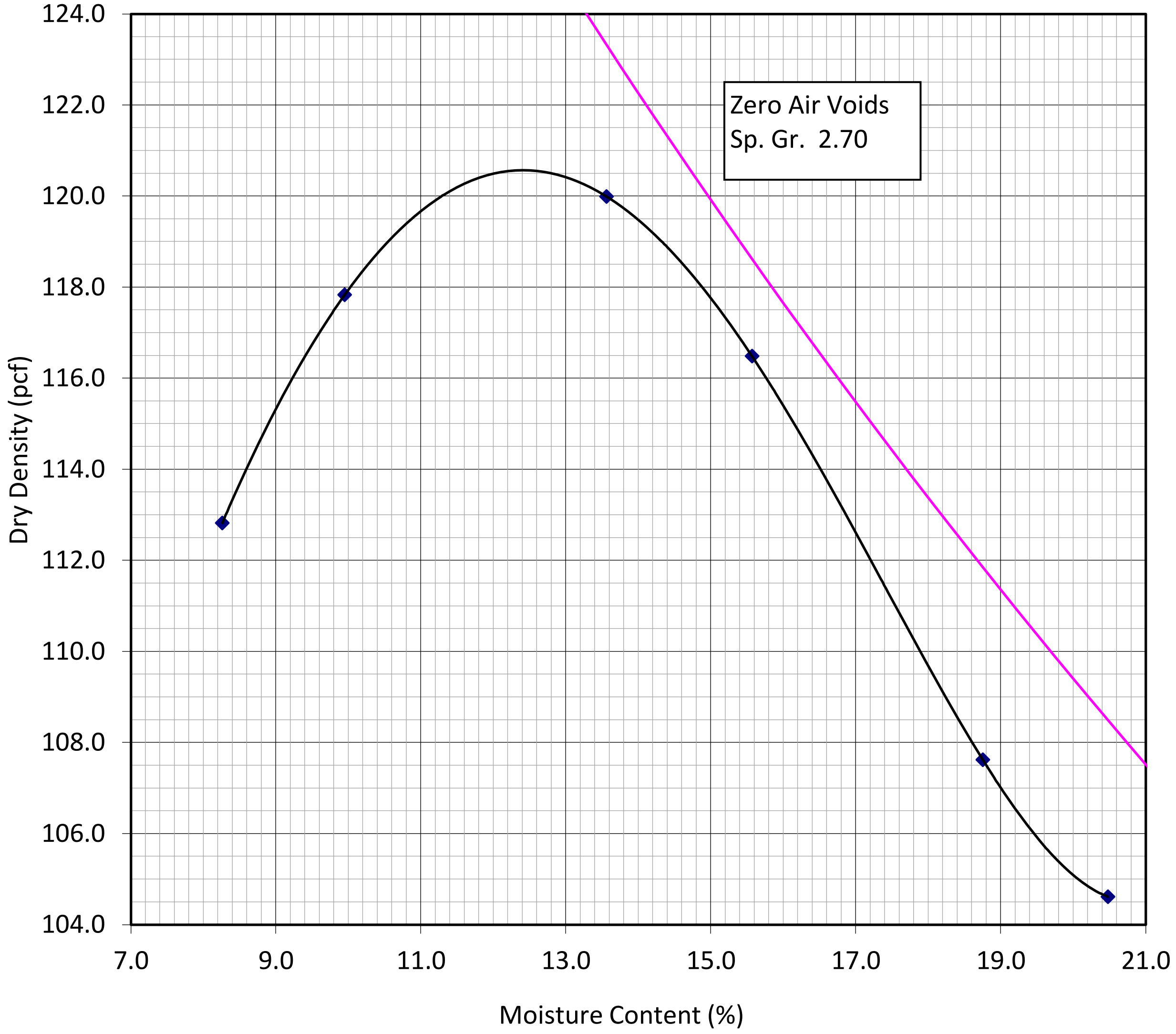
Preparation: Wet

Manual Hammer

Max. Dry Density (pcf): 120.6

Optimum Moisture (%): 12.5

As-received Moisture (%): 18.1



Reviewed By:

Paul R. Eggen

Westwood

MOISTURE-DENSITY CURVE

Project: Badger Mountain Solar - Chelan County, WA **Westwood Prj. No.:** R0025965.01, Phase 03

Report To: Avangrid Renewables, LLC **Date:** 2/5/2021

Boring Number: B-27 **Depth:** 2-5'

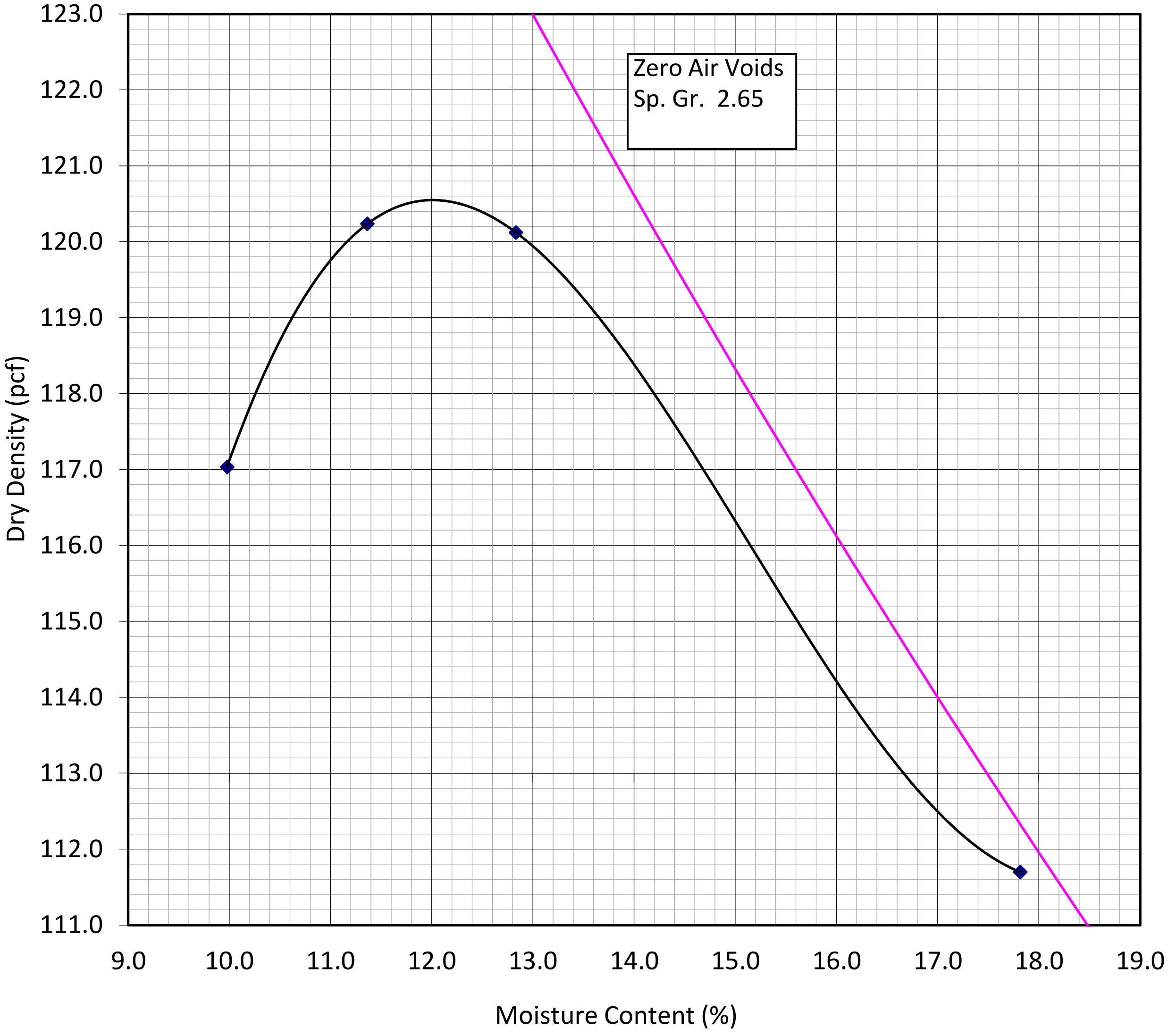
Unified Soils Classification (ASTM:D2487): SANDY SILT, dark yellowish brown (ML)

Tests Method: ASTM:D1557, Method B

Preparation: Wet **Manual Hammer**

Max. Dry Density (pcf): 120.6 **Optimum Moisture (%):** 112.0

As-received Moisture (%): 17.7



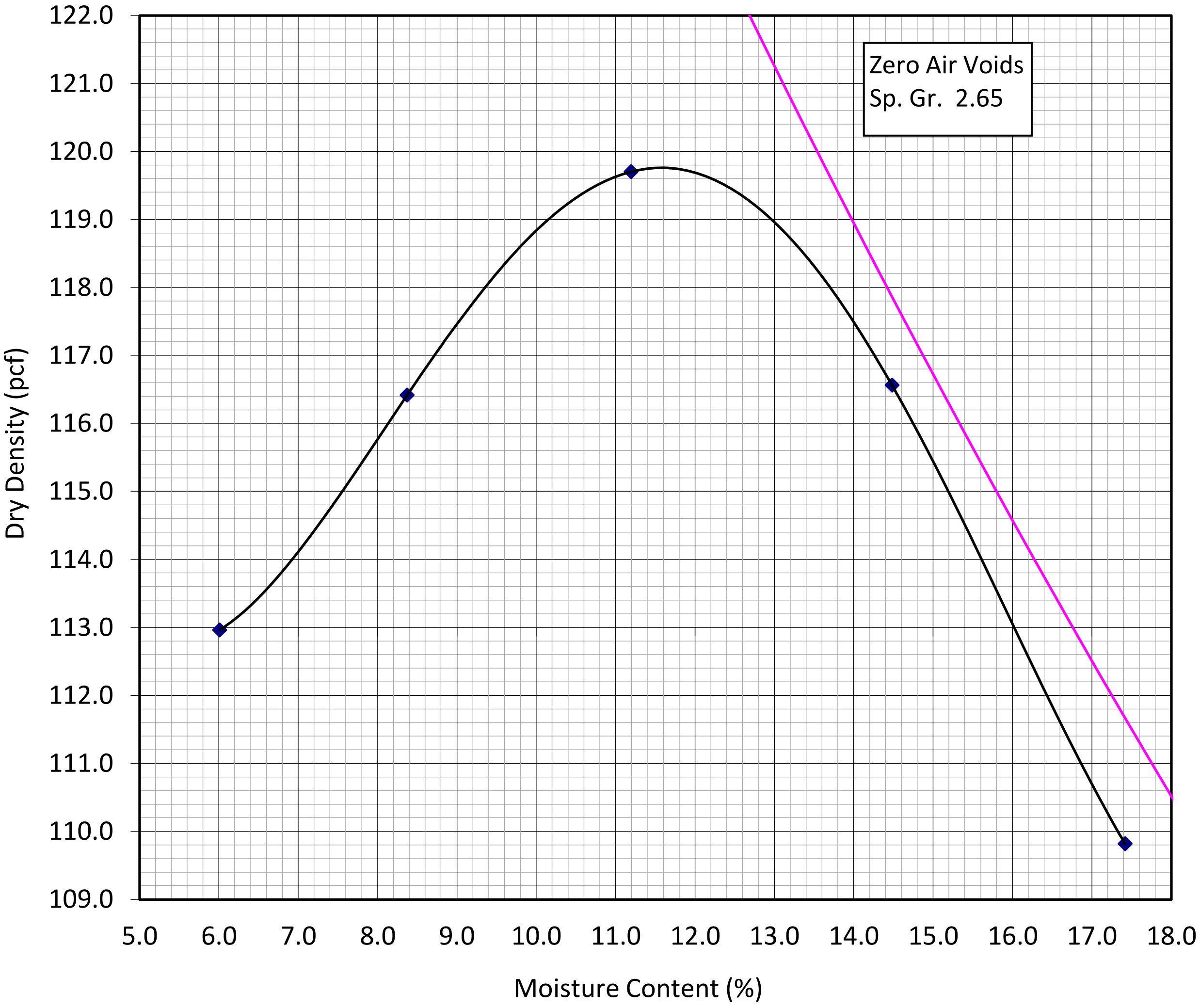
Reviewed By: ____________________

Paul R. Eggen

MOISTURE-DENSITY CURVE

Project: Badger Mountain Solar - Chelan County, WA
Westwood Prj. No.: R0025965.01, Phase 03
Report To: Avangrid Renewables, LLC
Date: 2/5/2021

Boring Number: Sub-03
Depth: 2-5'
Unified Soils Classification (ASTM:D2487): SANDY SILT, very dark grayish brown (ML)
Tests Method: ASTM:D1557, Method B
Preparation: Wet
Manual Hammer
Max. Dry Density (pcf): 119.7
Optimum Moisture (%): 11.5
As-received Moisture (%): 19.8



Reviewed By: ______________________

Paul R. Eggen

Westwood

1 Systems Drive
Appleton, WI 54914

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REPORT OF: LABORATORY TESTS OF SOILS

Project: Badger Mountain Solar - Chelan County, WA
Report To: Avangrid Renewables, LLC **Date:** 2/15/2021

Westwood Prj. No. R0025965.01
Date Delivered: 2/2/2021
Tests Performed: Grain Size Analysis, Atterberg Limits

Boring No.	B-01	B-10	B-17	B-27	Sub-03
Sample No.	Bulk	Bulk	Bulk	Bulk	Bulk
Depth	2-5'	2-5'	2-5'	2-5'	2-5'
USCS Classification:	SANDY SILT w/ GRAVEL, dark brown (ML)	SANDY SILT, dark yellowish brown (ML)	SANDY SILT, dark yellowish brown (ML)	SANDY SILT, dark yellowish brown (ML)	SANDY SILT, very dark grayish brown (ML)
USDA/ NRCS Classification:	Silt Loam	Silt Loam	Silt Loam	Silt Loam	Loam

TEST RESULTS:

Grain Size Analysis (ASTM:D6913 & D7928)

SIEVE SIZE			% PASSING		
1-1/2" (37.5 mm)	100	100	100	100	100
1" (25 mm)	97	100	100	100	100
3/4" (19 mm)	95	100	100	100	100
1/2" (12.5 mm)	90	100	100	100	100
3/8" (9.5 mm)	87	100	100	100	100
#4 (.475 mm)	84	100	100	100	100
#10 (2.0 mm)	83	100	100	100	100
#40 (.425 mm)	82	100	99	99	99
#100 (.15 mm)	73	93	93	91	92
#200 (.075 mm)	63	82	83	82	80
.050 mm	51.3	65.8	67.0	63.5	63.2
.020 mm	28.1	37.7	39.0	35.3	36.4
.005 mm	12.0	17.1	20.4	17.8	19.3
.002 mm	7.3	11.4	14.2	12.3	13.5

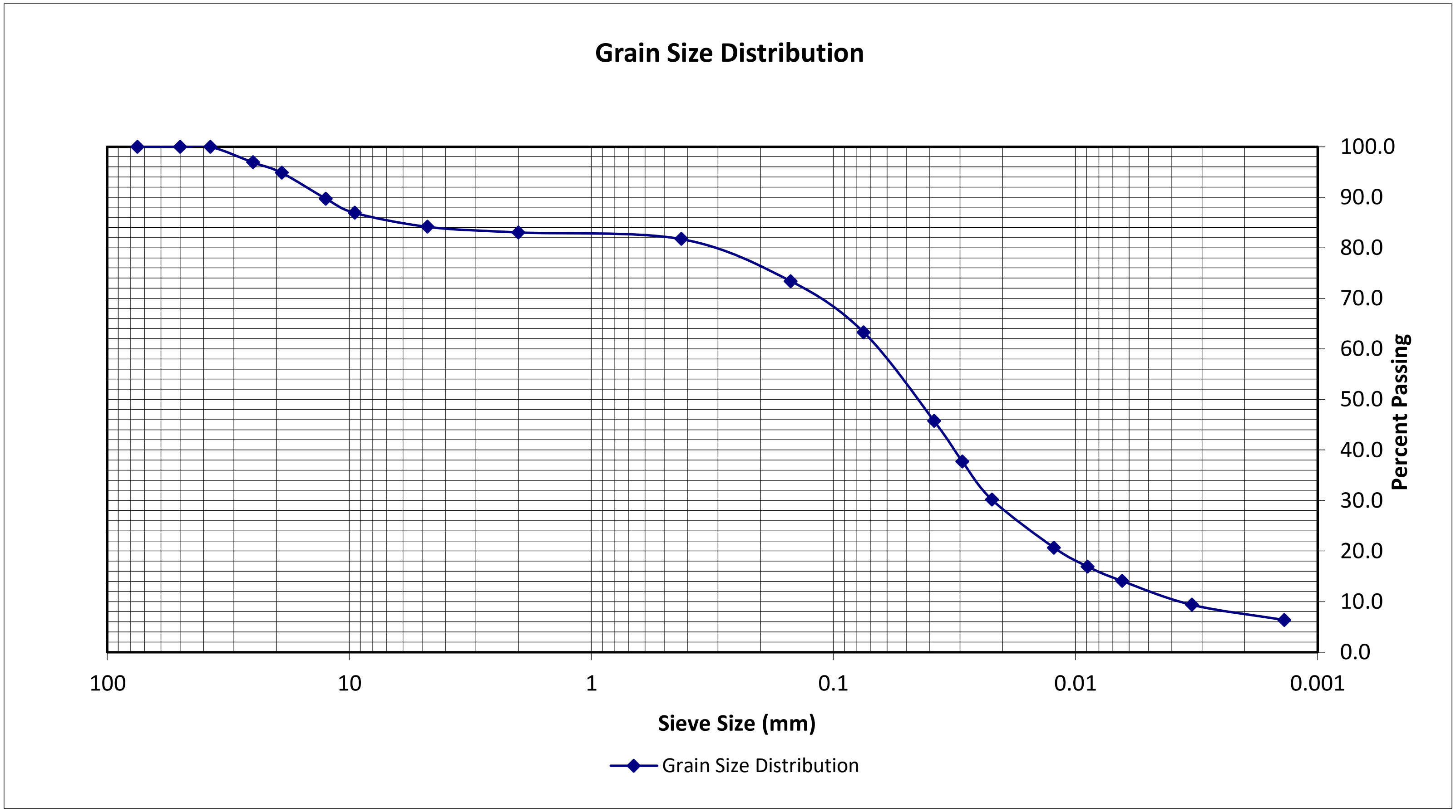
Atterberg Limits (ASTM: D4318)

Liquid Limit, LL (%)			28.2		
Plastic Limit, PL (%)			19.8		
Platicity Index (%)			8.4		

Project: Badger Mountain Solar - Chelan County, WA
Report To: Avangrid Renewables, LLC
Westwood Prj. No. R0025965.01

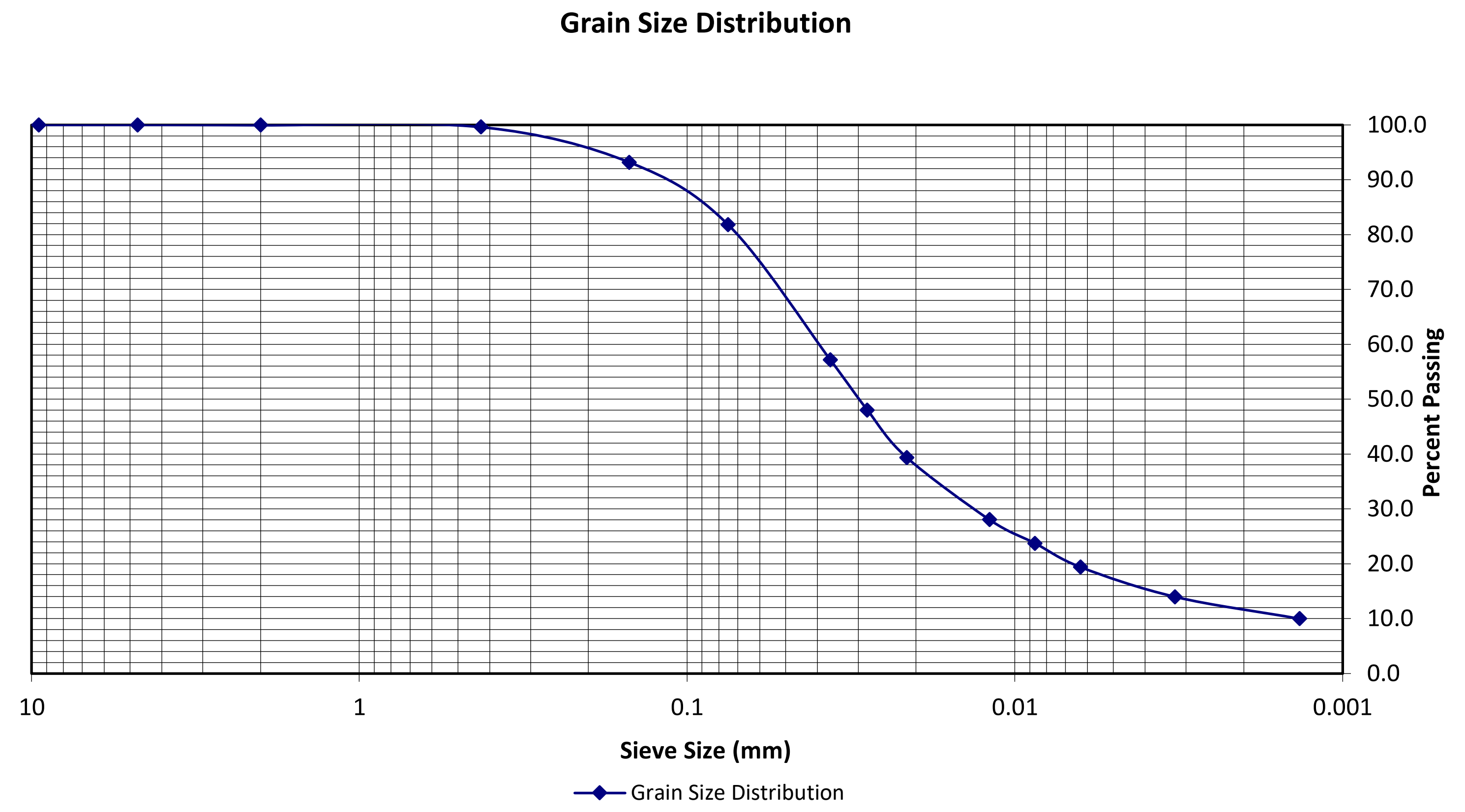
Date: 2/15/2021

Boring No. B-01
Sample No. Bulk
Depth 2-5'



Project: Badger Mountain Solar - Chelan County, WA
Report To: Avangrid Renewables, LLC **Date:** 2/15/2021
Westwood Prj. No. R0025965.01

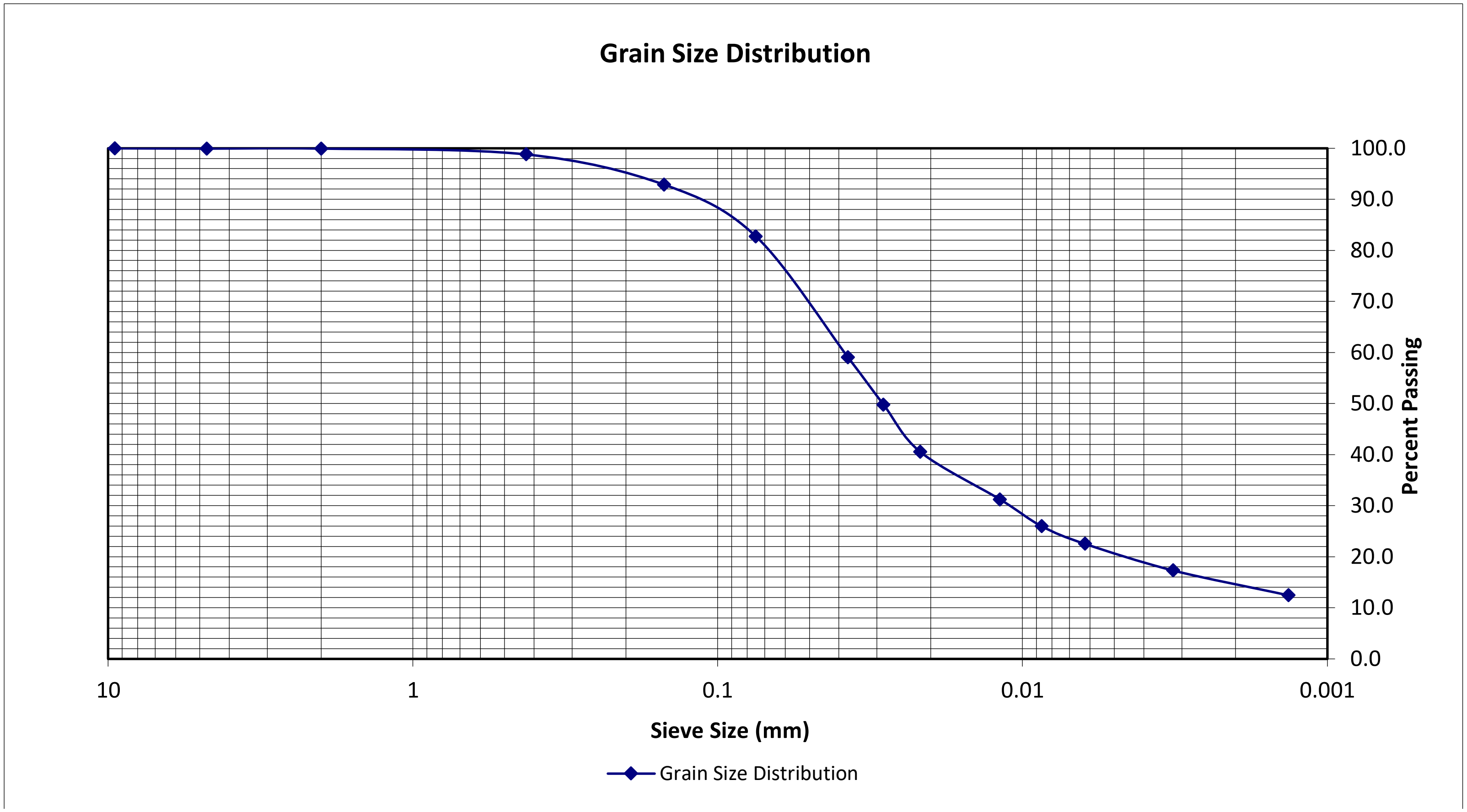
Boring No. B-10
Sample No. Bulk
Depth 2-5'



Project: Badger Mountain Solar - Chelan County, WA
Report To: Avangrid Renewables, LLC
Westwood Prj. No. R0025965.01

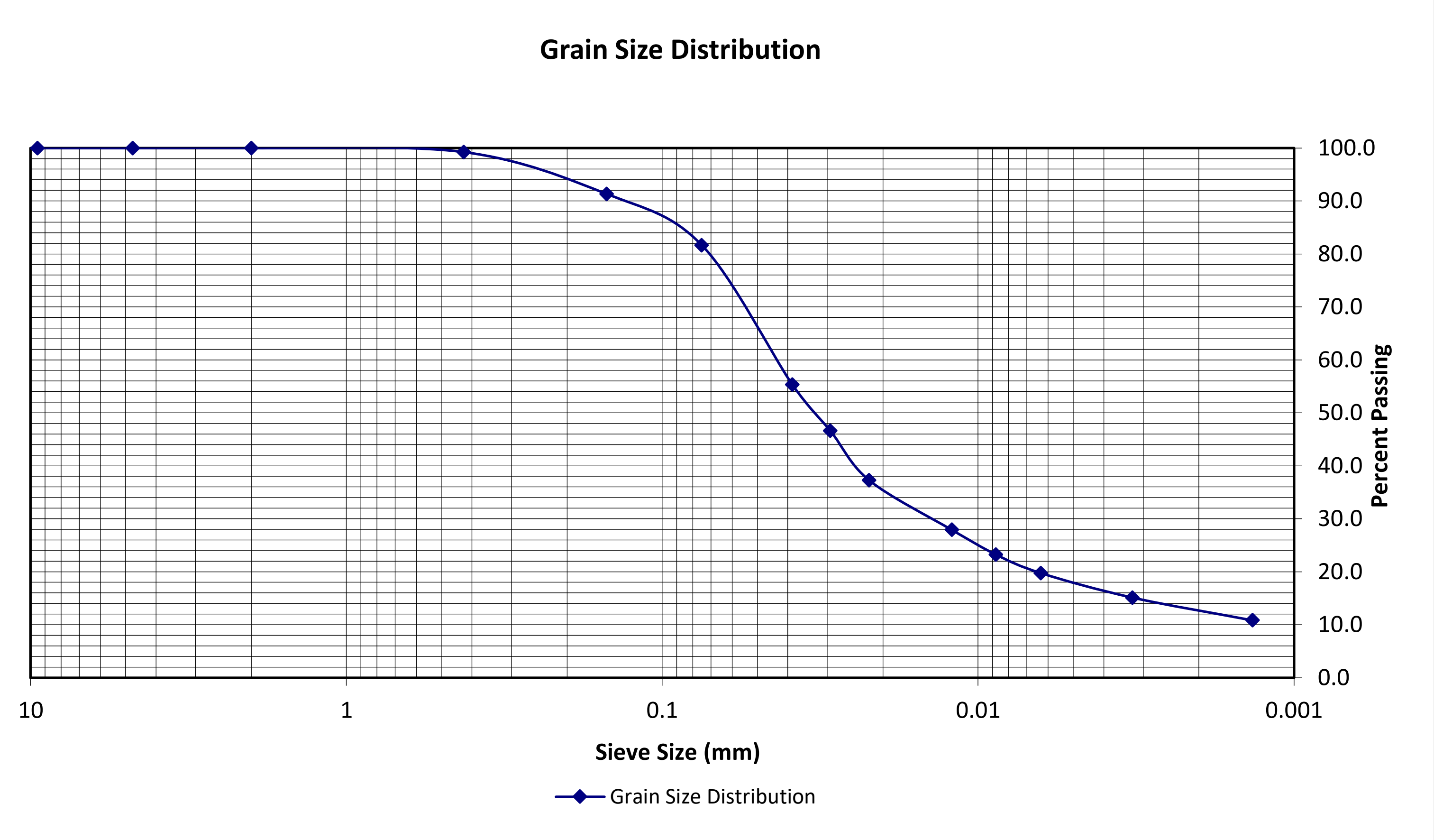
Date: 2/15/2021

Boring No. B-17
Sample No. Bulk
Depth 2-5'



Project: Badger Mountain Solar - Chelan County, WA
Report To: Avangrid Renewables, LLC **Date:** 2/15/2021
Westwood Prj. No. R0025965.01

Boring No. B-27
Sample No. Bulk
Depth 2-5'

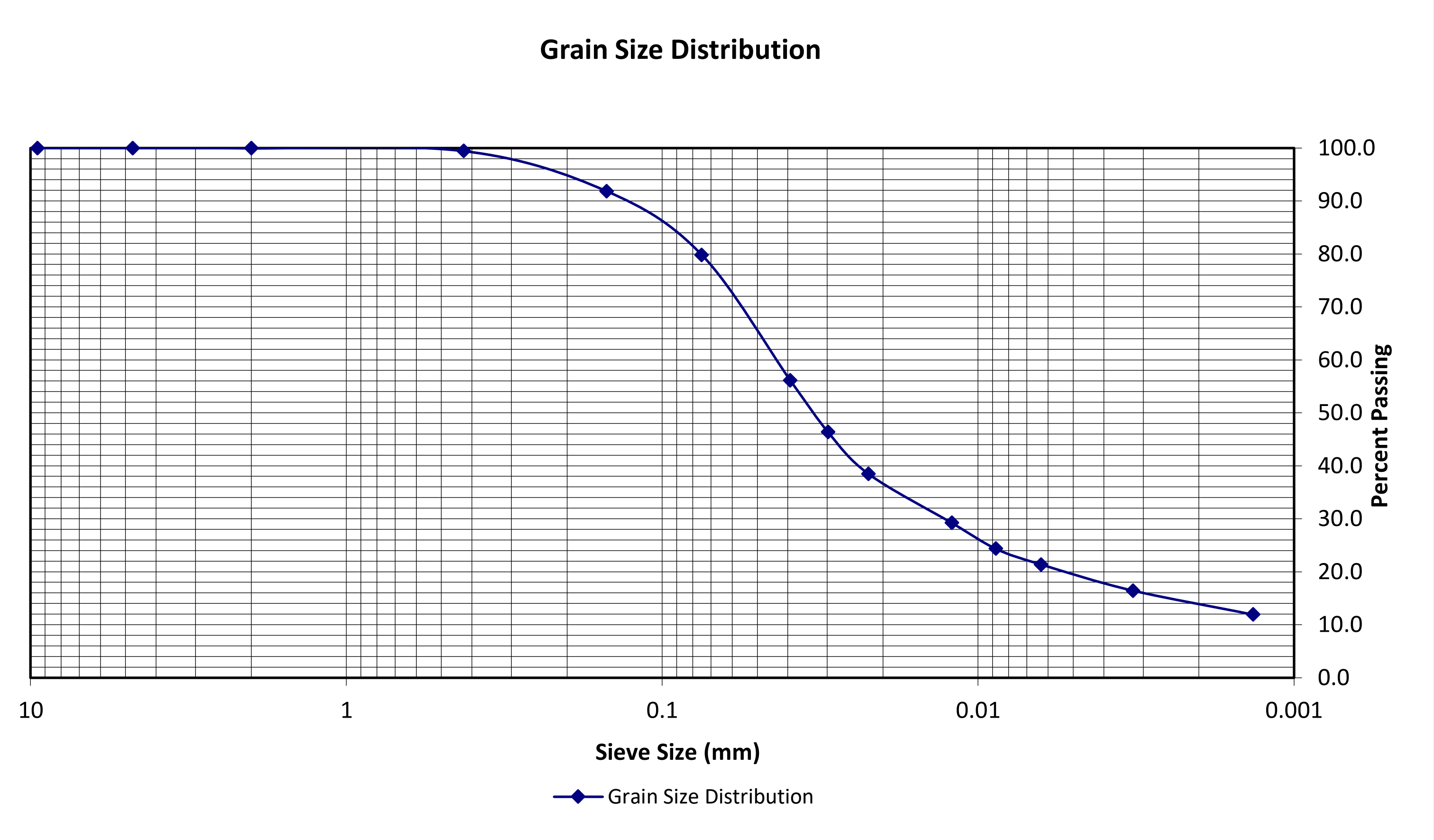


Westwood

Project: Badger Mountain Solar - Chelan County, WA
Report To: Avangrid Renewables, LLC
Westwood Prj. No. R0025965.01

Date: 2/15/2021

Boring No. Sub-03
Sample No. Bulk
Depth 2-5'



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February 19, 2021

Westwood
8401 Greenway Boulevard, Suite 400
Middleton, WI 53562
Attn: Connor Acker

Re: Thermal Analysis of Native Soil Samples
Badger Mountain Project – Douglas County, WA (0025965.01)

The following is the report of thermal dryout characterization tests conducted on the five (5) soil samples from the referenced project sent to our laboratory.

Thermal Resistivity Tests: The samples were tested at the ‘as received’ moisture content and at 85% of the maximum dry density ***provided by Westwood.*** The tests were conducted in accordance with the IEEE standard 442-2017. The results are tabulated below and the thermal dryout curves are presented in **Figures 1 to 5.**

Sample ID, Description, Thermal Resistivity, Moisture Content and Density

Sample ID	Soil Description (Westwood)	Thermal Resistivity (°C-cm/W)		Moisture Content (%)	Dry Density (lb/ft^3)
		Wet	Dry		
B-01 @ 2’-5’	Sandy Silt	100	256	14	97
B-10 @ 2’-5’	Sandy Silt	88	217	11	104
B-17 @ 2’-5’	Silty Clay	75	163	18	103
B-27 @ 2’-5’	Sandy Silt	78	167	18	103
Sub-03 @ 2’-5’	Sandy Silt	77	177	20	102

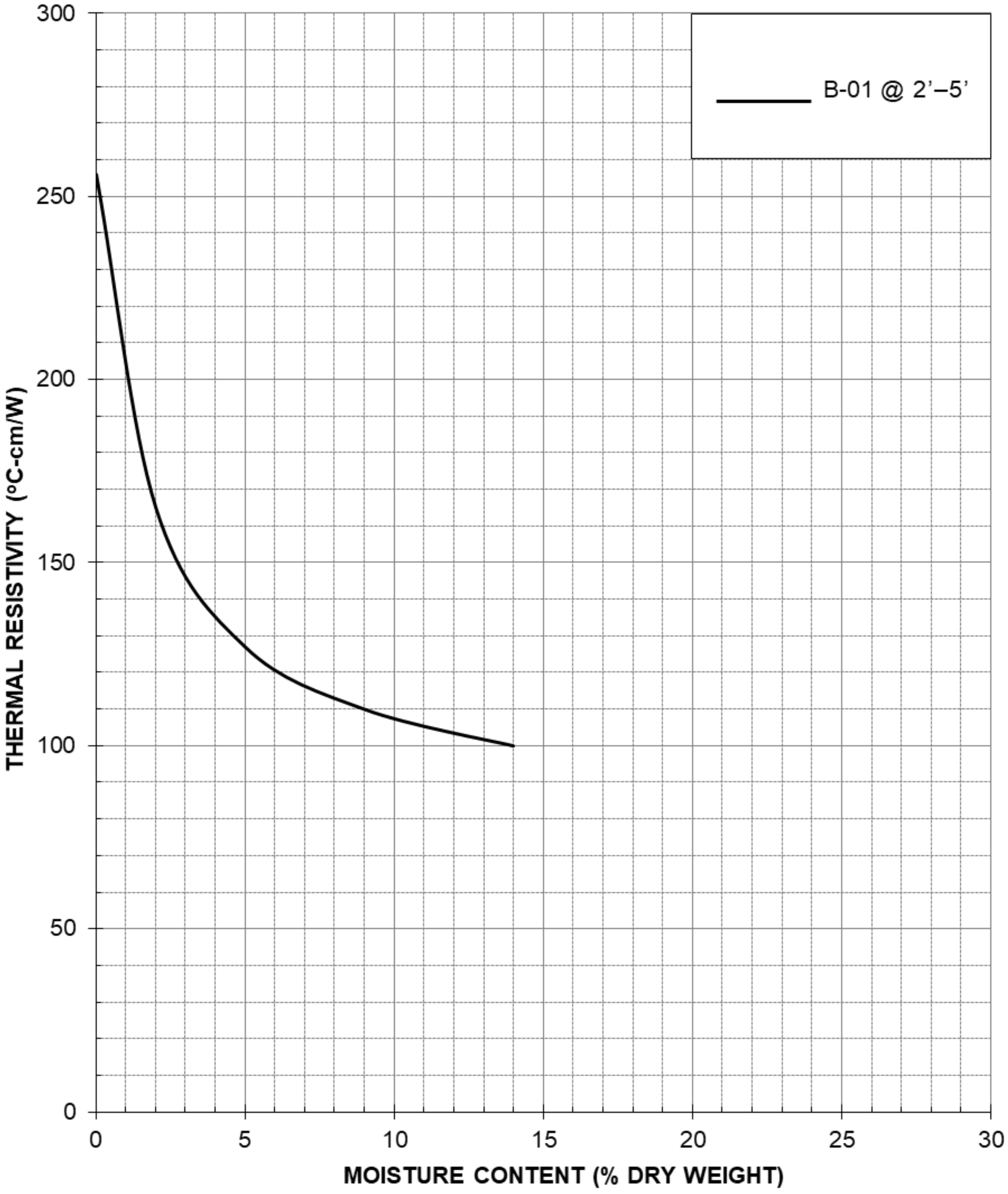
Comments: The thermal characteristic depicted in the dryout curves apply for the soils at their respective test dry density.

Please contact us if you have any questions or if we can be of further assistance.

Geotherm USA

Deepak Parmar

THERMAL DRYOUT CURVES



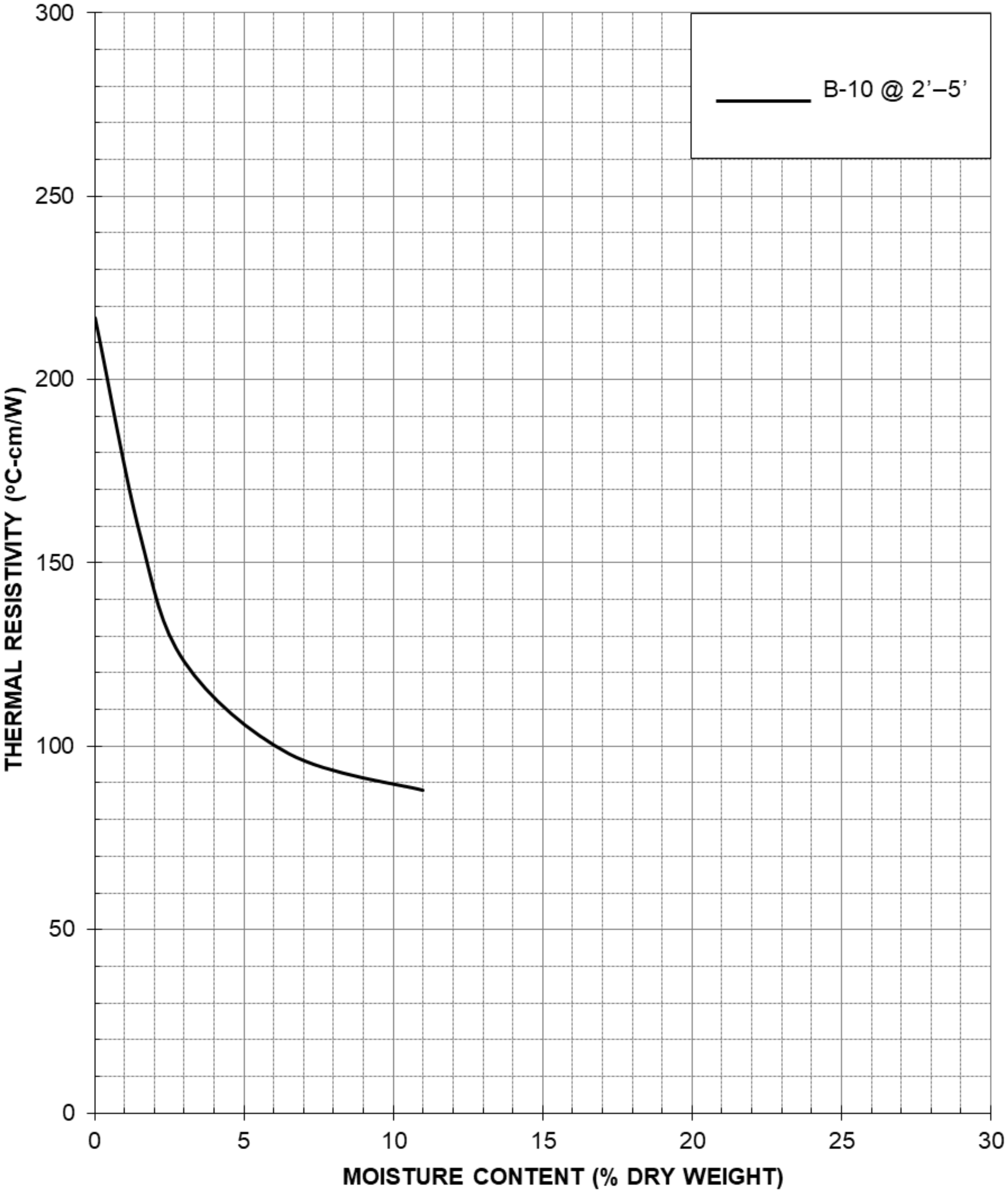
Westwood (Project No. R0022071.00)

Thermal Analysis of Native Soil

Badger Mountain Project – Douglas County, WA

February 2021 **Figure 1**

THERMAL DRYOUT CURVES



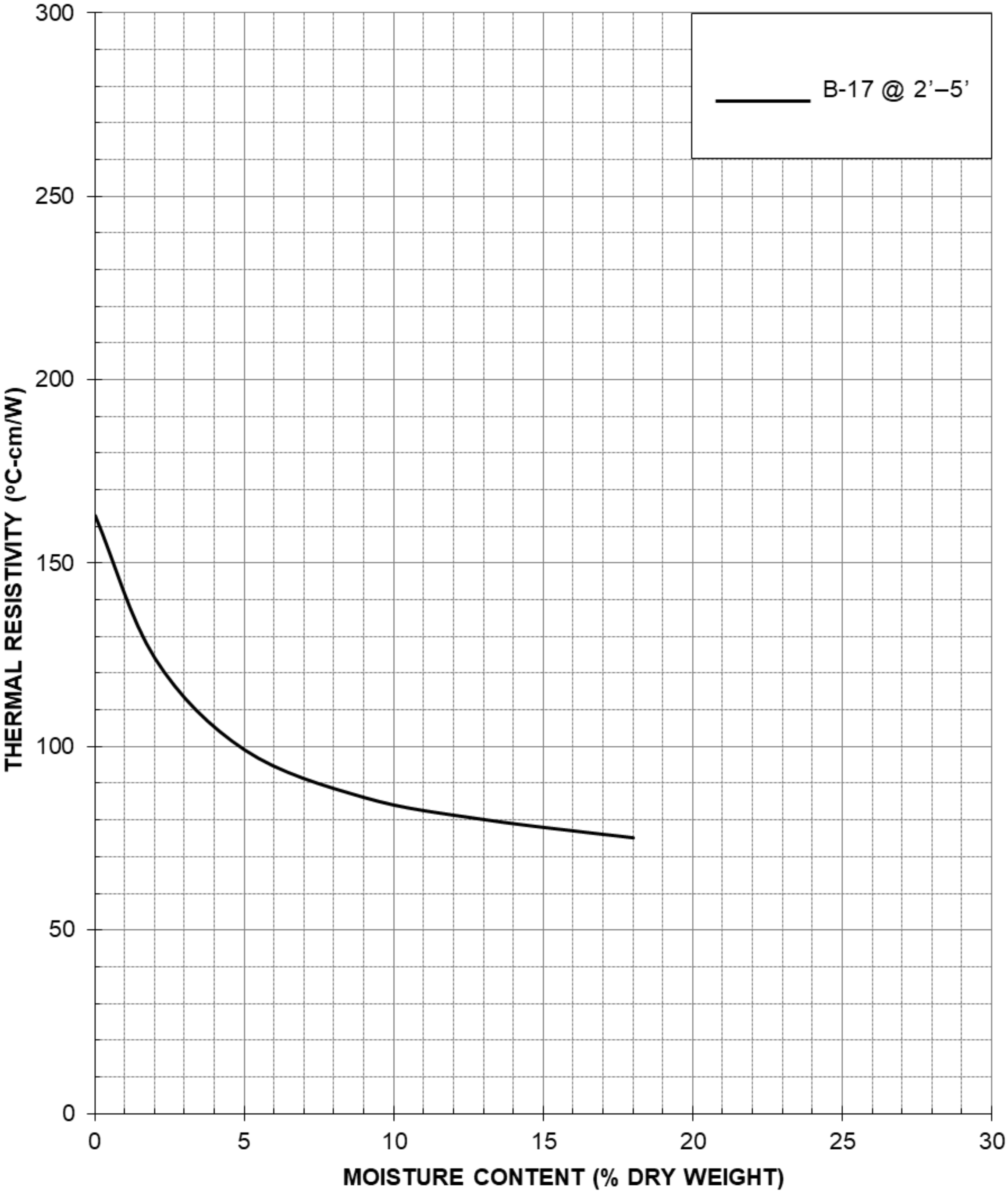
Westwood (Project No. R0022071.00)

Thermal Analysis of Native Soil

Badger Mountain Project – Douglas County, WA

February 2021 **Figure 2**

THERMAL DRYOUT CURVES



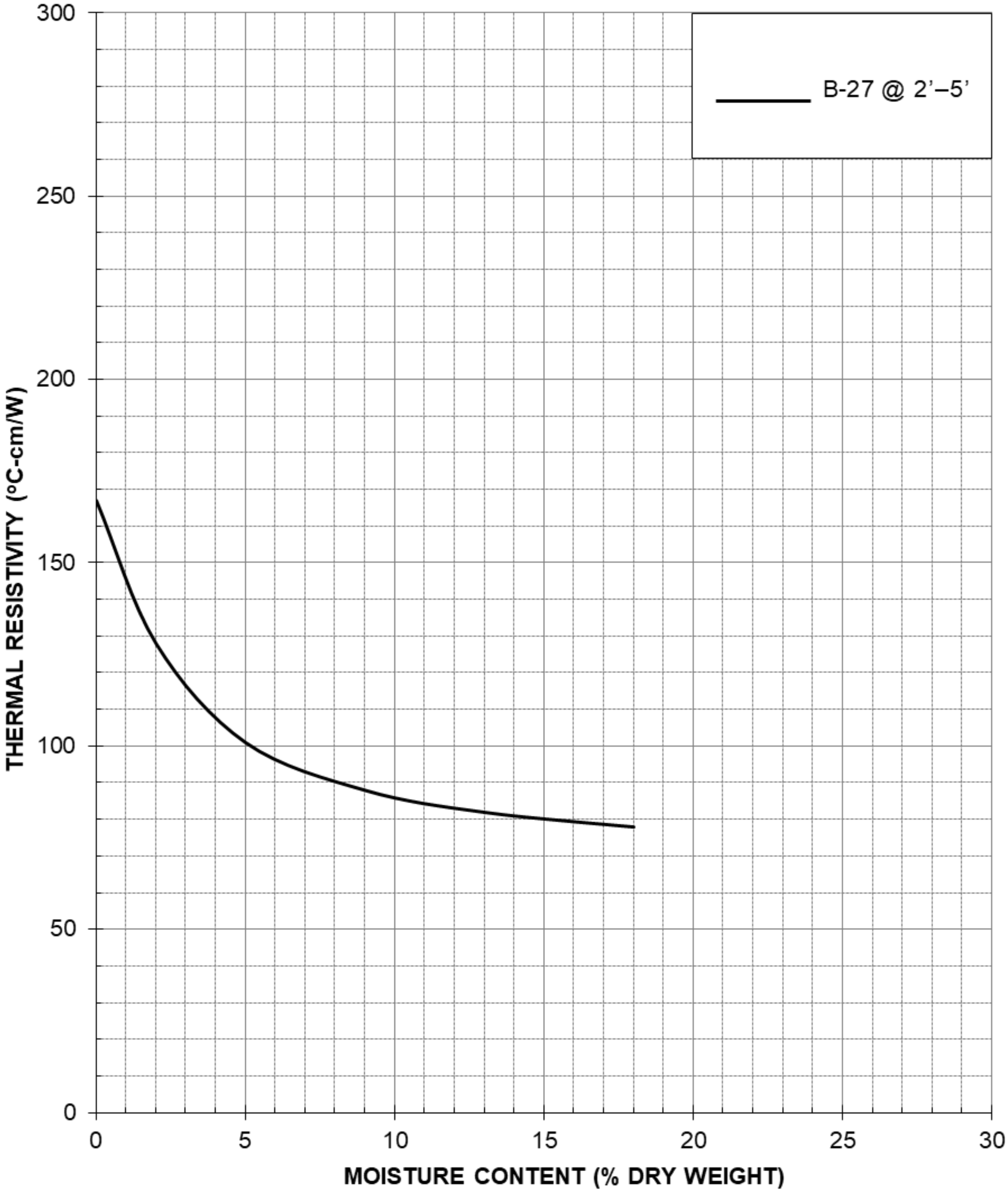
Westwood (Project No. R0022071.00)

Thermal Analysis of Native Soil

Badger Mountain Project – Douglas County, WA

February 2021 **Figure 3**

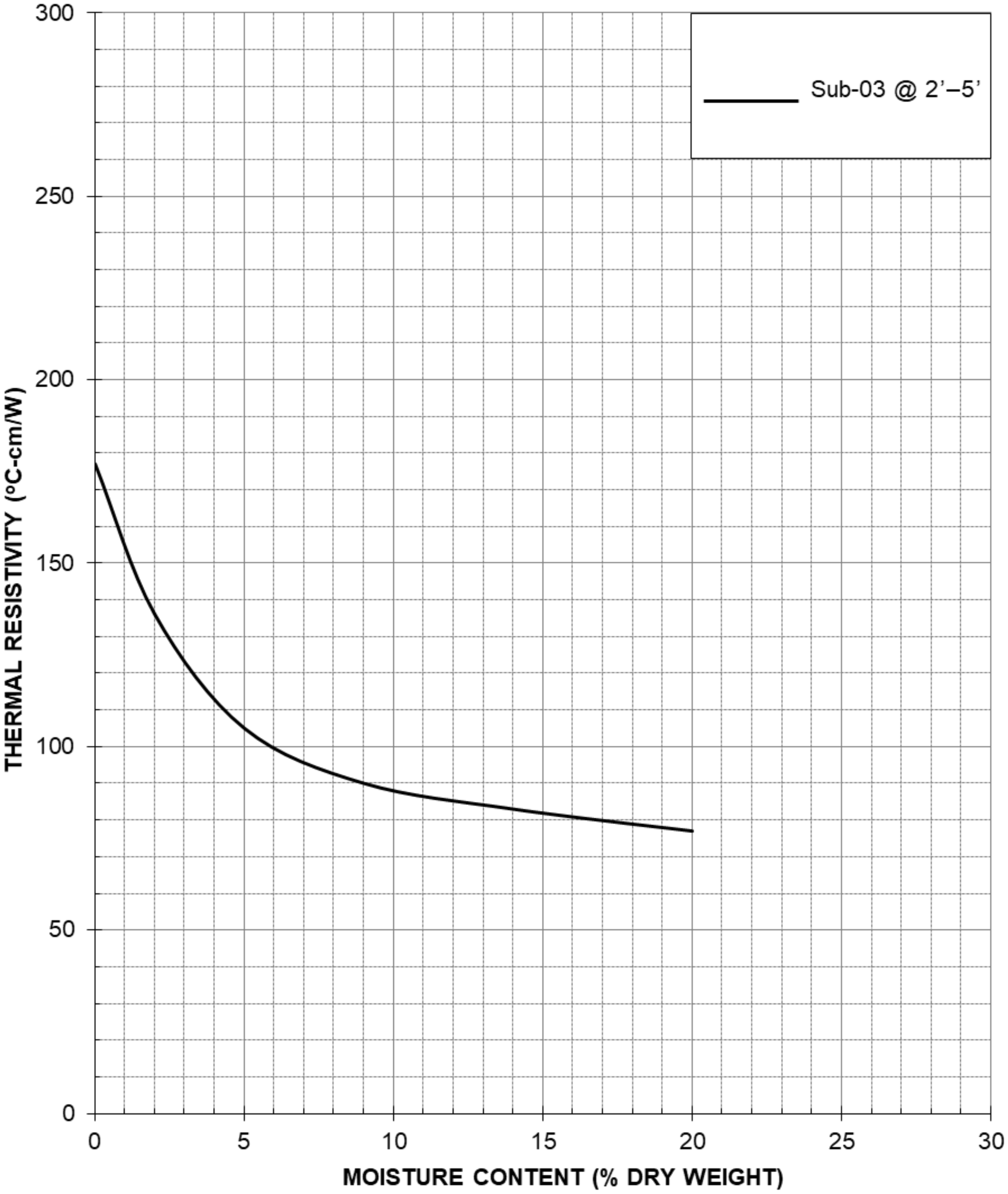
THERMAL DRYOUT CURVES



Westwood (Project No. R0022071.00)
Thermal Analysis of Native Soil
Badger Mountain Project – Douglas County, WA

February 2021 **Figure 4**

THERMAL DRYOUT CURVES



Westwood (Project No. R0022071.00)

Thermal Analysis of Native Soil

Badger Mountain Project – Douglas County, WA

February 2021 **Figure 5**

California Bearing Ratio ASTM:D1883

Project:	Badger Mountain	Job:	**12981**
Client:	Westwood Surveying & Engineering	Date:	2/16/21

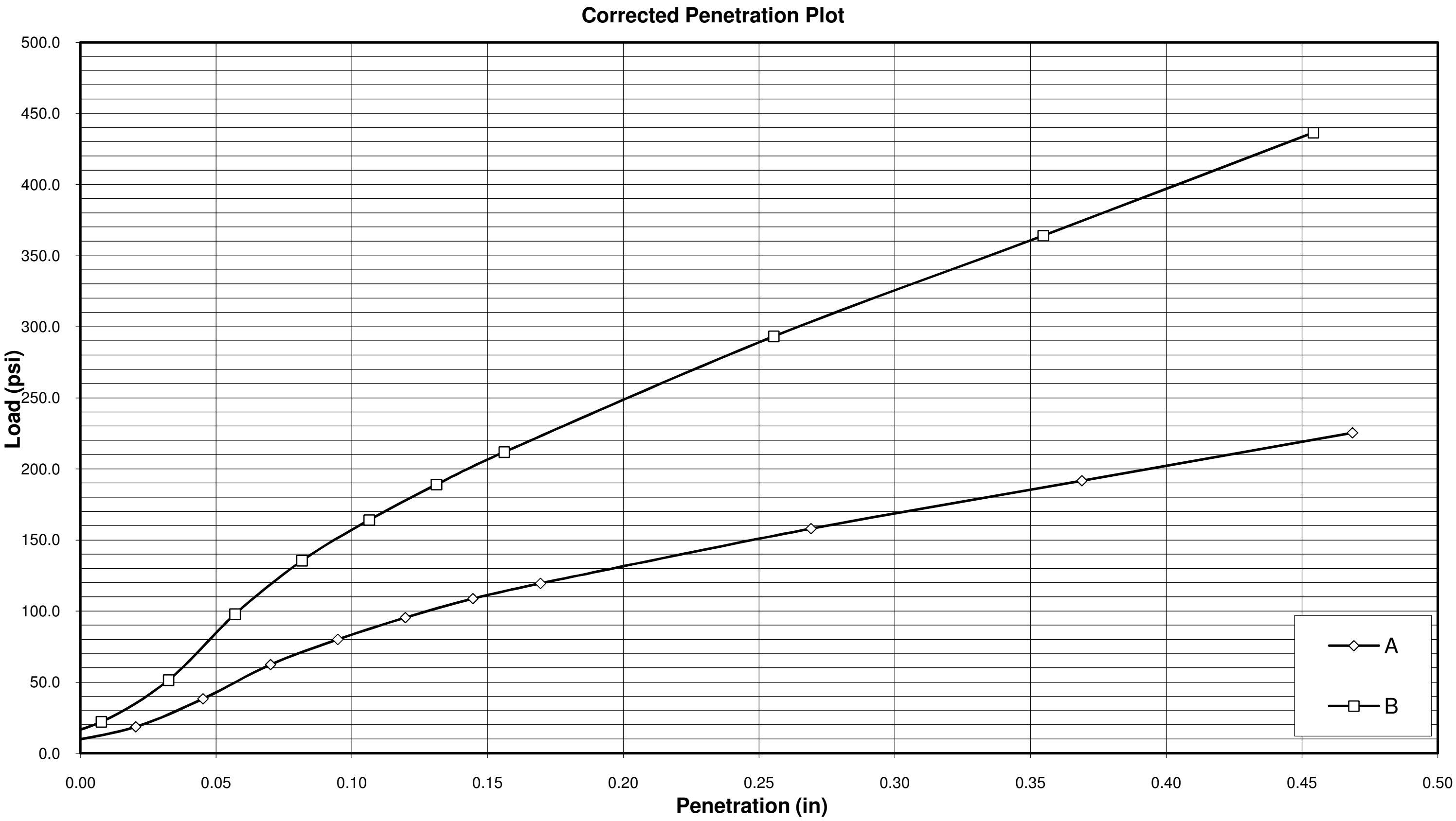
Boring #: B-15		Procedural Method:
Sample:		Specimens compacted to approximately 90% and 95% of maximum modified proctor density at the as received moisture content. Specimens soaked for a period of 4 days before CBR test was performed.
Depth (ft): 1-4	Type: Bulk	
Location:		

Classification: Sandy Lean Clay (CL)

Laboratory Moisture-Density Values		Index Properties		
Method:	ASTM:D1557 Method B	LL:	30	Gs:
Maximum Dry Density (PCF):	118.6	PL:	21	Organic Content:
Optimum Water Content:	12.7%	PI:	9	pH:

Initial Molding Conditions			
Specimen	A	B	
Compaction Hammer:	5 lb	5 lb	
Number of Layers:	3	3	
Blows per Layer:	NA	NA	
Initial Moisture Content:	11.2%	11.2%	
Initial Dry Density (PCF)	106.5	111.9	
Relative Compaction	89.8%	94.4%	
Soaking Phase			
Days Soaked	4	4	
Surcharge (psf)	50	50	
Total Swell (%)	2.0%	2.0%	
Penetration Phase			
Surcharge (psf)	50	50	
Corrected CBR Values			
at 0.1 inch (%)	8.3%	15.7%	
at 0.2 inch (%)	**8.8%**	**16.5%**	
Moisture Content After Penetration			
Top 1" of Specimen:	20.3%	20.1%	
Average of specimen:	18.3%	16.9%	

Stress vs. Penetration Graph



California Bearing Ratio ASTM:D1883

Project:	Badger Mountain	Job:	12981
Client:	Westwood Surveying & Engineering	Date:	2/16/21

Boring #: B-15

Sample:

Depth (ft): 1-4 Type: Bulk

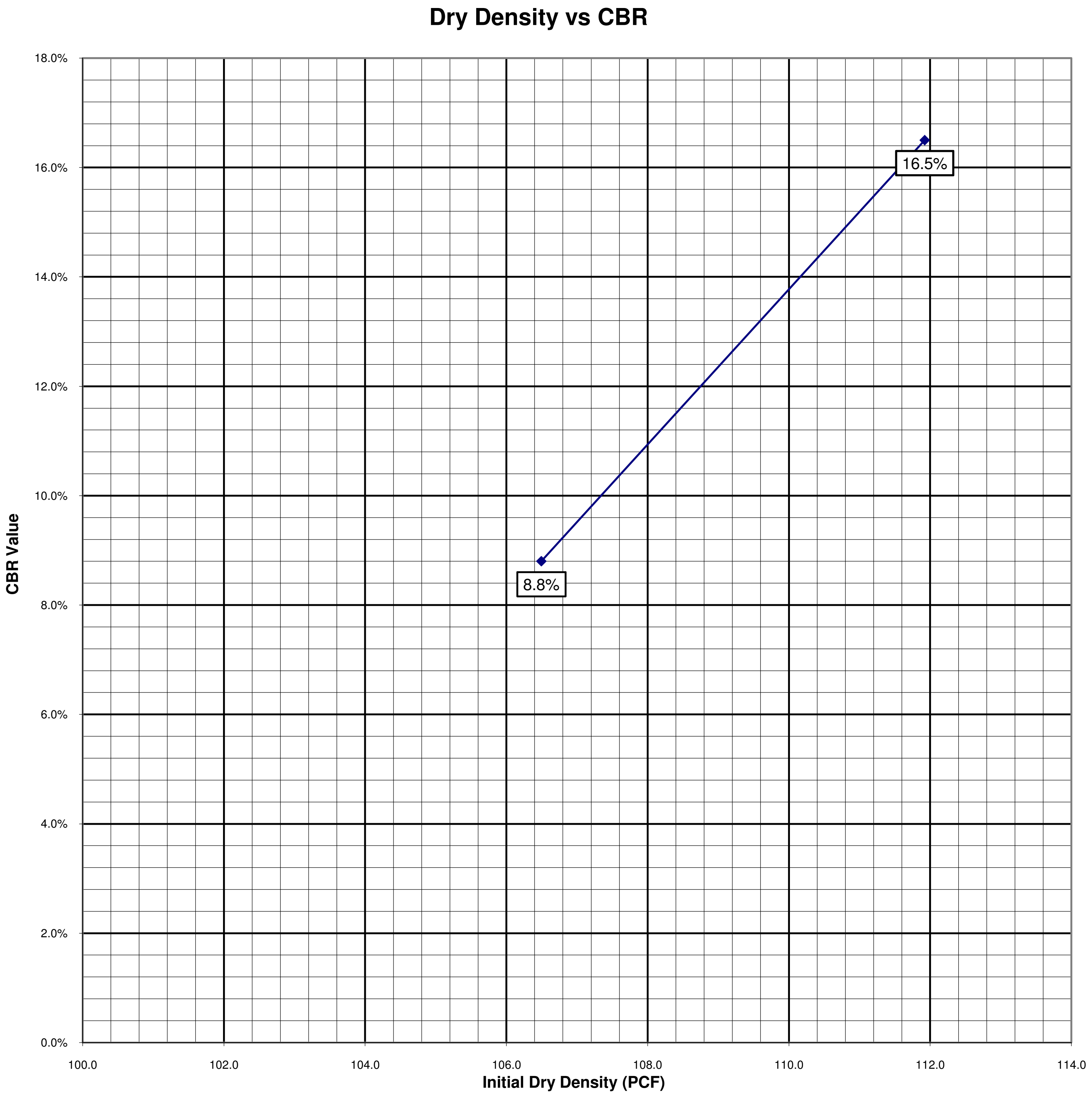
Location:

Classification: Sandy Lean Clay (CL)

Procedural Method:

Specimens compacted to approximately 90% and 95% of maximum modified proctor density at the as received moisture content. Specimens soaked for a period of 4 days before CBR test was performed.

