

**Windham Solar LLC**  
**157 Church Street, 19<sup>th</sup> Floor**  
**New Haven, CT 06510**

June 11, 2025

Connecticut Siting Council  
Ms. Melanie Bachman  
Executive Director  
Ten Franklin Square  
New Britain, CT 06051

**RE: PETITION NO. 1222A** - Windham Solar LLC Declaratory Ruling that no Certificate of Environmental Compatibility and Public Need is required for the construction, maintenance and operation of three 2.0 Megawatt and four 1.0 Megawatt Solar Photovoltaic Electric Generating facilities located southeast of Hartford Turnpike and south of Fisk Road, Hampton, Connecticut. **Response to September 26, 2024 Extension of Construction Time.**

Dear Ms. Bachman:

In response to your letter, dated September 26, 2024, with respect to the above referenced Petition, I am writing to provide those items required under Condition Nos. 2, 3, 4, 5 and 7 of the Council's April 23, 2021 Declaratory Ruling:

**2. Submit the name and resume of the independent environmental monitor.**

The independent environmental inspector is Robert Russo, a Soil Scientist/Environmental Scientist from CLA Engineers. Mr. Russo's resume is attached as Exhibit A to this letter.

**3. Submit a copy of the final DEEP Stormwater Permit.**

A copy of the General Permit and associated extension is attached as Exhibit B to this letter.

**4. Submit a copy of an updated distribution impact study to confirm 8 MW can be accommodated or alternatively, submit plans for battery storage or other mitigation measures, as applicable.**

A copy of the following fully executed interconnection agreements with Eversource are attached as Exhibit C:

- a) INT-29241 (2 MW) (a/k/a Dickinson)
- b) INT-29243 (2 MW) (a/k/a Sydney)

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- c) LEG-22714 (1 MW) (a/k/a McHenry)
- d) LEG-22712 (1 MW) (a/k/a Washington – not yet fully constructed)
- e) LEG-22713 (2 MW) (a/k/a Yantic – not yet fully constructed)

**5. Submission of the final structural design for the racking system, stamped by a Professional Engineer duly licensed in the State of Connecticut.**

A copy of the stamped structural drawings for the projects that have already been constructed (INT-29241, INT-29243 and LEG-22714) are attached as Exhibit D. The calculations and drawings from TerraSmart cover those projects with interconnection agreement nos. INT-29241 and INT-29243 and the AP Alternative calculations and drawings cover INT-22714.

**7. Submission of a spill prevention procedure or protocol that would be implemented at the site.**

A spill prevention plan is attached as Exhibit E.

Please let me know if this satisfies the requested items in your September 26, 2024 extension letter. We will submit the structural drawings and calculations for the remaining projects (LEG-22712 and LEG-22713) when they become available.

Any questions can be directed to me at [chris.little@ecosenergy.com](mailto:chris.little@ecosenergy.com).

Regards,



Christopher Little

Vice President

(612) 237-1105

[Chris.Little@EcosEnergy.com](mailto:Chris.Little@EcosEnergy.com)

Exhibit A  
Resume of  
Environemntal  
Monitor

# Robert C. Russo C.S.S.

## Soil Scientist/Environmental Scientist

### EDUCATION:

Wesleyan University  
B.A. Biology/Psychology 1982

Yale University  
M.E.S. Environmental Studies

### REGISTRATION:

Certified Soil Scientist  
Society of Soil Scientists of  
Southern New England

### BACKGROUND SUMMARY:

2002 – Present	Soil Scientist CLA Engineers, Inc.
1998 – 2002	Owner/Principal Scientist Environmental Planning & Soil Science
1993 – 1998	Senior Environmental Scientist VHB Inc.
1990 – 1993	Environmental Scientist Atlantic Environmental Services

### GENERAL BACKGROUND:

Mr. Russo has been involved with wetland and environmental investigations and permitting throughout Connecticut. His experience includes utility, roadway, commercial and residential projects. He is familiar with permitting requirements on the local, State and Federal Levels.

### SPECIFIC PROFESSIONAL EXPERIENCE:

\* November 2002 - Present - CLA Engineers, Inc., - Mr. Russo is a soil and environmental scientist in the firm and has performed wetland delineation, environmental investigation, and permitting task on projects including relating to utilities, roadway reconstruction, residential subdivision, and commercial development.

\* September 1998 – November 2002– Environmental Planning & Soil Science LLC, Ivoryton, CT. Mr. Russo specialized in wetland delineation and permitting and performed pre-design environmental constraints analysis, wetland permit preparation, layout of sedimentation and erosion control measures, wetland function evaluation, wetland mitigation design and monitoring, and on-site construction inspection. Work also included acting as liaison with local Inland Wetlands Agencies, CTDEP and the Army Corps of Engineers.

\* December 1993 - August 1998 VHB Inc. Middletown, CT. responsibilities included both technical and managerial aspects of projects. Work included preparation of National Environmental Policy Act (NEPA) documents; local, State, and Federal environmental permit applications; project management; client liaison; staff supervision.

\* September 1990 – December 1993 Atlantic Environmental Services, Inc, Colchester, CT. Responsibilities included both technical and managerial aspects of hazardous waste and ecological projects.



# Robert C. Russo C.S.S.

## Soil Scientist/Environmental Scientist

### ***AREAS OF EXPERTISE:***

- \* Wetland Delineation per State of Connecticut and United States Army Corps of Engineers criteria
- \* Sedimentation and erosion control planning and inspection
- \* Storm water management planning and permitting
- \* Pollutant and Water Quality Modeling
- \* Connecticut tidal wetland delineation
- \* Wetland functional assessment
- \* Wetland mitigation, creation and restoration and monitoring/inspection
- \* Vernal pool studies
- \* Site wide vegetative inventories
- \* Threatened, Endangered, and Special Concern Species investigations and targeted site searches
- \* Soils investigation and mapping
- \* Site constraints analysis
- \* GIS site analysis
- \* GPS wetland and resource mapping
- \* Site reconnaissance survey and constraints analysis
- \* Soils investigations for sand and gravel excavation
- \* Soils investigation and permeability testing for septic systems
- \* Environmental Impact Assessment

### ***PERMITTING EXPERIENCE:***

- \* Local, State, and Federal wetland permit preparation
- \* CTDEP Water Diversion
- \* CTDEP Stream Channel Encroachment
- \* CTDEP Stormwater permits for Commercial, Industrial, Construction sites
- \* CTDEP Water Quality Certification
- \* National Environmental Policy Act (NEPA) document preparation
- \* Connecticut Environmental Policy Act (CEPA) documentation preparation
- \* Coastal Management Consistency
- \* Coastal Permitting
- \* Compliance with Endangered Species Act

# Exhibit B

## General Permit



## **Bureau of Materials Management and Compliance Assurance**

### **Notice of Permit Authorization**

June, 28 2019

Steven Broyer  
JEFFERSON SOLAR LLC  
222 S 9th St  
Minneapolis, MN 55402-3382

Subject: General Permit Registration for the Discharge of Stormwater and Dewatering  
Wastewaters from Construction Activities  
Application NO.: 201904616

Steven Broyer:

The Department of Energy and Environmental Protection, Water Permitting and Enforcement Division of the Bureau of Materials Management and Compliance Assurance, has completed the review of the Fisk Road Solar (located at 111 Fisk Rd, Hampton) registration for the **General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, effective 10/1/13 (general permit)**. The project is compliant with the requirements of the general permit and the discharge(s) associated with this project is (are) authorized to commence as of the date of this letter. Permit No. GSN003450 has been assigned to authorize the stormwater discharge(s) from this project.

Questions can be emailed to [deep.stormwater@ct.gov](mailto:deep.stormwater@ct.gov).



## **Bureau of Materials Management and Compliance Assurance**

### **Notice of Permit Authorization**

July, 27 2021

Steven Broyer  
JEFFERSON SOLAR LLC  
222 S 9th St  
Minneapolis, MN 55402-3382

Subject: General Permit Registration for the Discharge of Stormwater and Dewatering  
Wastewaters from Construction Activities  
Application NO.: 202108503

Steven Broyer:

The Department of Energy and Environmental Protection, Water Permitting and Enforcement Division of the Bureau of Materials Management and Compliance Assurance, has completed the review of the Fisk Road Solar (located at 111 Fisk Rd, Hampton) registration for the **General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, effective 10/1/13 (general permit)**. The project is compliant with the requirements of the general permit and the discharge(s) associated with this project is (are) authorized to commence as of the date of this letter. Permit No. GSN003450 has been assigned to authorize the stormwater discharge(s) from this project.

Questions can be emailed to [deep.stormwater@ct.gov](mailto:deep.stormwater@ct.gov).



**Connecticut Department of  
Energy & Environmental Protection**  
Bureau of Materials Management & Compliance Assurance  
Water Permitting & Enforcement Division

*General Permit Registration Form for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, effective 10/1/13 (electronic form)*

Prior to completing this form, you **must** read the instructions for the subject general permit at [DEEP-WPED-INST-015](#).  
This form must be filled out electronically before being printed.  
You must submit the registration fee along with this form.

The [status of your registration](#) can be checked on the DEEP's ezFile. Portal. Please note that DEEP will no longer mail certificates of registration.

**Part I: Registration Type**

Select the appropriate boxes identifying the registration type and registration deadline.

CPPU USE ONLY	
App #:	_____
Doc #:	_____
Check #:	_____
Program:	<u>Stormwater</u>

Registration Type		Registration Timeline	
<input checked="" type="checkbox"/>	<b>Re-registration</b> <b>Existing Permit No. GSN</b> GSN003450 _____	<b>On or before February 1, 2014*</b>  *Note: Failure to renew a permit by this date will require submission of new registration. Re-registrants must only complete Parts I, II, III, IV - Question 1, VII and submit Attachment A.	
<input type="checkbox"/>	<b>New Registration</b>  (Refer to Section 2 of the permit for definitions of Locally Exempt and Locally Approvable Projects)	<input type="checkbox"/> <b>Locally Approvable</b> <b>Size of soil disturbance:</b> _____	<b>New registration - Sixty (60) days prior to the initiation of the construction activity for:</b>  For sites with a total soil disturbance area of 5 or more acres
		<input type="checkbox"/> <b>Locally Exempt</b> <b>Size of soil disturbance:</b> _____	<input type="checkbox"/> <b>New registration - Sixty (60) days prior to the initiation of the construction activity for:</b>  Sites with a total disturbance area of one (1) to twenty (20) acres except those with discharges to impaired waters or tidal wetlands
			<input type="checkbox"/> <b>New registration - Ninety (90) days prior to the initiation of the construction activity for:</b>  (i) Sites with a total soil disturbance area greater than twenty (20) acres, or (ii) Sites discharging to a tidal wetland (that is not fresh-tidal and is located within 500 feet), or (iii) Sites discharging to the impaired water listed in the "Impaired Waters Table for Construction Stormwater Discharges"

## Part II: Fee Information

1. New Registrations
  - a. Locally approvable projects (registration only):  
☐ \$625
  - b. Locally exempt projects (registration and Plan):  
☐ \$3,000 total soil disturbance area  $\geq$  one (1) and < twenty (20) acres.  
☐ \$4,000 total soil disturbance  $\geq$  twenty (20) acres and < fifty (50) acres.  
☐ \$5,000 total soil disturbance  $\geq$  fifty (50) acres.
2. Re-Registrations  
☐ \$625 (sites previously registered prior to September 1, 2012)  
☒ \$0 (sites previously registered between to September 1, 2012 and effective date of this permit)

Total Fee: \$0.00

*The fees for municipalities shall be half of those indicated in subsections (a), (b) and (c) above pursuant to Section 22a-6(b) of the Connecticut General Statutes. State and Federal agencies shall pay the full fees specified in this subsection. The registration will not be processed without the fee. The fee shall be non-refundable and shall be paid by certified check or money order payable to the Department of Energy and Environmental Protection.*

## Part III: Registrant Information

- If a registrant is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, it must be registered with the Secretary of the State. If applicable, the registrant's name shall be stated **exactly** as it is registered with the Secretary of the State. This information can be accessed at [CONCORD](#)
- If a registrant is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).

1. Registrant /Client Name: JEFFERSON SOLAR LLC  
Registrant Type: Business Entity  
Secretary of the State business ID #: \_\_\_\_\_  
Mailing Address: 222 S 9th St  
City/Town: Minneapolis State: MN Zip Code: 55402  
Business Phone: (612) 326-1500 ext.: \_\_\_\_\_  
*Example:(xxx) xxx-xxxx*  
Contact Person: Steven Broyer Title : Sr. Project Manager  
E-Mail: steve.broyer@ecosrenewable.com
2. List billing contact:  
Name: JEFFERSON SOLAR LLC  
Mailing Address: 222 S 9th St  
City/Town: Minneapolis State: MN Zip Code: 55402  
Business Phone: (612) 326-1500 ext.: \_\_\_\_\_  
Contact Person: Steven Broyer Title : Sr. Project Manager

3. List primary contact for departmental correspondence and inquiries:

Name: JEFFERSON SOLAR LLC

Mailing Address: 222 S 9th St

City/Town: Minneapolis State: MN Zip Code: 55402

Business Phone: (612) 326-1500 ext.

Contact Person: Steven Broyer Title: Sr. Project Manager

4. List owner of the property on which the activity will take place:

Name: PLH, LLC

Mailing Address: 222 S 9th St

City/Town: Minneapolis State: MN Zip Code: 55402

Business Phone: (612) 236-1500 ext.

Contact Person: Steve Broyer

5. List preparer:

Name: WESTWOOD PROFESSIONAL SERVICES, INC.

Mailing Address: 12701 Whitewater Dr

City/Town: Minnetonka State: MN Zip Code: 55343

Business Phone: (888) 937-5150 ext.

Contact Person: Aaron Mlynek Title: Director Stormwater Compliance

6. List design professional:

Name: CLA ENGINEERS, INC.

Mailing Address: 317 MAIN ST

City/Town: NORWICH State: CT Zip Code: 06360

Business Phone: (860) 866-1966 ext.

Contact Person: ELLEN BARTLETT Title:

7. List Reviewing Qualified Professional (for locally approvable projects only):

Name:

Mailing Address:

City/Town:  State:  Zip Code:

Business Phone:  ext.

Contact Person:  Title:

#### Part IV: Site Information

1. Site Name: Fisk Road Solar

Street Address or Description of Location: 111 Fisk Rd

City/Town: Hampton State: CT Zip Code: 06247

Brief Description of construction activity: Ongoing construction of remaining solar facilities on the site

Project Start Date: 29 Apr 2019 Anticipated Completion Date: 30 Dec 2022

Normal working hours: 7 to 7

2. **MINING** : Is the activity on the site in question part of mining operations (i.e. sand and gravel)? ☐Yes ☒No

*If yes, mining is not authorized by this general permit. You must submit the Registration Form for the General Permit for the Discharge of Stormwater Associated with Industrial Activity.*

3. **COMBINED OR SANITARY SEWER:** Does all of the stormwater from the proposed activity discharge to a combined or sanitary sewer (i.e. a sewage treatment plant)? ☐ Yes ☒No

*If yes, this activity is not regulated by this permit. Contact the Water Permitting & Enforcement Division at 860-424-3018.*

4. **INDIAN LANDS:** Is or will the facility be located on federally recognized Indian lands? ☐ Yes ☒No

5. **COASTAL BOUNDARY:** Is the activity which is the subject of this registration located

within the coastal boundary as delineated on DEEP approved coastal boundary maps? ☐ Yes ☒No

The coastal boundaries fall within the following towns: Branford, Bridgeport, Chester, Clinton, Darien, Deep River, East Haven, East Lyme, Essex, Fairfield, Greenwich, Groton (City and Town), Old Lyme, Guilford, Hamden, Ledyard, Lyme, Madison, Milford, Montville, New London, New Haven, North Haven, Norwalk, Norwich, Old Saybrook, Orange, Preston, Shelton, Stamford, Stonington (Borough and Town), Stratford, Waterford, West Haven, Westbrook and Westport.

If "yes", and this registration is for a new authorization or a modification of an existing authorization where the physical footprint of the subject activity is modified, you must provide documentation to the DEEP Office of Long Island Sound Programs or the local governing authority has issued a coastal site plan approval or determined the project is exempt from coastal site plan review. Provide this documentation with your registration as Attachment B. See guidance in Appendix D of the general permit. Information on the coastal boundary is available at the local town hall or on the [Connecticut Coastal Resources Map](#) . Additional DEEP Maps and Publications are available by contacting DEEP Staff at 860-424-3555.

6. **ENDANGERED OR THREATENED SPECIES:**

In order to be eligible to register for this General permit, each registrant must either perform a self-assessment, obtain a limited one-year determination, or obtain a safe-harbor determination regarding threatened and endangered species. This may include the need to develop and implement a mitigation plan. While each alternative has different limitations, the alternatives are not mutually exclusive; a registrant may register for this General Permit using more than one alternative. See Appendix A of the general Permit. Each registrant must complete this AND Attachment C to this Registration form and a registrant who does not or cannot do so is not eligible to register under this General Permit.

Each registration must perform a review of the Department's Natural Diversity Database maps to determine if the site of the construction activity is located within or in proximity (within ¼ mile) to a shaded area.

- a. Provide the date of the NDDDB maps were reviewed: 26 Jul 2021 (Print a copy of the NDDDB map you viewed since it must be submitted with this registration as part of Attachment C.)



- b. For a registrant using a limited one-year determination or safe harbor determination to register for this General Permit, provide the Department's Wildlife Division NDDB identification number for any such determination:

\_\_\_\_\_ (The number is on the determination issued by the Department's Wildlife Division).

For more information on threatened and endangered species requirements, refer to Appendix A and section 3(b)(2) of this General Permit, Visit the DEEP website at [Natural Diversity Data Base](#) or call the NDDB at 860-424-3011.

- c. I verify that I have completed Attachment C to this Registration Form. ☐ Yes

7. **WILD AND SCENIC RIVERS:** Is the proposed project within the watershed of a designated

Wild and Scenic River? ( See Appendix H for guidance)

☐ Yes ☒ No

8. **AQUIFER PROTECTION AREAS:** Is the site located within a mapped

[Aquifer Protection Area](#) , as defined in Section 22a-354h of the CT General Statutes?

(For additional guidance, please refer to Appendix C of the General Permit)

☐ Yes ☒ No

9. **Connecticut Guidelines for Soil Erosion and Sediment Control Guidelines:** Is the activity in

accordance with Connecticut Guidelines for Soil Erosion and Sediment Control Guidelines and local erosion & sediment control ordinances, where applicable?

☒ Yes ☐ No

10. **HISTORIC AND/OR ARCHAEOLOGICAL RESOURCES:**

Has the site of the proposed activity been reviewed (using the process outlined in Appendix G of this permit) for historic and/or archaeological resources?

☒ Yes ☐ No

- a. The review indicates the proposed site does not have the potential for historic/ archaeological resources, OR

☒ Yes ☐ No

- b. The review indicated historic and/ or archaeological resource potential exists and the proposed activity is being or has been reviewed by the Offices of Culture and Tourism, OR

☐ NA ☐ Yes ☒ No

- c. The proposed activity has been reviewed and authorized under an Army Corps of Engineers Section 404 wetland permit.

☐ NA ☐ Yes ☒ No

11. **CONSERVATION OR PRESERVATION RESTRICTION:**

Is the property subject to a conservation or preservation restriction?

☐ Yes ☒ No

If Yes, proof of written notice of this registration to the holder of such restriction or a letter from the holder of such restriction verifying this registration is in compliance with the terms of the restriction, must be submitted as Attachment D.

## Part V: Stormwater Discharge Information

**Table 1**

Outfall #	a) Type	b) Pipe Material	c) Pipe Size	d) Note: To find lat/long, go to: <a href="#">CT ECO</a> . A decimal format is required here. Directions on how to use CT ECO to find lat. /long. and conversions can be found in in Part V, section d of the <a href="#">DEEP-WPED-INST-015</a> .		e) What method was used to obtain your latitude/longitude information?
				Longitude (Format: -xx.xxxxx)	Latitude (Format: xx.xxxxx)	
1	Other(Please fill in below) Level Spreader Basin Outfall			-72.081654	41.767819	ezFile Portal Map
2	Other(Please fill in below) Level Spreader Basin Outfall			-72.081654	41.767819	ezFile Portal Map
3	Other(Please fill in below) Level Spreader Basin Outfall			-72.081654	41.767819	ezFile Portal Map
4	Other(Please fill in below) Level Spreader Basin Outfall			-72.081654	41.767819	ezFile Portal Map

Part V: Stormwater Discharge Information Continued

Table 2

2. Provide the following information about the receiving water(s)/wetland(s) that receive stormwater runoff from your site, either directly or through the storm sewer system:							
Outfall #	Dates when this outfall will be active:	a) To what system or receiving water does your stormwater runoff discharge? either "storm sewer or wetlands" or "waterbody" (If you select storm sewer or wetlands, columns c.1&2 of this table are not required to be completed)	b) What is your watershed ID (freshwater) or 305b ID (estuary)? (Section 3.b, of the <a href="#">DEP-GP-INST-015</a> explains how to find this information)	c.1) Is your receiving water identified as an impaired water in the <a href="#">"Impaired Waters Table for Construction Stormwater Discharges"</a> ?	<i>If you answered yes to question c.1, then answer the question below</i> c.2) Has any Total Maximum Daily Load (TMDL) been approved for your receiving waterbody?	For the drainage area associated with each outfall:  Effective Impervious Area Before Construction (sq ft)	For the drainage area associated with each outfall:  Effective Impervious Area After Construction (sq ft)
1	Start: 15 May 2019 End:	Storm Sewer or Wetlands		<input type="checkbox"/> Y <input checked="" type="checkbox"/> N <input type="checkbox"/> NA	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N <input type="checkbox"/> NA	0	91476
2	Start: 15 May 2019 End:	Storm Sewer or Wetlands		<input type="checkbox"/> Y <input checked="" type="checkbox"/> N <input type="checkbox"/> NA	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N <input type="checkbox"/> NA	0	43560
3	Start: 15 May 2019 End:	Storm Sewer or Wetlands		<input type="checkbox"/> Y <input checked="" type="checkbox"/> N <input type="checkbox"/> NA	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N <input type="checkbox"/> NA	0	39204
4	Start: 15 May 2019 End:	Storm Sewer or Wetlands		<input type="checkbox"/> Y <input checked="" type="checkbox"/> N <input type="checkbox"/> NA	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N <input type="checkbox"/> NA	0	17424
	Start: End:	Select One		<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA		
Provide the total effective impervious area for the entire site(sq ft):						0	191664

## Part V: Stormwater Discharge Information (continued)

**Impaired waters:** If you answered "yes" to Table 2, question 2.c.1, **verify** that the project's Pollution Control Plan (Plan) addresses the control measures below in Question 1 or 2, as appropriate.

1. If the impaired water does not have a TMDL, confirm compliance by selecting 1.a. or 2.b. below:

a. No more than 3 acres is disturbed at any time; ☐ Yes

**OR**

b. Stormwater runoff from a 2 yr, 24 rain event is **retained**. ☐ Yes

2. If the impaired water has a TMDL, confirm compliance by selecting 2.a. and 2.b. below and either question 2.c.1. or 2.c.2. below:

a. The Plan documents there is sufficient remaining Waste Load Allocations (WLA) in the TMDL for the proposed discharge, ☐ Yes

**AND**

b. Control measures shall be implemented to assure the WLA will not be exceeded, ☐ Yes

**AND**

c. 1. Stormwater discharges will be monitored for the indicator pollutant identified in the TMDL, ☐ Yes

**OR**

2. The Plan documents specific requirements for stormwater discharges specified in the TMDL. ☐ Yes

## Part VI: Pollution Control Plan Availability (check one of the following four categories)

☒ I am registering a Locally Exempt project and submitting the required electronic Plan (in Adobe™ PDF or similarly publically available format) pursuant to Section 3(c)(2)(E) of this permit.

☐ Plan is attached to this registration form

☒ Plan is available at the following Internet Address (URL):

☐ I am registering a Locally Approvable project and have chosen not to submit the Plan with this registration pursuant to Section 3(c)(1) of this permit.

☐ I am registering a Locally Approvable project and have chosen to make my Plan electronically available pursuant to Section 4(c)(2)(N) of this permit.

☐ Plan is attached to this registration form

☐ Plan is available at the following Internet Address (URL):

☐ I am registering a Locally exempt project and do not have the capability to submit the Plan electronically. Therefore, I am submitting a paper copy with this registration as Attachment E.

## Part VII: Registrant Certification

The registrant *and* the individual(s) responsible for actually preparing the registration must sign this part. A registration will be considered incomplete unless all required signatures are provided.

### For New Registrants:

"I hereby certify that I am making this certification in connection with a registration under such general permit, submitted to the commissioner by \_\_\_\_\_ for an activity located at \_\_\_\_\_ and that all terms and conditions of the general permit are being met for all discharges which have been initiated and such activity is eligible for authorization under such permit. I further certify that a system is in place to ensure that all terms and conditions of this general permit will continue to be met for all discharges authorized by this general permit at the site. I certify that the registration filed pursuant to this general permit is on complete and accurate forms as prescribed by the commissioner without alteration of their text. I certify that I have personally examined and am familiar with the information that provides the basis for this certification, including but not limited to all information described in Section 3(b)(8)(A) of such general permit, and I certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining such information, that the information upon which this certification is based is true, accurate and complete to the best of my knowledge and belief. I certify that I have made an affirmative determination in accordance with Section 3(b) (8) (B) of this general permit. I understand that the registration filed in connection with such general permit is submitted in accordance with and shall comply with the requirements of Section 22a-430b of Connecticut General Statutes, as amended by Public Act 12-172. I also understand that knowingly making any false statement made in the submitted information and in this certification may be punishable as a criminal offense, including the possibility of fine and imprisonment, under Section 53a-157b of the Connecticut General Statutes and any other applicable law."

### For Re-registrants:

"I hereby certify that I am making this certification in connection with a registration under the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, submitted to the commissioner by \_\_\_\_\_ JEFFERSON SOLAR LLC \_\_\_\_\_ for an activity located at \_\_\_\_\_ 111 Fisk Rd, Hampton, CT 06247 \_\_\_\_\_

and that all terms and conditions of the general permit are being met for all discharges which have been initiated and such activity is eligible for authorization under such permit. I further certify that all designs and plans for such activity meet the current terms and conditions of the general permit in accordance with Section 5(b)(5)(C) of such general permit and that a system is in place to ensure that all terms and conditions of this general permit will continue to be met for all discharges authorized by this general permit at the site. I verify that the registration filed pursuant to this general permit is on complete and accurate forms as prescribed by the commissioner without alteration of their text. I certify that I have personally examined and am familiar with the information that provides the basis for this certification, including but not limited to all information described in Section 3(b)(8)(A) of such general permit, and I certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining such information, that the information upon which this verification is based is true, accurate and complete to the best of my knowledge and belief. I also understand that knowingly making any false statement made in the submitted information and in this certification may be punishable as a criminal offense, including the possibility of fine and imprisonment, under Section 53a-157b of the Connecticut General Statutes and an other applicable law."

_____	_____
Signature of Registrant	
Steven Broyer	Sr. Project Manager
Name of Registrant (print or type)	Title (if applicable)
_____	
Signature of Preparer and Date (if different than above)	
Aaron Mlynek	Director Stormwater Compliance
Name of Preparer (print or type)	Title (if applicable)

**Part VIII: Professional Engineer (or Landscape Architect, where appropriate) Design Certification (for publically approvable and exempt projects)**

The following certification must be signed by a Professional Engineer, or Landscape Architect where appropriate.

<p>"I hereby certify that I am a _____ licensed in the State of Connecticut. I am making this certification in connection with a registration under such general permit, submitted to the commissioner by _____ JEFFERSON SOLAR LLC _____ for an activity located at _____ 111 Fisk Rd, Hampton, CT 06247 _____ I certify that I have thoroughly and completely reviewed the Stormwater Pollution Control Plan for the project or activity covered by this certification. I further certify, based on such review and on the standard of care for such projects, that the Stormwater Pollution Control Plan has been prepared in accordance with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, the Stormwater Quality Manual, as amended, and the conditions of the general permit, and that the controls required for such Plan are appropriate for the site. I further certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining such information, that the information upon which this certification is based is true, accurate and complete to the best of my knowledge and belief. I also understand that knowingly making any false statement in this certification may subject me to sanction by the Department and/or be punishable as a criminal offense, including the possibility of fine and imprisonment, under Section 53a-157b of the Connecticut General Statutes and any other applicable law."</p>	
<p>_____</p>	
<p>Signature of Design Professional and Date</p>	
<p>ELLEN BARTLETT</p>	<p>18346</p>
<p>Name of Professional (print or type)</p>	<p>License Number</p>
<p>Affix P.E./L.A Stamp Here</p>	

**Part IX: Reviewing Qualified Professional Certification**

The following certification must be signed by a) a Conservation District reviewer OR, b) a qualified soil erosion and sediment control and/ or professional engineer

☐ **Review Certification by Conservation District:**

1.) District: \_\_\_\_\_

Date of Affirmative Determination: \_\_\_\_\_

" I am making this certification in connection with a registration under General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, submitted to the commissioner by \_\_\_\_\_ for an activity located at \_\_\_\_\_.

I have personally examined and am familiar with the information that provides the basis for this certification, and I affirm, based on the review described in Section 3(b)(11)(C) of this general permit and on the standard of care for such projects, that the Stormwater Pollution Control Plan is adequate to assure that the activity authorized under this general permit will comply with the terms and conditions of such general permit and that all stormwater management systems: (i) have been designed to control pollution to the maximum extent achievable using measures that are technologically available and economically practicable and that conform to those in the Guidelines and the Stormwater Quality Manual; (ii) will function properly as designed; (iii) are adequate to ensure compliance with the terms and conditions of this general permit; and (iv) will protect the waters of the state from pollution."

\_\_\_\_\_  
Signature of District Professional and Date

\_\_\_\_\_  
Name of District Professional

\_\_\_\_\_  
License Number (if applicable)

**Or**

☐ **Review Certification by Qualified Professional:**

Company Name: \_\_\_\_\_

Name: \_\_\_\_\_

License #: \_\_\_\_\_

**Level of independency of professional:**

**Required for all projects disturbing over 1 acre:**

1. I verify I am not an employee of the registrant. ☐ Yes

2. I verify I have no ownership interest of any kind in the project for which the registration is being submitted. ☐ Yes

**Required for projects with 15 or more acres of site disturbance (in addition to questions 1&2):**

3. I verify I did not engage in any activities associated with the preparation, planning, designing or engineering of the soil erosion and sediment control plan or stormwater management systems plan for this registrant. ☐ Yes

4. I verify I am not under the same employ as any person associated with the preparation, planning, designing or engineering of the soil erosion and sediment control plan or stormwater management systems plan for this registrant. ☐ Yes

**Part IX: Reviewing Qualified Professional Certification (continued)**

"I hereby certify that I am a qualified professional engineer or qualified soil erosion and sediment control professional, or both, as defined in the General Permit for Discharge of Stormwater and Dewatering Wastewaters from Construction Activities and as further specified in Sections 3(b)(11)(A) and (B) of such general permit. I am making this certification in connection with a registration under such general permit, submitted to the commissioner by \_\_\_\_\_ for an activity located at \_\_\_\_\_.

I have personally examined and am familiar with the information that provides the basis for this certification, including but not limited to all information described in Section 3(b)(11)(C) of such general permit, and I certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining such information, that the information upon which this certification is based is true, accurate and complete to the best of my knowledge and belief. I certify, based on my review of all information described in Section 3(b)(11)(C) of such general permit and on the standard of care for such projects, that I have made an affirmative determination in accordance with Sections 3(b)(11)(D)(i) and (ii) of this general permit. I understand that this certification is part of a registration submitted in accordance with Section 22a-430b of Connecticut General Statutes, as amended by Public Act 12-172, and is subject to the requirements and responsibilities for a qualified professional in such statute. I also understand that knowingly making any false statement in this certification may be punishable as a criminal offense, including the possibility of fine and imprisonment, under Section 53a-157b of the Connecticut General Statutes and any other applicable law."

\_\_\_\_\_  
Signature of Reviewing Qualified Professional

\_\_\_\_\_  
Name of Reviewing Qualified Professional

\_\_\_\_\_  
License No.

Affix P.E./ L.A. Stamp Here

Note: Please submit the fee along with a completed, printed and signed Registration Form and all additional supporting documents to:

**CENTRAL PERMIT PROCESSING UNIT  
DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION  
79 ELM STREET  
HARTFORD, CT 06106-5127**



Exhibit C  
Interconnection  
Agreements

## STANDARD FAST TRACK AND STUDY PROCESS GENERATOR INTERCONNECTION AGREEMENT

This Interconnection Agreement (this "**Agreement**"), dated as of **September 24, 2019** (the "**Effective Date**"), is entered into by and between The Connecticut Light and Power d/b/a Eversource Energy, a specially chartered Connecticut corporation with a principal place of business at 107 Selden St, Berlin, CT, 06037 (the "**Electric Distribution Company**" or "**EDC**"), and **Allco Renewable Energy Limited**, with a place of business at c/o Allco Renewable Energy Limited, 1740 Broadway, 15th Floor, New York, NY 10019 (the "**Generator**"). The EDC and the Generator are collectively referred to herein as the "**Parties**" and individually as a "**Party**." Any capitalized term used but not defined in this Agreement shall have the meaning ascribed to such term in the Guidelines for Generator Interconnection attached hereto as Appendix A, as may be amended from time to time (the "**Guidelines**").

1. Basic Understandings. The Generator owns and/or operates or plans to construct the **Dickinson Solar Generating Facility** at **367 Hartford Turnpike, Hampton, CT 06247**, as depicted in Appendix H (the "**Facility**"). A description of the Facility as studied, and incorporating any design changes approved in accordance with Section 1.3, is attached hereto as Appendix B (the "**Facility Description**").

1.1. The subject matter of this Agreement pertains to the Interconnection of the Facility to the EPS. This Agreement does not relate to any other obligation of the Generator unrelated to the Interconnection of the Facility. Apart from this Agreement, the Generator is responsible for (a) all arrangements to effect any deliveries of electric energy from the Facility in accordance with the appropriate retail or FERC-jurisdictional tariffs and (b) arranging for its purchase of retail power (such as back-up or stand-by power).

1.2. This Agreement does not cover sales of power, capacity, energy or market products generated from the Facility. If the Generator intends to sell energy or ancillary services from the Facility, it must provide written notice to the EDC of such intention at least sixty (60) days prior to the effectuation of such sale. Furthermore, the EDC may require the Generator to enter into a new Interconnection agreement prior to such sale which may or may not require approval from FERC.

1.3. Any changes to the design of the Facility as it is described and specified in the application submitted by the Generator to the EDC with respect to such Facility (the "**Application**") must be approved by the EDC in writing prior to the implementation of such design changes. Only design changes approved in accordance with this Section 1.3 shall be implemented.

1.4. The Generator may not operate the Facility in parallel with the EPS until: (a) the conditions for initial parallel operation of the Facility set forth in Appendix C have been met; (b) commissioning and testing of the Facility has been completed in accordance with the Guidelines and to the satisfaction of the EDC; (c) the Generator has paid the EDC all funds due pursuant to paragraphs 5.3.1 and 5.3.2 of this Agreement; and (d) the EDC has provided formal written authorization in accordance with the Guidelines stating that operation of the Facility in parallel with the EPS is authorized by the EDC (the "**Authorization Date**"). Such written authorization will not be effective unless accompanied by a description of the Facility that incorporates all design changes to the Facility since the Application was submitted to the EDC (and not specified therein), including all design changes made during construction.

1.5. The Generator shall obtain each consent, approval, authorization, order or acceptance from FERC necessary for the Generator or any entity that, directly or indirectly, through one or

more intermediaries, controls, or is controlled by, or is under common control with the Generator (each, an "**Affiliate**") to sell any power, capacity, energy or market products from the Facility into the wholesale power market (collectively, "**Wholesale Sales**") prior to making any such sales. If the Generator intends to make Wholesale Sales, then the Generator shall provide written notice to the EDC at least sixty (60) days prior to making any Wholesale Sales. The Generator shall indemnify, defend and hold harmless the EDC, its trustees, directors, officers, employees, agents and affiliates from any costs, damages, fines or penalties, including reasonable attorneys' fees, directly resulting from Generator's or its Affiliate's non-compliance with any provision of this Section 1.5; provided, however, that the such indemnification obligation shall be subject to the limitation of liability set forth in Section 14.

## 2. Entire Agreement.

2.1. This Agreement, including any attachments or appendices, is entered into pursuant to the Guidelines.

2.2. This Agreement, the Guidelines, and the relevant EDC Tariffs, Terms and Conditions represent the entire understanding between the Parties as to the subject matter of this Agreement.

2.3. Each Party hereby represents that in entering into this Agreement, it has not relied on any promise, inducement, representation, warranty, agreement or other statement not set forth in this Agreement, the Tariffs, Terms and Conditions, or the Guidelines.

2.4. In the event of a conflict between this Agreement, the Guidelines and/or the Tariffs, Terms and Conditions, the Tariffs, shall take first precedent, followed by the Terms and Conditions, followed by the Guidelines, and lastly this Agreement.

## 3. Term.

3.1. This Agreement is effective as of the Effective Date. The Agreement shall continue in full force and effect until terminated pursuant to Section 4.

## 4. Termination.

4.1. This Agreement may be terminated under the following conditions:

4.1.1. The Parties may mutually terminate this Agreement at any time upon the execution of an agreement to terminate this Agreement.

4.1.2. The Generator may terminate this Agreement at any time by providing sixty (60) days written notice to EDC.

4.1.3. Either Party may terminate this Agreement immediately upon the occurrence of an Event of Default (as such term is defined in Section 20.1) by the other Party, subject to the notice requirement set forth in Section 20.2(c).

4.1.4. The EDC may terminate this Agreement if the Generator: (a) operates the Facility in parallel with the EPS prior to the Authorization Date; (b) fails within six months of testing to receive authorization from the EDC to operate in parallel with the EPS; (c) does not construct the Facility in accordance with the Facility Description; (d) modifies the Facility without the written approval of the EDC; (e) fails to energize the Facility within

twelve months of the Authorization Date; or (f) permanently abandons the Facility. For the purposes of this Agreement, the Generator's failure to operate the Facility for any consecutive twelve-month period after the Authorization Date shall be deemed a permanent abandonment.

4.1.5. The EDC may terminate this Agreement if the Generator fails to correct an Emergency Condition (as such term is defined in Section 7.1.1) or a Non-Emergency Adverse Operating Effect (as such term is defined in Section 7.1.4) within ninety (90) days from the date on which the EDC disconnected the Facility due to such event.

4.2. Survival of Obligations. The termination of this Agreement shall not relieve either Party of its liabilities and obligations, owed or continuing at the time of termination.

4.3. Related Agreements. Any agreement attached to and incorporated into this Agreement shall terminate concurrently with this Agreement unless the Parties have agreed otherwise in writing.

## 5. General Payment Terms.

5.1. Interconnection Costs. The Generator is responsible for paying all costs associated with Interconnection of the Facility, including (a) testing costs, (b) costs associated with installing, testing and maintaining the communications infrastructure necessary to provide protection and/or monitoring of the Generating Facility (collectively, the "**Communications Costs**"), (c) construction, modification or upgrade costs necessary to accommodate the Interconnection (collectively, the "**Construction Costs**"), and (d) any ongoing maintenance costs and other charges deemed necessary by the EDC to maintain the Interconnection (all such costs described in this sentence, the "**Interconnection Costs**"). The EDC shall notify the Generator in the event the Construction Costs exceed 110% of the estimate of such costs provided by the EDC to the Generator in the Construction Agreement (as such term is defined below), facility study report or other written understanding of the Parties.

5.2. Initial Cost Estimate. Attached hereto as Appendix D is a good-faith estimate of the initial Interconnection Costs (the "**Initial Cost Estimate**").

5.3. Billing and Payment Procedures for Initial Interconnection Costs.

5.3.1. The Generator shall pay the EDC the amount set forth in the Initial Cost Estimate (the "**Initial Payment**") within thirty (30) days of the Effective Date.

5.3.2. Within thirty (30) days following the date on which the Facility is first connected to the EPS (the "**Initial Interconnection**"), the EDC shall provide the Generator with a final accounting report detailing any Underpayment (as such term is defined below) or Overpayment (as such term is defined below) made by the Generator with respect to the Initial Payment. To the extent that the actual Interconnection Costs accrued up to the date of the Initial Interconnection exceed the Initial Payment (an "**Underpayment**"), the EDC shall invoice the Generator for an amount equal to the Underpayment and the Generator shall pay such amount to the EDC within thirty (30) days of such invoice. To the extent that the Initial Payment exceeds the actual Interconnection Costs accrued up to the date of the Initial Interconnection (an "**Overpayment**"), the EDC shall refund to the Generator an amount equal to the Overpayment within thirty (30) days of the provision of such final accounting report.

5.4. Billing and Payment Procedures for Ongoing Interconnection Costs. All Interconnection Costs incurred following the Initial Interconnection shall hereinafter be referred to as the "**Ongoing Costs**," and shall include maintenance, testing and Communications Costs, as well as any Construction Costs not included in either (a) the Construction Agreement by and between the Generator and the Company, dated as of [N/A a copy of which is attached hereto as Appendix F Attachment III or (b) the Initial Cost Estimate. The EDC shall invoice the Generator for all Ongoing Costs as such costs are incurred, and the Generator shall pay each such invoice within thirty (30) days of receipt, or as otherwise agreed to by the Parties.

5.5. Milestones. The Parties shall agree on milestones for which each Party is responsible and list them in Appendix F of this Agreement. A Party's obligations under this provision may be extended by agreement. If a Party anticipates that it will be unable to meet a milestone for any reason other than a Force Majeure Event (as such term is defined in Section 18.1), it shall immediately notify the other Party of the reason(s) for not meeting the milestone and (a) propose the earliest reasonable alternate date by which it can attain this and future milestones, and (b) requesting appropriate amendments to Appendix F. The Party affected by the failure to meet a milestone shall not unreasonably withhold agreement to such an amendment unless (i) it will suffer significant uncompensated economic or operational harm from the delay, (ii) attainment of the same milestone has previously been delayed, or (iii) it has reason to believe that the delay in meeting the milestone is intentional or unwarranted notwithstanding the circumstances explained by the Party proposing the amendment.

5.6. Distribution Upgrades. The EDC shall design, procure, construct, install, and own the upgrades described in Appendix G of this Agreement (the "**Upgrades**"). If the EDC and the Generator agree, the Generator may construct Upgrades that are located on land owned by the Generator. The actual cost of the Upgrades, including overheads, shall be directly assigned to the Generator. The Generator shall be responsible for its share of all reasonable expenses, associated with operating, maintaining, repairing, and replacing such Upgrades, except to the extent that a retail tariff of, or an agreement with, the EDC provides otherwise.

5.7. Taxes. The Parties shall comply with all applicable federal and state tax laws.

6. Operating Requirements.

6.1. General Operating Requirements. The Generator shall construct, interconnect, operate, and maintain the Facility and all accompanying and necessary facilities in accordance with (a) all applicable laws and requirements, Good Utility Practice, the Guidelines, Tariffs, and the Terms and Conditions; (b) applicable specifications that meet or exceed those provided by the National Electrical Safety Code, the American National Standards Institute, IEEE, Underwriter's Laboratory and ISO-NE operating requirements in effect at the time of construction and other applicable national and state codes and standards. Following the initial Interconnection of the Facility, the Generator shall comply with all special operating requirements set forth in Appendix C. In the event that the EDC believes that the cause of any problem to the EPS originates from the Facility, the EDC has the right to install monitoring equipment at a mutually agreed upon location to determine the exact cause of the problem. The cost of such monitoring equipment shall be borne by the EDC, unless such problem or problems are demonstrated to be caused by the Facility or if the test was performed at the request of the Generator in which case the costs of the monitoring equipment shall be borne by the Generator. If the operation of the Facility interferes with the EDC's or its customers' operations, the Generator must immediately take corrective action to stop such interference and shall not operate the Facility until such time as such

interference is stopped. If the Generator fails to take immediate corrective action pursuant to the preceding sentence, then the EDC may disconnect the Facility as set forth in the Guidelines.

6.2. No Adverse Effects; Non-interference.

6.2.1. The EDC shall notify the Generator if the EDC has evidence that the operation of the Facility could cause disruption or deterioration of service to other customers served from the EPS or if operation of the Facility could cause damage to the EPS or other affected systems. (For example, deterioration of service could be caused by, among other things, harmonic injection in excess of IEEE STD 519, as well as voltage fluctuations caused by large step changes in loading at the Facility.) The Generator shall cease operation of the Facility until such time as the Facility can operate without causing disruption or deterioration of service to other customers served from the EPS or causing damage to the EPS or other affected systems. Each Party shall promptly notify the other Party in writing of any condition or occurrence relating to such Party's equipment or facilities which, in such Party's reasonable judgment, could adversely affect the operation of the other Party's equipment or facilities.

6.2.2. The EDC shall operate the EPS in such a manner so as to not unreasonably interfere with the operation of the Facility. The Generator shall protect itself from normal disturbances propagating through the EPS in accordance with Good Utility Practice. Examples of such disturbances include single-phasing events, voltage sags from remote faults on the EPS, and outages on the EPS.

6.3. Safe Operations and Maintenance.

6.3.1. General. The Generator shall operate, maintain, repair, and inspect, and shall be fully responsible for, the Facility or facilities that it now or hereafter may own unless otherwise specified in this Agreement. Each Party shall be responsible for the maintenance, repair and condition of its respective lines and appurtenances on such Party's respective side of the Point of Interconnection. The EDC and the Generator shall each provide equipment on its respective side of the Point of Interconnection that adequately protects the EPS, personnel, and other persons from damage and injury. If the EDC has constructed or owns facilities that are identified at the time of Interconnection as specifically required by or as a result of such Interconnection, then the Generator shall reimburse the EDC for the costs of maintaining and repairing such facilities.

6.3.2. Ongoing Maintenance; Testing of the Facility. The Parties hereby acknowledge and agree that maintenance testing of the Facility's protective relaying is imperative for safe, reliable operation of the Facility. The test cycle for such protective relaying shall not be less frequent than once every sixty (60) calendar months or the manufacturer's recommended test cycle, whichever is more frequent. The Generator shall provide copies of these test records to the EDC within thirty (30) days of the completion of such maintenance testing. The EDC may disconnect the Facility from the EPS if the Generator fails to adhere to this Section 6.3.2. The Generator is responsible for all ongoing maintenance costs associated with the Facility.

6.4. Access.

6.4.1. Emergency Contact Information. Each Party shall provide to the other Party and

shall update as necessary a telephone number that can be used at all times to allow the other Party to report an emergency.

6.4.2. EDC Right to Access EDC-Owned Facilities and Equipment. The Generator shall allow the EDC access to the EDC's equipment and the EDC's facilities located on the Facility's premises (the "**EDC Property**"). To the extent that the Generator does not own all or part of the real property on which the EDC is required to locate EDC Property in order to serve the Facility, the Generator shall procure and provide to the EDC all necessary rights, including easements, for access to the EDC Property.

6.4.3. Isolation Device. The EDC shall have access to the Isolation Device of the Facility at all times. Generator is responsible for obtaining any and all property rights, including easements, which will permit the EDC access to such Isolation Device.

6.4.4. Right to Review Information. The EDC shall have the right to review and obtain copies of the Generator's operations and maintenance records, logs, or other information such as unit availability, maintenance outages, circuit breaker operation requiring manual reset, relay targets and unusual events pertaining to the Facility or its Interconnection with the EPS. The EDC shall treat such information as confidential and shall use such information solely for the purposes of determining compliance with the operating requirements set forth in this Section 6.

## 7. Disconnection.

### 7.1 Temporary Disconnection.

7.1.1 Emergency Conditions. The EDC may immediately and temporarily disconnect the Facility from the EPS without prior notification in cases where, in the reasonable judgment of the EDC, the continued connection of the Facility is imminently likely to (a) endanger persons or damage property or (b) cause an adverse effect on the integrity or security of, or damage to, the EPS or to other electric power systems to which the EPS is directly connected (each, an "**Emergency Condition**"). Upon becoming aware of an Emergency Condition, the Generator shall (i) immediately suspend operation of the Facility and (ii) promptly provide written notice to the EDC of such Emergency Condition and suspension (an "**Emergency Condition Notice**"). The Emergency Condition Notice shall describe (A) such Emergency Condition, (B) the extent of any damage or deficiency, (C) the expected effect on the operation of each Party's facilities and operations, (D) the anticipated duration of such Emergency Condition and (E) the necessary corrective action. After temporary disconnection or suspension pursuant to this Section 7.1.1, the Facility may not be reconnected or resume operation until the EDC and Generator are both satisfied that the cause of such Emergency Condition has been corrected. If the Generator fails to correct the Emergency Condition within ninety (90) days from the time that the EDC has temporarily disconnected the Facility due to such an event, the EDC may elect to terminate this Agreement in accordance with Section 4.1.5 and/or permanently disconnect the Facility in accordance with Section 7.2.2.

7.1.2 Routine Maintenance, Construction and Repair. The EDC shall have the right to disconnect the Facility from the EPS when necessary for routine maintenance, construction and repairs to the EPS. The EDC shall provide the Generator with a

minimum of seven (7) days prior written notice of such disconnection, consistent with the EDC's planned outage notification protocols. If the Generator requests disconnection by the EDC at the Point of Common Interconnection, the Generator will provide a minimum of seven (7) days prior written notice to the EDC. The EDC shall make reasonable efforts to work with Generator to schedule a mutually convenient time or times to temporarily disconnect the Facility pursuant to this Section 7.1.2.

7.1.3 Forced Outages. During any forced outage, the EDC shall have the right to temporarily disconnect the Facility from the EPS in order to effect immediate repairs to the EPS. The EDC shall use reasonable efforts to provide the Generator with prior notice of such temporarily disconnection; provided, however, the EDC may temporarily disconnect the Facility from the EPS without such notice pursuant to this Section 7.1.2 in the event circumstances do not permit such prior notice to the Generator.

7.1.4 Non-Emergency Adverse Operating Effects. The EDC may temporarily disconnect the Facility if it is having a non-emergency adverse operating effect on the EPS or on other customers (a "**Non-Emergency Adverse Operating Effect**") if the Generator fails to correct such Non-Emergency Adverse Operating Effect within forty-five (45) days of the EDC's written notice to the Generator requesting correction of such Non-Emergency Adverse Operating Effect. If the Generator fails to correct a Non-Emergency Adverse Operating Effect within ninety (90) days from the time that the EDC has temporarily disconnected the Facility due to such an event, the EDC may elect to terminate this Agreement in accordance with Section 4.1.5 and/or permanently disconnect the Facility in accordance with Section 7.2.2.

7.1.5 Modification of the Facility. The EDC has the right to immediately suspend Interconnection service and temporarily disconnect the Facility in the event any material modification to the Facility or the Generator's Interconnection facilities has been implemented without prior written authorization from the EDC.

7.1.6 Re-connection. Any temporary disconnection pursuant this Section 7.1 shall continue only for so long as is reasonably necessary. The Generator and the EDC shall cooperate with each other to restore the Facility and the EPS, respectively, to their normal operating states as soon as reasonably practicable following the correction of the event that led to the temporary disconnection.

## 7.2 Permanent Disconnection.

7.2.1 The Generator may permanently disconnect the Facility at any time upon thirty (30) days prior written notice to the EDC.

7.2.2 The EDC may permanently disconnect the Facility upon termination of this Agreement in accordance with Section 4.

7.2.3 The EDC may permanently disconnect the Facility in the event the Generator is unable to correct an Emergency Condition or a Non-Emergency Adverse Operating Effect in accordance with Section 7.1.1 or Section 7.1.4, respectively.

## 8. Metering.



8.1. Metering of the output from the Facility shall be conducted pursuant to the terms of the Guidelines.

9. Assignments.

9.1 Except as provided herein, the Generator shall not voluntarily assign its rights or obligations, in whole or in part, under this Agreement without the EDC's prior written consent, which consent shall not be unreasonably withheld or delayed. Any assignment the Generator purports to make without the EDC's prior written consent shall not be valid. Notwithstanding the foregoing, the EDC's consent shall not be required for any assignment made by the Generator to an Affiliate with an equal or greater credit rating and with the legal authority and operational ability to satisfy the obligations of the Generator under this Agreement; provided that that Generator promptly notifies the EDC of any such assignment. In all events, the Generator shall not be relieved of its obligations under this Agreement unless, and until, the permitted assignee assumes in writing all obligations of this Agreement and notifies the EDC of such assumption.

10. Confidentiality.

10.1 The EDC shall maintain the confidentiality of information provided from the Generator to the EDC if such information is clearly marked and labeled "Confidential" (the "**Confidential Information**"). Confidential Information shall not include information that (a) is or hereafter becomes part of the public domain, (b) previously was in the possession of the EDC, or (c) the EDC is required to disclose pursuant to a valid order of a court or other governmental body or any political subdivision thereof; provided, however, that to the extent that it may lawfully do so, the EDC shall first have given notice to the Generator and given the Generator a reasonable opportunity to interpose an objection or obtain a protective order requiring that the Confidential Information and/or documents so disclosed be used only for the purpose for which the order was issued; provided further that if such Confidential Information is requested or required by the PURA, the EDC shall seek protective treatment of such Confidential Information.

11. Insurance Requirements.

11.1 General Liability. In connection with the Generator's performance of its duties and obligations under this Agreement, the Generator shall maintain, during the term of this Agreement, general liability insurance with a combined single limit of not less than:

11.1.1 Three hundred thousand dollars (\$300,000) per occurrence and in the aggregate for bodily injury and/or property damage claims where the gross nameplate rating of the Facility is less than or equal to an aggregate of 100 kW;

11.1.2 One million dollars (\$1,000,000) per occurrence and in the aggregate for bodily injury and/or property damage claims where the gross nameplate rating of the Facility is greater than 100 kW and less than or equal to an aggregate of 1MW;

11.1.3 Two million dollars (\$2,000,000) per occurrence and in the aggregate for bodily injury and/or property damage claims where the gross nameplate rating of the Facility is greater than 1MW and less than or equal to an aggregate of 5MW; or

11.1.4 Five million dollars (\$5,000,000) per occurrence and in the aggregate for bodily injury and/or property damage claims where the gross nameplate rating of the Facility is greater than 5MW and less than or equal to an aggregate of 20MW.

11.2 Insurer Requirements and Endorsements. All insurance required pursuant to this Section 11 shall be carried by insurers qualified to underwrite insurance in Connecticut with an A.M. Best rating of A- or better. In addition, all insurance shall: (a) include the EDC as an additional insured for Generating facilities greater than 1MW; (b) contain a severability of interest clause or cross-liability clause unless the Generator is a residential customer; (c) provide that the EDC shall not be liable to the insurance carrier with respect to the payment of premium for such insurance; and (d) provide for written notice to the EDC thirty (30) days prior to cancellation, termination, or material change of such insurance.

11.3 Evidence of Insurance.

11.3.1 Evidence of the insurance required pursuant to this Section 11 shall state that the coverage provided is primary, and is not excess of or contributing with any insurance or self-insurance maintained by the EDC.

11.3.2 The Generator is responsible for providing the EDC with evidence of insurance on an annual basis as set forth in the Guidelines.

11.3.3 Prior to the EDC commencing any work on system modifications, the Generator shall have its insurer provide to the EDC certificates of insurance evidencing the insurance coverage required pursuant to this Section 11. Such certificates shall clearly indicate whether such insurance policy is written on a "claims-made" basis.

11.3.4 The EDC may, at its discretion, require the Generator to maintain tail coverage with respect to any policy written on a "claims-made" basis for a period of three years after expiration or termination of such policy.

11.3.5 All insurance certificates, statements of self insurance, endorsements, cancellations, terminations, alterations, and material changes of such insurance shall be issued and submitted to the appropriate EDC Facilitator.

12. Performance Assurance.

12.1 If the EDC reasonably expects that any Interconnection Costs necessary to accommodate the Facility will be in excess of fifty thousand dollars (\$50,000) in the aggregate in any calendar year, the EDC may require that the Generator provide to the EDC a guarantee, a surety bond, letter of credit or other form of security that is reasonably acceptable to the EDC at least twenty (20) Business Days prior to the commencement of the related work. Such security for payment shall be in an amount sufficient to cover such Interconnection Costs. In addition:

12.1.1. Any guarantee provided by the Generator pursuant to this Section 12 shall be made by an entity that meets the creditworthiness requirements of the EDC, and contain terms and conditions that guarantee payment of any amount that may be due from the Generator, up to an agreed-to maximum amount; and

12.1.2. Any letter of credit or surety bond provided by the Generator pursuant to this Section 12.1.2 shall be issued by a financial institution or insurer reasonably acceptable to the EDC and must specify an expiration date reasonably acceptable to the EDC.

13. Indemnification.

13.1 Indemnification of the EDC. Subject to the limitation of liability set forth in Section 14, the Generator shall indemnify, defend and hold harmless the EDC and its trustees, directors, officers, employees and agents (including affiliates, contractors and their employees) from and against any liability, damage, loss, claim, demand, complaint, suit, proceeding, action, audit, investigation, obligation, cost, judgment, adjudication, arbitration decision, penalty (including fees and fines), or expense (including court costs and attorneys' fees) relating to, arising from or connected to this Agreement.

13.2 Indemnification of the Generator. Subject to the limitation of liability set forth in Section 14, the EDC agrees to indemnify, defend and hold harmless the Generator, its trustees, directors, officers, employees and agents (including Affiliates, contractors and their employees), from and against any and all damages for personal injury (including death) or property damage to unaffiliated third parties arising from any and all actions relating to or arising out of any material failure by the EDC to perform any of its obligations pursuant to Section 6.2.2 of this Agreement.

13.3 Survival of Indemnification. The indemnification obligations of each Party set forth in this Section 13 shall continue in full force and effect regardless of whether this Agreement has expired or been terminated, defaulted or cancelled and shall not be limited in any way by any limitation on insurance.

14. Limitation of Liability.

14.1 Except with respect to a Party's fraud or willful misconduct, and except with respect to damages sought by a third party in connection with a third party claim: (a) neither Party shall be liable to the other Party, for any damages other than direct damages; and (b) each Party agrees that it is not entitled to recover and agrees to waive any claim with respect to, and will not seek, consequential, punitive or any other special damages as to any matter under, relating to, arising from or connected to this Agreement.

15. Amendments and Modifications.

15.1 No amendment or modification of this Agreement shall be binding unless in writing and duly executed by both Parties.

16. Permits and Approvals.

16.1 The Generator is responsible for obtaining all environmental and other permits required by governmental authorities for the construction and operation of the Facility (each, a "**Required Permit**"). The EDC assumes no responsibility for obtaining any Required Permit, advising the Generator with respect to Required Permits, or assuring that all Required Permits have been obtained by the Generator. Upon written request of the EDC, the Generator shall promptly provide to the EDC a copy of any Required Permit.

17. Environmental Releases.

17.1 Each Party shall immediately notify the other Party, first orally and then in writing, of any of the following events related to the Facility upon becoming aware of such event: (a) the release of any hazardous substances; (b) any asbestos or lead abatement activities; or (c) any type of remediation activities. The Party having the responsibility for reporting such an event to appropriate governmental authorities shall promptly furnish to the other Party copies of any publicly available reports filed with such authorities.

18. Force Majeure.

18.1 For purposes of this Agreement, "**Force Majeure Event**" means any event or circumstance that (a) is beyond the reasonable control of the affected Party and (b) the affected Party is unable to prevent or provide against by exercising commercially reasonable efforts. Force Majeure Events include the following events or circumstances, but only to the extent they satisfy the foregoing requirements: (i) acts of war or terrorism, public disorder, insurrection, or rebellion; (ii) floods, hurricanes, earthquakes, lighting, storms, and other natural calamities; (iii) explosions or fire; (iv) strikes, work stoppages, or labor disputes; (v) embargoes; and (vi) sabotage. In no event shall the lack of funds or the inability to obtain funds constitute a Force Majeure Event.

18.2 If a Force Majeure Event prevents a Party from fulfilling any obligations under this Agreement, such Party will promptly notify the other Party in writing, and will keep the other Party informed on a continuing basis of the scope and duration of the Force Majeure Event. The affected Party shall specify in reasonable detail the circumstances of the Force Majeure Event, its expected duration, and the steps that the affected Party is taking to mitigate the effects of the event on its performance. The affected Party may suspend or modify its performance of obligations under this Agreement, other than the obligation to make payments then due or becoming due under this Agreement, but only to the extent that the effect of the Force Majeure Event cannot be mitigated by the use of commercially reasonable efforts. The affected Party shall use commercially reasonable efforts to resume its performance as soon as possible. Without limiting this section, the Generator shall immediately notify the EDC verbally if the failure to fulfill the Generator's obligations under this Agreement may impact the safety or reliability of the EPS.

19. Notices.

19.1 All notices, demands and other communications to be given or delivered under or by reason of the provisions of this Agreement shall be in writing and shall be deemed to have been given: (a) immediately when personally delivered; (b) when received by first class mail, return receipt requested; (c) one day after being sent for overnight delivery by Federal Express or other overnight delivery service; or (d) when receipt is acknowledged, either electronically or otherwise, if sent by facsimile, telecopy or other electronic transmission device. Notices, demands and communications to the other Parties shall, unless another address is specified by such Parties in writing, be sent to the addresses indicated below:

If to the EDC:

**The Connecticut Light and Power Company d/b/a Eversource Energy**  
107 Selden Street, Berlin, CT 06037  
Attention: Supervisor, Distributed Resources  
Phone: 866-324-2437

If to the Generator:

**Allco Renewable Energy Limited**

1740 Broadway, 15<sup>th</sup> Floor, New York, NY 10019

Attention: Thomas M. Melone

Phone: 212-681-1120

And via email to: Thomas.Melone@gmail.com.

19.2 Each Party may designate operating representatives to conduct daily communications between the Parties, which may be necessary or convenient for the administration of this Agreement. The names, addresses, and phone numbers of each Party's representatives shall be provided in writing by such Party to the other Party.

20. Default and Remedies.

20.1 Defaults. Each of the following shall constitute an "***Event of Default***,"

20.1.1. A Party fails to pay any bill or invoice for charges incurred pursuant to this Agreement or any other amount due from such Party to the other Party as and when due, any such failure shall continue for a period of thirty (30) days after written notice of nonpayment from the affected Party to the defaulting Party; provided, however, if such Party disputes such bill, invoice or other amount due in good faith, then such failure to pay shall not constitute an Event of Default and the Parties shall resolve such dispute in accordance with Section 21;

20.1.2. A Party (a) fails to comply with any other provision of this Agreement or breaches any representation or warranty in any material respect and (b) fails to cure or remedy such failure or breach within sixty (60) days after notice and written demand by the other Party to cure the same or such longer period reasonably required to cure the same (not to exceed an additional ninety (90) days unless otherwise mutually agreed upon, provided that the failing or breaching Party diligently continues to cure until such failure or breach is fully cured). This provision pertains only to cure periods not specifically addressed elsewhere in this Agreement;

20.1.3. A Generator modifies the Facility or any part of the Interconnection without the prior written approval of the EDC; or

20.1.4. A Party fails to perform any obligation hereunder in accordance with (a) applicable laws and regulations, (b) the ISO-NE operating documents, procedures, and reliability standards, and (c) Good Utility Practice.

20.2 Remedies. Upon the occurrence of an Event of Default, the non-defaulting Party may, at its option, in addition to any remedies available under any other provision herein, do any, or any combination, as appropriate, of the following: (a) continue to perform and enforce this Agreement; (b) recover damages from the defaulting Party except as limited by this Agreement; (c) by written notice to the defaulting Party terminate this Agreement; or (d) pursue any other remedies it may have under this Agreement or under applicable law or in equity.

21. Dispute Resolution Procedures.

- 21.1 Each Party shall agree to attempt to resolve all disputes promptly, equitably and in good faith. If the Parties are unable to informally resolve any dispute, the Parties shall follow the dispute resolution process set forth in the Guidelines.

22. Subcontractors.

- 22.1 Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement; provided, however, that the hiring Party shall require such subcontractor to comply with all applicable terms and conditions of this Agreement in providing such subcontracting services and the hiring Party shall remain primarily liable to the other Party for the performance of such subcontractor.
- 22.2 The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor hired by the hiring Party to perform its obligations under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.
- 22.3 The obligations under this Section 22 will not be limited in any way by any limitation of subcontractor's insurance.

23. Miscellaneous.

- 23.1 Governing Law. This Agreement and the legal relations between the Parties will be governed by and construed in accordance with the laws of the State of Connecticut applicable to contracts made and performed in such State and without regard to conflicts of law doctrines.
- 23.2 Non-waiver. No failure on the part of any Party to exercise or delay in exercising any right hereunder shall be deemed a waiver thereof, nor shall any single or partial exercise of any right hereunder preclude any further or other exercise of such or any other right.
- 23.3 No Third Party Beneficiaries. This Agreement is made solely for the benefit of the Parties. Nothing in the Agreement shall be construed to create any rights in or duty to, or standard of care with respect to, or any liability to, any person not a party to or otherwise bound by this Agreement.
- 23.4 Severability. If any provision of this Agreement is held to be unenforceable for any reason, such provision shall be adjusted rather than voided, if possible, to achieve the intent of the Parties. If no such adjustment is possible, such provision shall be fully severable and severed, and all other provisions of this Agreement will be deemed valid and enforceable to the extent possible.
- 23.5 No Partnership. Nothing in this Agreement shall constitute or be construed to be or create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. No Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Parties.

- 23.6 **Headings.** All headings in this Agreement are included solely for convenient reference, are not intended to be full and accurate descriptions of the contents of this Agreement, will not be deemed a part of this Agreement, and will not affect the meaning or interpretation of this Agreement.
- 23.7 **Changes in State Regulations or Law.** Upon thirty (30) days prior written notice, EDC may terminate this Agreement if there are any changes in PURA regulations or Connecticut law that affects the EDC's ability to perform its obligations under this Agreement.
- 23.8 **General Rules of Construction.** For all purposes of this Agreement: (a) all terms defined herein or in the Guidelines shall have the meanings assigned to them herein or in the Guidelines, as the case may be, and shall include the plural as well as the singular; (b) all references in this Agreement to designated "Sections" and other subdivisions are to the designated Sections and other subdivisions of the body of this Agreement; (c) pronouns of either gender or neuter will include, as appropriate, the other pronoun forms; (d) the words "herein," "hereof" and "hereunder" and other words of similar import refer to this Agreement as a whole and not to any particular Section or other subdivision; (e) "or" is not exclusive; (f) "including" and "includes" will be deemed to be followed by "but not limited to" and "but is not limited to," respectively; (g) any definition of or reference to any law, agreement, instrument or other document herein will be construed as referring to such law, agreement, instrument or other document as from time to time amended, supplemented or otherwise modified; (h) any definition of or reference to any law or statute will be construed as referring also to any rules and regulations promulgated thereunder; and (i) as used herein, "days" shall mean "calendar days."
- 23.9 **Counterparts.** This Agreement may be executed in counterparts, each of which shall be deemed an original, and all counterparts so executed shall constitute one agreement binding on all of the Parties hereto, notwithstanding that all of the Parties are not signatories to the same counterpart. Facsimile counterparts may be delivered by any Party, with the intention that they shall have the same effect as an original counterpart hereof.
- 23.10 **Signatures.** Each Party hereby signifies its agreement to the all of the terms of this Agreement by its signatures hereto. Each Party represents that it has carefully reviewed this Agreement individually and with counsel and that it has knowingly and willingly executed this Agreement.

***[Signature Page Follows]***

IN WITNESS HEREOF, the Parties have caused this INTERCONNECTION AGREEMENT to be executed on the day and year first written above.

THE EDC

By: 

JMS 10-24-19

Name: Samuel N. Woolard

Title: Director – Distribution Engineering

Duly Authorized

THE GENERATOR

By: 

Name: Thomas M. Melone \_\_\_\_\_

Title: President \_\_\_\_\_

Duly Authorized



## **Appendix A**

### **Guidelines for Generator Interconnection Fast Track and Study Processes May 12, 2010**

(Intentionally omitted)

## **Appendix B**

### **Description of the Facility as studied, and incorporating any approved design changes**

This is an inverter-based Photovoltaic installation, 2,000kW with no energy storage device consisting of The one facility as shown in the table below.

	<b>Designation / Name</b>	<b>kW</b>	<b>Manufacturer and No. of Inverter</b>	<b>Notes</b>
	Dickinson Solar, Hampton CT	1,998	ABB PVS-166-TL-US (12) (800 Volts)	

## **Appendix C**

### **Conditions for Parallel Operation of Generating Facility, Special Operating Requirements**

Refer to Impact Study result in appendix H

Appendix D

**Initial Cost Estimate**

**Witness test: \$ Refer to Appendix F**  
**See Attachment F for total costs**

**Please refer to Section 5.3 – Billing and Payment Procedures for Initial Interconnection Costs. If someone other than the generator/customer is responsible for the payment, please note and sign below.**

**Other responsible party:** \_\_\_\_\_

**Name:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**City/State/Zip:** \_\_\_\_\_

**Appendix E**

**Construction Agreement**

None required.

**Appendix F**  
**Attachment I**  
**Schedule of Milestones**

No	Milestones for Interconnection	Due by Date	Responsible Party	Comments
1.	Sign and Return Schedule of Milestones (attachment I)	9/27/2019	Allco Renewable Energy Limited	
2.	Sign and return schedule of payment (attachment II)	9/27/2019	Allco Renewable Energy Limited	Payment due on September 27, 2019
3.	Sign Interconnection Agreement	9/27/2019	Allco Renewable Energy Limited	Return 2 copies
4.	Provide payment in compliance with Attachment II	9/27/2019	Allco Renewable Energy Limited	
5.	Coordinate construction meeting(s) to discuss new transformer requirements and project schedule.	9/27/2019	Allco Renewable Energy Limited / Eversource	
6.	Provide final design and three-line diagram	10/4/2019	Allco Renewable Energy Limited	
7.	Submit ISO-NE PP5 notification	10/4/2019	Allco Renewable Energy Limited	ISO-NE may require a full impact Study
8.	Provide Witness Test plan with all associated documentation	10/4/2019	Allco Renewable Energy Limited	
9.	Submit Certificate of Insurance	10/4/2019	Allco Renewable Energy Limited	
10.	Submit proof of Municipal Approval (WR#TBD)	12/1/2019	Allco Renewable Energy Limited	
11.	Coordinate Witness Test meeting	12/6/2019	Allco Renewable Energy Limited	
12.	Conduct final Witness Test	12/13/2019	Allco Renewable Energy Limited	
13.	Purchase installs and secures approval for the DG meter.	12/13/2019	Allco Renewable Energy Limited	
14.	Send Authorization to Interconnect Letter	12/20/2019	Eversource	
15.	In-Service Date on Brooklyn Substation Circuit	12/20/2019	Eversource	This interconnection will be limited to 1.5 MW on site generation
16.	In-Service Date on Card Substation Circuit	3/01/2020	Eversource	

**Agreed to by:**

Generator

Date:

Eversource Energy

Date:

**Attachment II  
Payment Schedule**

Item	Due by Date	Payment Amount	Status	Comments
1.	September 27, 2019	\$30,000		
	<b>Total Payments</b>	<b>\$30,000</b>		

**Agreed to by:**

Generator



Date:

9/26/19

Eversource Energy



Date:

10-14-19

Note: Payment assumes project is exempt from CIAC tax

**Attachment III  
Ongoing Costs**

None required.



## Appendix G

### EDC's Description of its Upgrades and Best Estimate of Upgrade Costs

Description	Dickinson Solar
New Service	25,000.00
Witness Test	5,000.00
<b>Subtotal</b>	<b>\$30,000.00</b>
CIAC 13% Tax (for reference purposes only)	\$3,900.00
<b>Total</b>	<b>\$30,000.00</b>

**TABLE 1**

#### General comments:

1. Line work may require consent from property owners in compliance with CT Statute. The proposed schedule of milestones as outlined in appendix F of the IA assumes that such approval will be secured with no opposition and does not include any delays or legal fees associated with securing such approval.
2. In the event that you are unable to meet the schedule of milestones in appendix F of the IA a revised schedule of milestones will be re-submitted to you. It is important to note that a slip in schedule may not result in an equal delay (one to one delay). Schedules are based on availability of man power, resources and the ability to schedule outages which can be curtailed during the summer season.
3. CIAC taxes shown for reference only. Documentation will be required to demonstrate compliance with CIAC exemption. Total due amount is Subtotal.
4. **Primary Metering and CT/PT purchase and installation will be performed by Eversource.**

## Attachment I

### Incremental and Ongoing Costs

The costs outlined in this agreement are based on the understanding that other projects ahead in the queue require specific upgrades also required for this project. If these other projects do not pay for such upgrades, the costs outlined in table 1 will be required to interconnect this project.

Description	Sydney Solar
Recloser	\$70,000.00
Line Extension – Contractor Cost (1)	\$241,875.00
Line Extension - Frontier Poles (2)	\$224,682.00
Line Extension - Overhead	\$253,876.00
Line Extension - Traffic Control	\$47,670.00
Line Extension - Material	\$99,198.00
Line Extension - Supervision	\$29,009.00
<b>Subtotal</b>	<b>\$966,310.00</b>
Contingency	\$94,894.00
<b>Total</b>	<b>\$1,061,204.00</b>

TABLE 1

Agreed to by:

Generator



Date:

9/26/19

Eversource Energy

Date:

## **Appendix H**

Impact Study Report

## STANDARD FAST TRACK AND STUDY PROCESS GENERATOR INTERCONNECTION AGREEMENT

This Interconnection Agreement (this "**Agreement**"), dated as of **September 20, 2019** (the "**Effective Date**"), is entered into by and between The Connecticut Light and Power d/b/a Eversource Energy, a specially chartered Connecticut corporation with a principal place of business at 107 Selden St, Berlin, CT, 06037 (the "**Electric Distribution Company**" or "**EDC**"), and **Allco Renewable Energy Limited**, with a place of business at c/o Allco Renewable Energy Limited, 1740 Broadway, 15th Floor, New York, NY 10019 (the "**Generator**"). The EDC and the Generator are collectively referred to herein as the "**Parties**" and individually as a "**Party**." Any capitalized term used but not defined in this Agreement shall have the meaning ascribed to such term in the Guidelines for Generator Interconnection attached hereto as Appendix A, as may be amended from time to time (the "**Guidelines**").

1. Basic Understandings. The Generator owns and/or operates or plans to construct the **Sydney Solar Generating Facility** at **25 West Fisk Road, Hampton, CT 06247**, as depicted in Appendix H (the "**Facility**"). A description of the Facility as studied, and incorporating any design changes approved in accordance with Section 1.3, is attached hereto as Appendix B (the "**Facility Description**").

1.1. The subject matter of this Agreement pertains to the Interconnection of the Facility to the EPS. This Agreement does not relate to any other obligation of the Generator unrelated to the Interconnection of the Facility. Apart from this Agreement, the Generator is responsible for (a) all arrangements to effect any deliveries of electric energy from the Facility in accordance with the appropriate retail or FERC-jurisdictional tariffs and (b) arranging for its purchase of retail power (such as back-up or stand-by power).

1.2. This Agreement does not cover sales of power, capacity, energy or market products generated from the Facility. If the Generator intends to sell energy or ancillary services from the Facility, it must provide written notice to the EDC of such intention at least sixty (60) days prior to the effectuation of such sale. Furthermore, the EDC may require the Generator to enter into a new Interconnection agreement prior to such sale which may or may not require approval from FERC.

1.3. Any changes to the design of the Facility as it is described and specified in the application submitted by the Generator to the EDC with respect to such Facility (the "**Application**") must be approved by the EDC in writing prior to the implementation of such design changes. Only design changes approved in accordance with this Section 1.3 shall be implemented.

1.4. The Generator may not operate the Facility in parallel with the EPS until: (a) the conditions for initial parallel operation of the Facility set forth in Appendix C have been met; (b) commissioning and testing of the Facility has been completed in accordance with the Guidelines and to the satisfaction of the EDC; (c) the Generator has paid the EDC all funds due pursuant to paragraphs 5.3.1 and 5.3.2 of this Agreement; and (d) the EDC has provided formal written authorization in accordance with the Guidelines stating that operation of the Facility in parallel with the EPS is authorized by the EDC (the "**Authorization Date**"). Such written authorization will not be effective unless accompanied by a description of the Facility that incorporates all design changes to the Facility since the Application was submitted to the EDC (and not specified therein), including all design changes made during construction.

1.5. The Generator shall obtain each consent, approval, authorization, order or acceptance

from FERC necessary for the Generator or any entity that, directly or indirectly, through one or more intermediaries, controls, or is controlled by, or is under common control with the Generator (each, an "***Affiliate***") to sell any power, capacity, energy or market products from the Facility into the wholesale power market (collectively, "***Wholesale Sales***") prior to making any such sales. If the Generator intends to make Wholesale Sales, then the Generator shall provide written notice to the EDC at least sixty (60) days prior to making any Wholesale Sales. The Generator shall indemnify, defend and hold harmless the EDC, its trustees, directors, officers, employees, agents and affiliates from any costs, damages, fines or penalties, including reasonable attorneys' fees, directly resulting from Generator's or its Affiliate's non-compliance with any provision of this Section 1.5; provided, however, that the such indemnification obligation shall be subject to the limitation of liability set forth in Section 14.

## 2. Entire Agreement.

2.1. This Agreement, including any attachments or appendices, is entered into pursuant to the Guidelines.

2.2. This Agreement, the Guidelines, and the relevant EDC Tariffs, Terms and Conditions represent the entire understanding between the Parties as to the subject matter of this Agreement.

2.3. Each Party hereby represents that in entering into this Agreement, it has not relied on any promise, inducement, representation, warranty, agreement or other statement not set forth in this Agreement, the Tariffs, Terms and Conditions, or the Guidelines.

2.4. In the event of a conflict between this Agreement, the Guidelines and/or the Tariffs, Terms and Conditions, the Tariffs, shall take first precedent, followed by the Terms and Conditions, followed by the Guidelines, and lastly this Agreement.

## 3. Term.

3.1. This Agreement is effective as of the Effective Date. The Agreement shall continue in full force and effect until terminated pursuant to Section 4.

## 4. Termination.

4.1. This Agreement may be terminated under the following conditions:

4.1.1. The Parties may mutually terminate this Agreement at any time upon the execution of an agreement to terminate this Agreement.

4.1.2. The Generator may terminate this Agreement at any time by providing sixty (60) days written notice to EDC.

4.1.3. Either Party may terminate this Agreement immediately upon the occurrence of an Event of Default (as such term is defined in Section 20.1) by the other Party, subject to the notice requirement set forth in Section 20.2(c).

4.1.4. The EDC may terminate this Agreement if the Generator: (a) operates the Facility in parallel with the EPS prior to the Authorization Date; (b) fails within six months of testing to receive authorization from the EDC to operate in parallel with the EPS; (c) does not construct the Facility in accordance with the Facility Description; (d) modifies the

Facility without the written approval of the EDC; (e) fails to energize the Facility within twelve months of the Authorization Date; or (f) permanently abandons the Facility. For the purposes of this Agreement, the Generator's failure to operate the Facility for any consecutive twelve month period after the Authorization Date shall be deemed a permanent abandonment.

4.1.5. The EDC may terminate this Agreement if the Generator fails to correct an Emergency Condition (as such term is defined in Section 7.1.1) or a Non-Emergency Adverse Operating Effect (as such term is defined in Section 7.1.4) within ninety (90) days from the date on which the EDC disconnected the Facility due to such event.

4.2. Survival of Obligations. The termination of this Agreement shall not relieve either Party of its liabilities and obligations, owed or continuing at the time of termination.

4.3. Related Agreements. Any agreement attached to and incorporated into this Agreement shall terminate concurrently with this Agreement unless the Parties have agreed otherwise in writing.

5. General Payment Terms.

5.1. Interconnection Costs. The Generator is responsible for paying all costs associated with Interconnection of the Facility, including (a) testing costs, (b) costs associated with installing, testing and maintaining the communications infrastructure necessary to provide protection and/or monitoring of the Generating Facility (collectively, the "**Communications Costs**"), (c) construction, modification or upgrade costs necessary to accommodate the Interconnection (collectively, the "**Construction Costs**"), and (d) any ongoing maintenance costs and other charges deemed necessary by the EDC to maintain the Interconnection (all such costs described in this sentence, the "**Interconnection Costs**"). The EDC shall notify the Generator in the event the Construction Costs exceed 110% of the estimate of such costs provided by the EDC to the Generator in the Construction Agreement (as such term is defined below), facility study report or other written understanding of the Parties.

5.2. Initial Cost Estimate. Attached hereto as Appendix D is a good-faith estimate of the initial Interconnection Costs (the "**Initial Cost Estimate**").

5.3. Billing and Payment Procedures for Initial Interconnection Costs.

5.3.1. The Generator shall pay the EDC the amount set forth in the Initial Cost Estimate (the "**Initial Payment**") within thirty (30) days of the Effective Date.

5.3.2. Within thirty (30) days following the date on which the Facility is first connected to the EPS (the "**Initial Interconnection**"), the EDC shall provide the Generator with a final accounting report detailing any Underpayment (as such term is defined below) or Overpayment (as such term is defined below) made by the Generator with respect to the Initial Payment. To the extent that the actual Interconnection Costs accrued up to the date of the Initial Interconnection exceed the Initial Payment (an "**Underpayment**"), the EDC shall invoice the Generator for an amount equal to the Underpayment and the Generator shall pay such amount to the EDC within thirty (30) days of such invoice. To the extent that the Initial Payment exceeds the actual Interconnection Costs accrued up to the date of the Initial Interconnection (an "**Overpayment**"), the EDC shall refund to the Generator an amount equal to the Overpayment within thirty (30) days of the provision of such final

accounting report.

5.4. Billing and Payment Procedures for Ongoing Interconnection Costs. All Interconnection Costs incurred following the Initial Interconnection shall hereinafter be referred to as the "**Ongoing Costs**," and shall include maintenance, testing and Communications Costs, as well as any Construction Costs not included in either (a) the Construction Agreement by and between the Generator and the Company, dated as of [N/A a copy of which is attached hereto as Appendix F Attachment III or (b) the Initial Cost Estimate. The EDC shall invoice the Generator for all Ongoing Costs as such costs are incurred, and the Generator shall pay each such invoice within thirty (30) days of receipt, or as otherwise agreed to by the Parties.

5.5. Milestones. The Parties shall agree on milestones for which each Party is responsible and list them in Appendix F of this Agreement. A Party's obligations under this provision may be extended by agreement. If a Party anticipates that it will be unable to meet a milestone for any reason other than a Force Majeure Event (as such term is defined in Section 18.1), it shall immediately notify the other Party of the reason(s) for not meeting the milestone and (a) propose the earliest reasonable alternate date by which it can attain this and future milestones, and (b) requesting appropriate amendments to Appendix F. The Party affected by the failure to meet a milestone shall not unreasonably withhold agreement to such an amendment unless (i) it will suffer significant uncompensated economic or operational harm from the delay, (ii) attainment of the same milestone has previously been delayed, or (iii) it has reason to believe that the delay in meeting the milestone is intentional or unwarranted notwithstanding the circumstances explained by the Party proposing the amendment.

5.6. Distribution Upgrades. The EDC shall design, procure, construct, install, and own the upgrades described in Appendix G of this Agreement (the "**Upgrades**"). If the EDC and the Generator agree, the Generator may construct Upgrades that are located on land owned by the Generator. The actual cost of the Upgrades, including overheads, shall be directly assigned to the Generator. The Generator shall be responsible for its share of all reasonable expenses, associated with operating, maintaining, repairing, and replacing such Upgrades, except to the extent that a retail tariff of, or an agreement with, the EDC provides otherwise.

5.7. Taxes. The Parties shall comply with all applicable federal and state tax laws.

## 6. Operating Requirements.

6.1. General Operating Requirements. The Generator shall construct, interconnect, operate, and maintain the Facility and all accompanying and necessary facilities in accordance with (a) all applicable laws and requirements, Good Utility Practice, the Guidelines, Tariffs, and the Terms and Conditions; (b) applicable specifications that meet or exceed those provided by the National Electrical Safety Code, the American National Standards Institute, IEEE, Underwriter's Laboratory and ISO-NE operating requirements in effect at the time of construction and other applicable national and state codes and standards. Following the initial Interconnection of the Facility, the Generator shall comply with all special operating requirements set forth in Appendix C. In the event that the EDC believes that the cause of any problem to the EPS originates from the Facility, the EDC has the right to install monitoring equipment at a mutually agreed upon location to determine the exact cause of the problem. The cost of such monitoring equipment shall be borne by the EDC, unless such problem or problems are demonstrated to be caused by the Facility or if the test was performed at the request of the Generator in which case the costs of the monitoring equipment shall be borne by the Generator. If the operation of the Facility

interferes with the EDC's or its customers' operations, the Generator must immediately take corrective action to stop such interference and shall not operate the Facility until such time as such interference is stopped. If the Generator fails to take immediate corrective action pursuant to the preceding sentence, then the EDC may disconnect the Facility as set forth in the Guidelines.

6.2. No Adverse Effects; Non-interference.

6.2.1. The EDC shall notify the Generator if the EDC has evidence that the operation of the Facility could cause disruption or deterioration of service to other customers served from the EPS or if operation of the Facility could cause damage to the EPS or other affected systems. (For example, deterioration of service could be caused by, among other things, harmonic injection in excess of IEEE STD 519, as well as voltage fluctuations caused by large step changes in loading at the Facility.) The Generator shall cease operation of the Facility until such time as the Facility can operate without causing disruption or deterioration of service to other customers served from the EPS or causing damage to the EPS or other affected systems. Each Party shall promptly notify the other Party in writing of any condition or occurrence relating to such Party's equipment or facilities which, in such Party's reasonable judgment, could adversely affect the operation of the other Party's equipment or facilities.

6.2.2. The EDC shall operate the EPS in such a manner so as to not unreasonably interfere with the operation of the Facility. The Generator shall protect itself from normal disturbances propagating through the EPS in accordance with Good Utility Practice. Examples of such disturbances include single-phasing events, voltage sags from remote faults on the EPS, and outages on the EPS.

6.3. Safe Operations and Maintenance.

6.3.1. General. The Generator shall operate, maintain, repair, and inspect, and shall be fully responsible for, the Facility or facilities that it now or hereafter may own unless otherwise specified in this Agreement. Each Party shall be responsible for the maintenance, repair and condition of its respective lines and appurtenances on such Party's respective side of the Point of Interconnection. The EDC and the Generator shall each provide equipment on its respective side of the Point of Interconnection that adequately protects the EPS, personnel, and other persons from damage and injury. If the EDC has constructed or owns facilities that are identified at the time of Interconnection as specifically required by or as a result of such Interconnection, then the Generator shall reimburse the EDC for the costs of maintaining and repairing such facilities.

6.3.2. Ongoing Maintenance; Testing of the Facility. The Parties hereby acknowledge and agree that maintenance testing of the Facility's protective relaying is imperative for safe, reliable operation of the Facility. The test cycle for such protective relaying shall not be less frequent than once every sixty (60) calendar months or the manufacturer's recommended test cycle, whichever is more frequent. The Generator shall provide copies of these test records to the EDC within thirty (30) days of the completion of such maintenance testing. The EDC may disconnect the Facility from the EPS if the Generator fails to adhere to this Section 6.3.2. The Generator is responsible for all ongoing maintenance costs associated with the Facility.

6.4. Access.



6.4.1. Emergency Contact Information. Each Party shall provide to the other Party and shall update as necessary a telephone number that can be used at all times to allow the other Party to report an emergency.

6.4.2. EDC Right to Access EDC-Owned Facilities and Equipment. The Generator shall allow the EDC access to the EDC's equipment and the EDC's facilities located on the Facility's premises (the "**EDC Property**"). To the extent that the Generator does not own all or part of the real property on which the EDC is required to locate EDC Property in order to serve the Facility, the Generator shall procure and provide to the EDC all necessary rights, including easements, for access to the EDC Property.

6.4.3. Isolation Device. The EDC shall have access to the Isolation Device of the Facility at all times. Generator is responsible for obtaining any and all property rights, including easements, which will permit the EDC access to such Isolation Device.

6.4.4. Right to Review Information. The EDC shall have the right to review and obtain copies of the Generator's operations and maintenance records, logs, or other information such as unit availability, maintenance outages, circuit breaker operation requiring manual reset, relay targets and unusual events pertaining to the Facility or its Interconnection with the EPS. The EDC shall treat such information as confidential and shall use such information solely for the purposes of determining compliance with the operating requirements set forth in this Section 6.

## 7. Disconnection.

### 7.1 Temporary Disconnection.

7.1.1 Emergency Conditions. The EDC may immediately and temporarily disconnect the Facility from the EPS without prior notification in cases where, in the reasonable judgment of the EDC, the continued connection of the Facility is imminently likely to (a) endanger persons or damage property or (b) cause an adverse effect on the integrity or security of, or damage to, the EPS or to other electric power systems to which the EPS is directly connected (each, an "**Emergency Condition**"). Upon becoming aware of an Emergency Condition, the Generator shall (i) immediately suspend operation of the Facility and (ii) promptly provide written notice to the EDC of such Emergency Condition and suspension (an "**Emergency Condition Notice**"). The Emergency Condition Notice shall describe (A) such Emergency Condition, (B) the extent of any damage or deficiency, (C) the expected effect on the operation of each Party's facilities and operations, (D) the anticipated duration of such Emergency Condition and (E) the necessary corrective action. After temporary disconnection or suspension pursuant to this Section 7.1.1, the Facility may not be reconnected or resume operation until the EDC and Generator are both satisfied that the cause of such Emergency Condition has been corrected. If the Generator fails to correct the Emergency Condition within ninety (90) days from the time that the EDC has temporarily disconnected the Facility due to such an event, the EDC may elect to terminate this Agreement in accordance with Section 4.1.5 and/or permanently disconnect the Facility in accordance with Section 7.2.2.

7.1.2 Routine Maintenance, Construction and Repair. The EDC shall have the right to disconnect the Facility from the EPS when necessary for routine maintenance,

construction and repairs to the EPS. The EDC shall provide the Generator with a minimum of seven (7) days prior written notice of such disconnection, consistent with the EDC's planned outage notification protocols. If the Generator requests disconnection by the EDC at the Point of Common Interconnection, the Generator will provide a minimum of seven (7) days prior written notice to the EDC. The EDC shall make reasonable efforts to work with Generator to schedule a mutually convenient time or times to temporarily disconnect the Facility pursuant to this Section 7.1.2.

7.1.3 Forced Outages. During any forced outage, the EDC shall have the right to temporarily disconnect the Facility from the EPS in order to effect immediate repairs to the EPS. The EDC shall use reasonable efforts to provide the Generator with prior notice of such temporarily disconnection; provided, however, the EDC may temporarily disconnect the Facility from the EPS without such notice pursuant to this Section 7.1.2 in the event circumstances do not permit such prior notice to the Generator.

7.1.4 Non-Emergency Adverse Operating Effects. The EDC may temporarily disconnect the Facility if it is having a non-emergency adverse operating effect on the EPS or on other customers (a "***Non-Emergency Adverse Operating Effect***") if the Generator fails to correct such Non-Emergency Adverse Operating Effect within forty-five (45) days of the EDC's written notice to the Generator requesting correction of such Non-Emergency Adverse Operating Effect. If the Generator fails to correct a Non-Emergency Adverse Operating Effect within ninety (90) days from the time that the EDC has temporarily disconnected the Facility due to such an event, the EDC may elect to terminate this Agreement in accordance with Section 4.1.5 and/or permanently disconnect the Facility in accordance with Section 7.2.2.

