STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Web Site: portal.ct.gov/csc

VIA ELECTRONIC MAIL

July 9, 2024

Lee D. Hoffman, Esq.
Pullman & Comley, LLC
90 State House Square
Hartford, CT 06103-3702
lhoffman@pullcom.com

RE: **PETITION NO. 1551** – C-Tec Solar, LLC Declaratory Ruling, pursuant to Connecticut General Statutes §4-176 and §16-50k, for the construction, maintenance and operation of a 1.3-megawatt AC solar photovoltaic electric generating facility located at the former New Britain landfill on Deming Road east of the intersection with Christian Lane, Berlin, Connecticut and associated electrical interconnection. **Compliance with Condition Nos. 2, 3, and 5.**

Dear Attorney Hoffman:

The Connecticut Siting Council (Council) is in receipt of your correspondence dated July 8, 2024 regarding compliance with Condition Nos. 2, 3, and 5 of the Declaratory Ruling issued by the Council on March 17, 2023 for the above-referenced facility. The correspondence includes a copy of the DEEP Stormwater Permit, the final structural design of the racking system stamped by a Professional Engineer duly licensed in the State of Connecticut, and a revised Operations and Maintenance Plan to include the reporting of landfill cap erosion issues, in accordance with Condition Nos. 2, 3, and 5, respectively.

Therefore, the Council acknowledges that Condition Nos. 2, 3, and 5 have been satisfied. This acknowledgment applies only to the conditions satisfied by the July 8, 2024 correspondence.

The Council also acknowledges the notice of commencement of construction included in the July 8, 2024 correspondence.

Please be advised that deviations from the standards established by the Council in the Declaratory Ruling are enforceable under the provisions of Connecticut General Statutes §16-50u.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/RDM/dll

c. Service List, dated November 23, 2022

PULLMAN &COMLEY

Lee D. Hoffman
90 State House Square
Hartford, CT 06103-3702
p 860 424 4315
f 860 424 4370
lhoffman@pullcom.com
www.pullcom.com

July 8, 2024

VIA ELECTRONIC MAIL

Melanie Bachman
Executive Director/Staff Attorney
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Petition 1551 - Petition of C-Tec Solar, LLC for a Declaratory Ruling that no Certificate of Environmental Compatibility and Public Need is Required for the Proposed Construction, Operation and Maintenance of a Solar-Based Electric Generating Facility, with an Output of 1.3 MW, to be Located at Deming Road, Berlin, Connecticut

Dear Ms. Bachman:

I am writing on behalf of my client, C-Tec Solar, LLC ("C-Tec"), in connection with the above-referenced Petition. The Project now has everything it requires to commence construction. Accordingly, this letter will serve as notification to the Council that the project intends commence construction on or about July 22, 2024.

With this notification, C-Tec also submits the following documentation: (1) Notice of Permit Authorization for its General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities; (2) Operations and Maintenance Manual & Decommissioning Plan; (3) Structural Calculation Report; and (4) Structural Detail Drawing. It should also be noted that C-Tec is in the process of coordinating training for potential first responders to the project. This training will be completed prior to the completion of construction.

Should you have any questions concerning this submittal, please contact me at your convenience. I certify that copies of this submittal have been submitted to all parties on the Application's Service List as of this date.

Sincerely,

Lee D. Hoffman

cc: Service List
Enclosures

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

Bureau of Materials Management and Compliance Assurance

Notice of Permit Authorization

August, 30 2023

BRANDON PIZZOFERRATO
C-TEC SOLAR, LLC
1 Griffin Rd S
Bloomfield, CT 06002-1351

Subject: General Permit Registration for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities
Application NO.: 202211539

BRANDON PIZZOFERRATO:

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 New Britain Landfill Solar (located at Deming Rd, Berlin) registration for the **General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, effective 12/31/2020, modified 11/25/2022 (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. GSN003889 has been assigned to authorize the stormwater discharge(s) from this project.

Questions can be emailed to deep.stormwater@ct.gov.

2023 OPERATIONS AND MAINTENANCE MANUAL & DECOMMISSIONING PLAN

NEW BRITAIN LANDFILL

Operations and Maintenance Manual

Contents

CTEC SOLAR

INTRODUCTION

This manual describes the operation and maintenance of the New Britain Landfill photovoltaic (PV) power generating facility located at 142 Deming Road, New Britain, CT 06037.

Please note that the site “as built” may vary from the initial design below.

Equipment	Quantity	Model	Notes
Modules (solar panels)	+/-3,228 540W modules	Canadian Solar CS6W-540MB-AG	High efficiency panels built for long- term performance.
Transformers	1	TBD, as approved by Eversource	5-Leg Core Pad-Mount Transformer
Inverters	13	Chint SCA100KTL-DO-/US-600	Medium Power three phase string inverters designed for high performance and reliability specifically for the North American grid.
Racking	n/a	TBD	Panels are mounted on ballast racking at a tilt angle of 20°

The solar PV facility is comprised of PV modules, associated wiring components and multiple string inverters. In operation, the DC power produced by the solar sub-array is converted to three-phase AC power by the inverters. That power is then supplied into an electrical main utility panelboard, which effectively enables each sub-array to function independently. The sub-arrays are then collectively interconnected to the utility system through a series of step-up transformers.

In the event of a power failure, the PV facility will automatically shut down when a loss of AC power occurs per UL 1741 and IEEE 1547 to protect utility personnel from injury while repairing the utility system.

This manual provides a description of the PV facility, procedures for basic operations, maintenance and troubleshooting of the system and important safety information.

RESPONSIBLE PARTIES

Responsible Parties	Name/Address	Contact (email/phone)
Landowner: City of New Britain	City of New Britain 27 West Main Street New Britain, CT 06037	E-mail: jon.delgadillo@newbritainct.gov, Phone: (860)826-3417
Operator: Onyx Asset Services Group LLC	Onyx Renewable Partners L.P 230 Park Avenue, Suite 845 New York, NY 10169	(646) 217-0713
Lessee: Same as Operator	Same as Operator	Same as Operator
Site Description	Acres	Type
Array area	Approx. 5 acres	Landfill
Leased area	Approx. 5 acres	Landfill

A Ground Lease Agreement will be executed between the Landowner (Lessor) and Operator (Lessee/Site Operator).

Onyx Asset Services Group LLC is the Operator of the Solar Project at the Site, and is the responsible party for the following Solar operations and maintenance activities on the Site:

- Grounds maintenance and maintenance of vegetation within the limits of the leased area, which shall include all solar generation equipment and a buffer surrounding such equipment, to be determined based on topography and site conditions.
- Drainage swales and stormwater controls (if any) within the limits of the leased area
- Access ways within the leased area

USE OF THIS DOCUMENT

This document packet is provided for informational purposes only. No one but the Operator and its Agents should attempt to operate any equipment on site.

This document is not intended to provide comprehensive site safety instructions, nor detailed operational guidance.

SITE SAFETY INFORMATION

FOR SITE EMERGENCIES

- For any life or property-threatening emergencies, **please dial 911**
- To report site issues, or speak to a Onyx Renewables representative please dial (646-217-0713)

EMERGENCY PV SHUTDOWN PROCEDURE

The following steps are required to shut the system down in an emergency:

1 Turn the AC Disconnect Switch to the "OFF" position.

2 Turn the DC Disconnect Switch to the "OFF" position.

These steps will power off the inverter; however, AC power from the grid and DC power from the array will still be present in the inverter wire termination section.

The next steps will disconnect power from the array and the utility transformer to the inverters:

1 Open DC PV array disconnect switches located on the inverter pad.

2 Open the main overhead disconnect switch. Or disconnect the individual inverter circuit breakers located inside the switchboards within the site.

Please refer to the as-built drawings or prominently displayed signage for switch location.

IMPORTANT NOTES:

WHILE THE ABOVE STEPS ISOLATE THE PV ARRAY CIRCUITS FROM THE INVERTERS, ALL CIRCUITS BETWEEN THE PV MODULES AND THE DISCONNECT SWITCHES WILL BE ENERGIZED DURING DAYLIGHT HOURS. HIGH VOLTAGE WILL BE PRESENT EVEN AT LOW LEVELS OF SUNLIGHT.

IT IS IMPERATIVE TO FOLLOW SAFE WORK PRACTICES AND USE PROPER SAFETY EQUIPMENT DURING ANY EMERGENCY OPERATIONS, WHICH INVOLVE ANY PORTION OF THE PV ARRAY.

GENERAL PV SAFETY PRECAUTIONS

The system has been designed for safe and reliable operation. However, it is critically important that any personnel who operate or maintain the system observe the proper safety precautions. Listed below are some of the most critical safety considerations:

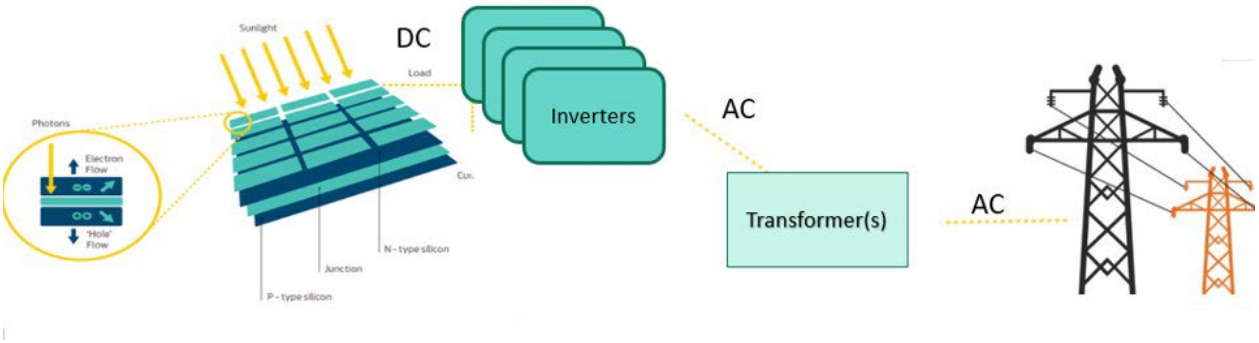
1 ONLY LICENSED, QUALIFIED, EXPERIENCED AND TRAINED PERSONNEL SHOULD PERFORM REPAIR WORK ON ANY ELECTRICAL COMPONENTS OF THE SYSTEMS.

2 DANGEROUS VOLTAGE LEVELS ARE PRESENT IN EACH SYSTEM – VOLTAGES UP TO 1,000 VOLTS DIRECT CURRENT (DC) AND 22,860 VOLTS AC CAN BE FOUND UNDER PARTICULAR OPERATING CONDITIONS. IT SHOULD BE NOTED THAT HIGH VOLTAGE SYSTEMS REQUIRE SPECIAL SAFETY PRECAUTIONS DURING MAINTENANCE OR REPAIR OPERATIONS.

3 PV MODULES PRODUCE VOLTAGE WHENEVER THEY ARE EXPOSED TO SUNLIGHT. AT ANY TIME DURING DAYLIGHT HOURS, (INCLUDING MINIMAL SUNLIGHT CONDITIONS) THERE IS AN ELECTRICAL SHOCK HAZARD IF ANY PERSONNEL SHOULD CONTACT EXPOSED PV ARRAY ELECTRICAL CIRCUIT COMPONENTS.

