BEFORE THE OHIO POWER SITING BOARD

In the Matter of the Application of Kensington PV 1, LLC for a Certificate of Environmental Compatibility and Public Need	**)** **)** **)** **)**	**Case No. 21-764-EL-BGN**

NOTICE OF FILING RESPONSES TO STAFF DATA REQUESTS

On October 19, 2021, Kensington PV 1, LLC ("Kensington") filed an Application for a Certificate of Environmental Compatibility and Public Need with the Ohio Power Siting Board (the "Board"). On November 3, 2021, November 29, 2021, November 30, 2021, December 1, 2021, December 27, 2021, February 1, 2022, and April 28, 2022, Board Staff sent data requests to Kensington. Attached to this notice are copies of Kensington's responses, previously submitted to the Board's Staff via electronic mail.

Respectfully submitted,

/s/ Anna Sanyal
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CERTIFICATE OF SERVICE

The Public Utilities Commission of Ohio's e-filing system will electronically serve notice of the filing of this document on the parties referenced on the service list of the docket card who have electronically subscribed to the case. In addition, the undersigned certifies that a courtesy copy of the foregoing document is also being served (via electronic mail) on May 3, 2022 upon all persons/entities listed below:

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Counsel for Staff of the Ohio Power Siting Board

/s/ Anna Sanyal
Anna Sanyal

In the Matter of the Application of	**)**	
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Certificate of Environmental	**)**	**Case No. 21-764-EL-BGN**
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Kensington PV 1, LLC's November 19, 2021 Responses to Staff's November 3, 2021 Data Requests

1. **Please provide copies of comment cards received during the public informational meeting as well as comments received by mail and email.**

   Please find the comment cards attached. Also, no emails have been received to date in the Kensington Solar inbox

2. **The pre-application notice, newspaper notice, public informational meeting notification letter, public informational meeting materials, and project website all indicate that the project will have a generating capacity of 135 MW. The application is for 145 MW. Please explain this discrepancy.**

   The Project was originally submitted to the PJM interconnection process in March of 2018 as a 175 MW project. After the System Impact Study (SIS) was issued and before the Facilities Study commenced, the project size was changed to 145 MW. The Project is currently listed on the PJM New Services Queue web page as a 145 MW project, which was reflected in the Application. However, through this data request, the Applicant clarifies that it intends to build the Project with a generating capacity of 135 MW only.

3. **Page 1 of the Application states that the nameplate capacity would be 145 MW, but the PJM System Impact Study for AE2-194 shows the capability to be 175 MW. Please explain the disagreement.**

   Please see the response above for question 2.

4. **Why is none of the PJM-estimated cost of $30,187,000 to reconductor 13.8 miles of transmission line being allocated to the Kensington Solar Project, AE2-194? (page 19/36 of the SIS for AE2-194).**

   Initially, the PJM System Impact Study (SIS) did not account for Sammis units 5 - 7, which were originally scheduled to deactivate prior to our study year. Subsequently, these deactivations were cancelled. However, PJM failed to include the units' original load serving capabilities back into the SIS, which greatly underestimated the Sammis units 5 – 7's contributions to the Sammis – Beaver Valley 345 kV line. Once we advised PJM of this, the Sammis units 5 - 7 were fully dispatched, demonstrating that the impact preceded our project. Specifically, the Project's contribution to the Sammis – Beaver Valley 345 kV line was below 1% the line's rating. Consequently, pursuant to PJM's Open Access Transmission Tariff rules, the Project did not qualify for an allocation.

5. **Please provide an estimate of the distance between the bus #239092, 02SAMMIS and bus #253902, 15BVRVAL.**

   This information is not provided in the AE2-194 System Impact Study and the Applicant does not have access to this information.

6. **Please provide the values of the maximum wind speeds seen in the project area, along with their frequency of occurrence.**

   Wind velocity data from the Ohio State University College of Food, Agriculture and Environmental Science was reviewed to determine wind speeds in the Project Area. A summary of the data describing the average daily wind speeds recorded in 2020 is provided in Table 8-2, which appears in page 51 of the Application filed on October 19, 2021. This Table includes date from the closest weather station to the Project Area located in Wooster, Ohio. Average daily wind speeds were greater than 11.1 mph on less than 3% of the days of the year in 2020. The maximum average daily wind speed reported in 2020 was 13.0 miles per hour and the maximum wind speed recorded was 30.5 mph.

7. **What is the anticipated effect in terms of force and loading from the maximum wind speeds on the panels, the trackers, and the support structures?**

   The Project will be designed according to Chapter 16 (Structural Design) of the Ohio Building Code, which specifies an ultimate design wind speed of 105 mile per hour ("mph") for a Risk Category I structure with site specific structural calculations by a Professional Engineer. The Project location is not considered a high wind speed zone and therefore high wind speeds are not expected to negatively impact the design or equipment. Exact loads and forces are dependent on final design.

8. **What stresses would be induced in these various components, and how do these stresses compare to the maximum allowable stresses of the materials used for the panels and supporting structures.**

   Axial, bending, and torsional stresses depend on the component and are based on the loads. Maximum allowable stresses will be calculated by a professional engineer and will be within the design specifications of all final component choice.

   As a best practice, the Applicant designs projects to keep components stressed to less than 90 percent of the allowable stress ratio permitted by AISC (100 percent being the limit state). This helps to account for minor variations realized during construction.

9. **What standards and guidelines would be used for the design of the facility?**

   As noted on page seven of the Application, all Project equipment will be compliant with applicable Underwriters Laboratories, Institute of Electrical and Electronics Engineers, NEC, National Electrical Safety Code, and American National Standards Institute listings, and any other applicable industry codes and standards.

10. Will there be a stow mode for the panels?

Yes. The meteorological sensor package for the trackers continuously monitors the wind, snow and flood conditions automatically. The meteorological data puts the tracker into a safe stow position for each of these contexts using sophisticated algorithms that eliminate transients. During high wind events, the trackers will adjust to the safety stow position to limit the impact on structural components. Each tracker will also stow at the set safety stow position during nighttime and will resume tracking when the sun rises. The stow position anticipated for the Project are:

Wind Stow: 0 degree

Snow Stow: 40 degree

Hail Stow: 60 degree

Flood Stow: 0 degree

These values can be adjusted in the SCADA system once final calculation is completed and the project design is finalized. Also, the stowing approach above may be updated depending on the final design and equipment selection.

11. What would be the wind velocity that would cause the panels to become separated from the tracking system and support structures?

Project design and construction will be done based on all applicable standards and based on the wind speed in the area. Additionally, as noted in response to data requests six and seven, this area is not a high wind speed zone and therefore high wind speeds are not expected to negatively impact equipment. Therefore, we are not expecting panels become separated from the trackers.

What information would you like to hear more about?

Do you reside or own land near the project area? (YES) NO

Please describe/provide location: 14486 Tink Rd

Would you like to discuss further one on one? YES (NO)

Was this information session effective and informative? YES (NO)

Comments: Why are you Choosing where we live to destroy our homes by bringing down Values and our property? This is where we relived to move to find peace and no Roma Rays we will have to move

We would like to keep you informed about the status of this project. Please provide your name and contact information so that we can stay in touch with you. This information will not be used for marketing purposes or given to any third parties other than approved Liberty Power contractors for use on the project. Thank You!

Name: Jodi Rodney Chilson

Contact Information:

What information would you like to hear more about?

Do you reside or own land near the project area? YES NO

Please describe/provide location: 14370 Fink Rd Kensington Oh. 44427

Would you like to discuss further one on one? YES NO

Was this information session effective and informative? YES NOT Really

Comments: I would like to know, what is this going to do to my well water? Trenching the ground around me. And the Noise from the construction. And the Magnetic field the panels are going to cause. And Wildlife 5-different Species of Birds.

We would like to keep you informed about the status of this project. Please provide your name and contact information so that we can stay in touch with you. This information will not be used for marketing purposes or given to any third parties other than approved Liberty Power contractors for use on the project. Thank You!

Name: Anita Kastor.

Contact Information: 3303410221

What information would you like to hear more about?

Do you reside or own land near the project area? ~~(YES)~~ NO

Do you reside or own land near the project area? (YES circled) NO

Please describe/provide location: 14410 Fink Rd

Would you like to discuss further one on one? YES (NO circled)

Was this information session effective and informative? YES (NO circled)

Comments: Why is Johnson doing this The man has enough money. Why do you want to destroy our beautiful land. Are you like Chesepeake Come in offer money then desert people We dont want Money we want to be left alone ↑ Our Roads are safe We dont need that Solar panel

We would like to keep you informed about the status of this project. Please provide your name and contact information so that we can stay in touch with you. This information will not be used for marketing purposes or given to any third parties other than approved Liberty Power contractors for use on the project. Thank You!

Name: Sadie & Rod Chuison

Contact Information:

What information would you like to hear more about?

Do you reside or own land near the project area? YES NO

Please describe/provide location: _____

Would you like to discuss further one on one? (YES) NO

Was this information session effective and informative? YES NO

Comments: Need contacted to discuss electric usage in Carroll Electric certified territory + metering.

We would like to keep you informed about the status of this project. Please provide your name and contact information so that we can stay in touch with you. This information will not be used for marketing purposes or given to any third parties other than approved Liberty Power contractors for use on the project. Thank You!

Name: Larry Forbers, Carroll Electric Cooperative, Inc.

Contact Information: 330-627-2116

What information would you like to hear more about?

Do you reside or own land near the project area? (YES) NO

Please describe/provide location: 14392 Fink Rd Kensington, Ohio

Would you like to discuss further one on one? (YES) NO

Was this information session effective and informative? YES (NO)

Comments: I don't like the idea you are forcing us to put up with this Chinese solaire Panels I should have right to set on my porch and enjoy my house and beautiful Country

We would like to keep you informed about the status of this project. Please provide your name and contact information so that we can stay in touch with you. This information will not be used for marketing purposes or given to any third parties other than approved Liberty Power contractors for use on the project. Thank You!

Name: Sadie Chilson Rodney Chilson

Contact Information: 330-341-2018

What information would you like to hear more about?

Do you reside or own land near the project area? (YES) NO

Please describe/provide location: 15173 Emerick Rd. Kensington, OH

Would you like to discuss further one on one? (YES) NO

Was this information session effective and informative? YES NO

Comments: _____

We would like to keep you informed about the status of this project. Please provide your name and contact information so that we can stay in touch with you. This information will not be used for marketing purposes or given to any third parties other than approved Liberty Power contractors for use on the project. Thank You!

Name: Gretchen & Eric Wentz

Contact Information: 325-721-0809
gwentz@ymail.com

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Kensington PV 1, LLC's January 6, 2022 Response to Staff's December 27, 2021 Data Request

1. **Please list the IDs of the wetlands which would be impacted by the proposed solar array.**

   Response: The wetlands impacted by the proposed solar arrays are:

Wetland_ID	Component
W-1	Solar Array
W-2	Solar Array
W-23	Solar Array
W-24	Solar Array
W-35	Solar Array
W-36	Solar Array
W-38	Solar Array
W-6	Solar Array
W-7	Solar Array
W-70	Solar Array
W-71	Solar Array
W-95	Solar Array

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Kensington PV 1, LLC's December 14, 2021 Responses to Staff's November 29, 2021, November 30, 2021, and December 1, 2021 Data Requests

1. **The vegetation management plan states that the Applicant will not be impacting any wetlands due to solar modules, access roads, inverters, or substations. The application narrative states that the Applicant is currently planning 0.6 acres of permanent impact to wetlands due to solar modules. Please clarify whether permanent impacts to wetlands are anticipated.**
    a. **If impacts are planned, please provide information on which wetlands are to be impacted.**

The information in the application narrative is correct. There are anticipated to be approximately 0.6 acres of permanent impacts to wetlands from solar modules. The 0.6 acres of wetland impacts from solar modules that are placed over six different palustrine emergent (PEM) wetlands depicted as in Figure 8-5 of the application.

2. **The vegetation management plan states that the project has been sited to avoid impacts to forested areas. The application states that 1.9 acres of forested land will be cleared. Please clarify whether clearing of forested land is anticipated.**
    a. **If impacts are planned, please provide a figure depicting the forested area to be cleared along with the current planned layout of the project.**

The information in the application narrative is correct. The project has been sited to avoid impacts to forested areas except for approximately 1.9 acres of forested areas that will need to be cleared as part of the Project. Figure 1 shows the locations where forested areas will be cleared for aboveground infrastructure.

3. **Please explain the nature of the proposed stream crossings, including number of crossings, which streams will be crossed, and the method of crossing.**

There are 29 stream crossings anticipated based on the current site layout. Stream crossings are limited to collector line and fence crossings. For all streams to be crossed by collector cables, horizontal directional drilling (HDD) will be utilized to avoid stream impacts. For streams to be crossed by Project fencing, the fencing will be constructed so that it spans the stream. The table below summarizes the information for each stream.

Stream ID	Infrastructure Impact	Anticipated Crossing Method
S-1	Fence	Span
S-1	Fence	Span
S-2	Fence	Span
S-28	Collector	HDD
S-40	Collector	HDD
S-45	Fence	Span
S-45	Fence	Span
S-45	Fence	Span
S-45	Fence	Span
S-45	Fence	Span
S-45	Fence	Span
S-45	Fence	Span
S-45	Fence	Span
S-45	Fence	Span
S-45	Collector	HDD
S-49	Fence	Span
S-49	Collector	HDD
S-51	Fence	Span
S-51	Collector	HDD
S-54	Collector	HDD
S-56	Collector	HDD
S-56	Collector	HDD
S-KP06	Fence	Span
S-KP10	Collector	HDD
S-KP11	Collector	HDD
S-KP24	Collector	HDD
S-SZ01-DN-RB	Fence	Span
S-SZ01-DN-RB	Collector	HDD
S-SZ02	Collector	HDD

4. **This project is within range of the northern harrier, a state endangered bird. Table 8-3 lists pasture as the primary habitat type present in the project area (738 acres), which provides nesting and hunting habitat for this species. The ODNR DOW has contacted Staff expressing concerns about potential impacts to this species and recommends that construction in this habitat be avoided during the species' nesting period of May 15 to August 1. If construction during this time cannot be avoided, ODNR may require a presence/absence survey for the northern harrier. Does the Applicant intend to conduct construction between May 15 and August 1?**
    a. **If yes, please detail the applicant's plans to avoid impacts to this species. These plans should be coordinated with the ODNR DOW as soon as possible.**

The Applicant only plans to disturb 0.2 acres of pasture habitat. The Applicant anticipates undertaking work in this area prior to May 15th, which is outside of the breeding/ nesting season

for the northern harrier. If the project schedule is impacted beyond control of the contractor (i.e. weather conditions), a qualified consultant will conduct reconnaissance, in coordination with ODNR, to assess if nesting is occurring. If nests are discovered then best practices will be followed to avoid the nest, until fledglings leave the nest.

Note that, the Applicant's consultant, Stantec, determined that all disturbed pasture habitat with the exception of 0.2 acres would not constitute nesting habitat. The pasture habitat within the Project area is heavily grazed. The vegetation is low growing herbaceous species with some trees/shrubs near streams or on the fence lines between the fields used for pasture. Dominant species in areas identified as pasture included English plantain (*Plantago lanceolata*), white clover (*Trifolium repens*), red clover, alsike clover (*Trifolium hybridum*), perennial ryegrass (*Lolium perenne*), curly dock (*Rumex crispus*), Kentucky bluegrass (*Poa pratensis*), multiflora rose (*Rosa multiflora*), Queen Anne's lace (*Daucus carota*), and Canada thistle (*Cirsium arvense*). As the Habitat Assessment Memo provided as Exhibit Q in the application states, the pasture within the Project area is likely hunting/feeding habitat for northern harriers, especially in the winter and during migration. However, as stated by ODNR in the environmental response letter provided for the Project on March 16, 2021, breeding habitat for this species is grasslands and large marshes. Ehrlich et al. (1988) also lists prairie, savanna, slough, wet meadows, and marsh as breeding habitat for northern harriers. They also state that nests are typically elevated at a height of 5 feet or less from the ground, such as on a mound (Ehrlich et al. 1988). The Cornell Lab (2021) describes northern harrier nesting/breeding habitat as large and undisturbed wetlands and grasslands with low and thick vegetation. Other habitats this bird will use for breeding includes marshes, lightly grazed meadows, old fields, tundra, dry upland prairies, drained marshes, high-desert shrub-steppe, and riverside woodlands. They also describe the wintering grounds as more open areas such as deserts, sand dunes, pasturelands, croplands, dry plains, grasslands, old fields, open floodplains, estuaries, and marshes (The Cornell Lab 2021). Dechant et al. (2002), in their thorough literature review of suitable habitat for the northern harrier, states that the species build well-concealed nests on the ground in tall and dense vegetation including living and dead grasses, forbs, low shrubs. Nest locations are undisturbed areas with abundant residual cover, typically a minimum of 40% cover. Dechant et al. (2002) summarizes nesting locations in dry areas and they are quite variable. Nests can be in western snowberry or other shrubs (North Dakota/northern Great Plains), large blackberry patches (Missouri), planted grass/legume fields with cover approximately 1.5 – 2 feet tall (North and South Dakota), and idle or fallow fields dominated by native or non-native grass species (Illinois).

The common parameters throughout the sites mentioned in Dechant et al. (2002) were little or no disturbance and good cover, which is why Stantec did not consider pasture at the Project to be preferred breeding habitat for northern harrier. As documented in the Habitat Assessment, there are limited areas of Old Field (15.2 acres) in the Project Area, which could potentially provide suitable nesting although those areas are fragmented and small in size and are largely outside the area proposed for disturbance (approximately 0.2 acres proposed for disturbance).

Literature Cited

The Cornell Lab. 2021. All About Birds: Northern Harrier. Available at: https://www.allaboutbirds.org/guide/Northern_Harrier/lifehistory. Accessed December 9, 2021.

Dechant, J.A., M.L. Sondreal, D.H. Johnson, L.D. Igl, C.M. Goldade, M.P. Nenneman, B.R. Euliss. 1998 (revised 2002). Effects of management practices on grassland birds: Northern harrier. Northern Prairie Wildlife Research Center, Jamestown, North Dakota. 15 pp.

eBird. 2021. Northern Harrier. Available at: https://ebird.org/map/norhar2?neg=true&env.minX=&env.minY=&env.maxX=&env.maxY=&zh=false&gp=false&ev=Z&mr=1-12&bmo=1&emo=12&yr=all&byr=1900&eyr=2021. Accessed December 9, 2021.

Ehrlich, P.R., D.S. Dobkin, D. Wheye. 1988. The Birder's Handbook: A Field Guide to the Natural History of North American Birds. Published by Simon & Schuster/Fireside Books, New York, New York.

5. **What is the manufacturer and model of the substation transformer used in noise model?**

A substation transformer model has not yet been selected for the Project so the noise model utilized a generic transformer model. The proposed Project substation includes one step-up transformer with an estimated sound power level of approximately 91.3 dBA. A tonal penalty of 5 dBA was added to each octave band resulting in an overall sound power level of 96.3 dBA for the substation transformer.

6. **What is the rating of the substation transformer used in noise model?**

The generic substation transformer model utilized is rated as a 175 mega volt ampere model.

7. **Please provide Appendix C of the sound report in excel format.**

Appendix C of the sound report is provided as an Excel sheet.

8. **On page 8 of the noise report you state," The following filters were applied to the data: the first and last hour of data at each location was removed to avoid set-up and break-down noise, any readings over 60 dB during possible weather events, and readings over 50 dB associated with wind gusts."**

    a. **Anomalous events should be filtered out of ambient sound level results. Anomalous events include the nearby use of lawnmowers, tractors, or other noisy equipment. Anomalous events can also include high frequency biogenic noise as high frequency biogenic noise does not occur during the winter months.**

    b. **Did anomalous events exist outside of those mentioned above (set-up/ break-down, weather/wind)? If so, were these anomalous events filtered out of**

ambient sound level results? If not, please filtered out those anomalous events from ambient sound level results and state the corrected ambient Leq levels.

Readings greater than 5dB higher than temporally adjacent readings were reviewed and filtered out if suspected to remove anomalous readings.

9. **On page 10 of the noise report the Leq daytime levels are listed as 44.2, 42.3, 45.2, 41.0, and 43.9. These values average 43.3 dBA. But on page 14 it is stated that the average daytime Leq is 43.6 dBA. If the ambient levels do not need to be corrected in accordance with question 4, what is the correct daytime ambient Leq average?**

The averaged 43.3 dBA Leq is an arithmetic average, 43.6 dBA is the logarithmic average. Since decibels are a logarithmic value, the latter was used within the sound report.

10. **Has the Applicant conducted any field surveys to confirm the locations of the oil and gas wells identified in Table 8-1 of the application?**

To date, field surveys have not been completed to confirm the locations of the oil and gas wells identified within Table 8-1 of the application. The location of these wells will be confirmed as part of the ALTA survey that will be completed for the Project. The Applicant currently projects the survey will be completed around Spring 2022.

11. **Please specify minimum distances between the oil and gas well features and the nearest proposed solar facility infrastructure.**

The table below provides a summary of the distance from each well within the Project Area, to the nearest infrastructure component.

Well API #	Well Type and Status	Nearest Infrastructure Type	Approximate Distance (ft.)
34029209050000	Vertical well, Producing	Fence	18
34029217670000	Vertical well, Producing	Fence	374
34029217800000	Vertical well, Producing	Fence	373
34029607990000	Vertical well, Plugged	Fence	12
34029608090000	Vertical well, Plugged	Fence	1,123
34029607980000	Vertical well, Plugged	Solar Array	0
34029608100000	Vertical well, Plugged	Solar Array	24
34029607970000	Vertical well, Plugged	Fence	19
34029203130000	Vertical well, Plugged	Solar Array	0
34029216260000	Vertical well, Expired Permit (not drilled)	Solar Array	0
34019224730000	Horizontal well, Producing	Solar Array	0
34029216960000	Horizontal well, Producing	Solar Array	0
34029217670000	Horizontal well, Producing	Fence	1
34029217730000	Horizontal well, Producing	Inverter	0
34029217800000	Horizontal well, Producing	Fence	177

Well API #	Well Type and Status	Nearest Infrastructure Type	Approximate Distance (ft.)
34029218140000	Horizontal well, Producing	Fence	836
34029218150000	Horizontal well, Producing	Solar Array	0
34029218390000	Horizontal well, Producing	Solar Array	0
34029218760000	Horizontal well, Producing	Inverter	0
34029218950000	Horizontal well, Producing	Solar Array	0
34029218960000	Horizontal well, Producing	Solar Array	0

12. **Table 4-1 of the application lists proposed project setbacks. 25 feet from active well pads has been proposed. Have setbacks from oil and gas related lease/access roads been considered? Have setbacks from oil and gas wells identified as plugged and abandoned been considered?**

The Applicant has setback 25 feet from well pads (active, plugged, and/or abandoned) associated with the horizontal wells, although Project infrastructure has been placed over the horizontal pipe as noted in the table above.

13. **Exhibit R, which provides the ODNR geology review of the application, indicates two mines are present within the project area. Please specify minimum distances between the mine boundaries and the nearest proposed solar facility infrastructure.**

The Summitville Tiles, Inc. surface mine and Dome Materials, Inc. shale quarry have both been avoided with Project infrastructure. Project fencing is within approximately 10 feet of the Summitville Tiles, Inc. mine and Project fencing is more than 510 feet from the Dome Materials, Inc. boundary.

14. **In the northern portion of the project area (west of test boring 2), the ODNR interactive mines viewer map indicates a historic coal mining site existed at one time. Is facility infrastructure planned in this area?**

This particular parcel has been reclaimed by a participating landowner and the land is currently used for agriculture. Facility infrastructure is planned in this area, as we are planning to install modules.

15. **What consideration was given to the project area's USDA websoil survey suitabilities and limitations for building site development?**

USDA websoil suitabilities and limitations will be considered in the final design of the facility. A preliminary geotechnical survey was completed and was submitted as Exhibit K to the application.

16. **What is the maximum slope where solar facility infrastructure is proposed?**

As noted in page 17 of the application, the maximum slope for the typical racking technology is 17.5 degree.

17. **The application indicates figure 8-4 includes delineation of both highly erodible soils and slopes exceeding 12%. Review of the figure indicates steep slopes were omitted. Please revise as necessary.**

Figure 2 is included within this data request submittal and provides the locations of steep slopes (>12%) and highly erodible soils within the Project Area and a 0.5 mile radius.

18. **Page 50 of the application indicates pile load testing was part of the preliminary geotechnical work (Exhibit K). Please confirm that site specific pile load testing has in fact occurred and provide the results of that testing.**

Pile load testing has not been completed and is planned to be completed in 2022. The preliminary geotechnical work was completed to fulfill the OPSB permitting requirements and preliminary engineering requirements to comply with precedent. More comprehensive geotechnical works will be performed prior to the finalization of project design.

19. **Page 10 of Exhibit K indicates that difficulties installing traditional driven piles are expected in some portions of the project area. The report recommends that a pile driving and testing program be developed to assess the difficulty of piles penetrating the soil conditions. The report goes on to indicate that predrilling may be necessary to anchor piles at the appropriate depths (expected to range from 6-10 feet bgl). In reviewing the boring logs, "highly weathered and very weak" bedrock was encountered at depths within the range of the expected pile embedment depths. What special engineering considerations have been given to ensuring these pile foundations will provide adequate support of the facility infrastructure during its operational life?**

Based on the preliminary geotechnical investigation and the amount of cobble stones encountered, helical piles would be utilized for most of the site. Furthermore, once pile load testing is complete, additional measures can be considered such as 'dead man' piles (structured footings) or remedial helical (excavate and backfill with preferred material).

20. **Please provide Staff with an unanticipated discovery plan. This plan would account for course/s of action to be taken in the event previously unidentified subsurface features which are or could be considered hazards are encountered during the proposed construction. e.g. oil and gas well infrastructure, abandoned mines, contaminated soils, etc.**

An unanticipated discovery plan will be prepared during final engineering design by the engineering, procurement, and construction contractor and will be provided to OPSB Staff at least 30 days before the pre-construction meeting.

21. Exhibit L (Glare Hazard Analysis) refers to three types of glare. Are there any minutes of "red" type predicted for the project?

As stated within the application and Exhibit L, no glare is anticipated from the Project at nearby residences, roadways, railroad tracks, or airports. This includes zero minutes of red, yellow, or green glare.

22. Referring to page 7 of the application and Exhibit M (Notice Criteria Tool) indicate a maximum height of 110 for substation components or transmission line structures. What would the height of the tallest structure at the solar farm be?

The 110-feet for the notice criteria was included as a conservative assumption and to reflect maximum gen-tie pole height or transformer height at the substation. The maximum height for the solar farm facility equipment's would be:

- 4 meters (13.1 feet) at each inverter location.
- 3 meters (9.8 feet) for the PV arrays.
- Please refer to response 23 for substation components.

23. Please provide what the height of the following structures at the solar farm would be

a. substation support structures,

b. substation lightning mast

c. transmission line support structures

The highest structure in the substation will be the H-Frame steel dead-end structure with lightning mast on top. Approximate total height of the steel structure will be 60 feet with an additional 10 feet for the lightning rod for a total height of 70 feet from the ground. The next highest structure will be the medium voltage (34.5 kV) buswork support structure at a height of about 30 feet with a single lightning mast that would make the total height 65 feet above the ground. The highest structure in the transmission owner switching station is expected to be the H-Frame steel structure with lightning rod for a total height of approximately 70 feet from the ground, though final design will be provided by the transmission owner.

24. The Application mentions a 138-kV three breaker ring bus POI substation, and 375-foot loop in/out line to be built, owned, and operated by ATSI. Please confirm that these are not included as part of this Application.

The Application includes the POI switchyard and the Applicant expects to assign the portion of the certificate covering the POI switchyard and line loop to ATSI.

25. The Application mentions a 175-foot-long gen-tie from the collector substation to the POI substation. Is Kensington PV 1, LLC is requesting approval of this component as part of this Application?

The 175-foot gen tie from the collector substation to the POI substation is part of this Application.

26. If included in this Application, please provide the following information for the 175 feet long gen tie transmission line:

a. Tower designs, pole structures, conductor size and number per phase, and insulator arrangement.

b. Base and foundation design.

c. Cable type and size, where underground.

d. Other major equipment or special structures.

The gen-tie line is planned as a single slack span between an H-Frame steel dead-end structure inside the project substation and an H-Frame steel dead-end structure inside the POI substation. No additional poles/towers are planned. There will be three phases, one conductor per phase. The conductor size will be 795MCM ACSR "DRAKE". There will also be two shield wires (7-#8 Alumoweld).

27. If included in this Application, please provide the shapefiles and depiction on Figure 3-2 (Project Site Layout Map) for the 175 feet long gen tie transmission line.

These will be uploaded to OPSB staff's sharefile site.

28. Please provide the following information for the substation support structures/poles referenced on page 7 of the Application:

a. Tower designs, pole structures, conductor size and number per phase, and insulator arrangement.

b. Base and foundation design.

c. Cable type and size, where underground.

d. Other major equipment or special structures.

Please refer to responses #23 and #26. All steel structures within the substation will be mounted on concrete foundations.

29. Is the gen tie transmission line design capacity one hundred kilovolts or more and within one hundred feet of an occupied residence or institution? If yes, please provide that voltage and the calculated electric and magnetic field strength levels at one meter

above ground, under the conductors and at the edge of the right-of-way for (i) Winter normal conductor rating, (ii) Emergency line loading, and (iii) Normal maximum loading.

Yes, the gen-tie line nominal voltage is above 100 kV. This line will not be within 100 feet of an occupied residence or institution.

30. What is the distance between the solar farm equipment and the 13 private water wells mentioned on page 47 of the Application?

A summary of the distance to each water well within the Project Area, and the type of infrastructure nearest to it, is provided in the table below. Of note, all of these wells are owned by project participating landowners. As part of the ALTA Survey, well status will be confirmed, and as part of final engineering design, the layout will be revised accordingly to ensure all wells are avoided.

Well #	Well Depth (ft.)	Nearest Infrastructure Type	Approximate Distance (ft.)
25302	148	Solar Array	0
443634	227	AC Underground Collection Line	113
89151	190	Fence	29
71429	53	Fence	16
387890	193	Fence	78
223166	100	Fence	15
955601	135	Fence	121
143790	72	Solar Array	0
301931	270	Fence	305
15217	105	Solar Array	0
25331	74	Fence	913

31. Please explain what possible avoidance, minimization, and/or mitigation measures Kensington PV 1, LLC will employ during construction for water well locations in the project area.

In consultation with participating landowners, all water well locations will be flagged prior to construction. In addition, as part of the ALTA Survey, water well locations within the project area will be identified. As noted in page 47 of the application, all water well locations will be avoided as part of final engineering design.

32. Would any of the 13 water wells be properly abandoned and sealed in accordance with Ohio Admin. Code 3701-28?

The Applicant anticipates engaging in discussions with participating landowners to determine if any of these wells need to be abandoned or sealed. Additionally, water wells will be verified as

part of the final geotechnical survey to determine if these wells were properly abandoned and sealed as per Ohio Admin. Code 3701-28.

33. **Please explain what setback Kensington PV 1, LLC would implement in its final design to a water well?**

As currently designed, with the exception of three wells identified above (and of which participating landowners are aware), all project infrastructure is at least 15 feet from the identified well. For the three wells that are identified as being under the solar array, final engineering will micro-site the trackers so that these wells can be avoided during the installation of the tracker posts.

34. **Please provide the current draft emergency response plan or an example emergency response plan referenced on page 42 of the Application.**

A draft emergency response plan is attached.

35. **The proposed decommissioning plan (Exhibit B) appears to be insufficient. Please submit an updated decommissioning plan and total decommissioning cost estimate without regard to salvage value but includes: (a) a provision that the decommissioning financial assurance mechanism include a performance bond where the company is the principal, the insurance company is the surety, and the Ohio Power Siting Board is the obligee; (b) a timeline of up to one year for removal of the equipment; (c) a provision to monitor the site for at least one additional year to ensure successful revegetation and rehabilitation; (d) a provision where the performance bond is posted prior to the commencement of construction; (e) a provision that the performance bond is for the total decommissioning cost and excludes salvage value; (f) a provision to coordinate repair of public roads damaged or modified during the decommissioning and reclamation process; (g) a provision that the decommissioning plan be prepared by a professional engineer registered with the state board of registration for professional engineers and surveyors; and (h) a provision stating that the bond shall be recalculated every five years by an engineer retained by the Applicant.**

An updated Decommissioning Plan is included as an attachment to this data request. The updated Decommissioning Plan reflects conditions (a) – (h) listed above, with the exception of (c). The Applicant will attempt to monitor the site and ensure revegetation has been completed if permitted by the landowner who retains control of the land following decommissioning of the Project.

36. **The proposed decommissioning plan (Exhibit E, page 2) indicates that decommissioning activities are anticipated to be completed in 12 to 18 months. Please explain what activities would extend after 12 months.**

The timing is an estimate and could be influenced by circumstances beyond control of the developer, such as but not limited to weather or permit delays. Nonetheless, minimal activity is

expected to go beyond 12 months and would involve minor tasks such as complying with landowner requests and any potential remediation work.

37. Please describe the "Gas/Hazardous Liquid Pipeline" identified on Figure 3-1 by providing, to the extent known, the:

a. the pipeline company owner;

b. the name, number, and designator of the pipeline;

c. the diameter of the pipeline;

There are three pipelines depicted in Figure 3-1, however information is only available for two of the lines. A summary of the available information from the U.S. Energy Information Administration for each pipeline is provided in the table below.

Pipeline/Location in Project Area	Type	Operator
East Sparta – Heath (East/West through Project)	Petroleum	Marathon
Interstate (North/South through Project)	Natural Gas	Columbia Gas Trans Co.
Southeast/Northwest through Project	Natural Gas	Unknown

Utility pipeline easements/right of ways would be identified as part of the title process and ALTA Survey work, as well as coordination with the Ohio Utilities Protection Services prior to construction.

38. What is the distance between solar equipment and the gas/hazardous liquid pipeline(s) right-of-way?

No information pertaining to the right-of-way width is available for the three pipelines through the Project Area, however the centerline of the East Sparta – Heath and Interstate pipelines cross collector lines, fences, access roads, and solar arrays. The Applicant will ensure that final project design avoids these pipelines. The unknown natural gas line, which is routed southeast/northwest, is approximately 65 feet from the nearest solar modules.

39. Please describe work procedures and safety precautions that will be implemented while working near the existing gas/hazardous liquid pipeline(s).

At a minimum, the following protocols will be followed:

- Industry best practices related to working near pipelines will be implemented. The selected EPC contractor safe work procedure will identify the exact safety precautions when working near existing gas/hazardous liquid pipelines
- As per state requirements, prior to any civil work, the contractor will have to contact Ohio Utilities Protections Services, Ohio 811 – 'call before you dig'
- Consultation with pipeline owner is continuous and compliance with their procedures will be required. If a collector line crosses a pipeline via directional bore then standard separation distance will be required
- All pipelines will be identified on ALTA survey maps

40. Please submit any correspondence sent to and received from the pipeline(s) owner or operator.

No correspondence has been sent or received from the pipeline owners or operators to date referenced in Question 37. Ongoing discussions will occur as necessary with these owners/operators.

41. Please identify the number of adjacent non-participating parcels containing a residence with a direct line of sight to facility components.

Creating a viewshed model using National Land Cover Data, with an assumed vegetation height of 40 feet for areas identified as forested, 13 feet for the panel height, and a 12-foot observer height (one-story building), we have estimated that 61 non-participating adjacent parcels with a residence would have a limited view of the solar project to some degree. As indicated in the application, further potential reasonable mitigation measures could be offered in the form of vegetative screening.

42. Please provide an estimate of the nature and amounts (in cubic yards) of debris and other solid waste generated during construction.

As stated in the application, the Applicant estimates that one 30 cubic yard roll-off dumpster will be required for waste collection every two weeks during the 12 to 18 month construction period. It is assumed that this dumpster would be full when emptied each week. Much of the construction waste consists of recyclable materials which the Applicant will collect and divert from the waste stream. This will be accomplished by using a 30 cubic yard recycling dumpster which will be collected monthly during the construction period and is assumed to be full each month when collected.

43. In June of 2021, it appears that the Applicant received approval from the OHPO of the Applicant's workplans to study for the presence/absence of architectural and archaeological resources. Preliminary architectural results indicated the need for mitigation or avoidance of above-ground resources. What is the <u>current status</u> of the

Applicant's architectural/archaeological studies and when does the Applicant anticipate their completion?

Archaeology surveys within the Project, following the methodology approved by OHPO, commenced on September 28, 2021 and have been ongoing since then as field conditions and crop harvest schedules have allowed. The Applicant anticipates completion of the surveys by the end of December 2021, provided the remaining land can be disced to allow for suitable surface visibility. Of the project area, approximately 300 acres remain which still need to be surveyed within the fenced area.

Provide an proposed timeline for:

a. Submission of all studies to the OHPO;

The architecture/history report was submitted to OHPO on October 15, 2021. It is estimated that the archaeology report will be submitted to OHPO in early January 2022.

b. Receipt of concurrence from the OHPO regarding the Applicant's final studies;

We estimate that with submittal of the archaeology report to OHPO by January 2022, that concurrence from OHPO on the archaeology report will be provided in February 2022.

c. Submission of any needed mitigation (and/or avoidance) recommendations to the OHPO;

The Applicant will work with OHPO to design an acceptable screening plan to mitigate potential impacts to architecture/history resources by February 2022.

d. Anticipated date of any required execution of MOUs with the SHPO.

The Applicant will execute a Memorandum of Understanding to finalize the agreement with OHPO regarding the implementation of the screening plan by March 2022.

44. Provide a large scale map which depicts participating and adjacent non-participating parcels containing a residence with a direct line of sight to facility components. This map should be superimposed upon the Applicant's proposed landscaping mitigation map. Identify and label nearby adjacent roads, recreational facilities, schools, cemeteries and any other sensitive land uses. Please also include a KMZ layer of the adjacent non-participating parcels containing a residence with a direct line of sight to facility components.

This figure has been provided as requested as Figure 3 in the data request response and the corresponding kmz provided.

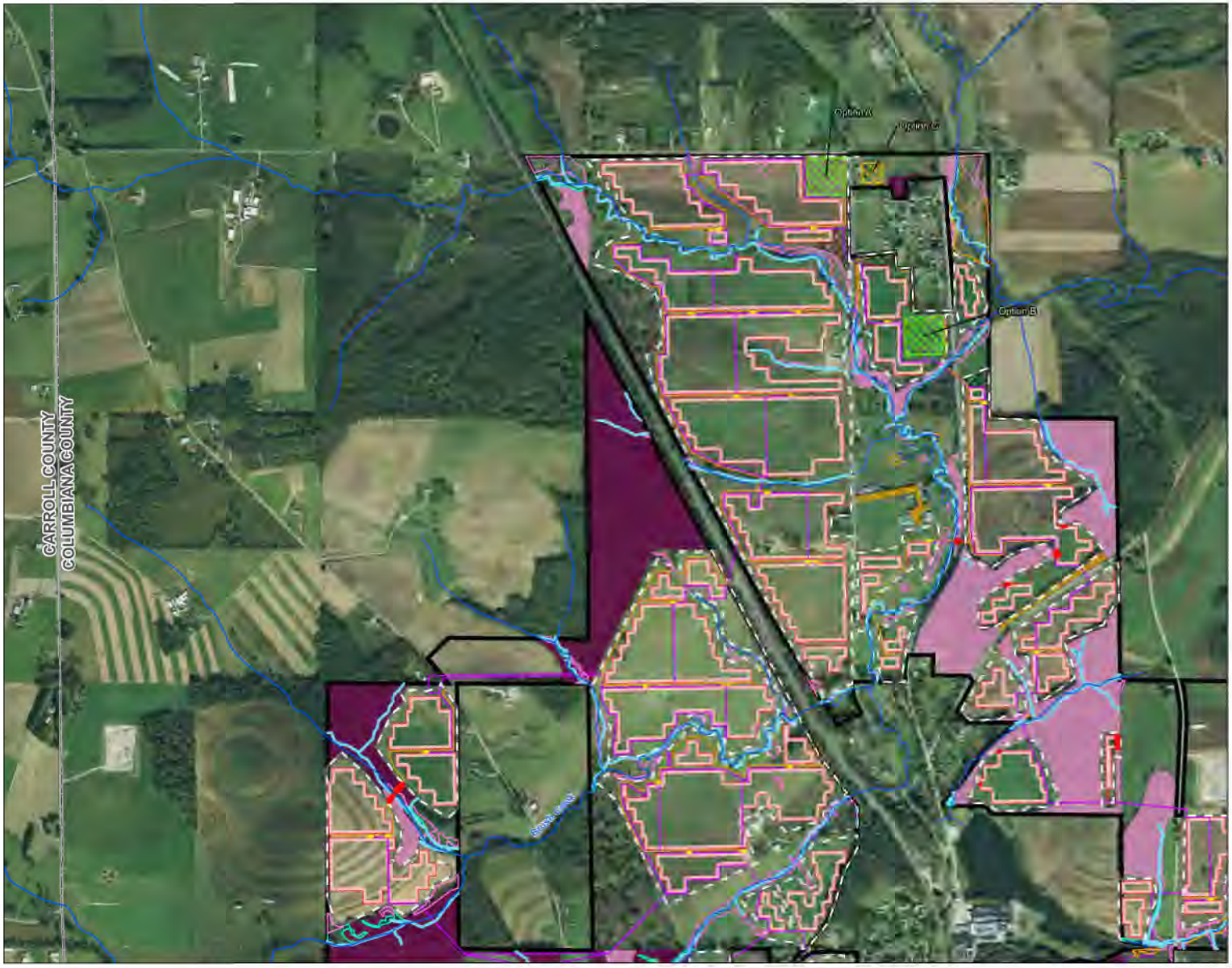


Figure No.
1

Title:
Forested Area Impacts Map

Client/Project
Kensington PV I, LLC
Kensington Solar Project
2028113280

Project Location
Columbiana County, Ohio

Prepared by MZ on 2021-12-10
TR by JS on 2021-12-10
IR by CD on 2021-12-13

N

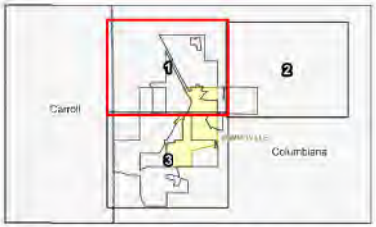
0 200 400
Feet
(At original document size of 11x17)
1:12,000

Legend

- Project Area
- Forested Area Impact
- Solar Array
- Inverter
- Substation/Switchyard
- Switchyard
- Temporary Staging
- Fence
- Access Road
- AC Underground
- DC Underground
- Field Delineated Waterway
- PEM Wetland
- PFO Wetland
- PSS Wetland
- PUB Wetland

Forested Habitat

- Mature Forest
- Successional Forest
- Treeline



Notes:
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Kensington PV I, LLC, Esri, NADS, USGS
3. Environment: NAIP 2019

Preliminary Design - Not for Construction

Stantec

Figure No.
1

Title
Forested Area Impacts Map

Client/Project
Kensington PV I, LLC
Kensington Solar Project

2026113260

Project Location
Columbiana County, Ohio

Prepared by MZ on 2021-12-10
TR by JS on 2021-12-10
IR by CD on 2021-12-13

N

0 200 400
Feet
(At original document size of 11x17)
1:12,000

Legend

- Project Area
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- Switchyard
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- Fence
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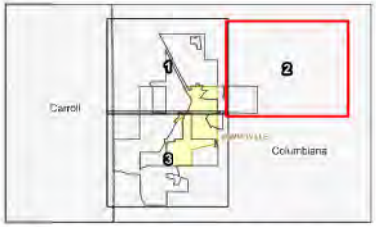
- DC Underground
- Field Delineated Waterway
- PEM Wetland
- PFO Wetland
- PSS Wetland
- PUB Wetland

Forested Habitat

- Mature Forest
- Successional Forest
- Treeline



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Kensington PV I, LLC, Esri, NADS, USGS
3. Background: NAIP 2019

Preliminary Design - Not for Construction

Stantec

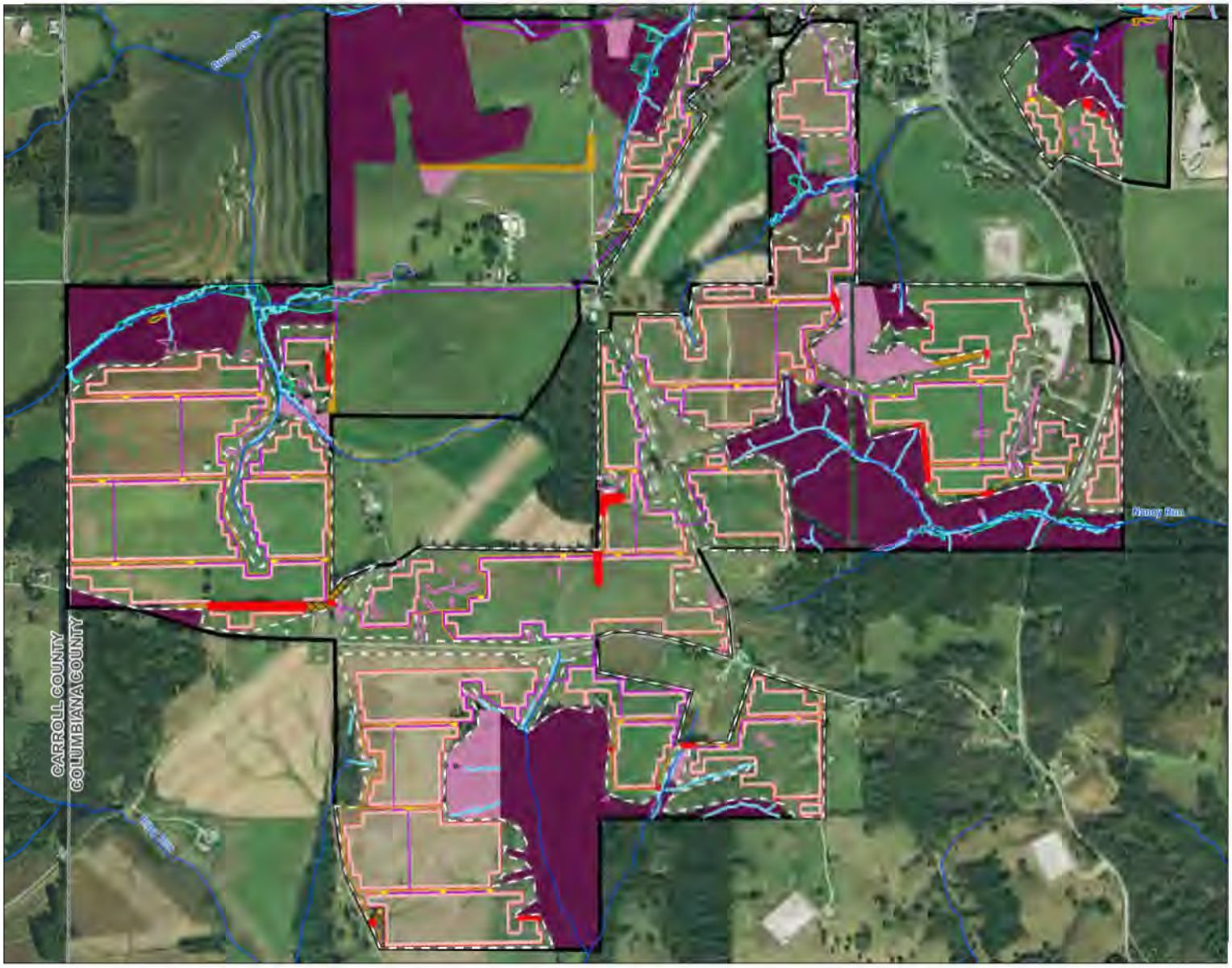


Figure No.
1

Title
Forested Area Impacts Map

Client/Project
Kensington PV I, LLC
Kensington Solar Project

2026113260

Project Location
Columbiana County, Ohio

Prepared by MZ on 2021-12-10
TR by JS on 2021-12-10
IR by CD on 2021-12-13

N

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Feet
(At original document size of 11x17)
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Legend

- Project Area
- Forested Area Impact
- Solar Array
- Inverter
- Substation/Switchyard
- Switchyard
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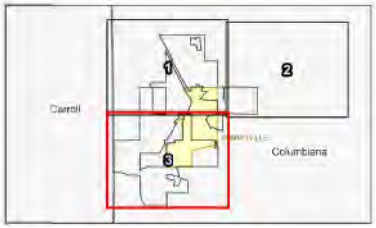
- PSS Wetland
- PUB Wetland

Forested Habitat

- Mature Forest
- Successional Forest
- Treeline



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Kensington PV I, LLC, Esri, NADS, USGS
3. Background: NAIP 2019

Preliminary Design - Not for Construction

Stantec

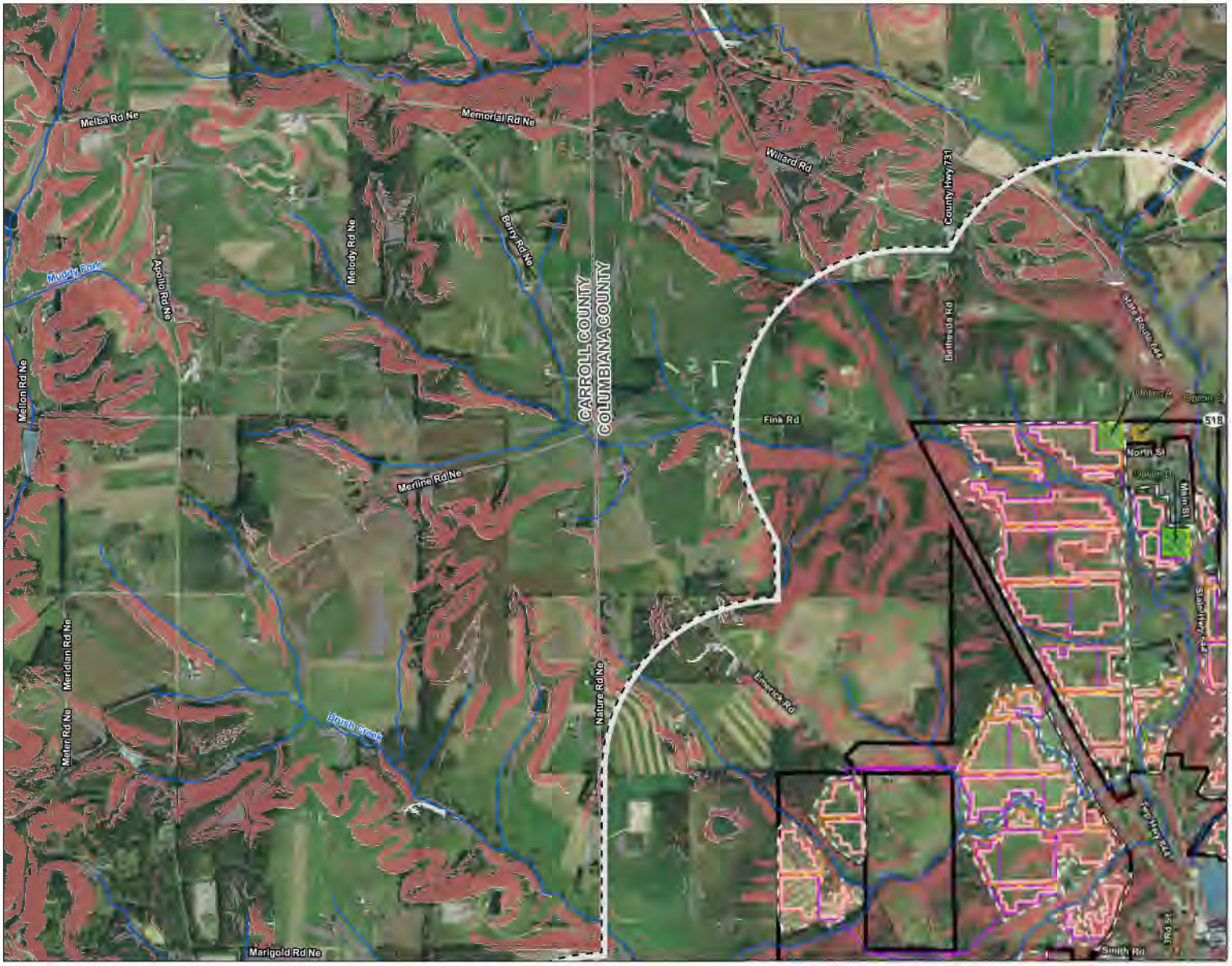


Figure No.
2

Title
Highly Erodible Soils and Steep Slopes Map

Client/Project
Kensington PV I, LLC
Kensington Solar Project
2026113260

Project Location
Columbiana County, Ohio

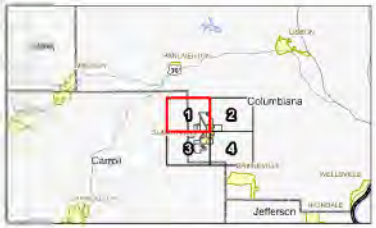
Prepared by MZ on 2021-12-10
TR by JH on 2021-12-10
IR by CD on 2021-12-13