7.1.5 Modification of the Facility. The EDC has the right to immediately suspend Interconnection service and temporarily disconnect the Facility in the event any material modification to the Facility or the Generator's Interconnection facilities has been implemented without prior written authorization from the EDC.

7.1.6 Re-connection. Any temporary disconnection pursuant this Section 7.1 shall continue only for so long as is reasonably necessary. The Generator and the EDC shall cooperate with each other to restore the Facility and the EPS, respectively, to their normal operating states as soon as reasonably practicable following the correction of the event that led to the temporary disconnection.

## 7.2 Permanent Disconnection.

7.2.1 The Generator may permanently disconnect the Facility at any time upon thirty (30) days prior written notice to the EDC.

7.2.2 The EDC may permanently disconnect the Facility upon termination of this Agreement in accordance with Section 4.

7.2.3 The EDC may permanently disconnect the Facility in the event the Generator is unable to correct an Emergency Condition or a Non-Emergency Adverse Operating Effect in accordance with Section 7.1.1 or Section 7.1.4, respectively.

## 8. Metering.

8.1. Metering of the output from the Facility shall be conducted pursuant to the terms of the Guidelines.

9. Assignments.

9.1 Except as provided herein, the Generator shall not voluntarily assign its rights or obligations, in whole or in part, under this Agreement without the EDC's prior written consent, which consent shall not be unreasonably withheld or delayed. Any assignment the Generator purports to make without the EDC's prior written consent shall not be valid. Notwithstanding the foregoing, the EDC's consent shall not be required for any assignment made by the Generator to an Affiliate with an equal or greater credit rating and with the legal authority and operational ability to satisfy the obligations of the Generator under this Agreement; provided that that Generator promptly notifies the EDC of any such assignment. In all events, the Generator shall not be relieved of its obligations under this Agreement unless, and until, the permitted assignee assumes in writing all obligations of this Agreement and notifies the EDC of such assumption.

10. Confidentiality.

10.1 The EDC shall maintain the confidentiality of information provided from the Generator to the EDC if such information is clearly marked and labeled "Confidential" (the "**Confidential Information**"). Confidential Information shall not include information that (a) is or hereafter becomes part of the public domain, (b) previously was in the possession of the EDC, or (c) the EDC is required to disclose pursuant to a valid order of a court or other governmental body or any political subdivision thereof; provided, however, that to the extent that it may lawfully do so, the EDC shall first have given notice to the Generator and given the Generator a reasonable opportunity to interpose an objection or obtain a protective order requiring that the Confidential Information and/or documents so disclosed be used only for the purpose for which the order was issued; provided further that if such Confidential Information is requested or required by the PURA, the EDC shall seek protective treatment of such Confidential Information.

11. Insurance Requirements.

11.1 General Liability. In connection with the Generator's performance of its duties and obligations under this Agreement, the Generator shall maintain, during the term of this Agreement, general liability insurance with a combined single limit of not less than:

11.1.1 Three hundred thousand dollars (\$300,000) per occurrence and in the aggregate for bodily injury and/or property damage claims where the gross nameplate rating of the Facility is less than or equal to an aggregate of 100 kW;

11.1.2 One million dollars (\$1,000,000) per occurrence and in the aggregate for bodily injury and/or property damage claims where the gross nameplate rating of the Facility is greater than 100 kW and less than or equal to an aggregate of 1MW;

11.1.3 Two million dollars (\$2,000,000) per occurrence and in the aggregate for bodily injury and/or property damage claims where the gross nameplate rating of the Facility is greater than 1MW and less than or equal to an aggregate of 5MW; or

11.1.4 Five million dollars (\$5,000,000) per occurrence and in the aggregate for bodily injury and/or property damage claims where the gross nameplate rating of the Facility is greater than 5MW and less than or equal to an aggregate of 20MW.

11.2 Insurer Requirements and Endorsements. All insurance required pursuant to this Section 11 shall be carried by insurers qualified to underwrite insurance in Connecticut with an A.M. Best rating of A- or better. In addition, all insurance shall: (a) include the EDC as an additional insured for Generating facilities greater than 1MW; (b) contain a severability of interest clause or cross-liability clause unless the Generator is a residential customer; (c) provide that the EDC shall not be liable to the insurance carrier with respect to the payment of premium for such insurance; and (d) provide for written notice to the EDC thirty (30) days prior to cancellation, termination, or material change of such insurance.

### 11.3 Evidence of Insurance.

11.3.1 Evidence of the insurance required pursuant to this Section 11 shall state that the coverage provided is primary, and is not excess of or contributing with any insurance or self-insurance maintained by the EDC.

11.3.2 The Generator is responsible for providing the EDC with evidence of insurance on an annual basis as set forth in the Guidelines.

11.3.3 Prior to the EDC commencing any work on system modifications, the Generator shall have its insurer provide to the EDC certificates of insurance evidencing the insurance coverage required pursuant to this Section 11. Such certificates shall clearly indicate whether such insurance policy is written on a "claims-made" basis.

11.3.4 The EDC may, at its discretion, require the Generator to maintain tail coverage with respect to any policy written on a "claims-made" basis for a period of three years after expiration or termination of such policy.

11.3.5 All insurance certificates, statements of self insurance, endorsements, cancellations, terminations, alterations, and material changes of such insurance shall be issued and submitted to the appropriate EDC Facilitator.

## 12. Performance Assurance.

12.1 If the EDC reasonably expects that any Interconnection Costs necessary to accommodate the Facility will be in excess of fifty thousand dollars (\$50,000) in the aggregate in any calendar year, the EDC may require that the Generator provide to the EDC a guarantee, a surety bond, letter of credit or other form of security that is reasonably acceptable to the EDC at least twenty (20) Business Days prior to the commencement of the related work. Such security for payment shall be in an amount sufficient to cover such Interconnection Costs. In addition:

12.1.1. Any guarantee provided by the Generator pursuant to this Section 12 shall be made by an entity that meets the creditworthiness requirements of the EDC, and contain terms and conditions that guarantee payment of any amount that may be due from the Generator, up to an agreed-to maximum amount; and

12.1.2. Any letter of credit or surety bond provided by the Generator pursuant to this Section 12.1.2 shall be issued by a financial institution or insurer reasonably acceptable to the EDC and must specify an expiration date reasonably acceptable to the EDC.

13. Indemnification.

13.1 Indemnification of the EDC. Subject to the limitation of liability set forth in Section 14, the Generator shall indemnify, defend and hold harmless the EDC and its trustees, directors, officers, employees and agents (including affiliates, contractors and their employees) from and against any liability, damage, loss, claim, demand, complaint, suit, proceeding, action, audit, investigation, obligation, cost, judgment, adjudication, arbitration decision, penalty (including fees and fines), or expense (including court costs and attorneys' fees) relating to, arising from or connected to this Agreement.

13.2 Indemnification of the Generator. Subject to the limitation of liability set forth in Section 14, the EDC agrees to indemnify, defend and hold harmless the Generator, its trustees, directors, officers, employees and agents (including Affiliates, contractors and their employees), from and against any and all damages for personal injury (including death) or property damage to unaffiliated third parties arising from any and all actions relating to or arising out of any material failure by the EDC to perform any of its obligations pursuant to Section 6.2.2 of this Agreement.

13.3 Survival of Indemnification. The indemnification obligations of each Party set forth in this Section 13 shall continue in full force and effect regardless of whether this Agreement has expired or been terminated, defaulted or cancelled and shall not be limited in any way by any limitation on insurance.

14. Limitation of Liability.

14.1 Except with respect to a Party's fraud or willful misconduct, and except with respect to damages sought by a third party in connection with a third party claim: (a) neither Party shall be liable to the other Party, for any damages other than direct damages; and (b) each Party agrees that it is not entitled to recover and agrees to waive any claim with respect to, and will not seek, consequential, punitive or any other special damages as to any matter under, relating to, arising from or connected to this Agreement.

15. Amendments and Modifications.

15.1 No amendment or modification of this Agreement shall be binding unless in writing and duly executed by both Parties.

16. Permits and Approvals.

16.1 The Generator is responsible for obtaining all environmental and other permits required by governmental authorities for the construction and operation of the Facility (each, a "**Required Permit**"). The EDC assumes no responsibility for obtaining any Required Permit, advising the Generator with respect to Required Permits, or assuring that all Required Permits have been obtained by the Generator. Upon written request of the EDC, the Generator shall promptly provide to the EDC a copy of any Required Permit.

17. Environmental Releases.

- 17.1 Each Party shall immediately notify the other Party, first orally and then in writing, of any of the following events related to the Facility upon becoming aware of such event: (a) the release of any hazardous substances; (b) any asbestos or lead abatement activities; or (c) any type of remediation activities. The Party having the responsibility for reporting such an event to appropriate governmental authorities shall promptly furnish to the other Party copies of any publicly available reports filed with such authorities.

18. Force Majeure.

- 18.1 For purposes of this Agreement, "**Force Majeure Event**" means any event or circumstance that (a) is beyond the reasonable control of the affected Party and (b) the affected Party is unable to prevent or provide against by exercising commercially reasonable efforts. Force Majeure Events include the following events or circumstances, but only to the extent they satisfy the foregoing requirements: (i) acts of war or terrorism, public disorder, insurrection, or rebellion; (ii) floods, hurricanes, earthquakes, lighting, storms, and other natural calamities; (iii) explosions or fire; (iv) strikes, work stoppages, or labor disputes; (v) embargoes; and (vi) sabotage. In no event shall the lack of funds or the inability to obtain funds constitute a Force Majeure Event.
- 18.2 If a Force Majeure Event prevents a Party from fulfilling any obligations under this Agreement, such Party will promptly notify the other Party in writing, and will keep the other Party informed on a continuing basis of the scope and duration of the Force Majeure Event. The affected Party shall specify in reasonable detail the circumstances of the Force Majeure Event, its expected duration, and the steps that the affected Party is taking to mitigate the effects of the event on its performance. The affected Party may suspend or modify its performance of obligations under this Agreement, other than the obligation to make payments then due or becoming due under this Agreement, but only to the extent that the effect of the Force Majeure Event cannot be mitigated by the use of commercially reasonable efforts. The affected Party shall use commercially reasonable efforts to resume its performance as soon as possible. Without limiting this section, the Generator shall immediately notify the EDC verbally if the failure to fulfill the Generator's obligations under this Agreement may impact the safety or reliability of the EPS.

19. Notices.

- 19.1 All notices, demands and other communications to be given or delivered under or by reason of the provisions of this Agreement shall be in writing and shall be deemed to have been given: (a) immediately when personally delivered; (b) when received by first class mail, return receipt requested; (c) one day after being sent for overnight delivery by Federal Express or other overnight delivery service; or (d) when receipt is acknowledged, either electronically or otherwise, if sent by facsimile, telecopy or other electronic transmission device. Notices, demands and communications to the other Parties shall, unless another address is specified by such Parties in writing, be sent to the addresses indicated below:

If to the EDC:

**The Connecticut Light and Power Company d/b/a Eversource Energy**  
107 Selden Street, Berlin, CT 06037  
Attention: Supervisor, Distributed Resources  
Phone: 866-324-2437

If to the Generator:

**Allco Renewable Energy Limited**

1740 Broadway, 15<sup>th</sup> Floor, New York, NY 10019

Attention: Thomas M. Melone

Phone: 212-681-1120

And via email to: Thomas.Melone@gmail.com.

19.2 Each Party may designate operating representatives to conduct daily communications between the Parties, which may be necessary or convenient for the administration of this Agreement. The names, addresses, and phone numbers of each Party's representatives shall be provided in writing by such Party to the other Party.

20. Default and Remedies.

20.1 Defaults. Each of the following shall constitute an "***Event of Default***,"

20.1.1. A Party fails to pay any bill or invoice for charges incurred pursuant to this Agreement or any other amount due from such Party to the other Party as and when due, any such failure shall continue for a period of thirty (30) days after written notice of nonpayment from the affected Party to the defaulting Party; provided, however, if such Party disputes such bill, invoice or other amount due in good faith, then such failure to pay shall not constitute an Event of Default and the Parties shall resolve such dispute in accordance with Section 21;

20.1.2. A Party (a) fails to comply with any other provision of this Agreement or breaches any representation or warranty in any material respect and (b) fails to cure or remedy such failure or breach within sixty (60) days after notice and written demand by the other Party to cure the same or such longer period reasonably required to cure the same (not to exceed an additional ninety (90) days unless otherwise mutually agreed upon, provided that the failing or breaching Party diligently continues to cure until such failure or breach is fully cured). This provision pertains only to cure periods not specifically addressed elsewhere in this Agreement;

20.1.3. A Generator modifies the Facility or any part of the Interconnection without the prior written approval of the EDC; or

20.1.4. A Party fails to perform any obligation hereunder in accordance with (a) applicable laws and regulations, (b) the ISO-NE operating documents, procedures, and reliability standards, and (c) Good Utility Practice.

20.2 Remedies. Upon the occurrence of an Event of Default, the non-defaulting Party may, at its option, in addition to any remedies available under any other provision herein, do any, or any combination, as appropriate, of the following: (a) continue to perform and enforce this Agreement; (b) recover damages from the defaulting Party except as limited by this Agreement; (c) by written notice to the defaulting Party terminate this Agreement; or (d) pursue any other remedies it may have under this Agreement or under applicable law or in equity.

21. Dispute Resolution Procedures.

- 21.1 Each Party shall agree to attempt to resolve all disputes promptly, equitably and in good faith. If the Parties are unable to informally resolve any dispute, the Parties shall follow the dispute resolution process set forth in the Guidelines.

22. Subcontractors.

- 22.1 Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement; provided, however, that the hiring Party shall require such subcontractor to comply with all applicable terms and conditions of this Agreement in providing such subcontracting services and the hiring Party shall remain primarily liable to the other Party for the performance of such subcontractor.
- 22.2 The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor hired by the hiring Party to perform its obligations under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.
- 22.3 The obligations under this Section 22 will not be limited in any way by any limitation of subcontractor's insurance.

23. Miscellaneous.

- 23.1 Governing Law. This Agreement and the legal relations between the Parties will be governed by and construed in accordance with the laws of the State of Connecticut applicable to contracts made and performed in such State and without regard to conflicts of law doctrines.
- 23.2 Non-waiver. No failure on the part of any Party to exercise or delay in exercising any right hereunder shall be deemed a waiver thereof, nor shall any single or partial exercise of any right hereunder preclude any further or other exercise of such or any other right.
- 23.3 No Third Party Beneficiaries. This Agreement is made solely for the benefit of the Parties. Nothing in the Agreement shall be construed to create any rights in or duty to, or standard of care with respect to, or any liability to, any person not a party to or otherwise bound by this Agreement.
- 23.4 Severability. If any provision of this Agreement is held to be unenforceable for any reason, such provision shall be adjusted rather than voided, if possible, to achieve the intent of the Parties. If no such adjustment is possible, such provision shall be fully severable and severed, and all other provisions of this Agreement will be deemed valid and enforceable to the extent possible.
- 23.5 No Partnership. Nothing in this Agreement shall constitute or be construed to be or create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. No Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Parties.



- 23.6 **Headings.** All headings in this Agreement are included solely for convenient reference, are not intended to be full and accurate descriptions of the contents of this Agreement, will not be deemed a part of this Agreement, and will not affect the meaning or interpretation of this Agreement.
- 23.7 **Changes in State Regulations or Law.** Upon thirty (30) days prior written notice, EDC may terminate this Agreement if there are any changes in PURA regulations or Connecticut law that affects the EDC's ability to perform its obligations under this Agreement.
- 23.8 **General Rules of Construction.** For all purposes of this Agreement: (a) all terms defined herein or in the Guidelines shall have the meanings assigned to them herein or in the Guidelines, as the case may be, and shall include the plural as well as the singular; (b) all references in this Agreement to designated "Sections" and other subdivisions are to the designated Sections and other subdivisions of the body of this Agreement; (c) pronouns of either gender or neuter will include, as appropriate, the other pronoun forms; (d) the words "herein," "hereof" and "hereunder" and other words of similar import refer to this Agreement as a whole and not to any particular Section or other subdivision; (e) "or" is not exclusive; (f) "including" and "includes" will be deemed to be followed by "but not limited to" and "but is not limited to," respectively; (g) any definition of or reference to any law, agreement, instrument or other document herein will be construed as referring to such law, agreement, instrument or other document as from time to time amended, supplemented or otherwise modified; (h) any definition of or reference to any law or statute will be construed as referring also to any rules and regulations promulgated thereunder; and (i) as used herein, "days" shall mean "calendar days."
- 23.9 **Counterparts.** This Agreement may be executed in counterparts, each of which shall be deemed an original, and all counterparts so executed shall constitute one agreement binding on all of the Parties hereto, notwithstanding that all of the Parties are not signatories to the same counterpart. Facsimile counterparts may be delivered by any Party, with the intention that they shall have the same effect as an original counterpart hereof.
- 23.10 **Signatures.** Each Party hereby signifies its agreement to the all of the terms of this Agreement by its signatures hereto. Each Party represents that it has carefully reviewed this Agreement individually and with counsel and that it has knowingly and willingly executed this Agreement.

***[Signature Page Follows]***

IN WITNESS HEREOF, the Parties have caused this INTERCONNECTION AGREEMENT to be executed on the day and year first written above.

THE EDC

By: 

07/20/19

Name: Samuel N. Woolard

Title: Director – Distribution Engineering

Duly Authorized

THE GENERATOR

By: 

Name: Thomas M. Melone \_\_\_\_\_

Title: President \_\_\_\_\_

Duly Authorized

## **Appendix A**

### **Guidelines for Generator Interconnection Fast Track and Study Processes May 12, 2010**

(Intentionally omitted)

## **Appendix B**

### **Description of the Facility as studied, and incorporating any approved design changes**

This is an inverter-based Photovoltaic installation, 2,000kW with no energy storage device consisting of The one facility as shown in the table below.

	<b>Designation / Name</b>	<b>kW</b>	<b>Manufacturer and No. of Inverter</b>	<b>Notes</b>
	Sydney Solar, Hampton CT	1,998	ABB PVS-166-TL-US (12) (800 Volts)	

## **Appendix C**

### **Conditions for Parallel Operation of Generating Facility, Special Operating Requirements**

Refer to Impact Study result in appendix H

**Appendix D**

**Initial Cost Estimate**

**Witness test: \$ Refer to Appendix F**

**See Attachment F for total costs**

**Please refer to Section 5.3 – Billing and Payment Procedures for Initial Interconnection Costs. If someone other than the generator/customer is responsible for the payment, please note and sign below.**

**Other responsible party:** \_\_\_\_\_

**Name:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**City/State/Zip:** \_\_\_\_\_

## Appendix E

### **Construction Agreement**

None required.

**Appendix F**  
**Attachment I**  
**Schedule of Milestones**

No	Milestones for Interconnection	Due by Date	Responsible Party	Comments
1.	Sign and Return Schedule of Milestones (attachment I)	9/27/2019	Allco Renewable Energy Limited	
2.	Sign and return schedule of payment (attachment II)	9/27/2019	Allco Renewable Energy Limited	First payment due on September 27, 2019
3.	Sign Interconnection Agreement	9/27/2019	Allco Renewable Energy Limited	
4.	Provide <b>payment #1</b> in compliance with Attachment II	9/27/2019	Allco Renewable Energy Limited	
5.	Coordinate construction meeting(s)	9/27/2019	Allco Renewable Energy Limited / Eversource	
6.	Provide <b>payment #2</b> in compliance with Attachment II	9/27/2019	Allco Renewable Energy Limited	
7.	Provide <b>payment #3</b> in compliance with Attachment II	10/04/2019	Allco Renewable Energy Limited	
8.	Provide <b>payment #4</b> in compliance with Attachment II	10/04/2019	Allco Renewable Energy Limited	
9.	Provide final design and three-line diagram	10/4/2019	Allco Renewable Energy Limited	
10.	Submit ISO-NE PP5 notification	10/4/2019	Allco Renewable Energy Limited	ISO-NE may require a full impact Study
11.	Provide Witness Test plan with all associated documentation	10/4/2019	Allco Renewable Energy Limited	
12.	Submit Certificate of Insurance	10/4/2019	Allco Renewable Energy Limited	
13.	Submit proof of Municipal Approval ( <i>WR#TBD</i> )	12/1/2019	Allco Renewable Energy Limited	
14.	Coordinate Witness Test meeting	12/6/2019	Allco Renewable Energy Limited	
15.	Conduct final Witness Test	12/13/2019	Allco Renewable Energy Limited	
16.	Purchase installs and secures approval for the DG meter.	12/13/2019	Allco Renewable Energy Limited	
17.	Send Authorization to Interconnect Letter	12/20/2019	Eversource	
18.	In-Service Date on Brooklyn Substation	12/20/2019	Eversource	This interconnection will be limited to 1.5 MW on site generation
19.	Final In-Service	03/01/2020		Connected to Card Station

**Agreed to by:**

Generator

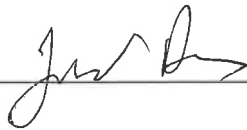


Date:

9/26/19



Eversource Energy

A handwritten signature in black ink, appearing to be "J. Smith", written over a horizontal line.

Date:

10-11-18

**Attachment II  
Payment Schedule**

Item	Due by Date	Payment Amount	Status	Comments
1.	September 19, 2019	\$100,000		
2.	September 19, 2019	\$200,000		
3.	September 27, 2019	\$348,155		
4.	September 27, 2019	\$94,279		
5.	30 days after In-Service Date	\$253,876		
	<b>Total Payments</b>	<b>\$996,310</b>		

**Agreed to by:**

Generator

Date:

9-26-19

Eversource Energy

Date:

10-21-19

Note: Payment assumes project is exempt from CIAC tax

**Attachment III  
Ongoing Costs**

None required.

## Appendix G

### EDC's Description of its Upgrades and Best Estimate of Upgrade Costs

Description	Sydney Solar
New Service	\$25,000.00
Recloser	\$70,000.00
Line Extension – Contractor Cost (1)	\$241,875.00
Line Extension - Frontier Poles (2)	\$224,682.00
Line Extension - Overhead	\$253,876.00
Line Extension - Traffic Control	\$47,670.00
Line Extension - Material	\$99,198.00
Line Extension - Supervision	\$29,009.00
Witness Test	\$5000.00
<b>Subtotal</b>	<b>\$996,310.00</b>
Contingency	\$97,840.00
<b>Total</b>	<b>\$1,094,150.00</b>

Notes: 1 – Labor only

2 – Labor and material for replacement of poles and transfer of communications equipment

**TABLE 1**

#### **General comments:**

1. Line work may require consent from property owners in compliance with CT Statute. The proposed schedule of milestones as outlined in appendix F of the IA assumes that such approval will be secured with no opposition and does not include any delays or legal fees associated with securing such approval.
2. In the event that you are unable to meet the schedule of milestones in appendix F of the IA a revised schedule of milestones will be re-submitted to you. It is important to note that a slip in schedule may not result in an equal delay (one to one delay). Schedules are based on availability of man power, resources and the ability to schedule outages which can be curtailed during the summer season.
3. CIAC taxes shown for reference only. Documentation will be required to demonstrate compliance with CIAC exemption. Total due amount is Subtotal.
4. Primary Metering and CT/PT purchase and installation will be performed Eversource.

5. Documentation will be required to support all final costs as being appropriate for payment by the Generator.

## **Appendix H**

Impact Study Report

## STANDARD FAST TRACK AND STUDY PROCESS GENERATOR INTERCONNECTION AGREEMENT (LEG-22714)

This Interconnection Agreement (this "**Agreement**"), dated as of **November 13, 2020** (the "**Effective Date**"), is entered into by and between The Connecticut Light and Power d/b/a Eversource Energy, a specially chartered Connecticut corporation with a principal place of business at 107 Selden St, Berlin, CT, 06037 (the "**Electric Distribution Company**" or "**EDC**"), and McHenry Solar LLC with a place of business at c/o Allco Renewable Energy Limited, 601 South Ocean Blvd., Delray Beach, FL 33483 (the "**Generator**"). The EDC and the Generator are collectively referred to herein as the "**Parties**" and individually as a "**Party**." Any capitalized term used but not defined in this Agreement shall have the meaning ascribed to such term in the Guidelines for Generator Interconnection attached hereto as Appendix A, as may be amended from time to time (the "**Guidelines**").

1. Basic Understandings. The Generator owns and/or operates or plans to construct a Generating Facility at **391 Hartford Turnpike, Hampton, CT 06247** as depicted in Appendix H (the "**Facility**"). A description of the Facility as studied and incorporating any design changes approved in accordance with Section 1.3, is attached hereto as Appendix B (the "**Facility Description**").

1.1. The subject matter of this Agreement pertains to the Interconnection of the Facility to the EPS. This Agreement does not relate to any other obligation of the Generator unrelated to the Interconnection of the Facility. Apart from this Agreement, the Generator is responsible for (a) all arrangements to effect any deliveries of electric energy from the Facility in accordance with the appropriate retail or FERC-jurisdictional tariffs and (b) arranging for its purchase of retail power (such as back-up or stand-by power).

1.2. This Agreement does not cover sales of power, capacity, energy or market products generated from the Facility. If the Generator intends to sell energy or ancillary services from the Facility, it must provide written notice to the EDC of such intention at least sixty (60) days prior to the effectuation of such sale. Furthermore, the EDC may require the Generator to enter into a new Interconnection agreement prior to such sale which may or may not require approval from FERC.

1.3. Any changes to the design of the Facility as it is described and specified in the application submitted by the Generator to the EDC with respect to such Facility (the "**Application**") must be approved by the EDC in writing prior to the implementation of such design changes. Only design changes approved in accordance with this Section 1.3 shall be implemented. The Generator may not operate the Facility in parallel with the EPS until: (a) the conditions for initial parallel operation of the Facility set forth in Appendix C have been met; (b) commissioning and testing of the Facility has been completed in accordance with the Guidelines and to the satisfaction of the EDC; (c) the Generator has paid the EDC all funds due pursuant to paragraphs 5.3.1 and 5.3.2 of this Agreement; and (d) the EDC has provided formal written authorization in accordance with the Guidelines stating that operation of the Facility in parallel with the EPS is authorized by the EDC (the "**Authorization Date**"). Such written authorization will not be effective unless accompanied by a description of the Facility that incorporates all design changes to the Facility since the Application was submitted to the EDC (and not specified therein), including all design changes made during construction.

1.4. The Generator shall obtain each consent, approval, authorization, order or acceptance from FERC necessary for the Generator or any entity that, directly or indirectly, through one or more intermediaries, controls, or is controlled by, or is under common control with the Generator (each, an "**Affiliate**") to sell any power, capacity, energy or market products from the Facility into the wholesale power market (collectively, "**Wholesale Sales**") prior to making any such sales. If the Generator intends to make Wholesale Sales, then the Generator shall provide written notice to the EDC at least sixty (60) days prior to making any Wholesale Sales. The Generator shall indemnify, defend and hold harmless the EDC, its trustees, directors, officers, employees, agents and affiliates from any costs, damages, fines or penalties, including reasonable attorneys' fees, directly resulting from Generator's or its Affiliate's non-compliance with any provision of this Section 1.4; provided, however, that the such indemnification obligation shall be subject to the limitation of liability set forth in Section 14.

2. Entire Agreement.

2.1. This Agreement, including any attachments or appendices, is entered into pursuant to the Guidelines.

2.2. This Agreement, the Guidelines, and the relevant EDC Tariffs, Terms and Conditions represent the entire understanding between the Parties as to the subject matter of this Agreement.

2.3. Each Party hereby represents that in entering into this Agreement, it has not relied on any promise, inducement, representation, warranty, agreement or other statement not set forth in this Agreement, the Tariffs, Terms and Conditions, or the Guidelines.

2.4. In the event of a conflict between this Agreement, the Guidelines and/or the Tariffs, Terms and Conditions, the Tariffs, shall take first precedent, followed by the Terms and Conditions, followed by the Guidelines, and lastly this Agreement.



3. Term.

3.1. This Agreement is effective as of the Effective Date. The Agreement shall continue in full force and effect until terminated pursuant to Section 4.

4. Termination.

4.1. This Agreement may be terminated under the following conditions:

4.1.1. The Parties may mutually terminate this Agreement at any time upon the execution of an agreement to terminate this Agreement.

4.1.2. The Generator may terminate this Agreement at any time by providing sixty (60) days written notice to EDC.

4.1.3. Either Party may terminate this Agreement immediately upon the occurrence of an Event of Default (as such term is defined in Section 20.1) by the other Party, subject to the notice requirement set forth in Section 20.2(c).

4.1.4. The EDC may terminate this Agreement if the Generator: (a) operates the Facility in parallel with the EPS prior to the Authorization Date; (b) fails within six months of testing to receive authorization from the EDC to operate in parallel with the EPS; (c) does not construct the Facility in accordance with the Facility Description; (d) modifies the Facility without the written approval of the EDC; (e) fails to energize the Facility within twelve months of the Authorization Date; or (f) permanently abandons the Facility. For the purposes of this Agreement, the Generator's failure to operate the Facility for any consecutive twelve month period after the Authorization Date shall be deemed a permanent abandonment.

4.1.5. The EDC may terminate this Agreement if the Generator fails to correct an Emergency Condition (as such term is defined in Section 7.1.1) or a Non-Emergency Adverse Operating Effect (as such term is defined in Section 7.1.4) within ninety (90) days from the date on which the EDC disconnected the Facility due to such event.

4.2. Survival of Obligations. The termination of this Agreement shall not relieve either Party of its liabilities and obligations, owed or continuing at the time of termination.

4.3. Related Agreements. Any agreement attached to and incorporated into this Agreement shall terminate concurrently with this Agreement unless the Parties have agreed otherwise in writing.

5. General Payment Terms.

5.1. Interconnection Costs. The Generator is responsible for paying all costs associated with Interconnection of the Facility, including (a) testing costs, (b) costs associated with installing, testing and maintaining the communications infrastructure necessary to provide protection and/or monitoring of the Generating Facility (collectively, the "**Communications Costs**"), (c) construction, modification or upgrade costs necessary to accommodate the Interconnection (collectively, the "**Construction Costs**"), and (d) any ongoing maintenance costs and other charges deemed necessary by the EDC to maintain the Interconnection (all such costs described in this sentence, the "**Interconnection Costs**"). The EDC shall notify the Generator in the event the Construction Costs exceed 110% of the estimate of such costs provided by the EDC to the Generator in the Construction Agreement (as such term is defined below), facility study report or other written understanding of the Parties.

5.2. Initial Cost Estimate. Attached hereto as Appendix D is a good-faith estimate of the initial Interconnection Costs (the "**Initial Cost Estimate**").

5.3. Billing and Payment Procedures for Initial Interconnection Costs.

5.3.1. The Generator shall pay the EDC the amount set forth in the Initial Cost Estimate (the "**Initial Payment**") within thirty (30) days of the Effective Date.

5.3.2. Within thirty (30) days following the date on which the Facility is first connected to the EPS (the "**Initial Interconnection**"), the EDC shall provide the Generator with a final accounting report detailing any Underpayment (as such term is defined below) or Overpayment (as such term is defined below) made by the Generator with respect to the Initial Payment. To the extent that the actual Interconnection Costs accrued up to the date of the Initial Interconnection exceed the Initial Payment (an "**Underpayment**"), the EDC shall invoice the Generator for an amount equal to the Underpayment and the Generator shall pay such amount to the EDC within thirty (30) days of such invoice. To the extent that the Initial Payment exceeds the actual Interconnection Costs accrued up to the date of the Initial Interconnection (an "**Overpayment**"), the EDC shall refund to the Generator an amount equal to the Overpayment within thirty (30) days of the provision of such final accounting report.

5.4. Billing and Payment Procedures for Ongoing Interconnection Costs. All Interconnection Costs incurred following the Initial Interconnection shall hereinafter be referred to as the "**Ongoing Costs**," and shall include maintenance, testing and Communications Costs, as well as any Construction Costs not included in either (a) the Construction Agreement by and between the Generator and the Company, dated as of **03/09/2016** a copy of which is attached hereto as Appendix F Attachment III or (b) the Initial Cost Estimate. The EDC shall invoice the Generator for all Ongoing Costs as such costs are incurred, and the Generator shall pay each such invoice within thirty (30) days of receipt, or as otherwise agreed to by the Parties.

5.5. Milestones. The Parties shall agree on milestones for which each Party is responsible and list them in Appendix F of this Agreement. A Party's obligations under this provision may be extended by agreement. If a Party anticipates that it will be unable to meet a milestone for any reason other than a Force Majeure Event (as such term is defined in Section 18.1), it shall immediately notify the other Party of the reason(s) for not meeting the milestone and (a) propose the earliest reasonable alternate date by which it can attain this and future milestones, and (b) requesting appropriate amendments to Appendix F. The Party affected by the failure to meet a milestone shall not unreasonably withhold agreement to such an amendment unless (i) it will suffer significant uncompensated economic or operational harm from the delay, (ii) attainment of the same milestone has previously been delayed, or (iii) it has reason to believe that the delay in meeting the milestone is intentional or unwarranted notwithstanding the circumstances explained by the Party proposing the amendment.

5.6. Distribution Upgrades. The EDC shall design, procure, construct, install, and own the upgrades described in Appendix G of this Agreement (the "**Upgrades**"). If the EDC and the Generator agree, the Generator may construct Upgrades that are located on land owned by the Generator. The actual cost of the Upgrades, including overheads, shall be directly assigned to the Generator. The Generator shall be responsible for its share of all reasonable expenses, associated with operating, maintaining, repairing, and replacing such Upgrades, except to the extent that a retail tariff of, or an agreement with, the EDC provides otherwise.

5.7. Taxes. The Parties shall comply with all applicable federal and state tax laws.

6. Operating Requirements.

6.1. General Operating Requirements. The Generator shall construct, interconnect, operate, and maintain the Facility and all accompanying and necessary facilities in accordance with (a) all applicable laws and requirements, Good Utility Practice, the Guidelines, Tariffs, and the Terms and Conditions; (b) applicable specifications that meet or exceed those provided by the National Electrical Safety Code, the American National Standards Institute, IEEE, Underwriter's Laboratory and ISO-NE operating requirements in effect at the time of construction and other applicable national and state codes and standards. Following the initial Interconnection of the Facility, the Generator shall comply with all special operating requirements set forth in Appendix C. In the event that the EDC believes that the cause of any problem to the EPS originates from the Facility, the EDC has the right to install monitoring equipment at a mutually agreed upon location to determine the exact cause of the problem. The cost of such monitoring equipment shall be borne by the EDC, unless such problem or problems are demonstrated to be caused by the Facility or if the test was performed at the request of the Generator in which case the costs of the monitoring equipment shall be borne by the Generator. If the operation of the Facility interferes with the EDC's or its customers' operations, the Generator must immediately take corrective action to stop such interference and shall not operate the Facility until such time as such interference is stopped. If the Generator fails to take immediate corrective action pursuant to the preceding sentence, then the EDC may disconnect the Facility as set forth in the Guidelines.

6.2. No Adverse Effects; Non-interference.

6.2.1. The EDC shall notify the Generator if the EDC has evidence that the operation of the Facility could cause disruption or deterioration of service to other customers served from the EPS or if operation of the Facility could cause damage to the EPS or other affected systems. (For example, deterioration of service could be caused by, among other things, harmonic injection in excess of IEEE STD 519, as well as voltage fluctuations caused by large step changes in loading at the Facility.) The Generator shall cease operation of the Facility until such time as the Facility can operate without causing disruption or deterioration of service to other customers served from the EPS or causing damage to the EPS or other affected systems. Each Party shall promptly notify the other Party in writing of any condition or occurrence relating to such Party's equipment or facilities which, in such Party's reasonable judgment, could adversely affect the operation of the other Party's equipment or facilities.

6.2.2. The EDC shall operate the EPS in such a manner so as to not unreasonably interfere with the operation of the Facility. The Generator shall protect itself from normal disturbances propagating through the EPS in accordance with Good Utility Practice. Examples of such disturbances include single-phasing events, voltage sags from remote faults on the EPS, and outages on the EPS.

6.3. Safe Operations and Maintenance.

6.3.1. General. The Generator shall operate, maintain, repair, and inspect, and shall be fully responsible for, the Facility or facilities that it now or hereafter may own unless otherwise specified in this Agreement. Each Party shall be responsible for the maintenance, repair and condition of its respective lines and appurtenances on such Party's respective side of the Point of Interconnection. The EDC and the Generator shall each provide equipment on its respective side of the Point of Interconnection that adequately protects the EPS, personnel, and other persons from damage and injury. If the EDC has constructed or owns facilities that are identified at the time of Interconnection as specifically required by or as a result of such Interconnection, then the Generator shall reimburse the EDC for the costs of maintaining and repairing such facilities.

6.3.2. Ongoing Maintenance; Testing of the Facility. The Parties hereby acknowledge and agree that maintenance testing of the Facility's protective relaying is imperative for safe, reliable operation of the Facility. The test cycle for such protective relaying shall not be less frequent than once every sixty (60) calendar months or the manufacturer's recommended test cycle, whichever is more frequent. The Generator shall provide copies of these test records to the EDC within thirty (30) days of the completion of such maintenance testing. The EDC may disconnect the Facility from the EPS if the Generator fails to adhere to this Section 6.3.2. The Generator is responsible for all ongoing maintenance costs associated with the Facility.

6.4. Access.

6.4.1. Emergency Contact Information. Each Party shall provide to the other Party and shall update as necessary a telephone number that can be used at all times to allow the other Party to report an emergency.

6.4.2. EDC Right to Access EDC-Owned Facilities and Equipment. The Generator shall allow the EDC access to the EDC's equipment and the EDC's facilities located on the Facility's premises (the "**EDC Property**"). To the extent that the Generator does not own all or part of the real property on which the EDC is required to locate EDC Property in order to serve the Facility, the Generator shall procure and provide to the EDC all necessary rights, including easements, for access to the EDC Property.

6.4.3. Isolation Device. The EDC shall have access to the Isolation Device of the Facility at all times. Generator is responsible for obtaining any and all property rights, including easements, which will permit the EDC access to such Isolation Device.

6.4.4. Right to Review Information. The EDC shall have the right to review and obtain copies of the Generator's operations and maintenance records, logs, or other information such as unit availability, maintenance outages, circuit breaker operation requiring manual reset, relay targets and unusual events pertaining to the Facility or its Interconnection with the EPS. The EDC shall treat such information as confidential and shall use such information solely for the purposes of determining compliance with the operating requirements set forth in this Section 6.

## 7. Disconnection.

### 7.1 Temporary Disconnection.

7.1.1 Emergency Conditions. The EDC may immediately and temporarily disconnect the Facility from the EPS without prior notification in cases where, in the reasonable judgment of the EDC, the continued connection of the Facility is imminently likely to (a) endanger persons or damage property or (b) cause an adverse effect on the integrity or security of, or damage to, the EPS or to other electric power systems to which the EPS is directly connected (each, an "**Emergency Condition**"). Upon becoming aware of an Emergency Condition, the Generator shall (i) immediately suspend operation of the Facility and (ii) promptly provide written notice to the EDC of such Emergency Condition and suspension (an "**Emergency Condition Notice**"). The Emergency Condition Notice shall describe (A) such Emergency Condition, (B) the extent of any damage or deficiency, (C) the expected effect on the operation of each Party's facilities and operations, (D) the anticipated duration of such Emergency Condition and (E) the necessary corrective action. After temporary disconnection or suspension pursuant to this Section 7.1.1, the Facility may not be reconnected or resume operation until the EDC and Generator are both satisfied that the cause of such Emergency Condition has been corrected. If the Generator fails to correct the Emergency Condition within ninety (90) days from the time that the EDC has temporarily disconnected the Facility due to such an event, the EDC may elect to terminate this Agreement in accordance with Section 4.1.5 and/or permanently disconnect the Facility in accordance with Section 7.2.2.

7.1.2 Routine Maintenance, Construction and Repair. The EDC shall have the right to disconnect the Facility from the EPS when necessary for routine maintenance, construction and repairs to the EPS. The EDC shall provide the Generator with a minimum of seven (7) days prior written notice of such disconnection, consistent with the EDC's planned outage notification protocols. If the Generator requests disconnection by the EDC at the Point of Common Interconnection, the Generator will provide a minimum of seven (7) days prior written notice to the EDC. The EDC shall make reasonable efforts to work with Generator to schedule a mutually convenient time or times to temporarily disconnect the Facility pursuant to this Section 7.1.2.

7.1.3 Forced Outages. During any forced outage, the EDC shall have the right to temporarily disconnect the Facility from the EPS in order to effect immediate repairs to the EPS. The EDC shall use reasonable efforts to provide the Generator with prior notice of such temporary disconnection; provided, however, the EDC may temporarily disconnect the Facility from the EPS without such notice pursuant to this Section 7.1.2 in the event circumstances do not permit such prior notice to the Generator.

7.1.4 Non-Emergency Adverse Operating Effects. The EDC may temporarily disconnect the Facility if it is having a non-emergency adverse operating effect on the EPS or on other customers (a "***Non-Emergency Adverse Operating Effect***") if the Generator fails to correct such Non-Emergency Adverse Operating Effect within forty-five (45) days of the EDC's written notice to the Generator requesting correction of such Non-Emergency Adverse Operating Effect. If the Generator fails to correct a Non-Emergency Adverse Operating Effect within ninety (90) days from the time that the EDC has temporarily disconnected the Facility due to such an event, the EDC may elect to terminate this Agreement in accordance with Section 4.1.5 and/or permanently disconnect the Facility in accordance with Section 7.2.2.

7.1.5 Modification of the Facility. The EDC has the right to immediately suspend Interconnection service and temporarily disconnect the Facility in the event any material modification to the Facility or the Generator's Interconnection facilities has been implemented without prior written authorization from the EDC.

7.1.6 Re-connection. Any temporary disconnection pursuant this Section 7.1 shall continue only for so long as is reasonably necessary. The Generator and the EDC shall cooperate with each other to restore the Facility and the EPS, respectively, to their normal operating states as soon as reasonably practicable following the correction of the event that led to the temporary disconnection.

## 7.2 Permanent Disconnection.

7.2.1 The Generator may permanently disconnect the Facility at any time upon thirty (30) days prior written notice to the EDC.

7.2.2 The EDC may permanently disconnect the Facility upon termination of this Agreement in accordance with Section 4.

7.2.3 The EDC may permanently disconnect the Facility in the event the Generator is unable to correct an Emergency Condition or a Non-Emergency Adverse Operating Effect in accordance with Section 7.1.1 or Section 7.1.4, respectively.

8. Metering.

8.1. Metering of the output from the Facility shall be conducted pursuant to the terms of the Guidelines.

9. Assignments.

9.1 Except as provided herein, the Generator shall not voluntarily assign its rights or obligations, in whole or in part, under this Agreement without the EDC's prior written consent, which consent shall not be unreasonably withheld or delayed. Any assignment the Generator purports to make without the EDC's prior written consent shall not be valid. Notwithstanding the foregoing, the EDC's consent shall not be required for any assignment made by the Generator to an Affiliate with an equal or greater credit rating and with the legal authority and operational ability to satisfy the obligations of the Generator under this Agreement; provided that that Generator promptly notifies the EDC of any such assignment. In all events, the Generator shall not be relieved of its obligations under this Agreement unless, and until, the permitted assignee assumes in writing all obligations of this Agreement and notifies the EDC of such assumption.

10. Confidentiality.

10.1 The EDC shall maintain the confidentiality of information provided from the Generator to the EDC if such information is clearly marked and labeled "Confidential" (the "**Confidential Information**"). Confidential Information shall not include information that (a) is or hereafter becomes part of the public domain, (b) previously was in the possession of the EDC, or (c) the EDC is required to disclose pursuant to a valid order of a court or other governmental body or any political subdivision thereof; provided, however, that to the extent that it may lawfully do so, the EDC shall first have given notice to the Generator and given the Generator a reasonable opportunity to interpose an objection or obtain a protective order requiring that the Confidential Information and/or documents so disclosed be used only for the purpose for which the order was issued; provided further that if such Confidential Information is requested or required by the PURA, the EDC shall seek protective treatment of such Confidential Information.

11. Insurance Requirements.

11.1 General Liability. In connection with the Generator's performance of its duties and obligations under this Agreement, the Generator shall maintain, during the term of this Agreement, general liability insurance with a combined single limit of not less than:

11.1.1 Three hundred thousand dollars (\$300,000) per occurrence and in the aggregate for bodily injury and/or property damage claims where the gross nameplate rating of the Facility is less than or equal to an aggregate of 100 kW;



11.1.2 One million dollars (\$1,000,000) per occurrence and in the aggregate for bodily injury and/or property damage claims where the gross nameplate rating of the Facility is greater than 100 kW and less than or equal to an aggregate of 1MW;

11.1.3 Two million dollars (\$2,000,000) per occurrence and in the aggregate for bodily injury and/or property damage claims where the gross nameplate rating of the Facility is greater than 1MW and less than or equal to an aggregate of 5MW; or

11.1.4 Five million dollars (\$5,000,000) per occurrence and in the aggregate for bodily injury and/or property damage claims where the gross nameplate rating of the Facility is greater than 5MW and less than or equal to an aggregate of 20MW.

11.2 Insurer Requirements and Endorsements. All insurance required pursuant to this Section 11 shall be carried by insurers qualified to underwrite insurance in Connecticut with an A.M. Best rating of A- or better. In addition, all insurance shall: (a) include the EDC as an additional insured for Generating facilities greater than 1MW; (b) contain a severability of interest clause or cross-liability clause unless the Generator is a residential customer; (c) provide that the EDC shall not be liable to the insurance carrier with respect to the payment of premium for such insurance; and (d) provide for written notice to the EDC thirty (30) days prior to cancellation, termination, or material change of such insurance.

11.3 Evidence of Insurance.

11.3.1 Evidence of the insurance required pursuant to this Section 11 shall state that the coverage provided is primary and is not excess of or contributing with any insurance or self-insurance maintained by the EDC.

11.3.2 The Generator is responsible for providing the EDC with evidence of insurance on an annual basis as set forth in the Guidelines.

11.3.3 Prior to the EDC commencing any work on system modifications, the Generator shall have its insurer provide to the EDC certificates of insurance evidencing the insurance coverage required pursuant to this Section 11. Such certificates shall clearly indicate whether such insurance policy is written on a "claims-made" basis.

11.3.4 The EDC may, at its discretion, require the Generator to maintain tail coverage with respect to any policy written on a "claims-made" basis for a period of three years after expiration or termination of such policy.

11.3.5 All insurance certificates, statements of self insurance, endorsements, cancellations, terminations, alterations, and material changes of such insurance shall be issued and submitted to the appropriate EDC Facilitator.

12. Performance Assurance.

12.1 If the EDC reasonably expects that any Interconnection Costs necessary to accommodate the Facility will be in excess of fifty thousand dollars (\$50,000) in the aggregate in any calendar year, the EDC may require that the Generator provide to the EDC a guarantee, a surety bond, letter of credit or other form of security that is reasonably acceptable to the EDC at least twenty (20) Business Days prior to the commencement of the related work. Such security for payment shall be in an amount sufficient to cover such Interconnection Costs. In addition:

12.1.1. Any guarantee provided by the Generator pursuant to this Section 12 shall be made by an entity that meets the creditworthiness requirements of the EDC, and contain terms and conditions that guarantee payment of any amount that may be due from the Generator, up to an agreed-to maximum amount; and

12.1.2. Any letter of credit or surety bond provided by the Generator pursuant to this Section 12.1.2 shall be issued by a financial institution or insurer reasonably acceptable to the EDC and must specify an expiration date reasonably acceptable to the EDC.

13. Indemnification.

13.1 Indemnification of the EDC. Subject to the limitation of liability set forth in Section 14, the Generator shall indemnify, defend and hold harmless the EDC and its trustees, directors, officers, employees and agents (including affiliates, contractors and their employees) from and against any liability, damage, loss, claim, demand, complaint, suit, proceeding, action, audit, investigation, obligation, cost, judgment, adjudication, arbitration decision, penalty (including fees and fines), or expense (including court costs and attorneys' fees) relating to, arising from or connected to this Agreement.

13.2 Indemnification of the Generator. Subject to the limitation of liability set forth in Section 14, the EDC agrees to indemnify, defend and hold harmless the Generator, its trustees, directors, officers, employees and agents (including Affiliates, contractors and their employees), from and against any and all damages for personal injury (including death) or property damage to unaffiliated third parties arising from any and all actions relating to or arising out of any material failure by the EDC to perform any of its obligations pursuant to Section 6.2.2 of this Agreement.

13.3 Survival of Indemnification. The indemnification obligations of each Party set forth in this Section 13 shall continue in full force and effect regardless of whether this Agreement has expired or been terminated, defaulted or cancelled and shall not be limited in any way by any limitation on insurance.

14. Limitation of Liability.

14.1 Except with respect to a Party's fraud or willful misconduct, and except with respect to damages sought by a third party in connection with a third party claim: (a) neither Party shall be

liable to the other Party, for any damages other than direct damages; and (b) each Party agrees that it is not entitled to recover and agrees to waive any claim with respect to, and will not seek, consequential, punitive or any other special damages as to any matter under, relating to, arising from or connected to this Agreement.

15. Amendments and Modifications.

15.1 No amendment or modification of this Agreement shall be binding unless in writing and duly executed by both Parties.

16. Permits and Approvals.

16.1 The Generator is responsible for obtaining all environmental and other permits required by governmental authorities for the construction and operation of the Facility (each, a "**Required Permit**"). The EDC assumes no responsibility for obtaining any Required Permit, advising the Generator with respect to Required Permits, or assuring that all Required Permits have been obtained by the Generator. Upon written request of the EDC, the Generator shall promptly provide to the EDC a copy of any Required Permit.

17. Environmental Releases.

17.1 Each Party shall immediately notify the other Party, first orally and then in writing, of any of the following events related to the Facility upon becoming aware of such event: (a) the release of any hazardous substances; (b) any asbestos or lead abatement activities; or (c) any type of remediation activities. The Party having the responsibility for reporting such an event to appropriate governmental authorities shall promptly furnish to the other Party copies of any publicly available reports filed with such authorities.

18. Force Majeure.

18.1 For purposes of this Agreement, "**Force Majeure Event**" means any event or circumstance that (a) is beyond the reasonable control of the affected Party and (b) the affected Party is unable to prevent or provide against by exercising commercially reasonable efforts. Force Majeure Events include the following events or circumstances, but only to the extent they satisfy the foregoing requirements: (i) acts of war or terrorism, public disorder, insurrection, or rebellion; (ii) floods, hurricanes, earthquakes, lightning, storms, and other natural calamities; (iii) explosions or fire; (iv) strikes, work stoppages, or labor disputes; (v) embargoes; and (vi) sabotage. In no event shall the lack of funds or the inability to obtain funds constitute a Force Majeure Event.

18.2 If a Force Majeure Event prevents a Party from fulfilling any obligations under this Agreement, such Party will promptly notify the other Party in writing, and will keep the other Party informed on a continuing basis of the scope and duration of the Force Majeure Event. The affected Party shall specify in reasonable detail the circumstances of the Force Majeure Event, its expected duration, and the steps that the affected Party is taking to

mitigate the effects of the event on its performance. The affected Party may suspend or modify its performance of obligations under this Agreement, other than the obligation to make payments then due or becoming due under this Agreement, but only to the extent that the effect of the Force Majeure Event cannot be mitigated by the use of commercially reasonable efforts. The affected Party shall use commercially reasonable efforts to resume its performance as soon as possible. Without limiting this section, the Generator shall immediately notify the EDC verbally if the failure to fulfill the Generator's obligations under this Agreement may impact the safety or reliability of the EPS.

19. Notices.

19.1 All notices, demands and other communications to be given or delivered under or by reason of the provisions of this Agreement shall be in writing and shall be deemed to have been given: (a) immediately when personally delivered; (b) when received by first class mail, return receipt requested; (c) one day after being sent for overnight delivery by Federal Express or other overnight delivery service; or (d) when receipt is acknowledged, either electronically or otherwise, if sent by facsimile, telecopy or other electronic transmission device. Notices, demands and communications to the other Parties shall, unless another address is specified by such Parties in writing, be sent to the addresses indicated below:

If to the EDC:

**The Connecticut Light and Power Company d/b/a Eversource Energy**  
107 Selden Street, Berlin, CT 06037  
Attention: Supervisor, Distributed Resources  
Phone: 866-324-2437

If to the Generator:

**McHenry Solar, LLC**  
c/o Allco Renewable Energy Limited,  
601 South Ocean Blvd., Delray Beach, FL 33483  
Attention: Thomas M. Melone  
Phone: 212-681-1120

And via email to [Thomas.Melone@gmail.com](mailto:Thomas.Melone@gmail.com)

19.2 Each Party may designate operating representatives to conduct daily communications between the Parties, which may be necessary or convenient for the administration of this Agreement. The names, addresses, and phone numbers of each Party's representatives shall be provided in writing by such Party to the other Party.

20. Default and Remedies.

20.1 Defaults. Each of the following shall constitute an "***Event of Default***,"

20.1.1. A Party fails to pay any bill or invoice for charges incurred pursuant to this Agreement or any other amount due from such Party to the other Party as and when due, any such failure shall continue for a period of thirty (30) days after written notice of nonpayment from the affected Party to the defaulting Party; provided, however, if such Party disputes such bill, invoice or other amount due in good faith, then such failure to pay shall not constitute an Event of Default and the Parties shall resolve such dispute in accordance with Section 21;

20.1.2. A Party (a) fails to comply with any other provision of this Agreement or breaches any representation or warranty in any material respect and (b) fails to cure or remedy such failure or breach within sixty (60) days after notice and written demand by the other Party to cure the same or such longer period reasonably required to cure the same (not to exceed an additional ninety (90) days unless otherwise mutually agreed upon, provided that the failing or breaching Party diligently continues to cure until such failure or breach is fully cured). This provision pertains only to cure periods not specifically addressed elsewhere in this Agreement;

20.1.3. A Generator modifies the Facility or any part of the Interconnection without the prior written approval of the EDC; or

20.1.4. A Party fails to perform any obligation hereunder in accordance with (a) applicable laws and regulations, (b) the ISO-NE operating documents, procedures, and reliability standards, and (c) Good Utility Practice.

20.2 Remedies. Upon the occurrence of an Event of Default, the non-defaulting Party may, at its option, in addition to any remedies available under any other provision herein, do any, or any combination, as appropriate, of the following: (a) continue to perform and enforce this Agreement; (b) recover damages from the defaulting Party except as limited by this Agreement; (c) by written notice to the defaulting Party terminate this Agreement; or (d) pursue any other remedies it may have under this Agreement or under applicable law or in equity.

## 21. Dispute Resolution Procedures.

21.1 Each Party shall agree to attempt to resolve all disputes promptly, equitably and in good faith. If the Parties are unable to informally resolve any dispute, the Parties shall follow the dispute resolution process set forth in the Guidelines.

## 22. Subcontractors.

22.1 Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement; provided, however, that the hiring Party shall require such subcontractor to comply with all applicable terms and conditions of this Agreement in providing such subcontracting

services and the hiring Party shall remain primarily liable to the other Party for the performance of such subcontractor.

22.2 The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor hired by the hiring Party to perform its obligations under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.

22.3 The obligations under this Section 22 will not be limited in any way by any limitation of subcontractor's insurance.

23. Miscellaneous.

23.1 Governing Law. This Agreement and the legal relations between the Parties will be governed by and construed in accordance with the laws of the State of Connecticut applicable to contracts made and performed in such State and without regard to conflicts of law doctrines.

23.2 Non-waiver. No failure on the part of any Party to exercise or delay in exercising any right hereunder shall be deemed a waiver thereof, nor shall any single or partial exercise of any right hereunder preclude any further or other exercise of such or any other right.

23.3 No Third Party Beneficiaries. This Agreement is made solely for the benefit of the Parties. Nothing in the Agreement shall be construed to create any rights in or duty to, or standard of care with respect to, or any liability to, any person not a party to or otherwise bound by this Agreement.

23.4 Severability. If any provision of this Agreement is held to be unenforceable for any reason, such provision shall be adjusted rather than voided, if possible, to achieve the intent of the Parties. If no such adjustment is possible, such provision shall be fully severable and severed, and all other provisions of this Agreement will be deemed valid and enforceable to the extent possible.

23.5 No Partnership. Nothing in this Agreement shall constitute or be construed to be or create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. No Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Parties.

23.6 Headings. All headings in this Agreement are included solely for convenient reference, are not intended to be full and accurate descriptions of the contents of this Agreement, will

not be deemed a part of this Agreement, and will not affect the meaning or interpretation of this Agreement.

**23.7 Changes in State Regulations or Law.** Upon thirty (30) days prior written notice, EDC may terminate this Agreement if there are any changes in PURA regulations or Connecticut law that affects the EDC's ability to perform its obligations under this Agreement.

**23.8 General Rules of Construction.** For all purposes of this Agreement: (a) all terms defined herein or in the Guidelines shall have the meanings assigned to them herein or in the Guidelines, as the case may be, and shall include the plural as well as the singular; (b) all references in this Agreement to designated "Sections" and other subdivisions are to the designated Sections and other subdivisions of the body of this Agreement; (c) pronouns of either gender or neuter will include, as appropriate, the other pronoun forms; (d) the words "herein," "hereof" and "hereunder" and other words of similar import refer to this Agreement as a whole and not to any particular Section or other subdivision; (e) "or" is not exclusive; (f) "including" and "includes" will be deemed to be followed by "but not limited to" and "but is not limited to," respectively; (g) any definition of or reference to any law, agreement, instrument or other document herein will be construed as referring to such law, agreement, instrument or other document as from time to time amended, supplemented or otherwise modified; (h) any definition of or reference to any law or statute will be construed as referring also to any rules and regulations promulgated thereunder; and (i) as used herein, "days" shall mean "calendar days."

**23.9 Counterparts.** This Agreement may be executed in counterparts, each of which shall be deemed an original, and all counterparts so executed shall constitute one agreement binding on all of the Parties hereto, notwithstanding that all of the Parties are not signatories to the same counterpart. Facsimile counterparts may be delivered by any Party, with the intention that they shall have the same effect as an original counterpart hereof.

**23.10 Signatures.** Each Party hereby signifies its agreement to the all of the terms of this Agreement by its signatures hereto. Each Party represents that it has carefully reviewed this Agreement individually and with counsel and that it has knowingly and willingly executed this Agreement.

## **24. Taxes**

**24.1 Payments Not Taxable.** The Parties intend that all payments or property transfers made by any party for the installation of the Upgrades shall be non-taxable, either as contributions to capital, or as an advance, in accordance with the internal Revenue Code and any applicable state income tax laws and shall not be taxable as contributions in aid of construction or otherwise under the Internal Revenue Code and any applicable state income tax laws.

**24.2 Representations and Covenants.** In accordance with IRS Notice 2016-36, Generator represents and covenants that (i) in the case of electricity wheeled over EDC's system, ownership of wheeled electricity remains with the Generator prior to its transmission onto the grid, (ii) for income tax purposes, the amount of any payments and the cost of any property transferred to the EDC for the Upgrades will be capitalized by Generator as an intangible asset and recovered using the straight-line method over a useful life of twenty (20) years, and (iii) any portion of the Generating Facility that is a "dual-use intertie," within the meaning of IRS Notice 2016-36, is reasonably expected to carry only a de minimis amount of electricity in the direction of the Generating Facility. For this purpose, "de minimis amount" means no more than 5 percent of the total power flows in both directions, calculated in accordance with the "5 percent test" set forth in IRS Notice 2016-36. This is not intended to be an exclusive list of the relevant conditions that must be met to conform to IRS requirements for non-taxable treatment.

At EDC's request, Generator shall provide EDC with a report from an independent engineer confirming its representation in clause (iii), above. EDC represents and covenants that the cost of the Upgrades paid for by Generator will have no net effect on the base upon which rates are determined.

**24.3 Indemnification for the Cost Consequences of Current Tax Liability Imposed Upon EDC.** Notwithstanding this Article 24.1, Generator shall protect, indemnify and hold harmless the EDC from the cost consequences of any current tax liability imposed against the EDC as the result of payments or property transfers made by the Generator to the EDC under this Agreement, as well as any interest and penalties, other than interest and penalties attributable to any delay caused by EDC.

The EDC shall not include a gross-up for the cost consequences of any current tax liability in the amounts it charges the Generator under this Agreement unless (i) the EDC has determined, in good faith, that the payments or property transfers made by the Generator to the EDC should be reported as income subject to taxation or (ii) any governmental authority directs EDC to report payments or property as income subject to taxation; provided, however, that the EDC may require the Generator to provide security, in a form reasonably acceptable to EDC (such as a parental guarantee or a letter of credit), in an amount equal to the cost consequences of any current tax liability under this Article 24. Generator shall reimburse EDC for such costs on a fully grossed-up basis, in accordance with Article 24.4, within thirty (30) Calendar Days of receiving written notification from EDC of the amount due, including detail about how the amount was calculated.

The indemnification obligation shall terminate at the earlier of (1) the expiration of the ten year testing period, and the applicable statute of limitation, as it may be extended by the EDC upon request of the IRS, to keep these years open for audit or adjustment, or (2) the occurrence of a subsequent taxable event and the payment of any related indemnification obligations as contemplated by this Article 5.17.



**24.4 Tax Gross-Up Amount.** Generator's liability for the cost consequences of any current tax liability under this Article 24 shall be calculated on a fully grossed-up basis. Except as may otherwise be agreed to by the parties, this means that Generator will pay EDC, in addition to the amount paid for the Upgrades, an amount equal to (1) the current taxes imposed on EDC ("Current Taxes") on the excess of (a) the gross income realized by EDC as a result of payments or property transfers made by Generator to EDC under this Agreement (without regard to any payments under this Article 24) (the "Gross Income Amount") over (b) the present value of future tax deductions for depreciation that will be available as a result of such payments or property transfers (the "Present Value Depreciation Amount"), plus (2) an additional amount sufficient to permit the EDC to receive and retain, after the payment of all Current Taxes, an amount equal to the net amount described in clause (1). For this purpose, (i) Current Taxes shall be computed based on EDC composite federal and state tax rates at the time the payments or property transfers are received and EDC will be treated as being subject to tax at the highest marginal rates in effect at that time (the "Current Tax Rate"), and (ii) the Present Value Depreciation Amount shall be computed by discounting EDC's anticipated tax depreciation deductions as a result of such payments or property transfers by EDC prime rate. Thus, the formula for calculating Generator's liability to EDC pursuant to this Article 5.17.4 can be expressed as follows: 
$$\frac{\text{Current Tax Rate} \times (\text{Gross Income Amount} - \text{Present Value of Tax Depreciation})}{(1 - \text{Current Tax Rate})}$$

**24.5 Private Letter Ruling or Change or Clarification of Law.** At Generator's request and expense, EDC shall file with the IRS a request for a private letter ruling as to whether any property transferred, or sums paid, or to be paid, by Generator to EDC under this Agreement are subject to federal income taxation. Generator will prepare the initial draft of the request for a private letter ruling and will certify under penalties of perjury that all facts represented in such request are true and accurate to the best of Generator's knowledge. EDC and Generator shall cooperate in good faith with respect to the submission of such request.

EDC shall keep Generator fully informed of the status of such request for a private letter ruling and shall execute either a privacy act waiver or a limited power of attorney, in a form acceptable to the IRS, that authorizes Generator to participate in all discussions with the IRS regarding such request for a private letter ruling. EDC shall allow Generator to attend all meetings with IRS officials about the request and shall permit Generator to prepare the initial drafts of any follow-up letters in connection with the request.

**24.6 Subsequent Taxable Events.** If, within ten (10) years from the date on which the relevant Upgrades are placed in service, (i) Generator breaches the covenant contained in Article 24.2, (ii) a "disqualification event" occurs within the meaning of IRS Notice 2016-36, or (iii) this Agreement terminates and EDC retains ownership of the Upgrades, the Generator shall pay a tax gross-up for the cost consequences of any current tax liability imposed on EDC, calculated using the methodology described in Article 24.4 and in accordance with IRS Notice 2016-36.

**24.7 Contests.** In the event any governmental authority determines that EDC's receipt of payments or property constitutes income that is subject to taxation, EDC shall notify Generator, in writing, within thirty (30) Calendar Days of receiving notification of such determination by a governmental authority. Upon the timely written request by Generator and at Generator's sole expense, EDC may appeal, protest, seek abatement of, or otherwise oppose such determination. Upon Generator's written request and sole expense, EDC may file a claim for refund with respect to any taxes paid under this Article 24, whether or not it has received such a determination. EDC reserves the right to make all decisions with regard to the prosecution of such appeal, protest, abatement or other contest, including the selection of counsel and compromise or settlement of the claim, but EDC shall keep generator informed, shall consider in good faith suggestions from Generator about the conduct of the contest, and shall reasonably permit Generator or a Generator representative to attend contest proceedings.

Generator shall pay to EDC on a periodic basis, as invoiced by EDC, documented reasonable costs of prosecuting such appeal, protest, abatement or other contest. At any time during the contest, EDC may agree to a settlement either with Generator's consent or after obtaining written advice from nationally -recognized tax counsel, selected by EDC, but reasonably acceptable to Generator, that the proposed settlement represents a reasonable settlement given the hazards of litigation. Generator's obligation shall be based on the amount of the settlement agreed to by Generator, or if a higher amount, so much of the settlement that is supported by the written advice from nationally recognized tax counsel selected under the terms of the preceding sentence. The settlement amount shall be calculated on a fully grossed-up basis to cover any related cost consequences of the current tax liability. Any settlement without Generator's consent or such written advice will relieve Generator from any obligation to indemnify EDC for the tax at issue in the contest.

**24.8 Refund.** In the event that (a) a private letter ruling is issued to EDC which holds that any amount paid or the value of any property transferred by Generator to EDC under the terms of this Agreement is not subject to federal income taxation, (b) any legislative change or administrative announcement, notice, ruling or other determination makes it reasonably clear to EDC in good faith that any amount paid or the value of any property transferred by Generator to EDC under the terms of this Agreement is not taxable to EDC, (c) any abatement, appeal, protest, or other contest results in a determination that any payments or transfers made by Generator to EDC are not subject to federal income tax, or (d) if EDC receives a refund from any taxing authority for any overpayment of tax attributable to any payment or property transfer made by Generator to EDC pursuant to this Agreement, EDC shall promptly refund to Generator the following:

- (i) any payment made by Generator under this Article 5.17 for taxes that is attributable to the amount determined to be non-taxable, together with interest thereon,

- (ii) interest on any amounts paid by Generator to EDC for such taxes which EDC did not submit to the taxing authority, interest calculated in accordance with

the methodology set forth in the Federal Energy Regulatory Commission's regulations at 18 CFR §35.19a(a)(2)(iii) from the date payment was made by Generator to the date EDC refunds such payment to Generator, and

(iii) with respect to any such taxes paid by EDC, any refund or credit EDC receives or to which it may be entitled from any governmental authority, interest (or that portion thereof attributable to the payment described in clause (i), above) owed to the EDC for such overpayment of taxes (including any reduction in interest otherwise payable by EDC to any governmental authority resulting from an offset or credit); provided, however, that EDC will remit such amount promptly to Generator only after and to the extent that EDC has received a tax refund, credit or offset from any governmental authority for any applicable overpayment of income tax related to the Upgrades.

The intent of this provision is to leave parties, to the extent practicable, in the event that no taxes are due with respect to any payment for Upgrades hereunder, in the same position they would have been in had no such tax payments been made.

IN WITNESS HEREOF, the Parties have caused this INTERCONNECTION AGREEMENT to be executed on the day and year first written above.

THE EDC

By:  \_\_\_\_\_

Name: Carl Nowiszewski

Title: Manager of Distributed Energy Resources CT

Duly Authorized

THE GENERATOR

By:  \_\_\_\_\_

Name: Thomas M. Melone

Title: President

Duly Authorized

## **Appendix A**

### **Guidelines for Generator Interconnection Fast Track and Study Processes April 5, 2019**

(Intentionally omitted)

## Appendix B

### Description of the Facility as studied, and incorporating any approved design changes

**Project description & size:** Photovoltaic generating facility consists of a 999 kW system

**Street Address:** Located approximately at 391 Hartford Turnpike, Hampton, CT.

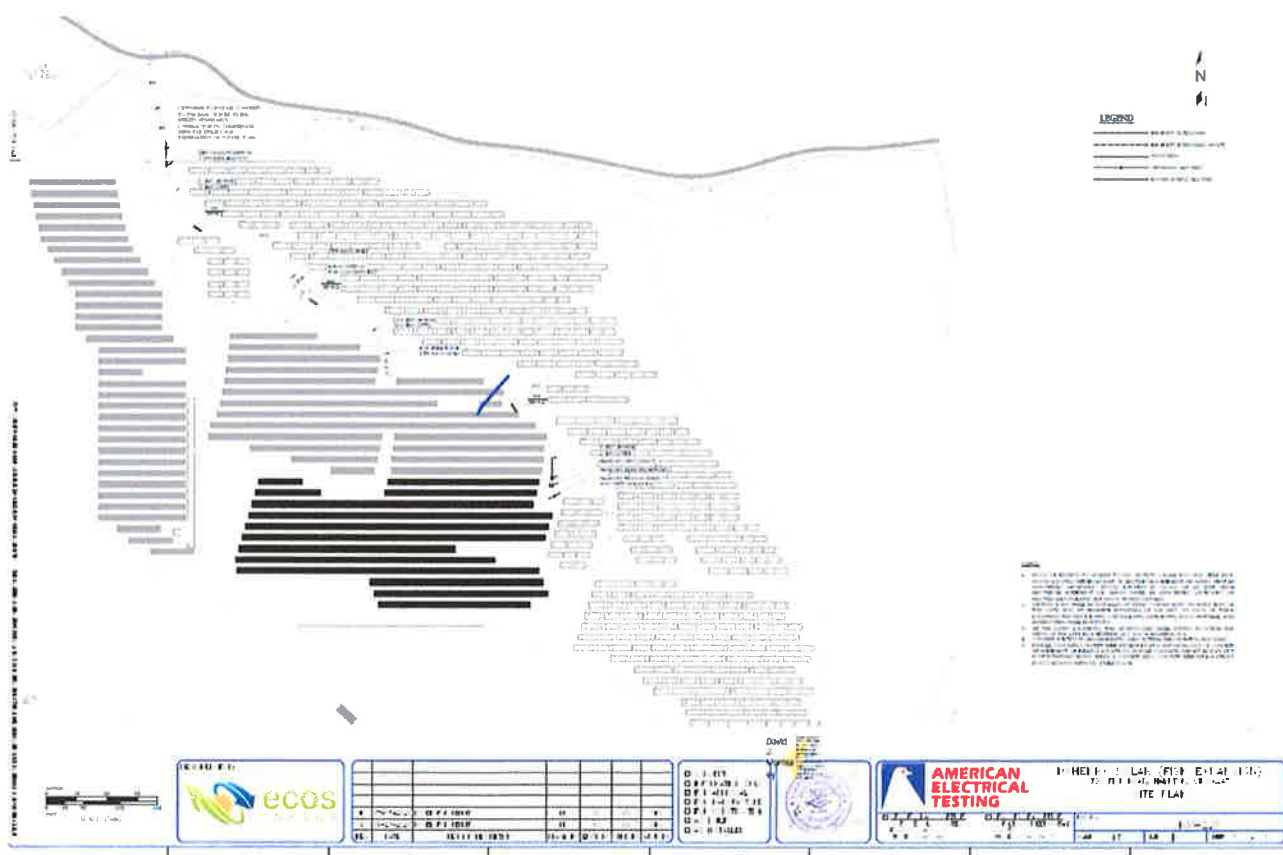
**LREC Contract:** L9-3766

**Point of interconnection:** The Project will interconnect to the Eversource 23kV 11F14 circuit distribution system via a primary service.

**System Description:** The Project consists of Eight (8) KACO-125TL3 inverters.

**Point of Change of Ownership (POCO):** At the same location of the existing primary meters

**Service type & description:** This project is an addition to the existing service and will only require the addition of a primary meter.



## Appendix C

### **Conditions for Parallel Operation of Generating Facility, Special Operating Requirements**

- 1- Enable the default ramp rate @ 1,000kW/minute.
- 2- The Project will be operating at unity power factor
- 3- Maximum export will be 999 kW AC.
- 4- Inverter setting per ISO-NE and Generator Interconnection Guidelines. Refer to Eversource Energy "The Eversource and United Illuminating Company Exhibit B- Generator Interconnection Technical Requirements" dated April 5<sup>th</sup>, 2019. The settings can be found in Appendix C
- 5- The visible break AC Disconnect switch is required as identified The Eversource and United Illuminating Company Exhibit B- Generator Interconnection Technical Requirements" dated April 5<sup>th</sup>, 2019 section 2.4 Visible break.

**Appendix D**

**Initial Cost Estimate**

**Witness test: See Attachment F for total costs**

**Please refer to Section 5.3 – Billing and Payment Procedures for Initial Interconnection Costs. If someone other than the generator/customer is responsible for the payment, please note and sign below.**

**Other responsible party:** \_\_\_\_\_

**Name:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**City/State/Zip:** \_\_\_\_\_



**Appendix E**

**Construction Agreement**

None required.

**Appendix F**  
**Attachment I**

No	Milestones for Interconnection	Due by Date	Responsible Party	Comments
1.	Sign the Interconnection Agreement and Attachments as appropriate and return	November 30, 2020	Generator	
2.	Provide initial payment of \$6,000	November 30, 2020	Generator	
3.	File a new service request	15 business days after return of the Interconnection Agreement and initial payment	Generator	
4.	Start Eversource procurement	15 business days after initial payment	Eversource	
5.	Secure Easements	Prior to start of Eversource construction	Generator	Refer to Appendix F Attachment II note 5
6.	Construction kick off call/meeting as needed.	10 business days after 100% payment	Eversource/Generator	
7.	Provide final design and three-line diagram	30 business days after 100% payment	Generator	
8.	Submit Certificate of Insurance	Prior to start of Eversource construction	Generator	
9.	Complete Eversource Construction	2 weeks from municipal approval	Eversource	
10.	Generator to provide either (1) documentation showing how it will meet the IRS Notice 2016-36 "Safe Harbor" provisions or (2) cash to the EDC for CIAC tax gross up at the applicable rate.	Two Months Prior to In-Service Date	Generator	Refer to Appendix G for CIAC amount
11.	Provide Witness Test plan with all associated documentation	Minimum 10 Business days before scheduling witness test	Generator	Refer to Appendix F Attachment II notes 2 and 3
12.	Submit proof of Municipal Approval ( <i>WR# by Eversource</i> )	Minimum 5 Business days before scheduling witness test	Generator	
13.	Conduct Witness Test	15 business days from Inspector approval & approved witness test plan	Eversource	Refer to Appendix F Attachment II notes 2 and 3
14.	Send authorization to interconnect Letter / In-service date	2 business days from successful witness test and receipt of all documents	Eversource	

**Agreed to by:**

Generator

Date:

11/16/20

Eversource Energy

Date:

6/25/2021

**Appendix F**  
**Attachment II**  
**Schedule of Milestones**

- 1- In order to meet the ISD stated in the milestone in appendix F all stated milestones must be completed at least 3 weeks prior to the ISD including all easement requirements for this project.
- 2- A witness test is required to be performed per the Generator Interconnection Guidelines. Refer to Eversource Energy "The Eversource and The United Illuminating Company Exhibit B- Generator Interconnection Technical Requirements" dated April 5<sup>th</sup>, 2019 section 7.
- 3- A test plan must outline the steps necessary to demonstrate that when the AC disconnect switch is opened, the PV inverters stop conducting within two (2) seconds or less, and when the AC disconnect switch is closed, the PV inverters do not start to conduct for at least five (5) minutes. The test must also demonstrate that the inverter shuts down upon loss of each individual phase.
- 4- Inverter setting per ISO-NE and Generator Interconnection Guidelines. Refer to Eversource Energy "The Eversource and United Illuminating Company Exhibit B- Generator Interconnection Technical Requirements" dated April 5<sup>th</sup>, 2019. The settings can be found in Appendix C. The settings must be included in the test plan.
- 5- The Project will interconnect to the Eversource Circuit via a primary service. Metering will be pole mounted and final location of poles will be determined during construction. Eversource will require easements for all Eversource equipment on private property. Easement will be the responsibility of the Generator.
- 6- Prior to start of Eversource construction, payment must be received in full.
- 7- The Generator is responsible that all equipment is tested and operating satisfactorily prior to requesting that Eversource energizes the site. Eversource will not be liable for any damage to Generator equipment.

**Appendix G**  
**Attachment 1**

**EDC's Description of its Upgrades and Best Estimate of Upgrade Costs**

<b>Item</b>	<b>Description</b>	<b>Cost</b>	<b>Notes No.</b>
1.	New Service	\$5,000	
2.	<b>Subtotal</b>	<b>\$5,000</b>	
3.	CIAC - 12%, (Contribution in Aid of Construction)		
4.	Subtotal with CIAC	\$5,000	
5.	Witness Test	\$1,000	
6.	<b>Total Construction cost</b> Note: Additional escalation cost of 4% will apply per year for payment after 2020	<b>\$6,000</b>	

**TABLE 1**

**General comments:**

1. Line work may require consent from property owners in compliance with CT Statute. The proposed schedule of milestones as outlined in appendix F of the IA assumes that such approval will be secured with no opposition and does not include any delays or legal fees associated with securing such approval.
2. In the event that you are unable to meet the schedule of milestones in appendix F of the IA a revised schedule of milestones will be re-submitted to you. It is important to note that a slip in schedule may not result in an equal delay (one to one delay). Schedules are based on availability of manpower, resources and the ability to schedule outages which can be curtailed during the summer season.
3. Price is based on Impact study with an accuracy of +/- 25% (If a Facility Study was performed delete this note)
4. Escalation cost of 4% will apply per year for payment after 2020.

**Agreed to by:**


Generator



Date:

11/26/20

Eversource Energy



Date:

6/25/2021

**Appendix G**  
**Attachment II**  
**Payment Schedule**

Item	Due by Date	Payment Amount
1.	November 30, 2020	\$6,000
2.	<b>Total Payments Amount</b>	\$6,000

**Agreed to by:**

**Generator**



**Date:**

11/16/20

**Eversource Energy**



**Date:**

6/25/2021

**Appendix G**  
**Attachment III**  
**Ongoing Costs**

Ongoing Costs will be calculated at the completion of construction based on the percentages shown below. Escalation cost per year is based on the Consumer Price Index (CPI). Taxes may be subject to change based on actual tax base. Refer to IA Section 5.4 of this IA.

DESCRIPTION	<i>Ongoing Costs</i>	Taxes	% Total	Cost (Estimated)	<i>Ongoing Costs</i>
Substation Station Equipment	5.66%	2.10%	7.76%	\$0.00	\$0.00
Overhead Conductors & Devices	7.69%	2.10%	9.79%	\$ 0.00	\$0.00
Total Yearly Amount					\$0.00

**Agreed to by:**

Generator  Date: 11/16/20

Eversource Energy  Date: 6/25/2021

## Appendix H





[illegible][illegible]

29 - R107050N1	017.0795 TO 210.4 107.6 U.S. VOLTAGE	29A - R1063	1.50 TO 1.65 U.S. THERMAL	SETTINGS ARE BASED ON REF-1547 SETTINGS ARE BASED ON 0.4 VOLTAGE
1.50 TO 1.65 U.S. THERMAL				

20. H. A. KATZ, *Journal of the Acoustical Society of America*, **41**, 100 (1967).

[illegible]

251A) THE AUTOMATON MUST RELAY CLOSE IF THERE IS A BLOWDOWN FAILURE OR POWER SUPPLY FAILURE OPERATING THE EXHAUST FAN UNDER OPERATING TIME (AN ADDITIONAL 30 CYCLES)

[illegible]

CT <sub>50</sub> (3)	CT <sub>50</sub> (6)	OPPORTUNISTIC DISEASE
GLUTATHIONE S-TRANSFERASE		
20000	12000	ACCL-5ACT WJ3
10000	10000	ACCL-5ACT WJ3
10000	10000	ACCL-5ACT WJ3

[illegible][illegible][illegible]

DESIGNED FOR:

Designed for:

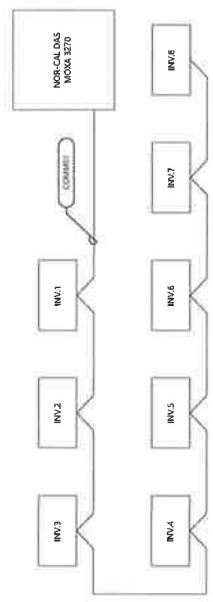

 E 02-17-1000 15/03 FOR RENEW

REV	DATE	REVISION DESCRIPTION	DRAWN
A	06-20-2020	ISSUED FOR PERMIT	

1 2 3



**NOTES:**  
 1. SEE SHEET E-105 FOR EQUIPMENT LABELING REQUIREMENTS  
 2. SEE SHEET E-240 THRU E-241 FOR MCK-CAL PROVIDED COMMUNICATION  
 SINGLE LINE DIAGRAMS



1 Inverter Comm Oneline Diagrams  
 NTS

WIRING SCHEDULE	
WIRING ID	NOTES
COMBIBIT	RS485 SHIELDS CONDUCTION IN 1" PVC CONDUIT

**McHenrey Solar**  
 Windham County, Connecticut

Communication  
 Oneline Diagram

ISSUED FOR  
 CONSTRUCTION

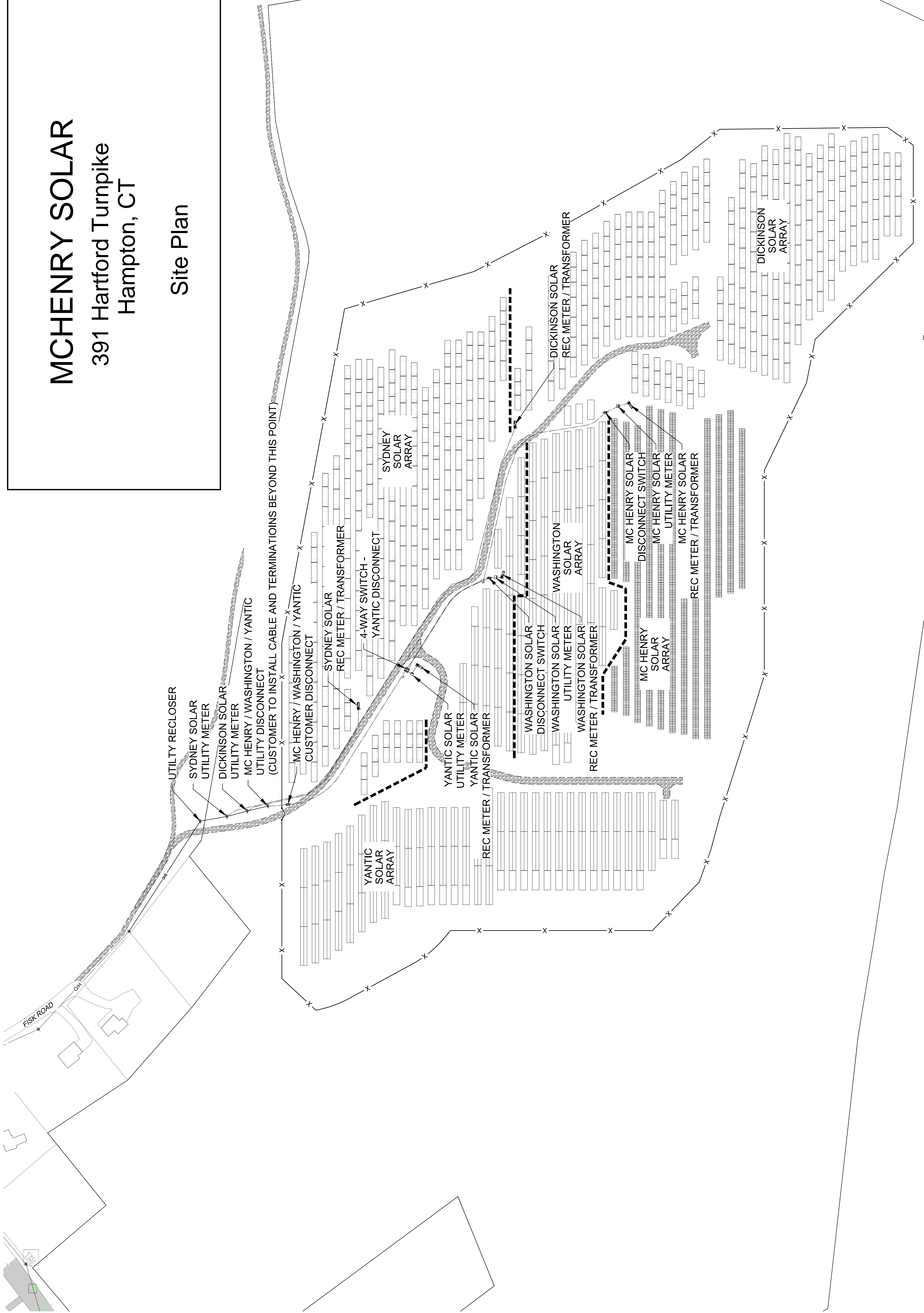
DATE: 08/05/2020

SHEET: E.230

# MCHENRY SOLAR

391 Hartford Turnpike  
Hampton, CT

## Site Plan





## **APPENDIX I**

### **ASSET DEMARCATION AGREEMENT**

This Asset Demarcation Agreement (“Agreement”) dated as of May 12, 2021 by and between The Connecticut Light and Power Company d/b/a Eversource Energy, a specially chartered Connecticut corporation with a principal place of business at 107 Selden Street, Berlin, Connecticut, 06037, (the “Electric Distribution Company” or “EDC”), and McHenry Solar LLC, with a place of business at c/o Allco Renewable Energy Limited, 601 South Ocean Blvd., Delray Beach, Florida 33483 (the “Generator”). The EDC and Generator are each referred to herein as a “Party” or collectively as the “Parties.”

### **WITNESSETH**

WHEREAS, the EDC and Generator are parties to the Standard Fast Track and Study Process Generator Interconnection Agreement dated as of November 13, 2020 (the “Interconnection Agreement”);

WHEREAS, the EDC and Generator independently own and maintain certain electric facilities that are interconnected to provide continuity of service between the Parties;

WHEREAS, the EDC and Generator are entering into this Agreement to evidence their agreement on the demarcation of ownership of their respective electric Facilities (as defined herein below);

WHEREAS, the Parties acknowledge that portions of the Generator Facilities were not constructed in accordance with the EDC’s Construction Standards; and

NOW THEREFORE, in consideration of the foregoing, the EDC and Generator hereby agree as follows:

1. Definitions. Whenever used in this Agreement with initial capitalization, the following terms have the meanings specified or referred to in this section. Capitalized terms used but not defined in this Agreement shall have meanings ascribed to such terms in the Interconnection Agreement

“Construction Standards” means those engineering and operations standards customer must comply with. The most recent being the Eversource Distribution line standards included in Exhibit B, which may change from time to time at discretion of EDC.

“Generator Facilities” means that portion of any Facilities owned by Generator including that portion of any such Facilities located on the easements, rights of way, or property of the EDC, to the Ownership Demarcation Point.

“Facilities” means all utility equipment used in the transmission of electricity including all equipment, fixtures, cables, wires, and associated structures.

“Ownership Demarcation Point” means, with respect to any Facility, the point where the EDC Facilities and Generator Facilities change ownership. The Ownership Demarcation Points for the Facilities are identified in Exhibit A attached hereto.

“Plan” means (a) the surveys, easement or plot plans and sketches, and (b) engineering plans, including electrical plans and diagrams that pictorially identify Ownership Demarcation Point(s) in Exhibit A.

“EDC Facilities” means that portion of any Facilities owned by the EDC including that portion of any such Facilities located on the easements, rights of way, or property of the Generator, to the Ownership Demarcation Point.

2. Agreement on Demarcation. Generator and the EDC hereby agree that the respective Ownership Demarcation Points between the EDC Facilities and Generator Facilities shall be delineated on Exhibit A hereto, which is incorporated herein by reference thereto. The EDC shall be responsible for operation and maintenance of the EDC’s Facilities up to, and at, the Ownership Demarcation Point, and Generator shall be responsible for operation and maintenance of the Generator Facilities up to, and at, the Ownership Demarcation Point.

3. Agreement of Generator to Comply with the EDC’s Construction Standards. The Generator acknowledges that the EDC has made an exception to its Construction Standards for the Generator Facilities described in the Interconnection Agreement and will comply with all EDC Construction Standards currently in place for future generation projects.

4. Change or Modification of Demarcation. Either Party may at any time propose to the other Party a change or other modification with respect to any Ownership Demarcation Point. No such change or modification shall be valid and binding unless both Parties execute a written amendment to this Agreement, specifying in detail such change or modification in Exhibit A hereto, and attaching a revised Plan depicting the new or modified Ownership Demarcation Point. Any such change or modification shall be subject to prior regulatory approval and applicable law.

5. Costs. Unless otherwise agreed by the Parties, all costs and expenses reasonably attributable to the Facilities shall be borne by the Party owning such Facilities, and, all costs and expenses reasonably attributable to a change or modification of an Ownership Demarcation Point shall be borne by the Party proposing such change or modification.

6. Regulation. Nothing in this Agreement shall require the Parties to own any asset or equipment other than as provided for herein.

7. Notices. All communications under this Agreement shall be in writing and shall be delivered in person, against receipt, or sent by certified mail, postage prepaid, return receipt requested, or by overnight delivery by a courier service providing evidence of receipt, and properly addressed as follows:

If to the EDC:

Carl Nowiszewski, Manager of DER Customer Care  
Eversource Energy  
107 Selden Street  
Berlin, CT 06037

Copy to:

Vincent P. Pace, Assistant General Counsel  
Eversource Energy Service Company  
P.O. Box 270  
Hartford, CT 06141-0270

If to Generator:

McHenry Solar LLC  
c/o Allco Renewable Energy Limited  
601 South Ocean Boulevard  
Delray Beach, Florida 33483  
Att: Thomas M. Melone

All notices and other communications required or permitted under this Agreement shall be effective upon delivery. Any Party may from time to time change its address for the purpose of notices to that Party by a similar notice specifying a new address.

8. No Joint Venture. Nothing in this Agreement is intended to create an association, trust, partnership or joint venture between the Parties, or impose a trust, partnership or fiduciary duty, obligation or liability on or with respect to either Party

9. Amendment. No waiver and no modification or amendment of any provision of this Agreement shall be effective unless made in writing and duly signed by the Parties.

10. No Third Party Beneficiaries. Nothing in this Agreement, express or implied, is intended or shall be construed to confer upon, or give to, any person other than the Parties and their successors and permitted assigns and remedy or claim under of by reason of this Agreement or any of the agreements, terms, covenants or conditions hereof and all the agreements, terms, covenants and conditions of this Agreement contained shall be for the sole and exclusive benefit of the Parties and their successors and permitted assigns.


11. Binding Effect; Assignment. This Agreement and all of the provisions hereof shall be binding upon and inure to the benefit of the Parties and their respective successors and assigns.

12. Governing Law and Venue. This Agreement shall be governed by and construed in accordance with the domestic laws of the State of Connecticut without giving effect to any choice or conflict-of-law provision or rule (whether of Connecticut or any other jurisdiction) that would cause the application of the laws of any jurisdiction other than Connecticut.

13. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together will constitute one and the same instrument.

IN WITNESS WHEREOF, this Agreement has been duly executed and delivered by the duly authorized officers of the Parties hereto as of the date first above written.