Test Plot



California Bearing Ratio ASTM:D1883

Project:	Badger Mountain	Job:	**12981**
Client:	Westwood Surveying & Engineering	Date:	2/16/21

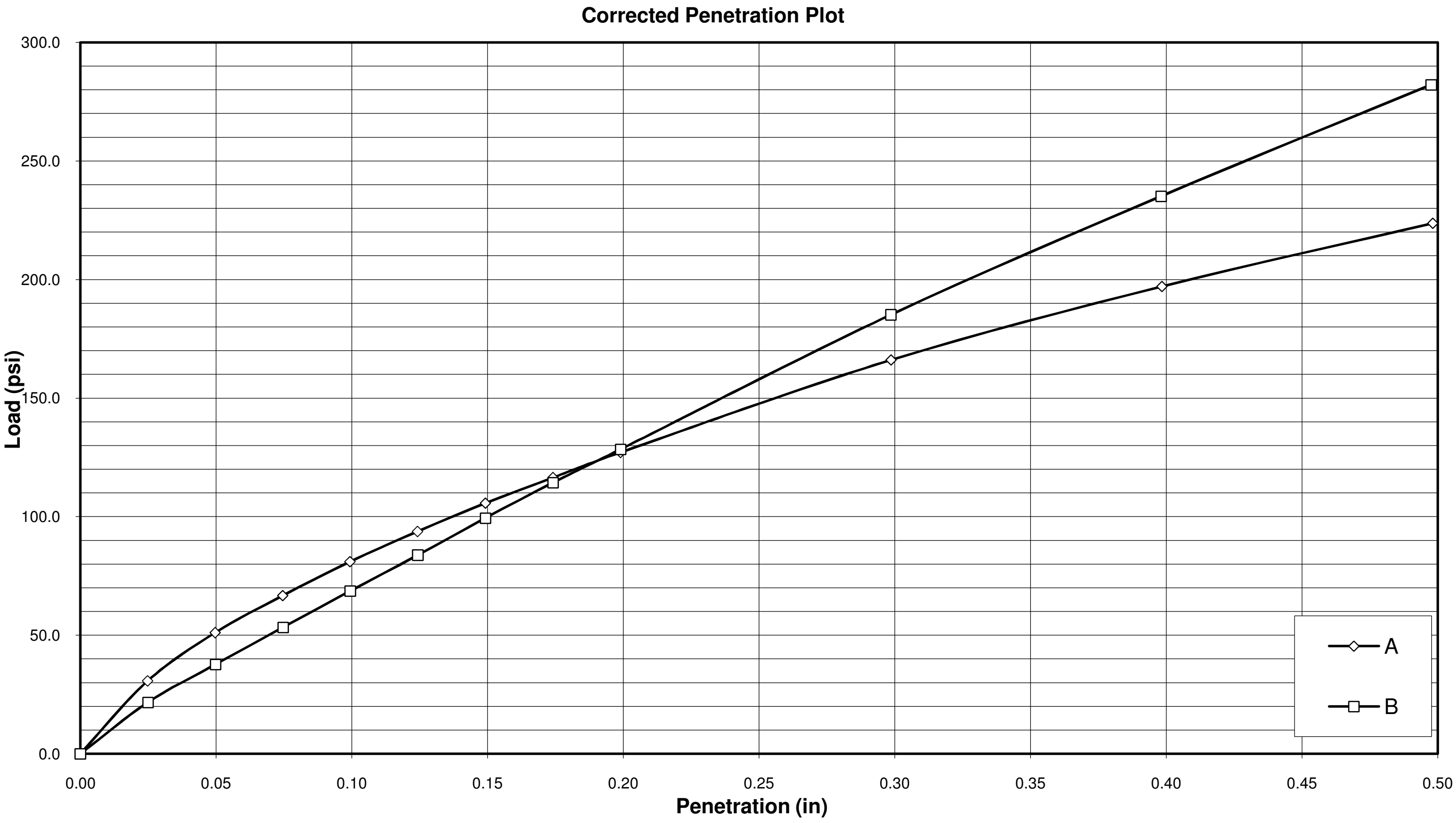
Boring #: B-26		Procedural Method:
Sample:		Specimens compacted to approximately 90% and 95% of maximum modified proctor density as close to as received moisture content as possible. Specimens soaked for a period of 4 days before CBR test was performed.
Depth (ft): 1-4	Type: Bulk	
Location:		
Classification: Sandy Lean Clay (CL)		

Laboratory Moisture-Density Values		Index Properties			
Method:	ASTM:D1557 Method B	LL:	29	Gs:	
Maximum Dry Density (PCF):	117.9	PL:	18	Organic Content:	
Optimum Water Content:	13.9%	PI:	11	pH:	

Initial Molding Conditions

Specimen	A	B	
Compaction Hammer:	5 lb	5 lb	
Number of Layers:	3	3	
Blows per Layer:	NA	NA	
Initial Moisture Content:	16.5%	16.5%	
Initial Dry Density (PCF)	105.9	109.4	
Relative Compaction	89.8%	92.8%	
Soaking Phase			
Days Soaked	4	4	
Surcharge (psf)	50	50	
Total Swell (%)	0.1%	0.3%	
Penetration Phase			
Surcharge (psf)	50	50	
Corrected CBR Values			
at 0.1 inch (%)	8.1%	6.9%	
at 0.2 inch (%)	**8.5%**	**8.6%**	
Moisture Content After Penetration			
Top 1" of Specimen:	18.3%	17.5%	
Average of specimen:	17.8%	17.1%	

Stress vs. Penetration Graph



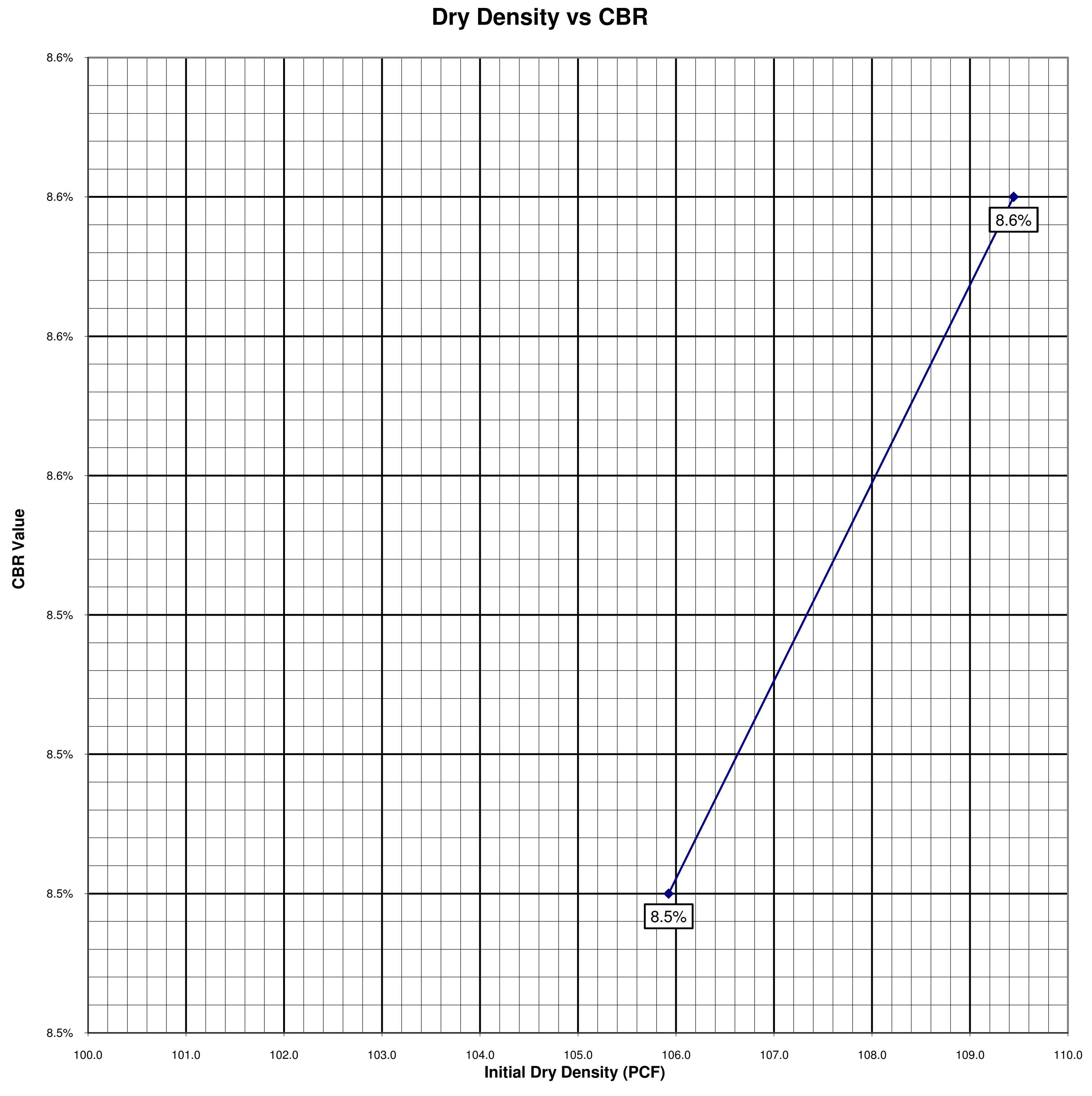
California Bearing Ratio ASTM:D1883

Project:	Badger Mountain	Job:	12981
Client:	Westwood Surveying & Engineering	Date:	2/16/21

Boring #: B-26		Procedural Method:
Sample:		Specimens compacted to approximately 90% and 95% of maximum modified proctor density as close to as received moisture content as possible. Specimens soaked for a period of 4 days before CBR test was performed.
Depth (ft): 1-4	Type: Bulk	
Location:		

Classification: Sandy Lean Clay (CL)

Test Plot



California Bearing Ratio ASTM:D1883

Project:	Badger Mountain	Job:	**12981**
Client:	Westwood Surveying & Engineering	Date:	2/16/21

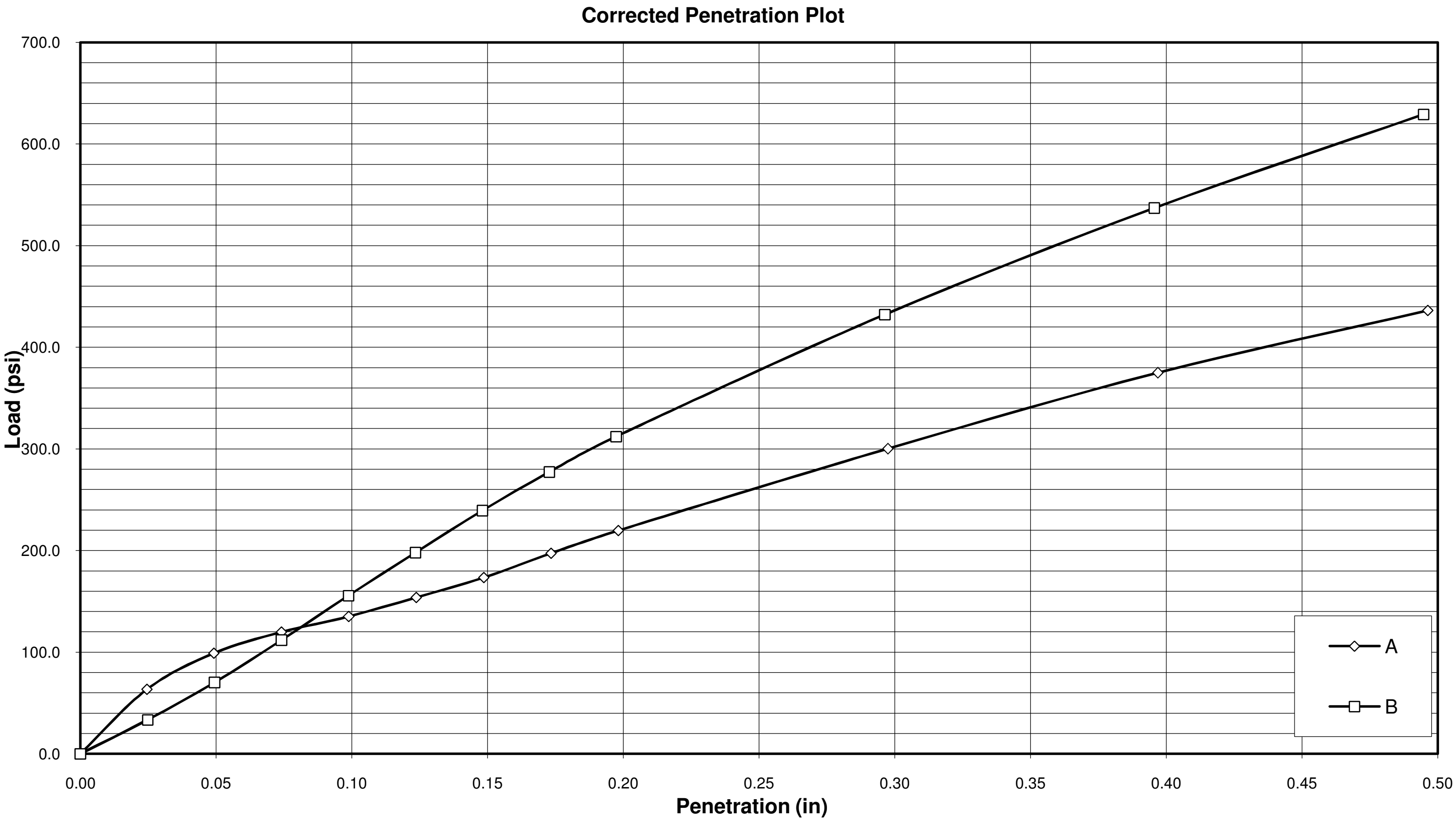
Boring #: Sub-02		Procedural Method:
Sample:		Specimens compacted to approximately 90% and 95% of maximum modified proctor density at as received moisture content. Specimens soaked for a period of 4 days before CBR test was performed.
Depth (ft): 1-4	Type: Bulk	
Location:		

Classification: Sandy Lean Clay with gravel (CL)

Laboratory Moisture-Density Values		Index Properties			
Method:	ASTM:D1557 Method B	LL:	30	Gs:	
Maximum Dry Density (PCF):	135.6	PL:	18	Organic Content:	
Optimum Water Content:	8.5%	PI:	12	pH:	

Initial Molding Conditions			
Specimen	A	B	
Compaction Hammer:	5 lb	5 lb	
Number of Layers:	3	3	
Blows per Layer:	NA	NA	
Initial Moisture Content:	13.7%	13.7%	
Initial Dry Density (PCF)	118.2	123.5	
Relative Compaction	87.2%	91.1%	
Soaking Phase			
Days Soaked	4	4	
Surcharge (psf)	50	50	
Total Swell (%)	0.2%	0.3%	
Penetration Phase			
Surcharge (psf)	50	50	
Corrected CBR Values			
at 0.1 inch (%)	13.6%	15.6%	
at 0.2 inch (%)	**14.7%**	**20.9%**	
Moisture Content After Penetration			
Top 1" of Specimen:	13.6%	14.1%	
Average of specimen:	13.0%	13.2%	

Stress vs. Penetration Graph



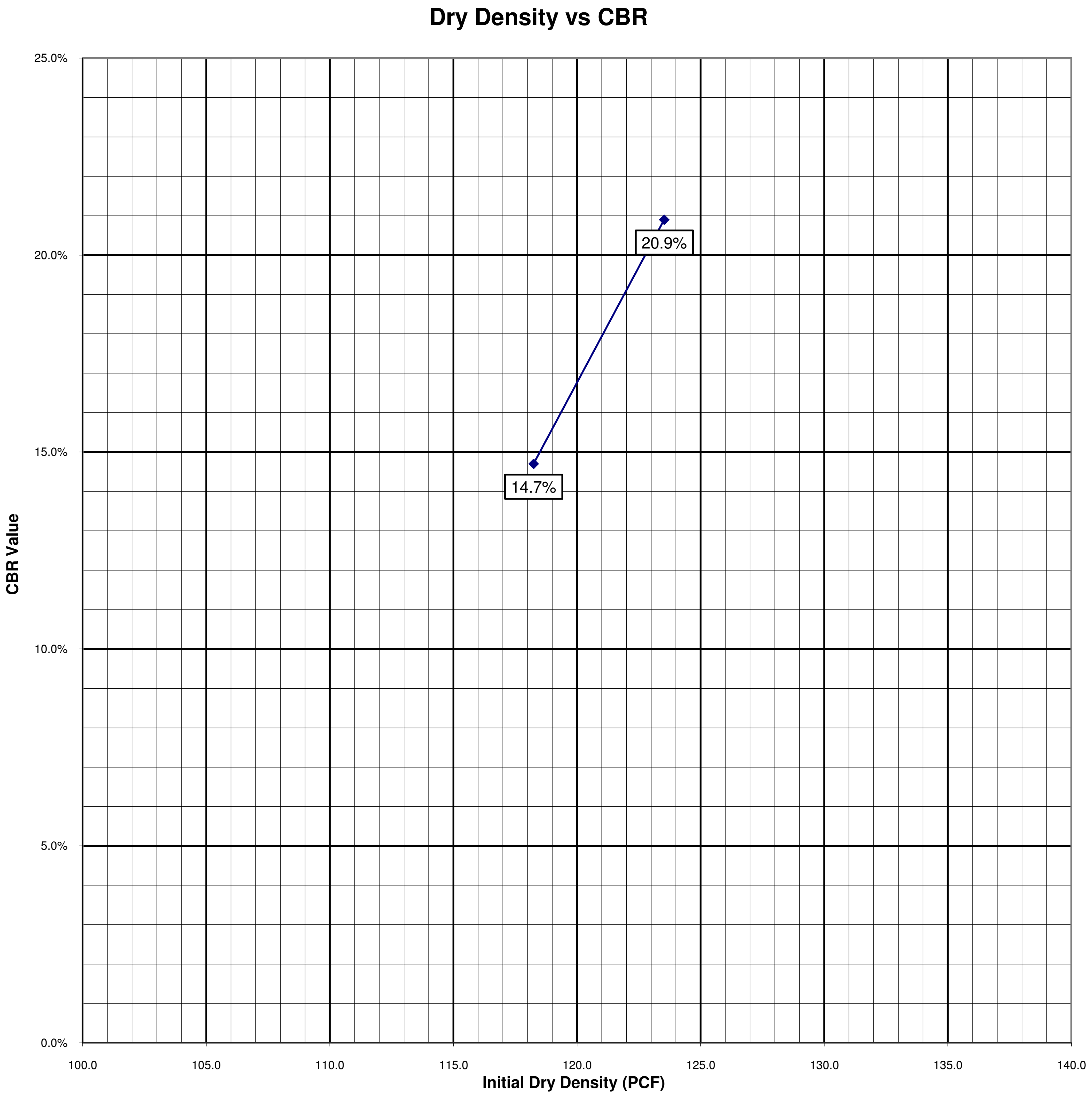
California Bearing Ratio ASTM:D1883

Project:	Badger Mountain	Job:	12981
Client:	Westwood Surveying & Engineering	Date:	2/16/21

Boring #: Sub-02		Procedural Method:
Sample:		Specimens compacted to approximately 90% and 95% of maximum modified proctor density at as received moisture content. Specimens soaked for a period of 4 days before CBR test was performed.
Depth (ft): 1-4	Type: Bulk	
Location:		

Classification: Sandy Lean Clay with gravel (CL)

Test Plot



Moisture Density Curve ASTM: D1557, Method B

Project: **Badger Mountain** Date: **2/10/21**

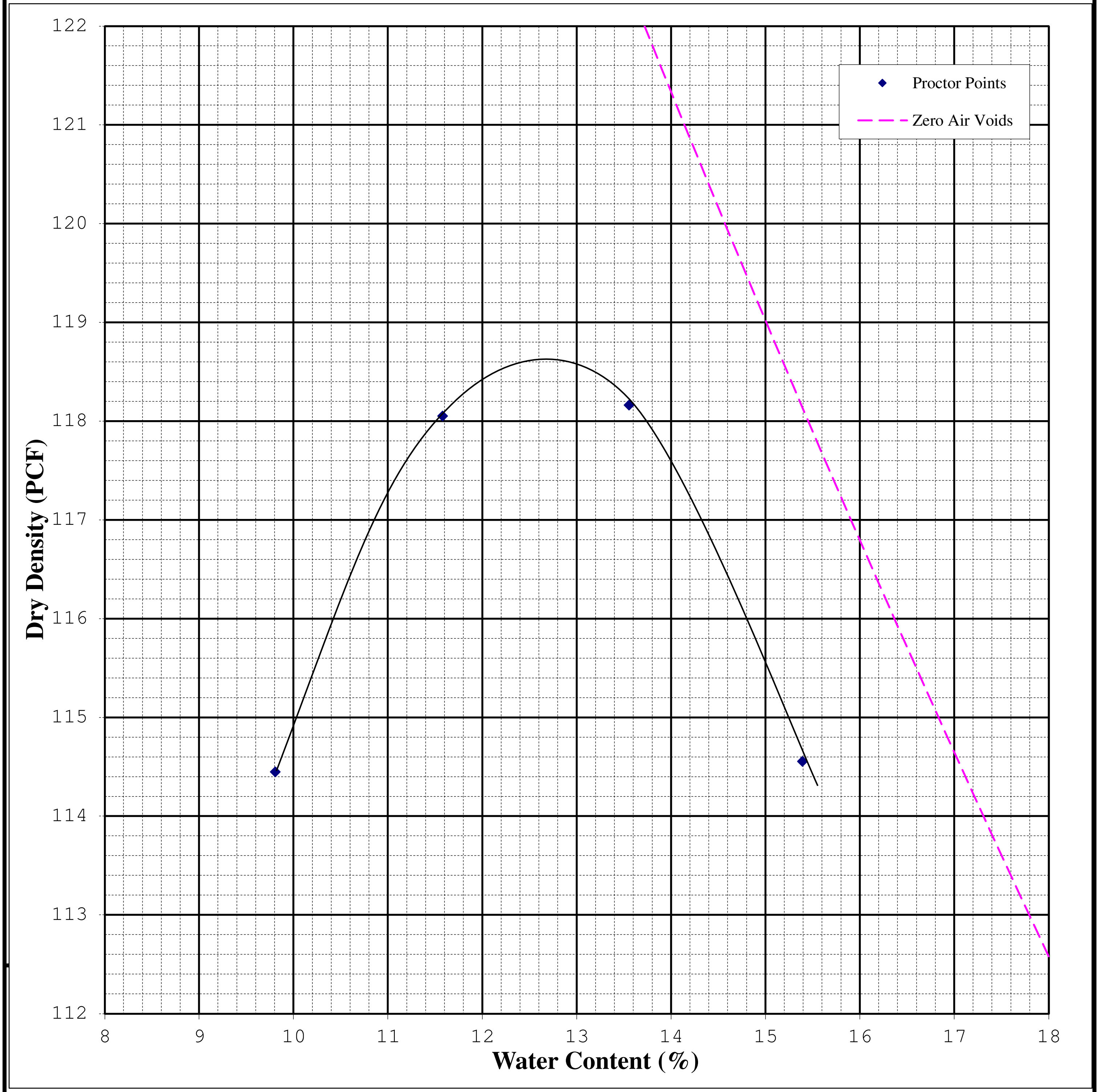
Client: **Westwood Surveying & Engineering** Job No. **12981**

Boring No. **B-15** Sample: Depth(ft): **1-4** Location:

Soil Type: **Sandy Lean Clay (CL)**

As Received W.C. (%): **11.2** ◆ LL: **30** △ PL: **21** PI: **9** Specific Gravity: **2.67** ◆ *Assumed △

Maximum Dry Density (pcf): **118.6** Opt. Water Content (%): **12.7**



Moisture Density Curve ASTM: D1557, Method B

Project: **Badger Mountain** Date: **2/10/21**

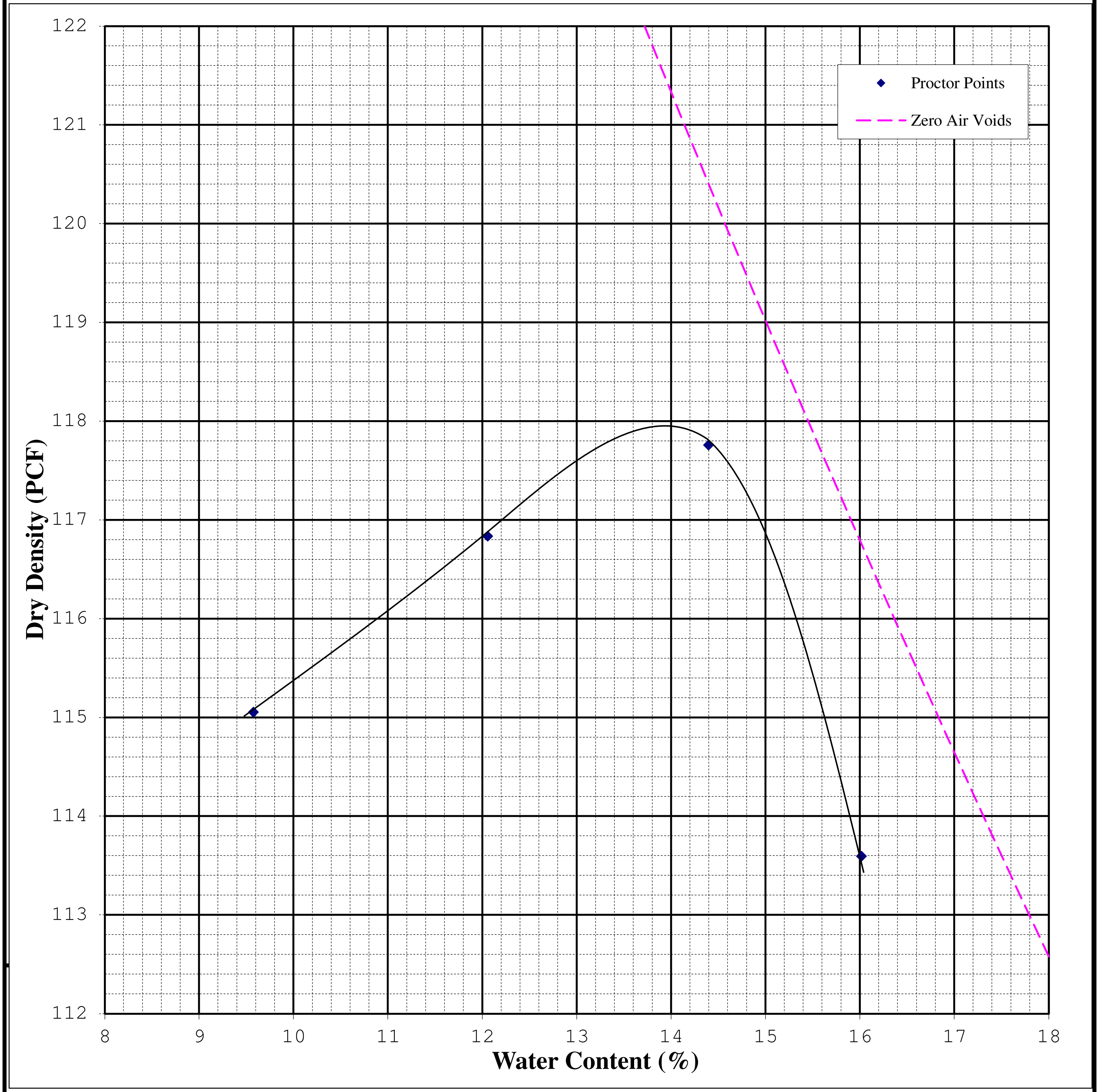
Client: **Westwood Surveying & Engineering** Job No. **12981**

Boring No. **B-26** Sample: Depth(ft): **1-4** Location:

Soil Type: **Sandy Lean Clay (CL)**

As Received W.C. (%): **19.9** ◆ LL: **29** ▲ PL: **18** PI: **11** Specific Gravity: **2.67** ◆ *Assumed ▲

Maximum Dry Density (pcf): **117.9** ______ Opt. Water Content (%): **13.9** ______



9530 James Ave South

SOIL ENGINEERING TESTING, INC.

Bloomington, MN 55431

SET-R18a

Moisture Density Curve ASTM: D1557, Method B

Project: **Badger Mountain** Date: **2/10/21**

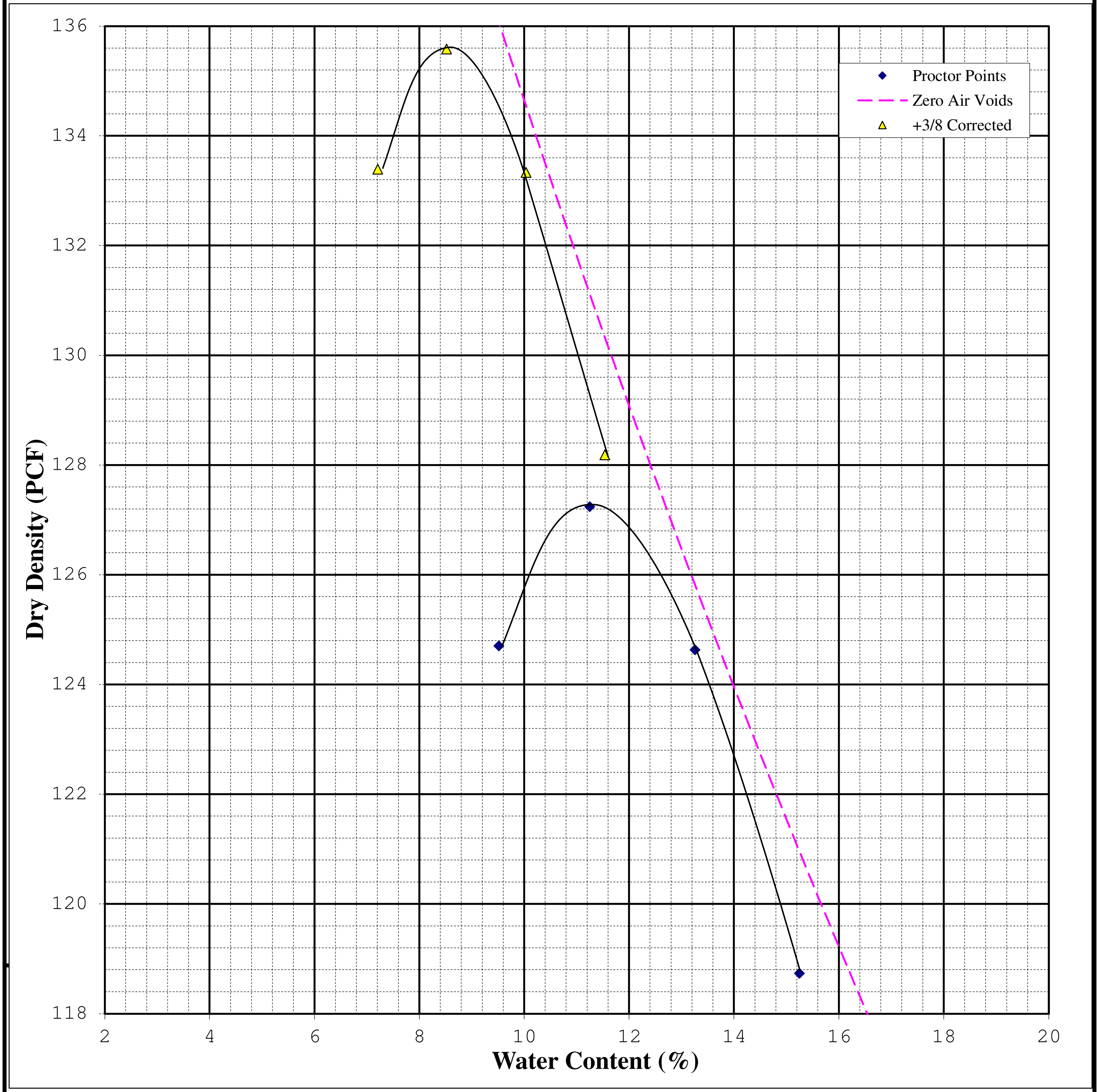
Client: **Westwood Surveying & Engineering** Job No. **12981**

Boring No. **Sub-02** Sample: Depth(ft): **1-4** Location:

Soil Type: **Sabdy Lean Clay with gravel (CL)**

As Received W.C. (%): **13.7** LL: **30** PL: **18** PI: **12** Specific Gravity: **2.75** *Assumed

	◆	△		◆	△
Maximum Dry Density (pcf):	**127.2**	**135.6**	Opt. Water Content (%):	**11.2**	**8.5**



9530 James Ave South

SOIL ENGINEERING TESTING, INC.

Bloomington, MN 55431

SET-R18a

Synergy Environmental Lab, INC

1990 Prospect Ct., Appleton, WI 54914 *P 920-830-2455 * F 920-733-0631

PAUL EGGEN
WESTWOOD PROFESSIONAL SERVICES
12701 WHITEWATER DRIVE
MINNETONKA. MN 55343

Report Date *01-Mar-21*

Project Name BADGER MOUNTAIN SOLAR **Invoice #** E39063
Project # R0025965.01

Lab Code 5039063A
Sample ID B-02 SS-03
Sample Matrix Soil
Sample Date

	Result	**Unit**	**LOD**	**LOQ**	**Dil**	**Method**	**Ext Date**	**Run Date**	**Analyst**	**Code**
General										
General										
Solids Percent	95.6	%			1	5021		2/11/2021	NJC	1
Wet Chemistry										
General										
Sulfate, Unfiltered	30.2 "J"	mg/kg	12.9	43	1	9056		2/21/2021	ESC	1
Chlorides, Unfiltered	16.1 "J"	mg/kg	9.2	30.7	1	9056		2/21/2021	ESC	1

Lab Code 5039063B
Sample ID B-04 SS-03
Sample Matrix Soil
Sample Date

	Result	**Unit**	**LOD**	**LOQ**	**Dil**	**Method**	**Ext Date**	**Run Date**	**Analyst**	**Code**
General										
General										
Solids Percent	96.9	%			1	5021		2/11/2021	NJC	1
Wet Chemistry										
General										
Sulfate, Unfiltered	437	mg/kg	12.9	43	1	9056		2/21/2021	ESC	1
Chlorides, Unfiltered	201	mg/kg	9.2	30.7	1	9056		2/21/2021	ESC	1

Lab Code 5039063C
Sample ID B-07 SS-03
Sample Matrix Soil
Sample Date

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	92.1	%			1	5021		2/11/2021	NJC	1
Wet Chemistry										
General										
Sulfate, Unfiltered	44.5	mg/kg	12.9	43	1	9056		2/21/2021	ESC	1
Chlorides, Unfiltered	11.5 "J"	mg/kg	9.2	30.7	1	9056		2/21/2021	ESC	1

Lab Code 5039063D
Sample ID B-13 SS-02
Sample Matrix Soil
Sample Date

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	97.8	%			1	5021		2/11/2021	NJC	1
Wet Chemistry										
General										
Sulfate, Unfiltered	< 12.9	mg/kg	12.9	43	1	9056		2/21/2021	ESC	1
Chlorides, Unfiltered	14.1 "J"	mg/kg	9.2	30.7	1	9056		2/21/2021	ESC	1

Lab Code 5039063E
Sample ID B-16 SS-02
Sample Matrix Soil
Sample Date

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	97.9	%			1	5021		2/11/2021	NJC	1
Wet Chemistry										
General										
Sulfate, Unfiltered	< 12.9	mg/kg	12.9	43	1	9056		2/21/2021	ESC	1
Chlorides, Unfiltered	< 9.2	mg/kg	9.2	30.7	1	9056		2/21/2021	ESC	1

Project Name BADGER MOUNTAIN SOLAR **Invoice #** E39063
Project # R0025965.01

Lab Code 5039063F
Sample ID B-20 SS-06
Sample Matrix Soil
Sample Date

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	93.8	%			1	5021		2/11/2021	NJC	1
Wet Chemistry										
General										
Sulfate, Unfiltered	404	mg/kg	12.9	43	1	9056		2/21/2021	ESC	1
Chlorides, Unfiltered	288	mg/kg	9.2	30.7	1	9056		2/21/2021	ESC	1

Lab Code 5039063G
Sample ID B-25 SS-06
Sample Matrix Soil
Sample Date

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	91.4	%			1	5021		2/11/2021	NJC	1
Wet Chemistry										
General										
Sulfate, Unfiltered	357	mg/kg	12.9	43	1	9056		2/21/2021	ESC	1
Chlorides, Unfiltered	28.7 "J"	mg/kg	9.2	30.7	1	9056		2/21/2021	ESC	1

Lab Code 5039063H
Sample ID B-26 SS-03
Sample Matrix Soil
Sample Date

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	99.1	%			1	5021		2/11/2021	NJC	1
Wet Chemistry										
General										
Sulfate, Unfiltered	27.9 "J"	mg/kg	12.9	43	1	9056		2/21/2021	ESC	1
Chlorides, Unfiltered	< 9.2	mg/kg	9.2	30.7	1	9056		2/21/2021	ESC	1

Project Name BADGER MOUNTAIN SOLAR **Invoice #** E39063
Project # R0025965.01

Lab Code 5039063I
Sample ID B-30 SS-01
Sample Matrix Soil
Sample Date

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	95.7	%			1	5021		2/11/2021	NJC	1
Wet Chemistry										
General										
Sulfate, Unfiltered	< 12.9	mg/kg	12.9	43	1	9056		2/21/2021	ESC	1
Chlorides, Unfiltered	< 9.2	mg/kg	9.2	30.7	1	9056		2/21/2021	ESC	1

Lab Code 5039063J
Sample ID BESS-02 SS-04
Sample Matrix Soil
Sample Date

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	94.4	%			1	5021		2/11/2021	NJC	1
Wet Chemistry										
General										
Sulfate, Unfiltered	168	mg/kg	12.9	43	1	9056		2/21/2021	ESC	1
Chlorides, Unfiltered	32.1	mg/kg	9.2	30.7	1	9056		2/21/2021	ESC	1

"J" Flag: Analyte detected between LOD and LOQ LOD Limit of Detection LOQ Limit of Quantitation

Code	*Comment*
1	Laboratory QC within limits.

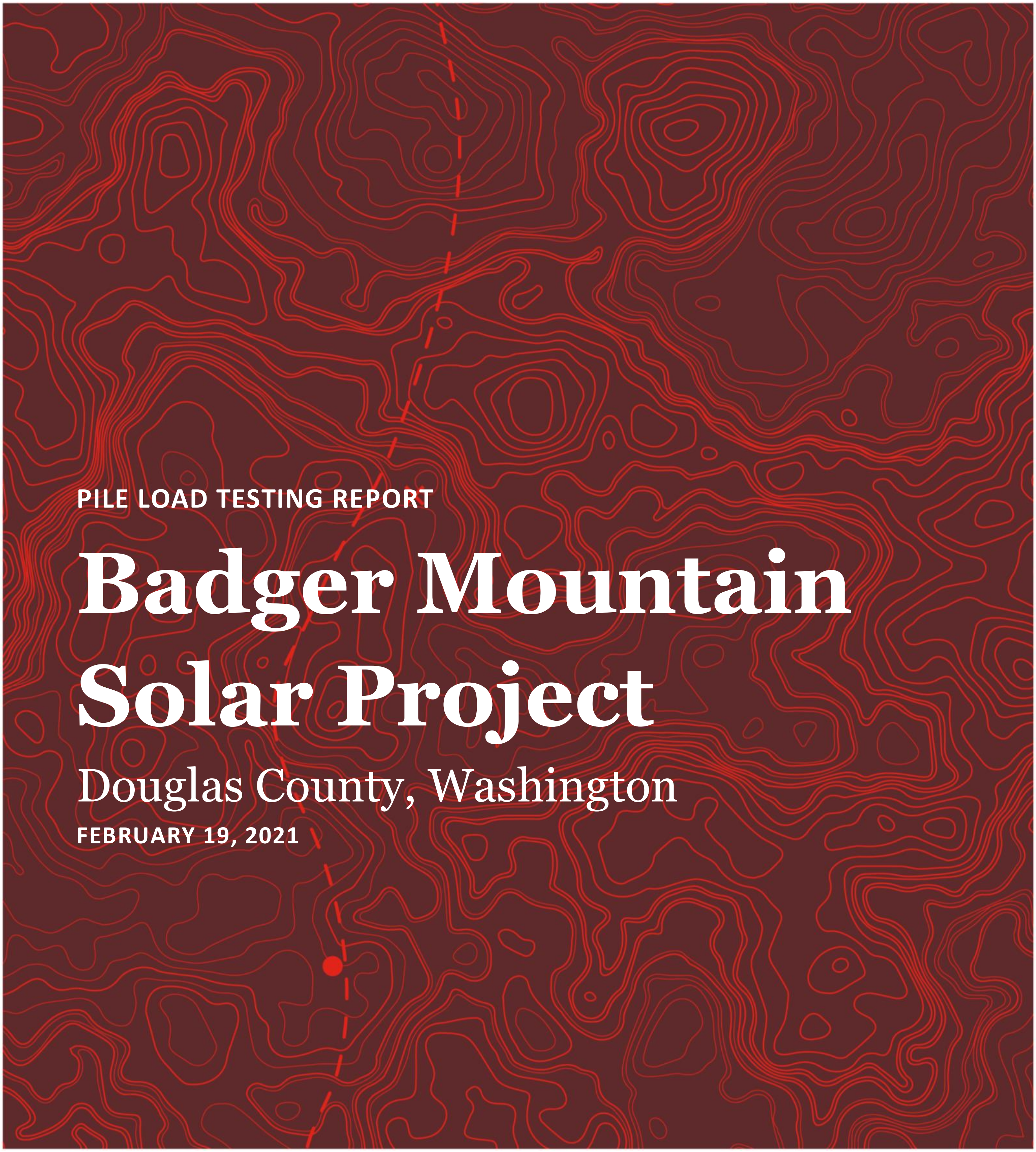
ESC denotes sub contract lab - Certification #998093910

All solid sample results reported on a dry weight basis unless otherwise indicated. All LOD's and LOQ's are adjusted for dilutions but not dry weight. Subcontracted results are denoted by SUB in the analyst field.

Authorized Signature

Appendix E

Pile Load Testing Report



PILE LOAD TESTING REPORT

Badger Mountain Solar Project

Douglas County, Washington

FEBRUARY 19, 2021

PREPARED FOR:

AVANGRID RENEWABLES

PREPARED BY:

Westwood

Westwood

Pile Load Testing Report

Badger Mountain Solar Project

Douglas County, Washington

Retained By:

Avangrid Renewables
1125 NW Couch Street, Suite 700
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(503) 796-7000

Prepared By:

Westwood Professional Services
12701 Whitewater Drive, Suite 300
Minnetonka, MN 55343
(952) 937-5150

February 19, 2021

Figures

Tables

Appendices

1.0 Introduction

Westwood Professional Services, Inc. (Westwood) was retained by Avangrid Renewables to perform axial tensile, lateral, and compression pile load tests at the Badger Mountain Solar Project in Douglas County, WA. A total of seventy (70) W6x9 non-galvanized prototype test piles were installed by Westwood between February 3, 2021 and February 4, 2021. Piles were installed at previously conducted boring locations to correlate load testing results with the soil borings as well as to gain spatial coverage of the project site. Pile load testing (axial tensile, lateral, and axial compression) was subsequently completed between February 5, 2021 and February 8, 2021. Pile locations are displayed in Figure 1 in Appendix 1.

2.0 Scope of Work

Westwood's scope included the following:

- Two (2) axial tensile pile load tests at the thirty (30) predesign pile locations.
  - Due to shallow refusals, not all piles were tested.
- Two (2) lateral pile load tests at the thirty (30) predesign pile locations.
  - Due to shallow refusals, not all piles were tested
- One (1) axial compression pile load tests at the ten (10) predesign pile locations.
- Data report presenting test results.

3.0 Test Pile Installation

3.1 Test Pile Installation Summary

Seventy (70) prototype test piles were installed by Granite Construction Company between February 3, 2021 and February 4, 2021. The piles were installed at the 30 test locations outlined in Table 3-1 below.

Table 3-1: Piles Installed at Each Location

Number of Locations	Pile #	Pile Section	Pile Length (ft)	Planned Embedment Depth (ft)	Test Performed
20	1	W6x9	11	6	Axial Tensile and Lateral
	2	W6x9	13	8	Axial Tensile and Lateral
10	1	W6x9	11	6	Axial Tensile and Lateral
	2	W6x9	13	8	Axial Tensile and Lateral
	3	W6x9	11	6	Axial Compressive

Test pile locations are displayed in Test Pile Location Figure in Appendix 1. During installation, a total of 16 piles encountered a refusal before reaching their planned embedment depth. For the purposes of this report, refusal is defined as 1-minute of drive time with less than 1-inch of advancement of the pile. A summary of the refusal depths is included in Table 3-2 below. The installed test piles utilized W6x9 non-galvanized I-beams conforming to ASTM standard A992. In general, test piles were installed at locations corresponding to the previously conducted boring locations. All piles were installed by Granite Construction Company using a Vermeer PD-10 pile driver. A Westwood representative was present when the piles were installed and recorded the install date, pile location, test post type/length, pile embedment, pile stick-up height, and total pile drive time. This data is summarized in Table 1 in Appendix 2. Detailed data for drive time recorded by foot is available in Appendix 3.

Table 3-2: Pile Refusal Summary

Pile Location ID	Pile Section	Planned Embedment Depth (ft)	Actual Embedment Depth (ft)
PLT-B01-6C	W6x9	6	4.80
PLT-AP16-8	W6x9	8	4.92
PLT-B01-6	W6x9	6	4.50
PLB-B02-8	W6x9	8	5.75
PLT-B07-6	W6x9	6	4.17
PLT-B07-8	W6x9	8	3.13
PLT-B12-6	W6x9	6	5.42
PLT-B12-8	W6x9	8	3.83
PLT-B14-8	W6x9	8	7.83
PLT-B16-6	W6x9	6	5.42
PLT-B16-8	W6x9	8	4.66
PLT-B22-8	W6x9	8	6.63
PLT-B28-6	W6x9	6	5.58
PLT-B28-8	W6x9	8	6.25
PLT-B30-6	W6x9	6	4.75
PLT-B30-8	W6x9	8	5.00

4.0 Pile Load Testing

4.1 Axial Tensile Test Set-Up

In general accordance with ASTM D3689, the axial tensile load apparatus was constructed and positioned so that the resultant loads were applied vertically and in line with the central vertical axis of the pile so as to minimize eccentric loading and avoid a horizontal load component. A clear distance of at least five times the maximum diameter of the pile was provided between the test pile and the reaction points. All apparatuses used for applying and measuring loads, including all struts and structural members, were of sufficient size, strength, and stiffness to safely prevent excessive deflection and instability up to 125% of the maximum applied test load.

The displacement reference frame was set up independent of the loading system, with supports firmly planted on the ground at a clear distance from the test pile. Displacement indictors rested on a platform fixed to the test pile. Figure 4-1 displays an example axial tensile test configuration.

Figure 4-1: Axial Tensile Testing Example

4.2 Axial Tensile Test Equipment

Axial tensile setup consisted of the following equipment:

- Reaction frame consisting of an excavator
- 10 ton hydraulic ram capable of incremental increasing and decreasing of applied load
- Hydraulic pump and related hydraulic hardware
- Calibrated digital in-line load cell
- Pile loading connection hardware
- Two (2) calibrated displacement indicators capable of at least 4” of travel
- Measurement frame consisting of a surveyor’s tripod

4.3 Axial Tensile Load Sequencing and Results

Axial tensile test loads and data recording were performed in accordance with Table 4-1. A summary of the axial tensile load test results are available in Table 2 in Appendix 2. Detailed tensile load testing results are displayed in Appendix 4. Pile load tests were terminated when the piles experienced continuous displacement or until the maximum test load was achieved. Continuous displacement is defined as the load (lbs) at which the pile experiences continuous movement to 1-inch of displacement as the test load is applied but the load experienced by the pile does not increase due to movement of the pile. Piles were loaded in 1,000 lbs increments. Displacement was recorded at 0 minutes and 1 minute of each load being applied. It should be noted that slight eccentricity in the test load can result in minor variations between the two displacement values. This is common and does not necessarily indicate malfunctioning equipment. When displacement variation occurs, not as a result of malfunction, the higher of the two displacements is to be used for evaluating the anchors performance.

Table 4-1: Axial Tensile Load Sequencing

Test Load (lbs)	Hold Time	Data Recording
0	1 minute	0, 1 minute
1,000	1 minute	0, 1 minute
2,000	1 minute	0, 1 minute
3,000	1 minute	0, 1 minute
4,000	1 minute	0, 1 minute
5,000	1 minute	0, 1 minute
6,000	1 minute	0, 1 minute
7,000	1 minute	0, 1 minute
8,000	1 minute	0, 1 minute
9,000	1 minute	0, 1 minute
10,000	1 minute	0, 1 minute
11,000	1 minute	0, 1 minute
12,000	1 minute	0, 1 minute
13,000	1 minute	0, 1 minute
14,000	1 minute	0, 1 minute
15,000	1 minute	0, 1 minute

4.4 Lateral Test Setup

In general accordance with ASTM D3966, lateral tests were performed following axial testing. Lateral tests used a hydraulic tension jack, calibrated in-line load cell, and a reaction counterweight. The test apparatus was constructed so that the resultant load was applied horizontally on the pile's strong axis, near the target load application height of approximately 4.5 feet above grade, after the frost was removed. The resultant loads were applied in line with the central vertical axis of the pile. The support reactions were constructed to prevent instability and to limit undesired rotations or lateral displacements. The distance between the test pile and reaction point was at least five times the maximum diameter of the test pile. All apparatuses used for applying and measuring loads, including all struts and structural members, were of sufficient size, strength, and stiffness to safely prevent excessive deflection and instability up to 125% of the maximum applied test load.

The displacement reference frame was supported independent of the loading system, with supports firmly planted on the ground at a clear distance from the test pile. The reference frames were oriented perpendicular to the line of load application, placing the beam supports as far as feasible from the test pile and reaction force system. The reference beams were constructed to allow displacement measurements to be taken near ground level and near the load application height. Figure 4-2 displays an example lateral test configuration.

Figure 4-2: Lateral Testing Example

4.5 Lateral Test Equipment

Lateral setup consisted of the following equipment.

- Counterweight consisting of an excavator
- 10 ton hydraulic ram capable of incremental increasing and decreasing of applied load
- Hydraulic pump and related hydraulic hardware
- Calibrated digital in-line load cell
- Pile loading connection hardware
- Two (2) calibrated displacement indicators capable of at least 4 inches of travel
- Measurement frames consisting of a surveyor's tripods

4.6 Lateral Load Sequencing and Results

Lateral test loads and data recording were performed in accordance with Table 4-2. The lateral tests were performed after the axial tests were completed. The pile load testing was terminated if the displacement of the pile exceeded the maximum range of the dial indicators (4 in), continuous displacement, and/or the maximum load was obtained. In some instances, the testing was terminated before continuous displacement or the maximum range of the dial indicators was exceeded. This was done when the technician was able to evaluate if the pile was going to experience continuous displacement or if the dial indicators would exceed the maximum range while advancing to the next load sequence. Following this protocol allowed for additional rebound data to be collected to evaluate residual displacement of the pile. A summary of the lateral load test results are available in Table 3 in Appendix 2. Detailed lateral load testing results are displayed in Appendix 5.

Table 4-2: Lateral Load Sequencing

Test Load (lbs)	Hold Time	Data Recording
0	0 minute	0 minute
750	1 minute	0, 1 minute
1,500	1 minute	0, 1 minute
0	1 minute	0, 1 minute
1,500	1 minute	0, 1 minute
2,250	1 minute	0, 1 minute
3,000	1 minute	0, 1 minute
0	0 minute	0 minute
3,000	1 minute	0, 1 minute
3,750	1 minute	0, 1 minute
4,500	1 minute	0, 1 minute
5,250	1 minute	0, 1 minute
6,000	1 minute	0, 1 minute
0	0 minute	0 minute

4.7 Axial Compression Test Set-Up

In accordance with ASTM D1143, the compressive loading and measurement apparatus were constructed and positioned so that the resultant loads were applied vertically and in line with the central vertical axis of the pile so as to minimize eccentric loading and avoid a horizontal load component. A clear distance was provided between the test pile and the reaction points. The distance between the test pile and reaction point was at least five times the maximum diameter of the pile. All apparatuses used for applying and measuring loads, including all struts and structural members, were of sufficient size, strength, and stiffness to safely prevent excessive deflection and instability up to 125% of the maximum anticipated test load. The displacement reference frame was set up independent of the loading system, with supports firmly planted on the ground as far as feasible away from the test pile. Displacement indictors rested on a platform fixed to the test pile. Figure 4-3 displays an example axial compressive test configuration.

Figure 4-3: Axial Compressive Testing Example

4.8 Axial Compression Test Equipment

- Reaction frame consisting of an excavator
- 10 ton hydraulic ram capable of incremental increasing and decreasing of applied load
- Hydraulic pump and related hydraulic hardware
- Calibrated digital in-line load cell
- Pile loading connection hardware
- Two (2) calibrated displacement indicators capable of at least 4” of travel
- Measurement frame consisting of a surveyor’s tripod

4.9 Axial Compression Load Sequencing and Results

Axial compression test loads and data recording were performed in accordance with Table 4-3. A summary of the results are displayed in Table 4 in Appendix 2. Pile load tests were terminated when the maximum designed load. It should be noted that slight eccentricity in the test load can result in minor variations between the two displacement values. This is common and does not necessarily indicate malfunctioning equipment. When displacement variation occurs, not as a result of malfunction, the higher of the two displacements is to be used for evaluating the anchors performance. Detailed compressive testing results are compiled in Appendix 6.

Table 4-3: Axial Compression Load Sequencing

Test Load (lbs)	Hold Time	Data Recording
0	1 minute	0, 1 minute
1,000	1 minute	0, 1 minute
2,000	1 minute	0, 1 minute
3,000	1 minute	0, 1 minute
4,000	1 minute	0, 1 minute
5,000	1 minute	0, 1 minute
6,000	1 minute	0, 1 minute
7,000	1 minute	0, 1 minute
8,000	1 minute	0, 1 minute
9,000	1 minute	0, 1 minute
10,000	1 minute	0, 1 minute
11,000	1 minute	0, 1 minute
12,000	1 minute	0, 1 minute
13,000	1 minute	0, 1 minute
14,000	1 minute	0, 1 minute
15,000	1 minute	0, 1 minute

5.0 Limitations

This report has been prepared for the exclusive use by our client for the specific application to the project discussed, and has been prepared in accordance with generally accepted geotechnical engineering practices in this locality at this time. Westwood makes no representation, guarantee, or warranty, expressed or implied, regarding the services, communications (oral or written), report, opinion, or instrument of service provided.

This report presents installation and testing data only. The limited conclusions and recommendations contained in this report are based on our field observations, test results, and our present knowledge of the project in attempt to provide additional information to the client.

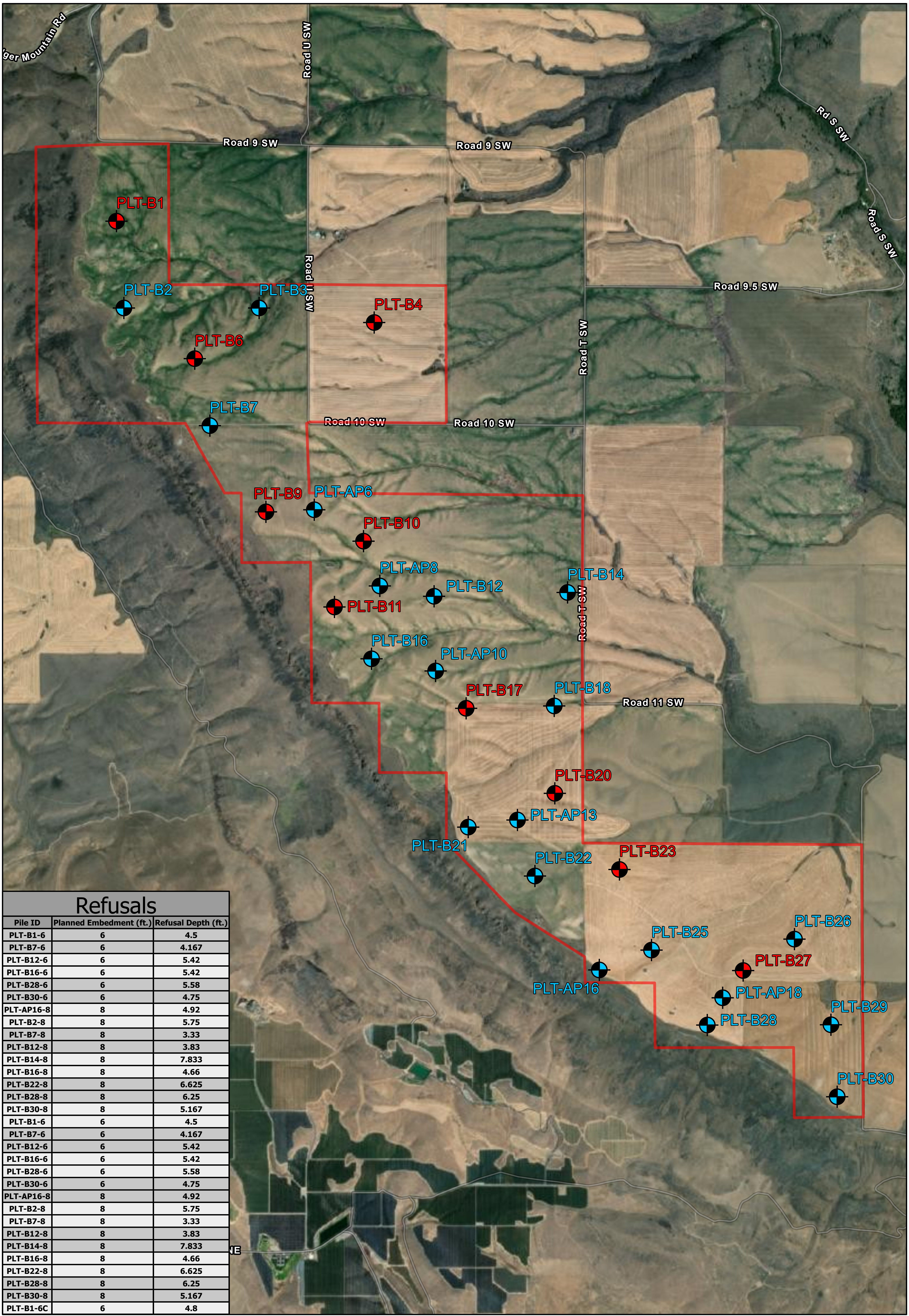
It is not within our scope of work to check the referenced documents or work for conformance to codes or other client and government requirements. Westwood makes no representation as to the accuracy of structural dimensions, calculations, or any portion of the pile design.

Test results are representative of the test piles used, their embedment depth, and the subsurface conditions they were installed in. The test results, therefore, do not necessarily reflect variations that may exist between test locations, embedment depths, and different pile types. If variations from the testing procedure or subsurface conditions described in this study are noted during design and/or construction, the conclusions and recommendations contained in this report should not be considered valid and engineering re-evaluation should be performed in regard to pile capacity. Westwood is not responsible for any claims, damages, or liability associated with the interpretation of this data by others.

Appendix 1

Test Pile Location Figure

Map Document: I:\Construction Services\Public\Field Services - Power\GIS\Pile Load Testing\MASTER PLT Map\Master PLT Map.aprx 2/19/2021 9:50 AM SJKellogg



Refusals

Pile ID	Planned Embedment (ft.)	Refusal Depth (ft.)
PLT-B1-6	6	4.5
PLT-B7-6	6	4.167
PLT-B12-6	6	5.42
PLT-B16-6	6	5.42
PLT-B28-6	6	5.58
PLT-B30-6	6	4.75
PLT-AP16-8	8	4.92
PLT-B2-8	8	5.75
PLT-B7-8	8	3.33
PLT-B12-8	8	3.83
PLT-B14-8	8	7.833
PLT-B16-8	8	4.66
PLT-B22-8	8	6.625
PLT-B28-8	8	6.25
PLT-B30-8	8	5.167
PLT-B1-6	6	4.5
PLT-B7-6	6	4.167
PLT-B12-6	6	5.42
PLT-B16-6	6	5.42
PLT-B28-6	6	5.58
PLT-B30-6	6	4.75
PLT-AP16-8	8	4.92
PLT-B2-8	8	5.75
PLT-B7-8	8	3.33
PLT-B12-8	8	3.83
PLT-B14-8	8	7.833
PLT-B16-8	8	4.66
PLT-B22-8	8	6.625
PLT-B28-8	8	6.25
PLT-B30-8	8	5.167
PLT-B1-6C	6	4.8

Data Source(s): Westwood (2021); .

N

Feet
0 2,500

Legend

- 🔵 2 Pile Locations
- 🔴 3 Pile Locations
- ▬ Project Boundary

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Douglas County, Washington

Pile Load Testing Locations

February 19, 2021

Appendix 2

Summary of Results

Table 1: Summary of Install Drive Times and Depth

Pile ID	Latitude	Longitude	Post Length (ft)	Stick-Up Height (ft)	Embedment Depth (ft)	Drive Time (s)
PLT-AP06-6	47.45908	-120.19646	11	5	6	19.46
PLT-AP06-8	47.45908	-120.19646	13	5	8	27.38
PLT-AP08-6	47.45512	-120.1914	11	5	6	19.28
PLT-AP08-8	47.45512	-120.1914	13	5	8	35.64
PLT-AP10-6	47.45069	-120.18711	11	5	6	17.4
PLT-AP10-8	47.45069	-120.18711	13	5	8	29.74
PLT-AP13-6	47.44291	-120.18082	11	5	6	18.41
PLT-AP13-8	47.44291	-120.18082	13	5	8	22.76
PLT-AP16-6	47.4351	-120.17452	11	5	6	28.16
PLT-AP16-8 (R4.92)	47.4351	-120.17452	13	8.08	4.92	167.94
PLT-AP18-6	47.43366	-120.16502	11	5	6	16.66
PLT-AP18-8	47.43366	-120.16502	13	5	8	23.04
PLT-B01-6 (R4.5)	47.47411	-120.21166	11	6.5	4.5	83.7
PLT-B01-8	47.47411	-120.21166	13	5	8	324.6
PLT-B02-6	47.46959	-120.21109	11	5	6	176.99
PLT-B02-8 (R5.75)	47.46959	-120.21109	13	7.25	5.75	144.98
PLT-B03-6	47.46957	-120.20069	11	5	6	21.03
PLT-B03-8	47.46957	-120.20069	13	5	8	20.36
PLT-B04-6	47.46882	-120.19183	11	5	6	13.48
PLT-B04-6C	47.46882	-120.19183	11	5	6	15.96
PLT-B04-8	47.46882	-120.19183	13	5	8	20.91
PLT-B06-6	47.46694	-120.20563	11	5	6	18.15
PLT-B06-6C	47.46694	-120.20563	10	4	6	12.14
PLT-B06-8	47.46694	-120.20563	13	5	8	21.43
PLT-B07-6 (R4.17)	47.46346	-120.20449	11	6.83	4.17	107.7
PLT-B07-8 (R3.13)	47.46346	-120.20449	13	9.67	3.33	81.34
PLT-B09-6	47.45897	-120.20017	11	5	6	19.46
PLT-B09-6C	47.45897	-120.20017	11	5	6	18.47
PLT-B09-8	47.45897	-120.20017	13	5	8	32.03
PLT-B10-6	47.45744	-120.19266	11	5	6	18.87
PLT-B10-6C	47.45744	-120.19266	11	5	6	13.93
PLT-B10-8	47.45744	-120.19266	13	5	8	22.55
PLT-B11-6	47.45401	-120.19491	11	5	6	18.06
PLT-B11-6C	47.45401	-120.19491	11	5	6	20.64
PLT-B11-8	47.45401	-120.19491	13	5	8	31.94
PLT-B12-6 (R5.42)	47.45457	-120.18722	11	5.58	5.42	127.96
PLT-B12-8 (R3.83)	47.45457	-120.18722	13	9.17	3.83	49.77
PLT-B14-6	47.45477	-120.17696	11	5	6	18.32
PLT-B14-8 (R7.83)	47.45477	-120.17696	13	5.17	7.83	107.17
PLT-B16-6 (R5.42)	47.45132	-120.19205	11	5.58	5.42	91.23
PLT-B16-8 (R4.66)	47.45132	-120.19205	13	8.34	4.66	75.96
PLT-B01-6C (R4.8)	47.47411	-120.21166	11	6.2	4.8	33.1
PLT-B17-6	47.44874	-120.18477	11	5	6	16.35
PLT-B17-6C	47.44874	-120.18477	11	5	6	11.59
PLT-B17-8	47.44874	-120.18477	13	5	8	17.78
PLT-B18-6	47.44886	-120.17798	11	5	6	19.84
PLT-B18-8	47.44886	-120.17798	13	5	8	25.61
PLT-B20-6	47.4443	-120.17794	11	5	6	15.03
PLT-B20-6C	47.4443	-120.17794	11	5	6	14.23
PLT-B20-8	47.4443	-120.17794	13	5	8	22.81
PLT-B21-6	47.44255	-120.1846	11	5	6	31.04
PLT-B21-8	47.44255	-120.1846	13	5	8	161.1

Table 1: Summary of Install Drive Times and Depth

Pile ID	Latitude	Longitude	Post Length (ft)	Stick-Up Height (ft)	Embedment Depth (ft)	Drive Time (s)
PLT-B22-6	47.44	-120.17947	11	5	6	20.8
PLT-B22-8 (R6.63)	47.44	-120.17947	13	6.38	6.63	76.4
PLT-B23-6	47.44035	-120.17298	11	5	6	16.26
PLT-B23-6C	47.44035	-120.17298	11	5	6	16.47
PLT-B23-8	47.44035	-120.17298	13	5	8	21.87
PLT-B25-6	47.43614	-120.1705	11	5	6	45.17
PLT-B25-8	47.43614	-120.1705	13	5	8	126.28
PLT-B26-6	47.43671	-120.1595	11	5	6	26.95
PLT-B26-8	47.43671	-120.1595	13	5	8	60.3
PLT-B27-6	47.43508	-120.16346	11	5	6	20.94
PLT-B27-6C	47.43508	-120.16346	11	5	6	18.38
PLT-B27-8	47.43508	-120.16346	13	5	8	26.61
PLT-B28-6 (R5.58)	47.43223	-120.16621	11	5.42	5.58	201.9
PLT-B28-8 (R6.25)	47.43223	-120.16621	13	6.75	6.25	153.92
PLT-B29-6	47.43225	-120.1567	11	5	6	14.92
PLT-B29-8	47.43225	-120.1567	13	5	8	30.22
PLT-B30-6 (R4.75)	47.42851	-120.15621	11	6.25	4.75	121.99
PLT-B30-8 (R5.0)	47.42851	-120.15621	13	7.833	5	163.32

Table 2: Summary of Axial Tensile Load Test Results

Pile ID	Post Type	Embedment Depth (ft)	Total Drive Time (sec)	Maximum Axial Test Load* (lbs)
PLT-AP6-6T	W6x9	6	19.46	2000
PLT-AP6-8T	W6x9	8	27.38	4000
PLT-AP8-6T	W6x9	6	19.28	4000
PLT-AP8-8T	W6x9	8	35.64	15000
PLT-AP10-6T	W6x9	6	17.4	4000
PLT-AP10-8T	W6x9	8	29.74	8000
PLT-AP13-6T	W6x9	6	18.41	4000
PLT-AP13-8T	W6x9	8	22.76	7000
PLT-AP16-6T	W6x9	6	28.16	Not Tested
PLT-AP16-8 (R4.92)	W6x9	4.92	167.94	15000
PLT-AP18-6T	W6x9	6	16.66	6000
PLT-AP18-8T	W6x9	8	23.04	10000
PLT-B1-6 (R4.5)	W6x9	4.5	83.7	15000
PLT-B1-8T	W6x9	8	324.6	15000
PLT-B2-6T	W6x9	6	176.99	14000
PLT-B2-8 (R5.9)	W6x9	5.75	144.98	Not Tested
PLT-B3-6T	W6x9	6	21.03	5000
PLT-B3-8T	W6x9	8	20.36	2000
PLT-B4-6T	W6x9	6	13.48	4000
PLT-B4-8T	W6x9	8	20.91	8000
PLT-B6-6T	W6x9	6	18.15	4000
PLT-B6-8T	W6x9	8	21.43	3000
PLT-B7-6 (R4.167)	W6x9	4.167	107.7	10000
PLT-B7-8 (R3.33)	W6x9	3.33	81.34	4000
PLT-B9-6T	W6x9	6	19.46	3000
PLT-B9-8T	W6x9	8	32.03	7000
PLT-B10-6T	W6x9	6	18.87	1000
PLT-B10-8T	W6x9	8	22.55	8000
PLT-B11-6T	W6x9	6	18.06	2000
PLT-B11-8T	W6x9	8	31.94	10000
PLT-B12-6 (R5.42)	W6x9	5.42	127.96	15000
PLT-B12-8 (R3.83)	W6x9	3.83	49.77	0
PLT-B14-6T	W6x9	6	18.32	8000
PLT-B14-8 (R7.833)	W6x9	7.833	107.17	15000
PLT-B16-6 (R5.42)	W6x9	5.42	91.23	8000
PLT-B16-8 (R4.66)	W6x9	4.66	75.96	2000
PLT-B17-6T	W6x9	6	16.35	2000
PLT-B17-8T	W6x9	8	17.78	4000
PLT-B18-6T	W6x9	6	19.84	2000
PLT-B18-8T	W6x9	8	25.61	6000
PLT-B20-6T	W6x9	6	15.03	1000
PLT-B20-8T	W6x9	8	22.81	4000
PLT-B21-6T	W6x9	6	31.04	12000
PLT-B21-8T	W6x9	8	161.1	15000

Table 2: Summary of Axial Tensile Load Test Results

Pile ID	Post Type	Embedment Depth (ft)	Total Drive Time (sec)	Maximum Axial Test Load* (lbs)
PLT-B22-6T	W6x9	6	20.8	8000
PLT-B22-8 (R6.625)	W6x9	6.625	76.4	13000
PLT-B23-6T	W6x9	6	16.26	3000
PLT-B23-8T	W6x9	8	21.87	5000
PLT-B25-6T	W6x9	6	45.17	15000
PLT-B25-8T	W6x9	8	126.28	15000
PLT-B26-6T	W6x9	6	26.95	11000
PLT-B26-8T	W6x9	8	60.3	15000
PLT-B27-6T	W6x9	6	20.94	2000
PLT-B27-8T	W6x9	8	26.61	5000
PLT-B28-6 (R5.58)	W6x9	5.58	201.9	15000
PLT-B28-8 (R6.25)	W6x9	6.25	153.92	15000
PLT-B29-6T	W6x9	6	14.92	1000
PLT-B29-8T	W6x9	8	30.22	8000
PLT-B30-6 (R4.75)	W6x9	4.75	121.99	10000
PLT-B30-8 (R5.0)	W6x9	5.167	163.32	Not Tested

*Maximum load applied before continuous displacement of up to 1-inch of displacement was recorded.