N

0 750 1,500 Feet
(At original document size of 11x17)
1:18,000

Legend
- Project Area
- 0.5 Mile Buffer
- Solar Array
- Inverter
- Substation/Switchyard
- Switchyard
- Temporary Staging Area
- Fence
- Access Road
- AC Underground Transmission Line
- DC Underground Collection Line
- Highly Erodible Soil
- >12% Slope

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Waterbody



Datum
Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
Sources: Stantec, Kensington PV I, LLC, Esri, NADS, USGS, NRCS
Imagery: NAIP 2019

Preliminary Design - Not for Construction

Stantec

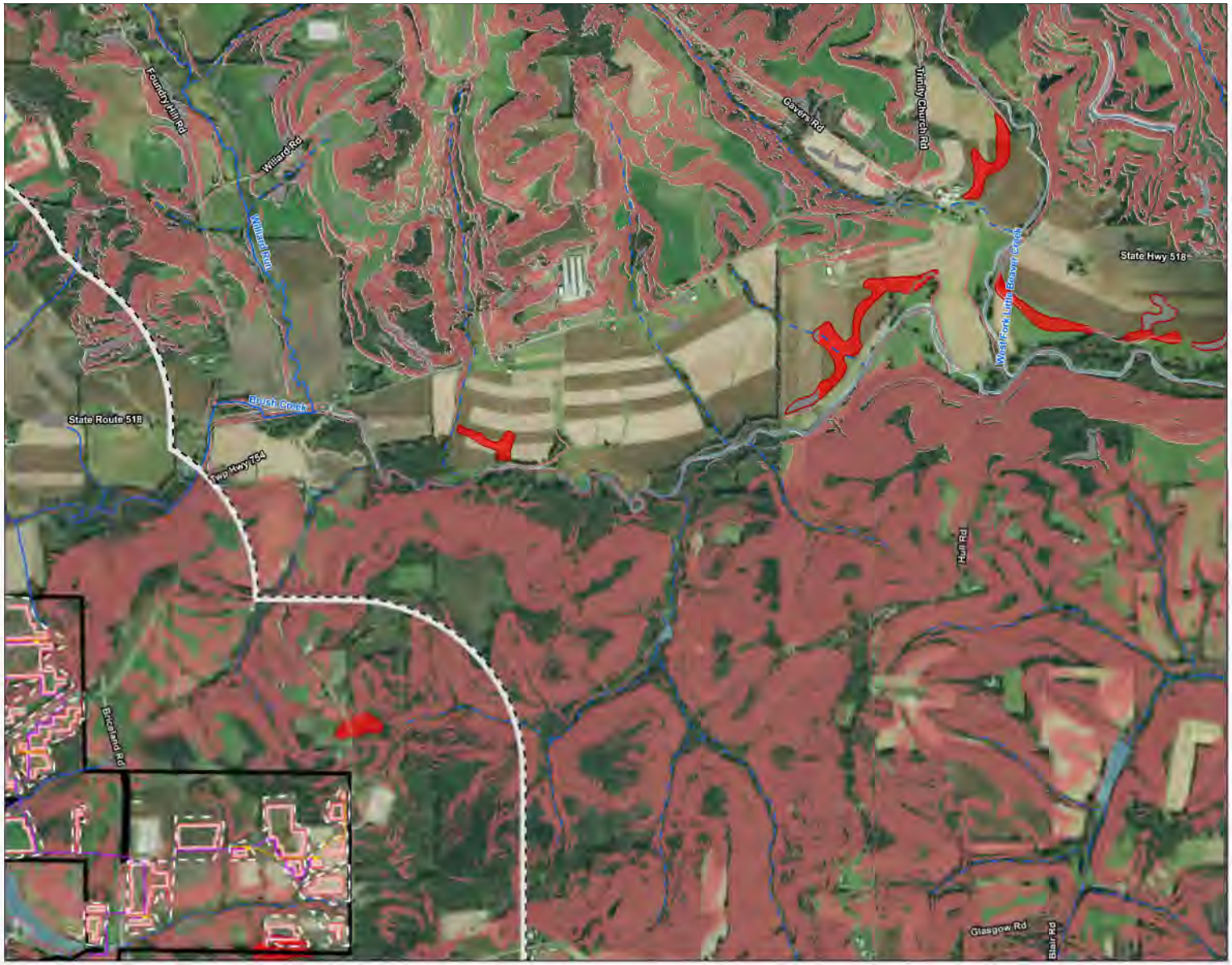


Figure No.
2

Title
Highly Erodible Soils and Steep Slopes Map

Client/Project
Kensington PV I, LLC
Kensington Solar Project

2028113260

Project Location
Columbiana County, Ohio

Prepared by MZ on 2021-12-10
TR by JH on 2021-12-10
IR by CD on 2021-12-13

N

0 750 1,500 Feet
(At original document size of 11x17)
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Legend
- Project Area
- 0.5 Mile Buffer
- Solar Array
- Inverter
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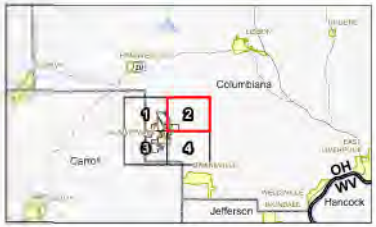
- Temporary Staging Area
- Fence
- Access Road
- AC Underground
- DC Underground
- Highly Erodible Soil
- >12% Slope

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Waterbody



Notes
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2. Data Sources: Stantec, Kensington PV I, LLC, Esri, NADS, USGS, NRCS
3. Base Layer: NAIP 2019

Preliminary Design - Not for Construction

Stantec

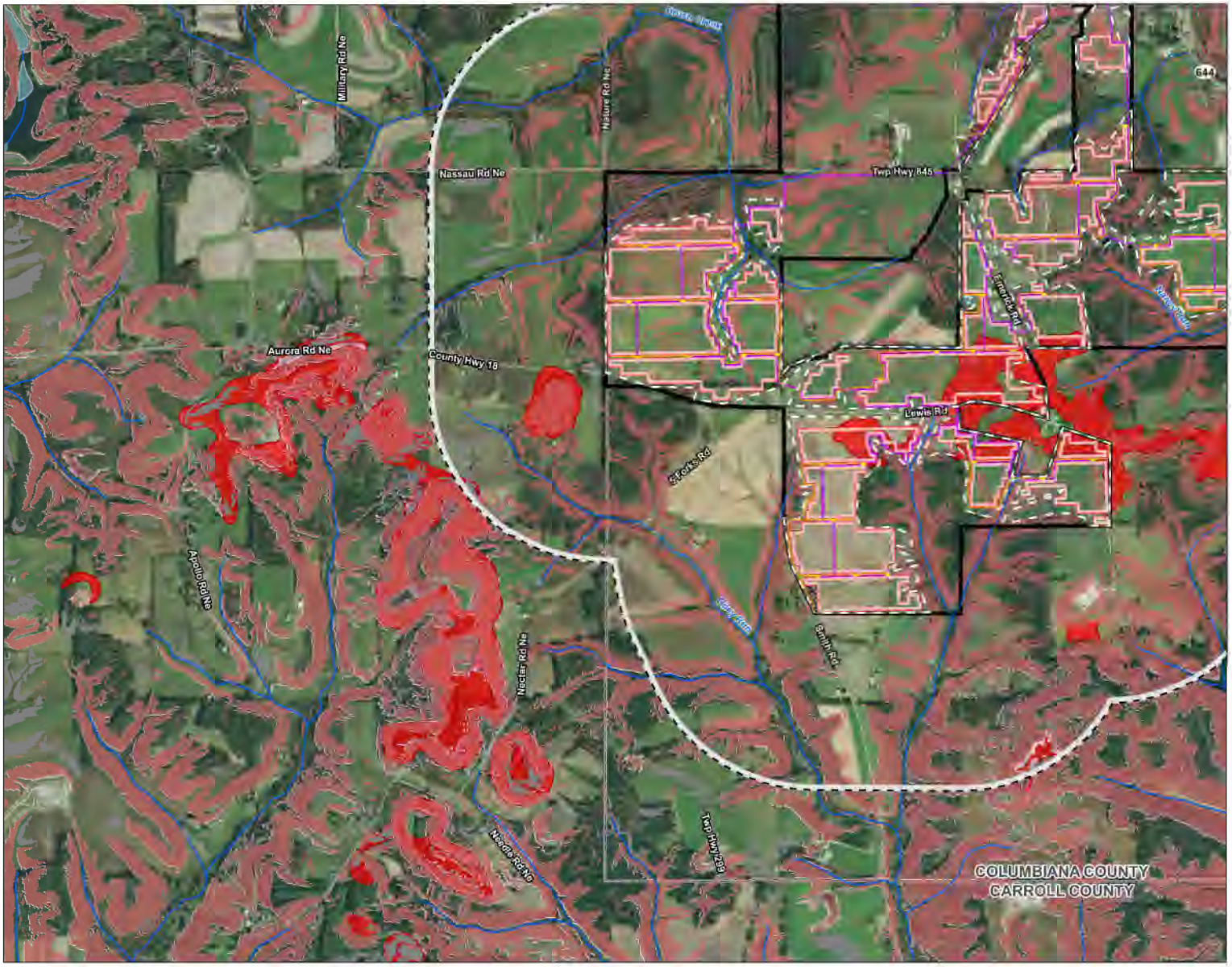

Figure No.
2

Title
Highly Erodible Soils and Steep Slopes Map

Client/Project
Kensington PV I, LLC
Kensington Solar Project

2026113260

Project Location
Columbiana County, Ohio

Prepared by MZ on 2021-12-10
TR by JH on 2021-12-10
IR by CD on 2021-12-13

N

0 750 1,500 Feet
(At original document size of 11x17)
1:18,000

Legend
- Project Area
- 0.5 Mile Buffer
- Solar Array
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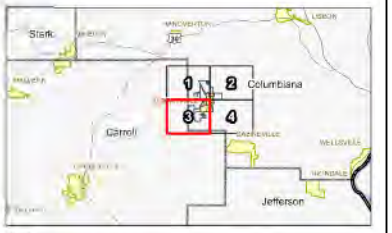
- AC Underground
- DC Underground
- Highly Erodible Soil
- >12% Slope

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Waterbody



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec Kensington PV I, LLC, Esri, NADS, USGS, NRCS
3. Background: NAIP 2019

Preliminary Design - Not for Construction

Stantec

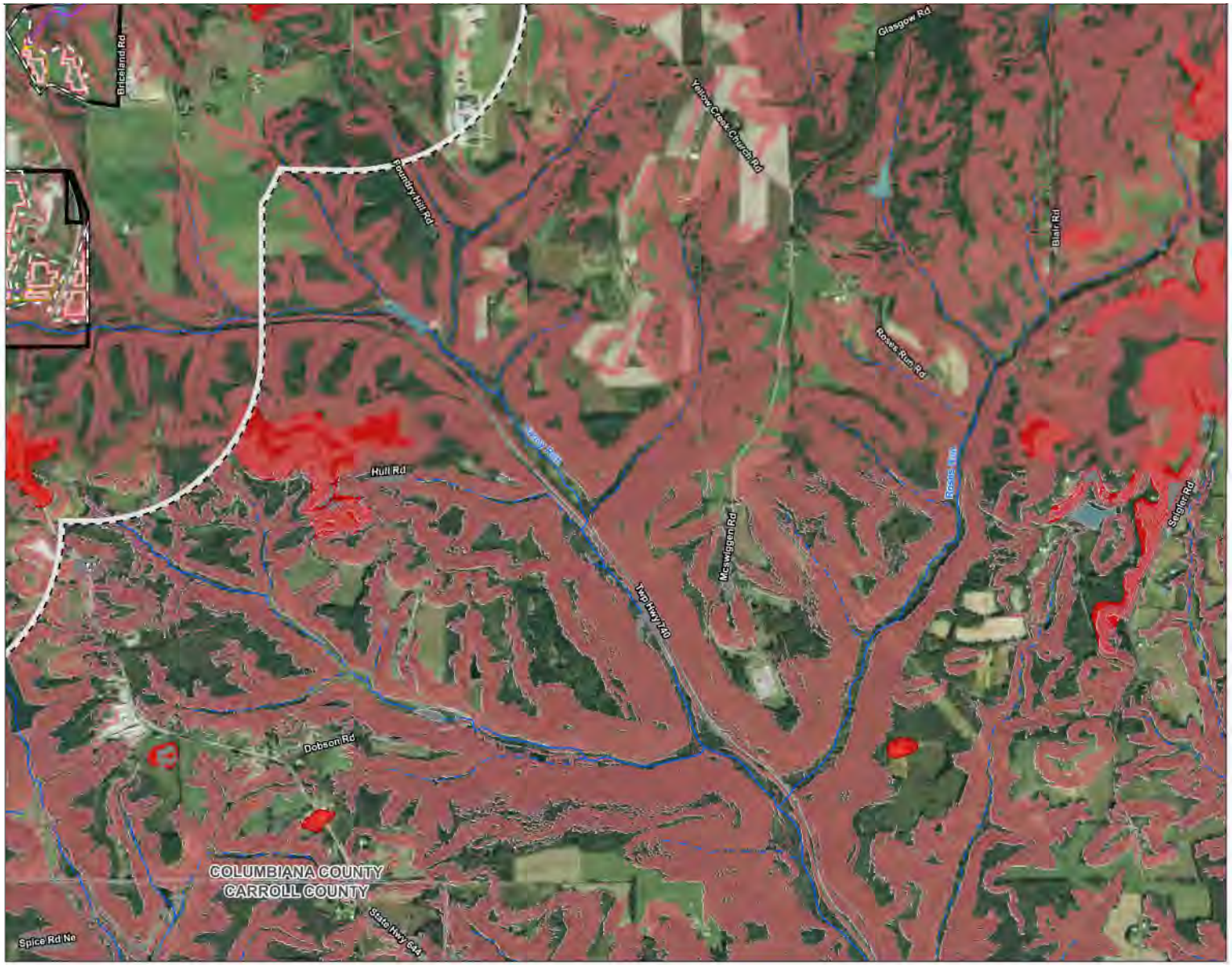


Figure No.
2

Title
Highly Erodible Soils and Steep Slopes Map

Client/Project
Kensington PV I, LLC
Kensington Solar Project
2028113280

Project Location:
Columbiana County, Ohio

Prepared by MZ on 2021-12-10
TR by JH on 2021-12-10
IR by CD on 2021-12-13

N

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(At original document size of 11x17)
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Legend
- Project Area
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- AC Underground
- DC Underground
- Highly Erodible Soil
- >12% Slope

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Waterbody

Notes:
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec Kensington PV I LLC, Esri, NADS, USGS, NRCS
3. Background: NAIP 2019

Preliminary Design - Not for Construction

Stantec

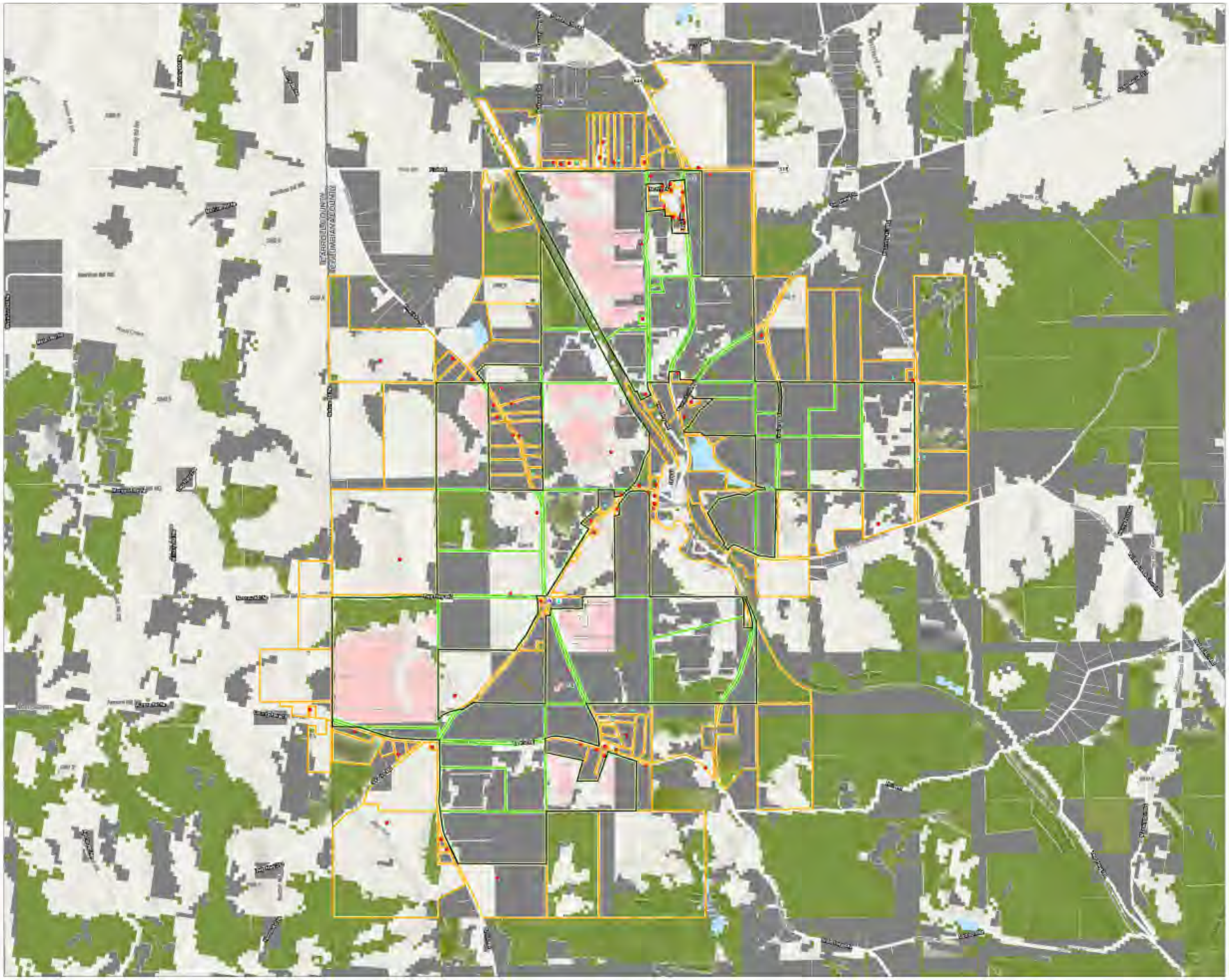
Figure No.
3

Title
Residential Visibility Assessment Map

Client/Project
Kensington PV I, LLC
Kensington Solar Project

Project Location
Columbiana County, Ohio

2028113260
Prepared by MZ on 2021-12-10
Technical Review by JS on 2021-12-10
Independent Review by CD on 2021-12-13



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Legend
- Project Area
- Participating Parcel
- Adjacent Parcel
- Solar Array
- Forested Vegetation
- Cemetery
- Place of Worship
- School*
- Civic Building

Residential*
- Not Visible
- Visible

*Residential visibility indicates the theoretical visibility of solar panels 13 feet in height above the existing terrain to a [illegible] for this analysis.

Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Kensington PV I, Esri, NADS, USGS, NLCD
3. Background: Esri World Topographic Map

Stantec

Preliminary Decommissioning Plan – Kensington Solar Project Columbiana County, Ohio

Prepared for:
Kensington PV 1, LLC
354 Davis Road, Suite 100
Oakville, ON L6J 2X1

Prepared by:
Stantec Consulting Services Inc.
1165 Scheuring Road
De Pere, Wisconsin 54115

Project No: 2028113260
December 13, 2021

This document entitled Preliminary Decommissioning Plan – Kensington Solar Project, Columbiana County, Ohio, was prepared by Stantec Consulting Services Inc. ("Stantec") for the use of Kensington PV 1, LLC (the "Client"), and the applicable regulatory agencies. Any reliance on this document by any other third party is strictly prohibited. The material in this document reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in this document are based on conditions and information existing at the time this document was published and do not take into account any subsequent changes.

Matthew A Clementi, PE
Senior Project Manager

[redacted]
Associate, Senior Scientist and Project Manager

(signature)

Courtney Dohoney, PMP
Senior Associate, Project Manager

[redacted]

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LIST OF FIGURES

Figure 1 Proposed Project Layout

1.0 INTRODUCTION

Kensington Solar PV 1, LLC, (Kensington Solar) is proposing to construct and operate the Kensington Solar Project (the Project) in Franklin Township in Columbiana County, Ohio. The Project footprint encompasses approximately 1,132 acres. The maximum nameplate generating capacity of the Project will be up to 145 megawatts, alternating current $(MW)_{[AC]}$. Kensington Solar is currently considering bifacial monocrystalline solar panels for the Project.

This Decommissioning Plan (Plan) provides a description of the decommissioning and restoration phase of the Project. Start-of-construction is planned for the first quarter of 2023, with a projected Commercial Operation Date in the first quarter of 2024. The Project will consist of the installation of the perimeter fencing; solar arrays and associated trackers, concrete pads for substation, and steel piles; inverter stations; access and internal roads; electrical collection system and substation (Figure 1).

This Plan is applicable to the decommissioning/deconstruction and restoration phases of the Project. A summary of the components to be removed is provided in Section 1.1. A summary of estimated costs associated with decommissioning the Project is provided in Section 4.0.

1.1 SOLAR FARM COMPONENTS

The main components of the Project include:

- Solar modules
- Tracking system and steel piles
- Inverter stations on piers
- Electrical cabling and conduits
- Site access roads
- Perimeter fencing
- Project substation and short transmission tie-in line

1.2 TRIGGERING EVENTS AND EXPECTED LIFETIME OF PROJECT

Project decommissioning may be triggered by an event such as the end of the power purchase agreement with no plans for further marketing of power sales, abandonment, or when the Project reaches the end of its operational life. The Project will be considered to be abandoned if facilities are non-operational for a period of twelve (12) consecutive months. Project facilities will be removed from the site in accordance with a timeframe agreed upon by Kensington Solar, the Ohio Power Siting Board Staff (OPSB), and the respective county administrators.

If properly maintained, the expected lifetime of the Project is 40 years. In the event that the modules are not retrofitted, or at the end of the Project's useful life, the panels and associated components will be decommissioned and removed from the Project site.

Components of the solar facility that have resale value may be sold in the wholesale market. Components with no wholesale value will be salvaged and sold as scrap for recycling or disposed of at an approved offsite licensed solid waste disposal facility (landfill). Decommissioning activities will include removal of the arrays and associated components as listed in Section 1.1 and described in Section 2.

Kensington Solar is committed, where possible, to recycling all solar panels. This commitment includes panels damaged during construction and operation, as well as panels at the end of Project life/ decommissioning.

1.3 DECOMMISSIONING SEQUENCE

Decommissioning activities will begin within twelve months of the Project ceasing operation and are anticipated to be completed in 12 to 18 months. Kensington Solar will be the responsible party. Monitoring and site restoration may extend beyond this period to ensure successful revegetation and rehabilitation. The anticipated sequence of decommissioning and removal is described below; however, overlap of activities is expected.

- Reinforce access roads, if needed, and prepare site for component removal
- Install erosion control fencing and other best management practices (BMPs) to protect sensitive resources and control erosion during decommissioning activities
- De-energize solar arrays
- Dismantle panels and above ground wiring
- Remove tracking and piles
- Remove inverter/transformer stations along with support system and foundation pads
- Remove electrical cables and conduits
- Remove access and internal roads and grade site (if required)
- Remove substation and associated transmission tie-in line
- De-compact subsoils as needed, restore and revegetate disturbed land to pre-construction conditions to the extent practicable

2.0 PROJECT COMPONENTS AND DECOMMISSIONING ACTIVITIES

The solar facility components and decommissioning activities necessary to restore the Project area, as near as practicable, to pre-construction conditions are described within this section.

2.1 OVERVIEW OF SOLAR FACILITY SYSTEM

Kensington Solar anticipates utilizing approximately 353,684 solar modules, with a total nameplate generating capacity of approximately 168 MW, direct current (DC) (145 $MW_{[AC]}$). The Project footprint encompasses approximately 1,132 acres and will be bounded by perimeter fencing as shown on Figure 1 (preliminary design; subject to modification). The land within the perimeter fencing is predominantly agricultural land. Statistics and estimates provided in this Plan are based on Jinko Solar Eagle 475-watt bifacial module or a similar module.

Foundations, steel piles, and electric cabling and conduit installed below the soil surface will be removed. Access roads may be left in place if requested and/or agreed to by the landowner; however, for purposes of this assessment, all access roads are assumed to be removed. Public roads damaged or modified during the decommissioning and reclamation process will be repaired upon completion of the decommissioning phase and in compliance with the Road Use Agreement that is expected to be implemented between Kensington Solar and the Columbiana County Engineers. An estimated cost of public road repair is included in Project decommissioning overhead costs.

Estimated quantities of materials to be removed and sold, salvaged, or disposed of are included in this section. Many of the materials described have salvage value; although, there are some components that will likely have none at the time of decommissioning. Removed materials that cannot be sold on the resale market will be salvaged or recycled to the extent possible. Other waste materials will be disposed of in accordance with state and federal law in an approved licensed solid waste facility.

Solar panels may have value in a resale market, depending on their condition at the end of the Project life. If the Project is decommissioned prior to the anticipated 40-year timeframe, the resale value of components will be substantially higher than at the end of the projected Project.

Table 1 presents a summary of the primary components of the Project included in this decommissioning plan.

Table 1 Primary Components of Solar Farm to be Decommissioned

Component	Quantity	Unit of Measure
Solar Modules (approximate)	353,684	Each
Tracking System (equivalent full trackers)	5,895	Tracker
Steel Piles	42,801	Each
Inverter Stations with Foundations	128	Each
Electrical Cables and Conduits	98,425	Linear Foot (estimated)
Perimeter Fencing	207,630	Linear Foot
Access Roads (approximate)	196,850	Linear Foot
Project Substation	1	Each

2.2 SOLAR MODULES

Kensington Solar intends to use a bifacial monocrystalline panel (475 watt) for the Project. Each module assembly (with frame) will have a total weight of approximately 58.4 pounds (26.5 kg). The modules will be approximately 87 inches by 41 inches in size and are mainly comprised of non-metallic materials such as silicon, glass, composite film, plastic, and epoxies, with an anodized aluminum frame.

At the time of decommissioning, module components in working condition may be refurbished and sold in a secondary market yielding greater revenue than selling as salvage material. The estimates in this report have been calculated using a conservative approach, considering revenue from salvage only, rather than resale of Project components.

Kensington Solar is committed, where possible, to recycling all solar panels. This commitment includes panels damaged during construction and operation, as well as panels at the end of Project life/ decommissioning.

2.3 TRACKING SYSTEM AND SUPPORT

The solar modules will be mounted on a single-axis, two-in-portrait tracking system. Kensington Solar will utilize the Voyager tracker manufactured by FTC Solar, the Gemini by NEXTracker or similar system for the tracking units. Each full, two-string tracker will be approximately 39.6 meters (130 feet) in length and will support 60 solar modules. Smaller trackers, supporting 30 panels each, will be employed at the edges of the layout to efficiently utilize available space. The tracking system is mainly comprised of high-strength galvanized steel and anodized aluminum; steel piles that support the system are assumed to be comprised of galvanized steel.

The solar arrays will be deactivated from the surrounding electrical system and made safe for disassembly. Liquid wastes, including oils and hydraulic fluids will be removed and

properly disposed of or recycled according to regulations current at the time of decommissioning. Electronic components, and internal electrical wiring will be removed and salvaged. The steel piles will be completely removed from the ground.

The supports, tracking system, and posts contain salvageable materials which can be sold to provide revenue to offset the decommissioning costs.

2.4 INVERTER STATIONS

The combined inverters/transformers (inverter stations) generally sit on small concrete footings or piers on steel piles within the array. The inverters will be deactivated, disassembled and removed. For purposes of this report, it is assumed that inverters will be constructed on concrete pads which will be completely removed during decommissioning. Depending on condition, the equipment may be sold for refurbishment and re-use. If not re-used, they will be salvaged or disposed of at an approved solid waste management facility.

2.5 ELECTRICAL CABLING AND CONDUITS

The Project's underground electrical collection system will be placed at a depth of at least 18 inches below the ground surface. For purposes of this report, it is assumed that all subsurface cabling will be removed and salvaged. Recovery cost has been conservatively based on aluminum wiring; however, the salvage value of copper, if used, would be far greater.

2.6 PROJECT SUBSTATION

A Project substation will be part of the Project within an approximately 375-foot by 375-foot footprint. The substation will contain within its perimeter, a gravel pad, power transformers and footings, electrical control house and concrete pads, as needed. The substation transformers may be sold for re-use or salvage. Components of the substation that cannot be salvaged will be transported off-site for disposal at an approved waste management facility. Although there is some potential that the Project substation may remain at the end of the Project life, an estimated decommissioning cost has been included in this Plan.

2.7 OVERHEAD GENERATION TIE-IN TRANSMISSION LINE

There is an approximate 160-foot-long overhead transmission line to be constructed between the Project substation and a utility substation (the point of interconnection). Removal of the overhead generation tie-in transmission line is included in this Plan.

2.8 OPERATIONS AND MAINTENANCE BUILDING

There is no onsite Operations and Maintenance (O&M) building planned; therefore, no O&M building removal is included in this Plan.

2.9 PERIMETER FENCING AND ACCESS ROADS

The Project will include a security fence around the perimeter of the site and exclusionary area. The fence will total approximately 207,630 feet in length.

Access drives will provide direct access to the solar facility from local roads and along the inner perimeter of the arrays. Internal roads will be located within the array to allow access to the equipment. The site access drives will be approximately 16 feet in width and total approximately 196,850 feet (37.28 miles) in length. The access road lengths may change with final Project design. To be conservative, the decommissioning estimate assumes that all access roads will be completely removed.

Topsoil removed during Project construction will be redistributed on the Project site to be utilized during site restoration. It is assumed that 90 percent of the topsoil required to restore the site will be drawn from on-site sources. An additional 10 percent of native topsoil (approximately 5,833 cubic yards) will be purchased to augment on site soils.

During installation of the Project access roads, the existing topsoil will be excavated to a depth of six inches, the subgrade will be compacted, and then six inches of granular fill will be placed. The estimated quantity of these materials and the required topsoil to replace them is provided in Table 2.

Table 2 Typical Access Road Construction Materials

Item	Quantity	Unit
Compacted granular fill, 6-inch thick – to be removed	58,326	Cubic Yards
Topsoil replacement	58,326	Cubic Yards (90% from on-site locations; 10% to be purchased to supplement)

Decommissioning activities include the removal and stockpiling of aggregate materials onsite for salvage preparation. It is conservatively assumed that all aggregate materials will be removed from the Project site and hauled up to five miles from the Project area. Following removal of aggregate, the access road areas will be graded, de-compacted with deep ripper or chisel plow (ripped to 18 inches), backfilled with native subsoil and topsoil, as needed, and graded as necessary.

3.0 LAND USE AND ENVIRONMENT

3.1 SOILS AND AGRICULTURAL LAND

Areas of the Project that were previously utilized for agricultural purposes will be restored to their pre-construction condition and land use as dictated by landowner lease agreements. Restored areas will be revegetated in consultation with the current landowner and in compliance with regulations in place at the time of decommissioning. Land disturbed by Project facilities will be restored in such a way to be used in a reasonably similar manner to its original intended use as it existed prior to Project construction.

3.2 RESTORATION AND REVEGETATION

Areas of the Project that have been excavated and backfilled will be graded as previously described. Soils compacted during de-construction activities will be de-compacted, as necessary, to restore the land to pre-construction land use. If present, drain tiles that have been damaged will be restored to pre-construction condition. Topsoil will be placed on disturbed areas and seeded with appropriate vegetation or in coordination with landowners within agricultural land. Work will be completed to comply with the conditions agreed upon by Kensington Solar and the OPSB or as directed by regulations in affect at the time of decommissioning.

3.3 SURFACE WATER DRAINAGE AND CONTROL

The proposed Project is predominantly located in agricultural land. The terrain is rolling hills. The Project facilities are being sited to avoid all impacts to wetlands and waterways. The existing Project site conditions and proposed BMPs to protect surface water features will be detailed in a Project Stormwater Pollution Prevention Plan (SWPPP) for the Project prior to the commencement of construction activities.

Surface water conditions at the Project site will be reassessed prior to the decommissioning phase. Kensington Solar will obtain the required water quality permits from the Ohio Environmental Protection Agency (OEPA) and the U.S. Army Corp of Engineers (USACE), if needed, before decommissioning of the Project. Construction storm water permits will also be obtained and a SWPPP prepared describing the protection needed to reflect conditions present at the time of decommissioning. BMPs may include construction entrances, temporary seeding, permanent seeding, mulching (in non-agricultural areas), erosion control matting, silt fence, filter berms, and filter socks.

3.4 MAJOR EQUIPMENT REQUIRED FOR DECOMMISSIONING

The activities involved in decommissioning the Project include removal of the above and below-ground ground components of the Project, and restoration as described in Sections 2 and 3.2.

Equipment required for the decommissioning activities is similar to what is needed to construct the solar facility and may include, but is not limited to: small cranes, low ground pressure (LGP) track mounted excavators, backhoes, LGP track bulldozers, LGP off-road end-dump trucks, front-end loaders, deep rippers, water trucks, disc plows and tractors to restore subgrade conditions, and ancillary equipment. Standard dump trucks will be used to transport material removed from the site to disposal facilities.

4.0 DECOMMISSIONING COST ESTIMATE SUMMARY

Expenses associated with decommissioning the Project will be dependent on labor costs at the time of decommissioning. For the purposes of this report approximate 2021 average market values were used to estimate labor expenses. Fluctuation and inflation of the labor costs were not factored into the estimates.

The value of the individual components of the solar facility will vary with time. In general, the highest component value would be expected at the time of construction with declining value over the life of the Project. Over most of the life of the Project, components such as the solar panels could be sold in the wholesale market for reuse or refurbishment. As efficiency and power production of the panels decrease due to aging and/or weathering, the resale value will decline accordingly. Secondary markets for used solar components include other utility scale solar facilities with similar designs that may require replacement equipment due to damage or normal wear over time; or other buyers (e.g., developers, consumers) that are willing to accept a slightly lower power output in return for a significantly lower price point when compared to new equipment.

4.1 DECOMMISSIONING RISK OVER THE LIFECYCLE OF A PROJECT

The probability of an event that would lead to abandonment or long-term interruption is extremely low during the first 15 to 20 years of the Project life. Accordingly, the risk of decommissioning the Project is extremely low during this time frame. The reasons why the risk to decommission the Project is extremely low in the early phases of the Project include, but are not limited to:

- In the early stages of the Project the resale value of the equipment is significantly higher than the decommissioning costs, resulting in a net positive (revenue).
- Project owners have sophisticated financing structures that allow the lender or tax equity partner to step in and rectify the event that may lead to abandonment.
- A Power Purchase Agreement (PPA) is a legal contract between an electricity generator (project owner) and a power purchaser (typically a utility or large power buyer/trader). The typical contractual term for a PPA can be many years, during which time the power purchaser buys energy, capacity and ancillary services, from the Project. Such PPAs play a key role in the financing of independently owned (i.e., not owned by a public utility) electricity generating assets since it defines the revenue terms for a project and the credit quality.
- Most critical solar components have original equipment manufacturer (OEM) warranties with terms in excess of five years that include labor and parts. A warranty is an agreement or guarantee outlined by a manufacturer to a customer that defines performance requirements for a product or service. Warranties give customers a form of insurance if the purchased product or service does not adhere to quality standards. These warranties assure the project owner, financing

parties, and other stakeholders, that equipment will perform as expected which minimizes the risk of a decommissioning event. Warranty lengths on critical components vary by component and include performance guarantees on solar modules.

- Solar projects consist of many networked components designed to convert solar radiation into electrical energy. The failure of any single component will not result in a substantial reduction of energy generation that could lead to a decommissioning event.
- Solar projects are required to maintain replacement value property damage insurance coverage and business interruption insurance coverage. Business interruption insurance covers the loss of income that a business suffers after a disaster or equipment failure. Typical solar business interruption insurance covers income loss for twelve months from the date of the event triggering the loss.
- The replacement costs of solar components will typically decline over time, and accordingly, costs to replace failed or damaged equipment after lapsed OEM warranties will not create large financial hurdles for the Project.
- Solar power is an increasingly popular form of renewable energy around the world and as an alternative to the burning of fossil fuels, solar ranks alongside wind and hydropower as essential energy options for the future of the planet. Solar also offers the additional benefit of being easier to build, operate and decommission with minimal environmental risks. Recent rises in popularity and use can be linked to lower installation and operation costs and it is expected that this pattern will continue into the future, further reducing the risk of a decommissioning event.

4.2 DECOMMISSIONING EXPENSES

Project decommissioning will incur costs associated with disposal of components, including materials which will be disposed of at a licensed facility, as required. Decommissioning costs also include backfilling, grading and restoration of the Project site as described in Section 2. Table 3 summarizes the estimates for activities associated with the major components of the Project.

Table 3 Estimated Decommissioning Expenses – 145 MW_{AC} Solar Array

Activity	Unit	Quantity	Cost per Unit	Total
Overhead and management (includes estimated permitting required)	Lump Sum	1	$685,000	$685,000
Solar modules; disassembly and removal	Each	353,684	$4.00	$1,414,736
Tracking System disassembly and removal (equivalent full trackers)	Each	5,895	$440.00	$2,593,800
Steel pile/post removal	Each	42,801	$12.50	$535,013
Remove buried AC cable	Linear Feet	98,425	$0.40	$39,370

Activity	Unit	Quantity	Cost per Unit	Total
Inverter removal with foundation	Each	126	$1,700	$214,200
Access road excavation and removal	Lump Sum	1	$360,350	$360,350
Perimeter fence removal	Linear Feet	207,630	$2.80	$581,364
Topsoil replacement for roads and rehabilitation of site	Lump Sum	1	$805,300	$805,300
Removed above ground transmission line and poles	Linear Mile	0.03	$250,000	$7,500
Project substation	Each	1	$300,000	$300,000
Total estimated decommissioning cost				$7,536,633

4.3 DECOMMISSIONING REVENUES

Potential revenue from decommissioning the Project could be realized through the sale of the solar facility components and construction materials. As previously described, the value of the decommissioned components will be higher in the early stages of the Project and decline over time. Resale of components such as solar panels is expected to be greater than salvage (i.e., scrap) value for most of the life of the Project.

Modules and other solar plant components may be sold within a secondary market or as salvage. A current sampling of reused solar panels indicates a wide range of pricing depending on age and condition ($0.10 to $0.40 per watt). Future pricing of solar panels is difficult to predict at this time, due to the relatively young age of the market, changes to solar panel technology, and the ever-increasing product demand. A conservative estimation of the value of solar panels at $0.10 per watt would yield approximately $16,800,000. Increased costs of removal, for resale versus salvage, would be expected in order to preserve the integrity of the panels; however, the net revenue would still be substantially higher than the estimated salvage value.

The resale value of components such as trackers, may decline more quickly; however, the salvage value of the steel that makes up a large portion of the tracker is expected to stay at or above the value used in this report.

The market value of steel and other materials fluctuates daily and has varied widely over the past five years. Salvage value estimates were based on an approximate five-year-average price of steel and copper derived from sources including on-line recycling companies and United States Geological Survey (USGS) commodity summaries. The price used to value the steel used in this report is $204 per metric ton; aluminum at $0.40 per pound; silicon at $0.40 per pound and glass at $0.05 per pound. The main component of the tracking system and piles is assumed to be salvageable steel. Solar panels are estimated to contain approximately 75 percent glass, 8 percent aluminum and 5 percent silicon. A 50 percent recovery rate was assumed for aluminum and all panel components,

due to the processing required to separate the panel components. Alternative and more efficient methods of recycling solar panels are anticipated before this Project is decommissioned, given the large number of solar facilities that are currently being developed. Table 4 summarizes the potential salvage value for the solar array components and construction materials.

Table 4 Estimated Decommissioning Revenues

Item	Unit of Measurement	Quantity per Unit	Salvage Price per Unit	Total Salvage Price per Item	Number of Items	Total
Panels - Silicon	Pounds per Panel	1.5	$0.40/lb	$0.600	353,684	$212,210
Panels - Aluminum	Pounds per Panel	2.3	$0.40/lb	$0.920	353,684	$325,389
Panels - Glass	Pounds per Panel	21.9	$0.05/lb	$1.095	353,684	$387,284
Collection Cabling - Aluminum	Pounds per foot		$0.19/lb	$0.190	98,425	$18,701
Tracking System and Posts	Metric tons per $MW_{[DC]}$	43.2	$204/MT	$8,812.8	168.00	$1,480,550
Substation	Each	1	$50,000	$50,000	1	$50,000
						$2,474,134

* Revenue based on salvage value only. Revenue from used panels at $0.10 per watt could raise $16,800,000 as resale versus the estimated salvage revenue.

4.4 DECOMMISSIONING COST SUMMARY

Table 5 provides a summary of the estimated cost to decommission the Project, using the information detailed in Section 4.2. Potential revenue as detailed in Section 4.3 is not included within this cost estimate. Estimates are based on 2021 prices, with no market fluctuations or inflation considered.

Table 5 Decommissioning Summary

Item	Cost/Revenue
Decommissioning Expenses	$7,536,633

4.5 FINANCIAL ASSURANCE

Kensington Solar proposes to post decommissioning funds in the form of a performance (surety) bond prior to construction, to cover 100 percent of the decommissioning expenses listed in Table 5. No salvage value of will be considered in the bond amount. The final Decommissioning Plan will be prepared by a professional engineer registered with the state board of registration for

professional engineers and surveyors. The applicant will be listed as the Principal, the insurance company as the Surety, and the OPSB as the Obligee. Kensington Solar proposes that the cost of decommissioning and bond amount be updated every 5 years by an engineer paid for by Kensington Solar and submitted to the OPSB.

Kensington Solar will also be responsible for coordinating the report of public roads damaged or modified during the decommissioning process. All Project equipment will be removed within one year.

FIGURES

Figure 1 Proposed Project Layout

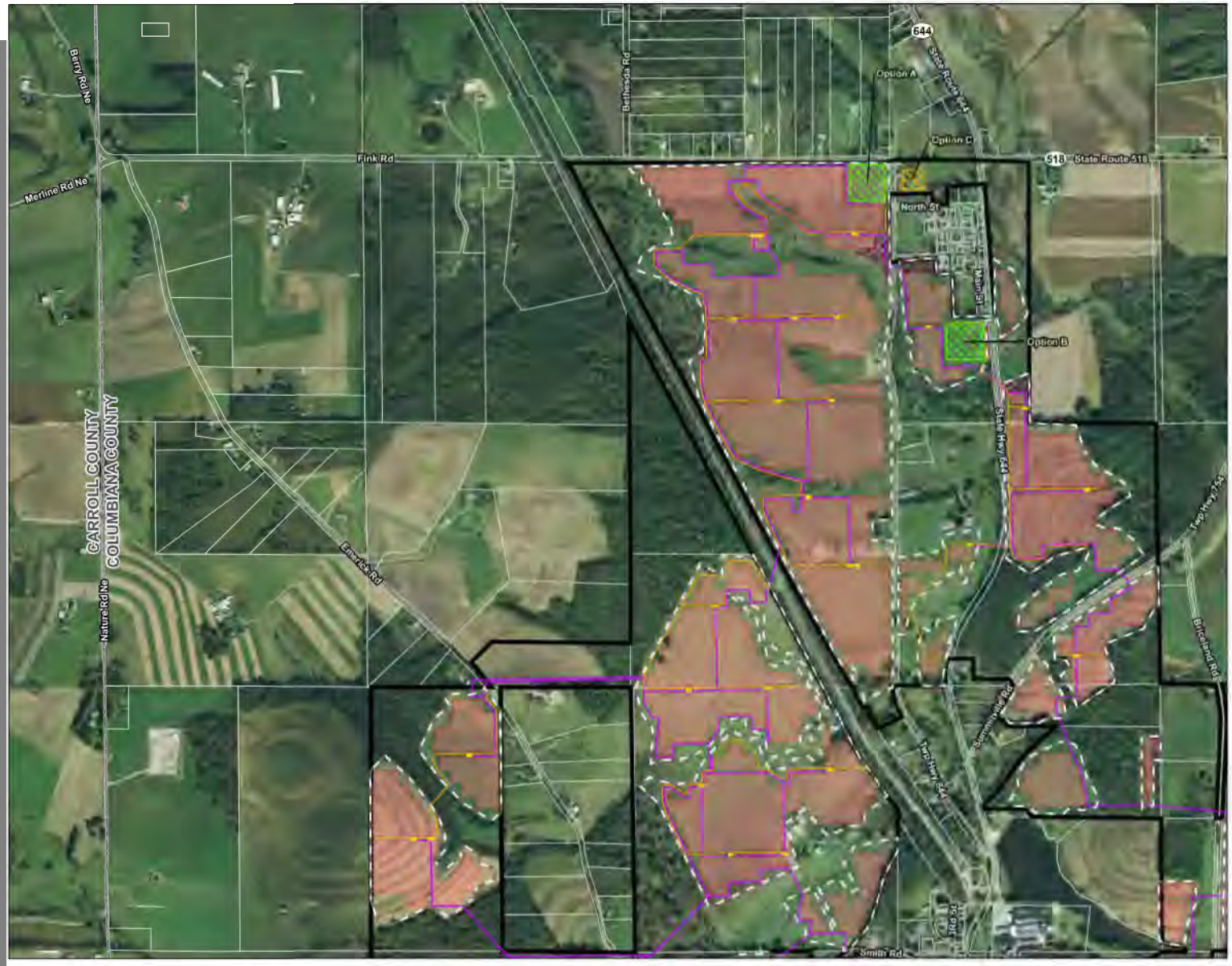

Figure No.
1

Title
Project Site Layout Map

Client/Project
2028113260
Kensington PV I, LLC
Kensington Solar Project

Project Location:
Columbiana County, Ohio

Prepared by MZ on 2021-06-18
TR by DG on 2021-07-29
IR by CD on 2021-10-11

N

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(At original document size of 11x17)
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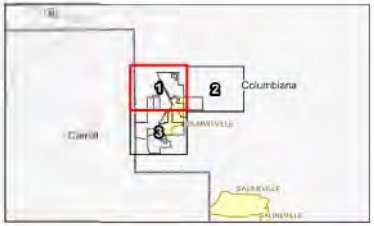
Legend
- Project Area
- Parcel Boundary
- Solar Array
- Inverter
- Substation/Switchyard
- Switchyard
- Temporary Staging Area
- Fence
- Access Road
- AC Underground Collection Line
- DC Underground Collection Line



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Kensington PV I LLC, Esri, NADS, Columbiana County
3. Basemap: NAIP 2019

Preliminary Design - Not for Construction

Stantec

Figure No.
3-2

Title
Project Site Layout Map

Client/Project
Kensington PV I, LLC
Kensington Solar Project

2028113260

Project Location
Columbiana County, Ohio

Prepared by MZ on 2021-06-18
TR by DG on 2021-07-29
IR by CD on 2021-10-11

N

0 500 1,000 Feet
(At original document size of 11x17)
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Legend
- Project Area
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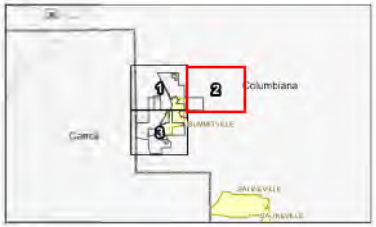
- Fence
- Access Road
- AC Underground Collection Line
- DC Underground Collection Line



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Kensington PV I LLC, Esri, NADS, Columbiana County
3. Background: NMP 2019

Preliminary Design - Not for Construction

Stantec

Figure No.
3-2

Title
Project Site Layout Map

Client/Project
2026113260
Kensington PV I, LLC
Kensington Solar Project

Project Location:
Columbiana County, Ohio

Prepared by MZ on 2021-06-16
TR by DG on 2021-07-29
IR by CD on 2021-10-11

N

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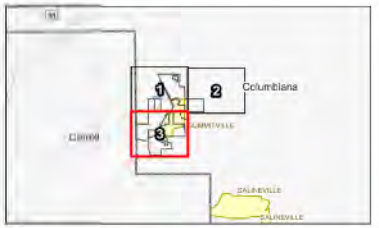
(At original document size of 11x17)
1:12,000

Legend
- Project Area
- Parcel Boundary
- Solar Array
- Inverter
- Substation/Switchyard
- Switchyard
- Temporary Staging Area
- Fence
- Access Road
- AC Underground Collection Line
- DC Underground Collection Line



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Kensington PV I, LLC, Esri, NADS, Columbiana County
3. Background: NAIP 2019

Preliminary Design - Not for Construction

Stantec

Version 1.0 DRAFT

December 13, 2021

FIRE AND EMERGENCY SERVICES MANUAL

Kensington Solar PV I, LLC

Columbiana County Kensington Solar

Responsibility for Fire Response Decision Making

Fire Department should be present when there is a fire at the Kensington Solar Project to ensure that the fire does not leave the property boundary of PV Solar project. Fire department should maintain a safe perimeter to make sure the fire does not "jump" the fence. Fire Department should watch the fire burn and not intervene because the fire is an electrical fire. Fire department should never enter the plant and operate equipment.

If there is a fire, we are confident that it will never get to the point where local Fire Department must cut locks to enter the project. Fire Department personnel should never operate equipment. If an electrical fire occurs, the breakers will automatically trip, all circuits will open, and the inverters will shut down in the affected arrays. This will occur to prevent further damages and possibly another fire. Liberty Power will provide the local Fire Department with an access key to the plant.

In the event the PV Plant must be De-Energized please use the following steps:

- Contact Liberty Power personnel (contact will be identified prior to construction) along with Operations & Maintenance responsible for maintaining the plant operations, numbers can be found on Contact list in manual.
- Non-Electrical Fire
    - Contact Local Utility, LP Dispatch in contact list, to open the Circuits Feeding our Plant, if they haven't already in the location of the fire.
    - Contact Plants Operations & Maintenance Team to access remotely and possibly locally to facilitate a site shut down
- Electrical Fire
    - Contact Local Utility, LP Dispatch in contact list, to open the Circuits feeding our plant, if they haven't already
    - Protection should be in place to isolate an issue if it occurs.
    - Breakers will Trip, Circuits will Open, Inverters will shutdown

Site Access

Controlled access points (gates with keyed locks) will be installed at the site prior to energization. Address signage (along with arrays served from each entrance) will be posted at each entrance so that it is visible from the road. See Figure 1, below, for an example of proposed address signage. Knox boxes will be mounted on posts (marked with blue reflective tape) outside of each gate.

Non-Fire Related Emergency

In the event a non-fire related emergency, EMS and Police department should rely on instructions provided by the personnel calling 9-1-1. Personnel shall give explicit instructions to EMS and/or Police dispatcher on where and how to access the project site.