THE CONNECTICUT LIGHT AND POWER COMPANY d/b/a  
EVERSOURCE ENERGY

By:   
Name: Carl Nowiszewski  
Title: Manager, DER, CT

MCHENRY SOLAR, LLC

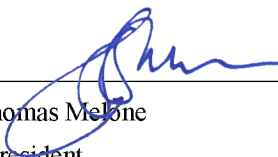
By:   
Name: Thomas Melone  
Title: President



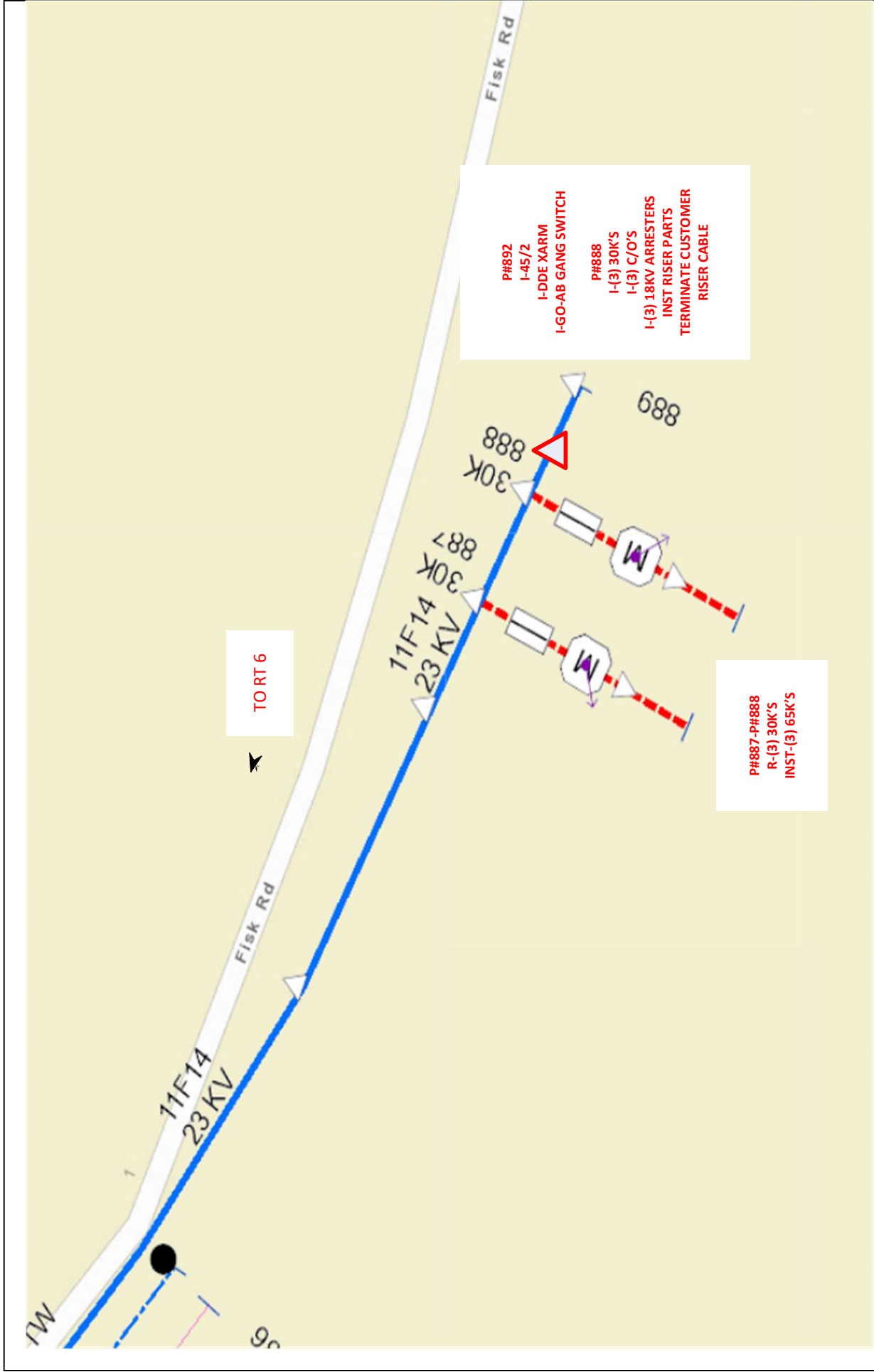
EXHIBIT A

DEMARICATION PLAN

EXHIBIT B

EVERSOURCE DISTRIBUTION LINE STANDARD





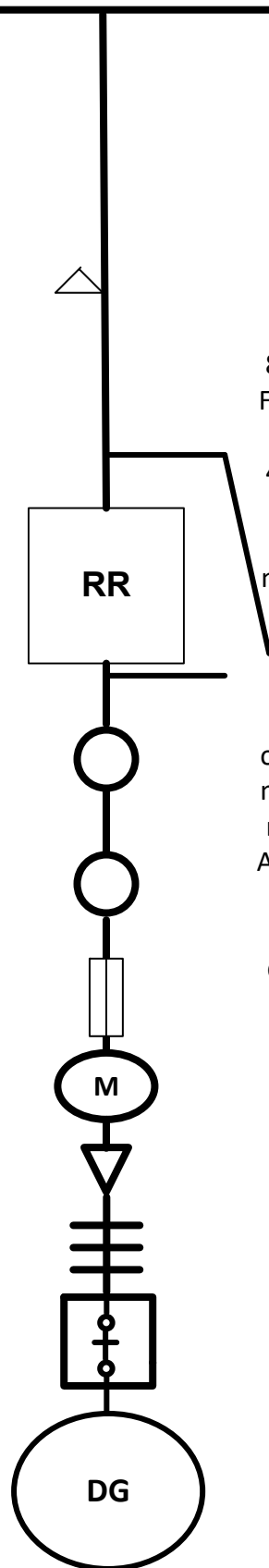
<div>EVERSOURCE</div> <div> </div>	Eng: Scott Cormier	Addr: FISK ST	Town: HAMPTON	PR:	WO: 5941464
	Tel: 860-779-5680	Ckt: 11F14	AWC: Danielson	Act:	FWO: 80085577
	Date: 6/15/2021	Pri V: 23KV	I-45/2 GOAD SWITCH RISER,C/O'S 30K'S AND 65K'S		

# Eversource Distribution line

Pole 1  
reserved for  
future transfer  
trip design

Pole 2  
82Z4-600R  
Nomenclature  
to be supplied  
by  
Distribution  
Engineering

Pole 3  
Fused

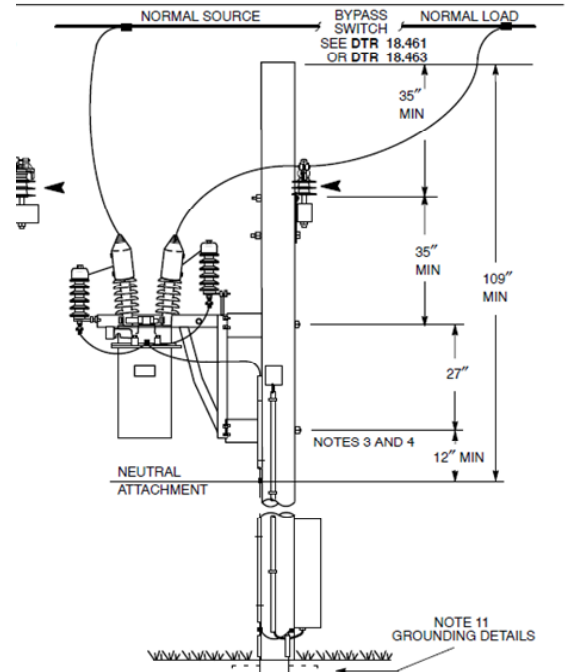


Pole 2 to be owned by Eversource. Recloser on source side of pole and disconnects on load side for visible break. At 23kV to 8.32kV use Cooper Nova and Form 6 control but verify with standards. For 27.6kV or 4.8kV delta contact P&C, will need external 120 source. If have a fiber transfer trip will need external 120/240 at any primary voltage.

Pole 3 to be owned by Eversource. Eversource to own the OH wire and primary metering only. DG to own the riser cable and terminations. Any OH wire beyond metering will be owned by DG. If a visible break such as disconnects is necessary, DG to install on their own pole/padmout. Fused if DG size allows

See page 2 for where to select primary metering design

Illustrative example only



## For OH primary metering use OH DTR section 35

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	<u>Page No</u>
1. Primary Metering Riser – CT/WMA	511
2. Single Phase Primary Metering – CT/WMA	
2.1. DELTA – Overhead to Overhead	705
2.2. WYE – Overhead to Overhead	707
2.3. WYE – Overhead to Underground	709
3. Three Phase Primary Metering – CT/WMA	
3.1. Three Wire – DELTA – Overhead to Overhead	713
3.2. Three Wire – DELTA – Overhead to Underground	715
3.3. Four Wire – WYE – Overhead to Overhead	717
3.4. Four Wire – WYE – Overhead to Underground	719
3.5. Four Wire – 23 kV & Below – Overhead to Overhead – Circuit Backbone	751
4. Primary Metering Overhead Equipment 35 kV – NH	821

## For pad-mounted primary metering use UG DTR section 35

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	<u>Page No</u>
1. Primary Metering Riser – CT/WMA	511
2. Single Phase Primary Metering – CT/WMA	
2.1. WYE – Overhead to Underground	709
3. Three Phase Primary Metering – CT/WMA	
3.1. Three Wire – DELTA – Overhead to Underground	715
3.2. Four Wire – WYE – Overhead to Underground	719
3.3. 15 kV & 25 kV Systems Pad-Mounted	701-703
3.4. 15 kV Wall-Mounted Systems	901

## STANDARD FAST TRACK AND STUDY PROCESS GENERATOR INTERCONNECTION AGREEMENT (LEG-22712)

This Interconnection Agreement (this "**Agreement**"), dated as of **April 23, 2021** (the "**Effective Date**"), is entered into by and between The Connecticut Light and Power d/b/a Eversource Energy, a specially chartered Connecticut corporation with a principal place of business at 107 Selden St, Berlin, CT, 06037 (the "**Electric Distribution Company**" or "**EDC**"), and **Washington Solar LLC** with a place of business at **c/o Allco Renewable Energy Limited, 601 South Ocean Blvd., Delray Beach, FL 33483** (the "**Generator**"). The EDC and the Generator are collectively referred to herein as the "**Parties**" and individually as a "**Party**." Any capitalized term used but not defined in this Agreement shall have the meaning ascribed to such term in the Guidelines for Generator Interconnection attached hereto as Appendix A, as may be amended from time to time (the "**Guidelines**").

1. Basic Understandings. The Generator owns and/or operates or plans to construct a Generating Facility at **391 Hartford Turnpike Road, Hampton, CT 06247** as depicted in Appendix H (the "**Facility**"). A description of the Facility as studied and incorporating any design changes approved in accordance with Section 1.3, is attached hereto as Appendix B (the "**Facility Description**").

1.1. The subject matter of this Agreement pertains to the Interconnection of the Facility to the EPS. This Agreement does not relate to any other obligation of the Generator unrelated to the Interconnection of the Facility. Apart from this Agreement, the Generator is responsible for (a) all arrangements to effect any deliveries of electric energy from the Facility in accordance with the appropriate retail or FERC-jurisdictional tariffs and (b) arranging for its purchase of retail power (such as back-up or stand-by power).

1.2. This Agreement does not cover sales of power, capacity, energy or market products generated from the Facility. If the Generator intends to sell energy or ancillary services from the Facility, it must provide written notice to the EDC of such intention at least sixty (60) days prior to the effectuation of such sale. Furthermore, the EDC may require the Generator to enter into a new Interconnection agreement prior to such sale which may or may not require approval from FERC.

1.3. Any changes to the design of the Facility as it is described and specified in the application submitted by the Generator to the EDC with respect to such Facility (the "**Application**") must be approved by the EDC in writing prior to the implementation of such design changes. Only design changes approved in accordance with this Section 1.3 shall be implemented. The Generator may not operate the Facility in parallel with the EPS until: (a) the conditions for initial parallel operation of the Facility set forth in Appendix C have been met; (b) commissioning and testing of the Facility has been completed in accordance with the Guidelines and to the satisfaction of the EDC; (c) the Generator has paid the EDC all funds due pursuant to paragraphs 5.3.1 and 5.3.2 of this Agreement; and (d) the EDC has provided formal written authorization in accordance with the Guidelines stating that operation of the Facility in parallel with the EPS is authorized by the EDC (the "**Authorization Date**"). Such written authorization will not be effective unless accompanied by a description of the Facility that incorporates all design changes to the Facility since the Application was submitted to the EDC (and not specified therein), including all design changes made during construction.

1.4. The Generator shall obtain each consent, approval, authorization, order or acceptance from FERC necessary for the Generator or any entity that, directly or indirectly, through one or more intermediaries, controls, or is controlled by, or is under common control with the Generator (each, an "**Affiliate**") to sell any power, capacity, energy or market products from the Facility into the wholesale power market (collectively, "**Wholesale Sales**") prior to making any such sales. If the Generator intends to make Wholesale Sales, then the Generator shall provide written notice to the EDC at least sixty (60) days prior to making any Wholesale Sales. The Generator shall indemnify, defend and hold harmless the EDC, its trustees, directors, officers, employees, agents and affiliates from any costs, damages, fines or penalties, including reasonable attorneys' fees, directly resulting from Generator's or its Affiliate's non-compliance with any provision of this Section 1.4; provided, however, that the such indemnification obligation shall be subject to the limitation of liability set forth in Section 14.

## 2. Entire Agreement.

2.1. This Agreement, including any attachments or appendices, is entered into pursuant to the Guidelines.

2.2. This Agreement, the Guidelines, and the relevant EDC Tariffs, Terms and Conditions represent the entire understanding between the Parties as to the subject matter of this Agreement.

2.3. Each Party hereby represents that in entering into this Agreement, it has not relied on any promise, inducement, representation, warranty, agreement or other statement not set forth in this Agreement, the Tariffs, Terms and Conditions, or the Guidelines.

2.4. In the event of a conflict between this Agreement, the Guidelines and/or the Tariffs, Terms and Conditions, the Tariffs, shall take first precedent, followed by the Terms and Conditions, followed by the Guidelines, and lastly this Agreement.



3. Term.

3.1. This Agreement is effective as of the Effective Date. The Agreement shall continue in full force and effect until terminated pursuant to Section 4.

4. Termination.

4.1. This Agreement may be terminated under the following conditions:

4.1.1. The Parties may mutually terminate this Agreement at any time upon the execution of an agreement to terminate this Agreement.

4.1.2. The Generator may terminate this Agreement at any time by providing sixty (60) days written notice to EDC.

4.1.3. Either Party may terminate this Agreement immediately upon the occurrence of an Event of Default (as such term is defined in Section 20.1) by the other Party, subject to the notice requirement set forth in Section 20.2(c).

4.1.4. The EDC may terminate this Agreement if the Generator: (a) operates the Facility in parallel with the EPS prior to the Authorization Date; (b) fails within six months of testing to receive authorization from the EDC to operate in parallel with the EPS; (c) does not construct the Facility in accordance with the Facility Description; (d) modifies the Facility without the written approval of the EDC; (e) fails to energize the Facility within twelve months of the Authorization Date; or (f) permanently abandons the Facility. For the purposes of this Agreement, the Generator's failure to operate the Facility for any consecutive twelve month period after the Authorization Date shall be deemed a permanent abandonment.

4.1.5. The EDC may terminate this Agreement if the Generator fails to correct an Emergency Condition (as such term is defined in Section 7.1.1) or a Non-Emergency Adverse Operating Effect (as such term is defined in Section 7.1.4) within ninety (90) days from the date on which the EDC disconnected the Facility due to such event.

4.2. Survival of Obligations. The termination of this Agreement shall not relieve either Party of its liabilities and obligations, owed or continuing at the time of termination.

4.3. Related Agreements. Any agreement attached to and incorporated into this Agreement shall terminate concurrently with this Agreement unless the Parties have agreed otherwise in writing.

5. General Payment Terms.

5.1. Interconnection Costs. The Generator is responsible for paying all costs associated with Interconnection of the Facility, including (a) testing costs, (b) costs associated with installing, testing and maintaining the communications infrastructure necessary to provide protection and/or monitoring of the Generating Facility (collectively, the "**Communications Costs**"), (c) construction, modification or upgrade costs necessary to accommodate the Interconnection (collectively, the "**Construction Costs**"), and (d) any ongoing maintenance costs and other charges deemed necessary by the EDC to maintain the Interconnection (all such costs described in this sentence, the "**Interconnection Costs**"). The EDC shall notify the Generator in the event the Construction Costs exceed 110% of the estimate of such costs provided by the EDC to the Generator in the Construction Agreement (as such term is defined below), facility study report or other written understanding of the Parties.

5.2. Initial Cost Estimate. Attached hereto as Appendix D is a good-faith estimate of the initial Interconnection Costs (the "**Initial Cost Estimate**").

5.3. Billing and Payment Procedures for Initial Interconnection Costs.

5.3.1. The Generator shall pay the EDC the amount set forth in the Initial Cost Estimate (the "**Initial Payment**") within thirty (30) days of the Effective Date.

5.3.2. Within thirty (30) days following the date on which the Facility is first connected to the EPS (the "**Initial Interconnection**"), the EDC shall provide the Generator with a final accounting report detailing any Underpayment (as such term is defined below) or Overpayment (as such term is defined below) made by the Generator with respect to the Initial Payment. To the extent that the actual Interconnection Costs accrued up to the date of the Initial Interconnection exceed the Initial Payment (an "**Underpayment**"), the EDC shall invoice the Generator for an amount equal to the Underpayment and the Generator shall pay such amount to the EDC within thirty (30) days of such invoice. To the extent that the Initial Payment exceeds the actual Interconnection Costs accrued up to the date of the Initial Interconnection (an "**Overpayment**"), the EDC shall refund to the Generator an amount equal to the Overpayment within thirty (30) days of the provision of such final accounting report.

5.4. Billing and Payment Procedures for Ongoing Interconnection Costs. All Interconnection Costs incurred following the Initial Interconnection shall hereinafter be referred to as the "**Ongoing Costs**," and shall include maintenance, testing and Communications Costs, as well as any Construction Costs not included in either (a) the Construction Agreement by and between the Generator and the Company, dated as of **03/09/2016** a copy of which is attached hereto as Appendix F Attachment III or (b) the Initial Cost Estimate. The EDC shall invoice the Generator for all Ongoing Costs as such costs are incurred, and the Generator shall pay each such invoice within thirty (30) days of receipt, or as otherwise agreed to by the Parties.

5.5. Milestones. The Parties shall agree on milestones for which each Party is responsible and list them in Appendix F of this Agreement. A Party's obligations under this provision may be extended by agreement. If a Party anticipates that it will be unable to meet a milestone for any reason other than a Force Majeure Event (as such term is defined in Section 18.1), it shall immediately notify the other Party of the reason(s) for not meeting the milestone and (a) propose the earliest reasonable alternate date by which it can attain this and future milestones, and (b) requesting appropriate amendments to Appendix F. The Party affected by the failure to meet a milestone shall not unreasonably withhold agreement to such an amendment unless (i) it will suffer significant uncompensated economic or operational harm from the delay, (ii) attainment of the same milestone has previously been delayed, or (iii) it has reason to believe that the delay in meeting the milestone is intentional or unwarranted notwithstanding the circumstances explained by the Party proposing the amendment.

5.6. Distribution Upgrades. The EDC shall design, procure, construct, install, and own the upgrades described in Appendix G of this Agreement (the "**Upgrades**"). If the EDC and the Generator agree, the Generator may construct Upgrades that are located on land owned by the Generator. The actual cost of the Upgrades, including overheads, shall be directly assigned to the Generator. The Generator shall be responsible for its share of all reasonable expenses, associated with operating, maintaining, repairing, and replacing such Upgrades, except to the extent that a retail tariff of, or an agreement with, the EDC provides otherwise.

5.7. Taxes. The Parties shall comply with all applicable federal and state tax laws.

6. Operating Requirements.

6.1. General Operating Requirements. The Generator shall construct, interconnect, operate, and maintain the Facility and all accompanying and necessary facilities in accordance with (a) all applicable laws and requirements, Good Utility Practice, the Guidelines, Tariffs, and the Terms and Conditions; (b) applicable specifications that meet or exceed those provided by the National Electrical Safety Code, the American National Standards Institute, IEEE, Underwriter's Laboratory and ISO-NE operating requirements in effect at the time of construction and other applicable national and state codes and standards. Following the initial Interconnection of the Facility, the Generator shall comply with all special operating requirements set forth in Appendix C. In the event that the EDC believes that the cause of any problem to the EPS originates from the Facility, the EDC has the right to install monitoring equipment at a mutually agreed upon location to determine the exact cause of the problem. The cost of such monitoring equipment shall be borne by the EDC, unless such problem or problems are demonstrated to be caused by the Facility or if the test was performed at the request of the Generator in which case the costs of the monitoring equipment shall be borne by the Generator. If the operation of the Facility interferes with the EDC's or its customers' operations, the Generator must immediately take corrective action to stop such interference and shall not operate the Facility until such time as such interference is stopped. If the Generator fails to take immediate corrective action pursuant to the preceding sentence, then the EDC may disconnect the Facility as set forth in the Guidelines.

6.2. No Adverse Effects; Non-interference.

6.2.1. The EDC shall notify the Generator if the EDC has evidence that the operation of the Facility could cause disruption or deterioration of service to other customers served from the EPS or if operation of the Facility could cause damage to the EPS or other affected systems. (For example, deterioration of service could be caused by, among other things, harmonic injection in excess of IEEE STD 519, as well as voltage fluctuations caused by large step changes in loading at the Facility.) The Generator shall cease operation of the Facility until such time as the Facility can operate without causing disruption or deterioration of service to other customers served from the EPS or causing damage to the EPS or other affected systems. Each Party shall promptly notify the other Party in writing of any condition or occurrence relating to such Party's equipment or facilities which, in such Party's reasonable judgment, could adversely affect the operation of the other Party's equipment or facilities.

6.2.2. The EDC shall operate the EPS in such a manner so as to not unreasonably interfere with the operation of the Facility. The Generator shall protect itself from normal disturbances propagating through the EPS in accordance with Good Utility Practice. Examples of such disturbances include single-phasing events, voltage sags from remote faults on the EPS, and outages on the EPS.

### 6.3. Safe Operations and Maintenance.

6.3.1. General. The Generator shall operate, maintain, repair, and inspect, and shall be fully responsible for, the Facility or facilities that it now or hereafter may own unless otherwise specified in this Agreement. Each Party shall be responsible for the maintenance, repair and condition of its respective lines and appurtenances on such Party's respective side of the Point of Interconnection. The EDC and the Generator shall each provide equipment on its respective side of the Point of Interconnection that adequately protects the EPS, personnel, and other persons from damage and injury. If the EDC has constructed or owns facilities that are identified at the time of Interconnection as specifically required by or as a result of such Interconnection, then the Generator shall reimburse the EDC for the costs of maintaining and repairing such facilities.

6.3.2. Ongoing Maintenance; Testing of the Facility. The Parties hereby acknowledge and agree that maintenance testing of the Facility's protective relaying is imperative for safe, reliable operation of the Facility. The test cycle for such protective relaying shall not be less frequent than once every sixty (60) calendar months or the manufacturer's recommended test cycle, whichever is more frequent. The Generator shall provide copies of these test records to the EDC within thirty (30) days of the completion of such maintenance testing. The EDC may disconnect the Facility from the EPS if the Generator fails to adhere to this Section 6.3.2. The Generator is responsible for all ongoing maintenance costs associated with the Facility.

### 6.4. Access.

6.4.1. Emergency Contact Information. Each Party shall provide to the other Party and shall update as necessary a telephone number that can be used at all times to allow the other Party to report an emergency.

6.4.2. EDC Right to Access EDC-Owned Facilities and Equipment. The Generator shall allow the EDC access to the EDC's equipment and the EDC's facilities located on the Facility's premises (the "**EDC Property**"). To the extent that the Generator does not own all or part of the real property on which the EDC is required to locate EDC Property in order to serve the Facility, the Generator shall procure and provide to the EDC all necessary rights, including easements, for access to the EDC Property.

6.4.3. Isolation Device. The EDC shall have access to the Isolation Device of the Facility at all times. Generator is responsible for obtaining any and all property rights, including easements, which will permit the EDC access to such Isolation Device.

6.4.4. Right to Review Information. The EDC shall have the right to review and obtain copies of the Generator's operations and maintenance records, logs, or other information such as unit availability, maintenance outages, circuit breaker operation requiring manual reset, relay targets and unusual events pertaining to the Facility or its Interconnection with the EPS. The EDC shall treat such information as confidential and shall use such information solely for the purposes of determining compliance with the operating requirements set forth in this Section 6.

## 7. Disconnection.

### 7.1 Temporary Disconnection.

7.1.1 Emergency Conditions. The EDC may immediately and temporarily disconnect the Facility from the EPS without prior notification in cases where, in the reasonable judgment of the EDC, the continued connection of the Facility is imminently likely to (a) endanger persons or damage property or (b) cause an adverse effect on the integrity or security of, or damage to, the EPS or to other electric power systems to which the EPS is directly connected (each, an "***Emergency Condition***"). Upon becoming aware of an Emergency Condition, the Generator shall (i) immediately suspend operation of the Facility and (ii) promptly provide written notice to the EDC of such Emergency Condition and suspension (an "***Emergency Condition Notice***"). The Emergency Condition Notice shall describe (A) such Emergency Condition, (B) the extent of any damage or deficiency, (C) the expected effect on the operation of each Party's facilities and operations, (D) the anticipated duration of such Emergency Condition and (E) the necessary corrective action. After temporary disconnection or suspension pursuant to this Section 7.1.1, the Facility may not be reconnected or resume operation until the EDC and Generator are both satisfied that the cause of such Emergency Condition has been corrected. If the Generator fails to correct the Emergency Condition within ninety (90) days from the time that the EDC has temporarily disconnected the Facility due to such an event, the EDC may elect to terminate this Agreement in accordance with Section 4.1.5 and/or permanently disconnect the Facility in accordance with Section 7.2.2.

7.1.2 Routine Maintenance, Construction and Repair. The EDC shall have the right to disconnect the Facility from the EPS when necessary for routine maintenance, construction and repairs to the EPS. The EDC shall provide the Generator with a minimum of seven (7) days prior written notice of such disconnection, consistent with the EDC's planned outage notification protocols. If the Generator requests disconnection by the EDC at the Point of Common Interconnection, the Generator will provide a minimum of seven (7) days prior written notice to the EDC. The EDC shall make reasonable efforts to work with Generator to schedule a mutually convenient time or times to temporarily disconnect the Facility pursuant to this Section 7.1.2.

7.1.3 Forced Outages. During any forced outage, the EDC shall have the right to temporarily disconnect the Facility from the EPS in order to effect immediate repairs to the EPS. The EDC shall use reasonable efforts to provide the Generator with prior notice of such temporarily disconnection; provided, however, the EDC may temporarily disconnect the Facility from the EPS without such notice pursuant to this Section 7.1.2 in the event circumstances do not permit such prior notice to the Generator.

7.1.4 Non-Emergency Adverse Operating Effects. The EDC may temporarily disconnect the Facility if it is having a non-emergency adverse operating effect on the EPS or on other customers (a "**Non-Emergency Adverse Operating Effect**") if the Generator fails to correct such Non-Emergency Adverse Operating Effect within forty-five (45) days of the EDC's written notice to the Generator requesting correction of such Non-Emergency Adverse Operating Effect. If the Generator fails to correct a Non-Emergency Adverse Operating Effect within ninety (90) days from the time that the EDC has temporarily disconnected the Facility due to such an event, the EDC may elect to terminate this Agreement in accordance with Section 4.1.5 and/or permanently disconnect the Facility in accordance with Section 7.2.2.

7.1.5 Modification of the Facility. The EDC has the right to immediately suspend Interconnection service and temporarily disconnect the Facility in the event any material modification to the Facility or the Generator's Interconnection facilities has been implemented without prior written authorization from the EDC.

7.1.6 Re-connection. Any temporary disconnection pursuant this Section 7.1 shall continue only for so long as is reasonably necessary. The Generator and the EDC shall cooperate with each other to restore the Facility and the EPS, respectively, to their normal operating states as soon as reasonably practicable following the correction of the event that led to the temporary disconnection.

## 7.2 Permanent Disconnection.

7.2.1 The Generator may permanently disconnect the Facility at any time upon thirty (30) days prior written notice to the EDC.

7.2.2 The EDC may permanently disconnect the Facility upon termination of this Agreement in accordance with Section 4.

7.2.3 The EDC may permanently disconnect the Facility in the event the Generator is unable to correct an Emergency Condition or a Non-Emergency Adverse Operating Effect in accordance with Section 7.1.1 or Section 7.1.4, respectively.

8. Metering.

8.1. Metering of the output from the Facility shall be conducted pursuant to the terms of the Guidelines.

9. Assignments.

9.1 Except as provided herein, the Generator shall not voluntarily assign its rights or obligations, in whole or in part, under this Agreement without the EDC's prior written consent, which consent shall not be unreasonably withheld or delayed. Any assignment the Generator purports to make without the EDC's prior written consent shall not be valid. Notwithstanding the foregoing, the EDC's consent shall not be required for any assignment made by the Generator to an Affiliate with an equal or greater credit rating and with the legal authority and operational ability to satisfy the obligations of the Generator under this Agreement; provided that that Generator promptly notifies the EDC of any such assignment. In all events, the Generator shall not be relieved of its obligations under this Agreement unless, and until, the permitted assignee assumes in writing all obligations of this Agreement and notifies the EDC of such assumption.

10. Confidentiality.

10.1 The EDC shall maintain the confidentiality of information provided from the Generator to the EDC if such information is clearly marked and labeled "Confidential" (the "***Confidential Information***"). Confidential Information shall not include information that (a) is or hereafter becomes part of the public domain, (b) previously was in the possession of the EDC, or (c) the EDC is required to disclose pursuant to a valid order of a court or other governmental body or any political subdivision thereof; provided, however, that to the extent that it may lawfully do so, the EDC shall first have given notice to the Generator and given the Generator a reasonable opportunity to interpose an objection or obtain a protective order requiring that the Confidential Information and/or documents so disclosed be used only for the purpose for which the order was issued; provided further that if such Confidential Information is requested or required by the PURA, the EDC shall seek protective treatment of such Confidential Information.

11. Insurance Requirements.

11.1 General Liability. In connection with the Generator's performance of its duties and obligations under this Agreement, the Generator shall maintain, during the term of this Agreement, general liability insurance with a combined single limit of not less than:

11.1.1 Three hundred thousand dollars (\$300,000) per occurrence and in the aggregate for bodily injury and/or property damage claims where the gross nameplate rating of the Facility is less than or equal to an aggregate of 100 kW;



11.1.2 One million dollars (\$1,000,000) per occurrence and in the aggregate for bodily injury and/or property damage claims where the gross nameplate rating of the Facility is greater than 100 kW and less than or equal to an aggregate of 1MW;

11.1.3 Two million dollars (\$2,000,000) per occurrence and in the aggregate for bodily injury and/or property damage claims where the gross nameplate rating of the Facility is greater than 1MW and less than or equal to an aggregate of 5MW; or

11.1.4 Five million dollars (\$5,000,000) per occurrence and in the aggregate for bodily injury and/or property damage claims where the gross nameplate rating of the Facility is greater than 5MW and less than or equal to an aggregate of 20MW.

11.2 Insurer Requirements and Endorsements. All insurance required pursuant to this Section 11 shall be carried by insurers qualified to underwrite insurance in Connecticut with an A.M. Best rating of A- or better. In addition, all insurance shall: (a) include the EDC as an additional insured for Generating facilities greater than 1MW; (b) contain a severability of interest clause or cross-liability clause unless the Generator is a residential customer; (c) provide that the EDC shall not be liable to the insurance carrier with respect to the payment of premium for such insurance; and (d) provide for written notice to the EDC thirty (30) days prior to cancellation, termination, or material change of such insurance.

11.3 Evidence of Insurance.

11.3.1 Evidence of the insurance required pursuant to this Section 11 shall state that the coverage provided is primary and is not excess of or contributing with any insurance or self-insurance maintained by the EDC.

11.3.2 The Generator is responsible for providing the EDC with evidence of insurance on an annual basis as set forth in the Guidelines.

11.3.3 Prior to the EDC commencing any work on system modifications, the Generator shall have its insurer provide to the EDC certificates of insurance evidencing the insurance coverage required pursuant to this Section 11. Such certificates shall clearly indicate whether such insurance policy is written on a "claims-made" basis.

11.3.4 The EDC may, at its discretion, require the Generator to maintain tail coverage with respect to any policy written on a "claims-made" basis for a period of three years after expiration or termination of such policy.

11.3.5 All insurance certificates, statements of self insurance, endorsements, cancellations, terminations, alterations, and material changes of such insurance shall be issued and submitted to the appropriate EDC Facilitator.

12. Performance Assurance.

12.1 If the EDC reasonably expects that any Interconnection Costs necessary to accommodate the Facility will be in excess of fifty thousand dollars (\$50,000) in the aggregate in any calendar year, the EDC may require that the Generator provide to the EDC a guarantee, a surety bond, letter of credit or other form of security that is reasonably acceptable to the EDC at least twenty (20) Business Days prior to the commencement of the related work. Such security for payment shall be in an amount sufficient to cover such Interconnection Costs. In addition:

12.1.1. Any guarantee provided by the Generator pursuant to this Section 12 shall be made by an entity that meets the creditworthiness requirements of the EDC, and contain terms and conditions that guarantee payment of any amount that may be due from the Generator, up to an agreed-to maximum amount; and

12.1.2. Any letter of credit or surety bond provided by the Generator pursuant to this Section 12.1.2 shall be issued by a financial institution or insurer reasonably acceptable to the EDC and must specify an expiration date reasonably acceptable to the EDC.

13. Indemnification.

13.1 Indemnification of the EDC. Subject to the limitation of liability set forth in Section 14, the Generator shall indemnify, defend and hold harmless the EDC and its trustees, directors, officers, employees and agents (including affiliates, contractors and their employees) from and against any liability, damage, loss, claim, demand, complaint, suit, proceeding, action, audit, investigation, obligation, cost, judgment, adjudication, arbitration decision, penalty (including fees and fines), or expense (including court costs and attorneys' fees) relating to, arising from or connected to this Agreement.

13.2 Indemnification of the Generator. Subject to the limitation of liability set forth in Section 14, the EDC agrees to indemnify, defend and hold harmless the Generator, its trustees, directors, officers, employees and agents (including Affiliates, contractors and their employees), from and against any and all damages for personal injury (including death) or property damage to unaffiliated third parties arising from any and all actions relating to or arising out of any material failure by the EDC to perform any of its obligations pursuant to Section 6.2.2 of this Agreement.

13.3 Survival of Indemnification. The indemnification obligations of each Party set forth in this Section 13 shall continue in full force and effect regardless of whether this Agreement has expired or been terminated, defaulted or cancelled and shall not be limited in any way by any limitation on insurance.

14. Limitation of Liability.

14.1 Except with respect to a Party's fraud or willful misconduct, and except with respect to damages sought by a third party in connection with a third party claim: (a) neither Party shall be

liable to the other Party, for any damages other than direct damages; and (b) each Party agrees that it is not entitled to recover and agrees to waive any claim with respect to, and will not seek, consequential, punitive or any other special damages as to any matter under, relating to, arising from or connected to this Agreement.

15. Amendments and Modifications.

15.1 No amendment or modification of this Agreement shall be binding unless in writing and duly executed by both Parties.

16. Permits and Approvals.

16.1 The Generator is responsible for obtaining all environmental and other permits required by governmental authorities for the construction and operation of the Facility (each, a "**Required Permit**"). The EDC assumes no responsibility for obtaining any Required Permit, advising the Generator with respect to Required Permits, or assuring that all Required Permits have been obtained by the Generator. Upon written request of the EDC, the Generator shall promptly provide to the EDC a copy of any Required Permit.

17. Environmental Releases.

17.1 Each Party shall immediately notify the other Party, first orally and then in writing, of any of the following events related to the Facility upon becoming aware of such event: (a) the release of any hazardous substances; (b) any asbestos or lead abatement activities; or (c) any type of remediation activities. The Party having the responsibility for reporting such an event to appropriate governmental authorities shall promptly furnish to the other Party copies of any publicly available reports filed with such authorities.

18. Force Majeure.

18.1 For purposes of this Agreement, "**Force Majeure Event**" means any event or circumstance that (a) is beyond the reasonable control of the affected Party and (b) the affected Party is unable to prevent or provide against by exercising commercially reasonable efforts. Force Majeure Events include the following events or circumstances, but only to the extent they satisfy the foregoing requirements: (i) acts of war or terrorism, public disorder, insurrection, or rebellion; (ii) floods, hurricanes, earthquakes, lightning, storms, and other natural calamities; (iii) explosions or fire; (iv) strikes, work stoppages, or labor disputes; (v) embargoes; and (vi) sabotage. In no event shall the lack of funds or the inability to obtain funds constitute a Force Majeure Event.

18.2 If a Force Majeure Event prevents a Party from fulfilling any obligations under this Agreement, such Party will promptly notify the other Party in writing, and will keep the other Party informed on a continuing basis of the scope and duration of the Force Majeure Event. The affected Party shall specify in reasonable detail the circumstances of the Force Majeure Event, its expected duration, and the steps that the affected Party is taking to

mitigate the effects of the event on its performance. The affected Party may suspend or modify its performance of obligations under this Agreement, other than the obligation to make payments then due or becoming due under this Agreement, but only to the extent that the effect of the Force Majeure Event cannot be mitigated by the use of commercially reasonable efforts. The affected Party shall use commercially reasonable efforts to resume its performance as soon as possible. Without limiting this section, the Generator shall immediately notify the EDC verbally if the failure to fulfill the Generator's obligations under this Agreement may impact the safety or reliability of the EPS.

19. Notices.

- 19.1 All notices, demands and other communications to be given or delivered under or by reason of the provisions of this Agreement shall be in writing and shall be deemed to have been given: (a) immediately when personally delivered; (b) when received by first class mail, return receipt requested; (c) one day after being sent for overnight delivery by Federal Express or other overnight delivery service; or (d) when receipt is acknowledged, either electronically or otherwise, if sent by facsimile, telecopy or other electronic transmission device. Notices, demands and communications to the other Parties shall, unless another address is specified by such Parties in writing, be sent to the addresses indicated below:

If to the EDC:

**The Connecticut Light and Power Company d/b/a Eversource Energy**  
107 Selden Street, Berlin, CT 06037  
Attention: Supervisor, Distributed Resources  
Phone: 866-324-2437

If to the Generator:

**Washington Solar LLC**  
c/o Allco Renewable Energy Limited,  
601 South Ocean Blvd., Delray Beach, FL 33483  
Attention: Thomas M. Melone  
Phone: 212-681-1120

And via email to [Thomas.Melone@gmail.com](mailto:Thomas.Melone@gmail.com)

- 19.2 Each Party may designate operating representatives to conduct daily communications between the Parties, which may be necessary or convenient for the administration of this Agreement. The names, addresses, and phone numbers of each Party's representatives shall be provided in writing by such Party to the other Party.

20. Default and Remedies.

- 20.1 Defaults. Each of the following shall constitute an "***Event of Default***,"

20.1.1. A Party fails to pay any bill or invoice for charges incurred pursuant to this Agreement or any other amount due from such Party to the other Party as and when due, any such failure shall continue for a period of thirty (30) days after written notice of nonpayment from the affected Party to the defaulting Party; provided, however, if such Party disputes such bill, invoice or other amount due in good faith, then such failure to pay shall not constitute an Event of Default and the Parties shall resolve such dispute in accordance with Section 21;

20.1.2. A Party (a) fails to comply with any other provision of this Agreement or breaches any representation or warranty in any material respect and (b) fails to cure or remedy such failure or breach within sixty (60) days after notice and written demand by the other Party to cure the same or such longer period reasonably required to cure the same (not to exceed an additional ninety (90) days unless otherwise mutually agreed upon, provided that the failing or breaching Party diligently continues to cure until such failure or breach is fully cured). This provision pertains only to cure periods not specifically addressed elsewhere in this Agreement;

20.1.3. A Generator modifies the Facility or any part of the Interconnection without the prior written approval of the EDC; or

20.1.4. A Party fails to perform any obligation hereunder in accordance with (a) applicable laws and regulations, (b) the ISO-NE operating documents, procedures, and reliability standards, and (c) Good Utility Practice.

20.2 Remedies. Upon the occurrence of an Event of Default, the non-defaulting Party may, at its option, in addition to any remedies available under any other provision herein, do any, or any combination, as appropriate, of the following: (a) continue to perform and enforce this Agreement; (b) recover damages from the defaulting Party except as limited by this Agreement; (c) by written notice to the defaulting Party terminate this Agreement; or (d) pursue any other remedies it may have under this Agreement or under applicable law or in equity.

21. Dispute Resolution Procedures.

21.1 Each Party shall agree to attempt to resolve all disputes promptly, equitably and in good faith. If the Parties are unable to informally resolve any dispute, the Parties shall follow the dispute resolution process set forth in the Guidelines.

22. Subcontractors.

22.1 Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement; provided, however, that the hiring Party shall require such subcontractor to comply with all applicable terms and conditions of this Agreement in providing such subcontracting

services and the hiring Party shall remain primarily liable to the other Party for the performance of such subcontractor.

22.2 The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor hired by the hiring Party to perform its obligations under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.

22.3 The obligations under this Section 22 will not be limited in any way by any limitation of subcontractor's insurance.

23. Miscellaneous.

23.1 Governing Law. This Agreement and the legal relations between the Parties will be governed by and construed in accordance with the laws of the State of Connecticut applicable to contracts made and performed in such State and without regard to conflicts of law doctrines.

23.2 Non-waiver. No failure on the part of any Party to exercise or delay in exercising any right hereunder shall be deemed a waiver thereof, nor shall any single or partial exercise of any right hereunder preclude any further or other exercise of such or any other right.

23.3 No Third Party Beneficiaries. This Agreement is made solely for the benefit of the Parties. Nothing in the Agreement shall be construed to create any rights in or duty to, or standard of care with respect to, or any liability to, any person not a party to or otherwise bound by this Agreement.

23.4 Severability. If any provision of this Agreement is held to be unenforceable for any reason, such provision shall be adjusted rather than voided, if possible, to achieve the intent of the Parties. If no such adjustment is possible, such provision shall be fully severable and severed, and all other provisions of this Agreement will be deemed valid and enforceable to the extent possible.

23.5 No Partnership. Nothing in this Agreement shall constitute or be construed to be or create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. No Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Parties.

23.6 Headings. All headings in this Agreement are included solely for convenient reference, are not intended to be full and accurate descriptions of the contents of this Agreement, will

not be deemed a part of this Agreement, and will not affect the meaning or interpretation of this Agreement.

23.7 Changes in State Regulations or Law. Upon thirty (30) days prior written notice, EDC may terminate this Agreement if there are any changes in PURA regulations or Connecticut law that affects the EDC's ability to perform its obligations under this Agreement.

23.8 General Rules of Construction. For all purposes of this Agreement: (a) all terms defined herein or in the Guidelines shall have the meanings assigned to them herein or in the Guidelines, as the case may be, and shall include the plural as well as the singular; (b) all references in this Agreement to designated "Sections" and other subdivisions are to the designated Sections and other subdivisions of the body of this Agreement; (c) pronouns of either gender or neuter will include, as appropriate, the other pronoun forms; (d) the words "herein," "hereof" and "hereunder" and other words of similar import refer to this Agreement as a whole and not to any particular Section or other subdivision; (e) "or" is not exclusive; (f) "including" and "includes" will be deemed to be followed by "but not limited to" and "but is not limited to," respectively; (g) any definition of or reference to any law, agreement, instrument or other document herein will be construed as referring to such law, agreement, instrument or other document as from time to time amended, supplemented or otherwise modified; (h) any definition of or reference to any law or statute will be construed as referring also to any rules and regulations promulgated thereunder; and (i) as used herein, "days" shall mean "calendar days."

23.9 Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed an original, and all counterparts so executed shall constitute one agreement binding on all of the Parties hereto, notwithstanding that all of the Parties are not signatories to the same counterpart. Facsimile counterparts may be delivered by any Party, with the intention that they shall have the same effect as an original counterpart hereof.

23.10 Signatures. Each Party hereby signifies its agreement to the all of the terms of this Agreement by its signatures hereto. Each Party represents that it has carefully reviewed this Agreement individually and with counsel and that it has knowingly and willingly executed this Agreement.

## 24. Taxes

**24.1** **Payments Not Taxable.** The Parties intend that all payments or property transfers made by any party for the installation of the Upgrades shall be non-taxable, either as contributions to capital, or as an advance, in accordance with the internal Revenue Code and any applicable state income tax laws and shall not be taxable as contributions in aid of construction or otherwise under the Internal Revenue Code and any applicable state income tax laws.

**24.2 Representations and Covenants.** In accordance with IRS Notice 2016-36, Generator represents and covenants that (i) in the case of electricity wheeled over EDC's system, ownership of wheeled electricity remains with the Generator prior to its transmission onto the grid, (ii) for income tax purposes, the amount of any payments and the cost of any property transferred to the EDC for the Upgrades will be capitalized by Generator as an intangible asset and recovered using the straight-line method over a useful life of twenty (20) years, and (iii) any portion of the Generating Facility that is a "dual-use intertie," within the meaning of IRS Notice 2016-36, is reasonably expected to carry only a de minimis amount of electricity in the direction of the Generating Facility. For this purpose, "de minimis amount" means no more than 5 percent of the total power flows in both directions, calculated in accordance with the "5 percent test" set forth in IRS Notice 2016-36. This is not intended to be an exclusive list of the relevant conditions that must be met to conform to IRS requirements for non-taxable treatment.

At EDC's request, Generator shall provide EDC with a report from an independent engineer confirming its representation in clause (iii), above. EDC represents and covenants that the cost of the Upgrades paid for by Generator will have no net effect on the base upon which rates are determined.

**24.3 Indemnification for the Cost Consequences of Current Tax Liability Imposed Upon EDC.** Notwithstanding this Article 24.1, Generator shall protect, indemnify and hold harmless the EDC from the cost consequences of any current tax liability imposed against the EDC as the result of payments or property transfers made by the Generator to the EDC under this Agreement, as well as any interest and penalties, other than interest and penalties attributable to any delay caused by EDC.

The EDC shall not include a gross-up for the cost consequences of any current tax liability in the amounts it charges the Generator under this Agreement unless (i) the EDC has determined, in good faith, that the payments or property transfers made by the Generator to the EDC should be reported as income subject to taxation or (ii) any governmental authority directs EDC to report payments or property as income subject to taxation; provided, however, that the EDC may require the Generator to provide security, in a form reasonably acceptable to EDC (such as a parental guarantee or a letter of credit), in an amount equal to the cost consequences of any current tax liability under this Article 24. Generator shall reimburse EDC for such costs on a fully grossed-up basis, in accordance with Article 24.4, within thirty (30) Calendar Days of receiving written notification from EDC of the amount due, including detail about how the amount was calculated.

The indemnification obligation shall terminate at the earlier of (1) the expiration of the ten year testing period, and the applicable statute of limitation, as it may be extended by the EDC upon request of the IRS, to keep these years open for audit or adjustment, or (2) the occurrence of a subsequent taxable event and the payment of any related indemnification obligations as contemplated by this Article 5.17.



**24.4 Tax Gross-Up Amount.** Generator's liability for the cost consequences of any current tax liability under this Article 24 shall be calculated on a fully grossed-up basis. Except as may otherwise be agreed to by the parties, this means that Generator will pay EDC, in addition to the amount paid for the Upgrades, an amount equal to (1) the current taxes imposed on EDC ("Current Taxes") on the excess of (a) the gross income realized by EDC as a result of payments or property transfers made by Generator to EDC under this Agreement (without regard to any payments under this Article 24) (the "Gross Income Amount") over (b) the present value of future tax deductions for depreciation that will be available as a result of such payments or property transfers (the "Present Value Depreciation Amount"), plus (2) an additional amount sufficient to permit the EDC to receive and retain, after the payment of all Current Taxes, an amount equal to the net amount described in clause (1). For this purpose, (i) Current Taxes shall be computed based on EDC composite federal and state tax rates at the time the payments or property transfers are received and EDC will be treated as being subject to tax at the highest marginal rates in effect at that time (the "Current Tax Rate"), and (ii) the Present Value Depreciation Amount shall be computed by discounting EDC's anticipated tax depreciation deductions as a result of such payments or property transfers by EDC prime rate. Thus, the formula for calculating Generator's liability to EDC pursuant to this Article 5.17.4 can be expressed as follows:  $(\text{Current Tax Rate} \times (\text{Gross Income Amount} - \text{Present Value of Tax Depreciation})) / (1 - \text{Current Tax Rate})$ .

**24.5 Private Letter Ruling or Change or Clarification of Law.** At Generator's request and expense, EDC shall file with the IRS a request for a private letter ruling as to whether any property transferred, or sums paid, or to be paid, by Generator to EDC under this Agreement are subject to federal income taxation. Generator will prepare the initial draft of the request for a private letter ruling and will certify under penalties of perjury that all facts represented in such request are true and accurate to the best of Generator's knowledge. EDC and Generator shall cooperate in good faith with respect to the submission of such request.

EDC shall keep Generator fully informed of the status of such request for a private letter ruling and shall execute either a privacy act waiver or a limited power of attorney, in a form acceptable to the IRS, that authorizes Generator to participate in all discussions with the IRS regarding such request for a private letter ruling. EDC shall allow Generator to attend all meetings with IRS officials about the request and shall permit Generator to prepare the initial drafts of any follow-up letters in connection with the request.

**24.6 Subsequent Taxable Events.** If, within ten (10) years from the date on which the relevant Upgrades are placed in service, (i) Generator breaches the covenant contained in Article 24.2, (ii) a "disqualification event" occurs within the meaning of IRS Notice 2016-36, or (iii) this Agreement terminates and EDC retains ownership of the Upgrades, the Generator shall pay a tax gross-up for the cost consequences of any current tax liability imposed on EDC, calculated using the methodology described in Article 24.4 and in accordance with IRS Notice 2016-36.

**24.7 Contests.** In the event any governmental authority determines that EDC's receipt of payments or property constitutes income that is subject to taxation, EDC shall notify Generator, in writing, within thirty (30) Calendar Days of receiving notification of such determination by a governmental authority. Upon the timely written request by Generator and at Generator's sole expense, EDC may appeal, protest, seek abatement of, or otherwise oppose such determination. Upon Generator's written request and sole expense, EDC may file a claim for refund with respect to any taxes paid under this Article 24, whether or not it has received such a determination. EDC reserves the right to make all decisions with regard to the prosecution of such appeal, protest, abatement or other contest, including the selection of counsel and compromise or settlement of the claim, but EDC shall keep generator informed, shall consider in good faith suggestions from Generator about the conduct of the contest, and shall reasonably permit Generator or a Generator representative to attend contest proceedings.

Generator shall pay to EDC on a periodic basis, as invoiced by EDC, documented reasonable costs of prosecuting such appeal, protest, abatement or other contest. At any time during the contest, EDC may agree to a settlement either with Generator's consent or after obtaining written advice from nationally -recognized tax counsel, selected by EDC, but reasonably acceptable to Generator, that the proposed settlement represents a reasonable settlement given the hazards of litigation. Generator's obligation shall be based on the amount of the settlement agreed to by Generator, or if a higher amount, so much of the settlement that is supported by the written advice from nationally recognized tax counsel selected under the terms of the preceding sentence. The settlement amount shall be calculated on a fully grossed-up basis to cover any related cost consequences of the current tax liability. Any settlement without Generator's consent or such written advice will relieve Generator from any obligation to indemnify EDC for the tax at issue in the contest.

**24.8 Refund.** In the event that (a) a private letter ruling is issued to EDC which holds that any amount paid or the value of any property transferred by Generator to EDC under the terms of this Agreement is not subject to federal income taxation, (b) any legislative change or administrative announcement, notice, ruling or other determination makes it reasonably clear to EDC in good faith that any amount paid or the value of any property transferred by Generator to EDC under the terms of this Agreement is not taxable to EDC, (c) any abatement, appeal, protest, or other contest results in a determination that any payments or transfers made by Generator to EDC are not subject to federal income tax, or (d) if EDC receives a refund from any taxing authority for any overpayment of tax attributable to any payment or property transfer made by Generator to EDC pursuant to this Agreement, EDC shall promptly refund to Generator the following:

(i) any payment made by Generator under this Article 5.17 for taxes that is attributable to the amount determined to be non-taxable, together with interest thereon,

(ii) interest on any amounts paid by Generator to EDC for such taxes which EDC did not submit to the taxing authority, interest calculated in accordance with

the methodology set forth in the Federal Energy Regulatory Commission's regulations at 18 CFR §35.19a(a)(2)(iii) from the date payment was made by Generator to the date EDC refunds such payment to Generator, and

(iii) with respect to any such taxes paid by EDC, any refund or credit EDC receives or to which it may be entitled from any governmental authority, interest (or that portion thereof attributable to the payment described in clause (i), above) owed to the EDC for such overpayment of taxes (including any reduction in interest otherwise payable by EDC to any governmental authority resulting from an offset or credit); provided, however, that EDC will remit such amount promptly to Generator only after and to the extent that EDC has received a tax refund, credit or offset from any governmental authority for any applicable overpayment of income tax related to the Upgrades.

The intent of this provision is to leave parties, to the extent practicable, in the event that no taxes are due with respect to any payment for Upgrades hereunder, in the same position they would have been in had no such tax payments been made.

IN WITNESS HEREOF, the Parties have caused this INTERCONNECTION AGREEMENT to be executed on the day and year first written above.

THE EDC

By: CSVa

Type text here

Name: Carl Nowiszewski

Title: Manager of Distributed Energy Resources CT

Duly Authorized

THE GENERATOR

By: Thomas M. Melong

Name: Thomas M. Melong

Title: President

Duly Authorized

## **Appendix A**

### **Guidelines for Generator Interconnection Fast Track and Study Processes April 5, 2019**

(Intentionally omitted)

## **Appendix B**

### **Description of the Facility as studied, and incorporating any approved design changes**

**Project description & size:** Photovoltaic generating facility consists of a 1,000kW system

**Street Address:** Located approximately at 391 Hartford Turnpike, Hampton, CT

**LREC Contract:** L9-3765

**Point of interconnection:** The Project will interconnect to the Eversource 23kV 11F14 circuit distribution system via a primary service.

**System Description:** The Project consists of Eight (8) Kaco 125TL3 inverters.

**Point of Change of Ownership (POCO):** At the same location of the existing primary meters

**Service type & description:** This project is an addition to the existing service and will only require the addition of a primary meter.

## **Appendix C**

### **Conditions for Parallel Operation of Generating Facility, Special Operating Requirements**

- 1- Enable the default ramp rate @ 1,000kW/minute.
- 2- The Project will be operating at unity power factor
- 3- Maximum export will be 1,000 kW AC.
- 4- Inverter setting per ISO-NE and Generator Interconnection Guidelines. Refer to Eversource Energy “The Eversource and United Illuminating Company Exhibit B- Generator Interconnection Technical Requirements” dated April 5<sup>th</sup>, 2019. The settings can be found in Appendix C
- 5- The visible break AC Disconnect switch is required as identified The Eversource and United Illuminating Company Exhibit B- Generator Interconnection Technical Requirements” dated April 5<sup>th</sup>, 2019 section 2.4 Visible break.

**Appendix D**

**Initial Cost Estimate**

**Witness test: See Attachment F for total costs**

**Please refer to Section 5.3 – Billing and Payment Procedures for Initial Interconnection Costs. If someone other than the generator/customer is responsible for the payment, please note and sign below.**

**Other responsible party: \_\_\_\_\_**

**Name: \_\_\_\_\_**

**Address: \_\_\_\_\_**

**City/State/Zip: \_\_\_\_\_**



## **Appendix E**

### **Construction Agreement**

None required.

**Appendix F**  
**Attachment I**

No	Milestones for Interconnection	Due by Date	Responsible Party	Comments
1.	Sign the Interconnection Agreement and Attachments as appropriate and return	May 7, 2021	Generator	
2.	Provide initial payment of \$36,000	May 7, 2021	Generator	
3.	File a new service request	15 business days after return of the Interconnection Agreement and initial payment	Generator	
4.	Start Eversource procurement	15 business days after initial payment	Eversource	
5.	Secure Easements	Prior to start of Eversource construction	Generator	Refer to Appendix F Attachment II note 5
6.	Construction kick off call/meeting as needed.	10 business days after 100% payment	Eversource/Generator	
7.	Provide final design and three-line diagram	30 business days after 100% payment	Generator	
8.	Submit Certificate of Insurance	Prior to start of Eversource construction	Generator	
9.	Complete Eversource Construction	2 weeks from municipal approval	Eversource	
10.	Generator to provide either (1) documentation showing how it will meet the IRS Notice 2016-36 "Safe Harbor" provisions or (2) cash to the EDC for CIAC tax gross up at the applicable rate.	Two Months Prior to In-Service Date	Generator	Refer to Appendix G for CIAC amount
11.	Provide Witness Test plan with all associated documentation	Minimum 10 Business days before scheduling witness test	Generator	Refer to Appendix F Attachment II notes 2 and 3
12.	Submit proof of Municipal Approval (WR# by Eversource)	Minimum 5 Business days before scheduling witness test	Generator	
13.	Conduct Witness Test	15 business days from Inspector approval & approved witness test plan	Eversource	Refer to Appendix F Attachment II notes 2 and 3
14.	Send authorization to interconnect Letter / In-service date	2 business days from successful witness test and receipt of all documents	Eversource	

**Agreed to by:**

Generator



Date:

4/27/21

Eversource Energy



Date:

12-28-2023

**Appendix F**  
**Attachment II**  
**Schedule of Milestones**

- 1- In order to meet the ISD stated in the milestone in appendix F all stated milestones must be completed at least 3 weeks prior to the ISD including all easement requirements for this project.
- 2- A witness test is required to be performed per the Generator Interconnection Guidelines. Refer to Eversource Energy “The Eversource and The United Illuminating Company Exhibit B- Generator Interconnection Technical Requirements” dated April 5<sup>th</sup>, 2019 section 7.
- 3- A test plan must outline the steps necessary to demonstrate that when the AC disconnect switch is opened, the PV inverters stop conducting within two (2) seconds or less, and when the AC disconnect switch is closed, the PV inverters do not start to conduct for at least five (5) minutes. The test must also demonstrate that the inverter shuts down upon loss of each individual phase.
- 4- Inverter setting per ISO-NE and Generator Interconnection Guidelines. Refer to Eversource Energy “The Eversource and United Illuminating Company Exhibit B- Generator Interconnection Technical Requirements” dated April 5<sup>th</sup>, 2019. The settings can be found in Appendix C. The settings must be included in the test plan.
- 5- The Project will interconnect to the Eversource Circuit via a primary service. Metering will be pole mounted and final location of poles will be determined during construction. Eversource will require easements for all Eversource equipment on private property. Easement will be the responsibility of the Generator.
- 6- Prior to start of Eversource construction, payment must be received in full.
- 7- The Generator is responsible that all equipment is tested and operating satisfactorily prior to requesting that Eversource energizes the site. Eversource will not be liable for any damage to Generator equipment.

**Appendix G**  
**Attachment 1**

**EDC's Description of its Upgrades and Best Estimate of Upgrade Costs**

Item	Description	Cost	Notes No.
1.	New Service	\$35,000	
2.	<b>Subtotal</b>	<b>\$35,000</b>	
3.	CIAC - 12%, (Contribution in Aid of Construction)		
4.	Subtotal with CIAC	\$35,000	
5.	Witness Test	\$1,000	
6.	<b>Total Construction cost</b> Note: Additional escalation cost of 4% will apply per year for payment after 2020	<b>\$36,000</b>	

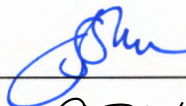
**TABLE 1**

**General comments:**

1. Line work may require consent from property owners in compliance with CT Statute. The proposed schedule of milestones as outlined in appendix F of the IA assumes that such approval will be secured with no opposition and does not include any delays or legal fees associated with securing such approval.
2. In the event that you are unable to meet the schedule of milestones in appendix F of the IA a revised schedule of milestones will be re-submitted to you. It is important to note that a slip in schedule may not result in an equal delay (one to one delay). Schedules are based on availability of manpower, resources and the ability to schedule outages which can be curtailed during the summer season.
3. Price is based on Impact study with an accuracy of +/- 25% (If a Facility Study was performed delete this note)
4. Escalation cost of 4% will apply per year for payment after 2020.

**Agreed to by:**

Generator



Date:

4/27/21

Eversource Energy



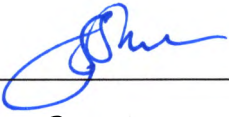
Date:


12-28-2023

**Appendix G**  
**Attachment II**  
**Payment Schedule**

Item	Due by Date	Payment Amount
1.	May 7, 2021	\$36,000
2.	<b>Total Payments Amount</b>	\$36,000

**Agreed to by:**

Generator  Date: 4/27/21

Eversource Energy  Date: 12-28-2023

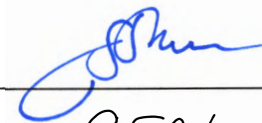
**Appendix G**  
**Attachment III**  
**Ongoing Costs**

Ongoing Costs will be calculated at the completion of construction based on the percentages shown below. Escalation cost per year is based on the Consumer Price Index (CPI). Taxes may be subject to change based on actual tax base. Refer to IA Section 5.4 of this IA.

DESCRIPTION	<i>Ongoing Costs</i>	Taxes	% Total	Cost (Estimated)	<i>Ongoing Costs</i>
Substation Station Equipment	5.66%	2.10%	7.76%	\$0.00	\$0.00
Overhead Conductors & Devices	7.69%	2.10%	9.79%	\$ 0.00	\$0.00
Total Yearly Amount					\$0.00

Agreed to by:

Generator



Date:

4/27/21

Eversource Energy



Date:

12-28-2023

## Appendix H

NEW CAR SCHEDULE													
SCHEDULE	VEH TYPE	CITY OF CONNECTION	SECTOR OF CONNECTION	CITY OF CONNECTION	SECTOR OF CONNECTION	CITY OF CONNECTION	SECTOR OF CONNECTION	DEPARTING BUS/VEHICLE CONNECTION	REGISTRATION TIME	CITY OF ORIGIN	CONNECTION TIME	DESTINY TIME	NOTES
A	TRUCK	1	PULPIT AREA 1	1	PULPIT AREA 1	-	-	TRUCK	10	1	0'	TRUCK	TRUCK ONLY
B	TRUCK	1	PULPIT AREA 1	1	PULPIT AREA 1	-	-	TRUCK	10	1	0'	TRUCK	TRUCK ONLY
C	TRUCK	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW
D	TRUCK	1	PULPIT AREA 1	1	PULPIT AREA 1	-	-	TRUCK	10	1	2'	TRUCK	-

ALL CONDUCTORS SHALL BE COPPER UNLESS OTHERWISE NOTED

INVERTER PROTECTING SETTINGS			
INVERTER PROTECTING FUNCTIONS	VOLTAGEN VOLTAGE	FREQUENZ FREQUENCY	SPANNUNGS- UND FREQ. BEREICH
2PFI - UNDERVOLTAGE	80% (60V)	---	60 (1.0)
2PFI - OVERVOLTAGE	120% (90V)	---	120 (2.0)
2PFI - OVERCURRENT	100% (7.5A)	---	100 (2.0)
2PFI - OVERHEAT	125 (270°C)	---	125 (3.0)
2PFI - UNDERFREQUENCY	---	50.5	50.5 (1.0)
2PFI - OVERFREQUENCY	---	50.5	50.5 (1.0)
2PFI - OVERTEMPERATURE	---	87.2	87.2 (2.0)
2PFI - OVERFREQUENCY	---	87.0	87.0 (1.0)

SETTINGS ARE BASED ON 100-15.47  
SETTINGS ARE BASED ON L-L VOLTAGE

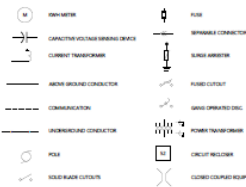
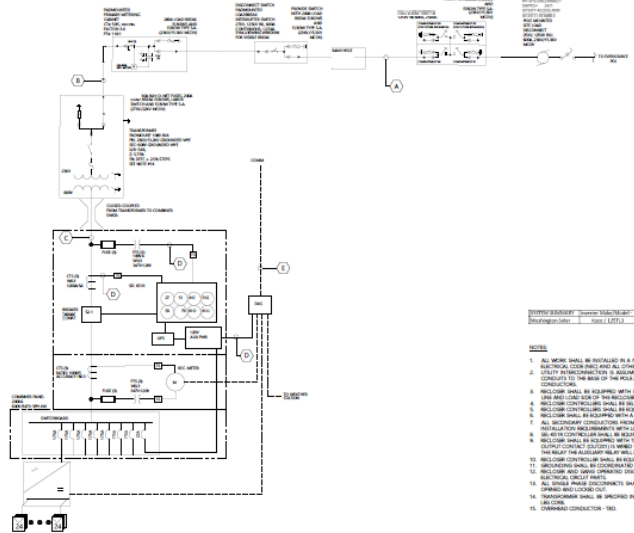
PROTECTIVE RELAY SETTINGS 5-1			
RELAY PROTECTIVE FUNCTIONS	VOLTAGE SETTING (V)	FREQUENCY SETTING-HZ	OPERATING TIME (SEC)
ZPT1 - UNDERVOLTAGE	60.0000	--	88 (1.1)
ZPT2 - UNDERVOLTAGE	120.0000	--	120 (2.5)
IMP1 - UNDERVOLTAGE	120.0000	--	120 (2.5)
IMP2 - UNDERVOLTAGE	140.0000	--	84 (2.5)
STPT1 - UNDERFREQUENCY	--	58.5	94 (3.0)
STPT2 - UNDERFREQUENCY	--	58.5	10.000 (3.0)
STPT3 - UNDERFREQUENCY	--	61.2	16.000 (3.0)
STPT4 - UNDERFREQUENCY	--	61.2	94 (3.0)
PT - AUTO-RESETTING	107.5 (60.0 TO 210.0 (200.0) & 5 VOLTAGE)	58.5 (57.0 TO 61.2)	5 MINUTES (2.0 TO 10.000)
ALARM ADVISING FAILURE, HIGH SUPPLY RAILING, LOSS OF DC			

**F8** FUNCTION IS ONLY ENABLED ON VOLTAGE AND FREQUENCY DISTURBANCES, A MINUTE DELAY FOR THE F8 FUNCTION IS ENABLED ON VOLTAGE AND FREQUENCY DISTURBANCES ON ALL BUT THE FIRST DETECTION OF A DISTURBANCE. AFTER THE FIRST DETECTION, THE F8 MINUTE TIME INTERVAL WILL RESTART IF THE UTILITY VOLTAGE OR FREQUENCY RALLS OUTSIDE OF THE WINDOW DEFINED IN THE ABOVE CHART. RECLOSURE WILL LOCKOUT ON:

- SECOND CONSECUTIVE DETECTION OF A DISTURBANCE.
- RECLOSURE WILL ONLY BE ALLOWED TO CLOSE WHEN THE VOLTAGE AND FREQUENCY ARE IN COMPLIANCE WITH IEEE-738 AND CNET 1, TABLE 9.1. VOLTAGE ANOMALY MUST BE 100% OF NOMINAL VOLTAGE. FREQUENCY IS BASED ON LINE TO LINE VOLTAGE. FREQUENCY BETWEEN PHASES TO BE 60HZ.
- SETTINGS ARE BASED ON 689-1547-0105 TABLE 7.1 AND 7.2 AND ANSI CNET 1.

REMARK: VOLTAGE QUALITY TEST AND BLOCK CIRCUIT IF THERE IS A MECHANICAL FAULT OR POWER SUPPLY FAILING.

**OPERATING TIME** INDICATES RECLOSURE OPERATING TIME (IN ADDITIONAL 60 CYCLES)



PROPERTY INFORMATION	Owner: State/Model:	AC Name: Peak Rating	Peak AC Rating	Peak DC Rating
Washington Solar	Peak / 1.277.3	1.275W	1.080W	1.376W

- [illegible]

**Washington Solar**  
Windham County, Connecticut  
391 Hartford Turnpike

Oneline Diagram

**IA INTERCONNECTION  
NOT FOR CONSTRUCTION**

DATE: \_\_\_\_\_  
SHEET: 1 OF 1





## STANDARD FAST TRACK AND STUDY PROCESS GENERATOR INTERCONNECTION AGREEMENT (LEG-22713)

This Interconnection Agreement (this "**Agreement**"), dated as of **April 23, 2021** (the "**Effective Date**"), is entered into by and between The Connecticut Light and Power d/b/a Eversource Energy, a specially chartered Connecticut corporation with a principal place of business at 107 Selden St, Berlin, CT, 06037 (the "**Electric Distribution Company**" or "**EDC**"), and **Yantic Solar LLC** with a place of business at **c/o Allco Renewable Energy Limited, 601 South Ocean Blvd., Delray Beach, FL 33483** (the "**Generator**"). The EDC and the Generator are collectively referred to herein as the "**Parties**" and individually as a "**Party**." Any capitalized term used but not defined in this Agreement shall have the meaning ascribed to such term in the Guidelines for Generator Interconnection attached hereto as Appendix A, as may be amended from time to time (the "**Guidelines**").

1. Basic Understandings. The Generator owns and/or operates or plans to construct a Generating Facility at **75 West Fisk Road, Hampton, CT 06247** as depicted in Appendix H (the "**Facility**"). A description of the Facility as studied and incorporating any design changes approved in accordance with Section 1.3, is attached hereto as Appendix B (the "**Facility Description**").

1.1. The subject matter of this Agreement pertains to the Interconnection of the Facility to the EPS. This Agreement does not relate to any other obligation of the Generator unrelated to the Interconnection of the Facility. Apart from this Agreement, the Generator is responsible for (a) all arrangements to effect any deliveries of electric energy from the Facility in accordance with the appropriate retail or FERC-jurisdictional tariffs and (b) arranging for its purchase of retail power (such as back-up or stand-by power).

1.2. This Agreement does not cover sales of power, capacity, energy or market products generated from the Facility. If the Generator intends to sell energy or ancillary services from the Facility, it must provide written notice to the EDC of such intention at least sixty (60) days prior to the effectuation of such sale. Furthermore, the EDC may require the Generator to enter into a new Interconnection agreement prior to such sale which may or may not require approval from FERC.

1.3. Any changes to the design of the Facility as it is described and specified in the application submitted by the Generator to the EDC with respect to such Facility (the "**Application**") must be approved by the EDC in writing prior to the implementation of such design changes. Only design changes approved in accordance with this Section 1.3 shall be implemented. The Generator may not operate the Facility in parallel with the EPS until: (a) the conditions for initial parallel operation of the Facility set forth in Appendix C have been met; (b) commissioning and testing of the Facility has been completed in accordance with the Guidelines and to the satisfaction of the EDC; (c) the Generator has paid the EDC all funds due pursuant to paragraphs 5.3.1 and 5.3.2 of this Agreement; and (d) the EDC has provided formal written authorization in accordance with the Guidelines stating that operation of the Facility in parallel with the EPS is authorized by the EDC (the "**Authorization Date**"). Such written authorization will not be effective unless accompanied by a description of the Facility that incorporates all design changes to the Facility since the Application was submitted to the EDC (and not specified therein), including all design changes made during construction.

1.4. The Generator shall obtain each consent, approval, authorization, order or acceptance from FERC necessary for the Generator or any entity that, directly or indirectly, through one or more intermediaries, controls, or is controlled by, or is under common control with the Generator (each, an "**Affiliate**") to sell any power, capacity, energy or market products from the Facility into the wholesale power market (collectively, "**Wholesale Sales**") prior to making any such sales. If the Generator intends to make Wholesale Sales, then the Generator shall provide written notice to the EDC at least sixty (60) days prior to making any Wholesale Sales. The Generator shall indemnify, defend and hold harmless the EDC, its trustees, directors, officers, employees, agents and affiliates from any costs, damages, fines or penalties, including reasonable attorneys' fees, directly resulting from Generator's or its Affiliate's non-compliance with any provision of this Section 1.4; provided, however, that the such indemnification obligation shall be subject to the limitation of liability set forth in Section 14.

## 2. Entire Agreement.

2.1. This Agreement, including any attachments or appendices, is entered into pursuant to the Guidelines.

2.2. This Agreement, the Guidelines, and the relevant EDC Tariffs, Terms and Conditions represent the entire understanding between the Parties as to the subject matter of this Agreement.

2.3. Each Party hereby represents that in entering into this Agreement, it has not relied on any promise, inducement, representation, warranty, agreement or other statement not set forth in this Agreement, the Tariffs, Terms and Conditions, or the Guidelines.

2.4. In the event of a conflict between this Agreement, the Guidelines and/or the Tariffs, Terms and Conditions, the Tariffs, shall take first precedent, followed by the Terms and Conditions, followed by the Guidelines, and lastly this Agreement.

3. Term.

3.1. This Agreement is effective as of the Effective Date. The Agreement shall continue in full force and effect until terminated pursuant to Section 4.

4. Termination.

4.1. This Agreement may be terminated under the following conditions:

4.1.1. The Parties may mutually terminate this Agreement at any time upon the execution of an agreement to terminate this Agreement.

4.1.2. The Generator may terminate this Agreement at any time by providing sixty (60) days written notice to EDC.

4.1.3. Either Party may terminate this Agreement immediately upon the occurrence of an Event of Default (as such term is defined in Section 20.1) by the other Party, subject to the notice requirement set forth in Section 20.2(c).

4.1.4. The EDC may terminate this Agreement if the Generator: (a) operates the Facility in parallel with the EPS prior to the Authorization Date; (b) fails within six months of testing to receive authorization from the EDC to operate in parallel with the EPS; (c) does not construct the Facility in accordance with the Facility Description; (d) modifies the Facility without the written approval of the EDC; (e) fails to energize the Facility within twelve months of the Authorization Date; or (f) permanently abandons the Facility. For the purposes of this Agreement, the Generator's failure to operate the Facility for any consecutive twelve month period after the Authorization Date shall be deemed a permanent abandonment.

4.1.5. The EDC may terminate this Agreement if the Generator fails to correct an Emergency Condition (as such term is defined in Section 7.1.1) or a Non-Emergency Adverse Operating Effect (as such term is defined in Section 7.1.4) within ninety (90) days from the date on which the EDC disconnected the Facility due to such event.

4.2. Survival of Obligations. The termination of this Agreement shall not relieve either Party of its liabilities and obligations, owed or continuing at the time of termination.

4.3. Related Agreements. Any agreement attached to and incorporated into this Agreement shall terminate concurrently with this Agreement unless the Parties have agreed otherwise in writing.

5. General Payment Terms.

5.1. Interconnection Costs. The Generator is responsible for paying all costs associated with Interconnection of the Facility, including (a) testing costs, (b) costs associated with installing, testing and maintaining the communications infrastructure necessary to provide protection and/or monitoring of the Generating Facility (collectively, the "**Communications Costs**"), (c) construction, modification or upgrade costs necessary to accommodate the Interconnection (collectively, the "**Construction Costs**"), and (d) any ongoing maintenance costs and other charges deemed necessary by the EDC to maintain the Interconnection (all such costs described in this sentence, the "**Interconnection Costs**"). The EDC shall notify the Generator in the event the Construction Costs exceed 110% of the estimate of such costs provided by the EDC to the Generator in the Construction Agreement (as such term is defined below), facility study report or other written understanding of the Parties.

5.2. Initial Cost Estimate. Attached hereto as Appendix D is a good-faith estimate of the initial Interconnection Costs (the "**Initial Cost Estimate**").

5.3. Billing and Payment Procedures for Initial Interconnection Costs.

5.3.1. The Generator shall pay the EDC the amount set forth in the Initial Cost Estimate (the "**Initial Payment**") within thirty (30) days of the Effective Date.

5.3.2. Within thirty (30) days following the date on which the Facility is first connected to the EPS (the "**Initial Interconnection**"), the EDC shall provide the Generator with a final accounting report detailing any Underpayment (as such term is defined below) or Overpayment (as such term is defined below) made by the Generator with respect to the Initial Payment. To the extent that the actual Interconnection Costs accrued up to the date of the Initial Interconnection exceed the Initial Payment (an "**Underpayment**"), the EDC shall invoice the Generator for an amount equal to the Underpayment and the Generator shall pay such amount to the EDC within thirty (30) days of such invoice. To the extent that the Initial Payment exceeds the actual Interconnection Costs accrued up to the date of the Initial Interconnection (an "**Overpayment**"), the EDC shall refund to the Generator an amount equal to the Overpayment within thirty (30) days of the provision of such final accounting report.

5.4. Billing and Payment Procedures for Ongoing Interconnection Costs. All Interconnection Costs incurred following the Initial Interconnection shall hereinafter be referred to as the "**Ongoing Costs**," and shall include maintenance, testing and Communications Costs, as well as any Construction Costs not included in either (a) the Construction Agreement by and between the Generator and the Company, dated as of **03/09/2016** a copy of which is attached hereto as Appendix F Attachment III or (b) the Initial Cost Estimate. The EDC shall invoice the Generator for all Ongoing Costs as such costs are incurred, and the Generator shall pay each such invoice within thirty (30) days of receipt, or as otherwise agreed to by the Parties.

5.5. Milestones. The Parties shall agree on milestones for which each Party is responsible and list them in Appendix F of this Agreement. A Party's obligations under this provision may be extended by agreement. If a Party anticipates that it will be unable to meet a milestone for any reason other than a Force Majeure Event (as such term is defined in Section 18.1), it shall immediately notify the other Party of the reason(s) for not meeting the milestone and (a) propose the earliest reasonable alternate date by which it can attain this and future milestones, and (b) requesting appropriate amendments to Appendix F. The Party affected by the failure to meet a milestone shall not unreasonably withhold agreement to such an amendment unless (i) it will suffer significant uncompensated economic or operational harm from the delay, (ii) attainment of the same milestone has previously been delayed, or (iii) it has reason to believe that the delay in meeting the milestone is intentional or unwarranted notwithstanding the circumstances explained by the Party proposing the amendment.

5.6. Distribution Upgrades. The EDC shall design, procure, construct, install, and own the upgrades described in Appendix G of this Agreement (the "**Upgrades**"). If the EDC and the Generator agree, the Generator may construct Upgrades that are located on land owned by the Generator. The actual cost of the Upgrades, including overheads, shall be directly assigned to the Generator. The Generator shall be responsible for its share of all reasonable expenses, associated with operating, maintaining, repairing, and replacing such Upgrades, except to the extent that a retail tariff of, or an agreement with, the EDC provides otherwise.

5.7. Taxes. The Parties shall comply with all applicable federal and state tax laws.

6. Operating Requirements.

6.1. General Operating Requirements. The Generator shall construct, interconnect, operate, and maintain the Facility and all accompanying and necessary facilities in accordance with (a) all applicable laws and requirements, Good Utility Practice, the Guidelines, Tariffs, and the Terms and Conditions; (b) applicable specifications that meet or exceed those provided by the National Electrical Safety Code, the American National Standards Institute, IEEE, Underwriter's Laboratory and ISO-NE operating requirements in effect at the time of construction and other applicable national and state codes and standards. Following the initial Interconnection of the Facility, the Generator shall comply with all special operating requirements set forth in Appendix C. In the event that the EDC believes that the cause of any problem to the EPS originates from the Facility, the EDC has the right to install monitoring equipment at a mutually agreed upon location to determine the exact cause of the problem. The cost of such monitoring equipment shall be borne by the EDC, unless such problem or problems are demonstrated to be caused by the Facility or if the test was performed at the request of the Generator in which case the costs of the monitoring equipment shall be borne by the Generator. If the operation of the Facility interferes with the EDC's or its customers' operations, the Generator must immediately take corrective action to stop such interference and shall not operate the Facility until such time as such interference is stopped. If the Generator fails to take immediate corrective action pursuant to the preceding sentence, then the EDC may disconnect the Facility as set forth in the Guidelines.

6.2. No Adverse Effects; Non-interference.

6.2.1. The EDC shall notify the Generator if the EDC has evidence that the operation of the Facility could cause disruption or deterioration of service to other customers served from the EPS or if operation of the Facility could cause damage to the EPS or other affected systems. (For example, deterioration of service could be caused by, among other things, harmonic injection in excess of IEEE STD 519, as well as voltage fluctuations caused by large step changes in loading at the Facility.) The Generator shall cease operation of the Facility until such time as the Facility can operate without causing disruption or deterioration of service to other customers served from the EPS or causing damage to the EPS or other affected systems. Each Party shall promptly notify the other Party in writing of any condition or occurrence relating to such Party's equipment or facilities which, in such Party's reasonable judgment, could adversely affect the operation of the other Party's equipment or facilities.

6.2.2. The EDC shall operate the EPS in such a manner so as to not unreasonably interfere with the operation of the Facility. The Generator shall protect itself from normal disturbances propagating through the EPS in accordance with Good Utility Practice. Examples of such disturbances include single-phasing events, voltage sags from remote faults on the EPS, and outages on the EPS.

### 6.3. Safe Operations and Maintenance.

6.3.1. General. The Generator shall operate, maintain, repair, and inspect, and shall be fully responsible for, the Facility or facilities that it now or hereafter may own unless otherwise specified in this Agreement. Each Party shall be responsible for the maintenance, repair and condition of its respective lines and appurtenances on such Party's respective side of the Point of Interconnection. The EDC and the Generator shall each provide equipment on its respective side of the Point of Interconnection that adequately protects the EPS, personnel, and other persons from damage and injury. If the EDC has constructed or owns facilities that are identified at the time of Interconnection as specifically required by or as a result of such Interconnection, then the Generator shall reimburse the EDC for the costs of maintaining and repairing such facilities.

6.3.2. Ongoing Maintenance; Testing of the Facility. The Parties hereby acknowledge and agree that maintenance testing of the Facility's protective relaying is imperative for safe, reliable operation of the Facility. The test cycle for such protective relaying shall not be less frequent than once every sixty (60) calendar months or the manufacturer's recommended test cycle, whichever is more frequent. The Generator shall provide copies of these test records to the EDC within thirty (30) days of the completion of such maintenance testing. The EDC may disconnect the Facility from the EPS if the Generator fails to adhere to this Section 6.3.2. The Generator is responsible for all ongoing maintenance costs associated with the Facility.

### 6.4. Access.

6.4.1. Emergency Contact Information. Each Party shall provide to the other Party and shall update as necessary a telephone number that can be used at all times to allow the other Party to report an emergency.

6.4.2. EDC Right to Access EDC-Owned Facilities and Equipment. The Generator shall allow the EDC access to the EDC's equipment and the EDC's facilities located on the Facility's premises (the "**EDC Property**"). To the extent that the Generator does not own all or part of the real property on which the EDC is required to locate EDC Property in order to serve the Facility, the Generator shall procure and provide to the EDC all necessary rights, including easements, for access to the EDC Property.

6.4.3. Isolation Device. The EDC shall have access to the Isolation Device of the Facility at all times. Generator is responsible for obtaining any and all property rights, including easements, which will permit the EDC access to such Isolation Device.

6.4.4. Right to Review Information. The EDC shall have the right to review and obtain copies of the Generator's operations and maintenance records, logs, or other information such as unit availability, maintenance outages, circuit breaker operation requiring manual reset, relay targets and unusual events pertaining to the Facility or its Interconnection with the EPS. The EDC shall treat such information as confidential and shall use such information solely for the purposes of determining compliance with the operating requirements set forth in this Section 6.

## 7. Disconnection.

### 7.1 Temporary Disconnection.

7.1.1 Emergency Conditions. The EDC may immediately and temporarily disconnect the Facility from the EPS without prior notification in cases where, in the reasonable judgment of the EDC, the continued connection of the Facility is imminently likely to (a) endanger persons or damage property or (b) cause an adverse effect on the integrity or security of, or damage to, the EPS or to other electric power systems to which the EPS is directly connected (each, an "***Emergency Condition***"). Upon becoming aware of an Emergency Condition, the Generator shall (i) immediately suspend operation of the Facility and (ii) promptly provide written notice to the EDC of such Emergency Condition and suspension (an "***Emergency Condition Notice***"). The Emergency Condition Notice shall describe (A) such Emergency Condition, (B) the extent of any damage or deficiency, (C) the expected effect on the operation of each Party's facilities and operations, (D) the anticipated duration of such Emergency Condition and (E) the necessary corrective action. After temporary disconnection or suspension pursuant to this Section 7.1.1, the Facility may not be reconnected or resume operation until the EDC and Generator are both satisfied that the cause of such Emergency Condition has been corrected. If the Generator fails to correct the Emergency Condition within ninety (90) days from the time that the EDC has temporarily disconnected the Facility due to such an event, the EDC may elect to terminate this Agreement in accordance with Section 4.1.5 and/or permanently disconnect the Facility in accordance with Section 7.2.2.

7.1.2 Routine Maintenance, Construction and Repair. The EDC shall have the right to disconnect the Facility from the EPS when necessary for routine maintenance, construction and repairs to the EPS. The EDC shall provide the Generator with a minimum of seven (7) days prior written notice of such disconnection, consistent with the EDC's planned outage notification protocols. If the Generator requests disconnection by the EDC at the Point of Common Interconnection, the Generator will provide a minimum of seven (7) days prior written notice to the EDC. The EDC shall make reasonable efforts to work with Generator to schedule a mutually convenient time or times to temporarily disconnect the Facility pursuant to this Section 7.1.2.



7.1.3 Forced Outages. During any forced outage, the EDC shall have the right to temporarily disconnect the Facility from the EPS in order to effect immediate repairs to the EPS. The EDC shall use reasonable efforts to provide the Generator with prior notice of such temporarily disconnection; provided, however, the EDC may temporarily disconnect the Facility from the EPS without such notice pursuant to this Section 7.1.2 in the event circumstances do not permit such prior notice to the Generator.

7.1.4 Non-Emergency Adverse Operating Effects. The EDC may temporarily disconnect the Facility if it is having a non-emergency adverse operating effect on the EPS or on other customers (a "**Non-Emergency Adverse Operating Effect**") if the Generator fails to correct such Non-Emergency Adverse Operating Effect within forty-five (45) days of the EDC's written notice to the Generator requesting correction of such Non-Emergency Adverse Operating Effect. If the Generator fails to correct a Non-Emergency Adverse Operating Effect within ninety (90) days from the time that the EDC has temporarily disconnected the Facility due to such an event, the EDC may elect to terminate this Agreement in accordance with Section 4.1.5 and/or permanently disconnect the Facility in accordance with Section 7.2.2.

7.1.5 Modification of the Facility. The EDC has the right to immediately suspend Interconnection service and temporarily disconnect the Facility in the event any material modification to the Facility or the Generator's Interconnection facilities has been implemented without prior written authorization from the EDC.

7.1.6 Re-connection. Any temporary disconnection pursuant this Section 7.1 shall continue only for so long as is reasonably necessary. The Generator and the EDC shall cooperate with each other to restore the Facility and the EPS, respectively, to their normal operating states as soon as reasonably practicable following the correction of the event that led to the temporary disconnection.

## 7.2 Permanent Disconnection.

7.2.1 The Generator may permanently disconnect the Facility at any time upon thirty (30) days prior written notice to the EDC.

7.2.2 The EDC may permanently disconnect the Facility upon termination of this Agreement in accordance with Section 4.

7.2.3 The EDC may permanently disconnect the Facility in the event the Generator is unable to correct an Emergency Condition or a Non-Emergency Adverse Operating Effect in accordance with Section 7.1.1 or Section 7.1.4, respectively.

8. Metering.

8.1. Metering of the output from the Facility shall be conducted pursuant to the terms of the Guidelines.

9. Assignments.

9.1 Except as provided herein, the Generator shall not voluntarily assign its rights or obligations, in whole or in part, under this Agreement without the EDC's prior written consent, which consent shall not be unreasonably withheld or delayed. Any assignment the Generator purports to make without the EDC's prior written consent shall not be valid. Notwithstanding the foregoing, the EDC's consent shall not be required for any assignment made by the Generator to an Affiliate with an equal or greater credit rating and with the legal authority and operational ability to satisfy the obligations of the Generator under this Agreement; provided that that Generator promptly notifies the EDC of any such assignment. In all events, the Generator shall not be relieved of its obligations under this Agreement unless, and until, the permitted assignee assumes in writing all obligations of this Agreement and notifies the EDC of such assumption.

10. Confidentiality.

10.1 The EDC shall maintain the confidentiality of information provided from the Generator to the EDC if such information is clearly marked and labeled "Confidential" (the "**Confidential Information**"). Confidential Information shall not include information that (a) is or hereafter becomes part of the public domain, (b) previously was in the possession of the EDC, or (c) the EDC is required to disclose pursuant to a valid order of a court or other governmental body or any political subdivision thereof; provided, however, that to the extent that it may lawfully do so, the EDC shall first have given notice to the Generator and given the Generator a reasonable opportunity to interpose an objection or obtain a protective order requiring that the Confidential Information and/or documents so disclosed be used only for the purpose for which the order was issued; provided further that if such Confidential Information is requested or required by the PURA, the EDC shall seek protective treatment of such Confidential Information.

11. Insurance Requirements.

11.1 General Liability. In connection with the Generator's performance of its duties and obligations under this Agreement, the Generator shall maintain, during the term of this Agreement, general liability insurance with a combined single limit of not less than:

11.1.1 Three hundred thousand dollars (\$300,000) per occurrence and in the aggregate for bodily injury and/or property damage claims where the gross nameplate rating of the Facility is less than or equal to an aggregate of 100 kW;

11.1.2 One million dollars (\$1,000,000) per occurrence and in the aggregate for bodily injury and/or property damage claims where the gross nameplate rating of the Facility is greater than 100 kW and less than or equal to an aggregate of 1MW;

11.1.3 Two million dollars (\$2,000,000) per occurrence and in the aggregate for bodily injury and/or property damage claims where the gross nameplate rating of the Facility is greater than 1MW and less than or equal to an aggregate of 5MW; or

11.1.4 Five million dollars (\$5,000,000) per occurrence and in the aggregate for bodily injury and/or property damage claims where the gross nameplate rating of the Facility is greater than 5MW and less than or equal to an aggregate of 20MW.

11.2 Insurer Requirements and Endorsements. All insurance required pursuant to this Section 11 shall be carried by insurers qualified to underwrite insurance in Connecticut with an A.M. Best rating of A- or better. In addition, all insurance shall: (a) include the EDC as an additional insured for Generating facilities greater than 1MW; (b) contain a severability of interest clause or cross-liability clause unless the Generator is a residential customer; (c) provide that the EDC shall not be liable to the insurance carrier with respect to the payment of premium for such insurance; and (d) provide for written notice to the EDC thirty (30) days prior to cancellation, termination, or material change of such insurance.

11.3 Evidence of Insurance.

11.3.1 Evidence of the insurance required pursuant to this Section 11 shall state that the coverage provided is primary and is not excess of or contributing with any insurance or self-insurance maintained by the EDC.

11.3.2 The Generator is responsible for providing the EDC with evidence of insurance on an annual basis as set forth in the Guidelines.

11.3.3 Prior to the EDC commencing any work on system modifications, the Generator shall have its insurer provide to the EDC certificates of insurance evidencing the insurance coverage required pursuant to this Section 11. Such certificates shall clearly indicate whether such insurance policy is written on a "claims-made" basis.

11.3.4 The EDC may, at its discretion, require the Generator to maintain tail coverage with respect to any policy written on a "claims-made" basis for a period of three years after expiration or termination of such policy.

11.3.5 All insurance certificates, statements of self insurance, endorsements, cancellations, terminations, alterations, and material changes of such insurance shall be issued and submitted to the appropriate EDC Facilitator.