4 BROKEN OR CRACKED PV MODULE GLASS CAN INCREASE RISK OF SHOCK HAZARD, ESPECIALLY WHEN WET. IMMEDIATELY CONTACT QUALIFIED PERSONNEL FOR REPLACEMENT SERVICES IF ANY BROKEN PV MODULE GLASS IS NOTICED.

SYSTEM DESCRIPTION



PV ARRAY

The ground-mounted photovoltaic arrays consist of PV modules which convert sunlight directly into electricity for utilization by a load such as a utility interconnected inverter. Each module is a sealed, solid-state device with an expected performance life well in excess of 25 years.

Electrically, the PV modules are wired into groups, which are referred to as strings or source circuits. Each source circuit is comprised of individual PV modules wired in a series configuration. Individual source circuits are then grouped together in combiner boxes forming sub-arrays.

For the PV modules to produce their full electrical output, they must be clean and free of shade. Shadows cast by nearby objects such as antennas, air conditioning equipment, trees, overhead wires, etc. will significantly reduce a module's current and voltage output. Because each module is electrically interconnected with other modules, reducing the output of a single module effectively reduces the energy production for the entire source circuit.

The solar modules are mounted using a rack mounting system, with a steel frame to secure the solar array at a uniform tilt angle to minimize shading, while optimizing use of array area.

INVERTERS

The inverters act as a fully automatic power-conditioning interface between the PV array and the utility system. The inverter will utilize solid-state power and control components to maximize power production from the PV array while meeting power quality and safety standards set forth by utilities under Underwriters Laboratories Safety Standards.

An LED display associated with the Ground Fault Detection and Interrupt Circuit (GFDI) on the face of the inverter will indicate the operating status of the unit along with other pertinent data. Please refer to the Inverter O&M manual for more details on the design and operation of the inverter.

To operate efficiently, the inverter circuit components must be kept free of excessive dust and dirt. In addition, the cooling fans and the blower impellers must be kept clean for efficient air movement. Dirt accumulating on circuit boards and electrical equipment leads to higher component operating temperatures and shorter life.

TRANSFORMERS AND ELECTRICAL SYSTEM

Transformers regulate and condition power prior to injection to the grid, and they are often custom- made to meet the specialized electrical requirements of both the array and the grid.

The system electrical circuitry transfers electrical energy from the PV arrays to the inverters and then from the inverters to the transformer and finally, to the point of utility interconnection. The components utilized in the system design are standard electrical components and can be serviced by any qualified electrical contractor who is thoroughly familiar with photovoltaic power systems.

DATA ACQUISITION SYSTEM

This Photovoltaic power system is equipped with a Data Acquisition System (DAS) manufactured by Also Energy (The global leader in Energy DAS) to monitor the energy production of the system.

The DAS consists of an environmental weather monitoring system, and various energy measurement components, which are both connected to an Internet Broadcast Device. The central DAS components and environmental components are located together within the site.

An environmental instrument package measures solar insolation, wind speed, and ambient temperature while the energy monitoring system measures power and the electrical energy produced by the system.

Information gathered by the DAS is broadcast to a web site for processing and monitoring purposes. This service not only gathers energy production data, but also issues alerts to system administrators when the system's projected performance falls below expected values.

In some cases the DAS can be configured to allow remote site diagnostics and operational control. Please contact the Site Operator for additional information.

SYSTEM COMPONENT SAFETY

PV ARRAYS – REPAIR BY SITE OPERATOR ONLY

PV Array

The solid-state nature of the PV array greatly reduces the amount of maintenance required when compared to traditional mechanical generating systems. Unless a portion of the PV array becomes physically damaged, the system will be safe and reliable for its service life. In the event that repair or maintenance work must be undertaken, please be aware of the following precautions:

- Only qualified personnel should be allowed access to the internal or energized components of the PV array junction boxes, inverters, panelboards, transformers, disconnect switches or field wiring.
- The PV array will always be electrically energized during all daylight conditions; so proper training, experience and precautions are required to ensure personnel safety.
- Before attempting any maintenance or washing operations, carefully inspect the entire PV array for modules with broken glass. A qualified contractor must replace broken PV Modules before any array washing or other maintenance work is attempted.
- In order to disconnect the entire PV array from the inverters, secure the operating handles of all mounted PV Array disconnect switches in the "Off" position.
- To disconnect a single PV array source circuit from the inverter, secure the operating handle of its associated PV Array disconnect switch in the "Off" position.
- Verify that all components undergoing maintenance or repair are disconnected from the inverter before servicing.
- Do not remove any fuses, or disconnect any PV module wiring while the array is electrically connected to the inverter.
- Physical damage to components and hazardous conditions will result if any individual PV Array component is opened under load.
- Do not attempt to access the junction boxes on the back of the PV modules. There are no user serviceable components in the module junction boxes.
- Always follow safe work practices and use proper safety equipment during maintenance or repair operations on the PV array.

INVERTERS – REPAIR BY SITE OPERATOR ONLY

When compared to historical rotary inverter technology, the solid-state design utilized in the Inverters greatly reduces maintenance requirements while maximizing system-operating efficiency. Before undertaking any routine maintenance or repair work, please read the Inverter manual and pay close attention to the following precautions:

- To shut down an inverter, turn the AC and DC Disconnect Switches, on the front of the inverter, to the "OFF" position. These switches can be used to shut down an inverter whenever there is a question regarding personal safety or the operation of either inverter.
- The appropriate AC breaker in the main panelboard for the respective inverter must be secured in the "OFF" position in order to ensure that the inverter is not energized by utility during routine maintenance operations.
- Only qualified, experienced and trained personnel should perform repairs on the electronic and electrically energized components inside the inverters.
- Because the interior of the inverter cabinet contains exposed high voltage components, the cabinet door should remain closed at all times. Qualified, maintenance or repair personnel should only open the cabinet to perform maintenance or service work after the inverter has been completely disconnected from all electrical energy sources and the capacitors have fully discharged.
- To reduce the risk of electric shock, do not perform any maintenance work other than that specified in the Inverter manual.
- Only Chint Power Systems or otherwise qualified personnel or their designated agents should perform any service work on the inverter's power conditioning or control components.
- Do not open the inverter cabinet doors during wet or inclement weather conditions. Introducing rain or moisture into the cabinet interior could result in hazardous conditions or damage to electrical components. For further information on the inverter, please refer to the appropriate inverter manual.
- Be sure to follow safe work practices and use proper safety equipment during maintenance or repair operations on the inverters.

SYSTEM OPERATION – REPAIR BY SITE OPERATOR ONLY

During normal operation, the inverters will act as fully automatic power-conditioning devices. The inverter will start to process power whenever there is sufficient energy available from the PV array. During the generation process, the inverter will utilize peak power tracking technology to maximize the energy production from the array. This function is achieved by varying the peak voltage and current point on the power curve for the photovoltaic array as operating conditions vary throughout the day.

Under basic operation, the PV array generates direct current (DC) and supplies it to the inverter. The inverter processes and conditions the direct current obtained from the PV array into 480

volt three- phase alternating current (AC), which is then stepped up to 22,860 volts via the transformer to the utility

voltage at the site. In addition, the inverter synchronizes the phase characteristics and frequency to match that of the utility system.

In the event that the quality of the utility power momentarily falls outside a set of pre-specified parameters, the inverter will automatically shut down in a fault mode. After stable utility power becomes available again, the inverters will automatically restart and continue to process power. In the total absence of utility power, the inverter will not operate.

Whenever the PV array produces insufficient energy to efficiently operate the inverter, the inverter will automatically go into a low power "sleep" mode. The inverter will then sample the PV array for available power and resume power processing functions when sufficient levels of electrical energy are once again available from the array.

The inverter will also shut down whenever an operating problem is detected with the PV array, utility power quality or an internal operating parameter. Under such conditions, a fault code will be displayed on the front user interface panel. The fault code can then be matched to a detailed list of fault codes found in the Inverter O&M manual.

ACTIVATING OR STARTING THE SYSTEM – BY SITE OPERATOR ONLY

Before attempting to operate the inverters, refer to the Inverter O&M manual for initial turn-on procedures. The O&M manual also contains a detailed list of inverter fault codes, safety procedures, and other pertinent information.

The following describes normal steps taken to turn the inverter on or off. Refer to the as-built drawings for identification of components.

The start-up operations listed below should be followed in the sequence listed (for each inverter):

1 Remove any lockout devices on the disconnect switches after confirming that any repairs or maintenance operations have been completed and that no personnel are still working on the system.

2 Make sure that the inverter cabinet doors and DC disconnect doors are all closed and locked.

3 Turn on the dedicated 3-phase (dedicated) circuit breaker on the electrical panel.

4 Verify the proper clockwise phase sequence at the "line" side terminals (top) of the AC disconnect. Do not turn on until clockwise phase sequence has been verified.

5 Turn on the Inverter's 3-phase AC disconnect.

6 Turn on the Inverter's DC disconnect.

7 Watch the LED indicators for initialization (green and red LEDs on), then slow blinking green LED followed by faster blinking green LED. Watch the LCD display for prompts and system status.

8 Listen for contactor clunk (inverter on-line).

9 Listen for slight 60Hz hum (transformer on-line).

10 Following the blinking green LED and high frequency switching sound you should see a solid green LED (inverter on-line and beginning to feed power into 3-phase circuit). This confirms that the inverter is operating normally. The LCD display will show the AC Power, Energy, current and voltage as well as DC voltage.

11 If the unit fails to power on, use the troubleshooting information provided in the user manual. If those steps do not resolve the problem, contact the Site Operator or Inverter Manufacturer.

MAINTENANCE

MAINTENANCE PRECAUTIONS

The Site Operator and its highly trained Agents are the only parties who should undertake any maintenance or repair to the system. Before doing so, Site Operator staff will follow the shutdown procedure described in the previous sections.

1 Review and understand all safety precautions and maintenance operations described in both this document and the Inverter Manual.

2 Only qualified individuals should perform or supervise any maintenance procedures.

3 Install appropriate lock out devices on all system disconnecting means to protect personnel performing maintenance operations on the system from electrical shock hazards.

4 Do not open the inverter cabinet door for any reason, only [inverter manufacturer] personnel are permitted to perform maintenance or inspections.

5 Contact Site Operator if there are any questions regarding operation or maintenance procedure for the PV array.

Note: The PV array circuits, array combiner boxes, the array disconnect switches and all associated wiring will remain energized as long as there is sunlight. Hazardous DC voltage levels will be present in all these components even during very low daylight conditions.

DAILY AND PERIODIC REMOTE OPERATIONS AND MONITORING

The Operator's Asset Management staff have the ability to monitor site equipment remotely, performing a suite of daily operational checks to verify site status and performance. In some cases, real time remote diagnostics allow O&M staff to analyze and correct common equipment issues through the same on-line interface. Comprehensive remote diagnostics and operations are fairly new to solar, and have allowed Operators to perform deeper analysis and understand fairly subtle performance issues without visiting the site.

On site cameras allow Asset Management staff to get a real time and historical view of site conditions, to assess vegetation, soiling, weather, and major equipment housings.

Web based performance monitoring mini sites can be provided to municipalities interested in following solar performance in real time.