Kensington Solar Contact List					
OWNER/EPC/EOR			Phone	Email	Position
Owner					
Site Contact					
EPC Project Manager					
EPC Project Engineer					
EPC Construction Manager					
EPC Commissioning and O&M					
Site Safety Contact					
Operations and Maintenance Contact					

[Placeholder Kensington Project Sign]

[Placeholder Final Site Plan]

BEFORE
THE OHIO POWER SITING BOARD

In the Matter of the Application of	**)**	
Kensington PV 1, LLC for a	**)**	
Certificate of Environmental	**)**	**Case No. 21-764-EL-BGN**
Compatibility and Public Need	**)**	

Kensington PV 1, LLC's February 9, 2022 Responses to
Staff's February 1, 2022 Data Requests

1. **In follow-up to Kensington PV 1, LLC's Responses to Staff's data requests dated November 29, 2021, November 30, 2021, and December 1, 2021, DR#27. Please depict the 175-ft long gen-tie electric transmission line on Figure 03-2 and confirm this has also been depicted on shapefiles provided to OPSB.**
    a. *Updated Figure 3-2 depicts the 175-feet long gen-tie line. The Applicant has also uploaded updated shapefiles to OPSB Staff's SharePoint.*

2. **In follow-up to Kensington PV 1, LLC's Responses to Staff's data requests dated November 29, 2021, November 30, 2021, and December 1, 2021, DR#24. Please depict the 375-ft line loop on Figure 03-2 and confirm this has also been depicted on shapefiles provided to OPSB.**
    a. *Updated Figure 3-2 depicts the 375-feet line loop. The Applicant has also uploaded updated shapefiles to OPSB Staff's SharePoint.*

3. **Is the 375-ft. long line loop design capacity one hundred kilovolts or more and within one hundred feet of an occupied residence or institution? If yes, please provide that voltage and the calculated electric and magnetic field strength levels at one meter above ground, under the conductors and at the edge of the right-of-way for (i) Winter normal conductor rating, (ii) Emergency line loading, and (iii) Normal maximum loading.**
    a. *There are no occupied residences or institutions within 100 feet of the 375-feet line loop. The Applicant purchased the house currently located where the switching station is proposed and will remove it prior to construction of the station.*

4. **In follow-up to Kensington PV 1, LLC's Responses to Staff's data requests dated November 29, 2021, November 30, 2021, and December 1, 2021, DR#37. It is unclear to Staff which pipeline is which, please denote on a map the Kensington Solar Project overlaying the three pipelines identified in the answer to DR#37 and label each pipeline.**
    a. *Updated Figure 3-1 denotes the East Sparta – Heath (Marathon), Interstate (Columbia Gas Transmission Company), and the unknown pipeline.*

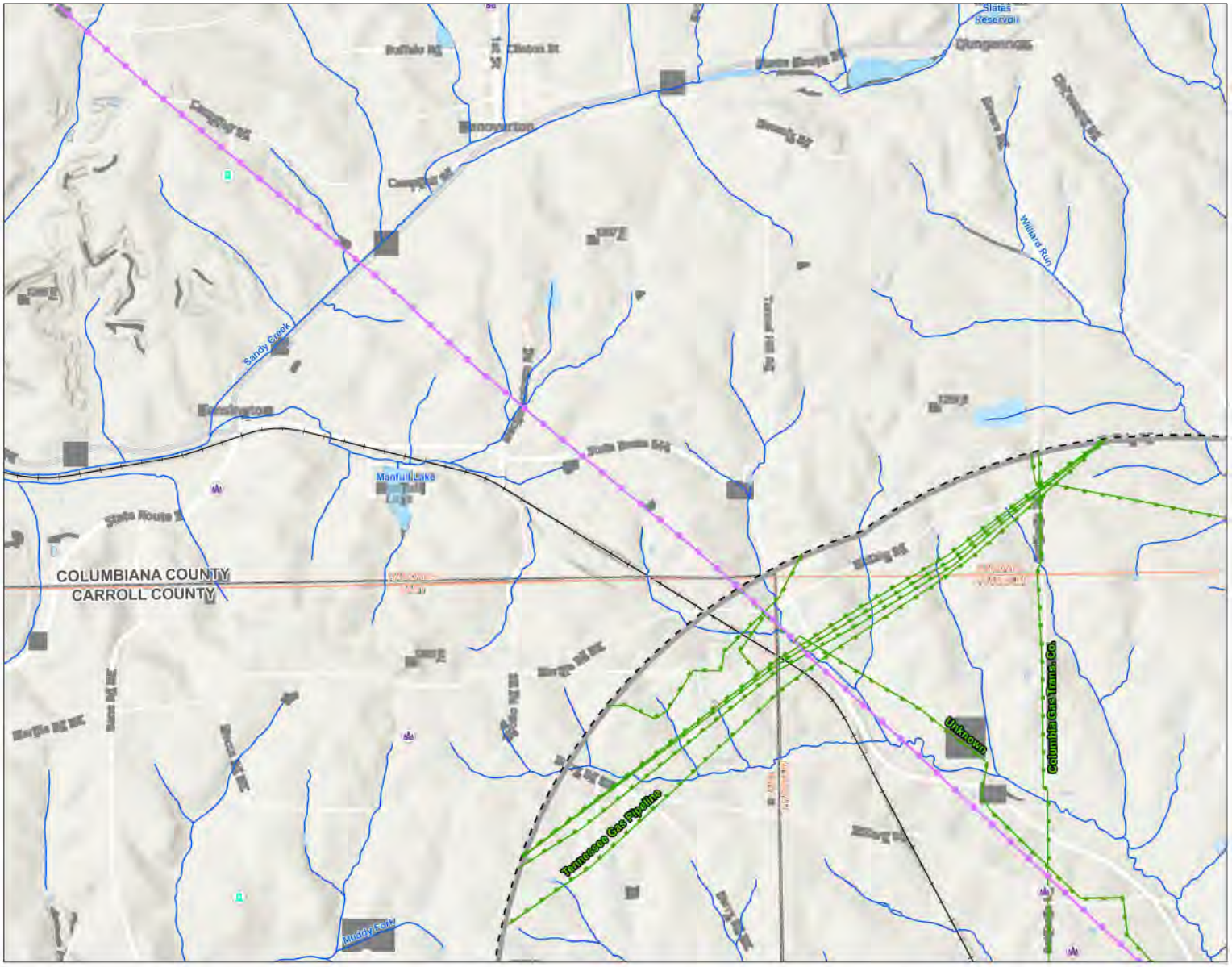


Figure No.
3-1

Title
Project Two-Mile Radius Map

Client/Project
Kensington PV I, LLC
Kensington Solar Project
202811260

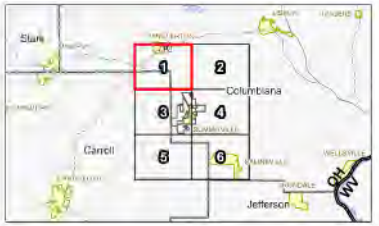
Project Location
Columbiana County, Ohio

Prepared by MZ on 2021-06-18
TR by DG on 2021-07-29
IR by CD on 2021-10-11

N

0 1,000 2,000 Feet
(At original document size of 11x17)
1:24,000

Legend
- Project Area
- 2 Mile Buffer
- Solar Array
- Inverter
- Substation/Switchyard
- Switchyard
- Temporary Staging Area
- Gen-tie Line
- Line Loop
- Fence
- Access Road
- AC Underground Collection Line
- DC Underground Collection Line
- Cemetery
- Place of Worship
- School
- Civic Building
- Existing Electric Transmission Line
- Gas/Hazardous Liquid Pipeline
- Railroad
- Wildlife or Conservation Area
- Township Boundary
- Perennial Stream
- Intermittent Stream
- Waterbody



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Source: Stantec Kensington PV I, LLC, Esri, USGS, PennWel, NPMS, PAD-US, ODNR, ODOT, NADS
3. Background: Esri

Preliminary Design - Not for Construction

Stantec

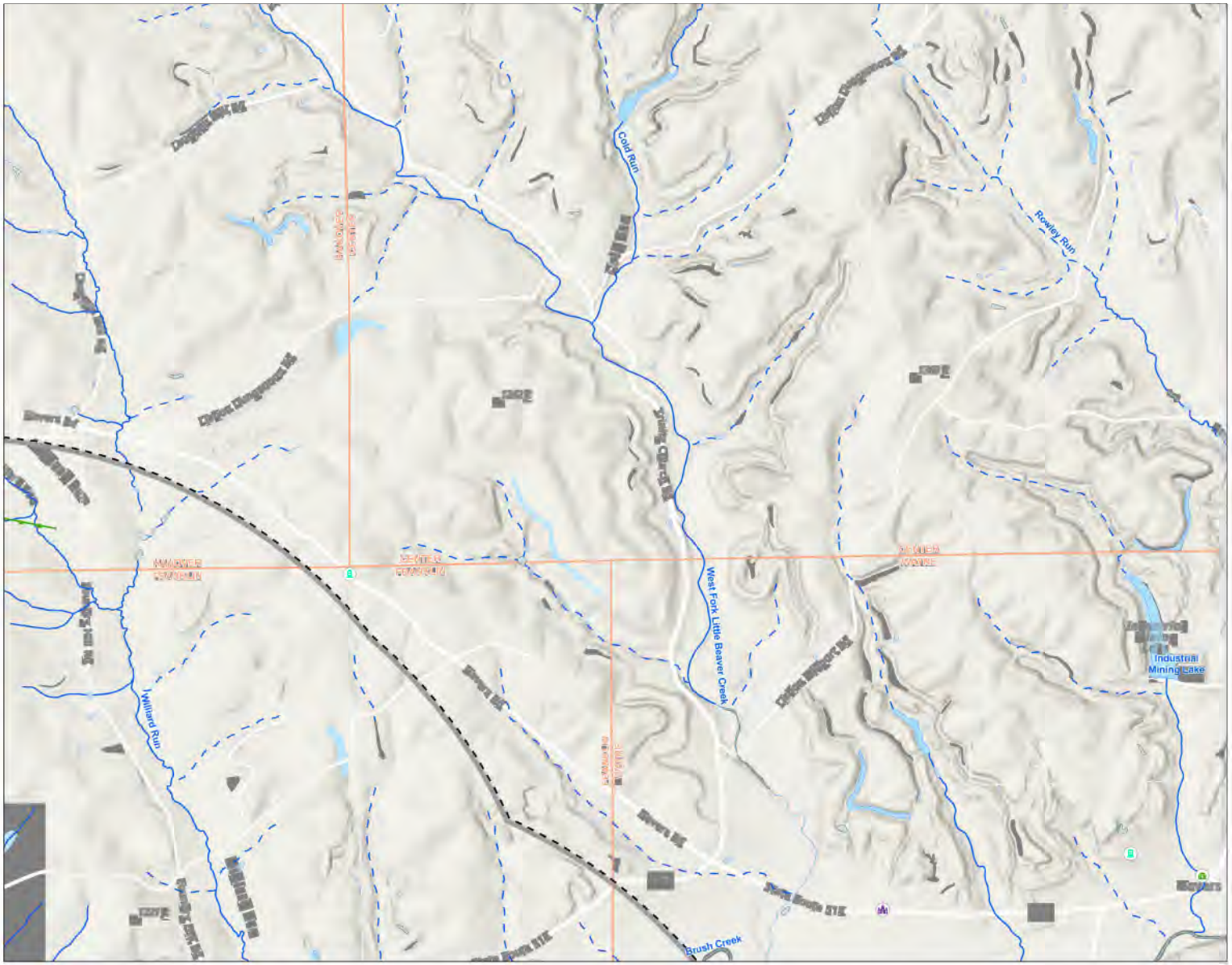


Figure No.
3-1

Title
Project Two-Mile Radius Map

Client/Project
Kensington PV I, LLC
Kensington Solar Project
2028113260

Project Location
Columbiana County, Ohio

Prepared by MZ on 2021-06-18
TR by DG on 2021-07-29
IR by CD on 2021-10-11

N

0 1,000 2,000 Feet
(At original document size of 11x17)
1:24,000

Legend
- Project Area
- 2 Mile Buffer
- Solar Array
- Inverter
- Substation/Switchyard
- Switchyard
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- Gen-tie Line
- Line Loop
- Fence
- Access Road
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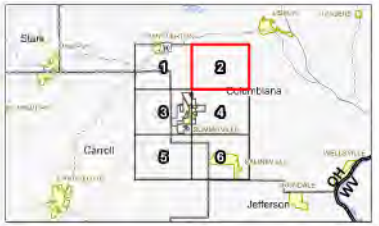
- Wildlife or Conservation Area
- Township Boundary
- Perennial Stream
- Intermittent Stream
- Waterbody



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Source(s): Stantec Kensington PV I, LLC, Esri, USGS, PennWel, NPMS, PAD-US, ODNR, ODOT, NADS
3. Background: Esri

Preliminary Design - Not for Construction

Stantec

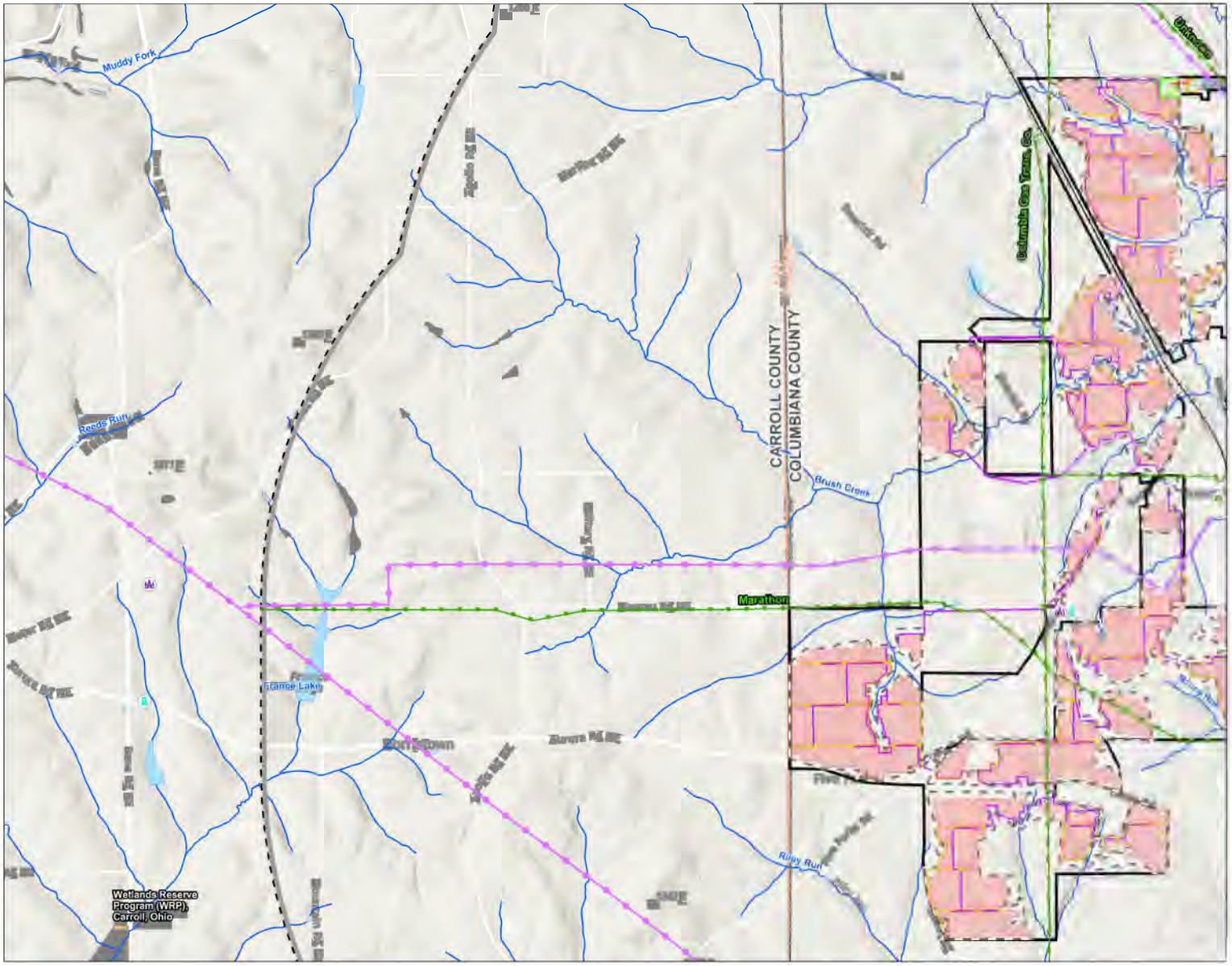


Figure No.
3-1

Title
Project Two-Mile Radius Map

Client/Project
Kensington PV I, LLC
Kensington Solar Project

202811326

Prepared by MZ on 2021-06-18
TR by DG on 2021-07-29
IR by CD on 2021-10-11

0 1,000 2,000 Feet
(At original document size of 11x17)
1:24,000

Legend:
- Project Area
- 2 Mile Buffer
- Solar Array
- Inverter
- Substation/Switchyard
- Switchyard
- Temporary Staging Area
- Gen-tie Line
- Line Loop
- Fence
- Access Road
- AC Underground Collection Line
- DC Underground Collection Line
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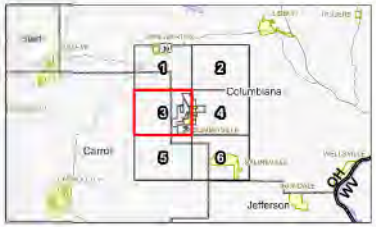
- Civic Building
- Existing Electric Transmission Line
- Gas/Hazardous Liquid Pipeline
- Railroad
- Wildlife or Conservation Area
- Township Boundary
- Perennial Stream
- Intermittent Stream
- Waterbody



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1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Source: Stantec, Kensington PV I LLC, Esri, USGS, PennWell, NPMS, PAD-US, ODNR, ODOT, NADS
3. Geographic Extent

Preliminary Design - Not for Construction

Stantec

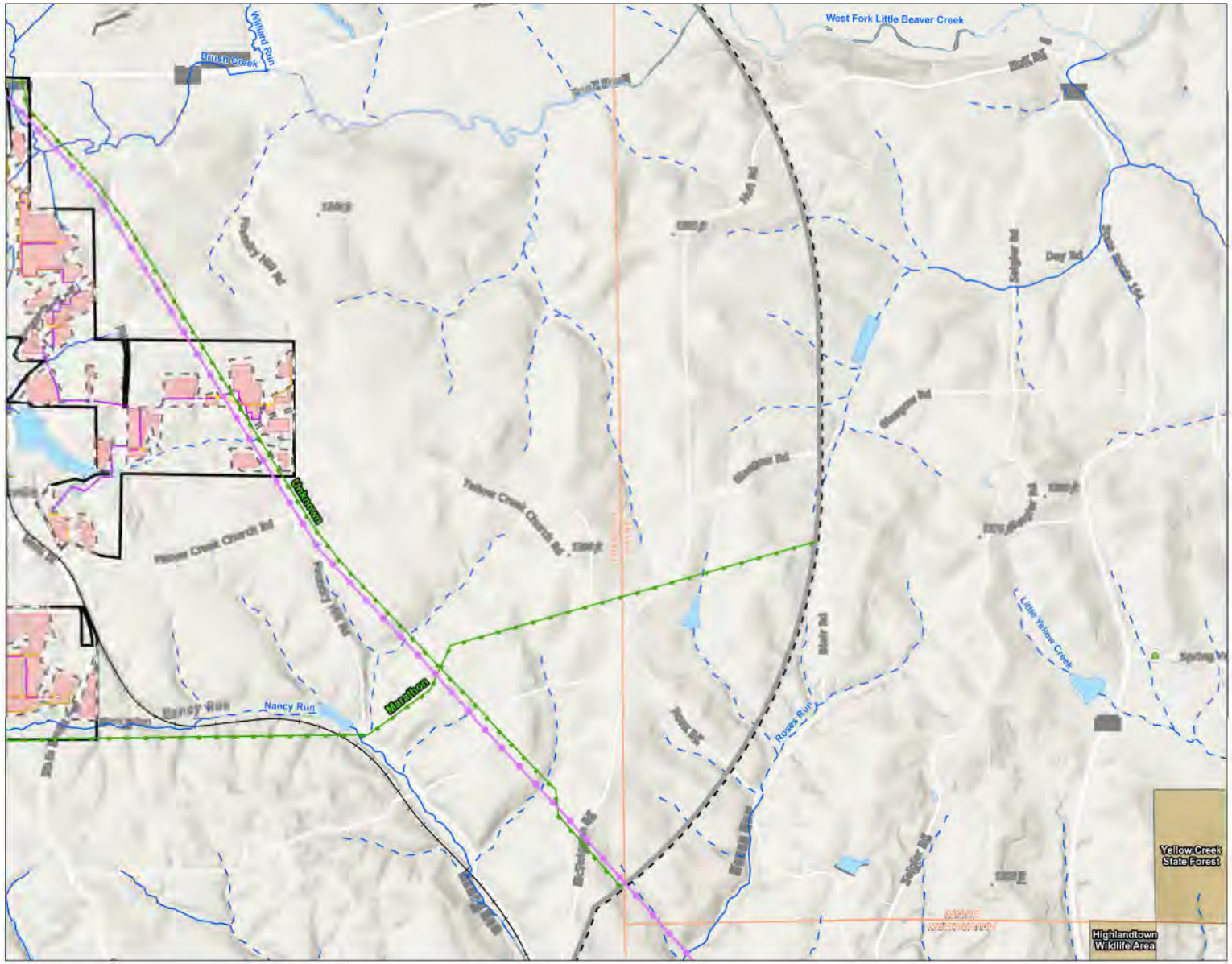

Figure No.
3-1

Title
Project Two-Mile Radius Map

Client/Project
Kensington PV I, LLC
Kensington Solar Project
2028113260

Project Location
Columbiana County, Ohio

Prepared by MZ on 2021-06-18
TR by DG on 2021-07-29
IR by CD on 2021-10-11

N

0 1,000 2,000 Feet
(At original document size of 11x17)
1:24,000

Legend
- Project Area
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- Inverter
- Substation/Switchyard
- Switchyard
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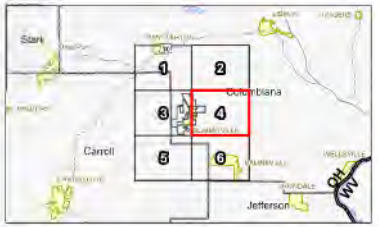

Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Source: Stantec Kensington PV I, LLC, Esri, USGS, PennWel, NPMS, PAD-US, ODNR, ODOT, NADS
3. Background: Esri

Preliminary Design - Not for Construction

Stantec

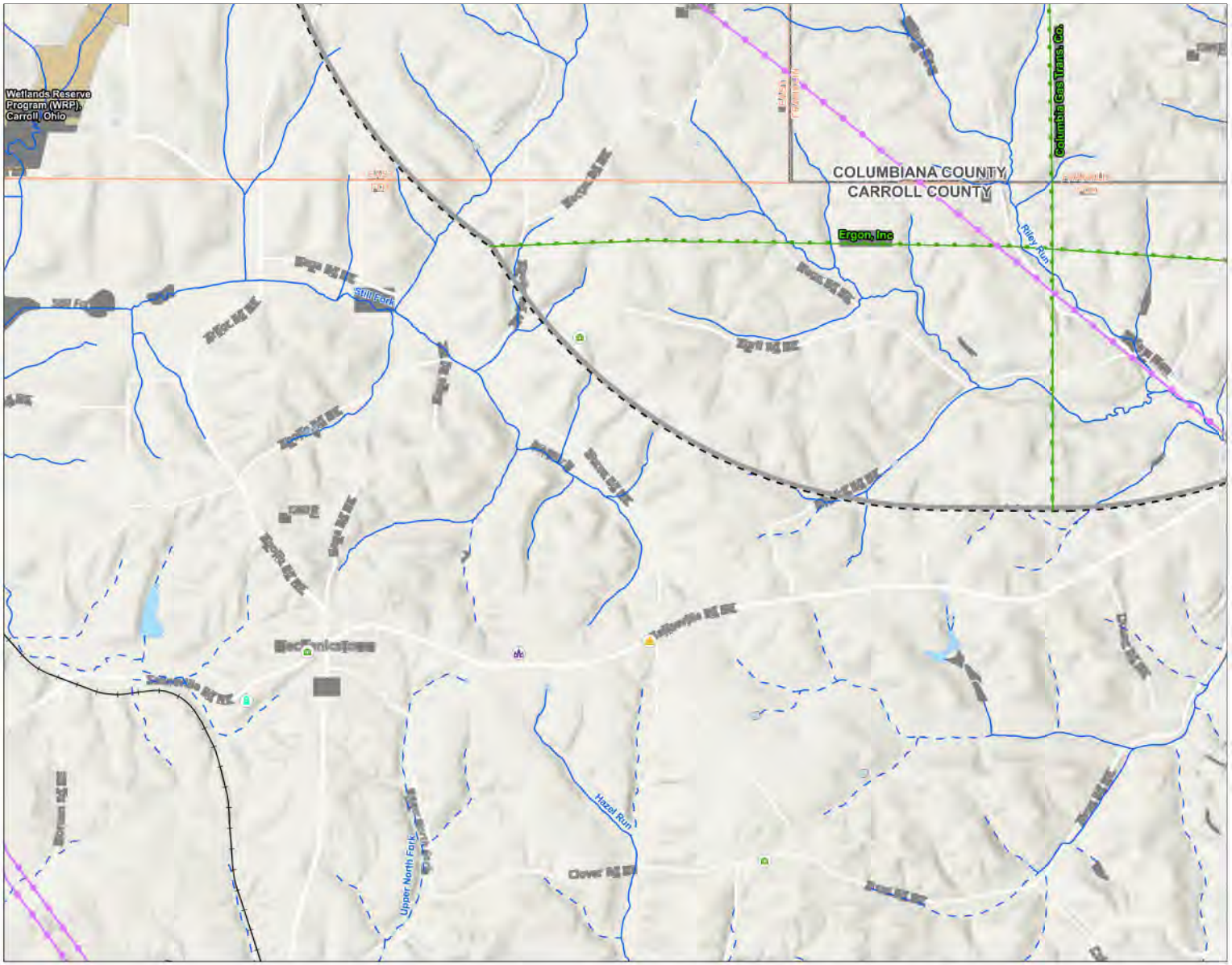

Figure No.
3-1

Title:
Project Two-Mile Radius Map

Client/Project
Kensington PV I, LLC
Kensington Solar Project
2028113260

Project Location:
Columbiana County, Ohio

Prepared by MZ on 2021-06-18
TR by DG on 2021-07-29
IR by CD on 2021-10-11

N

0 1,000 2,000 Feet
(At original document size of 11x17)
1:24,000

Legend:
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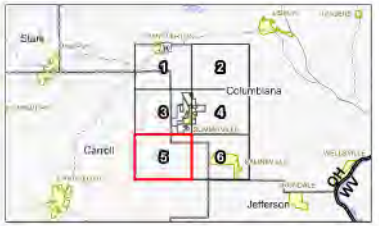

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1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Source: Stantec Kensington PV I, LLC, Esri, USGS, PennWel, NPMS, PAD-US, ODNR, ODOT, NADS
3. Background: Esri

Preliminary Design - Not for Construction

Stantec

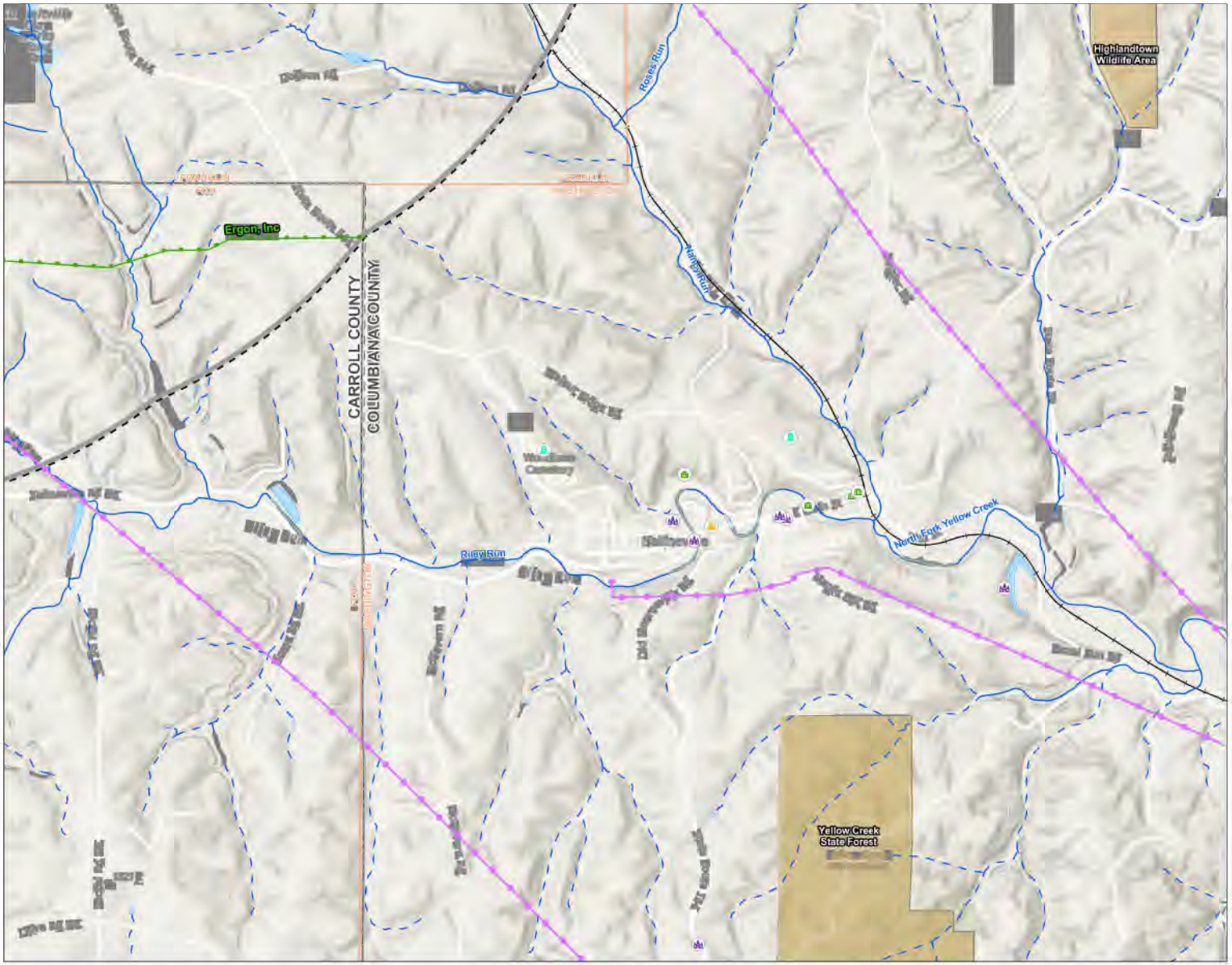

Figure No.
3-1

Title
Project Two-Mile Radius Map

Client/Project
Kensington PV I, LLC
Kensington Solar Project

2028113260

Project Location
Columbiana County, Ohio

Prepared by MZ on 2021-06-18
TR by DG on 2021-07-29
IR by CD on 2021-10-11

N

0 1,000 2,000 Feet
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Legend
- Project Area
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- Inverter
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- Line Loop
- Fence
- Access Road
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- DC Underground Collection Line
- Cemetery
- Place of Worship
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- Perennial Stream
- Intermittent Stream
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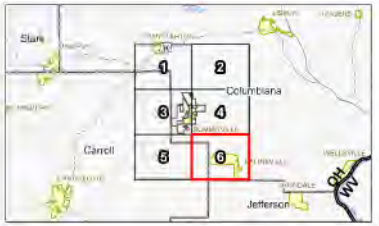

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1. Coordinate System: NAD 1983StatePlane Ohio North FIPS 3401 Feet
2. Data Source: Stantec Kensington PV I, LLC, Esri, USGS, PennWel, NPMS, PAD-US, ODNR, ODOT, NADS
3. Background: Esri

Preliminary Design - Not for Construction

Stantec

Figure No.
3-2

Title
Project Site Layout Map

Client/Project
Kensington PV I, LLC
Kensington Solar Project

2028113260

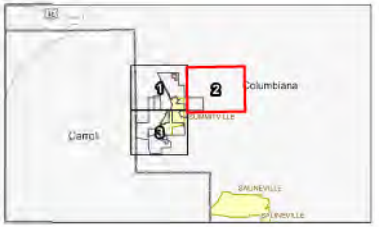
Project Location
Columbiana County, Ohio

Prepared by MZ on 2021-06-18
TR by DG on 2021-07-29
IR by CD on 2021-10-11

N

0 500 1,000 Feet
(At original document size of 11x17)
1:12,000

Legend
- Project Area
- Parcel Boundary
- Solar Array
- Inverter
- Substation
- Switchyard
- Temporary Staging Area
- Gen-tie Line
- Line Loop
- Fence
- Access Road
- AC Underground Collection Line
- DC Underground Collection Line



Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
2. Data Sources: Stantec, Kensington PV I, LLC, Esri, NADS, Columbiana County
3. Background: NAIP 2019

Preliminary Design - Not for Construction

Stantec

Figure No.
3-2

Title
Project Site Layout Map

Client/Project
Kensington PV I, LLC
Kensington Solar Project

2028113280

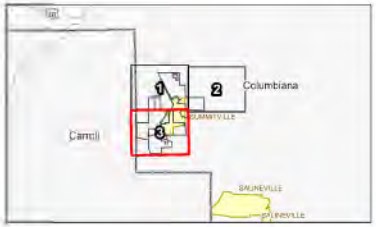
Project Location
Columbiana County, Ohio

Prepared by MZ on 2021-06-18
TR by DG on 2021-07-29
IR by CD on 2021-10-11

N

0 500 1,000 Feet
(At original document size of 11x17)
1:12,000

Legend
- Project Area
- Parcel Boundary
- Solar Array
- Inverter
- Substation
- Switchyard
- Temporary Staging Area
- Gen-tie Line
- Line Loop
- Fence
- Access Road
- AC Underground Collection Line
- DC Underground Collection Line



Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
2. Data Sources: Stantec, Kensington PV I, LLC, Esri, NADS, Columbiana County
3. Basemap: NAIP 2019

Preliminary Design - Not for Construction

Stantec

BEFORE
THE OHIO POWER SITING BOARD

In the Matter of the Application of	**)**	
Kensington PV 1, LLC for a	**)**	
Certificate of Environmental	**)**	**Case No. 21-764-EL-BGN**
Compatibility and Public Need	**)**	

Kensington PV 1, LLC's April 29, 2022 Response to Staff's April 28, 2022 Data Request

1. **Staff has requested a pile load testing report for the Project.**

Response: A pile load testing report is attached.

Solar Pile Load Testing Report

Kensington Solar Facility
Summitville, Columbiana County, Ohio
April 7, 2022
Revised April 21, 2022
Terracon Project No. N6225000

Prepared for:
Liberty Power
Oakville, Ontario

Prepared by:
Terracon Consultants, Inc.
Parma, Ohio

Revised April 21, 2022

Liberty Power
354 Davis Road, Suite 100
Oakville, Ontario L6J2X1

Attn: Mr. Neal Cumming – Project Manager
P: (416)-453-3651
E: Neal.Cumming@algonquinpower.com

Re: Solar Pile Load Testing Report
Kensington Solar Facility
4765 Old William Penn Highway
Summitville, Columbiana County, Ohio
Terracon Project No. N6225000

Dear Mr. Cumming:

We have completed the Solar Pile Load Testing services for the above referenced project. This study was performed in general accordance with Terracon Proposal No. PN6225000 dated February 1, 2022. This report presents the findings of the full-scale pile load testing program for the proposed solar project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Joseph P. Corrigan, P.E.
Assistant Project Manager

Chett A. Siefring, P.E.
Manager – Geotechnical Services

SME Review by: Arin Barkataki, P.E. (Texas)

REPORT TOPICS

INTRODUCTION 1
SITE CONDITIONS 1
PROJECT DESCRIPTION 2
FULL-SCALE PILE LOAD TESTING (PLT) PROGRAM 3
PV SOLAR ARRAY FIELD – RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION 8
GENERAL COMMENTS 13
ATTACHMENTS 15

Note: This report was originally delivered in a web-based format. For more interactive features, please view your project online at client.terracon.com.

ATTACHMENTS

APPENDIX A – FIELD EXPLORATION
APPENDIX B – TEST PILE DRIVING DATA
APPENDIX C – PILE LOAD TEST RESULTS – AXIAL COMPRESSION LOAD
APPENDIX D – PILE LOAD TEST RESULTS – AXIAL TENSION LOAD
APPENDIX E – PILE LOAD TEST RESULTS – LATERAL LOAD

Note: Refer to each individual Attachment for a listing of contents.

REPORT SUMMARY

Topic [1]	Overview Statement [2]
Project Description	The project site will be developed as a 135 MWac photovoltaic (PV) solar power facility.
Subsurface Conditions	During the previously completed geotechnical investigation at the site, the surface layer contained approximately 3 to 14 inches of topsoil. Underlying the topsoil, subsurface soils consisted of interbedded cohesive and granular soils overlying weathered shale and sandstone bedrock at depths ranging between approximately 8 inches and 17 feet below existing grade.
Pile Load Testing	This section provides the results of the full-scale uplift, compression, and lateral pile load testing.
PV Array	The steel pile foundations for the solar array are anticipated to consist of wide flange steel piles (W6x9, or similar).
General Comments	This section contains important information about the limitations of this geotechnical engineering report.

1. If the reader is reviewing this report as a pdf, the topics above can be used to access the appropriate section of the report by simply clicking on the topic itself.
2. This summary is for convenience only. It should be used in conjunction with the entire report for design purposes.

Solar Pile Load Testing Report

Kensington Solar Facility
4765 Old William Penn Highway
Summitville, Columbiana County, Ohio

Terracon Project No. N6225000
Revised April 21, 2022

INTRODUCTION

This report presents the results of our full-scale pile load testing program performed for the proposed solar array to be located at 4765 Old William Penn Highway in Summitville, Columbiana County, Ohio.

The scope of services performed as part of this study for the Kensington Solar project are shown in the following table:

Type of Exploration / Test	Number
Lateral Pile Load Tests	12
Axial Tension Pile Load Tests	12
Axial Compression Pile Load Tests	6

The scope of services performed during the previously performed study at this site (Terracon report no. N6205251, dated December 3, 2020) are shown below in the table:

Type of Exploration / Test	Number
SPT Borings (B-1 through B-12) – Photovoltaic (PV) array field	12
Field Electrical Resistivity Tests – PV array field	7
Corrosion Testing – PV array field	12

Maps showing the pile load test locations are shown in the **Site Location** and **Pile Load Test Location Plan** sections, respectively. The results of the pile load tests are included in the report and in the appendices to the report.

SITE CONDITIONS

The following description of site conditions is derived from our site visit in association with the pile load testing and our review of publicly available geologic and topographic maps.

Item	Description
Parcel Information	The project site consists of several parcels totaling about 2,264 acres, with approximately 1,132 acres being develop as part of the current project. The project site approximate coordinates are 40.6744 N, -80.8975 W. See **Site Location**
Existing Improvements/ Current Ground Cover	Project area mainly consists of an agricultural farm field, and some residential areas located throughout the proposed site.
Existing Topography	Surface grades across the planned solar facility range from approximately 1056 feet, MSL near where boring B-6 was advanced to approximately 1220 feet, MSL near where boring B-9 was advanced.
Geology	During the previously completed geotechnical investigation at the site, the surface layer contained approximately 3 to 14 inches of topsoil. Underlying the topsoil, subsurface soils consisted of interbedded cohesive and granular soils overlying weathered shale and sandstone bedrock at depths ranging between approximately 8 inches and 17 feet below existing grade.

PROJECT DESCRIPTION

Our initial understanding of the project was provided in our proposal and was discussed during project planning. A period of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
Project Description	The project site will be developed as a 135 MWac photovoltaic (PV) solar power facility.
Proposed Structure	The steel pile foundations for the solar array are anticipated to consist of wide flange steel piles (W6x9, or similar).
Below Grade Structures	None
Maximum Loads (Estimated by Terracon)	Structural loads were not provided, but have been estimated based on our experience on projects using single axis tracking rack systems: Downward: 1.5 to 4 kips; Uplift: 2 kips (does not include frost heave loads); and Shear (Lateral): 1 kip to 3.5 kips
Grading/Slopes	It is anticipated that the site work will involve a nominal amount of cut / fill of ±2 feet to develop final grade for the solar facility in Array areas. Final slope angles no steeper than 3H:1V (Horizontal: Vertical) nor taller than 5 feet are anticipated.
Estimated Start of Construction	TBD

FULL-SCALE PILE LOAD TESTING (PLT) PROGRAM

We completed a full-scale pile load testing program that included:

- The installation of a group of two or three test piles at 12 test locations. The piles were installed into oversized predrilled holes that were about 12 inches in diameter and about 2 feet deep.
- Performing testing under axial compressive loads for one test pile at 6 out of 12 test location (6 tests).
- Performing testing under axial tensile loads for two test piles in each group (24 tests).
- Performing testing under lateral loads for two test piles in each group (24 tests).

These activities are further described in the following sections.

PILE LOCATION PROCEDURES

The field-testing locations are indicated on the attached Pile Load Test Location Plan (Exhibit A-2) in **Appendix A**. These locations were established in the field by using a hand-held GPS (accurate to about 10 feet) and existing site features as reference points. The mapped test locations should be considered accurate only to the degree implied by the means and methods used to define them.

Test Pile Installation

The test piles consisted of wide-flange, bare steel W6x9 sections. A group of two test piles were installed at 6 test locations and a group of three test piles were installed at 6 test locations. The test piles have been identified using an alphanumeric system. The pile identification system for each location begins with “PLT” and is followed by the number corresponding to the test pile group location while the assigned letters “A”, “B”, and “C” indicate pile depths of 7, 10 and 7 feet below ground surface (bgs), respectively for test group numbers PLT-1, 3, 5, 9 & 11 and pile depths of 8, 11, 8 feet bgs, respectively for test group numbers 2, 4, 6, 7, 8, 10 and 12. The planned embedment depths were based on our experience with pile load testing in Ohio, the adfreeze depth, and assumed skin friction and end-bearing values.

The piles were advanced on March 15, 2022 with a track mounted Vermeer PD10 equipped with a hydraulic hammer. All the driven piles were installed into the soils at the bottom of the over-sized pre-drilled holes (approximately 12 inches in diameter and about 2 feet deep, to bypass adfreeze depth). After the 2-foot pre-drilling, five of the PLT locations (PLT-1, PLT-3, PLT-5, PLT-6, and PLT-12) had piles installed via direct-drive methods, and seven of the PLT locations (PLT-2, PLT-4, and PLT-7 through PLT-11) had piles installed in ‘full-depth’ pre-drilled holes. The ‘full-depth’ pre-drilled holes were drilled to three inches above the planned installation depth, using 6-inch-diameter augers. Prior to pile installation, the pre-drilled holes were backfilled with the auger cuttings without compaction.

The seven PLT locations selected for full-depth pre-drilling were based on the shallow rock depths (ranging from less than 1 foot to 6 feet below surface grade) encountered in the corresponding borings performed during the initial geotechnical exploration performed for this project (Terracon report No. N6205251). The purpose of full-depth pre-drilling was to achieve the planned pile installation depths for testing, or the minimum 5-foot embedment depth required for testing.

The time rate of installation was recorded with a stopwatch. The total time required to advance each pile to its specified embedment depth was recorded and is summarized in the following table:

Pile Location [1]	Planned Embedment Depth (feet)	Actual Embedment Depth (feet)	Drive Time [2] (seconds)	Average Drive Time (seconds/foot)
PLT-1A	7.0	7.0	81	16.2
PLT-1B	10.0	8.6 *	258	39.1
PLT-2A [3]	8.0	7.9 *	130	22.0
PLT-2B [3]	11.0	8.6 *	146	22.1
PLT-3A	7.0	7.0	68	13.6
PLT-3B	10.0	10.0	175	21.9
PLT-4A [3]	8.0	7.1*	130	25.5
PLT-4B [3]	11.0	11.0	38	4.2
PLT-4C [3]	8.0	8.0	19	3.2
PLT-5A	7.0	5.6 *	197	54.7
PLT-5B	10.0	5.6 *	209	56.7
PLT-5C	7.0	5.8 *	178	46.8
PLT-6A	8.0	8.0	97	16.2
PLT-6B	11.0	8.0	249	27.7
PLT-7A [3]	8.0	8.0	6	1.0
PLT-7B [3]	11.0	11.0	94	10.4
PLT-7C [3]	8.0	8.0	23	3.8
PLT-8A [3]	7.0	7.0	12	2.4
PLT-8B [3]	10.0	9.1 *	143	20.1
PLT-8C [3]	7.0	7.0	19	3.8
PLT-9A [3]	7.0	7.0	22	4.4
PLT-9B [3]	10.0	10.0	19	2.4
PLT-9C [3]	7.0	7.0	8	1.6
PLT-10A [3]	8.0	8.0	112	18.7
PLT-10B [3]	11.0	11.0	24	2.7
PLT-11A [3]	7.0	7.0	49	9.8
PLT-11B [3]	10.0	9.1 *	138	19.4

Pile Location [1]	Planned Embedment Depth (feet)	Actual Embedment Depth (feet)	Drive Time [2] (seconds)	Average Drive Time (seconds/foot)
PLT-12A	8.0	8.0	187	31.2
PLT-12B	11.0	7.1 *	218	42.7
PLT-12C	8.0	7.6 *	212	37.9

1. All piles were installed into approximate 12-inch-diameter pre-drilled holes to the 2-foot adfreeze depth.
2. The average time per foot excludes the upper 2 feet where piles were not in contact with soil.
3. Pile was installed into an approximate 6-inch-diameter pre-drilled hole that terminated about 3 inches above the planned pile installation depth.

"*" – Indicates pile encountered refusal prior to reaching the planned embedment depth.

Pile installation records showing individual pile drive times per foot are included in Attachments. The average drive time was about 13 seconds per foot but the maximum was about 100 seconds per foot. For purposes of this study and in accordance with industry standard, pile driving refusal has been defined as 120 seconds per foot. During driving operations, piles PLT-1B, 2A, 2B, 4A, 5A, 5B, 5C, 8B, 11B, 12B and 12C refused advancement prior to reaching planned depths due to encountering shallow bedrock.

Testing Under Axial Tensile ("pull-out") Load

We performed testing under axial tensile load for the piles at each location in accordance with ASTM D3689, *Standard Test Methods for Deep Foundations under Static Axial Tensile Load*, using the procedures generally outlined below.

Forty piles, two piles at each PLT location, were tested under axial tensile ("pull-out") load. The test piles with the designations "A" and "B" were tested under axial tensile load with the designation "A" being embedded either 7 or 10 feet below the ground surface or prior refusal, and the designation "B" being embedded either 8 or 11 feet below the ground surface or prior refusal.

Two piles at each location were tested under axial tensile ("pull-out") load. The "pull-out" load reaction was supported using an excavator. Axial loads were applied to the test pile using a Harrington 10-ton chain fall. Connections to the test piles were made using a 5-ton plate clamp (vertical) designed for connection to W-sections. The chain fall and load cell were connected in series with chains and clevises to the test piles, and the load was applied by pulling the chain through the chain fall in successive 500 lb. increments from 0 to 10,000 lbs or until ¾-inch of vertical movement was reached, whichever occurred first, for each test pile. Each load increment was sustained for about 60 seconds and the stabilized deflection reading of both indicator gauges was recorded.

Deflections were measured with digital gauges and loads were measured with a Digital Dynamometer 25-kip electronic load cell. The gauges and load cell were read, and the data was recorded manually by Terracon field personnel.

Testing Under Lateral Load

After testing under axial tensile load, the piles at each location were then tested under lateral load in accordance with ASTM D3966, *Standard Test Methods for Deep Foundations under Lateral Load*, using the procedures generally outlined below.

The piles were connected together to provide a reaction for the opposite post and tested simultaneously in the strong axis direction at the majority of locations. At some locations the piles were unable to be connected and were therefore tested individually using the excavator as the reaction force.

For lateral testing, the pair of piles were pulled toward each other or toward the excavator and deflections of each pile were measured. The load for the lateral tests was applied at about 3 feet above the ground surface. The loads were applied in 500-pound increments in a maximum 5 cycles from 0 pounds to a maximum lateral load of 7,000 pounds or until 2 inches of lateral movement measured at 6 inches above the ground surface was reached. Each load increment was held for at least 1 minute and the stabilized deflection readings of both indicator gauges were recorded.

Deflections were measured with digital gauges and loads were measured with a Digital Dynamometer 25-kip electronic load cell. The gauges and load cell were read, and the data was recorded manually by Terracon field personnel.

Testing Under Axial Compressive Load

Ten piles were tested under axial compressive load. Please note that test piles with the designation “C” were tested under axial compressive load and were embedded either 6 or 8 feet below the ground surface.

We performed tests under axial compressive loads as generally described below. These procedures were developed with reference to ASTM D1143, *Standard Test Methods for Deep Foundations under Static Axial Compressive Load.*

An excavator was mobilized to the site to provide a reaction for the applied vertical compression test loads. A load cell on the top of the pile, a hydraulic cylinder (jack) was placed above the load cell and under excavator bucket.

The loads were applied in 500-pound to 1,000-pound increments up to a maximum load of 13,000 pounds. Terracon utilized 13,000 pounds as a maximum load based on the equipment’s capacity and safe working load. Each load increment was held for about 30 seconds and the stabilized deflection reading of both indicator gauges were recorded.

Deflections were measured with digital gauges and loads were measured with a 25-kip electronic load cell. The gauges and load cell were read, and the data was recorded manually by Terracon field personnel.

SUMMARY OF PILE LOAD TEST RESULTS

In general, the axial compressive, tensile, and lateral loads were applied at approximately 500-pound increments. The maximum applied load during the axial compression test was 13,000 pounds or until the deflection exceeded 1 inch. The maximum applied load during the axial tension test was 10,000 pounds or until the deflection exceeded 1 inch. The maximum applied load during the lateral load test was 7,000 pounds or until the deflection exceeded one inch when measured at 6 inches above the ground surface.

The individual pile load test results are provided in **Appendix C** (uplift), **Appendix D** (lateral), and **Appendix E** (compression). The following table provides a summary of each test pile location, embedment depth, total drive time, compressive load at ¼ of an inch of vertical displacement, uplift load at ¼ of an inch of vertical displacement, and the lateral load at ½ of an inch of lateral displacement:

Pile Location [1]	Actual Embedment Depth (feet)	Drive Time [2] (seconds)	Uplift Load at ¼ of an inch Displacement (lbs.)	Lateral Load at ½ of an inch Displacement (lbs.)	Compressive Load at ¼ of an inch Displacement, (lbs.)
PLT-1A	7.0	81	7,350	3,050	-
PLT-1B	8.6 *	258	>10,000	3,330	-
PLT-2A [3]	7.9 *	130	2,210	2,260	-
PLT-2B [3]	8.6 *	146	7,110	1,570	-
PLT-3A	7.0	68	4,070	2,120	-
PLT-3B	10.0	175	7,740	1,850	-
PLT-4A [3]	7.1*	130	>10,000	2,560	-
PLT-4B [3]	11.0	38	8,610	760	-
PLT-4C [3]	8.0	19	-	-	>13,000
PLT-5A	5.6 *	197	>10,000	3,250	-
PLT-5B	5.6 *	209	>10,000	2,850	-
PLT-5C	5.8 *	178	-	-	>13,000
PLT-6A	8.0	97	6,640	2,340	-
PLT-6B	11.0	249	>10,000	3,730	-
PLT-7A [3]	8.0	6	1,130	1,270	-
PLT-7B [3]	11.0	94	7,080	2,080	-
PLT-7C [3]	8.0	23	-	-	9,540

Pile Location [1]	Actual Embedment Depth (feet)	Drive Time [2] (seconds)	Uplift Load at ¼ of an inch Displacement (lbs.)	Lateral Load at ½ of an inch Displacement (lbs.)	Compressive Load at ¼ of an inch Displacement, (lbs.)
PLT-8A [3]	7.0	12	4,500	1,820	-
PLT-8B [3]	9.1 *	143	5,630	1,400	-
PLT-8C [3]	7.0	19	-	-	>13,000
PLT-9A [3]	7.0	22	5,090	1,430	-
PLT-9B [3]	10.0	19	4,640	1,120	-
PLT-9C [3]	7.0	8	-	-	6,750
PLT-10A [3]	8.0	112	>10,000	2,660	-
PLT-10B [3]	11.0	24	3,510	1,260	-
PLT-11A [3]	7.0	49	5,790	2,870	-
PLT-11B [3]	9.1 *	138	>10,000	2,240	-
PLT-12A	8.0	187	>10,000	1,860	-
PLT-12B	7.1 *	218	>10,000	1,880	-
PLT-12C	7.6 *	212	-	-	>13,000

1. All piles were installed into approximate 12-inch-diameter pre-drilled holes to the 2-foot adfreeze depth.
2. The average time per foot excludes the upper 2 feet where piles were not in contact with soil.
3. Pile was installed into an approximate 6-inch-diameter pre-drilled hole that terminated about 3 inches above the planned pile installation depth.

Note: The ">" sign indicates the load was achieved prior to reaching the noted deflection.

PV SOLAR ARRAY FIELD – RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION

GEOTECHNICAL CONSIDERATIONS

We anticipate the preferred foundation choice for the PV panels will be driven steel piles. The inverters in the array field and the equipment pad are anticipated to be supported on similar driven steel piles or mat foundations. Settlement and strength parameters were analyzed using soil compressibility properties derived from the soil borings.

Geotechnical engineering recommendations for foundation systems and other earth-connected phases of the project are outlined in this report. The recommendations contained in this report are based upon the results of field, laboratory, and pile load testing, engineering analyses, and our current understanding of the proposed project.

SOLAR PANEL SUPPORT PILE DESIGN RECOMMENDATIONS

Adfreeze Stress

It is Terracon's professional opinion that the overburden soils encountered in the borings are frost susceptible. In cold weather climates, design to resist frost heave forces exerted on foundations is often the limiting factor in the foundation design. Specifically, pile lengths will need to be long enough to counteract potential heave forces in the seasonal frost zone.

As the frost penetrates deeper into the soil and the ground swells due to freezing, the ground surface will rise due to frost heaving. The upward displacement is due to freezing water contained in the soil voids along with the formation of ice lenses in the soil. The freezing material grips the steel pile and exerts an uplift force due to the adfreeze stress developed around the surface area of the pile. The amount of upward force depends on the following:

The thickness of ice lenses formed in the seasonal frozen ground
The bond between the steel pile surface and the frozen ground
The surface area of the steel pile in the seasonally frozen ground

Based on our review of soil samples, we recommend an adfreeze stress of 1,500 psf be considered when determining the adfreeze heave load on a pile. The box perimeter of the pile (two times the depth plus two times the flange width) acting over a maximum depth of about 2 feet below ground surface should be considered when determining the adfreeze heave load on a pile.

Uplift forces will likely govern the design and length of the panel array piles; therefore, uplift will likely be the primary factor in foundation costs. The factor of safety against uplift should be determined based on discussions with the owner and design engineer considering the desired level or risk, construction costs, and the long-term maintenance program.

Axial Capacity Recommendations

The axial uplift capacity of driven piles may be estimated based on skin friction developed along the perimeter of the pile, while the compression capacity may be estimated using the skin friction and end bearing. When determining embedment depths, the perimeter of a wide flange beam should be taken as twice the sum of the flange width and section depth. The upper 2 feet of soil for each pile should be neglected in the axial capacity analyses for uplift. For compression capacity, only the upper one foot should be neglected.