12. Performance Assurance.

12.1 If the EDC reasonably expects that any Interconnection Costs necessary to accommodate the Facility will be in excess of fifty thousand dollars (\$50,000) in the aggregate in any calendar year, the EDC may require that the Generator provide to the EDC a guarantee, a surety bond, letter of credit or other form of security that is reasonably acceptable to the EDC at least twenty (20) Business Days prior to the commencement of the related work. Such security for payment shall be in an amount sufficient to cover such Interconnection Costs. In addition:

12.1.1. Any guarantee provided by the Generator pursuant to this Section 12 shall be made by an entity that meets the creditworthiness requirements of the EDC, and contain terms and conditions that guarantee payment of any amount that may be due from the Generator, up to an agreed-to maximum amount; and

12.1.2. Any letter of credit or surety bond provided by the Generator pursuant to this Section 12.1.2 shall be issued by a financial institution or insurer reasonably acceptable to the EDC and must specify an expiration date reasonably acceptable to the EDC.

13. Indemnification.

13.1 Indemnification of the EDC. Subject to the limitation of liability set forth in Section 14, the Generator shall indemnify, defend and hold harmless the EDC and its trustees, directors, officers, employees and agents (including affiliates, contractors and their employees) from and against any liability, damage, loss, claim, demand, complaint, suit, proceeding, action, audit, investigation, obligation, cost, judgment, adjudication, arbitration decision, penalty (including fees and fines), or expense (including court costs and attorneys' fees) relating to, arising from or connected to this Agreement.

13.2 Indemnification of the Generator. Subject to the limitation of liability set forth in Section 14, the EDC agrees to indemnify, defend and hold harmless the Generator, its trustees, directors, officers, employees and agents (including Affiliates, contractors and their employees), from and against any and all damages for personal injury (including death) or property damage to unaffiliated third parties arising from any and all actions relating to or arising out of any material failure by the EDC to perform any of its obligations pursuant to Section 6.2.2 of this Agreement.

13.3 Survival of Indemnification. The indemnification obligations of each Party set forth in this Section 13 shall continue in full force and effect regardless of whether this Agreement has expired or been terminated, defaulted or cancelled and shall not be limited in any way by any limitation on insurance.

14. Limitation of Liability.

14.1 Except with respect to a Party's fraud or willful misconduct, and except with respect to damages sought by a third party in connection with a third party claim: (a) neither Party shall be

liable to the other Party, for any damages other than direct damages; and (b) each Party agrees that it is not entitled to recover and agrees to waive any claim with respect to, and will not seek, consequential, punitive or any other special damages as to any matter under, relating to, arising from or connected to this Agreement.

15. Amendments and Modifications.

15.1 No amendment or modification of this Agreement shall be binding unless in writing and duly executed by both Parties.

16. Permits and Approvals.

16.1 The Generator is responsible for obtaining all environmental and other permits required by governmental authorities for the construction and operation of the Facility (each, a "**Required Permit**"). The EDC assumes no responsibility for obtaining any Required Permit, advising the Generator with respect to Required Permits, or assuring that all Required Permits have been obtained by the Generator. Upon written request of the EDC, the Generator shall promptly provide to the EDC a copy of any Required Permit.

17. Environmental Releases.

17.1 Each Party shall immediately notify the other Party, first orally and then in writing, of any of the following events related to the Facility upon becoming aware of such event: (a) the release of any hazardous substances; (b) any asbestos or lead abatement activities; or (c) any type of remediation activities. The Party having the responsibility for reporting such an event to appropriate governmental authorities shall promptly furnish to the other Party copies of any publicly available reports filed with such authorities.

18. Force Majeure.

18.1 For purposes of this Agreement, "**Force Majeure Event**" means any event or circumstance that (a) is beyond the reasonable control of the affected Party and (b) the affected Party is unable to prevent or provide against by exercising commercially reasonable efforts. Force Majeure Events include the following events or circumstances, but only to the extent they satisfy the foregoing requirements: (i) acts of war or terrorism, public disorder, insurrection, or rebellion; (ii) floods, hurricanes, earthquakes, lightning, storms, and other natural calamities; (iii) explosions or fire; (iv) strikes, work stoppages, or labor disputes; (v) embargoes; and (vi) sabotage. In no event shall the lack of funds or the inability to obtain funds constitute a Force Majeure Event.

18.2 If a Force Majeure Event prevents a Party from fulfilling any obligations under this Agreement, such Party will promptly notify the other Party in writing, and will keep the other Party informed on a continuing basis of the scope and duration of the Force Majeure Event. The affected Party shall specify in reasonable detail the circumstances of the Force Majeure Event, its expected duration, and the steps that the affected Party is taking to

mitigate the effects of the event on its performance. The affected Party may suspend or modify its performance of obligations under this Agreement, other than the obligation to make payments then due or becoming due under this Agreement, but only to the extent that the effect of the Force Majeure Event cannot be mitigated by the use of commercially reasonable efforts. The affected Party shall use commercially reasonable efforts to resume its performance as soon as possible. Without limiting this section, the Generator shall immediately notify the EDC verbally if the failure to fulfill the Generator's obligations under this Agreement may impact the safety or reliability of the EPS.

19. Notices.

- 19.1 All notices, demands and other communications to be given or delivered under or by reason of the provisions of this Agreement shall be in writing and shall be deemed to have been given: (a) immediately when personally delivered; (b) when received by first class mail, return receipt requested; (c) one day after being sent for overnight delivery by Federal Express or other overnight delivery service; or (d) when receipt is acknowledged, either electronically or otherwise, if sent by facsimile, telecopy or other electronic transmission device. Notices, demands and communications to the other Parties shall, unless another address is specified by such Parties in writing, be sent to the addresses indicated below:

If to the EDC:

**The Connecticut Light and Power Company d/b/a Eversource Energy**  
107 Selden Street, Berlin, CT 06037  
Attention: Supervisor, Distributed Resources  
Phone: 866-324-2437

If to the Generator:

**Yantic Solar LLC**  
c/o Allco Renewable Energy Limited,  
601 South Ocean Blvd., Delray Beach, FL 33483  
Attention: Thomas M. Melone  
Phone: 212-681-1120

And via email to [Thomas.Melone@gmail.com](mailto:Thomas.Melone@gmail.com)

- 19.2 Each Party may designate operating representatives to conduct daily communications between the Parties, which may be necessary or convenient for the administration of this Agreement. The names, addresses, and phone numbers of each Party's representatives shall be provided in writing by such Party to the other Party.

20. Default and Remedies.

- 20.1 Defaults. Each of the following shall constitute an "***Event of Default***,"

20.1.1. A Party fails to pay any bill or invoice for charges incurred pursuant to this Agreement or any other amount due from such Party to the other Party as and when due, any such failure shall continue for a period of thirty (30) days after written notice of nonpayment from the affected Party to the defaulting Party; provided, however, if such Party disputes such bill, invoice or other amount due in good faith, then such failure to pay shall not constitute an Event of Default and the Parties shall resolve such dispute in accordance with Section 21;

20.1.2. A Party (a) fails to comply with any other provision of this Agreement or breaches any representation or warranty in any material respect and (b) fails to cure or remedy such failure or breach within sixty (60) days after notice and written demand by the other Party to cure the same or such longer period reasonably required to cure the same (not to exceed an additional ninety (90) days unless otherwise mutually agreed upon, provided that the failing or breaching Party diligently continues to cure until such failure or breach is fully cured). This provision pertains only to cure periods not specifically addressed elsewhere in this Agreement;

20.1.3. A Generator modifies the Facility or any part of the Interconnection without the prior written approval of the EDC; or

20.1.4. A Party fails to perform any obligation hereunder in accordance with (a) applicable laws and regulations, (b) the ISO-NE operating documents, procedures, and reliability standards, and (c) Good Utility Practice.

20.2 Remedies. Upon the occurrence of an Event of Default, the non-defaulting Party may, at its option, in addition to any remedies available under any other provision herein, do any, or any combination, as appropriate, of the following: (a) continue to perform and enforce this Agreement; (b) recover damages from the defaulting Party except as limited by this Agreement; (c) by written notice to the defaulting Party terminate this Agreement; or (d) pursue any other remedies it may have under this Agreement or under applicable law or in equity.

21. Dispute Resolution Procedures.

21.1 Each Party shall agree to attempt to resolve all disputes promptly, equitably and in good faith. If the Parties are unable to informally resolve any dispute, the Parties shall follow the dispute resolution process set forth in the Guidelines.

22. Subcontractors.

22.1 Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement; provided, however, that the hiring Party shall require such subcontractor to comply with all applicable terms and conditions of this Agreement in providing such subcontracting

services and the hiring Party shall remain primarily liable to the other Party for the performance of such subcontractor.

22.2 The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor hired by the hiring Party to perform its obligations under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.

22.3 The obligations under this Section 22 will not be limited in any way by any limitation of subcontractor's insurance.

23. Miscellaneous.

23.1 Governing Law. This Agreement and the legal relations between the Parties will be governed by and construed in accordance with the laws of the State of Connecticut applicable to contracts made and performed in such State and without regard to conflicts of law doctrines.

23.2 Non-waiver. No failure on the part of any Party to exercise or delay in exercising any right hereunder shall be deemed a waiver thereof, nor shall any single or partial exercise of any right hereunder preclude any further or other exercise of such or any other right.

23.3 No Third Party Beneficiaries. This Agreement is made solely for the benefit of the Parties. Nothing in the Agreement shall be construed to create any rights in or duty to, or standard of care with respect to, or any liability to, any person not a party to or otherwise bound by this Agreement.

23.4 Severability. If any provision of this Agreement is held to be unenforceable for any reason, such provision shall be adjusted rather than voided, if possible, to achieve the intent of the Parties. If no such adjustment is possible, such provision shall be fully severable and severed, and all other provisions of this Agreement will be deemed valid and enforceable to the extent possible.

23.5 No Partnership. Nothing in this Agreement shall constitute or be construed to be or create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. No Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Parties.

23.6 Headings. All headings in this Agreement are included solely for convenient reference, are not intended to be full and accurate descriptions of the contents of this Agreement, will



not be deemed a part of this Agreement, and will not affect the meaning or interpretation of this Agreement.

23.7 Changes in State Regulations or Law. Upon thirty (30) days prior written notice, EDC may terminate this Agreement if there are any changes in PURA regulations or Connecticut law that affects the EDC's ability to perform its obligations under this Agreement.

23.8 General Rules of Construction. For all purposes of this Agreement: (a) all terms defined herein or in the Guidelines shall have the meanings assigned to them herein or in the Guidelines, as the case may be, and shall include the plural as well as the singular; (b) all references in this Agreement to designated "Sections" and other subdivisions are to the designated Sections and other subdivisions of the body of this Agreement; (c) pronouns of either gender or neuter will include, as appropriate, the other pronoun forms; (d) the words "herein," "hereof" and "hereunder" and other words of similar import refer to this Agreement as a whole and not to any particular Section or other subdivision; (e) "or" is not exclusive; (f) "including" and "includes" will be deemed to be followed by "but not limited to" and "but is not limited to," respectively; (g) any definition of or reference to any law, agreement, instrument or other document herein will be construed as referring to such law, agreement, instrument or other document as from time to time amended, supplemented or otherwise modified; (h) any definition of or reference to any law or statute will be construed as referring also to any rules and regulations promulgated thereunder; and (i) as used herein, "days" shall mean "calendar days."

23.9 Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed an original, and all counterparts so executed shall constitute one agreement binding on all of the Parties hereto, notwithstanding that all of the Parties are not signatories to the same counterpart. Facsimile counterparts may be delivered by any Party, with the intention that they shall have the same effect as an original counterpart hereof.

23.10 Signatures. Each Party hereby signifies its agreement to the all of the terms of this Agreement by its signatures hereto. Each Party represents that it has carefully reviewed this Agreement individually and with counsel and that it has knowingly and willingly executed this Agreement.

## 24. Taxes

**24.1** **Payments Not Taxable.** The Parties intend that all payments or property transfers made by any party for the installation of the Upgrades shall be non-taxable, either as contributions to capital, or as an advance, in accordance with the internal Revenue Code and any applicable state income tax laws and shall not be taxable as contributions in aid of construction or otherwise under the Internal Revenue Code and any applicable state income tax laws.

**24.2 Representations and Covenants.** In accordance with IRS Notice 2016-36, Generator represents and covenants that (i) in the case of electricity wheeled over EDC's system, ownership of wheeled electricity remains with the Generator prior to its transmission onto the grid, (ii) for income tax purposes, the amount of any payments and the cost of any property transferred to the EDC for the Upgrades will be capitalized by Generator as an intangible asset and recovered using the straight-line method over a useful life of twenty (20) years, and (iii) any portion of the Generating Facility that is a "dual-use intertie," within the meaning of IRS Notice 2016-36, is reasonably expected to carry only a de minimis amount of electricity in the direction of the Generating Facility. For this purpose, "de minimis amount" means no more than 5 percent of the total power flows in both directions, calculated in accordance with the "5 percent test" set forth in IRS Notice 2016-36. This is not intended to be an exclusive list of the relevant conditions that must be met to conform to IRS requirements for non-taxable treatment.

At EDC's request, Generator shall provide EDC with a report from an independent engineer confirming its representation in clause (iii), above. EDC represents and covenants that the cost of the Upgrades paid for by Generator will have no net effect on the base upon which rates are determined.

**24.3 Indemnification for the Cost Consequences of Current Tax Liability Imposed Upon EDC.** Notwithstanding this Article 24.1, Generator shall protect, indemnify and hold harmless the EDC from the cost consequences of any current tax liability imposed against the EDC as the result of payments or property transfers made by the Generator to the EDC under this Agreement, as well as any interest and penalties, other than interest and penalties attributable to any delay caused by EDC.

The EDC shall not include a gross-up for the cost consequences of any current tax liability in the amounts it charges the Generator under this Agreement unless (i) the EDC has determined, in good faith, that the payments or property transfers made by the Generator to the EDC should be reported as income subject to taxation or (ii) any governmental authority directs EDC to report payments or property as income subject to taxation; provided, however, that the EDC may require the Generator to provide security, in a form reasonably acceptable to EDC (such as a parental guarantee or a letter of credit), in an amount equal to the cost consequences of any current tax liability under this Article 24. Generator shall reimburse EDC for such costs on a fully grossed-up basis, in accordance with Article 24.4, within thirty (30) Calendar Days of receiving written notification from EDC of the amount due, including detail about how the amount was calculated.

The indemnification obligation shall terminate at the earlier of (1) the expiration of the ten year testing period, and the applicable statute of limitation, as it may be extended by the EDC upon request of the IRS, to keep these years open for audit or adjustment, or (2) the occurrence of a subsequent taxable event and the payment of any related indemnification obligations as contemplated by this Article 5.17.

**24.4 Tax Gross-Up Amount.** Generator's liability for the cost consequences of any current tax liability under this Article 24 shall be calculated on a fully grossed-up basis. Except as may otherwise be agreed to by the parties, this means that Generator will pay EDC, in addition to the amount paid for the Upgrades, an amount equal to (1) the current taxes imposed on EDC ("Current Taxes") on the excess of (a) the gross income realized by EDC as a result of payments or property transfers made by Generator to EDC under this Agreement (without regard to any payments under this Article 24) (the "Gross Income Amount") over (b) the present value of future tax deductions for depreciation that will be available as a result of such payments or property transfers (the "Present Value Depreciation Amount"), plus (2) an additional amount sufficient to permit the EDC to receive and retain, after the payment of all Current Taxes, an amount equal to the net amount described in clause (1). For this purpose, (i) Current Taxes shall be computed based on EDC composite federal and state tax rates at the time the payments or property transfers are received and EDC will be treated as being subject to tax at the highest marginal rates in effect at that time (the "Current Tax Rate"), and (ii) the Present Value Depreciation Amount shall be computed by discounting EDC's anticipated tax depreciation deductions as a result of such payments or property transfers by EDC prime rate. Thus, the formula for calculating Generator's liability to EDC pursuant to this Article 5.17.4 can be expressed as follows:  $(\text{Current Tax Rate} \times (\text{Gross Income Amount} - \text{Present Value of Tax Depreciation})) / (1 - \text{Current Tax Rate})$ .

**24.5 Private Letter Ruling or Change or Clarification of Law.** At Generator's request and expense, EDC shall file with the IRS a request for a private letter ruling as to whether any property transferred, or sums paid, or to be paid, by Generator to EDC under this Agreement are subject to federal income taxation. Generator will prepare the initial draft of the request for a private letter ruling and will certify under penalties of perjury that all facts represented in such request are true and accurate to the best of Generator's knowledge. EDC and Generator shall cooperate in good faith with respect to the submission of such request.

EDC shall keep Generator fully informed of the status of such request for a private letter ruling and shall execute either a privacy act waiver or a limited power of attorney, in a form acceptable to the IRS, that authorizes Generator to participate in all discussions with the IRS regarding such request for a private letter ruling. EDC shall allow Generator to attend all meetings with IRS officials about the request and shall permit Generator to prepare the initial drafts of any follow-up letters in connection with the request.

**24.6 Subsequent Taxable Events.** If, within ten (10) years from the date on which the relevant Upgrades are placed in service, (i) Generator breaches the covenant contained in Article 24.2, (ii) a "disqualification event" occurs within the meaning of IRS Notice 2016-36, or (iii) this Agreement terminates and EDC retains ownership of the Upgrades, the Generator shall pay a tax gross-up for the cost consequences of any current tax liability imposed on EDC, calculated using the methodology described in Article 24.4 and in accordance with IRS Notice 2016-36.

**24.7 Contests.** In the event any governmental authority determines that EDC's receipt of payments or property constitutes income that is subject to taxation, EDC shall notify Generator, in writing, within thirty (30) Calendar Days of receiving notification of such determination by a governmental authority. Upon the timely written request by Generator and at Generator's sole expense, EDC may appeal, protest, seek abatement of, or otherwise oppose such determination. Upon Generator's written request and sole expense, EDC may file a claim for refund with respect to any taxes paid under this Article 24, whether or not it has received such a determination. EDC reserves the right to make all decisions with regard to the prosecution of such appeal, protest, abatement or other contest, including the selection of counsel and compromise or settlement of the claim, but EDC shall keep generator informed, shall consider in good faith suggestions from Generator about the conduct of the contest, and shall reasonably permit Generator or a Generator representative to attend contest proceedings.

Generator shall pay to EDC on a periodic basis, as invoiced by EDC, documented reasonable costs of prosecuting such appeal, protest, abatement or other contest. At any time during the contest, EDC may agree to a settlement either with Generator's consent or after obtaining written advice from nationally -recognized tax counsel, selected by EDC, but reasonably acceptable to Generator, that the proposed settlement represents a reasonable settlement given the hazards of litigation. Generator's obligation shall be based on the amount of the settlement agreed to by Generator, or if a higher amount, so much of the settlement that is supported by the written advice from nationally recognized tax counsel selected under the terms of the preceding sentence. The settlement amount shall be calculated on a fully grossed-up basis to cover any related cost consequences of the current tax liability. Any settlement without Generator's consent or such written advice will relieve Generator from any obligation to indemnify EDC for the tax at issue in the contest.

**24.8 Refund.** In the event that (a) a private letter ruling is issued to EDC which holds that any amount paid or the value of any property transferred by Generator to EDC under the terms of this Agreement is not subject to federal income taxation, (b) any legislative change or administrative announcement, notice, ruling or other determination makes it reasonably clear to EDC in good faith that any amount paid or the value of any property transferred by Generator to EDC under the terms of this Agreement is not taxable to EDC, (c) any abatement, appeal, protest, or other contest results in a determination that any payments or transfers made by Generator to EDC are not subject to federal income tax, or (d) if EDC receives a refund from any taxing authority for any overpayment of tax attributable to any payment or property transfer made by Generator to EDC pursuant to this Agreement, EDC shall promptly refund to Generator the following:

- (i) any payment made by Generator under this Article 5.17 for taxes that is attributable to the amount determined to be non-taxable, together with interest thereon,

- (ii) interest on any amounts paid by Generator to EDC for such taxes which EDC did not submit to the taxing authority, interest calculated in accordance with

the methodology set forth in the Federal Energy Regulatory Commission's regulations at 18 CFR §35.19a(a)(2)(iii) from the date payment was made by Generator to the date EDC refunds such payment to Generator, and

(iii) with respect to any such taxes paid by EDC, any refund or credit EDC receives or to which it may be entitled from any governmental authority, interest (or that portion thereof attributable to the payment described in clause (i), above) owed to the EDC for such overpayment of taxes (including any reduction in interest otherwise payable by EDC to any governmental authority resulting from an offset or credit); provided, however, that EDC will remit such amount promptly to Generator only after and to the extent that EDC has received a tax refund, credit or offset from any governmental authority for any applicable overpayment of income tax related to the Upgrades.

The intent of this provision is to leave parties, to the extent practicable, in the event that no taxes are due with respect to any payment for Upgrades hereunder, in the same position they would have been in had no such tax payments been made.

IN WITNESS HEREOF, the Parties have caused this INTERCONNECTION AGREEMENT to be executed on the day and year first written above.

THE EDC

By: CSVa

Name: Carl Nowiszewski

Title: Manager of Distributed Energy Resources CT

Duly Authorized

THE GENERATOR

By: Thomas M. Melong

Name: Thomas M. Melong

Title: President

Duly Authorized

## **Appendix A**

### **Guidelines for Generator Interconnection Fast Track and Study Processes April 5, 2019**

(Intentionally omitted)

## **Appendix B**

### **Description of the Facility as studied, and incorporating any approved design changes**

**Project description & size:** Photovoltaic generating facility consists of a 2,000kW system

**Street Address:** Located approximately at 75 West Fisk Road, Hampton, CT

**LREC Contract:** LREC9-3022

**Point of interconnection:** The Project will interconnect to the Eversource 23kV 11F14 circuit distribution system via a primary service.

**System Description:** The Project consists of Sixteen (16) Kaco 125TL3 inverters.

**Point of Change of Ownership (POCO):** At the same location of the existing primary meters

**Service type & description:** This project is an addition to the existing service and will only require the addition of a primary meter.



## **Appendix C**

### **Conditions for Parallel Operation of Generating Facility, Special Operating Requirements**

- 1- Enable the default ramp rate @ 1,000kW/minute.
- 2- The Project will be operating at unity power factor
- 3- Maximum export will be 2,000 kW AC.
- 4- Inverter setting per ISO-NE and Generator Interconnection Guidelines. Refer to Eversource Energy "The Eversource and United Illuminating Company Exhibit B- Generator Interconnection Technical Requirements" dated April 5<sup>th</sup>, 2019. The settings can be found in Appendix C
- 5- The visible break AC Disconnect switch is required as identified The Eversource and United Illuminating Company Exhibit B- Generator Interconnection Technical Requirements" dated April 5<sup>th</sup>, 2019 section 2.4 Visible break.

## **Appendix D**

### **Initial Cost Estimate**

**Witness test: See Attachment F for total costs**

**Please refer to Section 5.3 – Billing and Payment Procedures for Initial Interconnection Costs. If someone other than the generator/customer is responsible for the payment, please note and sign below.**

**Other responsible party: \_\_\_\_\_**

**Name: \_\_\_\_\_**

**Address: \_\_\_\_\_**

**City/State/Zip: \_\_\_\_\_**

## **Appendix E**

### **Construction Agreement**

None required.

**Appendix F**  
**Attachment I**

No	Milestones for Interconnection	Due by Date	Responsible Party	Comments
1.	Sign the Interconnection Agreement and Attachments as appropriate and return	May 7, 2021	Generator	
2.	Provide initial payment of \$36,000	May 7, 2021	Generator	
3.	File a new service request	15 business days after return of the Interconnection Agreement and initial payment	Generator	
4.	Start Eversource procurement	15 business days after initial payment	Eversource	
5.	Secure Easements	Prior to start of Eversource construction	Generator	Refer to Appendix F Attachment II note 5
6.	Construction kick off call/meeting as needed.	10 business days after 100% payment	Eversource/Generator	
7.	Provide final design and three-line diagram	30 business days after 100% payment	Generator	
8.	Submit Certificate of Insurance	Prior to start of Eversource construction	Generator	
9.	Complete Eversource Construction	2 weeks from municipal approval	Eversource	
10.	Generator to provide either (1) documentation showing how it will meet the IRS Notice 2016-36 "Safe Harbor" provisions or (2) cash to the EDC for CIAC tax gross up at the applicable rate.	Two Months Prior to In-Service Date	Generator	Refer to Appendix G for CIAC amount
11.	Provide Witness Test plan with all associated documentation	Minimum 10 Business days before scheduling witness test	Generator	Refer to Appendix F Attachment II notes 2 and 3
12.	Submit proof of Municipal Approval ( <i>WR# by Eversource</i> )	Minimum 5 Business days before scheduling witness test	Generator	
13.	Conduct Witness Test	15 business days from Inspector approval & approved witness test plan	Eversource	Refer to Appendix F Attachment II notes 2 and 3
14.	Send authorization to interconnect Letter / In-service date	2 business days from successful witness test and receipt of all documents	Eversource	

**Agreed to by:**

**Generator**

**Date:**

4/27/21

**Eversource Energy**

**Date:**

7/14/23

**Appendix F**  
**Attachment II**  
**Schedule of Milestones**

- 1- In order to meet the ISD stated in the milestone in appendix F all stated milestones must be completed at least 3 weeks prior to the ISD including all easement requirements for this project.
- 2- A witness test is required to be performed per the Generator Interconnection Guidelines. Refer to Eversource Energy “The Eversource and The United Illuminating Company Exhibit B- Generator Interconnection Technical Requirements” dated April 5<sup>th</sup>, 2019 section 7.
- 3- A test plan must outline the steps necessary to demonstrate that when the AC disconnect switch is opened, the PV inverters stop conducting within two (2) seconds or less, and when the AC disconnect switch is closed, the PV inverters do not start to conduct for at least five (5) minutes. The test must also demonstrate that the inverter shuts down upon loss of each individual phase.
- 4- Inverter setting per ISO-NE and Generator Interconnection Guidelines. Refer to Eversource Energy “The Eversource and United Illuminating Company Exhibit B- Generator Interconnection Technical Requirements” dated April 5<sup>th</sup>, 2019. The settings can be found in Appendix C. The settings must be included in the test plan.
- 5- The Project will interconnect to the Eversource Circuit via a primary service. Metering will be pole mounted and final location of poles will be determined during construction. Eversource will require easements for all Eversource equipment on private property. Easement will be the responsibility of the Generator.
- 6- Prior to start of Eversource construction, payment must be received in full.
- 7- The Generator is responsible that all equipment is tested and operating satisfactorily prior to requesting that Eversource energizes the site. Eversource will not be liable for any damage to Generator equipment.

**Appendix G**  
**Attachment 1**

**EDC's Description of its Upgrades and Best Estimate of Upgrade Costs**

Item	Description	Cost	Notes No.
1.	New Service	\$35,000	
2.	<b>Subtotal</b>	<b>\$35,000</b>	
3.	CIAC - 12%, (Contribution in Aid of Construction)		
4.	Subtotal with CIAC	\$35,000	
5.	Witness Test	\$1,000	
6.	<b>Total Construction cost</b> Note: Additional escalation cost of 4% will apply per year for payment after 2020	<b>\$36,000</b>	

**TABLE 1**

**General comments:**

1. Line work may require consent from property owners in compliance with CT Statute. The proposed schedule of milestones as outlined in appendix F of the IA assumes that such approval will be secured with no opposition and does not include any delays or legal fees associated with securing such approval.
2. In the event that you are unable to meet the schedule of milestones in appendix F of the IA a revised schedule of milestones will be re-submitted to you. It is important to note that a slip in schedule may not result in an equal delay (one to one delay). Schedules are based on availability of manpower, resources and the ability to schedule outages which can be curtailed during the summer season.
3. Price is based on Impact study with an accuracy of +/- 25% (If a Facility Study was performed delete this note)
4. Escalation cost of 4% will apply per year for payment after 2020.

**Agreed to by:**

Generator



Date:

4/27/21

Eversource Energy



Date:

7/14/23

**Appendix G**  
**Attachment II**  
**Payment Schedule**

Item	Due by Date	Payment Amount
1.	May 7, 2021	\$36,000
2.	<b>Total Payments Amount</b>	\$36,000

**Agreed to by:**

Generator  Date: 4/27/21

Eversource Energy  Date: 7/14/23

**Appendix G**  
**Attachment III**  
***Ongoing Costs***

Ongoing Costs will be calculated at the completion of construction based on the percentages shown below. Escalation cost per year is based on the Consumer Price Index (CPI). Taxes may be subject to change based on actual tax base. Refer to IA Section 5.4 of this IA.

DESCRIPTION	<i>Ongoing Costs</i>	Taxes	% Total	Cost (Estimated)	<i>Ongoing Costs</i>
Substation Station Equipment	5.66%	2.10%	7.76%	\$0.00	\$0.00
Overhead Conductors & Devices	7.69%	2.10%	9.79%	\$ 0.00	\$0.00
Total Yearly Amount					\$0.00

**Agreed to by:**

Generator  Date: 4/27/21

Eversource Energy  Date: 7/14/23



## Appendix H

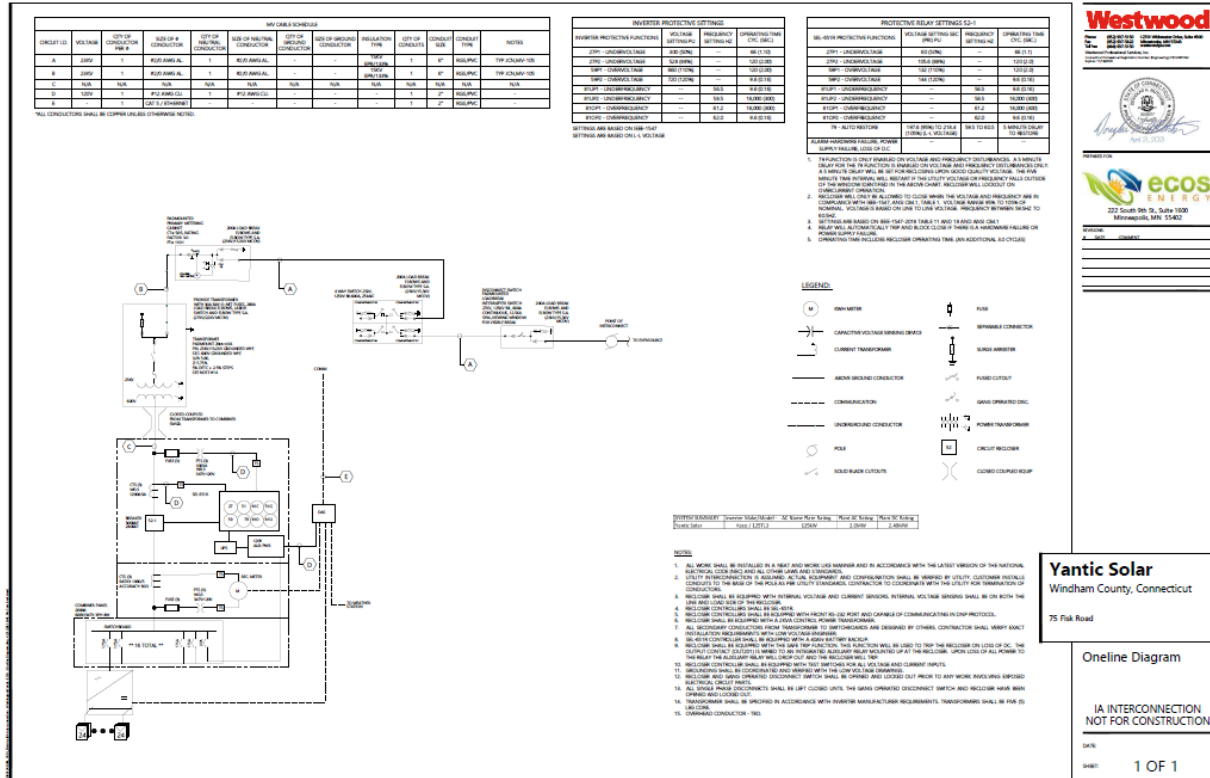




Exhibit D  
Structural  
Calculations  
and Drawings

# STRUCTURAL CALCULATION REPORT



# TERRAS<sup>SMART</sup>

## ELAN RENEWABLES - FISK

PROJECT NUMBER	19-3806
PRODUCT	TERRAGLIDE PORTRAIT
REVISION	2

### ENGINEER OF RECORD



ZEYN B. UZMAN - CT PEN.0023151



14590 GLOBAL PARKWAY  
FORT MYERS, FL 33913

P 239-362-0211  
F 239-362-0600

ENG@TERRASMART.COM  
WWW.TERRASMART.COM

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# ELAN RENEWABLES - FISK

## GENERAL INFORMATION

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# ELAN RENEWABLES - FISK

## PROJECT SPECIFICATIONS

### GENERAL PROJECT INFORMATION

ADDRESS	390 HARTFORD TURNPIKE
CITY	HAMPTON
STATE	CT
ZIP	06051

### DESIGN CRITERIA

EXPOSURE CATEGORY	C	ASCE/IBC
RISK/OCCUPANCY CATEGORY	I	ASCE/IBC
BASIC WIND SPEED	119 MPH	ASCE/IBC
GROUND SNOW LOAD	35.0 PSF	ASCE/IBC
FLAT ROOF SNOW LOAD	0.0 PSF	ASCE/IBC
MAPPED ACCELERATION, S <sub>s</sub>	0.172	ASCE/IBC
MAPPED ACCELERATION, S <sub>1</sub>	0.068	ASCE/IBC

### PV MODULE SPECIFICATIONS

PV MODULE MODEL	LG400N2W-V5	CLIENT PROVIDED
WATTAGE	400 W	
SHORT EDGE DIMENSION	40.315 IN	
LONG EDGE DIMENSION	79.685 IN	
SHORT BOLT SPACING	38.740 IN	
LONG BOLT SPACING	56.063 IN	
THICKNESS	1.575 IN	
WEIGHT	44.75 LBS	
HARDWARE SIZE	M8	

### PV RACKING SPECIFICATIONS

MODULE ORIENTATION	PORTRAIT
FOUNDATION TYPE	TERRASMART GROUND SCREWS
MODULE ROWS	2
MODULE COLUMNS	8
TILT ANGLE	25.0°
FRONT EDGE CLEARANCE	24 IN
MAX E-W SLOPE	10.0%
MAX NORTH FACING SLOPE	10.0%
MAX SOUTH FACING SLOPE	10.0%
E-W MODULE SPACING	0.500 IN
N-S MODULE SPACING	1.000 IN
EW SCREW SPACING	183 IN
NS SCREW SPACING	79 IN
OVERALL RACK WIDTH (E-W)	326.02 IN

### GEOTECHNICAL SPECIFICATIONS

GEOTECHNICAL REPORT DATE	4/4/2019	CLA ENGINEERS, INC.
GROUND SCREW REPORT DATE	9/24/2019	TERRASMART
FROST DEPTH	28 IN	CORNELL ATLAS

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PAGE 3 OF 13

# ELAN RENEWABLES - FISK

## MEMBER SPECIFICATIONS

### C PURLIN

SECTION	CEE 8.5X4-0.0713
LENGTH	326.445 IN
WEIGHT	108.57 LBS
MATERIAL	ASTM A653 - GRADE 80 SS

### HAT RAFTER

SECTION	HAT 6.1X5.76-0.0713
LENGTH	142.750 IN
WEIGHT	49.99 LBS
MATERIAL	ASTM A653 - GRADE 80

### SOUTH LEG

SECTION	2.375X9GA
LENGTH	39.000 IN
WEIGHT	11.01 LBS
MATERIAL	ASTM A500 - GRADE C

### NORTH LEG

SECTION	2.375X9GA
LENGTH	83.000 IN
WEIGHT	23.44 LBS
MATERIAL	ASTM A500 - GRADE C

### EXTERNAL LATERAL BRACE

SECTION	2.360-10GA
LENGTH	23.000 IN
WEIGHT	4.06 LBS
MATERIAL	ASTM A500 - GRADE C

### INTERNAL DIAGONAL LATERAL BRACE

SECTION	2.0X12GA
LENGTH	65.000 IN
WEIGHT	11.47 LBS
MATERIAL	ASTM A500 - GRADE C

### INTERNAL HORIZONTAL LATERAL BRACE

SECTION	-
LENGTH	-
WEIGHT	-
MATERIAL	-

# ELAN RENEWABLES - FISK

## DESIGN LOADS

### DEAD LOAD

TOTAL MODULE WEIGHT	716 LBS
---------------------	---------

### SNOW LOAD

EXPOSURE FACTOR, $C_e$	0.90
THERMAL FACTOR, $C_t$	1.20
IMPORTANCE FACTOR, $I_s$	0.80
FLAT ROOF SNOW LOAD, $P_f$	21.2 PSF
SLOPE FACTOR, $C_s$	0.82
SLOPED ROOF SNOW LOAD, $P_s$	17.3 PSF

### WIND LOAD

IMPORTANCE FACTOR, $I$	1.00
VELOCITY PRESSURE COEF., $K_z$	0.85
TOPOGRAPHIC FACTOR, $K_{zt}$	1.00
DIRECTIONALITY FACTOR, $K_d$	0.85
GUST FACTOR	0.85
VELOCITY PRESSURE, $q_z$	26.2 PSF

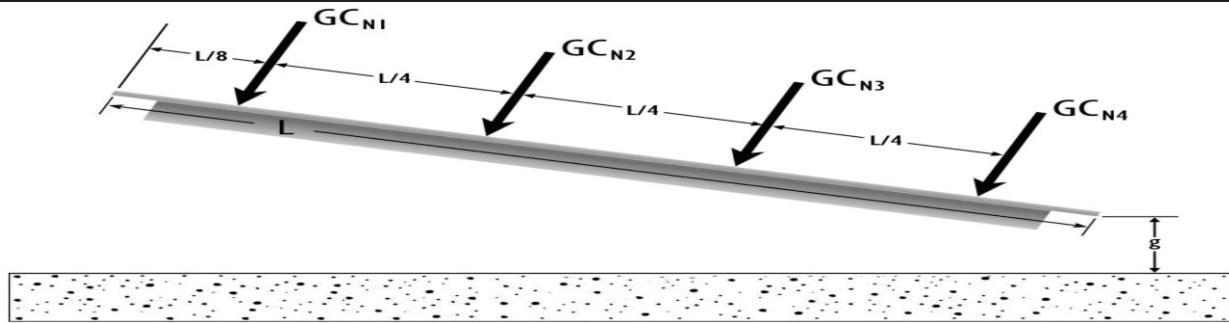
### ASCE WIND PRESSURE COEFFICIENTS - CASE A

$GC_n$	WIND UP	WIND DOWN
1	-1.60	1.90
2	-1.60	1.90
3	-1.67	1.83
4	-1.67	1.83

### ASCE WIND PRESSURE COEFFICIENTS - CASE B

$GC_n$	WIND UP	WIND DOWN
1	-2.43	0.80
2	-2.43	0.80
3	-0.37	2.33
4	-0.37	2.33

### ASCE WIND PRESSURE DIAGRAM





# ELAN RENEWABLES - FISK

## PURLIN DESIGN

### MATERIAL PROPERTIES

YIELD STRENGTH $F_y$	80 KSI
TENSILE STRENGTH, $F_u$	82 KSI
DESIGN THICKNESS, $t$	0.071 IN

### ALLOWABLE CAPACITY (VALUES BASED ON PURLIN LOCATION WITH HIGHEST UNITY RATIO)

ALLOWABLE MOMENT, $M_{max}$	86.9 KIP-IN
ALLOWABLE MOMENT, $M_{ay}$	38.1 KIP-IN
ALLOWABLE SHEAR, $V_y$	4.0 KIP
ALLOWABLE SHEAR, $V_x$	13.5 KIP

### APPLIED LOADS (VALUES BASED ON PURLIN LOCATION WITH HIGHEST UNITY RATIO)

ABOUT X AXIS	-26.3 KIP-IN
ABOUT Y AXIS	-5.0 KIP-IN
APPLIED SHEAR, $V_y$	-0.7 KIP
APPLIED SHEAR, $V_x$	-0.1 KIP

### UNITY CHECKS

AISI EQ H1.1-1	28%
AISI EQ H1.1-2	41%
AISI EQ H1.2-1	44%
AISI EQ H2-1 X	36%
AISI EQ H2-1 Y	17%

### DEFLECTION CHECKS

DEFLECTION RATIO	$L/1424$
CLEARSPAN DEAD DEFLECTION	0.016 IN
CANTELIVER DEAD DEFLECTION	0.012 IN

# ELAN RENEWABLES - FISK

## RAFTER DESIGN

### MATERIAL PROPERTIES

YIELD STRENGTH $F_y$	80 KSI
TENSILE STRENGTH, $F_u$	82 KSI
DESIGN THICKNESS, $t$	0.071 IN

### ALLOWABLE CAPACITY (VALUES BASED ON RAFTER LOCATION WITH HIGHEST UNITY RATIO)

ALLOWABLE MOMENT, $M_{ax}$	94.5 KIP-IN
ALLOWABLE MOMENT, $M_{ay}$	37.0 KIP-IN
ALLOWABLE SHEAR, $V_y$	19.8 KIP
ALLOWABLE SHEAR, $V_x$	9.5 KIP

### APPLIED LOADS (VALUES BASED ON RAFTER LOCATION WITH HIGHEST UNITY RATIO)

ABOUT X AXIS	-36.0 KIP-IN
ABOUT Y AXIS	-3.4 KIP-IN
APPLIED SHEAR, $V_y$	-1.3 KIP
APPLIED SHEAR, $V_x$	-0.1 KIP

### UNITY CHECKS

AISI EQ H1.1-1	43%
AISI EQ H1.1-2	51%
AISI EQ H1.2-1	54%
AISI EQ H2-1 X	46%
AISI EQ H2-1 Y	9%

### DEFLECTION CHECKS

DEFLECTION RATIO	$L/1312$
------------------	----------

# ELAN RENEWABLES - FISK

## LEG DESIGN

### MATERIAL PROPERTIES

YIELD STRENGTH  $F_y$

42 KSI

### SOUTH LEG ALLOWABLE CAPACITY (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

ALLOWABLE MOMENT,  $M_a$

17.8 KIP-IN

ALLOWABLE COMPRESSION,  $P_{cr}$

23.9 KIP-IN

ALLOWABLE TENSION,  $T$

25.1 KIP-IN

### NORTH LEG ALLOWABLE CAPACITY (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

ALLOWABLE MOMENT,  $M_a$

17.8 KIP-IN

ALLOWABLE COMPRESSION,  $P_{cr}$

17.7 KIP-IN

ALLOWABLE TENSION,  $T$

25.1 KIP-IN

### SOUTH LEG APPLIED LOADS (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

APPLIED MOMENT

0.4 KIP-IN

APPLIED TENSION

-0.7 KIP

APPLIED COMPRESSION

2.6 KIP

### NORTH LEG APPLIED LOADS (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

APPLIED MOMENT

0.1 KIP-IN

APPLIED TENSION

-3.1 KIP

APPLIED COMPRESSION

3.4 KIP

### UNITY CHECKS

SOUTH LEG COMBINED STRESS

8%

NORTH LEG COMBINED STRESS

10%

# ELAN RENEWABLES - FISK

## BRACE DESIGN

### DIAGONAL AND HORIZONTAL BRACE MATERIAL PROPERTIES

YIELD STRENGTH  $F_y$

42 KSI

### INTERNAL DIAGONAL BRACE ALLOWABLE CAPACITY

ALLOWABLE COMPRESSION,  $P_{cr}$

5.5 KIP

ALLOWABLE TENSION,  $T$

15.7 KIP

### INTERNAL HORIZONTAL BRACE ALLOWABLE CAPACITY

ALLOWABLE COMPRESSION,  $P_{cr}$

-

ALLOWABLE TENSION,  $T$

-

### INTERNAL DIAGONAL BRACE APPLIED LOADS (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

APPLIED TENSION

-2.1 KIP

APPLIED COMPRESSION

1.9 KIP

### INTERNAL HORIZONTAL BRACE APPLIED LOADS (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

APPLIED TENSION

-

APPLIED COMPRESSION

-

### SEISMIC CABLE BRACE CAPACITY

CABLE BREAKING STRENGTH

2.3 KIP

### SEISMIC CABLE BRACE APPLIED LOAD

MAXIMUM TENSION

0.1 KIP

### BRACE UNITY CHECKS

INTERNAL DIAGONAL BRACE COMBINED STRESS

34%

INTERNAL HORIZONTAL BRACE COMBINED STRESS

-

SEISMIC CABLE BRACE

1%

# ELAN RENEWABLES - FISK

## FOUNDATION DESIGN

### GROUND SCREW MINIMUM REQUIRED TORQUE

DESIGN TORQUE VARIABLE	227.30
DESIGN TORQUE EXPONENT	0.45
MINIMUM REQUIRED TORQUE	1000 N-m

### GROUND SCREW ALLOWABLE CAPACITY

ALLOWABLE COMPRESSION	6.8 KIP
ALLOWABLE TENSION	5.0 KIP
ALLOWABLE LATERAL	2.3 KIP

### GROUND SCREW APPLIED LOADS (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

APPLIED COMPRESSION	4.0 KIP
APPLIED TENSION	3.8 KIP
APPLIED LATERAL	1.9 KIP

### UNITY CHECK

GROUND SCREW STRESS	84%
---------------------	-----

### FROST HEAVE ANALYSIS

FOUNDATION EMBEDMENT DEPTH	74 IN
APPROXIMATE FROST DEPTH	28 IN
SCREW PENETRATION BELOW FROST DEPTH	46 IN
UPLIFT PRESSURE DUE TO ICE LENSING	0.29 KSI
UPLIFT PRESSURE DUE TO ADFREEZING	0.01 KSI
UPLIFT FORCE DUE TO ICE LENSING	0.00 KIP
UPLIFT FORCE DUE TO ADFREEZING	3.83 KIP
TOTAL FROST HEAVE FORCE	3.83 KIP
TOTAL DEAD LOAD	0.33 KIP
RESULTANT HEAVE FORCE	3.49 KIP
FROST HEAVE PREVENTION STRESS	69%

# ELAN RENEWABLES - FISK

## HARDWARE DESIGN

### PV MODULE TO C PURLIN

HARDWARE SPECIFICATION	M8 - GRADE 18-8
APPLIED TENSION	0.30 KIP
APPLIED SHEAR	0.04 KIP
UNITY CHECK	8%

### C PURLIN TO SLOPE BRACKET

HARDWARE SPECIFICATION	1/2-13 - GRADE 5
APPLIED TENSION	0.00 KIP
APPLIED SHEAR	1.78 KIP
UNITY CHECK	28%

### SLOPE BRACKET TO RAFTER

HARDWARE SPECIFICATION	1/2-13 - GRADE 5
APPLIED TENSION	1.45 KIP
APPLIED SHEAR	0.18 KIP
UNITY CHECK	14%

### RAFTER TO LEG

HARDWARE SPECIFICATION	1/2-13 - GRADE 5
APPLIED TENSION	0.00 KIP
APPLIED SHEAR	3.37 KIP
UNITY CHECK	27%

### DIAGONAL BRACE HARDWARE

HARDWARE SPECIFICATION	3/8-16 - GRADE 5
APPLIED TENSION	0.00 KIP
APPLIED SHEAR	2.12 KIP
UNITY CHECK	33%

### TERRASMART SET BOLT (INDEPENDENT LAB TESTING)

ALLOWABLE VERTICAL FORCE	8.00 KIP
APPLIED VERTICAL FORCE	2.12 KIP
UNITY CHECK	27%

# ELAN RENEWABLES - FISK

## CONNECTION DESIGN

### C PURLIN TO SLOPE BRACKET BEARING CHECK

HOLE SIZE	0.500 IN
ALLOWABLE BEARING	4.67 KIP
APPLIED PULL-OUT	1.78 KIP
UNITY CHECK	38%

### SLOPE BRACKET TO RAFTER CONNECTION

ALLOWABLE UPLIFT FORCE	3.15 KIP
ALLOWABLE LATERAL FORCE	0.80 KIP
APPLIED UPLIFT FORCE	1.78 KIP
APPLIED LATERAL FORCE	0.00 KIP
UNITY CHECK	56%

### RAFTER TO LEG CONNECTION

ALLOWABLE VERTICAL FORCE	7.00 KIP
APPLIED VERTICAL FORCE	3.37 KIP
UNITY CHECK	48%

### RAFTER TO LATERAL BRACE CONNECTION

HOLE SIZE	0.500 IN
ALLOWABLE BEARING	9.33 KIP
APPLIED PULL-OUT	2.12 KIP
UNITY CHECK	23%

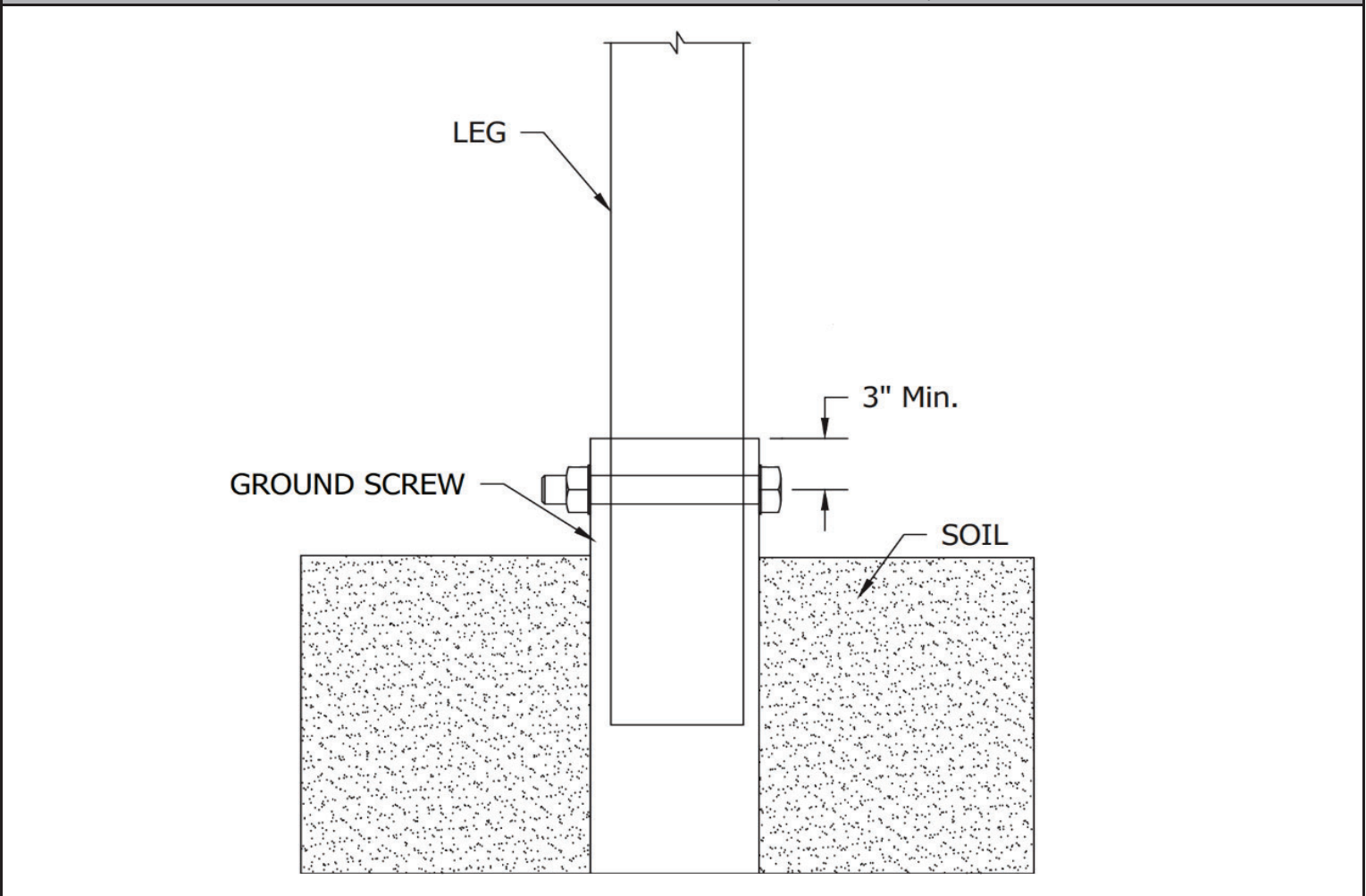
# ELAN RENEWABLES - FISK

## THRU BOLT DESIGN

### GROUND SCREW TO LEG THRU BOLT (USE AS NEEDED)

HARDWARE SPECIFICATION	1/2-13 - GRADE 5
APPLIED SHEAR	4.05 KIP
UNITY CHECK	32%

### GROUND SCREW TO LEG THRU BOLT (USE AS NEEDED)



### NOTE

A THRU BOLT MAY BE USED IN THE RARE EVENT THAT A GROUND SCREW WELD NUT IS DAMAGED DURING INSTALLATION.



# STRUCTURAL CALCULATION REPORT



# TERRAS<sup>SMART</sup>

## ELAN RENEWABLES - FISK

PROJECT NUMBER	19-3806
PRODUCT	TERRAGLIDE PORTRAIT
REVISION	2

### ENGINEER OF RECORD



ZEYN B. UZMAN - CT PEN.0023151



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F 239-362-0600

ENG@TERRASMART.COM  
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# ELAN RENEWABLES - FISK

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# ELAN RENEWABLES - FISK

## PROJECT SPECIFICATIONS

### GENERAL PROJECT INFORMATION

ADDRESS	390 HARTFORD TURNPIKE
CITY	HAMPTON
STATE	CT
ZIP	06051

### DESIGN CRITERIA

EXPOSURE CATEGORY	C	ASCE/IBC
RISK/OCCUPANCY CATEGORY	I	ASCE/IBC
BASIC WIND SPEED	119 MPH	ASCE/IBC
GROUND SNOW LOAD	35.0 PSF	ASCE/IBC
FLAT ROOF SNOW LOAD	0.0 PSF	ASCE/IBC
MAPPED ACCELERATION, S <sub>s</sub>	0.172	ASCE/IBC
MAPPED ACCELERATION, S <sub>1</sub>	0.068	ASCE/IBC

### PV MODULE SPECIFICATIONS

PV MODULE MODEL	LG400N2W-V5	CLIENT PROVIDED
WATTAGE	400 W	
SHORT EDGE DIMENSION	40.315 IN	
LONG EDGE DIMENSION	79.685 IN	
SHORT BOLT SPACING	38.740 IN	
LONG BOLT SPACING	56.063 IN	
THICKNESS	1.575 IN	
WEIGHT	44.75 LBS	
HARDWARE SIZE	M8	

### PV RACKING SPECIFICATIONS

MODULE ORIENTATION	PORTRAIT
FOUNDATION TYPE	TERRASMART GROUND SCREWS
MODULE ROWS	2
MODULE COLUMNS	9
TILT ANGLE	25.0°
FRONT EDGE CLEARANCE	24 IN
MAX E-W SLOPE	10.0%
MAX NORTH FACING SLOPE	10.0%
MAX SOUTH FACING SLOPE	10.0%
E-W MODULE SPACING	0.500 IN
N-S MODULE SPACING	1.000 IN
EW SCREW SPACING	206 IN
NS SCREW SPACING	79 IN
OVERALL RACK WIDTH (E-W)	366.83 IN

### GEOTECHNICAL SPECIFICATIONS

GEOTECHNICAL REPORT DATE	4/4/2019	CLA ENGINEERS, INC.
GROUND SCREW REPORT DATE	9/24/2019	TERRASMART
FROST DEPTH	28 IN	CORNELL ATLAS

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# ELAN RENEWABLES - FISK

## MEMBER SPECIFICATIONS

### C PURLIN

SECTION	CEE 8.5X4-0.0713
LENGTH	367.260 IN
WEIGHT	122.14 LBS
MATERIAL	ASTM A653 - GRADE 80 SS

### HAT RAFTER

SECTION	HAT 6.1X5.76-0.0713
LENGTH	142.750 IN
WEIGHT	49.99 LBS
MATERIAL	ASTM A653 - GRADE 80

### SOUTH LEG

SECTION	2.375X9GA
LENGTH	39.000 IN
WEIGHT	11.01 LBS
MATERIAL	ASTM A500 - GRADE C

### NORTH LEG

SECTION	2.375X9GA
LENGTH	83.000 IN
WEIGHT	23.44 LBS
MATERIAL	ASTM A500 - GRADE C

### EXTERNAL LATERAL BRACE

SECTION	2.360-10GA
LENGTH	23.000 IN
WEIGHT	4.06 LBS
MATERIAL	ASTM A500 - GRADE C

### INTERNAL DIAGONAL LATERAL BRACE

SECTION	2.0X12GA
LENGTH	65.000 IN
WEIGHT	11.47 LBS
MATERIAL	ASTM A500 - GRADE C

### INTERNAL HORIZONTAL LATERAL BRACE

SECTION	-
LENGTH	-
WEIGHT	-
MATERIAL	-

# ELAN RENEWABLES - FISK

## DESIGN LOADS

### DEAD LOAD

TOTAL MODULE WEIGHT	806 LBS
---------------------	---------

### SNOW LOAD

EXPOSURE FACTOR, $C_e$	0.90
THERMAL FACTOR, $C_t$	1.20
IMPORTANCE FACTOR, $I_s$	0.80
FLAT ROOF SNOW LOAD, $P_f$	21.2 PSF
SLOPE FACTOR, $C_s$	0.82
SLOPED ROOF SNOW LOAD, $P_s$	17.3 PSF

### WIND LOAD

IMPORTANCE FACTOR, $I$	1.00
VELOCITY PRESSURE COEF., $K_z$	0.85
TOPOGRAPHIC FACTOR, $K_{zt}$	1.00
DIRECTIONALITY FACTOR, $K_d$	0.85
GUST FACTOR	0.85
VELOCITY PRESSURE, $q_z$	26.2 PSF

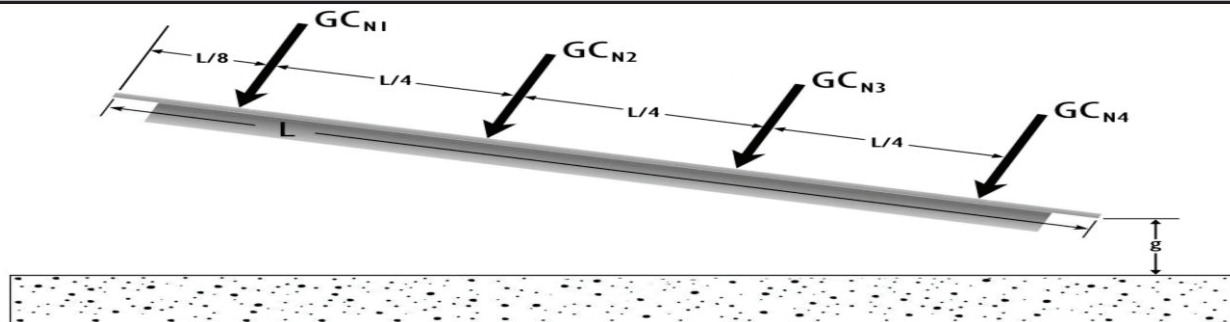
### ASCE WIND PRESSURE COEFFICIENTS - CASE A

$GC_n$	WIND UP	WIND DOWN
1	-1.60	1.90
2	-1.60	1.90
3	-1.67	1.83
4	-1.67	1.83

### ASCE WIND PRESSURE COEFFICIENTS - CASE B

$GC_n$	WIND UP	WIND DOWN
1	-2.43	0.80
2	-2.43	0.80
3	-0.37	2.33
4	-0.37	2.33

### ASCE WIND PRESSURE DIAGRAM



# ELAN RENEWABLES - FISK

## PURLIN DESIGN

### MATERIAL PROPERTIES

YIELD STRENGTH $F_y$	80 KSI
TENSILE STRENGTH, $F_u$	82 KSI
DESIGN THICKNESS, $t$	0.071 IN

### ALLOWABLE CAPACITY (VALUES BASED ON PURLIN LOCATION WITH HIGHEST UNITY RATIO)

ALLOWABLE MOMENT, $M_{ax}$	86.9 KIP-IN
ALLOWABLE MOMENT, $M_{ay}$	38.1 KIP-IN
ALLOWABLE SHEAR, $V_y$	4.0 KIP
ALLOWABLE SHEAR, $V_x$	13.5 KIP

### APPLIED LOADS (VALUES BASED ON PURLIN LOCATION WITH HIGHEST UNITY RATIO)

ABOUT X AXIS	-34.0 KIP-IN
ABOUT Y AXIS	-5.8 KIP-IN
APPLIED SHEAR, $V_y$	1.1 KIP
APPLIED SHEAR, $V_x$	0.2 KIP

### UNITY CHECKS

AISI EQ H1.1-1	34%
AISI EQ H1.1-2	54%
AISI EQ H1.2-1	53%
AISI EQ H2-1 X	43%
AISI EQ H2-1 Y	21%

### DEFLECTION CHECKS

DEFLECTION RATIO	$L/1033$
CLEARSPAN DEAD DEFLECTION	0.025 IN
CANTELIVER DEAD DEFLECTION	0.018 IN

# ELAN RENEWABLES - FISK

## RAFTER DESIGN

### MATERIAL PROPERTIES

YIELD STRENGTH $F_y$	80 KSI
TENSILE STRENGTH, $F_u$	82 KSI
DESIGN THICKNESS, $t$	0.071 IN

### ALLOWABLE CAPACITY (VALUES BASED ON RAFTER LOCATION WITH HIGHEST UNITY RATIO)

ALLOWABLE MOMENT, $M_{ax}$	94.5 KIP-IN
ALLOWABLE MOMENT, $M_{ay}$	37.0 KIP-IN
ALLOWABLE SHEAR, $V_y$	19.8 KIP
ALLOWABLE SHEAR, $V_x$	9.5 KIP

### APPLIED LOADS (VALUES BASED ON RAFTER LOCATION WITH HIGHEST UNITY RATIO)

ABOUT X AXIS	-40.2 KIP-IN
ABOUT Y AXIS	-3.8 KIP-IN
APPLIED SHEAR, $V_y$	-1.5 KIP
APPLIED SHEAR, $V_x$	-0.1 KIP

### UNITY CHECKS

AISI EQ H1.1-1	48%
AISI EQ H1.1-2	57%
AISI EQ H1.2-1	60%
AISI EQ H2-1 X	52%
AISI EQ H2-1 Y	11%

### DEFLECTION CHECKS

DEFLECTION RATIO	$L/1176$
------------------	----------

# ELAN RENEWABLES - FISK

## LEG DESIGN

### MATERIAL PROPERTIES

YIELD STRENGTH  $F_y$

42 KSI

### SOUTH LEG ALLOWABLE CAPACITY (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

ALLOWABLE MOMENT,  $M_a$

17.8 KIP-IN

ALLOWABLE COMPRESSION,  $P_{cr}$

23.9 KIP-IN

ALLOWABLE TENSION,  $T$

25.1 KIP-IN

### NORTH LEG ALLOWABLE CAPACITY (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

ALLOWABLE MOMENT,  $M_a$

17.8 KIP-IN

ALLOWABLE COMPRESSION,  $P_{cr}$

17.7 KIP-IN

ALLOWABLE TENSION,  $T$

25.1 KIP-IN

### SOUTH LEG APPLIED LOADS (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

APPLIED MOMENT

0.4 KIP-IN

APPLIED TENSION

-0.8 KIP

APPLIED COMPRESSION

3.0 KIP

### NORTH LEG APPLIED LOADS (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

APPLIED MOMENT

0.1 KIP-IN

APPLIED TENSION

-3.4 KIP

APPLIED COMPRESSION

3.8 KIP

### UNITY CHECKS

SOUTH LEG COMBINED STRESS

9%

NORTH LEG COMBINED STRESS

22%



# ELAN RENEWABLES - FISK

## BRACE DESIGN

### DIAGONAL AND HORIZONTAL BRACE MATERIAL PROPERTIES

YIELD STRENGTH  $F_y$

42 KSI

### INTERNAL DIAGONAL BRACE ALLOWABLE CAPACITY

ALLOWABLE COMPRESSION,  $P_{cr}$

5.5 KIP

ALLOWABLE TENSION,  $T$

15.7 KIP

### INTERNAL HORIZONTAL BRACE ALLOWABLE CAPACITY

ALLOWABLE COMPRESSION,  $P_{cr}$

-

ALLOWABLE TENSION,  $T$

-

### INTERNAL DIAGONAL BRACE APPLIED LOADS (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

APPLIED TENSION

-2.4 KIP

APPLIED COMPRESSION

2.1 KIP

### INTERNAL HORIZONTAL BRACE APPLIED LOADS (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

APPLIED TENSION

-

APPLIED COMPRESSION

-

### SEISMIC CABLE BRACE CAPACITY

CABLE BREAKING STRENGTH

2.3 KIP

### SEISMIC CABLE BRACE APPLIED LOAD

MAXIMUM TENSION

0.1 KIP

### BRACE UNITY CHECKS

INTERNAL DIAGONAL BRACE COMBINED STRESS

38%

INTERNAL HORIZONTAL BRACE COMBINED STRESS

-

SEISMIC CABLE BRACE

1%

# ELAN RENEWABLES - FISK

## FOUNDATION DESIGN

### GROUND SCREW MINIMUM REQUIRED TORQUE

DESIGN TORQUE VARIABLE	227.30
DESIGN TORQUE EXPONENT	0.45
MINIMUM REQUIRED TORQUE	1000 N-m

### GROUND SCREW ALLOWABLE CAPACITY

ALLOWABLE COMPRESSION	6.8 KIP
ALLOWABLE TENSION	5.0 KIP
ALLOWABLE LATERAL	2.3 KIP

### GROUND SCREW APPLIED LOADS (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

APPLIED COMPRESSION	4.5 KIP
APPLIED TENSION	4.2 KIP
APPLIED LATERAL	2.1 KIP

### UNITY CHECK

GROUND SCREW STRESS	94%
---------------------	-----

### FROST HEAVE ANALYSIS

FOUNDATION EMBEDMENT DEPTH	74 IN
APPROXIMATE FROST DEPTH	28 IN
SCREW PENETRATION BELOW FROST DEPTH	46 IN
UPLIFT PRESSURE DUE TO ICE LENSING	0.29 KSI
UPLIFT PRESSURE DUE TO ADFREEZING	0.01 KSI
UPLIFT FORCE DUE TO ICE LENSING	0.00 KIP
UPLIFT FORCE DUE TO ADFREEZING	3.83 KIP
TOTAL FROST HEAVE FORCE	3.83 KIP
TOTAL DEAD LOAD	0.37 KIP
RESULTANT HEAVE FORCE	3.46 KIP
FROST HEAVE PREVENTION STRESS	69%

# ELAN RENEWABLES - FISK

## HARDWARE DESIGN

### PV MODULE TO C PURLIN

HARDWARE SPECIFICATION	M8 - GRADE 18-8
APPLIED TENSION	0.30 KIP
APPLIED SHEAR	0.04 KIP
UNITY CHECK	8%

### C PURLIN TO SLOPE BRACKET

HARDWARE SPECIFICATION	1/2-13 - GRADE 5
APPLIED TENSION	0.00 KIP
APPLIED SHEAR	1.99 KIP
UNITY CHECK	31%

### SLOPE BRACKET TO RAFTER

HARDWARE SPECIFICATION	1/2-13 - GRADE 5
APPLIED TENSION	0.00 KIP
APPLIED SHEAR	0.00 KIP
UNITY CHECK	15%

### RAFTER TO LEG

HARDWARE SPECIFICATION	1/2-13 - GRADE 5
APPLIED TENSION	0.00 KIP
APPLIED SHEAR	3.77 KIP
UNITY CHECK	30%

### DIAGONAL BRACE HARDWARE

HARDWARE SPECIFICATION	3/8-16 - GRADE 5
APPLIED TENSION	0.00 KIP
APPLIED SHEAR	2.38 KIP
UNITY CHECK	37%

### TERRASMART SET BOLT (INDEPENDENT LAB TESTING)

ALLOWABLE VERTICAL FORCE	8.00 KIP
APPLIED VERTICAL FORCE	2.38 KIP
UNITY CHECK	30%

# ELAN RENEWABLES - FISK

## CONNECTION DESIGN

### C PURLIN TO SLOPE BRACKET BEARING CHECK

HOLE SIZE	0.500 IN
ALLOWABLE BEARING	4.67 KIP
APPLIED PULL-OUT	1.99 KIP
UNITY CHECK	43%

### SLOPE BRACKET TO RAFTER CONNECTION

ALLOWABLE UPLIFT FORCE	3.15 KIP
ALLOWABLE LATERAL FORCE	0.80 KIP
APPLIED UPLIFT FORCE	1.99 KIP
APPLIED LATERAL FORCE	0.00 KIP
UNITY CHECK	63%

### RAFTER TO LEG CONNECTION

ALLOWABLE VERTICAL FORCE	7.00 KIP
APPLIED VERTICAL FORCE	3.77 KIP
UNITY CHECK	54%

### RAFTER TO LATERAL BRACE CONNECTION

HOLE SIZE	0.500 IN
ALLOWABLE BEARING	9.33 KIP
APPLIED PULL-OUT	2.38 KIP
UNITY CHECK	25%

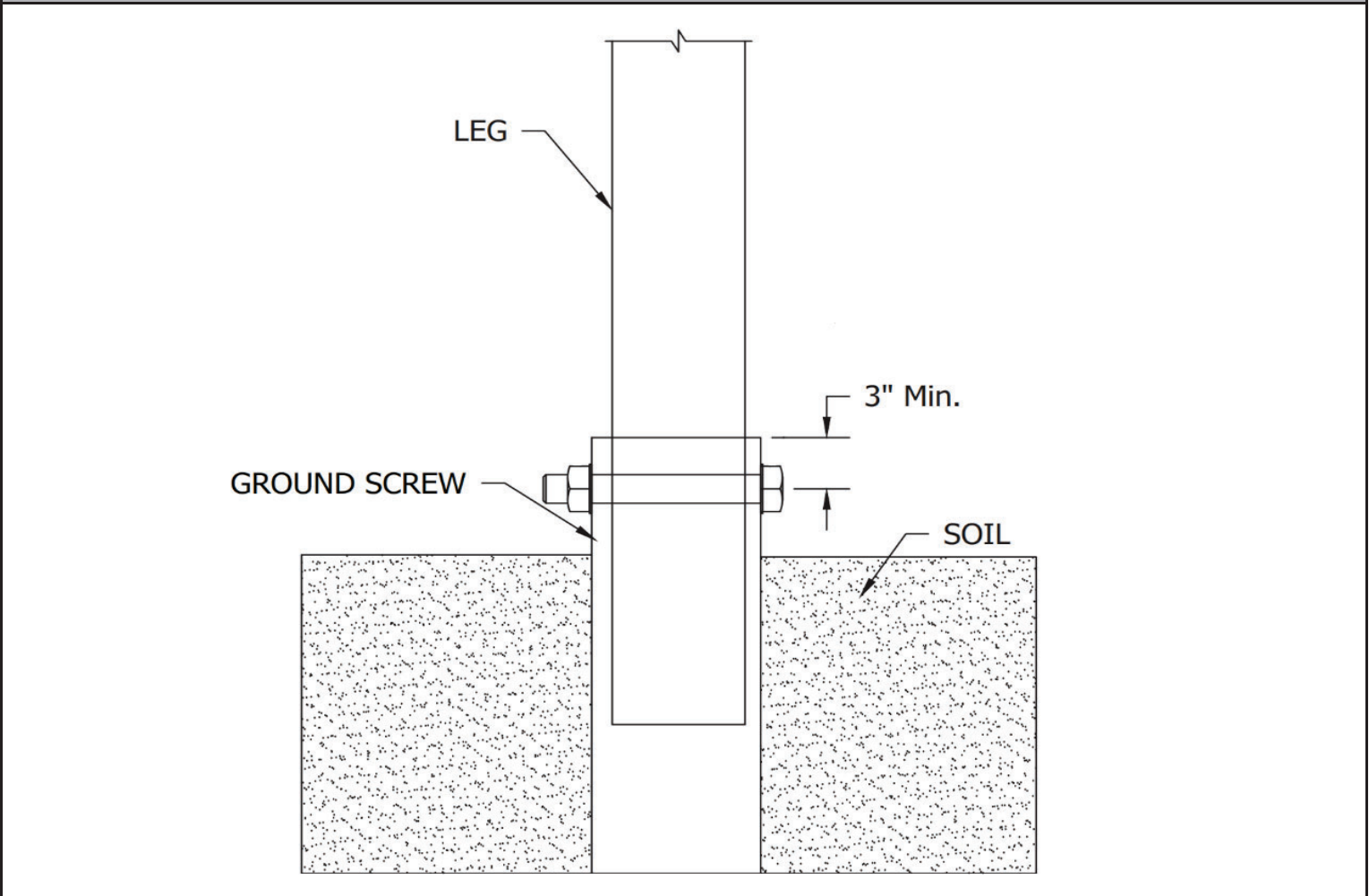
# ELAN RENEWABLES - FISK

## THRU BOLT DESIGN

### GROUND SCREW TO LEG THRU BOLT (USE AS NEEDED)

HARDWARE SPECIFICATION	1/2-13 - GRADE 5
APPLIED SHEAR	4.53 KIP
UNITY CHECK	36%

### GROUND SCREW TO LEG THRU BOLT (USE AS NEEDED)



### NOTE

A THRU BOLT MAY BE USED IN THE RARE EVENT THAT A GROUND SCREW WELD NUT IS DAMAGED DURING INSTALLATION.

# STRUCTURAL CALCULATION REPORT



# TERRAS<sup>SMART</sup>

## ELAN RENEWABLES - FISK

PROJECT NUMBER	19-3806
PRODUCT	TERRAGLIDE PORTRAIT
REVISION	2

### ENGINEER OF RECORD



ZEYN B. UZMAN - CT PEN.0023151



14590 GLOBAL PARKWAY  
FORT MYERS, FL 33913

P 239-362-0211  
F 239-362-0600

ENG@TERRASMART.COM  
WWW.TERRASMART.COM

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# ELAN RENEWABLES - FISK

## GENERAL INFORMATION

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### NOTES

- 1) TERRASMART RACKING CONFORMS TO UL2703 STANDARDS.
- 2) TERRASMART USES INFORMATION PROVIDED BY OUR CLIENT TO PROPERLY DESIGN OUR PRODUCT. IF CERTAIN INFORMATION IS NOT PROVIDED, GENERAL ASSUMPTIONS WILL BE MADE. IT IS THE RESPONSIBILITY OF THE CLIENT TO VERIFY AND APPROVE ALL DESIGN CRITERIA AND RACKING SPECIFICATIONS.
- 3) RACKING AND FOUNDATION STRUCTURAL CALCULATIONS CONFORM TO APPLICABLE STATE OR FEDERAL BUILDING CODES.
- 4) TERRASMART IS NOT RESPONSIBLE FOR THE ACCURACY OF THE ENVIRONMENTAL DESIGN CRITERIA (WIND SPEED, SNOW LOAD, EXPOSURE, ETC.)
- 5) SNOW BANKING ANALYSIS WAS NOT PERFORMED BY TERRASMART AND WAS NOT CONSIDERED IN THE DESIGN OF THE STRUCTURE. THE FRONT EDGE CLEARANCE WAS PROVIDED BY THE CLIENT AND ADVERSE EFFECTS OF SNOW BANKING ARE BEYOND TERRASMART'S SCOPE.
- 6) TERRASMART IS NOT RESPONSIBLE FOR ANY DAMAGE TO PV MODULES MOUNTED TO TERRASMART RACKING DUE TO THE EXTREME VARIETY IN MODULE FRAME DESIGN, MOUNTING STYLE, AND MANUFACTURING PROCESS. TERRASMART RECOMMENDS THAT THE CLIENT WORK WITH THE MODULE MANUFACTURER TO UNDERSTAND ALL RESTRICTIONS AND LIMITATIONS.
- 7) MOUNTING OF COMBINER BOXES, STRING INVERTERS, OR OTHER ITEMS NOT INCLUDED IN TERRASMARTS CALCULATION PACKAGE TO THE RACKING MUST BE REVIEWED AND APPROVED BY TERRASMART.
- 8) TERRASMART STRUCTURAL CALCULATIONS APPLY TO RACKING INSTALLED WITHIN THE TOLERANCES AND INSTALL PROCEDURES PROVIDED IN THE RACKING CONSTRUCTION PLANS AND ASSOCIATED INSTALLATION MANUAL. ANY DEVIATION FROM THE SPECIFIED TOLERANCES OR INSTALL PROCEDURES MUST BE REVIEWED AND APPROVED BY TERRASMART.

# ELAN RENEWABLES - FISK

## PROJECT SPECIFICATIONS

### GENERAL PROJECT INFORMATION

ADDRESS	390 HARTFORD TURNPIKE
CITY	HAMPTON
STATE	CT
ZIP	06051

### DESIGN CRITERIA

EXPOSURE CATEGORY	C	ASCE/IBC
RISK/OCCUPANCY CATEGORY	I	ASCE/IBC
BASIC WIND SPEED	119 MPH	ASCE/IBC
GROUND SNOW LOAD	35.0 PSF	ASCE/IBC
FLAT ROOF SNOW LOAD	0.0 PSF	ASCE/IBC
MAPPED ACCELERATION, S <sub>s</sub>	0.172	ASCE/IBC
MAPPED ACCELERATION, S <sub>1</sub>	0.068	ASCE/IBC

### PV MODULE SPECIFICATIONS

PV MODULE MODEL	LG400N2W-V5	CLIENT PROVIDED
WATTAGE	400 W	
SHORT EDGE DIMENSION	40.315 IN	
LONG EDGE DIMENSION	79.685 IN	
SHORT BOLT SPACING	38.740 IN	
LONG BOLT SPACING	56.063 IN	
THICKNESS	1.575 IN	
WEIGHT	44.75 LBS	
HARDWARE SIZE	M8	

### PV RACKING SPECIFICATIONS

MODULE ORIENTATION	PORTRAIT
FOUNDATION TYPE	TERRASMART GROUND SCREWS
MODULE ROWS	2
MODULE COLUMNS	10
TILT ANGLE	25.0°
FRONT EDGE CLEARANCE	24 IN
MAX E-W SLOPE	10.0%
MAX NORTH FACING SLOPE	10.0%
MAX SOUTH FACING SLOPE	10.0%
E-W MODULE SPACING	0.500 IN
N-S MODULE SPACING	1.000 IN
EW SCREW SPACING	229 IN
NS SCREW SPACING	79 IN
OVERALL RACK WIDTH (E-W)	407.65 IN

### GEOTECHNICAL SPECIFICATIONS

GEOTECHNICAL REPORT DATE	4/4/2019	CLA ENGINEERS, INC.
GROUND SCREW REPORT DATE	9/24/2019	TERRASMART
FROST DEPTH	28 IN	CORNELL ATLAS

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# ELAN RENEWABLES - FISK

## MEMBER SPECIFICATIONS

### C PURLIN

SECTION	CEE 8.5X4-0.0713
LENGTH	408.075 IN
WEIGHT	135.72 LBS
MATERIAL	ASTM A653 - GRADE 80 SS

### HAT RAFTER

SECTION	HAT 6.1X5.76-0.0713
LENGTH	142.750 IN
WEIGHT	49.99 LBS
MATERIAL	ASTM A653 - GRADE 80

### SOUTH LEG

SECTION	2.375X9GA
LENGTH	39.000 IN
WEIGHT	11.01 LBS
MATERIAL	ASTM A500 - GRADE C

### NORTH LEG

SECTION	2.375X9GA
LENGTH	83.000 IN
WEIGHT	23.44 LBS
MATERIAL	ASTM A500 - GRADE C

### EXTERNAL LATERAL BRACE

SECTION	2.360-10GA
LENGTH	23.000 IN
WEIGHT	4.06 LBS
MATERIAL	ASTM A500 - GRADE C

### INTERNAL DIAGONAL LATERAL BRACE

SECTION	2.0X12GA
LENGTH	65.000 IN
WEIGHT	11.47 LBS
MATERIAL	ASTM A500 - GRADE C

### INTERNAL HORIZONTAL LATERAL BRACE

SECTION	2.0X12GA
LENGTH	65.000 IN
WEIGHT	11.47 LBS
MATERIAL	ASTM A500 - GRADE C

# ELAN RENEWABLES - FISK

## DESIGN LOADS

### DEAD LOAD

TOTAL MODULE WEIGHT	895 LBS
---------------------	---------

### SNOW LOAD

EXPOSURE FACTOR, $C_e$	0.90
THERMAL FACTOR, $C_t$	1.20
IMPORTANCE FACTOR, $I_s$	0.80
FLAT ROOF SNOW LOAD, $P_f$	21.2 PSF
SLOPE FACTOR, $C_s$	0.82
SLOPED ROOF SNOW LOAD, $P_s$	17.3 PSF

### WIND LOAD

IMPORTANCE FACTOR, $I$	1.00
VELOCITY PRESSURE COEF., $K_z$	0.85
TOPOGRAPHIC FACTOR, $K_{zt}$	1.00
DIRECTIONALITY FACTOR, $K_d$	0.85
GUST FACTOR	0.85
VELOCITY PRESSURE, $q_z$	26.2 PSF

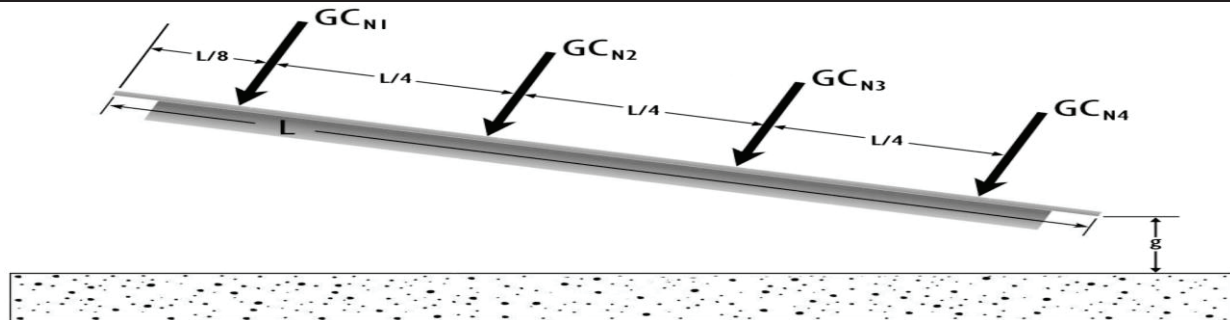
### ASCE WIND PRESSURE COEFFICIENTS - CASE A

GCn	WIND UP	WIND DOWN
1	-1.60	1.90
2	-1.60	1.90
3	-1.67	1.83
4	-1.67	1.83

### ASCE WIND PRESSURE COEFFICIENTS - CASE B

GCn	WIND UP	WIND DOWN
1	-2.43	0.80
2	-2.43	0.80
3	-0.37	2.33
4	-0.37	2.33

### ASCE WIND PRESSURE DIAGRAM



# ELAN RENEWABLES - FISK

## PURLIN DESIGN

### MATERIAL PROPERTIES

YIELD STRENGTH $F_y$	80 KSI
TENSILE STRENGTH, $F_u$	82 KSI
DESIGN THICKNESS, $t$	0.071 IN

### ALLOWABLE CAPACITY (VALUES BASED ON PURLIN LOCATION WITH HIGHEST UNITY RATIO)

ALLOWABLE MOMENT, $M_{ax}$	86.9 KIP-IN
ALLOWABLE MOMENT, $M_{ay}$	38.1 KIP-IN
ALLOWABLE SHEAR, $V_y$	4.0 KIP
ALLOWABLE SHEAR, $V_x$	13.5 KIP

### APPLIED LOADS (VALUES BASED ON PURLIN LOCATION WITH HIGHEST UNITY RATIO)

ABOUT X AXIS	-41.8 KIP-IN
ABOUT Y AXIS	-7.1 KIP-IN
APPLIED SHEAR, $V_y$	1.2 KIP
APPLIED SHEAR, $V_x$	0.2 KIP

### UNITY CHECKS

AISI EQ H1.1-1	42%
AISI EQ H1.1-2	67%
AISI EQ H1.2-1	65%
AISI EQ H2-1 X	51%
AISI EQ H2-1 Y	25%

### DEFLECTION CHECKS

DEFLECTION RATIO	$L/720$
CLEARSPAN DEAD DEFLECTION	0.041 IN
CANTELIVER DEAD DEFLECTION	0.025 IN

# ELAN RENEWABLES - FISK

## RAFTER DESIGN

### MATERIAL PROPERTIES

YIELD STRENGTH $F_y$	80 KSI
TENSILE STRENGTH, $F_u$	82 KSI
DESIGN THICKNESS, $t$	0.071 IN

### ALLOWABLE CAPACITY (VALUES BASED ON RAFTER LOCATION WITH HIGHEST UNITY RATIO)

ALLOWABLE MOMENT, $M_{ax}$	94.5 KIP-IN
ALLOWABLE MOMENT, $M_{ay}$	37.0 KIP-IN
ALLOWABLE SHEAR, $V_y$	19.8 KIP
ALLOWABLE SHEAR, $V_x$	9.5 KIP

### APPLIED LOADS (VALUES BASED ON RAFTER LOCATION WITH HIGHEST UNITY RATIO)

ABOUT X AXIS	-44.4 KIP-IN
ABOUT Y AXIS	-4.2 KIP-IN
APPLIED SHEAR, $V_y$	-1.6 KIP
APPLIED SHEAR, $V_x$	-0.2 KIP

### UNITY CHECKS

AISI EQ H1.1-1	54%
AISI EQ H1.1-2	64%
AISI EQ H1.2-1	67%
AISI EQ H2-1 X	58%
AISI EQ H2-1 Y	12%

### DEFLECTION CHECKS

DEFLECTION RATIO	$L/1066$
------------------	----------

# ELAN RENEWABLES - FISK

## LEG DESIGN

### MATERIAL PROPERTIES

YIELD STRENGTH  $F_y$

42 KSI

### SOUTH LEG ALLOWABLE CAPACITY (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

ALLOWABLE MOMENT,  $M_a$

17.8 KIP-IN

ALLOWABLE COMPRESSION,  $P_{cr}$

23.9 KIP-IN

ALLOWABLE TENSION,  $T$

25.1 KIP-IN

### NORTH LEG ALLOWABLE CAPACITY (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

ALLOWABLE MOMENT,  $M_a$

17.8 KIP-IN

ALLOWABLE COMPRESSION,  $P_{cr}$

17.7 KIP-IN

ALLOWABLE TENSION,  $T$

25.1 KIP-IN

### SOUTH LEG APPLIED LOADS (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

APPLIED MOMENT

0.5 KIP-IN

APPLIED TENSION

-0.9 KIP

APPLIED COMPRESSION

3.3 KIP

### NORTH LEG APPLIED LOADS (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

APPLIED MOMENT

0.2 KIP-IN

APPLIED TENSION

-3.8 KIP

APPLIED COMPRESSION

4.2 KIP

### UNITY CHECKS

SOUTH LEG COMBINED STRESS

10%

NORTH LEG COMBINED STRESS

24%

# ELAN RENEWABLES - FISK

## BRACE DESIGN

### DIAGONAL AND HORIZONTAL BRACE MATERIAL PROPERTIES

YIELD STRENGTH  $F_y$

42 KSI

### INTERNAL DIAGONAL BRACE ALLOWABLE CAPACITY

ALLOWABLE COMPRESSION,  $P_{cr}$

5.5 KIP

ALLOWABLE TENSION,  $T$

15.7 KIP

### INTERNAL HORIZONTAL BRACE ALLOWABLE CAPACITY

ALLOWABLE COMPRESSION,  $P_{cr}$

6.7 KIP

ALLOWABLE TENSION,  $T$

15.7 KIP

### INTERNAL DIAGONAL BRACE APPLIED LOADS (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

APPLIED TENSION

-2.6 KIP

APPLIED COMPRESSION

2.3 KIP

### INTERNAL HORIZONTAL BRACE APPLIED LOADS (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

APPLIED TENSION

-2.4 KIP

APPLIED COMPRESSION

2.4 KIP

### SEISMIC CABLE BRACE CAPACITY

CABLE BREAKING STRENGTH

2.3 KIP

### SEISMIC CABLE BRACE APPLIED LOAD

MAXIMUM TENSION

0.1 KIP

### BRACE UNITY CHECKS

INTERNAL DIAGONAL BRACE COMBINED STRESS

42%

INTERNAL HORIZONTAL BRACE COMBINED STRESS

8%

SEISMIC CABLE BRACE

1%

# ELAN RENEWABLES - FISK

## FOUNDATION DESIGN

### GROUND SCREW MINIMUM REQUIRED TORQUE

DESIGN TORQUE VARIABLE	227.30
DESIGN TORQUE EXPONENT	0.45
MINIMUM REQUIRED TORQUE	1000 N-m

### GROUND SCREW ALLOWABLE CAPACITY

ALLOWABLE COMPRESSION	6.8 KIP
ALLOWABLE TENSION	5.0 KIP
ALLOWABLE LATERAL	2.3 KIP

### GROUND SCREW APPLIED LOADS (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

APPLIED COMPRESSION	5.0 KIP
APPLIED TENSION	4.7 KIP
APPLIED LATERAL	1.2 KIP

### UNITY CHECK

GROUND SCREW STRESS	92%
---------------------	-----

### FROST HEAVE ANALYSIS

FOUNDATION EMBEDMENT DEPTH	74 IN
APPROXIMATE FROST DEPTH	28 IN
SCREW PENETRATION BELOW FROST DEPTH	46 IN
UPLIFT PRESSURE DUE TO ICE LENSING	0.29 KSI
UPLIFT PRESSURE DUE TO ADFREEZING	0.01 KSI
UPLIFT FORCE DUE TO ICE LENSING	0.00 KIP
UPLIFT FORCE DUE TO ADFREEZING	3.83 KIP
TOTAL FROST HEAVE FORCE	3.83 KIP
TOTAL DEAD LOAD	0.41 KIP
RESULTANT HEAVE FORCE	3.42 KIP
FROST HEAVE PREVENTION STRESS	68%

# ELAN RENEWABLES - FISK

## HARDWARE DESIGN

### PV MODULE TO C PURLIN

HARDWARE SPECIFICATION	M8 - GRADE 18-8
APPLIED TENSION	0.30 KIP
APPLIED SHEAR	0.04 KIP
UNITY CHECK	8%

### C PURLIN TO SLOPE BRACKET

HARDWARE SPECIFICATION	1/2-13 - GRADE 5
APPLIED TENSION	0.00 KIP
APPLIED SHEAR	2.21 KIP
UNITY CHECK	35%

### SLOPE BRACKET TO RAFTER

HARDWARE SPECIFICATION	1/2-13 - GRADE 5
APPLIED TENSION	1.79 KIP
APPLIED SHEAR	0.22 KIP
UNITY CHECK	17%

### RAFTER TO LEG

HARDWARE SPECIFICATION	1/2-13 - GRADE 5
APPLIED TENSION	0.00 KIP
APPLIED SHEAR	4.16 KIP
UNITY CHECK	33%

### DIAGONAL BRACE HARDWARE

HARDWARE SPECIFICATION	3/8-16 - GRADE 5
APPLIED TENSION	0.00 KIP
APPLIED SHEAR	2.63 KIP
UNITY CHECK	41%

### TERRASMART SET BOLT (INDEPENDENT LAB TESTING)

ALLOWABLE VERTICAL FORCE	8.00 KIP
APPLIED VERTICAL FORCE	2.63 KIP
UNITY CHECK	33%



# ELAN RENEWABLES - FISK

## CONNECTION DESIGN

### C PURLIN TO SLOPE BRACKET BEARING CHECK

HOLE SIZE	0.500 IN
ALLOWABLE BEARING	4.67 KIP
APPLIED PULL-OUT	2.21 KIP
UNITY CHECK	47%

### SLOPE BRACKET TO RAFTER CONNECTION

ALLOWABLE UPLIFT FORCE	3.15 KIP
ALLOWABLE LATERAL FORCE	0.80 KIP
APPLIED UPLIFT FORCE	2.21 KIP
APPLIED LATERAL FORCE	0.00 KIP
UNITY CHECK	70%

### RAFTER TO LEG CONNECTION

ALLOWABLE VERTICAL FORCE	7.00 KIP
APPLIED VERTICAL FORCE	4.16 KIP
UNITY CHECK	59%

### RAFTER TO LATERAL BRACE CONNECTION

HOLE SIZE	0.500 IN
ALLOWABLE BEARING	9.33 KIP
APPLIED PULL-OUT	2.63 KIP
UNITY CHECK	28%

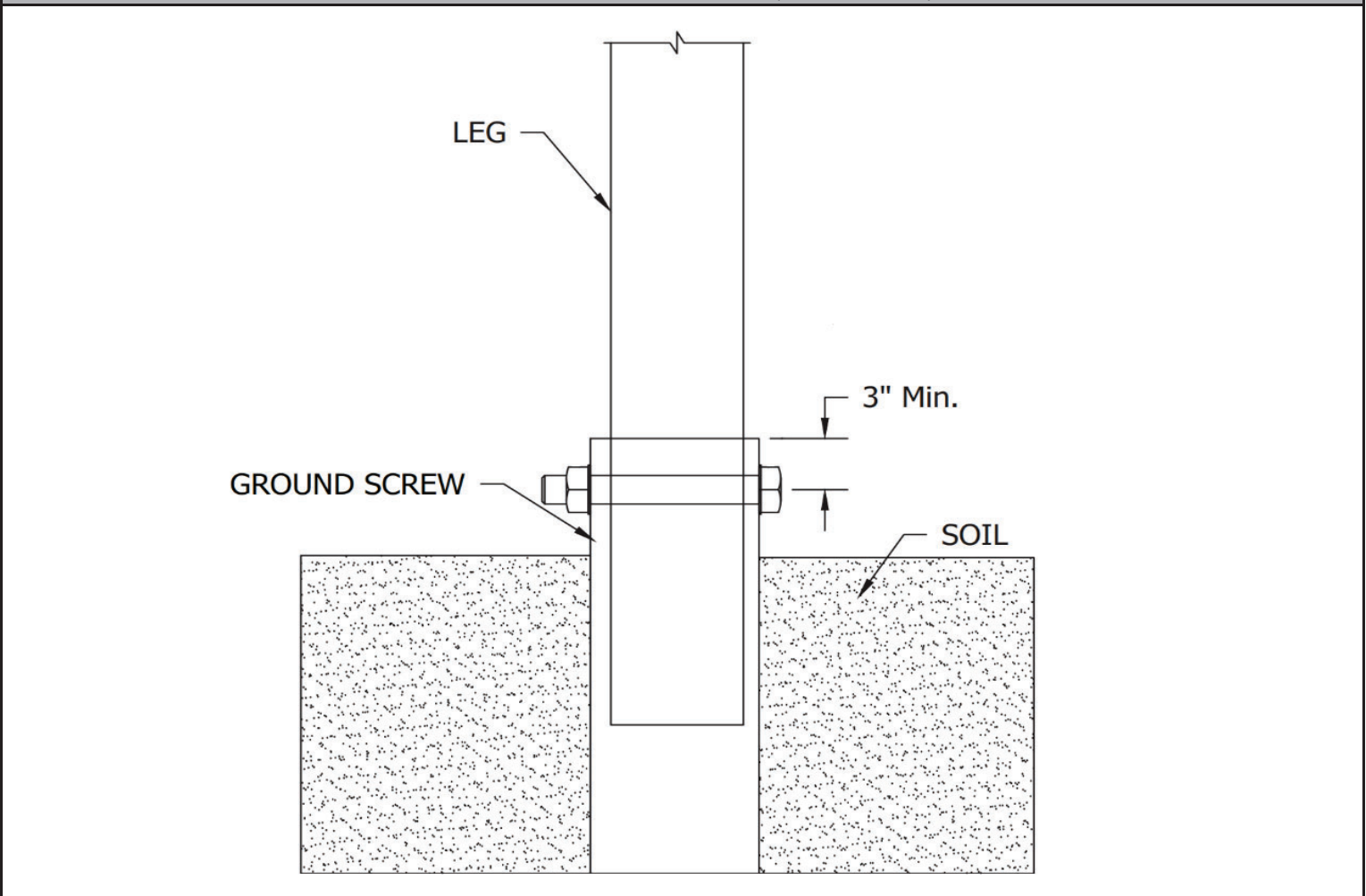
# ELAN RENEWABLES - FISK

## THRU BOLT DESIGN

### GROUND SCREW TO LEG THRU BOLT (USE AS NEEDED)

HARDWARE SPECIFICATION	1/2-13 - GRADE 5
APPLIED SHEAR	5.01 KIP
UNITY CHECK	39%

### GROUND SCREW TO LEG THRU BOLT (USE AS NEEDED)



### NOTE

A THRU BOLT MAY BE USED IN THE RARE EVENT THAT A GROUND SCREW WELD NUT IS DAMAGED DURING INSTALLATION.