Table 3: Summary of Lateral Load Testing Results

Pile ID	Post Type	Embedment Depth (ft)	Total Drive Time (sec)	Maximum Sustained Lateral Test Load* (lbs)	Displacement at Maximum Test Load (inches)	
					Grade (6")	Load Height (4.5')
PLT-AP6-6L	W6x9	6	19.46	3750	0.895	3.383
PLT-AP6-8L	W6x9	8	27.38	4500	0.717	2.59
PLT-AP8-6L	W6x9	6	19.28	3000	0.832	2.98
PLT-AP8-8L	W6x9	8	35.64	4500	0.919	3.304
PLT-AP10-6L	W6x9	6	17.4	3750	0.587	3.209
PLT-AP10-8L	W6x9	8	29.74	5250	1.25	3.773
PLT-AP13-6L	W6x9	6	18.41	3000	1.02	3.101
PLT-AP13-8L	W6x9	8	22.76	4500	0.95	3.388
PLT-AP16-6L	W6x9	6	28.16	Not Tested - See Test Log		
PLT-AP16-8 (R4.92)	W6x9	4.92	167.94	3750	1.084	3.062
PLT-AP18-6L	W6x9	6	16.66	3750	1.464	3.886
PLT-AP18-8L	W6x9	8	23.04	4500	1.088	3.376
PLT-B1-6 (R4.5)	W6x9	4.5	23.72	4500	1.389	3.404
PLT-B1-8L	W6x9	8	324.6	3750	0.748	2.531
PLT-B2-6L	W6x9	6	176.99	4500	1.112	2.9
PLT-B2-8 (R5.9)	W6x9	5.75	144.98	Not Tested - See Test Log		
PLT-B3-6L	W6x9	6	21.03	3750	1.009	3.281
PLT-B3-8L	W6x9	8	20.36	4500	0.951	2.962
PLT-B4-6L	W6x9	6	13.48	3000	1.45	3.836
PLT-B4-8L	W6x9	8	20.91	3750	1.074	3.073
PLT-B6-6L	W6x9	6	18.15	3000	0.923	2.64
PLT-B6-8L	W6x9	8	21.43	4500	0.964	3.408
PLT-B7-6 (R4.167)	W6x9	4.167	107.7	1500	1.452	3.529
PLT-B7-8 (R3.33)	W6x9	3.33	81.34	3000	1.037	3.191
PLT-B9-6L	W6x9	6	19.46	3750	0.737	2.971
PLT-B9-8L	W6x9	8	32.03	5250	0.993	3.4
PLT-B10-6L	W6x9	6	18.87	3750	1.452	4+
PLT-B10-8L	W6x9	8	22.55	4500	0.957	3.103
PLT-B11-6L	W6x9	6	18.06	3750	0.781	2.606
PLT-B11-8L	W6x9	8	31.94	5250	1.156	3.617
PLT-B12-6 (R5.42)	W6x9	5.42	127.96	3750	0.756	2.52
PLT-B12-8 (R3.83)	W6x9	3.83	49.77	Not Tested - See Test Log		
PLT-B14-6L	W6x9	6	18.32	2250	0.993	2.461
PLT-B14-8 (R7.833)	W6x9	7.833	107.17	3750	0.968	3.006
PLT-B16-6 (R5.42)	W6x9	5.42	91.23	3000	0.751	2.61
PLT-B16-8 (R4.66)	W6x9	4.66	75.96	3000	0.843	3.305
PLT-B17-6L	W6x9	6	16.35	3750	1.071	3.435
PLT-B17-8L	W6x9	8	17.78	4500	1.313	3.748
PLT-B18-6L	W6x9	6	19.84	3750	1.25	3.778
PLT-B18-8L	W6x9	8	25.61	4500	0.947	3.487
PLT-B20-6L	W6x9	6	15.03	1500	0.865	2.24
PLT-B20-8L	W6x9	8	22.81	3750	0.761	3.472
PLT-B21-6L	W6x9	6	31.04	3750	0.993	3.7
PLT-B21-8L	W6x9	8	161.1	4500	0.761	2.91
PLT-B22-6L	W6x9	6	20.8	3750	0.637	2.555
PLT-B22-8 (R6.625)	W6x9	6.625	76.4	3750	0.577	2.811
PLT-B23-6L	W6x9	6	16.26	3000	1.332	3.389
PLT-B23-8L	W6x9	8	21.87	4500	1.054	3.34
PLT-B25-6L	W6x9	6	45.17	3750	0.765	2.644

Table 3: Summary of Lateral Load Testing Results

Pile ID	Post Type	Embedment Depth (ft)	Total Drive Time (sec)	Maximum Sustained Lateral Test Load* (lbs)	Displacement at Maximum Test Load (inches)	
					Grade (6")	Load Height (4.5')
PLT-B25-8L	W6x9	8	126.28	6000	0.599	3.141
PLT-B26-6L	W6x9	6	26.95	3000	1.249	3.301
PLT-B26-8L	W6x9	8	60.3	3750	1.275	3.327
PLT-B27-6L	W6x9	6	20.94	3750	1.115	3.541
PLT-B27-8L	W6x9	8	26.61	3750	0.867	2.757
PLT-B28-6 (R5.58)	W6x9	5.58	201.9	3750	0.821	2.86
PLT-B28-8 (R6.25)	W6x9	6.25	153.92	4500	0.768	2.385
PLT-B29-6L	W6x9	6	14.92	2250	1.304	3.542
PLT-B29-8L	W6x9	8	30.22	4500	1.315	3.871
PLT-B30-6 (R4.75)	W6x9	4.75	121.99	3750	1.1	3.488
PLT-B30-8 (R5.0)	W6x9	5.167	163.32	Not Tested - See Test Log		

*Maxium load applied before continuous displacement of up to 4-inch of displacement was recorded, or maxium load (6,000lbs)

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Table 4: Summary of Axial Compression Load Test Results

Pile ID	Post Type	Embedment Depth (ft)	Total Drive Time (sec)	Maximum Axial Test Load* (lbs)
PLT-B1-6C (R4.8)	W6x9	4.8	33.1	8000
PLT-B4-6C	W6x9	6	15.96	4000
PLT-B6-6C	W6x9	6	12.14	9000
PLT-B9-6C	W6x9	6	18.47	5000
PLT-B10-6C	W6x9	6	13.93	5000
PLT-B11-6C	W6x9	6	20.64	8000
PLT-B17-6C	W6x9	6	11.59	6000
PLT-B20-6C	W6x9	6	14.23	3000
PLT-B23-6C	W6x9	6	16.47	5000
PLT-B27-6C	W6x9	6	18.38	10000

*Maximum load applied before continuous displacement of up to 1-inch of displacement was recorded, or maximum load (15,000lbs)

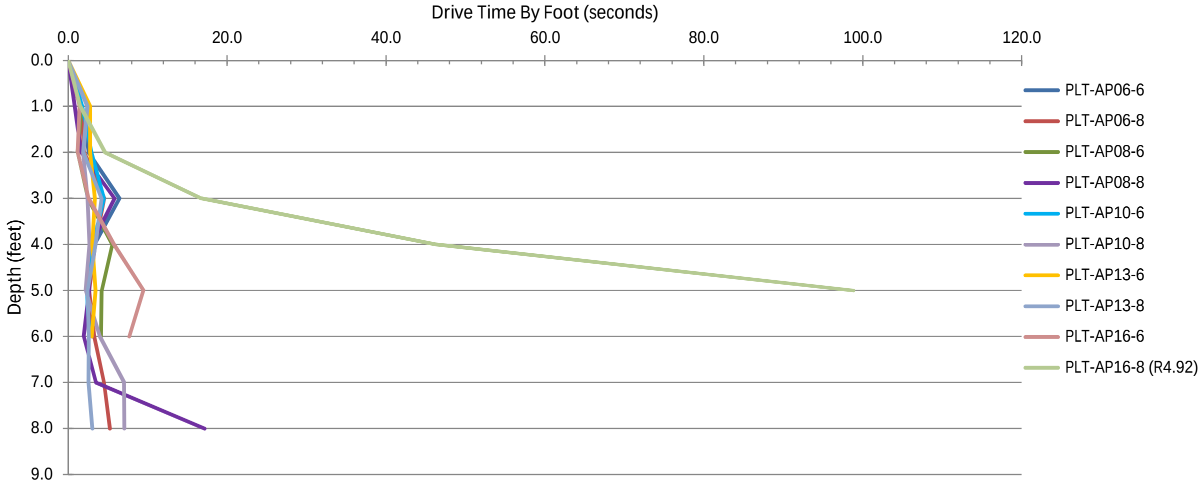
Appendix 3

Pile Installation Drive Time Data

Project:	Badger Mountain Solar	Test Weather:	20-40 Degrees; Overcast and Snowy
Install Date:	Februrary 3rd and February 4th, 2021	Installer:	Granite Construction: Vermeer PD-10

Pile Install Data - Drive Time By Foot (seconds)

Depth (ft)	PLT-AP06-6	PLT-AP06-8	PLT-AP08-6	PLT-AP08-8	PLT-AP10-6	PLT-AP10-8	PLT-AP13-6	PLT-AP13-8	PLT-AP16-6	PLT-AP16-8 (R4.92)
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	1.6	1.7	1.7	0.9	1.8	2.4	2.8	2.5	1.4	1.5
2.0	2.6	2.0	1.2	1.6	2.9	1.9	2.8	1.9	1.2	4.6
3.0	6.5	4.6	2.5	5.8	4.5	2.5	3.4	4.2	2.6	16.7
4.0	3.3	3.4	5.6	2.9	3.1	2.7	3.1	3.4	5.8	46.2
5.0	2.5	2.7	4.2	2.7	2.4	2.2	3.4	2.5	9.5	98.8
6.0	3.0	3.3	4.1	2.0	2.7	4.0	3.0	2.6	7.7	
7.0		4.5		3.5		7.0		2.6		
8.0		5.3		17.2		7.1		3.1		



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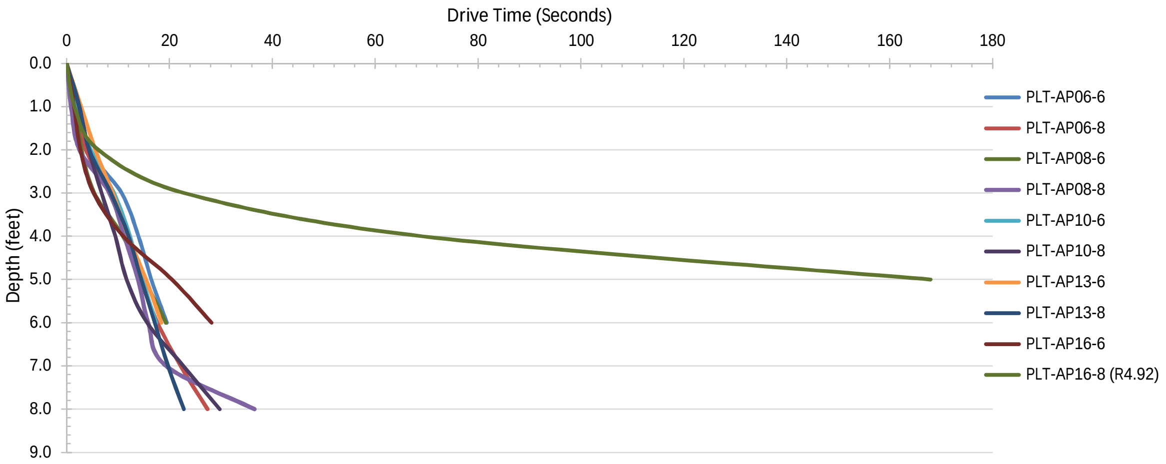
Install Date:	Februrary 3rd and February 4th, 2021	Installer:	Granite Construction: Vermeer PD-10

Pile Install Data - Cumulative Drive Time (seconds)

Depth (ft)	PLT-AP06-6	PLT-AP06-8	PLT-AP08-6	PLT-AP08-8	PLT-AP10-6	PLT-AP10-8	PLT-AP13-6	PLT-AP13-8	PLT-AP16-6	PLT-AP16-8 (R4.92)
0.0	0	0	0	0	0	0	0	0	0	0
1.0	1.62	1.69	1.67	0.85	1.78	2.41	2.79	2.47	1.43	1.52
2.0	4.2	3.69	2.88	2.49	4.7	4.3	5.55	4.39	2.65	6.15
3.0	10.66	8.24	5.38	8.32	9.19	6.77	8.93	8.59	5.24	22.88
4.0	13.95	11.67	10.93	11.21	12.31	9.45	11.99	12.03	10.99	69.12
5.0	16.44	14.34	15.14	13.86	14.69	11.65	15.42	14.49	20.46	167.94
6.0	19.46	17.63	19.28	15.84	17.4	15.64	18.41	17.11	28.16	
7.0		22.13		19.32		22.68		19.69		
8.0		27.38		36.49		29.74		22.76		



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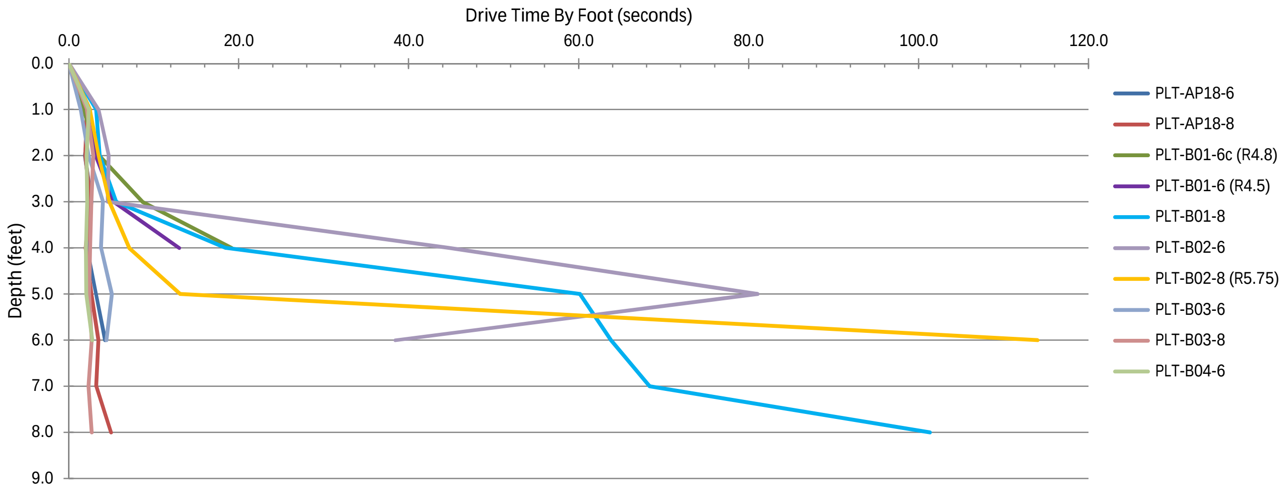
Install Date:	Februrary 3rd and February 4th, 2021	Installer:	Granite Construction: Vermeer PD-10

Pile Install Data - Drive Time By Foot (seconds)

Depth (ft)	PLT-AP18-6	PLT-AP18-8	PLT-B01-6c (R4.8)	PLT-B01-6 (R4.5)	PLT-B01-8	PLT-B02-6	PLT-B02-8 (R5.75)	PLT-B03-6	PLT-B03-8	PLT-B04-6
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	2.5	2.2	1.7	2.3	3.2	3.5	2.5	1.4	2.1	2.4
2.0	1.9	2.0	3.6	3.2	3.7	4.7	3.5	2.3	2.9	2.1
3.0	2.7	2.6	8.7	5.3	5.6	4.6	4.8	4.0	2.7	2.2
4.0	2.1	2.0	19.2	13.0	18.5	44.7	7.1	3.8	2.5	2.0
5.0	3.2	2.7			60.2	81.1	13.1	5.1	2.4	2.1
6.0	4.3	3.5			63.8	38.5	114.0	4.5	2.7	2.8
7.0		3.2			68.4				2.3	
8.0		5.0			101.3				2.7	



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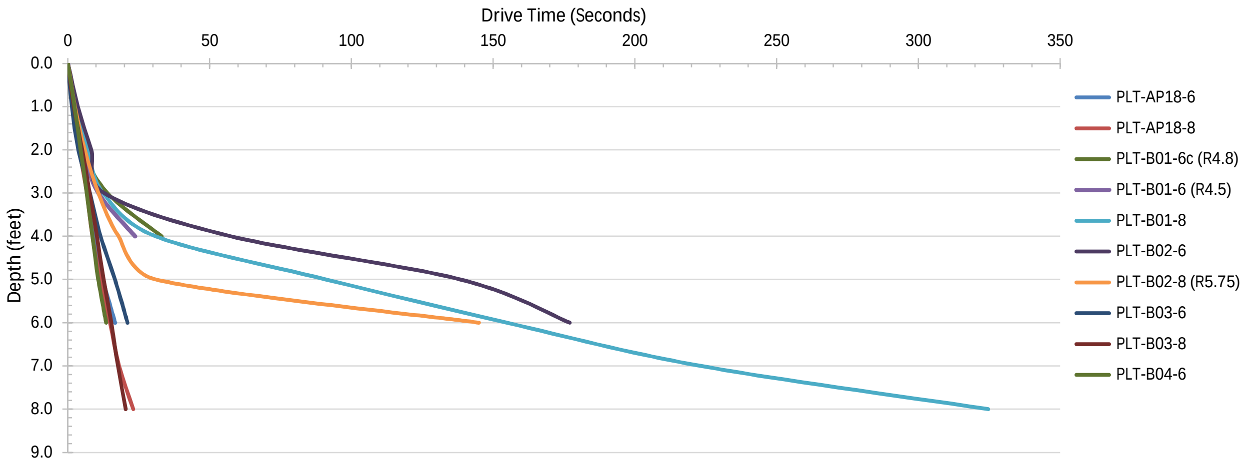
Project:	Badger Mountain Solar	Test Weather:	20-40 Degrees; Overcast and Snowy
Install Date:	Februrary 3rd and February 4th, 2021	Installer:	Granite Construction: Vermeer PD-10

Pile Install Data - Cumulative Drive Time (seconds)

Depth (ft)	PLT-AP18-6	PLT-AP18-8	PLT-B01-6c (R4.8)	PLT-B01-6 (R4.5)	PLT-B01-8	PLT-B02-6	PLT-B02-8 (R5.75)	PLT-B03-6	PLT-B03-8	PLT-B04-6
0.0	0	0	0	0	0	0	0	0	0	0
1.0	2.47	2.15	1.7	2.31	3.24	3.49	2.49	1.37	2.14	2.37
2.0	4.38	4.11	5.26	5.46	6.9	8.21	5.98	3.69	5.01	4.47
3.0	7.04	6.67	13.93	10.73	12.45	12.79	10.75	7.73	7.68	6.64
4.0	9.18	8.65	33.1	23.72	30.94	57.49	17.87	11.52	10.2	8.65
5.0	12.38	11.32			91.1	138.54	30.99	16.58	12.61	10.72
6.0	16.66	14.83			154.92	176.99	144.98	21.03	15.3	13.48
7.0		18.07			223.27				17.64	
8.0		23.04			324.6				20.36	



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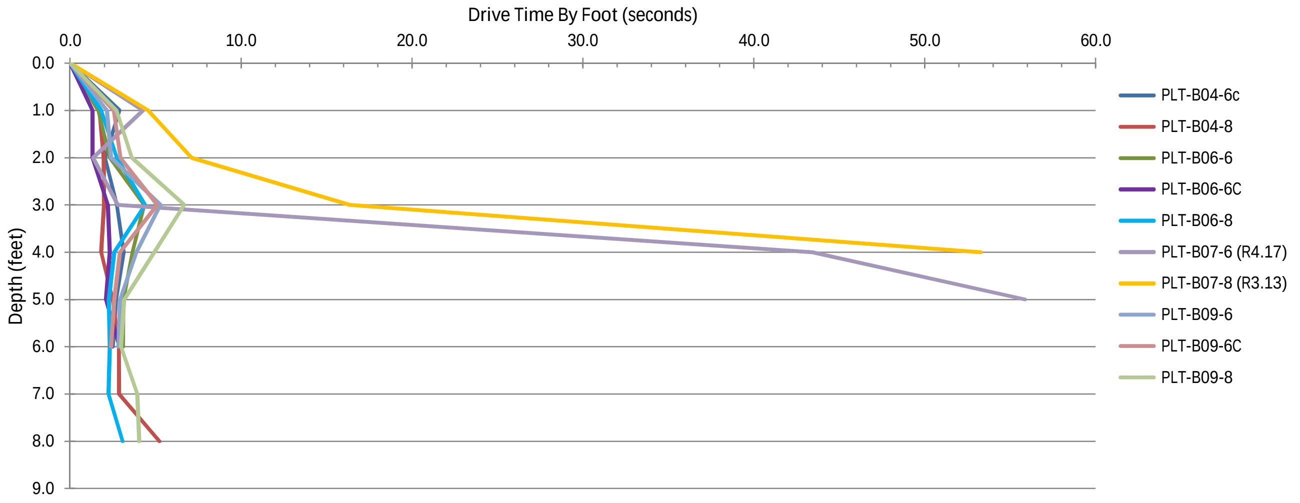
Project:	Badger Mountain Solar	Test Weather:	20-40 Degrees; Overcast and Snowy
Install Date:	Februrary 3rd and February 4th, 2021	Installer:	Granite Construction: Vermeer PD-10

Pile Install Data - Drive Time By Foot (seconds)

Depth (ft)	PLT-B04-6c	PLT-B04-8	PLT-B06-6	PLT-B06-6C	PLT-B06-8	PLT-B07-6 (R4.17)	PLT-B07-8 (R3.13)	PLT-B09-6	PLT-B09-6C	PLT-B09-8
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	2.9	1.7	1.6	1.3	1.8	4.3	4.6	2.2	2.5	2.7
2.0	2.0	2.0	2.3	1.3	2.7	1.4	7.1	2.4	2.9	3.6
3.0	2.7	2.0	4.3	2.2	4.4	2.8	16.4	5.3	5.1	6.7
4.0	3.1	1.8	3.7	2.3	2.6	43.4	53.3	3.9	2.9	4.9
5.0	2.7	2.5	3.1	2.1	2.3	55.9		2.9	2.6	3.2
6.0	2.5	2.8	3.1	2.9	2.3			2.8	2.4	3.0
7.0		2.9			2.2					3.9
8.0		5.2			3.1					4.0



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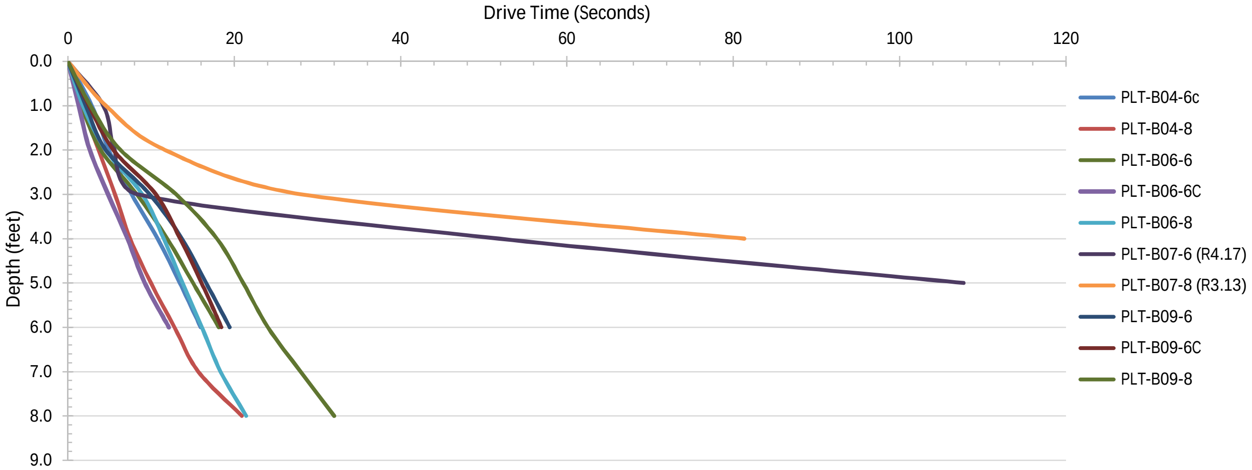
Install Date:	Februrary 3rd and February 4th, 2021	Installer:	Granite Construction: Vermeer PD-10

Pile Install Data - Cumulative Drive Time (seconds)

Depth (ft)	PLT-B04-6c	PLT-B04-8	PLT-B06-6	PLT-B06-6C	PLT-B06-8	PLT-B07-6 (R4.17)	PLT-B07-8 (R3.13)	PLT-B09-6	PLT-B09-6C	PLT-B09-8
0.0	0	0	0	0	0	0	0	0	0	0
1.0	2.88	1.73	1.64	1.31	1.81	4.27	4.57	2.16	2.54	2.71
2.0	4.92	3.69	3.96	2.63	4.55	5.62	11.69	4.56	5.48	6.33
3.0	7.66	5.67	8.29	4.84	8.94	8.41	28.06	9.84	10.58	13
4.0	10.79	7.49	11.94	7.16	11.53	51.84	81.34	13.71	13.5	17.92
5.0	13.46	9.98	15.05	9.25	13.8	107.7		16.63	16.08	21.08
6.0	15.96	12.82	18.15	12.14	16.12			19.46	18.47	24.05
7.0		15.68			18.36					27.99
8.0		20.91			21.43					32.03



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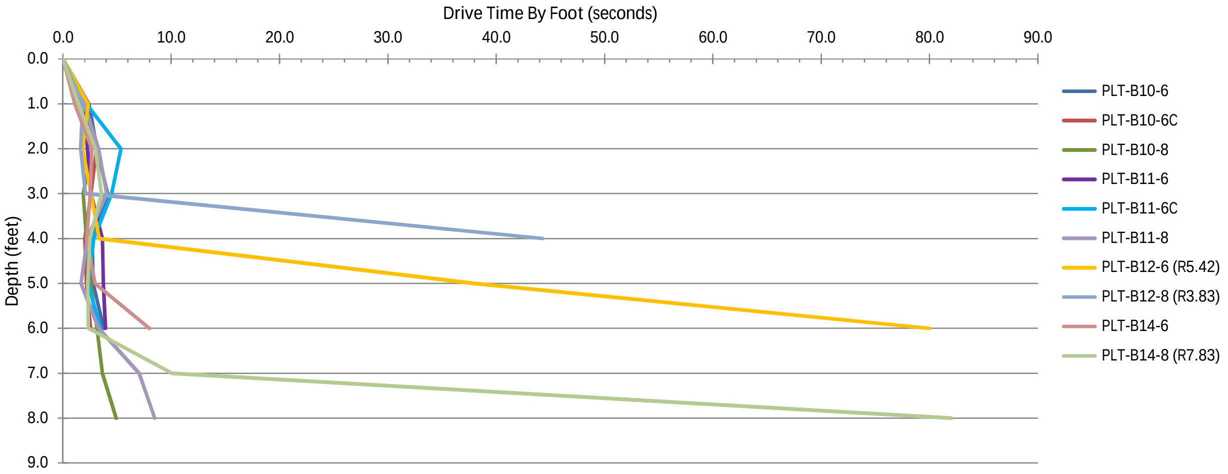
Pile Install Data - Drive Time By Foot (seconds)

Depth (ft)	PLT-B10-6	PLT-B10-6C	PLT-B10-8	PLT-B11-6	PLT-B11-6C	PLT-B11-8	PLT-B12-6 (R5.42)	PLT-B12-8 (R3.83)	PLT-B14-6	PLT-B14-8 (R7.83)
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	2.4	1.5	1.6	2.0	2.2	2.0	2.3	1.8	1.1	1.4
2.0	3.1	3.1	2.7	2.2	5.4	3.3	1.8	1.6	2.7	3.0
3.0	4.1	2.6	1.9	2.6	4.5	4.0	2.6	2.1	2.5	3.6
4.0	2.7	2.0	2.2	3.6	2.8	2.2	3.3	44.3	2.2	2.5
5.0	2.8	2.2	2.5	3.7	2.3	1.7	37.9		3.0	2.3
6.0	3.8	2.5	3.1	3.9	3.5	3.3	80.0		8.0	2.4
7.0			3.7			7.0				10.1
8.0			4.9			8.5				82.0



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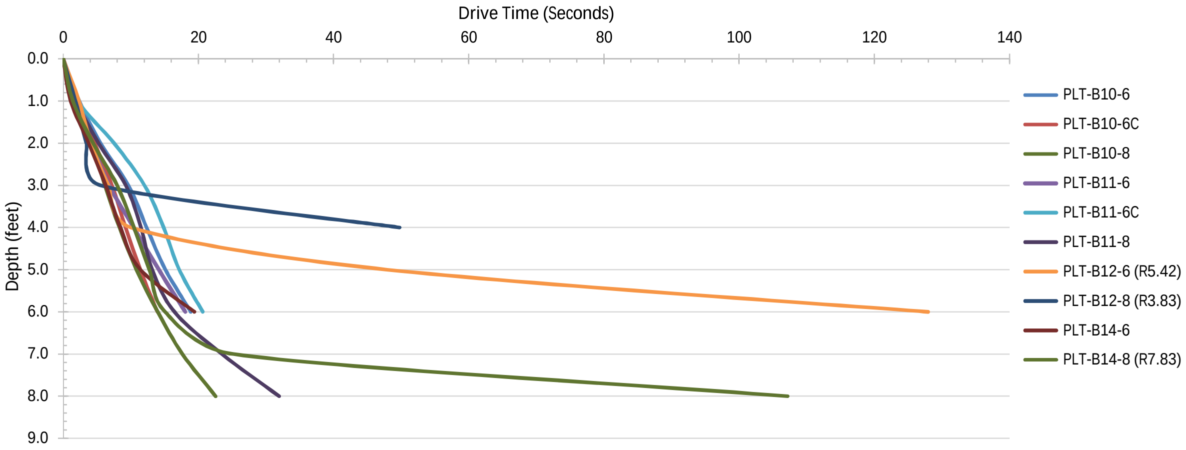
Pile Install Data - Cumulative Drive Time (seconds)

Depth (ft)	PLT-B10-6	PLT-B10-6C	PLT-B10-8	PLT-B11-6	PLT-B11-6C	PLT-B11-8	PLT-B12-6 (R5.42)	PLT-B12-8 (R3.83)	PLT-B14-6	PLT-B14-8 (R7.83)
0.0	0	0	0	0	0	0	0	0	0	0
1.0	2.39	1.54	1.61	1.99	2.16	1.96	2.34	1.81	1.1	1.43
2.0	5.53	4.64	4.27	4.23	7.52	5.23	4.14	3.43	3.76	4.42
3.0	9.64	7.21	6.14	6.79	12.02	9.25	6.7	5.51	6.28	7.97
4.0	12.34	9.23	8.3	10.43	14.86	11.49	10.04	49.77	8.46	10.46
5.0	15.12	11.4	10.84	14.14	17.17	13.16	47.98		11.43	12.73
6.0	18.87	13.93	13.98	18.06	20.64	16.45	127.96		19.42	15.08
7.0			17.63			23.47				25.14
8.0			22.55			31.94				107.17



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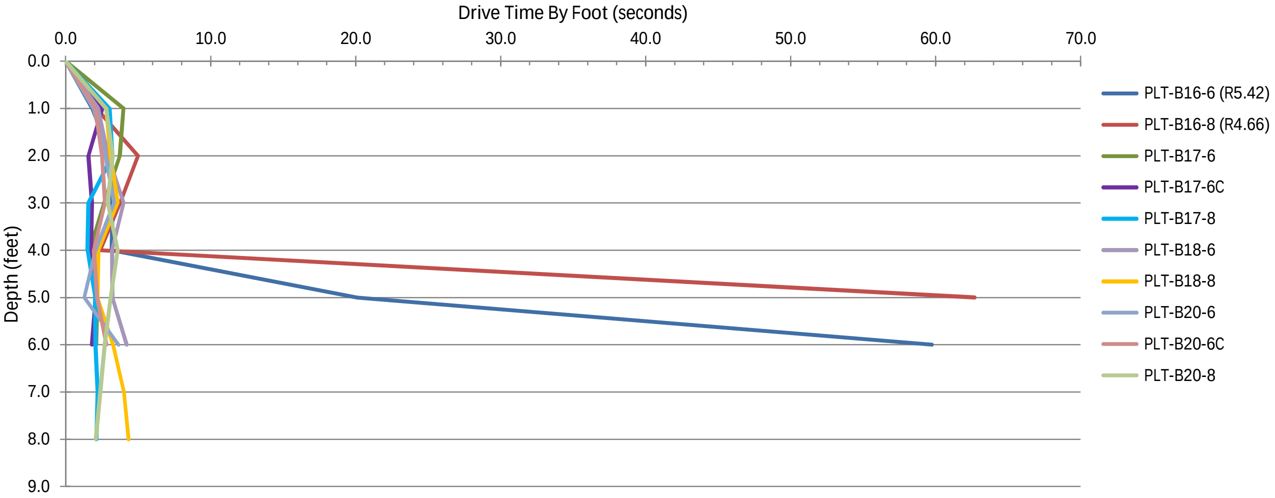
Project:	Badger Mountain Solar	Test Weather:	20-40 Degrees; Overcast and Snowy
Install Date:	Februrary 3rd and February 4th, 2021	Installer:	Granite Construction: Vermeer PD-10

Pile Install Data - Drive Time By Foot (seconds)

Depth (ft)	PLT-B16-6 (R5.42)	PLT-B16-8 (R4.66)	PLT-B17-6	PLT-B17-6C	PLT-B17-8	PLT-B18-6	PLT-B18-8	PLT-B20-6	PLT-B20-6C	PLT-B20-8
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	1.8	2.1	4.0	2.5	3.0	2.2	2.8	1.9	2.1	2.8
2.0	3.1	5.0	3.8	1.6	3.2	2.9	3.1	2.8	2.5	3.3
3.0	3.2	3.8	2.7	1.8	1.6	4.0	3.6	3.4	2.7	2.9
4.0	3.2	2.4	1.7	1.8	1.5	3.2	2.3	2.1	2.0	3.6
5.0	20.1	62.7	2.2	2.1	2.0	3.2	2.2	1.3	2.2	3.1
6.0	59.7		2.1	1.8	2.1	4.2	3.3	3.7	2.8	2.7
7.0					2.2		4.0			2.4
8.0					2.1		4.4			2.1



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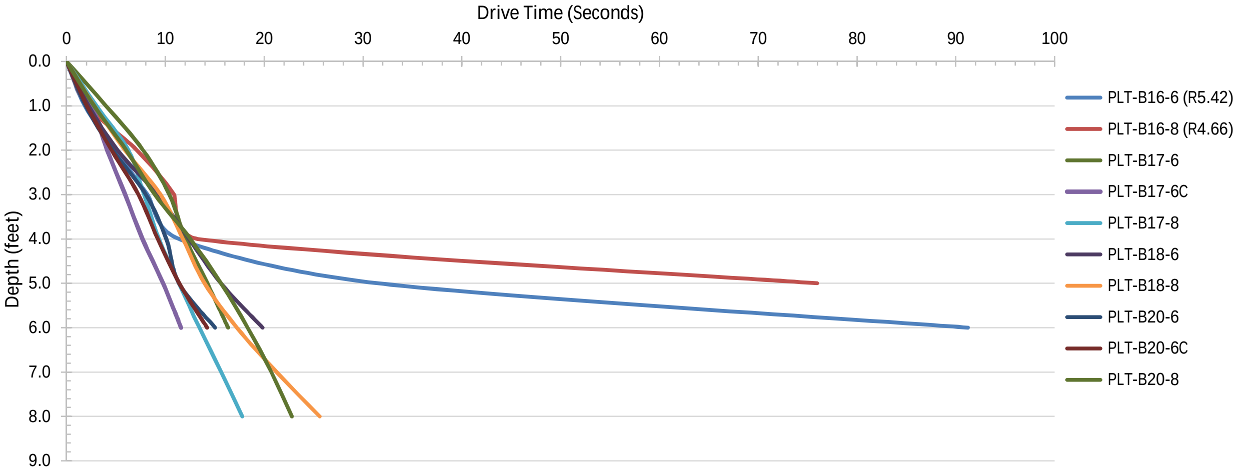
Install Date:	Februrary 3rd and February 4th, 2021	Installer:	Granite Construction: Vermeer PD-10

Pile Install Data - Cumulative Drive Time (seconds)

Depth (ft)	PLT-B16-6 (R5.42)	PLT-B16-8 (R4.66)	PLT-B17-6	PLT-B17-6C	PLT-B17-8	PLT-B18-6	PLT-B18-8	PLT-B20-6	PLT-B20-6C	PLT-B20-8
0.0	0	0	0	0	0	0	0	0	0	0
1.0	1.84	2.12	4	2.54	3.03	2.24	2.81	1.93	2.06	2.79
2.0	4.95	7.12	7.75	4.12	6.26	5.17	5.92	4.68	4.56	6.04
3.0	8.19	10.88	10.4	5.93	7.84	9.17	9.51	8.03	7.28	8.93
4.0	11.38	13.27	12.06	7.69	9.35	12.39	11.78	10.1	9.23	12.53
5.0	31.49	75.96	14.25	9.77	11.38	15.62	13.97	11.38	11.41	15.63
6.0	91.23		16.35	11.59	13.44	19.84	17.24	15.03	14.23	18.33
7.0					15.66		21.26			20.72
8.0					17.78		25.61			22.81



(R) Pile refusal is defined as less than 1 inch of movement over one minute of drive time.

Westwood
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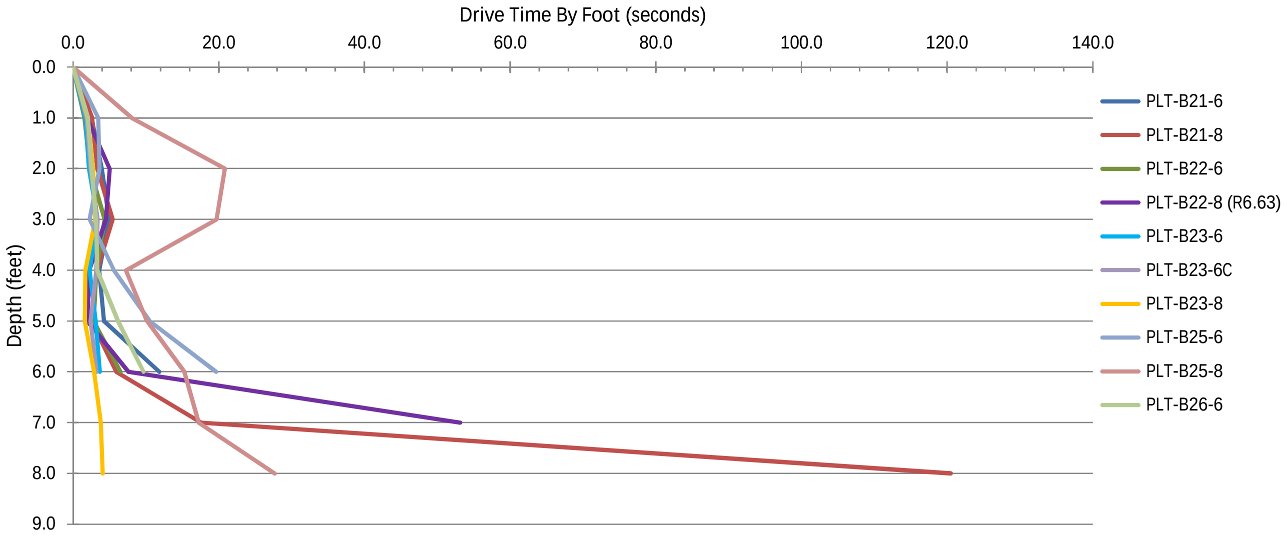
Minnetonka, MN 55343
westwoodps.com
(888) 937-5150

Project:	Badger Mountain Solar	Test Weather:	20-40 Degrees; Overcast and Snowy
Install Date:	Februrary 3rd and February 4th, 2021	Installer:	Granite Construction: Vermeer PD-10

Pile Install Data - Drive Time By Foot (seconds)

Depth (ft)	PLT-B21-6	PLT-B21-8	PLT-B22-6	PLT-B22-8 (R6.63)	PLT-B23-6	PLT-B23-6C	PLT-B23-8	PLT-B25-6	PLT-B25-8	PLT-B26-6
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	2.5	2.6	1.6	2.0	1.7	1.9	2.0	3.5	8.1	2.1
2.0	3.9	3.3	2.3	5.0	2.2	2.4	2.7	3.6	20.8	2.5
3.0	4.9	5.4	4.3	4.5	3.4	3.4	3.1	2.3	19.7	3.1
4.0	3.6	3.3	3.2	2.2	2.3	3.2	1.7	5.6	7.3	3.3
5.0	4.2	2.5	2.9	2.0	3.1	2.4	1.6	10.5	10.2	6.2
6.0	11.9	5.9	6.5	7.6	3.7	3.2	2.9	19.7	15.3	9.7
7.0		17.6		53.2			3.8		17.3	
8.0		120.5					4.1		27.7	

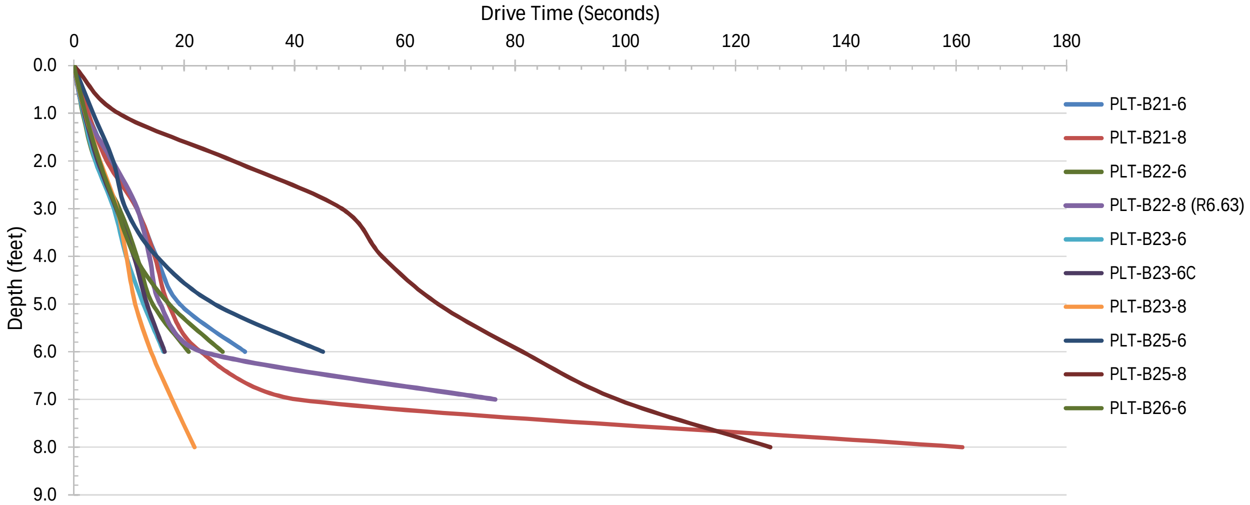


(R) Pile refusal is defined as less than 1 inch of movement over one minute of drive time.

Project:	Badger Mountain Solar	Test Weather:	20-40 Degrees; Overcast and Snowy
Install Date:	Februrary 3rd and February 4th, 2021	Installer:	Granite Construction: Vermeer PD-10

Pile Install Data - Cumulative Drive Time (seconds)

Depth (ft)	PLT-B21-6	PLT-B21-8	PLT-B22-6	PLT-B22-8 (R6.63)	PLT-B23-6	PLT-B23-6C	PLT-B23-8	PLT-B25-6	PLT-B25-8	PLT-B26-6
0.0	0	0	0	0	0	0	0	0	0	0
1.0	2.52	2.62	1.59	1.96	1.71	1.89	2.01	3.47	8.07	2.07
2.0	6.45	5.96	3.9	6.98	3.88	4.29	4.75	7.11	28.9	4.6
3.0	11.38	11.38	8.24	11.47	7.24	7.66	7.82	9.39	48.59	7.74
4.0	14.95	14.64	11.43	13.69	9.49	10.84	9.52	15	55.87	11.07
5.0	19.19	17.12	14.28	15.67	12.59	13.24	11.12	25.52	66.06	17.26
6.0	31.04	23.02	20.8	23.24	16.26	16.47	13.99	45.17	81.34	26.95
7.0		40.6		76.4			17.78		98.59	
8.0		161.1					21.87		126.28	



(R) Pile refusal is defined as less than 1 inch of movement over one minute of drive time.

Westwood
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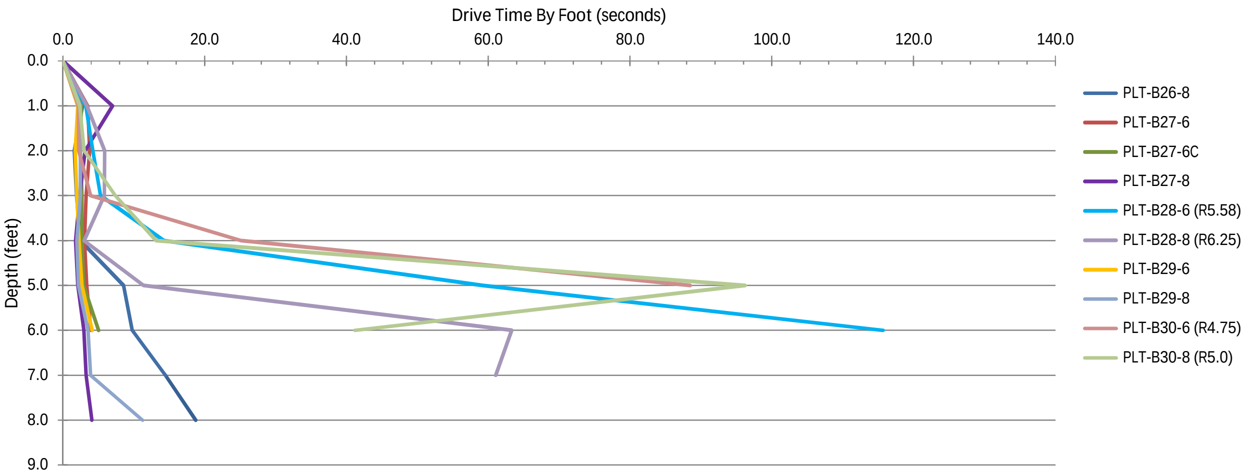
Project:	Badger Mountain Solar	Test Weather:	20-40 Degrees; Overcast and Snowy
Install Date:	Februrary 3rd and February 4th, 2021	Installer:	Granite Construction: Vermeer PD-10

Pile Install Data - Drive Time By Foot (seconds)

Depth (ft)	PLT-B26-8	PLT-B27-6	PLT-B27-6C	PLT-B27-8	PLT-B28-6 (R5.58)	PLT-B28-8 (R6.25)	PLT-B29-6	PLT-B29-8	PLT-B30-6 (R4.75)	PLT-B30-8 (R5.0)
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	2.8	3.5	2.6	7.0	3.2	3.4	2.1	2.5	2.2	2.4
2.0	1.6	3.8	2.4	3.1	4.2	5.9	1.8	2.5	2.2	3.0
3.0	1.9	3.3	2.7	2.4	5.3	5.9	2.0	2.5	3.9	7.4
4.0	2.5	3.1	2.7	1.8	14.3	3.0	2.3	2.0	25.2	13.1
5.0	8.6	3.4	2.9	2.1	59.2	11.4	2.7	2.2	88.5	96.2
6.0	9.8	4.0	5.0	2.9	115.7	63.3	4.1	3.6		41.2
7.0	14.5			3.3		61.1		3.9		
8.0	18.7			4.1				11.2		

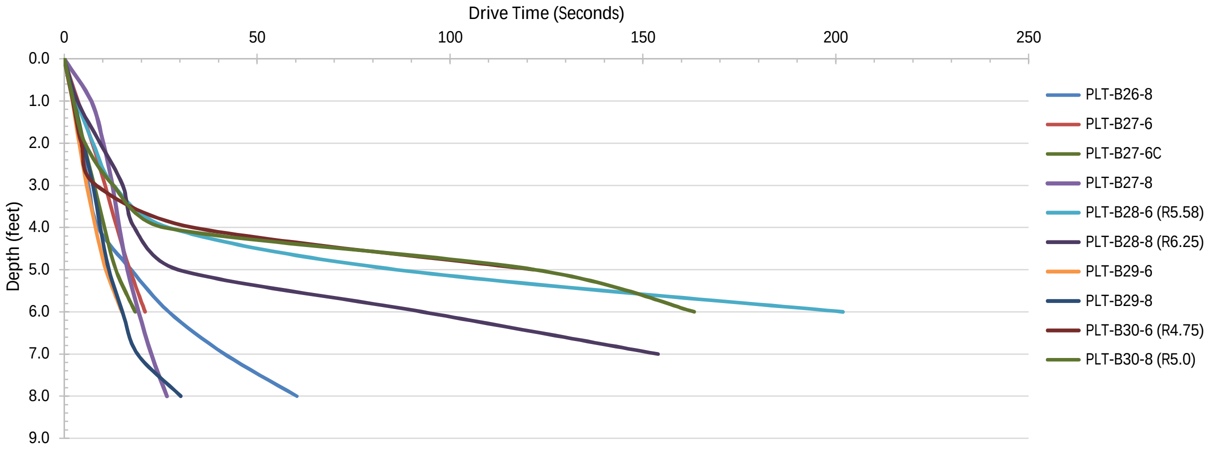


(R) Pile refusal is defined as less than 1 inch of movement over one minute of drive time.

Project:	Badger Mountain Solar	Test Weather:	20-40 Degrees; Overcast and Snowy
Install Date:	Februrary 3rd and February 4th, 2021	Installer:	Granite Construction: Vermeer PD-10

Pile Install Data - Cumulative Drive Time (seconds)

Depth (ft)	PLT-B26-8	PLT-B27-6	PLT-B27-6C	PLT-B27-8	PLT-B28-6 (R5.58)	PLT-B28-8 (R6.25)	PLT-B29-6	PLT-B29-8	PLT-B30-6 (R4.75)	PLT-B30-8 (R5.0)
0.0	0	0	0	0	0	0	0	0	0	0
1.0	2.78	3.51	2.61	6.99	3.24	3.4	2.11	2.47	2.17	2.39
2.0	4.38	7.28	5.05	10.11	7.46	9.31	3.86	4.95	4.41	5.38
3.0	6.3	10.56	7.75	12.49	12.77	15.16	5.82	7.41	8.3	12.75
4.0	8.78	13.62	10.45	14.27	27.03	18.15	8.09	9.37	33.5	25.89
5.0	17.33	16.99	13.36	16.35	86.21	29.56	10.79	11.55	121.99	122.12
6.0	27.1	20.94	18.38	19.29	201.9	92.87	14.92	15.1		163.32
7.0	41.57			22.54		153.92		18.99		
8.0	60.3			26.61				30.22		



(R) Pile refusal is defined as less than 1 inch of movement over one minute of drive time.

Appendix 4

Axial Tensile Pile Load Testing Data

Westwood
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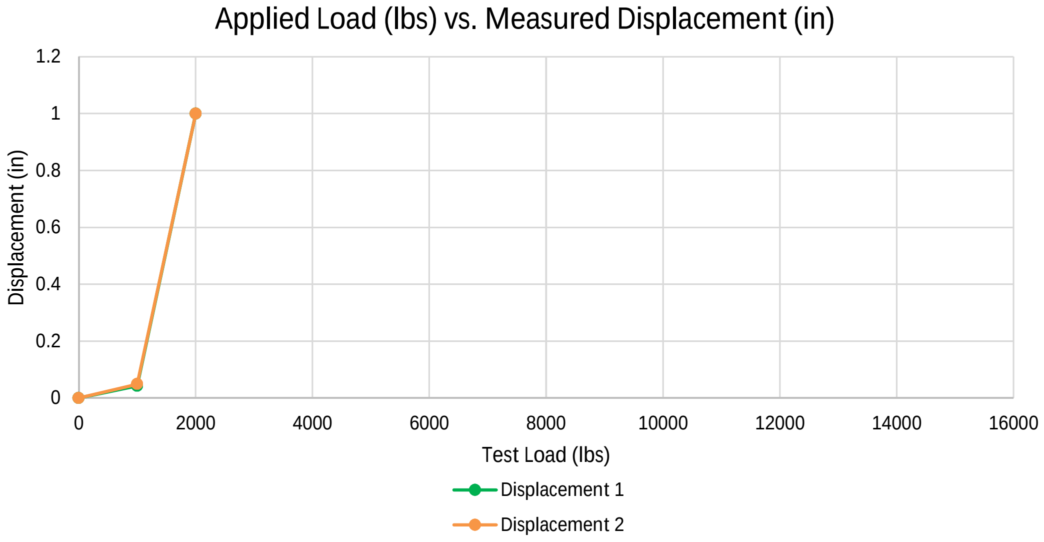
Minnetonka, MN 55343
westwoodps.com
(888) 937-5150

Project:	Badger Mountain	Pile ID:	PLT-AP6-6T
Test Date:	2/6/2021	Pile GPS Location:	47.45908 , -120.19646
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	19.5 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	2,000	Load Height:	5.0 *feet*
Notes:	1 in displacement at 2000, 5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.036	0.043	0.043	0.049
2000	1.003	0.999	1	1
3000				
4000				
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				



Westwood
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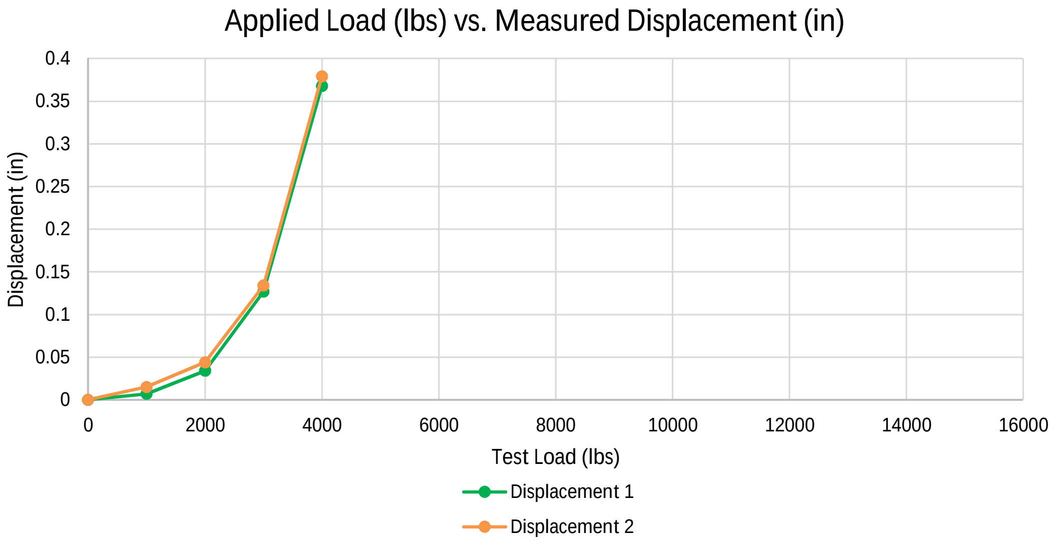
12701 Whitewater Drive, Suite 300
Minnetonka, MN 55343
westwoodps.com
(888) 937-5150

Project:	Badger Mountain	Pile ID:	PLT-AP6-8T
Test Date:	2/6/2021	Pile GPS Location:	47.45908 , -120.19646
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	27.4 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
CD* Load:	5,000	Load Height:	5.0 *feet*
Notes:	Continues displacement at 5000	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.007	0.015	0.007	0.015
2000	0.024	0.034	0.034	0.044
3000	0.109	0.121	0.127	0.134
4000	0.359	0.361	0.368	0.379
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				

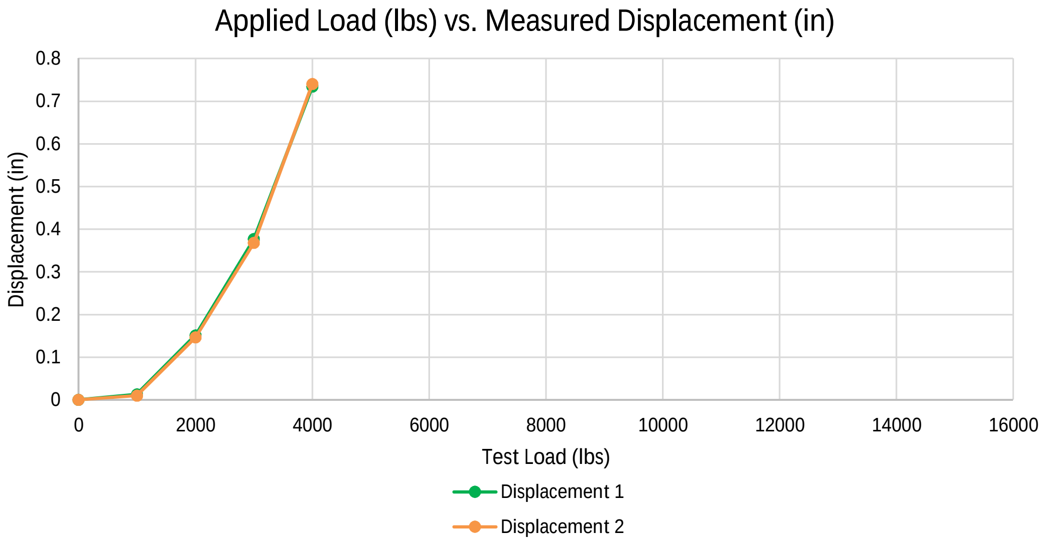


Project:	Badger Mountain	Pile ID:	PLT-AP8-6T
Test Date:		Pile GPS Location:	47.45512 , -120.19140
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:		Pile Drive Time:	19.3 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	4,500	Load Height:	5.0 *feet*
Notes:		Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.013	0.01	0.013	0.01
2000	0.15	0.145	0.151	0.146
3000	0.333	0.344	0.377	0.368
4000	0.691	0.703	0.734	0.74
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				

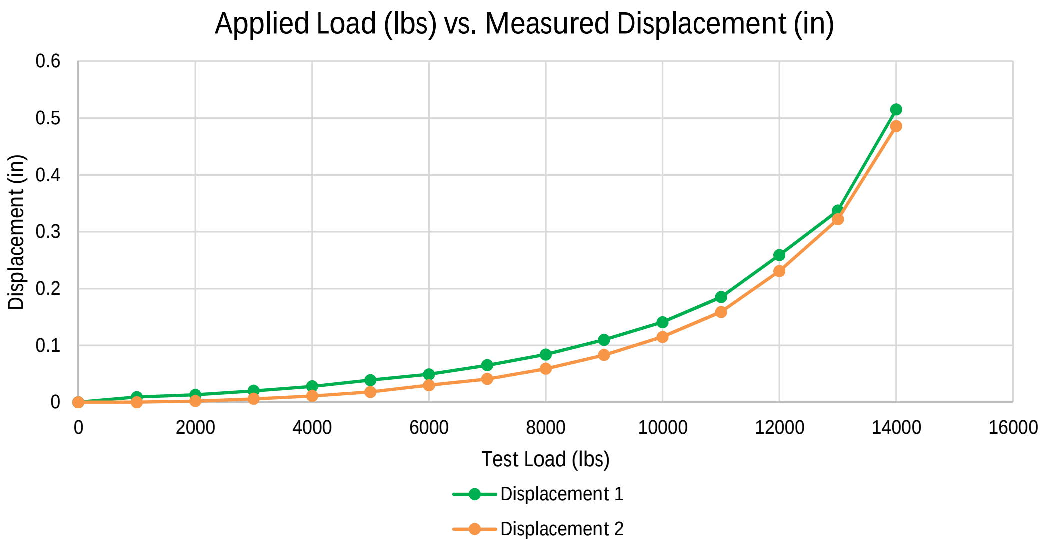


Project:	Badger Mountain	Pile ID:	PLT-AP8-8T
Test Date:	2/6/2021	Pile GPS Location:	47.45512 , -120.19140
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	35.6 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
CD* Load:	15,000	Load Height:	5.0 *feet*
Notes:	5 in of frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.009	0	0.009	0
2000	0.013	0.001	0.013	0.002
3000	0.019	0.006	0.02	0.006
4000	0.027	0.011	0.028	0.011
5000	0.037	0.017	0.039	0.018
6000	0.047	0.028	0.049	0.03
7000	0.063	0.04	0.065	0.041
8000	0.082	0.057	0.084	0.059
9000	0.106	0.081	0.11	0.083
10000	0.129	0.107	0.141	0.115
11000	0.179	0.152	0.185	0.159
12000	0.217	0.203	0.259	0.231
13000	0.311	0.293	0.337	0.322
14000	0.462	0.441	0.515	0.486
15000	0.737	0.755		

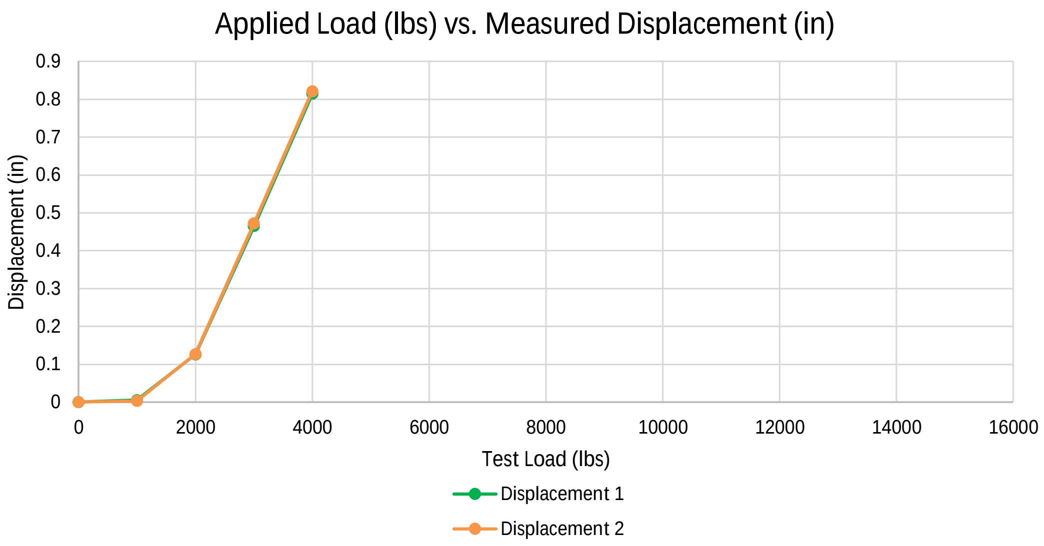


Project:	Badger Mountain	Pile ID:	PLT-AP10-6T
Test Date:	2/6/2021	Pile GPS Location:	47.45069 , -120.18711
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	17.4 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	5,000	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.005	0.002	0.005	0.003
2000	0.111	0.115	0.126	0.127
3000	0.393	0.403	0.465	0.472
4000	0.76	0.765	0.815	0.821
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				

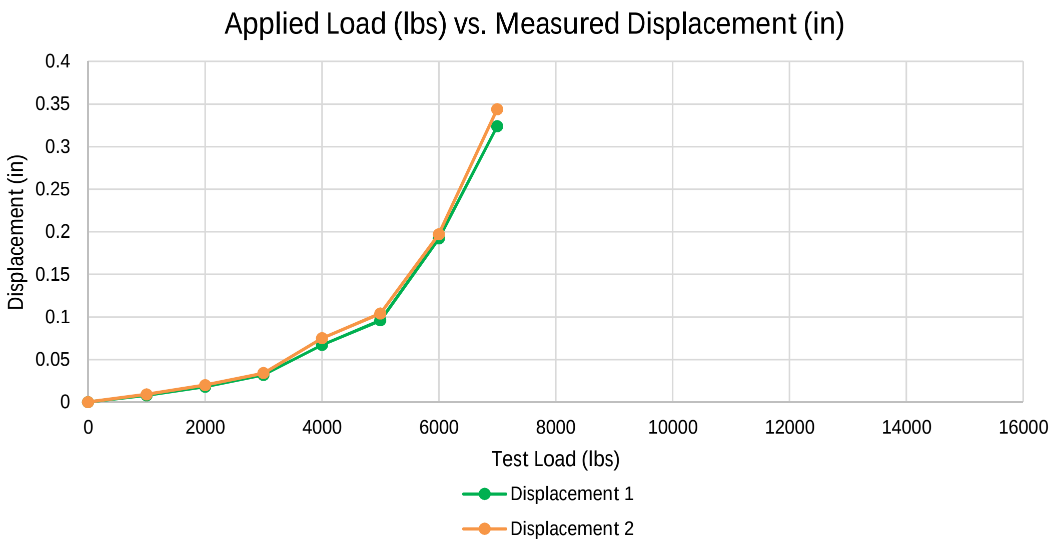


Project:	Badger Mountain	Pile ID:	PLT-AP10-8T
Test Date:	2/6/2021	Pile GPS Location:	47.45069 , -120.18711
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	29.7 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
CD* Load:	8,000	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.008	0.009	0.008	0.009
2000	0.016	0.018	0.018	0.02
3000	0.029	0.033	0.032	0.034
4000	0.066	0.073	0.067	0.075
5000	0.089	0.101	0.096	0.104
6000	0.16	0.171	0.192	0.197
7000	0.291	0.315	0.324	0.344
8000	0.435	0.487		
9000				
10000				
11000				
12000				
13000				
14000				
15000				

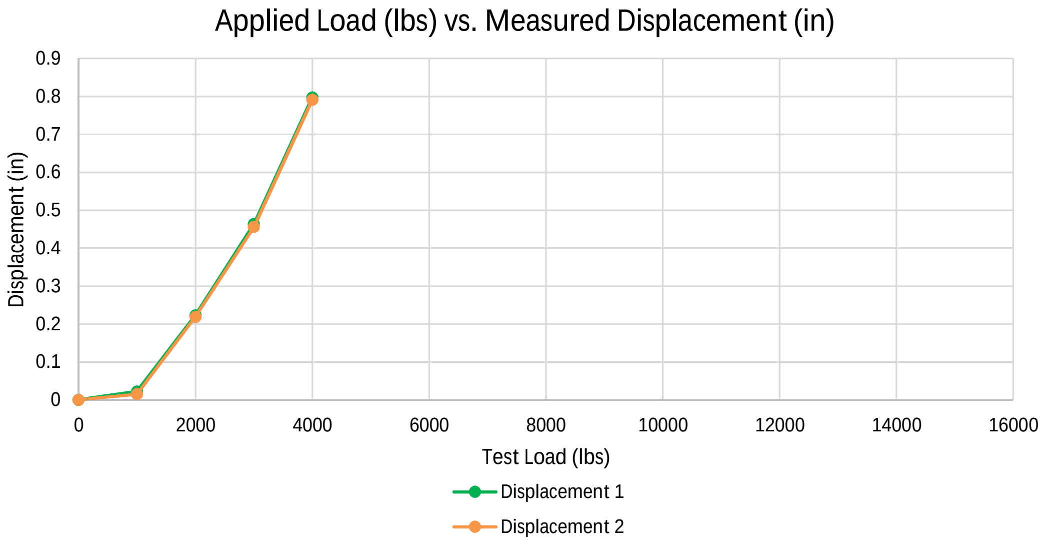


Project:	Badger Mountain	Pile ID:	PLT-AP13-6T
Test Date:	2/7/2021	Pile GPS Location:	47.44291 , -120.18082
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Clear	Pile Drive Time:	18.4 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	4,800	Load Height:	5.0 *feet*
Notes:	4 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.02	0.012	0.022	0.015
2000	0.205	0.199	0.223	0.219
3000	0.445	0.45	0.464	0.456
4000	0.74	0.759	0.797	0.791
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				

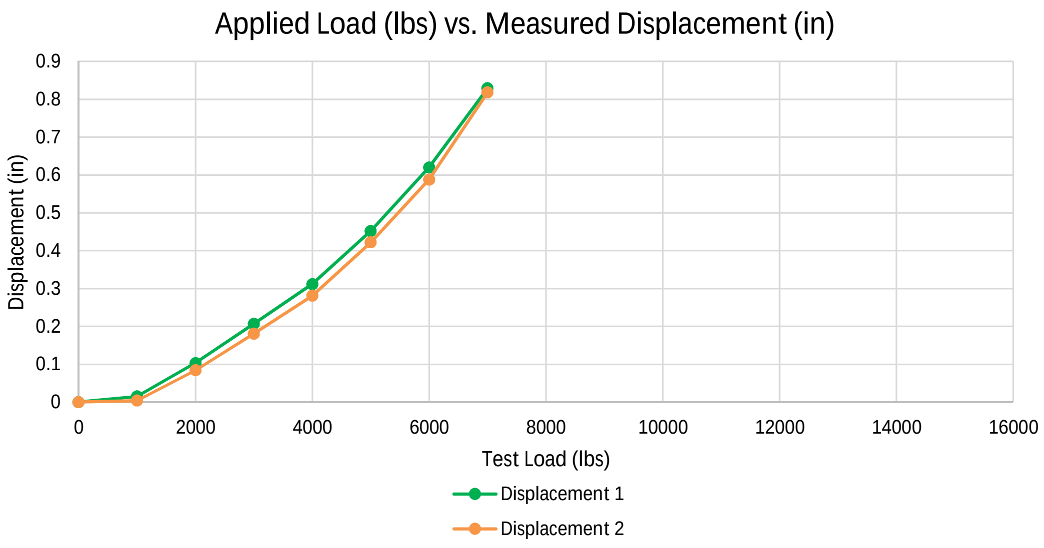


Project:	Badger Mountain	Pile ID:	PLT-AP13-8T
Test Date:	2/7/2021	Pile GPS Location:	47.44291 , -120.18082
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Clear	Pile Drive Time:	22.8 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
CD* Load:	7,900	Load Height:	5.0 *feet*
Notes:	4 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.015	0.003	0.015	0.004
2000	0.096	0.077	0.103	0.084
3000	0.206	0.18	0.207	0.181
4000	0.295	0.277	0.312	0.281
5000	0.42	0.393	0.452	0.422
6000	0.599	0.567	0.62	0.588
7000	0.782	0.755	0.829	0.818
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				

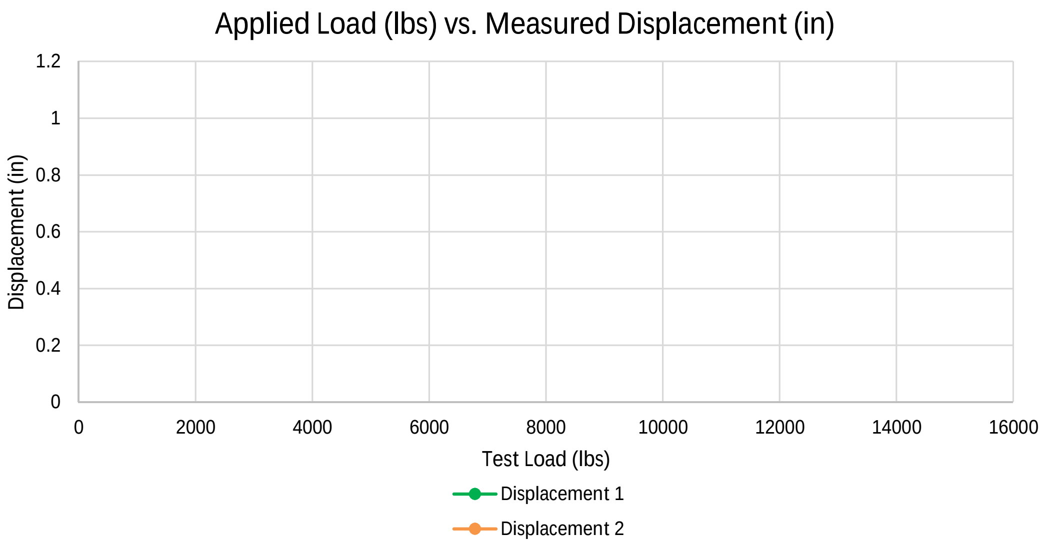


Project:	Badger Mountain	Pile ID:	PLT-AP16-6T
Test Date:		Pile GPS Location:	47.43510 , -120.17452
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:		Pile Drive Time:	28.2 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	N/A	Load Height:	5.0 *feet*
Notes:	Installed in borehole. Couldn't see borehole until snow melted. Did not test pile.		