Based on the results of the pile load testing program, we have divided the site into four Axial Zones as shown on Exhibit A-2. Below are tables of values recommended for the different axial zones:

Direct Embedment [1]				
Axial Zone	**Minimum Drive Time (seconds)**	**Embedment Depth (ft.-bgs)**	**Ultimate Uplift and Compression Skin Friction q_s (psf)** [1, 2]	**Ultimate End Bearing (lbs)** [2, 3]
Zone 1 (PLT-1, 5, 6 and 12)	187	2 to 9	800	3,000
Zone 3 (PLT-3)	68	2 to 10	500	3,000

1. The ultimate skin friction is based on the results of the uplift load testing. The upper 2.0 feet should be neglected in pile design for axial loading conditions for uplift due to loss of soil strength or contact with pile due to freeze-thaw action, seasonal water content variations, and other potential surface disturbances**.**
2. For Allowable Strength Design (ASD), we recommend the allowable capacity be determined by applying a minimum factor of safety of at least 1.5 to the ultimate values for the non-adfreeze effected loading conditions.
3. Values applicable to piles embedded a minimum of 6 feet bgs.

Pre-drilled Condition [1]				
Axial Zone	**Minimum Drive Time (seconds)**	**Embedment Depth (ft.-bgs)**	**Ultimate Uplift and Compression Skin Friction q_s (psf)** [1, 2]	**Ultimate End Bearing (lbs)** [2, 3]
Zone 2 (PLT-4, 10 and 11)	112	2 to 11	600	3,000
Zone 4 (PLT-2, 7, 8 and 9)	104	2 to 11	350	3,000

1. The ultimate skin friction is based on the results of the uplift load testing. The upper 2.0 feet should be neglected in pile design for axial loading conditions for uplift due to loss of soil strength or contact with pile due to freeze-thaw action, seasonal water content variations, and other potential surface disturbances**.**
2. For Allowable Strength Design (ASD), we recommend the allowable capacity be determined by applying a minimum factor of safety of at least 1.5 to the ultimate values for the non-adfreeze effected loading conditions.
3. Values applicable to piles embedded a minimum of 6 feet bgs.

The above values are to be used in the following equations to obtain the ultimate uplift or compression load capacity of a pile:

$$Q_{ult\ (compressive)} = Q_{ult\ (end)} + Q_{ult\ (uplift)}$$

$$Q_{ult\ (uplift)} = H \times P \times q_s$$

Q_{ult} = Ultimate uplift or compression capacity of post (lbs.)

$Q_{ult\ (end)}$ = Ultimate end bearing capacity per table above (lbs.)
H = Depth of embedment of pile (ft.)
P = Perimeter area/ft. of pile. (i.e. W6x9 = 1.64 sf/ft.)
q_s = Unit skin friction per table above (psf).

An example calculation to determine the allowable capacity for a W6x9 pile in tension and founded at a depth of 8 feet in the area of Zone 2 would be as follows:

$$allowable\ (uplift) = (8 - 2.0)\ x\ 1.64\ x \frac{500}{1.5} = 3,610\ lbs.$$

Should different pile sizes be used, such as W6x15 piles, the pile load test results from the W6x9 piles may be applied in the above equation, provided the correct embedment depths and pile perimeter areas are used to calculate the axial capacity. The provided skin friction values are applicable for piles that are driven using equipment similar to a Vermeer PD10 pile driver with a hydraulically operated hammer. If a smaller or larger drive hammer is used, we recommend that Terracon be consulted to determine the minimum drive time based on the actual equipment to be used.

For Allowable Stress Design (ASD), we recommend the allowable skin friction and end bearing values be determined by applying a factor of safety of at least 1.5 to the ultimate value.

Piles should have a minimum center-to-center spacing of at least 3 times their largest cross-sectional dimension to prevent reduction in the axial capacities due to group effects.

Final pile design to be completed by an engineering licensed in the State of Ohio based upon information contained in this geotechnical report and independent pile load testing.

Lateral Capacity Recommendations

Lateral load response of pile foundations was calculated using the computer program *L-Pile 2019*, by Ensoft, Inc. The stiffness of the pile and the stress-strain properties of the surrounding soils determine the lateral resistance of the foundation. We modeled the lateral response of the tested piles to evaluate L-Pile input parameters that can be used for design of the production piles. Recommended L-Pile input parameters for lateral load analysis for driven pile foundations are shown in the following table:

Depth Interval of Layer (feet)	(P-y) Curve Type Model	Effective Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)
0 to 2	Sand (Reese) [1]	115	-	29

Depth Interval of Layer (feet)	(P-y) Curve Type Model	Effective Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)
2 to 5	Stiff Clay w/o Free Water (Reese) [1]	120	1,000	-
5 to 20	Sand (Reese) [1]	120	-	36

1. Use default value for Strain Factor, $_{50}$

Based on the results of the pile load testing program, the lateral load test results were varied between the different embedment depths and test locations. We have divided the site into two Lateral Zones as shown on Exhibit A-2. The following table of p-multiplier values should be used for the corresponding embedment depths and Lateral Zones:

Embedment Depth (feet bgs)	P-Multiplier [1, 2, 3]	
	Lateral Zone A (Direct Embedment) (PLT-1, 3, 5, 6 and 12)	Lateral Zone B (Pre-drilled Condition) (PLT-2, 4, 7, 8, 9, 10 and 11)
6	6.0	-
7	4.0	2.0
8	3.3	1.8
9	5.5	1.7
10	2.7	0.8
11	-	0.9

1. The P-multiplier should be reduced by 30% in the upper 2.0 feet to account for seasonal freeze/thaw effects.
2. Linearly interpolate between values for piles embedded to depths between those provided in the table.
3. For piles embedded below depths of 10 feet in Zones A and B use the p-multiplier given for the 10-foot embedment depth piles in Zone A and B.

L-PILE analyses were performed by applying the field test load that resulted in approximately ½-inch deflection at a point about six inches above the ground surface. The shear load was applied at approximately 3 feet above the ground surface. The effective unit weight and cohesion were based on the results of the borings. The p- multiplier was then adjusted (by trial and error method) such that the applied load resulted in a deflection value that matched the load test results. Please note that this procedure was based on only one discrete set of data determined at about six inches from the ground surface during the field load testing. These results should be used for L-PILE analysis only using the 2019 version of L-Pile. These parameters are only applicable to piles embedded between six and eleven feet below grade. In our evaluation, the piles were modeled as a Steel AISC Section Strong Axis.

The structural engineer should evaluate the moment capacity of the pile as part of their structural evaluation. Piles should have a minimum center-to-center spacing of at least five times their largest cross-sectional dimension in the direction of the lateral loads, or the lateral capacities should be reduced due to group effects. If piles will be spaced closer than five times their largest cross-sectional dimension, we should be notified to provide supplemental recommendations regarding resistance to lateral loads.

DRIVEN PILE CONSTRUCTION CONSIDERATIONS

Based on the field exploration and laboratory testing, it is our opinion that the soils on the site are suitable for pile installation. **However, pre-drilling may be required for piles that are designed to be driven 6 feet or deeper, due to presence of shallow bedrock at certain locations of the site.**

A representative of the geotechnical engineer should observe pile driving operations. Each pile should be observed and checked for buckling, crimping and alignment in addition to recording penetration resistance, depth of embedment, and general pile driving operations.

GENERAL COMMENTS

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence or collaboration through this system are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client, and is not intended for

third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, and cost estimating including, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

ATTACHMENTS

APPENDIX A – FIELD EXPLORATION

Contents:

Exhibit A-1	Site Location Plan
Exhibit A-2	Pile Load Test Location Plan

Note: All attachments are one page unless noted above.

SITE LOCATION

Kensington Solar Facility Summitville, Columbiana County, Ohio
Revised April 21, 2022 Terracon Project No. N6225000

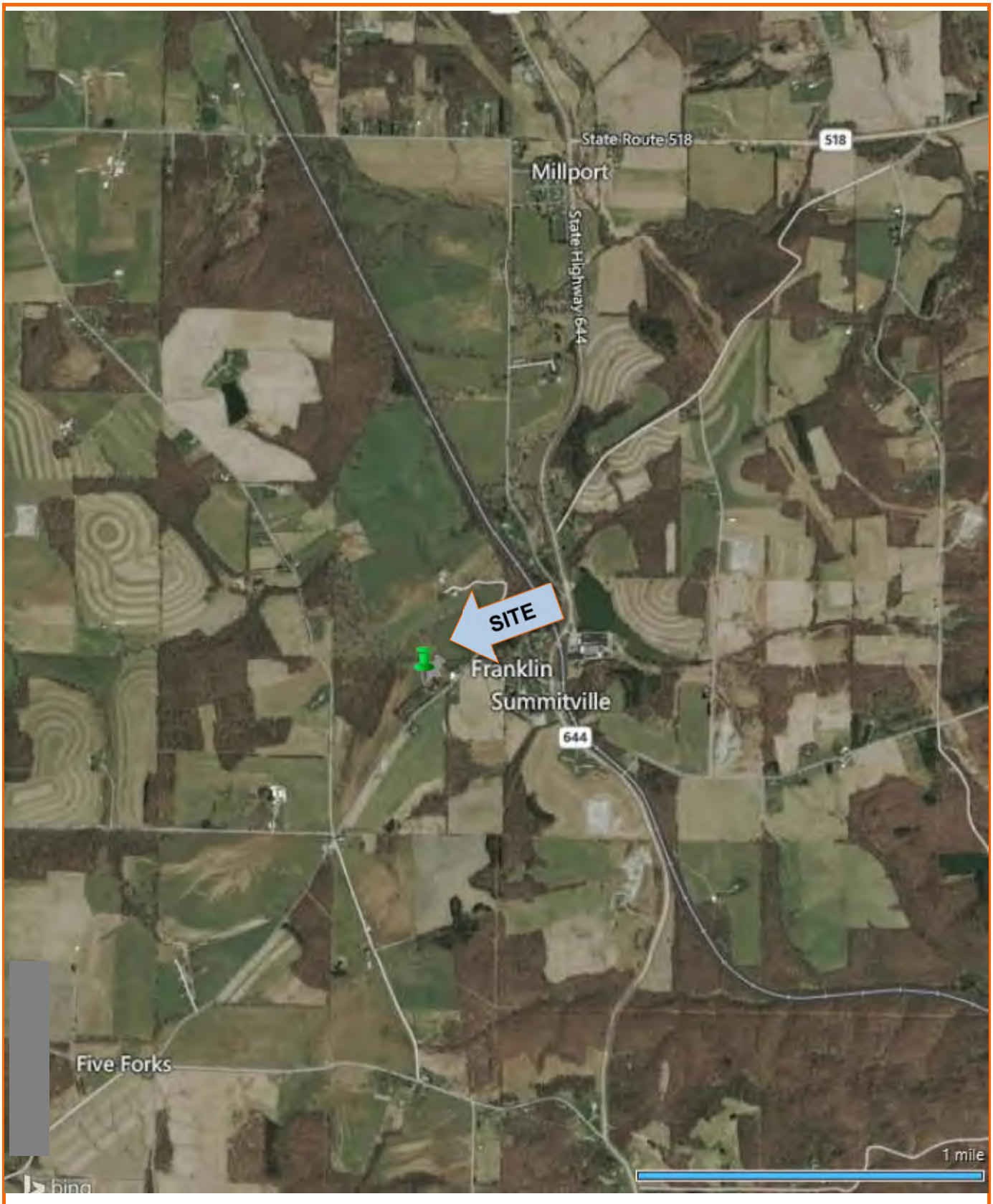


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES MAP PROVIDED BY MICROSOFT BING MAPS

PILE LOAD TEST LOCATION PLAN

Kensington Solar Facility Summitville, Columbiana County, Ohio
Revised April 21, 2022 Terracon Project No. N6225000

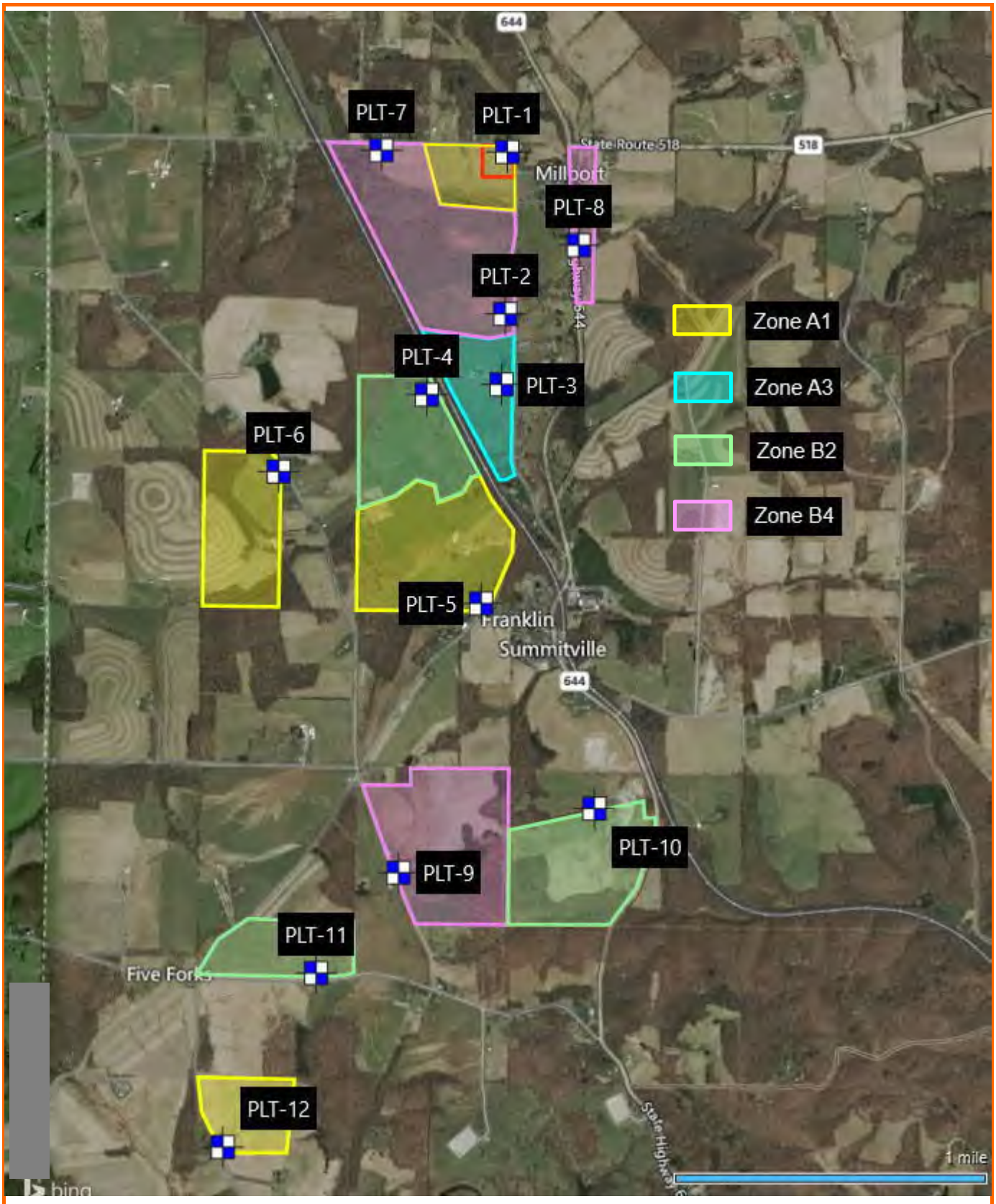


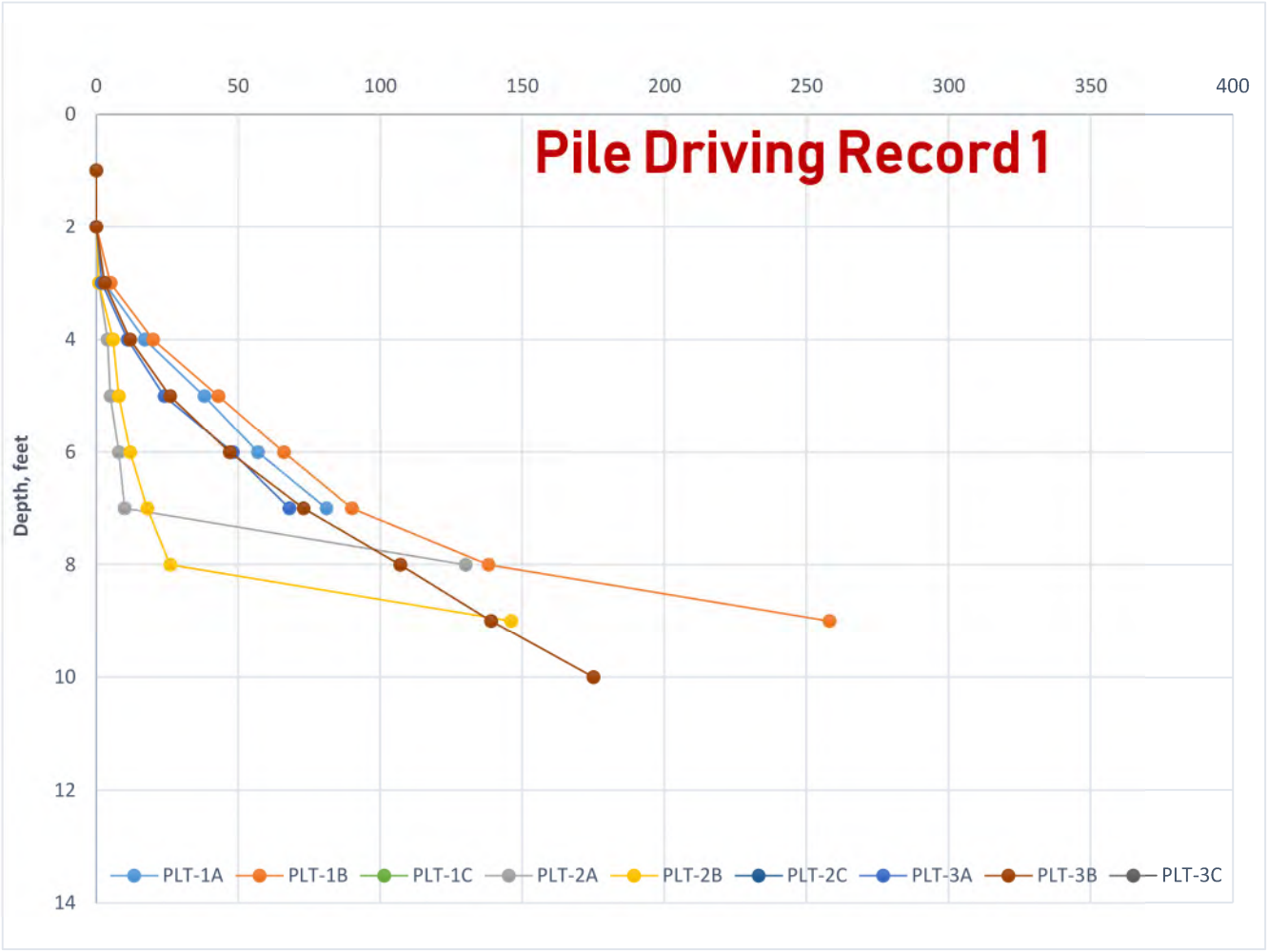
DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES MAP PROVIDED BY MICROSOFT BING MAPS

APPENDIX B – TEST PILE DRIVING DATA

Contents:

Exhibit B-1 to B-4 Test Pile Driving Records (4 pages)

Note: All attachments are one page unless noted above.

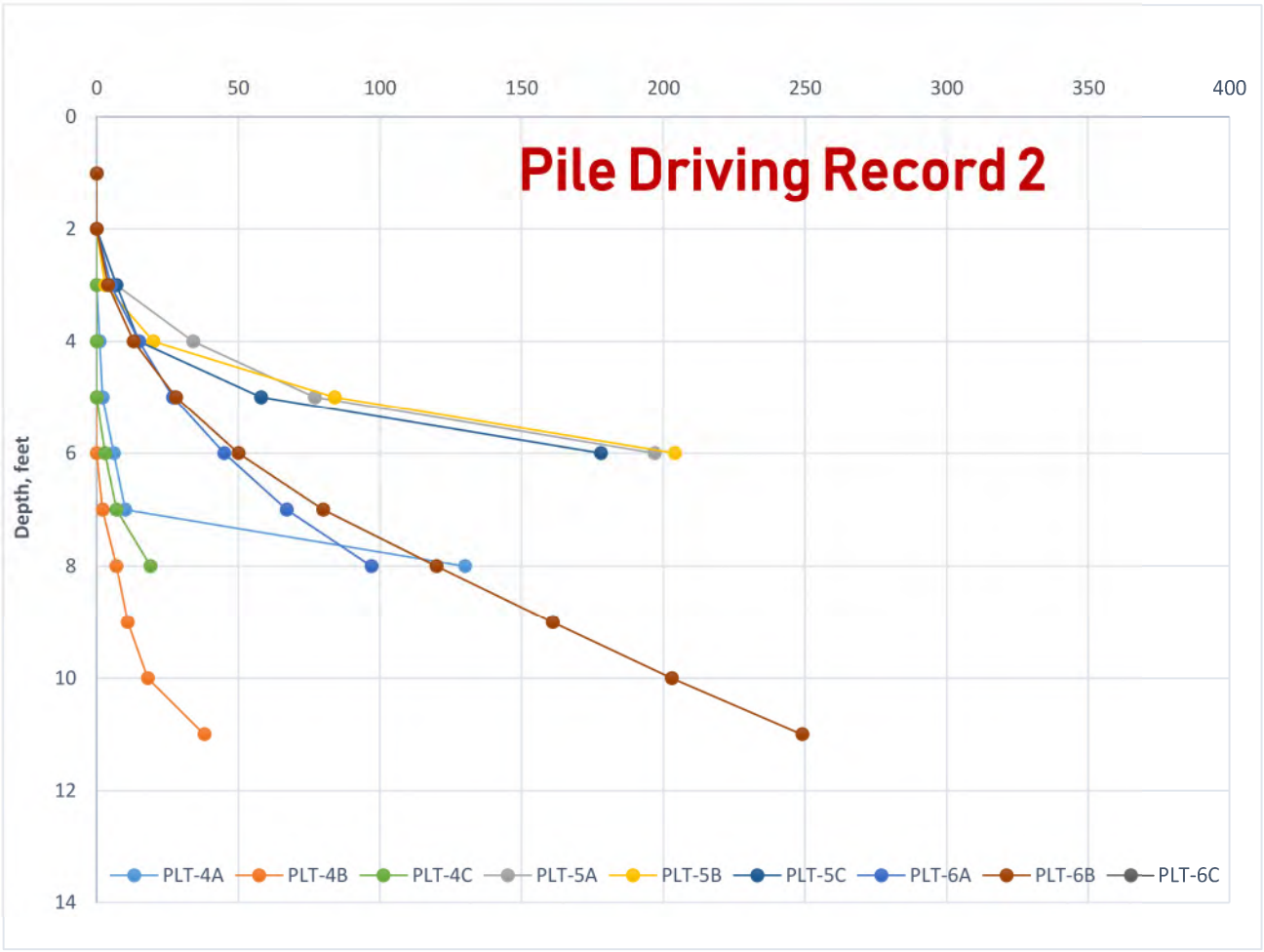


Depth (feet)	Cumulative Driving Time, seconds								
	PLT-1A	PLT-1B	PLT-1C	PLT-2A	PLT-2B	PLT-2C	PLT-3A	PLT-3B	PLT-3C
1	0.0	0.0		0.0	0.0		0.0	0.0	
2	0.0	0.0		0.0	0.0		0.0	0.0	
3	3.0	5.0		1.0	1.0		2.0	3.0	
4	17.0	20.0		4.0	6.0		11.0	12.0	
5	38.0	43.0		5.0	8.0		24.0	26.0	
6	57.0	66.0		8.0	12.0		48.0	47.0	
7	81.0	90.0		10.0	18.0		68.0	73.0	
8		138.0		130.0	26.0			107.0	
9		258.0			146.0			139.0	
10								175.0	
11									
12									
Embedment Depth, ft	7.0	8.6	0.0	7.9	8.6	0.0	7.0	10.0	0.0
Total Drive Time, sec	81.0	258.0	0.0	130.0	146.0	0.0	68.0	175.0	0.0
Average, sec/ft	16.2	39.1	0.0	22.0	22.1	0.0	13.6	21.9	0.0

NOTES:

Piles advanced with Vermeer PD-10 hydraulic ram.
Installation depth started at 24 inches below ground surface

Terracon

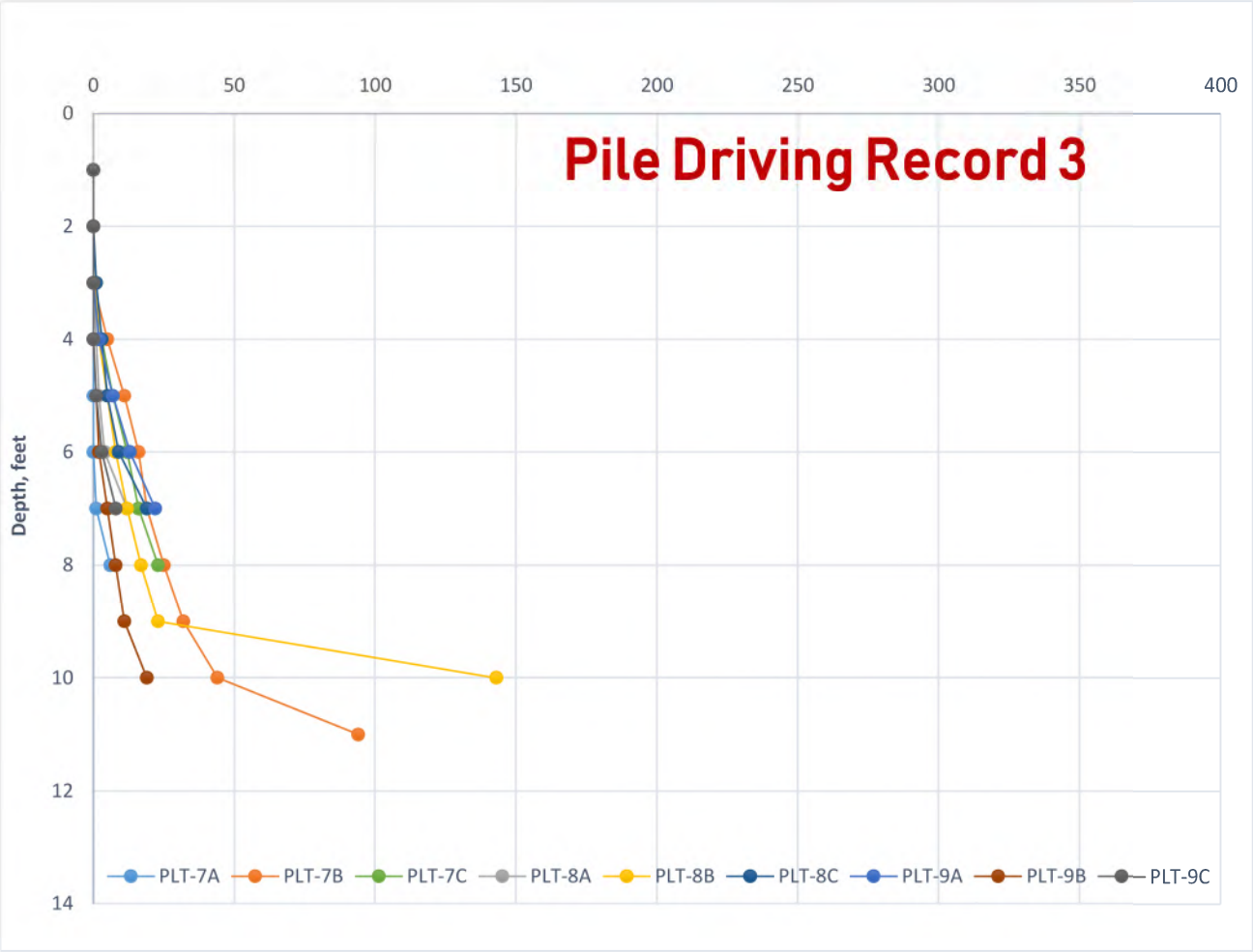


Depth (feet)	Cumulative Driving Time, seconds								
	PLT-4A	PLT-4B	PLT-4C	PLT-5A	PLT-5B	PLT-5C	PLT-6A	PLT-6B	PLT-6C
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
3	0.0	0.0	0.0	7.0	3.0	7.0	5.0	4.0	
4	1.0	0.0	0.0	34.0	20.0	15.0	15.0	13.0	
5	2.0	0.0	0.0	77.0	84.0	58.0	27.0	28.0	
6	6.0	0.0	3.0	197.0	204.0	178.0	45.0	50.0	
7	10.0	2.0	7.0				67.0	80.0	
8	130.0	7.0	19.0				97.0	120.0	
9		11.0						161.0	
10		18.0						203.0	
11		38.0						249.0	
12									
Embedment Depth, ft	7.1	11.0	8.0	5.6	5.6	5.8	8.0	11.0	0.0
Total Drive Time, sec	130.0	38.0	19.0	197.0	204.0	178.0	97.0	249.0	0.0
Average, sec/ft	25.5	4.2	3.2	54.7	56.7	46.8	16.2	27.7	0.0

NOTES:

Piles advanced with Vermeer PD-10 hydraulic ram.
Installation depth started at 24 inches below ground surface

Terracon

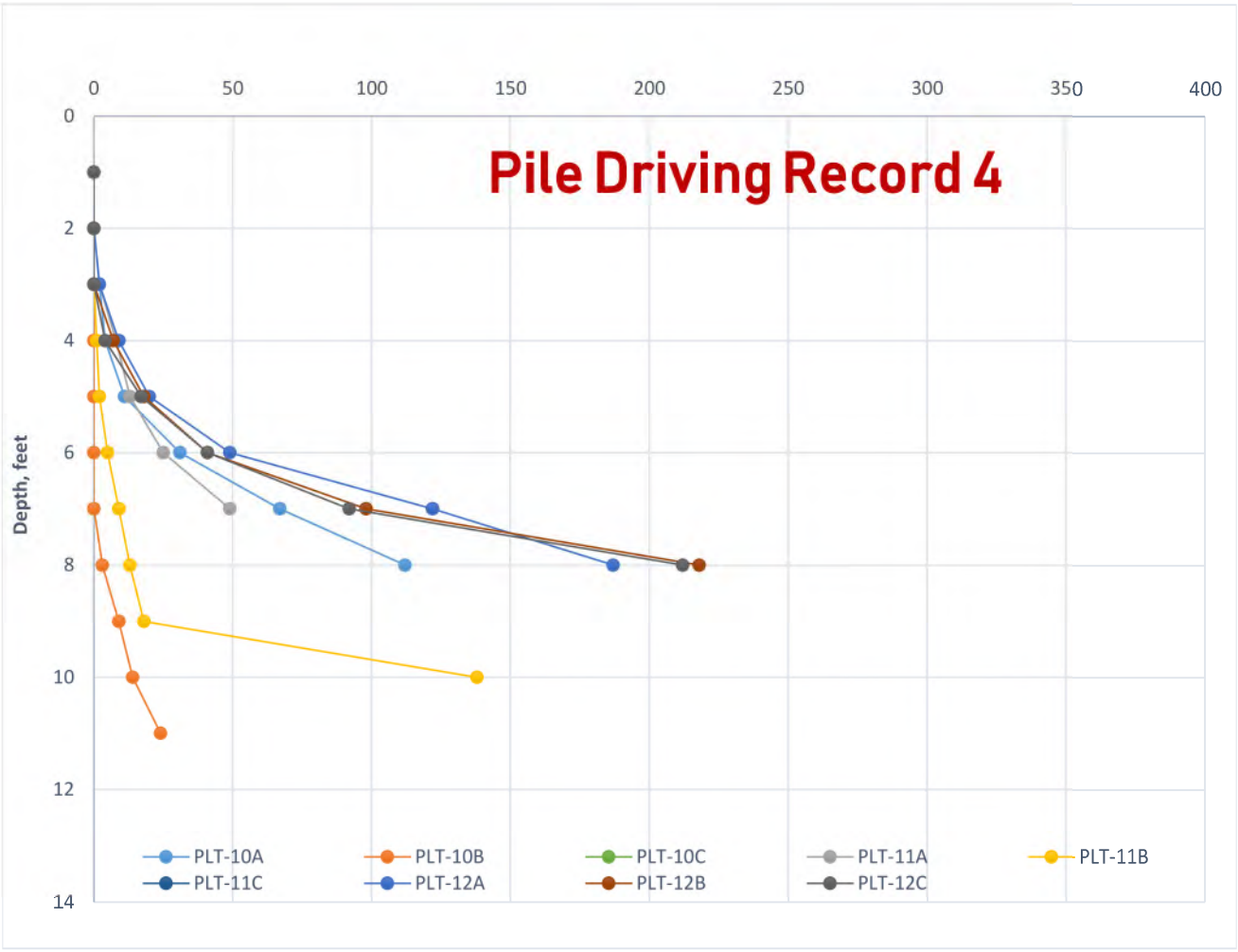


Depth (feet)	Cumulative Driving Time, seconds								
	PLT-7A	PLT-7B	PLT-7C	PLT-8A	PLT-8B	PLT-8C	PLT-9A	PLT-9B	PLT-9C
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0
4	0.0	5.0	3.0	1.0	2.0	3.0	2.0	0.0	0.0
5	0.0	11.0	7.0	2.0	5.0	5.0	7.0	1.0	1.0
6	0.0	16.0	12.0	4.0	8.0	9.0	13.0	2.0	3.0
7	1.0	19.0	16.0	12.0	12.0	19.0	22.0	5.0	8.0
8	6.0	25.0	23.0		17.0			8.0	
9		32.0			23.0			11.0	
10		44.0			143.0			19.0	
11		94.0							
12									
Embedment Depth, ft	8.0	11.0	8.0	7.0	9.1	7.0	7.0	10.0	7.0
Total Drive Time, sec	6.0	94.0	23.0	12.0	143.0	19.0	22.0	19.0	8.0
Average, sec/ft	1.0	10.4	3.8	2.4	20.1	3.8	4.4	2.4	1.6

NOTES:

Piles advanced with Vermeer PD-10 hydraulic ram.
Installation depth started at 24 inches below ground surface

Terracon



Depth (feet)	Cumulative Driving Time, seconds								
	PLT-10A	PLT-10B	PLT-10C	PLT-11A	PLT-11B	PLT-11C	PLT-12A	PLT-12B	PLT-12C
1	0.0	0.0		0.0	0.0		0.0	0.0	0.0
2	0.0	0.0		0.0	0.0		0.0	0.0	0.0
3	2.0	0.0		2.0	0.0		2.0	0.0	0.0
4	4.0	0.0		8.0	1.0		9.0	7.0	4.0
5	11.0	0.0		13.0	2.0		20.0	18.0	17.0
6	31.0	0.0		25.0	5.0		49.0	41.0	41.0
7	67.0	0.0		49.0	9.0		122.0	98.0	92.0
8	112.0	3.0			13.0		187.0	218.0	212.0
9		9.0			18.0				
10		14.0			138.0				
11		24.0							
12									
Embedment Depth, ft	8.0	11.0	0.0	7.0	9.1	0.0	8.0	7.1	7.6
Total Drive Time, sec	112.0	24.0	0.0	49.0	138.0	0.0	187.0	218.0	212.0
Average, sec/ft	18.7	2.7	0.0	9.8	19.4	0.0	31.2	42.7	37.9

NOTES:

Piles advanced with Vermeer PD-10 hydraulic ram. Installation depth started at 24 inches below ground surface

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APPENDIX C – PILE LOAD TEST RESULTS – AXIAL TENSION LOAD

Contents:

Exhibit C-1 to C-24 Tension Load Test Results (24 pages)

Note: All attachments are one page unless noted above.

Tension Load Test Result for PLT-1A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

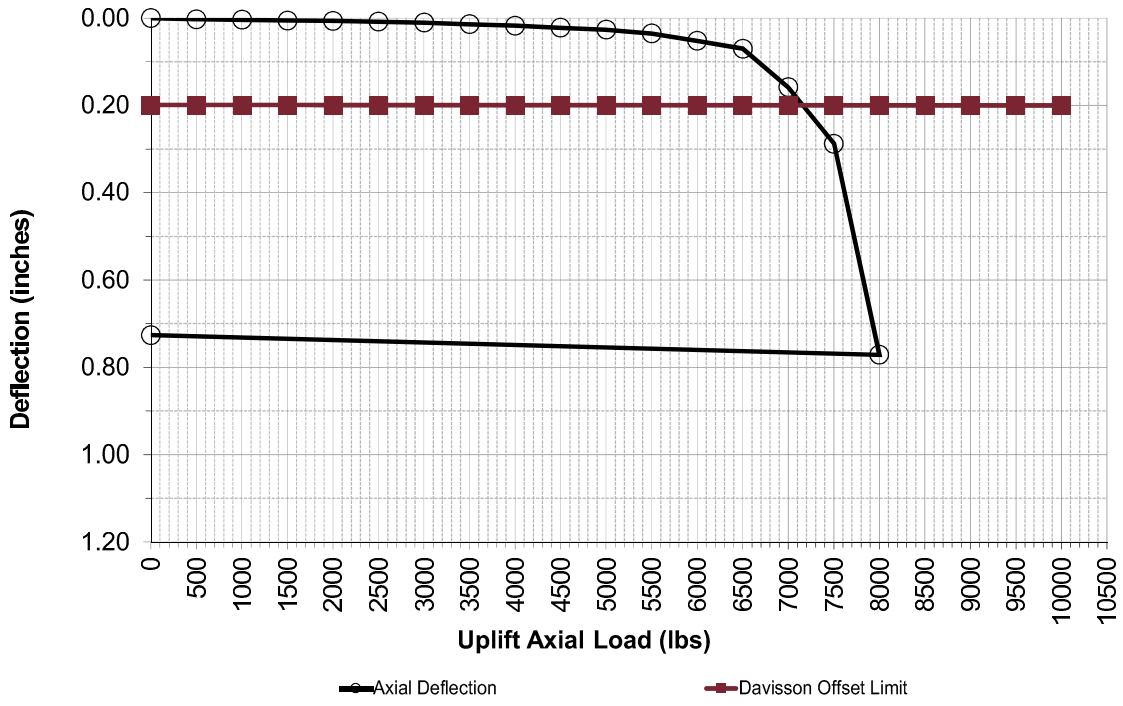
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	

Pile Information

Pile ID:	PLT-1A
Latitude:	40.70095
Longitude:	-80.88916
Pile Type:	W6x9
Pile Embedment Depth [in]:	7
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	81

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	0.003	0.000	0.199	
10%	1000	0.004	0.000	0.199	
15%	1500	0.006	0.000	0.199	
20%	2000	0.007	0.000	0.199	
25%	2500	0.008	0.000	0.199	
30%	3000	0.011	0.000	0.199	
35%	3500	0.014	0.000	0.199	
40%	4000	0.018	0.000	0.199	
45%	4500	0.022	0.000	0.200	
50%	5000	0.027	0.000	0.200	
55%	5500	0.036	0.000	0.200	
60%	6000	0.052	0.000	0.200	
65%	6500	0.070	0.001	0.200	
70%	7000	0.159	0.001	0.200	
75%	7500	0.288	0.001	0.200	
80%	8000	0.772	0.001	0.200	
85%	8500		0.001	0.200	
90%	9000		0.001	0.200	
95%	9500		0.001	0.200	
100%	10000		0.001	0.200	
0%	0	0.726	0.000	0.199	



Tension Load Test Result for PLT-1B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

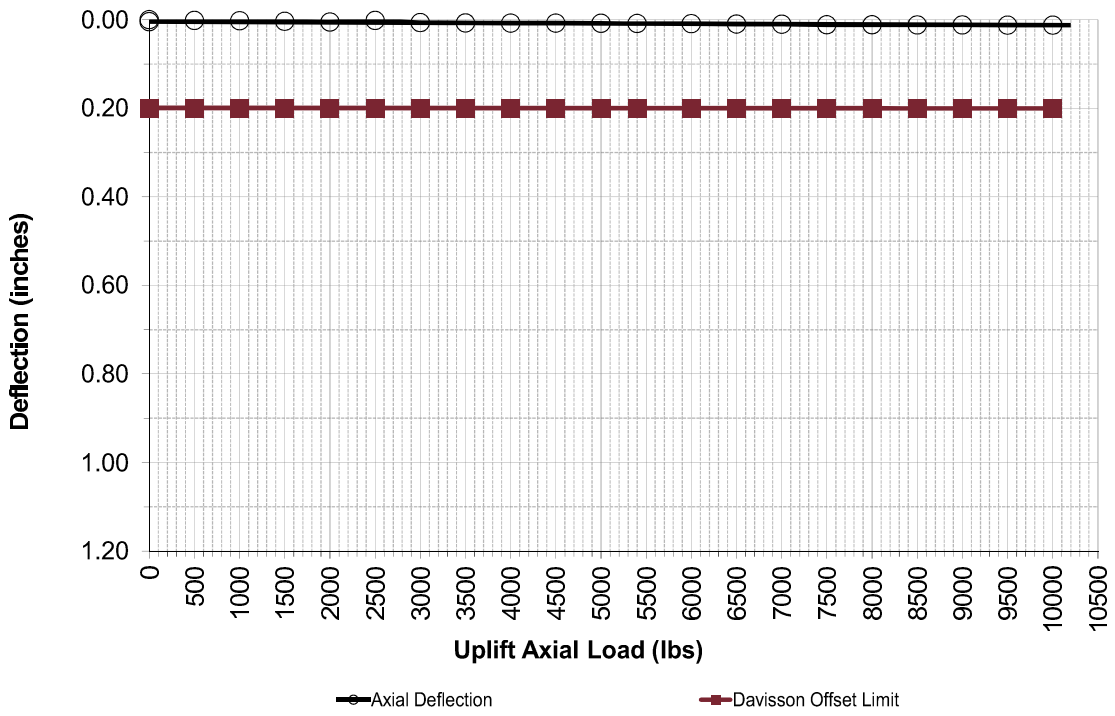
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-1B
Latitude:	40.70095
Longitude:	-80.88916
Pile Type:	W6x9
Pile Embedment Depth [in]:	8.6
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	219

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	0.002	0.000	0.199	
10%	1000	0.003	0.000	0.199	
15%	1500	0.004	0.000	0.199	
20%	2000	0.006	0.000	0.199	
25%	2500	0.002	0.000	0.199	
30%	3000	0.007	0.000	0.199	
35%	3500	0.008	0.000	0.200	
40%	4000	0.008	0.000	0.200	
45%	4500	0.008	0.000	0.200	
50%	5000	0.008	0.001	0.200	
54%	5400	0.009	0.001	0.200	
60%	6000	0.009	0.001	0.200	
65%	6500	0.010	0.001	0.200	
70%	7000	0.011	0.001	0.200	
75%	7500	0.012	0.001	0.200	
80%	8000	0.012	0.001	0.200	
85%	8500	0.012	0.001	0.200	
90%	9000	0.012	0.001	0.200	
95%	9500	0.012	0.001	0.200	
100%	10000	0.013	0.001	0.200	
0%	0	0.005	0.000	0.199	



Tension Load Test Result for PLT-2A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

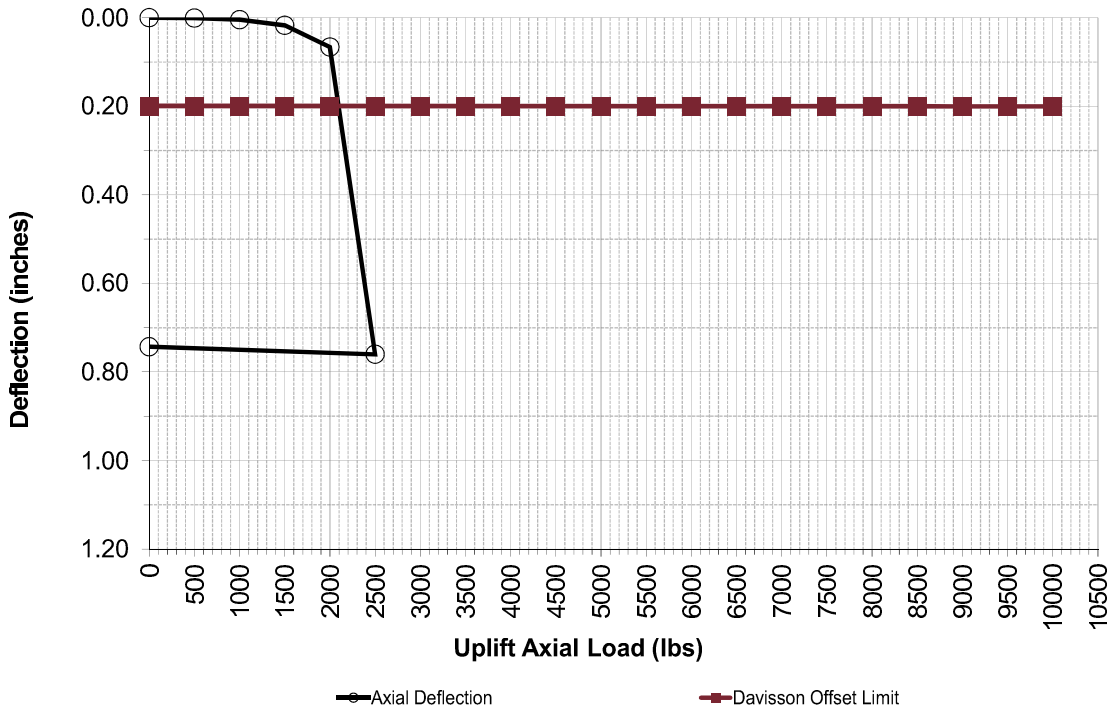
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-2A
Latitude:	40.69342
Longitude:	-80.88928
Pile Type:	W6x9
Pile Embedment Depth [in]:	7.9
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	91

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	0.001	0.000	0.199	
10%	1000	0.005	0.000	0.199	
15%	1500	0.018	0.000	0.199	
20%	2000	0.067	0.000	0.199	
25%	2500	0.760	0.000	0.199	
30%	3000		0.000	0.199	
35%	3500		0.000	0.199	
40%	4000		0.000	0.200	
45%	4500		0.000	0.200	
50%	5000		0.000	0.200	
55%	5500		0.001	0.200	
60%	6000		0.001	0.200	
65%	6500		0.001	0.200	
70%	7000		0.001	0.200	
75%	7500		0.001	0.200	
80%	8000		0.001	0.200	
85%	8500		0.001	0.200	
90%	9000		0.001	0.200	
95%	9500		0.001	0.200	
100%	10000		0.001	0.200	
0%	0	0.743	0.000	0.199	



Tension Load Test Result for PLT-2B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

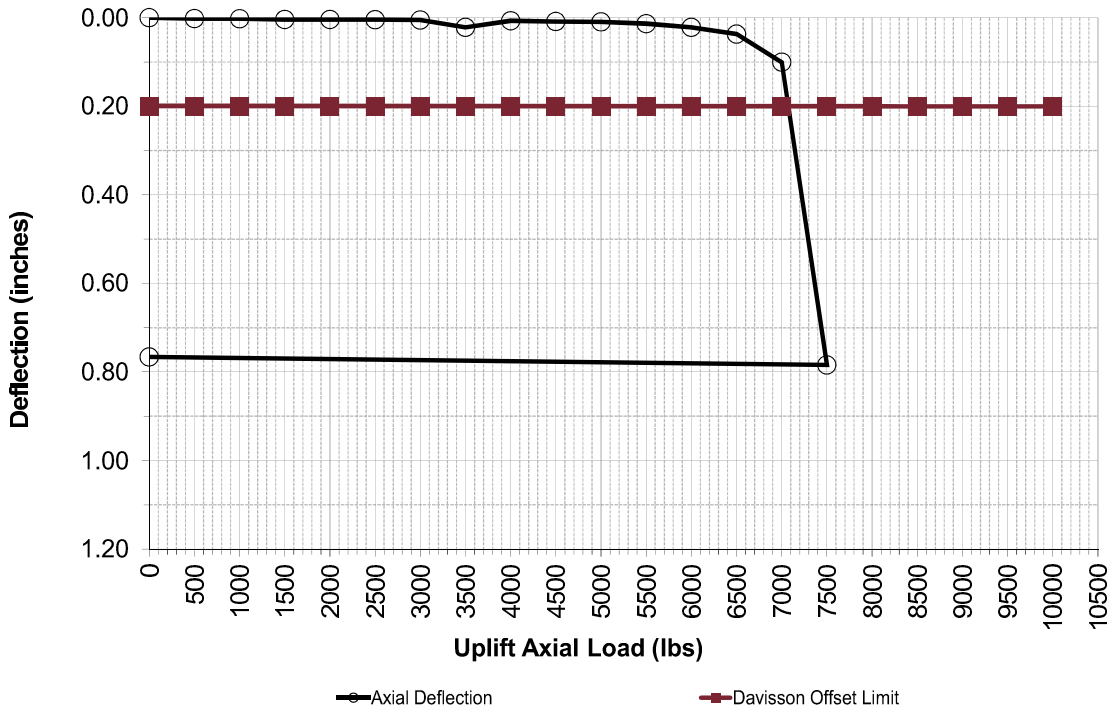
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-2B
Latitude:	40.69342
Longitude:	-80.88928
Pile Type:	W6x9
Pile Embedment Depth [in]:	8.6
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	107

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	0.002	0.000	0.199	
10%	1000	0.003	0.000	0.199	
15%	1500	0.004	0.000	0.199	
20%	2000	0.004	0.000	0.199	
25%	2500	0.005	0.000	0.199	
30%	3000	0.005	0.000	0.199	
35%	3500	0.022	0.000	0.200	
40%	4000	0.007	0.000	0.200	
45%	4500	0.009	0.000	0.200	
50%	5000	0.010	0.001	0.200	
55%	5500	0.014	0.001	0.200	
60%	6000	0.022	0.001	0.200	
65%	6500	0.037	0.001	0.200	
70%	7000	0.101	0.001	0.200	
75%	7500	0.784	0.001	0.200	
80%	8000		0.001	0.200	
85%	8500		0.001	0.200	
90%	9000		0.001	0.200	
95%	9500		0.001	0.200	
100%	10000		0.001	0.200	
0%	0	0.766	0.000	0.199	



Tension Load Test Result for PLT-3A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

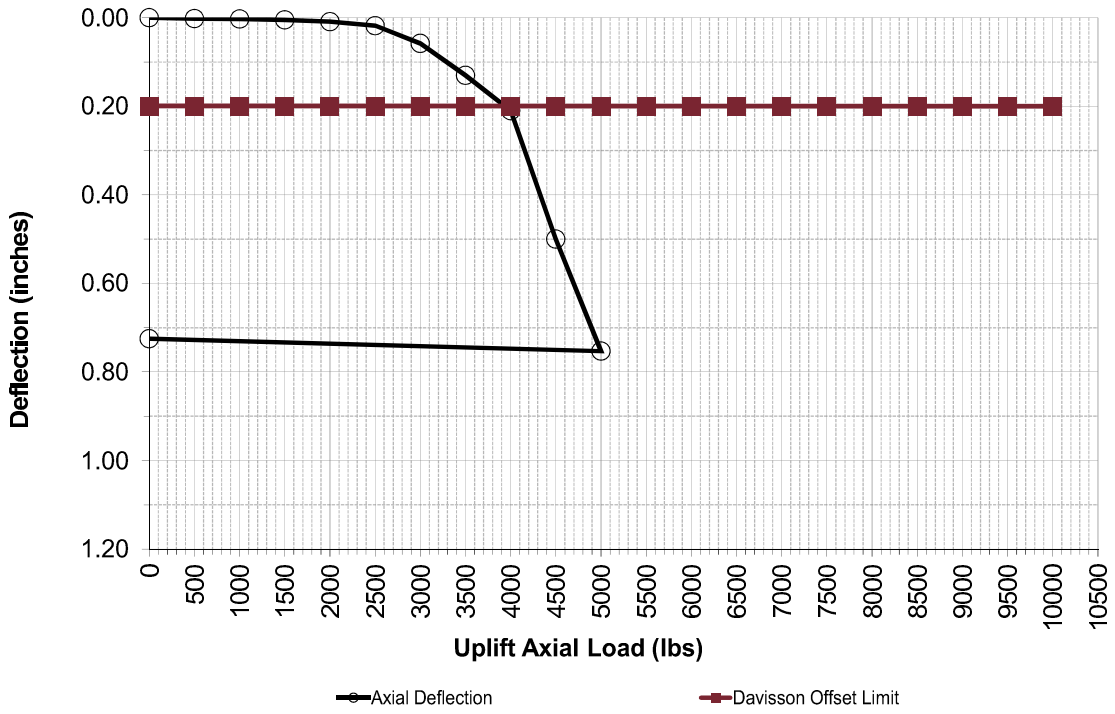
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-3A
Latitude:	40.69014
Longitude:	-80.88951
Pile Type:	W6x9
Pile Embedment Depth [in]:	7
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	68