PV Array Monitoring Procedures

Description	Action
1. Daily and intraday review of site alerts and equipment notifications	**Daily: Coordinate O&M team site visits as necessary, and ensure that issues are corrected expeditiously**
2. Review site video camera as necessary to establish real-time site conditions	**Daily: Review**
3. Verify inverter and meter performance to expected	**Daily: Coordinate investigation of any unexplained variance to expected**
4. Verify total site output to expected	**Daily: Coordinate investigation of any variance to expected**
5. Verify storage battery performance and equipment status, if applicable	**Daily: Coordinate response to variance**
6. Verify that grazing animals are confined to internal ElectroNet and behaving normally, if applicable	**Daily: Coordinate visit by shepherd if activity is unusual.**
7. Periodically analyze string, combiner, and inverter performance on a comparative basis, site-wide to identify underperformance related to blown fuses and other subtle performance issues	**Periodically: Coordinate investigation of any variance to expected**

PHOTO

New Britain Landfill, Winter 2023, before construction

PROCEDURES FOR ALL SITE VISITS

Remote monitoring and diagnostics do not displace on-site maintenance. From time to time Operations and Maintenance staff will be on site to investigate and correct issues. These visits are irregular but represent an opportunity to conduct a routine inspection and validate site conditions as thoroughly as possible. On average, Operations and Maintenance staff visit sites monthly to attend to on-site maintenance issues. For sites hosting grazing stock visits are at least biweekly.

PV Procedures at all Site Visits

Description	Action
1. Validate integrity of fencing	Coordinate O&M team site visits as necessary, and assure that issues are corrected expeditiously
2. Evaluate general condition of vegetation, shading	Recommend maintenance
3. Verify the integrity of major drainage features/erosion/settling	Recommend maintenance/additional evaluation
4. Verify the integrity and check soil levels of visible panels	Recommend maintenance
5. Check status of grazing herd, if applicable	Escalate issues to Shepherd, if applicable
6. Note obvious wire maintenance issues, if any	Recommend maintenance
7. Perform equipment-specific or site-specific checks as necessary	As required
8. Evaluate the general condition of the landfill site/cap area.	Report any Landfill cap erosion issues within the solar facility to the City of New Britain

ANNUAL MAINTENANCE PROCEDURES FOR THE PV ARRAY

At least once annually (more often if conditions warrant) Operations and Maintenance staff will conduct a thorough walk-through of the site, to perform preventative maintenance and diagnostics on all major equipment. This generally takes place in Spring.

Thermal imaging of major equipment, including a sample of panels, is conducted annually in addition to the below visual inspection. This data is collected and analyzed to uncover issues prior to equipment failure and/or degraded performance. Some array components may require more frequent cleaning depending on age and model; the elements below represent minimum annual activity.

Site inspection and video photography via drone is also performed on an annual or bi-annual basis.

Report any landfill cap erosion issues within the solar facility to the City of New Britain.

Annual Maintenance Procedures

Components & Equipment	Description	Action
PV Modules	Check for dust & debris on module surface	Wash or wipe clean with water
	Check for physical damage on all PV modules	Replace damaged PV modules
	Check for loose or disconnected cable terminations between PV module wiring	Retighten or reconnect wiring
	Check cable condition	Replace worn cables if necessary
	Check for shading obstructions on all PV modules	Identify source and remove
	Check for fading/discoloration, burn marks, seal condition, frame damage or rust	Log and report conditions to Site Operator
PV Inverters	Check functionality – e.g. auto disconnect upon loss of grid power supply, error & ground fault LED indicators	Consult inverter manufacturer for repair or replacement parts
	Check ventilation condition	Clear dirt, dust or debris from ventilation system
	Check for abnormal operating temperature	Consult inverter manufacturer for repair or replacement parts
	Check for abnormal noises – i.e. irregular humming or rattling	Consult inverter manufacturer for repair
	Inspect inverter structure(s) and enclosure(s) (seals, rust, damage, door condition, switch/handle condition, locks)	Log and report conditions to Site Operator
Cables	Check for cable conditions – i.e. wear and tear	Replace worn cables if necessary
	Check cable terminals for burnt marks, hot spots or loose connections	Tighten connections or replace if necessary
Combiner Boxes	Check cable terminals – e.g. wear and tear, loose connections or burn marks	Tighten or replace if necessary
	Check for placards and signage	Replace if necessary
	Check for physical damage	Replace if necessary
	Check for blown fuses inside the Combiner Box	Replace blown fuses
	Check for water leaks inside the Combiner Box	Replace combiner box or repair to prevent future water leaks
Bonding & Grounding	Check grounding cable and bonding connection conditions	Replace worn cables if necessary
	Check the physical grounding/bonding connection	Retighten connection if necessary
	Check continuity of grounding and bonding conductors	Troubleshoot or replace if necessary
Disconnect Switches	Check functionality	Replace or repair as necessary
	Check for corrosion	Treat corroded areas or consult racking manufacturer/installer

PV Module Racking System	Check for damage to racking system	Replace or repair damaged parts
	Check for settlement	If settlement is detected within the solar array area it will be assessed in conjunction with the Owner, as applicable, and an

Components & Equipment	Description	Action
		appropriate response action will be selected
Pole Mounted Equipment	Check for damage or irregularities – e.g. damage from weather related incidents, blown fuses, lightning marks, etc.	Replace or repair damaged equipment
Transformers	Operator will be responsible for attending the site to check the terminations, etc. for the main transformer Any alarms raised by the public or the DAS should be immediately forwarded directly to Site Operator for action Check fluid levels	Log and report conditions to Site Operator
General/ Vegetation	Check vegetation control to maintain optimal performance of PV system Check fence/gate security Check internal access-ways/signage integrity Check for erosion	Mowing of grassy areas as necessary to maintain solar generation efficiency Pruning of trees/bushes on property, or overhanging property that cause shading of the PV panels or potential damage to fencing/equipment in compliance with any conditions of the land lease Site Operator to carry out repair/replacement of fence and security systems as appropriate, as well as general erosion control.

SITE ACCESS

Site perimeter fence gate(s) are to remain locked at all times personnel is not present on site.

LOCK-INS

Anyone operating in and around the solar site needs to be cognizant of lock-ins, and the danger they pose.

When maintenance staff enter the site they will leave the gate unlocked in the unlikely event that first responders and emergency vehicles need to respond to an accident quickly. For this reason, the site should not be locked if it appears to be unlocked.

Please contact Asset Management at Onyx Renewables at: (646) 217-0713 before locking a gate that appears to have been left open. Onyx will verify that O&M staff are not inside before the gate should be secured.

Onyx will promptly investigate why the gate was left unlocked.

COMMON MAINTENANCE PROCEDURES

The following section outlines basic maintenance procedures, for the reader's information. No procedure should be attempted by anyone but the Operator or its Agents.

PV MODULE REPLACEMENT PROCEDURE

> WARNING: ONLY QUALIFIED PERSONNEL SHOULD WORK ON THIS SYSTEM. PHOTOVOLTAIC MODULES ARE ALWAYS ENERGIZED WHEN EXPOSED TO LIGHT

Perform module replacement operations in the order described below:

- Refer to the string wiring diagram to locate which inverter and DC disconnect the module is associated with.
- Put in the OFF position and lock out all PV Array Disconnect (inverter DC disconnect and panelboard AC disconnect) switches associated with the inverter prior to starting replacement operation.
- Open all circuit fuses that the module is associated with.
- WARNING: Do not open fuses until the DC disconnects have been turned off. Pulling fuses under load is an unsafe practice and a fire hazard, doing so could cause damage to PV wire, fuse holder, and combiner box.
- Cover the module with a blank out mat with steel spring clamp.
- Use PV disconnect tool to disconnect positive and negative leads of the broken module.
- WARNING: Do not disconnect modules until the fuses have been pulled. Disconnecting modules under load is an unsafe practice and a fire hazard, doing so could cause damage to PV module, connector, and wire.
- Loosen the four 5/16" bolts that attach PV module to racking.
- Replace broken module with new module.
- Replace the four 5/16" bolts and torque to 12 ft-lbs.
- Check module leads for any damage, and then connect positive and negative leads.
- Replace tie wraps for wire management.
- Close all fuses that the module is associated with.

INVERTER IS NOT OPERATING

In the event that the inverter is not running as expected during daylight hours with a clear sky and strong sunlight, please check the following:

1 Contact the Site Operator.

2 Verify that the facility is receiving power from the utility connection and that an electrical outage has not occurred within the last 10 minutes.

3 Make sure that the inverter doors are all closed and locked.

If the inverter does not begin countdown to operation after a 300 second delay once step three is complete, look for lockout devices on the disconnect switches listed below.

Important Note: The switches listed below may also be found unlocked in the "OFF" position for a specific reason. Do not close any switches without first verifying that no personnel or property are at risk if the switch is closed.

1 Utility AC Disconnect.

2 Inverter AC Disconnect.

3 Array Disconnects.

After establishing that it is safe to do so, close the switches in the following sequence:

1 Close the DC Disconnect switches.

2 Close the main disconnect switch and close the individual inverter specific breakers in the panelboard cabinets.

3 Close the DC PV array disconnect switches located on the panelboard pad.

If the inverter still does not operate after completing the sequence described above, then a Fault condition likely exists. Please refer to the following section for recommendations on further actions.

INVERTER IS IN FAULT MODE

The inverters have a set of internally monitored operating conditions that must be met for safe and reliable operation. If any of these conditions is not met, the inverter shuts down and goes into what is known as a "Fault" mode. The inverter will remain in off in the Fault mode until the condition is corrected.

Many operating conditions may change temporarily during normal system operation. Temporary fault conditions such as momentary sags in utility line frequency or voltages are transient, so the inverter will automatically restart after the operating conditions return to normal.

If the fault condition is not temporary the inverter will remain out of operation until the fault condition is corrected. In the event that an inverter has been off for several hours with uninterrupted electric utility service and clear sunny skies, then a more prevalent type of fault condition is likely preventing the inverter from operating.

To identify the fault condition, please refer to the Inverter Installation and Operation manual for a description of how to identify fault codes and how to do a soft restart as well as a hard restart of the inverter. The menu will indicate the present fault condition, which should recorded, be reported to facility operations manager for evaluation and correction.