# STRUCTURAL CALCULATION REPORT



# TERRAS<sub>M</sub>MART

## ELAN RENEWABLES - FISK

PROJECT NUMBER	19-3806
PRODUCT	TERRAGLIDE PORTRAIT
REVISION	2

### ENGINEER OF RECORD



ZEYN B. UZMAN - CT PEN.0023151



14590 GLOBAL PARKWAY  
FORT MYERS, FL 33913

P 239-362-0211  
F 239-362-0600

ENG@TERRASMART.COM  
WWW.TERRASMART.COM

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# ELAN RENEWABLES - FISK

## GENERAL INFORMATION

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### NOTES

- 1) TERRASMART RACKING CONFORMS TO UL2703 STANDARDS.
- 2) TERRASMART USES INFORMATION PROVIDED BY OUR CLIENT TO PROPERLY DESIGN OUR PRODUCT. IF CERTAIN INFORMATION IS NOT PROVIDED, GENERAL ASSUMPTIONS WILL BE MADE. IT IS THE RESPONSIBILITY OF THE CLIENT TO VERIFY AND APPROVE ALL DESIGN CRITERIA AND RACKING SPECIFICATIONS.
- 3) RACKING AND FOUNDATION STRUCTURAL CALCULATIONS CONFORM TO APPLICABLE STATE OR FEDERAL BUILDING CODES.
- 4) TERRASMART IS NOT RESPONSIBLE FOR THE ACCURACY OF THE ENVIRONMENTAL DESIGN CRITERIA (WIND SPEED, SNOW LOAD, EXPOSURE, ETC.)
- 5) SNOW BANKING ANALYSIS WAS NOT PERFORMED BY TERRASMART AND WAS NOT CONSIDERED IN THE DESIGN OF THE STRUCTURE. THE FRONT EDGE CLEARANCE WAS PROVIDED BY THE CLIENT AND ADVERSE EFFECTS OF SNOW BANKING ARE BEYOND TERRASMART'S SCOPE.
- 6) TERRASMART IS NOT RESPONSIBLE FOR ANY DAMAGE TO PV MODULES MOUNTED TO TERRASMART RACKING DUE TO THE EXTREME VARIETY IN MODULE FRAME DESIGN, MOUNTING STYLE, AND MANUFACTURING PROCESS. TERRASMART RECOMMENDS THAT THE CLIENT WORK WITH THE MODULE MANUFACTURER TO UNDERSTAND ALL RESTRICTIONS AND LIMITATIONS.
- 7) MOUNTING OF COMBINER BOXES, STRING INVERTERS, OR OTHER ITEMS NOT INCLUDED IN TERRASMARTS CALCULATION PACKAGE TO THE RACKING MUST BE REVIEWED AND APPROVED BY TERRASMART.
- 8) TERRASMART STRUCTURAL CALCULATIONS APPLY TO RACKING INSTALLED WITHIN THE TOLERANCES AND INSTALL PROCEDURES PROVIDED IN THE RACKING CONSTRUCTION PLANS AND ASSOCIATED INSTALLATION MANUAL. ANY DEVIATION FROM THE SPECIFIED TOLERANCES OR INSTALL PROCEDURES MUST BE REVIEWED AND APPROVED BY TERRASMART.

# ELAN RENEWABLES - FISK

## PROJECT SPECIFICATIONS

### GENERAL PROJECT INFORMATION

ADDRESS	390 HARTFORD TURNPIKE
CITY	HAMPTON
STATE	CT
ZIP	06051

### DESIGN CRITERIA

EXPOSURE CATEGORY	C	ASCE/IBC
RISK/OCCUPANCY CATEGORY	I	ASCE/IBC
BASIC WIND SPEED	119 MPH	ASCE/IBC
GROUND SNOW LOAD	35.0 PSF	ASCE/IBC
FLAT ROOF SNOW LOAD	0.0 PSF	ASCE/IBC
MAPPED ACCELERATION, S <sub>s</sub>	0.172	ASCE/IBC
MAPPED ACCELERATION, S <sub>1</sub>	0.068	ASCE/IBC

### PV MODULE SPECIFICATIONS

PV MODULE MODEL	LG400N2W-V5	CLIENT PROVIDED
WATTAGE	400 W	
SHORT EDGE DIMENSION	40.315 IN	
LONG EDGE DIMENSION	79.685 IN	
SHORT BOLT SPACING	38.740 IN	
LONG BOLT SPACING	56.063 IN	
THICKNESS	1.575 IN	
WEIGHT	44.75 LBS	
HARDWARE SIZE	M8	

### PV RACKING SPECIFICATIONS

MODULE ORIENTATION	PORTRAIT
FOUNDATION TYPE	TERRASMART GROUND SCREWS
MODULE ROWS	2
MODULE COLUMNS	12
TILT ANGLE	25.0°
FRONT EDGE CLEARANCE	24 IN
MAX E-W SLOPE	10.0%
MAX NORTH FACING SLOPE	10.0%
MAX SOUTH FACING SLOPE	10.0%
E-W MODULE SPACING	0.500 IN
N-S MODULE SPACING	1.000 IN
EW SCREW SPACING	272 IN
NS SCREW SPACING	79 IN
OVERALL RACK WIDTH (E-W)	489.28 IN

### GEOTECHNICAL SPECIFICATIONS

GEOTECHNICAL REPORT DATE	4/4/2019	CLA ENGINEERS, INC.
GROUND SCREW REPORT DATE	9/24/2019	TERRASMART
FROST DEPTH	27 IN	CORNELL ATLAS

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# ELAN RENEWABLES - FISK

## MEMBER SPECIFICATIONS

### C PURLIN

SECTION	CEE 8.5X4-0.0713
LENGTH	489.705 IN
WEIGHT	162.87 LBS
MATERIAL	ASTM A653 - GRADE 80 SS

### HAT RAFTER

SECTION	HAT 6.1X5.76-0.0713
LENGTH	142.750 IN
WEIGHT	49.99 LBS
MATERIAL	ASTM A653 - GRADE 80

### SOUTH LEG

SECTION	2.375X9GA
LENGTH	39.000 IN
WEIGHT	11.01 LBS
MATERIAL	ASTM A500 - GRADE C

### NORTH LEG

SECTION	2.375X9GA
LENGTH	83.000 IN
WEIGHT	23.44 LBS
MATERIAL	ASTM A500 - GRADE C

### EXTERNAL LATERAL BRACE

SECTION	2.360-10GA
LENGTH	23.000 IN
WEIGHT	4.06 LBS
MATERIAL	ASTM A500 - GRADE C

### INTERNAL DIAGONAL LATERAL BRACE

SECTION	2.0X12GA
LENGTH	65.000 IN
WEIGHT	11.47 LBS
MATERIAL	ASTM A500 - GRADE C

### INTERNAL HORIZONTAL LATERAL BRACE

SECTION	2.0X12GA
LENGTH	65.000 IN
WEIGHT	11.47 LBS
MATERIAL	ASTM A500 - GRADE C

# ELAN RENEWABLES - FISK

## DESIGN LOADS

### DEAD LOAD

TOTAL MODULE WEIGHT	1074 LBS
---------------------	----------

### SNOW LOAD

EXPOSURE FACTOR, $C_e$	0.90
THERMAL FACTOR, $C_t$	1.20
IMPORTANCE FACTOR, $I_s$	0.80
FLAT ROOF SNOW LOAD, $P_f$	21.2 PSF
SLOPE FACTOR, $C_s$	0.82
SLOPED ROOF SNOW LOAD, $P_s$	17.3 PSF

### WIND LOAD

IMPORTANCE FACTOR, $I$	1.00
VELOCITY PRESSURE COEF., $K_z$	0.85
TOPOGRAPHIC FACTOR, $K_{zt}$	1.00
DIRECTIONALITY FACTOR, $K_d$	0.85
GUST FACTOR	0.85
VELOCITY PRESSURE, $q_z$	26.2 PSF

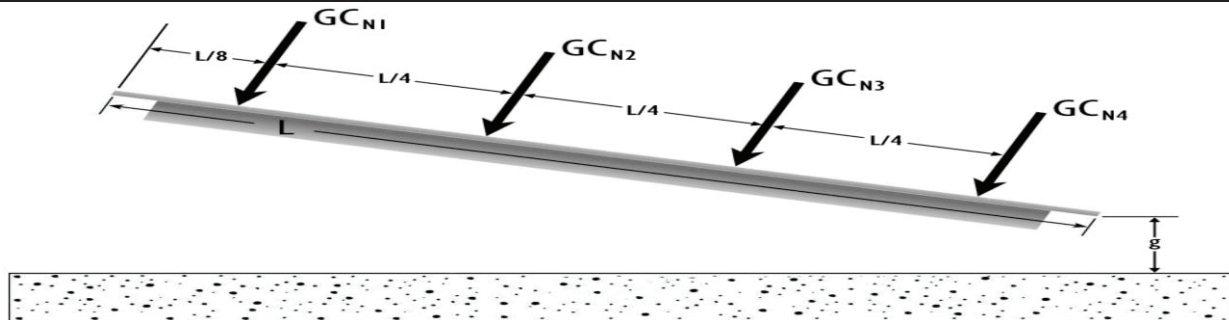
### ASCE WIND PRESSURE COEFFICIENTS - CASE A

$GC_n$	WIND UP	WIND DOWN
1	-1.60	1.90
2	-1.60	1.90
3	-1.67	1.83
4	-1.67	1.83

### ASCE WIND PRESSURE COEFFICIENTS - CASE B

$GC_n$	WIND UP	WIND DOWN
1	-2.43	0.80
2	-2.43	0.80
3	-0.37	2.33
4	-0.37	2.33

### ASCE WIND PRESSURE DIAGRAM



# ELAN RENEWABLES - FISK

## PURLIN DESIGN

### MATERIAL PROPERTIES

YIELD STRENGTH $F_y$	80 KSI
TENSILE STRENGTH, $F_u$	82 KSI
DESIGN THICKNESS, $t$	0.071 IN

### ALLOWABLE CAPACITY (VALUES BASED ON PURLIN LOCATION WITH HIGHEST UNITY RATIO)

ALLOWABLE MOMENT, $M_{ax}$	87.1 KIP-IN
ALLOWABLE MOMENT, $M_{ay}$	38.1 KIP-IN
ALLOWABLE SHEAR, $V_y$	4.0 KIP
ALLOWABLE SHEAR, $V_x$	13.5 KIP

### APPLIED LOADS (VALUES BASED ON PURLIN LOCATION WITH HIGHEST UNITY RATIO)

ABOUT X AXIS	-61.3 KIP-IN
ABOUT Y AXIS	-10.4 KIP-IN
APPLIED SHEAR, $V_y$	-1.1 KIP
APPLIED SHEAR, $V_x$	-0.2 KIP

### UNITY CHECKS

AISI EQ H1.1-1	61%
AISI EQ H1.1-2	93%
AISI EQ H1.2-1	98%
AISI EQ H2-1 X	70%
AISI EQ H2-1 Y	37%

### DEFLECTION CHECKS

DEFLECTION RATIO	$L/435$
CLEARSPAN DEAD DEFLECTION	0.071 IN
CANTELIVER DEAD DEFLECTION	0.068 IN



# ELAN RENEWABLES - FISK

## RAFTER DESIGN

### MATERIAL PROPERTIES

YIELD STRENGTH $F_y$	80 KSI
TENSILE STRENGTH, $F_u$	82 KSI
DESIGN THICKNESS, $t$	0.071 IN

### ALLOWABLE CAPACITY (VALUES BASED ON RAFTER LOCATION WITH HIGHEST UNITY RATIO)

ALLOWABLE MOMENT, $M_{ax}$	94.5 KIP-IN
ALLOWABLE MOMENT, $M_{ay}$	37.0 KIP-IN
ALLOWABLE SHEAR, $V_y$	19.8 KIP
ALLOWABLE SHEAR, $V_x$	9.5 KIP

### APPLIED LOADS (VALUES BASED ON RAFTER LOCATION WITH HIGHEST UNITY RATIO)

ABOUT X AXIS	-52.9 KIP-IN
ABOUT Y AXIS	-4.9 KIP-IN
APPLIED SHEAR, $V_y$	-2.0 KIP
APPLIED SHEAR, $V_x$	-0.2 KIP

### UNITY CHECKS

AISI EQ H1.1-1	64%
AISI EQ H1.1-2	77%
AISI EQ H1.2-1	80%
AISI EQ H2-1 X	69%
AISI EQ H2-1 Y	14%

### DEFLECTION CHECKS

DEFLECTION RATIO	$L/897$
------------------	---------

# ELAN RENEWABLES - FISK

## LEG DESIGN

### MATERIAL PROPERTIES

YIELD STRENGTH  $F_y$

42 KSI

### SOUTH LEG ALLOWABLE CAPACITY (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

ALLOWABLE MOMENT,  $M_a$

17.8 KIP-IN

ALLOWABLE COMPRESSION,  $P_{cr}$

23.9 KIP-IN

ALLOWABLE TENSION,  $T$

25.1 KIP-IN

### NORTH LEG ALLOWABLE CAPACITY (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

ALLOWABLE MOMENT,  $M_a$

17.8 KIP-IN

ALLOWABLE COMPRESSION,  $P_{cr}$

17.7 KIP-IN

ALLOWABLE TENSION,  $T$

25.1 KIP-IN

### SOUTH LEG APPLIED LOADS (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

APPLIED MOMENT

0.6 KIP-IN

APPLIED TENSION

-1.0 KIP

APPLIED COMPRESSION

3.9 KIP

### NORTH LEG APPLIED LOADS (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

APPLIED MOMENT

0.2 KIP-IN

APPLIED TENSION

-4.5 KIP

APPLIED COMPRESSION

5.0 KIP

### UNITY CHECKS

SOUTH LEG COMBINED STRESS

11%

NORTH LEG COMBINED STRESS

29%

# ELAN RENEWABLES - FISK

## BRACE DESIGN

### DIAGONAL AND HORIZONTAL BRACE MATERIAL PROPERTIES

YIELD STRENGTH  $F_y$

42 KSI

### INTERNAL DIAGONAL BRACE ALLOWABLE CAPACITY

ALLOWABLE COMPRESSION,  $P_{cr}$

5.5 KIP

ALLOWABLE TENSION,  $T$

15.7 KIP

### INTERNAL HORIZONTAL BRACE ALLOWABLE CAPACITY

ALLOWABLE COMPRESSION,  $P_{cr}$

6.7 KIP

ALLOWABLE TENSION,  $T$

15.7 KIP

### INTERNAL DIAGONAL BRACE APPLIED LOADS (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

APPLIED TENSION

-3.1 KIP

APPLIED COMPRESSION

2.8 KIP

### INTERNAL HORIZONTAL BRACE APPLIED LOADS (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

APPLIED TENSION

-2.9 KIP

APPLIED COMPRESSION

2.9 KIP

### SEISMIC CABLE BRACE CAPACITY

CABLE BREAKING STRENGTH

2.3 KIP

### SEISMIC CABLE BRACE APPLIED LOAD

MAXIMUM TENSION

0.2 KIP

### BRACE UNITY CHECKS

INTERNAL DIAGONAL BRACE COMBINED STRESS

50%

INTERNAL HORIZONTAL BRACE COMBINED STRESS

9%

SEISMIC CABLE BRACE

2%

# ELAN RENEWABLES - FISK

## FOUNDATION DESIGN

### GROUND SCREW MINIMUM REQUIRED TORQUE

DESIGN TORQUE VARIABLE	227.30
DESIGN TORQUE EXPONENT	0.45
MINIMUM REQUIRED TORQUE	1244 N-m

### GROUND SCREW ALLOWABLE CAPACITY

ALLOWABLE COMPRESSION	7.5 KIP
ALLOWABLE TENSION	5.5 KIP
ALLOWABLE LATERAL	2.3 KIP

### GROUND SCREW APPLIED LOADS (VALUES BASED ON LOCATION WITH HIGHEST UNITY RATIO)

APPLIED COMPRESSION	6.0 KIP
APPLIED TENSION	5.5 KIP
APPLIED LATERAL	1.4 KIP

### UNITY CHECK

GROUND SCREW STRESS	100%
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### FROST HEAVE ANALYSIS

FOUNDATION EMBEDMENT DEPTH	74 IN
APPROXIMATE FROST DEPTH	27 IN
SCREW PENETRATION BELOW FROST DEPTH	47 IN
UPLIFT PRESSURE DUE TO ICE LENSING	0.29 KSI
UPLIFT PRESSURE DUE TO ADFREEZING	0.01 KSI
UPLIFT FORCE DUE TO ICE LENSING	0.00 KIP
UPLIFT FORCE DUE TO ADFREEZING	3.69 KIP
TOTAL FROST HEAVE FORCE	3.69 KIP
TOTAL DEAD LOAD	0.48 KIP
RESULTANT HEAVE FORCE	3.21 KIP
FROST HEAVE PREVENTION STRESS	58%

# ELAN RENEWABLES - FISK

## HARDWARE DESIGN

### PV MODULE TO C PURLIN

HARDWARE SPECIFICATION	M8 - GRADE 18-8
APPLIED TENSION	0.30 KIP
APPLIED SHEAR	0.04 KIP
UNITY CHECK	8%

### C PURLIN TO SLOPE BRACKET

HARDWARE SPECIFICATION	1/2-13 - GRADE 5
APPLIED TENSION	0.00 KIP
APPLIED SHEAR	2.64 KIP
UNITY CHECK	42%

### SLOPE BRACKET TO RAFTER

HARDWARE SPECIFICATION	1/2-13 - GRADE 5
APPLIED TENSION	2.13 KIP
APPLIED SHEAR	0.27 KIP
UNITY CHECK	20%

### RAFTER TO LEG

HARDWARE SPECIFICATION	1/2-13 - GRADE 5
APPLIED TENSION	0.00 KIP
APPLIED SHEAR	4.96 KIP
UNITY CHECK	39%

### DIAGONAL BRACE HARDWARE

HARDWARE SPECIFICATION	3/8-16 - GRADE 5
APPLIED TENSION	0.00 KIP
APPLIED SHEAR	3.15 KIP
UNITY CHECK	50%

### TERRASMART SET BOLT (INDEPENDENT LAB TESTING)

ALLOWABLE VERTICAL FORCE	8.00 KIP
APPLIED VERTICAL FORCE	3.15 KIP
UNITY CHECK	39%

# ELAN RENEWABLES - FISK

## CONNECTION DESIGN

### C PURLIN TO SLOPE BRACKET BEARING CHECK

HOLE SIZE	0.500 IN
ALLOWABLE BEARING	4.67 KIP
APPLIED PULL-OUT	2.64 KIP
UNITY CHECK	57%

### SLOPE BRACKET TO RAFTER CONNECTION

ALLOWABLE UPLIFT FORCE	3.15 KIP
ALLOWABLE LATERAL FORCE	0.80 KIP
APPLIED UPLIFT FORCE	2.64 KIP
APPLIED LATERAL FORCE	0.00 KIP
UNITY CHECK	84%

### RAFTER TO LEG CONNECTION

ALLOWABLE VERTICAL FORCE	7.00 KIP
APPLIED VERTICAL FORCE	4.96 KIP
UNITY CHECK	71%

### RAFTER TO LATERAL BRACE CONNECTION

HOLE SIZE	0.500 IN
ALLOWABLE BEARING	9.33 KIP
APPLIED PULL-OUT	3.15 KIP
UNITY CHECK	34%

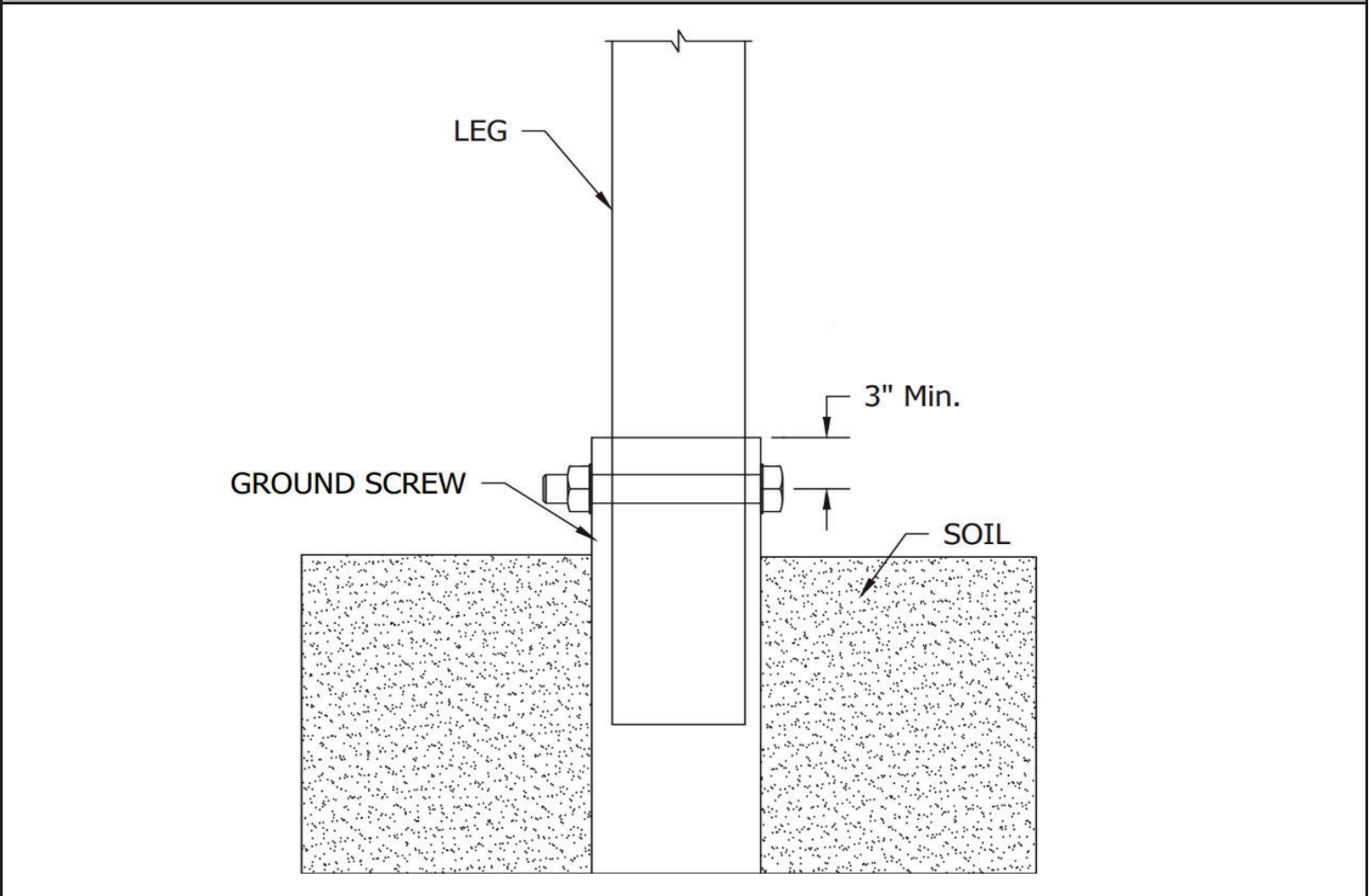
# ELAN RENEWABLES - FISK

## THRU BOLT DESIGN

### GROUND SCREW TO LEG THRU BOLT (USE AS NEEDED)

HARDWARE SPECIFICATION	1/2-13 - GRADE 5
APPLIED SHEAR	5.98 KIP
UNITY CHECK	47%

### GROUND SCREW TO LEG THRU BOLT (USE AS NEEDED)



### NOTE

A THRU BOLT MAY BE USED IN THE RARE EVENT THAT A GROUND SCREW WELD NUT IS DAMAGED DURING INSTALLATION.






1. FRAME AND FOUNDATION CONFORMS TO THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE BASED UPON DESIGN CRITERIA AS OUTLINED ON THE COVER SHEET. TERRASMAK MAKES NO REPRESENTATION AS TO THE ACCURACY OF THE DESIGN CRITERIA AS IT WAS SUPPLIED BY CLIENT. PLEASE REFER TO STRUCTURAL CALCULATIONS FOR FRAME AND FOUNDATION DESIGN.

- ## II. SITE PREPARATION

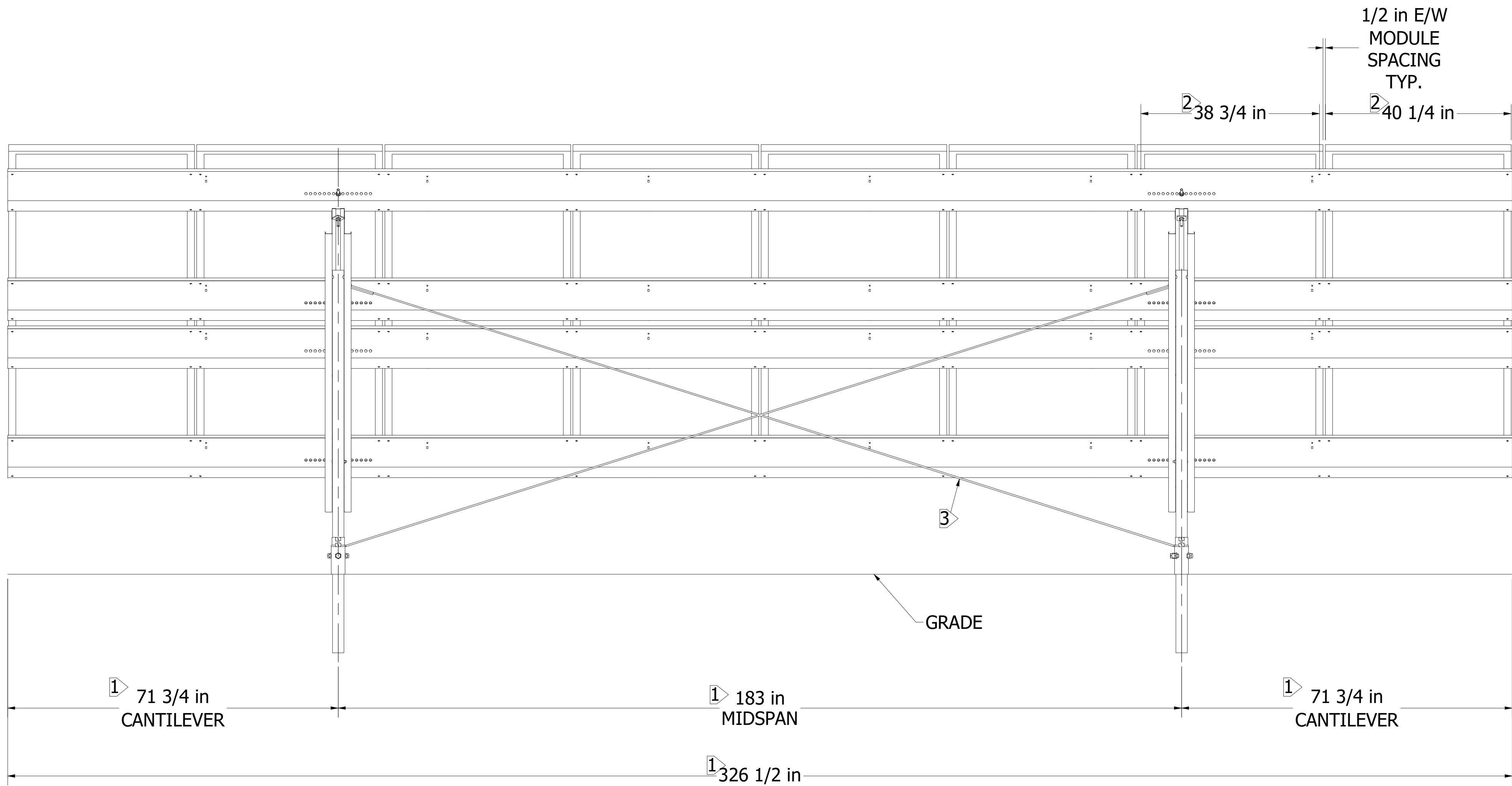
- ### III. FOUNDATION NOTES

ZEYN B. UZMAN  
CT PE# PEN.0023151

GROUND SCREW KRINNER G SERIES GROUND SCREW SOUTH SCREW - 76mm X 2100mm NORTH SCREW - 76mm X 2100mm MODULE DIMENSIONS NORTH/ SOUTH EDGE - 79.69 (2024mm) EAST/ WEST EDGE - 40.31 (1024mm) NORTH/ SOUTH BOLT SPACING - 56.06 (1424mm) EAST/ WEST BOLT SPACING - 38.74 (984mm) THICKNESS - 1.57 (40mm)	PROJECT SPECIFICATIONS: TILT ANGLE - 25° RACK SIZE - 2X8 MODULE ORIENTATION - PORTRAIT	DRAWN BY TMC - 11/6/2019	CHECKED BY JWS - 11/6/2019	 <b>TERRASmart.</b>		
		ENG. APPROVED BY MF - 11/6/2019	PROJ. ENG. APPROVED BY NB - 11/6/2019			
		MFG. APPROVED BY SS - 11/6/2019	PROJECT NAME FISK			SHEET SIZE D
	TERRASmart, LLC 14590 GLOBAL PARKWAY FORT MYERS, FL 33913 P 239.362.0211 F 239.676.1900 WWW.TERRASmart.COM	PROJECT NUMBER 19-3806	CLIENT ELAN RENEWABLES	MODULE LG400N2W-V5	REV 2	SHEET NUMBER 2 OF 6
	PROPRIETARY AND CONFIDENTIAL. THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF TERRASmart. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT WRITTEN PERMISSION OF TERRASmart IS PROHIBITED.					








REAR ELEVATION VIEW  
SCALE 1/16



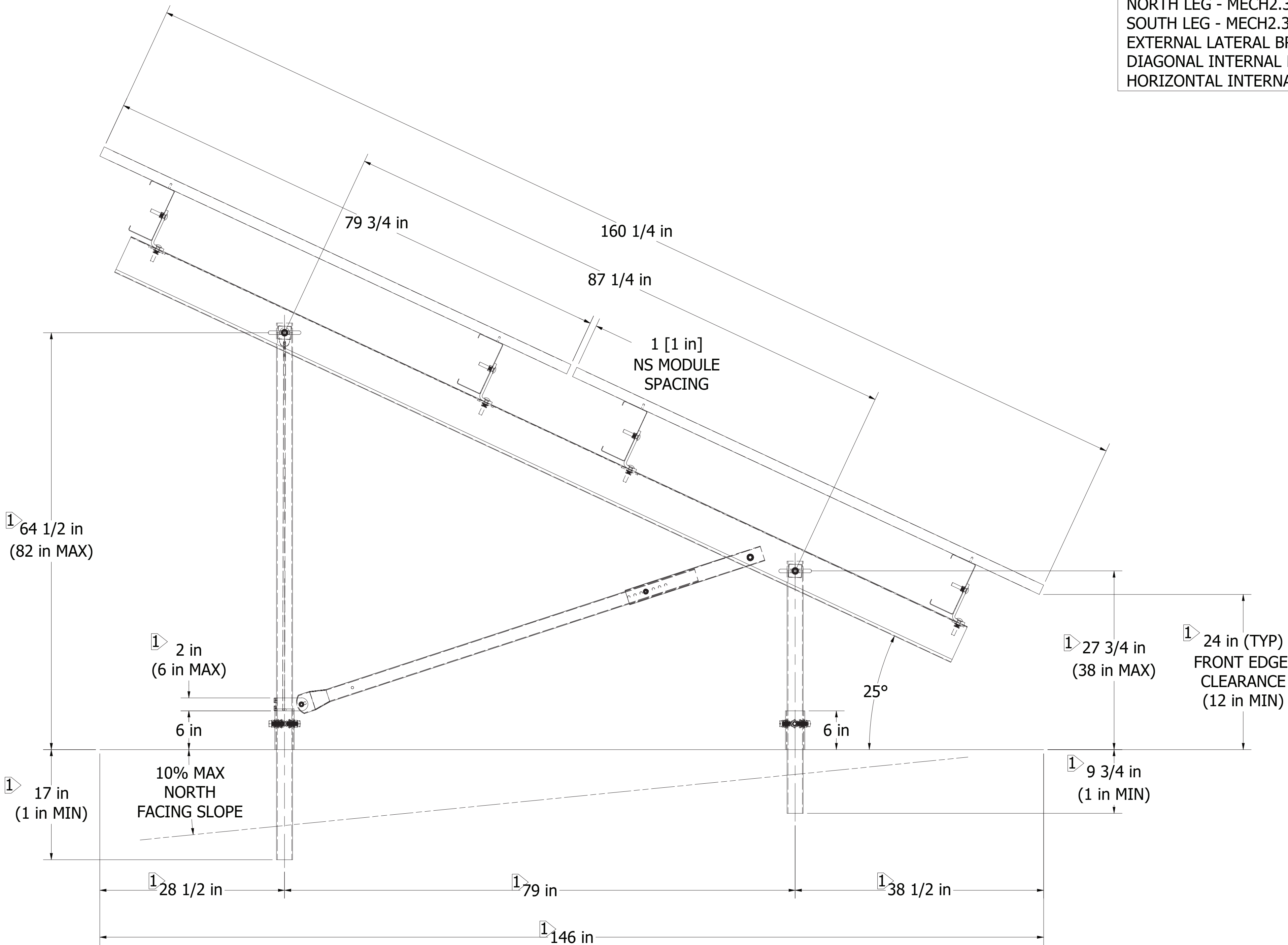
ZEYN B. UZMAN  
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NOTES:

- 1> TYPICAL INSTALLATION DIMENSIONS MAY BE ADJUSTED TO SUIT FIELD CONDITIONS WITHIN THE TOLERANCES PROVIDED.
- 2> PURLIN SPACING IS DEPENDENT ON MODULE SPECIFICATIONS, REFER TO PROJECT NOTES FOR MODULE SPECIFICATIONS.
- 3> SEISMIC CROSS BRACING TO BE FIELD FIT.


GROUND SCREW KRINNER G SERIES GROUND SCREW SOUTH SCREW - 76mm X 2100mm NORTH SCREW - 76mm X 2100mm MODULE DIMENSIONS NORTH/ SOUTH EDGE - 79.69 (2024mm) EAST/ WEST EDGE - 40.31 (1024mm) NORTH/ SOUTH BOLT SPACING - 56.06 (1424mm) EAST/ WEST BOLT SPACING - 38.74 (984mm) THICKNESS - 1.57 (40mm)	PROJECT SPECIFICATIONS: TILT ANGLE - 25° RACK SIZE - 2X8 MODULE ORIENTATION - PORTRAIT	DRAWN BY TMC - 11/6/2019		CHECKED BY JWS - 11/6/2019				PROJECT NAME FISK		SHEET SIZE D							
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		MFG. APPROVED BY SS - 11/6/2019															
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MEMBER PROPERTIES	
SOUTH SCREW - 76 mm X 2100 mm	
NORTH SCREW - 76 mm X 2100 mm	
NORTH /SOUTH BEAM - RAFTER - LENGTH = 142.75 in	
EAST/ WEST BEAM - C-BEAM 8.5x4.0x0.0713 - LENGTH = 326.44 in	
NORTH LEG - MECH2.375 x 9GA. - LENGTH = 83.00 in	
SOUTH LEG - MECH2.375 x 9GA. - LENGTH = 39.00 in	
EXTERNAL LATERAL BRACE - MECH2.360 x 13GA. - LENGTH = 22.00 in	
DIAGONAL INTERNAL LATERAL BRACE - MECH2.000x12GA.- LENGTH = 65 in	
HORIZONTAL INTERNAL LATERAL BRACE - MECH2.000x12GA.- LENGTH = N/A in	



SIDE ELEVATION VIEW  
SCALE 1/10

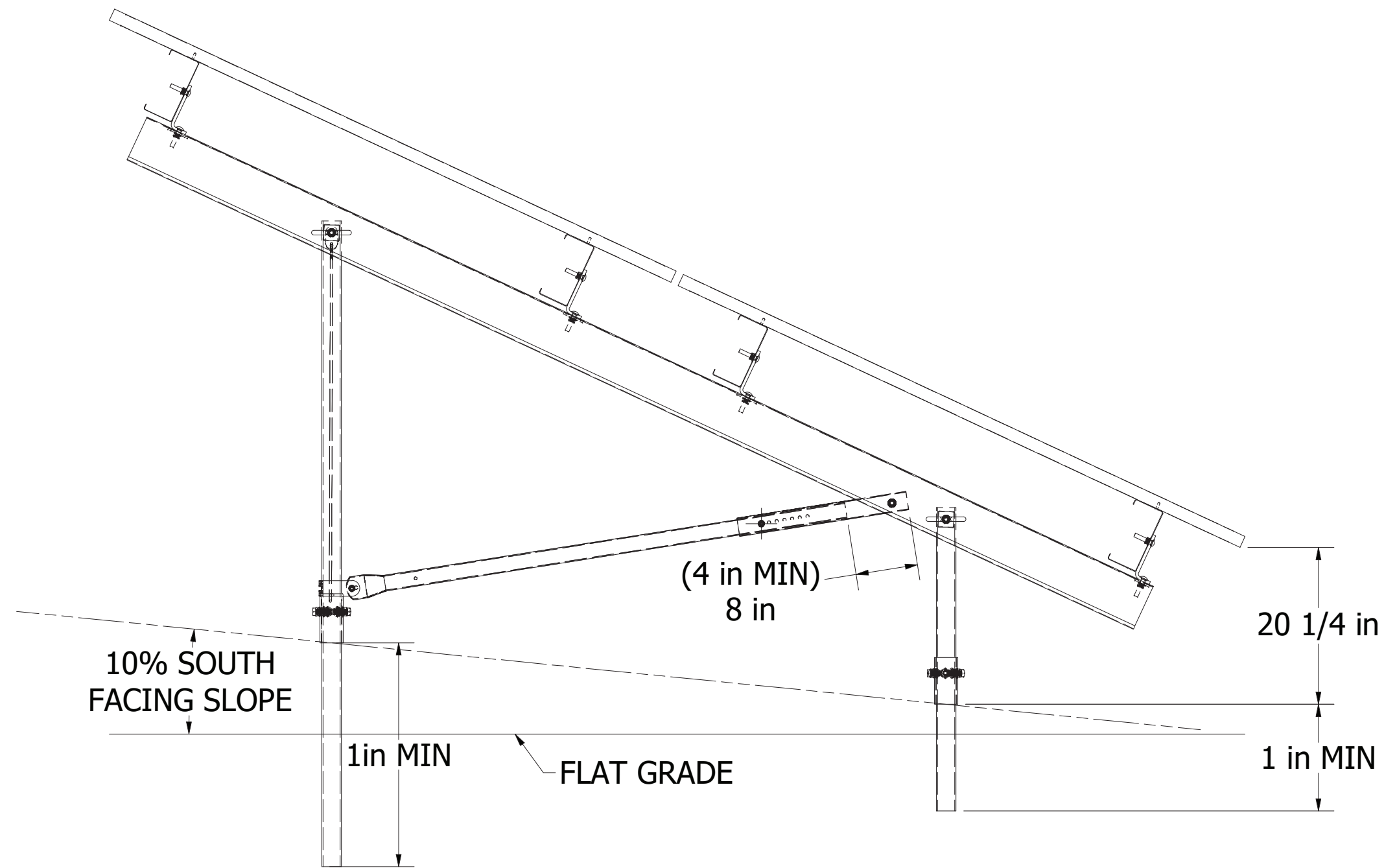
- NOTES:
1. TYPICAL INSTALLATION DIMENSIONS MAY BE ADJUSTED TO SUIT FIELD CONDITIONS WITHIN THE TOLERANCES PROVIDED.
  2. LEGS SHALL BE INSTALLED PLUMB, IF MECHANICALLY POSSIBLE. MAXIMUM 3° OUT OF PLUMB.
  3. LATERAL BRACES ARE DESIGNED TO ALLOW FOR 7" OF TOTAL ADJUSTMENT. IF FIELD CONDITIONS REQUIRE ADDITIONAL ADJUSTMENT AND LATERAL BRACES ARE TOO LONG, THEY MAY BE CUT DOWN AND DRILLED TO FIT BY THE RACK INSTALLER. IF THEY ARE TOO SHORT, NEW LATERAL BRACES MAY BE ORDERED TO FIT AT THE PURCHASER'S EXPENSE.
  4. FOR SOUTH FACING SLOPES, THE DIAGONAL AND HORIZONTAL LATERAL BRACES CAN BE SWITCHED TO PROVIDE ADDITIONAL ADJUSTABILITY.
  5. ON NORTH FACING SLOPES LEGS CAN BE FULLY EXTENDED TO MEET MINIMUM FRONT EDGE REQUIREMENTS. ALL LEGS REQUIRE A MINIMUM OF 1 INCH EMBEDMENT BELOW GRADE. FULL EXTENSION OF LEGS MAY RESULT IN LATERAL BRACES NOT FITTING. IF THEY ARE TOO SHORT, NEW LATERAL BRACES MAY BE ORDERED TO FIT AT THE PURCHASER'S EXPENSE.

GROUND SCREW KRINNER G SERIES GROUND SCREW SOUTH SCREW - 76mm X 2100mm NORTH SCREW - 76mm X 2100mm MODULE DIMENSIONS NORTH/ SOUTH EDGE - 79.69 (2024mm) EAST/ WEST EDGE - 40.31 (1024mm) NORTH/ SOUTH BOLT SPACING - 56.06 (1424mm) EAST/ WEST BOLT SPACING - 38.74 (984mm) THICKNESS - 1.57 (40mm)	PROJECT SPECIFICATIONS: TILT ANGLE - 25° RACK SIZE - 2x8 MODULE ORIENTATION - PORTRAIT	DRAWN BY TMC - 11/6/2019		CHECKED BY JWS - 11/6/2019			PROJECT NAME FISK	SHEET SIZE D
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	TERRASMART, LLC 14590 GLOBAL PARKWAY FORT MYERS, FL 33913 P 239.362.0211   F 239.676.1900 WWW.TERRASMART.COM	PROJECT NUMBER 19-3806	CLIENT ELAN RENEWABLES		MODULE LG400N2W-V5	REV 2	SHEET NUMBER 5 OF 6	
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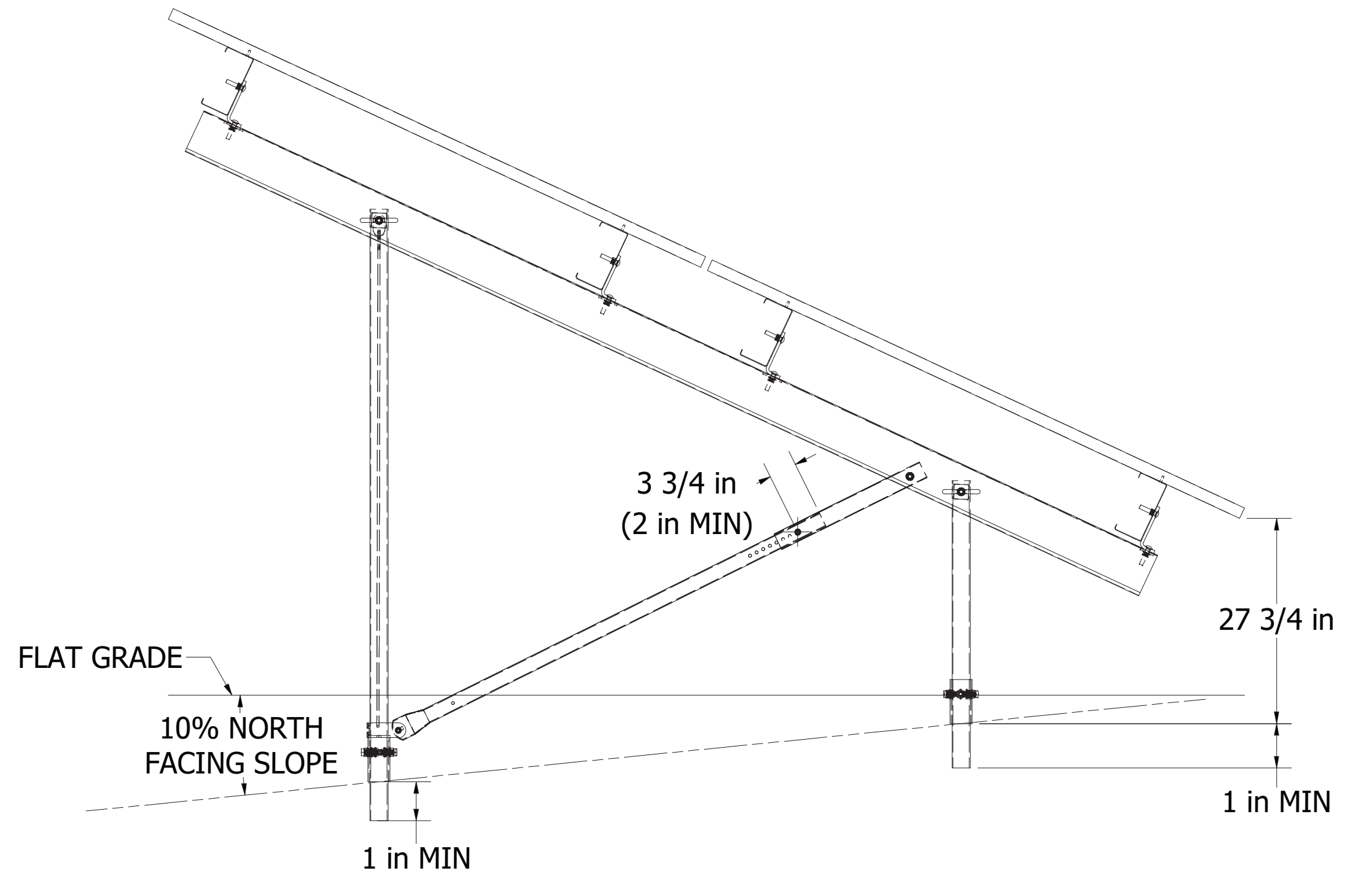


ZEYIN B. UZMAN  
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SOUTH FACING SLOPE  
SCALE 1/16



NORTH FACING SLOPE  
SCALE 1/16

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		<div>ENG. APPROVED BY</div> <div>MF - 11/6/2019</div>		<div>PROJ. ENG. APPROVED BY</div> <div>NB - 11/6/2019</div>			
		<div>TERRASmart, LLC</div> <div>14590 GLOBAL PARKWAY</div> <div>FORT MYERS, FL 33913</div> <div>P 239.362.0211   F 239.676.1900</div> <div>WWW.TERRASmart.COM</div>		<div>PROJECT NAME</div> <div>FISK</div>		<div>SHEET SIZE</div> <div>D</div>	
	<div>PROJECT NUMBER</div> <div>19-3806</div>			<div>CLIENT</div> <div>ELAN RENEWABLES</div>	<div>MODULE</div> <div>LG400N2W-V5</div>	<div>REV</div> <div>2</div>	<div>SHEET NUMBER</div> <div>6 OF 6</div>
	<div>PROPRIETARY AND CONFIDENTIAL. THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF TERRASmart.</div> <div>ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT WRITTEN PERMISSION OF TERRASmart IS PROHIBITED.</div>						



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1. FRAME AND FOUNDATION CONFORMS TO THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE BASED UPON DESIGN CRITERIA AS OUTLINED ON THE COVER SHEET. TERRASMAK MAKES NO REPRESENTATION AS TO THE ACCURACY OF THE DESIGN CRITERIA AS IT WAS SUPPLIED BY CLIENT. PLEASE REFER TO STRUCTURAL CALCULATIONS FOR FRAME AND FOUNDATION DESIGN.
2. THE STRUCTURAL INTEGRITY OF THE TERRAGLIDE RACK DEPENDS ON INTERACTION OF VARIOUS CONNECTED COMPONENTS. PROVIDE ADEQUATE BRACING, SHORING, AND OTHER TEMPORARY SUPPORTS AS REQUIRED TO SAFELY COMPLETE THE WORK.
3. FOUNDATION INSTALLATION SUB-CONTRACTOR SHALL COORDINATE WITH THE ENGINEER IF ANY UNFORESEEN CONFLICTS ARISE, SUCH AS EXISTING UNDULATION THAT COULD POTENTIALLY CAUSE RACKING INSTALLATION ISSUES.
4. STRUCTURAL STEEL SHALL BE ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS, UNLESS OTHERWISE NOTED.
5. DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED.
6. CROSS BRACING TO BE FIT ON SITE, PER INSTALLATION MANUAL.
7. COLD GALVANIZING COMPOUND SHALL BE USED PER MANUFACTURER'S DIRECTIONS AND IN ACCORDANCE WITH ASTM-A780 IN AREAS WHERE GALVANIZATION WAS REMOVED DURING TRANSPORTATION, OR ERECTION/INSTALLATION.
8. BOLTS TO BE TIGHTENED PER THE PROCEDURES DESCRIBED IN THE INSTALLATION MANUAL.
9. THIS STRUCTURAL DRAWING DOES NOT INCLUDE INFORMATION REGARDING ELECTRICAL CONNECTIONS, INCLUDING GROUNDING. REFER TO INSTALLATION MANUAL AND ELECTRICAL PLANS PREPARED BY OTHERS.
10. SHADING ANALYSIS WAS NOT PERFORMED BY TERRASMAK AND WAS NOT CONSIDERED IN THE LAYOUT OF THE FOUNDATION. TERRASMAK RECOMMENDS CONSULTING A SOLAR SHADING EXPERT PRIOR TO INSTALLATION TO AVOID POWER REDUCTION DUE TO SHADOWS.

12. MINIMUM AND TYPICAL FRONT EDGE CLEARANCE SHOWN ON SIDE ELEVATION. MAXIMUM FRONT EDGE CLEARANCE DETERMINED PER FIELD CONDITIONS.

14. EASTERN AND WESTERN EDGES OF MODULES SHALL BE ALIGNED WITHIN 2" VERTICALLY AND HORIZONTALLY OF THE SOUTHERN EDGE OF MODULES OF THE ADJACENT RACK.

16. RACK SPACING TOLERANCE: 6" TYPICAL, 4" MINIMUM, AS MEASURED BETWEEN THE CLOSEST MODULES EDGE BETWEEN ADJACENT RACKS. REFER TO CIVIL ENGINEERING PLANS FOR MORE INFORMATION AND FURTHER DETAIL.

18. TERRAGLIDE RACKING IS DESIGNED TO ACCOMMODATE A MAXIMUM EAST/WEST SLOPE OF 10%, A MAXIMUM NORTH FACING SLOPE OF 10%, AND A MAXIMUM SOUTH FACING SLOPE OF 10%. THESE SLOPES WERE PROVIDED BY THE CLIENT.

## II. SITE PREPARATION

A. ALL REQUIRED PERMITS SHALL BE OBTAINED AND CURRENT.  
B. LOCATE ALL UNDERGROUND UTILITIES AND ENSURE THAT THE PROPOSED INSTALLATION DOES NOT CONFLICT WITH ANY EXISTING INFRASTRUCTURE. MARKINGS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT.  
C. ALL REQUIRED EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE AND OPERATIONAL.  
D. GRASS SHALL BE MOWED WITH BLADES NO HIGHER THAN 3" TALL.  
E. ALL VEGETATION, INCLUDING TREES AND SHRUBS SHALL BE CLEARED AND ROOT SYSTEMS GRUBBED. ALL ORGANIC MATTER SHALL BE STRIPPED AND REMOVED FROM THE BUILDING ENVELOPE BEFORE EARTH WORK OCCURS, IF ANY.  
F. LOOSE SURFACE IMPEDIMENTS, INCLUDING ROCKS, COBBLES, BOULDERS, CONSTRUCTION DEBRIS, AND OTHER OBSTRUCTIONS SHALL BE REMOVED.  
G. SITE SHALL BE SAFE FOR OPERATING MACHINERY AND FOR PERSONNEL ON FOOT. SITE CONDITIONS SHALL NOT BE AN ENCUMBRANCE TO THE PERFORMANCE OF WORK.  
H. GROUND WATER, INCLUDING WATER TABLE AND PERCHED WATER, SHALL NOT ENCROACH BETWEEN THE GROUND SURFACE AND THE EMBEDMENT DEPTH OF THE GROUND SCREW. DEWATERING IS REQUIRED IF GROUND WATER IS ENCOUNTERED.

I. SITE SHALL BE GRADED TO PROVIDE CONTROLLED POSITIVE DRAINAGE AWAY FROM FOUNDATIONS. STANDING WATER AND/OR WATER WITH SUFFICIENT VELOCITY TO ERODE SOIL IS NOT ALLOWED WITHIN 20 FEET OF THE FOUNDATION.

2. ALL EARTHWORK SHALL BE NOTED ON THE PLANS AND PROPERLY AS-BUILT. CUT AREAS SHALL BE PROOF ROLLED AFTER REMOVAL OF SOIL. FILL AREAS SHALL BE STRIPPED OF ALL VEGETATION AND PROOF ROLLED PRIOR TO PLACING FILL MATERIAL.

4. IMPORTED GRANULAR FILL MATERIAL SHALL BE USED FOR EARTHWORK UNLESS ON-SITE SOILS MEET THE FOLLOWING REQUIREMENTS:

5. GRANULAR ON-SITE SOILS OR IMPORTED GRANULAR MATERIAL MAY BE USED AS FILL AS LONG AS THEY MEET THE FOLLOWING REQUIREMENTS:

B. CONTAINING NO CLAY BALLS, ROOTS, ORGANIC MATTER OR OTHER DELETERIOUS MATERIALS;

C. MAXIMUM PARTICLE SIZE OF 2", WITH LESS THAN 12% PASSING THE U.S. NO. 200 SIEVE; AND

D. IMPORTED FILL MATERIALS SHALL BE SAMPLED AND TESTED BY A GEOTECHNICAL ENGINEER OR OTHER QUALIFIED SOIL TESTING AGENCY PRIOR TO BEING TRANSPORTED TO THE SITE.

7. TERRASMA RT REQUIRES THAT FILL COMPACTION BE TESTED BY A GEOTECHNICAL ENGINEER OR OTHER QUALIFIED SOIL TESTING AGENCY DURING THE PLACEMENT AND COMPACTION OF FILL TO VALIDATE THE WORK.

8. ROCK DRILLING SHALL BE PERFORMED IF REQUIRED BY PRESENCE OF UNDERGROUND ROCK. PILOT HOLE DIAMETER SHALL BE DETERMINED BY ONSITE TESTING AND APPROVED BY TERRASmart.

1. GROUND SCREW FOUNDATIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER SPECIFICATIONS BY A CERTIFIED INSTALLER TRAINED ON THIS TECHNOLOGY.

2. GROUND SCREW FOUNDATIONS SHALL BE INSTALLED IN UNDISTURBED, NATURAL SOIL, UNLESS OTHERWISE NOTED AND PROPERLY PREPARED AS DESCRIBED IN SECTION II. SITE PREPARATION.

3. FOUNDATION INSTALLATION SUB-CONTRACTOR SHALL DETERMINE DIAMETER AND DEPTH OF PRE-DRILLED PILOT HOLE AS REQUIRED BY SITE CONDITIONS.

4. SHOULD UNFORESEEN LOOSE SOIL CONDITIONS BE ENCOUNTERED ONSITE, CONCRETE OR OTHER ADDITIVES MAY BE USED TO STABILIZE THE SOIL AT CLIENTS EXPENSE. SHOULD UNDERGROUND WATER BE ENCOUNTERED, THE CLIENT SHALL REMEDIATE THE ISSUE.

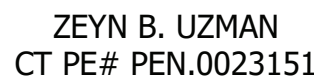
5. THE USE OF WATER AS LUBRICANT IS ALLOWED.


6. TOLERANCES IN THE POSITION OF EACH SCREW ARE  $\pm 2"$  Laterally (North-South and East-West) and  $\pm 3"$  Vertically (Up-Down) with a typical 76.7" Embedment, as measured from grade.

7. MINIMUM REQUIRED TORQUE FOR GROUND SCREW INSTALLATION: 1000 N-m.

8. GROUND SCREW FOUNDATIONS HAVE BEEN DESIGNED BASED ON FIELD TESTING PERFORMED BY TERRASMAST (REPORT DATED: 09/24/2019).

9. GROUND SCREW FOUNDATIONS HAVE BEEN DESIGNED BASED ON THE PROJECT GEOTECHNICAL REPORT PROVIDED BY THE CLIENT (CLA ENGINEERS, INC., REPORT NUMBER 6178, DATED 04/04/2019).



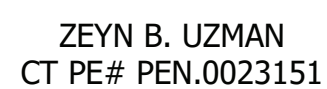
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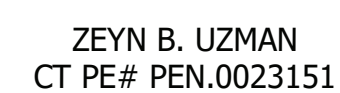
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1. FRAME AND FOUNDATION CONFORMS TO THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE BASED UPON DESIGN CRITERIA AS OUTLINED ON THE COVER SHEET. TERRASMAK MAKES NO REPRESENTATION AS TO THE ACCURACY OF THE DESIGN CRITERIA AS IT WAS SUPPLIED BY CLIENT. PLEASE REFER TO STRUCTURAL CALCULATIONS FOR FRAME AND FOUNDATION DESIGN.


2. THE STRUCTURAL INTEGRITY OF THE TERRAGLIDE RACK DEPENDS ON INTERACTION OF VARIOUS CONNECTED COMPONENTS. PROVIDE ADEQUATE BRACING, SHORING, AND OTHER TEMPORARY SUPPORTS AS REQUIRED TO SAFELY COMPLETE THE WORK.
3. FOUNDATION INSTALLATION SUB-CONTRACTOR SHALL COORDINATE WITH THE ENGINEER IF ANY UNFORESEEN CONFLICTS ARISE, SUCH AS EXISTING UNDULATION THAT COULD POTENTIALLY CAUSE RACKING INSTALLATION ISSUES.
4. STRUCTURAL STEEL SHALL BE ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS, UNLESS OTHERWISE NOTED.
5. DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED.
6. CROSS BRACING TO BE FIT ON SITE, PER INSTALLATION MANUAL.
7. COLD GALVANIZING COMPOUND SHALL BE USED PER MANUFACTURER'S DIRECTIONS AND IN ACCORDANCE WITH ASTM-A780 IN AREAS WHERE GALVANIZATION WAS REMOVED DURING TRANSPORTATION, OR ERECTION/INSTALLATION.
8. BOLTS TO BE TIGHTENED PER THE PROCEDURES DESCRIBED IN THE INSTALLATION MANUAL.
9. THIS STRUCTURAL DRAWING DOES NOT INCLUDE INFORMATION REGARDING ELECTRICAL CONNECTIONS, INCLUDING GROUNDING. REFER TO INSTALLATION MANUAL AND ELECTRICAL PLANS PREPARED BY OTHERS.
10. SHADING ANALYSIS WAS NOT PERFORMED BY TERRASmart AND WAS NOT CONSIDERED IN THE LAYOUT OF THE FOUNDATION. TERRASmart RECOMMENDS CONSULTING A SOLAR SHADING EXPERT PRIOR TO INSTALLATION TO AVOID POWER REDUCTION DUE TO SHADOWS.
11. SNOW BANKING ANALYSIS WAS NOT PERFORMED BY TERRASmart AND WAS NOT CONSIDERED IN THE STRUCTURAL DESIGN. THE FRONT EDGE CLEARANCE WAS SUPPLIED BY CLIENT AND IT IS ASSUMED THAT THE SYSTEM OWNER WILL REMOVE SNOW AS NEEDED TO MAINTAIN AN UNOBSTRUCTED FRONT EDGE. ADVERSE EFFECTS OF SNOW BANKING, INCLUDING SHADING OR OTHER STRUCTURAL CONSIDERATIONS ARE BEYOND TERRASmart'S SCOPE.
12. MINIMUM AND TYPICAL FRONT EDGE CLEARANCE SHOWN ON SIDE ELEVATION. MAXIMUM FRONT EDGE CLEARANCE DETERMINED PER FIELD CONDITIONS.
13. SOUTHERN EDGES OF MODULES SHALL BE ALIGNED WITHIN 2" HORIZONTALLY OF THE SOUTHERN EDGE OF MODULES OF THE ADJACENT RACK.
14. EASTERN AND WESTERN EDGES OF MODULES SHALL BE ALIGNED WITHIN 2" VERTICALLY AND HORIZONTALLY OF THE SOUTHERN EDGE OF MODULES OF THE ADJACENT RACK.
15. TILT ANGLE TOLERANCE:  $\pm 2^\circ$  FROM ANGLE SHOWN ON SIDE ELEVATION.
16. RACK SPACING TOLERANCE: 6" TYPICAL, 4" MINIMUM, AS MEASURED BETWEEN THE CLOSEST MODULES EDGE BETWEEN ADJACENT RACKS. REFER TO CIVIL ENGINEERING PLANS FOR MORE INFORMATION AND FURTHER DETAIL.
17. AZIMUTH TOLERANCE:  $\pm 2^\circ$  FROM APPROVED CIVIL ENGINEERING PLANS.
18. TERRAGLIDE RACKING IS DESIGNED TO ACCOMMODATE A MAXIMUM EAST/WEST SLOPE OF 10%, A MAXIMUM NORTH FACING SLOPE OF 10%, AND A MAXIMUM SOUTH FACING SLOPE OF 10%. THESE SLOPES WERE PROVIDED BY THE CLIENT.
19. PANEL SPACING TOLERANCE:  $\pm 1/4"$  FROM SPACING DIMENSION AS SHOWN ON SIDE ELEVATION AND REAR ELEVATION.

1. PRIOR TO COMMENCING WORK AND FOR THE DURATION OF THE PROJECT, GENERAL CONTRACTOR SHALL ENSURE THE SITE IS PREPARED AND MAINTAINED AS FOLLOWS (TO AVOID CHANGE ORDERS):


- A. ALL REQUIRED PERMITS SHALL BE OBTAINED AND CURRENT.
- B. LOCATE ALL UNDERGROUND UTILITIES AND ENSURE THAT THE PROPOSED INSTALLATION DOES NOT CONFLICT WITH ANY EXISTING INFRASTRUCTURE. MARKINGS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT.
- C. ALL REQUIRED EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE AND OPERATIONAL.
- D. GRASS SHALL BE MOWED WITH BLADES NO HIGHER THAN 3" TALL.
- E. ALL VEGETATION, INCLUDING TREES AND SHRUBS SHALL BE CLEARED AND ROOT SYSTEMS GRUBBED. ALL ORGANIC MATTER SHALL BE STRIPPED AND REMOVED FROM THE BUILDING ENVELOPE BEFORE EARTH WORK OCCURS, IF ANY.
- F. LOOSE SURFACE IMPEDIMENTS, INCLUDING ROCKS, COBBLES, BOULDERS, CONSTRUCTION DEBRIS, AND OTHER OBSTRUCTIONS SHALL BE REMOVED.
- G. SITE SHALL BE SAFE FOR OPERATING MACHINERY AND FOR PERSONNEL ON FOOT. SITE CONDITIONS SHALL NOT BE AN ENCUMBRANCE TO THE PERFORMANCE OF WORK.
- H. GROUND WATER, INCLUDING WATER TABLE AND PERCHED WATER, SHALL NOT ENCROACH BETWEEN THE GROUND SURFACE AND THE EMBEDMENT DEPTH OF THE GROUND SCREW. DEWATERING IS REQUIRED IF GROUND WATER IS ENCOUNTERED DURING PILOT HOLE DRILLING AND/OR GROUND SCREW INSTALLATION.

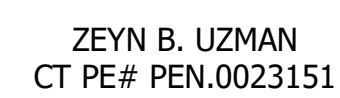
1. SITE SHALL BE GRADED TO PROVIDE CONTROLLED POSITIVE DRAINAGE AWAY FROM FOUNDATIONS. STANDING WATER AND/OR WATER WITH SUFFICIENT VELOCITY TO ERODE SOIL IS NOT ALLOWED WITHIN 20 FEET OF THE FOUNDATION.
- J. NO FINISHED GRADE SOIL SHALL BE DISTURBED WITHIN 24" OF THE PROPOSED OR INSTALLED LOCATION OF A GROUND SCREW. SEE ADDITIONAL REQUIREMENTS FOR TRENCHES AND OTHER EXCAVATIONS IN SECTION II.3.
2. ALL EARTHWORK SHALL BE NOTED ON THE PLANS AND PROPERLY AS-BUILT. CUT AREAS SHALL BE PROOF ROLLED AFTER REMOVAL OF SOIL. FILL AREAS SHALL BE STRIPPED OF ALL VEGETATION AND PROOF ROLLED PRIOR TO PLACING FILL MATERIAL.
3. TRENCHES AND OTHER EXCAVATIONS MAY BE CUT EITHER BEFORE OR AFTER GROUND SCREW INSTALLATION PROVIDED THEY MEET THE REQUIREMENTS OF II.1, II.5. IF THEY ARE CUT AFTER GROUND SCREW INSTALLATION, THE HORIZONTAL DISTANCE BETWEEN THE GROUND SCREW AND THE EDGE OF THE EXCAVATION MUST BE GREATER THAN OR EQUAL TO THE VERTICAL DEPTH OF THE EXCAVATION (1:1 RATIO), PLUS 24". 2. IF THEY ARE CUT BEFORE GROUND SCREW INSTALLATION, THE HORIZONTAL DISTANCE BETWEEN EXCAVATION AND PROPOSED GROUND SCREW LOCATION SHOULD BE 24" OR GREATER.
4. IMPORTED GRANULAR FILL MATERIAL SHALL BE USED FOR EARTHWORK UNLESS ON-SITE SOILS MEET THE FOLLOWING REQUIREMENTS:
  - A. FREE OF PARTICLES LARGER THAN 2" IN DIAMETER, ORGANIC MATTER, AND OTHER DELETERIOUS MATERIALS; AND
  - B. CAN BE PROPERLY MOISTURE CONDITIONED.
5. GRANULAR ON-SITE SOILS OR IMPORTED GRANULAR MATERIAL MAY BE USED AS FILL AS LONG AS THEY MEET THE FOLLOWING REQUIREMENTS:
  - A. WELL GRADED BETWEEN COARSE AND FINE SIZES;
  - B. CONTAINING NO CLAY BALLS, ROOTS, ORGANIC MATTER OR OTHER DELETERIOUS MATERIALS;
  - C. MAXIMUM PARTICLE SIZE OF 2", WITH LESS THAN 12% PASSING THE U.S. NO. 200 SIEVE; AND
  - D. IMPORTED FILL MATERIALS SHALL BE SAMPLED AND TESTED BY A GEOTECHNICAL ENGINEER OR OTHER QUALIFIED SOIL TESTING AGENCY PRIOR TO BEING TRANSPORTED TO THE SITE.
6. FILL SOILS SHALL BE COMPACTED AT MOISTURE CONTENTS THAT ARE NEAR OPTIMUM. THE OPTIMUM MOISTURE CONTENT VARIES WITH THE SOIL GRADATION AND SHALL BE EVALUATED DURING CONSTRUCTION. FILL MATERIAL THAT IS NOT NEAR OPTIMUM MOISTURE CONTENT SHALL BE MOISTURE CONDITIONED. FILL MATERIAL SHALL BE PLACED IN UNIFORM, HORIZONTAL LIFTS, AND BE COMPACTED WITH APPROPRIATE EQUIPMENT TO AT LEAST 90% OF THE MAXIMUM DRY DENSITY PER ASTM D1557. THE MAXIMUM LIFT THICKNESS WILL VARY DEPENDING ON THE MATERIAL AND COMPACTION EQUIPMENT USED, BUT SHALL NOT BE GREATER THAN 12" AND SHOULD BE CONSISTENT THROUGHOUT THE DEPTH OF THE COMPACTED SOIL.
7. TERRASMART REQUIRES THAT FILL COMPACTION BE TESTED BY A GEOTECHNICAL ENGINEER OR OTHER QUALIFIED SOIL TESTING AGENCY DURING THE PLACEMENT AND COMPACTION OF FILL TO VALIDATE THE WORK.
8. ROCK DRILLING SHALL BE PERFORMED IF REQUIRED BY PRESENCE OF UNDERGROUND ROCK. PILOT HOLE DIAMETER SHALL BE DETERMINED BY ONSITE TESTING AND APPROVED BY TERRASMART.


1. GROUND SCREW FOUNDATIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER SPECIFICATIONS BY A CERTIFIED INSTALLER TRAINED ON THIS TECHNOLOGY.
2. GROUND SCREW FOUNDATIONS SHALL BE INSTALLED IN UNDISTURBED, NATURAL SOIL, UNLESS OTHERWISE NOTED AND PROPERLY PREPARED AS DESCRIBED IN SECTION II. SITE PREPARATION.
3. FOUNDATION INSTALLATION SUB-CONTRACTOR SHALL DETERMINE DIAMETER AND DEPTH OF PRE-DRILLED PILOT HOLE AS REQUIRED BY SITE CONDITIONS.
4. SHOULD UNFORESEEN LOOSE SOIL CONDITIONS BE ENCOUNTERED ONSITE, CONCRETE OR OTHER ADDITIVES MAY BE USED TO STABILIZE THE SOIL AT CLIENTS EXPENSE. SHOULD UNDERGROUND WATER BE ENCOUNTERED, THE CLIENT SHALL REMEDIATE THE ISSUE.
5. THE USE OF WATER AS LUBRICANT IS ALLOWED.
6. TOLERANCES IN THE POSITION OF EACH SCREW ARE  $\pm 2"$  Laterally (North-South and East-West) AND  $\pm 3"$  Vertically (Up-Down) WITH A TYPICAL 76.7" EMBEDMENT, AS MEASURED FROM GRADE.
7. MINIMUM REQUIRED TORQUE FOR GROUND SCREW INSTALLATION: 1000 N-m.
8. GROUND SCREW FOUNDATIONS HAVE BEEN DESIGNED BASED ON FIELD TESTING PERFORMED BY TERRASMART (REPORT DATED: 09/24/2019).
9. GROUND SCREW FOUNDATIONS HAVE BEEN DESIGNED BASED ON THE PROJECT GEOTECHNICAL REPORT PROVIDED BY THE CLIENT (CLA ENGINEERS, INC., REPORT NUMBER 6178, DATED 04/04/2019).



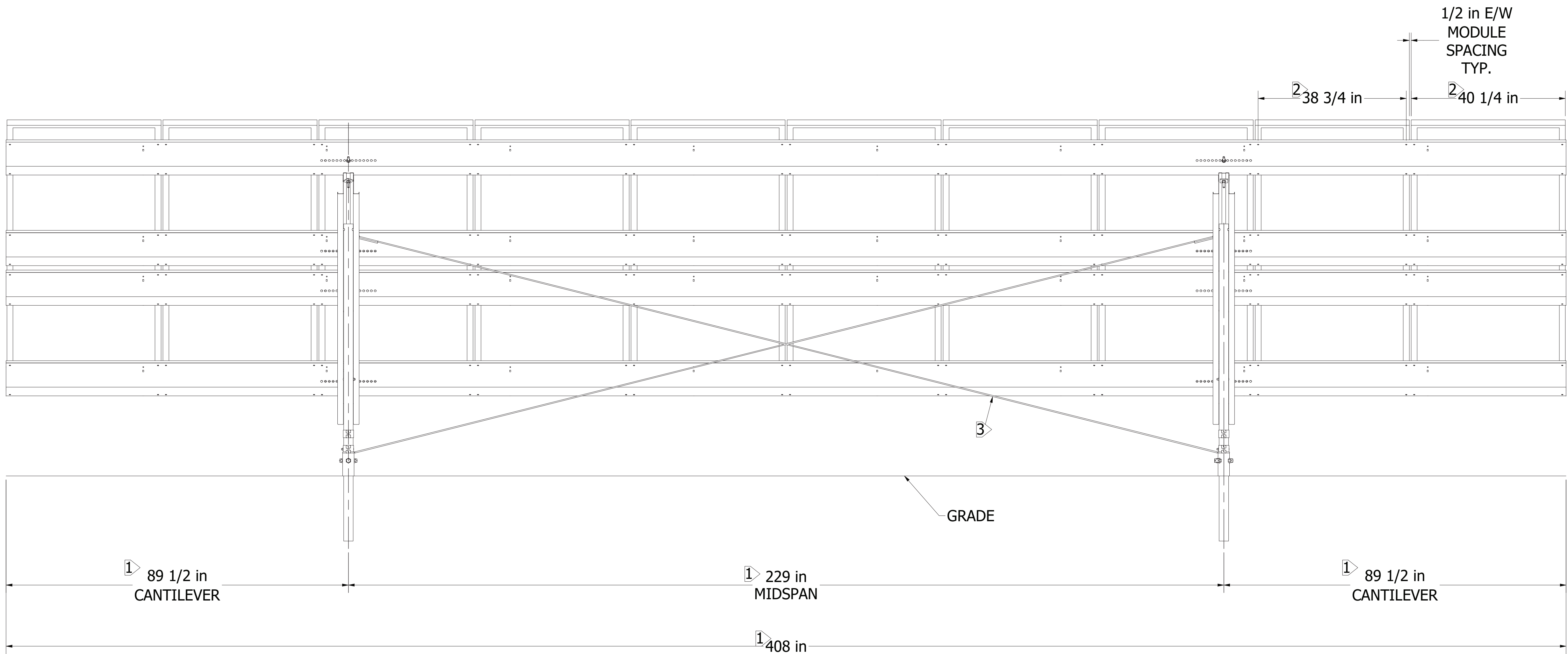
ZEYİN B. UZMAN  
CT PE# PEN.0023151

<div>GROUND SCREW</div> <div>KRINNER G SERIES GROUND SCREW</div> <div>SOUTH SCREW - 76mm X 2100mm</div> <div>NORTH SCREW - 76mm X 2100mm</div> <div>MODULE DIMENSIONS</div> <div>NORTH/ SOUTH EDGE - 79.69 (2024mm)</div> <div>EAST/ WEST EDGE - 40.31 (1024mm)</div> <div>NORTH/ SOUTH BOLT SPACING - 56.06 (1424mm)</div> <div>EAST/ WEST BOLT SPACING - 38.74 (984mm)</div> <div>THICKNESS - 1.57 (40mm)</div>	<div>PROJECT SPECIFICATIONS:</div> <div>TILT ANGLE - 25°</div> <div>RACK SIZE - 2X10</div> <div>MODULE ORIENTATION - PORTRAIT</div>	<div>DRAWN BY</div> <div>TMC - 11/6/2019</div>		<div>CHECKED BY</div> <div>JWS - 11/6/2019</div>		<div></div>		
		<div>ENG. APPROVED BY</div> <div>MF - 11/6/2019</div>		<div>PROJ. ENG. APPROVED BY</div> <div>NB - 11/6/2019</div>				
		<div>MFG. APPROVED BY</div> <div>SS - 11/6/2019</div>						
	<div>TERRASmart, LLC</div> <div>14590 GLOBAL PARKWAY</div> <div>FORT MYERS, FL 33913</div> <div>P 239.362.0211   F 239.676.1900</div> <div>WWW.TERRASmart.COM</div>	<div>PROJECT NUMBER</div> <div>19-3806</div>		<div>CLIENT</div> <div>ELAN RENEWABLES</div>		<div>MODULE</div> <div>LG400N2W-V5</div>	<div>REV</div> <div>2</div>	<div>SHEET NUMBER</div> <div>2 OF 6</div>
		<div>PROJECT NAME</div> <div>FISK</div>						
		<div>PROPRIETARY AND CONFIDENTIAL. THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF TERRASmart.</div> <div>ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT WRITTEN PERMISSION OF TERRASmart IS PROHIBITED.</div>						



GROUND SCREW KRINNER G SERIES GROUND SCREW SOUTH SCREW - 76mm X 2100mm NORTH SCREW - 76mm X 2100mm MODULE DIMENSIONS NORTH/ SOUTH EDGE - 79.69 (2024mm) EAST/ WEST EDGE - 40.31 (1024mm) NORTH/ SOUTH BOLT SPACING - 56.06 (1424mm) EAST/ WEST BOLT SPACING - 38.74 (984mm) THICKNESS - 1.57 (40mm)	PROJECT SPECIFICATIONS: TILT ANGLE - 25° RACK SPACE - 2X10 MODULE ORIENTATION - PORTRAIT		DRAWN BY TMC - 11/6/2019		CHECKED BY JWS - 11/6/2019					
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			MFG. APPROVED BY SS - 11/6/2019		PROJECT NAME FISK			SHEET SIZE D		
	TERRASmart, LLC 14590 GLOBAL PARKWAY FORT MYERS, FL 33913 P 239.362.0211   F 239.676.1900 WWW.TERRASmart.COM		PROJECT NUMBER 19-3806		CLIENT ELAN RENEWABLES			MODULE LG400N2W-V5	REV 2	SHEET NUMBER 3 OF 6
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REAR ELEVATION VIEW  
SCALE 1/16



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CT PE# PEN.0023151

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MODULE ORIENTATION - PORTRAIT

TERRASMART, LLC  
14590 GLOBAL PARKWAY  
FORT MYERS, FL 33913  
P 239.362.0211 | F 239.676.1900  
WWW.TERRASMART.COM

DRAWN BY  
TMC - 11/6/2019

ENG. APPROVED BY  
MF - 11/6/2019

MFG. APPROVED BY  
SS - 11/6/2019

CHECKED BY  
JWS - 11/6/2019

PROJ. ENG. APPROVED BY  
NB - 11/6/2019

PROJECT NUMBER  
19-3806

CLIENT  
ELAN RENEWABLES

MODULE  
LG400N2W-V5

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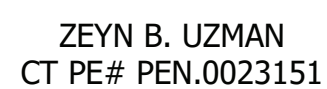
PROJECT NAME  
FISK

SHEET SIZE  
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REV  
2

SHEET NUMBER  
4 OF 6

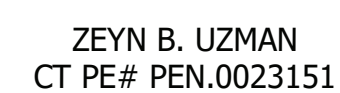
SOUTH SCREW - 76 mm X 2100 mm  
NORTH SCREW - 76 mm X 2100 mm  
NORTH /SOUTH BEAM - RAFTER - LENGTH = 142.75 in  
EAST/ WEST BEAM - C-BEAM 8.5x4.0x0.0713 - LENGTH = 408.07 in  
NORTH LEG - MECH2.375 x 9GA. - LENGTH = 83.00 in  
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EXTERNAL LATERAL BRACE - MECH2.360 x 13GA. - LENGTH = 22.00 in  
DIAGONAL INTERNAL LATERAL BRACE - MECH2.000x12GA.- LENGTH = 65 in  
HORIZONTAL INTERNAL LATERAL BRACE - MECH2.000x12GA.- LENGTH = 65 in




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3. LATERAL BRACES ARE DESIGNED TO ALLOW FOR 7" OF TOTAL ADJUSTMENT. IF FIELD CONDITIONS REQUIRE ADDITIONAL ADJUSTMENT AND LATERAL BRACES ARE TOO LONG, THEY MAY BE CUT DOWN AND DRILLED TO FIT BY THE RACK INSTALLER. IF THEY ARE TOO SHORT, NEW LATERAL BRACES MAY BE ORDERED TO FIT AT THE PURCHASER'S EXPENSE.
4. FOR SOUTH FACING SLOPES, THE DIAGONAL AND HORIZONTAL LATERAL BRACES CAN BE SWITCHED TO PROVIDE ADDITIONAL ADJUSTABILITY.
5. ON NORTH FACING SLOPES LEGS CAN BE FULLY EXTENDED TO MEET MINIMUM FRONT EDGE REQUIREMENTS. ALL LEGS REQUIRE A MINIMUM OF 1 INCH EMBEDMENT BELOW GRADE. FULL EXTENSION OF LEGS MAY RESULT IN LATERAL BRACES NOT FITTING. IF THEY ARE TOO SHORT, NEW LATERAL BRACES MAY BE ORDERED TO FIT AT THE PURCHASER'S EXPENSE.

GROUND SCREW KRINNER G SERIES GROUND SCREW SOUTH SCREW - 76mm X 2100mm NORTH SCREW - 76mm X 2100mm MODULE DIMENSIONS NORTH/ SOUTH EDGE - 79.69 (2024mm) EAST/ WEST EDGE - 40.31 (1024mm) NORTH/ SOUTH BOLT SPACING - 56.06 (1424mm) EAST/ WEST BOLT SPACING - 38.74 (984mm) THICKNESS - 1.57 (40mm)	PROJECT SPECIFICATIONS:  TILT ANGLE - 25° RACK SIZE - 2X10 MODULE ORIENTATION - PORTRAIT	DRAWN BY TMC - 11/6/2019	CHECKED BY JWS - 11/6/2019			
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	TERRASmart, LLC 14590 GLOBAL PARKWAY FORT MYERS, FL 33913 P 239.362.0211   F 239.676.1900 WWW.TERRASmart.COM	PROJECT NUMBER 19-3806	CLIENT ELAN RENEWABLES	MODULE LG400N2W-V5	REV 2	SHEET NUMBER 5 OF 6
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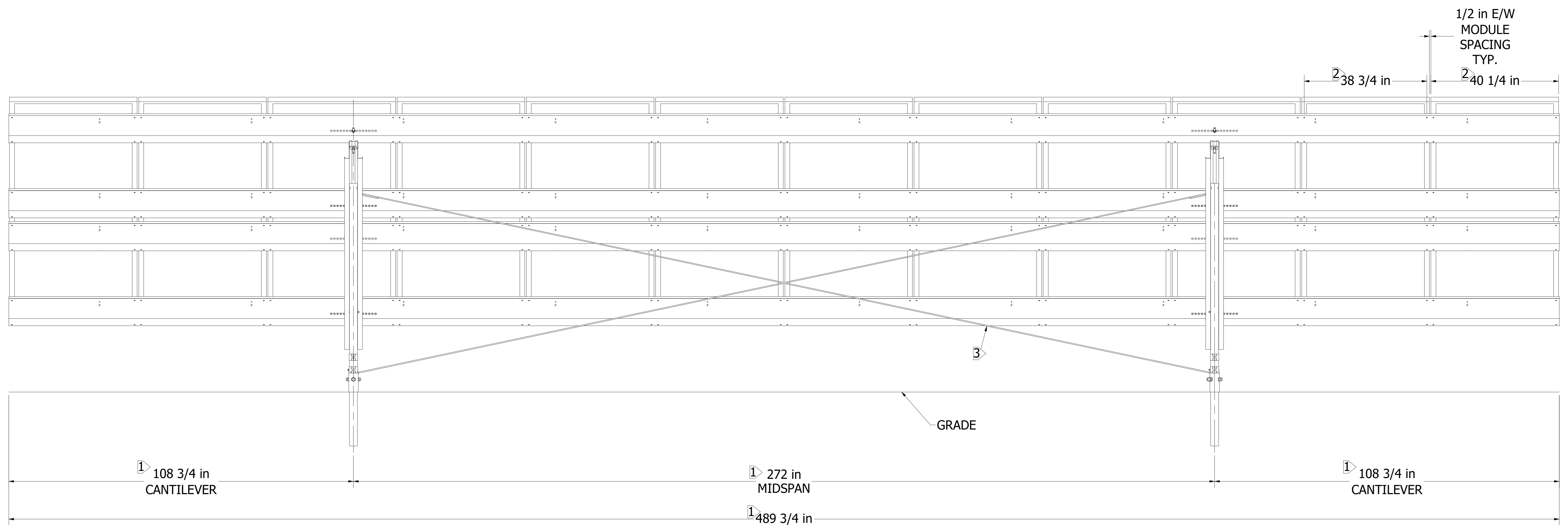













REAR ELEVATION VIEW  
SCALE 1/16



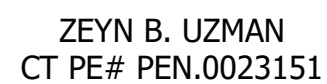
ZEYN B. UZMAN  
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NOTES:


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	<p>TERRASmart, LLC</p> <p>14590 GLOBAL PARKWAY</p> <p>FORT MYERS, FL 33913</p> <p>P 239.362.0211   F 239.676.1900</p> <p>WWW.TERRASmart.COM</p>	<p>MFG. APPROVED BY</p> <p>SS - 11/6/2019</p>	<p>PROJECT NAME</p> <p>FISK</p>			<p>SHEET SIZE</p> <p>D</p>
		<p>PROJECT NUMBER</p> <p>19-3806</p>	<p>CLIENT</p> <p>ELAN RENEWABLES</p>	<p>MODULE</p> <p>LG400N2W-V5</p>	<p>REV</p> <p>2</p>	<p>SHEET NUMBER</p> <p>4 OF 6</p>
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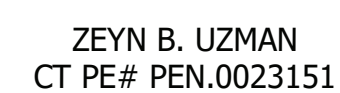
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SOUTH LEG - MECH2.375 x 9GA. - LENGTH = 39.00 in  
EXTERNAL LATERAL BRACE - MECH2.360 x 13GA. - LENGTH = 22.00 in  
DIAGONAL INTERNAL LATERAL BRACE - MECH2.000x12GA.- LENGTH = 65 in  
HORIZONTAL INTERNAL LATERAL BRACE - MECH2.000x12GA.- LENGTH = 65 in




1. TYPICAL INSTALLATION DIMENSIONS MAY BE ADJUSTED TO SUIT FIELD CONDITIONS WITHIN THE TOLERANCES PROVIDED.
2. LEGS SHALL BE INSTALLED PLUMB, IF MECHANICALLY POSSIBLE. MAXIMUM 3° OUT OF PLUMB.
3. LATERAL BRACES ARE DESIGNED TO ALLOW FOR 7" OF TOTAL ADJUSTMENT. IF FIELD CONDITIONS REQUIRE ADDITIONAL ADJUSTMENT AND LATERAL BRACES ARE TOO LONG, THEY MAY BE CUT DOWN AND DRILLED TO FIT BY THE RACK INSTALLER. IF THEY ARE TOO SHORT, NEW LATERAL BRACES MAY BE ORDERED TO FIT AT THE PURCHASER'S EXPENSE.
4. FOR SOUTH FACING SLOPES, THE DIAGONAL AND HORIZONTAL LATERAL BRACES CAN BE SWITCHED TO PROVIDE ADDITIONAL ADJUSTABILITY.
5. ON NORTH FACING SLOPES LEGS CAN BE FULLY EXTENDED TO MEET MINIMUM FRONT EDGE REQUIREMENTS. ALL LEGS REQUIRE A MINIMUM OF 1 INCH EMBEDMENT BELOW GRADE. FULL EXTENSION OF LEGS MAY RESULT IN LATERAL BRACES NOT FITTING. IF THEY ARE TOO SHORT, NEW LATERAL BRACES MAY BE ORDERED TO FIT AT THE PURCHASER'S EXPENSE.