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0		
1000				
2000				
3000				
4000				
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				



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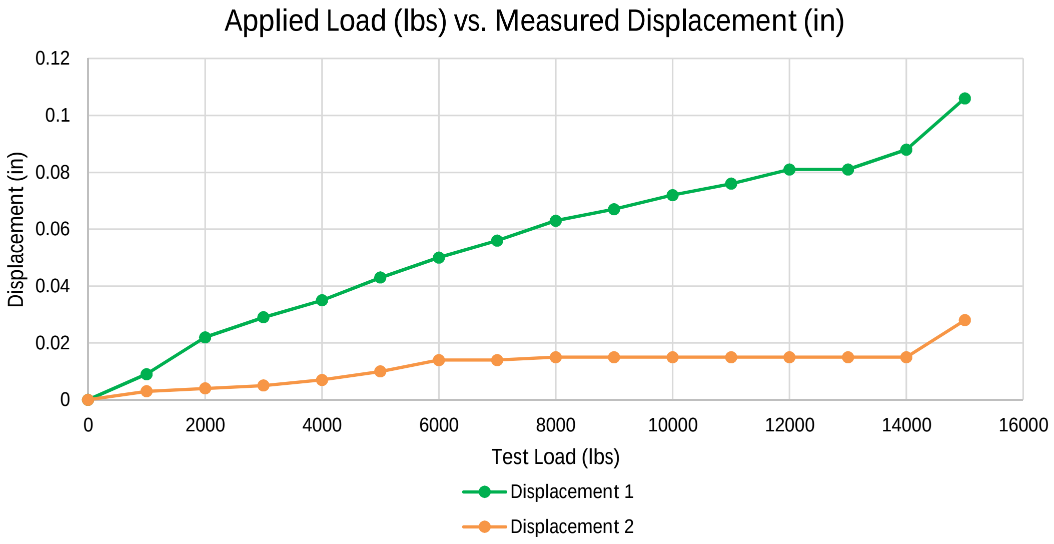
Project:	Badger Mountain	Pile ID:	PLT-AP16-8 (R4.92)
Test Date:	2/8/2021	Pile GPS Location:	47.43510 , -120.17452
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Cloudy	Pile Drive Time:	167.9 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	8.1 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	4.9 *feet*
CD* Load:	N/A	Load Height:	5.0 *feet*
Notes:	3 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.009	0.003	0.009	0.003
2000	0.022	0.004	0.022	0.004
3000	0.029	0.005	0.029	0.005
4000	0.035	0.007	0.035	0.007
5000	0.043	0.01	0.043	0.01
6000	0.05	0.013	0.05	0.014
7000	0.055	0.014	0.056	0.014
8000	0.061	0.015	0.063	0.015
9000	0.066	0.015	0.067	0.015
10000	0.072	0.015	0.072	0.015
11000	0.076	0.015	0.076	0.015
12000	0.081	0.015	0.081	0.015
13000	0.081	0.015	0.081	0.015
14000	0.085	0.015	0.088	0.015
15000	0.099	0.016	0.106	0.028

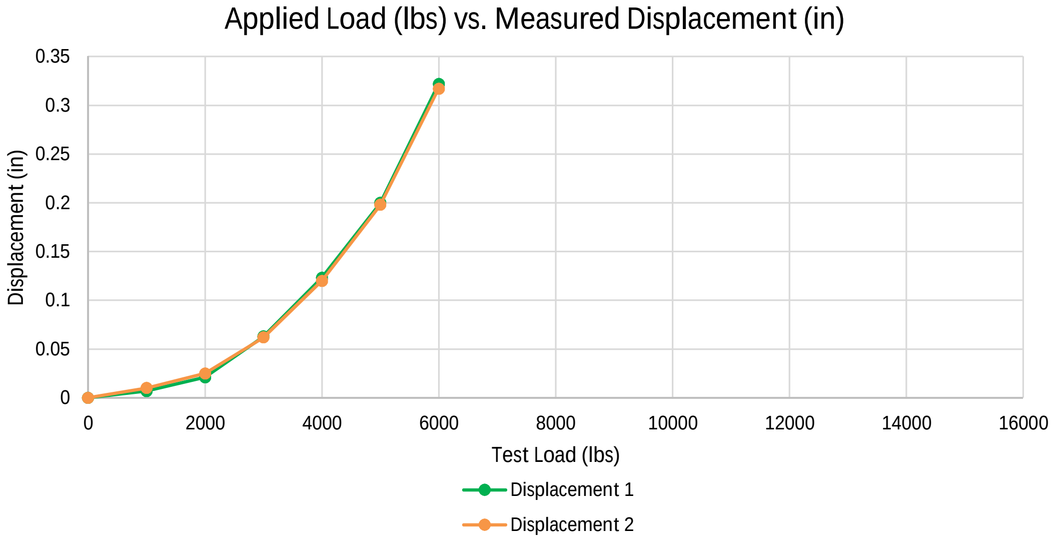


Project:	Badger Mountain	Pile ID:	PLT-AP18-6T
Test Date:	2/8/2021	Pile GPS Location:	47.43366 , -120.16502
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Cloudy	Pile Drive Time:	16.7 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	7,000	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.007	0.01	0.007	0.01
2000	0.02	0.021	0.021	0.025
3000	0.062	0.062	0.063	0.062
4000	0.121	0.119	0.123	0.12
5000	0.191	0.189	0.2	0.198
6000	0.309	0.31	0.322	0.317
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				

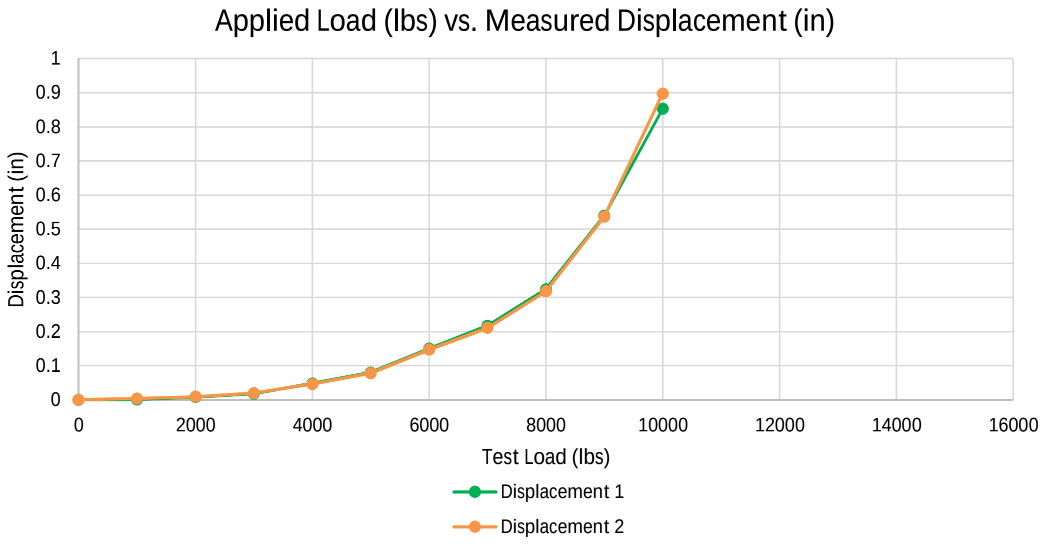


Project:	Badger Mountain	Pile ID:	PLT-AP18-8T
Test Date:	2/8/2021	Pile GPS Location:	47.43366 , -120.16502
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Cloudy	Pile Drive Time:	23.0 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
CD* Load:	10,800	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.001	0.004	0.001	0.004
2000	0.007	0.009	0.008	0.009
3000	0.016	0.018	0.018	0.02
4000	0.04	0.037	0.048	0.046
5000	0.075	0.074	0.08	0.078
6000	0.137	0.133	0.15	0.147
7000	0.203	0.205	0.217	0.211
8000	0.309	0.311	0.324	0.318
9000	0.517	0.517	0.54	0.537
10000	0.75	0.779	0.853	0.897
11000				
12000				
13000				
14000				
15000				



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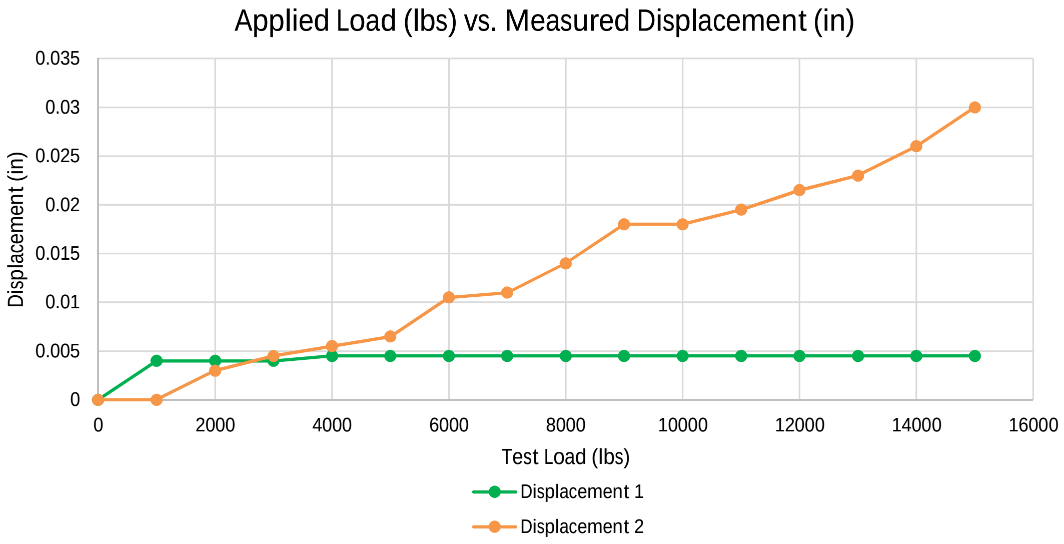
Project:	Badger Mountain	Pile ID:	PLT-B1-6 (R4.5)
Test Date:	2/5/2021	Pile GPS Location:	47.47411 , -120.21166
Testing Phase:	Design	Pile Install Date:	2/2/2021
Test Weather:	Clear	Pile Drive Time:	83.7 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	6.5 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	4.5 *feet*
CD* Load:	N/A	Load Height:	5.0 *feet*
Notes:	6 inches of frost removed, gauge 1 malfunction	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.004	0	0.004	0
2000	0.004	0.002	0.004	0.003
3000	0.004	0.0045	0.004	0.0045
4000	0.0045	0.0055	0.0045	0.0055
5000	0.0045	0.0055	0.0045	0.0065
6000	0.0045	0.01	0.0045	0.0105
7000	0.0045	0.0085	0.0045	0.011
8000	0.0045	0.0125	0.0045	0.014
9000	0.0045	0.015	0.0045	0.018
10000	0.0045	0.0175	0.0045	0.018
11000	0.0045	0.0185	0.0045	0.0195
12000	0.0045	0.021	0.0045	0.0215
13000	0.0045	0.022	0.0045	0.023
14000	0.0045	0.025	0.0045	0.026
15000	0.0045	0.029	0.0045	0.03

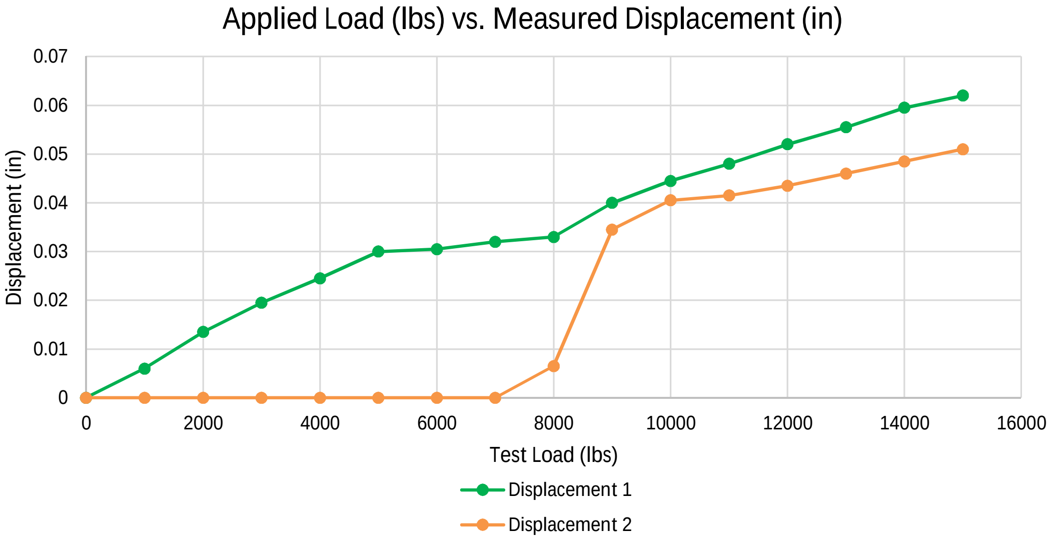


Project:	Badger Mountain	Pile ID:	PLT-B1-8T
Test Date:	2/5/2021	Pile GPS Location:	47.47411 , -120.21166
Testing Phase:	Design	Pile Install Date:	2/2/2021
Test Weather:	Clear	Pile Drive Time:	324.6 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
CD* Load:	N/A	Load Height:	5.0 *feet*
Notes:	6 inches of frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.004	0	0.006	0
2000	0.012	0	0.0135	0
3000	0.018	0	0.0195	0
4000	0.0235	0	0.0245	0
5000	0.028	0	0.03	0
6000	0.0305	0	0.0305	0
7000	0.0315	0	0.032	0
8000	0.033	0.0065	0.033	0.0065
9000	0.0395	0.0325	0.04	0.0345
10000	0.0435	0.039	0.0445	0.0405
11000	0.0475	0.041	0.048	0.0415
12000	0.052	0.043	0.052	0.0435
13000	0.0555	0.045	0.0555	0.046
14000	0.0585	0.0475	0.0595	0.0485
15000	0.062	0.05	0.062	0.051



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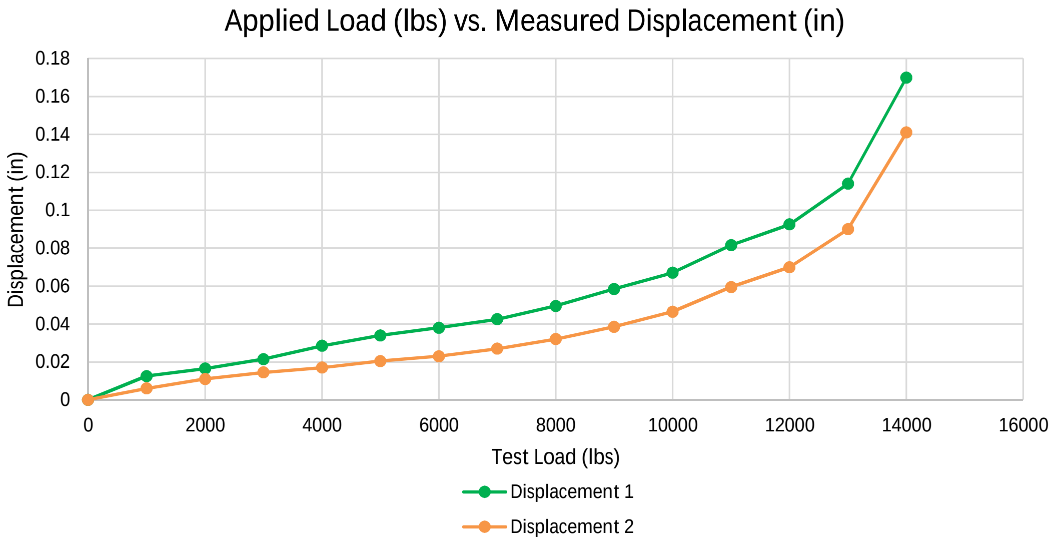
Project:	Badger Mountain	Pile ID:	PLT-B2-6T
Test Date:	2/5/2021	Pile GPS Location:	47.46959 , -120.21109
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	177.0 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	N/A	Load Height:	5.0 *feet*
Notes:	Stand moved after 14000, also did not scrape frost	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.01	0.0035	0.0125	0.006
2000	0.008	0.0105	0.0165	0.011
3000	0.0195	0.0125	0.0215	0.0145
4000	0.0275	0.016	0.0285	0.017
5000	0.0325	0.019	0.034	0.0205
6000	0.037	0.0215	0.038	0.023
7000	0.0415	0.025	0.0425	0.027
8000	0.0445	0.0315	0.0495	0.032
9000	0.0555	0.0345	0.0585	0.0385
10000	0.064	0.0435	0.067	0.0465
11000	0.078	0.058	0.0815	0.0595
12000	0.0885	0.066	0.0925	0.07
13000	0.1065	0.083	0.114	0.09
14000	0.155	0.131	0.17	0.141
15000				



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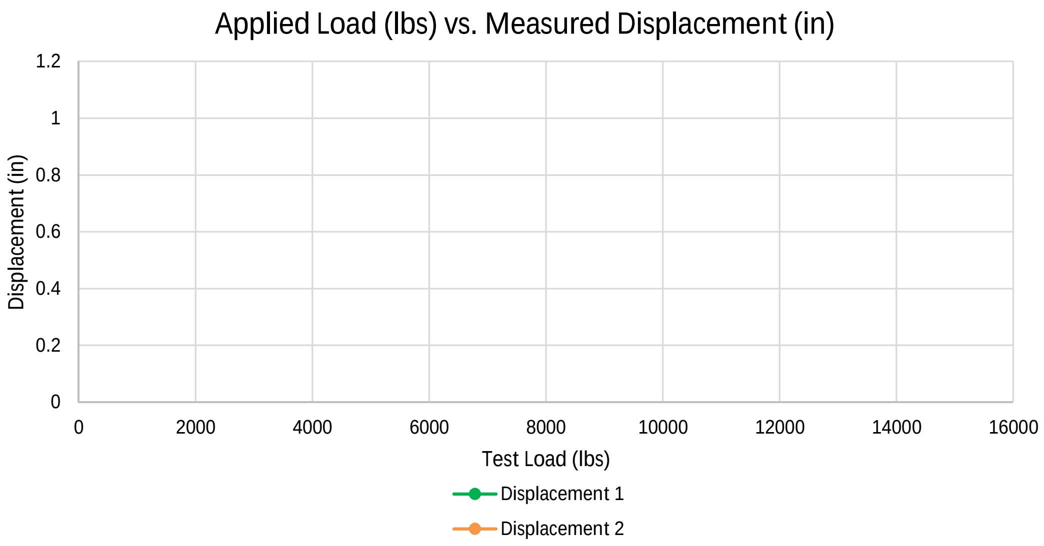
Project:	Badger Mountain	Pile ID:	PLT-B2-8 (R5.9)
Test Date:	2/5/2021	Pile GPS Location:	47.46959 , -120.21109
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	145.0 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	7.3 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	5.9 *feet*
CD* Load:	N/A	Load Height:	5.0 *feet*
Notes:	Refusal at same depth of 6 foot pile, not tested due to redundant embedment depth.		

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0		
1000				
2000				
3000				
4000				
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				

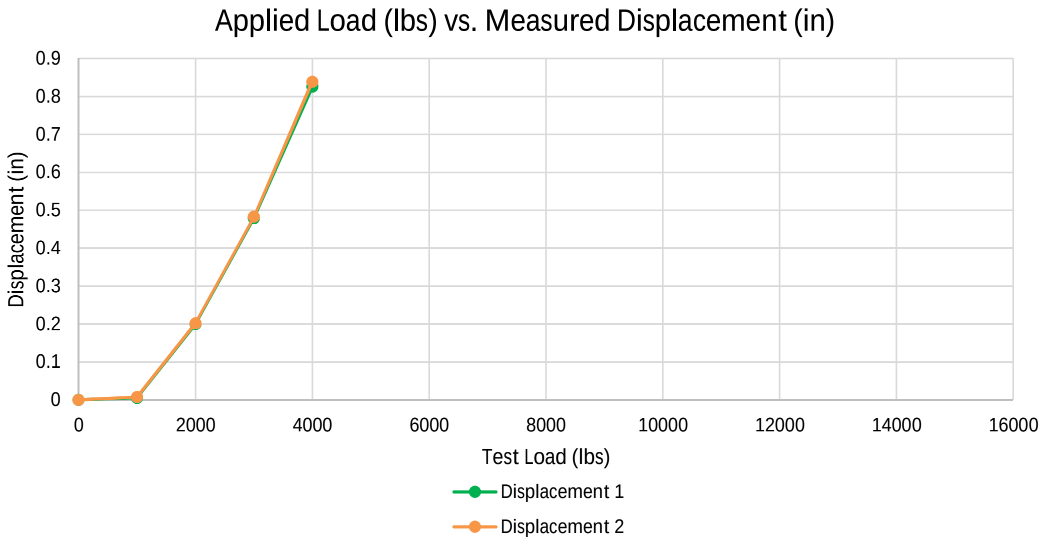


Project:	Badger Mountain	Pile ID:	PLT-B3-6T
Test Date:	2/5/2021	Pile GPS Location:	47.46957 , -120.20069
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	21.0 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	4,600	Load Height:	5.0 *feet*
Notes:	4 inches of frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.004	0.005	0.005	0.0075
2000	0.147	0.175	0.2	0.202
3000	0.444	0.482	0.479	0.483
4000	0.785	0.794	0.826	0.839
5000	1.137	1.158		
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				



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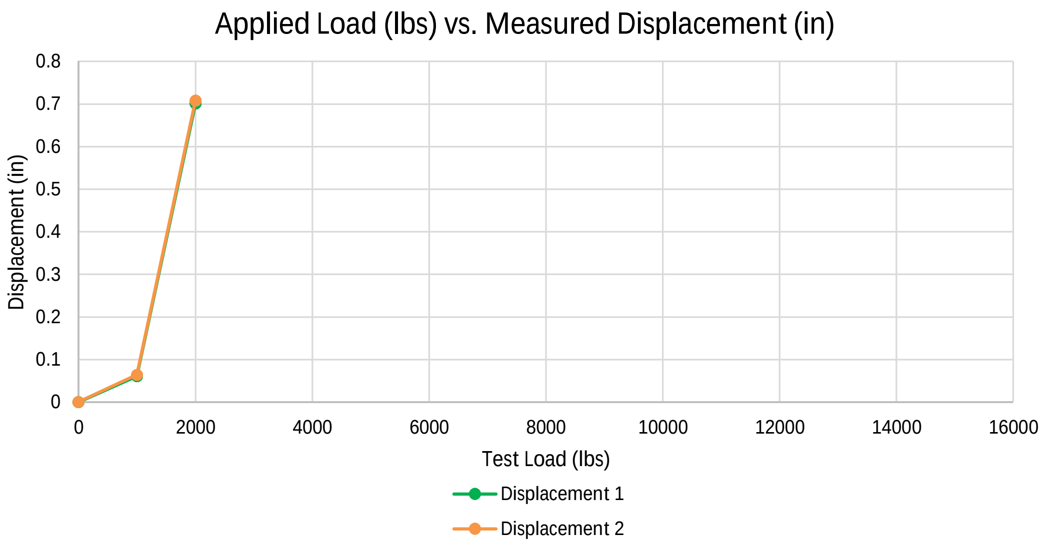
Project:	Badger Mountain	Pile ID:	PLT-B3-8T
Test Date:	2/5/2021	Pile GPS Location:	47.46957 , -120.20069
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	20.4 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
CD* Load:	2,400	Load Height:	5.0 *feet*
Notes:	1 in displacement at 2400 , 4 in of frost	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.054	0.059	0.061	0.064
2000	0.621	0.682	0.701	0.708
3000				
4000				
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				

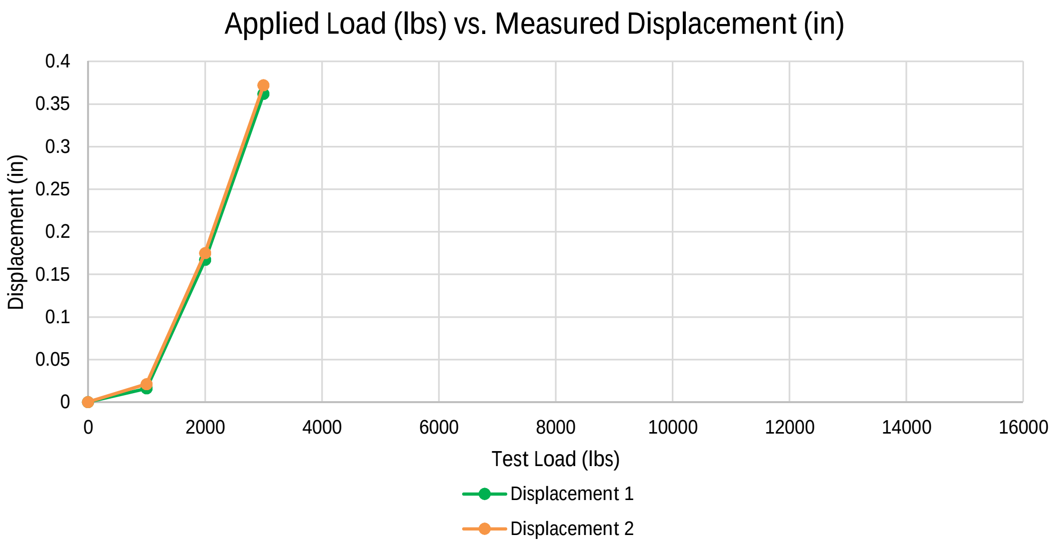


Project:	Badger Mountain	Pile ID:	PLT-B4-6T
Test Date:	2/9/2021	Pile GPS Location:	47.46882 , -120.19183
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Snowy	Pile Drive Time:	13.5 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	4,000	Load Height:	5.0 *feet*
Notes:	5 inches of frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.013	0.018	0.016	0.021
2000	0.166	0.175	0.167	0.175
3000	0.36	0.372	0.362	0.372
4000	0.709	0.799		
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				



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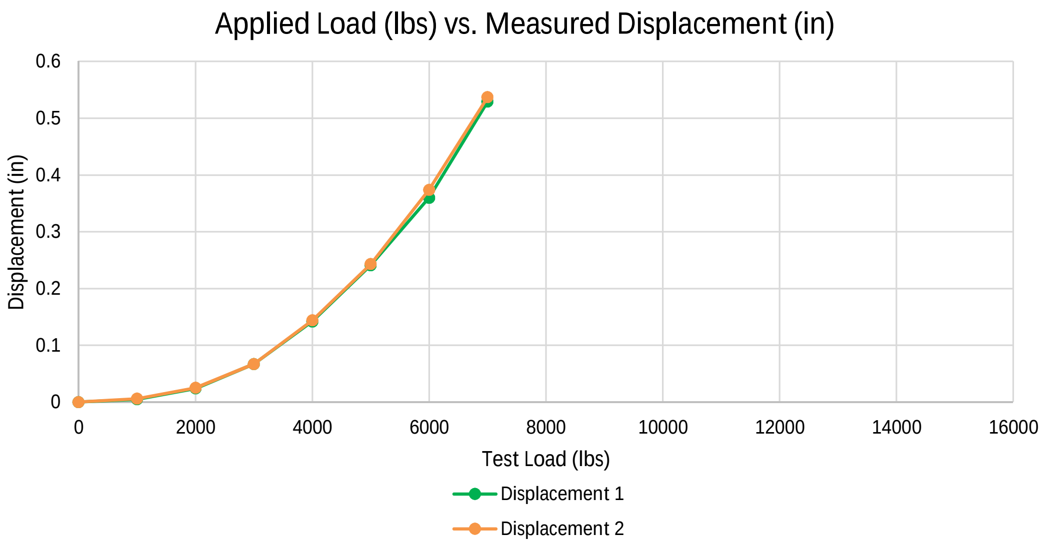
Project:	Badger Mountain	Pile ID:	PLT-B4-8T
Test Date:	2/9/2021	Pile GPS Location:	47.46882 , -120.19183
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Snowy	Pile Drive Time:	20.9 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
CD* Load:	8,000	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.005	0.006	0.005	0.006
2000	0.024	0.025	0.024	0.025
3000	0.067	0.067	0.067	0.067
4000	0.128	0.143	0.142	0.144
5000	0.221	0.226	0.241	0.243
6000	0.349	0.345	0.36	0.374
7000	0.508	0.516	0.529	0.537
8000	0.775	0.885		
9000				
10000				
11000				
12000				
13000				
14000				
15000				

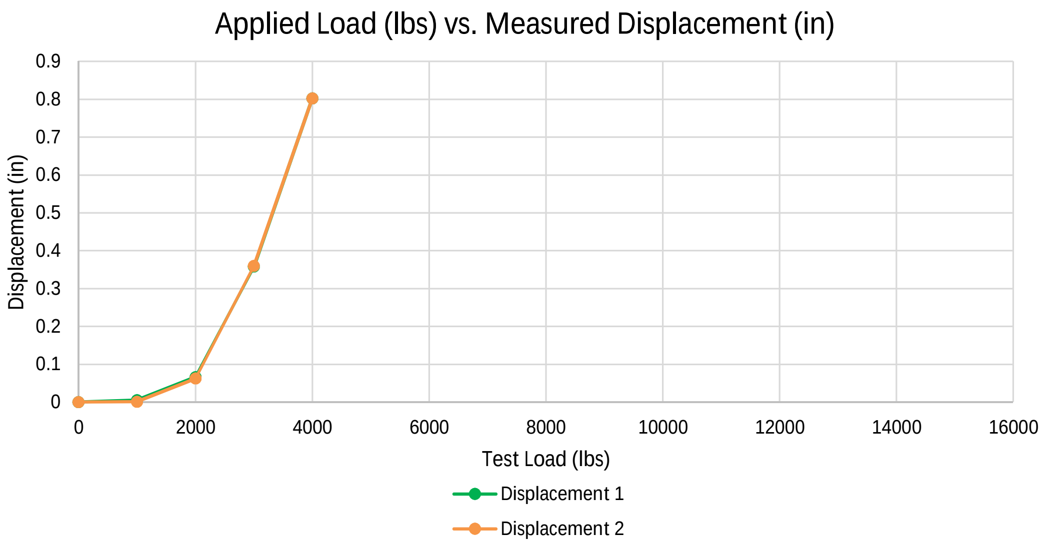


Project:	Badger Mountain	Pile ID:	PLT-B6-6T
Test Date:	2/5/2021	Pile GPS Location:	47.46694 , -120.20563
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	18.2 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	4,600	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.004	0	0.005	0.001
2000	0.054	0.0515	0.066	0.062
3000	0.293	0.319	0.358	0.36
4000	0.768	0.777	0.802	0.802
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				



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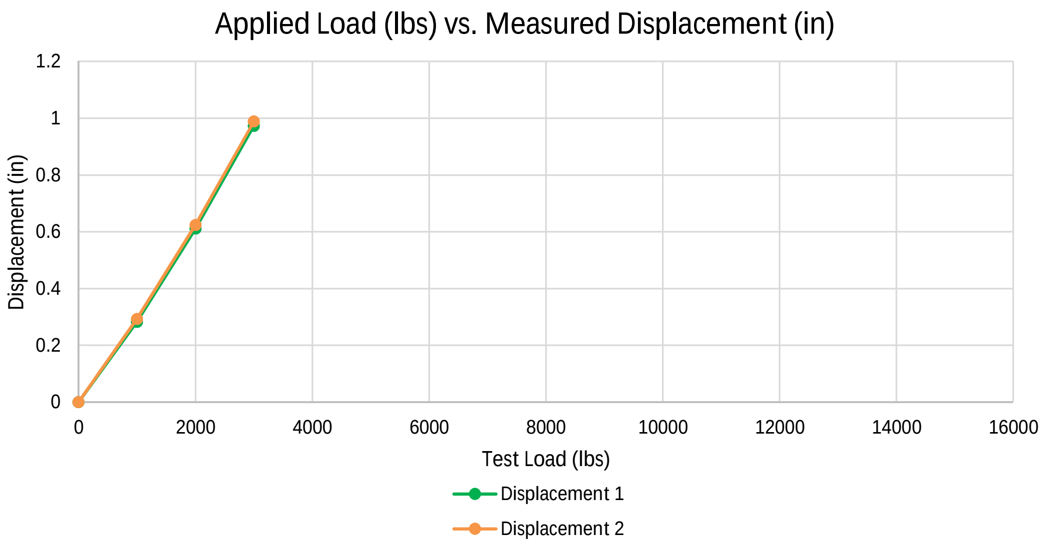
Project:	Badger Mountain	Pile ID:	PLT-B6-8T
Test Date:	2/5/2021	Pile GPS Location:	47.46694 , -120.20563
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	21.4 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
CD* Load:	3,600	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.25	0.279	0.283	0.293
2000	0.588	0.618	0.611	0.624
3000	0.948	0.979	0.973	0.989
4000				
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				



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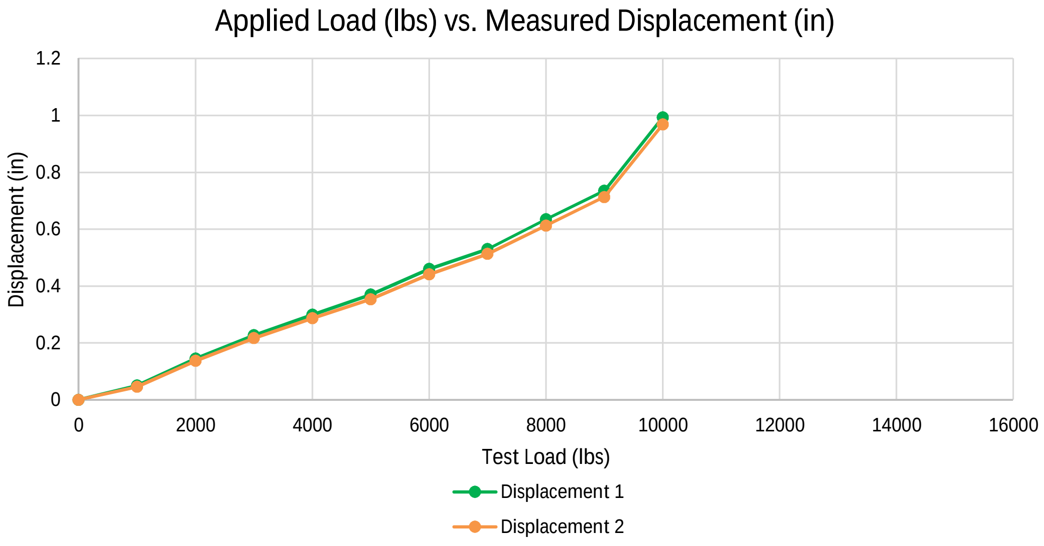
Project:	Badger Mountain	Pile ID:	PLT-B7-6 (R4.167)
Test Date:	2/5/2021	Pile GPS Location:	47.46346 , -120.20449
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	107.7 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	6.8 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	4.2 *feet*
CD* Load:	N/A	Load Height:	5.0 *feet*
Notes:	4 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.047	0.045	0.05	0.046
2000	0.138	0.136	0.145	0.137
3000	0.206	0.196	0.227	0.217
4000	0.297	0.285	0.299	0.287
5000	0.36	0.347	0.37	0.354
6000	0.442	0.43	0.46	0.441
7000	0.515	0.5	0.53	0.513
8000	0.61	0.595	0.635	0.612
9000	0.715	0.701	0.735	0.713
10000	0.981	0.955	0.993	0.968
11000				
12000				
13000				
14000				
15000				



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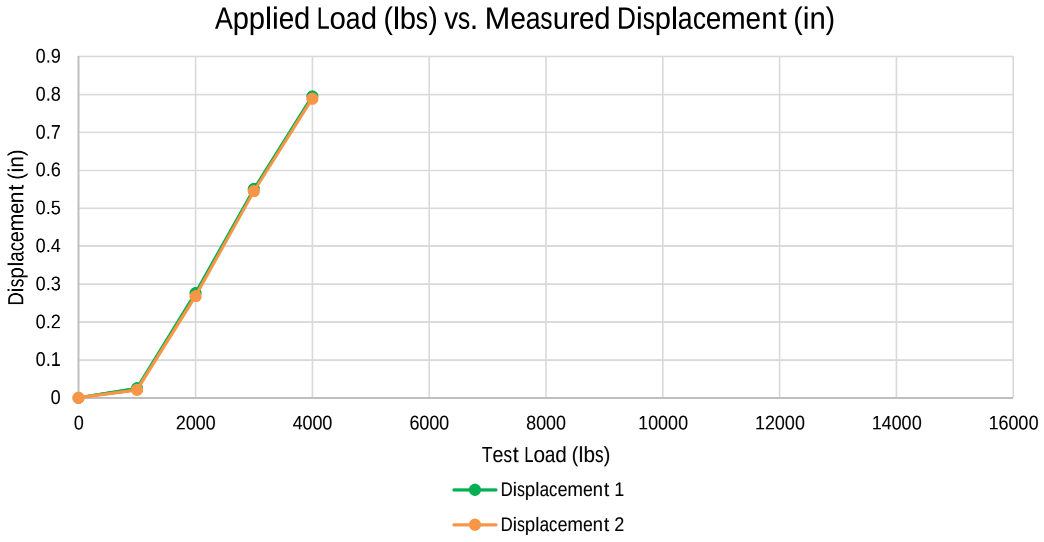
Project:	Badger Mountain	Pile ID:	PLT-B7-8 (R3.33)
Test Date:	2/5/2021	Pile GPS Location:	47.46346 , -120.20449
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	81.3 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	9.7 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	3.3 *feet*
CD* Load:	N/A	Load Height:	5.0 *feet*
Notes:	4 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.023	0.021	0.025	0.021
2000	0.276	0.267	0.276	0.268
3000	0.537	0.529	0.551	0.545
4000	0.774	0.762	0.795	0.789
5000	1.004			
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				



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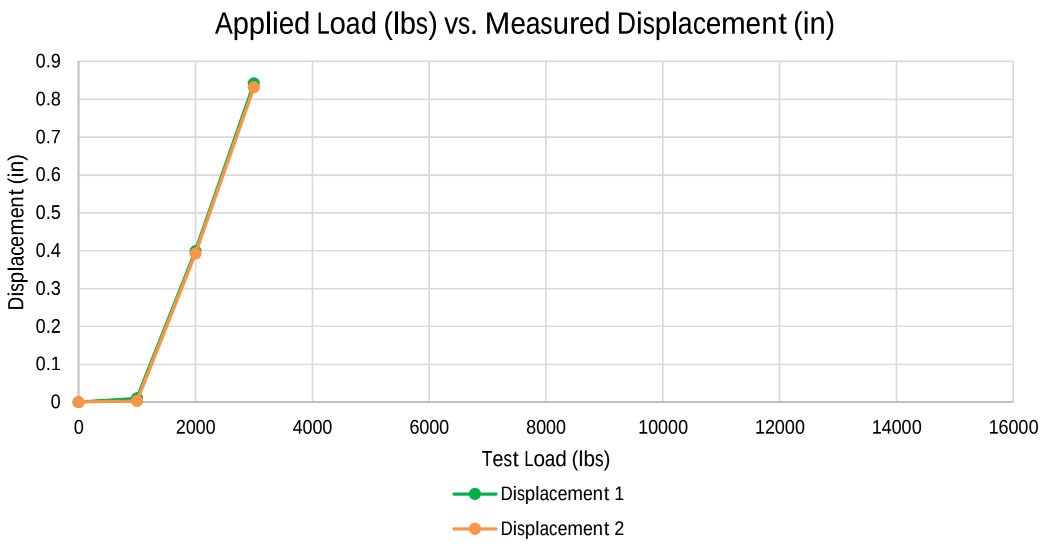
Project:	Badger Mountain	Pile ID:	PLT-B9-6T
Test Date:	2/5/2021	Pile GPS Location:	47.45897 , -120.20017
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	19.5 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	N/A	Load Height:	5.0 *feet*
Notes:	1 in displacement at 3700, 5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.006	0	0.01	0.003
2000	0.354	0.366	0.399	0.393
3000	0.784	0.781	0.842	0.832
4000				
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				



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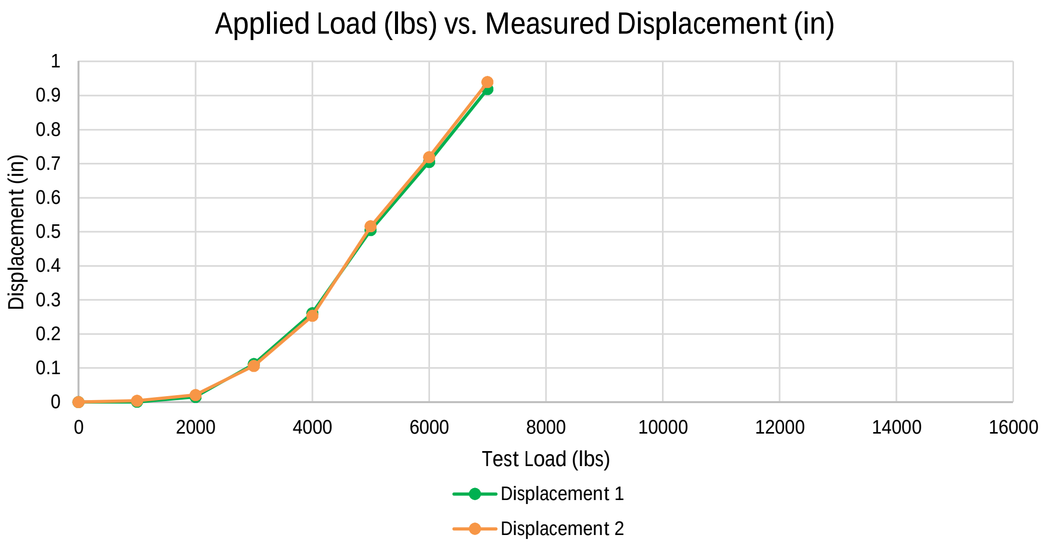
Project:	Badger Mountain	Pile ID:	PLT-B9-8T
Test Date:	2/5/2021	Pile GPS Location:	47.45897 , -120.20017
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	32.0 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
CD* Load:	7,900	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.0005	0.004	0.0005	0.004
2000	0.0145	0.0195	0.015	0.021
3000	0.083	0.096	0.112	0.106
4000	0.241	0.239	0.261	0.253
5000	0.485	0.502	0.505	0.516
6000	0.665	0.685	0.705	0.719
7000	0.884	0.911	0.919	0.939
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				



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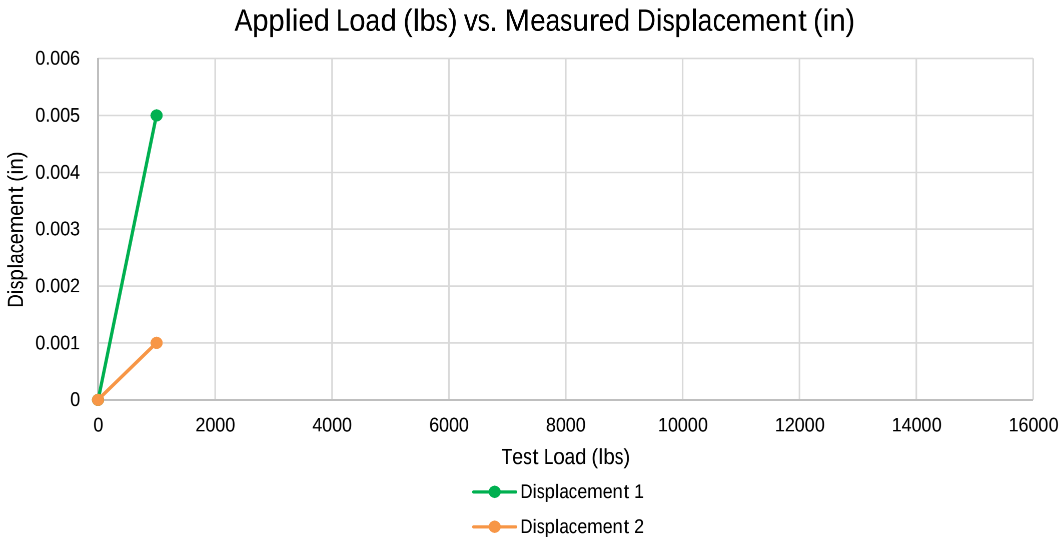
Project:	Badger Mountain	Pile ID:	PLT-B10-6T
Test Date:		Pile GPS Location:	47.45744 , -120.19266
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:		Pile Drive Time:	18.9 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	1,950	Load Height:	5.0 *feet*
Notes:	4 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.005	0.001	0.005	0.001
2000				
3000				
4000				
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				

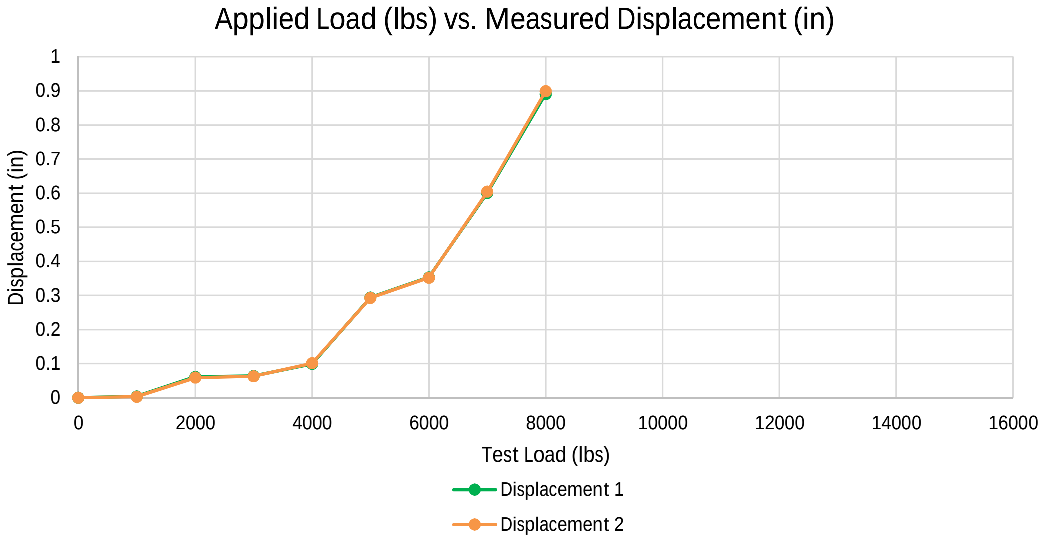


Project:	Badger Mountain	Pile ID:	PLT-B10-8T
Test Date:	2/6/2021	Pile GPS Location:	47.45744 , -120.19266
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	22.6 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
CD* Load:	8,500	Load Height:	5.0 *feet*
Notes:	4 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.004	0.003	0.004	0.003
2000	0.061	0.059	0.061	0.059
3000	0.063	0.063	0.064	0.063
4000	0.096	0.099	0.099	0.101
5000	0.293	0.292	0.294	0.293
6000	0.339	0.345	0.353	0.352
7000	0.577	0.587	0.601	0.604
8000	0.803	0.823	0.891	0.899
9000				
10000				
11000				
12000				
13000				
14000				
15000				

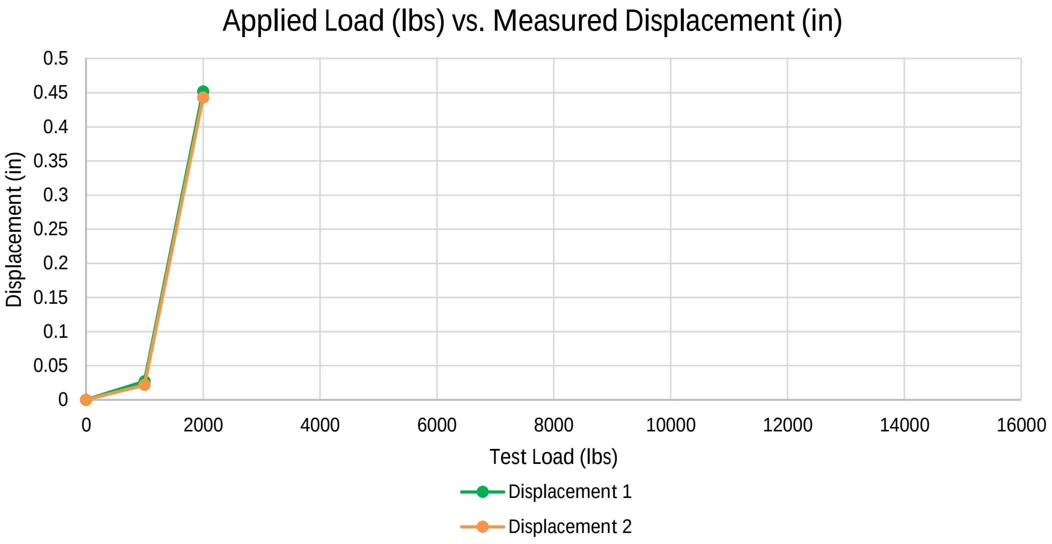


Project:	Badger Mountain	Pile ID:	PLT-B11-6T
Test Date:	2/6/2021	Pile GPS Location:	47.45401 , -120.19491
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	18.1 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	3,000	Load Height:	5.0 *feet*
Notes:	4 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.025	0.021	0.027	0.022
2000	0.426	0.428	0.452	0.443
3000				
4000				
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				



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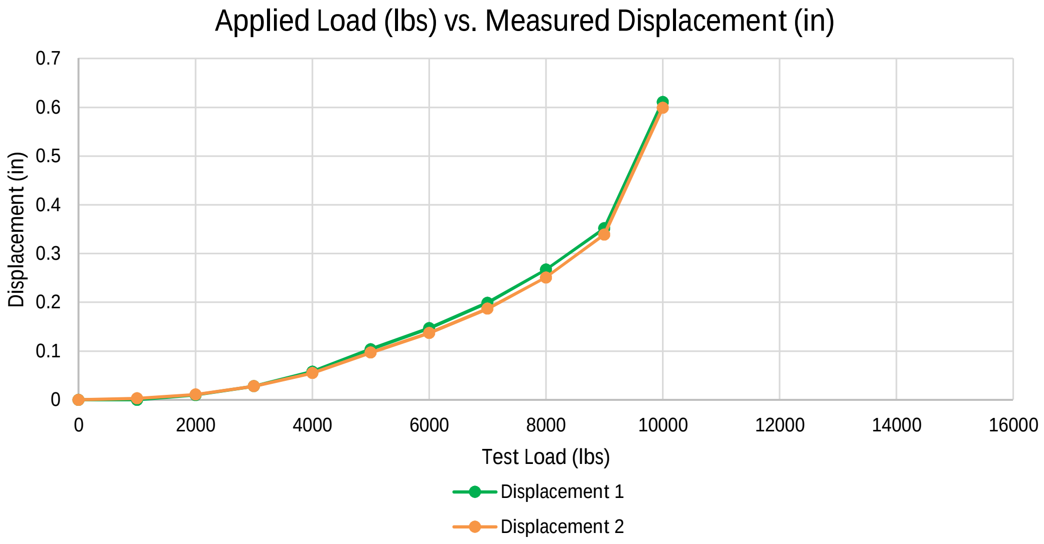
Project:	Badger Mountain	Pile ID:	PLT-B11-8T
Test Date:	2/6/2021	Pile GPS Location:	47.45401 , -120.19491
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	31.9 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
CD* Load:	10,500	Load Height:	5.0 *feet*
Notes:	4 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0	0.003	0	0.003
2000	0.009	0.011	0.01	0.011
3000	0.026	0.027	0.028	0.028
4000	0.055	0.054	0.058	0.055
5000	0.095	0.091	0.104	0.097
6000	0.136	0.127	0.147	0.137
7000	0.188	0.175	0.199	0.187
8000	0.251	0.238	0.267	0.251
9000	0.339	0.327	0.352	0.339
10000	0.513	0.503	0.611	0.599
11000				
12000				
13000				
14000				
15000				



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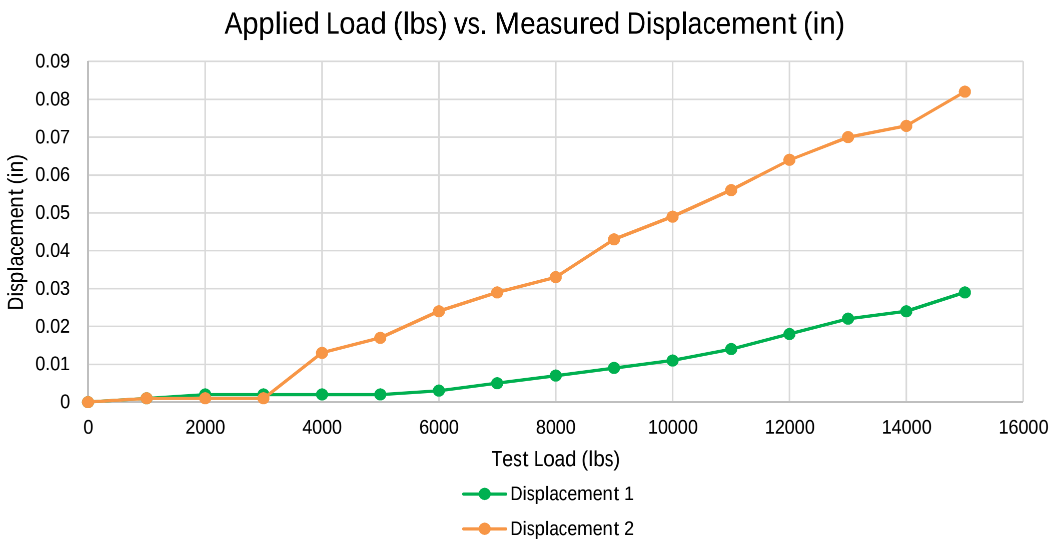
Project:	Badger Mountain	Pile ID:	PLT-B12-6 (R5.42)
Test Date:	2/6/2021	Pile GPS Location:	47.45457 , -120.18722
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	128.0 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.6 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	5.4 *feet*
CD* Load:	N/A	Load Height:	5.0 *feet*
Notes:	4 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.001	0.001	0.001	0.001
2000	0.002	0.001	0.002	0.001
3000	0.002	0.001	0.002	0.001
4000	0.002	0.013	0.002	0.013
5000	0.002	0.017	0.002	0.017
6000	0.003	0.023	0.003	0.024
7000	0.005	0.029	0.005	0.029
8000	0.006	0.033	0.007	0.033
9000	0.009	0.043	0.009	0.043
10000	0.011	0.049	0.011	0.049
11000	0.014	0.056	0.014	0.056
12000	0.018	0.064	0.018	0.064
13000	0.022	0.07	0.022	0.07
14000	0.024	0.073	0.024	0.073
15000	0.029	0.082	0.029	0.082



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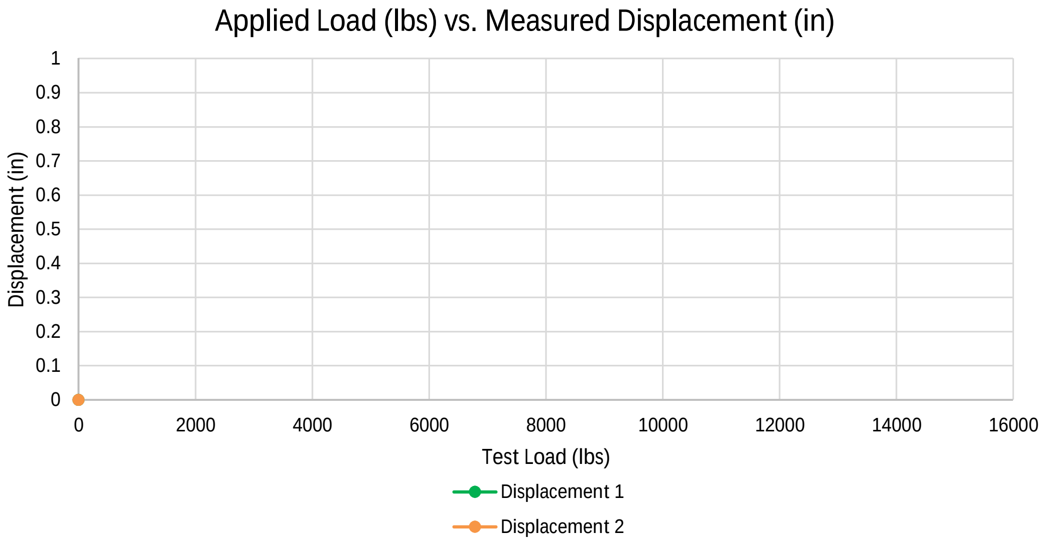
Project:	Badger Mountain	Pile ID:	PLT-B12-8 (R3.83)
Test Date:	2/6/2021	Pile GPS Location:	47.45457 , -120.18722
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	49.8 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	9.2 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	3.8 *feet*
CD* Load:	600	Load Height:	5.0 *feet*
Notes:	1 in displacement at 600, 4 in frost removed, pile slightly disturbed in frost removal		

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000				
2000				
3000				
4000				
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				


Applied Load (lbs) vs. Measured Displacement (in)

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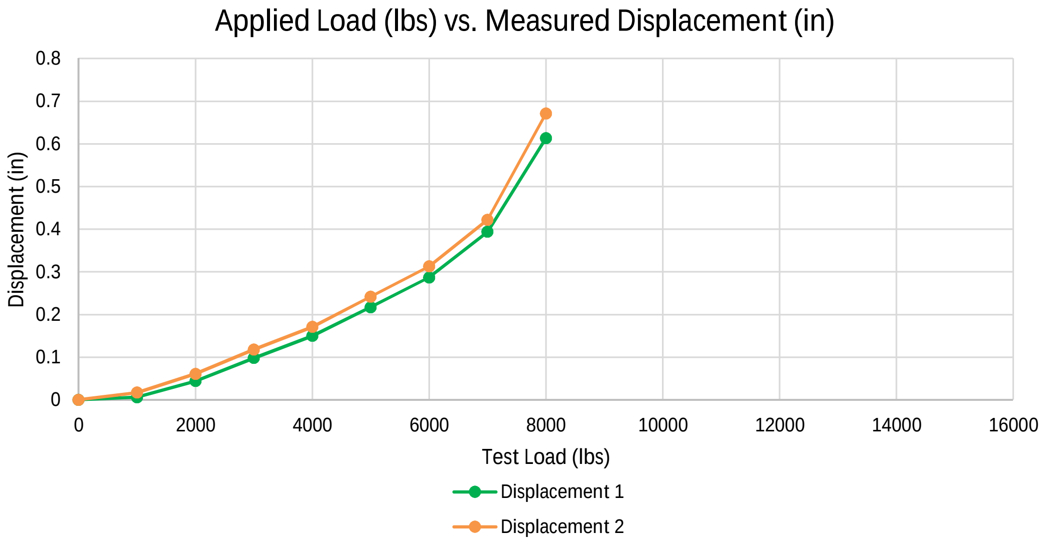
Project:	Badger Mountain	Pile ID:	PLT-B14-6T
Test Date:	2/8/2021	Pile GPS Location:	47.45477 , -120.17696
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Partly Cloudy	Pile Drive Time:	18.3 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	8,800	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.004	0.017	0.006	0.017
2000	0.044	0.059	0.044	0.061
3000	0.093	0.112	0.098	0.118
4000	0.149	0.171	0.15	0.171
5000	0.213	0.237	0.217	0.242
6000	0.271	0.304	0.287	0.313
7000	0.365	0.405	0.394	0.422
8000	0.555	0.61	0.613	0.671
9000				
10000				
11000				
12000				
13000				
14000				
15000				