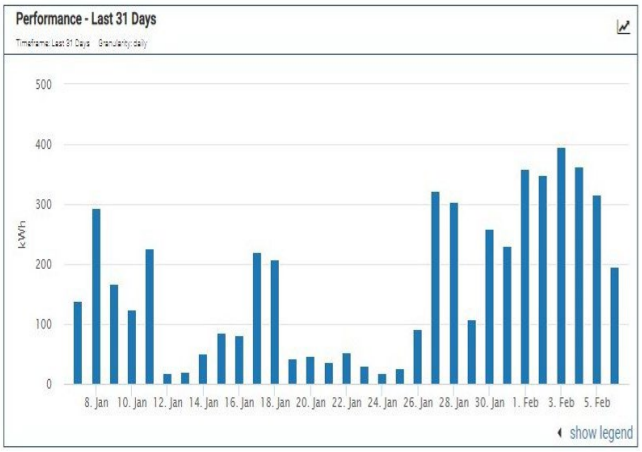
LOW ENERGY PRODUCTION REPORTED BY THE DAS

Some common causes of system underperformance are:

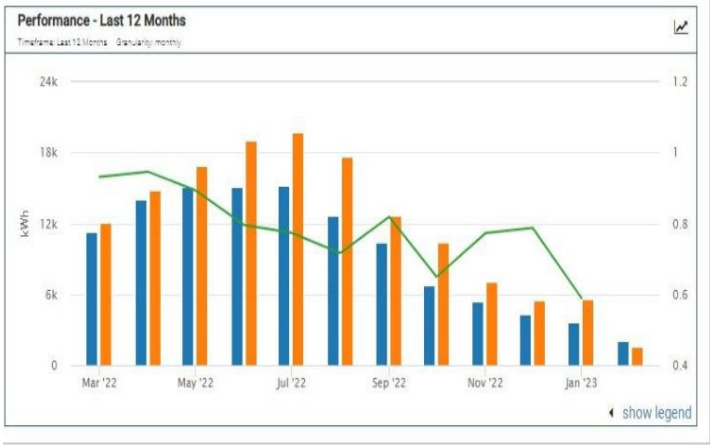
- Heavy dirt, debris, dust accumulation, or shading on the PV array.
- Damaged PV modules.
- Compromised electrical system components such as damaged conduit or wiring.
- Open fuses in the PV array combiner boxes or open disconnect switches.

How are sites managed?

- Cameras allow remote staff to see the site for security purposes, as well as to confirm snow and other debris.



- Weather equipment tracks how strong the sun is at minute intervals; other tools track electrical generation down to the inverter and string level.



How do seasons and weather affect solar production?

- Snow covered panels don't operate well. Snow typically slides off quickly
- Although snow and ice reduce productivity in the short term, they provide a valuable "scouring" effect that removes grime and dust
- High ambient temperatures reduce solar production; hot August days are less productive than cool May days, even with the same amount of sun
- Solar produces twice as much in June as in January due to the length of the day and the angle of the sun
- When the utility loses power, (counterintuitively), solar arrays stop producing as a safety measure; when the utility is down, so are we.

CTEC SOLAR

DECOMMISSIOING PLAN

Parcel 10-1-83-2
Pursuant to Petition 1551

The purpose of this plan is to provide an outline of necessary steps to decommission the solar array to be constructed at 142 Deming Road, New Britain, CT, Parcel 10-1-83-2 (the
"Site") and to restore the Site following the conclusion of the useful life of the system.

Decommissioning Plan

This Decommissioning Plan describes the approach for removal and/or proper abandonment of facilities and equipment associated with the project and describes anticipated land restoration activities to take place following the end of the project's useful life. The array y is intended to operate for 25 or more years.

The Decommissioning Plan covers the following elements.

1. Removal of solar module structures and all appurtenant above ground equipment;
2. Removal of overhead poles and above ground electrical lines within the Project site;
3. Removal of the on-site switchgear, as applicable;
4. Restoration of disturbed soil on the site to a condition consistent with the pre- development conditions;
5. Restoration or reclamation of Project roads to their pre-construction condition unless the landowner requests to retain the improved roads for access throughout the landowner's property;

Documentation of the pre-construction condition of the project site, including photographic record, will be collected by the property owner.

Summary of the Solar Facility

The proposed Project includes the installation of PV modules which will convert sunlight into DC electricity. The PV-generated DC power will be collected from each of the multiple rows of PV modules and conveyed to inverters. The inverters will convert the DC power to AC power, which will then flow to a medium-voltage transformer that converts the output of the inverter to 13.8 kV where the power will be delivered to the regional electrical grid.

The facility will consist of an approximately +/-1.7MW (DC) solar power generating facility secured within a fence, surrounding the solar panels and equipment, and accessed through locked gates along the frontage to the site. The facility will include the following features:

- Racking supporting the photovoltaic modules supported on driven piles
- One transformer and inverters
- Perimeter fence
- Underground and above ground conduit and wires

- Approximately 4 above ground wooden utility poles

- Overhead wires
- Security gates providing access

Site preparation will be conducted in accordance with the approved plans.

Project Decommissioning and Recycling

In general, decommissioning will maximize the recycling of all facility components. Certain facility equipment and features are assumed to be left in place for future uses, including roads and fences. The individual array components to be decommissioned will be recycled to the maximum extent practicable or removed from the site and disposed of at an appropriately licensed disposal facility.

Decommissioning Preparation

The first step in the decommissioning process would be to assess existing site conditions and prepare the site for demolition.

Site decommissioning and equipment removal is anticipated to require 2-3 weeks. Therefore, access roads, fencing, electrical power, and other facilities will temporarily remain in place for use by the decommissioning workers until no longer needed. Demolition debris will be placed in temporary onsite storage area(s) pending final transportation and disposal and/or recycling according to the procedures listed below.

Permits and Approvals

Depending on the regulatory requirements at the time of decommissioning, permits or approvals may be required for the decommissioning activities. These approvals will likely at a minimum require demolition/building permit from the City. Appropriate applications for approvals and permits would be submitted and approved issued prior to decommissioning activities.

Erosion Control

Prior to commencement of decommissioning activities, erosion control measures would be implemented. The type and extent of these measures would be dictated by the regulatory requirements at the time of decommissioning.

Health and Safety

A Health and Safety Plan will be developed prior to decommissioning activities. The plan will be designed to ensure worker and public safety during decommissioning. A Health and Safety Manager will be assigned to the decommissioning activities to provide worker training and health and safety monitoring.

PV Equipment Removal and Recycling

During decommissioning, Project components that are no longer needed would be removed from the site and recycled or disposed of at an appropriately licensed disposal facility. Above ground portions of the PV module supports will be removed. Below ground portions of the PV module supports will be removed entirely where practical. Those supports that are more firmly

anchored (e.g., such as embedded in bedrock) and cannot be pulled with a typical backhoe (John Deere 310 or similar) may be cut off and the remaining support left in place. The demolition debris and removed equipment may be cut or dismantled into pieces that can be safely lifted or carried with the onsite equipment being used. The debris and equipment will be processed for transportation and delivery to an appropriately licensed disposal facility or recycling center. Modules will be recycled in accordance with the current recycling program. No hazardous materials or waste will be used during operation of the solar facility, and disposal of hazardous materials or waste will not be required during decommissioning.

Power components

The inverters, transformers, and switch gear will be dismantled and recycled. The cast-in-place concrete foundation will be broken up, removed and recycled unless requested to remain in place by the property owner. The overhead and underground equipment and conductors of the system will be removed, and the poles and pole foundations will be removed. Aluminum and copper from the conductors will be recycled or removed from the site to an appropriately licensed disposal facility. After removal of the conductor, the underground conduit will be cut off three feet below the ground surface and will remain in place.

Roads

Access roads will remain in place to accomplish decommissioning at the end of the Project's life. At the time of decommissioning, if the property owner determines that some of these roads will be beneficial for future use of the site; those roads may remain after decommissioning.
Roads that will not be used will be restored to be similar to pre-construction conditions.

Fencing

To the extent the perimeter fence remains in good repair, it will be left in place at the end of the decommissioning project.

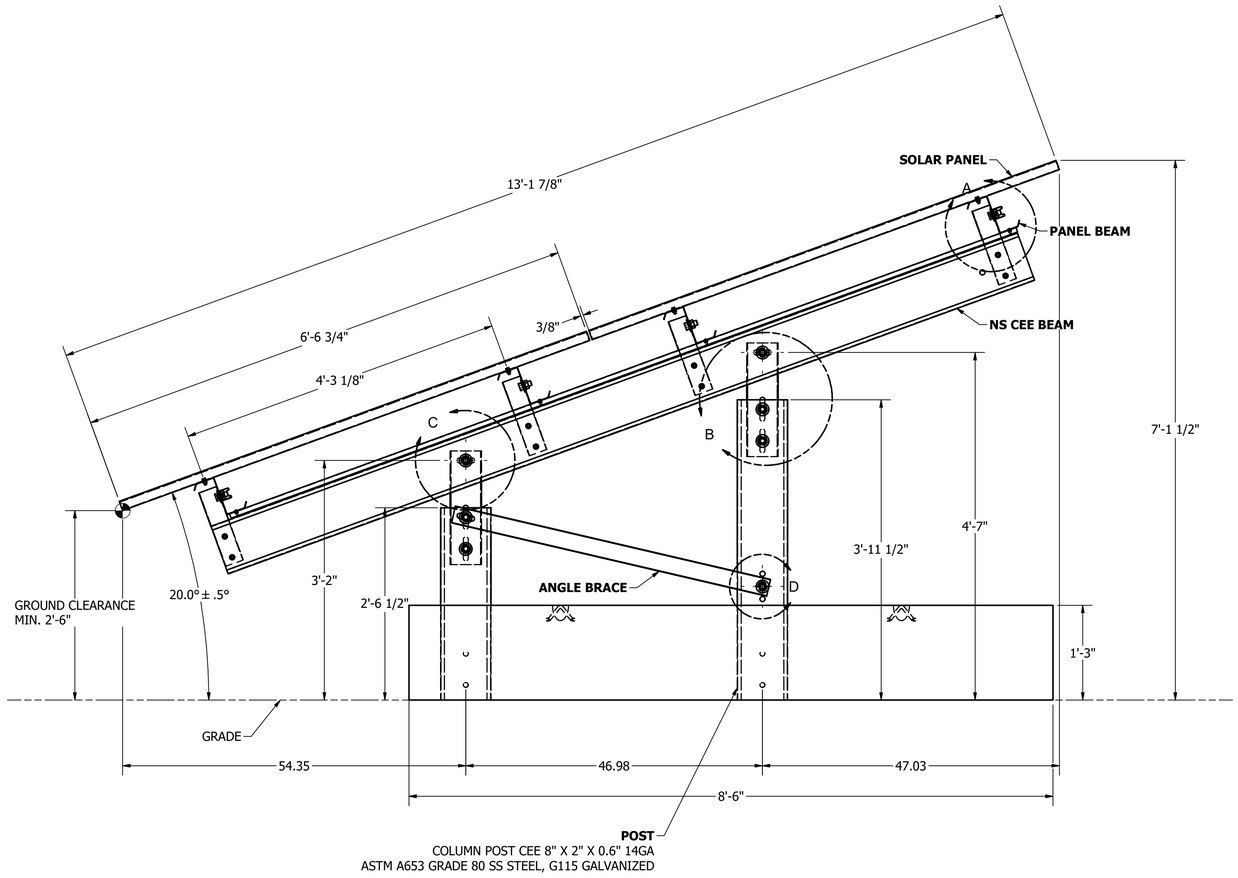
Site Restoration

Once removal of all Project equipment is complete, the vegetative cover of array will be left in place and allowed to grow to natural, unmaintained conditions.

Future Land Use

The decommissioning plan is based upon the site being returned to a condition consistent with preconstruction use. Property owner may seek alternate uses subsequent to decommissioning of the array.