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	0.002	0.000	0.199	
10%	1000	0.003	0.000	0.199	
15%	1500	0.005	0.000	0.199	
20%	2000	0.009	0.000	0.199	
25%	2500	0.018	0.000	0.199	
30%	3000	0.058	0.000	0.199	
35%	3500	0.130	0.000	0.199	
40%	4000	0.210	0.000	0.199	
45%	4500	0.500	0.000	0.200	
50%	5000	0.753	0.000	0.200	
55%	5500		0.000	0.200	
60%	6000		0.000	0.200	
65%	6500		0.001	0.200	
70%	7000		0.001	0.200	
75%	7500		0.001	0.200	
80%	8000		0.001	0.200	
85%	8500		0.001	0.200	
90%	9000		0.001	0.200	
95%	9500		0.001	0.200	
100%	10000		0.001	0.200	
0%	0	0.725	0.000	0.199	



Tension Load Test Result for PLT-3B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

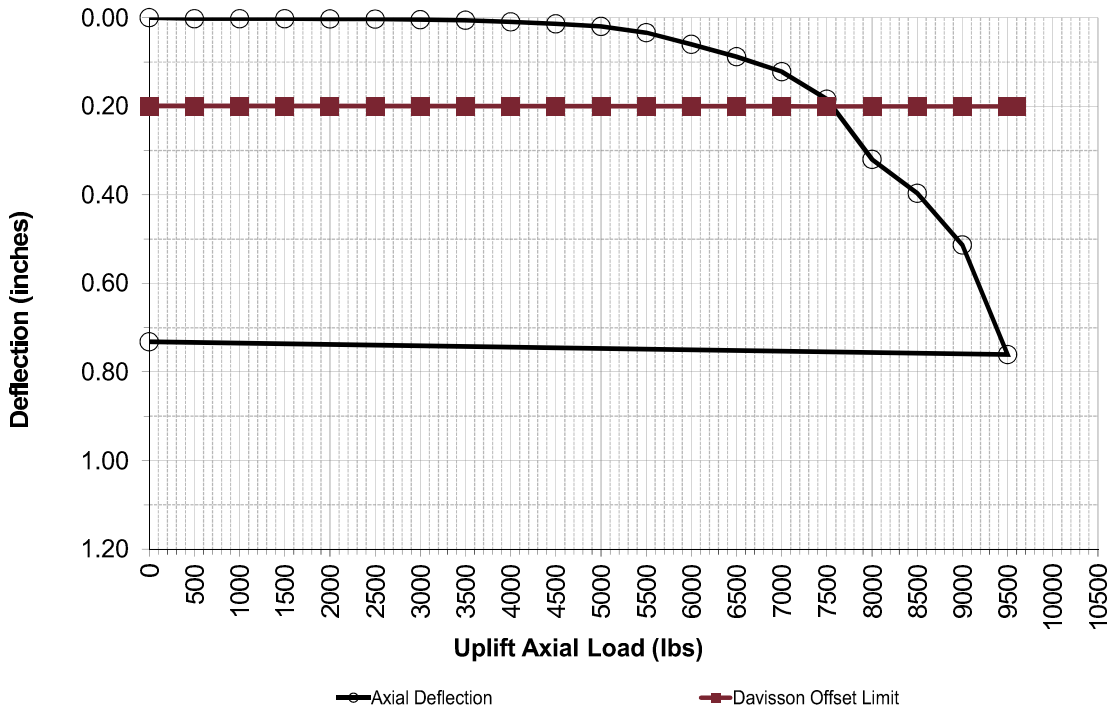
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-3B
Latitude:	40.69014
Longitude:	-80.88951
Pile Type:	W6x9
Pile Embedment Depth [in]:	10
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	175

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	0.003	0.000	0.199	
10%	1000	0.003	0.000	0.199	
15%	1500	0.003	0.000	0.199	
20%	2000	0.003	0.000	0.199	
25%	2500	0.003	0.000	0.199	
30%	3000	0.005	0.000	0.200	
35%	3500	0.006	0.000	0.200	
40%	4000	0.010	0.000	0.200	
45%	4500	0.014	0.001	0.200	
50%	5000	0.020	0.001	0.200	
55%	5500	0.034	0.001	0.200	
60%	6000	0.060	0.001	0.200	
65%	6500	0.088	0.001	0.200	
70%	7000	0.122	0.001	0.200	
75%	7500	0.184	0.001	0.200	
80%	8000	0.320	0.001	0.200	
85%	8500	0.397	0.001	0.200	
90%	9000	0.513	0.001	0.200	
95%	9500	0.761	0.001	0.200	
96%	9600		0.001	0.200	
0%	0	0.732	0.000	0.199	



Tension Load Test Result for PLT-4A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

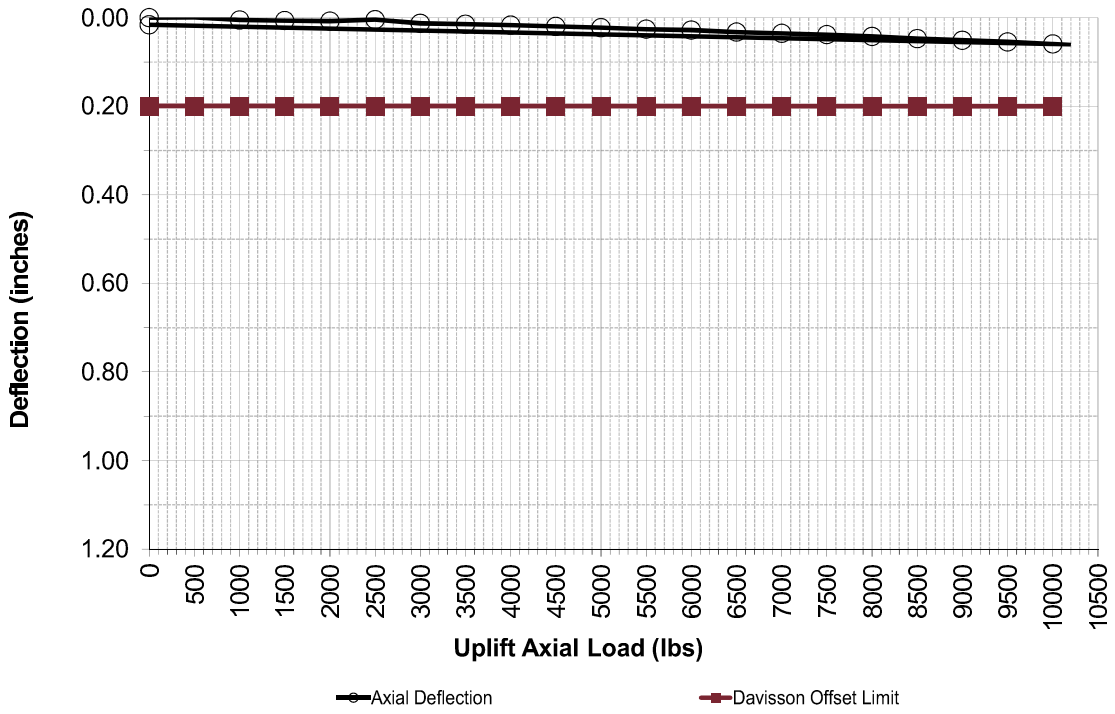
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-4A
Latitude:	40.68967
Longitude:	-80.89409
Pile Type:	W6x9
Pile Embedment Depth [in]:	7.1
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	91

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	-0.001	0.000	0.199	
10%	1000	0.006	0.000	0.199	
15%	1500	0.007	0.000	0.199	
20%	2000	0.008	0.000	0.199	
25%	2500	0.005	0.000	0.199	
30%	3000	0.013	0.000	0.199	
35%	3500	0.015	0.000	0.199	
40%	4000	0.017	0.000	0.199	
45%	4500	0.020	0.000	0.200	
50%	5000	0.023	0.000	0.200	
55%	5500	0.026	0.000	0.200	
60%	6000	0.028	0.000	0.200	
65%	6500	0.033	0.001	0.200	
70%	7000	0.036	0.001	0.200	
75%	7500	0.039	0.001	0.200	
80%	8000	0.043	0.001	0.200	
85%	8500	0.048	0.001	0.200	
90%	9000	0.051	0.001	0.200	
95%	9500	0.055	0.001	0.200	
100%	10000	0.060	0.001	0.200	
0%	0	0.016	0.000	0.199	



Tension Load Test Result for PLT-4B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

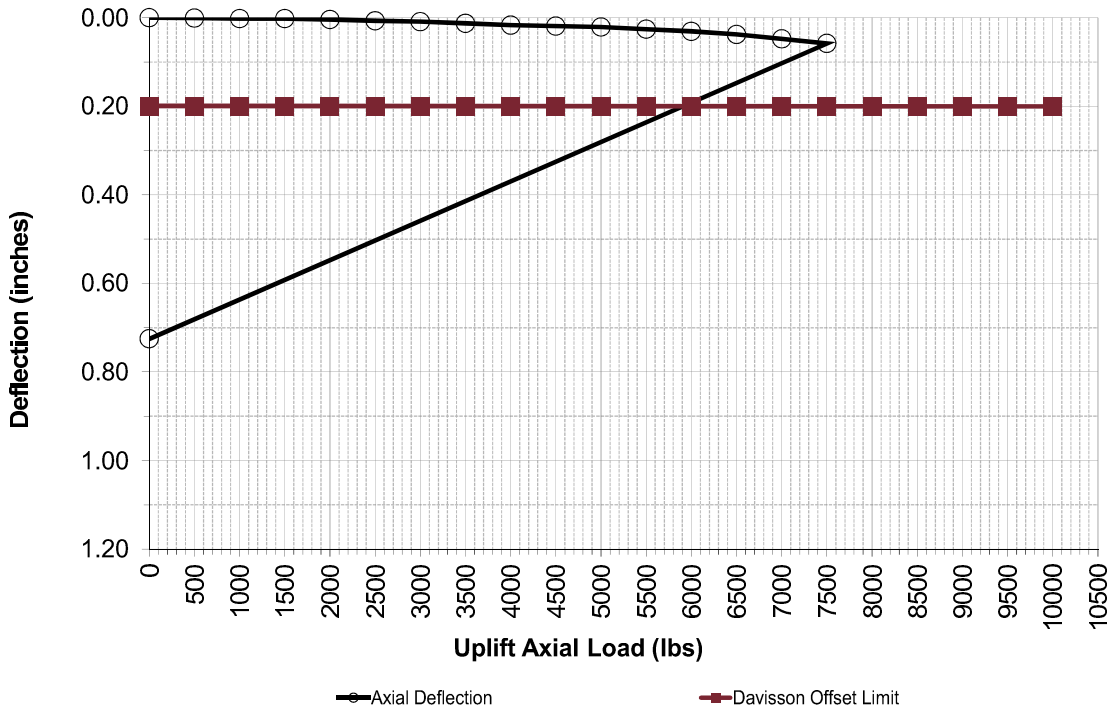
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-4B
Latitude:	40.68967
Longitude:	-80.89409
Pile Type:	W6x9
Pile Embedment Depth [in]:	11
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	38

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	0.001	0.000	0.199	
10%	1000	0.002	0.000	0.199	
15%	1500	0.002	0.000	0.199	
20%	2000	0.004	0.000	0.199	
25%	2500	0.007	0.000	0.199	
30%	3000	0.009	0.000	0.200	
35%	3500	0.013	0.000	0.200	
40%	4000	0.017	0.001	0.200	
45%	4500	0.019	0.001	0.200	
50%	5000	0.021	0.001	0.200	
55%	5500	0.026	0.001	0.200	
60%	6000	0.031	0.001	0.200	
65%	6500	0.038	0.001	0.200	
70%	7000	0.048	0.001	0.200	
75%	7500	0.058	0.001	0.200	
80%	8000		0.001	0.200	
85%	8500		0.001	0.200	
90%	9000		0.001	0.200	
95%	9500		0.001	0.200	
100%	10000		0.001	0.200	
0%	0	0.725	0.000	0.199	



Tension Load Test Result for PLT-5A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

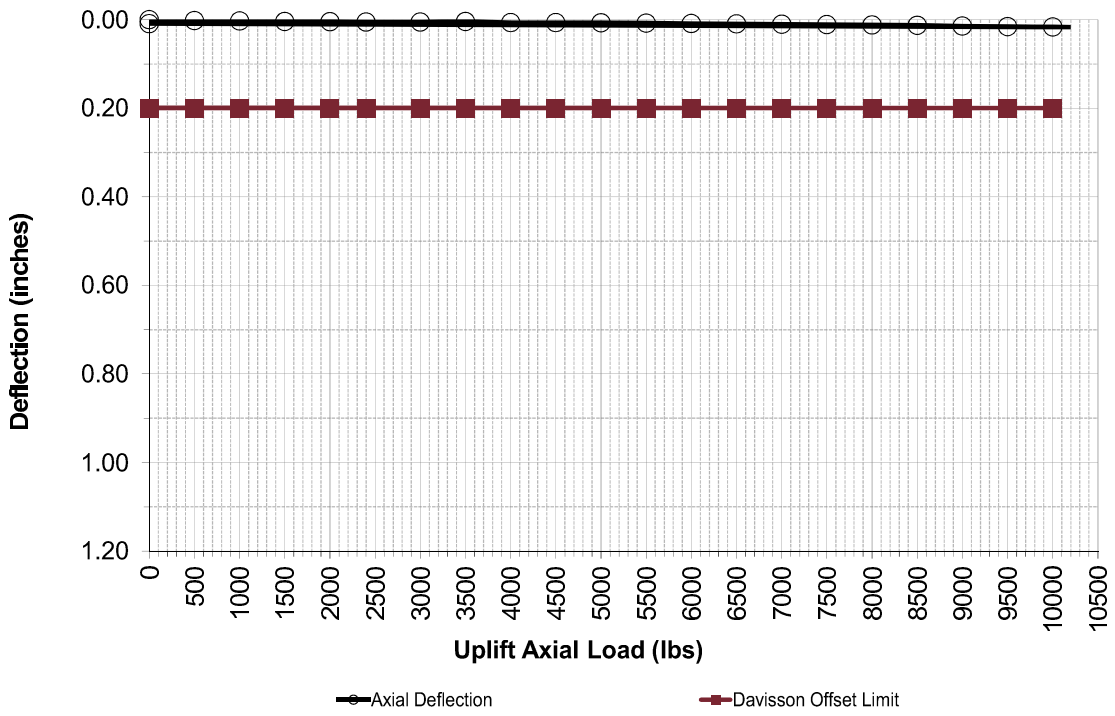
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-5A
Latitude:	40.67996
Longitude:	-80.89076
Pile Type:	W6x9
Pile Embedment Depth [in]:	5.6
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	177

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	0.002	0.000	0.199	
10%	1000	0.003	0.000	0.199	
15%	1500	0.004	0.000	0.199	
20%	2000	0.005	0.000	0.199	
24%	2400	0.006	0.000	0.199	
30%	3000	0.006	0.000	0.199	
35%	3500	0.004	0.000	0.199	
40%	4000	0.007	0.000	0.199	
45%	4500	0.007	0.000	0.199	
50%	5000	0.007	0.000	0.199	
55%	5500	0.008	0.000	0.200	
60%	6000	0.009	0.000	0.200	
65%	6500	0.010	0.000	0.200	
70%	7000	0.011	0.000	0.200	
75%	7500	0.011	0.000	0.200	
80%	8000	0.012	0.001	0.200	
85%	8500	0.013	0.001	0.200	
90%	9000	0.015	0.001	0.200	
95%	9500	0.016	0.001	0.200	
100%	10000	0.017	0.001	0.200	
0%	0	0.009	0.000	0.199	



Tension Load Test Result for PLT-5B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

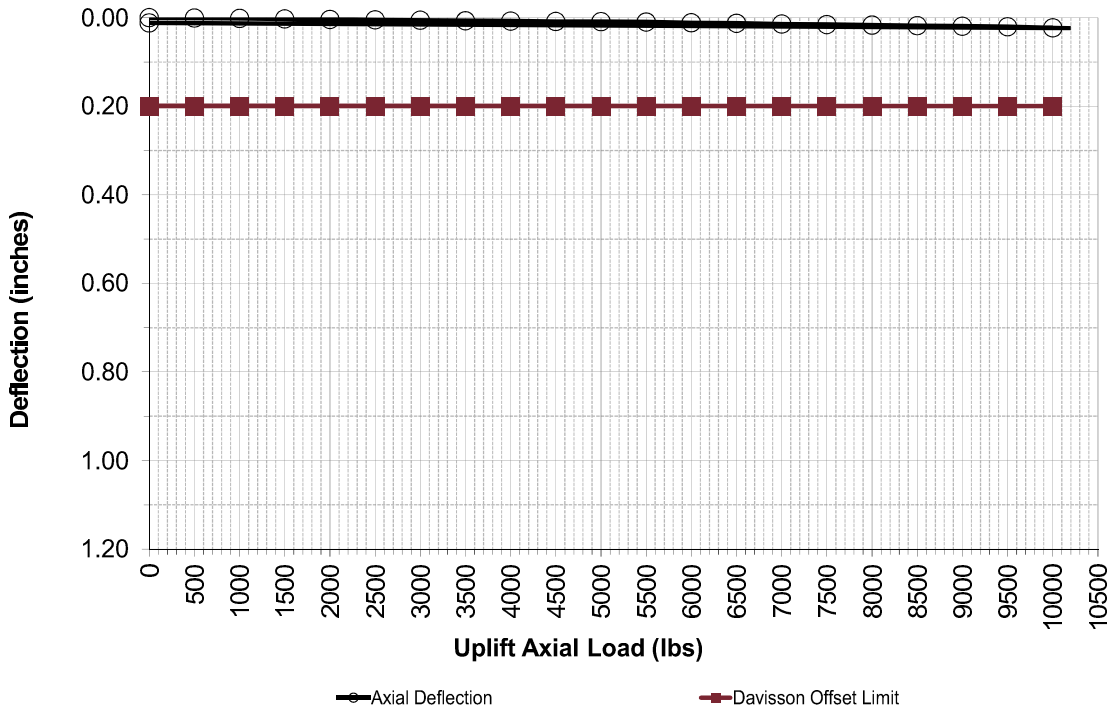
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-5B
Latitude:	40.67996
Longitude:	-80.89076
Pile Type:	W6x9
Pile Embedment Depth [in]:	5.6
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	170

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	0.001	0.000	0.199	
10%	1000	0.002	0.000	0.199	
15%	1500	0.003	0.000	0.199	
20%	2000	0.004	0.000	0.199	
25%	2500	0.005	0.000	0.199	
30%	3000	0.006	0.000	0.199	
35%	3500	0.007	0.000	0.199	
40%	4000	0.008	0.000	0.199	
45%	4500	0.009	0.000	0.199	
50%	5000	0.009	0.000	0.199	
55%	5500	0.010	0.000	0.200	
60%	6000	0.012	0.000	0.200	
65%	6500	0.013	0.000	0.200	
70%	7000	0.015	0.000	0.200	
75%	7500	0.016	0.000	0.200	
80%	8000	0.017	0.001	0.200	
85%	8500	0.018	0.001	0.200	
90%	9000	0.020	0.001	0.200	
95%	9500	0.021	0.001	0.200	
100%	10000	0.023	0.001	0.200	
0%	0	0.012	0.000	0.199	



Tension Load Test Result for PLT-6A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

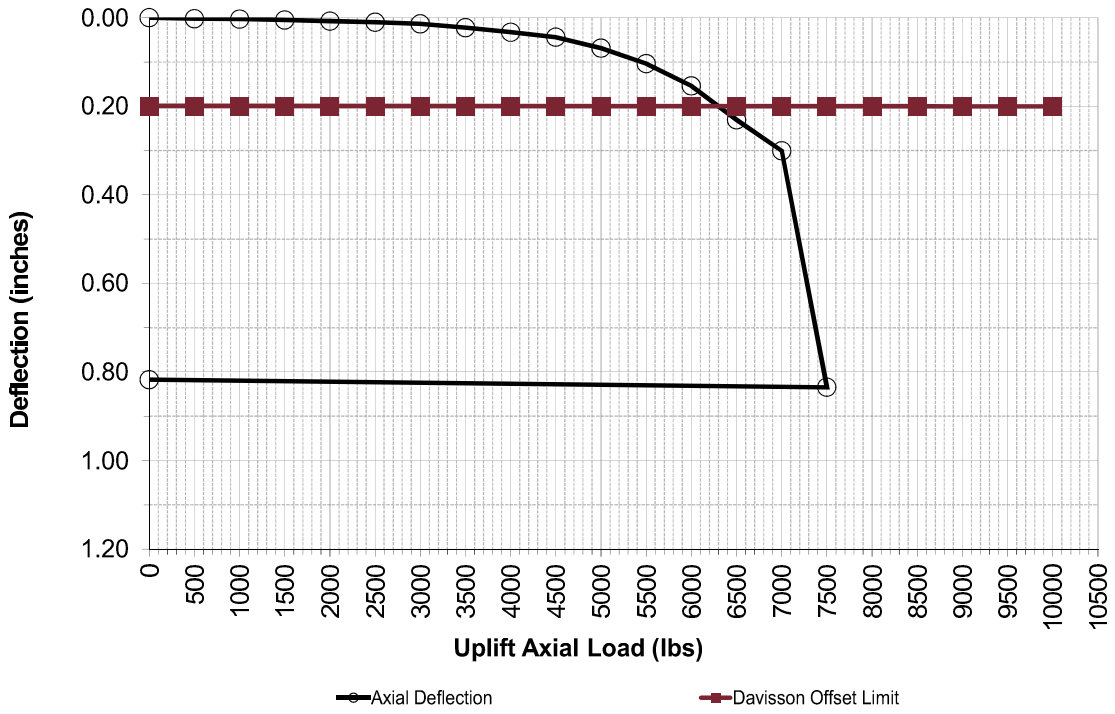
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-6A
Latitude:	40.68609
Longitude:	-80.90316
Pile Type:	W6x9
Pile Embedment Depth [in]:	8
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	97

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	0.003	0.000	0.199	
10%	1000	0.004	0.000	0.199	
15%	1500	0.006	0.000	0.199	
20%	2000	0.008	0.000	0.199	
25%	2500	0.011	0.000	0.199	
30%	3000	0.014	0.000	0.199	
35%	3500	0.023	0.000	0.199	
40%	4000	0.033	0.000	0.200	
45%	4500	0.044	0.000	0.200	
50%	5000	0.069	0.000	0.200	
55%	5500	0.104	0.001	0.200	
60%	6000	0.154	0.001	0.200	
65%	6500	0.231	0.001	0.200	
70%	7000	0.301	0.001	0.200	
75%	7500	0.835	0.001	0.200	
80%	8000		0.001	0.200	
85%	8500		0.001	0.200	
90%	9000		0.001	0.200	
95%	9500		0.001	0.200	
100%	10000		0.001	0.200	
0%	0	0.818	0.000	0.199	



Tension Load Test Result for PLT-6B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

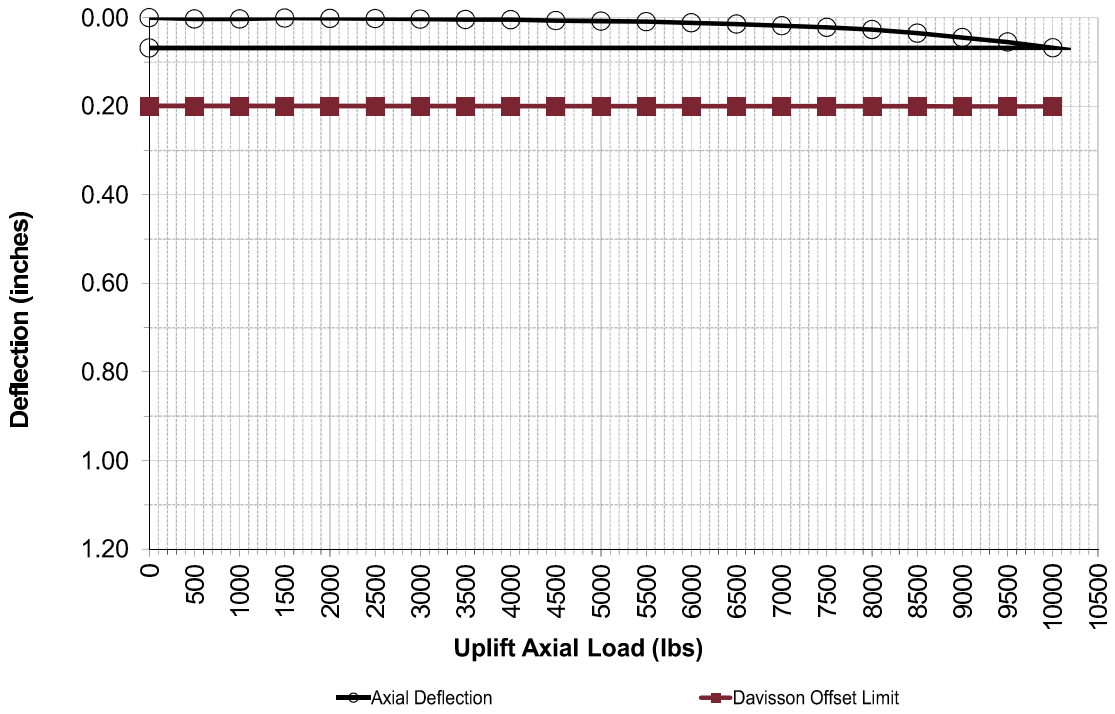
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-6B
Latitude:	40.68609
Longitude:	-80.90316
Pile Type:	W6x9
Pile Embedment Depth [in]:	8
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	120

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	0.003	0.000	0.199	
10%	1000	0.003	0.000	0.199	
15%	1500	0.001	0.000	0.199	
20%	2000	0.002	0.000	0.199	
25%	2500	0.002	0.000	0.199	
30%	3000	0.004	0.000	0.199	
35%	3500	0.004	0.000	0.199	
40%	4000	0.005	0.000	0.200	
45%	4500	0.007	0.000	0.200	
50%	5000	0.008	0.000	0.200	
55%	5500	0.009	0.001	0.200	
60%	6000	0.012	0.001	0.200	
65%	6500	0.015	0.001	0.200	
70%	7000	0.018	0.001	0.200	
75%	7500	0.022	0.001	0.200	
80%	8000	0.027	0.001	0.200	
85%	8500	0.035	0.001	0.200	
90%	9000	0.045	0.001	0.200	
95%	9500	0.055	0.001	0.200	
100%	10000	0.068	0.001	0.200	
0%	0	0.069	0.000	0.199	



Tension Load Test Result for PLT-7A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

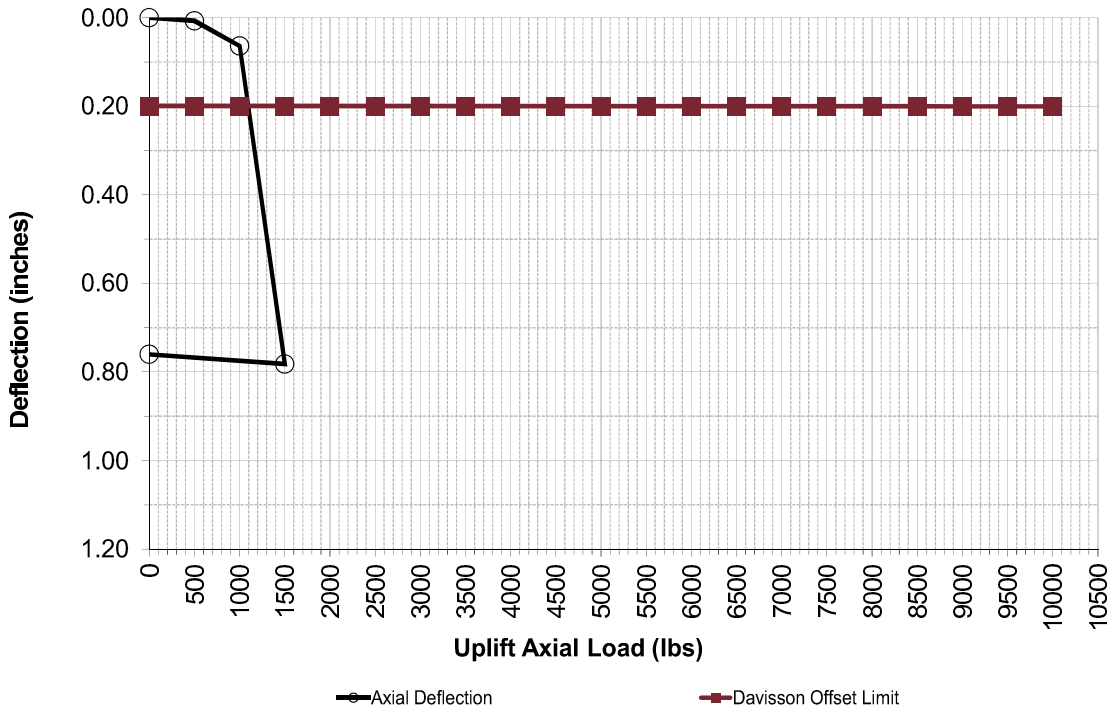
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-7A
Latitude:	40.70103
Longitude:	-80.89688
Pile Type:	W6x9
Pile Embedment Depth [in]:	8
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	6

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	0.007	0.000	0.199	
10%	1000	0.064	0.000	0.199	
15%	1500	0.782	0.000	0.199	
20%	2000		0.000	0.199	
25%	2500		0.000	0.199	
30%	3000		0.000	0.199	
35%	3500		0.000	0.199	
40%	4000		0.000	0.200	
45%	4500		0.000	0.200	
50%	5000		0.000	0.200	
55%	5500		0.001	0.200	
60%	6000		0.001	0.200	
65%	6500		0.001	0.200	
70%	7000		0.001	0.200	
75%	7500		0.001	0.200	
80%	8000		0.001	0.200	
85%	8500		0.001	0.200	
90%	9000		0.001	0.200	
95%	9500		0.001	0.200	
100%	10000		0.001	0.200	
0%	0	0.760	0.000	0.199	



Tension Load Test Result for PLT-7B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

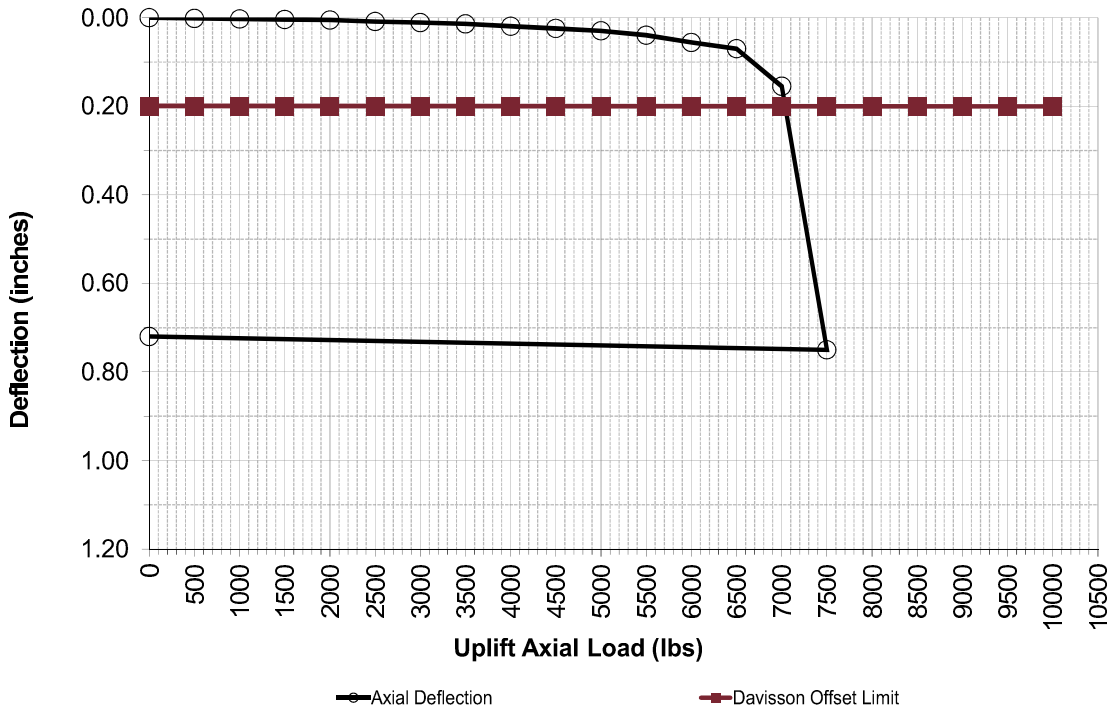
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-7B
Latitude:	40.70103
Longitude:	-80.89688
Pile Type:	W6x9
Pile Embedment Depth [in]:	11
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	25

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	0.002	0.000	0.199	
10%	1000	0.003	0.000	0.199	
15%	1500	0.004	0.000	0.199	
20%	2000	0.006	0.000	0.199	
25%	2500	0.009	0.000	0.199	
30%	3000	0.011	0.000	0.200	
35%	3500	0.014	0.000	0.200	
40%	4000	0.020	0.001	0.200	
45%	4500	0.025	0.001	0.200	
50%	5000	0.030	0.001	0.200	
55%	5500	0.040	0.001	0.200	
60%	6000	0.056	0.001	0.200	
65%	6500	0.070	0.001	0.200	
70%	7000	0.155	0.001	0.200	
75%	7500	0.750	0.001	0.200	
80%	8000		0.001	0.200	
85%	8500		0.001	0.200	
90%	9000		0.001	0.200	
95%	9500		0.001	0.200	
100%	10000		0.001	0.200	
0%	0	0.720	0.000	0.199	



Tension Load Test Result for PLT-8A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

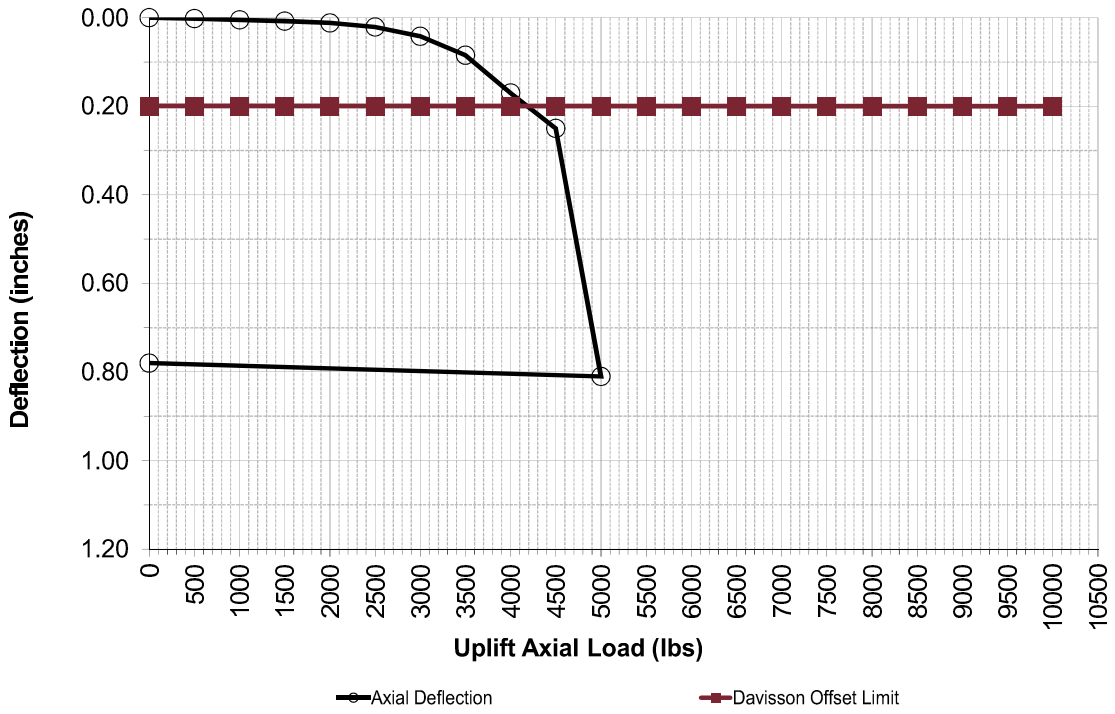
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-8A
Latitude:	40.69661
Longitude:	-80.88478
Pile Type:	W6x9
Pile Embedment Depth [in]:	7
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	12

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	0.002	0.000	0.199	
10%	1000	0.005	0.000	0.199	
15%	1500	0.008	0.000	0.199	
20%	2000	0.012	0.000	0.199	
25%	2500	0.021	0.000	0.199	
30%	3000	0.042	0.000	0.199	
35%	3500	0.085	0.000	0.199	
40%	4000	0.170	0.000	0.199	
45%	4500	0.250	0.000	0.200	
50%	5000	0.810	0.000	0.200	
55%	5500		0.000	0.200	
60%	6000		0.000	0.200	
65%	6500		0.001	0.200	
70%	7000		0.001	0.200	
75%	7500		0.001	0.200	
80%	8000		0.001	0.200	
85%	8500		0.001	0.200	
90%	9000		0.001	0.200	
95%	9500		0.001	0.200	
100%	10000		0.001	0.200	
0%	0	0.780	0.000	0.199	



Tension Load Test Result for PLT-8B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

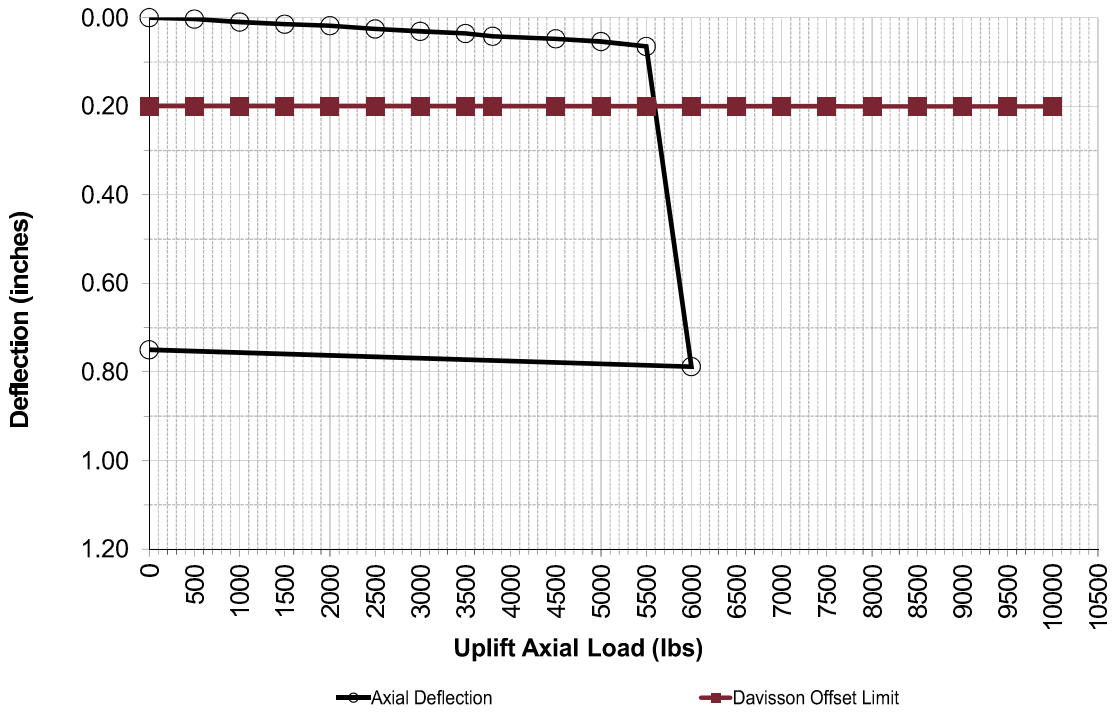
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-8B
Latitude:	40.69661
Longitude:	-80.88478
Pile Type:	W6x9
Pile Embedment Depth [in]:	9.1
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	104

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	0.004	0.000	0.199	
10%	1000	0.010	0.000	0.199	
15%	1500	0.015	0.000	0.199	
20%	2000	0.018	0.000	0.199	
25%	2500	0.026	0.000	0.199	
30%	3000	0.031	0.000	0.199	
35%	3500	0.036	0.000	0.200	
38%	3800	0.042	0.000	0.200	
45%	4500	0.048	0.000	0.200	
50%	5000	0.054	0.001	0.200	
55%	5500	0.065	0.001	0.200	
60%	6000	0.788	0.001	0.200	
65%	6500		0.001	0.200	
70%	7000		0.001	0.200	
75%	7500		0.001	0.200	
80%	8000		0.001	0.200	
85%	8500		0.001	0.200	
90%	9000		0.001	0.200	
95%	9500		0.001	0.200	
100%	10000		0.001	0.200	
0%	0	0.750	0.000	0.199	



Tension Load Test Result for PLT-9A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

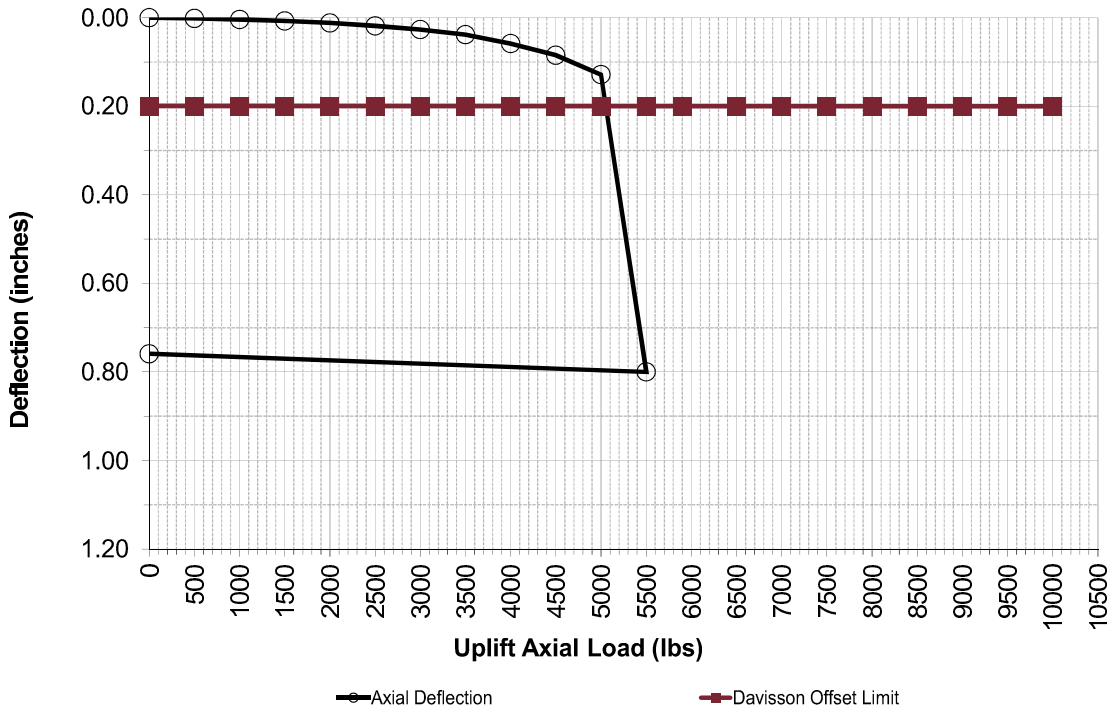
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-9A
Latitude:	40.66744
Longitude:	-80.89583
Pile Type:	W6x9
Pile Embedment Depth [in]:	7
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	22

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	0.002	0.000	0.199	
10%	1000	0.004	0.000	0.199	
15%	1500	0.008	0.000	0.199	
20%	2000	0.012	0.000	0.199	
25%	2500	0.019	0.000	0.199	
30%	3000	0.027	0.000	0.199	
35%	3500	0.039	0.000	0.199	
40%	4000	0.059	0.000	0.199	
45%	4500	0.085	0.000	0.200	
50%	5000	0.129	0.000	0.200	
55%	5500	0.800	0.000	0.200	
59%	5900		0.000	0.200	
65%	6500		0.001	0.200	
70%	7000		0.001	0.200	
75%	7500		0.001	0.200	
80%	8000		0.001	0.200	
85%	8500		0.001	0.200	
90%	9000		0.001	0.200	
95%	9500		0.001	0.200	
100%	10000		0.001	0.200	
0%	0	0.759	0.000	0.199	



Tension Load Test Result for PLT-9B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

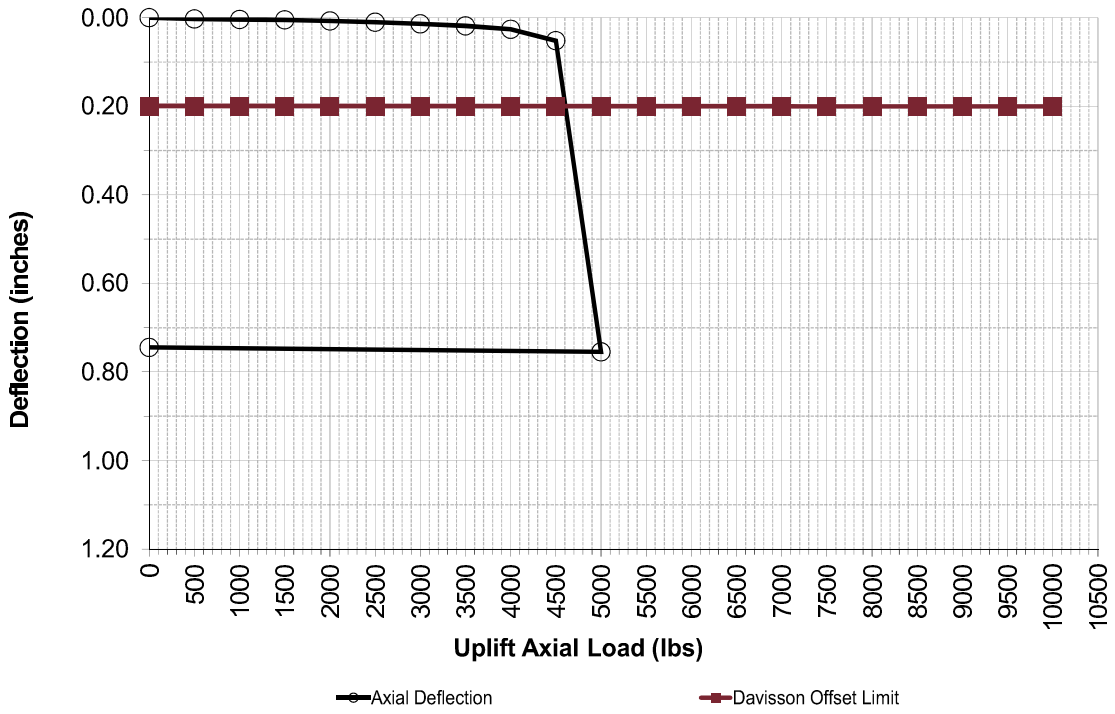
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-9B
Latitude:	40.66744
Longitude:	-80.89583
Pile Type:	W6x9
Pile Embedment Depth [in]:	10
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	19

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	0.003	0.000	0.199	
10%	1000	0.004	0.000	0.199	
15%	1500	0.005	0.000	0.199	
20%	2000	0.008	0.000	0.199	
25%	2500	0.011	0.000	0.199	
30%	3000	0.014	0.000	0.200	
35%	3500	0.019	0.000	0.200	
40%	4000	0.027	0.000	0.200	
45%	4500	0.052	0.001	0.200	
50%	5000	0.755	0.001	0.200	
55%	5500		0.001	0.200	
60%	6000		0.001	0.200	
65%	6500		0.001	0.200	
70%	7000		0.001	0.200	
75%	7500		0.001	0.200	
80%	8000		0.001	0.200	
85%	8500		0.001	0.200	
90%	9000		0.001	0.200	
95%	9500		0.001	0.200	
100%	10000		0.001	0.200	
0%	0	0.745	0.000	0.199	



Tension Load Test Result for PLT-10A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

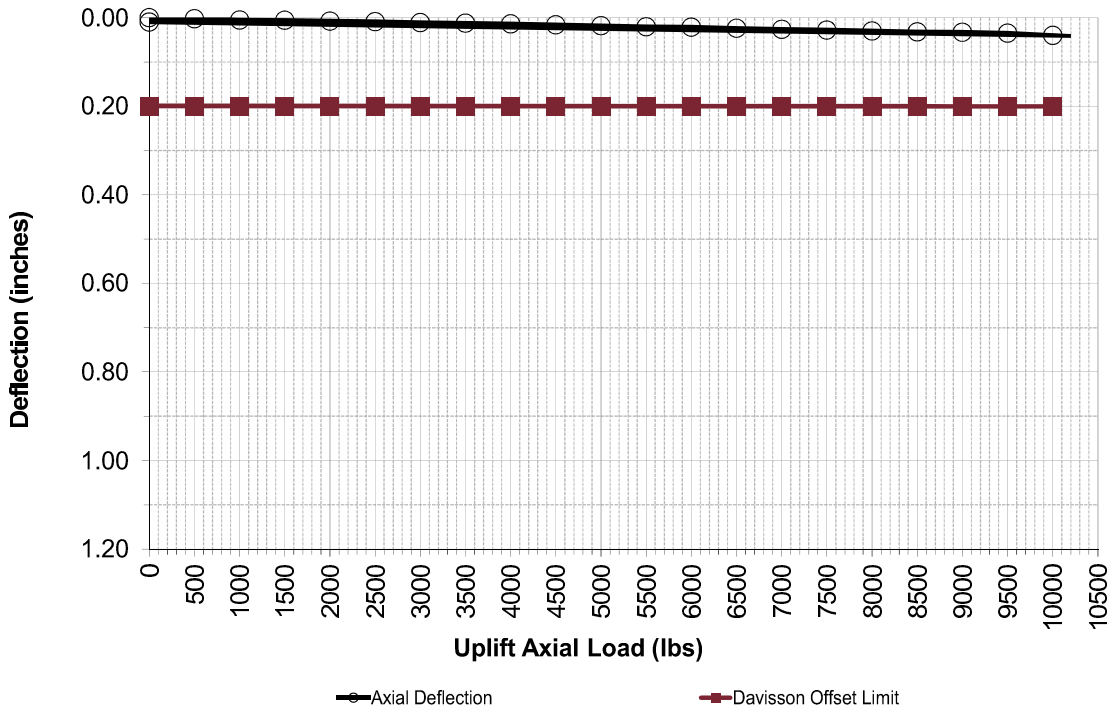
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-10A
Latitude:	40.67042
Longitude:	-80.88382
Pile Type:	W6x9
Pile Embedment Depth [in]:	8
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	112

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	0.003	0.000	0.199	
10%	1000	0.006	0.000	0.199	
15%	1500	0.006	0.000	0.199	
20%	2000	0.008	0.000	0.199	
25%	2500	0.009	0.000	0.199	
30%	3000	0.011	0.000	0.199	
35%	3500	0.013	0.000	0.199	
40%	4000	0.014	0.000	0.200	
45%	4500	0.016	0.000	0.200	
50%	5000	0.018	0.000	0.200	
55%	5500	0.021	0.001	0.200	
60%	6000	0.022	0.001	0.200	
65%	6500	0.024	0.001	0.200	
70%	7000	0.027	0.001	0.200	
75%	7500	0.028	0.001	0.200	
80%	8000	0.030	0.001	0.200	
85%	8500	0.032	0.001	0.200	
90%	9000	0.033	0.001	0.200	
95%	9500	0.035	0.001	0.200	
100%	10000	0.040	0.001	0.200	
0%	0	0.010	0.000	0.199	



Tension Load Test Result for PLT-10B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

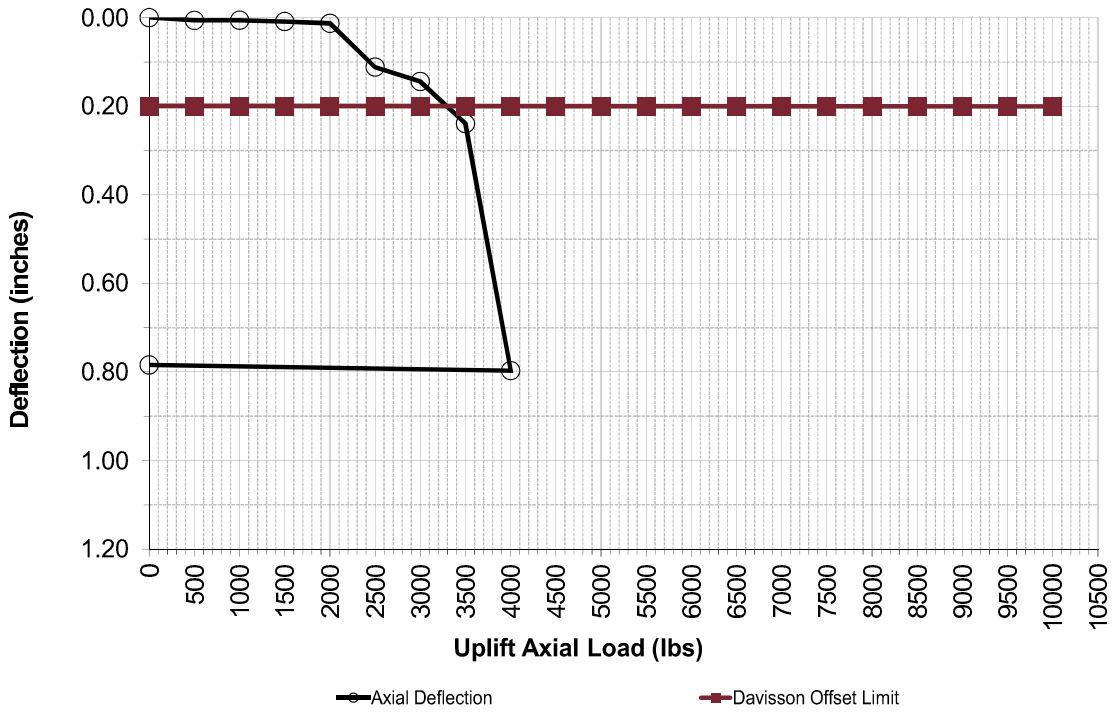
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-10B
Latitude:	40.67042
Longitude:	-80.88382
Pile Type:	W6x9
Pile Embedment Depth [in]:	11
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	24