GROUND SCREW KRINNER G SERIES GROUND SCREW SOUTH SCREW - 76mm X 2100mm NORTH SCREW - 76mm X 2100mm MODULE DIMENSIONS NORTH/ SOUTH EDGE - 79.69 (2024mm) EAST/ WEST EDGE - 40.31 (1024mm) NORTH/ SOUTH BOLT SPACING - 56.06 (1424mm) EAST/ WEST BOLT SPACING - 38.74 (984mm) THICKNESS - 1.57 (40mm)	PROJECT SPECIFICATIONS: TILT ANGLE - 25° RACK SIZE - 2X12 MODULE ORIENTATION - PORTRAIT	DRAWN BY TMC - 11/6/2019 ENG. APPROVED BY MF - 11/6/2019 MFG. APPROVED BY SS - 11/6/2019	CHECKED BY JWS - 11/6/2019 PROJ. ENG. APPROVED BY NB - 11/6/2019			PROJECT NAME FISK		SHEET SIZE D
	TERRASmart, LLC 14500 GLOBAL PARKWAY FORT MYERS, FL 33913 P 239.362.0211   F 239.676.1900 WWW.TERRASmart.COM	PROJECT NUMBER 19-3806	CLIENT ELAN RENEWABLES	MODULE LG400N2W-V5	REV 2	SHEET NUMBER 5 OF 6	PROPRIETARY AND CONFIDENTIAL. THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF TERRASmart. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT WRITTEN PERMISSION OF TERRASmart IS PROHIBITED.	





GROUND SCREW KRINNER G SERIES GROUND SCREW SOUTH SCREW - 76mm X 2100mm NORTH SCREW - 76mm X 2100mm MODULE DIMENSIONS NORTH/ SOUTH EDGE - 79.69 (2024mm) EAST/ WEST EDGE - 40.31 (1024mm) NORTH/ SOUTH BOLT SPACING - 56.06 (1424mm) EAST/ WEST BOLT SPACING - 38.74 (984mm) THICKNESS - 1.57 (40mm)	PROJECT SPECIFICATIONS:  TILT ANGLE - 25° RACK SIZE - 2X12 MODULE ORIENTATION - PORTRAIT	DRAWN BY TMC - 11/6/2019	CHECKED BY JWS - 11/6/2019			
		ENG. APPROVED BY MF - 11/6/2019	PROJ. ENG. APPROVED BY NB - 11/6/2019			
		MFG. APPROVED BY SS - 11/6/2019				
	TERRASmart, LLC 14590 GLOBAL PARKWAY FORT MYERS, FL 33913 P 239.362.0211   F 239.676.1900 WWW.TERRASmart.COM	PROJECT NUMBER 19-3806	CLIENT ELAN RENEWABLES	MODULE LG400N2W-V5	REV 2	SHEET NUMBER 6 OF 6
		PROPRIETARY AND CONFIDENTIAL. THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF TERRASmart. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT WRITTEN PERMISSION OF TERRASmart IS PROHIBITED.				

June 19, 2020

Subject: Solar Array  
390 Hartford Turnpike  
Hampton, CT 06351  
Structural Conformance Letter

To Whom It May Concern,

This letter is to certify that the subject project located at 390 Hartford Turnpike in Hampton, Connecticut, has been structurally evaluated per local design criteria and applicable building codes based on the dimension, methods and general arrangement provided in the drawing package titled Connecticut 200051.

The drawing package has been reviewed and found to be in conformance with the loading and stresses provided within the Solar Rack Structural Calculations for Connecticut 200051.

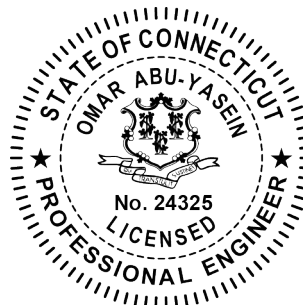
Thanks in advance for your considerations and please do not hesitate to contact me if you need any additional information.

Sincerely,



the jdi group, Inc.  
Omar Abu-Yasein, P.E., PhD, SECB

cc: Mrs. Anne Grasser  
Mr. Thomas Worline



SIGNED: 06/19/2020  
EXPIRES: 01/31/2021



# STRUCTURAL PRINT PACKAGE - 200051

## HAMPTON, CT 06351



REVISION: A

PERMIT SET/  
STRUCTURAL PACKET

APPROVED

### RACKING PROVIDER



20-345 COUNTY ROAD X  
RIDGEVILLE CORNERS, OHIO 43555  
(P) 419.267.5280  
(F) 419.267.5214  
WWW.APALTERNATIVES.COM

### STRUC. ENGINEER OF RECORD



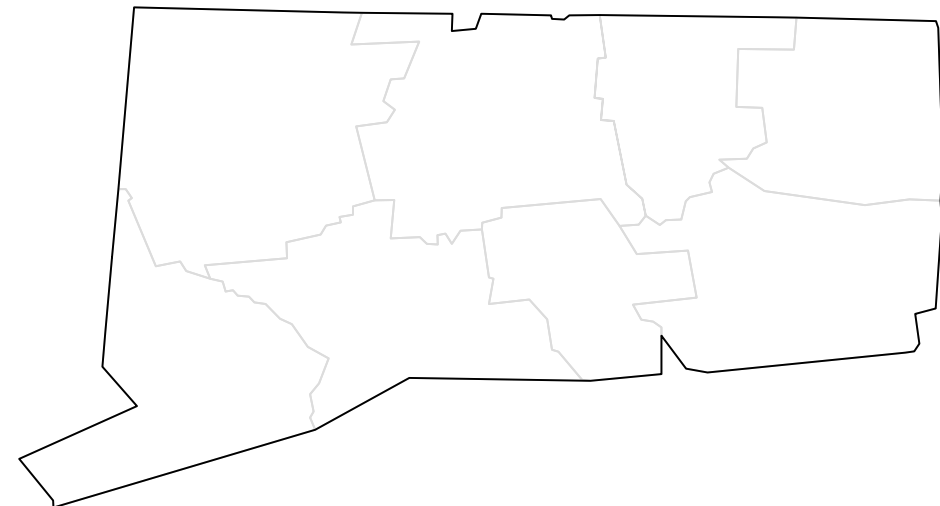
360 W. DUSSEL DR.  
MAUMEE, OH 43537  
(P) 419.725.7161  
(F) 419.725.7160

### RACKING PRODUCT LINE



USE WITH THE FOLLOWING PRINTS  
& PACKAGES. INCLUDE WITH  
SUBMISSION TO PERMIT/INSPECTION  
AGENCY:

- ☒ CALCULATION PACKAGE:  
200051 CALC SET – STAMPED
- ☒ ANCHOR/FOUNDATION TESTING  
REPORT (SITE SPECIFIC, & ONLY  
WHERE REQUIRED BY EOR OR AHJ)



SITE ADDRESS: 390 HARTFORD TURNPIKE  
HAMPTON, CT 06351

### SOLAR PHOTOVOLTAIC GROUND MOUNT

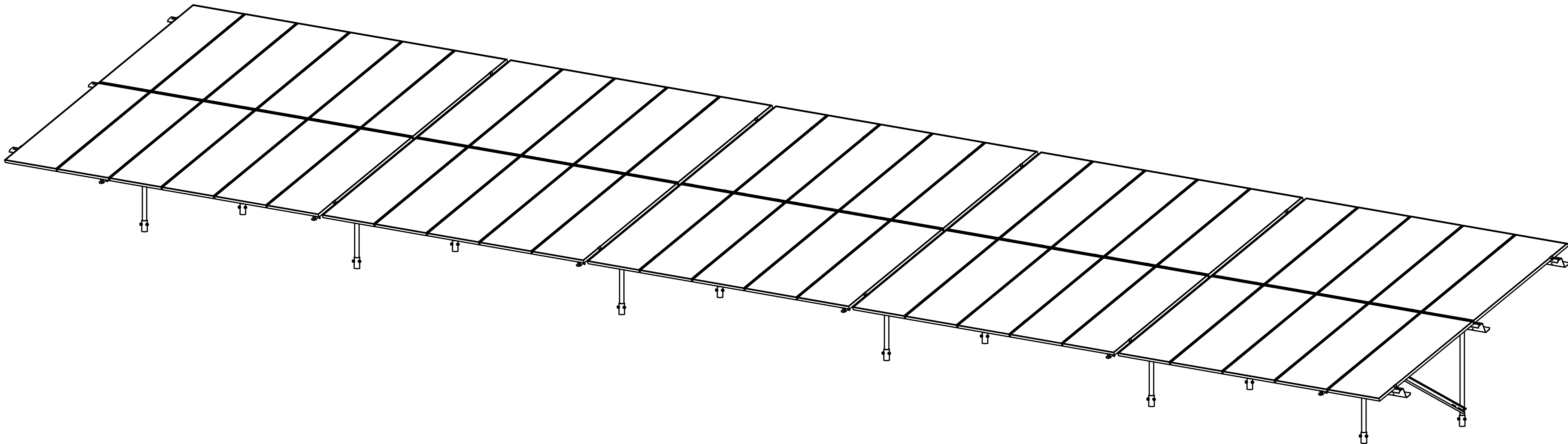


IMAGE FOR REFERENCE ONLY

#### SHEET INDEX

STRUCTURAL		
S-000	A	STRUCTURAL COVER
S-100	A	RACKING OVERVIEW
S-101	A	GROUND SCREW
S-200	A	STRUCTURAL COMPONENTS
S-300	A	CONNECTIONS
S-400	A	STRUCTURAL PURLINS
S-500	A	BRACES & CLAMPS
S-600	A	STRUCTURAL DESIGN & ANALYSIS SUMMARY

#### GOVERNING STRUCTURAL CODE/S

2015 INTERNATIONAL BUILDING CODE  
2015 CONNECTICUT STATE BUILDING CODE

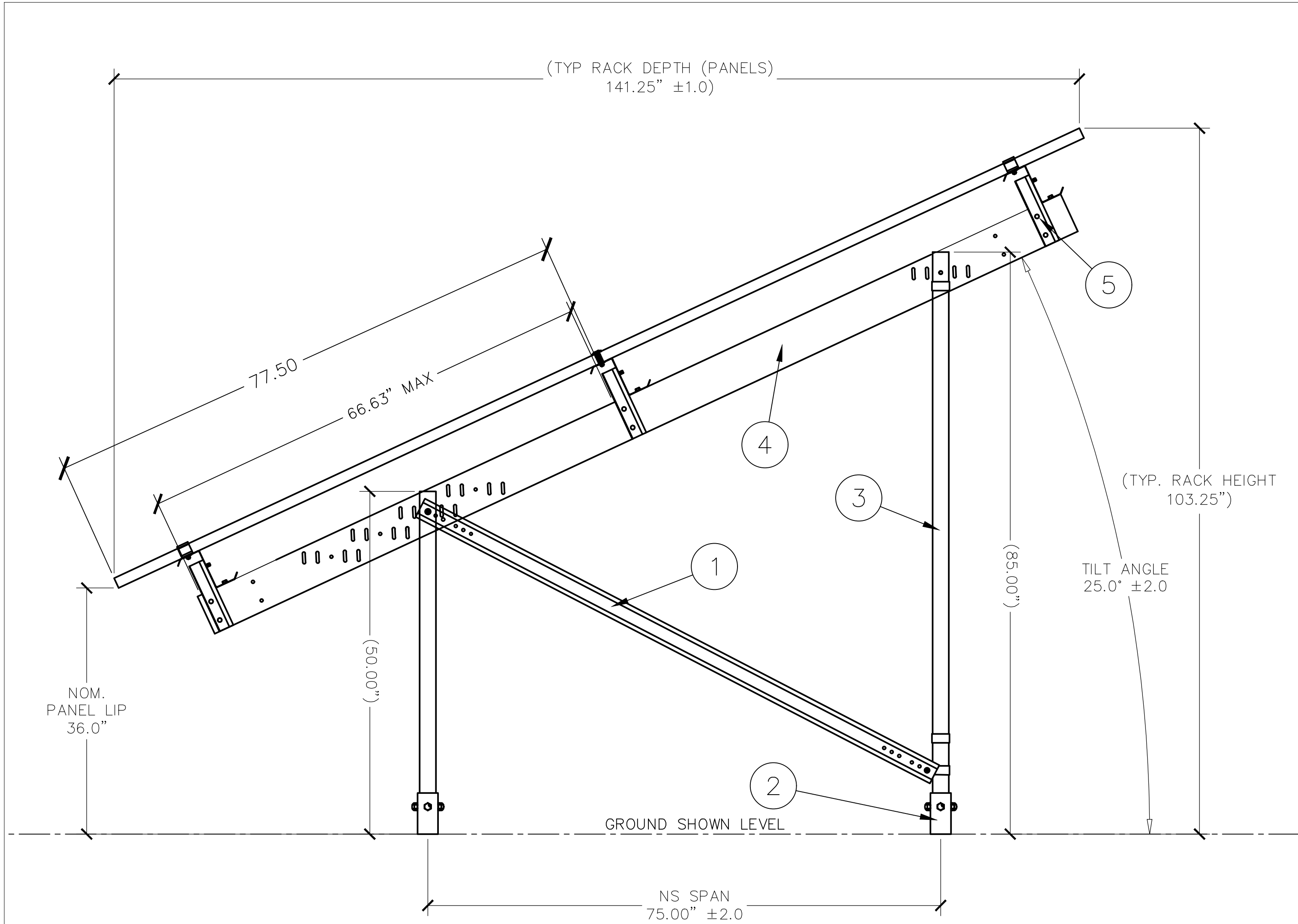
#### PACKAGE COVERAGE – LOADING AND SETUP RANGES & CONSTANTS

TILT ANGLES: 25°  
MAX GROUND SNOW LOAD (PSF): 35  
MAX WIND LOADS (MPH): 120  
WIND EXPOSURE CATEGORY: C  
MAX SEISMIC Ss: 0.26 g  
MAX SEISMIC S1: 0.07 g

PV MODULE:  
MAX. PANEL WIDTH: 39.50"  
MAX. PANEL LENGTH: 77.50"  
MAX. PANEL HEIGHT: 2.00"  
MAX. PANEL WEIGHT: 60.00 LBS

RISK CATEGORY: I  
MAX. FRONT LIP CLEARANCE: 42"

01/18/2020 3:12:58 PM J02796 14-02-18 T:\projects\apaltery\200051\turnpike.ct\design and structural analysis\turnpike.ctp\_200051\turnpike.ct - map - unassociated  
SCALE IS REDUCED WHEN SHEET SIZE IS 11" x 17"



NOTES: PV MODULE & MODULE RELATED DIMENSIONS IN THIS DETAIL ARE MAX ALLOWABLE.  
DIMENSIONS TO GROUND ARE NOMINAL FROM LEVEL GROUND.  
MAX FRONT LIP HEIGHT 42"

C1 PROFILE VIEW: RACK OVERVIEW

PARTS LIST (BALLOONS THIS SHEET)			
ITEM	DESCRIPTION	SHAPE	DETAIL / SHEET
1	KNEE BRACE	CEE	B2 / S.200
2	GROUND SCREW	POST	D2 / S.101
3	ANCHOR POST	POST	A5 / S.200
4	NS CHORD	CEE	D1 / S.200
5	ROLL BAR	MIXED	A2 / S.200
6	TRANSVERSE BRACE	ZEE	D5 / S.500
7	ZEE PURLIN	ZEE	E1 / S.200
8	CABLE BRACE	CABLE	D4 / S.500

NOTES:

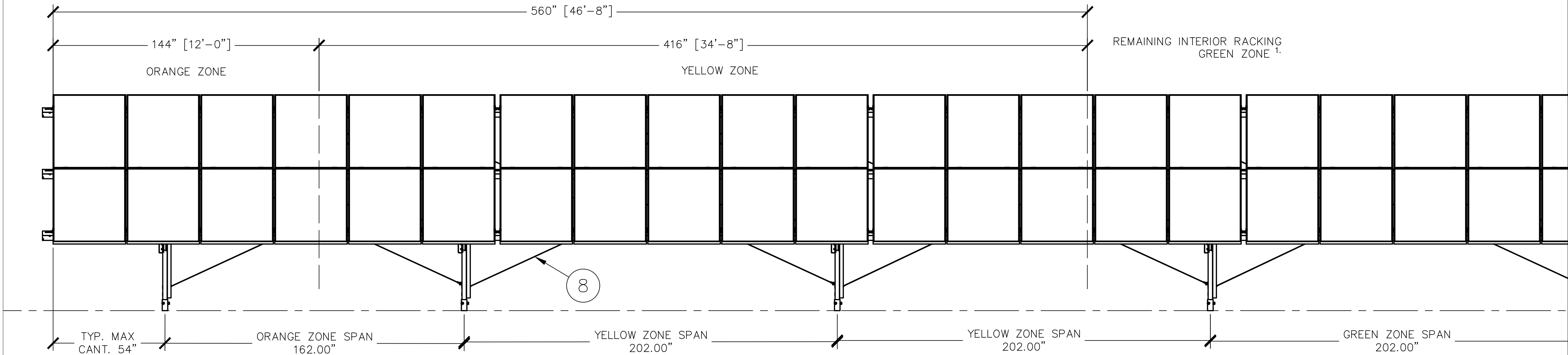
- STANDARD FRONT LIP HEIGHT AND TILT ANGLES MEASURED FROM LEVEL GROUND
- ANCHOR TESTING, WHERE REQUIRED, SHALL BE DONE ACCORDING TO THE "QUICK TEST METHOD" PER ASTM D1143 & D3689.
- PRINT DIMENSIONS: DIMENSIONS SHOWN REFLECT POST HEIGHTS ON LEVEL GROUND. ON UNEVEN TERRAIN, REAR ANCHOR HEIGHT WILL BE DICTATED BY FRONT LIP HEIGHT, PANEL TILT, AND NORTH/SOUTH ANCHOR SPACING.
- ADDITIONAL TOLERANCES: POST PLUMBNESS SHOULD BE WITHIN ±2"
- SPECIAL INSPECTIONS (WHERE REQUIRED):

SPECIAL INSPECTIONS ARE NOT REQUIRED BY AP ALTERNATIVES OR THE STRUCTURAL ENGINEER OF RECORD, THE JDI GROUP, WHERE REQUIRED BY OWNER, CUSTOMER, AND/OR AUTHORITY HAVING JURISDICTION, MINIMUM INSPECTION SHALL FOLLOW IBC OR LOCAL AHJ SPECIAL INSPECTIONS GUIDELINES, PER NOTES AND TABLE BELOW

- 5.1. ALL SPECIAL INSPECTORS SHALL BE RETAINED BY OWNER/CUSTOMER. THE EXTENT OF THE INSPECTION SHALL COMPLY WITH THE CONTRACT DOCUMENTS, THE BUILDING CODE REQUIREMENTS, AND LOCAL JURISDICTION. IT IS THE OWNER/CUSTOMER'S RESPONSIBILITY TO GIVE PROPER NOTIFICATION TO THE SPECIAL INSPECTOR AND PROCEED WITH THE WORK ONLY AFTER THE SPECIAL INSPECTOR'S APPROVAL.
- 5.2. FAILURE TO NOTIFY THE SPECIAL INSPECTOR MAY RESULT IN OWNER/CUSTOMER HAVING TO REMOVE WORK FOR THE PURPOSE OF INSPECTION AT THE OWNER'S/CUSTOMERS EXPENSE.
- 5.3. SPECIAL INSPECTORS SHALL KEEP RECORDS OF ALL INSPECTIONS. RECORDS SHALL BE FURNISHED TO THE OWNER, ENGINEER OF RECORD, AND LOCAL JURISDICTION AS REQUIRED.

SPECIAL INSPECTION & TESTING SCHEDULE		
(WHEN REQUIRED, SEE ABOVE)		
	CONTINUOUS	PERIODIC
STRUCTURAL STEEL FABRICATION		
MATERIAL IDENTIFICATION		X
HIGH STRENGTH BOLTS - MATERIAL IDENTIFICATION OF BOLTS, NUTS, & WASHERS		X
WELD FILLER MATERIALS - IDENTIFICATION AND CONFIRMATION OF COMPLIANCE WITH DESIGN DOCUMENTS		X
STRUCTURAL STEEL ERECTION		
MATERIAL IDENTIFICATION		X
INSTALLATION OF HIGH STRENGTH BOLTS		X
WELDED CONNECTIONS		X
MEMBER SIZES AND PLACEMENT		X
GENERAL CONFORMANCE WITH DESIGN DOCUMENTS		X
DRIVEN DEEP FOUNDATION ELEMENTS		
VERIFY ELEMENT MATERIALS, SIZE, LENGTHS COMPLY WITH DESIGN DOCUMENTS	X	
DETERMINE CAPACITIES OF TEST ELEMENTS & CONDUCT ADDITIONAL LOAD TESTS, AS REQ.	X	
OBSERVE DRIVING OPERATIONS, MAINTAIN RECORDS	X	
VERIFY PLACEMENT LOCATIONS & PLUMBNESS	X	
HELICAL PILE FOUNDATIONS		
RECORD INSTALLATION EQUIPMENT USED, PILE DIMENSIONS, TIP ELEVATIONS, FINAL DEPTH.	X	

THIS TABLE PER IBC 2015, SEC. 1705



NOTES: MAX CANTILEVER MEASURED FROM EDGE OF PANEL TO POST CENTER.  
MAX SPAN MEASURED FROM PILE CENTER TO PILE CENTER.  
POST QUANTITY AS REQUIRED TO SATISFY CANTILEVERS, SPANS, ROW LENGTH, & PANEL QUANTITY  
1. WHERE ALLOWABLE PER THE CALCULATIONS PACKAGE. PROHIBITED AREAS SHALL REMAIN ZONED YELLOW.

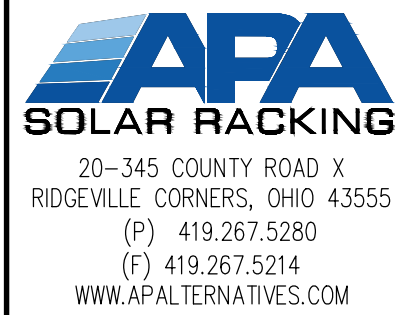
IMAGE REFERENCE ONLY. NOT INDICATIVE OF REQUIRED QUANTITIES.

A1 ELEVATION VIEW FROM FRONT (NORTH-FACING)



CUSTOMER

RACKING PROVIDER



RACKING TYPE



STRUCTURAL ENGINEER OF RECORD



360 W. DUSSEL DR.  
MAUMEE, OH 43537  
[P] 419.725.7161 [F] 419.725.7160

PROFESSIONAL SEAL/STAMP

STRUCTURAL PRINT PACKAGE  
SITE STREET ADDRESS: 390 HARTFORD TURNPIKE  
SITE CITY-STATE-ZIP: HAMPTON, CT 06351

SHEET REVISIONS		DATE
REV.	DESCRIPTION	
A	INITIAL RELEASE	06/05/2020

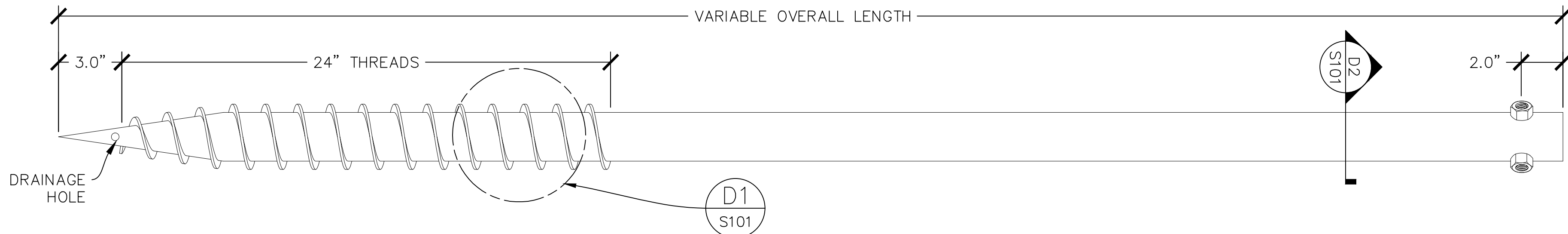
APPROVED

DRAWN	REVIEWED	APPROVED	SIZE
TK	JR	JDI	D
SHEET NAME			
RACKING OVERVIEW			
PROJECT NUMBER			
200051			
DRAWING NUMBER			
S.100			
REV.			
A			



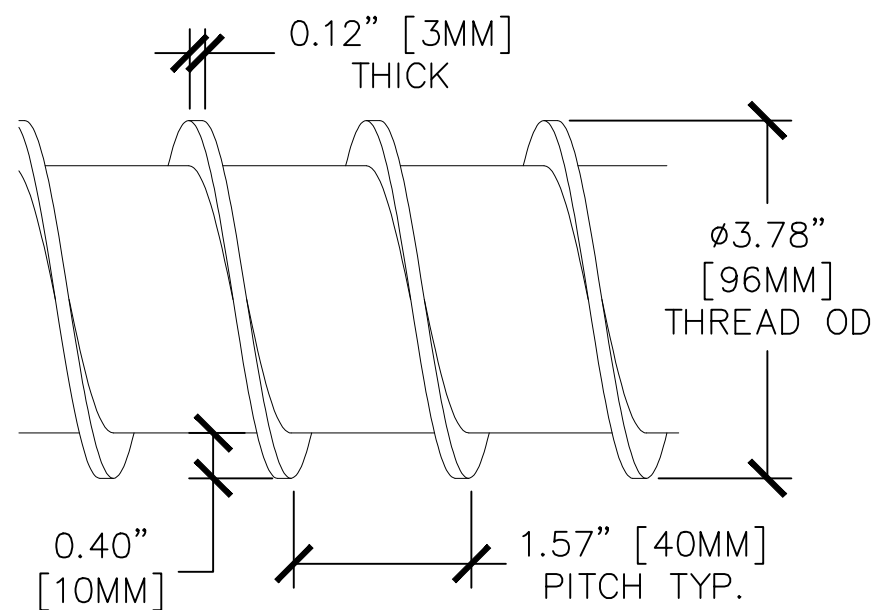
SCALE IS REDUCED WHEN SHEET SIZE IS 11" x 17"

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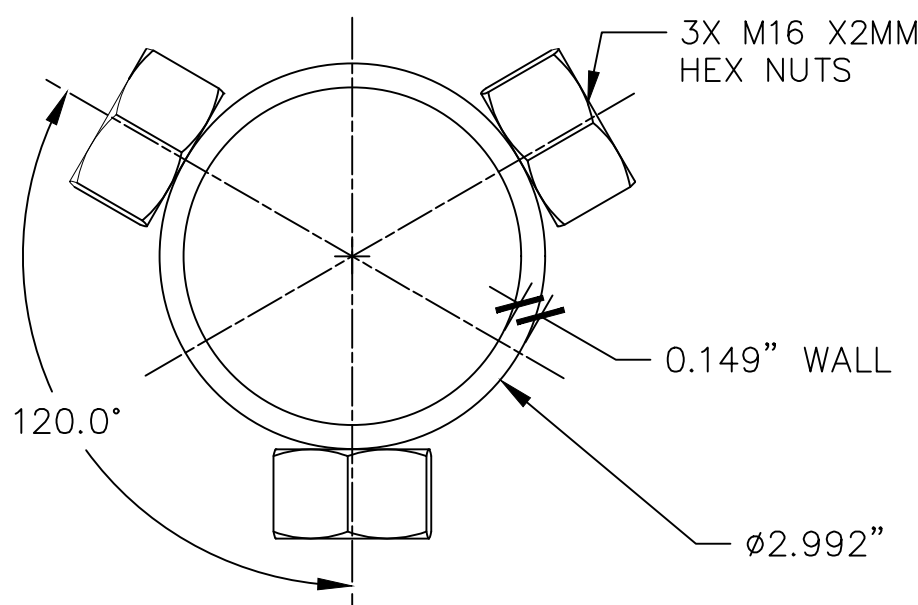


NOTES:  
1. VIEW NOT REPRESENTATIVE OF SCREW TIP OR REQUIRED OVERALL OR THREAD LENGTH.

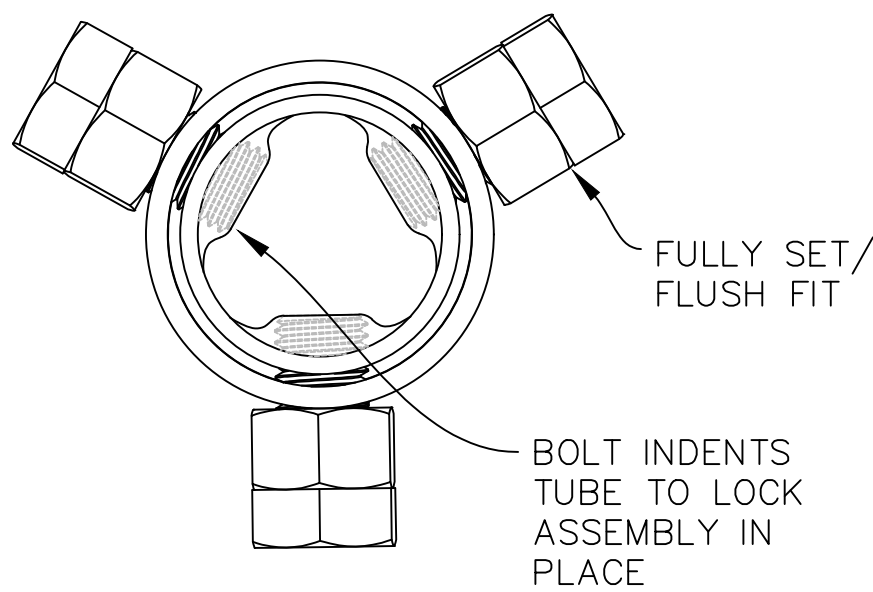
E1 PART: SCREW PILE



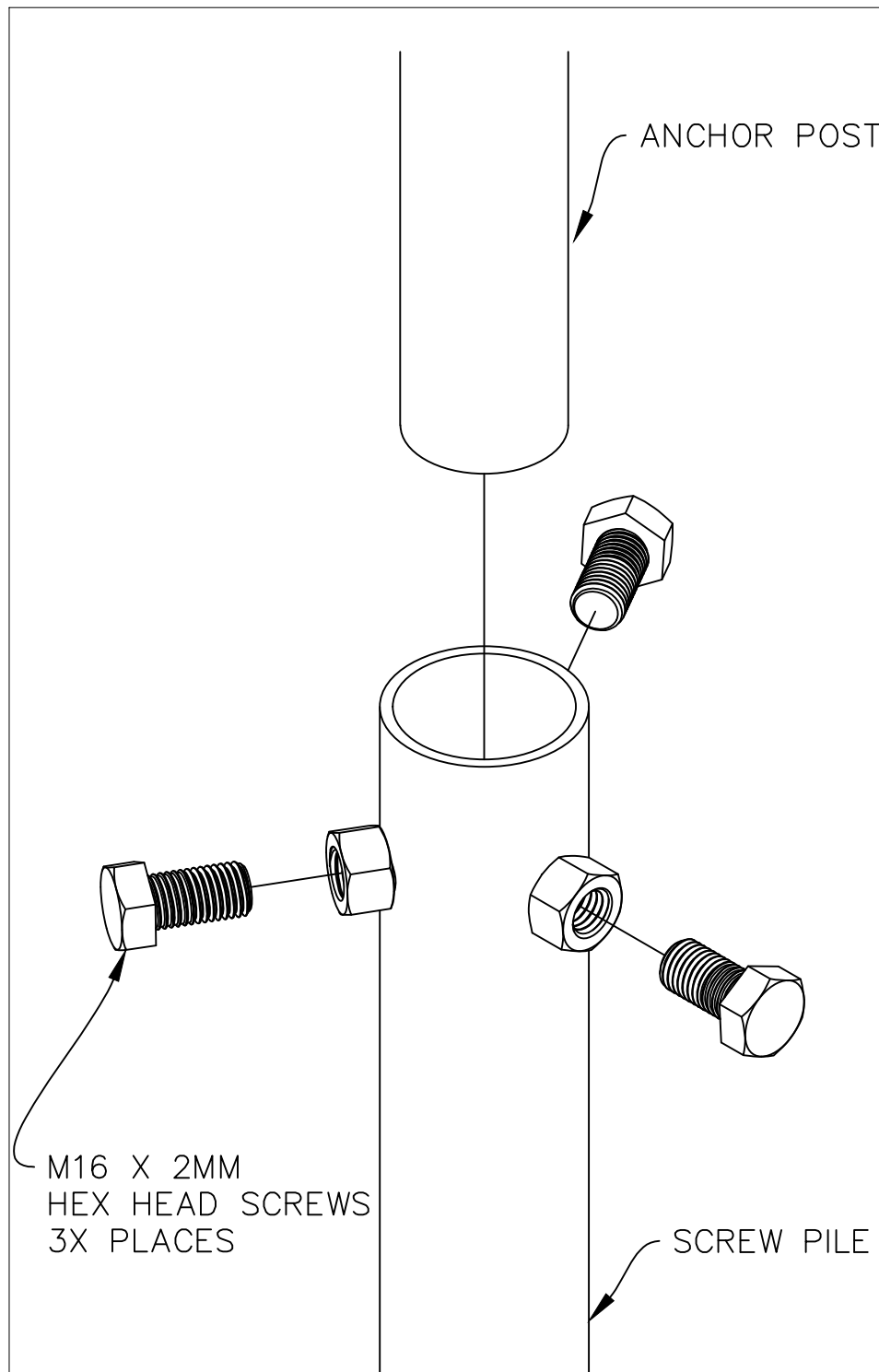
D1 DETAIL: SCREW PILE



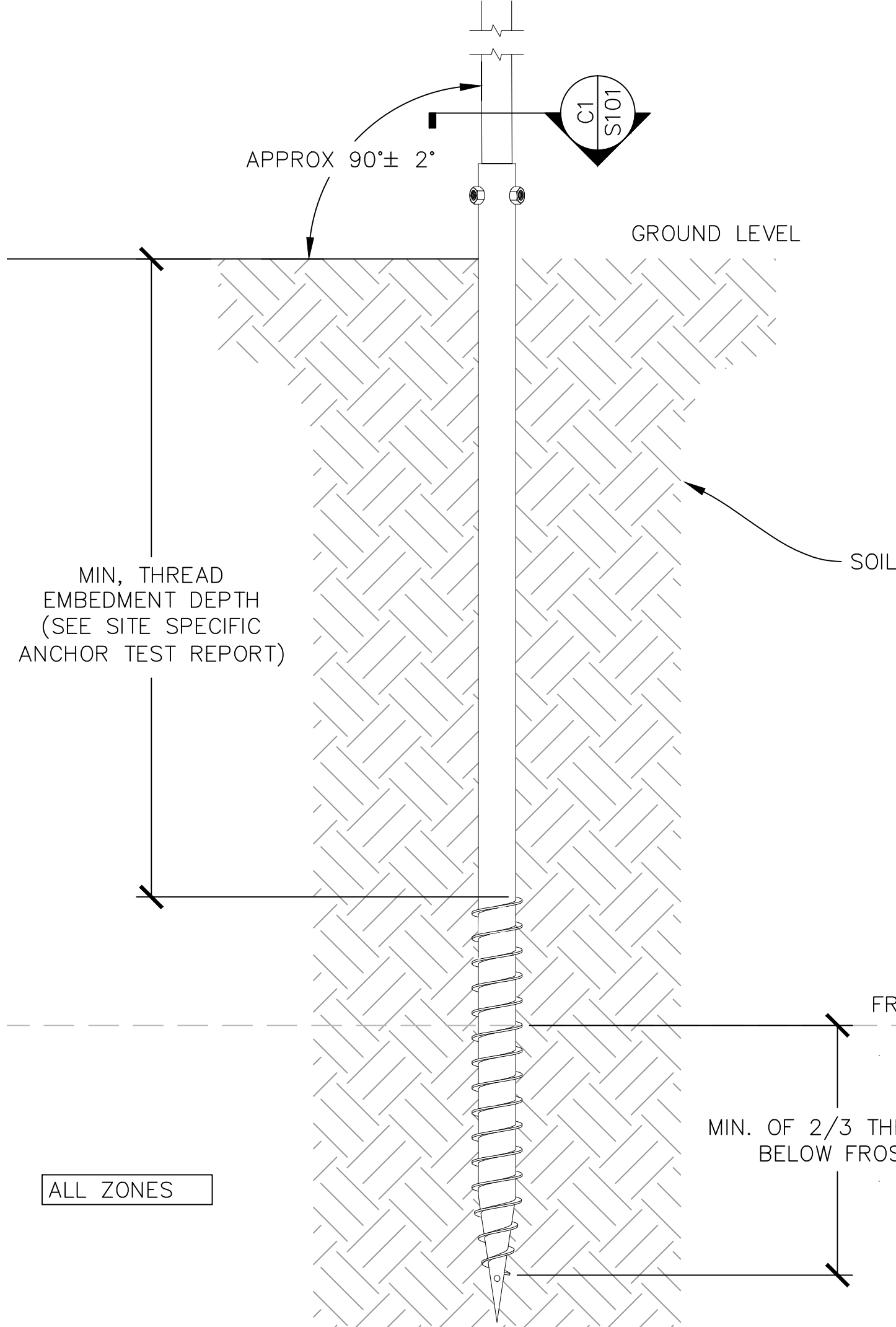
D2 SECTION: SCREW PILE



C1 SECTION: PILE ASSEMBLY

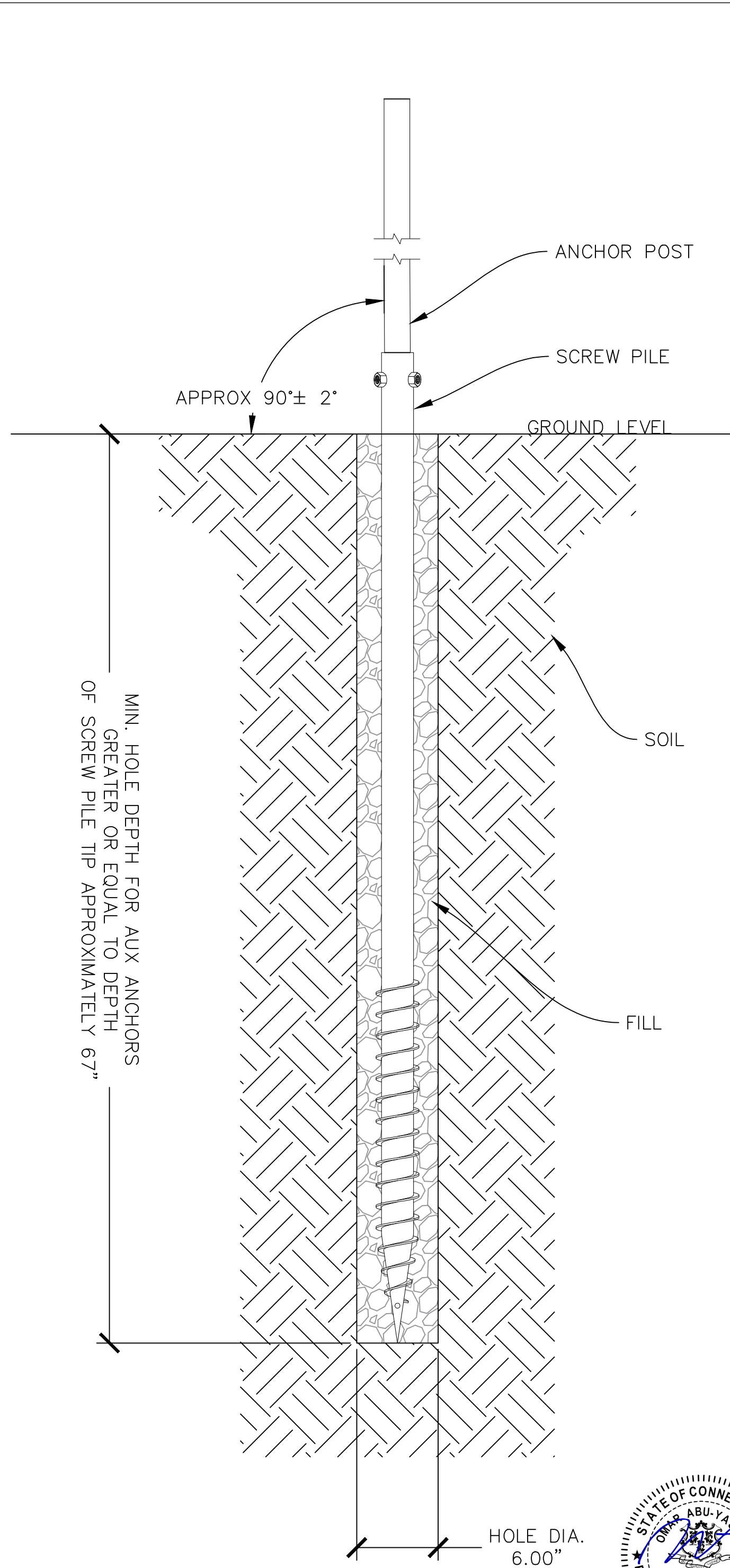


A1 CONNECTION: POST-TO-PILE



NOTES:  
1. LENGTH & THREADS MAY VARY, SEE SHEET NOTES  
2. EMBEDMENT DEPTH PER GEOTECHNICAL ENGINEER APPROVED ANCHOR TEST REPORT, NOT BY JDI GROUP.

A2 VIEW: POST EMBEDMENT



NOTE: EMBEDMENT DEPTH PER GEOTECHNICAL ENGINEER APPROVED ANCHOR TEST REPORT, NOT BY JDI GROUP.

A3 AUX. FOUNDATION VIEW: PROFILE - SOIL CUTAWAY

NOTES:

- ANCHOR TUBE MATERIAL: 50 KSI MIN YIELD STRENGTH, 1010 STEEL
  - ANCHOR TUBE TO BE HOT DIPPED GALVANIZED TO ASTM A123 OR INLINE GALVANIZED TO ASTM A1057.
  - SCREW PILE TUBE MATERIAL: 30 KSI MIN YIELD STRENGTH STEEL.
  - SCREW PILE THREAD MATERIAL: 28 KSI MIN YIELD STRENGTH STEEL.
  - SCREW PILE TO BE HOT DIPPED GALVANIZED TO ASTM A123 OR INLINE GALVANIZED TO ASTM A1057.
  - ALL HARDWARE IS 300 SERIES STAINLESS STEEL, A574 ALLOY STEEL, OR MINIMUM 8.8 CLASS METRIC.
  - BOLTS MUST BE FULLY SET INTO WELDED NUTS.
  - BOLTS SHALL BE 30 MM LONG.
  - SCREW PILE SHALL PENETRATE THE SOIL TO A DEPTH PAST THE FROST LINE, SUCH WHICH LESS THAN 1/3 OF THE TOTAL LENGTH OF THREADS ARE ABOVE THE FROST LINE, OR TO THE DEPTH INDICATED AS MINIMUM PER THE STAMPED ANCHOR TEST REPORT, WHICHEVER IS DEEPER.
  - ANCHOR POST SHALL EXTEND ABOVE GROUND LEVEL AT MINIMUM OF INDICATED FRONT LIP CLEARANCE, PLUS THE ADDITIONAL LENGTH REQUIRED TO ACHIEVE THE INDICATED TILT ANGLE.
  - MINIMUM ENGAGEMENT BETWEEN SCREW PILE AND ANCHOR POST SHALL BE 4".
  - INSTALLERS SHALL REFER TO STRUT AND POST SETUP SHEETS FOR LENGTH AND PLACEMENT DETAILS.
- ANCHOR POST INSTALLATION
- ACCURATELY LOCATE AND INSTALL SCREW PILES BY SUCH METHODS AND EQUIPMENT SO AS NOT TO IMPAIR THE PILE STRENGTH OR DAMAGE ANCHORS OR ADJACENT CONSTRUCTION.
  - INSTALLATION CONTRACTOR RESPONSIBLE FOR ALL CONSTRUCTION EQUIPMENT, METHODS, AND SEQUENCES.
  - DISTURBED GALVANIZED SURFACES SHALL BE TOUCHED UP WITH AN APPROVED COLD GALVANIZING COMPOUND.
  - INSTALL SCREW PILES TO MINIMUM DEPTH(PER GEOTECHNICAL ENGINEER, NOT JDI-DELEGATED DESIGN PARAMETER) AS INDICATED THIS SHEET OR AS REQUIRED PER THE STAMPED ANCHOR TEST REPORT.

AUXILIARY FOUNDATION NOTES:

- EMBEDMENT DEPTH(PER GEOTECHNICAL ENGINEER, NOT JDI-DELEGATED DESIGN PARAMETER) CONTINGENT UPON SITE SPECIFIC DATA, INCLUDING BUT NOT LIMITED TO: FROST DEPTH, SOIL PROPERTIES, AND LOCAL BUILDING CODE REQUIREMENTS.
- AUGERED HOLE SHOULD EXTEND BELOW THE LOCAL FROST LINE, INTO THE STABLE SOIL ZONE.
- HOLDING PROPERTIES OF THE SCREW PILE IN AGGREGATE DETERMINED BY TESTING CONDUCTED BY APA, PER ASTM D1143
- STRUCTURAL PROPERTIES OF SCREW PILE TESTED ONLY. CORROSIVITY, AND OTHER GEOTECHNICAL PROPERTIES NOT TESTED.

INSTALLATION PROCEDURE

- AUGER HOLE TO REQUIRED DEPTH. HOLE SHOULD BE APPROXIMATELY PLUMB AND A MINIMUM DIAMETER AS INDICATED IN DRAWING.
- REMOVE THE SPOILS AS BEST AS POSSIBLE. THERE SHOULD BE NO LARGE CLUMPS OR ROCKS AT THE BOTTOM OF THE HOLE.
- POUR IN AGGREGATE.

- AGGREGATE SHOULD BE SIZED BETWEEN 1" - 2 1/2".
- KNOWN ACCEPTABLE AGGREGATES (NAMING PER ASTM C33-03):
  - #2 (2 1/2" - 1 1/2")
  - #3 (2" - 1"),
  - A COMBINATION OF BOTH #2 & #3
  - EQUIVALENT SIZE OF EITHER #2 OR #3.

- DEVIATIONS IN AGGREGATE SIZE, FROM THE ABOVE SPECIFICATIONS, MUST BE APPROVED BY AP ALTERNATIVES ENGINEERING BEFORE USING/PURCHASING.

- DRIVE SCREW PILE AS NORMALLY INTO HOLE. ENSURE IT IS PLUMB. ENSURE THE NORTH-SOUTH DIMENSIONS AND EAST-WEST DIMENSIONS ARE CORRECT. ALSO ENSURE BOLT HOLE IN THE ANCHOR IS FACING THE CORRECT DIRECTION.  
  
IF NEEDED, RETAMP THE AGGREGATE AT SOIL LEVEL AROUND THE SCREW PILE.

QUALITY CONTROL NOTES

- ANCHOR HEIGHTS SHOULD BE MEASURED FROM THE GROUND LEVEL, NOT THE TOP OF THE AGGREGATE. IF AGGREGATE IS BELOW GROUND LEVEL, ADDITIONAL GRAVEL SHOULD BE ADDED AND TAMPED TO BRING IT UP TO AT LEAST GROUND LEVEL.
- ANCHORS SHOULD NOT BE VERIFIED BY PULLING LATERALLY AT THE TOP OF THE ANCHOR (FIGURE 3). THIS CREATES A LARGE AND ARTIFICIAL MOMENT IN THE ANCHOR. ANCHORS SHOULD ALSO NOT BE ROCKED BACK AND FORTH UNTIL IT "FAILS"; THE ANCHORS ARE INTENDED TO WORK AS A SYSTEM WITH ALL PARTS INTACT (ADJOINING ANCHORS, SMALL AND LARGE ZEES, HARD AND CABLE BRACES, AND ALL ADDITIONAL PARTS AND HARDWARE INSTALLED AND TIGHTENED) AND DO NOT REACH FULL CAPACITY UNTIL THAT POINT.

CUSTOMER

RACKING PROVIDER

**APA**  
SOLAR RACKING  
20-345 COUNTY ROAD X  
RIDGEVILLE CORNERS, OHIO 43555  
(P) 419.267.5280  
(F) 419.267.5214  
WWW.APALTERNATIVES.COM

RACKING TYPE

**TITAN**  
RVS

STRUCTURAL ENGINEER OF RECORD

**the jdi group**  
architects & engineers

360 W. DUSSEL DR.  
MAUMEE, OH 43537  
(P) 419.725.7161 (F) 419.725.7160

PROFESSIONAL SEAL/STAMP

DOCUMENT NAME:  
STRUCTURAL PRINT PACKAGE

SITE STREET ADDRESS:  
390 HARTFORD TURNPIKE  
SITE CITY-STATE-ZIP:  
HAMPTON, CT 06351

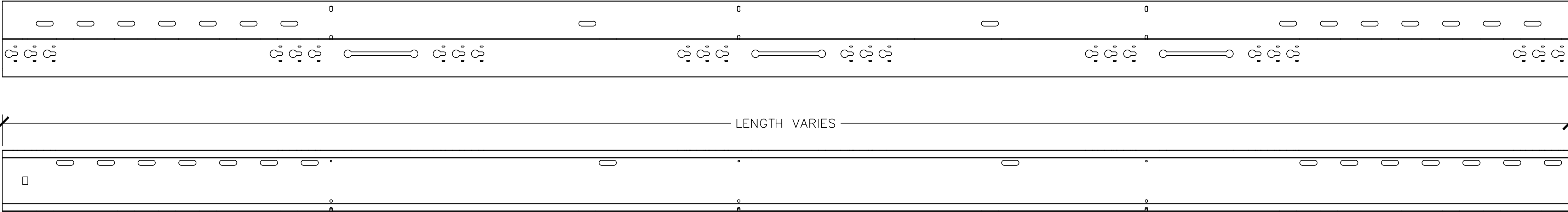
SHEET REVISIONS  
REV. DESCRIPTION DATE  
A INITIAL RELEASE 06/05/2020

APPROVED

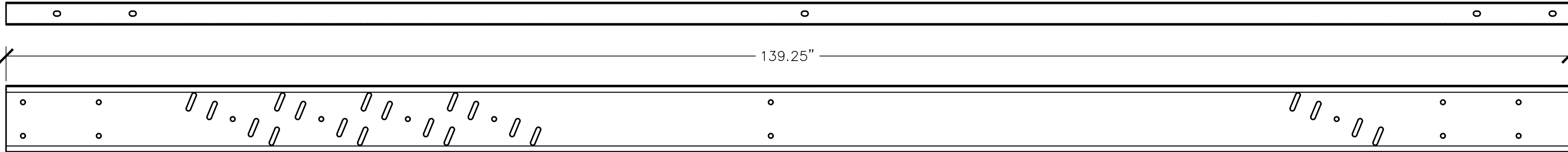
DRAWN: TK REVIEWED: JR APPROVED: JDI SIZE: D  
SHEET NAME: GROUND SCREW  
PROJECT NUMBER: 200051  
DRAWING NUMBER: S.101 REV: A

SCALE IS REDUCED WHEN SHEET SIZE IS 11" x 17"

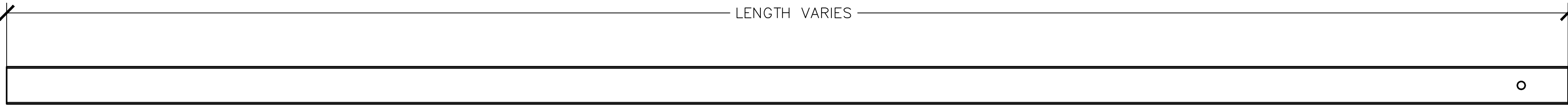
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E1 SIDE/TOP: ZEE PURLIN

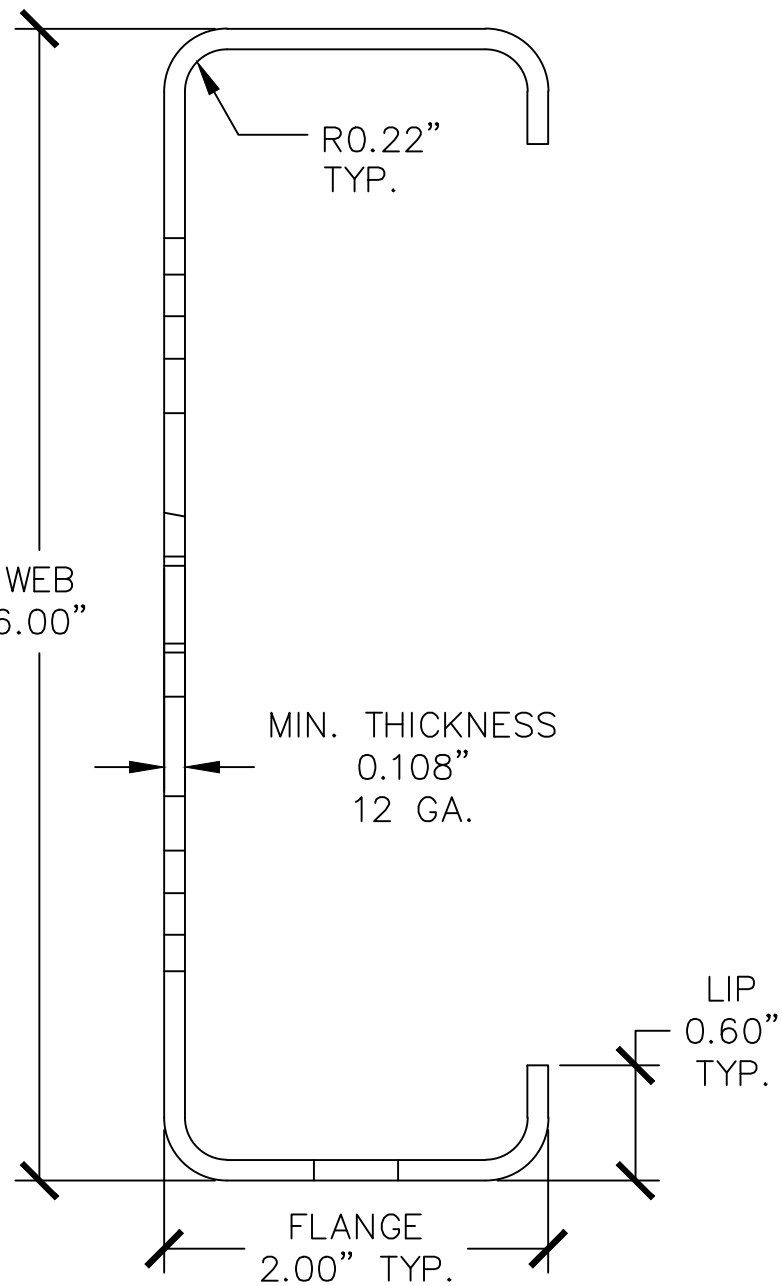


D1 SIDE/TOP: NS CHORD



C1 SIDE: ANCHOR POST

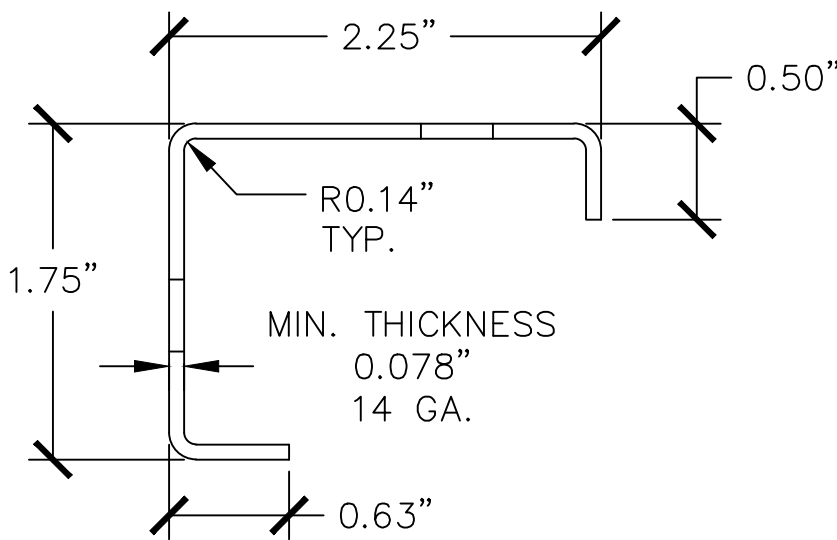
MATERIAL: A653 STR. STL.  
STRENGTH: MIN. YIELD (Fy): 80 KSI.



A1 PROFILE: NS CHORD

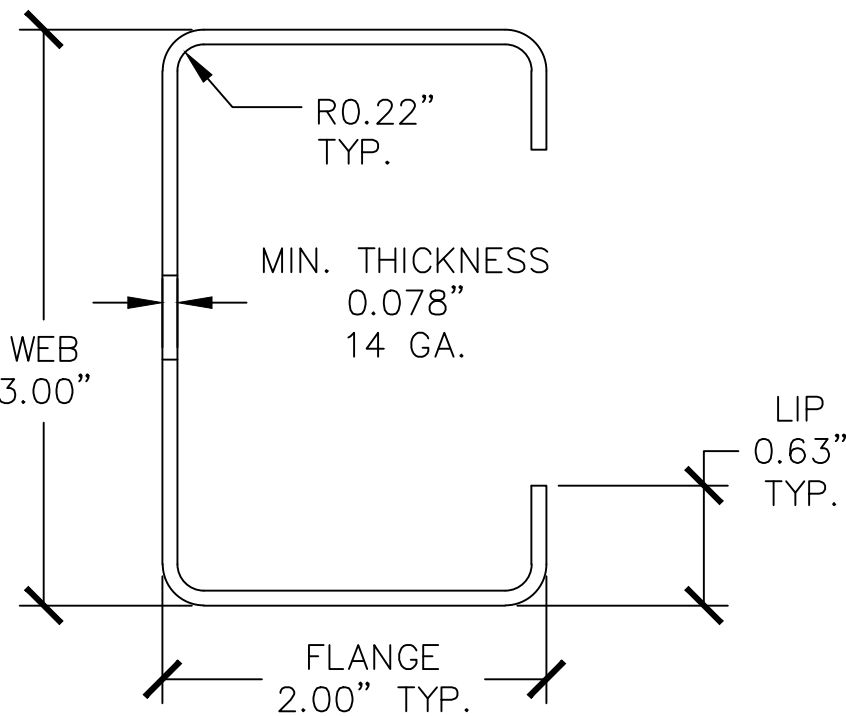
B2 SIDE: KNEE BRACE

MATERIAL: A570 CF STR. STL.  
STRENGTH: MIN. YIELD (Fy): 50 KSI.

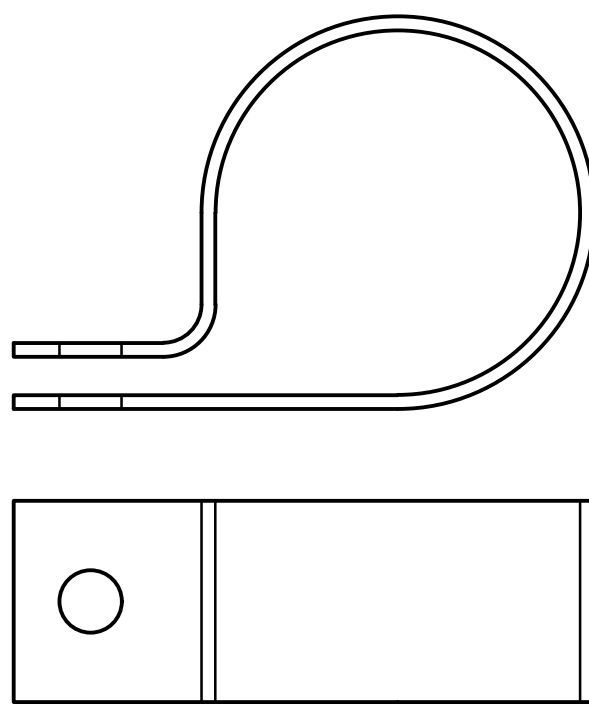


A2 PROFILE: ROLL BAR

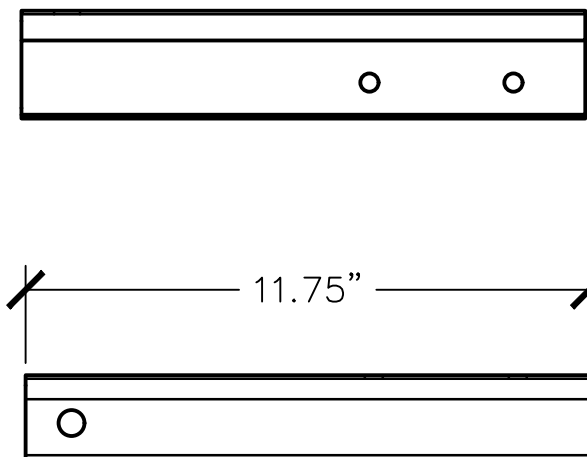
MATERIAL: A570 CF STR. STL.  
STRENGTH: MIN. YIELD (Fy): 80 KSI.



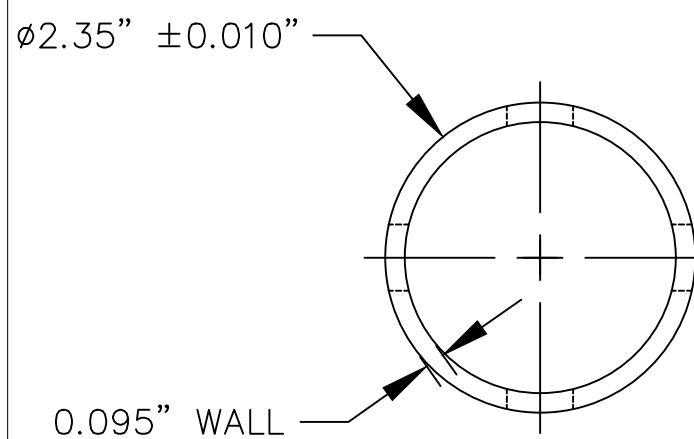
A3 PROFILE: KNEE BRACE



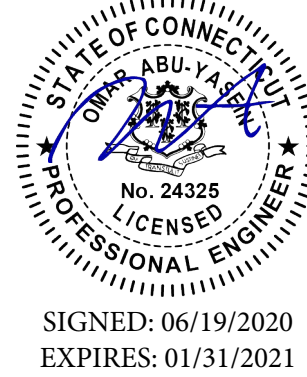
A4 SIDE: BRACE CLAMP



A5 SIDE/TOP: ROLL BAR



A6 PROFILE: ANCHOR POST



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(F) 419.267.5214  
WWW.APALTERNATIVES.COM

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**the jdi group**  
architects & engineers

360 W. DUSSEL DR.  
MAUMEE, OH 43537  
[P] 419.725.7161 [F] 419.725.7160

PROFESSIONAL SEAL/STAMP

DOCUMENT NAME:  
**STRUCTURAL PRINT PACKAGE**  
SITE STREET ADDRESS:  
**390 HARTFORD TURNPIKE**  
SITE CITY, STATE, ZIP:  
**HAMPTON, CT 06351**

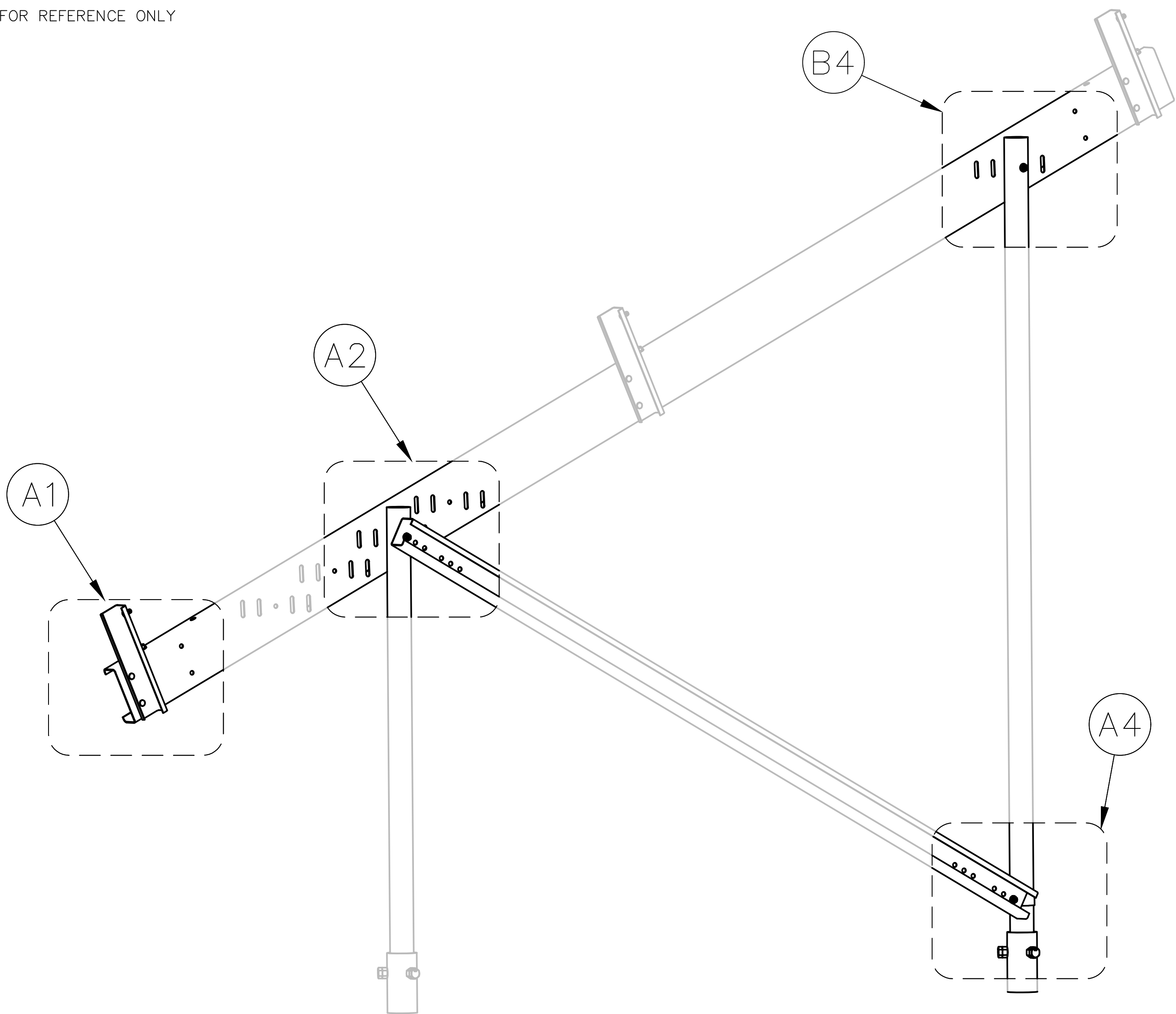
SHEET REVISIONS		
REV.	DESCRIPTION	DATE
A	INITIAL RELEASE	06/05/2020

**APPROVED**

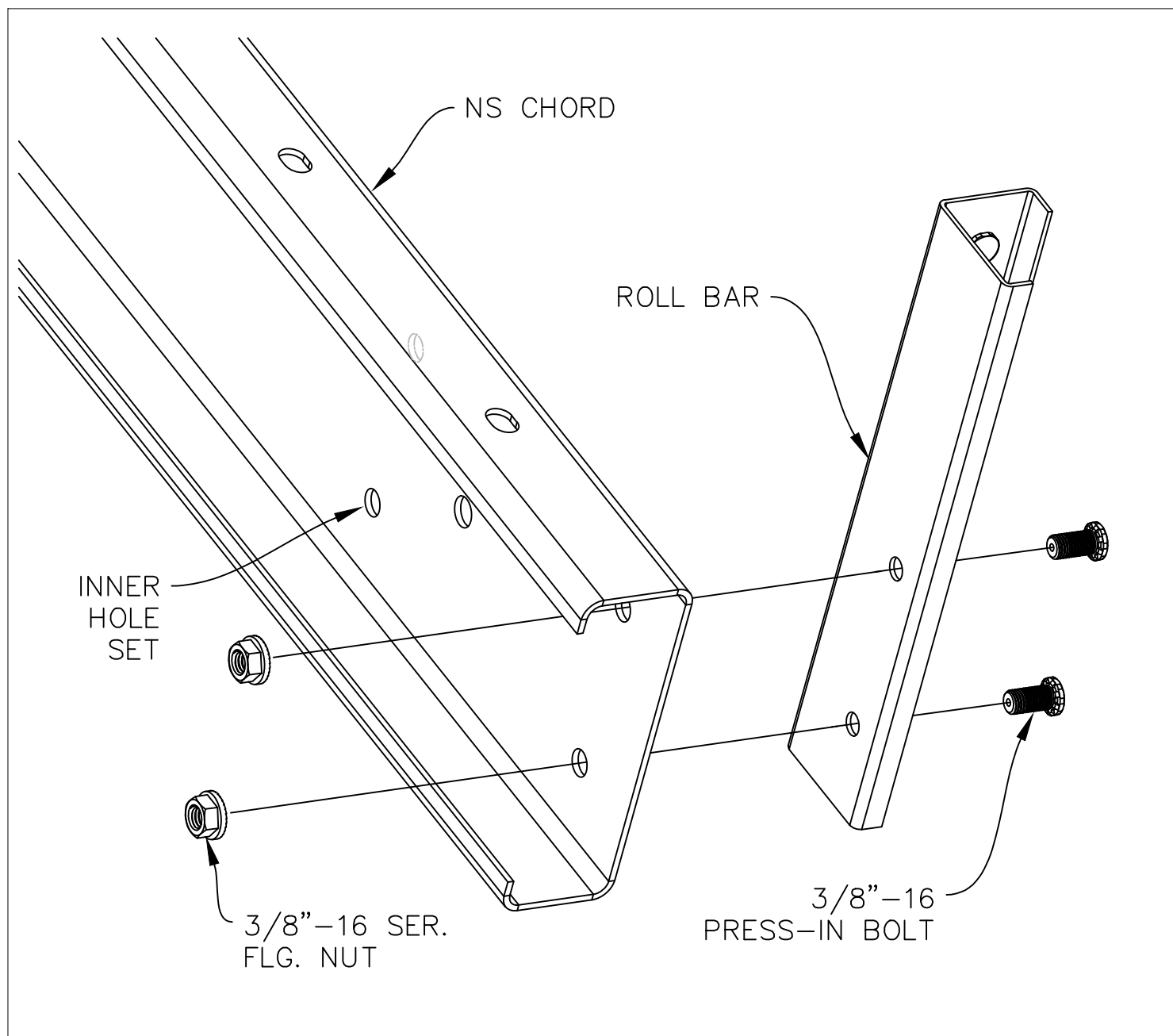
DRAWN	REVIEWED	APPROVED	SIZE
TK	JR	JDI	D
SHEET NAME			
STRUCTURAL COMPONENTS			
PROJECT NUMBER			
200051			
DRAWING NUMBER		REV.	
S.200		A	



IMAGE FOR REFERENCE ONLY

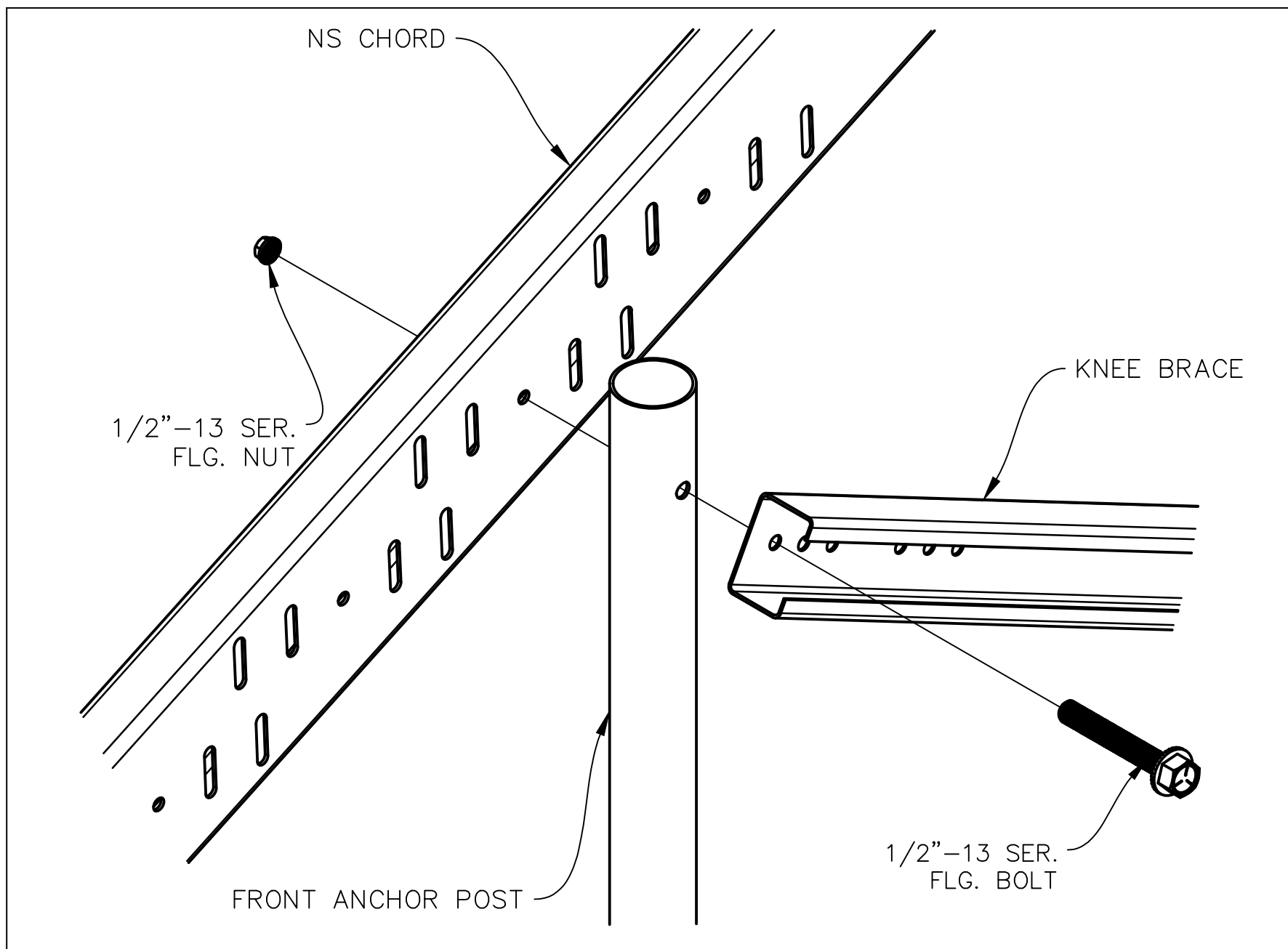


B1 FOUNDATION SET CONNECTIONS OVERVIEW

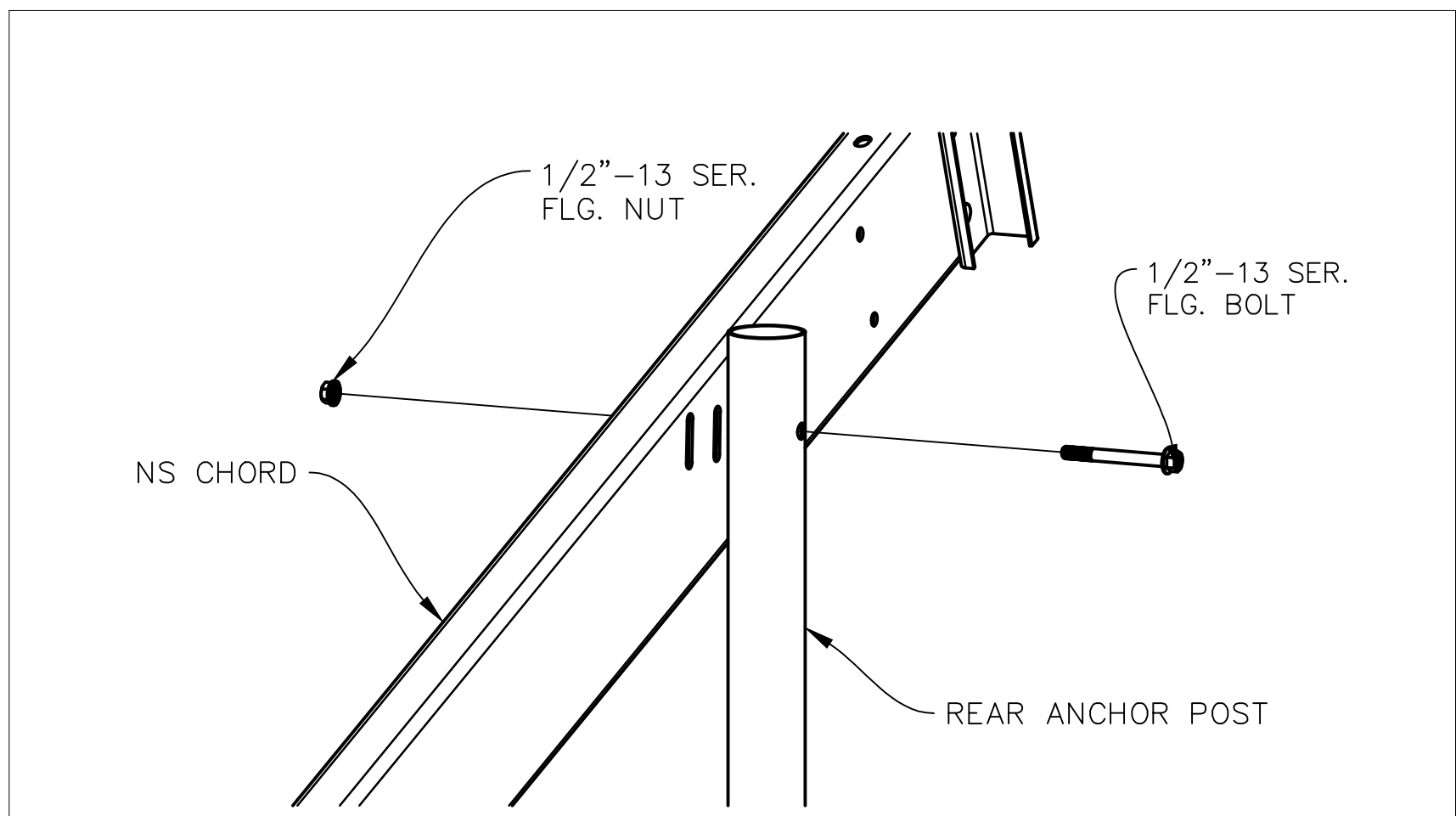


ATTACHED TO OUTER HOLE SET FOR REFERENCE ONLY. SEE NOTES.

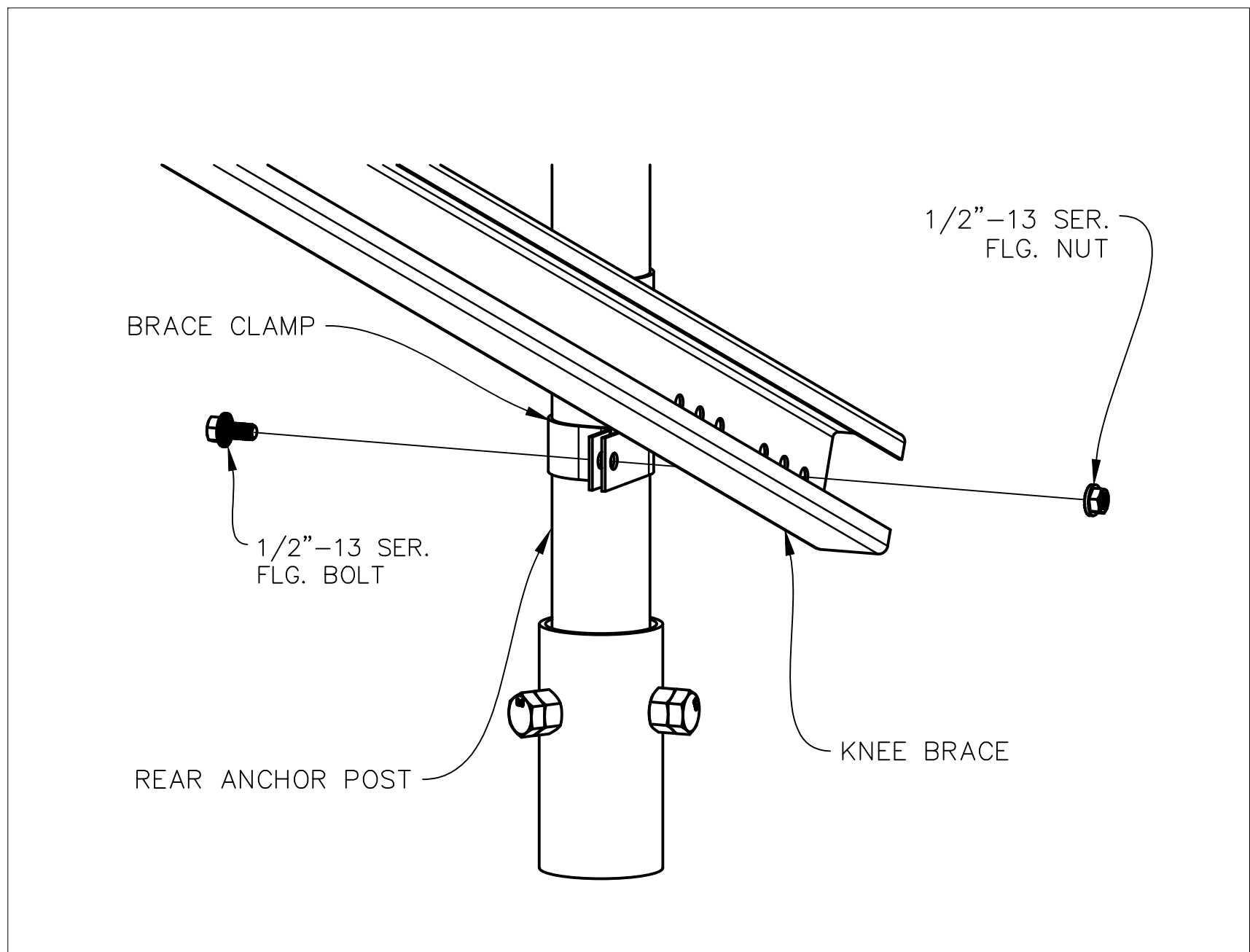
A1 CONNECTION: ROLL BAR-TO-NS CHORD



A2 CONNECTION: KNEE BRACE-TO-FRONT ANCHOR



B4 CONNECTION: REAR ANCHOR-TO-NS CHORD



A4 KNEE BRACE-TO-REAR ANCHOR

NOTES:

1. HARDWARE TORQUE VALUES:

3/8"-16 STAINLESS STEEL  
MIN.: 17.5 FT-LBS  
NOM.: 19.6 FT-LBS  
MAX.: 50.0 FT-LBS

1/2"-13 STAINLESS STEEL  
MIN: 40 FT-LBS

2. DEPICTED HARDWARE AND PART PLACEMENT NOT INDICATIVE OF PREFERRED OR REQUIRED POSITIONS.

3. HOLE/SLOT PATTERNS IN PARTS ALLOW FOR DEVIATION FROM NOMINAL DIMENSIONS, MULTIPLE PART POSITIONS, AND MULTIPLE TILT ANGLES.

4. SEE INSTALLATION MANUAL FOR SETUP INSTRUCTIONS.

5. SERRATED FLANGED BOLTS MAY BE REPLACED WITH EQUIVALENT PRESS-IN BOLTS.

6. PRESS-IN BOLTS, WHERE PRESENT, TO BE INSTALLED TO MANUFACTURERS RECOMMENDED VALUES.

7. OTHER SPECIFIC CONNECTIONS ELSEWHERE IN PRINT SET.

8. ROLL BAR MUST CONNECT TO THE CORRECT HOLES IN CEE CHANNEL (INNER, OR OUTER TYPICALLY), AS DETERMINED BY PV MODULE MANUFACTURERS ALLOWABLE CLAMPING ZONE.

9. USE CORRECT NOMINAL HOLES IN CEE TO CONNECT TO ANCHOR POST, AS INDICATED. ADJACENT HOLES AND SLOTS FOR FIELD ADJUSTMENTS.

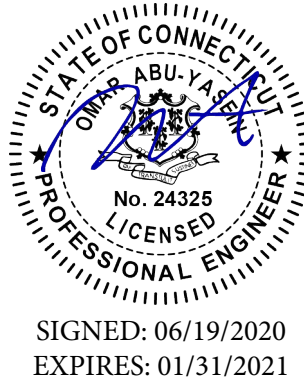
10. SERRATED HARDWARE MAY BE REPLACED WITH EQUIVALENT HARDWARE WITH WASHERS IF NECESSARY.

11. IN ALL DETAILS, THE PRESENCE OF TWO SETS OF HARDWARE INDICATES THE REQUIREMENT OF TWO SETS OF HARDWARE.

12. STAINLESS STEEL HARDWARE MAY BE REPLACED WITH GALVANIZED STEEL HARDWARE OR CORROSION AND STRENGTH COMPARABLE HARDWARE MATERIALS AND FINISHES.

13. UNLESS NOTED OTHERWISE, ALL HARDWARE MAY BE INSTALLED IN EITHER DIRECTION (NUT/BOLT MAY BE ON EITHER SIDE OF CONNECTION).

14. WHEN NECESSARY, ADDITIONAL HOLES MAY BE DRILLED TO COMPLETE CONNECTION. ENGINEERING SHALL BE CONTRACTED PRIOR TO FIELD MODIFICATIONS OF PARTS.



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RIDGEVILLE CORNERS, OHIO 43555  
(P) 419.267.5280  
(F) 419.267.5214  
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STRUCTURAL ENGINEER OF RECORD

**the jdi group**  
architects & engineers

360 W. DUSSEL DR.  
MAUMEE, OH 43537  
(P) 419.725.7161 (F) 419.725.7160

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REV.	DESCRIPTION	DATE
A	INITIAL RELEASE	06/05/2020

APPROVED

DRAWN	REVIEWED	APPROVED	SIZE
TK	JR	JDI	D

SHEET NAME

CONNECTIONS

PROJECT NUMBER

200051

DRAWING NUMBER

S.300

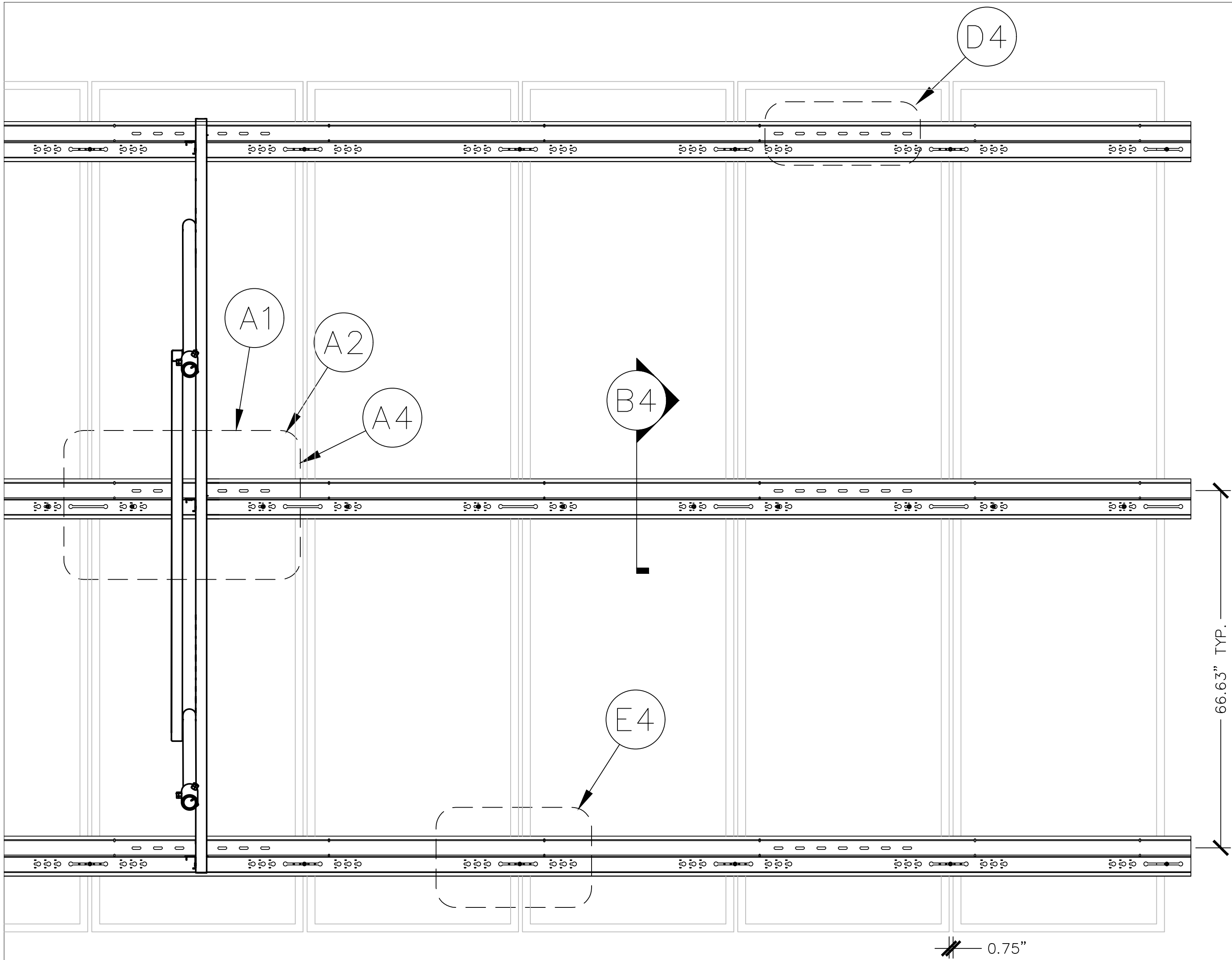
REV.