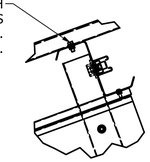
APPENDIX- A
STRUCTURAL DETAIL DRAWING



SIDE VIEW
VIEW1
SCALE 1 : 12

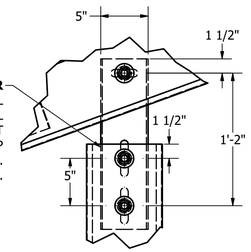
ALL PANEL MOUNTING HARDWARE CALLED OUT BELOW WILL BE PROVIDED BY DCE SOLAR. ANY CUSTOMIZED PANEL MOUNTING HARDWARE PROVIDED BY OTHERS MAY VOID DCE SOLAR'S UL2703 CERTIFICATION.

PANEL ATTACHES TO PANEL BEAMS WITH (4) 5/16-18 X 3/4" SERRATED FLANGE CAP SCREWS AND 5/16-18 SERRATED FLANGE NUTS. TORQUE TO 15 FT-LBS.



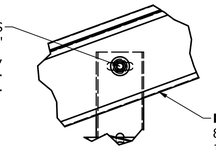
DETAIL A
SCALE 1 / 8

TOP BEAM ADAPTER
5" X 1.75" X 18" X 8G CHANNEL G115, ASTM A653 GRADE 50 SS STEEL ATTACHES TO NS BEAM AND COLUMN POST WITH (3) 3/4-10 X 1.5" SERRATED FLANGE CAP SCREW, WASHER, AND SERRATED FLANGE NUT. TORQUE TO 250 FT-LB.



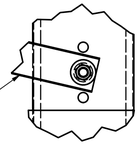
DETAIL B
SCALE 1 / 8

ANGLE BRACE ATTACHES TO NS BEAM WITH (1) 3/4-10 X 1.5" GRADE 5 STEEL HHCS, WASHER, AND SERRATED FLANGE NUT. TORQUE TO 250 FT-LBS.



NS BEAM
8" X 2" X 0.6"
14 GAUGE ASTM A653
GRADE 80 SS STEEL
G115 GALVANIZED

DETAIL C
SCALE 1 / 8



ANGLE BRACE
2.75" X 1.75" U-CHANNEL, 14 GAUGE ASTM A653 GRADE 50 SS STEEL. G115 GALVANIZED.

DETAIL D
SCALE 1 / 6

PROJECT INFORMATION
INSTALLATION ADDRESS:
170 Deming Rd, Berlin, CT 06037
Structural General Notes

1. The contractor will be solely responsible for all construction means, methods, techniques, sequences and procedures and shall at all times take reasonable precautions for the safety of its employees on the project, and shall comply with all applicable provisions of federal, state, and municipal safety laws and building construction codes.

2. If existing conditions make it necessary to revise structural details, consult DCE Solar before proceeding with any change.

3. These drawings and notes are for this specific project and no other use is authorized.

4. Structure designed in accordance with the 2021 International Building Code. ASCE 7-16, AISC 360-16 (14th Edition), and AISI S100-16: ASD
Snow Loads:
-Ground Snow Load pg = 30 psf
-Importance Factor Is = 0.8
-Exposure Factor Ce = 0.9
-Slope Snow Load ps = 27.27 psf

Wind Loads:
-Basic Wind Speed V = 110 mph
-MRI Factor = 1.00
-Iw = 1
-Exposure = C
-Wind Design performed in accordance with the requirements of ASCE - Wind Tunnel Procedure. Refer to Wind Tunnel Report by UWO BLWT Laboratory dated 12/11/14.

Seismic Loads:
-SS = 0.201g, S1 = 0.055g
-Site Class = D
-SDS = 0.322, SD1 = 0.132g
-Seismic Design Category = B
-Ordinary Steel Cantilever Column System

5. Material strengths:
-Hot-rolled structural steel ASTM A992 GR50.
-Cold Formed Steel Sections comply w/ASTM A1003, structural grade, galvanized to Grade as noted.
-Formed Steel Brackets - ASTM A653 Grade 50 SS, G115 HDG
-I-Beams - A992, 50 ksi, Hot Dip Galvanized to ASTM 123 Grade 85
-Plate - A36 Steel, Hot Dip Galvanized
-Connectors - Stainless Steel unless otherwise noted.

6. Members and connections have been designed for worst-case loading associated with exterior zones of the array per the wind tunnel report.

7. For the purposes of this project, all arrays are classified as Exterior Arrays.

8. Scope of work by Structural Engineer includes member design, connection design, and determination of design base reactions only. Layout of PV arrays such that they do not conflict with existing site obstructions, determination of site-specific foundation and geotechnical parameters, and all other work not specifically noted is by others.

Engineer of Record

REVISION HISTORY			
REV	DESCRIPTION	DATE	DESIGNER
0	STRUCTURAL DETAIL DRAWING	10/7/2022	JSPEIDEL
1	REVISED PANEL, UPDATED LAYOUT PER NEW PANEL AND TABLE SIZES	4/4/2023	CPATTERSON
2	REVISED BALLAST BLOCK DIMENSIONS, REVISED GML ON PAGE 4	7/20/2023	CPATTERSON

DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED
TOLERANCES ARE AS FOLLOWS:

.X = ± 0.050" (1.27mm)
.XX = ± 0.015" (0.38mm)
.XXX = ± 0.005" (0.127mm)

ANGLE = ± 5 °
MIN. BREAK = 0.012" (0.3mm)

SURFACE FINISH = 63 (US)

Material:
Weight: 7827.542 lbmass
Description: **CT-LS-DC-B, TRINA TSM-DE14H(II), 2x9, 20 DEG, NEW BRITAIN LANDFILL, C-TEC SOLAR, LLC**
Project: NEW BRITAIN LANDFILL
Drawn: CPATTERSON
Date: 7/20/2023
Scale:
Sheet: 1 of 4

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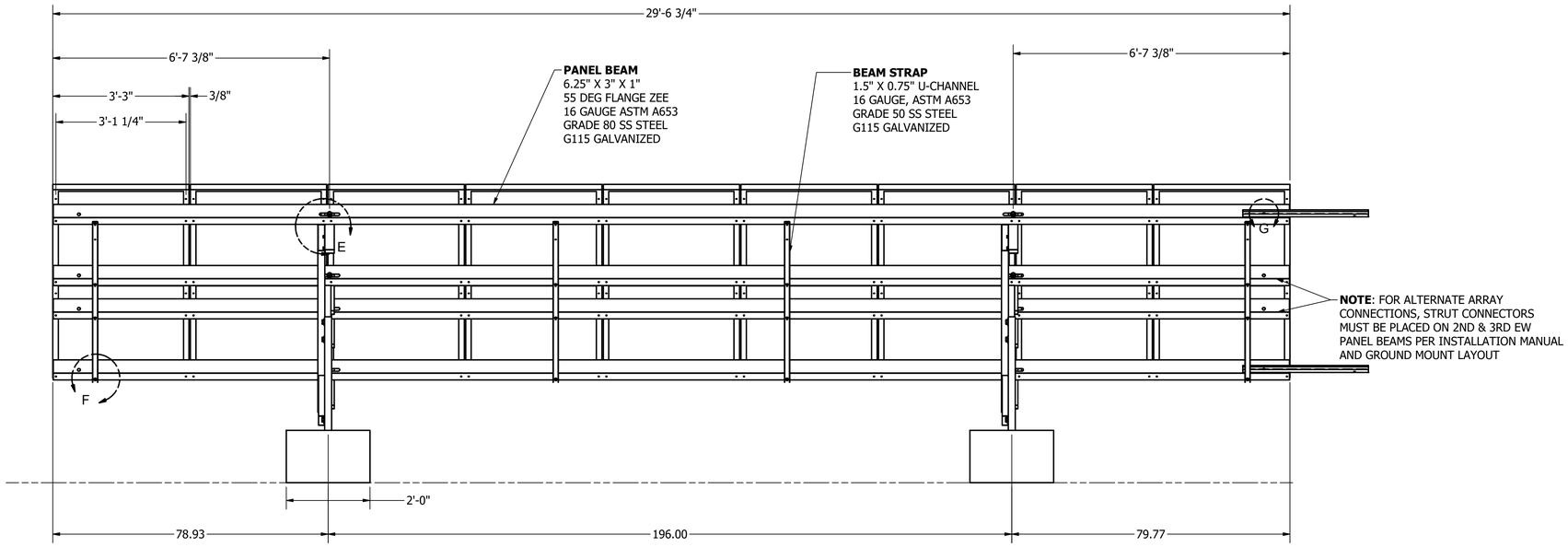
19410 Jetton Rd, Ste 220
Cornelius, NC, 28031
www.dcesolar.com
Phone:1-704-659-7474

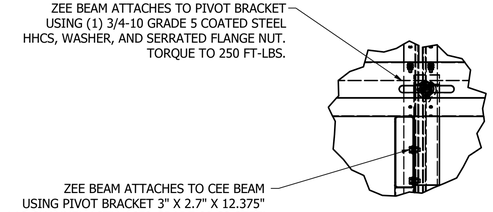
Format: D
Part Number: **5666**
Rev: 2

STRUCTURAL DETAIL DRAWING - REAR

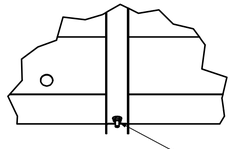


REAR VIEW

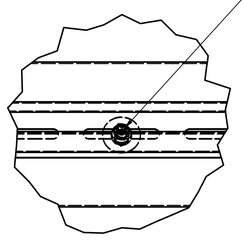
VIEW3
SCALE 1 /20



DETAIL E
SCALE 1 / 8



DETAIL F
SCALE 1 / 5



DETAIL G
SCALE 1 / 3

PROJECT INFORMATION
INSTALLATION ADDRESS:
170 Deming Rd, Berlin, CT 06037

Structural General Notes

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-Importance Factor Is = 0.8
-Exposure Factor Ce = 0.9
-Slope Snow Load ps = 27.27 psf

Wind Loads:
-Basic Wind Speed V = 110 mph
-MRI Factor = 1.00
-Iw = 1
-Exposure = C
-Wind Design performed in accordance with the requirements of ASCE - Wind Tunnel Procedure. Refer to Wind Tunnel Report by UWO BLWT Laboratory dated 12/11/14.

Seismic Loads:
-SS = 0.201g, S1 = 0.055g
-Site Class = D
-SDS = 0.322, SD1 = 0.132g
-Seismic Design Category = B
-Ordinary Steel Cantilever Column System

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-Plate - A36 Steel, Hot Dip Galvanized
-Connectors - Stainless Steel unless otherwise noted.

6. Members and connections have been designed for worst-case loading associated with exterior zones of the array per the wind tunnel report.

7. For the purposes of this project, all arrays are classified as Exterior Arrays.

8. Scope of work by Structural Engineer includes member design, connection design, and determination of design base reactions only. Layout of PV arrays such that they do not conflict with existing site obstructions, determination of site-specific foundation and geotechnical parameters, and all other work not specifically noted is by others.