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	0.006	0.000	0.199	
10%	1000	0.006	0.000	0.199	
15%	1500	0.009	0.000	0.199	
20%	2000	0.013	0.000	0.199	
25%	2500	0.112	0.000	0.199	
30%	3000	0.144	0.000	0.200	
35%	3500	0.240	0.000	0.200	
40%	4000	0.797	0.001	0.200	
45%	4500		0.001	0.200	
50%	5000		0.001	0.200	
55%	5500		0.001	0.200	
60%	6000		0.001	0.200	
65%	6500		0.001	0.200	
70%	7000		0.001	0.200	
75%	7500		0.001	0.200	
80%	8000		0.001	0.200	
85%	8500		0.001	0.200	
90%	9000		0.001	0.200	
95%	9500		0.001	0.200	
100%	10000		0.001	0.200	
0%	0	0.784	0.000	0.199	



Tension Load Test Result for PLT-11A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

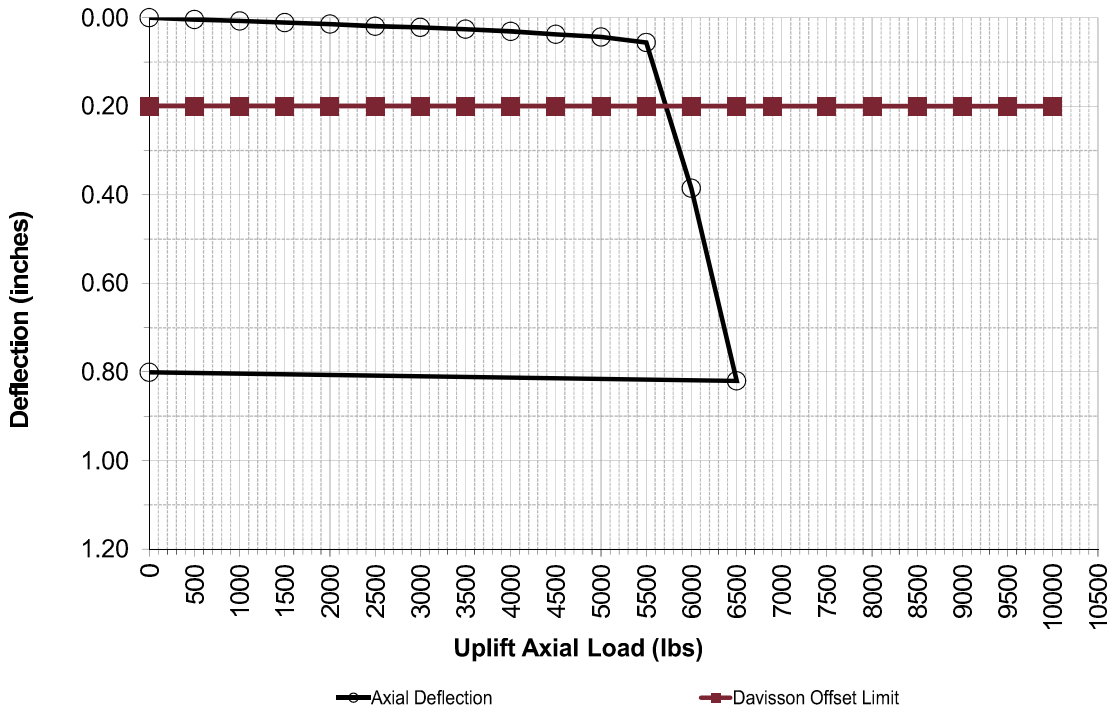
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-11A
Latitude:	40.66277
Longitude:	-80.90087
Pile Type:	W6x9
Pile Embedment Depth [in]:	7
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	49

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	0.004	0.000	0.199	
10%	1000	0.008	0.000	0.199	
15%	1500	0.011	0.000	0.199	
20%	2000	0.015	0.000	0.199	
25%	2500	0.020	0.000	0.199	
30%	3000	0.022	0.000	0.199	
35%	3500	0.026	0.000	0.199	
40%	4000	0.031	0.000	0.199	
45%	4500	0.038	0.000	0.200	
50%	5000	0.044	0.000	0.200	
55%	5500	0.056	0.000	0.200	
60%	6000	0.385	0.000	0.200	
65%	6500	0.820	0.001	0.200	
69%	6900		0.001	0.200	
75%	7500		0.001	0.200	
80%	8000		0.001	0.200	
85%	8500		0.001	0.200	
90%	9000		0.001	0.200	
95%	9500		0.001	0.200	
100%	10000		0.001	0.200	
0%	0	0.801	0.000	0.199	



Tension Load Test Result for PLT-11B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

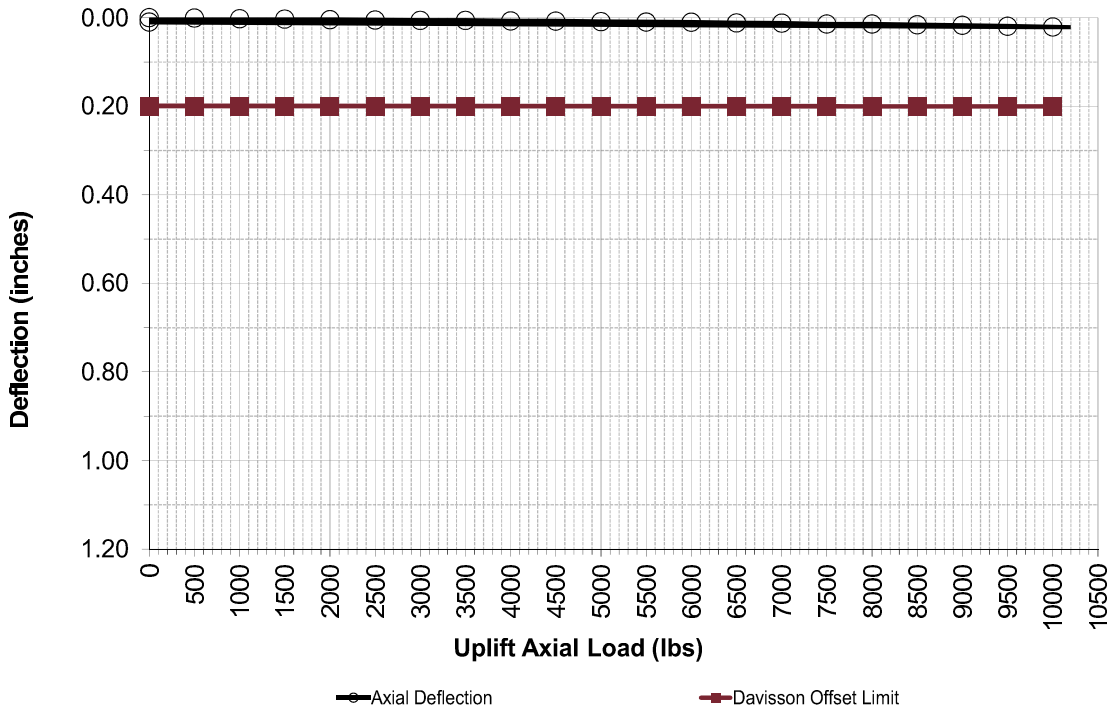
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-11B
Latitude:	40.66277
Longitude:	-80.90087
Pile Type:	W6x9
Pile Embedment Depth [in]:	9.1
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	98

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	0.001	0.000	0.199	
10%	1000	0.003	0.000	0.199	
15%	1500	0.003	0.000	0.199	
20%	2000	0.005	0.000	0.199	
25%	2500	0.006	0.000	0.199	
30%	3000	0.006	0.000	0.199	
35%	3500	0.006	0.000	0.200	
40%	4000	0.008	0.000	0.200	
45%	4500	0.008	0.000	0.200	
50%	5000	0.009	0.001	0.200	
55%	5500	0.010	0.001	0.200	
60%	6000	0.011	0.001	0.200	
65%	6500	0.012	0.001	0.200	
70%	7000	0.013	0.001	0.200	
75%	7500	0.015	0.001	0.200	
80%	8000	0.015	0.001	0.200	
85%	8500	0.016	0.001	0.200	
90%	9000	0.018	0.001	0.200	
95%	9500	0.020	0.001	0.200	
100%	10000	0.021	0.001	0.200	
0%	0	0.010	0.000	0.199	



Tension Load Test Result for PLT-12A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

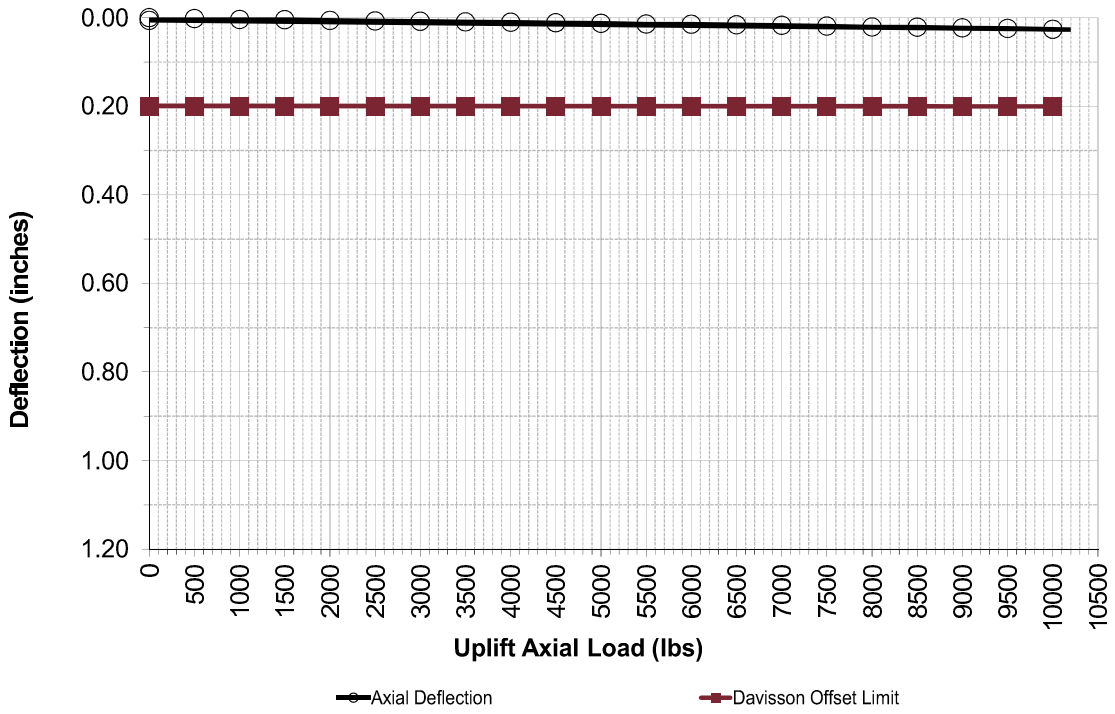
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-12A
Latitude:	40.65468
Longitude:	-80.90659
Pile Type:	W6x9
Pile Embedment Depth [in]:	8
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	187

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	0.002	0.000	0.199	
10%	1000	0.004	0.000	0.199	
15%	1500	0.005	0.000	0.199	
20%	2000	0.006	0.000	0.199	
25%	2500	0.007	0.000	0.199	
30%	3000	0.008	0.000	0.199	
35%	3500	0.010	0.000	0.199	
40%	4000	0.011	0.000	0.200	
45%	4500	0.012	0.000	0.200	
50%	5000	0.013	0.000	0.200	
55%	5500	0.015	0.001	0.200	
60%	6000	0.015	0.001	0.200	
65%	6500	0.016	0.001	0.200	
70%	7000	0.018	0.001	0.200	
75%	7500	0.019	0.001	0.200	
80%	8000	0.021	0.001	0.200	
85%	8500	0.022	0.001	0.200	
90%	9000	0.023	0.001	0.200	
95%	9500	0.025	0.001	0.200	
100%	10000	0.027	0.001	0.200	
0%	0	0.006	0.000	0.199	



Tension Load Test Result for PLT-12B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

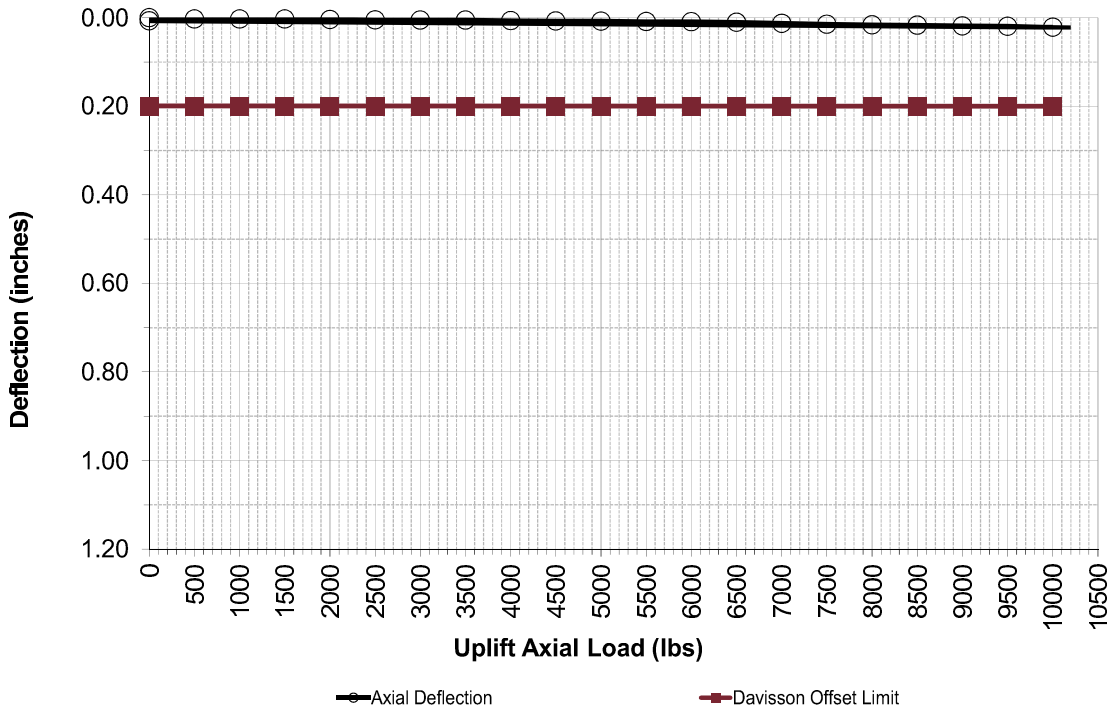
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-12B
Latitude:	40.65468
Longitude:	-80.90659
Pile Type:	W6x9
Pile Embedment Depth [in]:	7.1
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	10000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	178

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offset Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.199	
5%	500	0.003	0.000	0.199	
10%	1000	0.003	0.000	0.199	
15%	1500	0.003	0.000	0.199	
20%	2000	0.004	0.000	0.199	
25%	2500	0.005	0.000	0.199	
30%	3000	0.006	0.000	0.199	
35%	3500	0.006	0.000	0.199	
40%	4000	0.007	0.000	0.199	
45%	4500	0.008	0.000	0.200	
50%	5000	0.008	0.000	0.200	
55%	5500	0.009	0.000	0.200	
60%	6000	0.009	0.000	0.200	
65%	6500	0.010	0.001	0.200	
70%	7000	0.013	0.001	0.200	
75%	7500	0.015	0.001	0.200	
80%	8000	0.016	0.001	0.200	
85%	8500	0.017	0.001	0.200	
90%	9000	0.019	0.001	0.200	
95%	9500	0.020	0.001	0.200	
100%	10000	0.022	0.001	0.200	
0%	0	0.007	0.000	0.199	



APPENDIX D – PILE LOAD TEST RESULTS – LATERAL LOAD

Contents:

Exhibit D-1 to D-10	Lateral Load Test Summary Graphs (10 pages)
Exhibit D-11 to D-34	Lateral Load Test Results (24 pages)

Note: All attachments are one page unless noted above.

PLT Lateral Graphs - 6 Feet Embedment Zone A

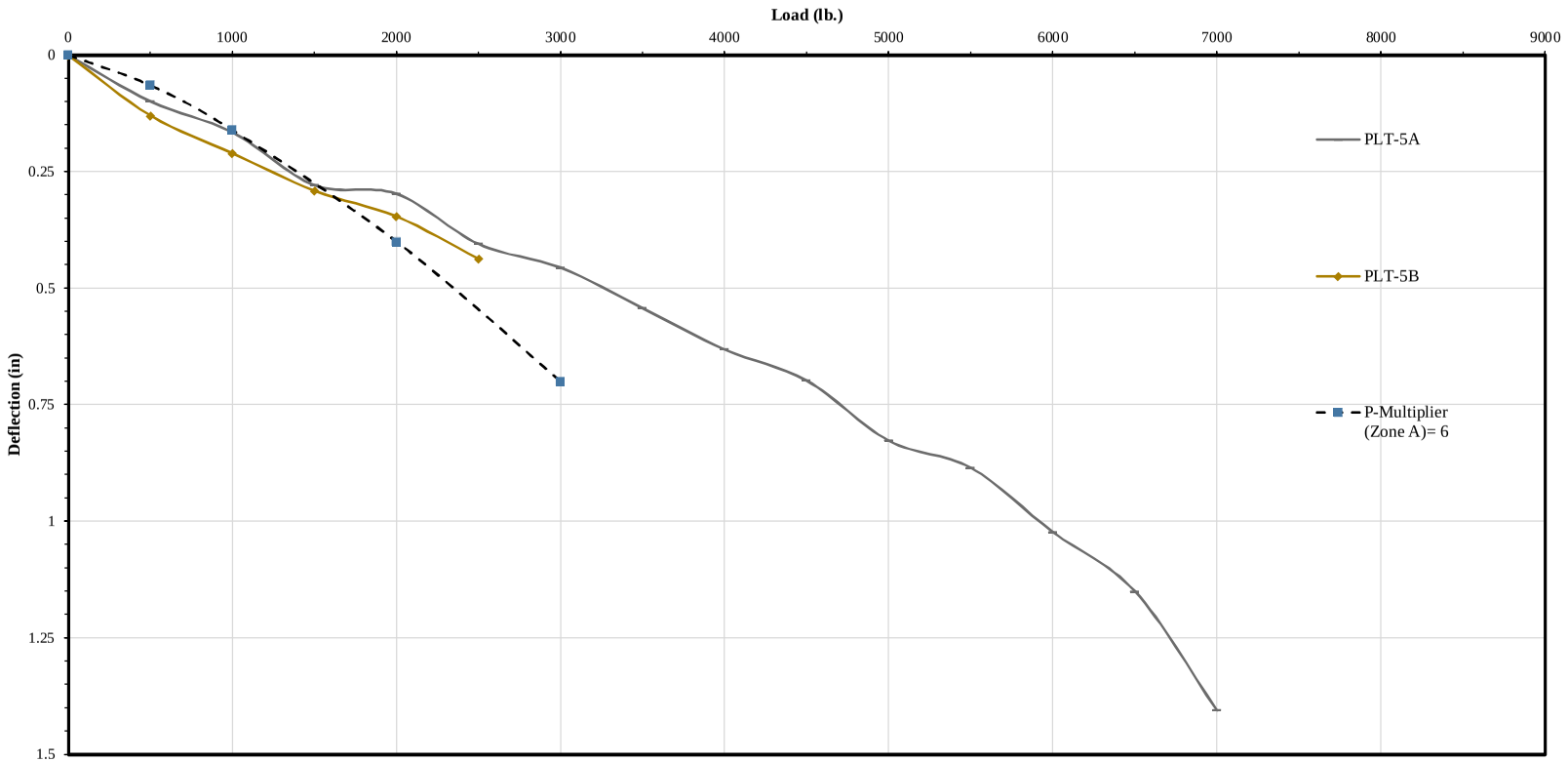
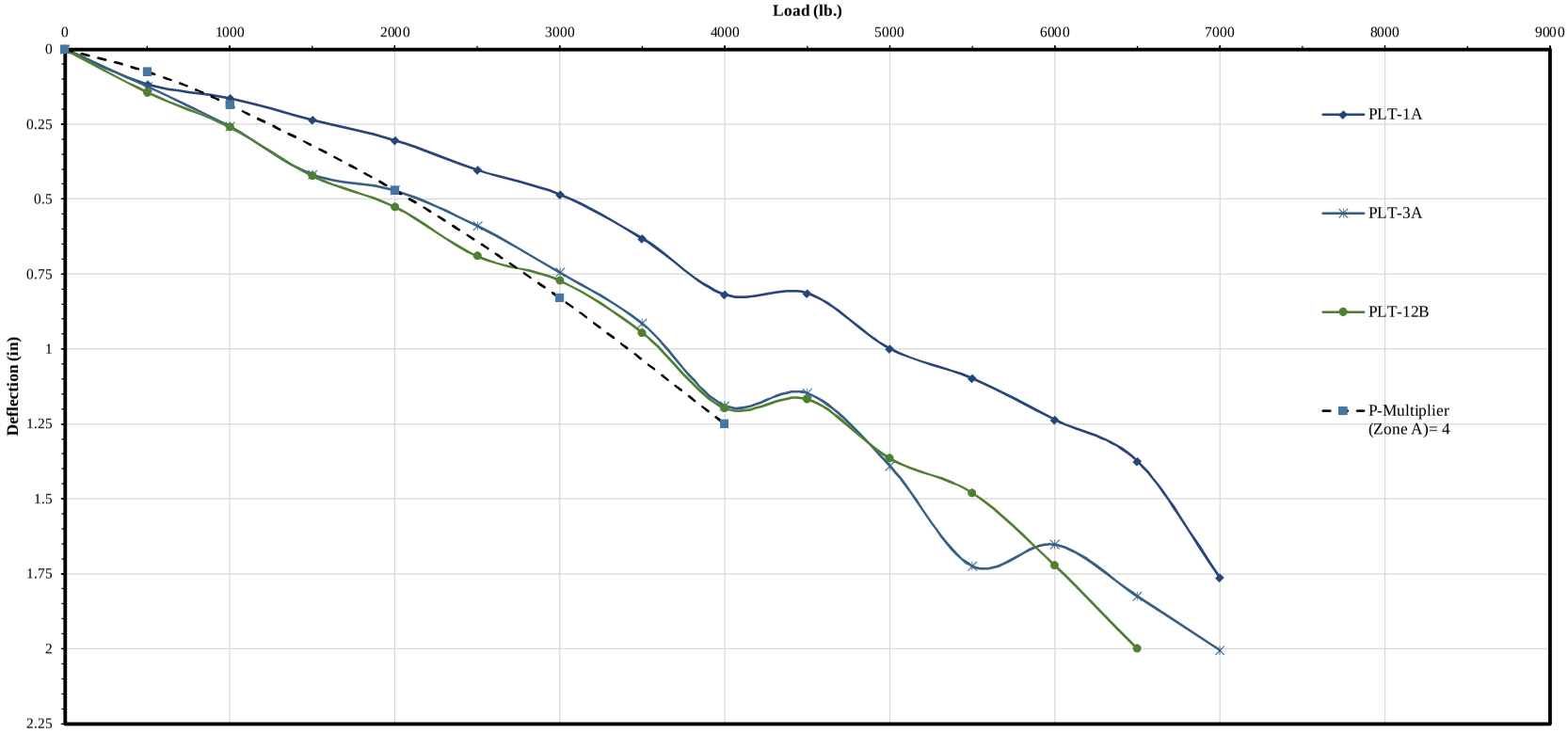
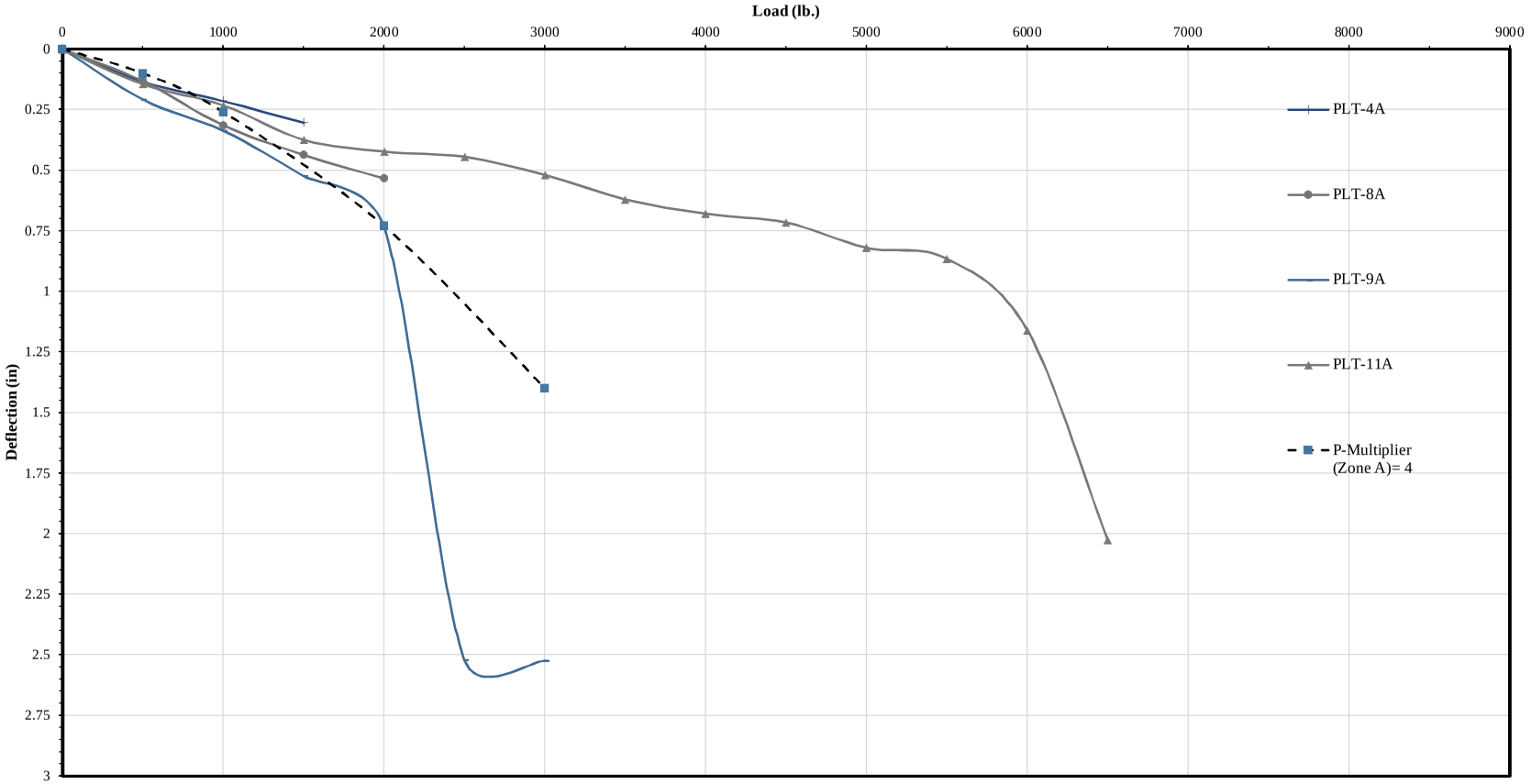


Exhibit D-1

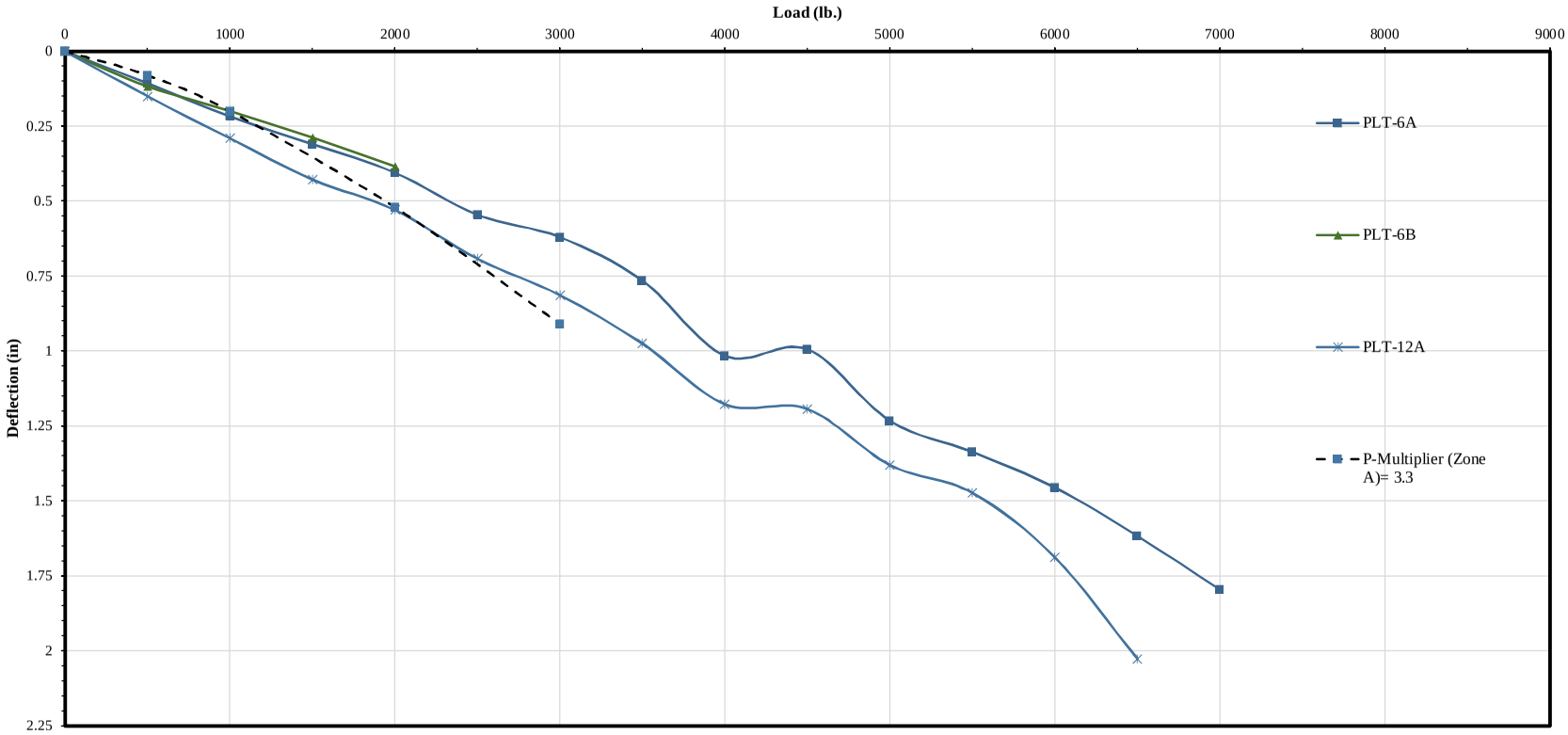
PLT Lateral Graphs - 7 Feet Embedment Zone A



PLT Lateral Graphs - 7 Feet Embedment Zone B



PLT Lateral Graphs - 8 Feet Embedment Zone A



PLT Lateral Graphs - 8 Feet Embedment Zone B

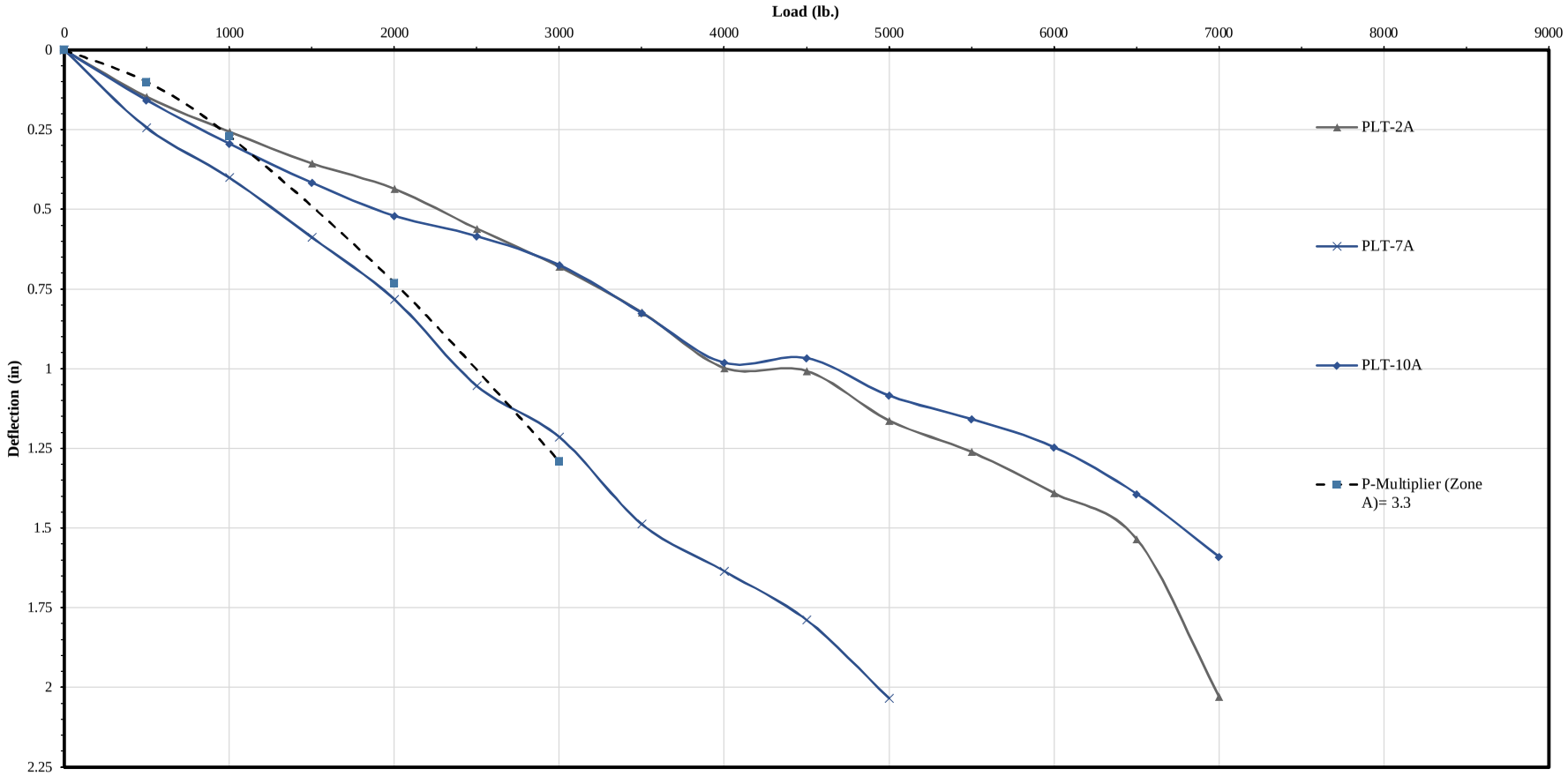


Exhibit D-5

PLT Lateral Graphs - 9 Feet Embedment Zone A

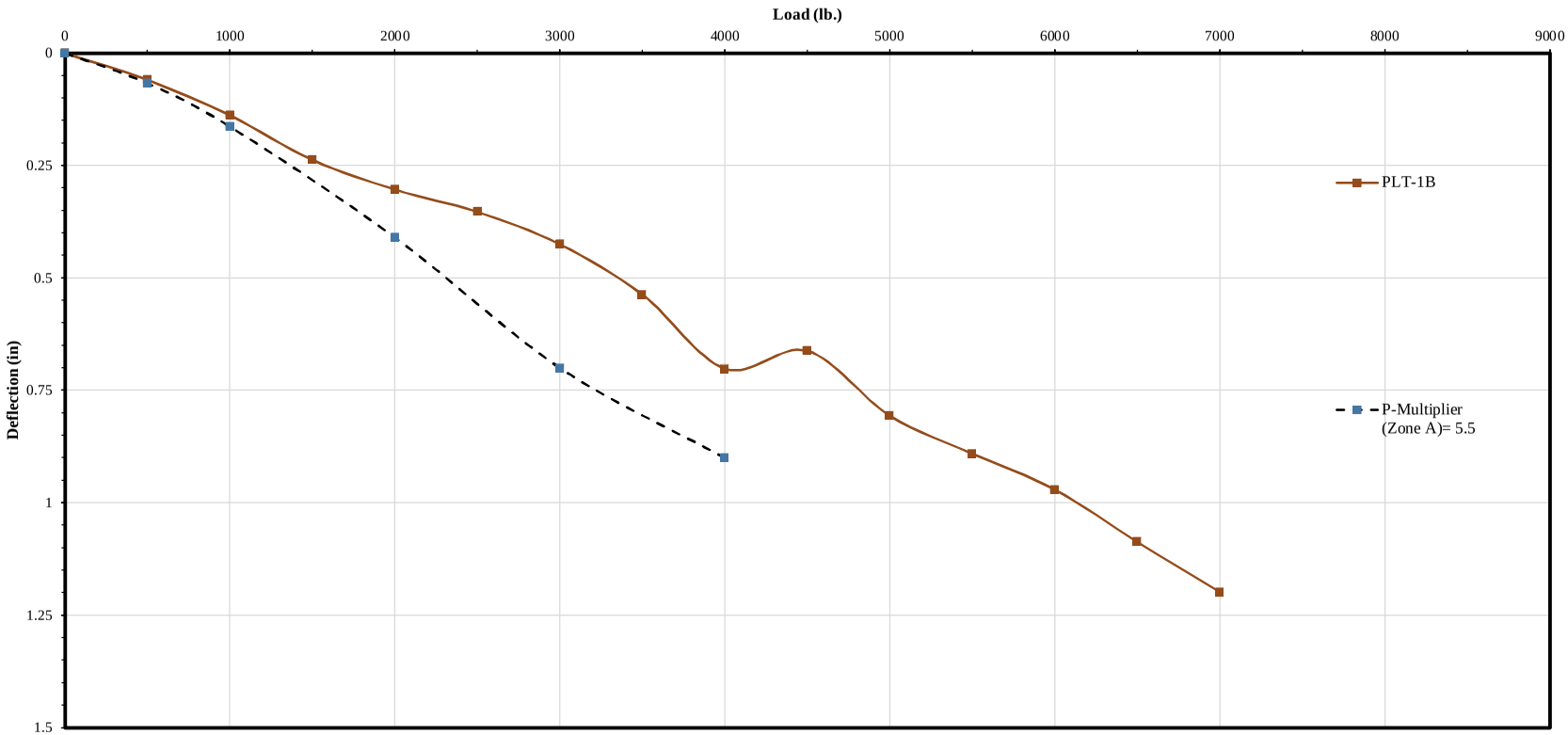


Exhibit D-6

PLT Lateral Graphs - 9 Feet Embedment Zone B

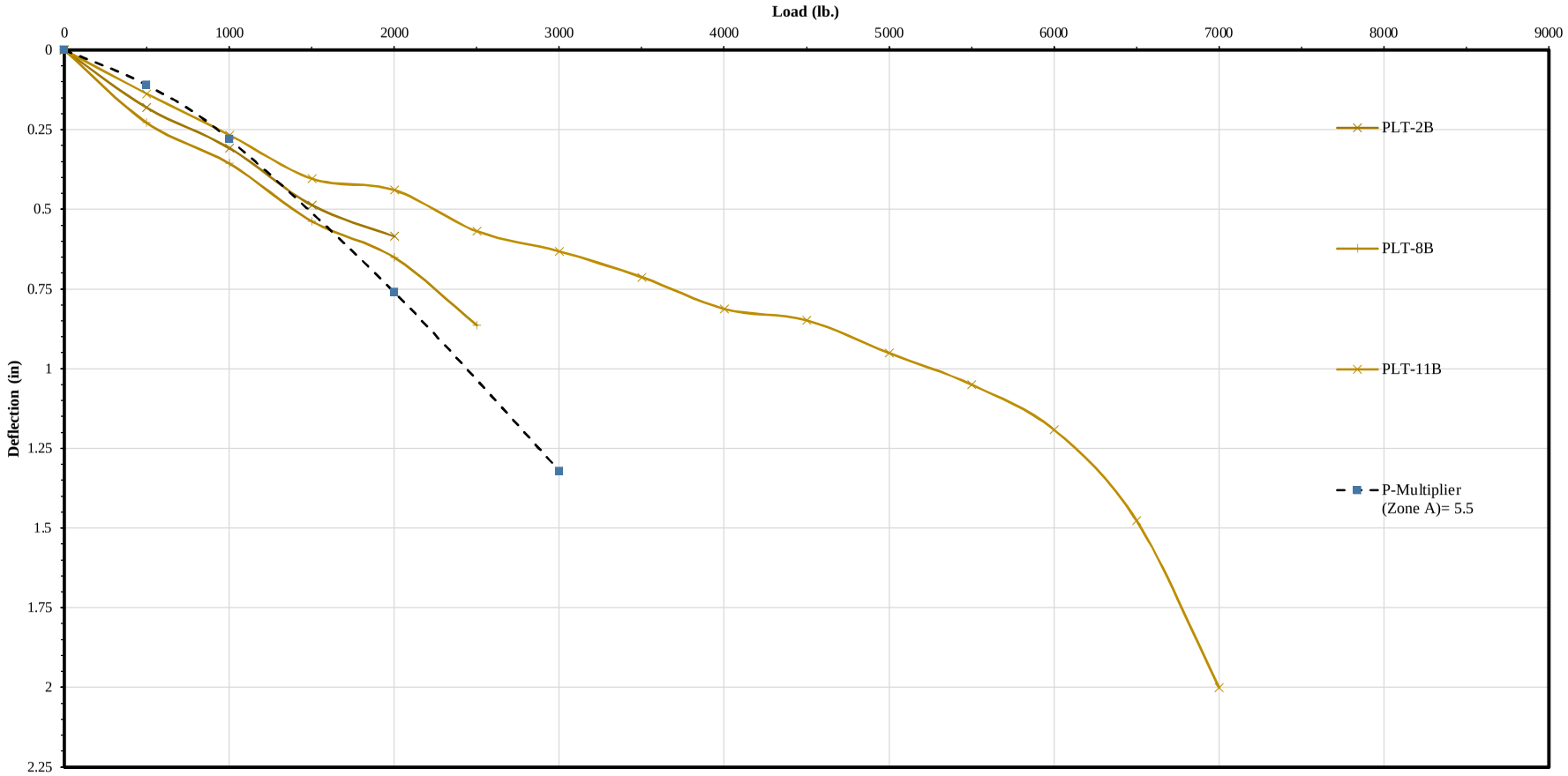
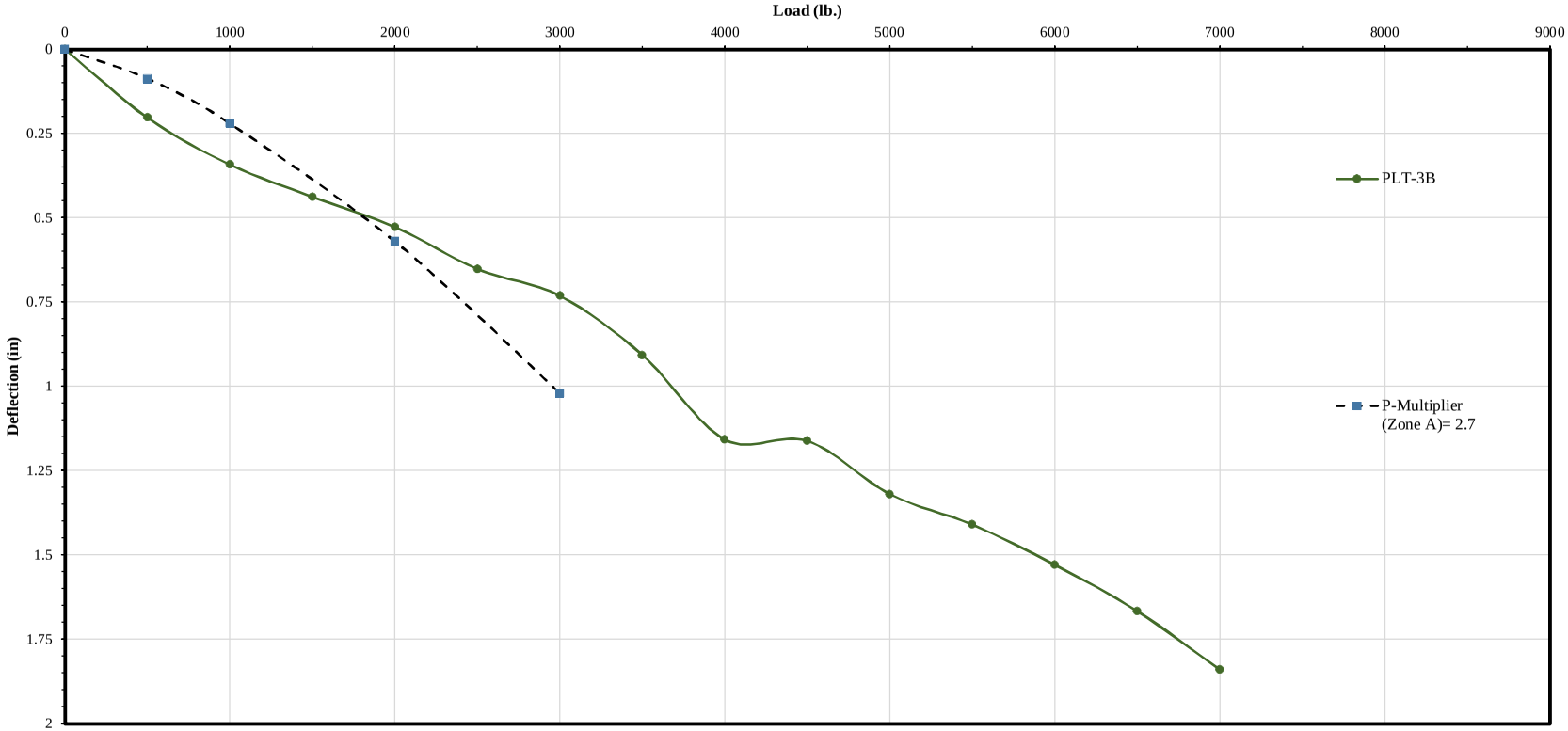


Exhibit D-7

PLT Lateral Graphs - 10 Feet Embedment Zone A



PLT Lateral Graphs - 10 Feet Embedment Zone B

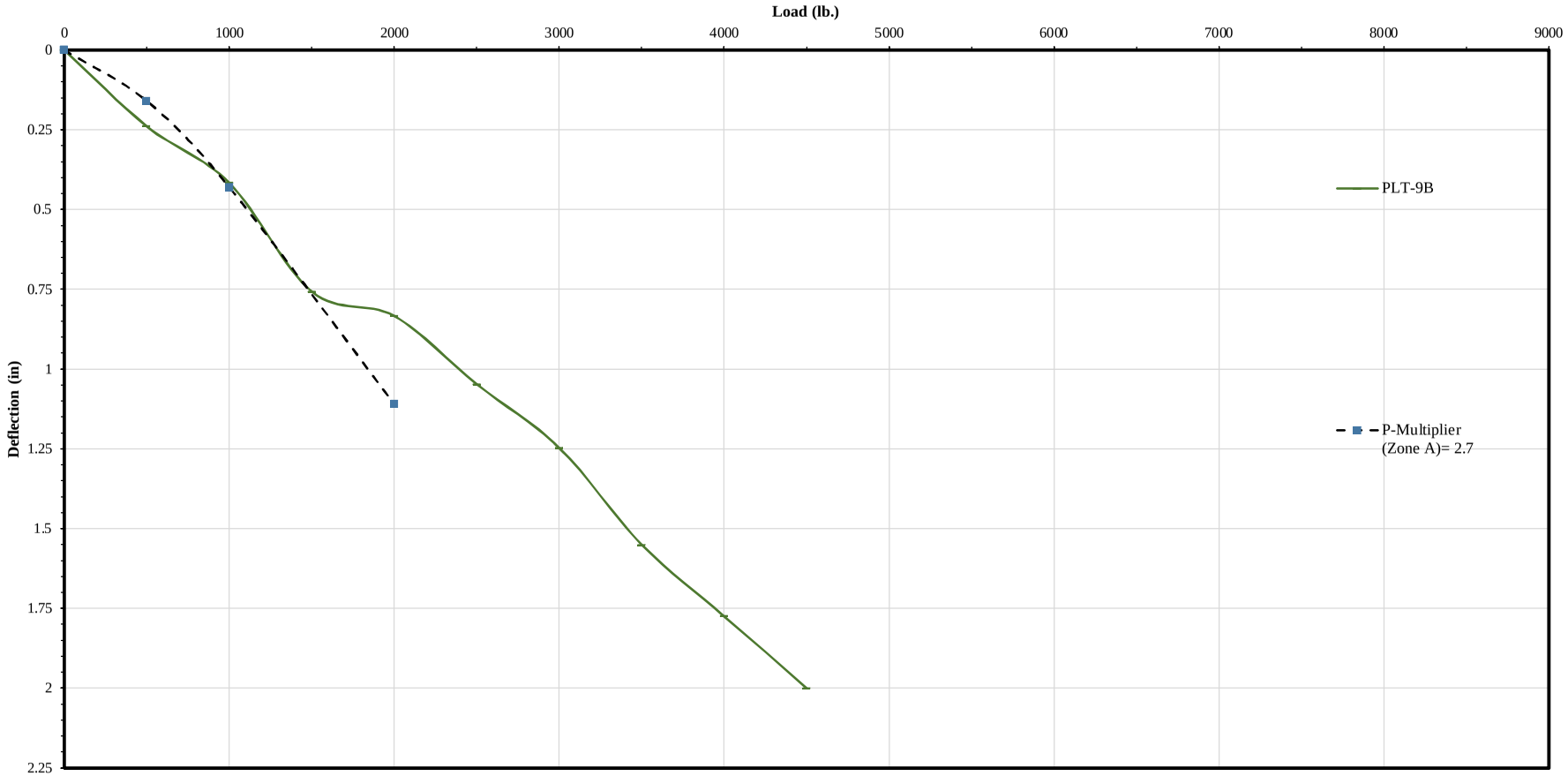


Exhibit D-9

PLT Lateral Graphs - 11 Feet Embedment Zone B

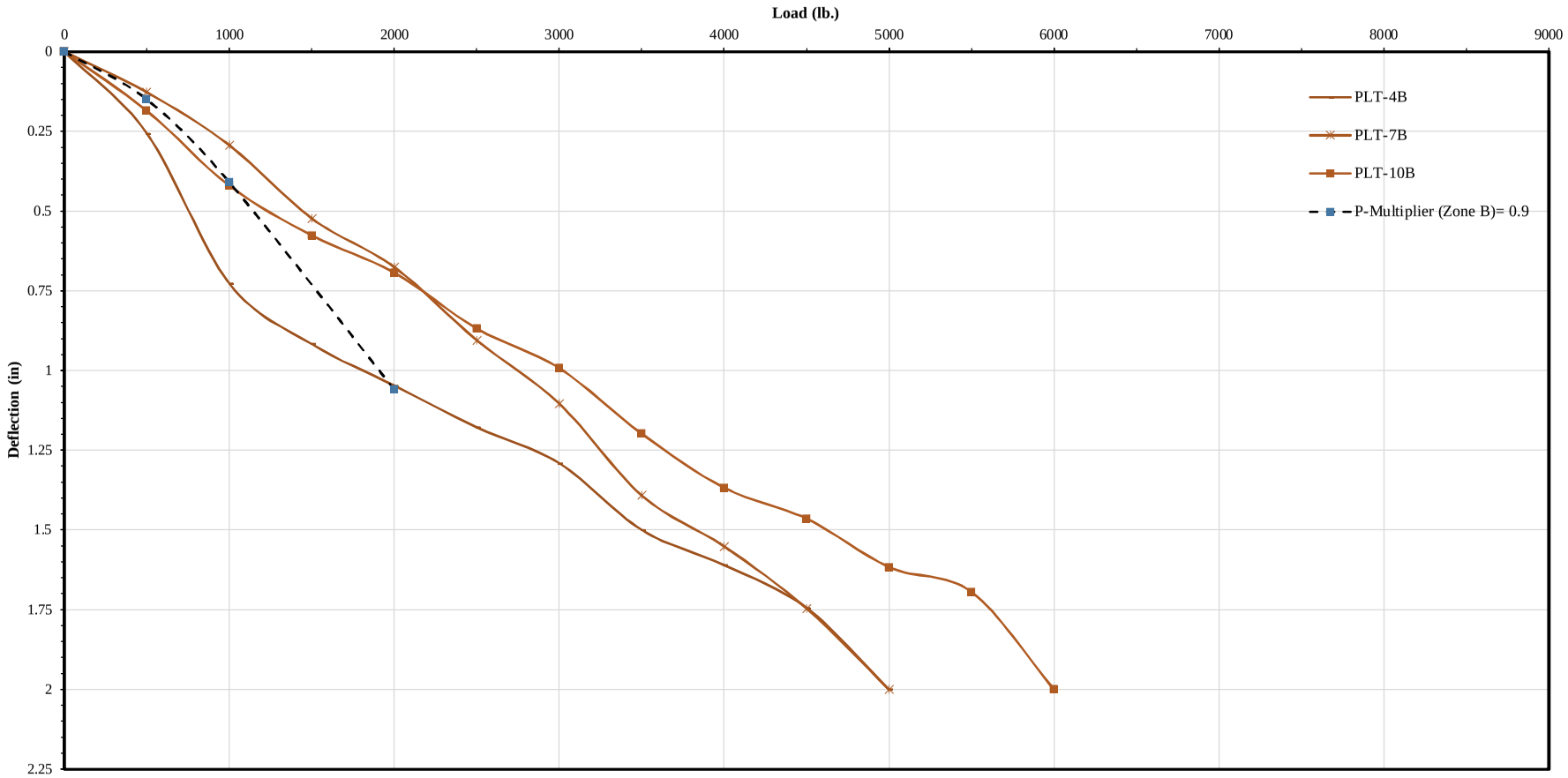


Exhibit D-10

Lateral Load Test Result for PLT-1A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