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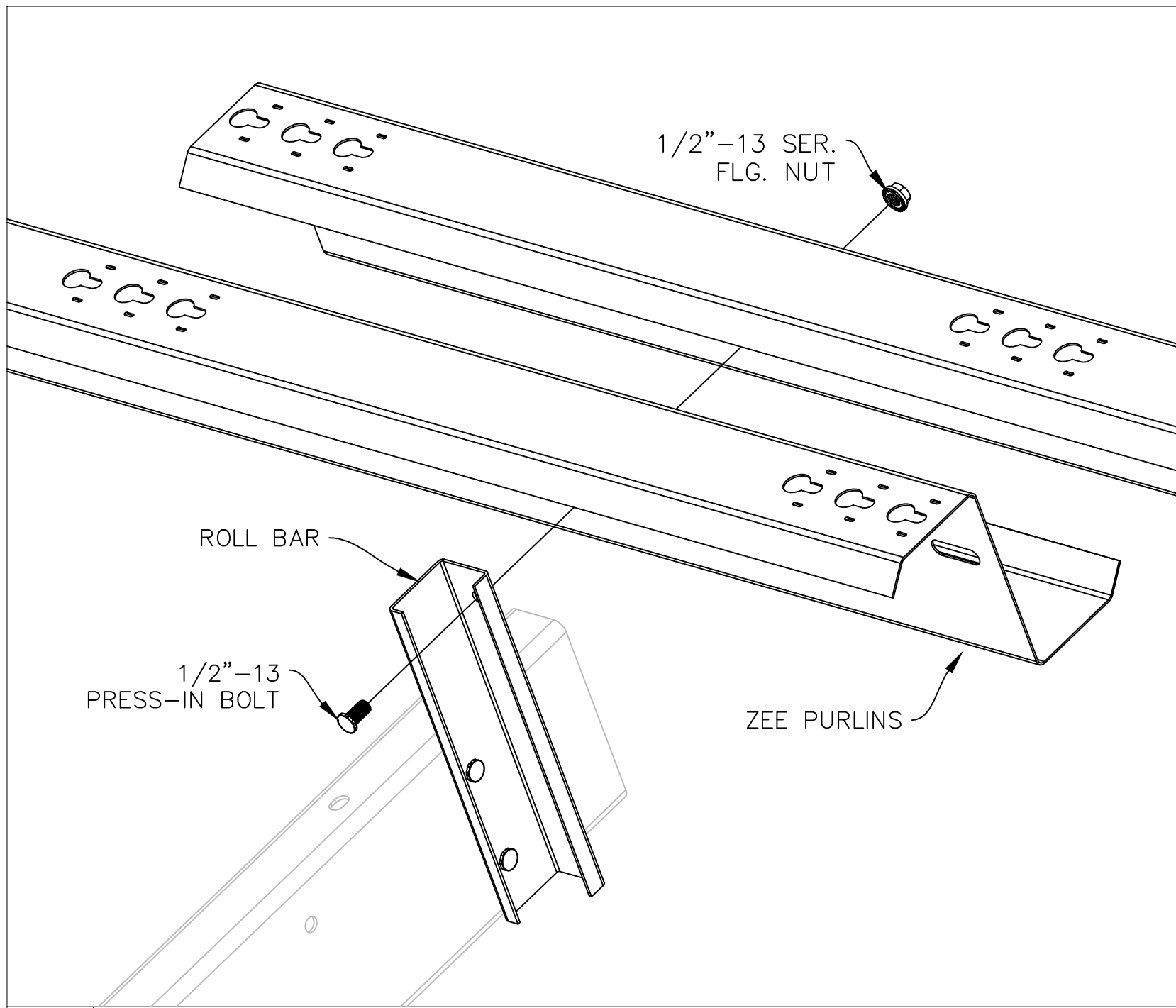


SCALE IS REDUCED WHEN SHEET SIZE IS 11" x 17"

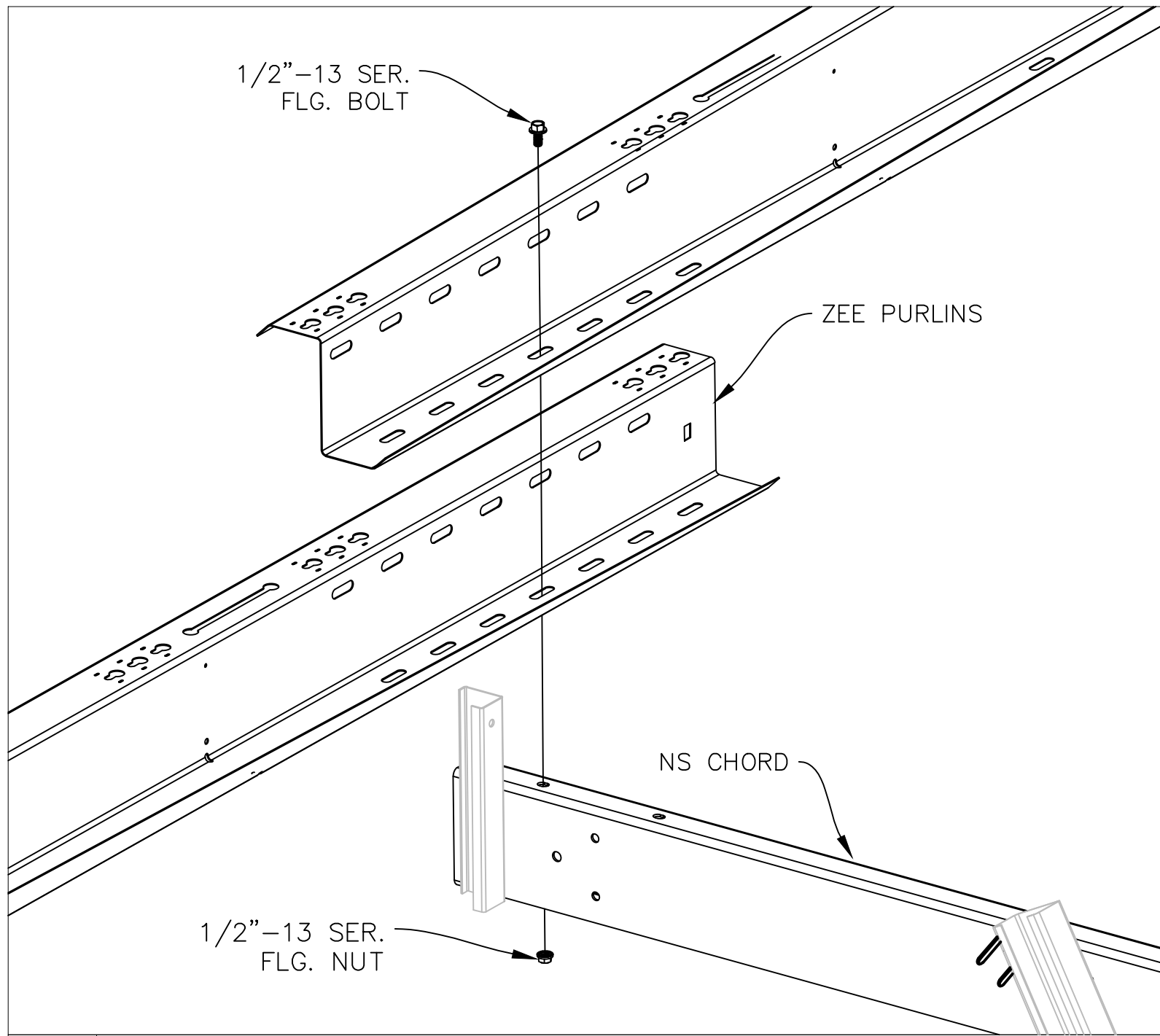
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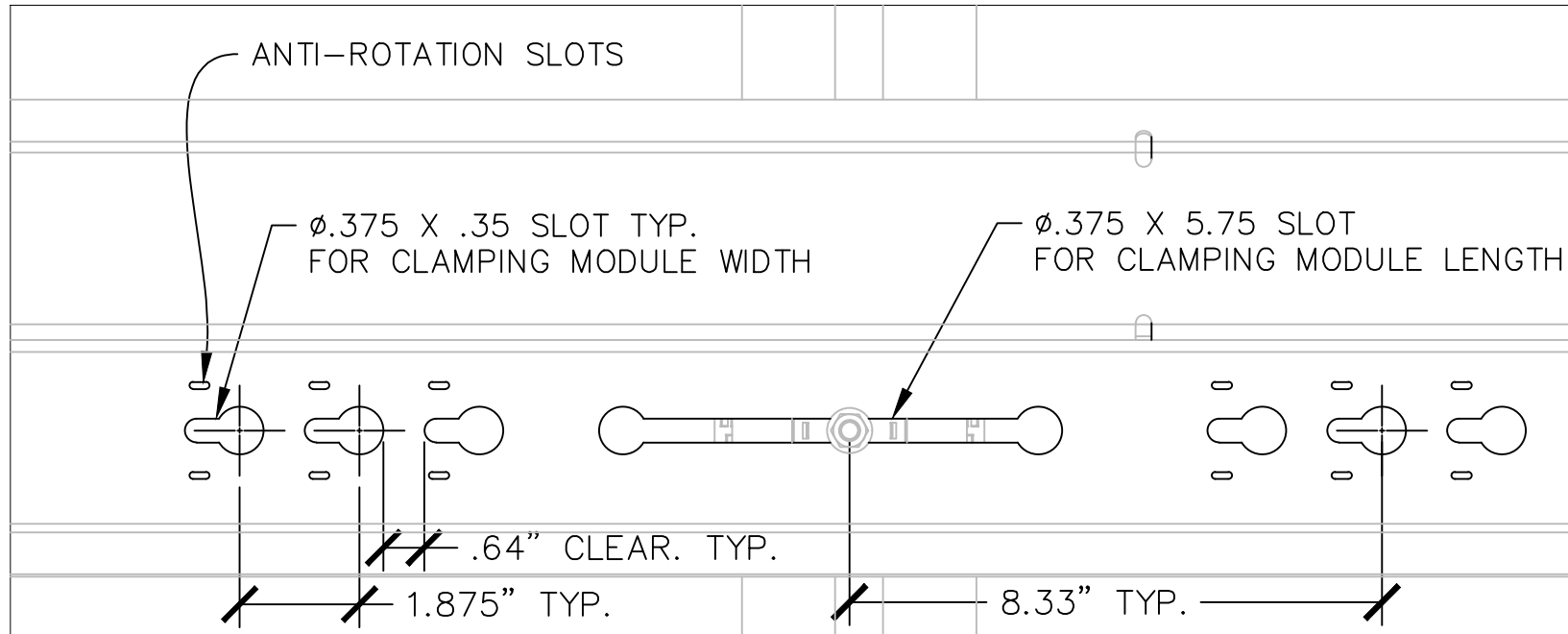
B1 OVERVIEW: ZEE PURLIN CONNECTIONS (RACK UNDERSIDE)



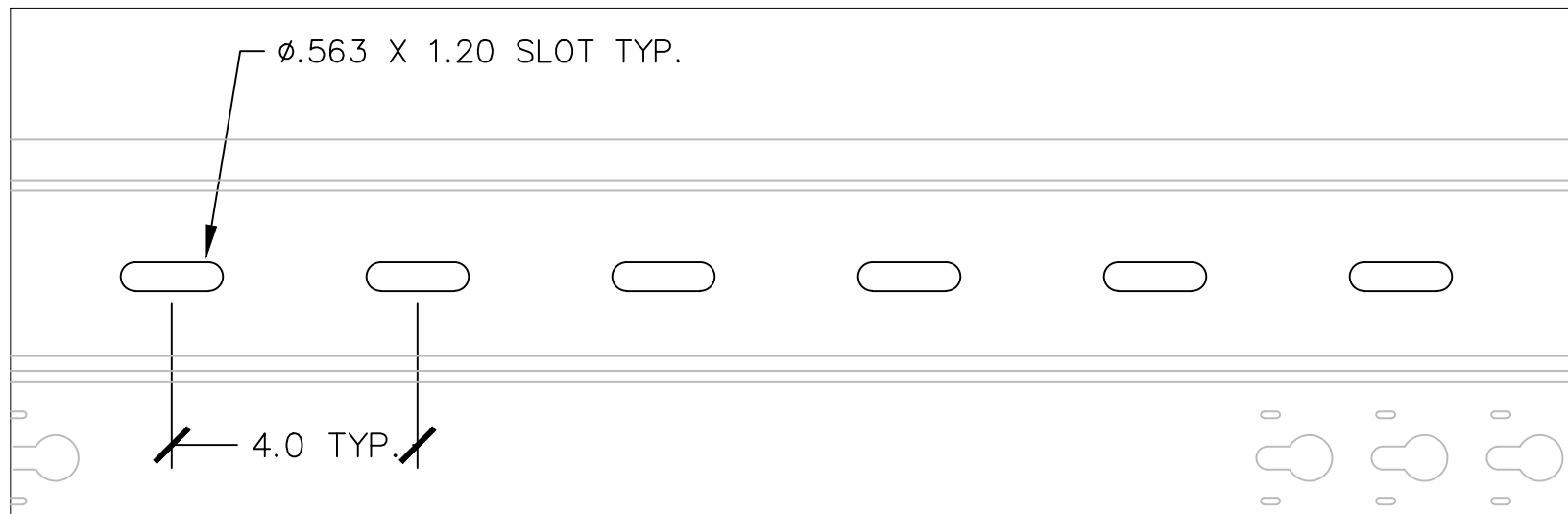
A1 CONNECTION: ZEE PURLINS-TO-ROLL BAR



A2 CONNECTION: ZEE PURLINS-TO-NS CHORD

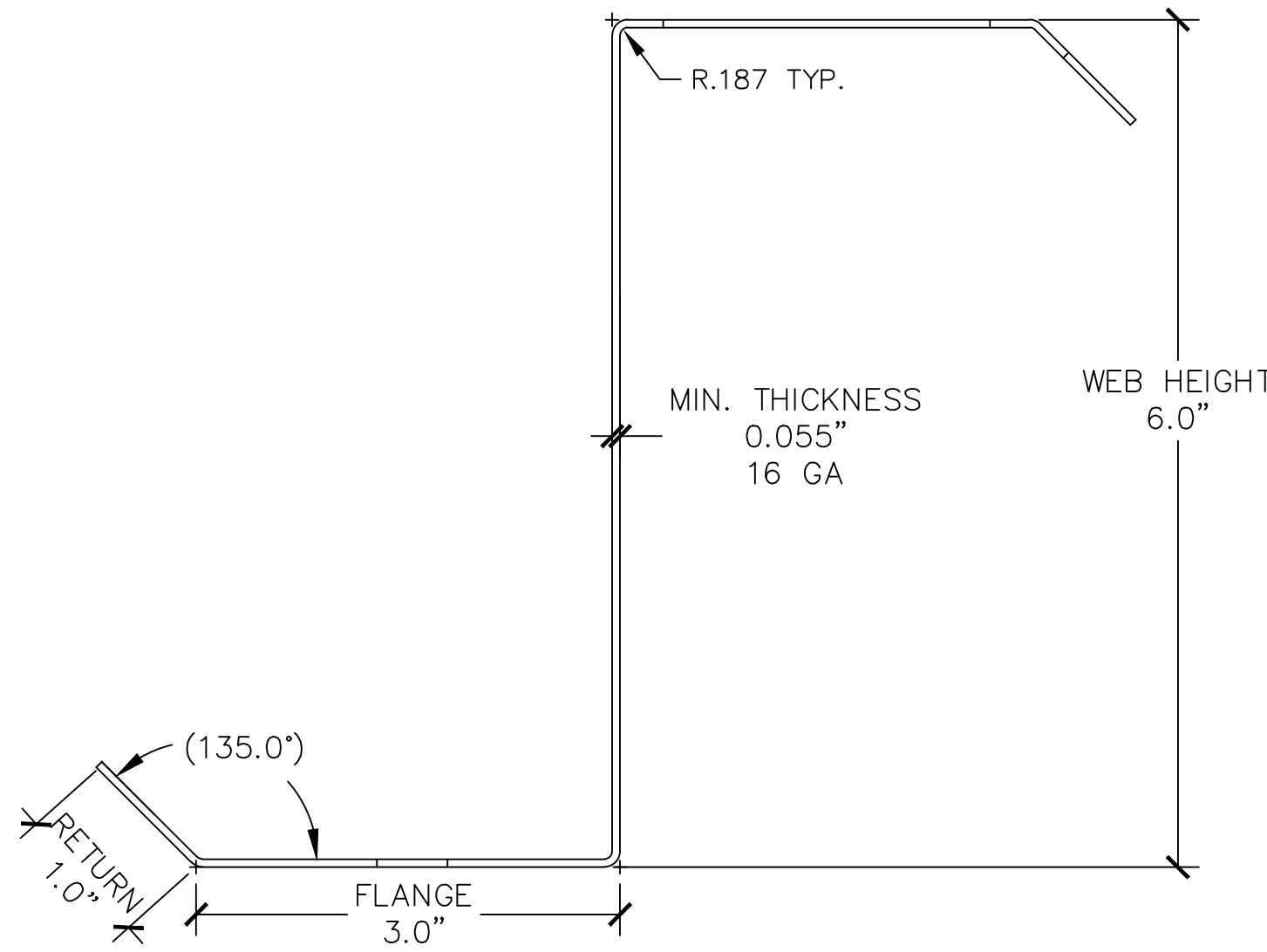


E4 DETAIL: ZEE PURLIN PANEL SLOTS

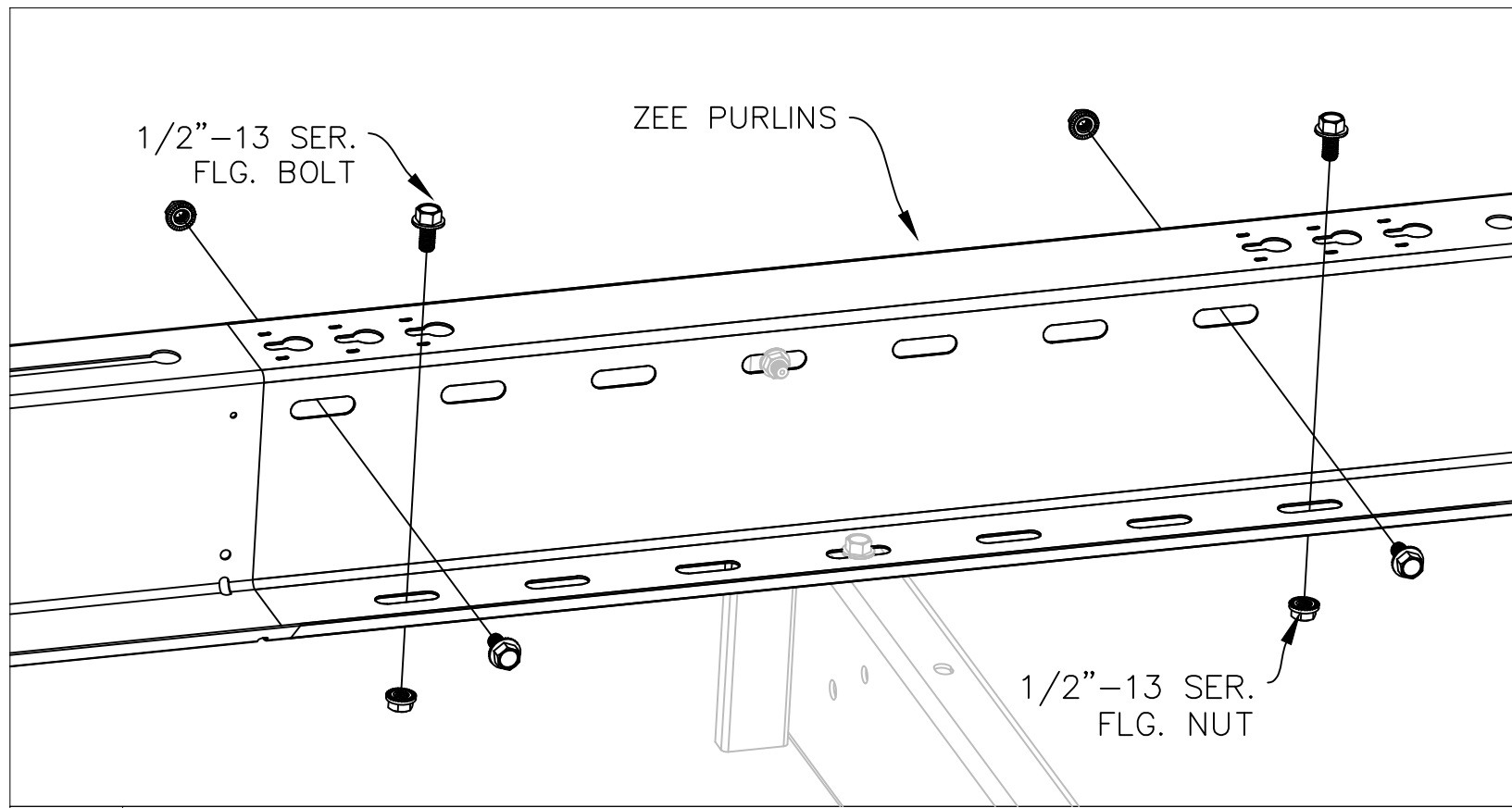


D4 DETAIL: ZEE PURLIN SPLICE SLOTS

MATERIAL: A653 STR. STL.  
STRENGTH: MIN. YIELD (Fy): 80 KSI.



B4 PART: ZEE PURLIN



A4 CONNECTION: ZEE-TO-ZEE PURLINS SPLICE

NOTES:

1. HARDWARE TORQUE VALUES:

3/8"-16 STAINLESS STEEL  
MIN.: 17.5 FT-LBS  
NOM.: 19.6 FT-LBS  
MAX.: 50.0 FT-LBS

2. DEPICTED HARDWARE AND PART PLACEMENT NOT INDICATIVE OF PREFERRED OR REQUIRED POSITIONS.

3. HOLE/SLOT PATTERNS IN PARTS ALLOW FOR DEVIATION FROM NOMINAL DIMENSIONS, MULTIPLE PART POSITIONS, AND MULTIPLE TILT ANGLES.

4. SEE INSTALLATION MANUAL FOR SETUP INSTRUCTIONS.

5. SERRATED FLANGED BOLTS MAY BE REPLACED WITH EQUIVALENT PRESS-IN BOLTS.

6. PRESS-IN BOLTS, WHERE PRESENT, TO BE INSTALLED TO MANUFACTURERS RECOMMENDED VALUES.

7. OTHER SPECIFIC CONNECTIONS ELSEWHERE IN PRINT SET.

8. SERRATED HARDWARE MAY BE REPLACED WITH EQUIVALENT HARDWARE WITH WASHERS IF NECESSARY.

9. IN ALL DETAILS, THE PRESENCE OF TWO SETS OF HARDWARE INDICATES THE REQUIREMENT OF TWO SETS OF HARDWARE.

10. STAINLESS STEEL HARDWARE MAY BE REPLACED WITH GALVANIZED STEEL HARDWARE OR CORROSION AND STRENGTH COMPARABLE HARDWARE MATERIALS AND FINISHES.

11. UNLESS NOTED OTHERWISE, ALL HARDWARE MAY BE INSTALLED IN EITHER DIRECTION (NUT/BOLT MAY BE ON EITHER SIDE OF CONNECTION).

12. WHEN NECESSARY, ADDITIONAL HOLES MAY BE DRILLED TO COMPLETE CONNECTION. ENGINEERING SHALL BE CONTRACTED PRIOR TO FIELD MODIFICATIONS OF PARTS.

13. CONNECTION IN DETAIL A1 & A2 SHOWN IN NOMINAL POSITION. ACTUAL CONNECTION MAY BE ±8".

14. WHEN CONNECTIONS IN DETAIL A1 & A2 ARE AT THEIR MAX/MIN POSITIONS (±2") INTERFERING SPLICE HARDWARE MAY BE RELOCATED TO NEXT NEAREST SLOTS.

15. WHERE PRESENT, TRANSVERSE BRACE MAY UTILIZE LOWER SPLICE BOLTS. SEE CONNECTIONS SHEET FOR MORE INFORMATION.

16. ZEE-TO-ZEE SPLICE SHALL ALWAYS OVERLAP APPROXIMATELY 24", AS INDICATED, EXCEPT AT ENDS OF ROW, WHERE NO SPLICE IS REQUIRED.

17. SPLICE MAY OVERLAP IN EITHER DIRECTION.

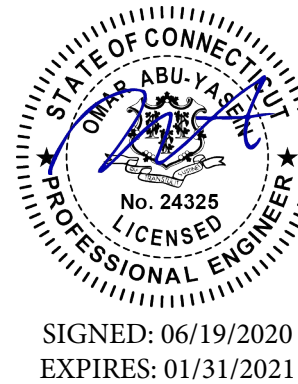
18. ZEE PURLIN MATERIAL AND FINISH ARE MANUFACTURED TO SPECIFICATIONS THAT MEET OR EXCEED OUR STANDARD PRODUCT WARRANTY.

19. ZEE PURLINS GALVANIZED TO CONFORM TO A MINIMUM THICKNESS DESIGNATION EQUAL TO G90 OR INLINE GALVANIZED TO COMPARABLE THICKNESS AS PER ASTM A1057.

20. TYPICAL ZEE PURLIN RETURN LIP ANGLE SHOWN. ACTUAL ANGLE MAY VARY.

21. SLOT DIMENSIONS FOR REFERENCE ONLY. FINAL SHAPE, FREQUENCY, AND DIMENSIONS MAY VARY.

22. LENGTH OF PURLIN VARIES BY PROJECT AND LOCATION WITHIN ARRAY. LENGTH OF PURLIN DOES NOT AFFECT STRUCTURAL CAPACITY.



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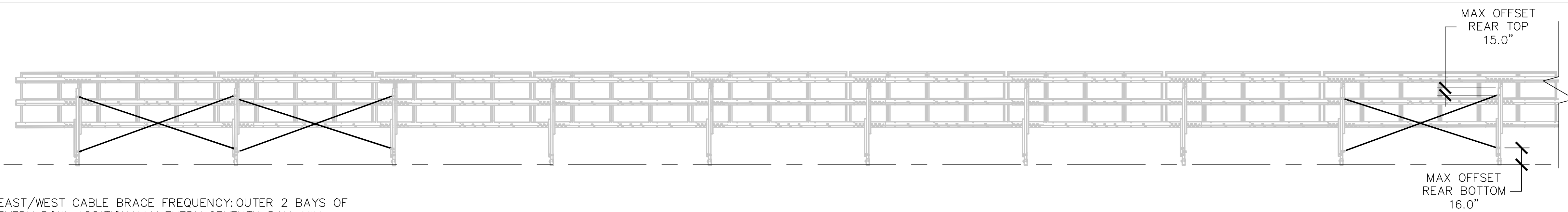
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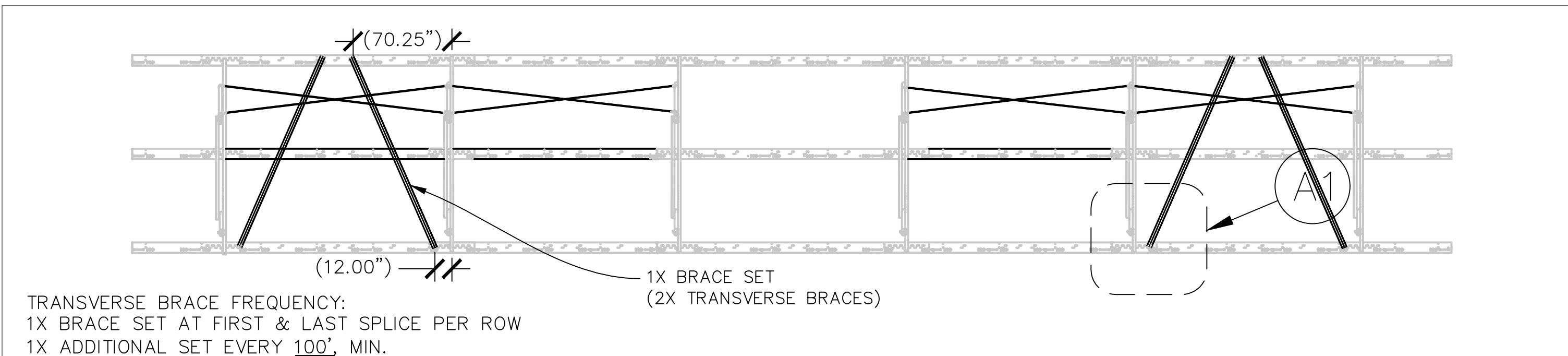
DRAWN	REVIEWED	APPROVED	SIZE
TK	JR	JDI	D
SHEET NAME			
STRUCTURAL PURLINS			
PROJECT NUMBER			
200051			
DRAWING NUMBER			REV.
S.400			A



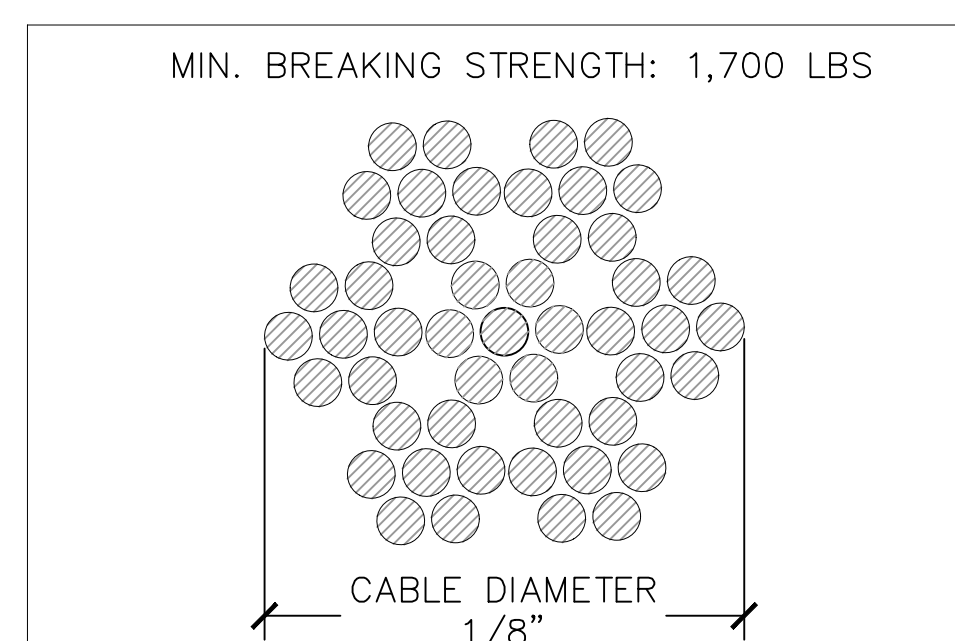


EAST/WEST CABLE BRACE FREQUENCY: OUTER 2 BAYS OF EVERY ROW. ADDITIONALLY EVERY SEVENTH BAY, MIN

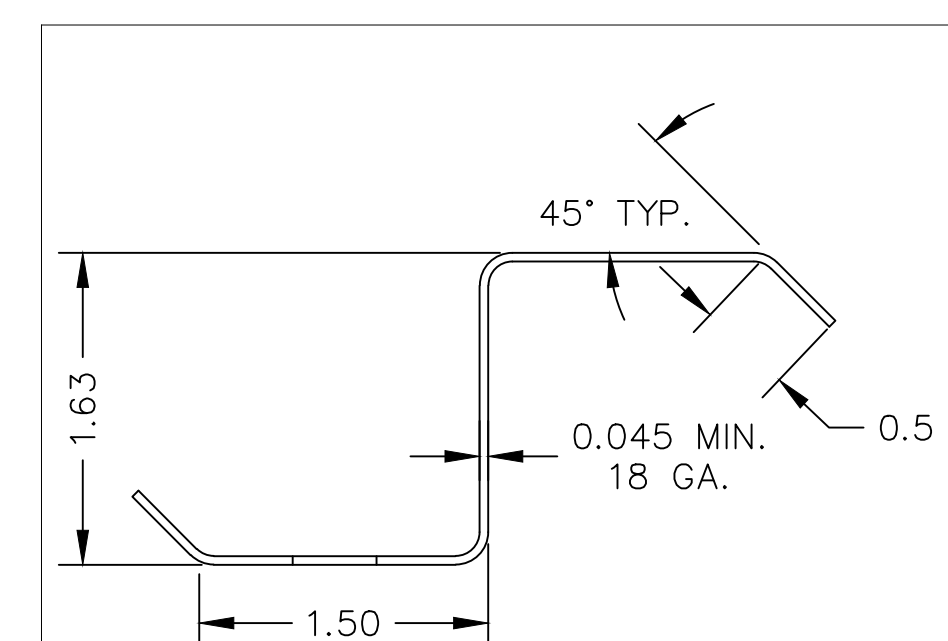
E1	REAR VIEW: CABLE BRACE FREQUENCY
----	----------------------------------



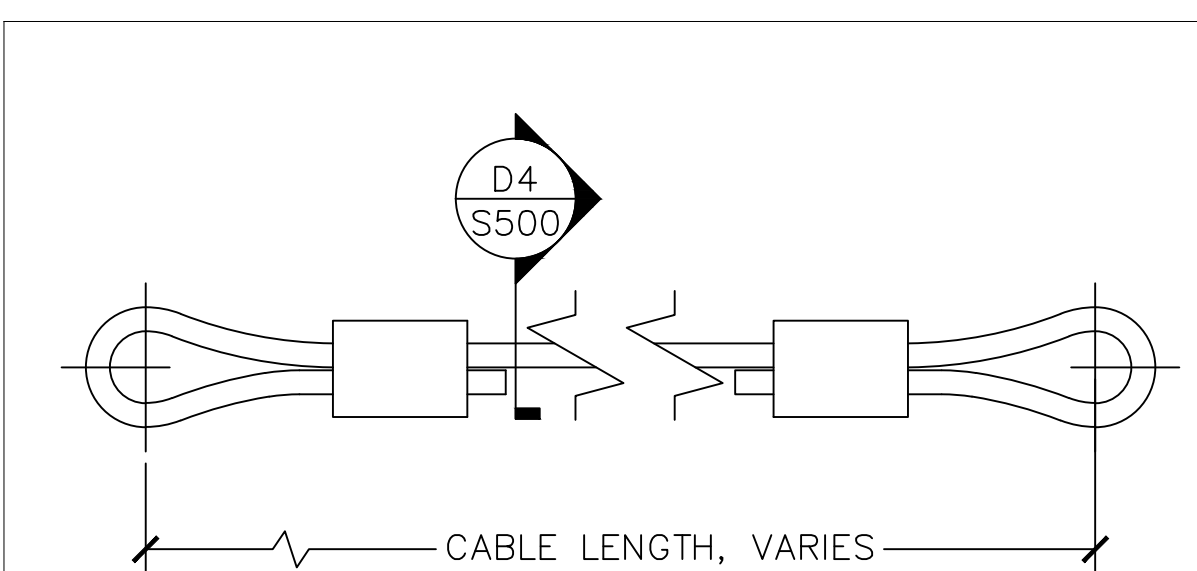
D1	BOTTOM VIEW: TRANSVERSE BRACE LOCATIONS
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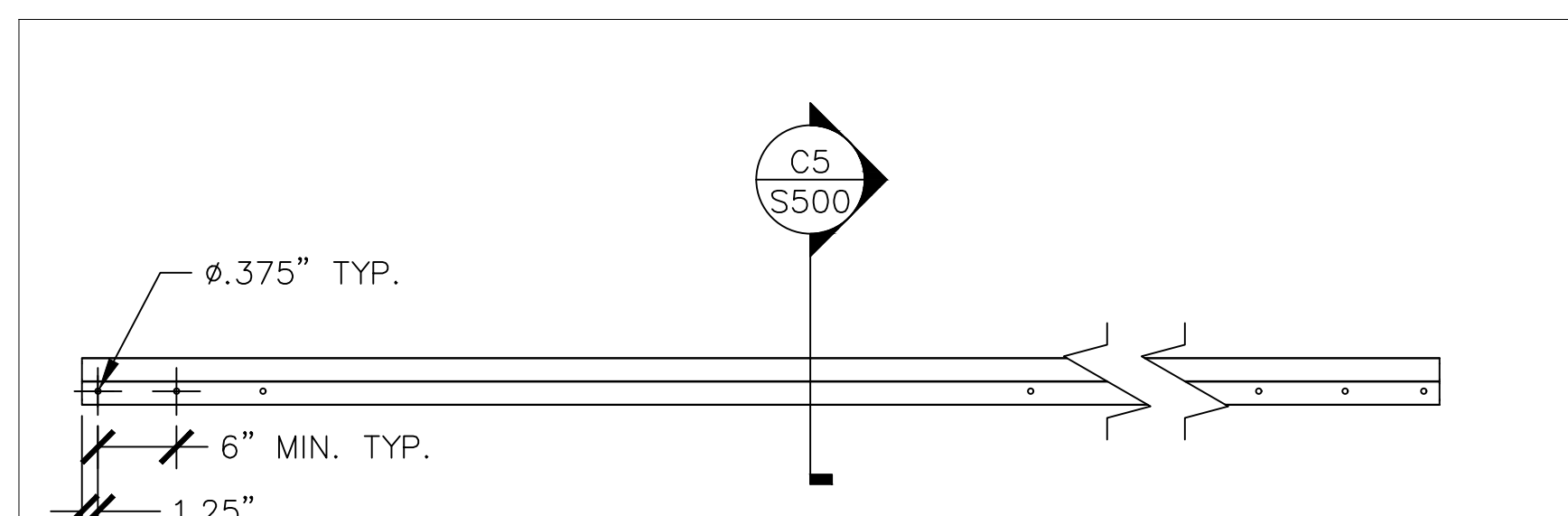
D4	SEC.: CABLE BRACE
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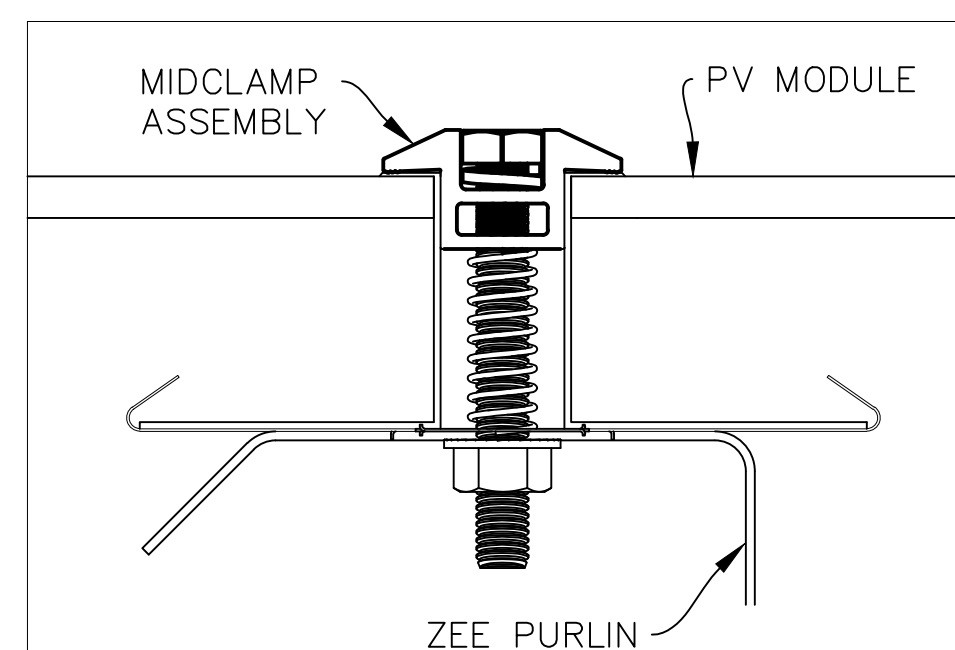
D5	SECTION: TVS BRACE
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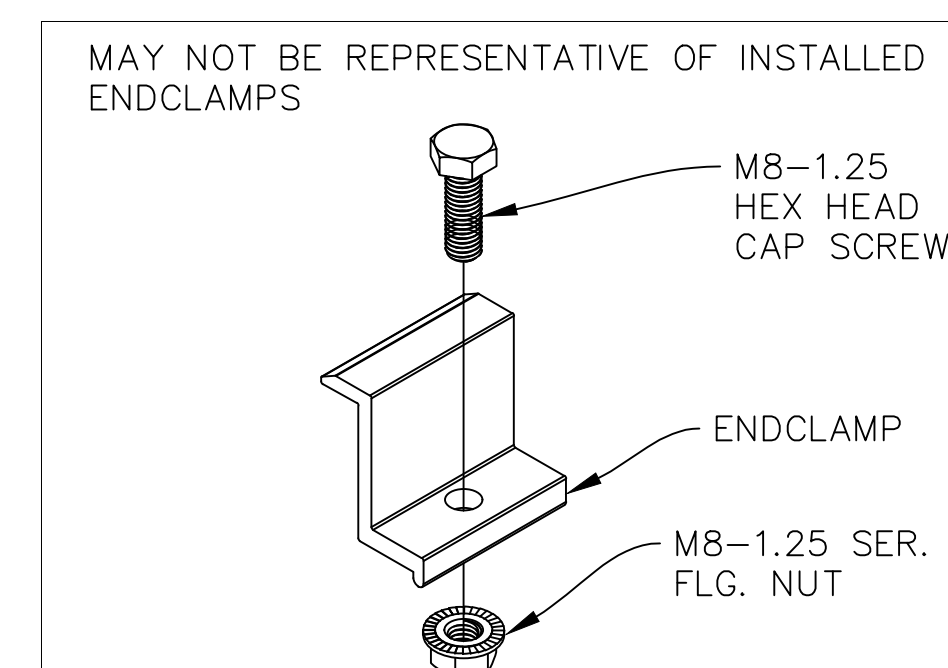
C1	PART: CABLE BRACE
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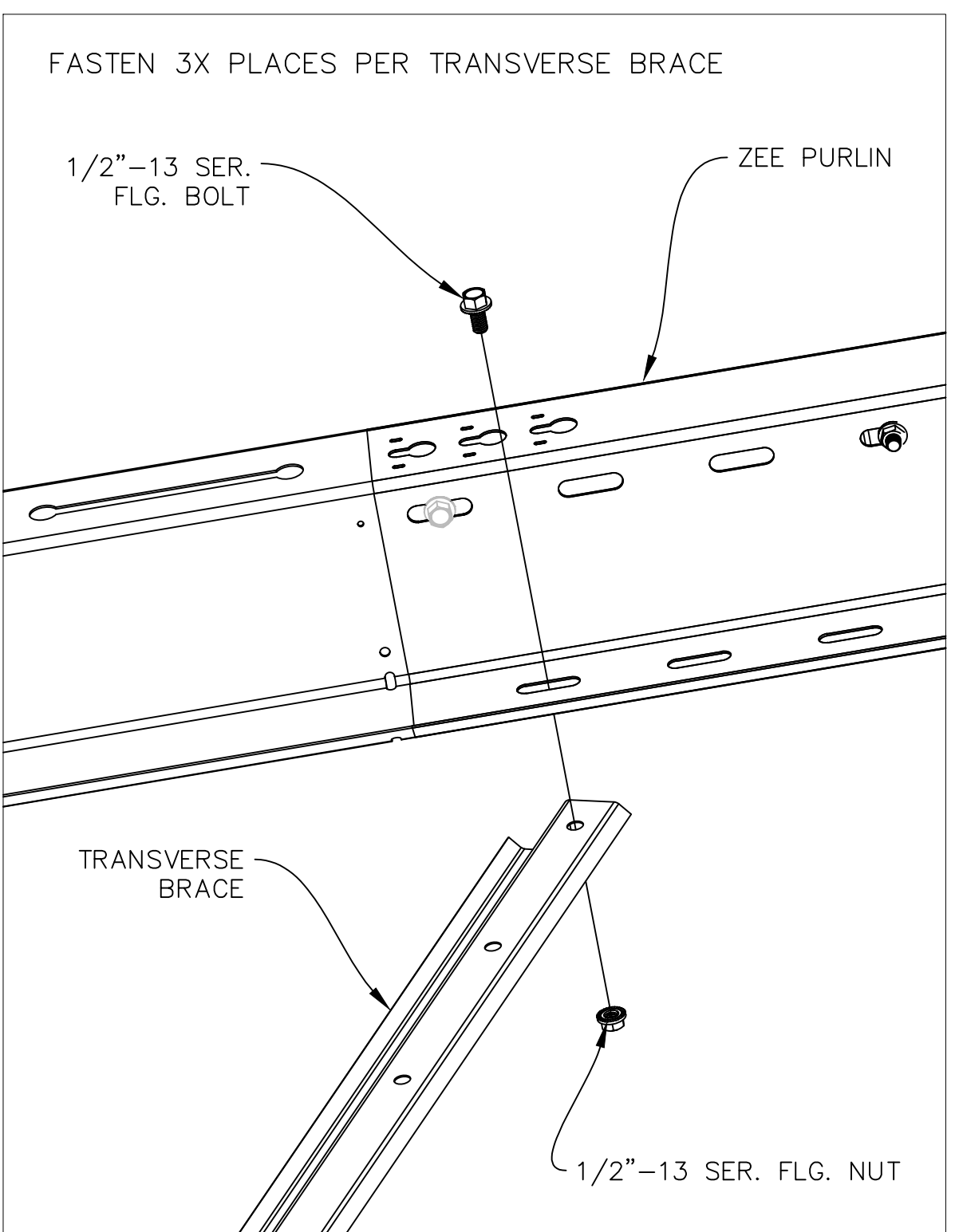
C2	PART: TRANSVERSE BRACE (TVS BRACE)
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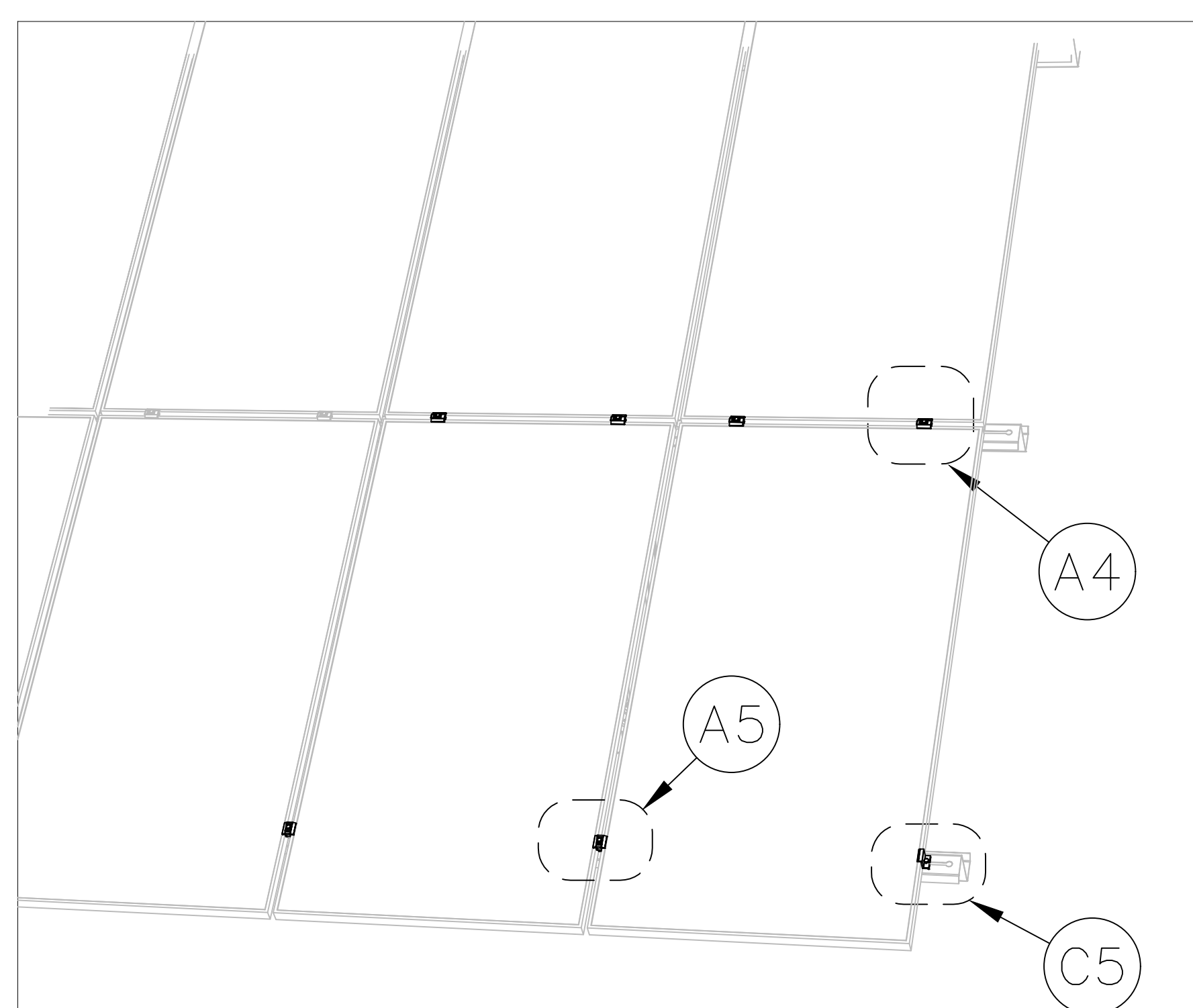
C4	CONNECTION: PV-T0-PURLIN
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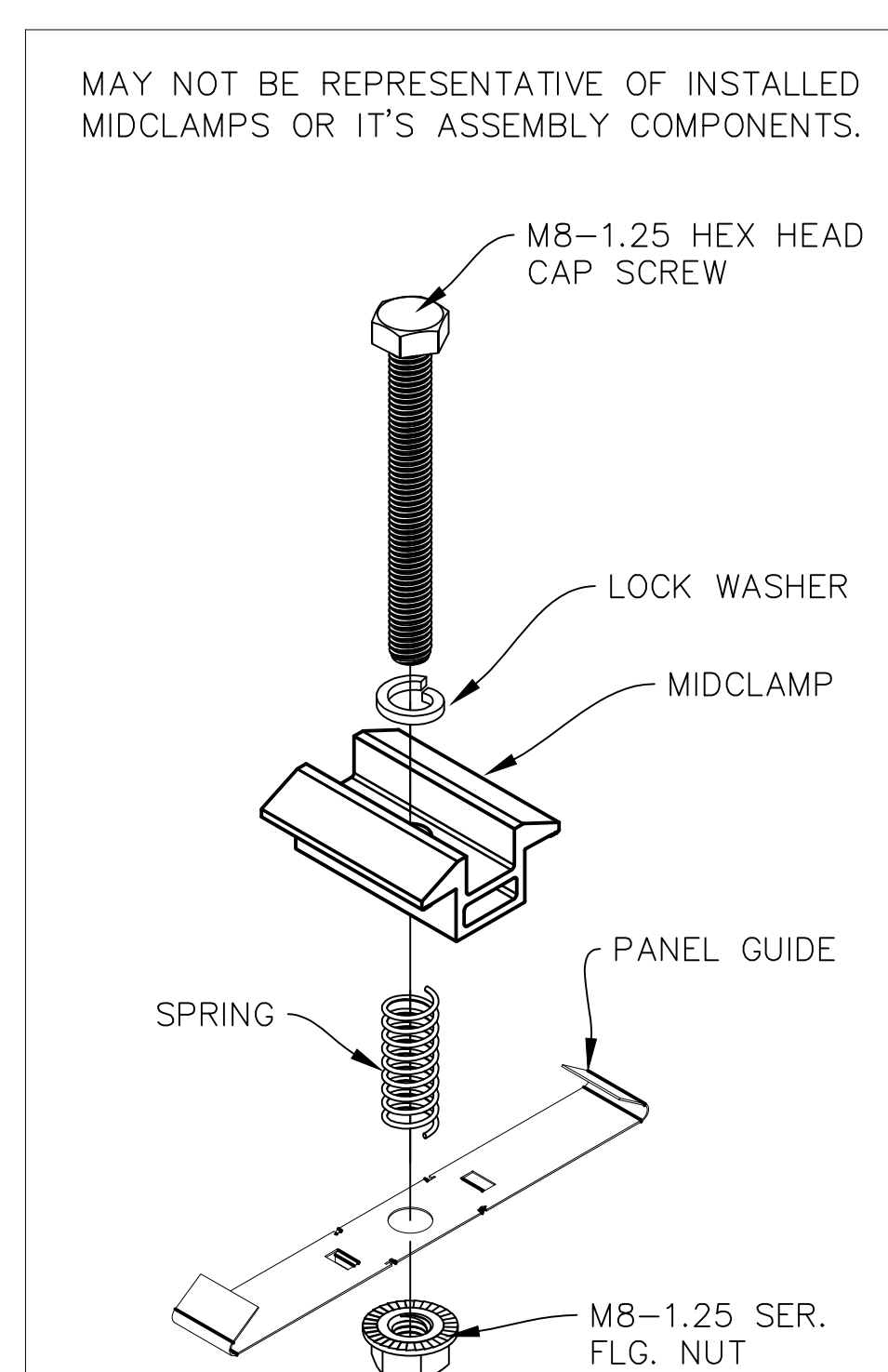
C5	ASSEMBLY: ENDCLAMP
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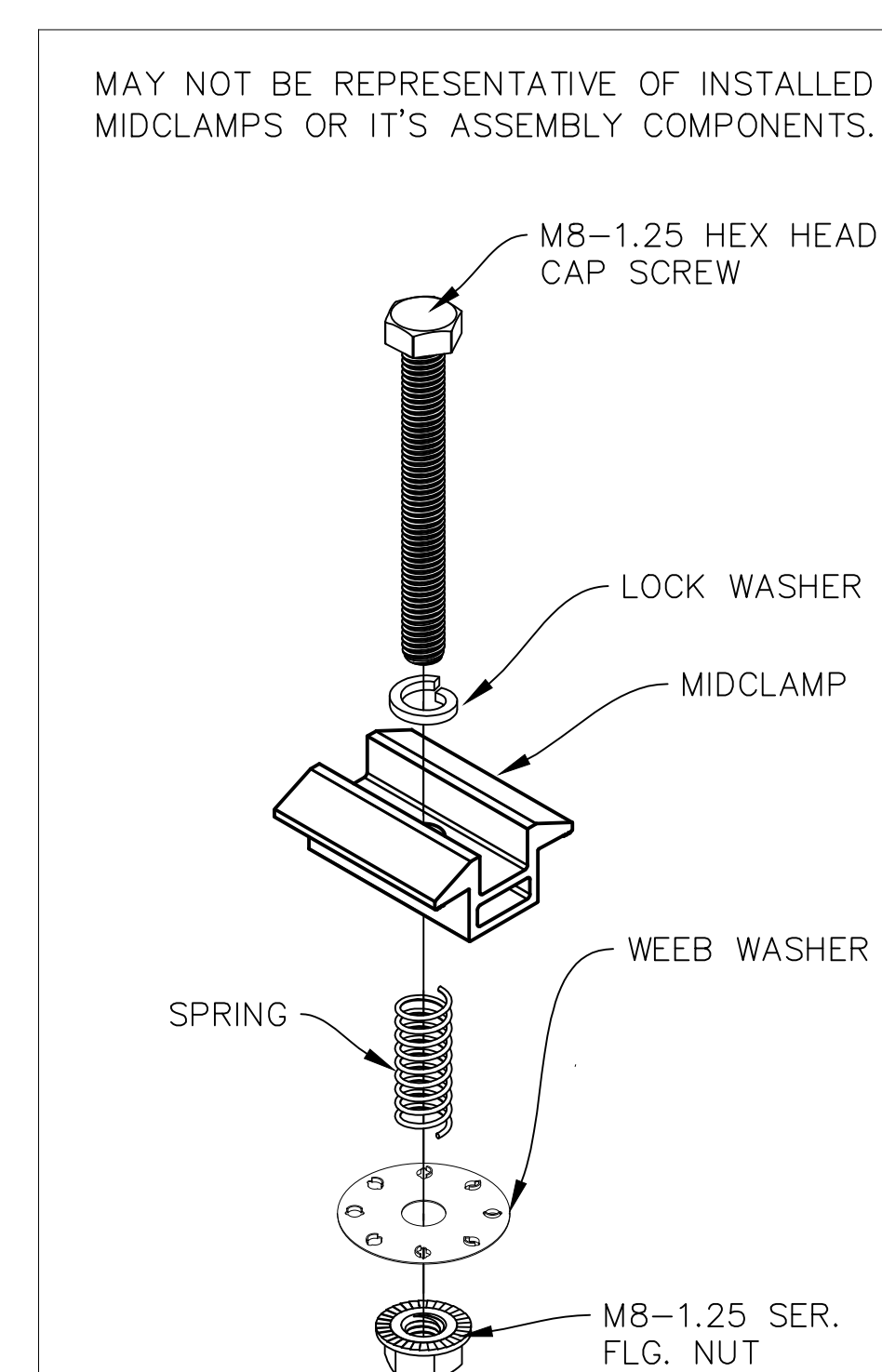
A1	CONNECTION: TVS BRACE-TO-PURLIN
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A2	TOP (ISO) VIEW: PV CLAMP LOCATIONS
----	------------------------------------



A4	ASSEMBLY: MIDCLAMP
----	--------------------



A5	ASSEMBLY: MIDCLAMP
----	--------------------

NOTES:

1. HARDWARE TORQUE VALUES:

1/2"-13 STAINLESS STEEL  
MIN.: 40 FT-LBS

M8-1.25 STAINLESS STEEL  
MIN.: 14.0 FT-LBS  
NOM.: 15.6 FT-LBS  
MAX.: 17.5 FT-LBS



2. DEPICTED HARDWARE AND PART PLACEMENT NOT INDICATIVE OF PREFERRED OR REQUIRED POSITIONS.
3. HOLE/SLOT PATTERNS IN PARTS ALLOW FOR DEVIATION FROM NOMINAL DIMENSIONS, MULTIPLE PART POSITIONS, AND MULTIPLE TILT ANGLES.
4. SEE INSTALLATION MANUAL FOR SETUP INSTRUCTIONS.
5. SERRATED FLANGED BOLTS MAY BE REPLACED WITH EQUIVALENT PRESS-IN BOLTS.
6. PRESS-IN BOLTS, WHERE PRESENT, TO BE INSTALLED TO MANUFACTURERS RECOMMENDED VALUES.
7. OTHER SPECIFIC CONNECTIONS ELSEWHERE IN PRINT SET.
8. SERRATED HARDWARE MAY BE REPLACED WITH EQUIVALENT HARDWARE WITH WASHERS IF NECESSARY.
9. STAINLESS STEEL HARDWARE MAY BE REPLACED WITH GALVANIZED STEEL HARDWARE OR CORROSION AND STRENGTH COMPARABLE HARDWARE MATERIALS AND FINISHES.
10. UNLESS NOTED OTHERWISE, ALL HARDWARE MAY BE INSTALLED IN EITHER DIRECTION (NUT/BOLT MAY BE ON EITHER SIDE OF CONNECTION).
11. WHEN NECESSARY, ADDITIONAL HOLES MAY BE DRILLED TO COMPLETE CONNECTION. ENGINEERING SHALL BE CONTRACTED PRIOR TO FIELD MODIFICATIONS OF PARTS.
12. EASE/WEST CABLE BRACING (C1) TO BE INSTALLED IN THE SPACE BETWEEN ANCHOR SETS (BAY).
13. MINIMUM CABLE BREAKING STRENGTH DETERMINED BY PROJECT SPECIFIC STRUCTURAL CALCULATIONS.
14. CABLE TO BE STAINLESS STEEL AIRCRAFT CABLE.
15. CABLE MAY BE OF ANY CONFIGURATION (IE. 7X7 OR 7X19) AS LONG AS IT MEETS THE REQUIREMENTS LISTED ON THIS SHEET.
16. LENGTH OF BRACES WILL VARY DEPENDENT ON PROJECT SPECIFICS.
17. TRANSVERSE BRACE SETS SHALL BE INSTALLED AT FREQUENCY INDICATED.
18. TRANSVERSE BRACE SHALL BE FASTENED IN THREE PLACES (ONCE TO EACH ZEE).
19. TRANSVERSE BRACES ARE NOT A REQUIREMENT OF THE STRUCTURAL MODELS. APA REQUIRES THEIR PRESENCE AS AN ASSEMBLY AID ONLY.
20. DUE TO IT'S NON-STRUCTURAL NATURE, TRANSVERSE BRACE PROFILE, THICKNESS, MATERIAL, STRENGTH, COATING, FREQUENCY, AND INSTALLATION MAY CHANGE AT ANY TIME AT THE DISCRETION OF APA, BY APPROVAL OF APA ENGINEERING.
21. WHERE TRANSVERSE BRACE CANNOT BE INSTALLED DUE TO NS CHORD (OUT OF NOMINAL LOCATION), BRACE SHALL BE RELOCATED TO NEXT NEAREST REASONABLE SPLICE.
22. TRANSVERSE BRACE MAY UTILIZE LOWER SPLICE BOLTS, WHERE PRESENT. SEE PURLIN SHEET FOR MORE INFORMATION.
23. EACH PV MODULE SHALL BE CLAMPED IN 4 PLACES.
24. A MAJORITY OF THE CLAMP BOLT FLANGES MUST TERMINATE OVER THE SLOT, AND NOT OVER THE KEYHOLE.
25. SPRING, & PANEL GUIDE MAY NOT BE PRESENT AT ALL LOCATIONS, OR ANY LOCATIONS.
26. ALL PANELS MUST BE GROUNDED/BONDED TO ZEE PURLINS. THIS MAY BE ACCOMPLISHED WITH THE PANEL GUIDE, WEBB WASHERS, DYNABOND EQUIPMENT OR OTHER APPROVED GROUNDING DEVICE.

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20-345 COUNTY ROAD X  
RIDGEVILLE CORNERS, OHIO 43555  
(P) 419.267.5280  
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STRUCTURAL ENGINEER OF RECORD



360 W. DUSSEL DR.  
MAUMEE, OH 43537  
[P] 419.725.7161 [F] 419.725.7160

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APPROVED

DRAWN TK	REVIEWED JR	APPROVED JDI	SIZE D
SHEET NAME CLAMPS & BRACES			
PROJECT NUMBER 200051			
DRAWING NUMBER S 500			REV. A



1. MODULE CONSTANTS

MAX. MODULE DIMS.				
WIDTH	39.50	IN	3.29	FT
LENGTH	77.50	IN	6.46	FT
HEIGHT	2.00	IN	0.17	FT
WEIGHT	60.00	LBS		
AREA	21.26	SQ FT		

2. DESIGN CONSTANTS

SNOW LOAD CONSTANTS		
TERRAIN TYPE	C	
EXPOSURE CONDITION	FULLY EXPOSED	
EXPOSURE FACTOR	0.90	Ce
THERMAL CONDITION	UNHEATED	
THERMAL FACTOR	1.20	Ct
IMPORTANCE CATEGORY	I	
IMPORTANCE FACTOR	0.80	Is
ROOF SURFACE TYPE	SLIPPERY	
VENTILATION	VENTILATED	

WIND LOAD CONSTANTS		
RISK CATEGORY	I	
VELOCITY PRESSURE COEFF.	.85	Kd
EXPOSURE CATEGORY	C	
GUST EFFECT FACTOR	0.85	
TOPOGRAPHY FACTOR	1.0	Kzt

SEISMIC LOAD CONSTANTS		
RISK CATEGORY	I	
RESPONSE MODIFICATION FACTOR	1.25	
SYSTEM OVERSTRENGTH FACTOR	1.25	
DEFLECTION AMPLIFICATION FACTOR	1.25	
SEISMIC FORCE-RESISTING SYSTEM	CANTILEVERED COLUMN SYSTEMS; STEEL ORDINARY CANTILEVER	
SEISMIC IMPORTANCE FACTOR	1.00	
STRUCTURE TYPE	ALL OTHER SYSTEMS	
LONG-PERIOD TRANSITION PERIOD	6.00	SEC

3. SITE DESIGN LOADS

DEAD LOADS		
PER PANEL		
MODULES WEIGHT	60.00	LBS
EW STRUTS WEIGHT	18.10	LBS
MISC HARDWARE WEIGHT	5.00	LBS
TOTAL DEAD LOAD	83.10	LBS
PRESSURE	3.91	PSF
DISTRIBUTED LOAD	12.62	LB/FT

SNOW LOADS		
PER PANEL		
GROUND SNOW LOAD	35	PSF
TILT ANGLE	25	DEGREES
WIDTH	3.29	FT
DEPTH	5.85	FT
SLOPED SNOW LOAD	17.32	PSF
AREA	19.27	SQ FT
RESULTANT FORCE	333.69	LBS
DISTRIBUTED LOAD	50.69	LB/FT

WIND LOADS		
PER CARTRIDGE		
ENVELOPE WIDTH	3.29	FT
ENVELOPE HEIGHT	2.73	FT
AREA	8.98	SQ FT
WIND SPEED (3-SEC PEAK GUST), Vult	120	MPH
VELOCITY PRESSURE	355.00	PSF

SEISMIC LOADS		
PER CARTRIDGE		
MAX SHORT PERIOD ACCELERATION, Ss	0.260	G
MAX 1 SEC PERIOD ACCELERATION, S1	0.070	G
SITE COEF. SHORT PERIOD, FA	1.59	
SITE COEF. 1 SEC. PERIOD, FV	2.40	
SITE CLASS	D	
DESIGN CATEGORY	E	
MAX HEIGHT	8.96	FT
Cs	0.22	
WEIGHT OF STRUCTURE	14,984	LB
SEISMIC BASE SHEAR	3,308	LBS
SEISMIC BASE SHEAR - PER RACK	3,308	LBS
LOAD PER POST	150.36	LBS

4. LOAD COMBOS.

LOAD COMBINATIONS	
LRFD	
CODE	FORMULA
D1	1.4DL
D2	1.2DL+0.5LLR
D3	1.2DL+0.5SL
D4	1.2DL+1.6LLR
D5	1.2DL+1.6SL
D6	1.2DL+0.5WL1
D7	1.2DL+0.5WL2
D8	1.2DL+0.5WL3
D9	1.2DL+0.5WL4
D10	1.2DL+0.5WL5
D11	1.2DL+0.5WL6
D12	1.2DL+1.6LLR+0.5WL1
D13	1.2DL+1.6LLR+0.5WL2
D14	1.2DL+1.6LLR+0.5WL3
D15	1.2DL+1.6LLR+0.5WL4
D16	1.2DL+1.6LLR+0.5WL5
D17	1.2DL+1.6LLR+0.5WL6
D18	1.2DL+1.6SL+0.5WL1
D19	1.2DL+1.6SL+0.5WL2
D20	1.2DL+1.6SL+0.5WL3
D21	1.2DL+1.6SL+0.5WL4
D22	1.2DL+1.6SL+0.5WL5
D23	1.2DL+1.6SL+0.5WL6
D24	1.2DL+WL1
D25	1.2DL+WL2
D26	1.2DL+WL3
D27	1.2DL+WL4
D28	1.2DL+WL5
D29	1.2DL+WL6
D30	1.2DL+0.5LLR+WL1
D31	1.2DL+0.5LLR+WL2
D32	1.2DL+0.5LLR+WL3
D33	1.2DL+0.5LLR+WL4
D34	1.2DL+0.5LLR+WL5
D35	1.2DL+0.5LLR+WL6
D36	1.2DL+0.5SL+WL1
D37	1.2DL+0.5SL+WL2
D38	1.2DL+0.5SL+WL3
D39	1.2DL+0.5SL+WL4
D40	1.2DL+0.5SL+WL5
D41	1.2DL+0.5SL+WL6
D42	1.2DL+0.2SL
D43	1.2DL+EL1
D44	1.2DL+EL2
D45	1.2DL+EL3
D46	1.2DL+EL4
D47	1.2DL+0.2SL+EL1
D48	1.2DL+0.2SL+EL2
D49	1.2DL+0.2SL+EL3
D50	1.2DL+0.2SL+EL4
D51	0.9DL+WL1
D52	0.9DL+WL2
D53	0.9DL+WL3
D54	0.9DL+WL4
D55	0.9DL+WL5
D56	0.9DL+WL6
D57	0.9DL+EL1
D58	0.9DL+EL2
D59	0.9DL+EL3
D60	0.9DL+EL4

LOAD COMBINATIONS	
ASD	
CODE	FORMULA
D1	DL
D2	DL+LLR
D3	DL+SL
D4	DL+0.75SL
D5	DL+0.75LLR
D6	DL+0.6WL1
D7	DL+0.6WL2
D8	DL+0.7EL1
D9	DL+0.7EL2
D10	DL+0.7EL3
D11	DL+0.7EL4
D12	DL+0.75SL+0.45WL1
D13	DL+0.75SL+0.45WL2
D14	DL+0.75LLR+0.45WL1
D15	DL+0.75LLR+0.45WL2
D16	DL+0.75SL+0.525EL1
D17	DL+0.75SL+0.525EL2
D18	DL+0.75SL+0.525EL3
D19	DL+0.75SL+0.525EL4
D20	DL+0.75LLR+0.525EL1
D21	DL+0.75LLR+0.525EL2
D22	DL+0.75LLR+0.525EL3
D23	DL+0.75LLR+0.525EL4
D24	0.6DL+0.6WL1
D25	0.6DL+0.6WL2
D26	0.6DL+0.7EL1
D27	0.6DL+0.7EL2
D28	0.6DL+0.7EL3
D29	0.6DL+0.7EL4
D30	DL+0.6WL3
D31	DL+0.6WL4
D32	DL+0.6WL5
D33	DL+0.6WL6
D34	DL+0.75SL+0.45WL3
D35	DL+0.75SL+0.45WL4
D36	DL+0.75SL+0.45WL5
D37	DL+0.75SL+0.45WL6
D38	DL+0.75LLR+0.45WL3
D39	DL+0.75LLR+0.45WL4
D40	DL+0.75LLR+0.45WL5
D41	DL+0.75LLR+0.45WL6
D42	0.6DL+0.6WL3
D43	0.6DL+0.6WL4
D44	0.6DL+0.6WL5
D45	0.6DL+0.6WL6

5. FINAL DESIGN LOADS

FORCES				
ABBRV.	NAME	RESULTANT LOAD	DISTRIBUTED LOAD (LB/FT/PC.)	DIR.
DL	DEAD LOAD	83.10	-12.62	-Y
SL	SNOW LOAD	333.69	-50.69	-Y
SEE CALC PACKAGE FOR WIND LOADING				
		LB/POST		
EL1	SEISMIC LEFT	150.36		+X
EL2	SEISMIC RIGHT	-150.36		-X
EL3	SEISMIC NORTH	150.36		+Z
EL4	SEISMIC SOUTH	-150.36		-Z

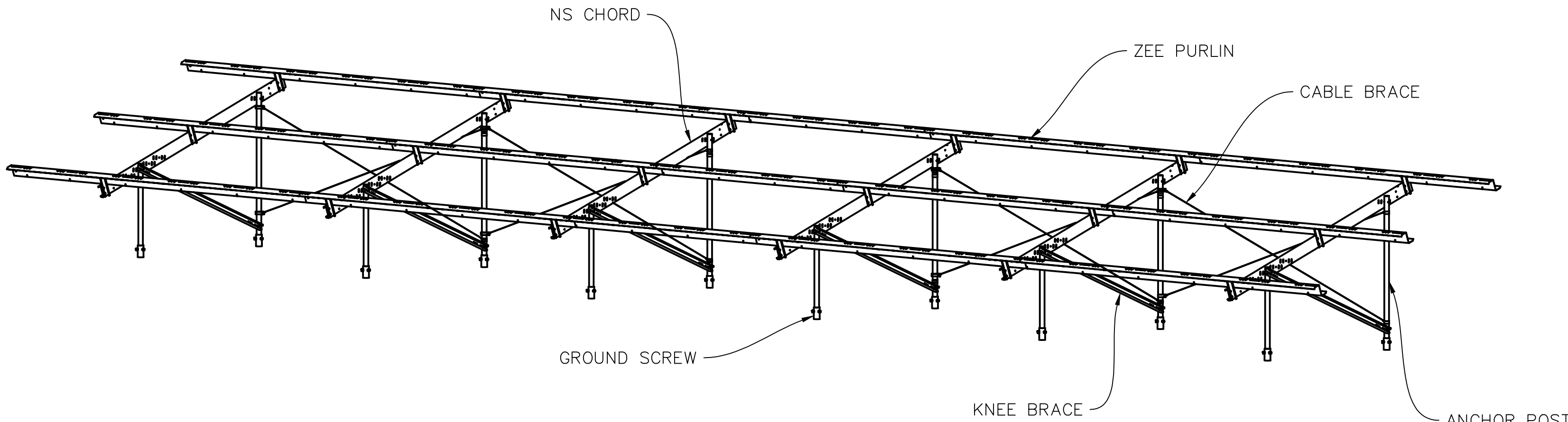
6. ANALYSIS RESULTS:  
LRFD

STEEL CODE CHECK SUMMARY - LRFD						
	GREEN ZONE		YELLOW ZONE		ORANGE ZONE	
DESC.	CTRL EQ.	RATIO	CTRL EQ.	RATIO	CTRL EQ.	RATIO
ANCHOR POST	D21	0.32	D39	0.51	D39	0.44
ZEE PURLIN	D21	0.82	D22	0.86	D21	0.72
CABLE BRACE	D48	0.21				
KNEE BRACE	D54	0.26	D39	0.63	D39	0.57
NS CHORD	D22	0.65	D40	0.85	D40	0.71

7. ANALYSIS RESULTS:  
ASD

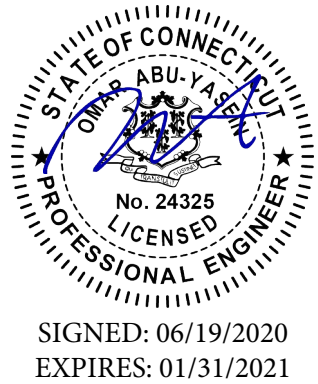
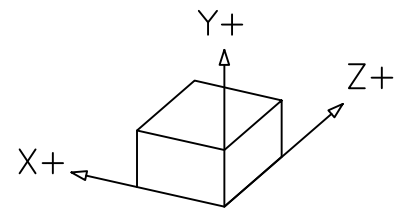
MAX/MIN SUPPORT REACTIONS - ASD							
		GREEN ZONE		YELLOW ZONE		ORANGE ZONE	
DIR.	SIGN	LOAD (LBS)	LOAD COMB.	LOAD (LBS)	LOAD COMB.	LOAD (LBS)	LOAD COMB.
X	MAX	0	D36	199	D9	193	D27
	MIN	0	D36	-196	D8	-195	D26
Y	MAX	2460	D3	3125	D35	2488	D35
	MIN	-2766	D24	-4495	D25	-3633	D25
Z	MAX	1203	D30	2023	D42	1568	D42
	MIN	-689	D43	-1657	D31	-1513	D31

IMAGE FOR REFERENCE ONLY



MEMBER SUMMARY		
DESCRIPTION	SECTION	MATERIAL
KNEE BRACE	CEE 3 X 2 X 0.78	A1011 GR80 COLD FORM
ANCHOR POST	POST 2.35 X 0.095	A1011 GR50 COLD FORM
NS CHORD	CEE 6 X 2 X 0.108	A1011 GR80 COLD FORM
ZEE PURLIN	ZEE 6 X 3 X 0.055	A1011 GR80 COLD FORM
CABLE BRACE	CABLE BRACE 1/8	A36

TITAN - DUO  
25° TILT  
35 PSF SNOW  
120 WIND



CUSTOMER

RACKING PROVIDER

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20-345 COUNTY ROAD X  
RIDGEVILLE CORNERS, OHIO 43555  
(P) 419.267.5280  
(F) 419.267.5214  
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RACKING TYPE

TITAN D10  
STRUCTURAL ENGINEER OF RECORD

thejdggroup  
architects & engineers  
360 W. DUSSEL DR.  
MAUMEE, OH 43537  
(P) 419.725.7161 (F) 419.725.7160

PROFESSIONAL SEAL/STAMP

DOCUMENT NAME:  
STRUCTURAL PRINT PACKAGE

SITE STREET ADDRESS:  
390 HARTFORD TURNPIKE

SITE CITY-STATE-ZIP:  
HAMPTON, CT 06351

SHEET REVISIONS

REV.	DESCRIPTION	DATE
A	INITIAL RELEASE	06/05/2020

APPROVED

DRAWN: TK  
REVIEWED: JR  
APPROVED: JDI  
SIZE: D

SHEET NAME:  
DESIGN & ANALYSIS SUMMARY

PROJECT NUMBER:  
200051

DRAWING NUMBER:  
S.600

REV.:  
A



# SOLAR PV GROUND MOUNT STRUCTURAL CALCULATIONS



20-345 County Road X, PO Box 326  
Ridgeville Corners, OH 43555

Office: 419.267.5280  
Fax: 419.267.5214

LOCATION

## CONNECTICUT

PRINT PACKAGE NUMBER:

**200051**

ON:

6/5/2020

DESIGN CRITERIA:

TITAN

25° TILT

35 PSF SNOW

120 MPH WIND, RISK CAT 1, EX. C.

ASCE 7-10

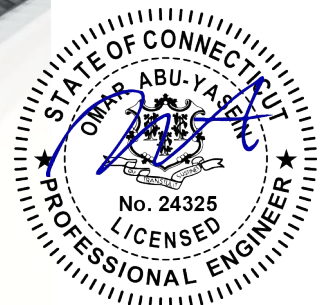
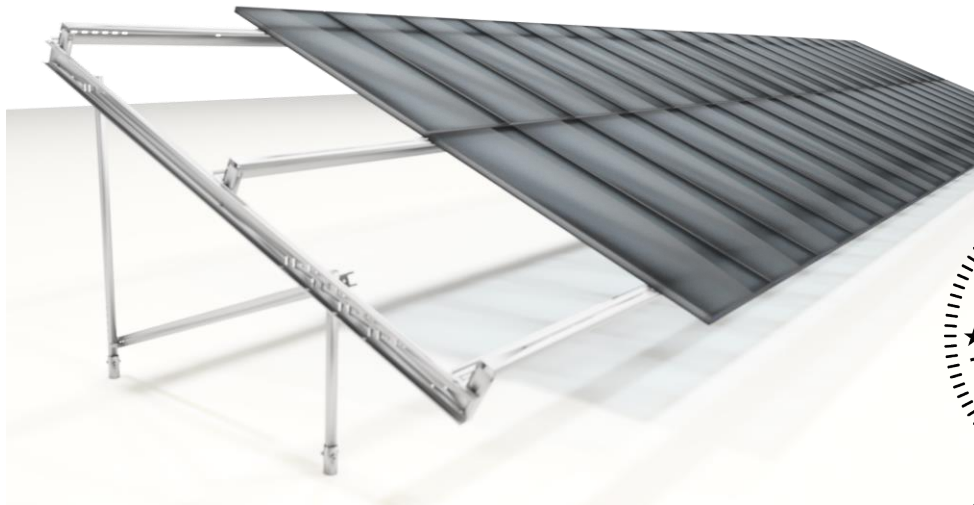
Load & Resistance Factor Design (LRFD) - Code Check

Allowable Stress Design (ASD) - Foundation Reactions



360 W. Dussel Drive  
Maumee, OH 43537

Office: 419.725.7161  
Fax: 419.725.7160



SIGNED: 06/19/2020

EXPIRES: 01/31/2021

REPORT: APA SOLAR  
REVIEW: THE JDI GROUP

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# LOAD CALCULATIONS

## General Calculations

Interface Title

### General Dimensions

Racking Type	$R_T = 1$
Quantity of PV Modules, Vertically (Cartridge)	$PV_Q = 1$
PV Module Tilt	$PV_T = 25.000^\circ$
PV Module Length	$PV_L = 77.50$ in
PV Module Width	$PV_W = 39.500$ in
PV Module Area	$PV_A = PV_L \times PV_W = 21.26$ ft <sup>2</sup>
PV Module Weight	$PV_{LB} = 60.000$ lbs
Force Resisting Members Quantity	$M_Q = 2.0$
Vertical Section Flat Length (chord)	$PV_{FL} = \text{if}(R_T=1, PV_L \times PV_Q, PV_W \times PV_Q) = 6.46$ ft
Vertical Section Profile Length (at tilt)	$PV_{PL} = PV_{FL} \times \cos(PV_T) = 5.85$ ft
Horizontal Width (at tilt)	$PV_{PW} = \text{if}(R_T=1, PV_W, PV_L) = 3.29$ ft
Profile Height (at tilt)	$PV_{PH} = PV_{FL} \times \sin(PV_T) = 2.73$ ft
Area Projected Vertically	$PV_{AV} = PV_{PL} \times PV_{PW} = 19.27$ ft <sup>2</sup>
Area Projected Horizontally	$PV_{AH} = PV_{PH} \times PV_{PW} = 8.98$ ft <sup>2</sup>

## Dead Loading

Force Resisting Member Weight	$M_W = 2.750$ lbs/ft
Cartridge Weight per Member	$PV_{LBT} = PV_{LB} / PV_Q / M_Q = 30.000$ lbs
Misc. Hardware Weight per Vertical Section	$W_{MH} = 5.000$ lbs
Dead Load per Vertical Section	$DL_T = -(PV_{LB} \times PV_Q + M_W \times PV_W \times M_Q \times PV_Q + W_{MH}) = -83.10$ lbs
TD: Distributed Dead Load on Outer Member	$DL = DL_T / PV_Q / M_Q / PV_W = -14.70$ lbs/ft
TD: Distributed Dead Load on Inner Member	$DL = DL_T / PV_Q / M_Q / PV_W = -21.09$ lbs/ft

## **SNOW**

### **SNOW LOADING (ASCE7-10)**

Tedds calculation version 1.0.05

#### **Building details**

Roof type Monopitch  
Width of roof  $b = 5.85$  ft  
Slope of roof 1  $\alpha = 25.00$  deg

#### **Ground snow load**

Ground snow load  $p_g = 35.00$  lb/ft<sup>2</sup>  
Density of snow  $\gamma = \min(0.13 \times p_g / 1\text{ft} + 14\text{lb/ft}^3, 30\text{lb/ft}^3) = 18.55$  lb/ft<sup>3</sup>  
Terrain type B  
Exposure condition (Table 7-2) Fully exposed  
Exposure factor (Table 7-2)  $C_e = 0.90$   
Thermal condition (Table 7-3) Unheated structures  
Thermal factor (Table 7-3)  $C_t = 1.20$   
Importance category (Table 1-1) I  
Importance factor (Table 7-4)  $I_s = 0.80$   
Flat roof snow load (Sect 7.3)  $p_f = 0.7 \times C_e \times C_t \times I_s \times p_g = 21.17$  lb/ft<sup>2</sup>

#### **Cold roof slope factor ( $C_t > 1.0$ )**

Roof surface type Slippery  
Ventilation Ventilated  
Thermal resistance (R-value)  $R = 30.00^\circ\text{F h ft}^2 / \text{Btu}$   
Roof slope factor Fig 7-2c (dashed line)  $C_s = 0.82$

#### **Monoslope**

Sloped roof snow load (Cl.7.4)  $p_s = C_s \times p_f = 17.32$  lb/ft<sup>2</sup>

#### **Distributed Snow Loading**

Snow Load per Vertical Section  $SL_T = -(p_s \times PV_{AV}) = 333.69$  lb  
TD: Distributed Snow Load on Outer Member  $SL = SL_T / PV_Q / M_Q / PV_W = -59.03$  lbs/ft  
TD: Distributed Snow Load on Inner Member  $SL = SL_T / PV_Q / M_Q / PV_W = -84.70$  lbs/ft

## SEISMIC

### SEISMIC FORCES (ASCE 7-10)

Tedds calculation version 3.0.10

#### Site parameters

Site class	<b>D</b>
Mapped acceleration parameters (Section 11.4.1)	
at short period	$S_S = \mathbf{0.260}$
at 1 sec period	$S_1 = \mathbf{0.07}$
Site coefficient at short period (Table 11.4-1)	$F_a = \mathbf{1.6}$
at 1 sec period (Table 11.4-2)	$F_v = \mathbf{2.4}$

#### Spectral response acceleration parameters

at short period (Eq. 11.4-1)	$S_{MS} = F_a \times S_S = \mathbf{0.414}$
at 1 sec period (Eq. 11.4-2)	$S_{M1} = F_v \times S_1 = \mathbf{0.168}$

#### Design spectral acceleration parameters (Sect 11.4.4)

at short period (Eq. 11.4-3)	$S_{DS} = 2 / 3 \times S_{MS} = \mathbf{0.276}$
at 1 sec period (Eq. 11.4-4)	$S_{D1} = 2 / 3 \times S_{M1} = \mathbf{0.112}$

#### Seismic design category

Risk category (Table 1.5-1)	<b>I</b>
Seismic design category	<b>B</b>

#### Approximate fundamental period

Height above base to highest level of building	$h_n = \mathbf{8.96 \text{ ft}}$
--	----------------------------------

From Table 12.8-2:

Structure type	All other systems
Building period parameter $C_t$	$C_t = \mathbf{0.02}$
Building period parameter $x$	$x = \mathbf{0.75}$
Approximate fundamental period (Eq 12.8-7)	$T_a = C_t \times (h_n)^x \times 1 \text{ sec} / (1 \text{ ft})^x = \mathbf{0.104 \text{ sec}}$
Building fundamental period (Sect 12.8.2)	$T = T_a = \mathbf{0.104 \text{ sec}}$
Long-period transition period	$T_L = 6 \text{ sec}$

#### Seismic response coefficient

Seismic force-resisting system (Table 12.2-1)	<b>G. CANTILEVERED COLUMN SYSTEMS DETAILED TO CONFORM TO</b>
THE REQUIRE	

Response modification factor (Table 12.2-1)	<b>2. Steel ordinary cantilever column systems</b>
Seismic importance factor (Table 1.5-2)	$R = \mathbf{1.25}$
Seismic response coefficient (Sect 12.8.1.1)	$I_e = \mathbf{1.000}$

Maximum ((Eq 12.8-3))	$C_{s\_max} = S_{D1} / (T \times (R / I_e)) = \mathbf{0.8651}$
-----------------------	--

Minimum:

Eq 12.8-5	$C_{s\_min1} = \max(0.044 \times S_{DS} \times I_e, 0.01) = \mathbf{0.0121}$
Seismic response coefficient	$C_s = \mathbf{0.2208}$
Calculated (Eq 12.8-3)	$C_{s\_calc} = S_{DS} / (R / I_e) = \mathbf{0.2208}$

### Seismic base shear (Sect 12.8.1)

Effective seismic weight of the structure

$$W = 15 \text{ kips}$$

Seismic base shear (Eq 12.8-1)

$$V = C_s \times W = 3.3 \text{ kips}$$

### Distributed Seismic Loading

Analyzed Rack Length

$$AR_L = 2048 \text{ in}$$

Analyzed Rack Weight

$$AR_{LB} = AR_L / PV_{PW} \times DL_T = -14,984 \text{ lbs}$$

Analyzed Rack Anchor Qty

$$AR_A = 22.000$$

Load per node (anchor top)

$$EL = V / AR_A = 150.36 \text{ lbs}$$

*\*Seismic based on worst case for United States per USGS min/max per region chart. Seismic does not control.*

## **WIND**

### **WIND LOADING (ASCE7-10)**

In accordance with ASCE7-10 incorporating Errata No. 1 and Errata No. 2

Using the directional design method

Tedds calculation version 2.0.15

#### Wall/sign data

Length of wall/sign;	<b>B = 3.29 ft</b>
Height of wall/sign;	<b>s = 2.73 ft</b>
Height to top of sign;	<b>h = 6.23 ft</b>

#### General wind load requirements

Basic wind speed;	<b>V = 120.0 mph</b>
Risk category;	<b>I</b>
Velocity pressure exponent coeff (Table 26.6-1);	<b>K<sub>d</sub> = 0.85</b>
Exposure category (cl.26.7.3);	<b>C</b>
Gust effect factor;	<b>G<sub>f</sub> = 0.85</b>

#### Topography

Topography factor not significant;	<b>K<sub>zt</sub> = 1.0</b>
------------------------------------	-----------------------------

#### Velocity pressure

Velocity pressure coefficient (T.29.3-1);	<b>K<sub>z</sub> = 0.85</b>
Velocity pressure;	<b>q<sub>h</sub> = 0.00256 × K<sub>z</sub> × K<sub>zt</sub> × K<sub>d</sub> × V<sup>2</sup> × 1psf/mph<sup>2</sup> = 26.6 psf</b>

#### Pressures and forces

Net pressure;	<b>p = q<sub>h</sub> × GC<sub>N</sub></b>
Net force;	<b>F<sub>w</sub> = p × A<sub>ref</sub></b>
Area (per zone);	<b>A<sub>ref</sub> = PV<sub>A</sub></b>



**CPP Wind Loading Table**

TITAN

GREEN ZONE	Load Case	Load Case Desc.	Load Dir.	Panel Load Loc.	CPP pressure coeff. GCN	Net pressure p (psf)	Net force Fw (lbs)	Rails	Net force per Rail Fw (lbs/ft)
	1	CPP E-W Rail	Up	1	-1.42	-37.73	-204.41	3	134
				2	-0.71	-18.82	-101.97		90
				3	-0.52	-13.85	-75.03		37
				4	-0.34	-9.06	-49.06		
	2	CPP Half Chord		1	-1.20	-32.05	-173.63		118
				2	-0.91	-24.24	-131.31		107
				3	-0.55	-14.56	-78.88		37
				4	-0.33	-8.79	-47.62		
	3	CPP Post Pair		1	-1.14	-30.36	-164.49		113
				2	-0.90	-23.97	-129.86		114
				3	-0.65	-17.40	-94.27		43
				4	-0.39	-10.39	-56.27		
	4	CPP Post Pair	Down	1	0.33	8.88	48.10		-36
				2	0.45	11.90	64.45		-67
				3	0.46	12.34	66.86		-50
				4	0.50	13.32	72.15		
	5	CPP Half Chord		1	0.23	6.13	33.19		-25
				2	0.34	9.14	49.54		-59
				3	0.45	12.07	65.41		-59
				4	0.60	15.89	86.09		
	6	CPP E-W Rail		1	0.23	6.04	32.71		-25
				2	0.38	10.12	54.83		-62
				3	0.46	12.25	66.37		-55
				4	0.55	14.65	79.36		

YELLOW ZONE	Load Case	Load Case Desc.	Load Dir.	Panel Load Loc.	CPP pressure coeff. GCN	Net pressure p (psf)	Net force Fw (lbs)	Rails	Net force per Rail Fw (lbs/ft)
	1	CPP E-W Rail	Up	1	-1.99	-53.00	-287.14	3	189
				2	-1.03	-27.52	-149.10		132
				3	-0.76	-20.24	-109.66		53
				4	-0.49	-12.96	-70.22		
	2	CPP Half Chord		1	-1.79	-47.68	-258.28		177
				2	-1.44	-38.26	-207.30		167
				3	-0.83	-22.20	-120.24		53
				4	-0.47	-12.52	-67.82		
	3	CPP Post Pair		1	-1.51	-40.13	-217.40		152
				2	-1.43	-38.18	-206.82		197
				3	-1.25	-33.20	-179.88		87
				4	-0.79	-21.13	-114.47		
	4	CPP Post Pair	Down	1	0.46	12.34	66.86		-51
				2	0.75	20.06	108.70		-126

	5	CPP Half Chord	3	0.97	25.75	139.48	-113
			4	1.14	30.27	164.01	
			1	0.42	11.28	61.08	-47
			2	0.71	19.00	102.93	-125
	6	CPP E-W Rail	3	0.98	26.19	141.89	-115
			4	1.16	30.81	166.90	
			1	0.32	8.61	46.65	-37
			2	0.60	15.89	86.09	-102
			3	0.79	21.13	114.47	-123
			4	1.27	33.91	183.73	

ORANGE ZONE	Load Case	Load Case Desc.	Load Dir.	Panel Load Loc.	CPP pressure coeff. GCN	Net pressure p (psf)	Net force Fw (lbs)	Rails	Net force per Rail Fw (lbs/ft)	
	1	CPP E-W Rail	Up	1	-2.81	-74.93	-405.95	3	261	
				2	-1.01	-26.78	-145.09		122	
				3	-0.66	-17.50	-94.82		47	
				4	-0.43	-11.38	-61.66			
	2	CPP Half Chord		1	-2.68	-71.36	-386.60		258	
				2	-1.62	-43.11	-233.56		206	
				3	-1.19	-31.64	-171.43		90	
				4	-0.83	-22.10	-119.74			
	3	CPP Post Pair		1	-2.61	-69.63	-377.21		252	
				2	-1.62	-43.11	-233.56		211	
				3	-1.26	-33.49	-181.41		98	
				4	-0.92	-24.40	-132.20			
	4	CPP Post Pair		Down	1	0.85	22.63		122.61	-93
					2	1.30	34.50		186.89	-232
					3	1.86	49.46		267.93	-207
					4	2.06	54.89		297.38	
	5	CPP Half Chord	1		0.78	20.89	113.17		-85	
			2		1.18	31.47	170.49		-226	
			3		1.89	50.32	272.63		-211	
			4		2.10	55.89	302.80			
	6	CPP E-W Rail	1		0.54	14.47	78.37		-58	
			2		0.76	20.37	110.34		-143	
			3		1.18	31.54	170.86		-169	
			4		1.73	46.19	250.25			