Engineer of Record

STATE OF CONNECTICUT
WOLFGANG U. PRITZ
No. 27916
LICENSED
PROFESSIONAL ENGINEER

DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED
TOLERANCES ARE AS FOLLOWS:

.X = ± 0.050" (1.27mm)
.XX = ± 0.015" (0.38mm)
.XXX = ± 0.005" (0.127mm)

ANGLE = ± 5 °
MIN. BREAK = 0.012" (0.3mm)

SURFACE FINISH = 63 (US)

Material:	
Weight:	7827.542 lbmass
Description:	**CT-LS-DC-B, TRINA TSM-DE14H(II), 2x9, 20 DEG, NEW BRITAIN LANDFILL, C-TEC SOLAR, LLC**
Project:	NEW BRITAIN LANDFILL
Drawn:	CPATTERSON
Date:	7/20/2023
Scale:	
Sheet:	2 of 4

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Cornelius, NC, 28031
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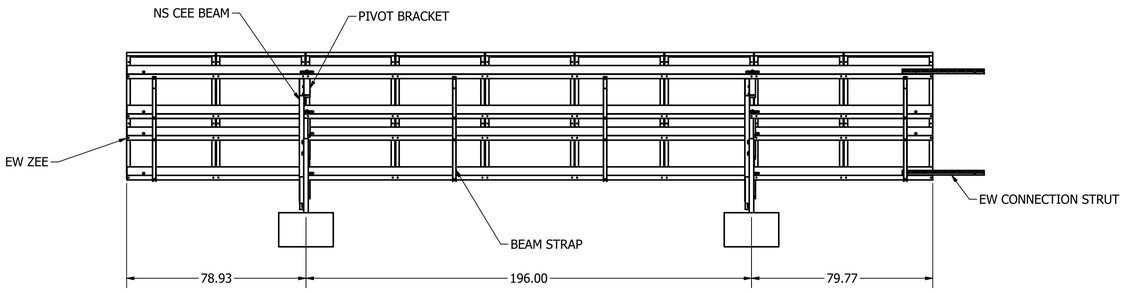
Phone:1-704-659-7474

Format:	Part Number	Rev:
D	**5666**	2



REAR VIEW
2X9 ARRAY
VIEW13
SCALE 0.03 : 1

PANEL SPECIFICATION	
NAME	DESCRIPTION
MANUFACTURER	TRINA
MODEL	TSM-DE14H(II)
LENGTH (mm)	2000
WIDTH (mm)	992
THICKNESS (mm)	40

MATERIAL DESCRIPTION

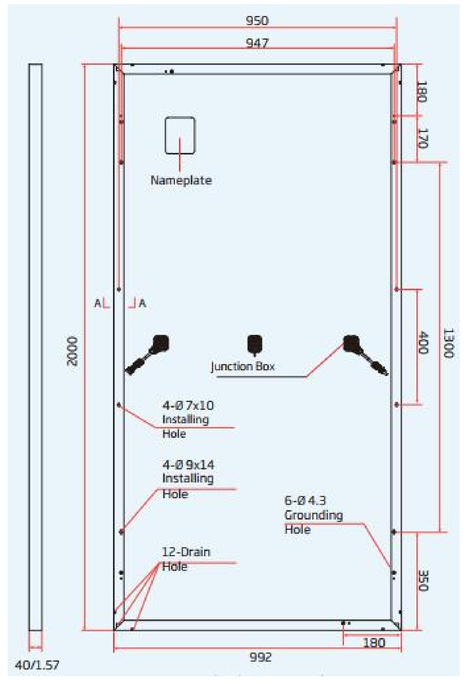
MEMBER	SHAPE	MATERIAL	GAGE
PANEL BEAM	6.25Z3X1X55DEG	A653 SS Gr80	16GA
NS CEE BEAM	8CS2X0.625	A653 SS Gr80	14GA
KICKER BRACE	2.75CU1.75	A653 SS Gr50	14GA
BEAM BRACE	1.5CU0.75	A653 SS Gr50	16GA
POST	CEE POST 8 X 2 X .625	A653 SS Gr80	14GA

NOTES

*ADJUSTED UPLIFT IS ASSUMED AS 70% OF THE DOWNWARD LOAD. IT'S RECOMMENDED TO USE THIS LOAD FOR PULL TEST IN CASE PUSH TEST CANNOT BE PERFORMED.
1: USE ADJUSTED UPLIFT IF NO REFUSAL IS ENCOUNTERED.
2: USE UPLIFT FORCE IN CASE OF REFUSAL.
3: FOR UPLIFT AND LATERAL FORCES USE SAFETY FACTOR OF 1.5 AND 2, RESPECTIVELY.

IN-FIELD PILE REMEDIATION

ANY IN-FIELD REMEDIATION REQUIRING THE CUTTING OR DRILLING OF GALVANIZED MATERIAL SHOULD FOLLOW ONE OF THESE TWO GUIDELINES TO COAT AND TREAT METALS THAT ARE EXPOSED TO GALVANIZATION DAMAGE:
1. USE PAINTS CONTAINING ZINC DUST (IN ACCORDANCE WITH "ASTM A 780-01" SECTION A2)
2. USE ZINC SPRAY (IN ACCORDANCE WITH "ASTM A 780-01" SECTION A3) ONE OF THE ABOVE GUIDELINES MUST BE FOLLOWED TO MAINTAIN THE DCE WARRANTY REQUIREMENTS.



PROJECT INFORMATION

INSTALLATION ADDRESS:
170 Deming Rd, Berlin, CT 06037

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-Exposure Factor Ce = 0.9
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-Basic Wind Speed V = 110 mph
-MRI Factor = 1.00
-Iw = 1
-Exposure = C
-Wind Design performed in accordance with the requirements of ASCE - Wind Tunnel Procedure. Refer to Wind Tunnel Report by UWO BLWT Laboratory dated 12/11/14.

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-I-Beams - A992, 50 ksi, Hot Dip Galvanized to ASTM 123 Grade 85
-Plate - A36 Steel, Hot Dip Galvanized
-Connectors - Stainless Steel unless otherwise noted.

6. Members and connections have been designed for worst-case loading associated with exterior zones of the array per the wind tunnel report.

7. For the purposes of this project, all arrays are classified as Exterior Arrays.

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Engineer of Record

STATE OF CONNECTICUT
WOLFGANG U. HAFF
No. 27915
LICENSED PROFESSIONAL ENGINEER

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.XXX = ± 0.005" (0.127mm)

ANGLE = ± 5 °
MIN. BREAK = 0.012" (0.3mm)

SURFACE FINISH = 63 (US)

Material:
Weight: 7827.542 lbmass
Description: **CT-LS-DC-B, TRINA TSM-DE14H(II), 2x9, 20 DEG, NEW BRITAIN LANDFILL, C-TEC SOLAR, LLC**
Project: NEW BRITAIN LANDFILL
Drawn: CPATTERSON
Date: 7/20/2023
Scale:
Sheet: 3 of 4

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www.dcesolar.com
Phone:1-704-659-7474

Format: D
Part Number: **5666**
Rev: 2

Contour ™

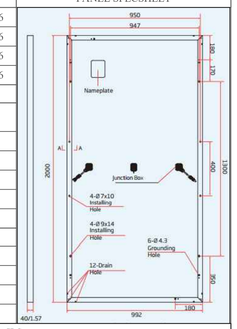
PROJECT INFORMATION	
PROJECT NAME	NEW BRITAIN LANDFILL
INSTALLATION ADDRESS	170 DEMING RD, BERLIN, CT 06037
CLIENT	C-TEC SOLAR, LLC

SITE SPECIFICATION		
WIND SPEED (MPH)	110	ASCE 7-16
SNOW LOAD (PSF)	30	ASCE 7-16
EXPOSURE CATEGORY	C	ASCE 7-16
RISK CATEGORY	I	ASCE 7-16

PANEL SPECIFICATION	
MODEL	TRINA TSM-DE14H(II)
LENGTH (mm)	2000
WIDTH (mm)	992
WEIGHT (lb)	50.7
PANEL WATTAGE (W)	385
PROJECT PANEL COUNT	4,032

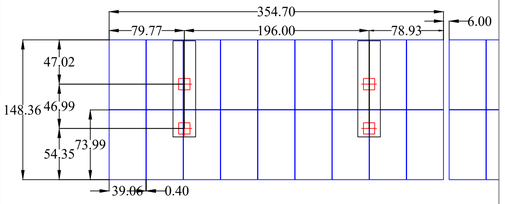
SYSTEM INFORMATION	
ARRAY CONFIGURATION	2X9
SYSTEM SIZE (W)	1,552,320
ARRAY TILT (°)	20
GROUND CLEARANCE (in)	30

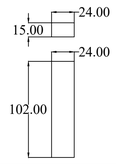
PANEL SPECSHEET



ARRAY DETAILS	
ITEM	QUANTITY
2X9	224
BALLAST BLOCKS	448
ALTERNATE ARRAY CONNECTIONS	23

CAD BLOCK





GENERAL NOTES

1. **PROPRIETARY AND CONFIDENTIAL**

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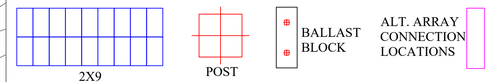
2. THE CONTRACTOR WILL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND SHALL AT ALL TIMES TAKE REASONABLE PRECAUTIONS FOR THE SAFETY OF ITS EMPLOYEES ON THE PROJECT, AND SHALL COMPLY WITH ALL APPPLICABLE PROVISIONS OF FEDERAL, STATE, AND MUNICIPAL SAFETY LAWS AND BUILDING CONSTRUCTIONS CODES.

3. CUSTOMER PROVIDED SITE LAYOUTS WERE USED TO GENERATE THE LAYOUT AS SHOWN.

4. ANY CHANGES TO THE LAYOUT SHOWN THAT MAY CAUSE ERRORS DURING INSTALLATION ARE NOT THE RESPONSIBILITY OF DCE SOLAR.

LEGEND DETAILS



REVISION NOTES

REV	DESCRIPTION	PREPARED BY	DATE
0	GROUND MOUNT LAYOUT	JSPEIDEL	10/7/2022
1	REVISED PANEL, REVISED LAYOUT	CPATTERSON	4/4/2023
2	REVISED LAYOUT	CPATTERSON	7/20/2023
3			
4			