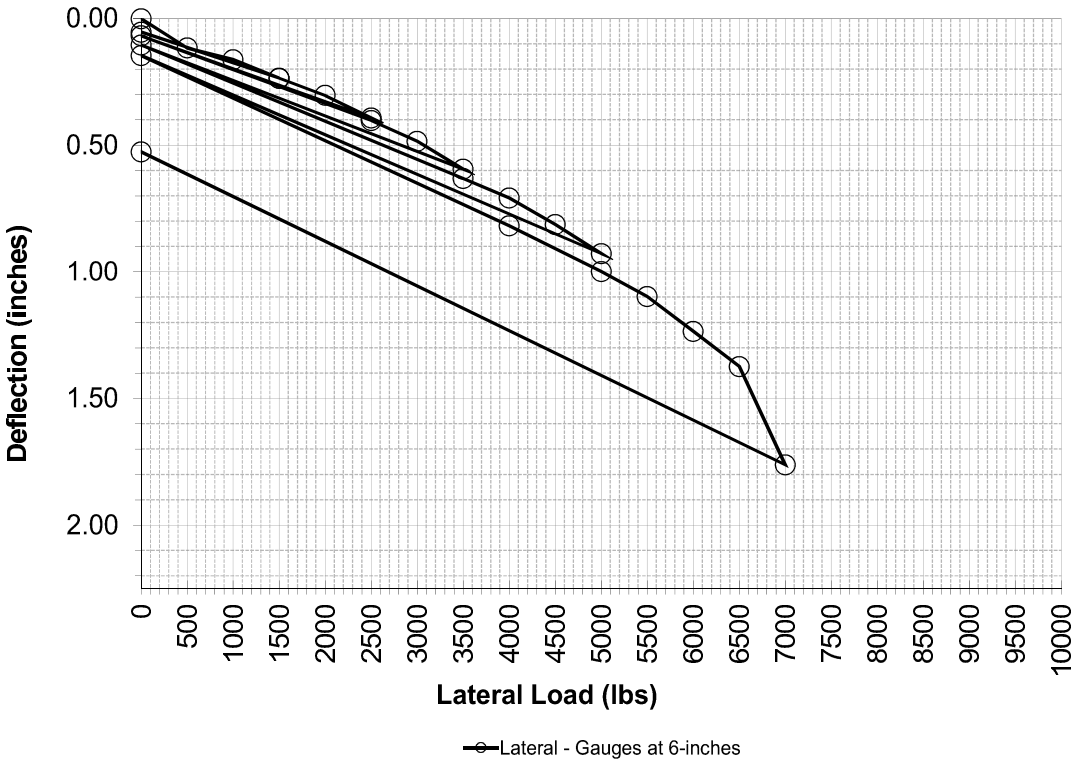
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	

Pile Information

Pile ID:	PLT-1A
Latitude:	40.70095
Longitude:	-80.88916
Pile Type:	W6x9
Pile Embedment Depth [in]:	7
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	81

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.116	
14%	1000	0.163	
21%	1500	0.235	
0%	0	0.054	
21%	1500	0.236	
29%	2000	0.303	
36%	2500	0.393	
0%	0	0.068	
36%	2500	0.403	
43%	3000	0.484	
50%	3500	0.595	
0%	0	0.104	
50%	3500	0.631	
57%	4000	0.708	
64%	4500	0.813	
71%	5000	0.928	
0%	0	0.146	
57%	4000	0.818	
71%	5000	0.998	
79%	5500	1.098	
86%	6000	1.235	
93%	6500	1.374	
100%	7000	1.762	
0%	0	0.526	



Lateral Load Test Result for PLT-1B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

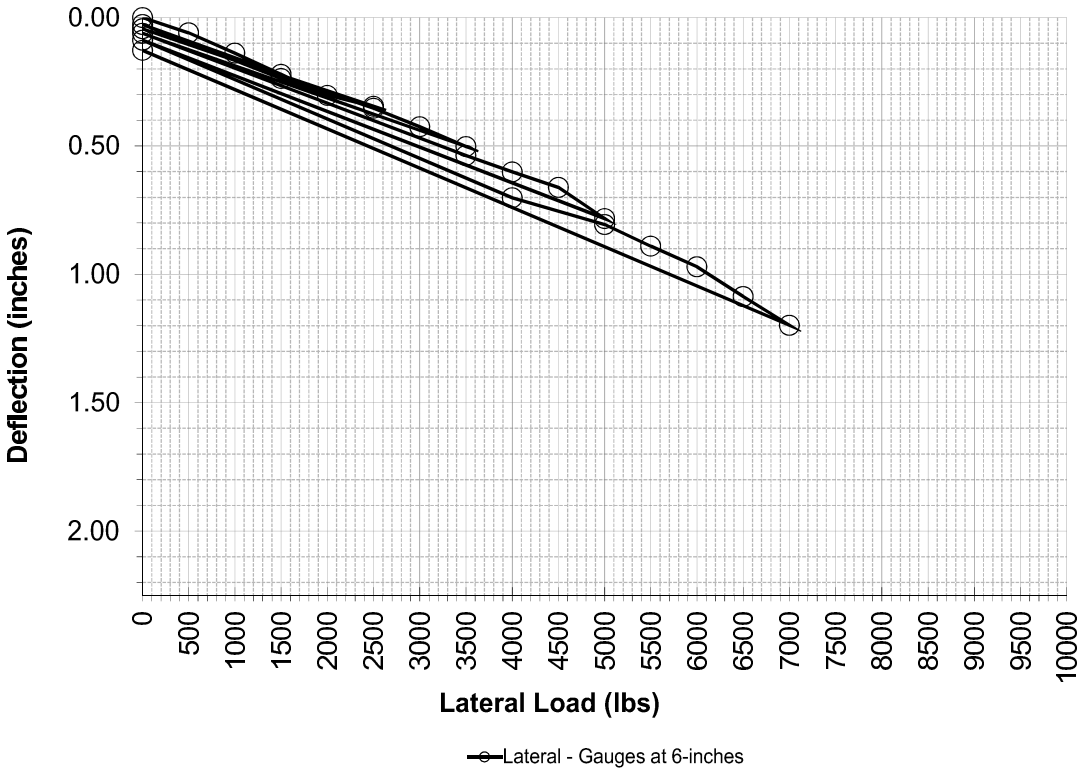
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	

Pile Information

Pile ID:	PLT-1B
Latitude:	40.70095
Longitude:	-80.88916
Pile Type:	W6x9
Pile Embedment Depth [in]:	8.6
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	219

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.060	
14%	1000	0.139	
21%	1500	0.221	
0%	0	0.028	
21%	1500	0.238	
29%	2000	0.303	
36%	2500	0.346	
0%	0	0.044	
36%	2500	0.353	
43%	3000	0.425	
50%	3500	0.503	
0%	0	0.061	
50%	3500	0.537	
57%	4000	0.602	
64%	4500	0.662	
71%	5000	0.783	
0%	0	0.088	
57%	4000	0.702	
71%	5000	0.807	
79%	5500	0.891	
86%	6000	0.971	
93%	6500	1.087	
100%	7000	1.199	
0%	0	0.128	



Lateral Load Test Result for PLT-2A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

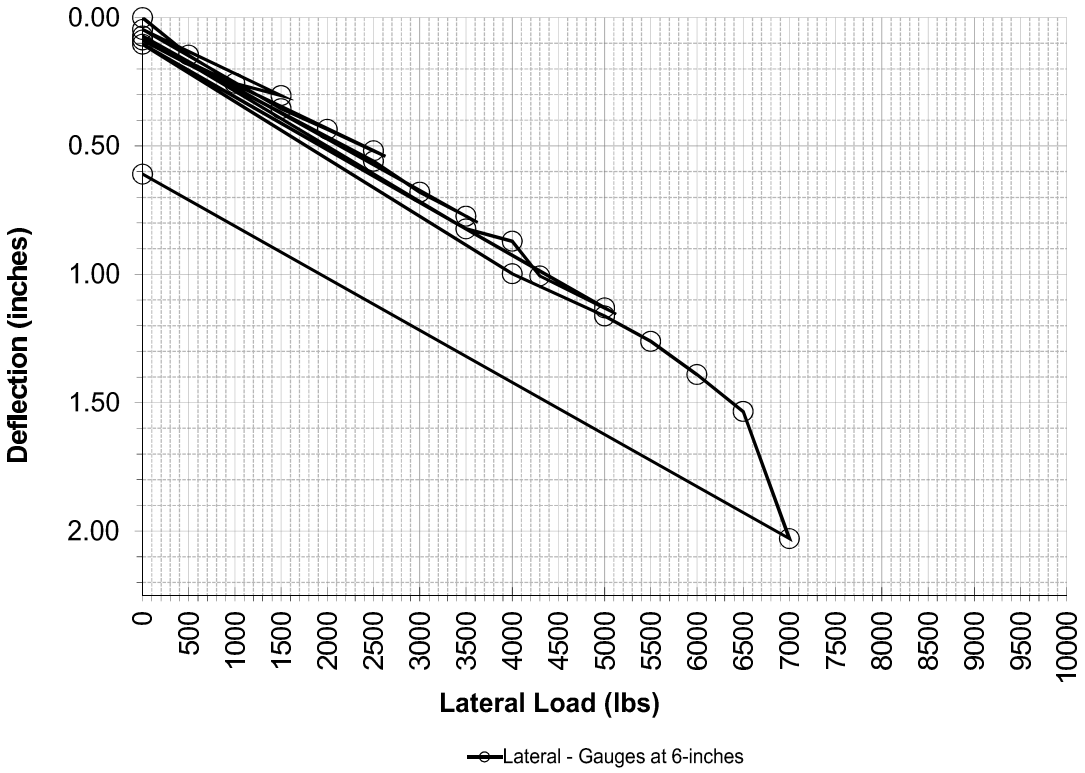
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	

Pile Information

Pile ID:	PLT-2A
Latitude:	40.69342
Longitude:	-80.88928
Pile Type:	W6x9
Pile Embedment Depth [in]:	7.9
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	91

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.147	
14%	1000	0.256	
21%	1500	0.304	
0%	0	0.047	
21%	1500	0.355	
29%	2000	0.435	
36%	2500	0.519	
0%	0	0.088	
36%	2500	0.560	
43%	3000	0.680	
50%	3500	0.774	
0%	0	0.072	
50%	3500	0.823	
57%	4000	0.871	
61%	4300	1.007	
71%	5000	1.131	
0%	0	0.104	
57%	4000	0.998	
71%	5000	1.163	
79%	5500	1.261	
86%	6000	1.390	
93%	6500	1.534	
100%	7000	2.029	
0%	0	0.610	



Lateral Load Test Result for PLT-2B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

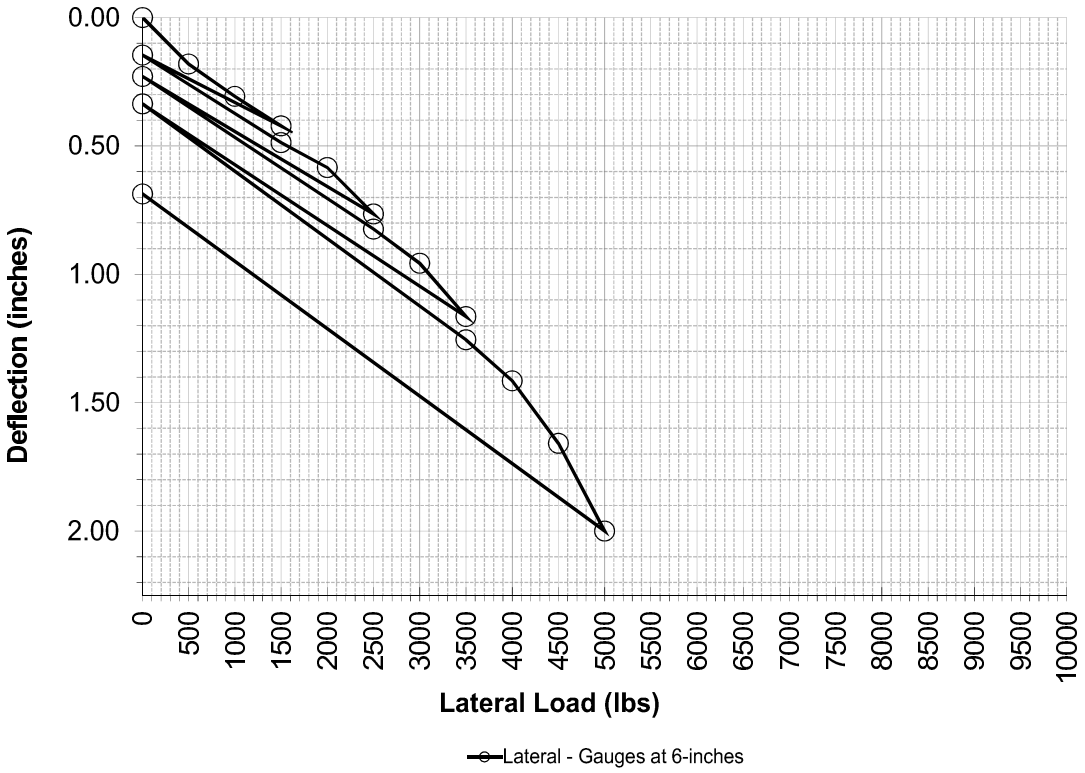
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-2B
Latitude:	40.69342
Longitude:	-80.88928
Pile Type:	W6x9
Pile Embedment Depth [in]:	8.6
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	107

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.181	
14%	1000	0.307	
21%	1500	0.422	
0%	0	0.146	
21%	1500	0.487	
29%	2000	0.585	
36%	2500	0.766	
0%	0	0.230	
36%	2500	0.824	
43%	3000	0.957	
50%	3500	1.165	
0%	0	0.336	
50%	3500	1.255	
57%	4000	1.415	
64%	4500	1.659	
71%	5000	2.000	
0%	0		
57%	4000		
71%	5000		
79%	5500		
86%	6000		
93%	6500		
100%	7000		
0%	0	0.687	



Lateral Load Test Result for PLT-3A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

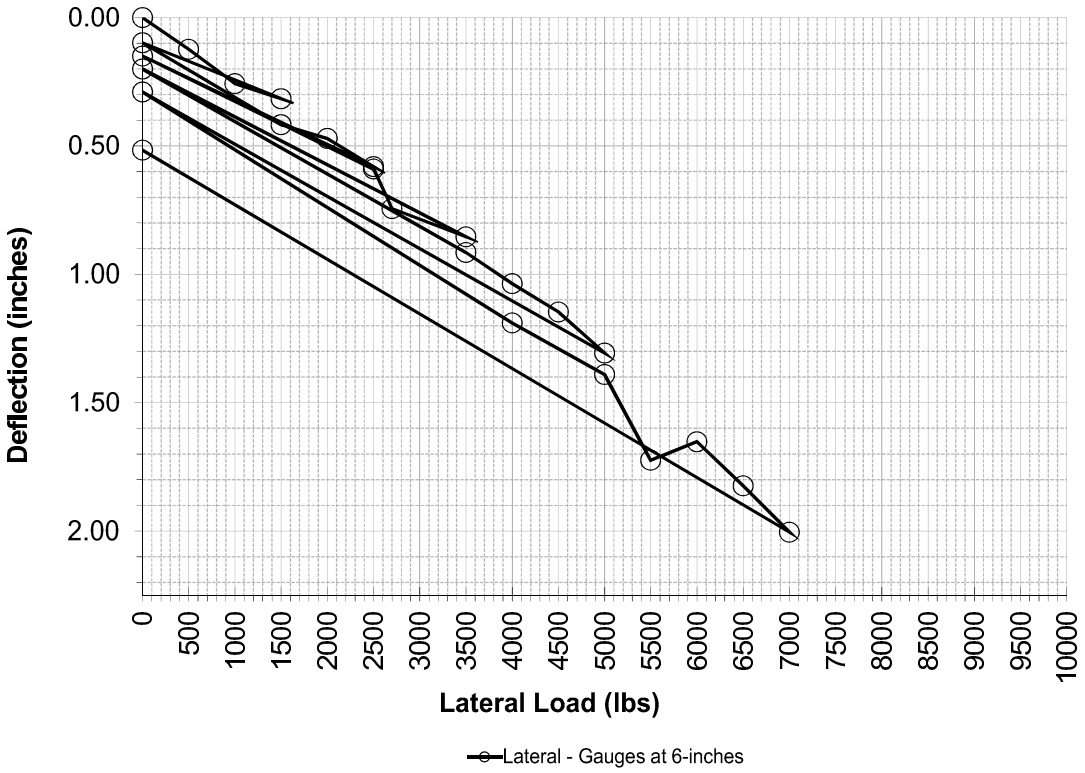
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-3A
Latitude:	40.69014
Longitude:	-80.88951
Pile Type:	W6x9
Pile Embedment Depth [in]:	7
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	68

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.124	
14%	1000	0.258	
21%	1500	0.317	
0%	0	0.099	
21%	1500	0.418	
29%	2000	0.471	
36%	2500	0.581	
0%	0	0.150	
36%	2500	0.590	
39%	2700	0.745	
50%	3500	0.854	
0%	0	0.200	
50%	3500	0.915	
57%	4000	1.037	
64%	4500	1.147	
71%	5000	1.307	
0%	0	0.290	
57%	4000	1.189	
71%	5000	1.390	
79%	5500	1.724	
86%	6000	1.652	
93%	6500	1.824	
100%	7000	2.004	
0%	0	0.517	



Lateral Load Test Result for PLT-3B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

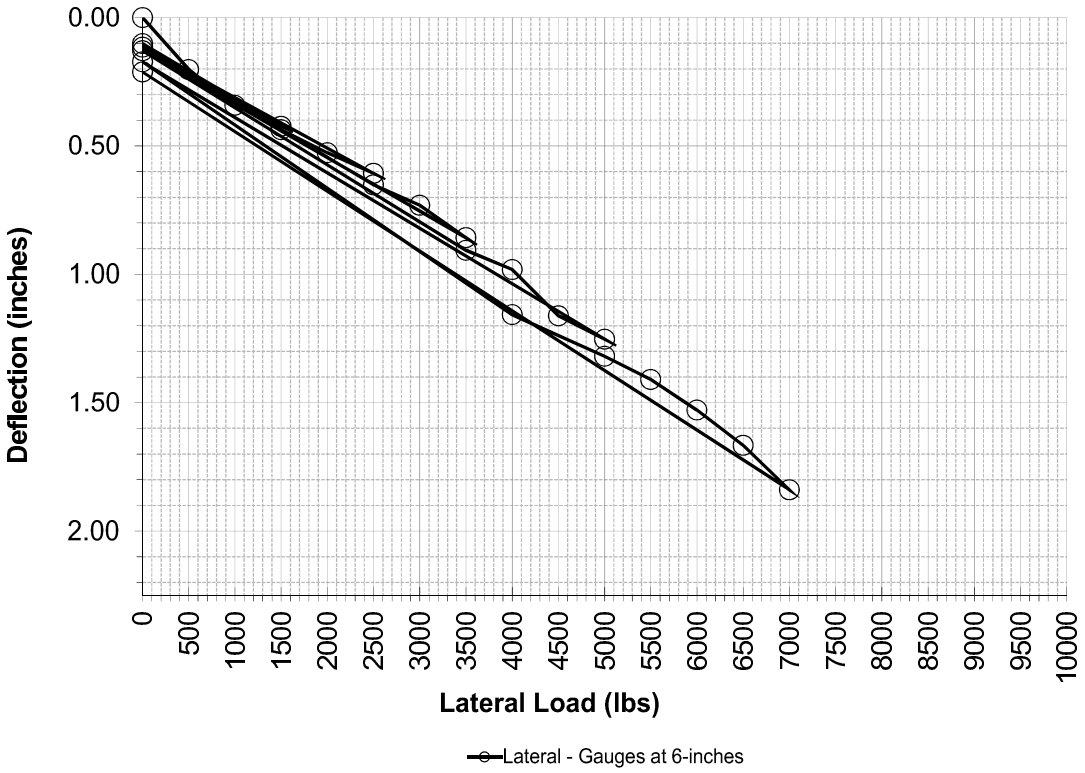
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	

Pile Information

Pile ID:	PLT-3B
Latitude:	40.69014
Longitude:	-80.88951
Pile Type:	W6x9
Pile Embedment Depth [in]:	10
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	175

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.203	
14%	1000	0.342	
21%	1500	0.424	
0%	0	0.101	
21%	1500	0.437	
29%	2000	0.527	
36%	2500	0.607	
0%	0	0.116	
36%	2500	0.651	
43%	3000	0.731	
50%	3500	0.858	
0%	0	0.129	
50%	3500	0.907	
57%	4000	0.981	
64%	4500	1.162	
71%	5000	1.253	
0%	0	0.173	
57%	4000	1.157	
71%	5000	1.319	
79%	5500	1.410	
86%	6000	1.529	
93%	6500	1.666	
100%	7000	1.840	
0%	0	0.212	



Lateral Load Test Result for PLT-4A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

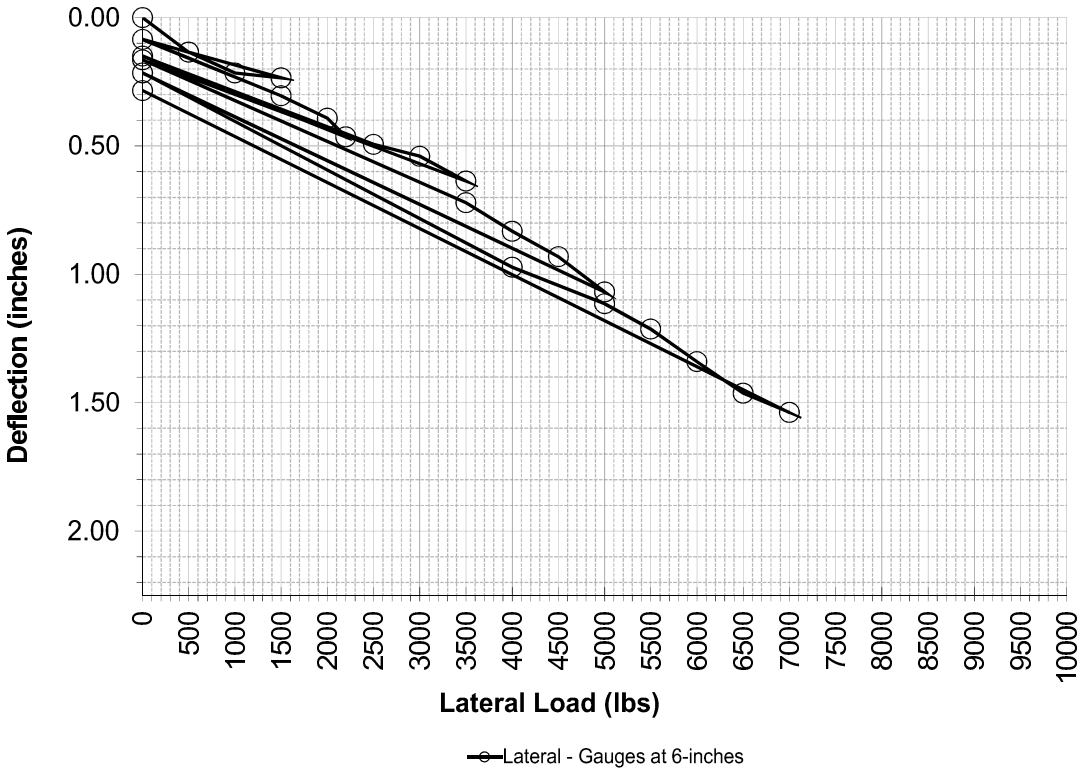
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	

Pile Information

Pile ID:	PLT-4A
Latitude:	40.68967
Longitude:	-80.89409
Pile Type:	W6x9
Pile Embedment Depth [in]:	7.1
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	91

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.135	
14%	1000	0.216	
21%	1500	0.235	
0%	0	0.086	
21%	1500	0.305	
29%	2000	0.392	
31%	2200	0.465	
0%	0	0.150	
36%	2500	0.494	
43%	3000	0.541	
50%	3500	0.637	
0%	0	0.165	
50%	3500	0.721	
57%	4000	0.833	
64%	4500	0.931	
71%	5000	1.069	
0%	0	0.216	
57%	4000	0.972	
71%	5000	1.115	
79%	5500	1.214	
86%	6000	1.340	
93%	6500	1.463	
100%	7000	1.538	
0%	0	0.285	



Lateral Load Test Result for PLT-4B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

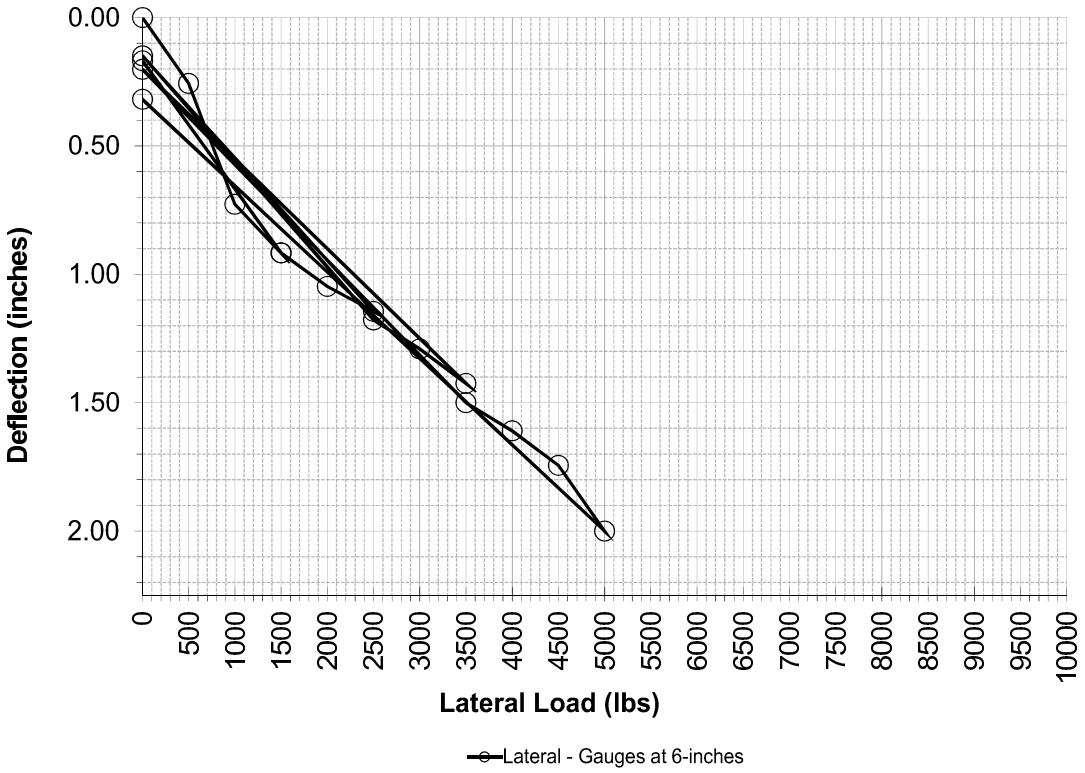
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	

Pile Information

Pile ID:	PLT-4B
Latitude:	40.68967
Longitude:	-80.89409
Pile Type:	W6x9
Pile Embedment Depth [in]:	11
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	38

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.257	
14%	1000	0.727	
21%	1500	0.917	
0%	0	0.169	
21%	1500	0.917	
29%	2000	1.047	
36%	2500	1.144	
0%	0	0.150	
36%	2500	1.178	
43%	3000	1.291	
50%	3500	1.425	
0%	0	0.202	
50%	3500	1.500	
57%	4000	1.610	
64%	4500	1.745	
71%	5000	2.000	
0%	0		
57%	4000		
71%	5000		
79%	5500		
86%	6000		
93%	6500		
100%	7000		
0%	0	0.318	



Lateral Load Test Result for PLT-5A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

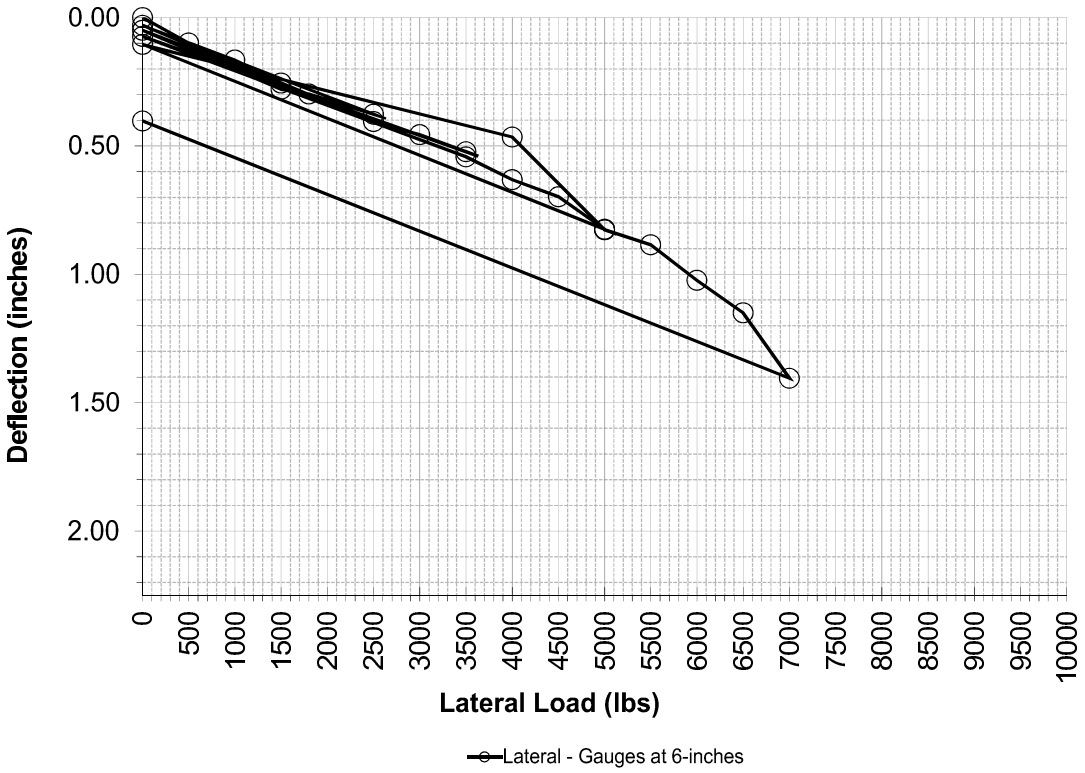
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	

Pile Information

Pile ID:	PLT-5A
Latitude:	40.67996
Longitude:	-80.89076
Pile Type:	W6x9
Pile Embedment Depth [in]:	5.6
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	177

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.099	
14%	1000	0.166	
21%	1500	0.255	
0%	0	0.050	
21%	1500	0.279	
26%	1800	0.298	
36%	2500	0.377	
0%	0	0.030	
36%	2500	0.405	
43%	3000	0.456	
50%	3500	0.523	
0%	0	0.074	
50%	3500	0.543	
57%	4000	0.632	
64%	4500	0.698	
71%	5000	0.825	
0%	0	0.105	
57%	4000	0.466	
71%	5000	0.827	
79%	5500	0.885	
86%	6000	1.023	
93%	6500	1.150	
100%	7000	1.405	
0%	0	0.403	



Lateral Load Test Result for PLT-5B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

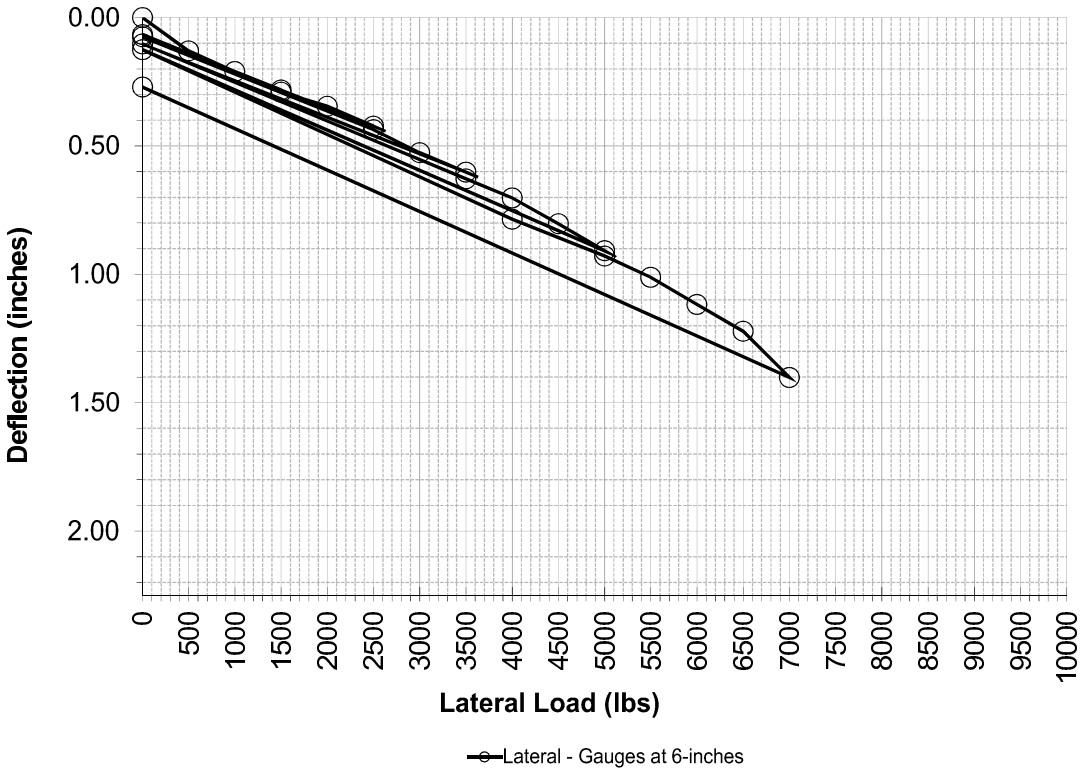
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	

Pile Information

Pile ID:	PLT-5B
Latitude:	40.67996
Longitude:	-80.89076
Pile Type:	W6x9
Pile Embedment Depth [in]:	5.6
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	170

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.130	
14%	1000	0.210	
21%	1500	0.283	
0%	0	0.067	
21%	1500	0.291	
29%	2000	0.346	
36%	2500	0.423	
0%	0	0.075	
36%	2500	0.437	
43%	3000	0.527	
50%	3500	0.603	
0%	0	0.103	
50%	3500	0.629	
57%	4000	0.703	
64%	4500	0.803	
71%	5000	0.908	
0%	0	0.125	
57%	4000	0.786	
71%	5000	0.929	
79%	5500	1.012	
86%	6000	1.117	
93%	6500	1.222	
100%	7000	1.402	
0%	0	0.271	



Lateral Load Test Result for PLT-6A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

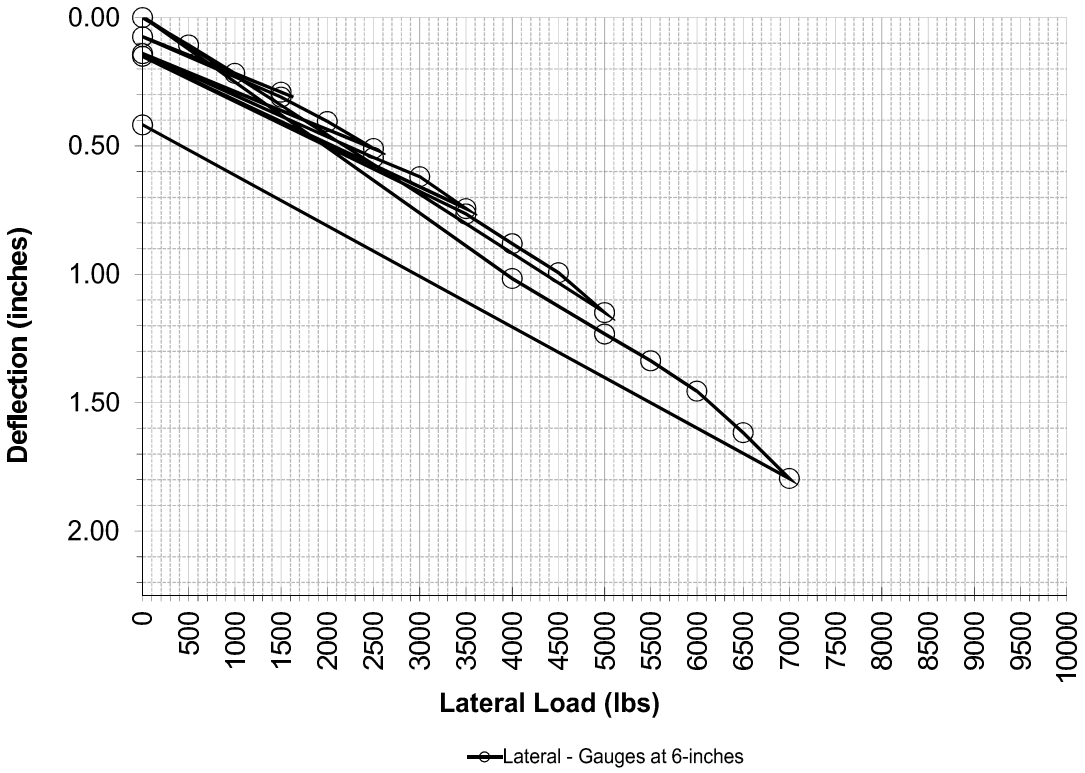
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-6A
Latitude:	40.68609
Longitude:	-80.90316
Pile Type:	W6x9
Pile Embedment Depth [in]:	8
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	97

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.107	
14%	1000	0.218	
21%	1500	0.291	
0%	0	0.075	
21%	1500	0.310	
29%	2000	0.405	
36%	2500	0.510	
0%	0	0.141	
36%	2500	0.546	
43%	3000	0.620	
50%	3500	0.745	
0%	0	0.151	
50%	3500	0.765	
57%	4000	0.881	
64%	4500	0.994	
71%	5000	1.149	
0%	0	-0.004	
57%	4000	1.016	
71%	5000	1.233	
79%	5500	1.337	
86%	6000	1.455	
93%	6500	1.617	
100%	7000	1.796	
0%	0	0.418	



Lateral Load Test Result for PLT-6B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

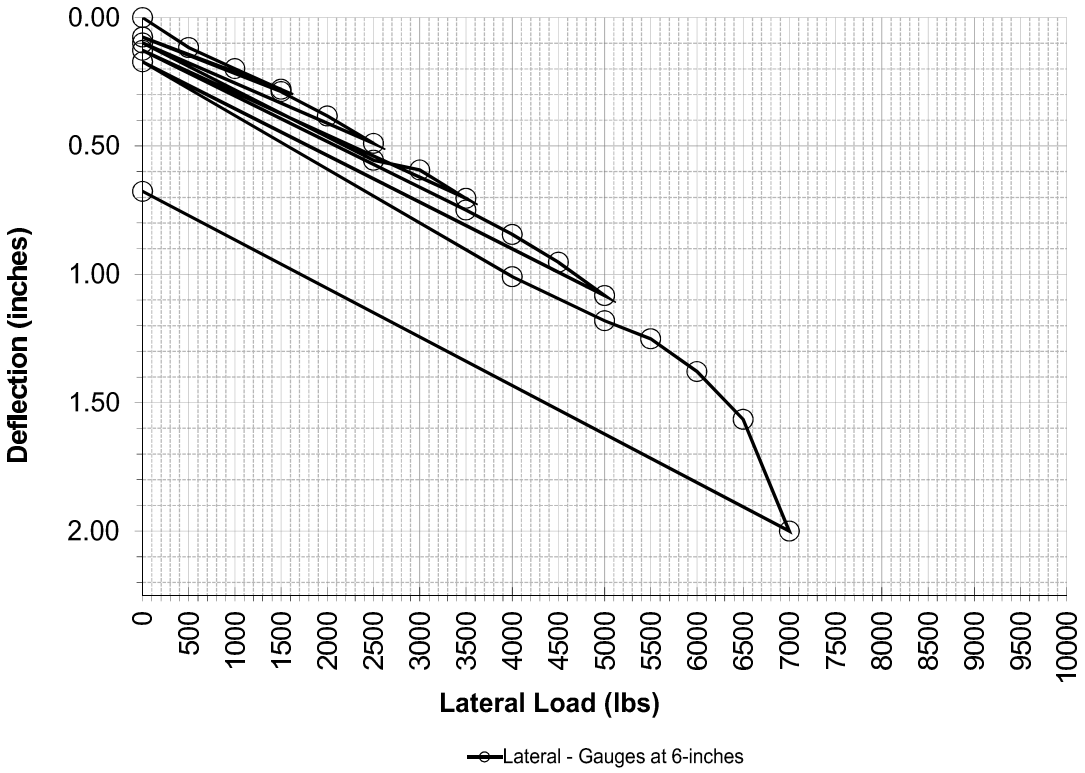
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	

Pile Information

Pile ID:	PLT-6B
Latitude:	40.68609
Longitude:	-80.90316
Pile Type:	W6x9
Pile Embedment Depth [in]:	8
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	120

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.117	
14%	1000	0.199	
21%	1500	0.279	
0%	0	0.076	
21%	1500	0.288	
29%	2000	0.384	
36%	2500	0.491	
0%	0	0.099	
36%	2500	0.556	
43%	3000	0.594	
50%	3500	0.704	
0%	0	0.128	
50%	3500	0.750	
57%	4000	0.845	
64%	4500	0.953	
71%	5000	1.083	
0%	0	0.172	
57%	4000	1.009	
71%	5000	1.181	
79%	5500	1.251	
86%	6000	1.379	
93%	6500	1.565	
100%	7000	2.000	
0%	0	0.677	



Lateral Load Test Result for PLT-7A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

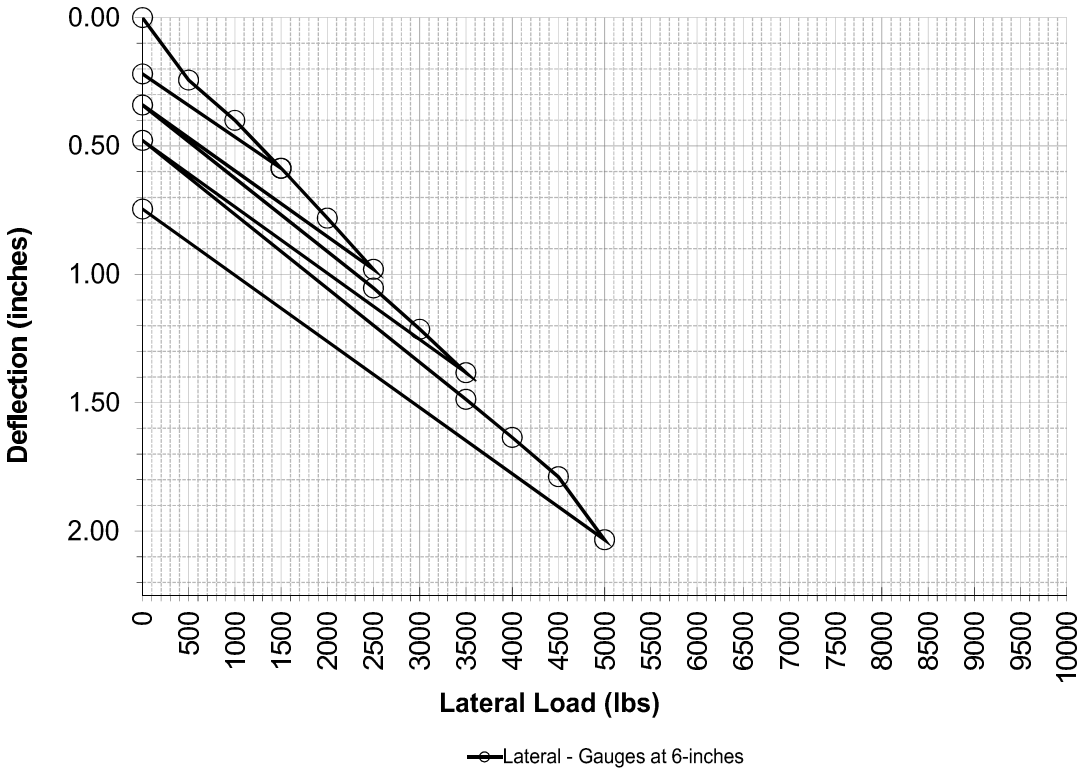
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	

Pile Information

Pile ID:	PLT-7A
Latitude:	40.70103
Longitude:	-80.89688
Pile Type:	W6x9
Pile Embedment Depth [in]:	8
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	6

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.244	
14%	1000	0.401	
21%	1500	0.588	
0%	0	0.220	
21%	1500	0.587	
29%	2000	0.782	
36%	2500	0.981	
0%	0	0.341	
36%	2500	1.054	
43%	3000	1.214	
50%	3500	1.384	
0%	0	0.479	
50%	3500	1.487	
57%	4000	1.635	
64%	4500	1.789	
71%	5000	2.034	
0%	0		
57%	4000		
71%	5000		
79%	5500		
86%	6000		
93%	6500		
100%	7000		
0%	0	0.746	



Lateral Load Test Result for PLT-7B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

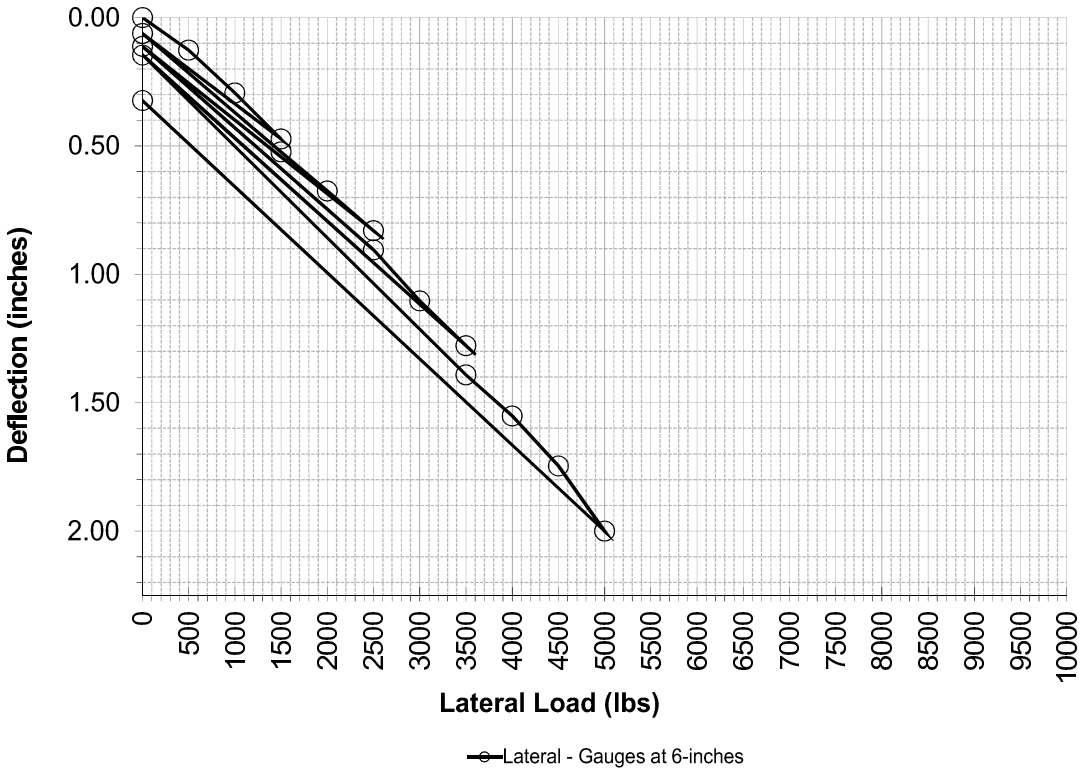
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	

Pile Information

Pile ID:	PLT-7B
Latitude:	40.70103
Longitude:	-80.89688
Pile Type:	W6x9
Pile Embedment Depth [in]:	11
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	25

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.127	
14%	1000	0.294	
21%	1500	0.474	
0%	0	0.062	
21%	1500	0.523	
29%	2000	0.676	
36%	2500	0.830	
0%	0	0.112	
36%	2500	0.905	
43%	3000	1.104	
50%	3500	1.278	
0%	0	0.146	
50%	3500	1.392	
57%	4000	1.552	
64%	4500	1.747	
71%	5000	2.000	
0%	0		
57%	4000		
71%	5000		
79%	5500		
86%	6000		
93%	6500		
100%	7000		
0%	0	0.323	



Lateral Load Test Result for PLT-8A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

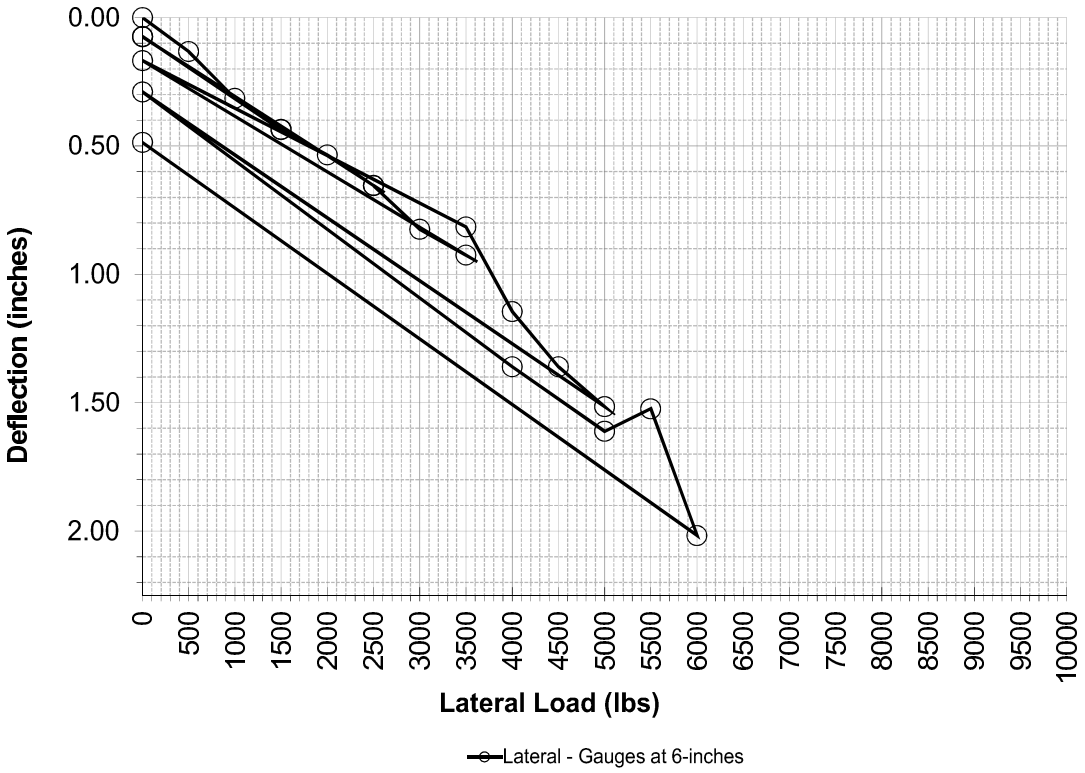
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	

Pile Information

Pile ID:	PLT-8A
Latitude:	40.69661
Longitude:	-80.88478
Pile Type:	W6x9
Pile Embedment Depth [in]:	7
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	12