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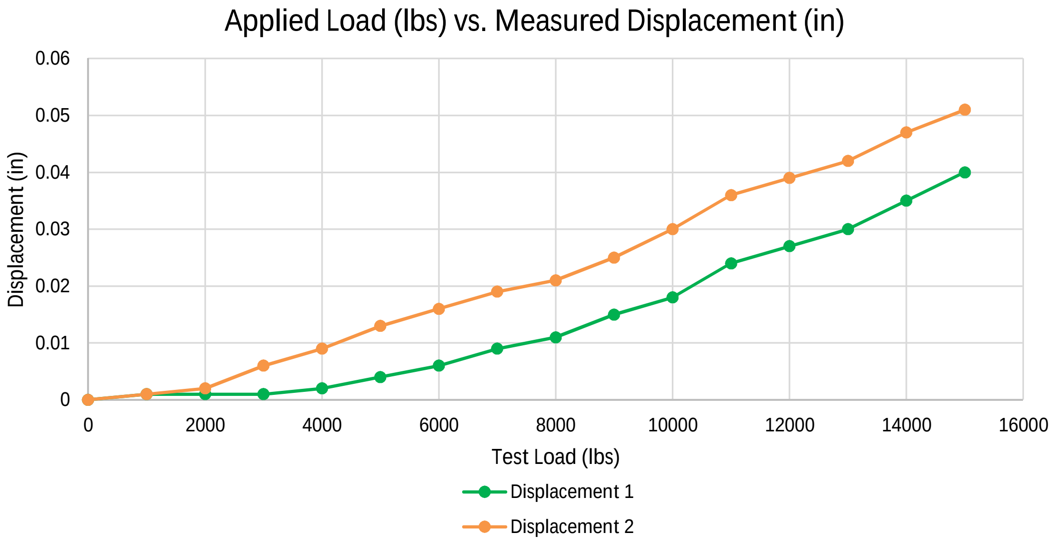
Project:	Badger Mountain	Pile ID:	PLT-B14-8 (R7.833)
Test Date:	2/8/2021	Pile GPS Location:	47.45477 , -120.17696
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Cloudy	Pile Drive Time:	107.2 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.2 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	7.8 *feet*
CD* Load:	N/A	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.001	0.001	0.001	0.001
2000	0.001	0.002	0.001	0.002
3000	0.001	0.006	0.001	0.006
4000	0.002	0.009	0.002	0.009
5000	0.004	0.013	0.004	0.013
6000	0.006	0.016	0.006	0.016
7000	0.009	0.019	0.009	0.019
8000	0.011	0.021	0.011	0.021
9000	0.014	0.025	0.015	0.025
10000	0.018	0.03	0.018	0.03
11000	0.024	0.036	0.024	0.036
12000	0.027	0.039	0.027	0.039
13000	0.03	0.042	0.03	0.042
14000	0.035	0.047	0.035	0.047
15000	0.039	0.051	0.04	0.051



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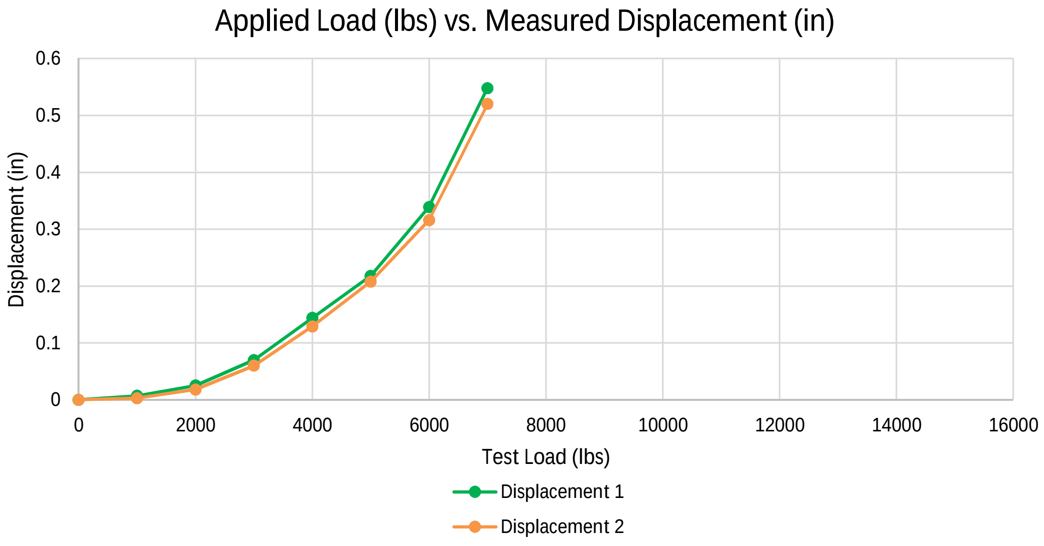
Project:	Badger Mountain	Pile ID:	PLT-B16-6 (R5.42)
Test Date:	2/6/2021	Pile GPS Location:	47.45132 , -120.19205
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	91.2 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.6 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	5.4 *feet*
CD* Load:	8,000	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.007	0.003	0.007	0.003
2000	0.024	0.018	0.025	0.018
3000	0.066	0.057	0.07	0.06
4000	0.134	0.12	0.144	0.129
5000	0.212	0.196	0.218	0.208
6000	0.325	0.307	0.339	0.316
7000	0.502	0.504	0.548	0.52
8000	0.871	0.84		
9000				
10000				
11000				
12000				
13000				
14000				
15000				



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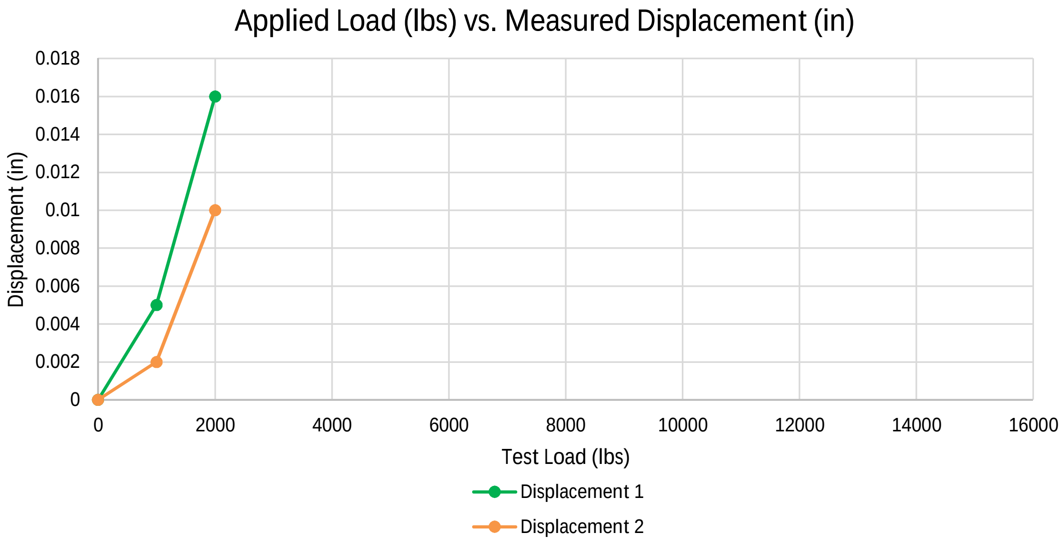
Project:	Badger Mountain	Pile ID:	PLT-B16-8 (R4.66)
Test Date:	2/6/2021	Pile GPS Location:	47.45132 , -120.19205
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	76.0 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	8.3 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	4.7 *feet*
CD* Load:	2,300	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.005	0.002	0.005	0.002
2000	0.015	0.01	0.016	0.01
3000				
4000				
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				



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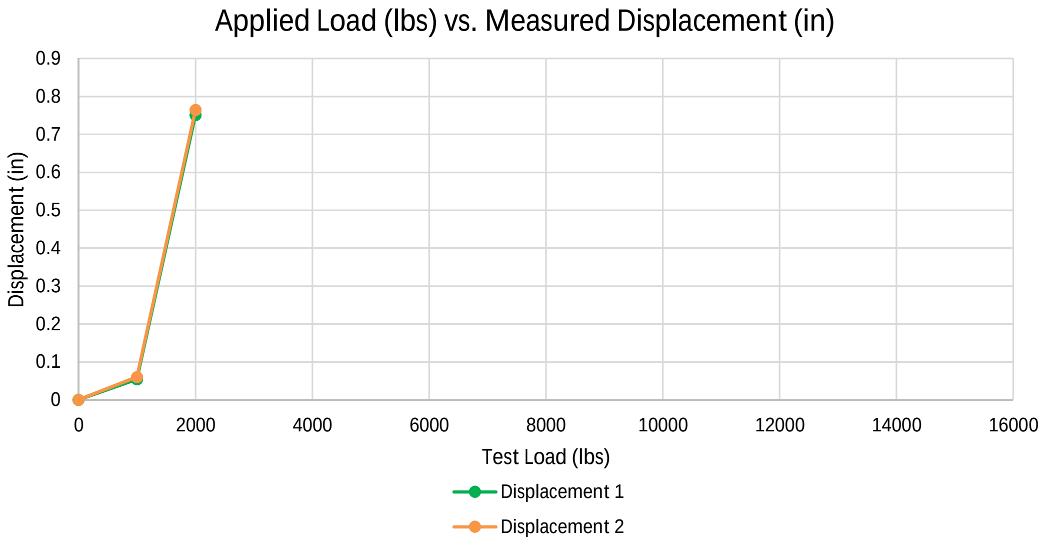
Project:	Badger Mountain	Pile ID:	PLT-B17-6T
Test Date:	2/7/2021	Pile GPS Location:	47.44874 , -120.18477
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Partly Cloudy	Pile Drive Time:	16.4 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	2,300	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.053	0.06	0.054	0.06
2000	0.566	0.71	0.751	0.764
3000				
4000				
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				



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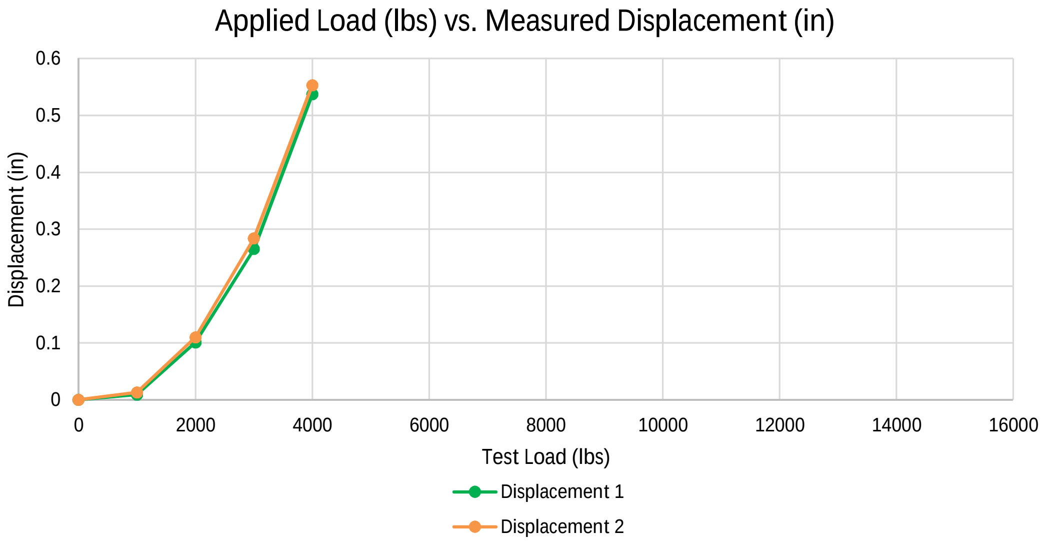
Project:	Badger Mountain	Pile ID:	PLT-B17-8T
Test Date:	2/7/2021	Pile GPS Location:	47.44874 , -120.18477
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Partly Cloudy	Pile Drive Time:	17.8 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
CD* Load:	N/A	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.008	0.013	0.009	0.013
2000	0.1	0.11	0.101	0.11
3000	0.242	0.257	0.265	0.284
4000	0.493	0.512	0.537	0.553
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				

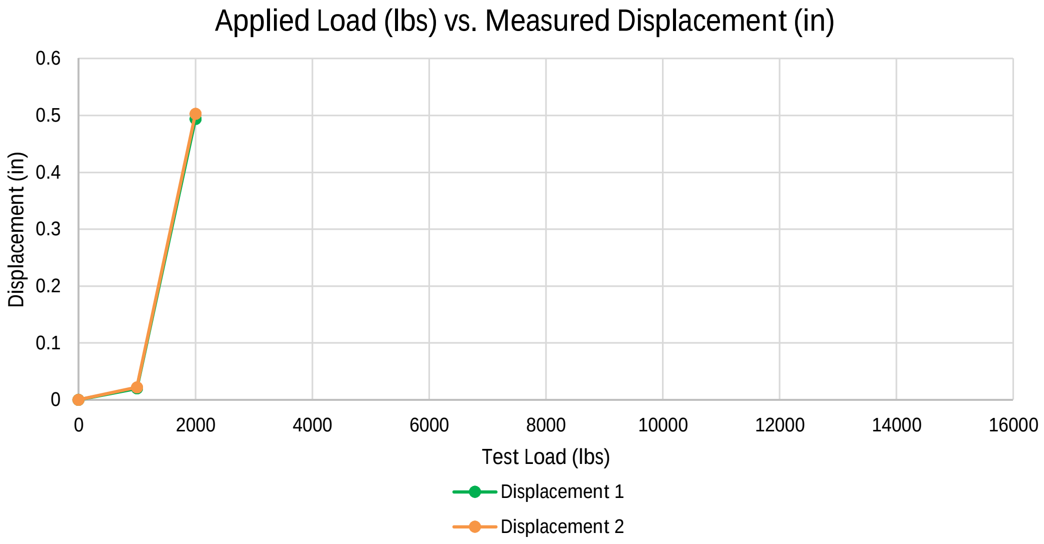


Project:	Badger Mountain	Pile ID:	PLT-B18-6T
Test Date:	2/7/2021	Pile GPS Location:	47.44886 , -120.17798
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Clear	Pile Drive Time:	19.8 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	N/A	Load Height:	5.0 *feet*
Notes:	1 in displacement at 2900, 4 in frost removed. Pile	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.018	0.019	0.02	0.022
2000	0.475	0.485	0.494	0.503
3000				
4000				
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				



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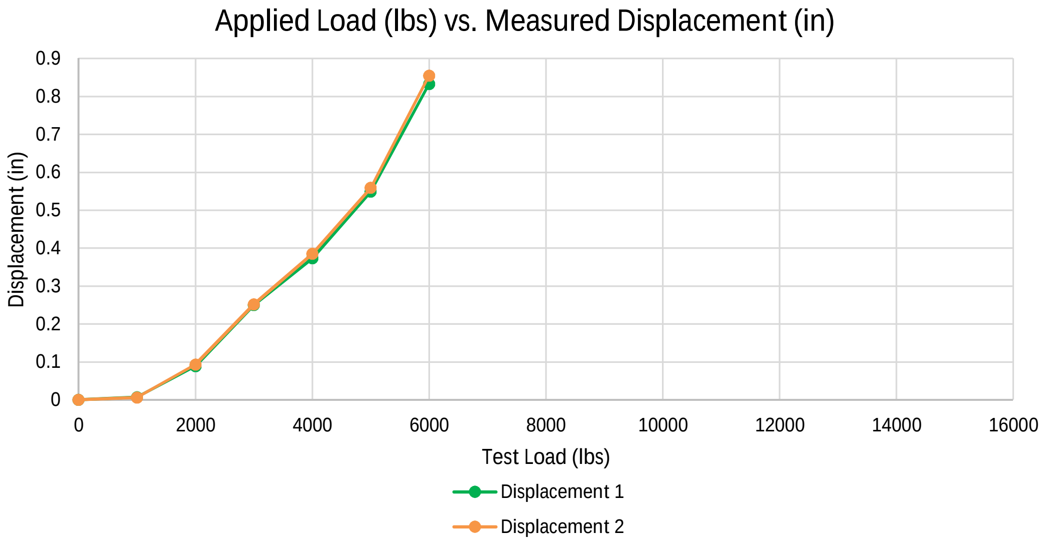
Project:	Badger Mountain	Pile ID:	PLT-B18-8T
Test Date:	2/7/2021	Pile GPS Location:	47.44886 , -120.17798
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Clear	Pile Drive Time:	25.6 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
CD* Load:	4,800	Load Height:	5.0 *feet*
Notes:		Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.005	0.004	0.007	0.006
2000	0.077	0.082	0.089	0.093
3000	0.249	0.252	0.25	0.252
4000	0.362	0.372	0.373	0.385
5000	0.513	0.534	0.549	0.559
6000	0.694	0.73	0.833	0.855
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				



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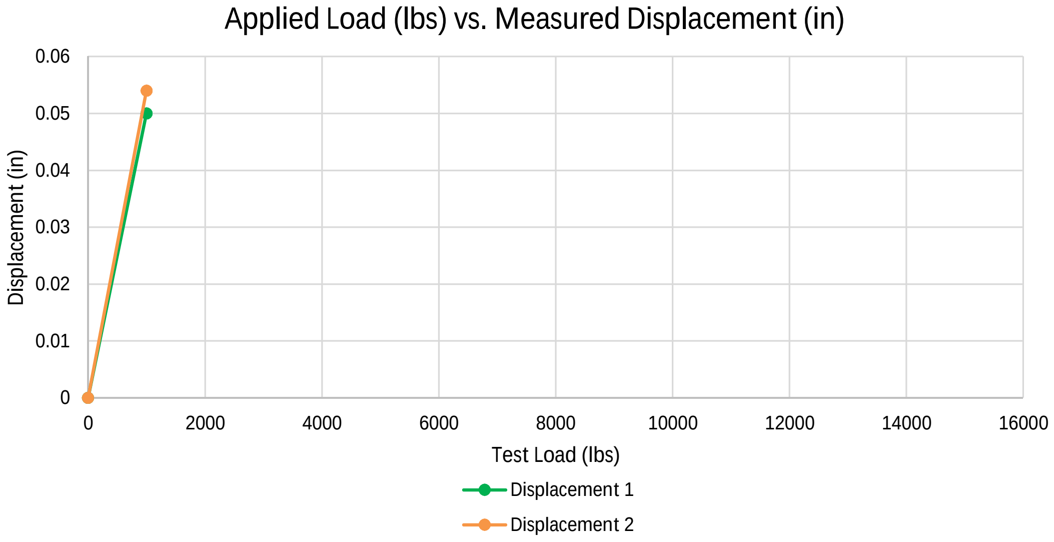
Project:	Badger Mountain	Pile ID:	PLT-B20-6T
Test Date:	2/7/2021	Pile GPS Location:	47.44430 , -120.17794
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Clear	Pile Drive Time:	15.0 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	1,400	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.05	0.053	0.05	0.054
2000				
3000				
4000				
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				

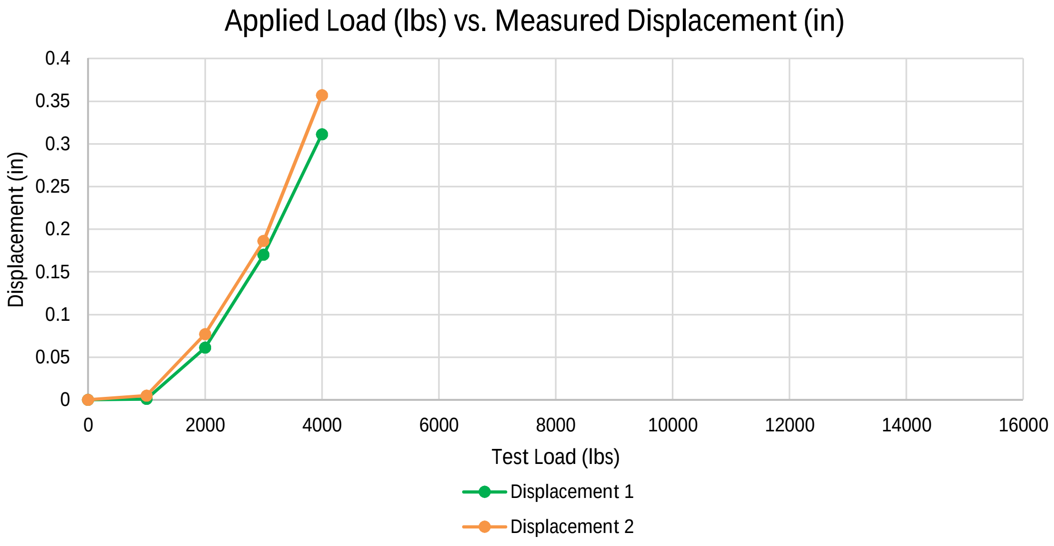


Project:	Badger Mountain	Pile ID:	PLT-B20-8T
Test Date:	2/7/2021	Pile GPS Location:	47.44430 , -120.17794
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Clear	Pile Drive Time:	22.8 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
CD* Load:	5,000	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0	0.005	0.001	0.005
2000	0.059	0.072	0.061	0.077
3000	0.167	0.185	0.17	0.186
4000	0.305	0.329	0.311	0.357
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				



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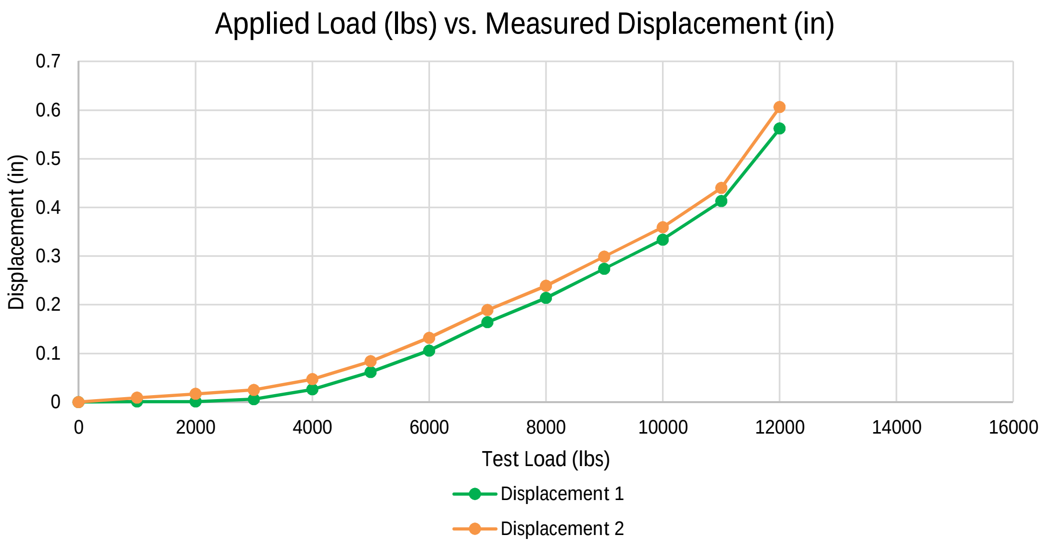
Project:	Badger Mountain	Pile ID:	PLT-B21-6T
Test Date:	2/7/2021	Pile GPS Location:	47.44255 , -120.18460
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Clear	Pile Drive Time:	31.0 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	12,850	Load Height:	5.0 *feet*
Notes:	5-in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.001	0.008	0.001	0.009
2000	0.001	0.017	0.001	0.017
3000	0.006	0.025	0.006	0.025
4000	0.022	0.044	0.026	0.047
5000	0.056	0.081	0.062	0.084
6000	0.102	0.126	0.106	0.132
7000	0.161	0.182	0.164	0.189
8000	0.206	0.231	0.214	0.239
9000	0.266	0.292	0.274	0.299
10000	0.324	0.352	0.334	0.359
11000	0.398	0.432	0.413	0.44
12000	0.515	0.56	0.562	0.606
13000				
14000				
15000				



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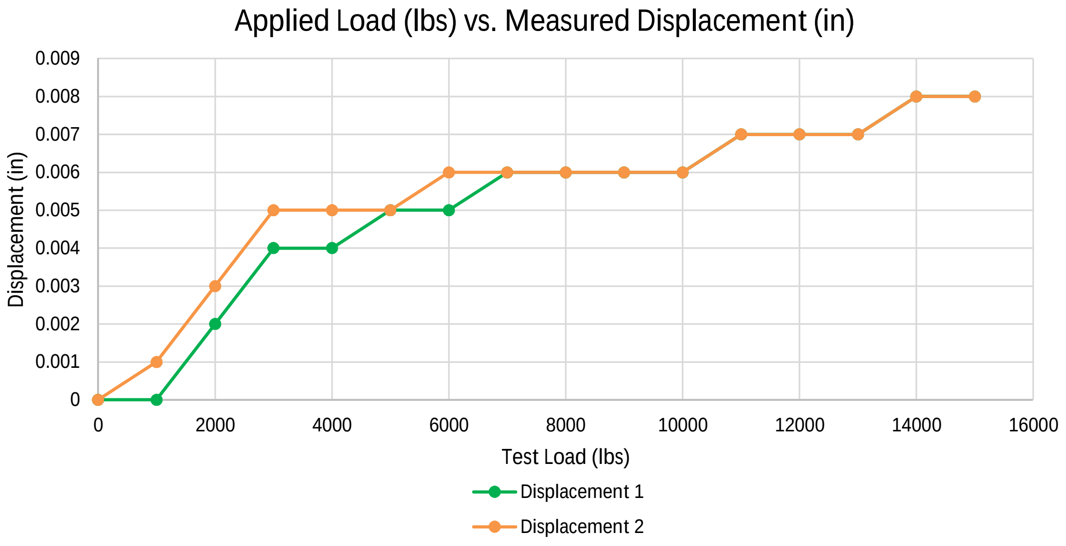
Project:	Badger Mountain	Pile ID:	PLT-B21-8T
Test Date:	2/7/2021	Pile GPS Location:	47.44255 , -120.18460
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Partly Cloudy	Pile Drive Time:	161.1 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
CD* Load:	N/A	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0	0.001	0	0.001
2000	0.002	0.003	0.002	0.003
3000	0.004	0.005	0.004	0.005
4000	0.004	0.005	0.004	0.005
5000	0.005	0.005	0.005	0.005
6000	0.005	0.006	0.005	0.006
7000	0.006	0.006	0.006	0.006
8000	0.006	0.006	0.006	0.006
9000	0.006	0.006	0.006	0.006
10000	0.006	0.006	0.006	0.006
11000	0.007	0.007	0.007	0.007
12000	0.007	0.007	0.007	0.007
13000	0.007	0.007	0.007	0.007
14000	0.008	0.008	0.008	0.008
15000	0.008	0.008	0.008	0.008

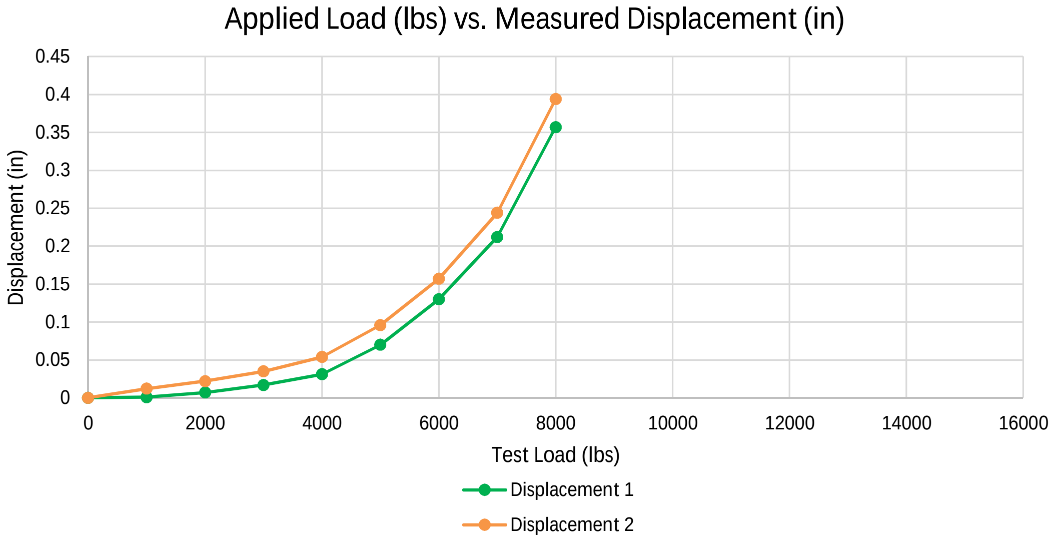


Project:	Badger Mountain	Pile ID:	PLT-B22-6T
Test Date:	2/7/2021	Pile GPS Location:	47.44000 , -120.17947
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Snowy	Pile Drive Time:	20.8 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	9,000	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.001	0.012	0.001	0.012
2000	0.006	0.022	0.007	0.022
3000	0.017	0.035	0.017	0.035
4000	0.031	0.053	0.031	0.054
5000	0.064	0.093	0.07	0.096
6000	0.119	0.146	0.13	0.157
7000	0.203	0.235	0.212	0.244
8000	0.332	0.363	0.357	0.394
9000				
10000				
11000				
12000				
13000				
14000				
15000				

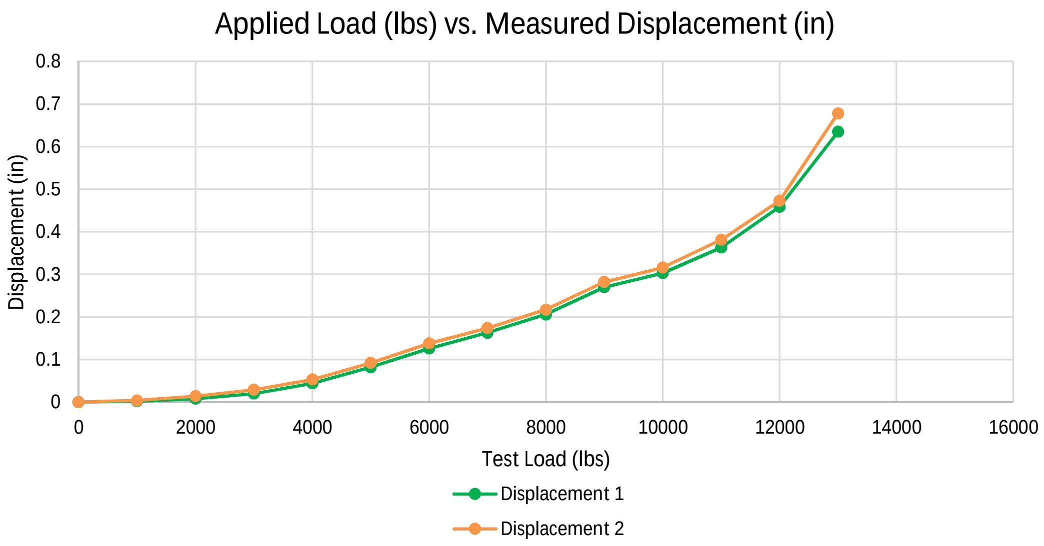


Project:	Badger Mountain	Pile ID:	PLT-B22-8 (R6.625)
Test Date:	2/7/2021	Pile GPS Location:	47.44000 , -120.17947
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Snowy	Pile Drive Time:	76.4 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	6.4 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.6 *feet*
CD* Load:	13,400	Load Height:	5.0 *feet*
Notes:	4 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.002	0.004	0.002	0.004
2000	0.008	0.014	0.008	0.014
3000	0.019	0.028	0.02	0.029
4000	0.042	0.05	0.044	0.053
5000	0.077	0.088	0.082	0.092
6000	0.12	0.131	0.126	0.138
7000	0.16	0.172	0.163	0.174
8000	0.2	0.212	0.206	0.217
9000	0.268	0.28	0.27	0.282
10000	0.297	0.312	0.303	0.316
11000	0.352	0.37	0.363	0.381
12000	0.424	0.439	0.459	0.473
13000	0.534	0.587	0.635	0.678
14000				
15000				



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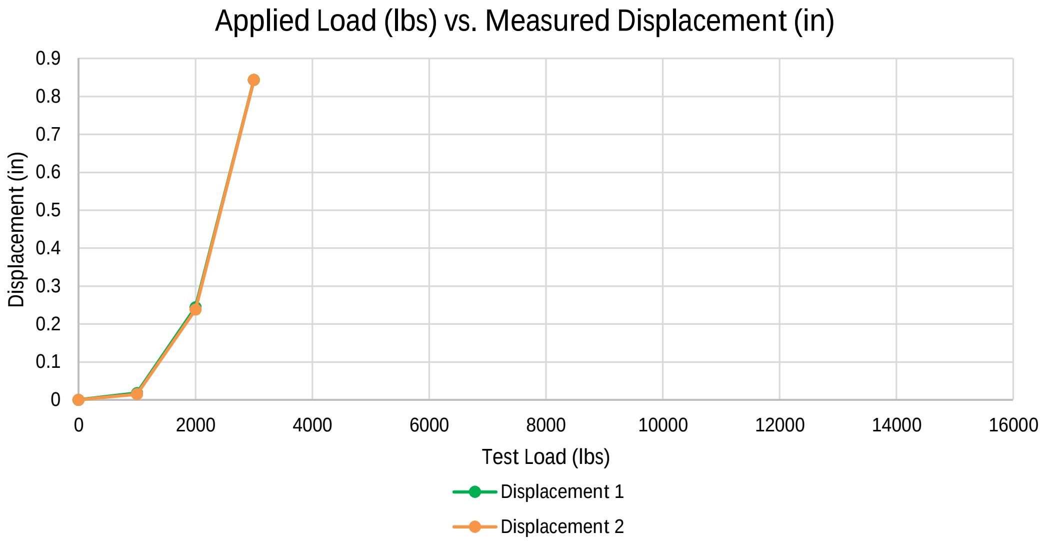
Project:	Badger Mountain	Pile ID:	PLT-B23-6T
Test Date:	2/7/2021	Pile GPS Location:	47.44035 , -120.17298
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Partly Cloudy	Pile Drive Time:	16.3 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	3,350	Load Height:	5.0 *feet*
Notes:	4 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.016	0.013	0.018	0.015
2000	0.223	0.236	0.244	0.238
3000	0.804	0.819	0.844	0.844
4000				
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				



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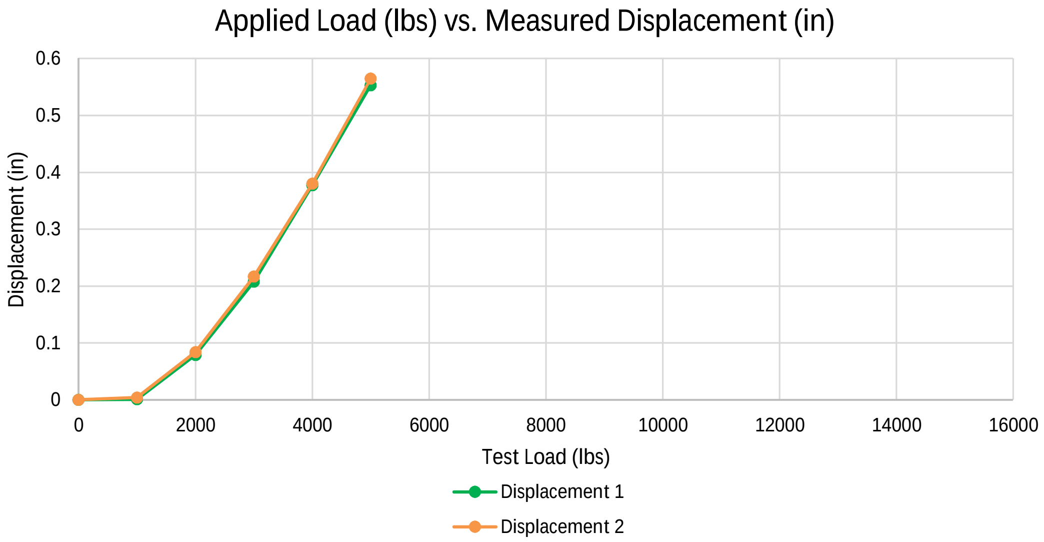
Project:	Badger Mountain	Pile ID:	PLT-B23-8T
Test Date:	2/7/2021	Pile GPS Location:	47.44035 , -120.17298
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Partly Cloudy	Pile Drive Time:	21.9 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
CD* Load:	6,000	Load Height:	5.0 *feet*
Notes:	4 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.001	0.004	0.001	0.004
2000	0.078	0.083	0.079	0.084
3000	0.193	0.21	0.208	0.217
4000	0.35	0.362	0.377	0.38
5000	0.518	0.545	0.553	0.565
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				

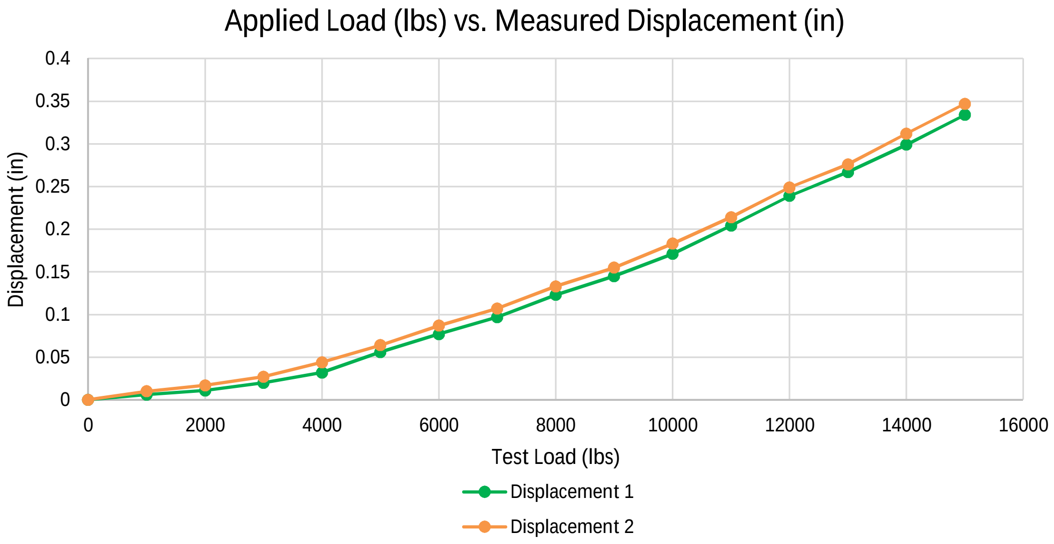


Project:	Badger Mountain	Pile ID:	PLT-B25-6T
Test Date:	2/8/2021	Pile GPS Location:	47.43614 , -120.17050
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Cloudy	Pile Drive Time:	45.2 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	N/A	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.005	0.009	0.006	0.01
2000	0.009	0.015	0.011	0.017
3000	0.019	0.026	0.02	0.027
4000	0.032	0.039	0.032	0.044
5000	0.055	0.063	0.056	0.064
6000	0.077	0.085	0.077	0.087
7000	0.097	0.107	0.097	0.107
8000	0.12	0.131	0.123	0.133
9000	0.139	0.152	0.145	0.155
10000	0.167	0.179	0.171	0.183
11000	0.197	0.21	0.204	0.214
12000	0.233	0.245	0.239	0.249
13000	0.261	0.273	0.267	0.276
14000	0.293	0.306	0.299	0.312
15000	0.325	0.34	0.334	0.347

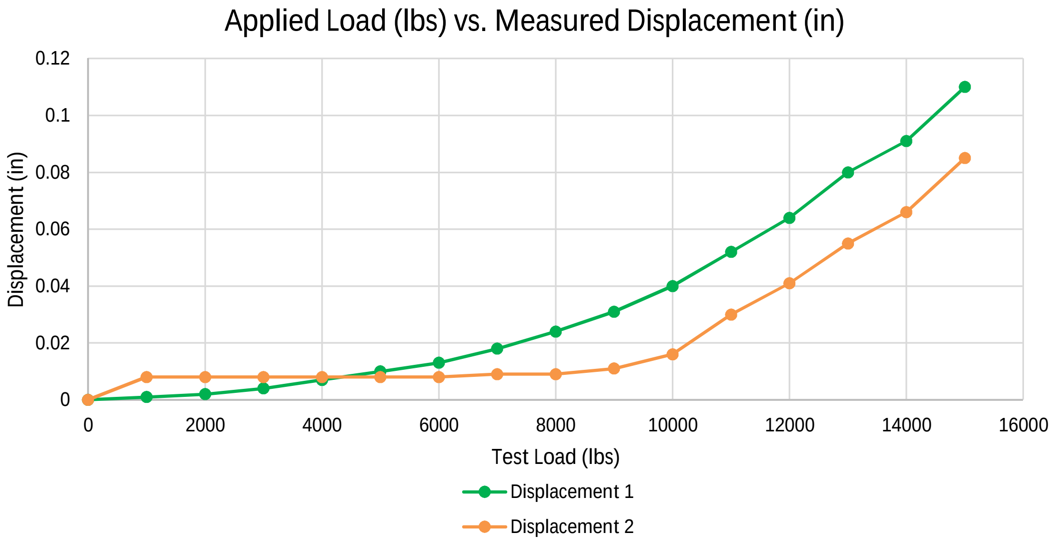


Project:	Badger Mountain	Pile ID:	PLT-B25-8T
Test Date:	2/8/2021	Pile GPS Location:	47.43614 , -120.17050
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Cloudy	Pile Drive Time:	126.3 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
CD* Load:	N/A	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.001	0.008	0.001	0.008
2000	0.002	0.008	0.002	0.008
3000	0.004	0.008	0.004	0.008
4000	0.007	0.008	0.007	0.008
5000	0.01	0.008	0.01	0.008
6000	0.012	0.008	0.013	0.008
7000	0.018	0.009	0.018	0.009
8000	0.023	0.009	0.024	0.009
9000	0.03	0.01	0.031	0.011
10000	0.038	0.016	0.04	0.016
11000	0.048	0.026	0.052	0.03
12000	0.062	0.041	0.064	0.041
13000	0.079	0.054	0.08	0.055
14000	0.091	0.065	0.091	0.066
15000	0.109	0.083	0.11	0.085



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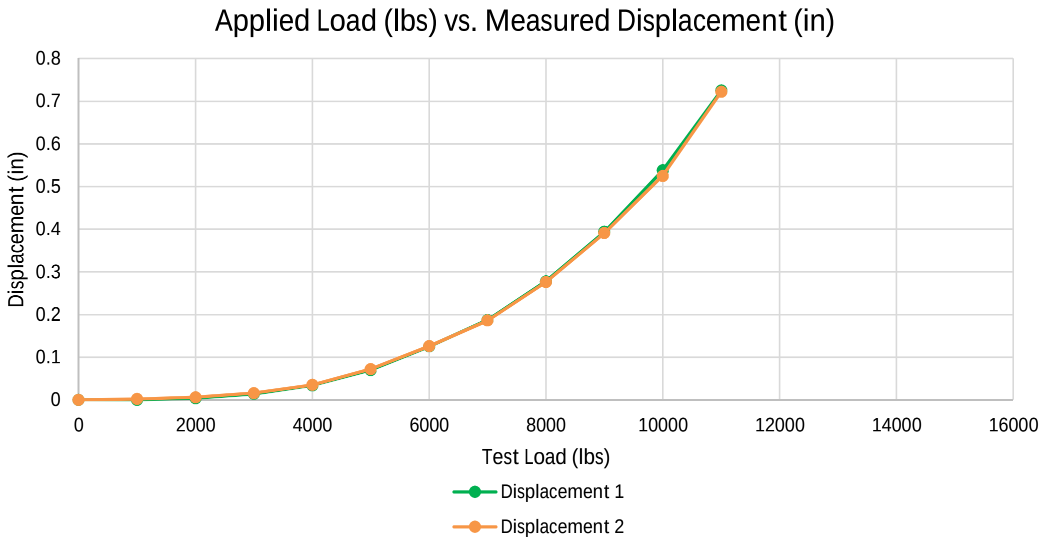
Project:	Badger Mountain	Pile ID:	PLT-B26-6T
Test Date:	2/8/2021	Pile GPS Location:	47.43671 , -120.15950
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Partly Cloudy	Pile Drive Time:	27.0 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	12,000	Load Height:	5.0 *feet*
Notes:	4 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0	0.002	0	0.002
2000	0.004	0.006	0.004	0.006
3000	0.013	0.016	0.014	0.016
4000	0.033	0.035	0.034	0.035
5000	0.061	0.063	0.07	0.072
6000	0.105	0.116	0.125	0.126
7000	0.179	0.183	0.187	0.186
8000	0.262	0.27	0.278	0.276
9000	0.365	0.362	0.394	0.391
10000	0.493	0.505	0.538	0.525
11000	0.714	0.711	0.725	0.722
12000				
13000				
14000				
15000				



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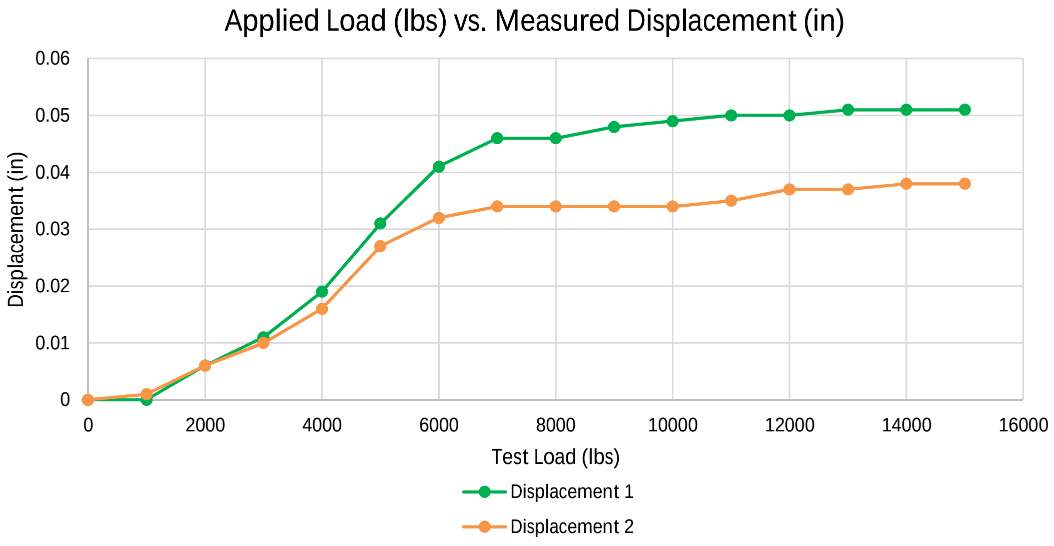
Project:	Badger Mountain	Pile ID:	PLT-B26-8T
Test Date:	2/8/2021	Pile GPS Location:	47.43671 , -120.15950
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Partly Cloudy	Pile Drive Time:	60.3 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
CD* Load:	N/A	Load Height:	5.0 *feet*
Notes:	4 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0	0.001	0	0.001
2000	0.006	0.006	0.006	0.006
3000	0.01	0.01	0.011	0.01
4000	0.018	0.015	0.019	0.016
5000	0.031	0.026	0.031	0.027
6000	0.04	0.031	0.041	0.032
7000	0.044	0.033	0.046	0.034
8000	0.046	0.034	0.046	0.034
9000	0.047	0.034	0.048	0.034
10000	0.049	0.034	0.049	0.034
11000	0.049	0.035	0.05	0.035
12000	0.05	0.036	0.05	0.037
13000	0.05	0.036	0.051	0.037
14000	0.051	0.037	0.051	0.038
15000	0.051	0.038	0.051	0.038

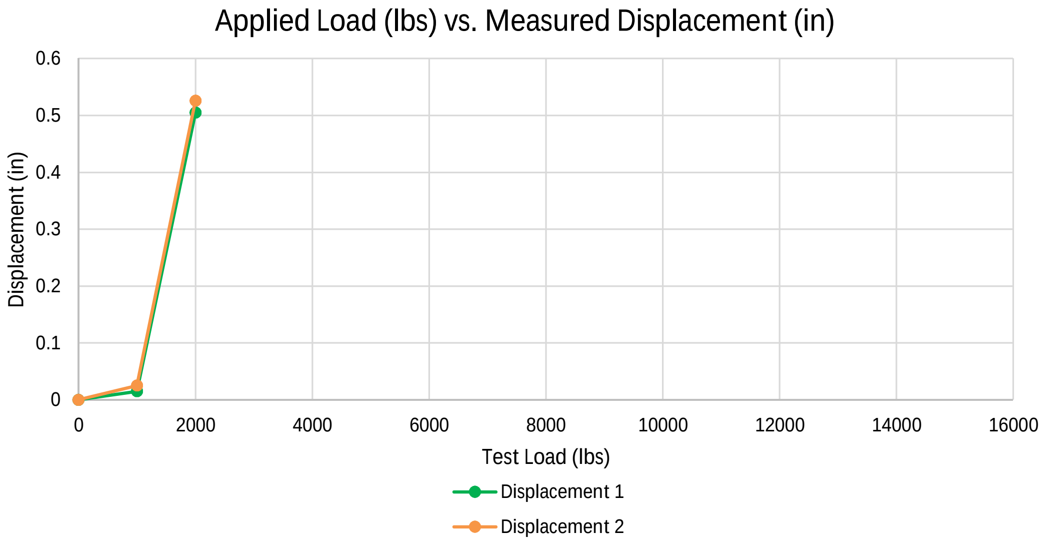


Project:	Badger Mountain	Pile ID:	PLT-B27-6T
Test Date:	2/7/2021	Pile GPS Location:	47.43508 , -120.16346
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Partly Cloudy	Pile Drive Time:	20.9 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	2,750	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.013	0.024	0.015	0.025
2000	0.476	0.497	0.505	0.526
3000				
4000				
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				



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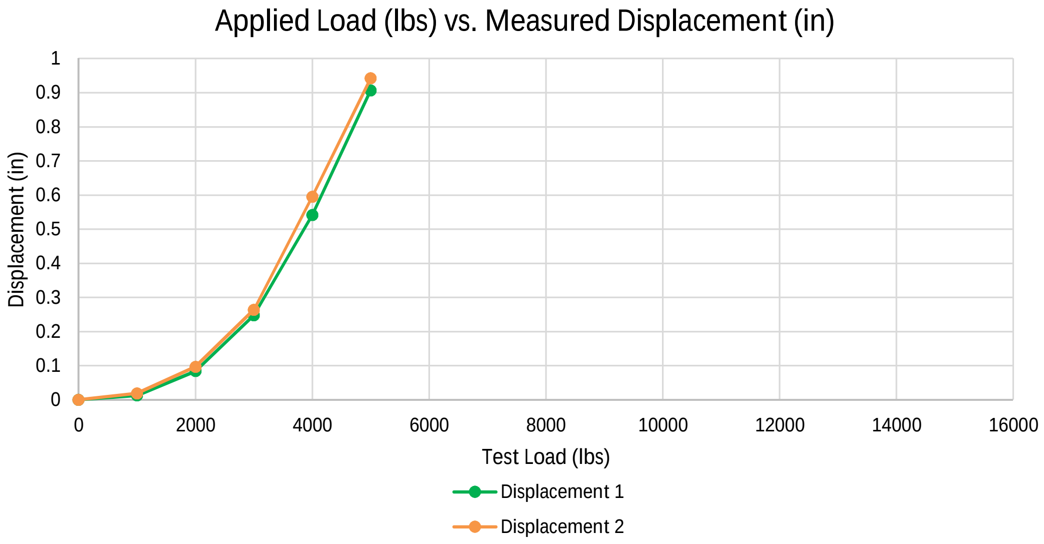
Project:	Badger Mountain	Pile ID:	PLT-B27-8T
Test Date:	2/7/2021	Pile GPS Location:	47.43508 , -120.16346
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Partly Cloudy	Pile Drive Time:	26.6 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
CD* Load:	5,600	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.011	0.016	0.013	0.019
2000	0.081	0.095	0.084	0.097
3000	0.225	0.258	0.248	0.264
4000	0.509	0.555	0.541	0.595
5000	0.871	0.896	0.907	0.942
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				

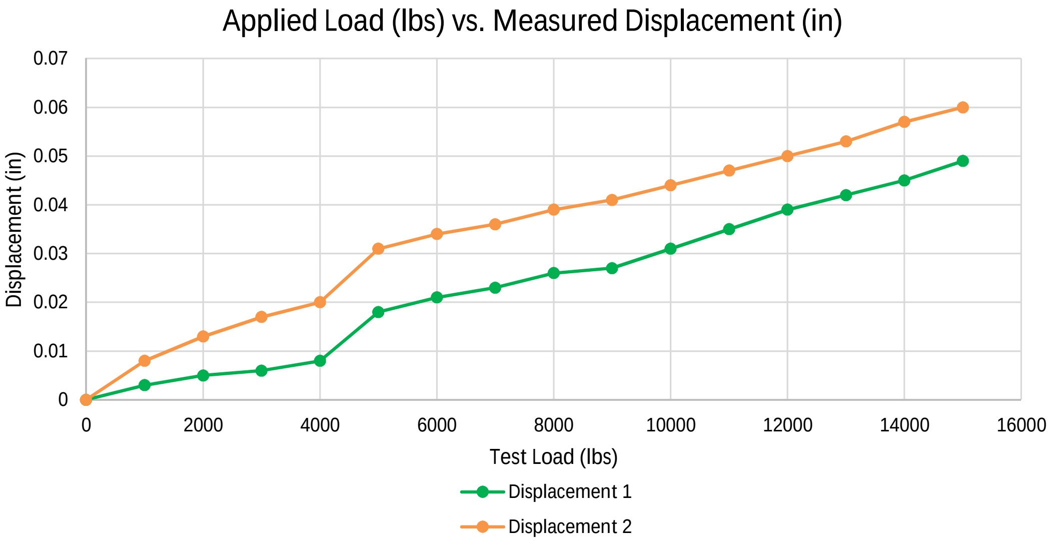


Project:	Badger Mountain	Pile ID:	PLT-B28-6 (R5.58)
Test Date:	2/8/2021	Pile GPS Location:	47.43223 , -120.16621
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Snowy	Pile Drive Time:	201.9 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.4 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	5.6 *feet*
CD* Load:	N/A	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.003	0.008	0.003	0.008
2000	0.004	0.013	0.005	0.013
3000	0.006	0.017	0.006	0.017
4000	0.007	0.02	0.008	0.02
5000	0.018	0.031	0.018	0.031
6000	0.021	0.034	0.021	0.034
7000	0.023	0.036	0.023	0.036
8000	0.026	0.039	0.026	0.039
9000	0.027	0.041	0.027	0.041
10000	0.031	0.043	0.031	0.044
11000	0.035	0.047	0.035	0.047
12000	0.038	0.05	0.039	0.05
13000	0.042	0.053	0.042	0.053
14000	0.045	0.056	0.045	0.057
15000	0.048	0.06	0.049	0.06



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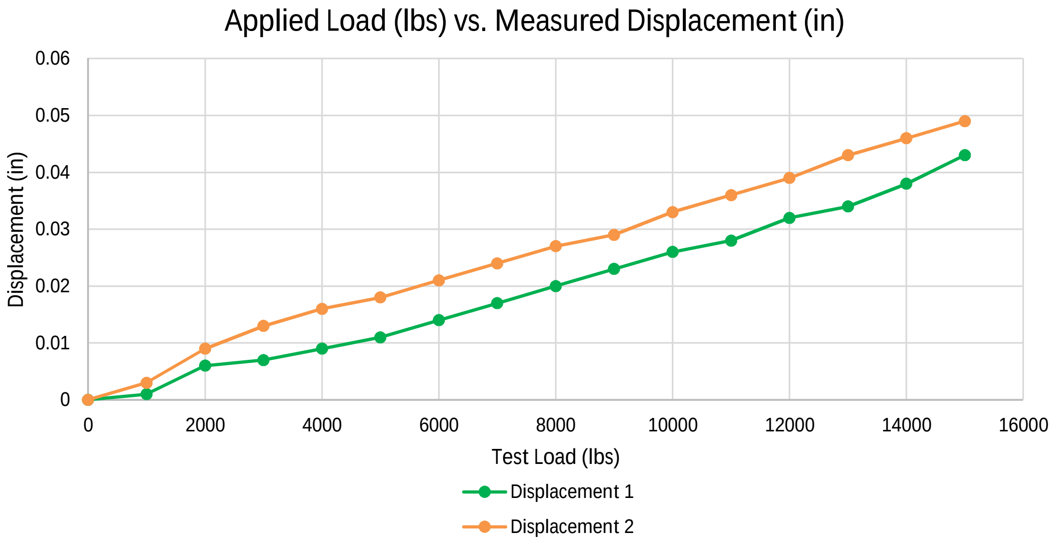
Project:	Badger Mountain	Pile ID:	PLT-B28-8 (R6.25)
Test Date:	2/8/2021	Pile GPS Location:	47.43223 , -120.16621
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Snowy	Pile Drive Time:	153.9 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	6.8 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.3 *feet*
CD* Load:	N/A	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.001	0.003	0.001	0.003
2000	0.006	0.009	0.006	0.009
3000	0.007	0.013	0.007	0.013
4000	0.008	0.015	0.009	0.016
5000	0.011	0.018	0.011	0.018
6000	0.013	0.02	0.014	0.021
7000	0.017	0.024	0.017	0.024
8000	0.02	0.026	0.02	0.027
9000	0.022	0.029	0.023	0.029
10000	0.025	0.032	0.026	0.033
11000	0.028	0.035	0.028	0.036
12000	0.032	0.039	0.032	0.039
13000	0.033	0.042	0.034	0.043
14000	0.038	0.045	0.038	0.046
15000	0.043	0.049	0.043	0.049

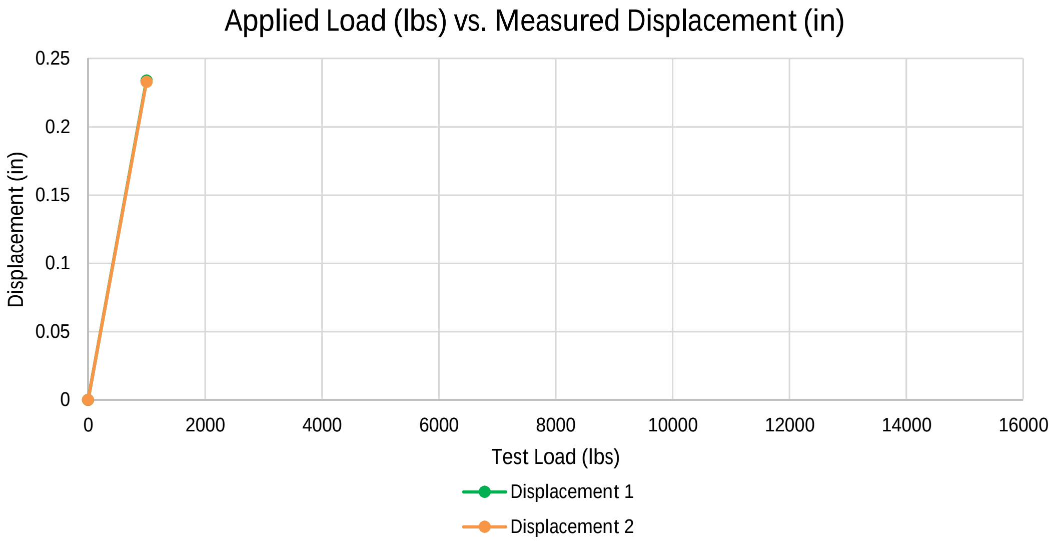


Project:	Badger Mountain	Pile ID:	PLT-B29-6T
Test Date:	2/8/2021	Pile GPS Location:	47.43225 , -120.15670
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Snowy	Pile Drive Time:	14.9 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	1,900	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.234	0.233	0.234	0.233
2000				
3000				
4000				
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				

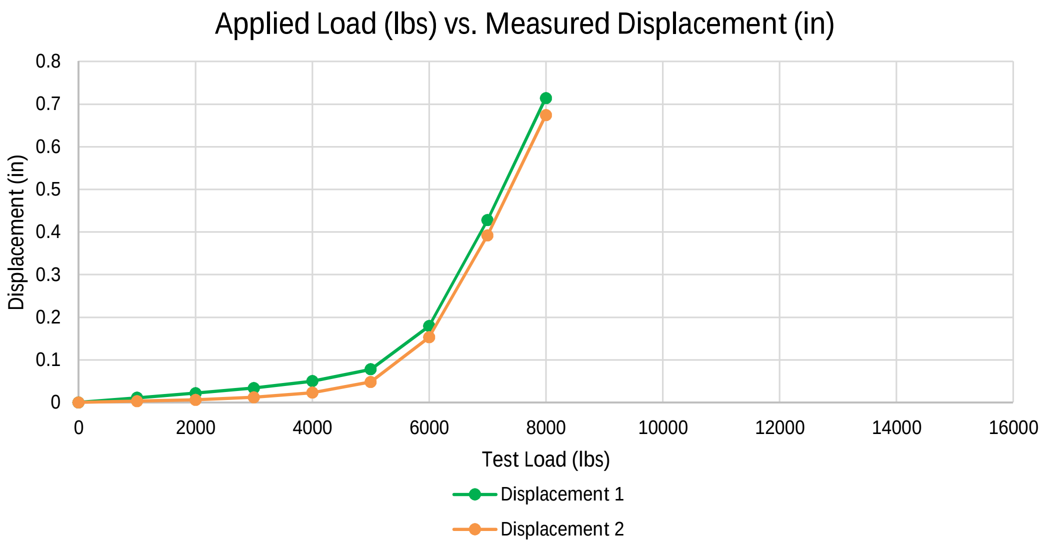


Project:	Badger Mountain	Pile ID:	PLT-B29-8T
Test Date:	2/8/2021	Pile GPS Location:	47.43225 , -120.15670
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Snowy	Pile Drive Time:	30.2 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
CD* Load:	8,700	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.011	0.003	0.011	0.003
2000	0.022	0.006	0.022	0.006
3000	0.034	0.011	0.034	0.012
4000	0.05	0.023	0.05	0.023
5000	0.075	0.048	0.078	0.048
6000	0.173	0.146	0.179	0.153
7000	0.365	0.33	0.428	0.392
8000	0.695	0.659	0.714	0.674
9000				
10000				
11000				
12000				
13000				
14000				
15000				



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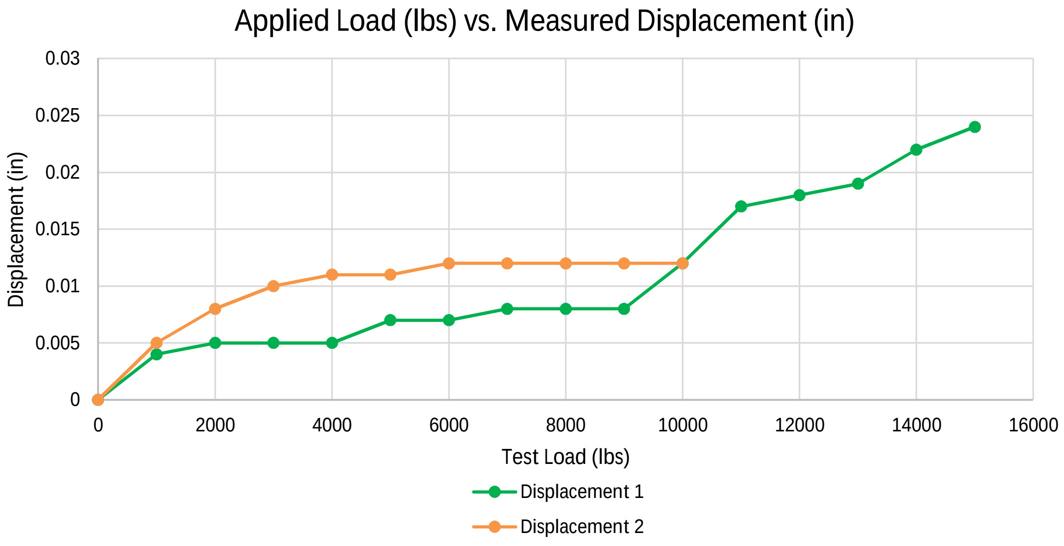
Project:	Badger Mountain	Pile ID:	PLT-B30-6 (R4.75)
Test Date:	2/8/2021	Pile GPS Location:	47.42851 , -120.15621
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Snowy	Pile Drive Time:	122.0 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	6.3 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	4.8 *feet*
CD* Load:	11,000	Load Height:	5.0 *feet*
Notes:	5 in frost removed, gauge 2 malfunction	Load Test Type:	Tensile

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.004	0.005	0.004	0.005
2000	0.005	0.008	0.005	0.008
3000	0.005	0.01	0.005	0.01
4000	0.005	0.011	0.005	0.011
5000	0.007	0.011	0.007	0.011
6000	0.007	0.012	0.007	0.012
7000	0.008	0.012	0.008	0.012
8000	0.008	0.012	0.008	0.012
9000	0.008	0.012	0.008	0.012
10000	0.012	0.011	0.012	0.012
11000	0.017		0.017	
12000	0.018		0.018	
13000	0.019		0.019	
14000	0.022		0.022	
15000	0.024		0.024	