DCE SOLAR
Elevating the Future for Solar | Made in America
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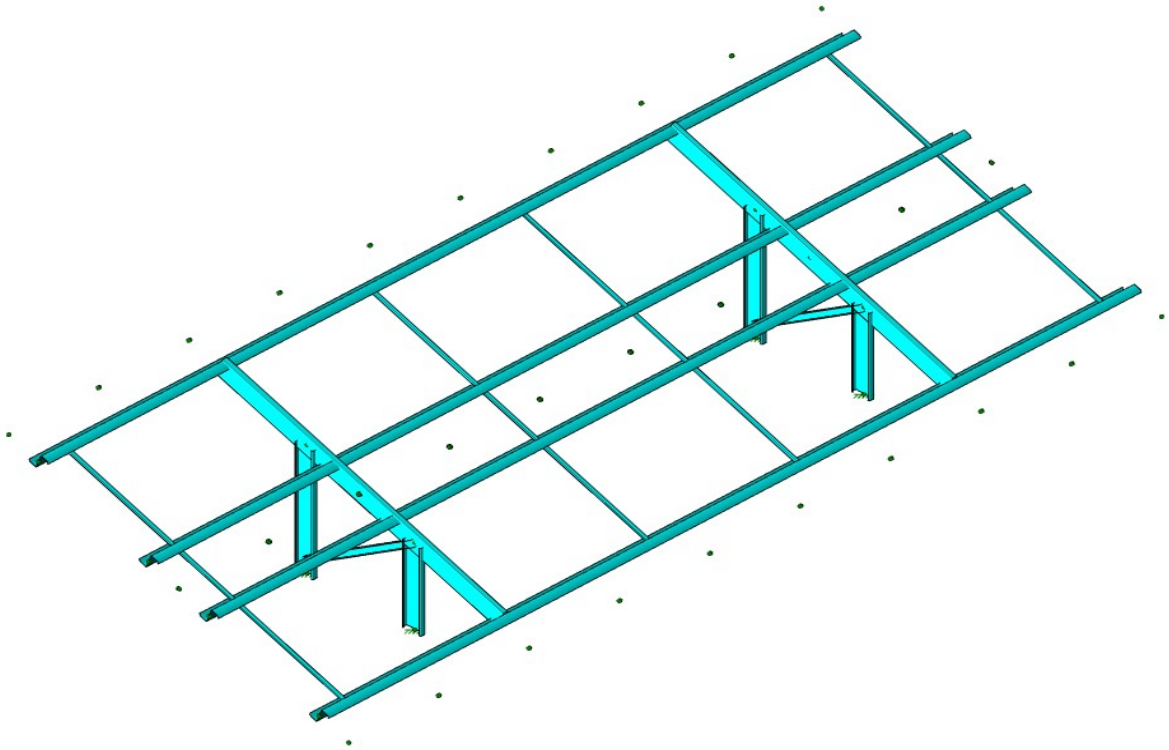
www.dcesolar.com
Phone:1-704-659-7474

Format: D

SHEET: 4 OF 4

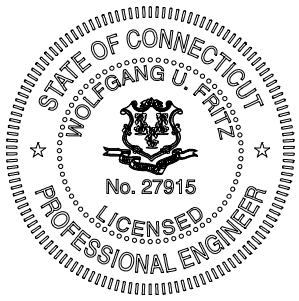


STRUCTURAL CALCULATION REPORT

Project Name:

NEW BRITAIN LANDFILL

Installation Address:
170 Deming Rd, Berlin, CT 06037



Contour-LS™

19410 Jetton Rd Ste 220
Cornelius, NC 28031
p. 704-659-7474
f. 704-875-0781
info@dcesolar.com
www.dcesolar.com

INDEX SHEET

GENERAL

Project Information

.Customer:	C-TEC SOLAR, LLC
.Project Name:	New Britain Landfill
.Project Location:	170 Deming Rd, Berlin, CT 06037
.Project Wattage (W):	

Module Specifications

.Module Manufacturer:	Trina
.Module Model No:	TSM-DE14H(II)
.Module Wattage (W):	
.Module Length (mm):	2,000
.Module Width (mm):	992
.Module Thickness (mm):	40
.Module Area (ft^2):	21.36
.Module Weight (lbs):	50.70

System Information

.Product Type:	Contour-LS
.Module Orientation:	Portrait
.Array Configuration:	2x9
.System Ground Clearance (in):	30.00
.System Tilt (degrees):	20.00
.System Length EW Dir. (ft):	29.50
.System Width NW Dir. (ft):	10.83
.System Area (ft^2):	319.58

Design Criteria

.Foundation Type:	Ballast
Pile Embedmend Depth (ft):	N/A

Criteria as per requirements by CT- licensed geotechnical engineer

SYSTEM LAYOUT

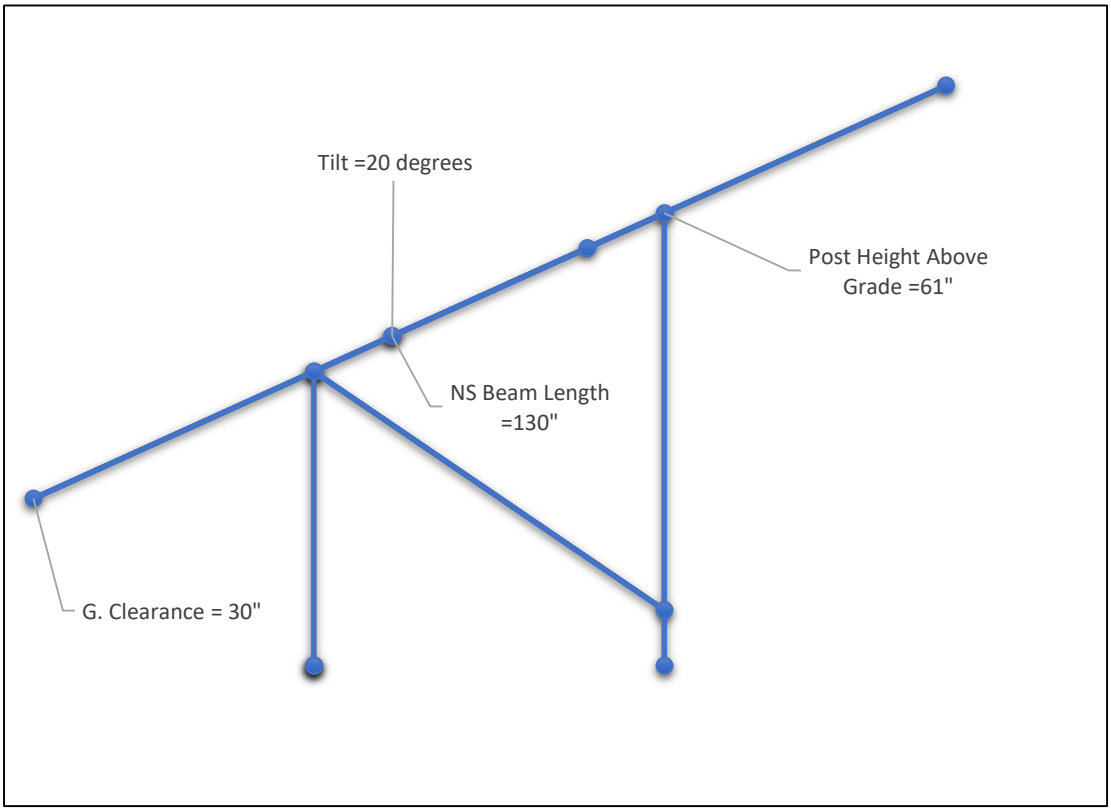


Figure 1: ***System Cross-Section***

Member Shapes

.Post:	8CS2X14GA-0.625
.NS Cee Beam:	8CS2X14GA-0.625
.EW Zee Beam:	6.25Z3X1X16GAX55DEG
..Number of Zee Beams:	Four
.Kicker Brace:	2.75CU1.75X14ga_CFA
..Number of Kicker Braces:	One
.Beam Brace:	1.5CU0.75X0.058
..Number of Beam Braces:	Four

.NS Segment 1 (in):	40.00
.NS Segment 2 (in):	50.00
.NS Segment 3 (in):	32.00

MATERIAL SPECIFICATIONS AND STRENGTHS

Hot-Rolled Steel

.Structural Steel
.ASTM A992, F_y = 52ksi U.N.O.
.ASTM A123 Gr. 85 HDG

Cold-Formed Steel

.Structural Steel
.ASTM A653 Gr. 50 Class 3 G115 U.N.O.
.ASTM A653 Gr. 80 Class 3 G115 U.N.O.

Bolts

.ASTM A325

CODES & REFERENCES

2021 International Building Code (IBC)
.ASCE 7-16 Minimum Design Loads for Buildings and Other Structures
.AISC ASD/LRFD - Fourteen Edition (2016) / AISC 360-16
.AISI S100-16 ASD- North America Specification for the Design of Cold-Formed Structural Members

DESIGN SOFTWARE

.RISA 3D v.19

SYSTEM LOADS

Dead Load

.A) Module Dead Load (psf):	2.37
.B) Self Weight of Structure (psf):	1.86
.C) Electr./Misc. Equipment (psf):	0.77
.D) Total Dead Load [A + B + C] (psf):	5.00

**** Actual System Self Weight is Determined by RISA 3D ****

Live Load

.Live Load (psf): **** Live Load Not Considered ****

Snow Load

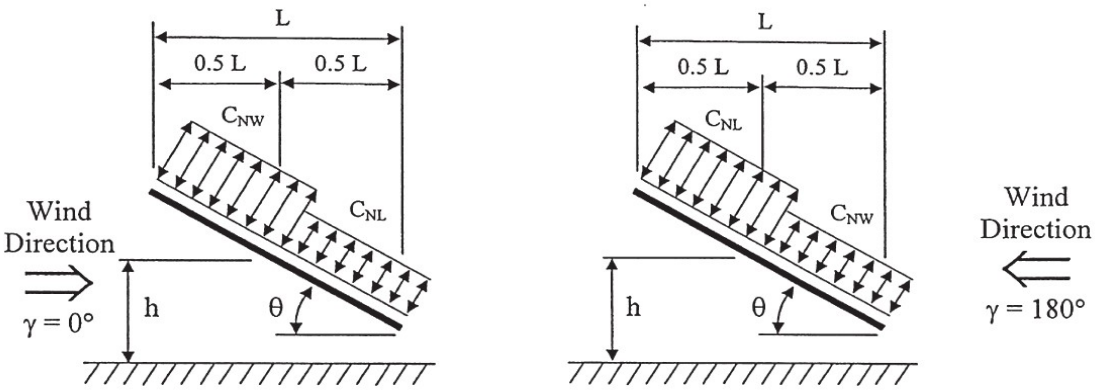
.Ground Snow Load (psf):	30	*per ASCE 7-16 Figure 7-1*
.Exposure Category	C	*per ASCE 7-16 Section 26.7*
.Importance Factor Snow, I_s:	0.80	*per ASCE 7-16 Table 1.5-2*
.Thermal Factor, C_t:	1.20	*per ASCE 7-16 Table 7-3*
.Exposure Factor, C_e:	0.90	*per ASCE 7-16 Table 7-2*
.Flat Snow Load, p_f (psf)	30.00	*per ASCE 7-16 Equation 7.3-1*
.Min. Snow Load, p_f min (psf):	30.00	*per ASCE 7-16 Section 7.3.4*
.Tilt Angle Factor, Cs:	0.91	*per ASCE 7-16 Figure 7-2*
.Tilt Angle Snow Load, p_s (psf):	27.27	*per ASCE 7-16 Equation 7.4-1*
.Rain-on-Snow Surcharge:	0.00	*per ASCE 7-16 Section 7.10*
.Total Snow Load (psf):	27.27	

SYSTEM LOADS

Wind Loads

.Wind Speed (3s-gust) V, (mph):	110	*per ASCE 7-16 Figure 26.5-1c*
.Risk Category:	I	*per ASCE 7-16 Table 1.5-1*
.Wind Importance Factor:	1.00	per ASCE 7-16 Table 1.5-2
.Exposure Category:	C	*per ASCE 7-16 Section 26.7*
.Topographic Factor, k_{zt}:	1.00	*per ASCE 7-16 Figure 26.8-1*
.Vel. Press. Exp. Coeff., k_h (MWFRS):	0.85	*per ASCE 7-16 Table 27.3-1*
..3-sec gust-speed, α	9.5	*per ASCE 7-16 Table 26.9-1*
..Nominal height, Zg	900	*per ASCE 7-16 Table 26.9-1*
.Directionality Factor, k_d:	0.85	*per ASCE 7-16 Table 26.6-1*
.Roof Velocity Pressure, q_h (psf):	22.37	*per ASCE 7-16 Equation 27.3-1*
.Roof Pressures, $P = q_h GC_N$:	Clear Wind Flow	*per ASCE 7-16 Section 30.8.2*