## Load data - with ASD Combos (for reactions)

### GLOSSARY

Comb : Indicates if load condition is a load combination

### Load conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
LLR	Roof Live Load	No	LLR
SL	Snow Load	No	SNOW
WL1	Wind - APA_CPP - EW Rail / Up - 0° (S-N)	No	WIND
WL2	Wind - APA_CPP - Half Chord / Up - 0° (S-N)	No	WIND
WL3	Wind - APA_CPP - Post Pair / Up - 0° (S-N)	No	WIND
WL4	Wind - APA_CPP - Post Pair / Down - 180° (N-S)	No	WIND
WL5	Wind - APA_CPP - Half Chord / Down - 180° (N-S)	No	WIND
WL6	Wind - APA_CPP - EW Rail / Down - 180° (N-S)	No	WIND
EL1	Seismic Left	No	EQ
EL2	Seismic Right	No	EQ
EL3	Seismic North	No	EQ
EL4	Seismic South	No	EQ
D1	DL	Yes	
D2	DL+LLR	Yes	
D3	DL+SL	Yes	
D4	DL+0.75SL	Yes	
D5	DL+0.75LLR	Yes	
D6	DL+0.6WL1	Yes	
D7	DL+0.6WL2	Yes	
D8	DL+0.7EL1	Yes	
D9	DL+0.7EL2	Yes	
D10	DL+0.7EL3	Yes	
D11	DL+0.7EL4	Yes	
D12	DL+0.75SL+0.45WL1	Yes	
D13	DL+0.75SL+0.45WL2	Yes	
D14	DL+0.75LLR+0.45WL1	Yes	
D15	DL+0.75LLR+0.45WL2	Yes	
D16	DL+0.75SL+0.525EL1	Yes	
D17	DL+0.75SL+0.525EL2	Yes	
D18	DL+0.75SL+0.525EL3	Yes	
D19	DL+0.75SL+0.525EL4	Yes	
D20	DL+0.75LLR+0.525EL1	Yes	
D21	DL+0.75LLR+0.525EL2	Yes	
D22	DL+0.75LLR+0.525EL3	Yes	
D23	DL+0.75LLR+0.525EL4	Yes	
D24	0.6DL+0.6WL1	Yes	
D25	0.6DL+0.6WL2	Yes	
D26	0.6DL+0.7EL1	Yes	
D27	0.6DL+0.7EL2	Yes	
D28	0.6DL+0.7EL3	Yes	
D29	0.6DL+0.7EL4	Yes	
D30	DL+0.6WL3	Yes	
D31	DL+0.6WL4	Yes	
D32	DL+0.6WL5	Yes	
D33	DL+0.6WL6	Yes	
D34	DL+0.75SL+0.45WL3	Yes	
D35	DL+0.75SL+0.45WL4	Yes	
D36	DL+0.75SL+0.45WL5	Yes	
D37	DL+0.75SL+0.45WL6	Yes	
D38	DL+0.75LLR+0.45WL3	Yes	
D39	DL+0.75LLR+0.45WL4	Yes	
D40	DL+0.75LLR+0.45WL5	Yes	
D41	DL+0.75LLR+0.45WL6	Yes	
D42	0.6DL+0.6WL3	Yes	
D43	0.6DL+0.6WL4	Yes	
D44	0.6DL+0.6WL5	Yes	
D45	0.6DL+0.6WL6	Yes	

## Load data - with LRFD Combos (for code check)

### GLOSSARY

Comb : Indicates if load condition is a load combination

### Load conditions

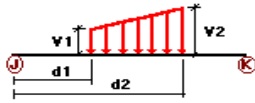
Condition	Description	Comb.	Category
DL	Dead Load	No	DL
LLR	Roof Live Load	No	LLR
SL	Snow Load	No	SNOW
WL1	Wind - APA_CPP - EW Rail / Up - 0° (S-N)	No	WIND
WL2	Wind - APA_CPP - Half Chord / Up - 0° (S-N)	No	WIND
WL3	Wind - APA_CPP - Post Pair / Up - 0° (S-N)	No	WIND
WL4	Wind - APA_CPP - Post Pair / Down - 180° (N-S)	No	WIND
WL5	Wind - APA_CPP - Half Chord / Down - 180° (N-S)	No	WIND
WL6	Wind - APA_CPP - EW Rail / Down - 180° (N-S)	No	WIND
EL1	Seismic Left	No	EQ
EL2	Seismic Right	No	EQ
EL3	Seismic North	No	EQ
EL4	Seismic South	No	EQ
CEN	Center Beam Point Load	No	LLR
D1	1.4DL	Yes	
D51	0.9DL+WL1	Yes	
D52	0.9DL+WL2	Yes	
D53	0.9DL+WL3	Yes	
D54	0.9DL+WL4	Yes	
D55	0.9DL+WL5	Yes	
D56	0.9DL+WL6	Yes	
D57	0.9DL+EL1	Yes	
D58	0.9DL+EL2	Yes	
D59	0.9DL+EL3	Yes	
D60	0.9DL+EL4	Yes	
DEF1	DL+SL	Yes	
DEF2	DL+0.7WL1	Yes	
DEF3	DL+0.7WL2	Yes	
DEF4	DL+0.7WL3	Yes	
DEF5	DL+0.7WL4	Yes	
DEF6	DL+0.7WL5	Yes	
DEF7	DL+0.7WL6	Yes	
MAN	0.6DL+CEN	Yes	
D2	1.2DL+0.5LLR	Yes	
D3	1.2DL+0.5SL	Yes	
D4	1.2DL+1.6LLR	Yes	
D5	1.2DL+1.6SL	Yes	
D6	1.2DL+0.5WL1	Yes	
D7	1.2DL+0.5WL2	Yes	
D8	1.2DL+0.5WL3	Yes	
D9	1.2DL+0.5WL4	Yes	
D10	1.2DL+0.5WL5	Yes	
D11	1.2DL+0.5WL6	Yes	
D12	1.2DL+1.6LLR+0.5WL1	Yes	
D13	1.2DL+1.6LLR+0.5WL2	Yes	
D14	1.2DL+1.6LLR+0.5WL3	Yes	
D15	1.2DL+1.6LLR+0.5WL4	Yes	
D16	1.2DL+1.6LLR+0.5WL5	Yes	
D17	1.2DL+1.6LLR+0.5WL6	Yes	
D18	1.2DL+1.6SL+0.5WL1	Yes	
D19	1.2DL+1.6SL+0.5WL2	Yes	
D20	1.2DL+1.6SL+0.5WL3	Yes	
D21	1.2DL+1.6SL+0.5WL4	Yes	
D22	1.2DL+1.6SL+0.5WL5	Yes	
D23	1.2DL+1.6SL+0.5WL6	Yes	
D24	1.2DL+WL1	Yes	

D25	1.2DL+WL2	Yes
D26	1.2DL+WL3	Yes
D27	1.2DL+WL4	Yes
D28	1.2DL+WL5	Yes
D29	1.2DL+WL6	Yes
D30	1.2DL+0.5LLR+WL1	Yes
D31	1.2DL+0.5LLR+WL2	Yes
D32	1.2DL+0.5LLR+WL3	Yes
D33	1.2DL+0.5LLR+WL4	Yes
D34	1.2DL+0.5LLR+WL5	Yes
D35	1.2DL+0.5LLR+WL6	Yes
D36	1.2DL+0.5SL+WL1	Yes
D37	1.2DL+0.5SL+WL2	Yes
D38	1.2DL+0.5SL+WL3	Yes
D39	1.2DL+0.5SL+WL4	Yes
D40	1.2DL+0.5SL+WL5	Yes
D41	1.2DL+0.5SL+WL6	Yes
D42	1.2DL+0.2SL	Yes
D43	1.2DL+EL1	Yes
D44	1.2DL+EL2	Yes
D45	1.2DL+EL3	Yes
D46	1.2DL+EL4	Yes
D47	1.2DL+0.2SL+EL1	Yes
D48	1.2DL+0.2SL+EL2	Yes
D49	1.2DL+0.2SL+EL3	Yes
D50	1.2DL+0.2SL+EL4	Yes

## Load on nodes

Condition	Node	FX [Lb]	FY [Lb]	FZ [Lb]	MX [Lb*ft]	MY [Lb*ft]	MZ [Lb*ft]
EL1	153	150.36	0.00	0.00	0.00	0.00	0.00
EL2	153	-150.36	0.00	0.00	0.00	0.00	0.00
EL3	153	0.00	0.00	150.36	0.00	0.00	0.00
EL4	153	0.00	0.00	-150.36	0.00	0.00	0.00

## Distributed Forces on Members



Condition	Member	Dir1	Val1 [Lb/ft]	Val2 [Lb/ft]	Dist1 [in]	%	Dist2 [in]	%
DL	351(Outer Rail)	Y	-14.70	-14.70	0.00	Yes	100.00	Yes
SL	351(Outer Rail)	Y	-59.03	-59.03	0.00	Yes	100.00	Yes
DL	351(Inner Rail)	Y	-21.09	-21.09	0.00	Yes	100.00	Yes
SL	351(Inner Rail)	Y	-84.70	-84.70	0.00	Yes	100.00	Yes
WL1	See Pages 9-10							
WL2	See Pages 9-10							
WL3	See Pages 9-10							
WL4	See Pages 9-10							
WL5	See Pages 9-10							
WL6	See Pages 9-10							

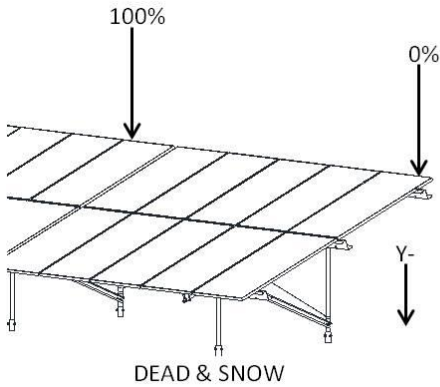


Figure 1: Load Direction Y

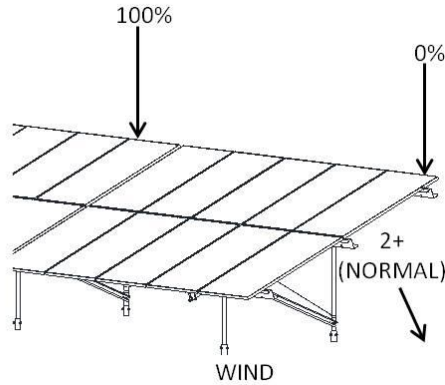
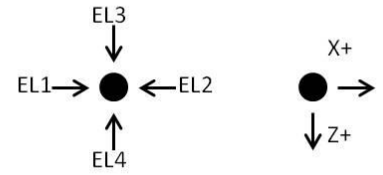


Figure 2: Load Direction 2



SEISMIC LOADS – PLAN VIEW

Figure 3: Load Direction X & Z

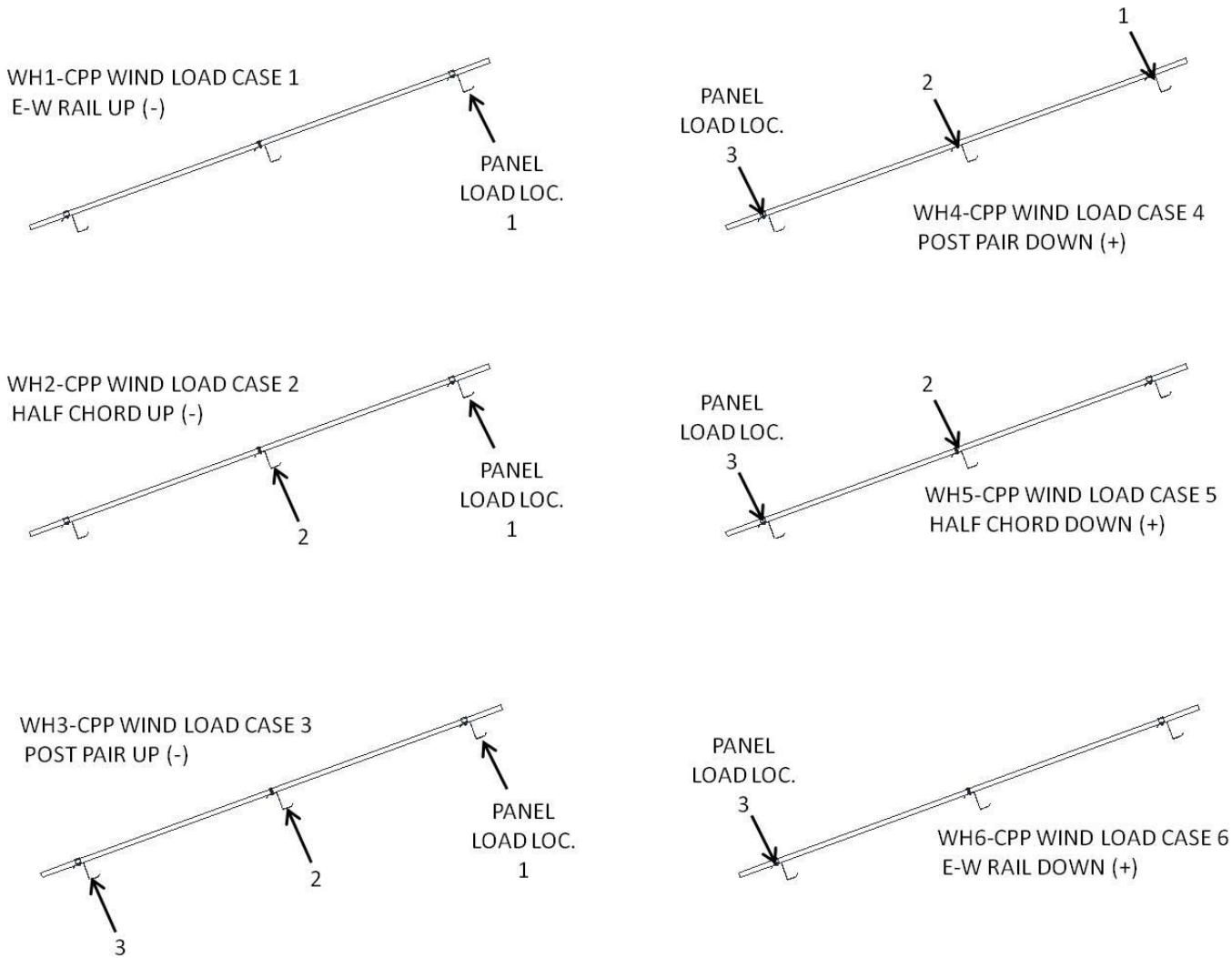


Figure 4: Load CPP Wind Loads

## WIND TUNNEL DATA



### CPP Project 11825 - Wind Tunnel Tests and Wind Load Analysis for AP ALTERNATIVES FIXED-TILT GROUND MOUNT

#### Executive Summary

CPP, Inc. has evaluated wind loads on a generic array of fixed-tilt ground mounted photovoltaic (PV) solar modules produced by AP Alternatives. The wind tunnel data used in the analysis is from the CPP proprietary ground mount wind loads database. This database consists of simultaneous surface pressure measurements at a large number of locations on the solar modules. The database contains data for a large number of configurations with varying combinations of tilt, ground clearance, and row spacing. The geometric parameters of the AP Alternatives system studied are summarized below:

Parameter	Range of applicability
Chord length:	140 in to 170 in, allowable application range, with no adjustment
Tilt:	10°, 15°, 22.5° and 30°, allowable with interpolation appropriate between presented results. Extrapolation up to 35° is also acceptable.
Height (low edge of modules):	18 in to 42 in, allowable application range, with no adjustment
Row spacing (clear gap):	$2.75L\sin(\text{tilt})$ and $4L\sin(\text{tilt})$ with interpolation appropriate between presented results, $L$ being the chord length
Post spacing (along row):	$\geq 72$ in (results presented for 72in, 100in and 200in) with interpolation appropriate between presented results. Direct use of 200in results at greater spacing is also acceptable with some conservatism.

The wind loads determined by CPP are based upon measurements obtained in an atmospheric boundary layer wind tunnel study conducted in accordance with the test procedures described in ASCE 7. The primary goal of this study was to determine peak forces on an array of panels for the purpose of calculating design wind loads. The results are presented as load cases, defined in this document. These loads vary with position within the array and, as expected, the worst case- loads were found at the array perimeter. Interior portions of the array were generally found to have substantially lower wind loads than perimeter locations due to sheltering

#### Wind Tunnel Load Cases

The load cases are listed below. In some cases the load effect is the peak load on a fraction of the chord (e.g. the high rail or half the chord).

**$GC_{N-Post\ pair}$**  – Peak net pressure on a post-pair tributary area; uplift and downforces; for designs of posts, N-S strut/beam and braces. The tributary area considered includes the full chord and spans halfway to the next post pair; the nominal tributary area for a pair of posts in a dual-post system.

**$GC_{N-Post\ half-chord}$**  – Peak net pressure on a single post tributary area; uplift on upper post and downforce on lower post cases; for design of posts, N-S strut, and braces. The tributary area considered includes half of the chord and spans halfway to the next post pair; the nominal tributary area for a single post in a dual-post system.

**$GC_{N\ Rail}$**  – Peak net pressure on E-W rails spanning between posts, supporting modules; uplift and downforce cases. The tributary area considered includes one quarter of the chord and spans from one post pair to the next post pair; the nominal tributary area for a rail.

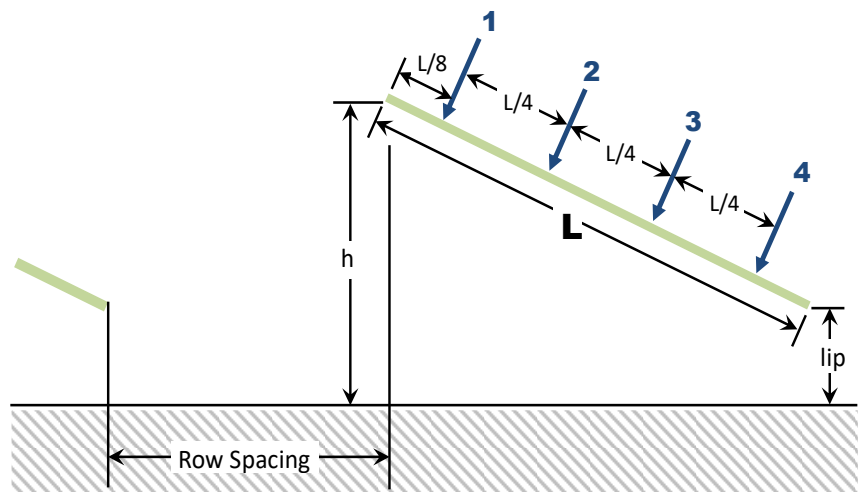
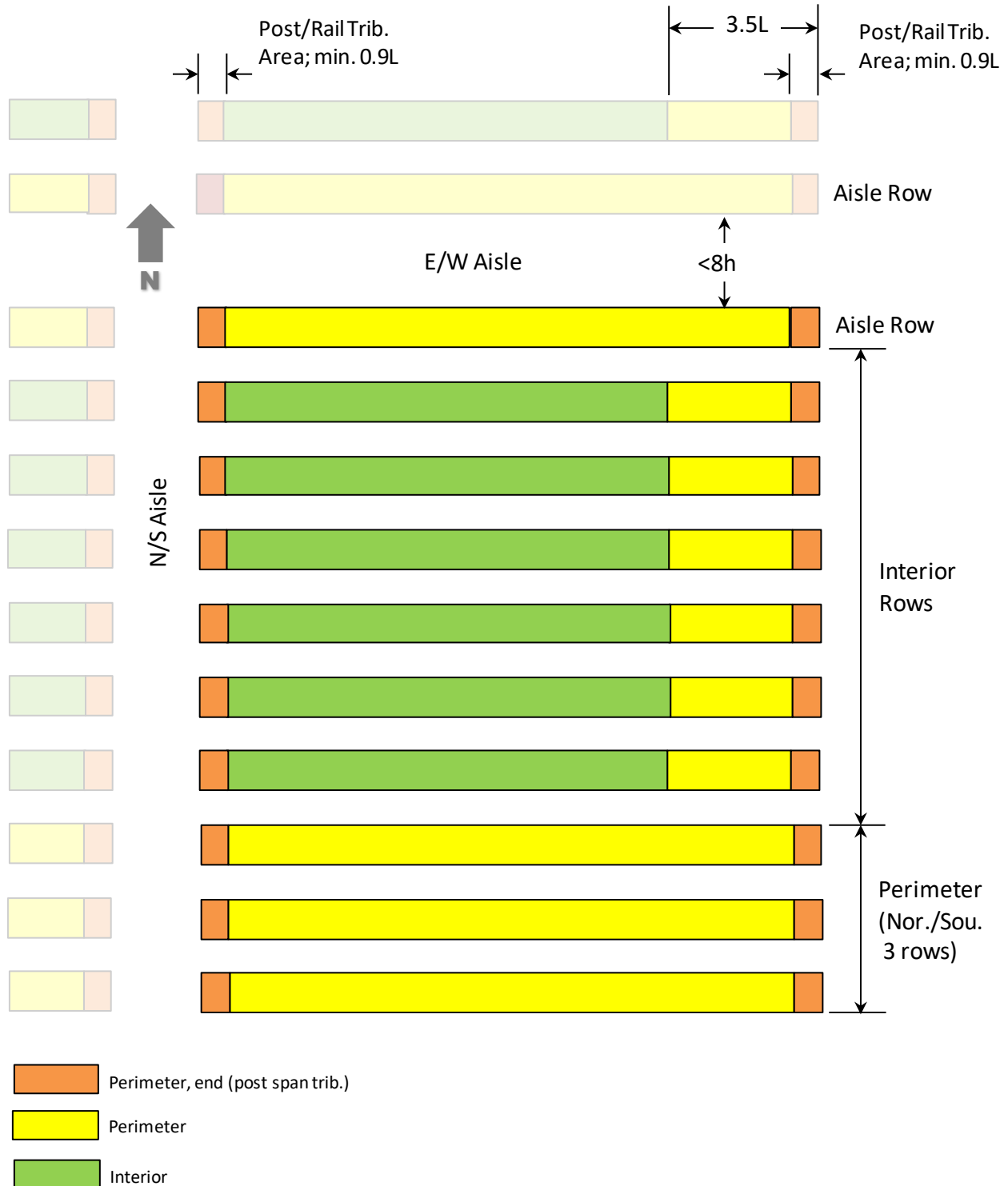


Figure 5: Wind Tunnel Load Distribution Schematic



**Wind Tunnel Zone Map**



**Figure 6: Wind Tunnel Zone Map**

# **SETUP & ANALYSIS (ASD)**

## Parts list

Note.- Only the graphically selected elements are listed below

Profile	Length [in]	N° of pieces
CABLE BRACE - 1/8	183.91	4
CABLE BRACE - 1/8	219.96	4
NS RD M-996-3	130.25	11
RD KNEE M- 1132-1	89.09	11
STD BIG ZEE - 6 X 3 X .11...	16.00	54
STD BIG ZEE - 6 X 3 X 055	146.00	6
STD BIG ZEE - 6 X 3 X 055	170.00	24
STD BIG ZEE - 6 X 3 X 055	54.00	6
TITAN DUAL POST - 2.37...	51.08	11
TITAN DUAL POST - 2.37...	86.05	11
Total N° of pieces		142

## List of materials

Note.- Only the graphically selected members and shells are listed

### Members:

Profile	Material	Uweight [Lb/ft]	Length [in]	Weight [Lb]
CABLE BRACE - 1/8	APA - A36 - CABLES	1.67E-01	1615.461	22.501
NS RD M-996-3	A653 SS 80-1	3.72E+00	1432.802	444.352
RD KNEE M- 1132-1	A653 SS 80-1	1.99E+00	979.969	162.876
STD BIG ZEE - 6 X 3 X .11 - SPLICE	A653 SS 80-1	4.96E+00	864.000	356.901
STD BIG ZEE - 6 X 3 X 055	A653 SS 80-1	2.51E+00	5280.000	1102.468
TITAN DUAL POST - 2.375 X 0.095	APA - A570 GR50 COLD FORM	2.34E+00	1508.430	294.169
Total weight [Lb]				2383.268

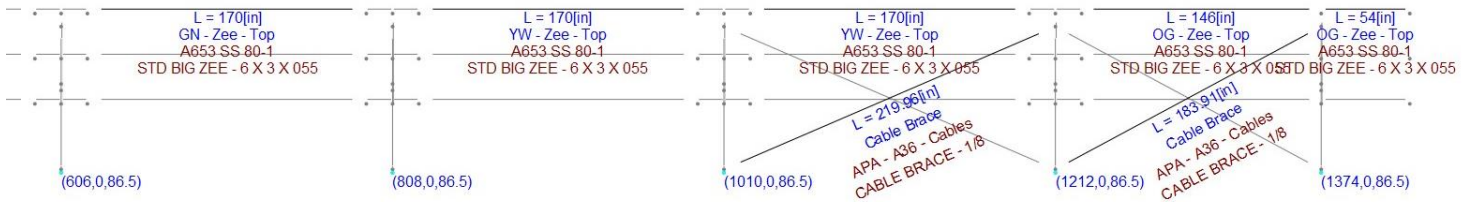


Figure 7: - Member Length, Name, Material, And Section - ORANGE, YELLOW, & GREEN ZONE

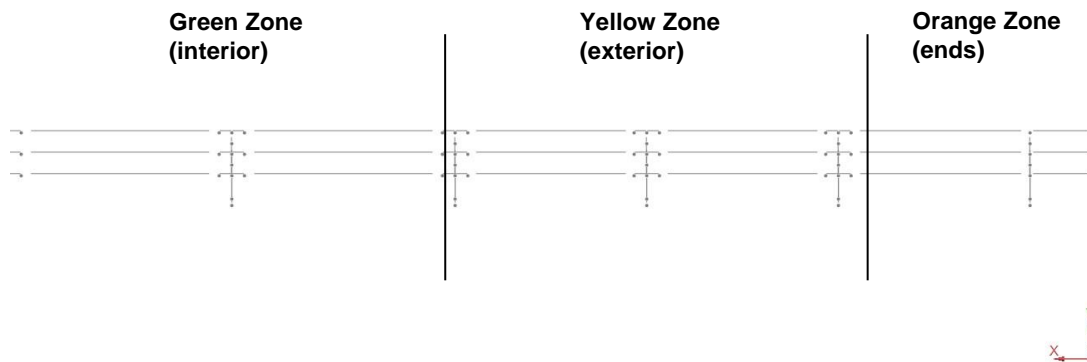


Figure 8: - Racking Zones

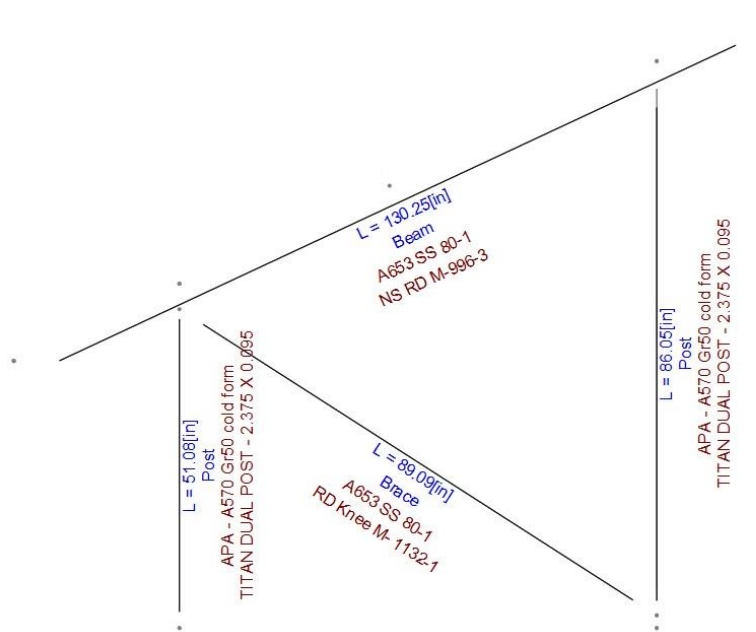


Figure 9: - Member Length, Name, Material, and Section

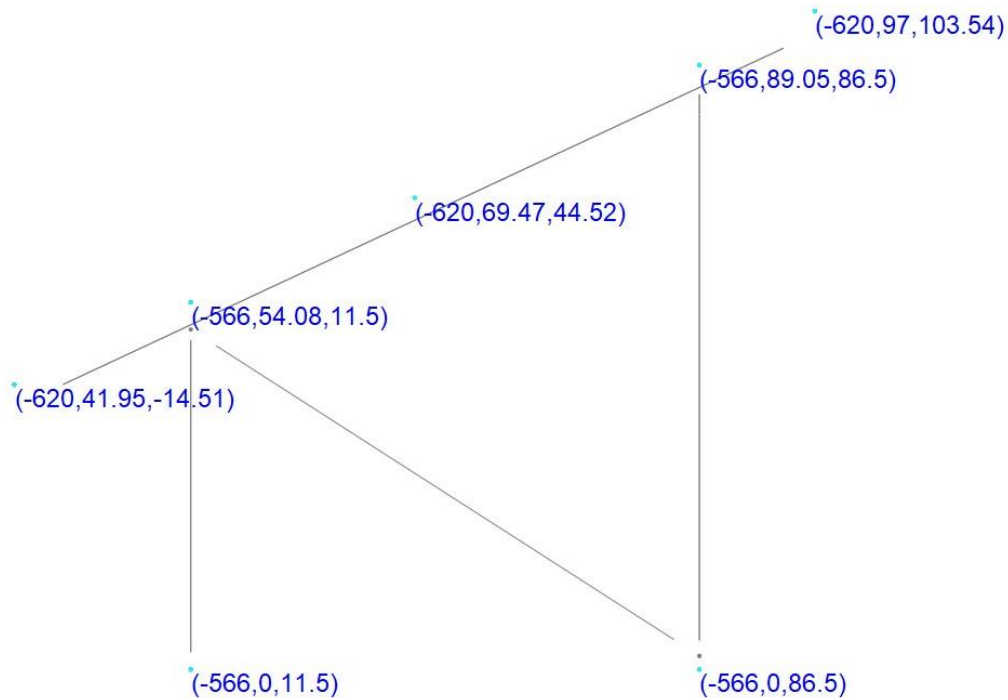
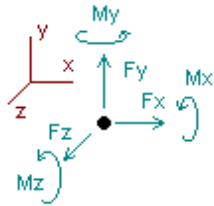


Figure 10: - Node X,Y,Z Coordinate

## Analysis - Reaction Envelope - ASD

### Reactions



Direction of positive forces and moments

Max Uplift:	-4495 lbs	(D25)
Max Down Load:	3125 lbs	(D35)
Max Lateral:	2023 lbs	(D42)

Node		Forces						Moments					
		Fx [Lb]	lc	Fy [Lb]	lc	Fz [Lb]	lc	Mx [Lb*ft]	lc	My [Lb*ft]	lc	Mz [Lb*ft]	lc
145	Max	191.024	D27	2803.125	D35	1952.966	D42	0.00000	D1	137.96261	D35	0.00000	D1
	Min	-0.018	D36	-4135.928	D25	-1274.625	D31	0.00000	D1	-205.08826	D25	0.00000	D1
151	Max	-0.001	D28	2488.414	D35	1567.802	D42	0.00000	D1	134.56181	D17	0.00000	D1
	Min	-194.581	D26	-3633.379	D25	-1512.694	D31	0.00000	D1	-171.06047	D25	0.00000	D1
173	Max	-0.004	D27	2787.184	D35	1949.879	D42	0.00000	D1	149.44273	D17	0.00000	D1
	Min	-193.612	D8	-4130.151	D25	-1269.950	D31	0.00000	D1	-187.80295	D25	0.00000	D1
174	Max	192.878	D27	2399.012	D35	1517.247	D30	0.00000	D1	109.57817	D35	0.00000	D1
	Min	-0.015	D36	-3571.664	D25	-1459.166	D43	0.00000	D1	-177.97678	D25	0.00000	D1
185	Max	199.115	D9	3062.493	D35	1996.415	D42	0.00000	D1	147.53259	D17	0.00000	D1
	Min	-195.992	D8	-4460.197	D25	-1627.961	D31	0.00000	D1	-196.75441	D25	0.00000	D1
195	Max	190.109	D27	3124.687	D35	2023.400	D42	0.00000	D1	140.71257	D35	0.00000	D1
	Min	-188.865	D26	-4495.209	D25	-1657.172	D31	0.00000	D1	-207.68844	D25	0.00000	D1
205	Max	0.008	D42	2523.500	D35	1538.840	D30	0.00000	D1	133.78542	D35	0.00000	D1
	Min	-0.016	D36	-3342.483	D24	-974.444	D43	0.00000	D1	-159.81039	D24	0.00000	D1
212	Max	0.007	D42	2520.852	D35	1537.820	D30	0.00000	D1	133.01575	D35	0.00000	D1
	Min	-0.015	D36	-3337.085	D24	-973.223	D43	0.00000	D1	-156.89587	D24	0.00000	D1
213	Max	0.006	D42	2228.294	D35	1122.098	D42	0.00000	D1	125.51969	D35	0.00000	D1
	Min	-0.014	D36	-2624.804	D24	-620.648	D31	0.00000	D1	-123.61684	D24	0.00000	D1
214	Max	0.006	D42	2287.785	D35	1203.450	D30	0.00000	D1	127.19153	D35	0.00000	D1
	Min	-0.014	D36	-2765.532	D24	-689.285	D43	0.00000	D1	-130.25786	D24	0.00000	D1
215	Max	0.006	D42	2227.915	D35	1121.614	D42	0.00000	D1	125.38896	D35	0.00000	D1
	Min	-0.014	D36	-2624.616	D24	-619.930	D31	0.00000	D1	-123.01375	D24	0.00000	D1
294	Max	0.030	D36	2816.704	D37	25.547	D31	0.00000	D1	272.30768	D37	0.00000	D1
	Min	-0.017	D42	230.612	D28	-39.143	D42	0.00000	D1	-136.16380	D42	0.00000	D1
296	Max	0.027	D36	2019.474	D36	30.319	D31	0.00000	D1	235.29021	D36	0.00000	D1
	Min	-0.012	D42	113.519	D28	-31.423	D42	0.00000	D1	-78.74829	D42	0.00000	D1
298	Max	0.029	D36	2821.443	D37	25.454	D31	0.00000	D1	272.17750	D37	0.00000	D1
	Min	-0.016	D42	231.076	D28	-39.081	D42	0.00000	D1	-135.48244	D42	0.00000	D1
300	Max	0.026	D36	2089.775	D36	29.246	D43	0.00000	D1	230.03926	D36	0.00000	D1
	Min	-0.012	D42	120.569	D28	-30.410	D30	0.00000	D1	-77.05861	D42	0.00000	D1
302	Max	0.031	D36	2763.902	D36	32.629	D31	0.00000	D1	293.86425	D36	0.00000	D1
	Min	-0.015	D42	209.733	D28	-40.014	D42	0.00000	D1	-118.81834	D42	0.00000	D1

304	Max	0.032	D36	2730.014	D36	33.215	D31	0.00000	D1	294.93098	D36	0.00000	D1
	Min	-0.015	D42	206.005	D28	-40.555	D42	0.00000	D1	-118.30834	D42	0.00000	D1
306	Max	0.027	D36	2521.811	D37	19.531	D43	0.00000	D1	235.03649	D36	0.00000	D1
	Min	-0.013	D42	226.539	D28	-30.843	D30	0.00000	D1	-91.29577	D42	0.00000	D1
308	Max	0.026	D36	2519.862	D37	19.506	D43	0.00000	D1	232.75636	D36	0.00000	D1
	Min	-0.013	D42	226.671	D28	-30.823	D30	0.00000	D1	-88.10778	D42	0.00000	D1
310	Max	0.024	D36	2459.602	D3	12.440	D31	0.00000	D1	197.25136	D36	0.00000	D1
	Min	-0.010	D42	227.446	D28	-22.490	D42	0.00000	D1	-47.02930	D42	0.00000	D1
312	Max	0.024	D36	2457.848	D3	13.815	D43	0.00000	D1	204.27084	D36	0.00000	D1
	Min	-0.010	D42	227.235	D28	-24.121	D30	0.00000	D1	-55.15389	D42	0.00000	D1
314	Max	0.023	D36	2459.883	D3	12.425	D31	0.00000	D1	196.72622	D36	0.00000	D1
	Min	-0.009	D42	227.479	D28	-22.480	D42	0.00000	D1	-46.23849	D42	0.00000	D1

# **CODE CHECK**

## **(ASCE 7-10, LRFD)**



## Steel Code Check - SUMMARY

Report: Summary - Group by description

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
<u>Beam</u>	<i>NS RD M-996-3</i>	338	D40 at 21.88%	0.85	OK	C5.2.2-2
<u>Brace</u>	<i>RD Knee M- 1132-1</i>	339	D39 at 0.00%	0.63	OK	C4.1
<u>Cable Brace</u>	<i>CABLE BRACE - 1/8</i>	426	D48 at 50.00%	0.21	OK	Eq. H1-1a
<u>Post</u>	<i>TITAN DUAL POST - 2.375 ...</i>	337	D39 at 3.13%	0.51	OK	C5.2.2-1
<u>ZEE PURLIN</u>	<i>STD BIG ZEE - 6 X 3 X 055</i>	314	D22 at 0.00%	<b>0.86</b>	<b>OK</b>	C5.2.2-3

## Steel Code Check - NS CHORD

Report: Concise

Members: Cold-formed

Design code: AISI 2001 Sup. 2004 LRFD

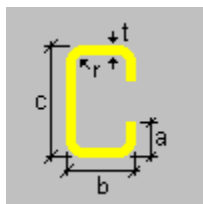
Member : 338 (Beam)  
Design status : OK

### PROPERTIES

### Section information

Section name: NS RD M-996-3 (US)

#### Dimensions



a	=	0.600	[in]	Lip
b	=	2.000	[in]	Flange width
c	=	6.000	[in]	Depth
r	=	0.219	[in]	Inside bend radius
t	=	0.108	[in]	Thickness

#### Properties

Section properties	Unit	Major axis	Minor axis
Gross area of the section. (Ag)	[in <sup>2</sup> ]	1.108	
Moment of Inertia (principal axes) (I')	[in <sup>4</sup> ]	5.733	0.525
Bending constant for moments (principal axis) (J')	[in]	0.000	3.324
Radius of gyration (principal axes) (r')	[in]	2.275	0.688
Saint-Venant torsion constant. (J)	[in <sup>4</sup> ]	0.005	
Section warping constant. (Cw)	[in <sup>6</sup> ]	4.248	
Distance from centroid to shear center (principal axis) (xo,yo)	[in]	-1.466	0.000
Top elastic section modulus of the section (principal axis) (S'sup)	[in <sup>3</sup> ]	1.911	0.364
Bottom elastic section modulus of the section (principal axis) (S'inf)	[in <sup>3</sup> ]	1.911	0.942
Polar radius of gyration. (ro)	[in]	2.793	

Material : A653 SS 80-1

Description	Unit	Value
Yield stress (Fy):	[Lb/in2]	80000.00
Tensile strength (Fu):	[Lb/in2]	82000.00
Elasticity Modulus (E):	[Lb/in2]	2.95E07
Shear modulus for steel (G):	[Lb/in2]	1.134615E07

## DESIGN CRITERIA

Description	Unit	Major axis	Minor axis
Effective length factor (K)	--	1.00	1.00
Effective length factor for torsion	--	1.00	
Unbraced compression length (Lx, Ly)	[in]	53.50	85.00
Length for torsion and lateral-torsional buckling	[in]	47.00	
Lateral bracing	--	No	No
<b>Additional hypotheses</b>			
Bearing length	[in]	3.25	
Positive flange fastened		No	
Negative flange fastened		No	
Continuous lateral torsional restraint		No	

## SERVICE CONDITIONS

Verification	Unit	Value	Ctrl EQ	Reference
Maximum geometric slenderness (L/r)	--	122.83		(Com. C4F)
Geometric slenderness (KL/r)	--	122.83		
Deflection in compression and/or bending	[in]	-0.26	DEF6 at 0.00%	

## DESIGN CHECKS

### DESIGN FOR FLEXURE

#### Bending about major axis, M33

Ratio	:	0.74	Reference	:	(Sec. C3)
Capacity	:	10458.05 [Lb*ft]	Ctrl Eq.	:	D40 at 21.88%
Demand	:	-7736.28 [Lb*ft]			

Intermediate results	Unit	Value	Reference
Nominal flexural strength (Mnx)	[Lb*ft]	11620.06	(Sec. C3)
Nominal flexural strength with Fy (Mnxo)	[Lb*ft]	12615.12	(Eq. C3.1.1-1)
Elastic section modulus of effective section at Fy (Sex)	[in3]	1.89	(Sec. C3.1.1)
Lateral torsional buckling nominal flexural strength (Mnc)	[Lb*ft]	11620.06	(Sec. C3.1.2)
Elastic buckling stress for bending (Fe)	[Lb/in2]	118681.30	(Sec. C3.1.2.1)
Critical buckling stress (Fc)	[Lb/in2]	72245.08	(Sec. C3.1.2.1)
Elastic section modulus of effective section at Fc (Scx)	[in3]	1.93	(Sec. C3.1.2.1)
Lateral-torsional buckling modification factor (Cb)	--	2.02	
End moment coefficient in interaction formula (Cm)	--	0.85	

#### Bending about minor axis, M22

Ratio	:	0.15	Reference	:	(Sec. C3)
Capacity	:	2192.70 [Lb*ft]	Ctrl Eq.	:	D22 at 0.00%
Demand	:	335.15 [Lb*ft]			

Intermediate results	Unit	Value	Reference
Nominal flexural strength (Mny)	[Lb*ft]	2436.33	(Sec. C3)
Nominal flexural strength with Fy (Mnyo)	[Lb*ft]	2436.33	(Eq. C3.1.1-1)

Elastic section modulus of effective section at $F_y$ ( $S_y$ )	[in <sup>3</sup> ]	0.37	(Sec. C3.1.1)
Lateral torsional buckling nominal flexural strength ( $M_{nc}$ )	[Lb*ft]	2436.33	(Sec. C3.1.2)
Elastic buckling stress for bending ( $F_e$ )	[Lb/in <sup>2</sup> ]	1.0376E07	(Sec. C3.1.2.1)
Critical buckling stress ( $F_c$ )	[Lb/in <sup>2</sup> ]	80000.00	(Sec. C3.1.2.1)
Elastic section modulus of effective section at $F_c$ ( $S_{cy}$ )	[in <sup>3</sup> ]	0.37	(Sec. C3.1.2.1)
Lateral-torsional buckling modification factor ( $C_b$ )	--	1.50	
End moment coefficient in interaction formula ( $C_m$ )	--	0.85	

## DESIGN FOR SHEAR

### Shear parallel to minor axis, V2

Ratio	:	0.14		
Capacity	:	23602.01 [Lb]	Reference	: (Sec. C3.2)
Demand	:	-3327.55 [Lb]	Ctrl Eq.	: D51 at 85.94%

Intermediate results	Unit	Value	Reference
Nominal shear strength ( $V_n$ )	[Lb]	24844.22	(Sec. C3.2)

### Shear parallel to major axis, V3

Ratio	:	0.01		
Capacity	:	13257.56 [Lb]	Reference	: (Sec. C3.2)
Demand	:	160.60 [Lb]	Ctrl Eq.	: D47 at 85.94%

Intermediate results	Unit	Value	Reference
Nominal shear strength ( $V_n$ )	[Lb]	13955.33	(Sec. C3.2)

## DESIGN FOR TENSION

### Tension

Ratio	:	0.01		
Capacity	:	80164.14 [Lb]	Reference	: (Eq. C2-1)
Demand	:	1079.12 [Lb]	Ctrl Eq.	: D39 at 51.56%

Intermediate results	Unit	Value	Reference
Nominal tension strength ( $T_n$ )	[Lb]	89071.27	(Sec. C2)

## DESIGN FOR COMPRESSION

### Compression

Ratio	:	0.18		
Capacity	:	-16015.91 [Lb]	Reference	: (Sec. C4)
Demand	:	-2808.40 [Lb]	Ctrl Eq.	: D37 at 23.44%

Intermediate results	Unit	Value	Reference
Nominal compression strength ( $P_n$ )	[Lb]	-18842.24	(Eq. C4.1)
Axial elastic buckling stress ( $F_e$ )	[Lb/in <sup>2</sup> ]	19296.81	(Sec. C4.2)
Effective net area at stress at stress $F_y$ ( $A_e$ )	[in <sup>2</sup> ]	0.87	(Sec. B)
Nominal axial strength with $F_y$ ( $P_{no}$ )	[Lb]	-69478.30	(Sec. C4)
Nominal buckling stress ( $F_n$ )	[Lb/in <sup>2</sup> ]	16923.30	(Sec. C4)
Effective net area at stress at stress $F_n$ ( $A_e$ )	[in <sup>2</sup> ]	1.11	(Sec. B)

## DESIGN FOR TORSION

### Torsion

Ratio : 0.13  
Capacity : 159.09 [Lb\*ft]  
Demand : -20.92 [Lb\*ft]

Reference : (AISC, Sec. H)  
Ctrl Eq. : D52 at 85.94%

Intermediate results	Unit	Value	Reference
Nominal torsion strength	[Lb*ft]	167.46	

### DESIGN FOR CRIPPLING

#### Web crippling strength

Ratio : 0.49  
Capacity : 12067.02 [Lb]  
Demand : 5925.76 [Lb]

Reference : (Sec. C3.4)  
Ctrl Eq. : D40 at 23.44%

Intermediate results	Unit	Value	Reference
Nominal crippling strength (P <sub>n</sub> )	[Lb]	13407.80	(Eq. C3.4.1-1)
Crippling strength factor ( $\Omega_w$ )	--	0.90	(Tables C3.4.1)
Coefficient from Tables	--	13.00	(Sec. C3.4)
Inside bend radius coefficient (CR)	--	0.23	(Sec. C3.4)
Bearing length coefficient (CN)	--	0.14	(Sec. C3.4)
Web slenderness coefficient (Ch)	--	0.01	(Sec. C3.4)
Limit R/t	--	5.00	(Sec. C3.4)

### INTERACTION

#### Combined bending and web crippling ratio

Ratio : 0.77

Ctrl Eq. : D40 at 23.44%  
Reference : C3.5.2-1

\*The equation has been modified for a maximum ratio equal to 1.0

#### Combined bending and shear ratio (x-x)

Ratio : 0.66

Ctrl Eq. : D40 at 21.88%  
Reference : C3.3.2-1

#### Combined bending and shear ratio (y-y)

Ratio : 0.15

Ctrl Eq. : D22 at 0.00%  
Reference : C3.3.2-1

#### Combined flexure and tension ratio

Ratio : 0.84

Ctrl Eq. : D40 at 21.88%  
Reference : C5.1.2-2

Intermediate results	Unit	Value	Reference
Nominal flexural strength with gross properties (M <sub>nx</sub> )	[Lb*ft]	12867.38	(Sec. C5.1)
Nominal flexural strength with gross properties (M <sub>ny</sub> )	[Lb*ft]	6352.26	(Sec. C5.1)

#### Combined flexure and compression ratio

Ratio : 0.85

Ctrl Eq. : D40 at 21.88%  
Reference : C5.2.2-2

Intermediate results	Unit	Value	Reference
Elastic buckling strength (PE <sub>x</sub> )	[Lb]	589002.00	(Sec. C5.2.1)
Elastic buckling strength (PE <sub>y</sub> )	[Lb]	21484.89	(Sec. C5.2.1)
Magnification factor ( $\alpha_x$ )	--	1.00	(Sec. C5.2.1)
Magnification factor ( $\alpha_y$ )	--	1.00	(Sec. C5.2.1)

#### CRITICAL STRENGTH RATIO



Ratio	:	0.85		
Ctrl Eq.	:	D40 at 21.88%	Reference	: C5.2.2-2

## Steel Code Check - ANCHOR POST

Report: Concise

Members: Cold-formed

Design code: AISI 2001 Sup. 2004 LRFD

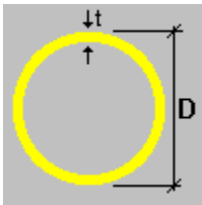
Member : 337 (Post)  
Design status : OK

### PROPERTIES

### Section information

Section name: TITAN DUAL POST - 2.375 X 0.095 (US)

#### Dimensions



D = 2.375 [in] Diameter  
t = 0.095 [in] Thickness

#### Properties

Section properties	Unit	Major axis	Minor axis
Gross area of the section. (Ag)	[in2]	0.687	
Moment of Inertia (principal axes) (I')	[in4]	0.444	0.444
Bending constant for moments (principal axis) (J')	[in]	0.000	0.000
Radius of gyration (principal axes) (r')	[in]	0.804	0.804
Saint-Venant torsion constant. (J)	[in4]	0.868	
Section warping constant. (Cw)	[in6]	6.25E-05	
Distance from centroid to shear center (principal axis) (xo,yo)	[in]	0.000	0.000
Top elastic section modulus of the section (principal axis) (S'sup)	[in3]	0.367	0.367
Bottom elastic section modulus of the section (principal axis) (S'inf)	[in3]	0.367	0.367
Polar radius of gyration. (ro)	[in]	1.138	

Material : APA - A570 Gr50 cold form

Description	Unit	Value
Yield stress (Fy):	[Lb/in2]	50000.00
Tensile strength (Fu):	[Lb/in2]	65300.00
Elasticity Modulus (E):	[Lb/in2]	2.9E07
Shear modulus for steel (G):	[Lb/in2]	1.150794E07

### DESIGN CRITERIA

Description	Unit	Major axis	Minor axis
Effective length factor (K)	--	1.00	1.00
Effective length factor for torsion	--	1.00	
Unbraced compression length (Lx, Ly)	[in]	86.05	86.05
Length for torsion and lateral-torsional buckling	[in]	86.05	
Lateral bracing	--	Yes	Yes
<b>Additional hypotheses</b>			
Bearing length	[in]	2.00	

Positive flange fastened	No
Negative flange fastened	No
Continuous lateral torsional restraint	No

## SERVICE CONDITIONS

Verification	Unit	Value	Ctrl EQ	Reference
Maximum geometric slenderness (L/r)	--	106.96		(Com. C4F)
Geometric slenderness (KL/r)	--	106.96		
Deflection in compression and/or bending	[in]	-0.18	DEF3 at 100.00%	

## DESIGN CHECKS

### DESIGN FOR FLEXURE

#### Bending about major axis, M33

Ratio	:	0.02	Reference	:	(Sec. C3)
Capacity	:	1817.82 [Lb*ft]	Ctrl Eq.	:	D58 at 3.13%
Demand	:	-44.90 [Lb*ft]			

Intermediate results	Unit	Value	Reference
<u>Nominal flexural strength (Mnx)</u>	[Lb*ft]	1913.49	(Sec. C3)
Nominal flexural strength with Fy (Mnxo)	[Lb*ft]	0.00	(Eq. C3.1.1-1)
Elastic section modulus of effective section at Fy (Sex)	[in3]	0.00	(Sec. C3.1.1)
Lateral torsional buckling nominal flexural strength (Mnc)	[Lb*ft]	1E300	(Sec. C3.1.2)
Elastic buckling stress for bending (Fe)	[Lb/in2]	1839119.00	(Sec. C3.1.2.1)
Critical buckling stress (Fc)	[Lb/in2]	62500.00	(Sec. C3.1.2.1)
Elastic section modulus of effective section at Fc (Scx)	[in3]	0.37	(Sec. C3.1.2.1)
Lateral-torsional buckling modification factor (Cb)	--	1.63	
End moment coefficient in interaction formula (Cm)	--	0.85	

#### Bending about minor axis, M22

Ratio	:	0.31	Reference	:	(Sec. C3)
Capacity	:	1817.82 [Lb*ft]	Ctrl Eq.	:	D53 at 3.13%
Demand	:	-557.50 [Lb*ft]			

Intermediate results	Unit	Value	Reference
<u>Nominal flexural strength (Mny)</u>	[Lb*ft]	1913.49	(Sec. C3)
Nominal flexural strength with Fy (Mnyo)	[Lb*ft]	0.00	(Eq. C3.1.1-1)
Elastic section modulus of effective section at Fy (Sey)	[in3]	0.00	(Sec. C3.1.1)
Lateral torsional buckling nominal flexural strength (Mnc)	[Lb*ft]	1E300	(Sec. C3.1.2)
Elastic buckling stress for bending (Fe)	[Lb/in2]	1839119.00	(Sec. C3.1.2.1)
Critical buckling stress (Fc)	[Lb/in2]	62500.00	(Sec. C3.1.2.1)
Elastic section modulus of effective section at Fc (Scy)	[in3]	0.37	(Sec. C3.1.2.1)
Lateral-torsional buckling modification factor (Cb)	--	1.63	
End moment coefficient in interaction formula (Cm)	--	0.85	

### DESIGN FOR SHEAR

#### Shear parallel to minor axis, V2

Ratio	:	0.03	Reference	:	(Sec. C3.2)
Capacity	:	9785.17 [Lb]	Ctrl Eq.	:	D58 at 0.00%
Demand	:	-271.45 [Lb]			

Intermediate results	Unit	Value	Reference
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Nominal shear strength (Vn) [Lb] 10300.18 (Sec. C3.2)

### Shear parallel to major axis, V3

Ratio	:	0.34	Reference	:	(Sec. C3.2)
Capacity	:	9785.17 [Lb]	Ctrl Eq.	:	D53 at 0.00%
Demand	:	3372.98 [Lb]			

Intermediate results	Unit	Value	Reference
Nominal shear strength (Vn)	[Lb]	10300.18	(Sec. C3.2)

### DESIGN FOR TENSION

#### Tension

Ratio	:	0.24	Reference	:	(Eq. C2-1)
Capacity	:	30900.55 [Lb]	Ctrl Eq.	:	D52 at 0.00%
Demand	:	7526.67 [Lb]			

Intermediate results	Unit	Value	Reference
Nominal tension strength (Tn)	[Lb]	34333.95	(Sec. C2)

### DESIGN FOR COMPRESSION

#### Compression

Ratio	:	0.39	Reference	:	(Sec. C4)
Capacity	:	-12642.44 [Lb]	Ctrl Eq.	:	D39 at 0.00%
Demand	:	-4968.74 [Lb]			

Intermediate results	Unit	Value	Reference
Nominal compression strength (Pn)	[Lb]	-14873.45	(Eq. C4.1)
Axial elastic buckling stress (Fe)	[Lb/in <sup>2</sup> ]	25016.26	(Sec. C4.2)
Effective net area at stress at stress Fy (Ae)	[in <sup>2</sup> ]	0.69	(Sec. B)
Nominal axial strength with Fy (Pno)	[Lb]	-34333.95	(Sec. C4)
Nominal buckling stress (Fn)	[Lb/in <sup>2</sup> ]	21659.98	(Sec. C4)
Effective net area at stress at stress Fn (Ae)	[in <sup>2</sup> ]	0.69	(Sec. B)

### DESIGN FOR TORSION

#### Torsion

Ratio	:	0.00	Reference	:	(AISC, Sec. H)
Capacity	:	4104000.00 [Lb*ft]	Ctrl Eq.	:	D52 at 0.00%
Demand	:	348.16 [Lb*ft]			

Intermediate results	Unit	Value	Reference
Nominal torsion strength	[Lb*ft]	4320000.00	

### DESIGN FOR CRIPPLING (N/A)

### INTERACTION

#### Combined bending and web crippling ratio



Ratio : 0.00

Ctrl Eq. : D1 at 0.00%

\*The equation has been modified for a maximum ratio equal to 1.0

#### Combined bending and shear ratio (x-x)

Ratio : 0.12

Ctrl Eq. : D53 at 0.00%  
Reference : C3.3.2-1

#### Combined bending and shear ratio (y-y)

Ratio : 0.31

Ctrl Eq. : D53 at 3.13%  
Reference : C3.3.2-1

#### Combined flexure and tension ratio

Ratio : 0.31

Ctrl Eq. : D39 at 3.13%  
Reference : C5.1.2-1

#### Intermediate results

Unit	Value	Reference
[Lb*ft]	1530.80	(Sec. C5.1)
[Lb*ft]	1530.80	(Sec. C5.1)

Nominal flexural strength with gross properties (Mnxt)  
Nominal flexural strength with gross properties (Mnyt)

#### Combined flexure and compression ratio

Ratio : 0.51

Ctrl Eq. : D39 at 3.13%  
Reference : C5.2.2-1

#### Intermediate results

Unit	Value	Reference
[Lb]	17178.14	(Sec. C5.2.1)
[Lb]	17178.14	(Sec. C5.2.1)
--	0.82	(Sec. C5.2.1)
--	0.82	(Sec. C5.2.1)

Elastic buckling strength (PE<sub>x</sub>)  
Elastic buckling strength (PE<sub>y</sub>)  
Magnification factor ( $\alpha_x$ )  
Magnification factor ( $\alpha_y$ )

#### CRITICAL STRENGTH RATIO


Ratio : 0.51  
Ctrl Eq. : D39 at 3.13%

Reference : C5.2.2-1

## Steel Code Check - CABLE BRACE

Report: Concise

Members: Hot-rolled

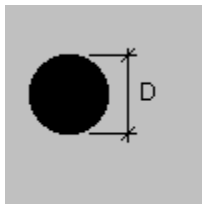
Design code: AISC 360-2010 LRFD

Member : 426 (Cable Brace)  
Design status : OK

### Section information

Section name: CABLE BRACE - 1/8 (US)

#### Dimensions



D = 0.250 [in] Diameter

#### Properties

Section properties	Unit	Major axis	Minor axis
Gross area of the section. (Ag)	[in <sup>2</sup> ]	0.049	
Moment of Inertia (local axes) (I)	[in <sup>4</sup> ]	1.91E-04	1.91E-04
Moment of Inertia (principal axes) (I')	[in <sup>4</sup> ]	1.91E-04	1.91E-04
Bending constant for moments (principal axis) (J')	[in]	0.000	0.000
Radius of gyration (local axes) (r)	[in]	0.062	0.062
Radius of gyration (principal axes) (r')	[in]	0.062	0.062
Saint-Venant torsion constant. (J)	[in <sup>4</sup> ]	3.97E-04	
Section warping constant. (Cw)	[in <sup>6</sup> ]	0.000	
Distance from centroid to shear center (principal axis) (xo,yo)	[in]	0.000	0.000
Top elastic section modulus of the section (local axis) (Ssup)	[in <sup>3</sup> ]	0.001	0.001
Bottom elastic section modulus of the section (local axis) (Sinf)	[in <sup>3</sup> ]	0.001	0.001
Top elastic section modulus of the section (principal axis) (S'sup)	[in <sup>3</sup> ]	0.001	0.001
Bottom elastic section modulus of the section (principal axis) (S'inf)	[in <sup>3</sup> ]	0.001	0.001
Plastic section modulus (local axis) (Z)	[in <sup>3</sup> ]	0.003	0.003
Plastic section modulus (principal axis) (Z')	[in <sup>3</sup> ]	0.003	0.003
Polar radius of gyration. (ro)	[in]	0.088	
Area for shear (Aw)	[in <sup>2</sup> ]	0.049	0.049
Torsional constant. (C)	[in <sup>3</sup> ]	0.004	

Material : APA - A36 - Cables

Properties	Unit	Value
Yield stress (Fy):	[Lb/in <sup>2</sup> ]	36000.00
Tensile strength (Fu):	[Lb/in <sup>2</sup> ]	58000.00
Elasticity Modulus (E):	[Lb/in <sup>2</sup> ]	2.9E07
Shear modulus for steel (G):	[Lb/in <sup>2</sup> ]	1.150794E07

#### DESIGN CRITERIA

Description	Unit	Value
Length for tension slenderness ratio (L)	[in]	183.91

### Distance between member lateral bracing points

Length (Lb) [in]	
Top	Bottom
183.91	183.91

### Laterally unbraced length

Major axis(L33)	Length [in]		Major axis(K33)	Effective length factor		Torsional axis(Kt)
	Minor axis(L22)	Torsional axis(Lt)		Minor axis(K22)	Torsional axis(Kt)	
183.91	183.91	183.91	1.0	1.0	1.0	1.0

### Additional assumptions

Continuous lateral torsional restraint	No
Tension field action	No
Continuous flexural torsional restraint	No
Effective length factor value type	None
Major axis frame type	Sway
Minor axis frame type	Sway

## DESIGN CHECKS

### AXIAL TENSION DESIGN

#### Axial tension

Ratio	:	0.21		
Capacity	:	1589.05 [Lb]	Reference	: Eq. Sec. D2
Demand	:	335.89 [Lb]	Ctrl Eq.	: D48 at 0.00%

Intermediate results	Unit	Value	Reference
Factored axial tension capacity ( $\phi P_n$ )	[Lb]	1589.05	Eq. Sec. D2
Nominal axial tension capacity ( $P_n$ )	[Lb]	1765.62	Eq. D2-1

### AXIAL COMPRESSION DESIGN

#### Compression in the major axis 33

Ratio	:	0.00		
Capacity	:	1.28 [Lb]	Reference	: Sec. E1
Demand	:	0.00 [Lb]	Ctrl Eq.	: D43 at 0.00%

Intermediate results	Unit	Value	Reference
<u>Section classification</u>			
Unstiffened element classification	--	Non slender	
Stiffened element classification	--	Non slender	
Stiffened element slenderness ( $\lambda$ )	--	1.00	
Stiffened element limiting slenderness ( $\lambda_r$ )	--	42.29	
Factored flexural buckling strength ( $\phi P_{n33}$ )	[Lb]	1.28	Sec. E1
Effective length factor (K33)	--	1.00	
Unbraced length (L33)	[in]	183.91	
Effective slenderness ( $(KL/r)_{33}$ )	--	2943.15	Eq. E3-4
Elastic critical buckling stress ( $F_{e33}$ )	[Lb/in <sup>2</sup> ]	33.04	Eq. E3-4
Reduction factor for slender unstiffened elements ( $Q_{s33}$ )	--	1.00	
Effective area of the cross section based on the effective width (A <sub>g</sub> )	[in <sup>2</sup> ]	0.05	Eq. E3-3
Reduction factor for slender stiffened elements ( $Q_{a33}$ )	--	1.00	
Full reduction factor for slender elements ( $Q_{33}$ )	--	1.00	Sec. E7
Critical stress for flexural buckling ( $F_{cr33}$ )	[Lb/in <sup>2</sup> ]	28.98	Eq. E3-3
Nominal flexural buckling strength ( $P_{n33}$ )	[Lb]	1.42	Eq. E3-1

### Compression in the minor axis 22

Ratio	:	0.00	Reference	:	Sec. E1
Capacity	:	1.28 [Lb]	Ctrl Eq.	:	D43 at 0.00%
Demand	:	0.00 [Lb]			

#### Intermediate results

Unit	Value	Reference
------	-------	-----------

#### Section classification

Unstiffened element classification	--	Non slender
Stiffened element classification	--	Non slender
Stiffened element slenderness ( $\lambda$ )	--	1.00
Stiffened element limiting slenderness ( $\lambda_r$ )	--	42.29

#### Factored flexural buckling strength ( $\phi P_{n22}$ )

Effective length factor (K <sub>22</sub> )	--	1.00	Sec. E1
Unbraced length (L <sub>22</sub> )	[in]	183.91	
Effective slenderness ((KL/r) <sub>22</sub> )	--	2943.15	Eq. E3-4
Elastic critical buckling stress (F <sub>e22</sub> )	[Lb/in <sup>2</sup> ]	33.04	Eq. E3-4
Reduction factor for slender unstiffened elements (Q <sub>s22</sub> )	--	1.00	
Effective area of the cross section based on the effective width (A <sub>e</sub> )	[in <sup>2</sup> ]	0.05	Eq. E3-3
Reduction factor for slender stiffened elements (Q <sub>a22</sub> )	--	1.00	
Full reduction factor for slender elements (Q <sub>22</sub> )	--	1.00	Sec. E7
Critical stress for flexural buckling (F <sub>cr22</sub> )	[Lb/in <sup>2</sup> ]	28.98	Eq. E3-3
Nominal flexural buckling strength (P <sub>n22</sub> )	[Lb]	1.42	Eq. E3-1

### FLEXURAL DESIGN

#### Bending about major axis, M33

Ratio	:	0.00	Reference	:	Sec. F1
Capacity	:	6.47 [Lb*ft]	Ctrl Eq.	:	D43 at 46.88%
Demand	:	0.01 [Lb*ft]			

#### Intermediate results

Unit	Value	Reference
------	-------	-----------

#### Section classification

Unstiffened element classification	--	Compact
Stiffened element classification	--	Compact

#### Factored yielding strength ( $\phi M_n$ )

Yielding (M <sub>n</sub> )	[Lb*ft]	6.47	Sec. F1
	[Lb*ft]	7.19	Eq. F11-1

#### Bending about minor axis, M22

Ratio	:	0.00	Reference	:	Sec. F1
Capacity	:	6.47 [Lb*ft]	Ctrl Eq.	:	D27 at 50.00%
Demand	:	-0.02 [Lb*ft]			

#### Intermediate results

Unit	Value	Reference
------	-------	-----------

#### Section classification

Unstiffened element classification	--	Compact
Stiffened element classification	--	Compact

#### Factored yielding strength ( $\phi M_n$ )

Yielding (M <sub>n</sub> )	[Lb*ft]	6.47	Sec. F1
	[Lb*ft]	7.19	Eq. F11-1

### DESIGN FOR SHEAR

#### Shear in major axis 33

Ratio	:	0.00
Capacity	:	953.43 [Lb]

Demand : 0.00 [Lb] Ctrl Eq. : D18 at 0.00%

Intermediate results	Unit	Value	Reference
Factored shear capacity ( $\phi V_n$ )	[Lb]	953.43	
Shear area ( $A_w$ )	[in <sup>2</sup> ]	0.05	
Nominal shear strength ( $V_n$ )	[Lb]	1059.37	Eq. G2-1

#### Shear in minor axis 22

Ratio : 0.00  
Capacity : 953.43 [Lb]  
Demand : 0.00 [Lb] Ctrl Eq. : D57 at 0.00%

Intermediate results	Unit	Value	Reference
Factored shear capacity ( $\phi V_n$ )	[Lb]	953.43	
Shear area ( $A_w$ )	[in <sup>2</sup> ]	0.05	
Nominal shear strength ( $V_n$ )	[Lb]	1059.37	Eq. G2-1

#### TORSION DESIGN

##### Torsion

Ratio : 0.01  
Capacity : 5.14 [Lb\*ft]  
Demand : 0.06 [Lb\*ft] Ctrl Eq. : D51 at 0.00%

Intermediate results	Unit	Value	Reference
Factored torsion capacity ( $\phi T_n$ )	[Lb*ft]	5.14	
Nominal torsion capacity ( $T_n$ )	[Lb*ft]	5.72	Sec. H3

#### COMBINED ACTIONS DESIGN

##### Combined flexure and axial compression

Ratio : 0.00  
Ctrl Eq. : D24 at 46.88% Reference : Eq. H1-1b

Intermediate results	Unit	Value	Reference
Interaction of flexure and axial force	--	0.00	Eq. H1-1b
Required flexural strength about strong axis ( $M_{r33}$ )	[Lb*ft]	0.01	
Available flexural strength about strong axis ( $M_{c33}$ )	[Lb*ft]	6.47	Sec. F1
Required flexural strength about weak axis ( $M_{r22}$ )	[Lb*ft]	-0.01	
Available flexural strength about weak axis ( $M_{c22}$ )	[Lb*ft]	6.47	Sec. F1
Required axial compressive strength ( $P_r$ )	[Lb]	0.00	
Available axial compressive strength ( $P_c$ )	[Lb]	1.28	Sec. E1

##### Combined flexure and axial tension

Ratio : 0.21  
Ctrl Eq. : D48 at 50.00% Reference : Eq. H1-1a

Intermediate results	Unit	Value	Reference
Required flexural strength about strong axis ( $M_{r33}$ )	[Lb*ft]	0.00	
Available flexural strength about strong axis ( $M_{c33}$ )	[Lb*ft]	6.47	Sec. F1

Required flexural strength about weak axis ( $M_{r22}$ )	[Lb*ft]	0.01	
Available flexural strength about weak axis ( $M_{c22}$ )	[Lb*ft]	6.47	Sec. F1
Required axial tensile strength ( $P_r$ )	[Lb]	335.89	
Available axial tensile strength ( $P_c$ )	[Lb]	1589.05	Eq. Sec. D2

#### Combined flexure and axial compression about local axis

Ratio	:	N/A	
Ctrl Eq.	:	--	Reference :

#### Combined flexure and axial tension about local axis

Ratio	:	N/A	
Ctrl Eq.	:	--	Reference :

#### Combined torsion, flexure, shear and axial compression

Ratio	:	N/A	
Ctrl Eq.	:	--	Reference :

#### Combined torsion, flexure, shear and axial tension

Ratio	:	N/A	
Ctrl Eq.	:	--	Reference :

## Steel Code Check – KNEE BRACE

Report: Concise

Members: Cold-formed

Design code: AISI 2001 Sup. 2004 LRFD

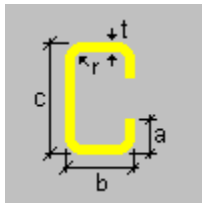
Member : 339 (Brace)  
Design status : OK

### PROPERTIES

### Section information

Section name: RD Knee M- 1132-1 (US)

#### Dimensions



a	=	0.630	[in]	Lip
b	=	2.000	[in]	Flange width
c	=	3.000	[in]	Depth
r	=	0.141	[in]	Inside bend radius
t	=	0.078	[in]	Thickness

#### Properties

Section properties	Unit	Major axis	Minor axis
Gross area of the section. (Ag)	[in2]	0.594	
Moment of Inertia (principal axes) (I')	[in4]	0.871	0.333
Bending constant for moments (principal axis) (J')	[in]	0.000	2.304
Radius of gyration (principal axes) (r')	[in]	1.211	0.749
Saint-Venant torsion constant. (J)	[in4]	0.001	
Section warping constant. (Cw)	[in6]	0.845	
Distance from centroid to shear center (principal axis) (xo,yo)	[in]	-1.909	0.000
Top elastic section modulus of the section (principal axis) (S'sup)	[in3]	0.581	0.273
Bottom elastic section modulus of the section (principal axis) (S'inf)	[in3]	0.581	0.427
Polar radius of gyration. (ro)	[in]	2.381	

Material : A653 SS 80-1

Description	Unit	Value
Yield stress (Fy):	[Lb/in2]	80000.00
Tensile strength (Fu):	[Lb/in2]	82000.00
Elasticity Modulus (E):	[Lb/in2]	2.95E07
Shear modulus for steel (G):	[Lb/in2]	1.134615E07

### DESIGN CRITERIA

Description	Unit	Major axis	Minor axis
Effective length factor (K)	--	1.00	1.00
Effective length factor for torsion	--	1.00	
Unbraced compression length (Lx, Ly)	[in]	89.09	89.09
Length for torsion and lateral-torsional buckling	[in]	89.09	
Lateral bracing	--	No	No

### Additional hypotheses

Bearing length	[in]	0.00
Positive flange fastened		No
Negative flange fastened		No
Continuous lateral torsional restraint		No

## SERVICE CONDITIONS

Verification	Unit	Value	Ctrl EQ	Reference
Maximum geometric slenderness (L/r)	--	118.61		(Com. C4F)
Geometric slenderness (KL/r)	--	118.61		
Deflection in compression and/or bending	[in]	0.02	DEF3 at 0.00%	

## DESIGN CHECKS

### DESIGN FOR FLEXURE

#### Bending about major axis, M33

Ratio	:	0.00	Reference	:	(Sec. C3)
Capacity	:	1752.28 [Lb*ft]	Ctrl Eq.	:	D37 at 0.00%
Demand	:	0.00 [Lb*ft]			

Intermediate results	Unit	Value	Reference
Nominal flexural strength (Mnx)	[Lb*ft]	1946.98	(Sec. C3)
Nominal flexural strength with Fy (Mnxo)	[Lb*ft]	3534.46	(Eq. C3.1.1-1)
Elastic section modulus of effective section at Fy (Sex)	[in <sup>3</sup> ]	0.53	(Sec. C3.1.1)
Lateral torsional buckling nominal flexural strength (Mnc)	[Lb*ft]	1946.98	(Sec. C3.1.2)
Elastic buckling stress for bending (Fe)	[Lb/in <sup>2</sup> ]	39924.35	(Sec. C3.1.2.1)
Critical buckling stress (Fc)	[Lb/in <sup>2</sup> ]	39924.35	(Sec. C3.1.2.1)
Elastic section modulus of effective section at Fc (Scx)	[in <sup>3</sup> ]	0.59	(Sec. C3.1.2.1)
Lateral-torsional buckling modification factor (Cb)	--	1.00	
End moment coefficient in interaction formula (Cm)	--	0.85	

#### Bending about minor axis, M22

Ratio	:	0.00	Reference	:	(Sec. C3)
Capacity	:	712.61 [Lb*ft]	Ctrl Eq.	:	D52 at 0.00%
Demand	:	0.00 [Lb*ft]			

Intermediate results	Unit	Value	Reference
Nominal flexural strength (Mny)	[Lb*ft]	791.78	(Sec. C3)
Nominal flexural strength with Fy (Mnyo)	[Lb*ft]	1834.45	(Eq. C3.1.1-1)
Elastic section modulus of effective section at Fy (Sey)	[in <sup>3</sup> ]	0.28	(Sec. C3.1.1)
Lateral torsional buckling nominal flexural strength (Mnc)	[Lb*ft]	791.78	(Sec. C3.1.2)
Elastic buckling stress for bending (Fe)	[Lb/in <sup>2</sup> ]	34418.66	(Sec. C3.1.2.1)
Critical buckling stress (Fc)	[Lb/in <sup>2</sup> ]	34418.66	(Sec. C3.1.2.1)
Elastic section modulus of effective section at Fc (Scy)	[in <sup>3</sup> ]	0.28	(Sec. C3.1.2.1)
Lateral-torsional buckling modification factor (Cb)	--	1.00	
End moment coefficient in interaction formula (Cm)	--	0.85	

### DESIGN FOR SHEAR

#### Shear parallel to minor axis, V2

Ratio	:	0.00	Reference	:	(Sec. C3.2)
Capacity	:	9112.52 [Lb]	Ctrl Eq.	:	D37 at 0.00%
Demand	:	0.00 [Lb]			



Intermediate results	Unit	Value	Reference
Nominal shear strength (Vn)	[Lb]	9592.13	(Sec. C3.2)

#### Shear parallel to major axis, V3

Ratio	:	0.00	
Capacity	:	11111.44 [Lb]	Reference : (Sec. C3.2)
Demand	:	0.00 [Lb]	Ctrl Eq. : D52 at 0.00%

Intermediate results	Unit	Value	Reference
Nominal shear strength (Vn)	[Lb]	11696.26	(Sec. C3.2)

### DESIGN FOR TENSION

#### Tension

Ratio	:	0.10	
Capacity	:	42937.00 [Lb]	Reference : (Eq. C2-1)
Demand	:	4101.90 [Lb]	Ctrl Eq. : D53 at 0.00%

Intermediate results	Unit	Value	Reference
Nominal tension strength (Tn)	[Lb]	47707.78	(Sec. C2)

### DESIGN FOR COMPRESSION

#### Compression

Ratio	:	0.63	
Capacity	:	-5367.98 [Lb]	Reference : (Sec. C4)
Demand	:	-3370.98 [Lb]	Ctrl Eq. : D39 at 0.00%

Intermediate results	Unit	Value	Reference
Nominal compression strength (Pn)	[Lb]	-6315.27	(Eq. C4.1)
Axial elastic buckling stress (Fe)	[Lb/in <sup>2</sup> ]	12075.17	(Sec. C4.2)
Effective net area at stress at stress Fy (Ae)	[in <sup>2</sup> ]	0.50	(Sec. B)
Nominal axial strength with Fy (Pno)	[Lb]	-40211.34	(Sec. C4)
Nominal buckling stress (Fn)	[Lb/in <sup>2</sup> ]	10589.92	(Sec. C4)
Effective net area at stress at stress Fn (Ae)	[in <sup>2</sup> ]	0.60	(Sec. B)

### DESIGN FOR TORSION

#### Torsion

Ratio	:	0.00	
Capacity	:	61.25 [Lb*ft]	Reference : (AISC, Sec. H)
Demand	:	-0.25 [Lb*ft]	Ctrl Eq. : D40 at 0.00%

Intermediate results	Unit	Value	Reference
Nominal torsion strength	[Lb*ft]	64.47	

### DESIGN FOR CRIPPLING

#### Web crippling strength

Ratio : 0.00  
Capacity : 2334.31 [Lb]  
Demand : 0.00 [Lb]

Reference : (Sec. C3.4)  
Ctrl Eq. : D1 at 0.00%

Intermediate results	Unit	Value	Reference
Nominal crippling strength ( $P_n$ )	[Lb]	2917.89	(Eq. C3.4.1-1)
Crippling strength factor ( $\Omega_w$ )	--	0.80	(Tables C3.4.1)
Coefficient from Tables	--	4.00	(Sec. C3.4)
Inside bend radius coefficient (CR)	--	0.14	(Sec. C3.4)
Bearing length coefficient (CN)	--	0.35	(Sec. C3.4)
Web slenderness coefficient (Ch)	--	0.02	(Sec. C3.4)
Limit R/t	--	5.00	(Sec. C3.4)

## INTERACTION

### Combined bending and web crippling ratio

Ratio : 0.00

Ctrl Eq. : D37 at 0.00%  
Reference : C3.5.2-1

\*The equation has been modified for a maximum ratio equal to 1.0

### Combined bending and shear ratio (x-x)

Ratio : 0.00

Ctrl Eq. : D37 at 0.00%  
Reference : C3.3.2-1

### Combined bending and shear ratio (y-y)

Ratio : 0.00

Ctrl Eq. : D52 at 0.00%  
Reference : C3.3.2-1

### Combined flexure and tension ratio

Ratio : 0.10

Ctrl Eq. : D53 at 0.00%  
Reference : C5.1.2-1

Intermediate results	Unit	Value	Reference
Nominal flexural strength with gross properties ( $M_{nxt}$ )	[Lb*ft]	3901.34	(Sec. C5.1)
Nominal flexural strength with gross properties ( $M_{nyt}$ )	[Lb*ft]	2870.72	(Sec. C5.1)

### Combined flexure and compression ratio

Ratio : 0.63

Ctrl Eq. : D39 at 0.00%  
Reference : C5.2.2-1

Intermediate results	Unit	Value	Reference
Elastic buckling strength ( $P_{Ex}$ )	[Lb]	32201.74	(Sec. C5.2.1)
Elastic buckling strength ( $P_{Ey}$ )	[Lb]	12341.75	(Sec. C5.2.1)
Magnification factor ( $\alpha_x$ )	--	0.90	(Sec. C5.2.1)
Magnification factor ( $\alpha_y$ )	--	0.73	(Sec. C5.2.1)

## CRITICAL STRENGTH RATIO

Ratio : 0.63  
Ctrl Eq. : D39 at 0.00%

Reference : C4.1

## Steel Code Check - ZEE PURLIN

Report: Concise

Members: Cold-formed

Design code: AISI 2001 Sup. 2004 LRFD

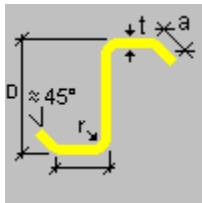
Member : 314 (ZEE PURLIN)  
Design status : OK

### PROPERTIES

### Section information

Section name: STD BIG ZEE - 6 X 3 X 055 (US)

#### Dimensions



a	=	1.000	[in]	Lip
b	=	3.000	[in]	Flange width
D	=	6.000	[in]	Depth
r	=	0.220	[in]	Inside bend radius
t	=	0.055	[in]	Thickness

#### Properties

Section properties	Unit	Major axis	Minor axis
Gross area of the section. (Ag)	[in2]	0.746	
Moment of Inertia (principal axes) (I')	[in4]	4.424	2.127
Bending constant for moments (principal axis) (J')	[in]	0.000	0.000
Radius of gyration (principal axes) (r')	[in]	2.436	1.689
Saint-Venant torsion constant. (J)	[in4]	7.70E-04	
Section warping constant. (Cw)	[in6]	12.653	
Distance from centroid to shear center (principal axis) (xo,yo)	[in]	0.000	0.000
Top elastic section modulus of the section (principal axis) (S'sup)	[in3]	1.475	0.575
Bottom elastic section modulus of the section (principal axis) (S'inf)	[in3]	1.475	0.575
Polar radius of gyration. (ro)	[in]	2.964	

Material : A653 SS 80-1

Description	Unit	Value
Yield stress (Fy):	[Lb/in2]	80000.00
Tensile strength (Fu):	[Lb/in2]	82000.00
Elasticity Modulus (E):	[Lb/in2]	2.95E07
Shear modulus for steel (G):	[Lb/in2]	1.134615E07

### DESIGN CRITERIA

Description	Unit	Major axis	Minor axis
Effective length factor (K)	--	1.00	1.00
Effective length factor for torsion	--	1.00	
Unbraced compression length (Lx, Ly)	[in]	40.00	170.00
Length for torsion and lateral-torsional buckling	[in]	40.00	
Lateral bracing	--	Yes	Yes

### Additional hypotheses

Bearing length	[in]	3.00
Positive flange fastened		No
Negative flange fastened		No
Continuous lateral torsional restraint		No

### SERVICE CONDITIONS

Verification	Unit	Value	Ctrl EQ	Reference
Maximum geometric slenderness (L/r)	--	99.94		(Com. C4F)
Geometric slenderness (KL/r)	--	99.94		
Deflection in compression and/or bending	[in]	0.31	DEF4 at 50.00%	

### DESIGN CHECKS

#### DESIGN FOR FLEXURE

##### Bending about major axis, M33

Ratio	:	0.48	Reference	:	(Sec. C3)
Capacity	:	6788.89 [Lb*ft]	Ctrl Eq.	:	D39 at 100.00%
Demand	:	-3229.51 [Lb*ft]			

Intermediate results	Unit	Value	Reference
Nominal flexural strength (Mnx)	[Lb*ft]	7146.20	(Sec. C3)
Nominal flexural strength with Fy (Mnxo)	[Lb*ft]	7146.20	(Eq. C3.1.1-1)
Elastic section modulus of effective section at Fy (Sex)	[in3]	1.07	(Sec. C3.1.1)
Lateral torsional buckling nominal flexural strength (Mnc)	[Lb*ft]	7146.20	(Sec. C3.1.2)
Elastic buckling stress for bending (Fe)	[Lb/in2]	341644.60	(Sec. C3.1.2.1)
Critical buckling stress (Fc)	[Lb/in2]	80000.00	(Sec. C3.1.2.1)
Elastic section modulus of effective section at Fc (Scx)	[in3]	1.07	(Sec. C3.1.2.1)
Lateral-torsional buckling modification factor (Cb)	--	2.28	
End moment coefficient in interaction formula (Cm)	--	0.85	

##### Bending about minor axis, M22

Ratio	:	0.40	Reference	:	(Sec. C3)
Capacity	:	2810.73 [Lb*ft]	Ctrl Eq.	:	D21 at 0.00%
Demand	:	-1115.82 [Lb*ft]			

Intermediate results	Unit	Value	Reference
Nominal flexural strength (Mny)	[Lb*ft]	3123.03	(Sec. C3)
Nominal flexural strength with Fy (Mnyo)	[Lb*ft]	3123.03	(Eq. C3.1.1-1)
Elastic section modulus of effective section at Fy (Sey)	[in3]	0.47	(Sec. C3.1.1)
Lateral torsional buckling nominal flexural strength (Mnc)	[Lb*ft]	3123.03	(Sec. C3.1.2)
Elastic buckling stress for bending (Fe)	[Lb/in2]	4366730.00	(Sec. C3.1.2.1)
Critical buckling stress (Fc)	[Lb/in2]	80000.00	(Sec. C3.1.2.1)
Elastic section modulus of effective section at Fc (Scy)	[in3]	0.47	(Sec. C3.1.2.1)
Lateral-torsional buckling modification factor (Cb)	--	1.87	
End moment coefficient in interaction formula (Cm)	--	0.85	

#### DESIGN FOR SHEAR

##### Shear parallel to minor axis, V2

Ratio	:	0.36	Reference	:	(Sec. C3.2)
Capacity	:	4129.10 [Lb]	Ctrl Eq.	:	D21 at 0.00%
Demand	:	1484.04 [Lb]			

Intermediate results	Unit	Value	Reference
Nominal shear strength (Vn)	[Lb]	4346.42	(Sec. C3.2)

#### Shear parallel to major axis, V3

Ratio	:	0.04	
Capacity	:	12242.13 [Lb]	Reference : (Sec. C3.2)
Demand	:	-500.48 [Lb]	Ctrl Eq. : D21 at 0.00%

Intermediate results	Unit	Value	Reference
Nominal shear strength (Vn)	[Lb]	12886.45	(Sec. C3.2)

#### DESIGN FOR TENSION

##### Tension

Ratio	:	0.00	
Capacity	:	54097.44 [Lb]	Reference : (Eq. C2-1)
Demand	:	4.00 [Lb]	Ctrl Eq. : D47 at 0.00%

Intermediate results	Unit	Value	Reference
Nominal tension strength (Tn)	[Lb]	60108.27	(Sec. C2)

#### DESIGN FOR COMPRESSION

##### Compression

Ratio	:	0.00	
Capacity	:	-12648.04 [Lb]	Reference : (Sec. C4)
Demand	:	-57.01 [Lb]	Ctrl Eq. : D48 at 0.00%

Intermediate results	Unit	Value	Reference
Nominal compression strength (Pn)	[Lb]	-14880.04	(Eq. C4.1)
Axial elastic buckling stress (Fe)	[Lb/in <sup>2</sup> ]	29150.55	(Sec. C4.2)
Effective net area at stress at stress Fy (Ae)	[in <sup>2</sup> ]	0.38	(Sec. B)
Nominal axial strength with Fy (Pno)	[Lb]	-30345.46	(Sec. C4)
Nominal buckling stress (Fn)	[Lb/in <sup>2</sup> ]	25565.03	(Sec. C4)
Effective net area at stress at stress Fn (Ae)	[in <sup>2</sup> ]	0.58	(Sec. B)

#### DESIGN FOR TORSION

##### Torsion

Ratio	:	0.00	
Capacity	:	53.22 [Lb*ft]	Reference : (AISC, Sec. H)
Demand	:	0.00 [Lb*ft]	Ctrl Eq. : D38 at 0.00%

Intermediate results	Unit	Value	Reference
Nominal torsion strength	[Lb*ft]	56.02	

#### DESIGN FOR CRIPPLING

##### Web crippling strength

Ratio : 0.00  
Capacity : 2800.28 [Lb]  
Demand : 0.00 [Lb]

Reference : (Sec. C3.4)  
Ctrl Eq. : D1 at 12.50%

Intermediate results	Unit	Value	Reference
Nominal crippling strength ( $P_n$ )	[Lb]	3111.42	(Eq. C3.4.1-1)
Crippling strength factor ( $\Omega_w$ )	--	0.90	(Tables C3.4.1)
Coefficient from Tables	--	13.00	(Sec. C3.4)
Inside bend radius coefficient (CR)	--	0.23	(Sec. C3.4)
Bearing length coefficient (CN)	--	0.14	(Sec. C3.4)
Web slenderness coefficient (Ch)	--	0.01	(Sec. C3.4)
Limit R/t	--	5.00	(Sec. C3.4)

## INTERACTION

### Combined bending and web crippling ratio

Ratio : 0.34

Ctrl Eq. : D39 at 100.00%  
Reference : C3.5.2-1

\*The equation has been modified for a maximum ratio equal to 1.0

### Combined bending and shear ratio (x-x)

Ratio : 0.59

Ctrl Eq. : D22 at 0.00%  
Reference : C3.3.2-1

### Combined bending and shear ratio (y-y)

Ratio : 0.40

Ctrl Eq. : D21 at 0.00%  
Reference : C3.3.2-1

### Combined flexure and tension ratio

Ratio : 0.86

Ctrl Eq. : D22 at 0.00%  
Reference : C5.1.2-2

Intermediate results	Unit	Value	Reference
Nominal flexural strength with gross properties ( $M_{nxt}$ )	[Lb*ft]	9992.25	(Sec. C5.1)
Nominal flexural strength with gross properties ( $M_{nyt}$ )	[Lb*ft]	3918.30	(Sec. C5.1)

### Combined flexure and compression ratio

Ratio : 0.86

Ctrl Eq. : D22 at 0.00%  
Reference : C5.2.2-3

Intermediate results	Unit	Value	Reference
Elastic buckling strength ( $P_{Ex}$ )	[Lb]	818234.20	(Sec. C5.2.1)
Elastic buckling strength ( $P_{Ey}$ )	[Lb]	21902.37	(Sec. C5.2.1)
Magnification factor ( $\alpha_x$ )	--	1.00	(Sec. C5.2.1)
Magnification factor ( $\alpha_y$ )	--	1.00	(Sec. C5.2.1)

## CRITICAL STRENGTH RATIO

Ratio : 0.86  
Ctrl Eq. : D22 at 0.00%

Reference : C5.2.2-3



Exhibit E  
Spill  
Prevention  
Plan

# **Spill Prevention and Response Plan**

## **Windham Solar - Ground-Mounted Solar Photovoltaic (PV) Facilities**

**Location:** 367 and 391 Hartford Turnpike and 25 and 75 West Fisk Road, Hampton, CT

**Date:** June 4, 2025

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### **1. Purpose**

This Spill Prevention and Response Plan outlines procedures to prevent, control, and respond to potential spills of hazardous materials, such as fuel, oil, and other chemicals, that may be used or stored during construction, operation, or maintenance of the solar PV facility.

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### **2. Applicability**

This plan applies to all personnel, contractors, and subcontractors involved in construction and operation of the facility. While the project is not expected to store any petroleum products, limited use of lubricants, hydraulic fluids, and fuels may occur during construction and maintenance activities.

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### **3. Spill Prevention Measures**

#### **3.1. Materials Storage**

- Hazardous materials (e.g., fuel, oil, lubricants) will be stored in labeled containers with secondary containment (e.g., spill pallets or containment berms).
- No bulk fuel storage is anticipated. If temporary storage is needed during construction, it will not exceed 1,320 gallons onsite at any one time without additional SPCC compliance.
- All containers must be kept in good condition and closed when not in use.

#### **3.2. Equipment Maintenance**

- Construction and maintenance vehicles must be inspected daily for leaks.
- Preventative maintenance will be performed to reduce the risk of spills from equipment failure.
- Refueling and fluid changes will occur away from sensitive areas, using drip pans or absorbents to capture drips/spills.

### 3.3. Stormwater Protection

- Materials will be stored away from stormwater conveyances.
  - Spill containment measures will be implemented in accordance with the project's Stormwater Pollution Prevention Plan (SWPPP).
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## 4. Spill Response Procedures

### 4.1. Discovery of a Spill

- Any observed spill must be immediately reported to the Site Supervisor.
- The area should be secured to prevent further contamination or spread.

### 4.2. Response Actions

- Use appropriate personal protective equipment (PPE).
- Stop the source of the spill, if safe to do so.
- Contain the spill using absorbents, booms, or other available containment methods.
- Collect and properly dispose of all contaminated materials.
- Notify appropriate regulatory agencies if the spill exceeds reportable quantities.

### 4.3. Notifications

- **Site Supervisor:** Frankey Jenkins – (501) 940-2873
  - **CT DEEP Emergency Response and Spill Prevention Division:**  
24-Hour Emergency Number: 1-866-337-7745
  - **National Response Center (NRC):** 1-800-424-8802 (if federally reportable)
  - Record the incident and corrective actions in the project's Environmental Log.
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## 5. Training and Inspections

### 5.1. Training

- All personnel will receive training on spill prevention and response procedures prior to beginning work onsite.
- Refresher training will occur annually and/or following any incident.

### 5.2. Inspections

- Weekly site inspections during construction to check for proper storage, signs of leaks, and availability of spill kits.
- Monthly inspections during operations.

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## **6. Spill Kits**

Spill response kits will be available on-site at all times and include:

- Absorbent pads and booms
- Protective gloves and goggles
- Disposal bags
- Emergency contact list
- Instructions for spill containment and reporting

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## **7. Recordkeeping**

Records of inspections, training, spill incidents, and corrective actions will be maintained onsite for a minimum of 3 years and made available to the Connecticut Siting Council or CT DEEP upon request.