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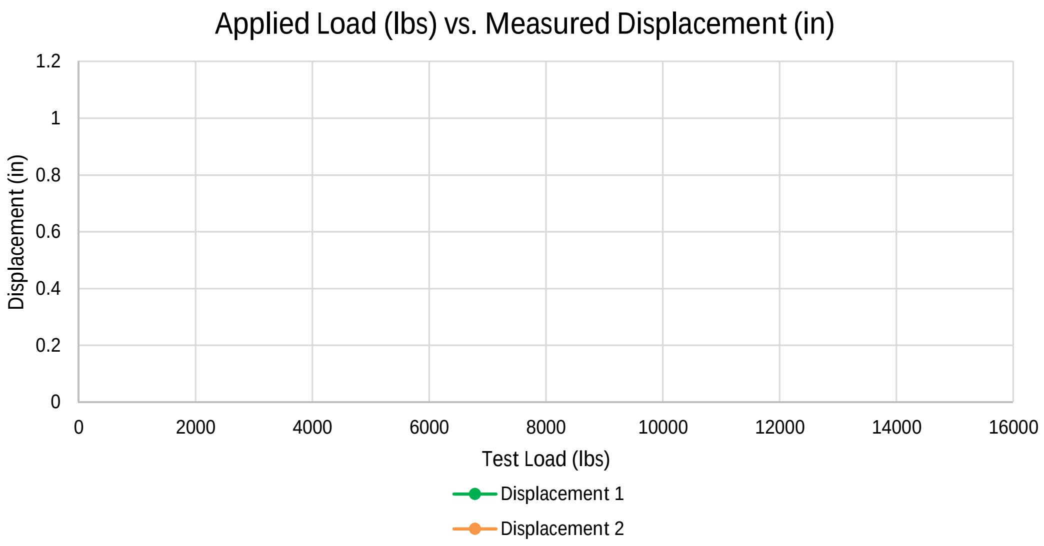
Project:	Badger Mountain	Pile ID:	PLT-B30-8 (R5.0)
Test Date:		Pile GPS Location:	47.42851 , -120.15621
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:		Pile Drive Time:	163.3 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	8.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	5.0 *feet*
CD* Load:	N/A	Load Height:	5.0 *feet*
Notes:	Within 3 inches of 6 foot post, did not test due to redundancy		

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch or greater of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0		
1000				
2000				
3000				
4000				
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				



Appendix 5

Lateral Pile Load Testing Data

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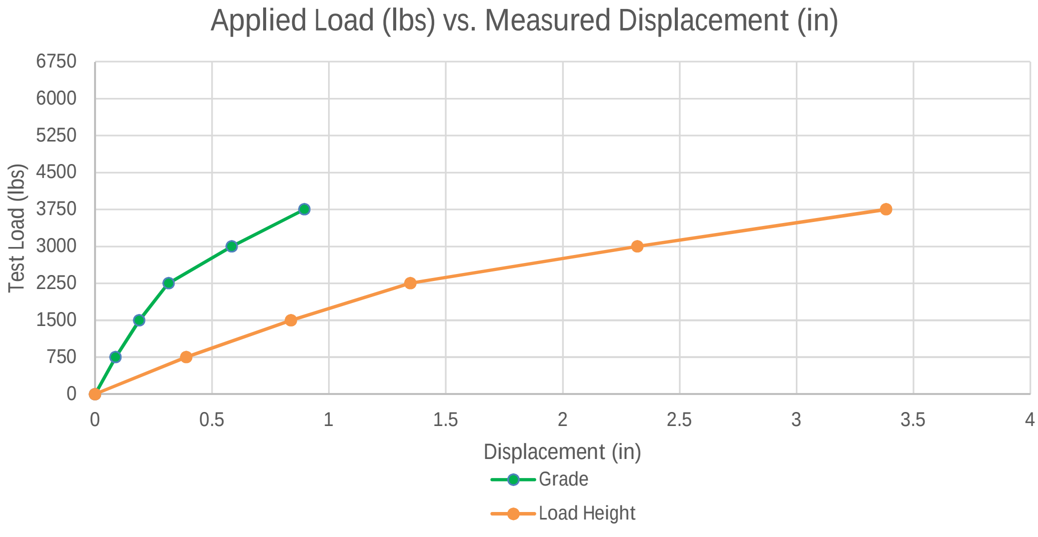
Project:	Badger Mountain	Pile ID:	PLT-AP6-6L
Test Date:	2/6/2021	Pile GPS Location:	47.45908 , -120.19646
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	19.5 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	4,550	Load Height:	5.0 *feet*
Notes:	4 in displacement at 4550, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.086	0.388	0.087	0.39
1500	0.174	0.81	0.181	0.826
0	0.034	0.108	-	-
1500	0.185	0.817	0.189	0.838
2250	0.301	1.342	0.314	1.348
3000	0.531	2.146	0.539	2.187
0	0.183	0.612	-	-
3000	0.577	2.297	0.584	2.319
3750	0.839	3.3	0.895	3.383
4500				
5250				
6000				
0			-	-

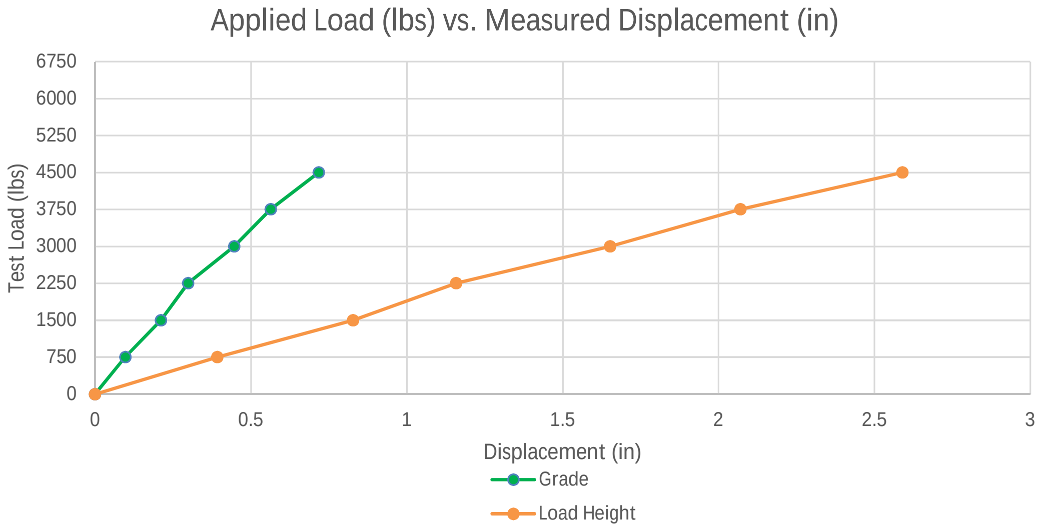


Project:	Badger Mountain	Pile ID:	PLT-AP6-8L
Test Date:	2/6/2021	Pile GPS Location:	47.45908 , -120.19646
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	27.4 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
Failure Load*:	5,250	Load Height:	5.0 *feet*
Notes:	4 in displacement at 5250, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.096	0.385	0.097	0.392
1500	0.199	0.787	0.199	0.787
0	0.01	0.018	-	-
1500	0.211	0.819	0.211	0.827
2250	0.292	1.154	0.298	1.158
3000	0.437	1.636	0.438	1.648
0	0.03	0.061	-	-
3000	0.442	1.642	0.446	1.652
3750	0.562	2.053	0.563	2.07
4500	0.689	2.554	0.717	2.59
5250	1.013	3.741		
6000				
0			-	-



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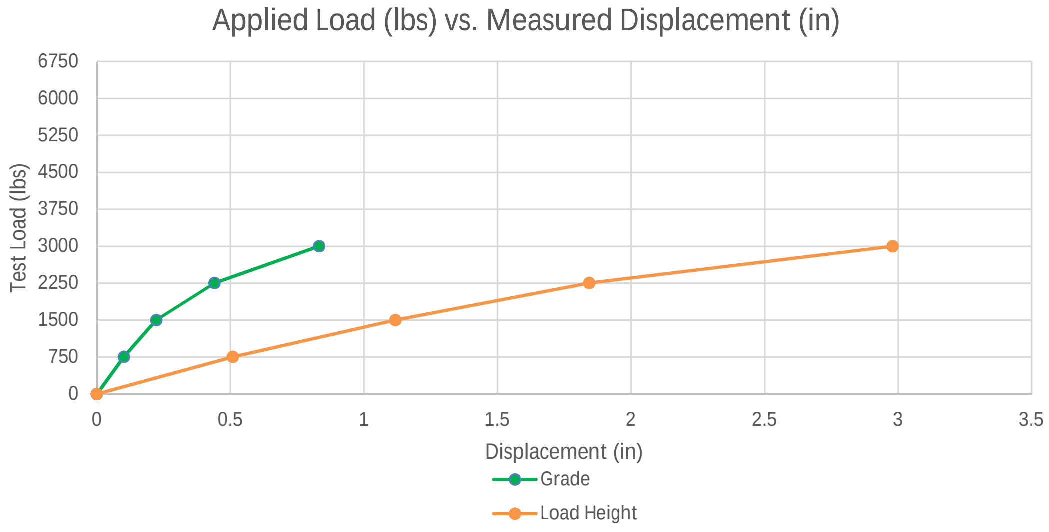
Project:	Badger Mountain	Pile ID:	PLT-AP8-6L
Test Date:	2/6/2021	Pile GPS Location:	47.45512 , -120.19140
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	19.3 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	4,700	Load Height:	5.0 *feet*
Notes:	4 in displacement at 4700, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.098	0.48	0.101	0.509
1500	0.222	1.045	0.255	1.065
0	0.02	0.23	-	-
1500	0.22	1.101	0.222	1.117
2250	0.43	1.798	0.441	1.844
3000	0.748	2.777	0.778	2.79
0	0.233	0.845	-	-
3000	0.829	2.95	0.832	2.98
3750				
4500				
5250				
6000				
0			-	-

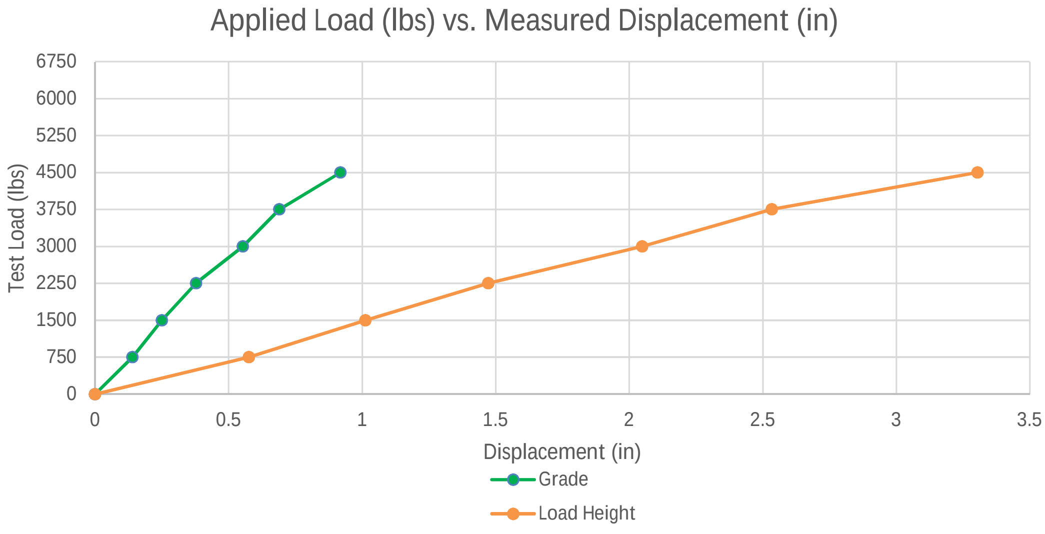


Project:	Badger Mountain	Pile ID:	PLT-AP8-8L
Test Date:	2/6/2021	Pile GPS Location:	47.45512 , -120.19140
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	35.6 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
Failure Load*:	4,750	Load Height:	5.0 *feet*
Notes:	4 in displacement at 4750, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.129	0.521	0.14	0.576
1500	0.233	0.934	0.238	0.955
0	0.02	0.142	-	-
1500	0.25	1.005	0.25	1.012
2250	0.374	1.463	0.378	1.472
3000	0.512	1.966	0.526	1.972
0	0.039	0.218	-	-
3000	0.545	2.039	0.553	2.049
3750	0.678	2.51	0.69	2.534
4500	0.892	3.252	0.919	3.304
5250				
6000				
0			-	-

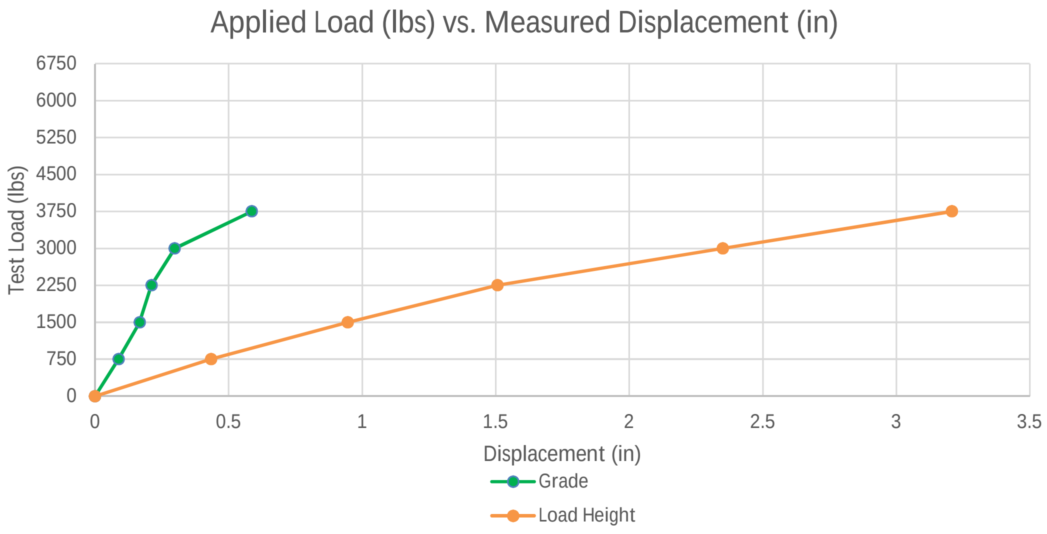


Project:	Badger Mountain	Pile ID:	PLT-AP10-6L
Test Date:	2/6/2021	Pile GPS Location:	47.45069 , -120.18711
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	17.4 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	4,300	Load Height:	5.0 *feet*
Notes:	4 in displacement at 4300, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.088	0.433	0.088	0.434
1500	0.189	0.89	0.189	0.89
0	0.004	0.157	-	-
1500	0.161	0.942	0.167	0.946
2250	0.208	1.507	0.211	1.507
3000	0.234	2.219	0.289	2.253
0	0.149	0.651	-	-
3000	0.295	2.35	0.298	2.351
3750	0.578	3.166	0.587	3.209
4500				
5250				
6000				
0			-	-



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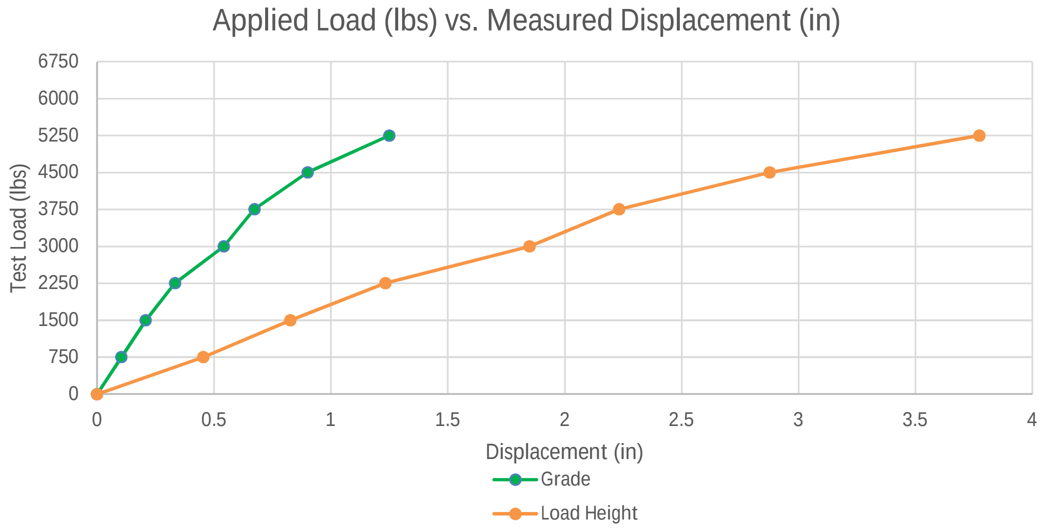
Project:	Badger Mountain	Pile ID:	PLT-AP10-8L
Test Date:	2/6/2021	Pile GPS Location:	47.45069 , -120.18711
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	29.7 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
Failure Load*:	5,300	Load Height:	5.0 *feet*
Notes:	4 in displacement at 5300, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.104	0.45	0.104	0.454
1500	0.21	0.831	0.21	0.832
0	0	0.071	-	-
1500	0.208	0.827	0.208	0.827
2250	0.33	1.228	0.333	1.233
3000	0.491	1.706	0.492	1.713
0	0.001	0.12	-	-
3000	0.54	1.842	0.542	1.85
3750	0.653	2.227	0.673	2.233
4500	0.859	2.808	0.9	2.876
5250	1.226	3.773	1.25	3.773
6000				
0			-	-

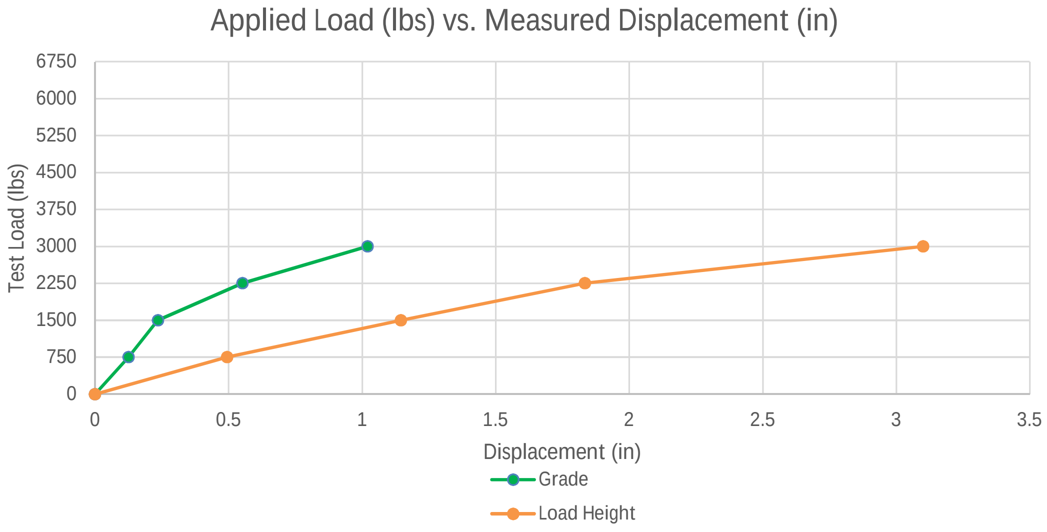


Project:	Badger Mountain	Pile ID:	PLT-AP13-6L
Test Date:	2/7/2021	Pile GPS Location:	47.44291 , -120.18082
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Clear	Pile Drive Time:	18.4 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	3,750	Load Height:	5.0 *feet*
Notes:	4 in displacement at 3750, 4 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.125	0.494	0.125	0.494
1500	0.275	1.008	0.28	1.008
0	0.09	0.236	-	-
1500	0.235	1.143	0.235	1.145
2250	0.51	1.731	0.552	1.834
3000	0.832	2.743	0.918	2.856
0	0.424	1.021	-	-
3000	0.983	3.01	1.02	3.101
3750				
4500				
5250				
6000				
0			-	-



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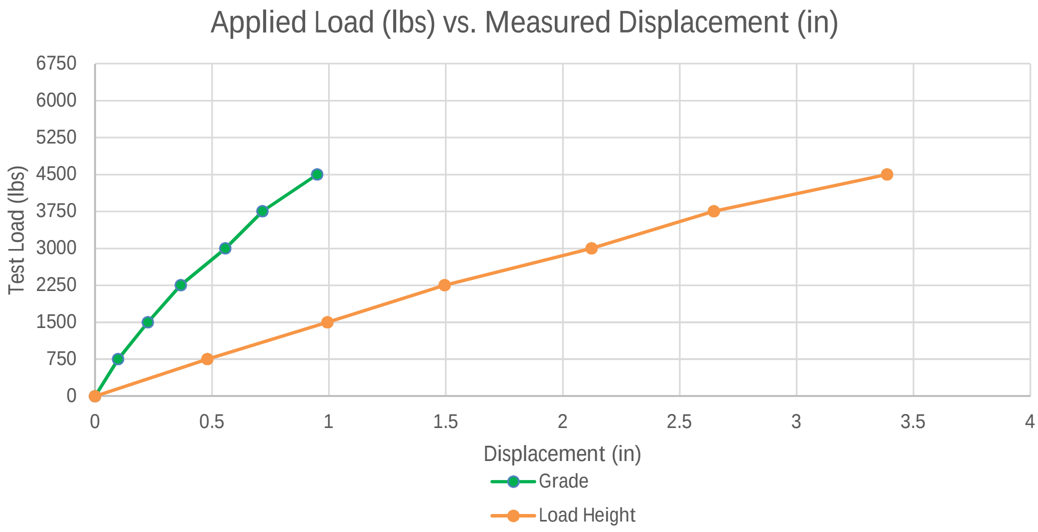
Project:	Badger Mountain	Pile ID:	PLT-AP13-8L
Test Date:	2/7/2021	Pile GPS Location:	47.44291 , -120.18082
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Clear	Pile Drive Time:	22.8 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
Failure Load*:	5,000	Load Height:	5.0 *feet*
Notes:	4 in displacement at 5000, 4 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.098	0.466	0.098	0.48
1500	0.211	0.939	0.217	0.95
0	0.006	0.111	-	-
1500	0.226	0.986	0.226	0.993
2250	0.365	1.484	0.366	1.495
3000	0.519	1.982	0.52	2.013
0	0.047	0.249	-	-
3000	0.555	2.115	0.557	2.123
3750	0.703	2.607	0.716	2.646
4500	0.944	3.34	0.95	3.388
5250				
6000				
0			-	-

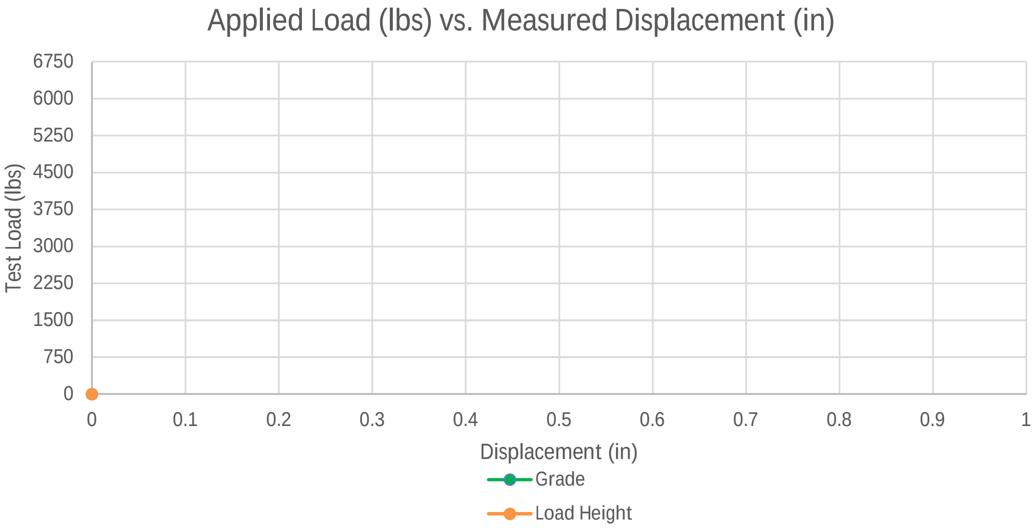


Project:	Badger Mountain	Pile ID:	PLT-AP16-6L
Test Date:	2/8/2021	Pile GPS Location:	47.43510 , -120.17452
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Snow	Pile Drive Time:	28.2 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	N/A	Load Height:	5.0 *feet*
Notes:	Pile installed in borehole, couldn't see bore hole until snow melted. Did not test due to skewed data.		

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750				
1500				
0			-	-
1500				
2250				
3000				
0			-	-
3000				
3750				
4500				
5250				
6000				
0			-	-

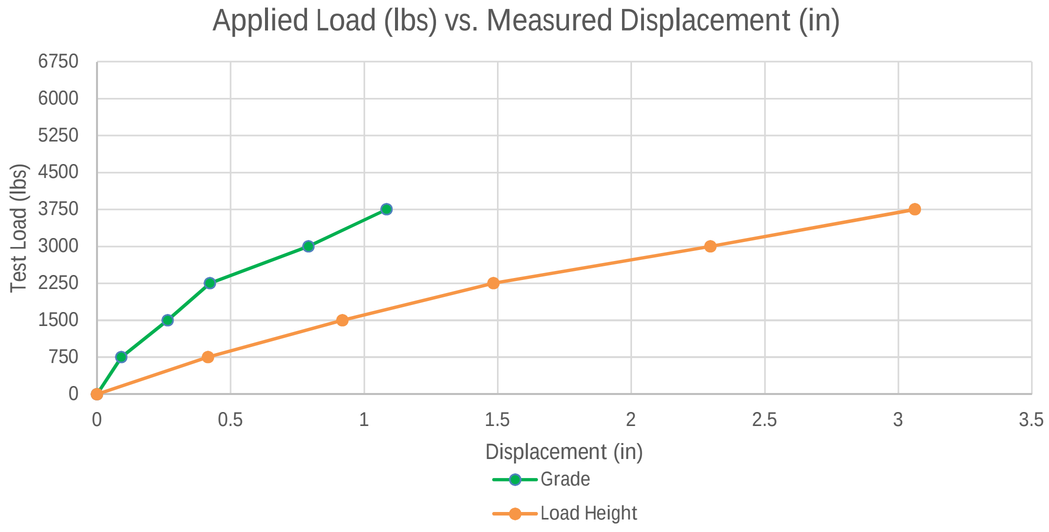


Project:	Badger Mountain	Pile ID:	PLT-AP16-8 (R4.92)
Test Date:	2/8/2021	Pile GPS Location:	47.43510 , -120.17452
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Snowy	Pile Drive Time:	167.9 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	8.1 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	4.9 *feet*
Failure Load*:	4,425	Load Height:	5.0 *feet*
Notes:	4 in displacement at 4425, 3 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.09	0.414	0.091	0.415
1500	0.231	0.865	0.235	0.865
0	0.039	0.112	-	-
1500	0.261	0.915	0.264	0.918
2250	0.419	1.381	0.423	1.484
3000	0.677	2.084	0.703	2.134
0	0.147	0.334	-	-
3000	0.784	2.284	0.791	2.297
3750	1.024	3.011	1.084	3.062
4500				
5250				
6000				
0			-	-

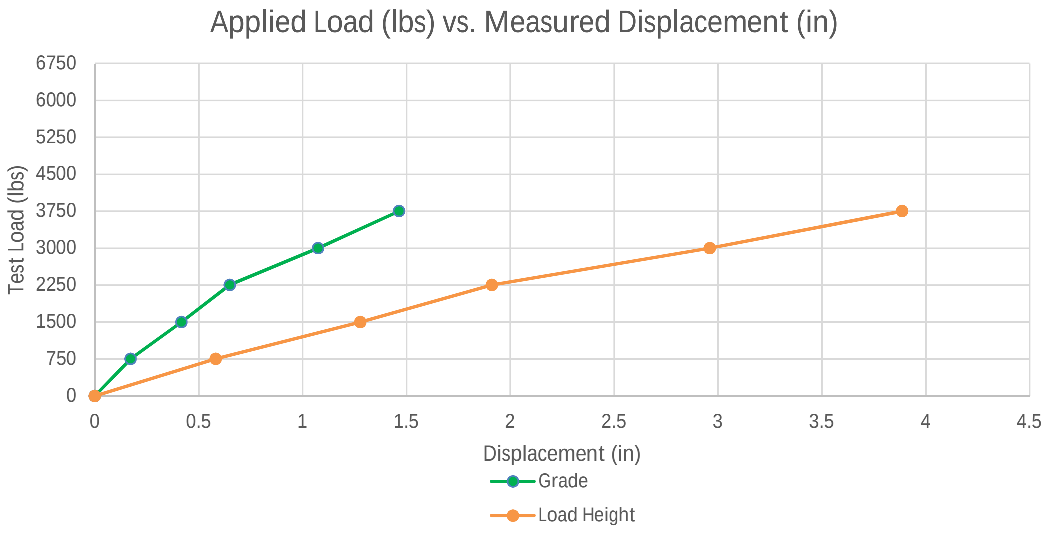


Project:	Badger Mountain	Pile ID:	PLT-AP18-6L
Test Date:	2/8/2021	Pile GPS Location:	47.43366 , -120.16502
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Cloudy	Pile Drive Time:	16.7 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	3,800	Load Height:	5.0 *feet*
Notes:	4 in displacement at 3800, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.165	0.576	0.172	0.581
1500	0.397	1.224	0.403	1.236
0	0.124	0.305	-	-
1500	0.416	1.272	0.417	1.278
2250	0.632	1.872	0.649	1.911
3000	0.971	2.766	0.987	2.802
0	0.373	0.807	-	-
3000	1.063	2.933	1.075	2.961
3750	1.457	3.878	1.464	3.886
4500				
5250				
6000				
0			-	-



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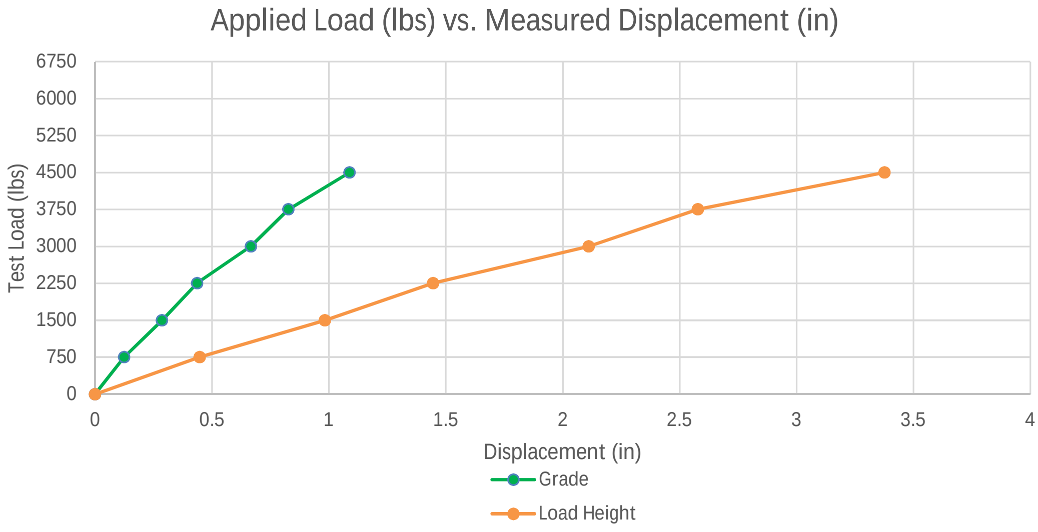
Project:	Badger Mountain	Pile ID:	PLT-AP18-8L
Test Date:	2/8/2021	Pile GPS Location:	47.43366 , -120.16502
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Cloudy	Pile Drive Time:	23.0 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
Failure Load*:	4,800	Load Height:	5.0 *feet*
Notes:	4 in displacement at 4800, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.123	0.441	0.124	0.447
1500	0.267	0.915	0.273	0.935
0	0.033	0.077	-	-
1500	0.285	0.976	0.286	0.983
2250	0.436	1.439	0.436	1.445
3000	0.634	2.034	0.637	2.024
0	0.071	0.144	-	-
3000	0.666	2.1	0.666	2.111
3750	0.816	2.555	0.827	2.578
4500	1.084	3.319	1.088	3.376
5250				
6000				
0			-	-



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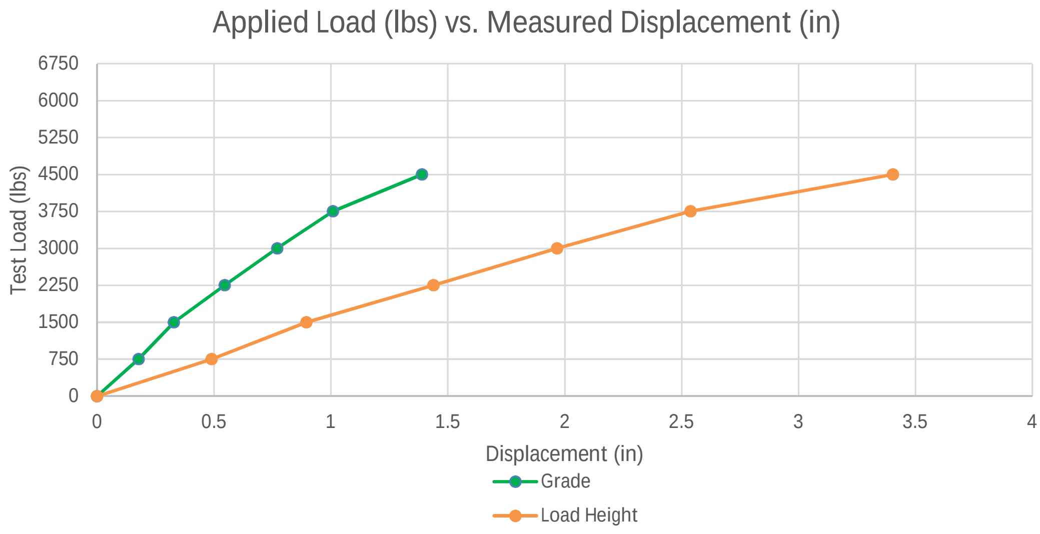
Project:	Badger Mountain	Pile ID:	PLT-B1-6 (R4.5)
Test Date:	2/5/2021	Pile GPS Location:	47.47411 , -120.21166
Testing Phase:	Design	Pile Install Date:	2/2/2021
Test Weather:	Clear	Pile Drive Time:	23.7 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	6.5 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	4.5 *feet*
Failure Load*:	5,250	Load Height:	5.0 *feet*
Notes:	Frost was scraped 6 inches	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.177	0.49	0.177	0.49
1500	0.316	0.8715	0.316	0.866
0	0.161	0.395	-	-
1500	0.328	0.9	0.328	0.895
2250	0.545	1.442	0.546	1.439
3000	0.732	1.888	0.735	1.891
0	0.27	0.574	-	-
3000	0.768	1.967	0.77	1.967
3750	1.006	2.4538	1.009	2.538
4500	1.369	3.316	1.389	3.404
5250				
6000				
0			-	-



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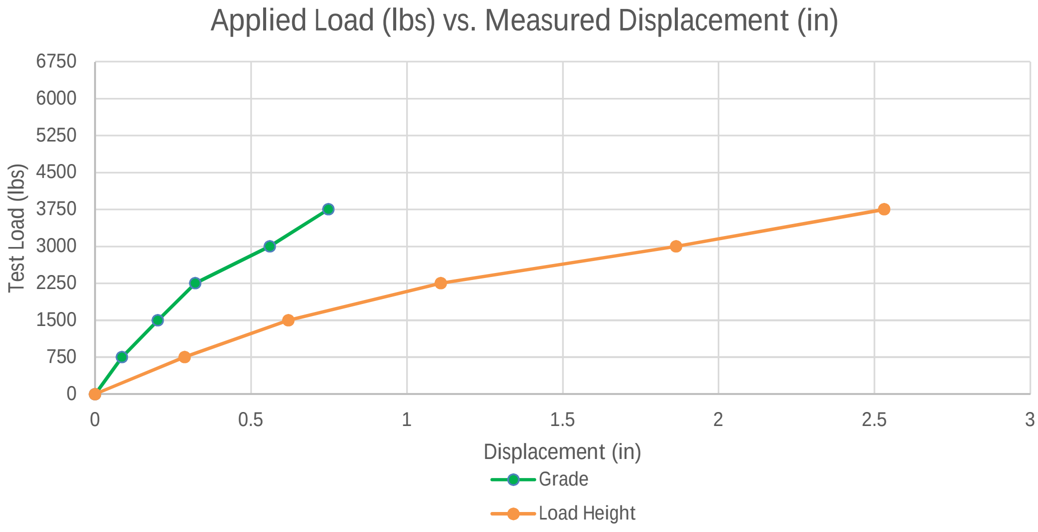
Project:	Badger Mountain	Pile ID:	PLT-B1-8L
Test Date:	2/5/2021	Pile GPS Location:	47.47411 , -120.21166
Testing Phase:	Design	Pile Install Date:	2/2/2021
Test Weather:	Clear	Pile Drive Time:	324.6 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
Failure Load*:	4,400	Load Height:	5.0 *feet*
Notes:	Frost was scraped 6 inches	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.0865	0.287	0.086	0.287
1500	0.193	0.435	0.195	0.515
0	0.001	0.032	-	-
1500	0.2045	0.585	0.201	0.6195
2250	0.324	1.106	0.3215	1.109
3000	0.532	1.558	0.526	1.641
0	0.051	0.254	-	-
3000	0.569	1.858	0.56	1.864
3750	0.744	2.518	0.748	2.531
4500				
5250				
6000				
0			-	-



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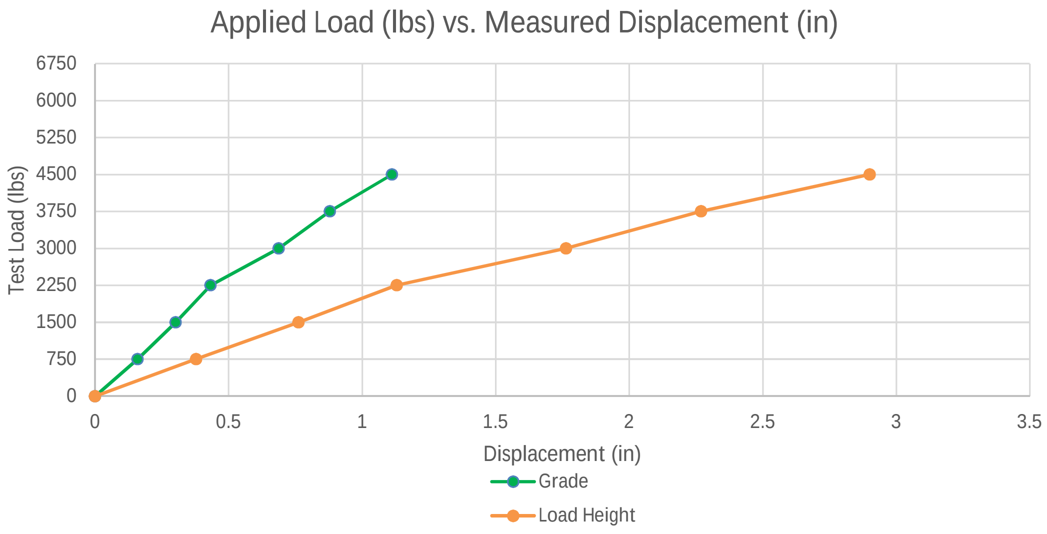
Project:	Badger Mountain	Pile ID:	PLT-B2-6L
Test Date:		Pile GPS Location:	47.46959 , -120.21109
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	177.0 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	4,850	Load Height:	5.0 *feet*
Notes:		Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.155	0.364	0.159	0.378
1500	0.244	0.651	0.266	0.651
0	0.067	0.005	-	-
1500	0.286	0.744	0.302	0.762
2250	0.391	1.018	0.432	1.13
3000	0.545	1.441	0.589	1.533
0	0.14	0.112	-	-
3000	0.66	1.703	0.687	1.763
3750	0.814	2.121	0.879	2.269
4500	1.024	2.583	1.112	2.9
5250				
6000				
0			-	-

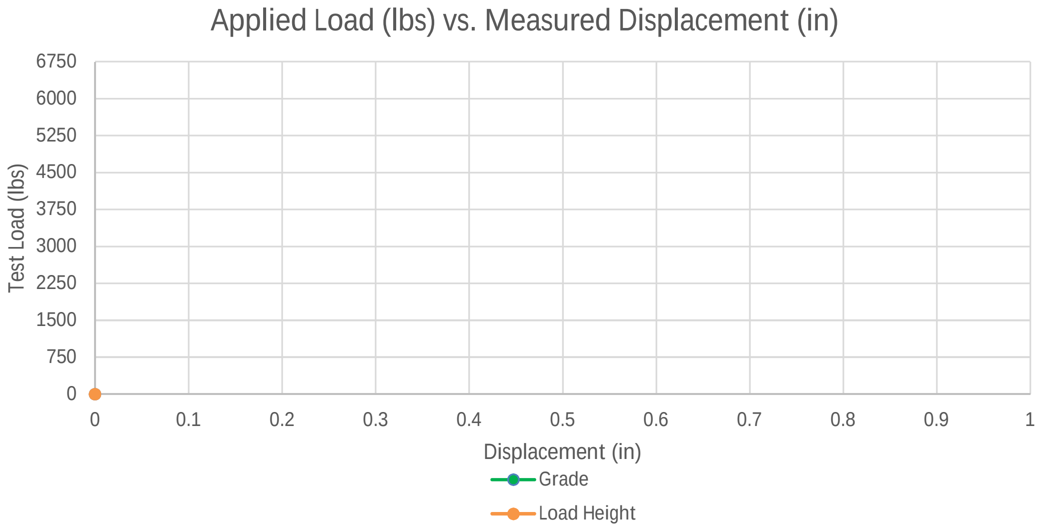


Project:	Badger Mountain	Pile ID:	PLT-B2-8 (R5.9)
Test Date:		Pile GPS Location:	47.46959 , -120.21109
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:		Pile Drive Time:	145.0 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	7.3 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	5.9 *feet*
Failure Load*:	N/A	Load Height:	5.0 *feet*
Notes:	Refusal depth within 3 In of other post, did not test due to redundancy		

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750				
1500				
0			-	-
1500				
2250				
3000				
0			-	-
3000				
3750				
4500				
5250				
6000				
0			-	-

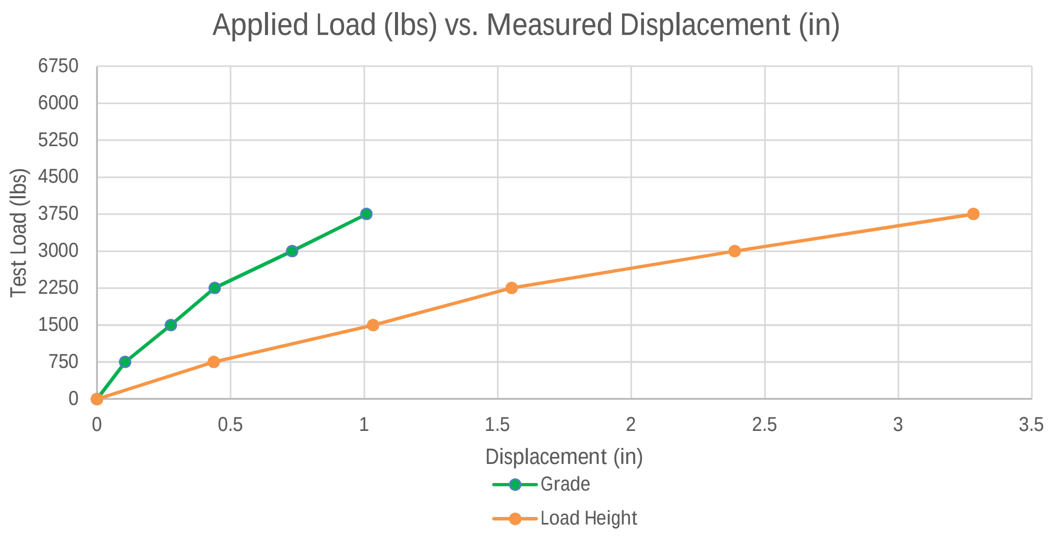


Project:	Badger Mountain	Pile ID:	PLT-B3-6L
Test Date:	2/5/2021	Pile GPS Location:	47.46957 , -120.20069
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	21.0 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	4,200	Load Height:	5.0 *feet*
Notes:	4 in displacement at 4200 , 4 in of frost	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.105	0.434	0.105	0.437
1500	0.255	0.957	0.273	1.018
0	0.093	0.328	-	-
1500	0.276	1.033	0.276	1.034
2250	0.435	1.554	0.44	1.552
3000	0.66	2.205	0.676	2.238
0	0.176	0.525	-	-
3000	0.709	2.348	0.73	2.388
3750	0.967	3.17	1.009	3.281
4500				
5250				
6000				
0			-	-

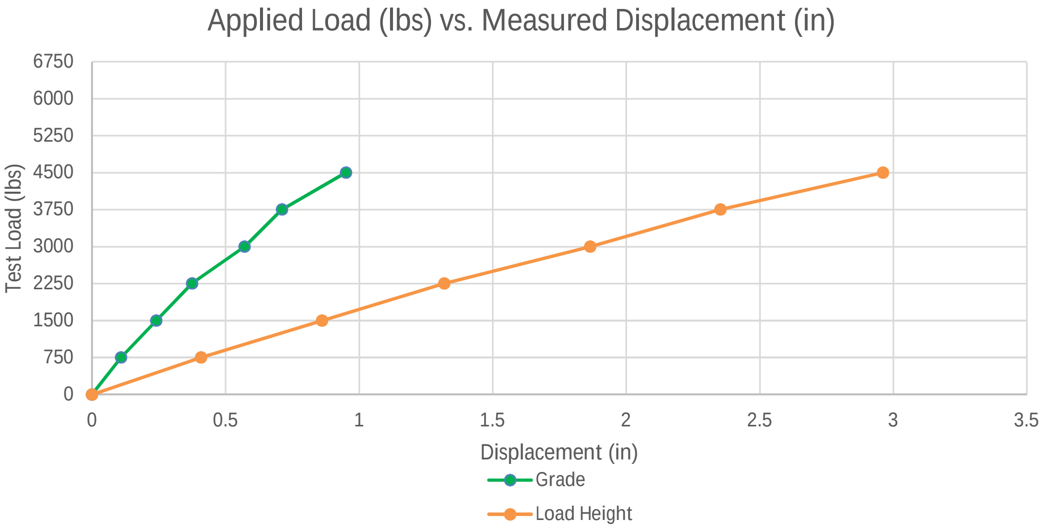


Project:	Badger Mountain	Pile ID:	PLT-B3-8L
Test Date:	2/5/2021	Pile GPS Location:	47.46957 , -120.20069
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	20.4 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
Failure Load*:	5,250	Load Height:	5.0 *feet*
Notes:	CD 4 in at 5250 , 4 in of frost	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.109	0.408	0.109	0.408
1500	0.233	0.806	0.234	0.82
0	0.04	0.092	-	-
1500	0.24	0.861	0.24	0.861
2250	0.365	1.293	0.374	1.319
3000	0.528	1.75	0.529	1.767
0	0.119	0.288	-	-
3000	0.568	1.863	0.571	1.865
3750	0.701	2.302	0.711	2.353
4500	0.929	2.961	0.951	2.962
5250	1.345	4		
6000				
0			-	-



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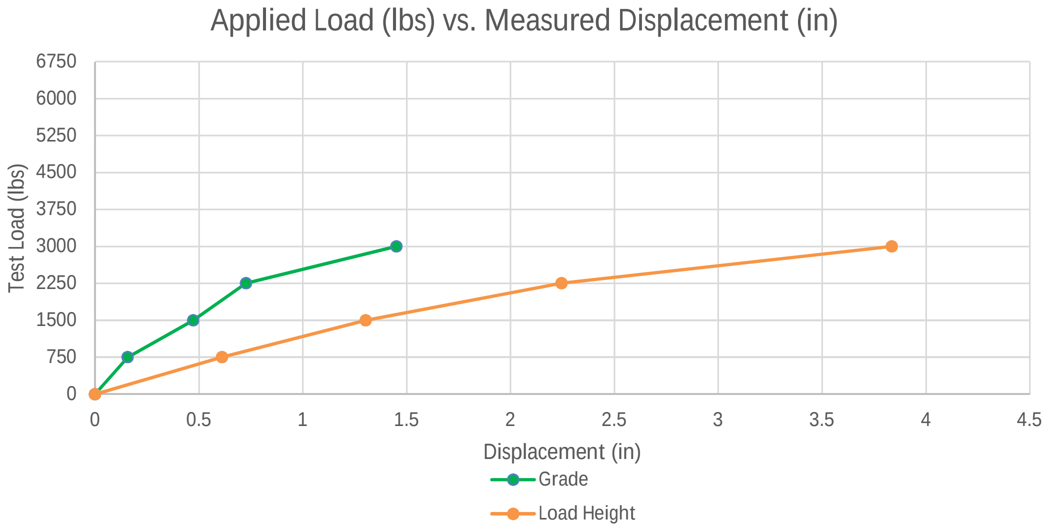
Project:	Badger Mountain	Pile ID:	PLT-B4-6L
Test Date:	2/9/2021	Pile GPS Location:	47.46882 , -120.19183
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Snowy	Pile Drive Time:	13.5 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	3,100	Load Height:	5.0 *feet*
Notes:	4 in displacement at 3100, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.157	0.545	0.157	0.611
1500	0.37	1.203	0.37	1.206
0	0.169	0.371	-	-
1500	0.471	1.291	0.472	1.303
2250	0.727	2.194	0.727	2.246
3000	1.272	3.5	1.315	3.557
0	0.831	1.76	-	-
3000	1.415	3.835	1.45	3.836
3750				
4500				
5250				
6000				
0			-	-

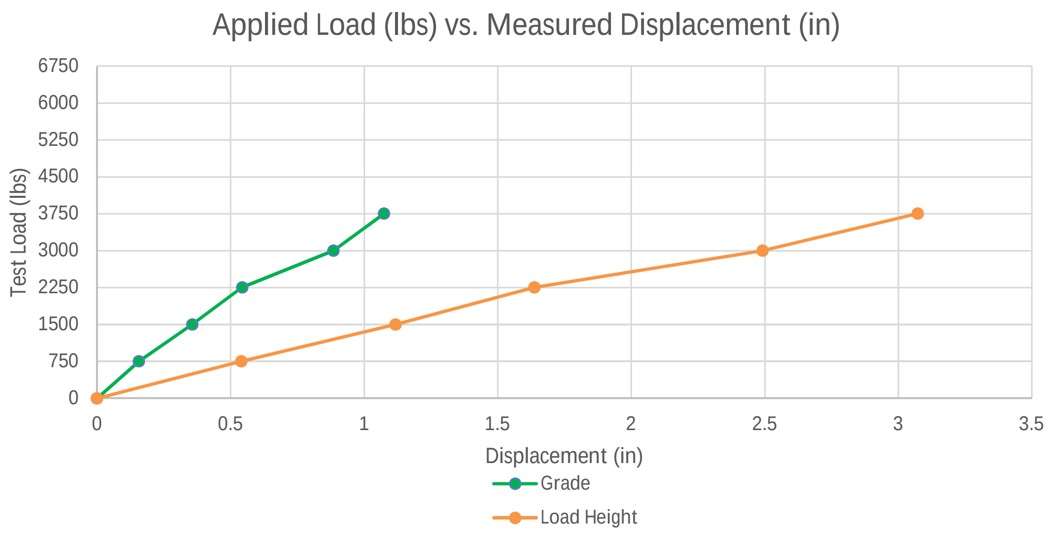


Project:	Badger Mountain	Pile ID:	PLT-B4-8L
Test Date:	2/9/2021	Pile GPS Location:	47.46882 , -120.19183
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Snowy	Pile Drive Time:	20.9 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
Failure Load*:	4,500	Load Height:	5.0 *feet*
Notes:	4 in displacement on 4500, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.145	0.532	0.157	0.54
1500	0.304	0.998	0.308	1.037
0	0.056	0.121	-	-
1500	0.356	1.109	0.356	1.117
2250	0.525	1.616	0.543	1.637
3000	0.759	2.225	0.78	2.257
0	0.145	0.251	-	-
3000	0.873	2.489	0.885	2.492
3750	1.034	2.985	1.074	3.073
4500	1.37	4.019		
5250				
6000				
0			-	-

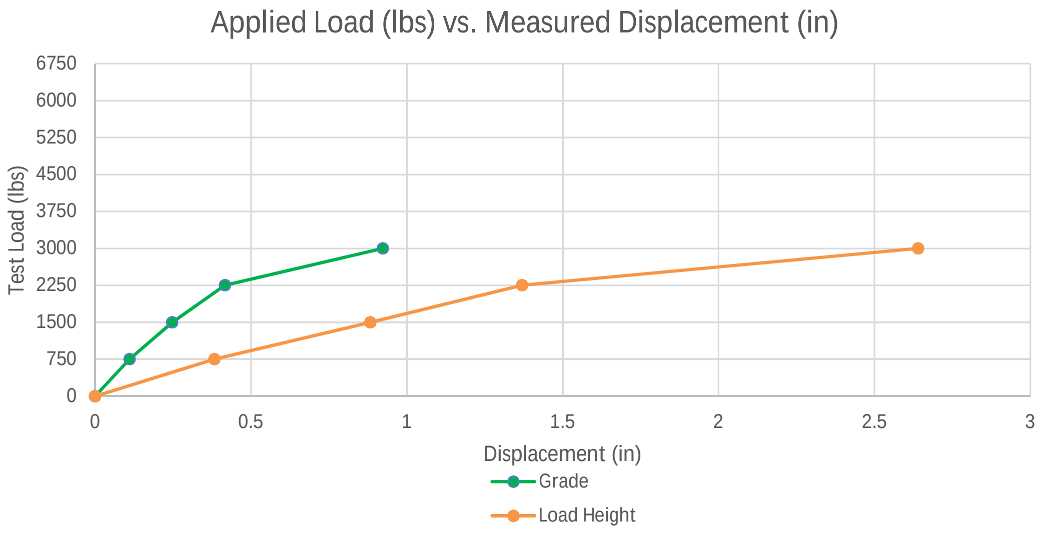


Project:	Badger Mountain	Pile ID:	PLT-B6-6L
Test Date:	2/5/2021	Pile GPS Location:	47.46694 , -120.20563
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	18.2 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	3,750	Load Height:	5.0 *feet*
Notes:	4 in displacement at 3750, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.112	0.387	0.11	0.383
1500	0.231	0.8	0.234	0.819
0	0.001	0.041	-	-
1500	0.249	0.895	0.247	0.883
2250	0.404	1.339	0.417	1.37
3000	0.765	2.178	0.837	2.439
0	0.285	0.705	-	-
3000	0.903	2.562	0.923	2.64
3750				
4500				
5250				
6000				
0			-	-

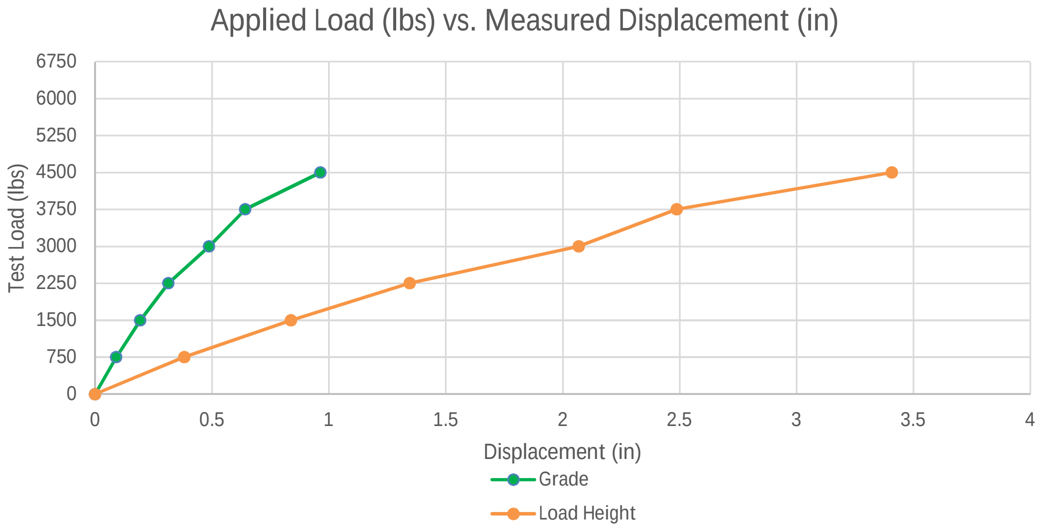


Project:	Badger Mountain	Pile ID:	PLT-B6-8L
Test Date:	2/5/2021	Pile GPS Location:	47.46694 , -120.20563
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	21.4 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
Failure Load*:	N/A	Load Height:	5.0 *feet*
Notes:	4 in displacement at 5000, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.09	0.381	0.09	0.381
1500	0.194	0.78	0.197	0.817
0	0	0.043	-	-
1500	0.193	0.838	0.193	0.838
2250	0.315	1.326	0.313	1.345
3000	0.446	1.853	0.446	1.897
0	0.036	0.217	-	-
3000	0.487	2.077	0.487	2.068
3750	0.626	2.499	0.642	2.488
4500	0.928	3.1284	0.964	3.408
5250				
6000				
0			-	-



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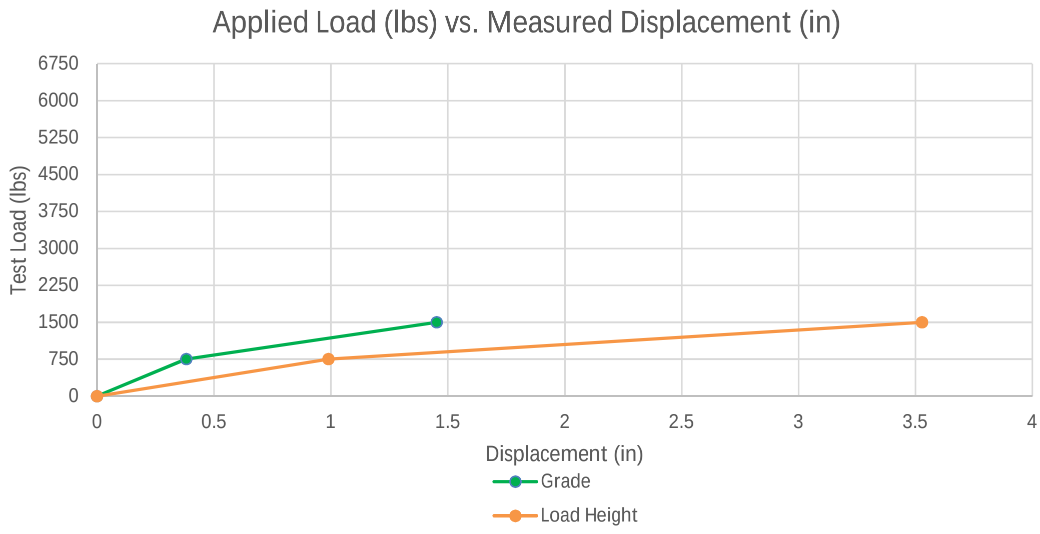
Project:	Badger Mountain	Pile ID:	PLT-B7-6 (R4.167)
Test Date:	2/5/2021	Pile GPS Location:	47.46346 , -120.20449
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	107.7 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	6.8 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	4.2 *feet*
Failure Load*:	N/A	Load Height:	5.0 *feet*
Notes:	4 in displacement at 1800, 4 in frost	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.359	0.934	0.381	0.99
1500	1.275	3.088	1.273	3.087
0	0.806	1.821	-	-
1500	1.445	3.485	1.452	3.529
2250				
3000				
0			-	-
3000				
3750				
4500				
5250				
6000				
0			-	-



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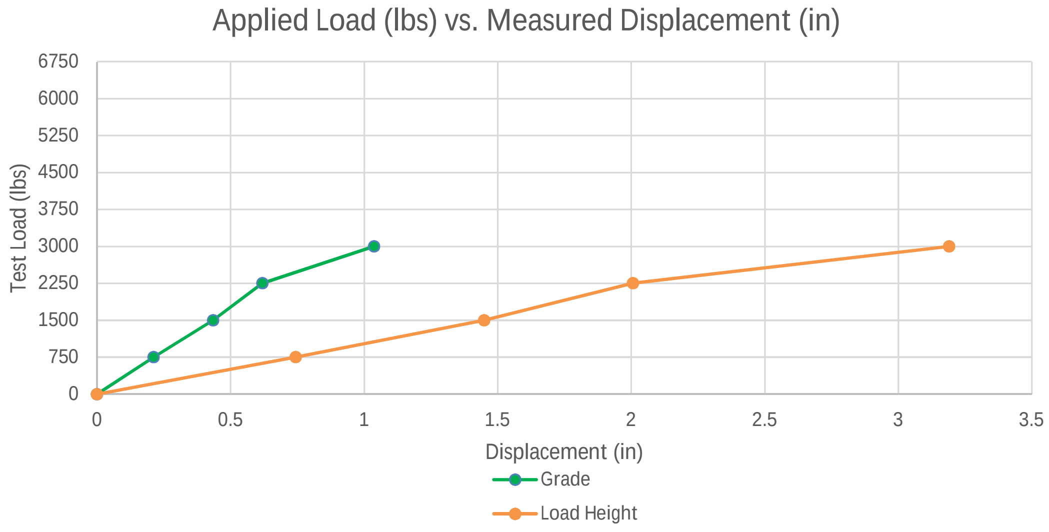
Project:	Badger Mountain	Pile ID:	PLT-B7-8 (R3.33)
Test Date:	2/5/2021	Pile GPS Location:	47.46346 , -120.20449
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	81.3 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	9.7 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	3.3 *feet*
Failure Load*:	N/A	Load Height:	5.0 *feet*
Notes:	4 in displacement at 3700, 4 in frost, measured pul	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.202	0.663	0.212	0.744
1500	0.395	1.213	0.399	1.3
0	0.21	0.669	-	-
1500	0.433	1.442	0.434	1.449
2250	0.613	1.927	0.619	2.006
3000	0.907	2.773	0.944	2.915
0	0.527	1.574	-	-
3000	1.002	3.092	1.037	3.191
3750				
4500				
5250				
6000				
0			-	-

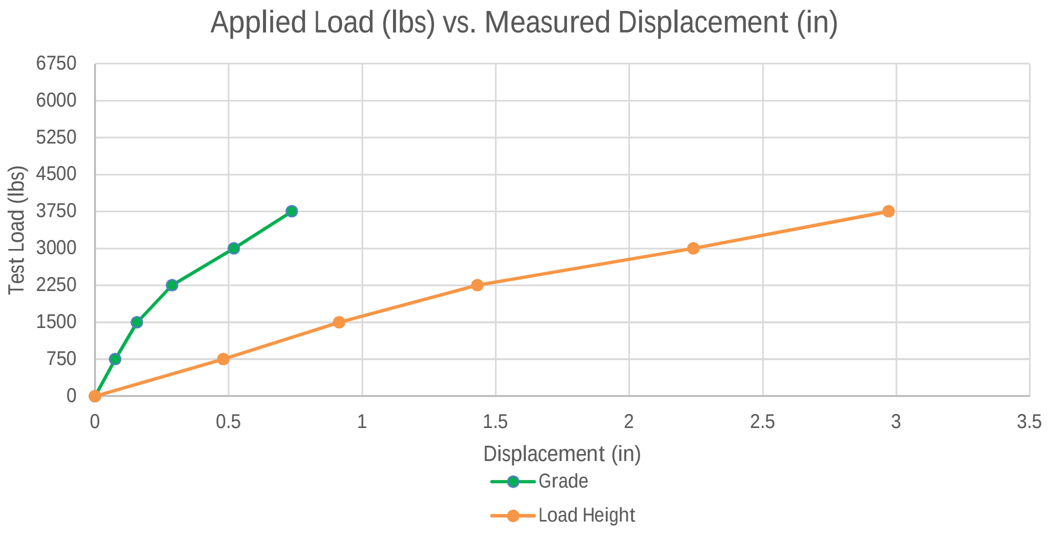


Project:	Badger Mountain	Pile ID:	PLT-B9-6L
Test Date:	2/5/2021	Pile GPS Location:	47.45897 , -120.20017
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	19.5 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	4,300	Load Height:	5.0 *feet*
Notes:	4 in displacement at 4300, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.066	0.422	0.075	0.48
1500	0.166	0.866	0.167	0.9
0	0.024	0.076	-	-
1500	0.156	0.912	0.157	0.914
2250	0.287	1.405	0.288	1.431
3000	0.472	2.092	0.486	2.128
0	0.079	0.449	-	-
3000	0.518	2.23	0.519	2.24
3750	0.709	2.908	0.737	2.971
4500				
5250				
6000				
0			-	-

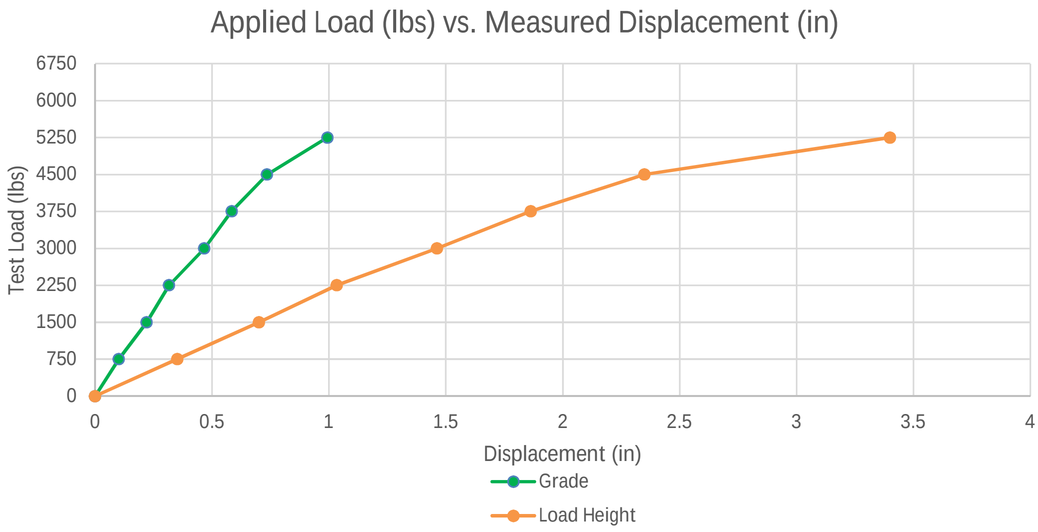


Project:	Badger Mountain	Pile ID:	PLT-B9-8L
Test Date:	2/5/2021	Pile GPS Location:	47.45897 , -120.20017
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	32.0 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
Failure Load*:	5,800	Load Height:	5.0 *feet*
Notes:	4 in displacement at 5800, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.091	0.342	0.101	0.351
1500	0.192	0.692	0.198	0.698
0	0.059	0.049	-	-
1500	0.213	0.688	0.22	0.701
2250	0.302	1.021	0.316	1.034
3000	0.422	1.428	0.438	1.43
0	0.11	0.111	-	-
3000	0.463	1.462	0.467	1.462
3750	0.581	1.847	0.584	1.863
4500	0.732	2.313	0.735	2.35
5250	0.973	3.4	0.993	3.4
6000				
0			-	-