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.133	
14%	1000	0.315	
21%	1500	0.435	
0%	0	0.074	
21%	1500	0.437	
29%	2000	0.535	
36%	2500	0.654	
0%	0	0.075	
36%	2500	0.655	
43%	3000	0.825	
50%	3500	0.925	
0%	0	0.168	
50%	3500	0.815	
57%	4000	1.145	
64%	4500	1.360	
71%	5000	1.516	
0%	0	0.290	
57%	4000	1.360	
71%	5000	1.611	
79%	5500	1.524	
86%	6000	2.018	
93%	6500		
100%	7000		
0%	0	0.487	



Lateral Load Test Result for PLT-8B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

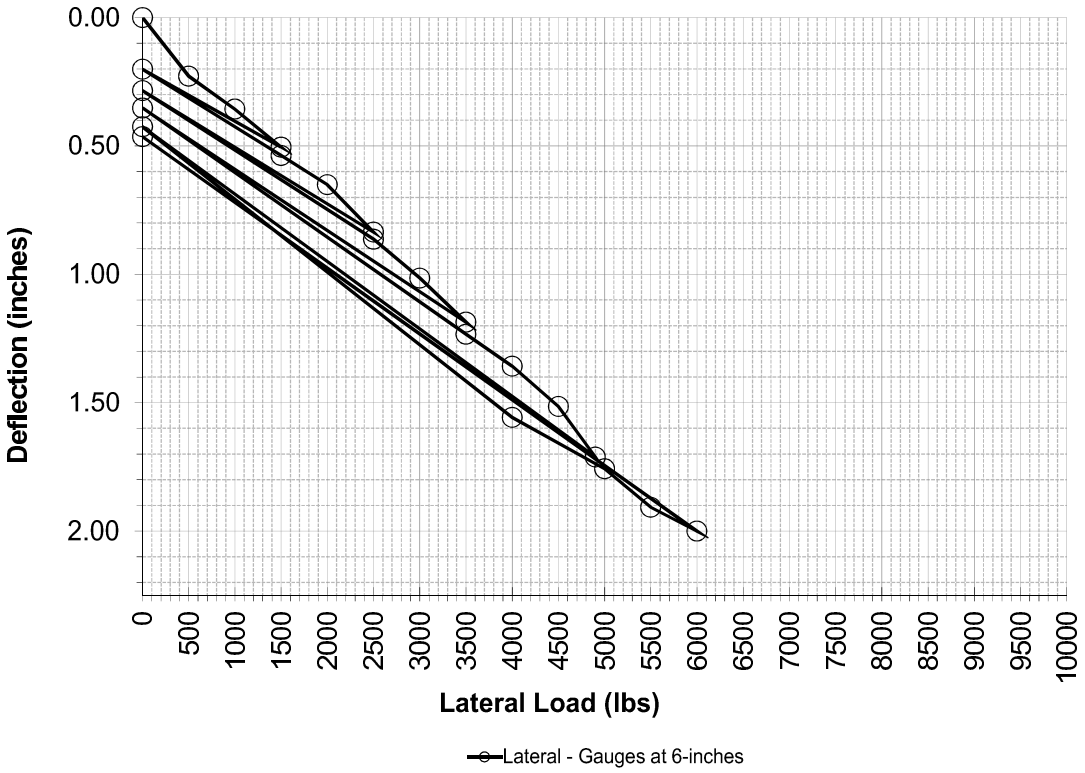
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	

Pile Information

Pile ID:	PLT-8B
Latitude:	40.69661
Longitude:	-80.88478
Pile Type:	W6x9
Pile Embedment Depth [in]:	9.1
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	104

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.229	
14%	1000	0.356	
21%	1500	0.505	
0%	0	0.201	
21%	1500	0.537	
29%	2000	0.651	
36%	2500	0.836	
0%	0	0.284	
36%	2500	0.863	
43%	3000	1.015	
50%	3500	1.186	
0%	0	0.352	
50%	3500	1.234	
57%	4000	1.358	
64%	4500	1.515	
70%	4900	1.712	
0%	0	0.425	
57%	4000	1.558	
71%	5000	1.757	
79%	5500	1.907	
86%	6000	2.000	
93%	6500		
100%	7000		
0%	0	0.464	



Lateral Load Test Result for PLT-9A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

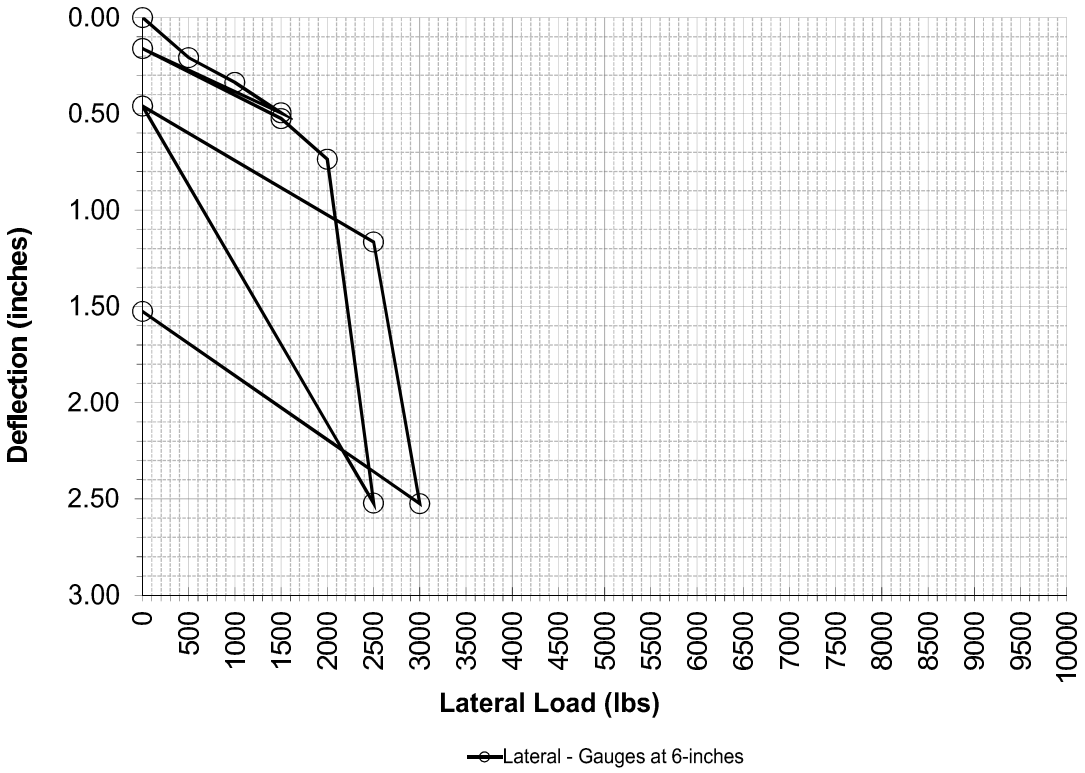
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	

Pile Information

Pile ID:	PLT-9A
Latitude:	40.66744
Longitude:	-80.89583
Pile Type:	W6x9
Pile Embedment Depth [in]:	7
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	22

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.209	
14%	1000	0.338	
21%	1500	0.495	
0%	0	0.162	
21%	1500	0.525	
29%	2000	0.736	
36%	2500	2.521	
0%	0	0.460	
36%	2500	1.166	
43%	3000	2.524	
50%	3500		
0%	0		
50%	3500		
57%	4000		
64%	4500		
71%	5000		
0%	0		
57%	4000		
71%	5000		
79%	5500		
86%	6000		
93%	6500		
100%	7000		
0%	0	1.527	



Lateral Load Test Result for PLT-9B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

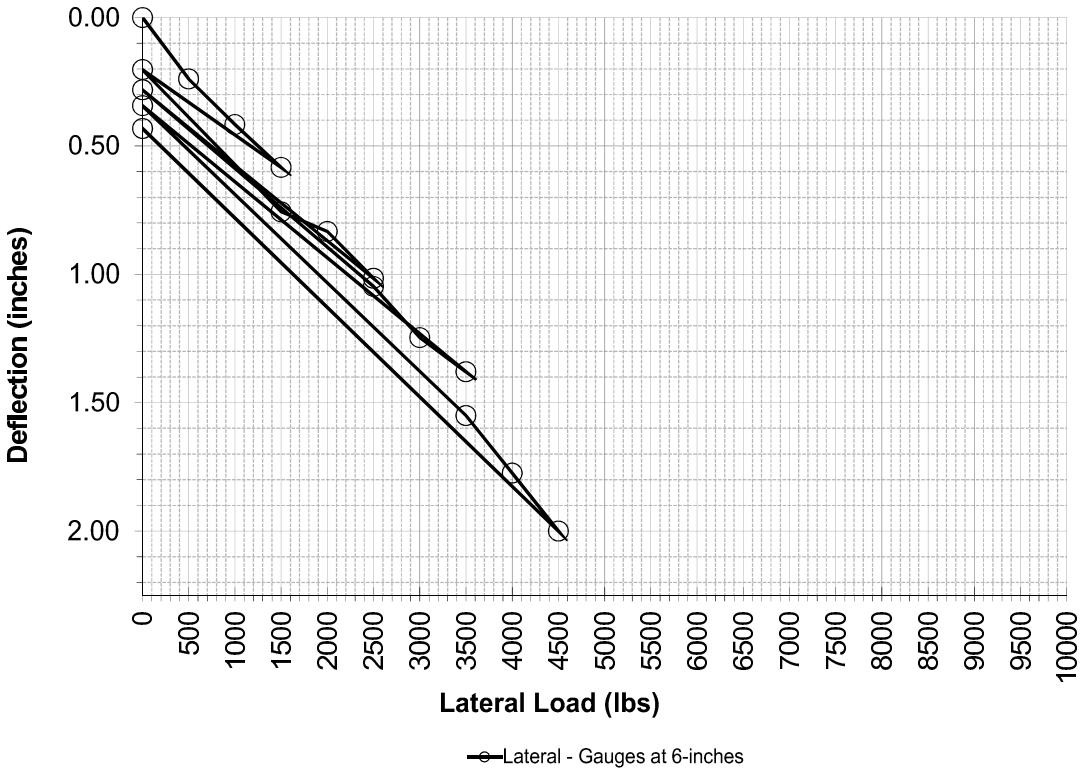
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-9B
Latitude:	40.66744
Longitude:	-80.89583
Pile Type:	W6x9
Pile Embedment Depth [in]:	10
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	19

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.239	
14%	1000	0.417	
21%	1500	0.584	
0%	0	0.203	
21%	1500	0.757	
29%	2000	0.834	
36%	2500	1.016	
0%	0	0.281	
36%	2500	1.047	
43%	3000	1.246	
50%	3500	1.380	
0%	0	0.343	
50%	3500	1.550	
57%	4000	1.774	
64%	4500	2.000	
71%	5000		
0%	0		
57%	4000		
71%	5000		
79%	5500		
86%	6000		
93%	6500		
100%	7000		
0%	0	0.433	



Lateral Load Test Result for PLT-10A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

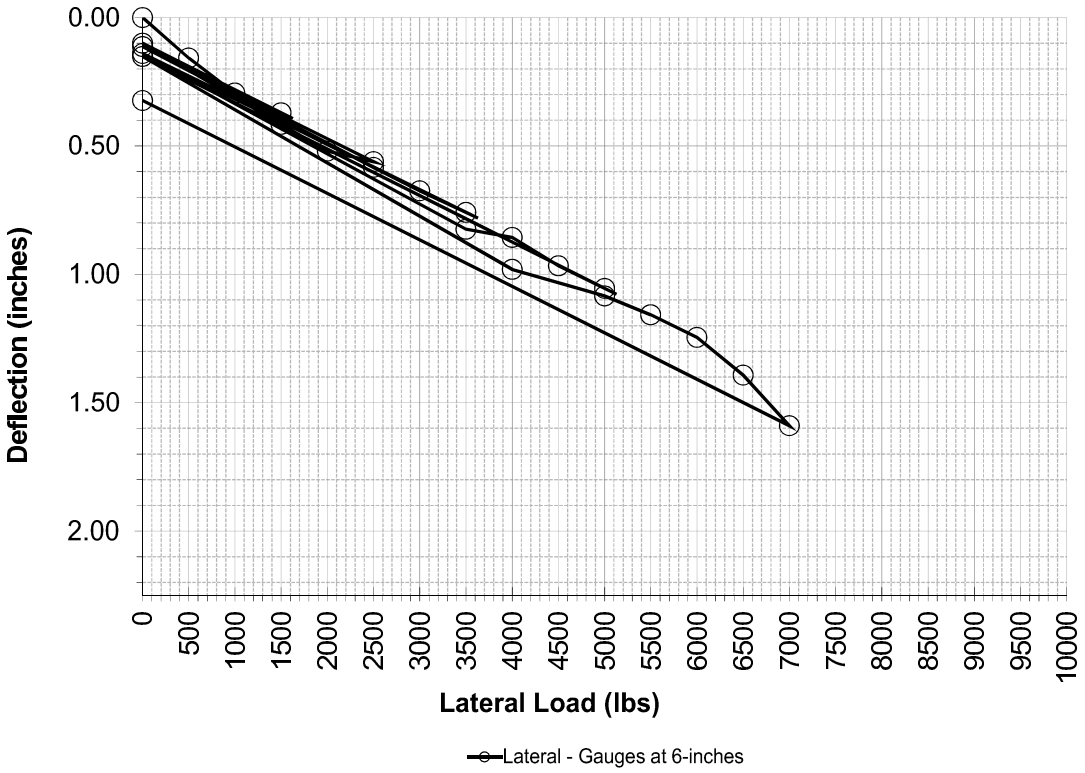
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	

Pile Information

Pile ID:	PLT-10A
Latitude:	40.67042
Longitude:	-80.88382
Pile Type:	W6x9
Pile Embedment Depth [in]:	8
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	112

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.158	
14%	1000	0.294	
21%	1500	0.371	
0%	0	0.100	
21%	1500	0.416	
29%	2000	0.520	
36%	2500	0.561	
0%	0	0.113	
36%	2500	0.584	
43%	3000	0.675	
50%	3500	0.759	
0%	0	0.140	
50%	3500	0.825	
57%	4000	0.856	
64%	4500	0.967	
71%	5000	1.055	
0%	0	0.152	
57%	4000	0.981	
71%	5000	1.084	
79%	5500	1.158	
86%	6000	1.246	
93%	6500	1.393	
100%	7000	1.590	
0%	0	0.324	



Lateral Load Test Result for PLT-10B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

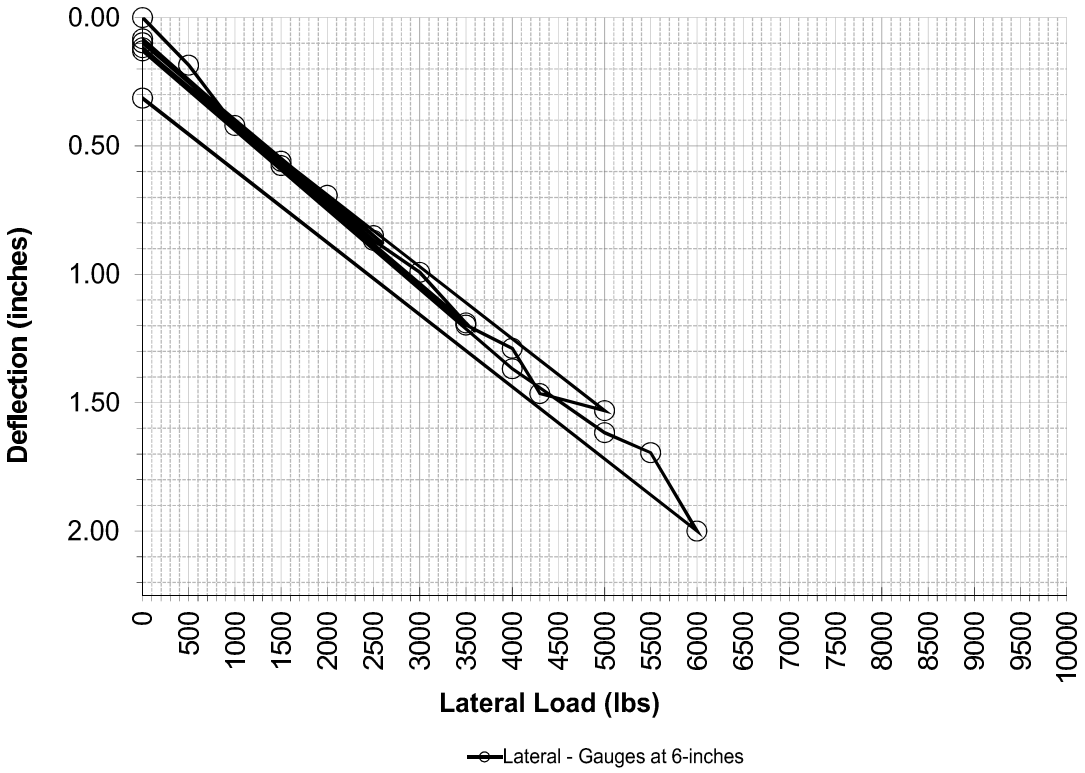
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-10B
Latitude:	40.67042
Longitude:	-80.88382
Pile Type:	W6x9
Pile Embedment Depth [in]:	11
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	24

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.186	
14%	1000	0.420	
21%	1500	0.560	
0%	0	0.083	
21%	1500	0.577	
29%	2000	0.693	
36%	2500	0.850	
0%	0	0.099	
36%	2500	0.868	
43%	3000	0.993	
50%	3500	1.190	
0%	0	0.118	
50%	3500	1.198	
57%	4000	1.289	
61%	4300	1.464	
71%	5000	1.531	
0%	0	0.130	
57%	4000	1.368	
71%	5000	1.617	
79%	5500	1.695	
86%	6000	2.000	
93%	6500		
100%	7000		
0%	0	0.314	



Lateral Load Test Result for PLT-11A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

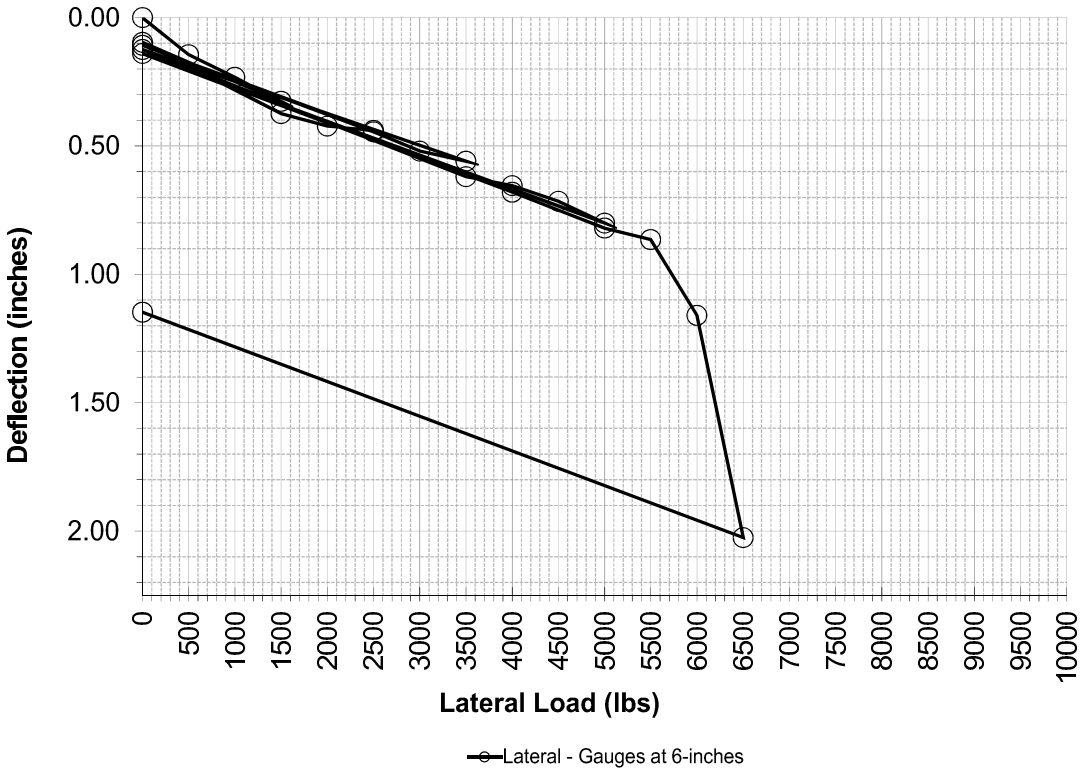
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-11A
Latitude:	40.66277
Longitude:	-80.90087
Pile Type:	W6x9
Pile Embedment Depth [in]:	7
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	49

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.145	
14%	1000	0.233	
21%	1500	0.327	
0%	0	0.097	
21%	1500	0.375	
29%	2000	0.423	
36%	2500	0.440	
0%	0	0.109	
36%	2500	0.446	
43%	3000	0.520	
50%	3500	0.560	
0%	0	0.125	
50%	3500	0.620	
57%	4000	0.655	
64%	4500	0.716	
71%	5000	0.801	
0%	0	0.140	
57%	4000	0.680	
71%	5000	0.820	
79%	5500	0.865	
86%	6000	1.160	
93%	6500	2.025	
100%	7000		
0%	0	1.148	



Lateral Load Test Result for PLT-11B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

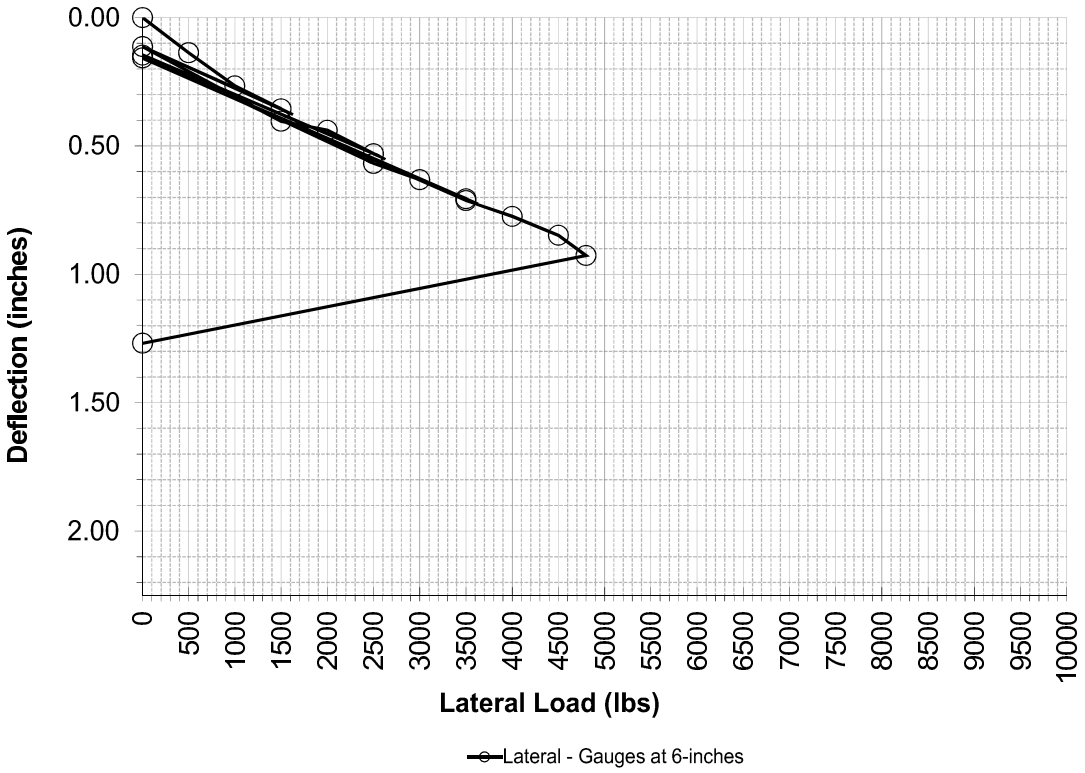
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-11B
Latitude:	40.66277
Longitude:	-80.90087
Pile Type:	W6x9
Pile Embedment Depth [in]:	9.1
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	98

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.137	
14%	1000	0.266	
21%	1500	0.356	
0%	0	0.113	
21%	1500	0.403	
29%	2000	0.439	
36%	2500	0.530	
0%	0	0.147	
36%	2500	0.568	
43%	3000	0.632	
50%	3500	0.706	
0%	0	0.157	
50%	3500	0.712	
57%	4000	0.774	
64%	4500	0.848	
69%	4800	0.927	
0%	0		
57%	4000		
71%	5000		
79%	5500		
86%	6000		
93%	6500		
100%	7000		
0%	0	1.269	



Lateral Load Test Result for PLT-12A

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

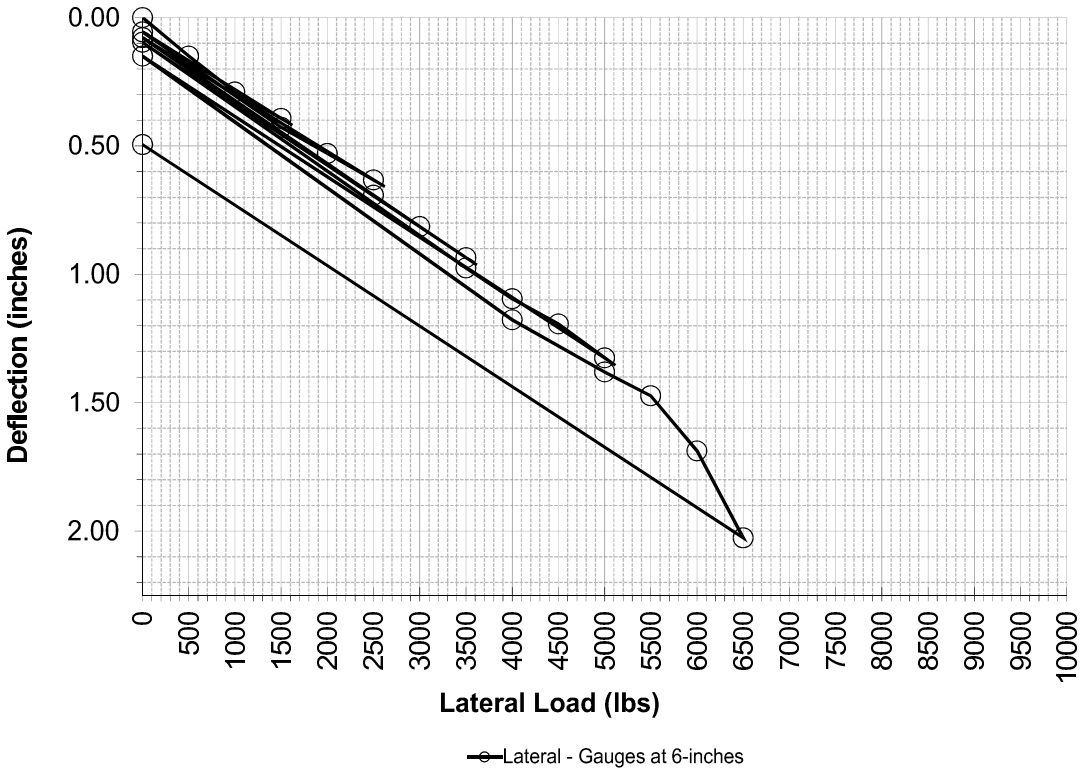
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	

Pile Information

Pile ID:	PLT-12A
Latitude:	40.65468
Longitude:	-80.90659
Pile Type:	W6x9
Pile Embedment Depth [in]:	8
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	187

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.150	
14%	1000	0.290	
21%	1500	0.393	
0%	0	0.056	
21%	1500	0.428	
29%	2000	0.530	
36%	2500	0.633	
0%	0	0.079	
36%	2500	0.692	
43%	3000	0.814	
50%	3500	0.935	
0%	0	0.096	
50%	3500	0.975	
57%	4000	1.095	
64%	4500	1.193	
71%	5000	1.325	
0%	0	0.150	
57%	4000	1.177	
71%	5000	1.380	
79%	5500	1.473	
86%	6000	1.688	
93%	6500	2.027	
100%	7000		
0%	0	0.495	



Lateral Load Test Result for PLT-12B

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	-
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	36
Load Cell:	25k Ed Jr.

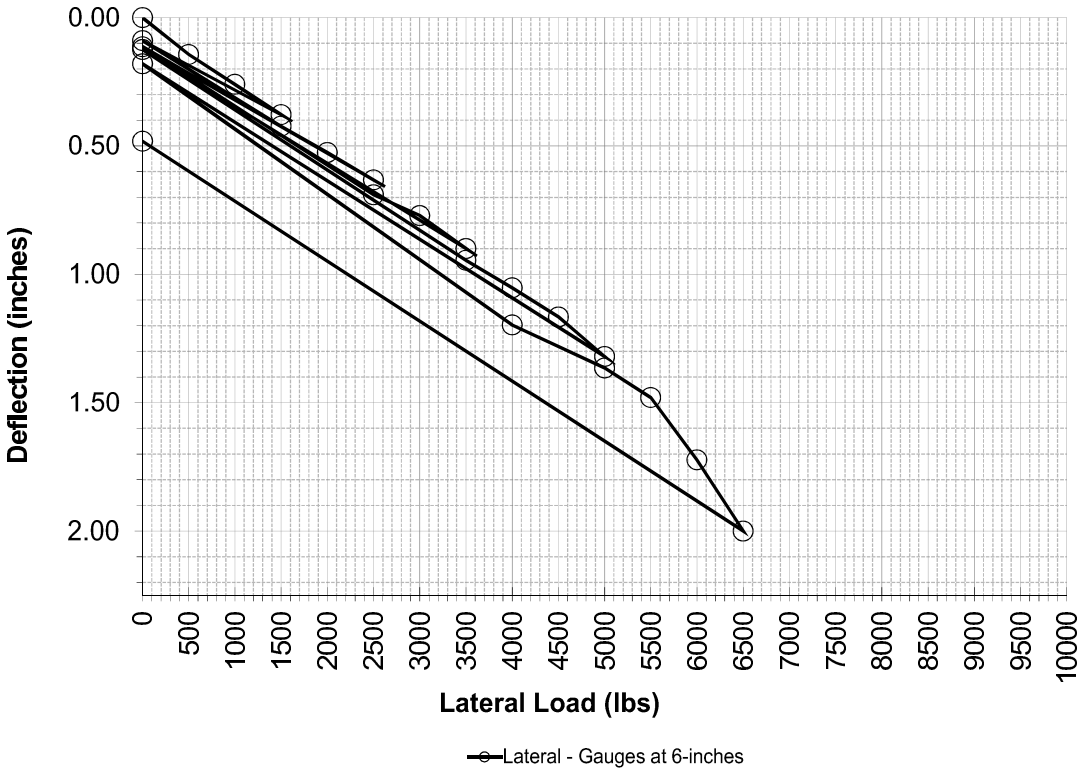
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	[redacted]

Pile Information

Pile ID:	PLT-12B
Latitude:	40.65468
Longitude:	-80.90659
Pile Type:	W6x9
Pile Embedment Depth [in]:	7.1
Pile Stick-Up [in]:	36
Lateral Design Load [lbs]:	7000
Drive Time [sec]:	178

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
7%	500	0.144	
14%	1000	0.260	
21%	1500	0.378	
0%	0	0.090	
21%	1500	0.423	
29%	2000	0.526	
36%	2500	0.632	
0%	0	0.114	
36%	2500	0.690	
43%	3000	0.772	
50%	3500	0.900	
0%	0	0.125	
50%	3500	0.946	
57%	4000	1.053	
64%	4500	1.167	
71%	5000	1.320	
0%	0	0.180	
57%	4000	1.197	
71%	5000	1.365	
79%	5500	1.480	
86%	6000	1.723	
93%	6500	2.000	
100%	7000		
0%	0	0.481	



APPENDIX E – PILE LOAD TEST RESULTS – AXIAL COMPRESSION LOAD

Contents:

Exhibit E-1 to E-6 Compression Load Test Results (6 pages)

Note: All attachments are one page unless noted above.

Compression Load Test Result for PLT-4C

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

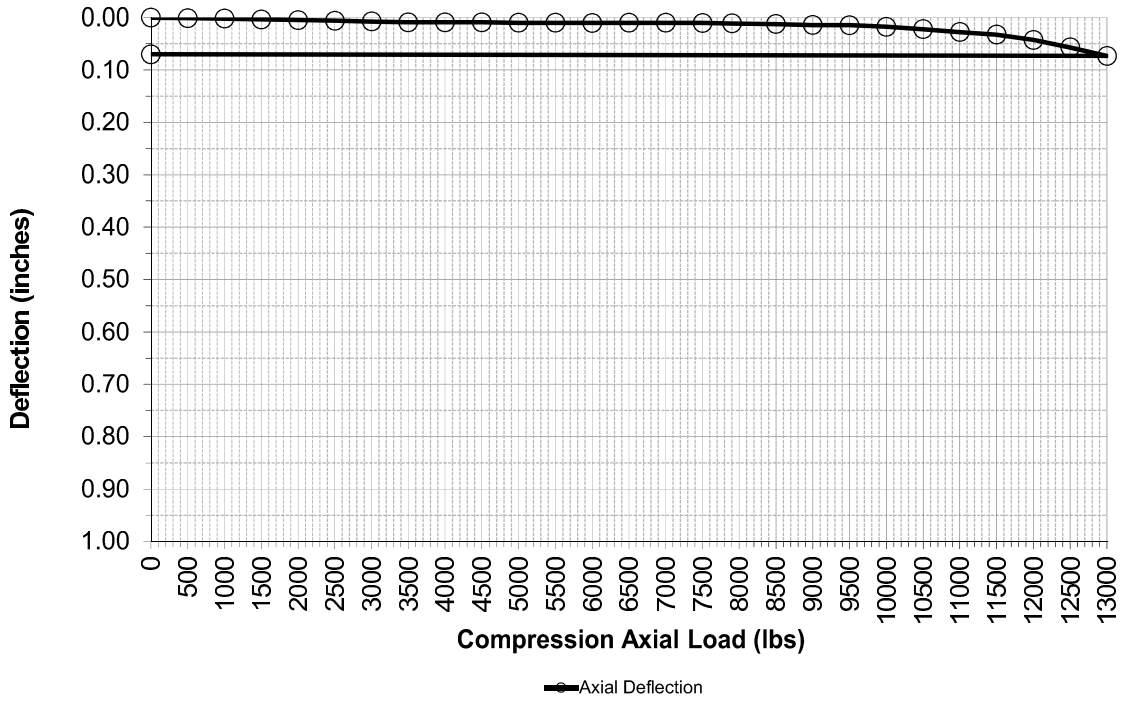
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	

Pile Information

Pile ID:	PLT-4C
Latitude:	40.68967
Longitude:	-80.89409
Pile Type:	W6x9
Pile Embedment Depth [in]:	8
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	13000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	
Drive Time [sec]:	19

Compression Test Results			
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
4%	500	0.001	
8%	1000	0.002	
12%	1500	0.004	
15%	2000	0.005	
19%	2500	0.006	
23%	3000	0.008	
27%	3500	0.009	
31%	4000	0.009	
35%	4500	0.009	
38%	5000	0.010	
42%	5500	0.010	
46%	6000	0.010	
50%	6500	0.010	
54%	7000	0.010	
58%	7500	0.010	
61%	7900	0.011	
65%	8500	0.013	
69%	9000	0.014	
73%	9500	0.015	
77%	10000	0.018	
81%	10500	0.022	
85%	11000	0.028	
88%	11500	0.033	
92%	12000	0.043	
96%	12500	0.057	
100%	13000	0.073	



Compression Load Test Result for PLT-5C

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

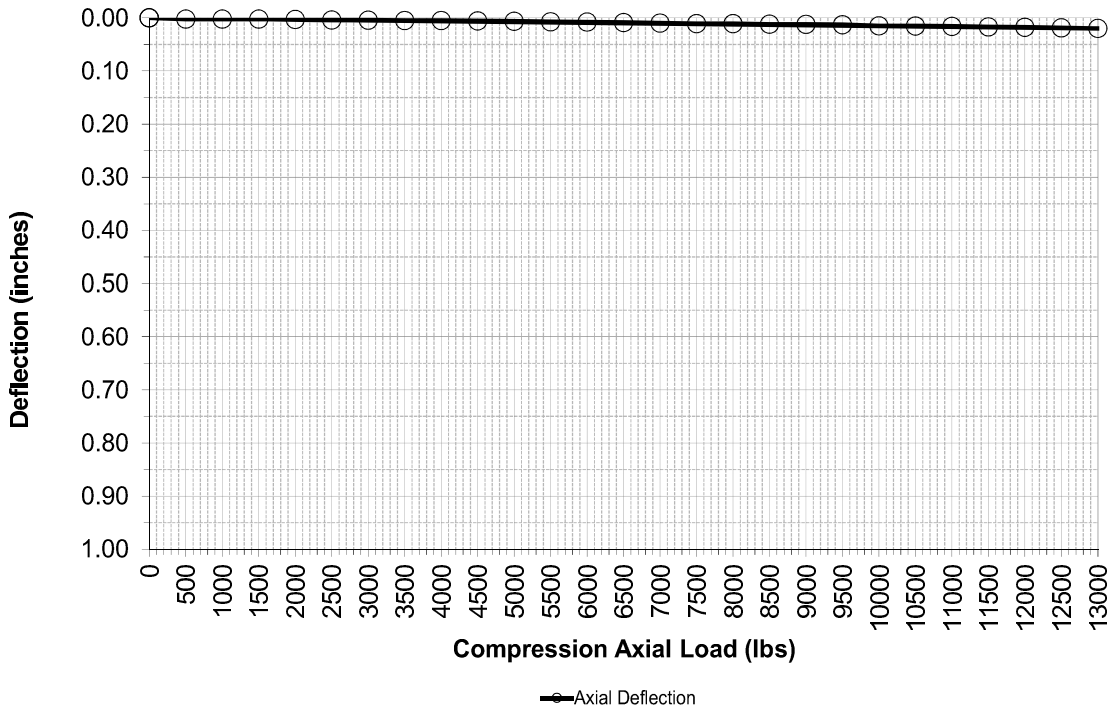
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	

Pile Information

Pile ID:	PLT-5C
Latitude:	40.67996
Longitude:	-80.89076
Pile Type:	W6x9
Pile Embedment Depth [in]:	5.8
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	13000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	
Drive Time [sec]:	139

Compression Test Results			
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
4%	500	0.002	
8%	1000	0.002	
12%	1500	0.003	
15%	2000	0.003	
19%	2500	0.004	
23%	3000	0.005	
27%	3500	0.005	
31%	4000	0.005	
35%	4500	0.006	
38%	5000	0.007	
42%	5500	0.008	
46%	6000	0.008	
50%	6500	0.009	
54%	7000	0.010	
58%	7500	0.011	
62%	8000	0.011	
65%	8500	0.012	
69%	9000	0.013	
73%	9500	0.013	
77%	10000	0.015	
81%	10500	0.016	
85%	11000	0.016	
88%	11500	0.017	
92%	12000	0.018	
96%	12500	0.019	
100%	13000	0.020	



Compression Load Test Result for PLT-7C

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

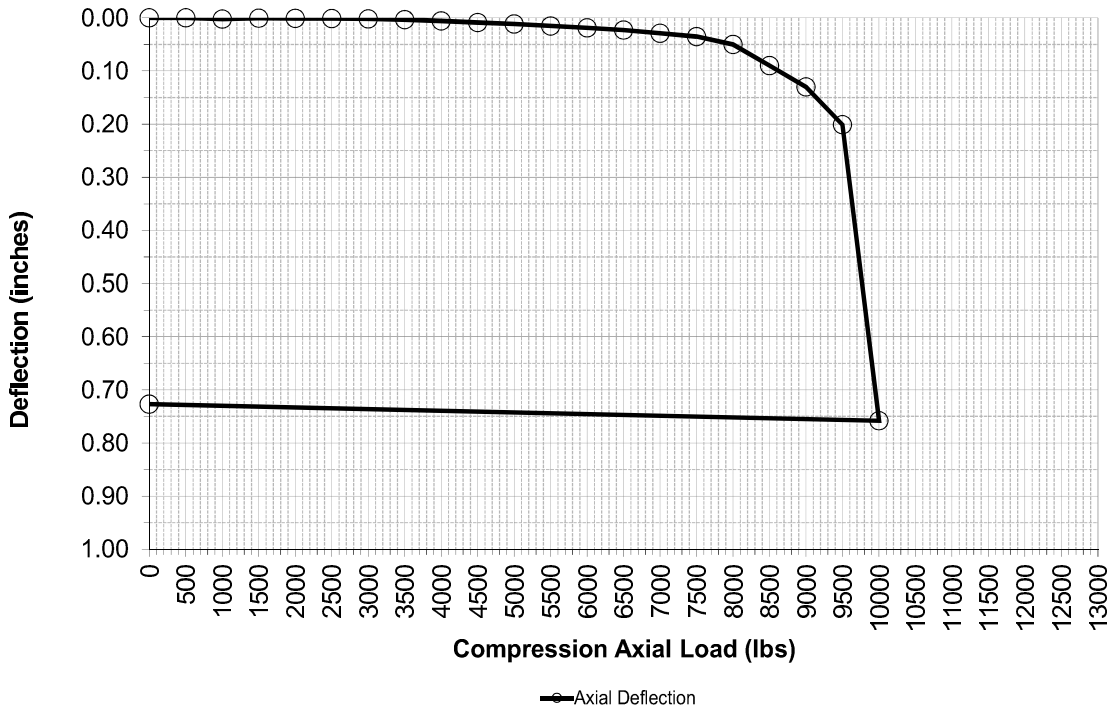
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	

Pile Information

Pile ID:	PLT-7C
Latitude:	40.70103
Longitude:	-80.89688
Pile Type:	W6x9
Pile Embedment Depth [in]:	8
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	13000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	
Drive Time [sec]:	23

Compression Test Results			
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
4%	500	0.000	
8%	1000	0.003	
12%	1500	0.001	
15%	2000	0.001	
19%	2500	0.002	
23%	3000	0.002	
27%	3500	0.004	
31%	4000	0.006	
35%	4500	0.009	
38%	5000	0.012	
42%	5500	0.016	
46%	6000	0.019	
50%	6500	0.023	
54%	7000	0.029	
58%	7500	0.036	
62%	8000	0.050	
65%	8500	0.090	
69%	9000	0.130	
73%	9500	0.201	
77%	10000	0.758	
81%	10500		
85%	11000		
88%	11500		
92%	12000		
96%	12500		
100%	13000		



Compression Load Test Result for PLT-8C

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

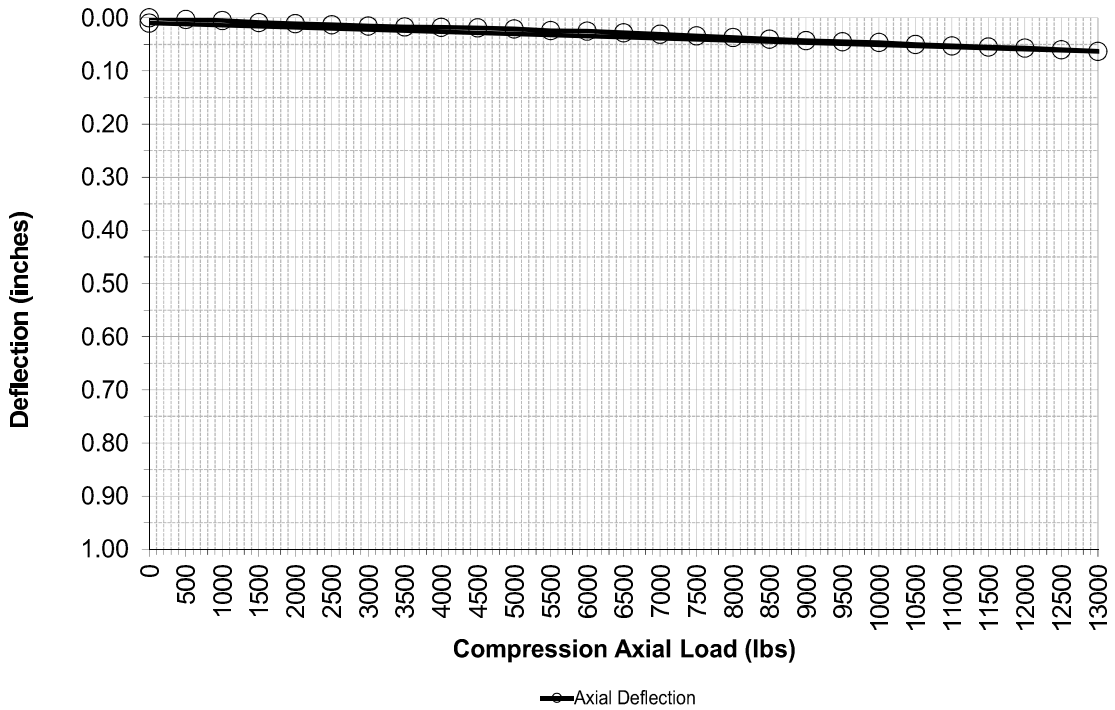
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	

Pile Information

Pile ID:	PLT-8C
Latitude:	40.69661
Longitude:	-80.88478
Pile Type:	W6x9
Pile Embedment Depth [in]:	7
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	13000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	
Drive Time [sec]:	19

Compression Test Results			
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
4%	500	0.003	
8%	1000	0.005	
12%	1500	0.009	
15%	2000	0.011	
19%	2500	0.013	
23%	3000	0.016	
27%	3500	0.017	
31%	4000	0.018	
35%	4500	0.019	
38%	5000	0.021	
42%	5500	0.024	
46%	6000	0.025	
50%	6500	0.028	
54%	7000	0.031	
58%	7500	0.034	
62%	8000	0.037	
65%	8500	0.040	
69%	9000	0.043	
73%	9500	0.045	
77%	10000	0.047	
81%	10500	0.050	
85%	11000	0.053	
88%	11500	0.055	
92%	12000	0.057	
96%	12500	0.060	
100%	13000	0.063	



Compression Load Test Result for PLT-9C

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

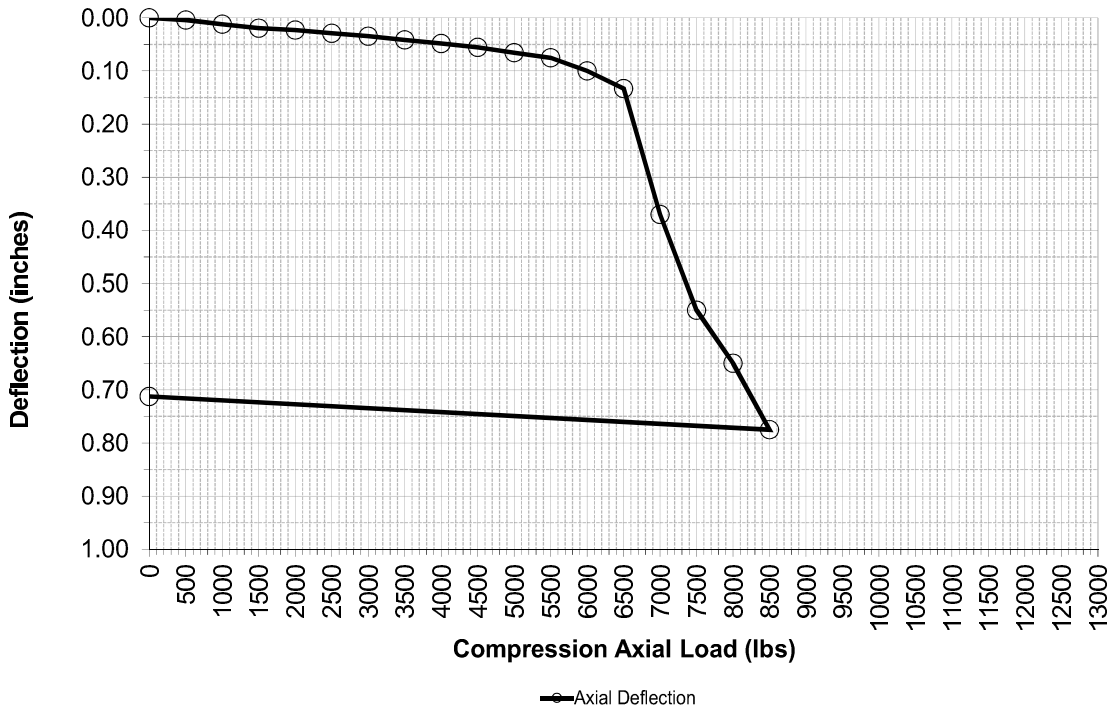
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	

Pile Information

Pile ID:	PLT-9C
Latitude:	40.66744
Longitude:	-80.89583
Pile Type:	W6x9
Pile Embedment Depth [in]:	7
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	13000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	
Drive Time [sec]:	8

Compression Test Results			
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
4%	500	0.004	
8%	1000	0.012	
12%	1500	0.020	
15%	2000	0.023	
19%	2500	0.029	
23%	3000	0.035	
27%	3500	0.042	
31%	4000	0.049	
35%	4500	0.056	
38%	5000	0.066	
42%	5500	0.075	
46%	6000	0.100	
50%	6500	0.133	
54%	7000	0.370	
58%	7500	0.550	
62%	8000	0.650	
65%	8500	0.775	
69%	9000		
73%	9500		
77%	10000		
81%	10500		
85%	11000		
88%	11500		
92%	12000		
96%	12500		
100%	13000		



Compression Load Test Result for PLT-12C

Project Information

Project Name:	Kensington Solar
Project Location:	Summitville, Ohio
Project Number:	N6225000

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	25k Ed Jr.

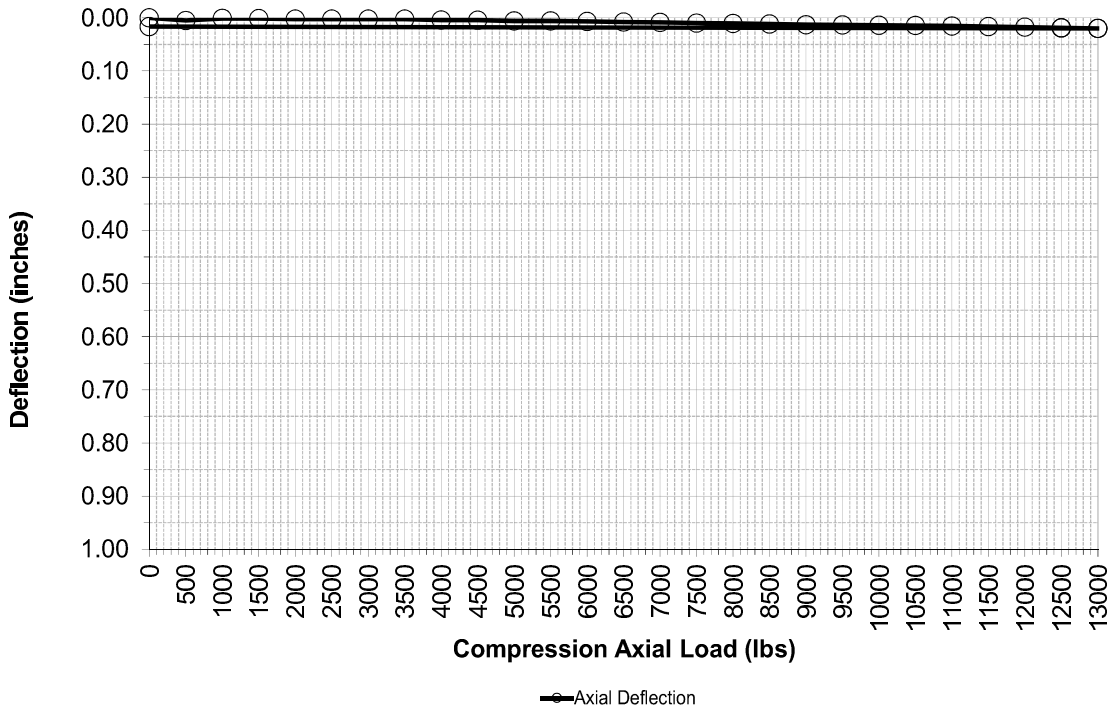
Test Date and Representative

Tested By Terracon Rep:	I. McGougan
Date Tested:	

Pile Information

Pile ID:	PLT-12C
Latitude:	40.65468
Longitude:	-80.90659
Pile Type:	W6x9
Pile Embedment Depth [in]:	8
Pile Diameter [in]:	5.9
Pile Stick-Up [in]:	36
Axial Design Load [lbs]:	13000
Pile Area [sq. in]:	2.96
Elastic Modulus [ksi]:	
Drive Time [sec]:	173

Compression Test Results			
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
4%	500	0.005	
8%	1000	0.001	
12%	1500	0.002	
15%	2000	0.003	
19%	2500	0.003	
23%	3000	0.003	
27%	3500	0.003	
31%	4000	0.004	
35%	4500	0.005	
38%	5000	0.006	
42%	5500	0.006	
46%	6000	0.007	
50%	6500	0.008	
54%	7000	0.009	
58%	7500	0.010	
62%	8000	0.011	
65%	8500	0.012	
69%	9000	0.013	
73%	9500	0.014	
77%	10000	0.014	
81%	10500	0.015	
85%	11000	0.016	
88%	11500	0.017	
92%	12000	0.018	
96%	12500	0.019	
100%	13000	0.020	



Summary: Notice Notice of Filing Data Responses electronically filed by Ms. Anna Sanyal on behalf of Kensington PV 1, LLC