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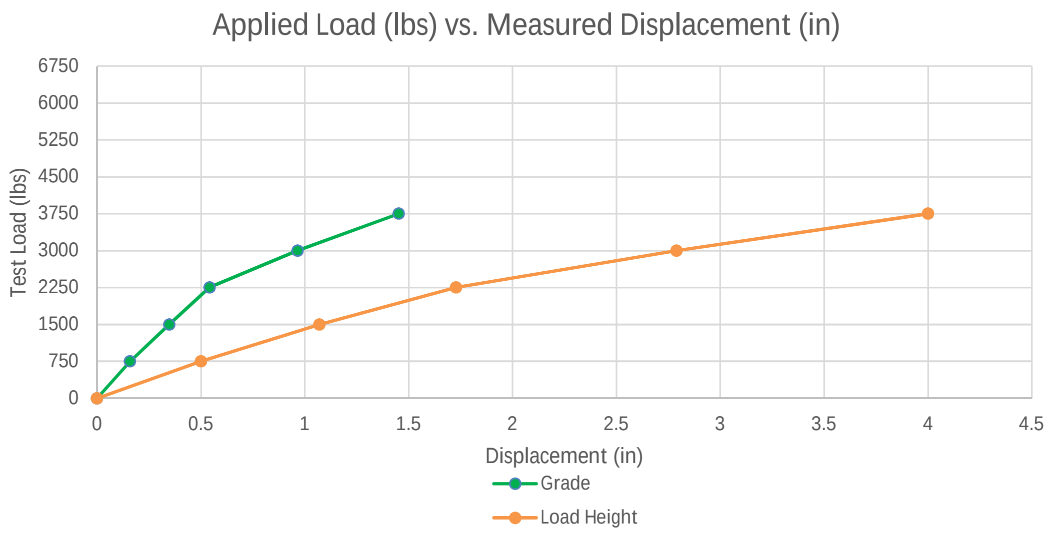
Project:	Badger Mountain	Pile ID:	PLT-B10-6L
Test Date:	2/6/2021	Pile GPS Location:	47.45744 , -120.19266
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	18.9 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	3,900	Load Height:	5.0 *feet*
Notes:	4 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.158	0.5	0.158	0.5
1500	0.319	1.011	0.327	1.013
0	0.077	0.15	-	-
1500	0.34	1.053	0.347	1.07
2250	0.541	1.637	0.541	1.728
3000	0.847	2.467	0.852	2.475
0	0.342	0.746	-	-
3000	0.963	2.751	0.965	2.79
3750	1.381	3.952	1.452	4
4500				
5250				
6000				
0			-	-

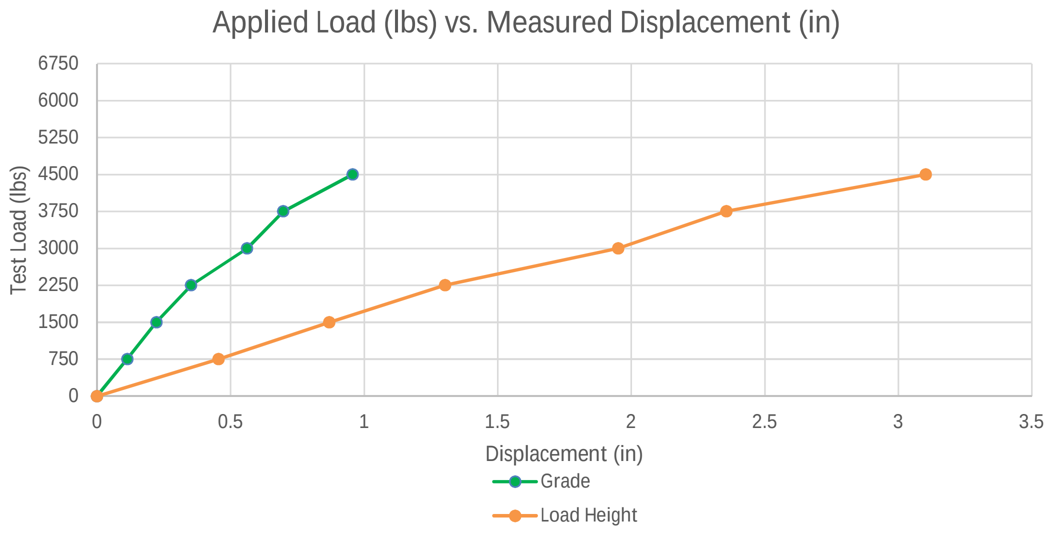


Project:	Badger Mountain	Pile ID:	PLT-B10-8L
Test Date:	2/6/2021	Pile GPS Location:	47.45744 , -120.19266
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	22.6 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
Failure Load*:	5,200	Load Height:	5.0 *feet*
Notes:	4 in displacement at 5200, 4 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.111	0.452	0.113	0.455
1500	0.204	0.83	0.218	0.835
0	0.008	0.057	-	-
1500	0.221	0.863	0.222	0.87
2250	0.351	1.29	0.352	1.303
3000	0.531	1.854	0.533	1.867
0	0.019	0.099	-	-
3000	0.562	1.942	0.562	1.951
3750	0.682	2.348	0.697	2.356
4500	0.929	3.02	0.957	3.103
5250				
6000				
0			-	-

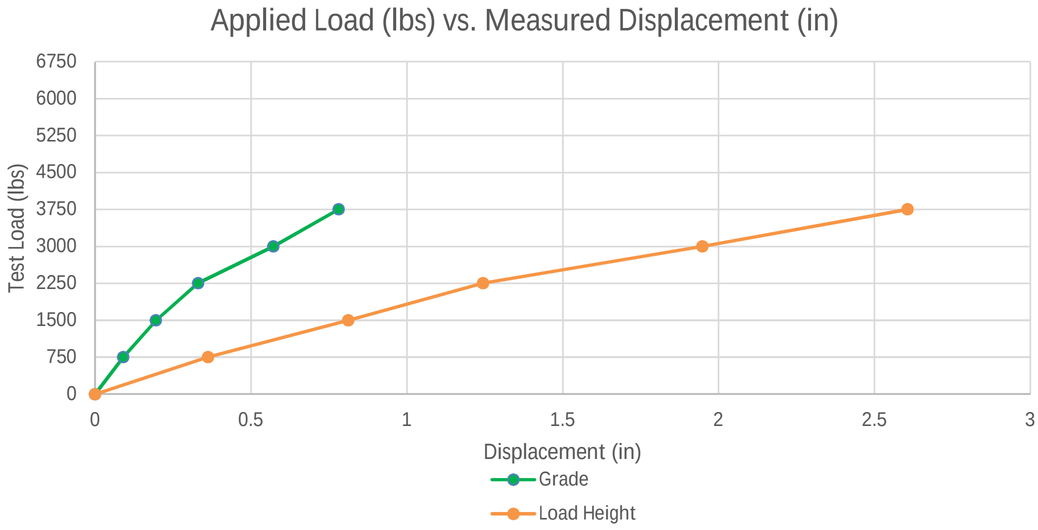


Project:	Badger Mountain	Pile ID:	PLT-B11-6L
Test Date:	2/6/2021	Pile GPS Location:	47.45401 , -120.19491
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	18.1 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	4,500	Load Height:	5.0 *feet*
Notes:	4 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.09	0.312	0.09	0.362
1500	0.18	0.761	0.184	0.768
0	0.022	0.1	-	-
1500	0.195	0.807	0.195	0.812
2250	0.316	1.241	0.33	1.244
3000	0.502	1.757	0.525	1.824
0	0.132	0.39	-	-
3000	0.563	1.912	0.572	1.948
3750	0.744	2.536	0.781	2.606
4500				
5250				
6000				
0			-	-



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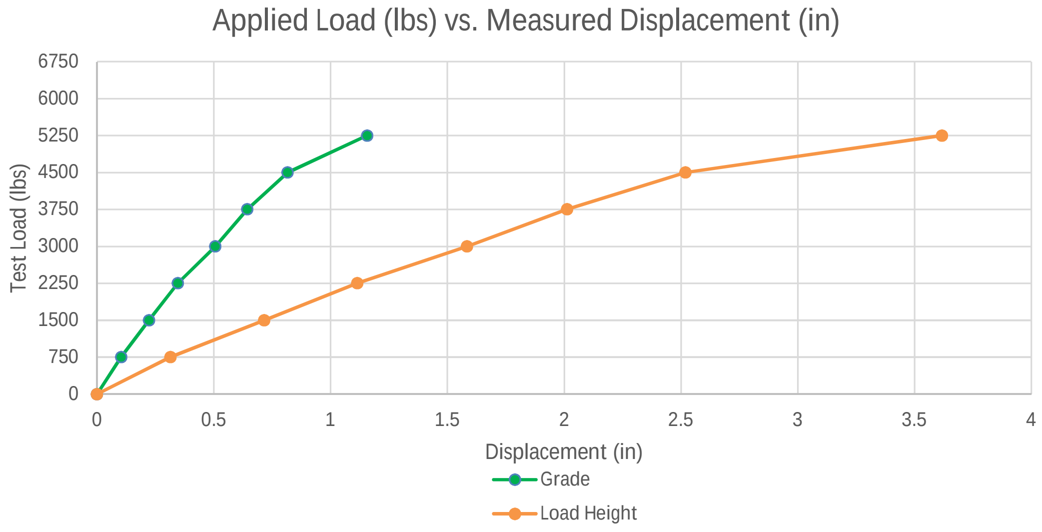
Project:	Badger Mountain	Pile ID:	PLT-B11-8L
Test Date:	2/6/2021	Pile GPS Location:	47.45401 , -120.19491
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	31.9 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
Failure Load*:	5,500	Load Height:	5.0 *feet*
Notes:	4 in displacement at 5500	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.101	0.311	0.103	0.314
1500	0.219	0.69	0.219	0.701
0	0.004	0	-	-
1500	0.222	0.706	0.222	0.716
2250	0.342	1.109	0.346	1.114
3000	0.484	1.559	0.491	1.568
0	0.014	0.001	-	-
3000	0.506	1.577	0.506	1.584
3750	0.642	2.001	0.643	2.013
4500	0.802	2.508	0.816	2.519
5250	1.136	3.554	1.156	3.617
6000				
0			-	-

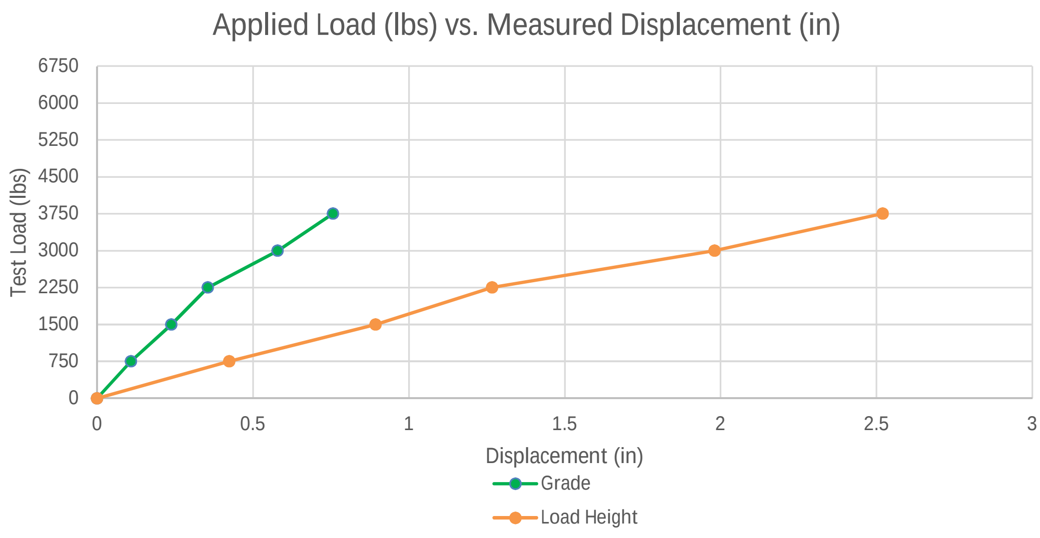


Project:	Badger Mountain	Pile ID:	PLT-B12-6 (R5.42)
Test Date:	2/6/2021	Pile GPS Location:	47.45457 , -120.18722
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	128.0 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.6 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	5.4 *feet*
Failure Load*:	4,300	Load Height:	5.0 *feet*
Notes:	4 in displacement at 4300, 4 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.107	0.425	0.108	0.424
1500	0.21	0.7995	0.211	0.799
0	0.018	0.046	-	-
1500	0.238	0.902	0.238	0.893
2250	0.35	1.273	0.355	1.267
3000	0.509	1.791	0.525	1.846
0	0.047	0.126	-	-
3000	0.581	2.012	0.579	1.981
3750	0.735	2.418	0.756	2.52
4500				
5250				
6000				
0			-	-



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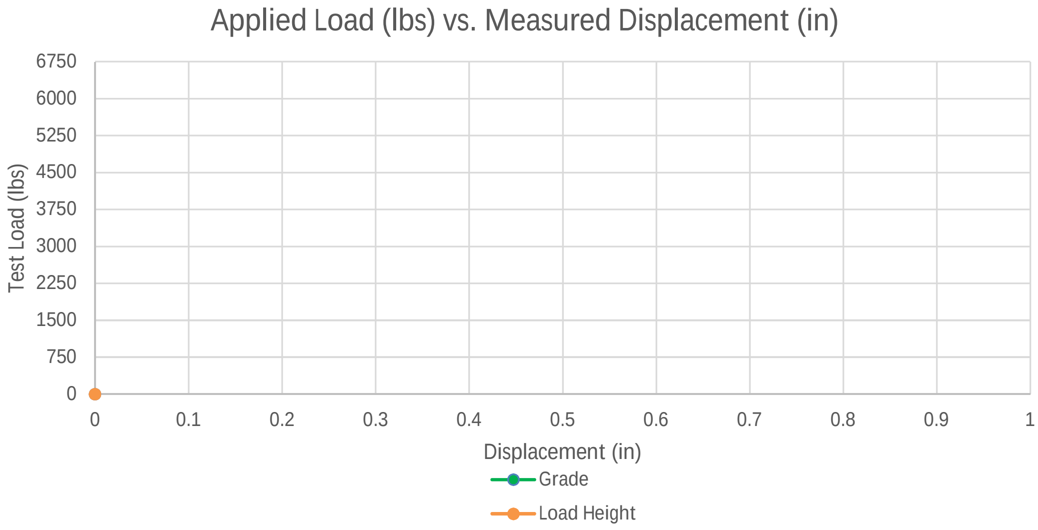
Project:	Badger Mountain	Pile ID:	PLT-B12-8 (R3.83)
Test Date:	2/6/2021	Pile GPS Location:	47.45457 , -120.18722
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	49.8 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	9.2 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	3.8 *feet*
Failure Load*:	N/A	Load Height:	5.0 *feet*
Notes:	Pile disturbed during frost removal, can move 4-inches by hand. Did not test.		

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750				
1500				
0			-	-
1500				
2250				
3000				
0			-	-
3000				
3750				
4500				
5250				
6000				
0			-	-

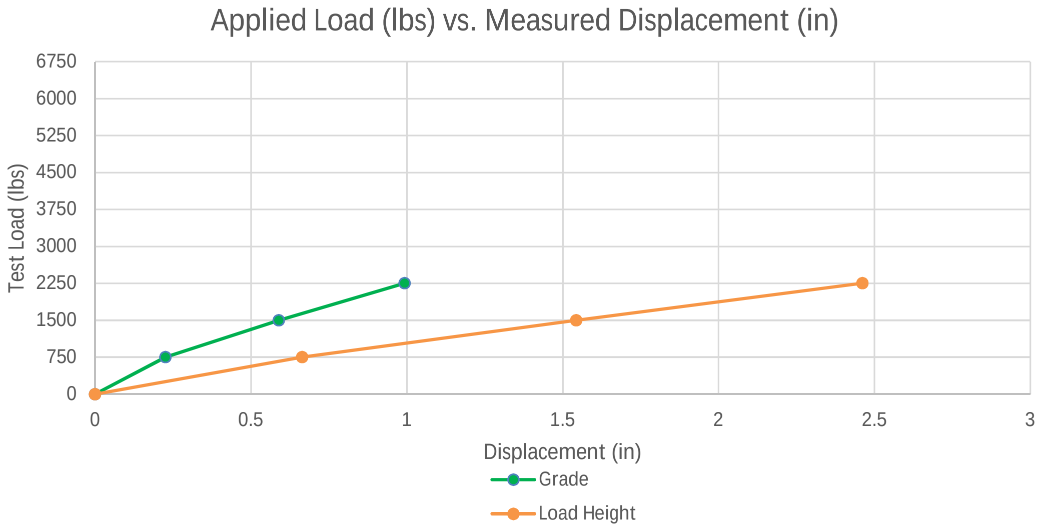


Project:	Badger Mountain	Pile ID:	PLT-B14-6L
Test Date:	2/8/2021	Pile GPS Location:	47.45477 , -120.17696
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Cloudy	Pile Drive Time:	18.3 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	3,000	Load Height:	5.0 *feet*
Notes:	4 in displacement at 3000, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.226	0.663	0.226	0.664
1500	0.521	1.417	0.521	1.474
0	0.184	0.352	-	-
1500	0.585	1.542	0.589	1.543
2250	0.933	2.461	0.993	2.461
3000				
0			-	-
3000				
3750				
4500				
5250				
6000				
0			-	-

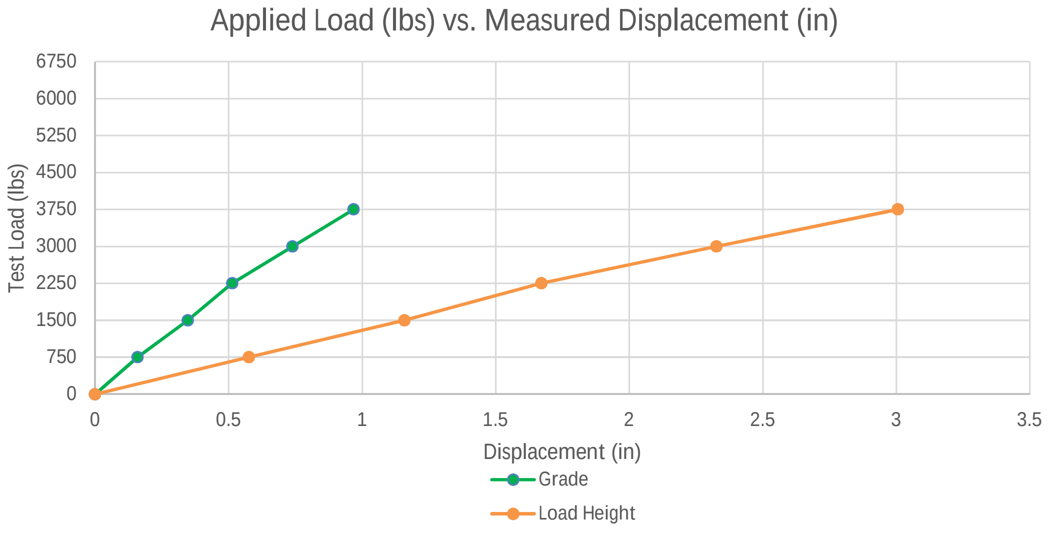


Project:	Badger Mountain	Pile ID:	PLT-B14-8 (R7.833)
Test Date:	2/8/2021	Pile GPS Location:	47.45477 , -120.17696
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Cloudy	Pile Drive Time:	107.2 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.2 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	7.8 *feet*
Failure Load*:	4,500	Load Height:	5.0 *feet*
Notes:	4 in displacement at 4500, 4 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.159	0.544	0.159	0.576
1500	0.32	1.067	0.32	1.074
0	0.013	0.066	-	-
1500	0.347	1.145	0.347	1.158
2250	0.499	1.623	0.513	1.671
3000	0.672	2.119	0.672	2.133
0	0.017	0.067	-	-
3000	0.738	2.307	0.739	2.327
3750	0.937	2.871	0.968	3.006
4500				
5250				
6000				
0			-	-

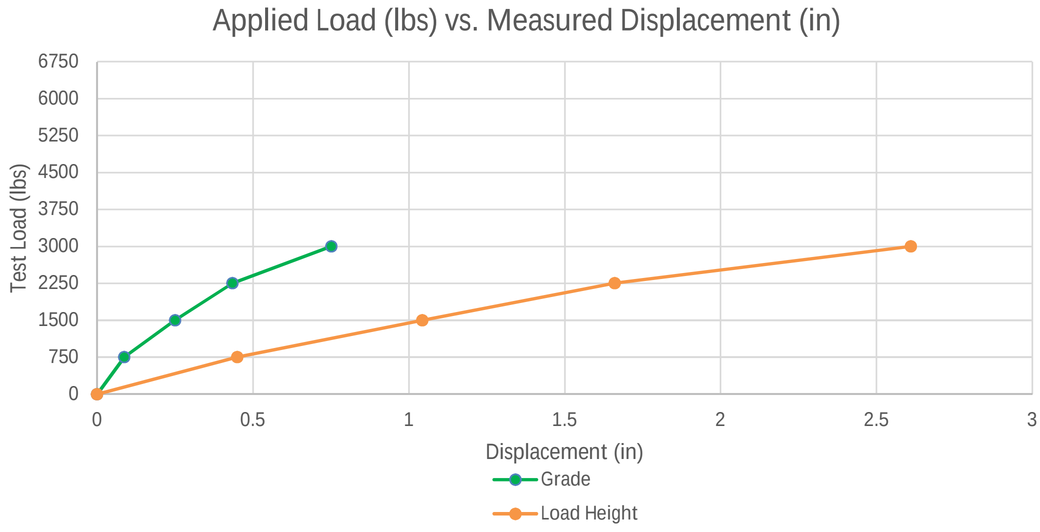


Project:	Badger Mountain	Pile ID:	PLT-B16-6 (R5.42)
Test Date:	2/6/2021	Pile GPS Location:	47.45132 , -120.19205
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	91.2 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.6 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	5.4 *feet*
Failure Load*:	3,650	Load Height:	5.0 *feet*
Notes:	4 in displacement at 3650, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.085	0.424	0.087	0.449
1500	0.227	0.954	0.238	0.999
0	0.033	0.182	-	-
1500	0.25	1.037	0.25	1.043
2250	0.418	1.602	0.434	1.66
3000	0.667	2.336	0.69	2.405
0	0.233	0.673	-	-
3000	0.744	2.551	0.751	2.61
3750				
4500				
5250				
6000				
0			-	-



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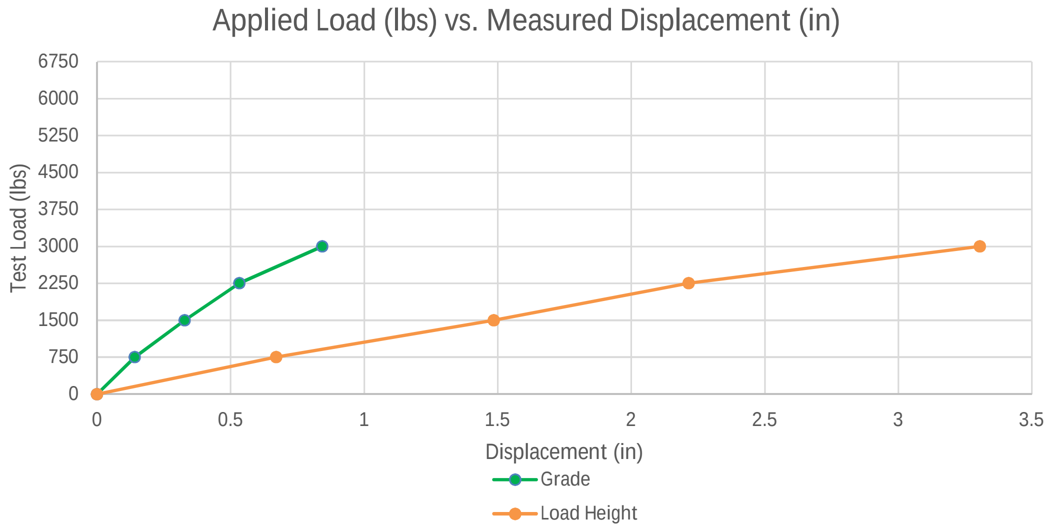
Project:	Badger Mountain	Pile ID:	PLT-B16-8 (R4.66)
Test Date:	2/6/2021	Pile GPS Location:	47.45132 , -120.19205
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	76.0 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	8.3 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	4.7 *feet*
Failure Load*:	4,600	Load Height:	5.0 *feet*
Notes:	4 in displacement at 4600, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.136	0.636	0.141	0.67
1500	0.311	1.36	0.319	1.427
0	0.125	0.574	-	-
1500	0.324	1.465	0.328	1.485
2250	0.526	2.191	0.533	2.215
3000	0.783	3.047	0.795	3.076
0	0.399	1.488	-	-
3000	0.834	3.24	0.843	3.305
3750				
4500				
5250				
6000				
0			-	-



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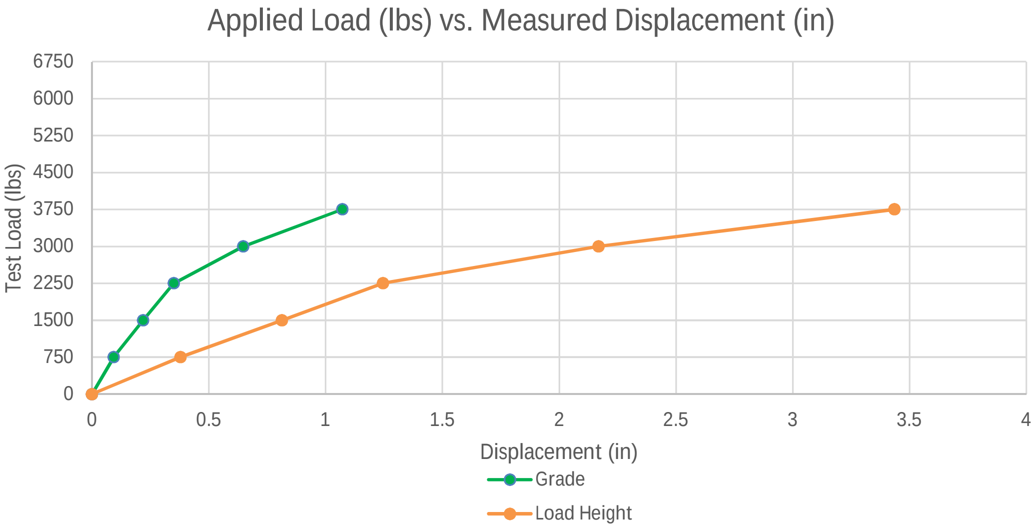
Project:	Badger Mountain	Pile ID:	PLT-B17-6L
Test Date:	2/7/2021	Pile GPS Location:	47.44874 , -120.18477
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Partly Cloudy	Pile Drive Time:	16.4 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	4,250	Load Height:	5.0 *feet*
Notes:	4 in displacement at 4250, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.093	0.37	0.093	0.379
1500	0.205	0.76	0.205	0.772
0	0.055	0.112	-	-
1500	0.218	0.795	0.219	0.813
2250	0.343	1.234	0.35	1.246
3000	0.568	1.953	0.581	1.966
0	0.254	0.588	-	-
3000	0.628	2.128	0.647	2.168
3750	0.962	3.264	1.071	3.435
4500				
5250				
6000				
0			-	-



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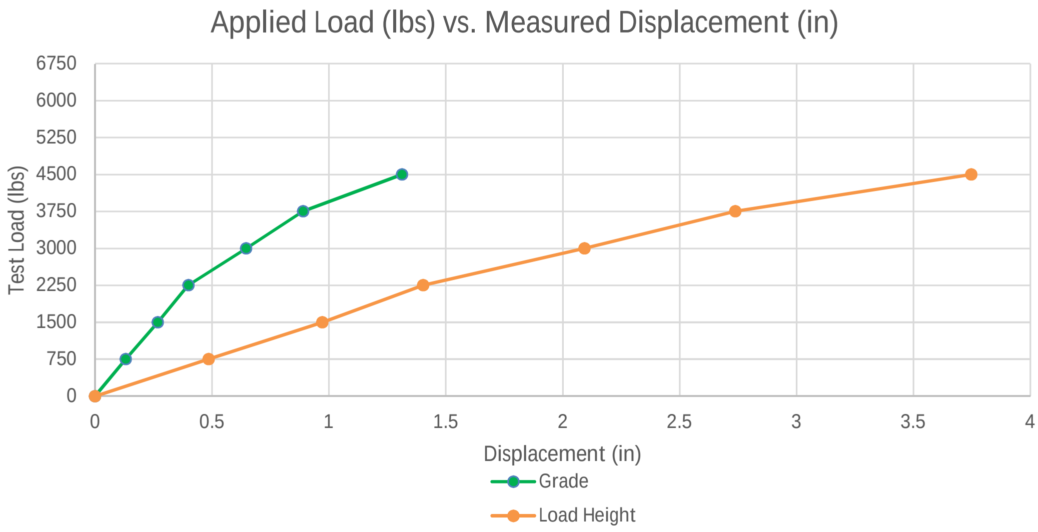
Project:	Badger Mountain	Pile ID:	PLT-B17-8L
Test Date:	2/7/2021	Pile GPS Location:	47.44874 , -120.18477
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Clear	Pile Drive Time:	17.8 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
Failure Load*:	N/A	Load Height:	5.0 *feet*
Notes:	4 in displacement at 4600, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.131	0.478	0.131	0.485
1500	0.251	0.891	0.251	0.9
0	0.059	0.137	-	-
1500	0.267	0.958	0.268	0.972
2250	0.39	1.376	0.399	1.403
3000	0.577	1.977	0.602	2.021
0	0.14	0.323	-	-
3000	0.642	2.081	0.646	2.093
3750	0.867	2.73	0.889	2.738
4500	1.263	3.661	1.313	3.748
5250				
6000				
0			-	-

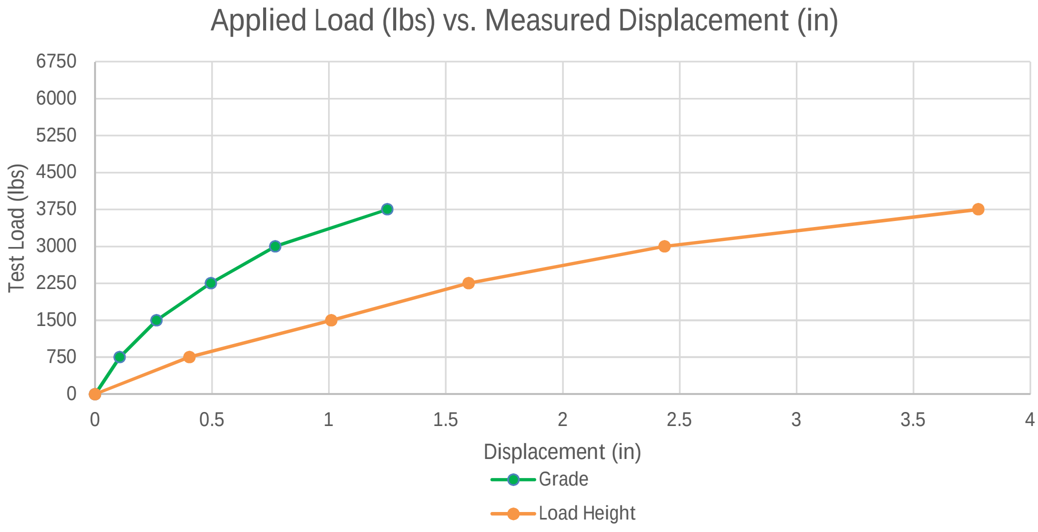


Project:	Badger Mountain	Pile ID:	PLT-B18-6L
Test Date:	2/7/2021	Pile GPS Location:	47.44886 , -120.17798
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Partly Cloudy	Pile Drive Time:	19.8 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	3,800	Load Height:	5.0 *feet*
Notes:	4 in displacement at 3800, 4 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.103	0.403	0.105	0.403
1500	0.244	0.912	0.253	0.913
0	0.019	0.15	-	-
1500	0.259	0.999	0.263	1.01
2250	0.459	1.595	0.495	1.597
3000	0.709	2.264	0.712	2.278
0	0.163	0.507	-	-
3000	0.77	2.418	0.77	2.435
3750	1.161	3.692	1.25	3.778
4500				
5250				
6000				
0			-	-



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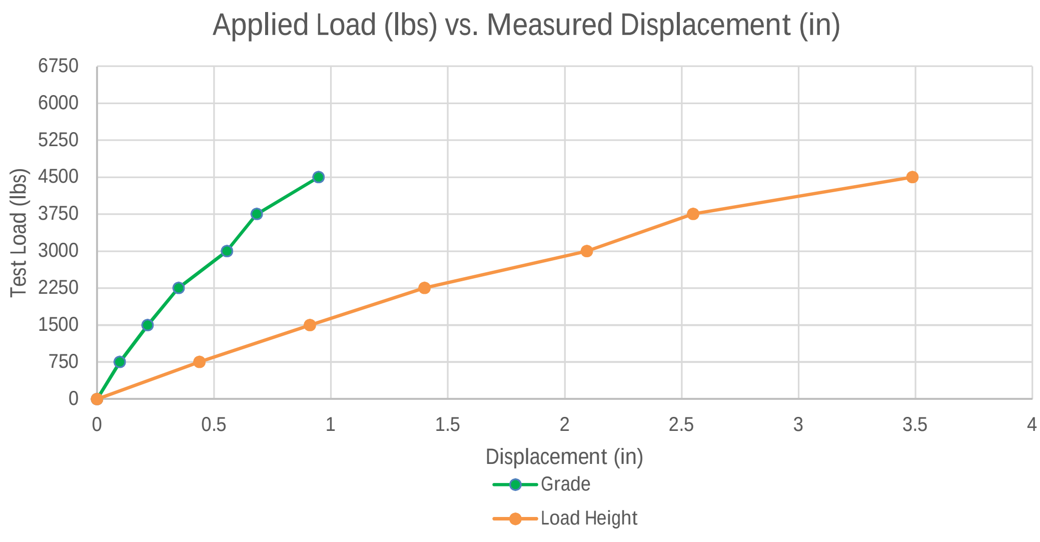
Project:	Badger Mountain	Pile ID:	PLT-B18-8L
Test Date:	2/7/2021	Pile GPS Location:	47.44886 , -120.17798
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Partly Cloudy	Pile Drive Time:	25.6 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
Failure Load*:	5,050	Load Height:	5.0 *feet*
Notes:	4 in displacement at 5050, 4 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.095	0.429	0.097	0.437
1500	0.211	0.894	0.212	0.901
0	0.019	0.041	-	-
1500	0.213	0.9	0.216	0.91
2250	0.337	1.37	0.348	1.4
3000	0.495	1.931	0.506	1.938
0	0.055	0.108	-	-
3000	0.553	2.069	0.555	2.095
3750	0.669	2.526	0.683	2.549
4500	0.915	3.374	0.947	3.487
5250				
6000				
0			-	-

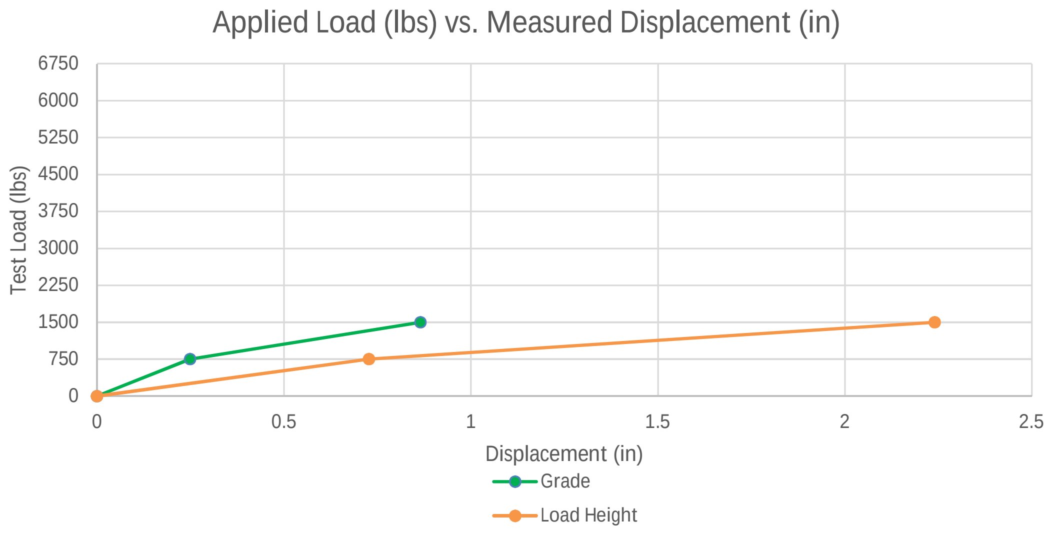


Project:	Badger Mountain	Pile ID:	PLT-B20-6L
Test Date:	2/7/2021	Pile GPS Location:	47.44430 , -120.17794
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Clear	Pile Drive Time:	15.0 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	4,250	Load Height:	5.0 *feet*
Notes:	2250 continues displacement, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.229	0.723	0.249	0.727
1500	0.697	1.884	0.709	2.014
0	0.528	1.142	-	-
1500	0.84	2.18	0.865	2.24
2250				
3000				
0			-	-
3000				
3750				
4500				
5250				
6000				
0			-	-

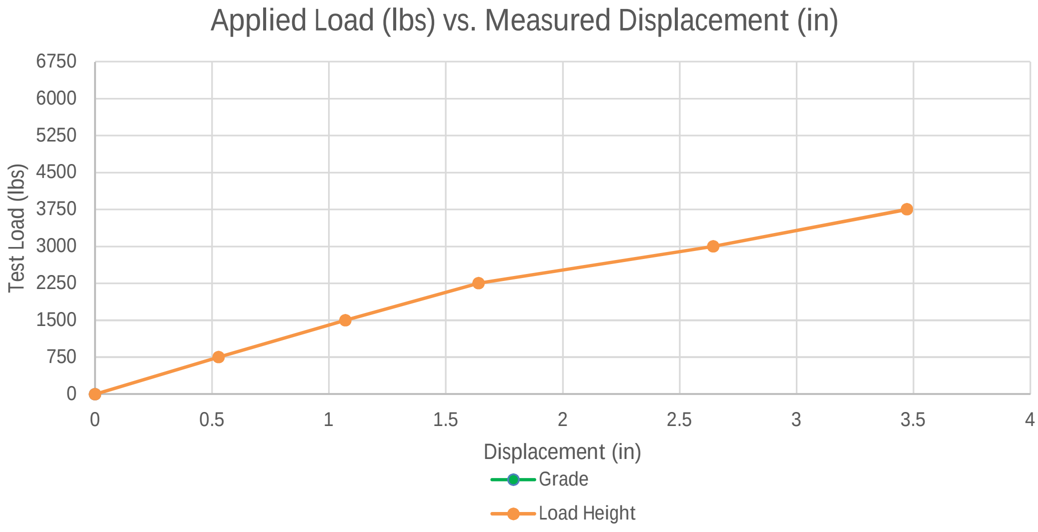


Project:	Badger Mountain	Pile ID:	PLT-B20-8L
Test Date:	2/7/2021	Pile GPS Location:	47.44430 , -120.17794
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Clear	Pile Drive Time:	22.8 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
Failure Load*:	4,350	Load Height:	5.0 *feet*
Notes:	4 in displacement at 4350, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750		0.523		0.528
1500		0.988		0.995
0		0.141		-
1500		1.057		1.07
2250		1.637		1.64
3000		2.455		2.491
0		0.106		-
3000		2.601		2.644
3750		3.427		3.472
4500				
5250				
6000				
0			-	-

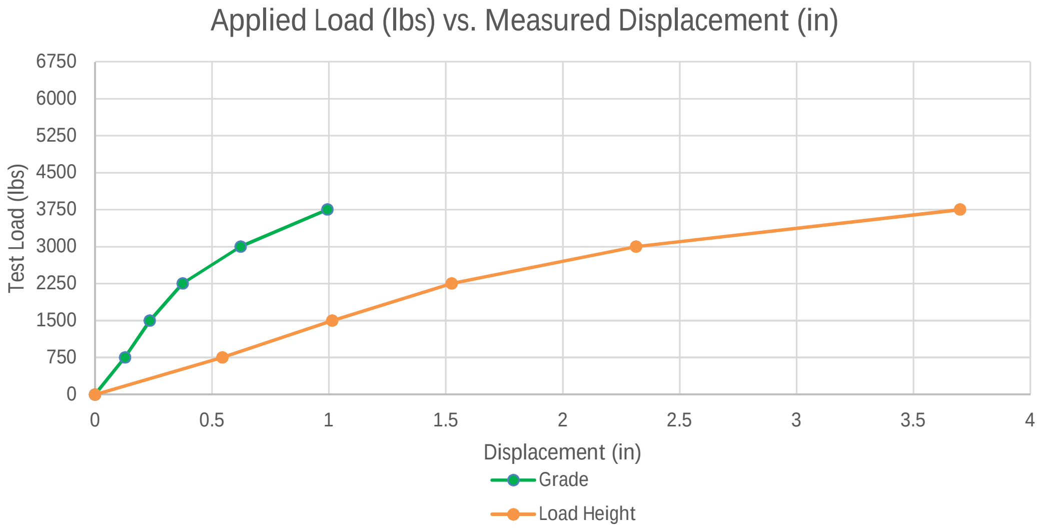


Project:	Badger Mountain	Pile ID:	PLT-B21-6L
Test Date:	2/7/2021	Pile GPS Location:	47.44255 , -120.18460
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Clear	Pile Drive Time:	31.0 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	3,850	Load Height:	5.0 *feet*
Notes:	4 inche of frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.128	0.544	0.128	0.544
1500	0.221	0.954	0.225	0.972
0	0.013	0.098	-	-
1500	0.233	1.002	0.234	1.014
2250	0.361	1.515	0.374	1.525
3000	0.564	2.157	0.568	2.191
0	0.081	0.304	-	-
3000	0.618	2.308	0.622	2.314
3750	0.899	3.3	0.993	3.7
4500				
5250				
6000				
0			-	-



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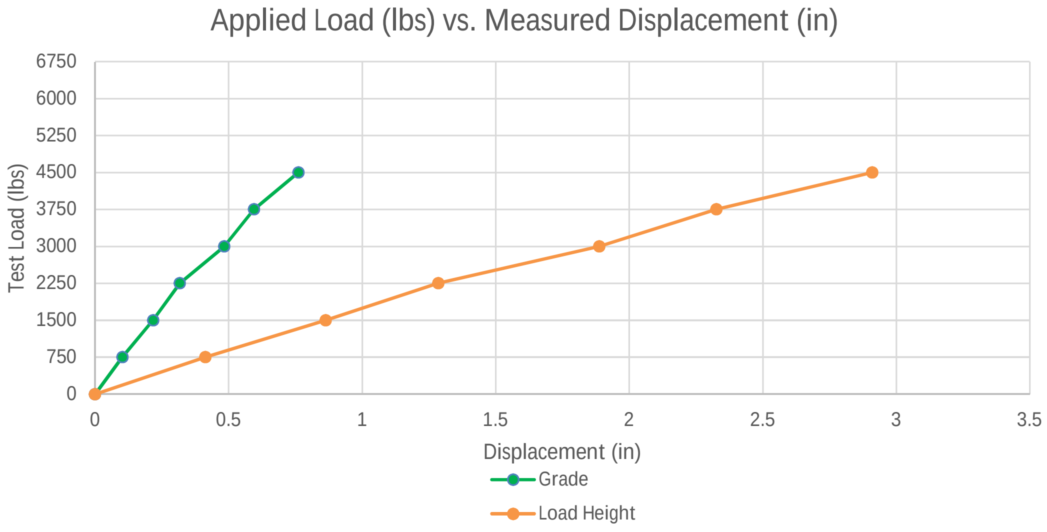
Project:	Badger Mountain	Pile ID:	PLT-B21-8L
Test Date:	2/7/2021	Pile GPS Location:	47.44255 , -120.18460
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Clear	Pile Drive Time:	161.1 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
Failure Load*:	5,250	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.102	0.413	0.102	0.413
1500	0.203	0.806	0.203	0.806
0	0.033	0.118	-	-
1500	0.216	0.863	0.217	0.863
2250	0.315	1.25	0.317	1.285
3000	0.444	1.733	0.447	1.751
0	0.055	0.243	-	-
3000	0.483	1.881	0.484	1.888
3750	0.585	2.297	0.595	2.327
4500	0.759	2.888	0.761	2.91
5250				
6000				
0			-	-

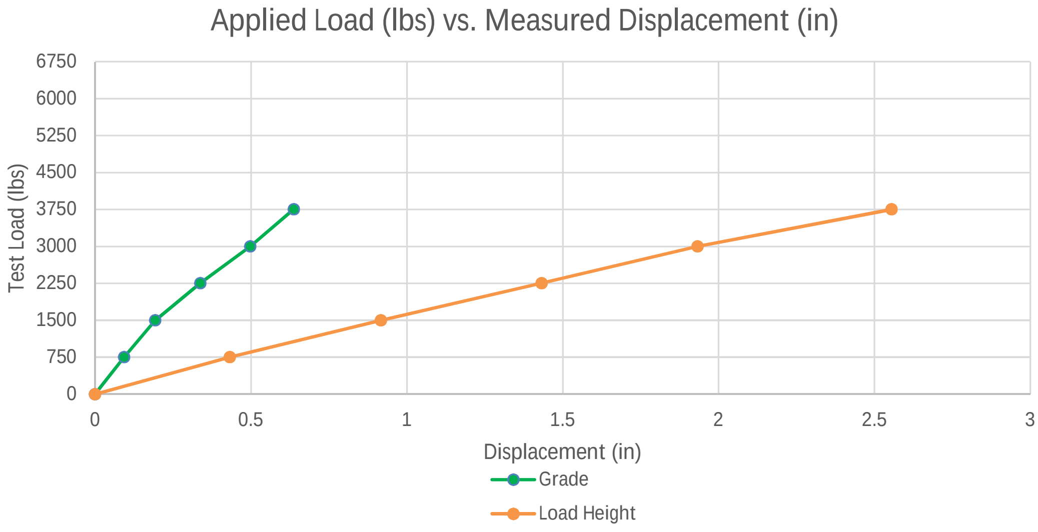


Project:	Badger Mountain	Pile ID:	PLT-B22-6L
Test Date:	2/7/2021	Pile GPS Location:	47.44000 , -120.17947
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Snowy	Pile Drive Time:	20.8 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	4,250	Load Height:	5.0 *feet*
Notes:	4 in displacement at 4250, 4 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.093	0.427	0.093	0.432
1500	0.195	0.848	0.195	0.874
0	0.015	0.126	-	-
1500	0.193	0.916	0.193	0.917
2250	0.337	1.373	0.337	1.432
3000	0.497	1.895	0.497	1.903
0	0.06	0.305	-	-
3000	0.489	1.923	0.498	1.933
3750	0.637	2.472	0.637	2.555
4500				
5250				
6000				
0			-	-



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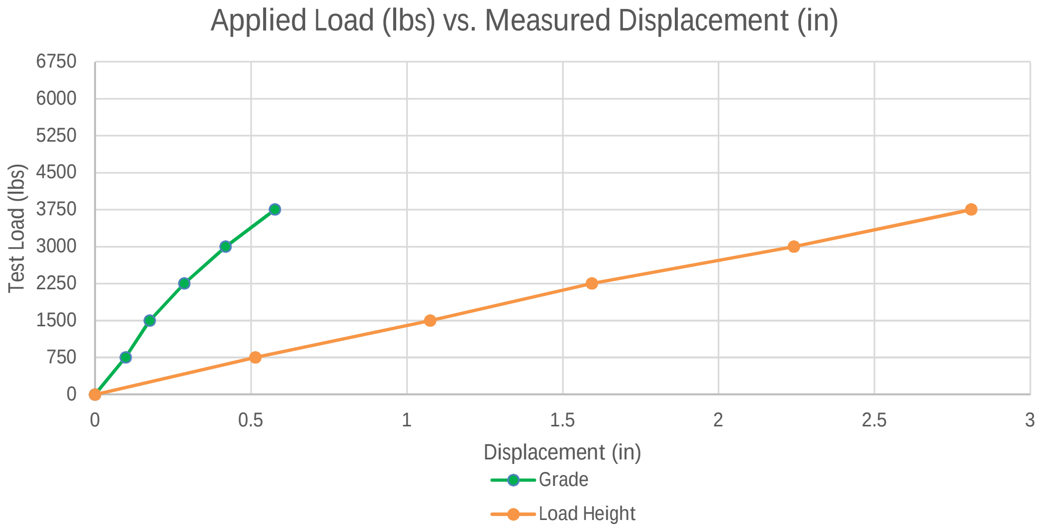
Project:	Badger Mountain	Pile ID:	PLT-B22-8 (R6.625)
Test Date:	2/7/2021	Pile GPS Location:	47.44000 , -120.17947
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Snowy	Pile Drive Time:	76.4 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	6.4 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.6 *feet*
Failure Load*:	N/A	Load Height:	5.0 *feet*
Notes:	4 in displacement at 4500, 4 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.097	0.482	0.098	0.514
1500	0.199	0.987	0.2	1.022
0	0.021	0.199	-	-
1500	0.174	1.074	0.175	1.075
2250	0.283	1.513	0.286	1.594
3000	0.414	2.125	0.418	2.15
0	0.04	0.35	-	-
3000	0.419	2.242	0.419	2.242
3750	0.565	2.768	0.577	2.811
4500				
5250				
6000				
0			-	-

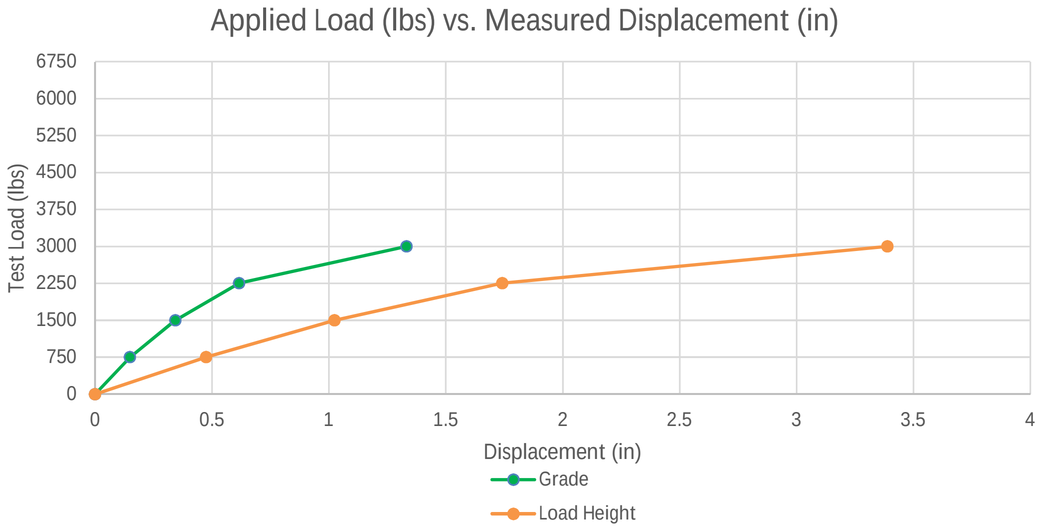


Project:	Badger Mountain	Pile ID:	PLT-B23-6L
Test Date:	2/7/2021	Pile GPS Location:	47.44035 , -120.17298
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Partly Cloudy	Pile Drive Time:	16.3 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	3,600	Load Height:	5.0 *feet*
Notes:	4 in displacement at 3600, 4 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.148	0.475	0.149	0.475
1500	0.317	0.968	0.324	0.979
0	0.08	0.174	-	-
1500	0.342	1.023	0.343	1.024
2250	0.592	1.708	0.615	1.741
3000	1.107	2.983	1.187	3.08
0	0.613	1.303	-	-
3000	1.282	3.384	1.332	3.389
3750				
4500				
5250				
6000				
0			-	-



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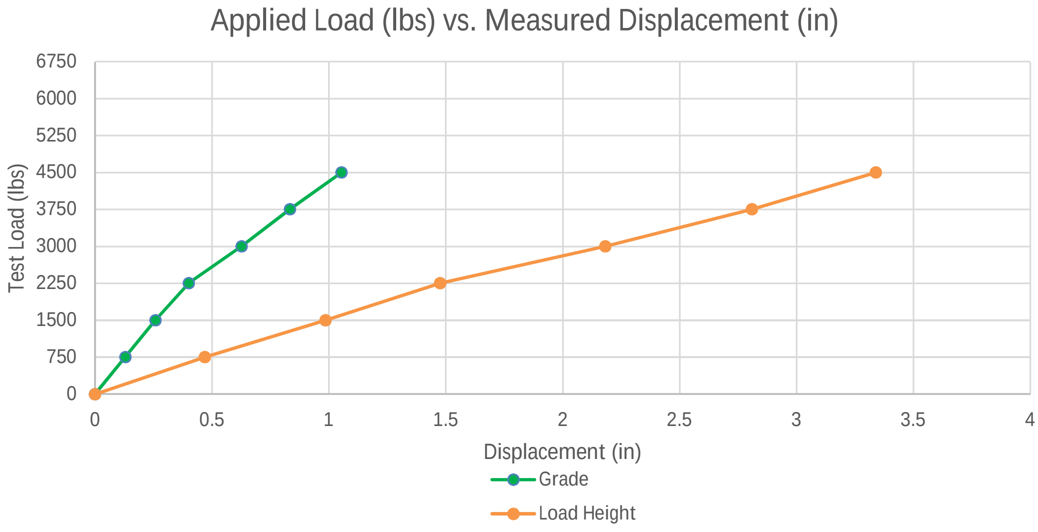
Project:	Badger Mountain	Pile ID:	PLT-B23-8L
Test Date:	2/7/2021	Pile GPS Location:	47.44035 , -120.17298
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Partly Cloudy	Pile Drive Time:	21.9 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
Failure Load*:	4,600	Load Height:	5.0 *feet*
Notes:	4 in displacement at 4600, 4 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.128	0.453	0.129	0.469
1500	0.238	0.888	0.238	0.889
0	0.033	0.116	-	-
1500	0.258	0.983	0.258	0.985
2250	0.39	1.474	0.4	1.476
3000	0.563	2.027	0.58	2.035
0	0.079	0.287	-	-
3000	0.624	2.171	0.626	2.182
3750	0.829	2.803	0.833	2.81
4500	1.023	3.295	1.054	3.34
5250				
6000				
0			-	-

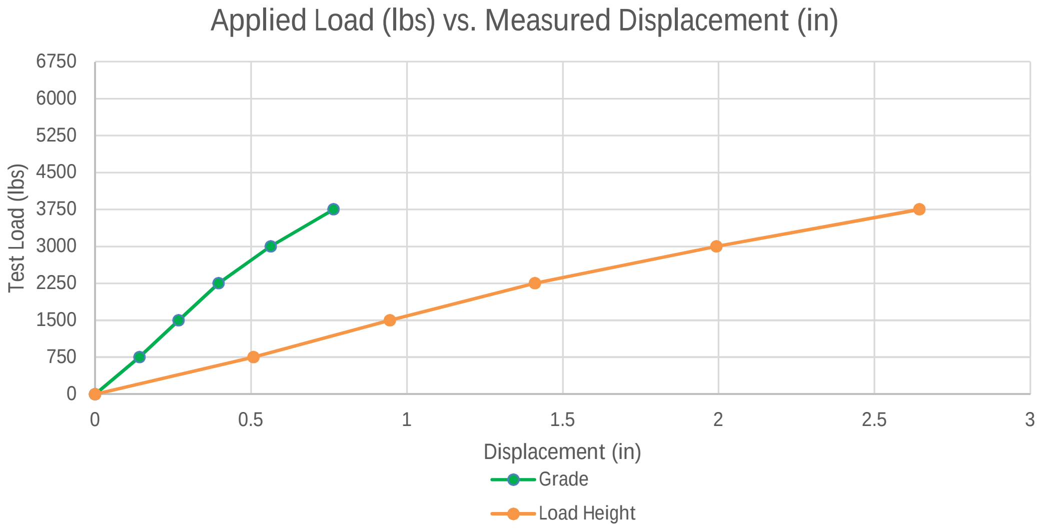


Project:	Badger Mountain	Pile ID:	PLT-B25-6L
Test Date:	2/8/2021	Pile GPS Location:	47.43614 , -120.17050
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Cloudy	Pile Drive Time:	45.2 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	4,225	Load Height:	5.0 *feet*
Notes:	4 in displacement at 4225, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.136	0.506	0.142	0.508
1500	0.267	0.95	0.268	0.957
0	0.024	0.054	-	-
1500	0.268	0.941	0.268	0.945
2250	0.396	1.404	0.396	1.411
3000	0.524	1.852	0.526	1.92
0	0.058	0.149	-	-
3000	0.553	1.96	0.563	1.993
3750	0.762	2.551	0.765	2.644
4500				
5250				
6000				
0			-	-



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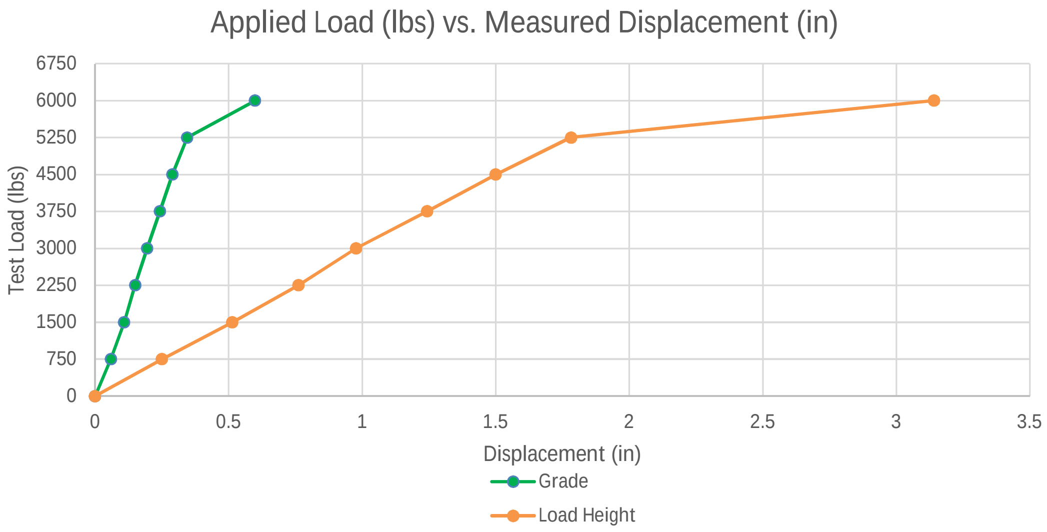
Project:	Badger Mountain	Pile ID:	PLT-B25-8L
Test Date:	2/8/2021	Pile GPS Location:	47.43614 , -120.17050
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Cloudy	Pile Drive Time:	126.3 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
Failure Load*:	N/A	Load Height:	5.0 *feet*
Notes:	5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.058	0.237	0.059	0.25
1500	0.113	0.527	0.113	0.54
0	0.01	0	-	-
1500	0.108	0.505	0.109	0.513
2250	0.152	0.743	0.15	0.761
3000	0.203	1.017	0.205	1.031
0	0.013	0	-	-
3000	0.194	0.961	0.195	0.977
3750	0.241	1.223	0.243	1.243
4500	0.29	1.486	0.29	1.5
5250	0.338	1.774	0.345	1.782
6000	0.539	2.85	0.599	3.141
0	0.259	1.144	-	-

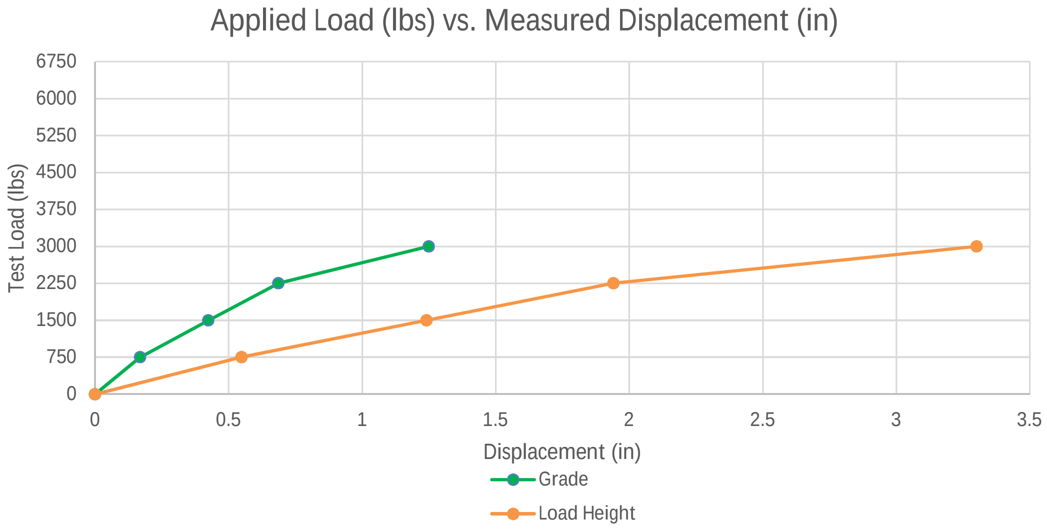


Project:	Badger Mountain	Pile ID:	PLT-B26-6L
Test Date:	2/8/2021	Pile GPS Location:	47.43671 , -120.15950
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Partly Cloudy	Pile Drive Time:	27.0 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	3,500	Load Height:	5.0 *feet*
Notes:	4 in displacement at 3500, 4 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.163	0.529	0.169	0.548
1500	0.384	1.15	0.384	1.183
0	0.086	0.166	-	-
1500	0.423	1.23	0.424	1.241
2250	0.655	1.93	0.686	1.941
3000	1.083	2.929	1.135	3.038
0	0.37	0.737	-	-
3000	1.225	3.202	1.249	3.301
3750				
4500				
5250				
6000				
0			-	-



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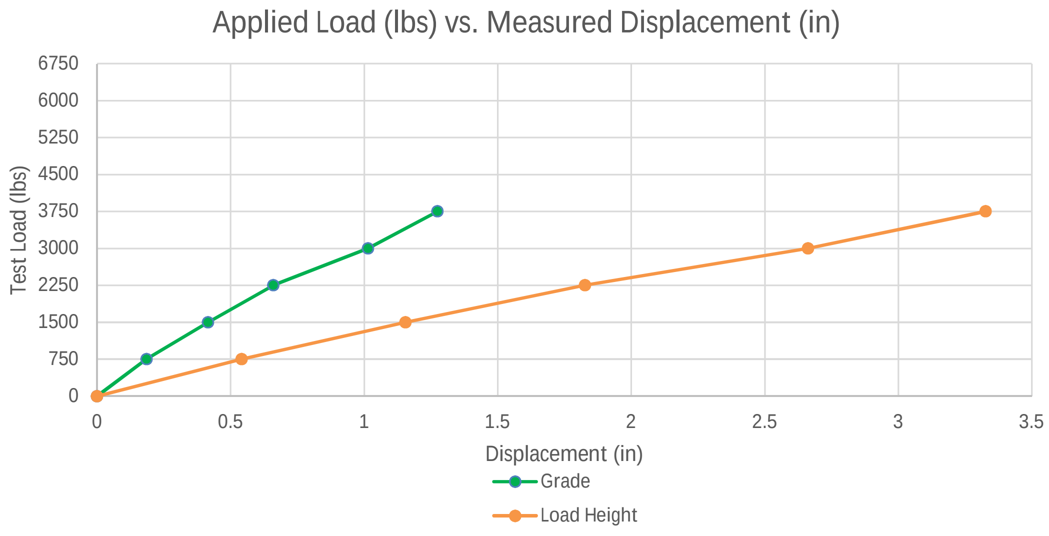
Project:	Badger Mountain	Pile ID:	PLT-B26-8L
Test Date:	2/8/2021	Pile GPS Location:	47.43671 , -120.15950
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Partly Cloudy	Pile Drive Time:	60.3 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
Failure Load*:	4,400	Load Height:	5.0 *feet*
Notes:	4 in displacement at 4400, 4 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.179	0.541	0.185	0.541
1500	0.372	1.067	0.377	1.083
0	0.035	0.057	-	-
1500	0.415	1.141	0.415	1.155
2250	0.646	1.783	0.66	1.827
3000	0.936	2.48	0.948	2.521
0	0.071	0.107	-	-
3000	1.014	2.645	1.015	2.662
3750	1.246	3.303	1.275	3.327
4500				
5250				
6000				
0			-	-



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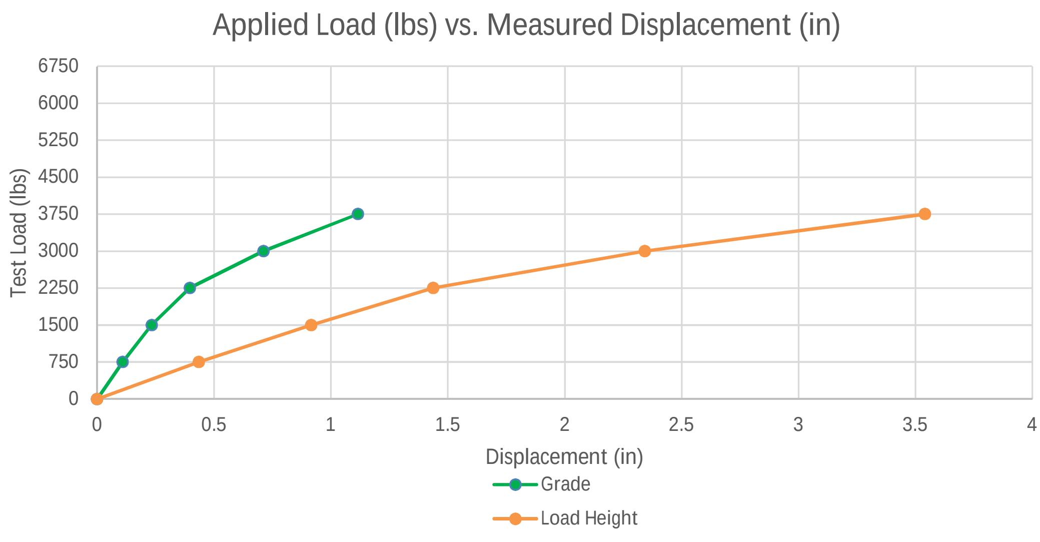
Project:	Badger Mountain	Pile ID:	PLT-B27-6L
Test Date:	2/7/2021	Pile GPS Location:	47.43508 , -120.16346
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Partly Cloudy	Pile Drive Time:	20.9 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	3,850	Load Height:	5.0 *feet*
Notes:	4 in displacement at 3850, 4 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.108	0.435	0.109	0.435
1500	0.214	0.376	0.219	0.848
0	0.026	0.131	-	-
1500	0.231	0.904	0.233	0.915
2250	0.387	1.419	0.396	1.438
3000	0.627	2.113	0.633	2.122
0	0.157	0.477	-	-
3000	0.702	2.339	0.711	2.343
3750	1.08	3.527	1.115	3.541
4500				
5250				
6000				
0			-	-

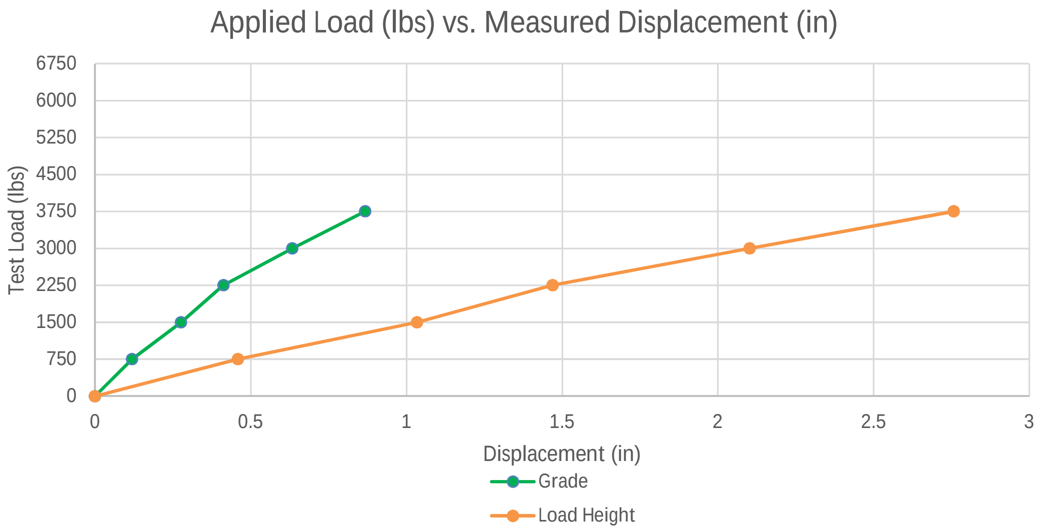


Project:	Badger Mountain	Pile ID:	PLT-B27-8L
Test Date:	2/8/2021	Pile GPS Location:	47.43508 , -120.16346
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Partly Cloudy	Pile Drive Time:	26.6 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
Failure Load*:	4,500	Load Height:	5.0 *feet*
Notes:	4 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.119	0.45	0.119	0.459
1500	0.238	0.906	0.243	0.908
0	0.035	0.136	-	-
1500	0.276	1.026	0.276	1.034
2250	0.412	1.457	0.412	1.469
3000	0.575	1.942	0.58	1.958
0	0.101	0.297	-	-
3000	0.629	2.1	0.633	2.102
3750	0.845	2.711	0.867	2.757
4500	1.36	3.953		
5250				
6000				
0			-	-



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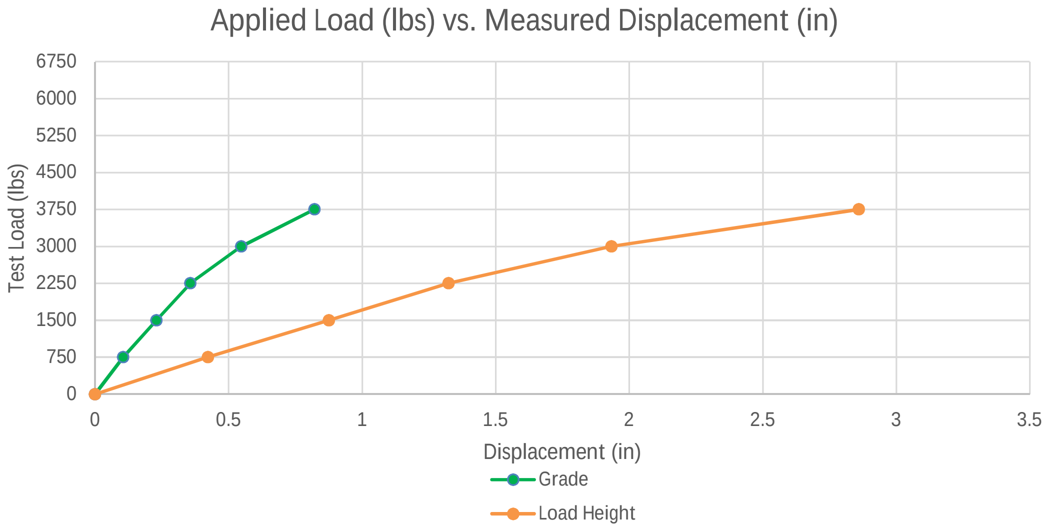
Project:	Badger Mountain	Pile ID:	PLT-B28-6 (R5.58)
Test Date:	2/8/2021	Pile GPS Location:	47.43223 , -120.16621
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Snowy	Pile Drive Time:	201.9 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.4 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	5.6 *feet*
Failure Load*:	4,000	Load Height:	5.0 *feet*
Notes:	4 in displacement at 4000, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.105	0.418	0.105	0.422
1500	0.214	0.822	0.223	0.855
0	0.024	0.068	-	-
1500	0.229	0.867	0.229	0.875
2250	0.356	1.319	0.357	1.324
3000	0.505	1.824	0.514	1.855
0	0.077	0.21	-	-
3000	0.547	1.921	0.547	1.933
3750	0.791	2.84	0.821	2.86
4500				
5250				
6000				
0			-	-



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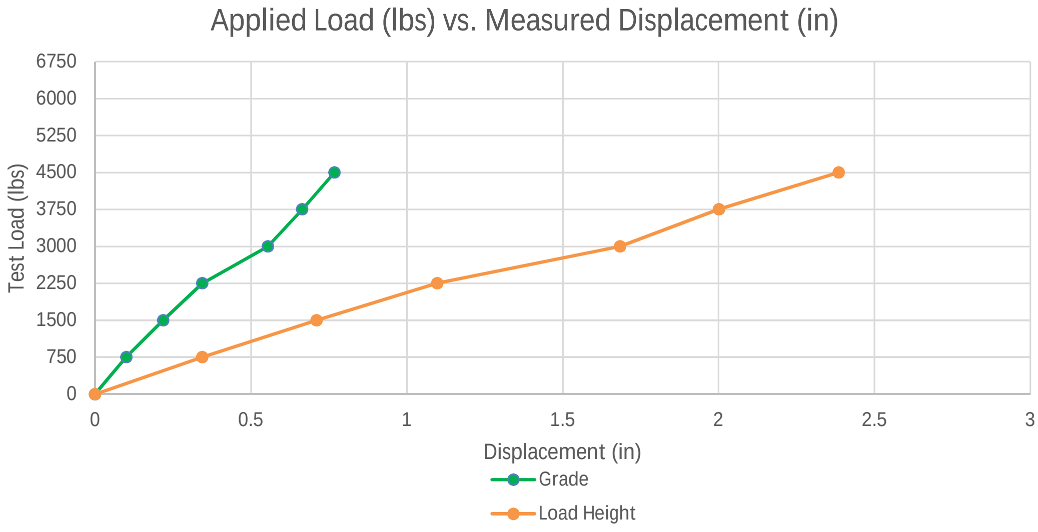
Project:	Badger Mountain	Pile ID:	PLT-B28-8 (R6.25)
Test Date:	2/8/2021	Pile GPS Location:	47.43223 , -120.16621
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Snowy	Pile Drive Time:	153.9 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	6.8 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.3 *feet*
Failure Load*:	5,250	Load Height:	5.0 *feet*
Notes:	Continues displacement at 5250, 5 in frost remove	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.099	0.342	0.1	0.344
1500	0.205	0.684	0.205	0.691
0	0.043	0.074	-	-
1500	0.218	0.702	0.218	0.71
2250	0.343	1.084	0.344	1.097
3000	0.456	1.437	0.456	1.45
0	0.08	0.124	-	-
3000	0.538	1.681	0.554	1.684
3750	0.664	1.989	0.664	2.001
4500	0.762	2.315	0.768	2.385
5250				
6000				
0			-	-

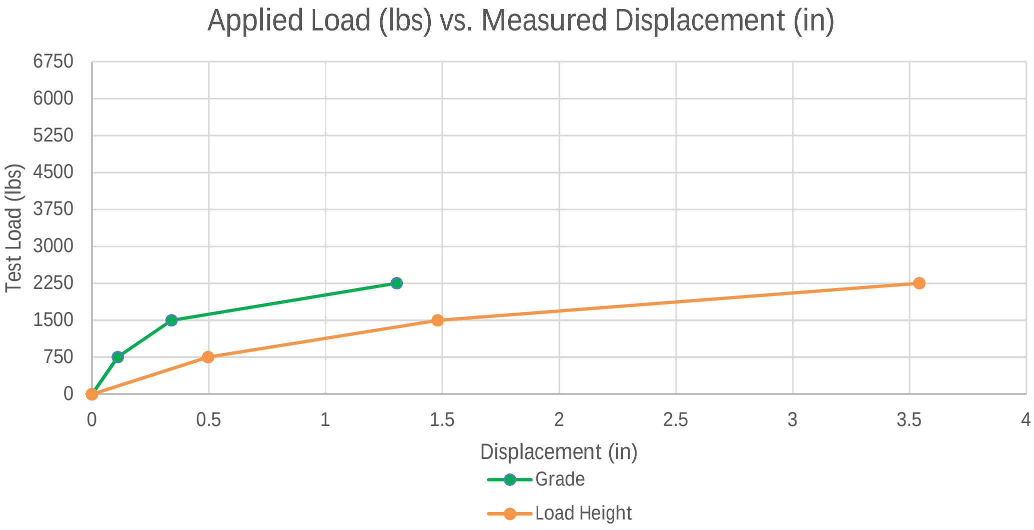


Project:	Badger Mountain	Pile ID:	PLT-B29-6L
Test Date:	2/8/2021	Pile GPS Location:	47.43225 , -120.15670
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Snowy	Pile Drive Time:	14.9 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
Failure Load*:	2,500	Load Height:	5.0 *feet*
Notes:	4 in displacement at 2500, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.11	0.494	0.11	0.496
1500	0.311	1.309	0.314	1.309
0	0.009	0.335	-	-
1500	0.34	1.452	0.341	1.48
2250	1.235	3.396	1.304	3.542
3000				
0			-	-
3000				
3750				
4500				
5250				
6000				
0			-	-

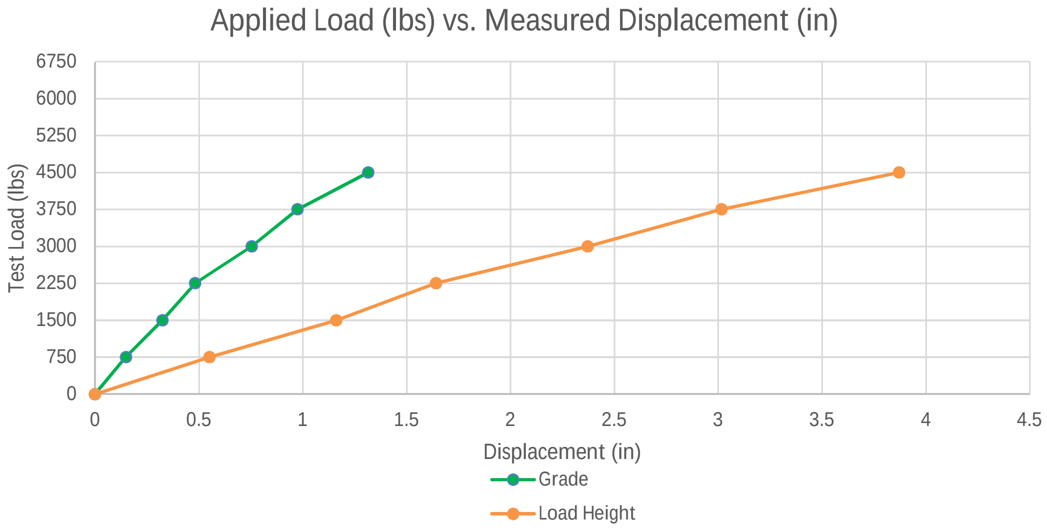


Project:	Badger Mountain	Pile ID:	PLT-B29-8L
Test Date:	2/8/2021	Pile GPS Location:	47.43225 , -120.15670
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Snowy	Pile Drive Time:	30.2 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	8.0 *feet*
Failure Load*:	4,600	Load Height:	5.0 *feet*
Notes:	4 in displacement at 4600, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.147	0.551	0.148	0.551
1500	0.275	0.989	0.285	1.028
0	0.027	0.111	-	-
1500	0.323	1.15	0.324	1.161
2250	0.481	1.632	0.482	1.641
3000	0.707	2.273	0.712	2.283
0	0.091	0.231	-	-
3000	0.753	2.364	0.754	2.372
3750	0.97	2.984	0.975	3.016
4500	1.295	3.87	1.315	3.871
5250				
6000				
0			-	-

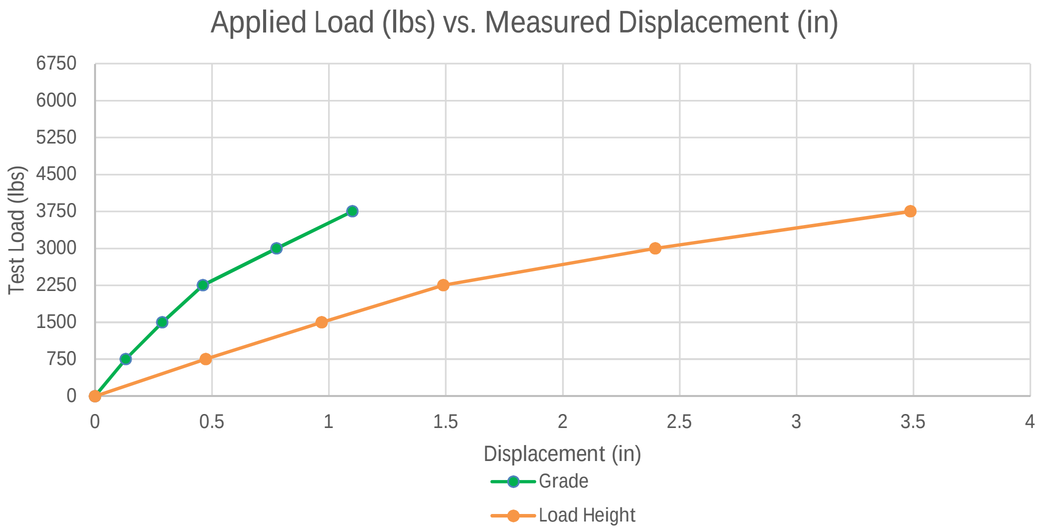


Project:	Badger Mountain	Pile ID:	PLT-B30-6 (R4.75)
Test Date:	2/8/2021	Pile GPS Location:	47.42851 , -120.15621
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Snowy	Pile Drive Time:	122.0 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	6.3 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	4.8 *feet*
Failure Load*:	3,800	Load Height:	5.0 *feet*
Notes:	4 in displacement at 3800, 5 in frost removed	Load Test Type:	Lateral

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750	0.131	0.473	0.131	0.473
1500	0.262	0.901	0.263	0.902
0	0.019	0.039	-	-
1500	0.285	0.966	0.287	0.969
2250	0.445	1.454	0.461	1.49
3000	0.707	2.206	0.725	2.284
0	0.161	0.374	-	-
3000	0.774	2.357	0.776	2.396
3750	1.095	3.339	1.1	3.488
4500				
5250				
6000				
0			-	-

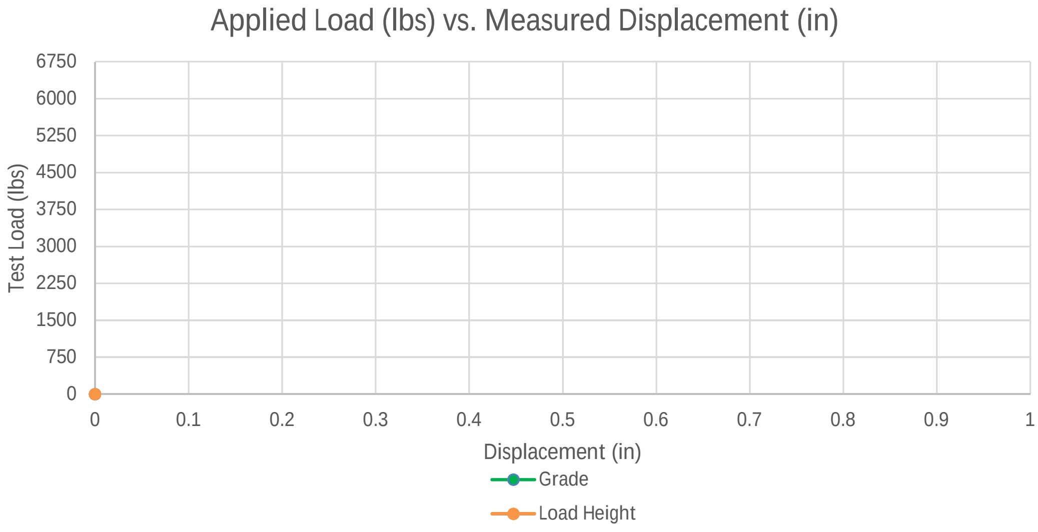


Project:	Badger Mountain	Pile ID:	PLT-B30-8 (R5.0)
Test Date:		Pile GPS Location:	47.42851 , -120.15621
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Snowy	Pile Drive Time:	163.3 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	13.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	7.8 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	5.0 *feet*
Failure Load*:	N/A	Load Height:	5.0 *feet*
Notes:	Within 3 inches of 6 foot post, not tested due to redundancy.		

*Failure Load is load at which displacement exceeds capacity of gauge (4 in)

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Grade	Load Height	Grade	Load Height
0	0	0	-	-
750				
1500				
0			-	-
1500				
2250				
3000				
0			-	-
3000				
3750				
4500				
5250				
6000				
0			-	-



Appendix 6

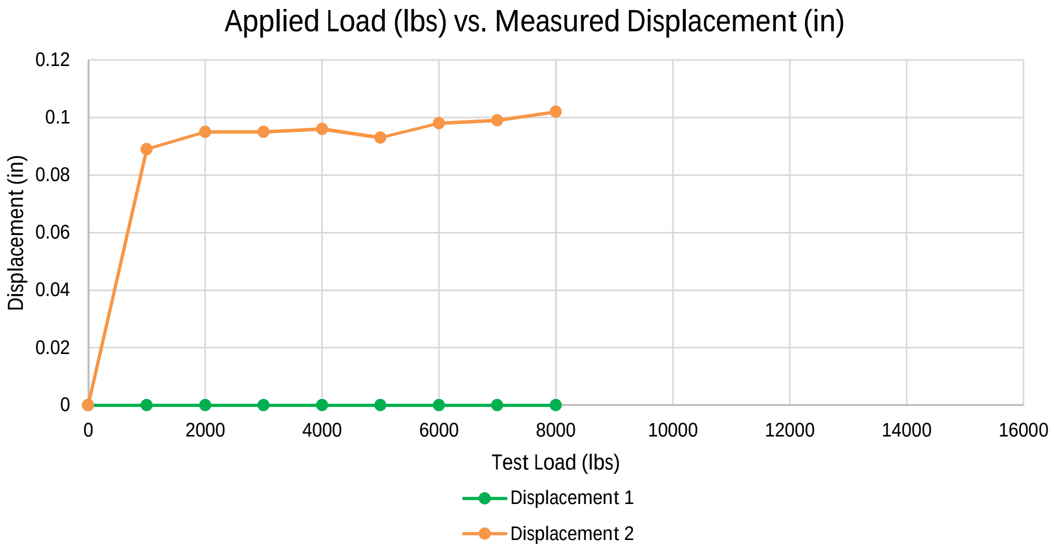
Axial Compression Pile Load Testing Data

Project:	Badger Mountain	Pile ID:	PLT-B1-5 (R4.8)
Test Date:	2/5/2021	Pile GPS Location:	47.47411 , -120.21166
Testing Phase:	Design	Pile Install Date:	2/2/2021
Test Weather:	Clear	Pile Drive Time:	33.1 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	6.2 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	4.8 *feet*
CD* Load:	8,500	Load Height:	5.0 *feet*
Notes:	Disp #1 Malfunction	Load Test Type:	Compression

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0	0.089	0	0.089
2000	0	0.095	0	0.095
3000	0	0.095	0	0.095
4000	0	0.096	0	0.096
5000	0	0.093	0	0.093
6000	0	0.098	0	0.098
7000	0	0.099	0	0.099
8000	0	0.102	0	0.102
9000				
10000				
11000				
12000				
13000				
14000				
15000				

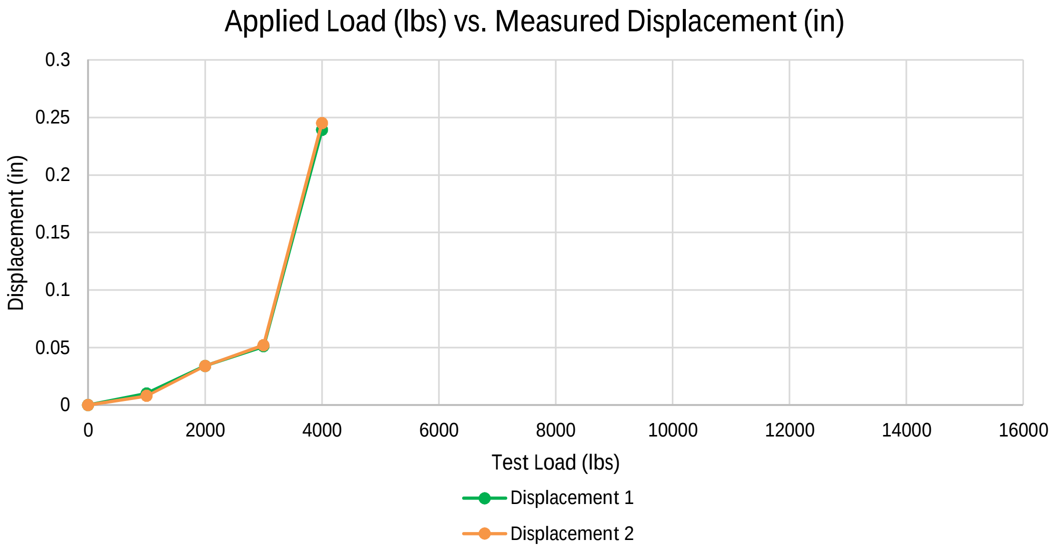


Project:	Badger Mountain	Pile ID:	PLT-B4-6C
Test Date:	2/8/2021	Pile GPS Location:	47.46882 , -120.19183
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Cloudy	Pile Drive Time:	16.0 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	5,400	Load Height:	5.0 *feet*
Notes:		Load Test Type:	Compression

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.009	0.008	0.01	0.008
2000	0.034	0.034	0.034	0.034
3000	0.045	0.049	0.051	0.052
4000	0.166	0.175	0.239	0.245
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				

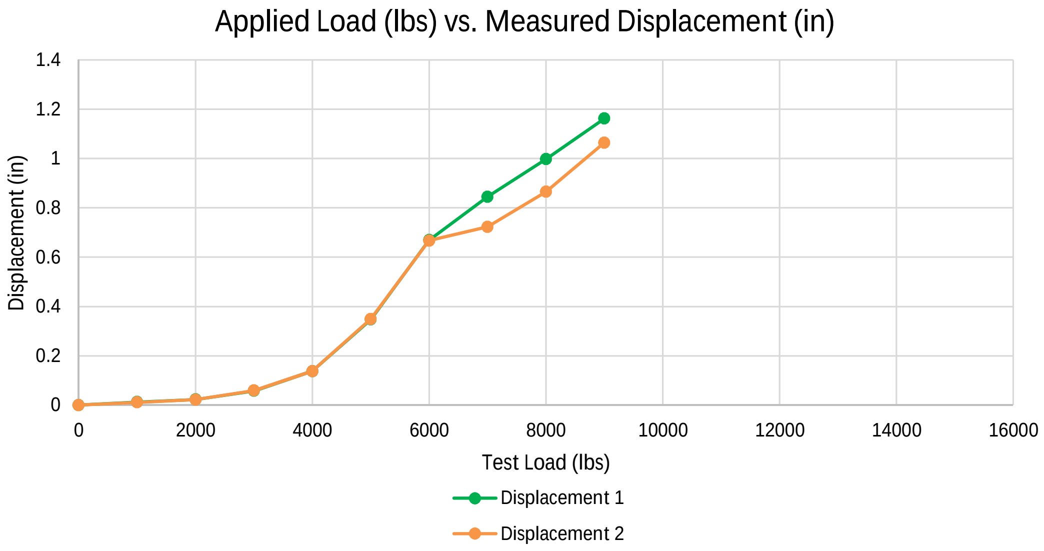


Project:	Badger Mountain	Pile ID:	PLT-B6-6C
Test Date:	2/5/2021	Pile GPS Location:	47.46694 , -120.20563
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	12.1 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	10.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	4.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	6,900	Load Height:	5.0 *feet*
Notes:		Load Test Type:	Compression

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.0125	0.0115	0.0125	0.0115
2000	0.023	0.022	0.023	0.0225
3000	0.056	0.055	0.058	0.059
4000	0.135	0.137	0.138	0.138
5000	0.309	0.312	0.347	0.349
6000	0.621	0.625	0.669	0.667
7000	0.826	0.723	0.845	0.723
8000	0.98	0.86	0.997	0.865
9000	1.151	1.056	1.162	1.064
10000				
11000				
12000				
13000				
14000				
15000				

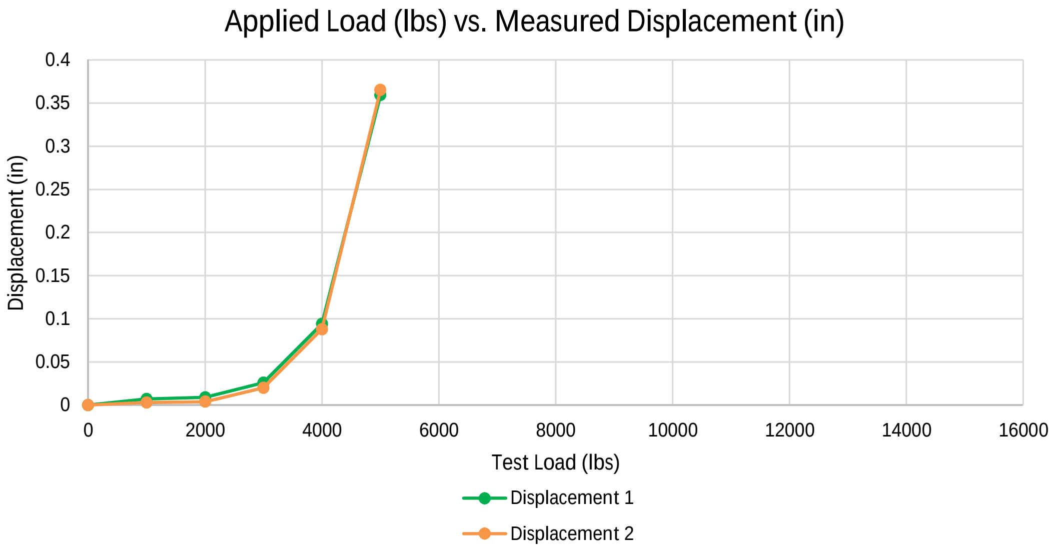


Project:	Badger Mountain	Pile ID:	PLT-B9-6C
Test Date:	2/5/2021	Pile GPS Location:	47.45897 , -120.20017
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	18.5 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	5,800	Load Height:	5.0 *feet*
Notes:		Load Test Type:	Compression

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.007	0.003	0.007	0.003
2000	0.009	0.004	0.009	0.004
3000	0.025	0.02	0.026	0.02
4000	0.091	0.087	0.094	0.088
5000	0.335	0.347	0.359	0.365
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				



Westwood
Multi-Disciplined Surveying & Engineering

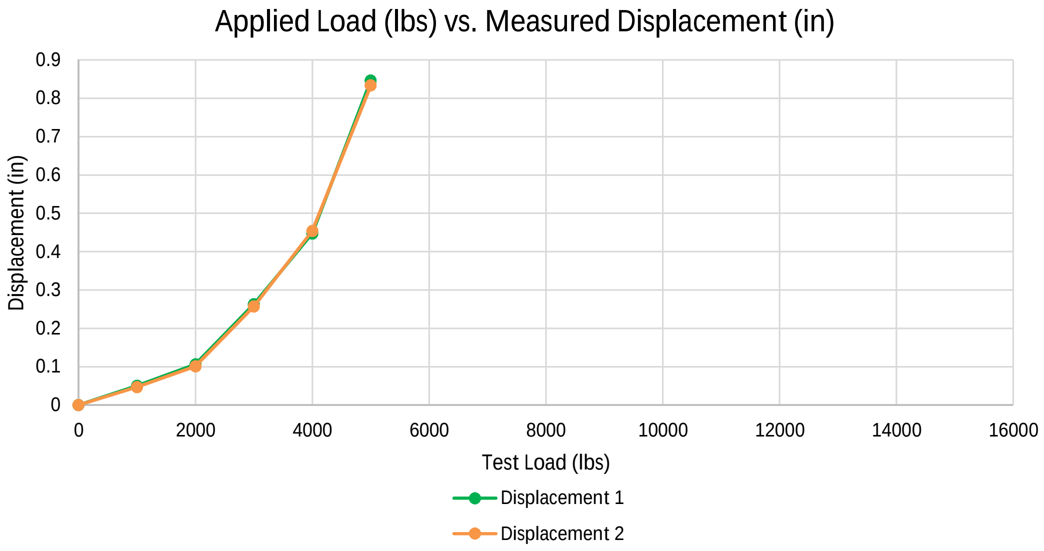
12701 Whitewater Drive, Suite 300
Minnetonka, MN 55343
westwoodps.com
(888) 937-5150

Project:	Badger Mountain	Pile ID:	PLT-B10-6C
Test Date:		Pile GPS Location:	47.45744 , -120.19266
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:		Pile Drive Time:	13.9 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	N/A	Load Height:	5.0 *feet*
Notes:		Load Test Type:	Compression

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.049	0.047	0.05	0.047
2000	0.104	0.099	0.106	0.101
3000	0.249	0.243	0.263	0.257
4000	0.442	0.436	0.447	0.454
5000	0.815	0.828	0.846	0.833
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				



Westwood
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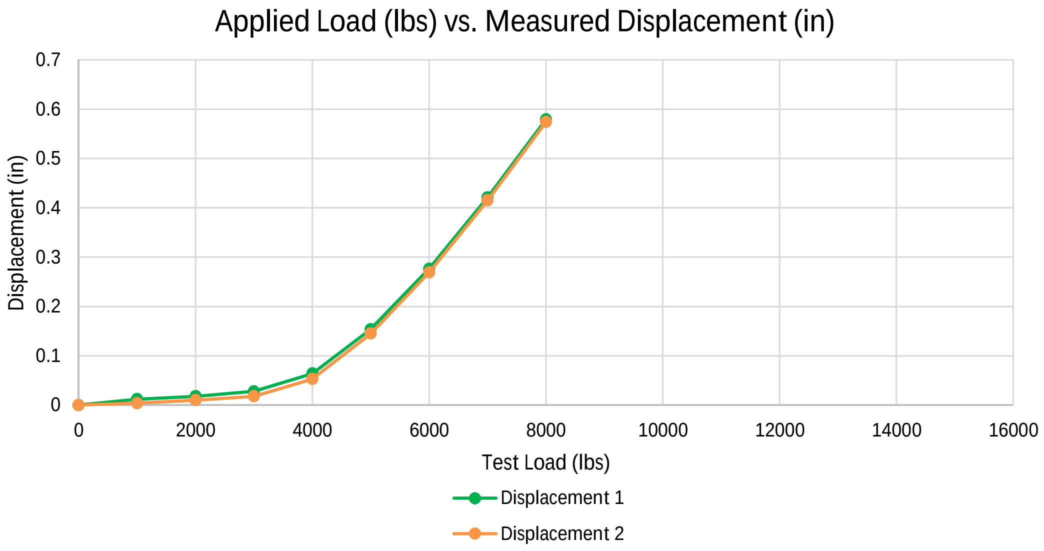
12701 Whitewater Drive, Suite 300
Minnetonka, MN 55343
westwoodps.com
(888) 937-5150

Project:	Badger Mountain	Pile ID:	PLT-B11-6C
Test Date:	2/6/2021	Pile GPS Location:	47.45401 , -120.19491
Testing Phase:	Design	Pile Install Date:	2/3/2021
Test Weather:	Clear	Pile Drive Time:	20.6 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	9,000	Load Height:	5.0 *feet*
Notes:		Load Test Type:	Compression

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.012	0.004	0.012	0.004
2000	0.017	0.009	0.018	0.01
3000	0.026	0.017	0.028	0.018
4000	0.061	0.051	0.064	0.053
5000	0.143	0.141	0.154	0.145
6000	0.264	0.263	0.276	0.269
7000	0.414	0.407	0.421	0.415
8000	0.551	0.559	0.579	0.574
9000				
10000				
11000				
12000				
13000				
14000				
15000				



Westwood
Multi-Disciplined Surveying & Engineering

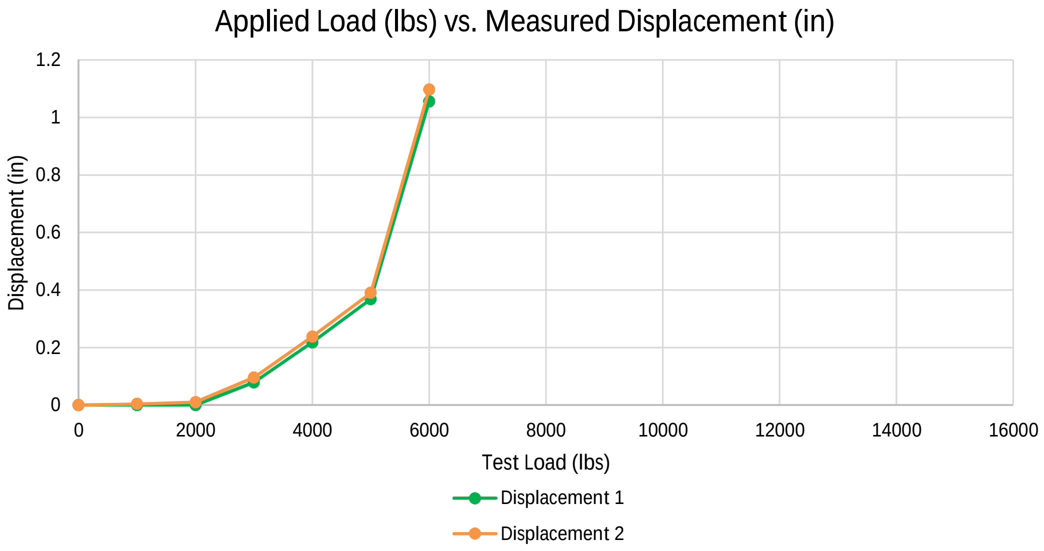
12701 Whitewater Drive, Suite 300
Minnetonka, MN 55343
westwoodps.com
(888) 937-5150

Project:	Badger Mountain	Pile ID:	PLT-B17-6C
Test Date:	2/7/2021	Pile GPS Location:	47.44874 , -120.18477
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Partly Cloudy	Pile Drive Time:	11.6 *seconds*
Technician:	Shelby Kellogg	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	N/A	Load Height:	5.0 *feet*
Notes:		Load Test Type:	Compression

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0	0.004	0	0.004
2000	0	0.01	0	0.01
3000	0.078	0.096	0.079	0.096
4000	0.205	0.237	0.218	0.238
5000	0.365	0.388	0.368	0.39
6000	0.964	0.994	1.055	1.096
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				

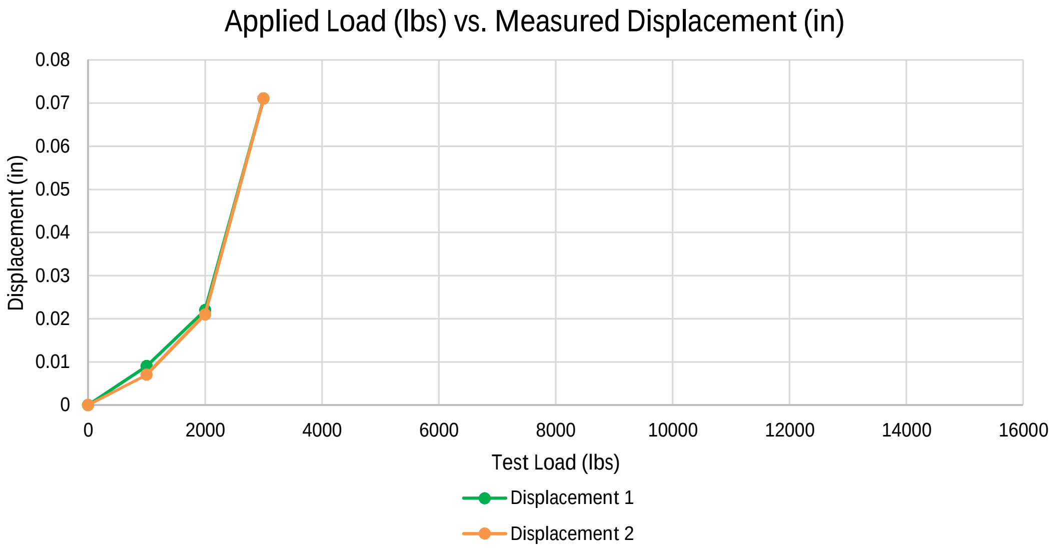


Project:	Badger Mountain	Pile ID:	PLT-B20-6C
Test Date:	2/7/2021	Pile GPS Location:	47.44430 , -120.17794
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Clear	Pile Drive Time:	14.2 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	4,000	Load Height:	5.0 *feet*
Notes:		Load Test Type:	Compression

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.009	0.006	0.009	0.007
2000	0.022	0.021	0.022	0.021
3000	0.07	0.07	0.071	0.071
4000				
5000				
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				

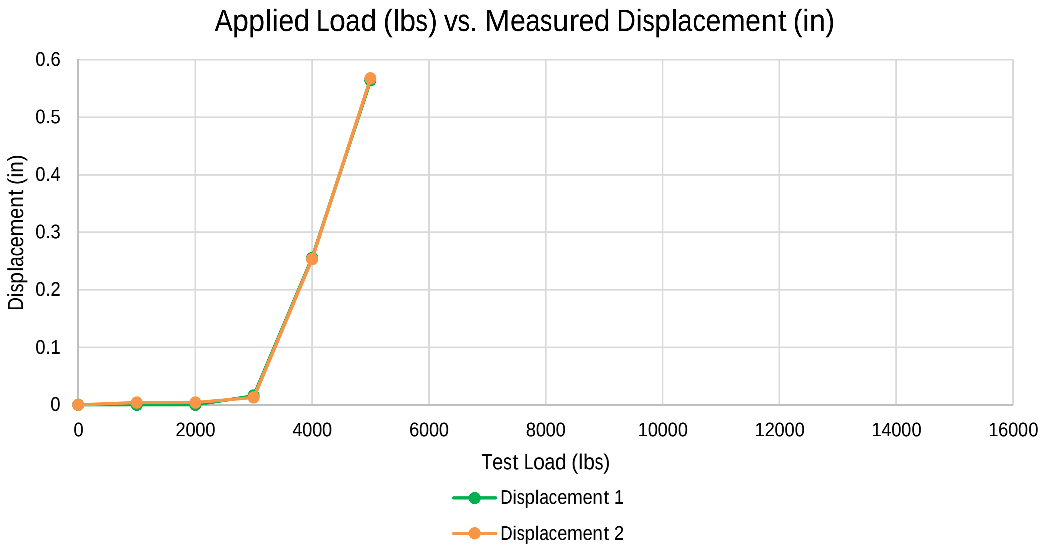


Project:	Badger Mountain	Pile ID:	PLT-B23-6C
Test Date:	2/7/2021	Pile GPS Location:	47.44035 , -120.17298
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Partly Cloudy	Pile Drive Time:	16.5 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	6,000	Load Height:	5.0 *feet*
Notes:		Load Test Type:	Compression

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0	0.004	0	0.004
2000	0	0.004	0	0.004
3000	0.012	0.01	0.016	0.013
4000	0.25	0.248	0.255	0.253
5000	0.54	0.541	0.564	0.567
6000				
7000				
8000				
9000				
10000				
11000				
12000				
13000				
14000				
15000				

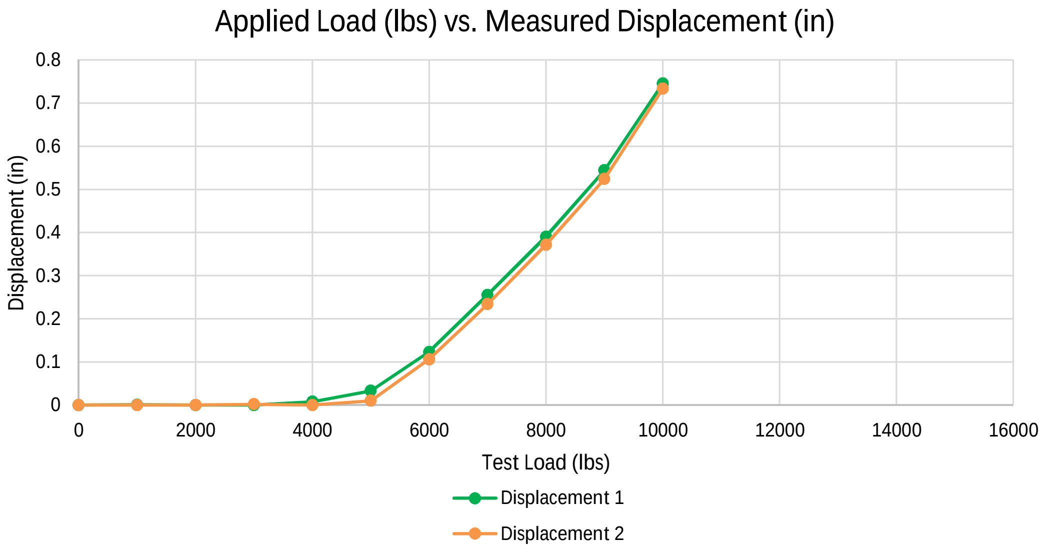


Project:	Badger Mountain	Pile ID:	PLT-B27-6C
Test Date:	2/8/2021	Pile GPS Location:	47.43508 , -120.16346
Testing Phase:	Design	Pile Install Date:	2/4/2021
Test Weather:	Partly Cloudy	Pile Drive Time:	18.4 *seconds*
Technician:	Ben Pierce	Pile Type:	W6x9
Load ID:	10555	Pile Length:	11.0 *feet*
Disp #1 ID:	17B0326	Pile Stick-up:	5.0 *feet*
Disp #2 ID:	WW-DISP-4E-1	Pile Embedment:	6.0 *feet*
CD* Load:	11,000	Load Height:	5.0 *feet*
Notes:		Load Test Type:	Compression

*Continuous displacement defined as continuous movement under a certain load until pile exceeds 1 inch of displacement.

Applied Load (lbs) vs. Measured Displacement (in)

Test Load (lbs)	Disp @ 0 min (in)		Disp @ 1 min (in)	
	Disp #1	Disp #2	Disp #1	Disp #2
0	0	0	0	0
1000	0.001	0	0.001	0
2000	0	0	0	0
3000	0	0.002	0	0.002
4000	0.008	0	0.008	0
5000	0.032	0.009	0.033	0.01
6000	0.12	0.098	0.123	0.106
7000	0.245	0.228	0.255	0.234
8000	0.376	0.365	0.39	0.371
9000	0.534	0.521	0.544	0.524
10000	0.705	0.706	0.745	0.733
11000				
12000				
13000				
14000				
15000				



Appendix 7

Pile and Testing Equipment Calibrations

Certificate of Calibration

Certificate #: 2510970

Calibration Performed By:
MARTIN CALIBRATION, INC.
11965 12TH AVENUE SOUTH
BURNSVILLE, MN 55337

For:
WESTWOOD PROFESSIONAL SERVICES
12701 WHITEWATER DRIVE, SUITE 300
EDEN PRAIRIE, MN 55334

Serial Number:	17B0326	Gage I.D.:	17B0326
Description:	INDICATOR, DIGITAL		
Manufacturer:	IGAGING	Performed By:	THUY HOANG
Model:	35-955-99	Procedure:	SCP-150-0006
Size:	0-4 INCH	Cal Date:	06 Aug 2020
Temp./RH:	68 F / 33 %	Due Date:	06 Aug 2021

Actual Measured Values Found to Be:
WITHIN NOMINAL TOLERANCE

Comments:

Test Points

Description	UUT Reading	Tolerance -	Tolerance +	As Found	Final	Unit
Linearity	0.0000	-0.0010	0.0010	0.0000	0.0000	in
	0.1000	0.0990	0.1010	0.1000	0.1000	in
	0.2500	0.2490	0.2510	0.2500	0.2500	in
	0.5000	0.4990	0.5010	0.5000	0.5000	in
	0.7500	0.7490	0.7510	0.7500	0.7500	in
	1.0000	0.9990	1.0010	1.0000	1.0000	in
	2.0000	1.9990	2.0010	2.0000	2.0000	in
	3.0000	2.9990	3.0010	3.0000	3.0000	in
	4.0000	3.9990	4.0010	4.0005	4.0005	in

Decision Rule applied: Simple Acceptance; statements of compliance to specifications do not consider measurement uncertainty.

Standards Used To Calibrate Equipment:

Serial Number	Gage ID	Manufacturer	Model	Last Calibration	Due for Calibration
350635	MI-150-507	MITUTOYO	0	30 Sep 2019	30 Sep 2020
708022	MI-150-555	MITUTOYO	7004	04 Aug 2020	31 Aug 2021

Uncertainty in measurement: (5 + 8L) µin

REFERENCE: ANSI/ASME B89.1.10(M)

NOTE: Verified hysteresis & repeatability in accordance with ANSI/ASME B89.1.10(M)

The above instrument was calibrated by standards traceable to the International System of Units (SI) through the National Institute of Standards & Technology (NIST) or other National Measurement Institute (NMI) per the guidelines specified in the latest revisions of ANSI/NCSL Z540-1 and ISO/IEC 17025. All measurement uncertainties calculated at a 95% Confidence Level (k=2). All test points have a Test Uncertainty Ratio (TUR) of 4:1 or better unless otherwise noted. The results indicated on this certificate relate only to the items calibrated. This certificate shall not be reproduced, except in full, without the written approval of Martin Calibration. Martin Calibration's responsibility shall in no event, nor for any cause whatsoever, exceed the purchase price of this certificate.

Quality Assurance Representative: Mai Vang

ilac-MRA

ANAB ACCREDITED ISO/IEC 17025 CALIBRATION LABORATORY ACT-1265

ACCREDITED CALIBRATION LABORATORY

Martin Calibration *"Your Partner in Quality"*

Certificate of Calibration

Certificate #:2429117

Calibration Performed By:
MARTIN CALIBRATION, INC.
11965 12TH AVENUE SOUTH
BURNSVILLE, MN 55337

For:
WESTWOOD PROFESSIONAL SERVICES
12701 WHITEWATER DRIVE, SUITE 300
EDEN PRAIRIE, MN 55334

Serial Number:	17B0766	Gage I.D.:	WW-DISP-4E-1
Description:	INDICATOR, DIGITAL		
Manufacturer:	IGAGING	Performed By:	JON RANALLO
Model:	35-999-99	Procedure:	SCP-150-0006
Size:	0-4 INCH	Cal Date:	30 Mar 2020
Temp./RH:	69 F / 28 %	Due Date:	30 Mar 2021

Actual Measured Values Found to Be:
WITHIN NOMINAL TOLERANCE

Comments: Replaced battery

Test Points

Description	UUT Reading	Tolerance -	Tolerance +	As Found	Final	Unit
Linearity	0.0000	-0.0010	0.0010	0.0000	0.0000	in
	0.1000	0.0990	0.1010	0.1000	0.1000	in
	0.2500	0.2490	0.2510	0.2502	0.2502	in
	0.5000	0.4990	0.5010	0.5000	0.5000	in
	0.7500	0.7490	0.7510	0.7499	0.7499	in
	1.0000	0.9990	1.0010	1.0001	1.0001	in
	2.0000	1.9990	2.0010	1.9997	1.9997	in
	3.0000	2.9990	3.0010	2.9990	2.9990	in
	4.0000	3.9990	4.0010	3.9995	3.9995	in

Decision Rule applied: Simple Acceptance; statements of compliance to specifications do not consider measurement uncertainty.

Standards Used To Calibrate Equipment:

Serial Number	Gage ID	Manufacturer	Model	Last Calibration	Due for Calibration
1022.	MI-150-584	FOWLER	TULM 210	02 Dec 2019	31 Dec 2020

Uncertainty in measurement: (5 + 8L) µin

REFERENCE: ANSI/ASME B89.1.10(M)

NOTE: Verified hysteresis & repeatability in accordance with ANSI/ASME B89.1.10(M)

The above instrument was calibrated by standards traceable to the International System of Units (SI) through the National Institute of Standards & Technology (NIST) or other National Measurement Institute (NMI) per the guidelines specified in the latest revisions of ANSI/NCSL Z540-1 and ISO/IEC 17025. All measurement uncertainties calculated at a 95% Confidence Level (k=2). All test points have a Test Uncertainty Ratio (TUR) of 4:1 or better unless otherwise noted. The results indicated on this certificate relate only to the items calibrated. This certificate shall not be reproduced, except in full, without the written approval of Martin Calibration. Martin Calibration's responsibility shall in no event, nor for any cause whatsoever, exceed the purchase price of this certificate. 3

Quality Assurance Representative: Nicholas House

ilac-MRA

ANAB ACCREDITED ISO/IEC 17025 CALIBRATION LABORATORY ACT-1265

ACCREDITED CALIBRATION LABORATORY

Martin Calibration *"Your Partner in Quality"*

Certificate of Calibration

Certificate #: 2431547

Calibration Performed By:
MARTIN CALIBRATION, INC.
11965 12TH AVENUE SOUTH
BURNSVILLE, MN 55337

For:
WESTWOOD PROFESSIONAL SERVICES
12701 WHITEWATER DRIVE, SUITE 300
EDEN PRAIRIE, MN 55334

Serial Number:	10555	Gage I.D.:	WW-LDCELL-5TW24K-1
Description:	WIRELESS LOADCELL WITH HANDHELD INDICATOR		
Manufacturer:	MSL OILFIELD SERVICES	Performed By:	PAUL ROBERTSON
Model:	WLL12T	Procedure:	SCP-110-0007
Range:	24000 LBF	Cal Date:	02 Apr 2020
Temp./RH:	70 F / 25 %	Due Date:	02 Apr 2021

Actual Measured Values Found to Be:
WITHIN NOMINAL TOLERANCE

Comments:

Test Points

Description	Nominal	Tolerance -	Tolerance +	As Found	Final	Unit	TUR
Tension	2400	2376	2424	2396	2396	lbf	
	4800	4752	4848	4804	4804	lbf	
	7200	7128	7272	7212	7212	lbf	
	9600	9504	9696	9628	9628	lbf	
	12000	11880	12120	12024	12024	lbf	
	14400	14256	14544	14417	14417	lbf	
	16800	16632	16968	16816	16816	lbf	
	19200	19008	19392	19217	19217	lbf	
	21600	21384	21816	21626	21626	lbf	
	24000	23760	24240	24026	24026	lbf	

Decision Rule applied: Simple Acceptance; statements of compliance to specifications do not consider measurement uncertainty.

Standards Used To Calibrate Equipment:

Serial Number	Gage ID	Manufacturer	Model	Last Calibration	Due for Calibration
426726	MI-110-075	INTERFACE	1620AJH-25K	13 Mar 2020	31 Mar 2021
88345	MI-110-133	INTERFACE	9840-200-1-T	04 Jun 2019	30 Jun 2020

Uncertainty in measurement: 0.04 % of value

The above instrument was calibrated by standards traceable to the International System of Units (SI) through the National Institute of Standards & Technology (NIST) or other National Measurement Institute (NMI) per the guidelines specified in the latest revisions of ANSI/NCSL Z540-1 and ISO/IEC 17025. All measurement uncertainties calculated at a 95% Confidence Level (k=2). All test points have a Test Uncertainty Ratio (TUR) of 4:1 or better unless otherwise noted. The results indicated on this certificate relate only to the items calibrated. This certificate shall not be reproduced, except in full, without the written approval of Martin Calibration. Martin Calibration's responsibility shall in no event, nor for any cause whatsoever, exceed the purchase price of this certificate. 3

Quality Assurance Representative:

ilac-MRA

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ISO/IEC 17025
CALIBRATION LABORATORY
ACT-1265

ACCREDITED CALIBRATION LABORATORY

Martin Calibration *"Your Partner in Quality"*

Certificate #: 2431487

Certificate of Calibration

Calibration Performed By:
MARTIN CALIBRATION, INC.
11965 12TH AVENUE SOUTH
BURNSVILLE, MN 55337

For:
WESTWOOD PROFESSIONAL SERVICES
12701 WHITEWATER DRIVE, SUITE 300
EDEN PRAIRIE, MN 55334

Serial Number:	30845	Gage I.D.:	30845
Description:	WIRELESS LOADCELL WITH BLUETOOTH		
Manufacturer:	STRAIGHTPOINT	Performed By:	PAUL ROBERTSON
Model:	WNI10TCU-BLE	Procedure:	SCP-110-0004
Range:	0 - 22000 LBF	Cal Date:	02 Apr 2020
Temp./RH:	70 F / 25 %	Due Date:	02 Apr 2021

Actual Measured Values Found to Be:
REPORT OF VALUE

Comments: ROV, per customer.

Test Points

Description	Nominal	Tolerance -	Tolerance +		As Found	Final	Unit	TUR
Compression	2200	2178	2222		2206	2206	lbf	
	4400	4378	4422	R	4430	4430	lbf	
	6600	6578	6622	R	6630	6630	lbf	
	8800	8778	8822	R	8830	8830	lbf	
	11000	10978	11022	R	11030	11030	lbf	
	13200	13178	13222	R	13228	13228	lbf	
	15400	15378	15422	R	15426	15426	lbf	3.5
	17600	17578	17622	R	17626	17626	lbf	3.1
	19800	19778	19822	R	19824	19824	lbf	2.8
	22000	21978	22022		22022	22022	lbf	2.5

Decision Rule applied: Simple Acceptance; statements of compliance to specifications do not consider measurement uncertainty.

Standards Used To Calibrate Equipment:

Serial Number	Gage ID	Manufacturer	Model	Last Calibration	Due for Calibration
426726	MI-110-075	INTERFACE	1620AJH-25K	13 Mar 2020	31 Mar 2021
88345	MI-110-133	INTERFACE	9840-200-1-T	04 Jun 2019	30 Jun 2020

Uncertainty in measurement: 0.04 % of value

The above instrument was calibrated by standards traceable to the International System of Units (SI) through the National Institute of Standards & Technology (NIST) or other National Measurement Institute (NMI) per the guidelines specified in the latest revisions of ANSI/NCSL Z540-1 and ISO/IEC 17025. All measurement uncertainties calculated at a 95% Confidence Level (k=2). All test points have a Test Uncertainty Ratio (TUR) of 4:1 or better unless otherwise noted. The results indicated on this certificate relate only to the items calibrated. This certificate shall not be reproduced, except in full, without the written approval of Martin Calibration. Martin Calibration's responsibility shall in no event, nor for any cause whatsoever, exceed the purchase price of this certificate.

Quality Assurance Representative:

ilac-MRA

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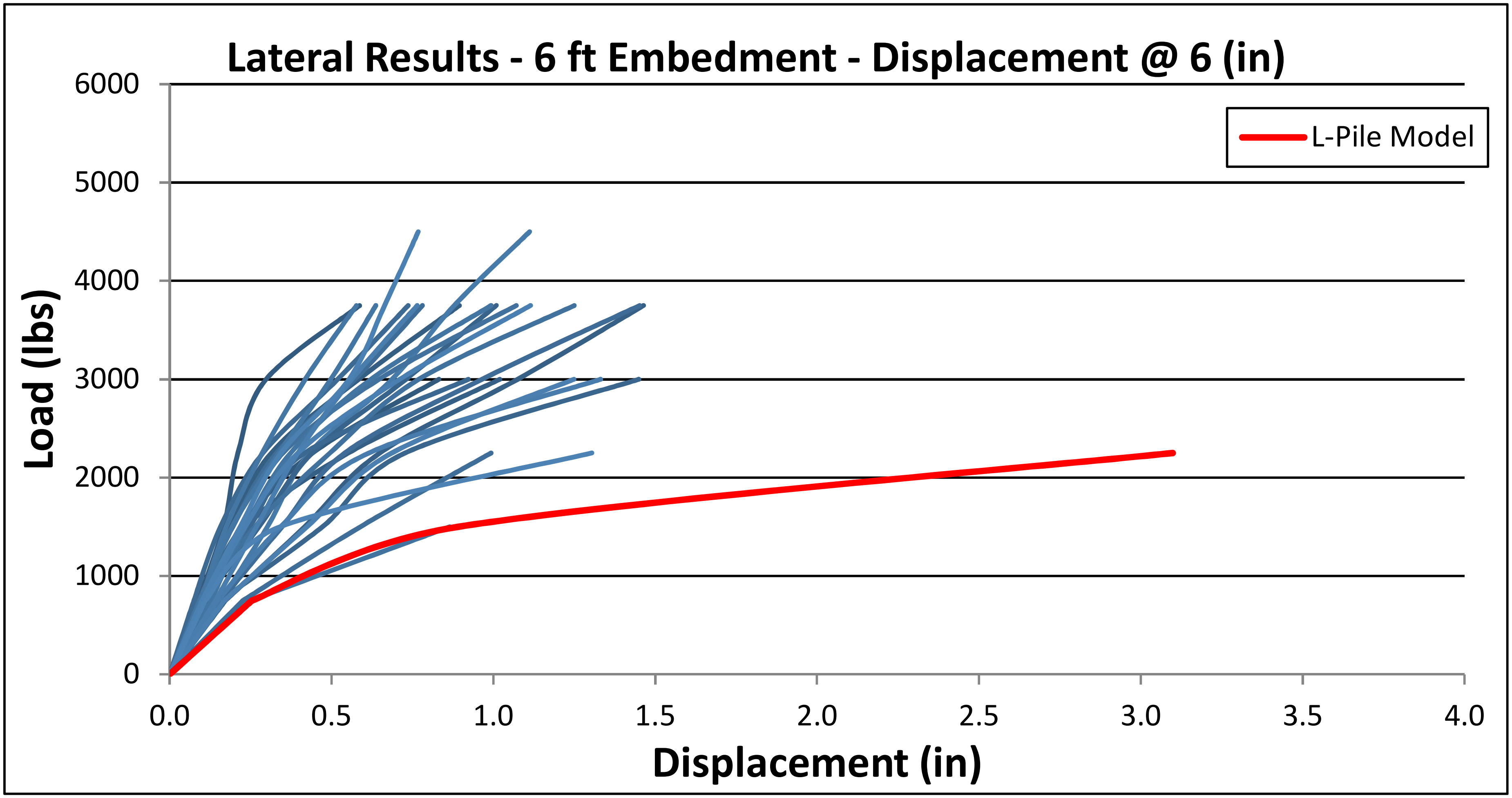
ISO/IEC 17025
CALIBRATION LABORATORY
ACT-1265

Appendix F

LPile Calibration Curves

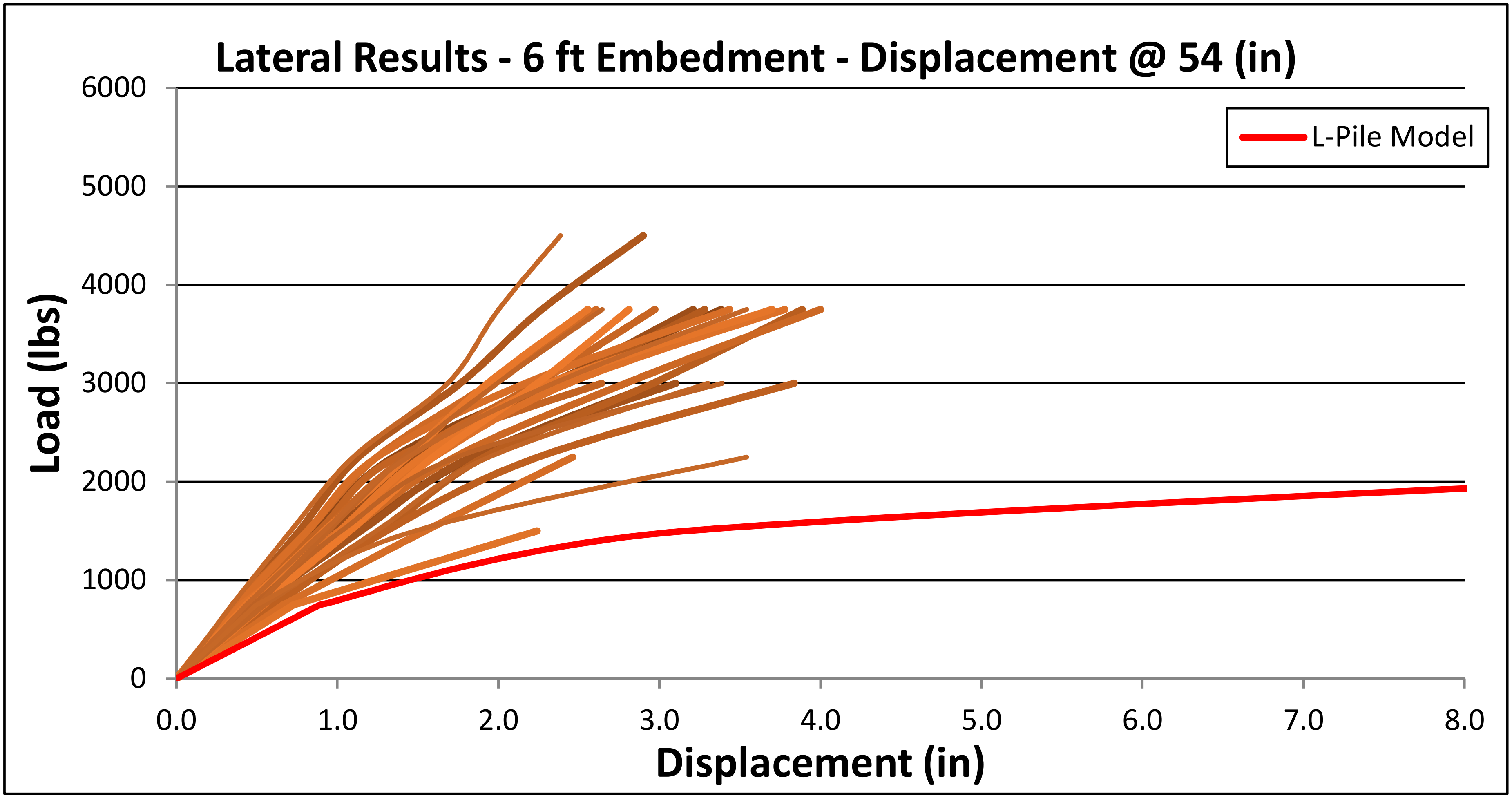
Westwood

Badger Mountain Solar - LPile Calibration Curve



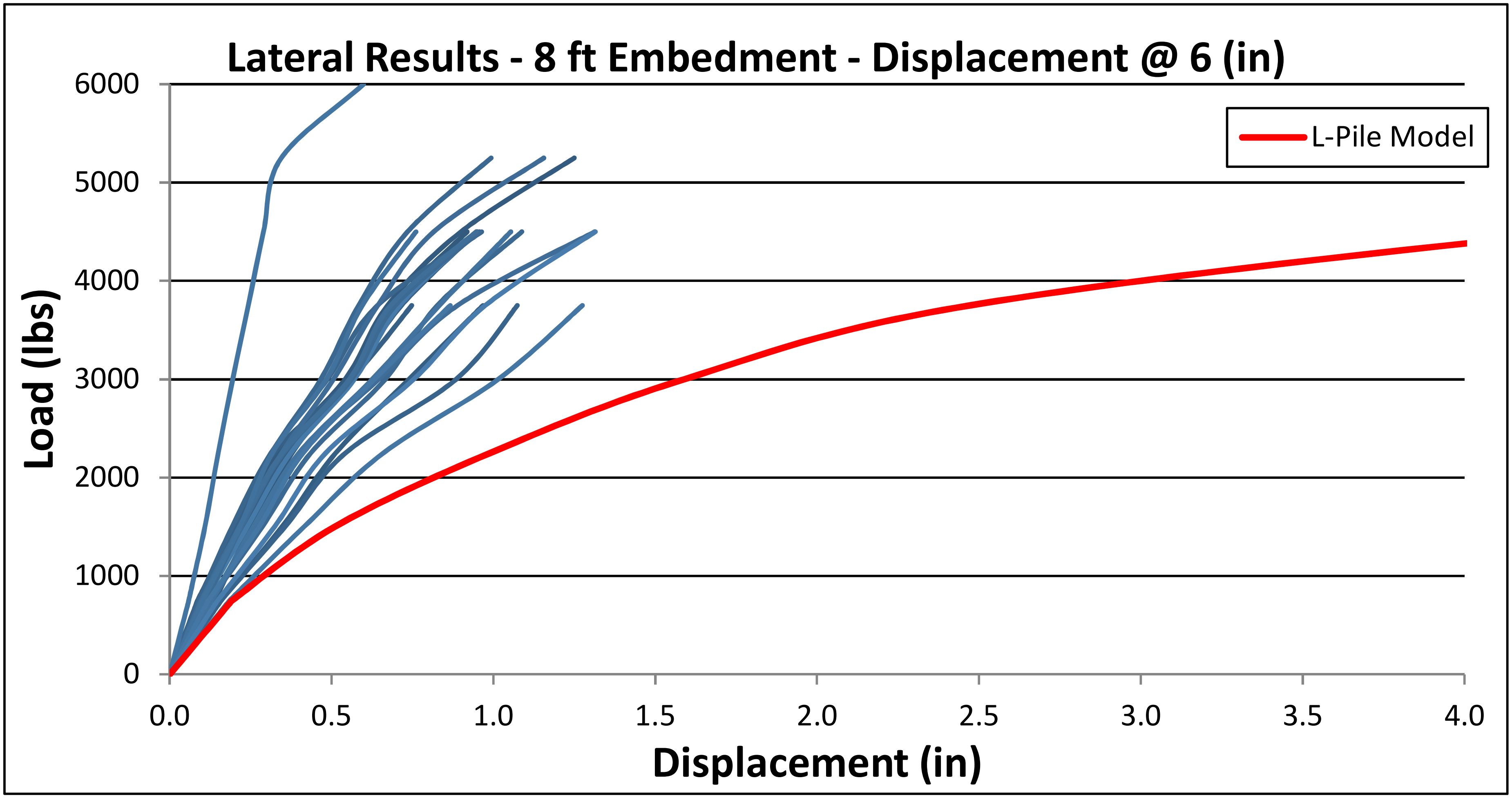
Westwood

Badger Mountain Solar - LPile Calibration Curve



Westwood

Badger Mountain Solar - LPile Calibration Curve



Westwood

Badger Mountain Solar - LPile Calibration Curve