**** min. design wind load shall be not less than 16psf per ASCE 7-16 Section 27.4.7 ****



ASCE 7-16 Figure 27.4-4

Table 1: Downward Wind Pressure Coefficients GCN (DCE Solar GM Wind Tunnel Report):

Location	DAF	GC_{NW}	GC_{NL}	P_W (psf)	P_L (psf)
E/W EDGE	1.08	0.51	0.56	11.36	12.57
NORTH	1.08	0.32	0.36	7.22	7.99
INTERIOR	1.08	0.24	0.27	5.39	5.96
SOUTH	**1.08**	**0.65**	**0.72**	**14.59**	**16.14**

Table 2: Upward Wind Pressure Coefficients GCN (DCE Solar GM Wind Tunnel Report):

Location	DAF	GC_{NW}	GC_{NL}	P_W (psf)	P_L (psf)
E/W EDGE	1.15	-0.57	-0.65	-12.68	-14.63
NORTH	**1.10**	**-0.63**	**-0.73**	**-14.08**	**-16.24**
INTERIOR	1.10	-0.47	-0.54	-10.44	-12.05
SOUTH	1.10	-0.56	-0.64	-12.49	-14.41

SYSTEM LOADS

Seismic Loads

.Spectral Response, short period, S_s	0.201	*per ASCE 7-16 Figure 22-1*
.Spectral Response, 1-sec period, S_1	0.055	*per ASCE 7-16 Figure 22-2*
.Long Period Transition Period, T_L (s):	6	*per ASCE 7-16 Figure 22-12*
.Site Class:	D	*per ASCE 7-16 Section 11.4.2*
.Seismic Design Category:	B	per ASCE 7-16 Table 11.6-1
.Occupancy Importance Factor, I:	1.00	per ASCE 7-16 Table 1.5-2
.Site Coefficient for short period, F_a:	1.600	*per ASCE 7-16 Table 11.4-1*
.Site Coefficeint for 1-sec period, F_v:	2.400	*per ASCE 7-16 Table 11.4-2*
Max. Considered Earthquake (MCE) Parameters:		
..MCE_R, short period, S_{MS}	0.322	*per ASCE 7-16 Equation 11.4-1*
..MCE_R, 1-sec period, S_{M1}	0.132	*per ASCE 7-16 Equation 11.4-2*
Design Base Earthquake (DBE) Parameters:		
..Spectral Response, short period, S_{DS}	0.214	*per ASCE 7-16 Equation 11.4-3*
..Spectral Response, 1-sec period, S_{D1}	0.088	*per ASCE 7-16 Equation 11.4-4*
.Period, T_0 (s):	0.082	*per ASCE 7-16 Section 11.4.5*
.Period, T_s (s):	0.410	*per ASCE 7-16 Section 11.4.5*
.Approx. Fundamental Period. T_a (s):	0.093	*per ASCE 7-16 Equation 12.8-7*
..Peridod Parameters, C_t:	0.028	*per ASCE 7-16 Table 12.8-2*
..Period Parameters, x:	0.800	*per ASCE 7-16 Table 12.8-2*
..Effective Height, h_m(ft):	4.500	*per ASCE 7-16 Section 11.2*
.Structure Type:	G2 - Ordinary Steel Moment Frame	
..Response Modification Factor, R:	1.25	*per ASCE 7-16 Table 12.2-1*
..System Over strength Factor, Ω_0:	1.25	*per ASCE 7-16 Table 12.2-1*
..Deflection Amp. Factor, C_d:	1.25	*per ASCE 7-16 Table 12.2-1*
.Seismic Response Coefficient, C_s:	0.172	*per ASCE 7-16 Equation 12.8-2*
..$C_{s\text{-}max}$:	0.755	*per ASCE 7-16 Equation 12.8-3*
..$C_{s\text{-}min}$:	0.010	*per ASCE 7-16 Equation 12.8-5*
.Redundancy Factor, ρ	1.000	*per ASCE 7-16 Section 11.3.4*
.Seismic Base Shear, V:		
.. Vx:	0.172 * W	*per ASCE 7-16 Equation 12.8-1*
.. Vz:	0.172 * W	*per ASCE 7-16 Equation 12.8-1*

LOAD COMBINATION

Legend

.D = Dead Load
.L = Live Load (not applicable)
.LR = Roof Live Load (not applicable)
. S = Snow Load
. W1 = Wind Uplift Load
.W2 = Wind Downward Load
.Ex = Seismic Load (NS Direction)
.Ez = Seismic Load (EW Direction)

ASD Load Combination per ASCE 7-16

. 1) "D"
. 2) "D+S"
. 3) "D+0.75S"
. 4) "D+0.6W1"
. 5) "D+0.6W2"
. 6) "D+0.7Ex"
. 7) "D+0.7Ez"
. 8) "D+0.45W1+0.75S"
. 9) "D+0.45W2+0.75S"
.10) "D+0.525Ex+0.75S"
.11) "D+0.525Ez+0.75S"
.12) "0.6D+0.6W1"
.13) "0.6D+0.6W2"
.14) "0.6D+0.7Ex"
.15) "0.6D+0.7Ez"

Designer: T. Mayhew
Job Number:
Model Name: NEW BRITAIN LANDFILL

Member Information

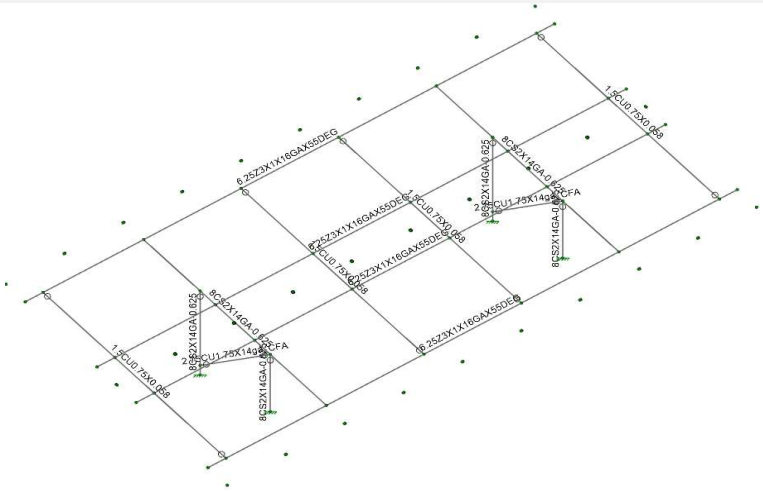
Member	Label	Shape	Node i	Node j	Rotation	Material
M1	Column	8CS2X14GA-0.625	1	3	0	2
M2	Column	8CS2X14GA-0.625	2	4	0	2
M3	NS CEE Beam	8CS2X14GA-0.625	6	5	180	2
M4	NS CEE Beam	8CS2X14GA-0.625	8	7	180	2
M5	Kicker Brace	2.75CU1.75X14ga_CFA	9	10	0	2
M6	Kicker Brace	2.75CU1.75X14ga_CFA	11	12	0	2
M7	Panel Beam	6.25Z3X1X16GAX55DEG	13	14	20	2
M8	Panel Beam	6.25Z3X1X16GAX55DEG	15	16	20	2
M9	Panel Beam	6.25Z3X1X16GAX55DEG	17	18	20	2
M10	Panel Beam	6.25Z3X1X16GAX55DEG	19	20	20	2
M11	Beam Brace	1.5CU0.75X0.058	21	24	90	2
M12	Beam Brace	1.5CU0.75X0.058	25	28	90	2
M14	Beam Brace	1.5CU0.75X0.058	42	39	90	2
M15	Beam Brace	1.5CU0.75X0.058	29	32	90	2
M19	Column	8CS2X14GA-0.625	34	12	0	2
M20	Column	8CS2X14GA-0.625	33	10	0	2

Boundary Conditions

Node	Fx	Fy	Fz	Mx	My	Mz
N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
N2	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
N43	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
N44	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Designer: T. Mayhew
Job Number:
Model Name: NEW BRITAIN LANDFILL

Member Shapes Layout



Member Area Loading Table

Node A	Node B	Node C	Node D	Direction	Load D.	Panel	Snow	Wind -	Wind +
T8	T4	T3	T7	Y	B-C	-2.37	-27.27	-16.14	16.24
T6	T2	T1	T5	Y	B-C	-2.37	-27.27	-16.14	16.24
T16	T12	T11	T15	Y	B-C	-2.37	-27.27	-16.14	16.24
T14	T10	T9	T13	Y	B-C	-2.37	-27.27	-16.14	16.24
T24	T20	T19	T23	Y	B-C	-2.37	-27.27	-16.14	16.24
T22	T18	T17	T21	Y	B-C	-2.37	-27.27	-16.14	16.24
T32	T28	T27	T31	Y	B-C	-2.37	-27.27	-16.14	16.24
T30	T26	T25	T29	Y	B-C	-2.37	-27.27	-16.14	16.24
T40	T36	T35	T39	Y	B-C	-2.37	-27.27	-16.14	16.24
T38	T34	T33	T37	Y	B-C	-2.37	-27.27	-16.14	16.24
T48	T44	T43	T47	Y	B-C	-2.37	-27.27	-16.14	16.24
T46	T42	T41	T45	Y	B-C	-2.37	-27.27	-16.14	16.24
T56	T52	T51	T55	Y	B-C	-2.37	-27.27	-16.14	16.24
T54	T50	T49	T53	Y	B-C	-2.37	-27.27	-16.14	16.24
T64	T60	T59	T63	Y	B-C	-2.37	-27.27	-16.14	16.24
T62	T58	T57	T61	Y	B-C	-2.37	-27.27	-16.14	16.24
T72	T68	T67	T71	Y	B-C	-2.37	-27.27	-16.14	16.24
T70	T66	T65	T69	Y	B-C	-2.37	-27.27	-16.14	16.24

Designer: T. Mayhew
Job Number:
Model Name: NEW BRITAIN LANDFILL

Global Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation ?	Yes
Increase Nailing Capacity for Wind ?	Yes
Include Warping ?	Yes
Trans Load Btwn Intersecting Wood Wall ?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	0.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.17
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes (Iterative)
RISAConnection Code	None
Cold Formed Steel Code	AISI S100-12: ASD
Wood Code	None
Wood Temperature	<100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None
Stainless Steel Code	None

Designer: T. Mayhew
Job Number:
Model Name: NEW BRITAIN LANDFILL

Hot Roll Steel Section Sets

	Label	E (ksi)	G (ksi)	Nu	Thermal	Density	Yield (ksi)	Fu (ksi)
1	A992	29000	11154	0.3	0.65	0.49	50	65
2	A36 Gr. 36	29000	11154	0.3	0.65	0.49	36	58

	Label	Shape	Type	Material	A(in2)	Iyy (in4)	Izz (in4)	J (in4)
1	Pipe	HSS2.375x0.154	Column	A500 Gr. C RND	1	0.627	0.627	1.25
2	Column	W6x8.5	Column	A992	2.52	1.99	14.9	0.33

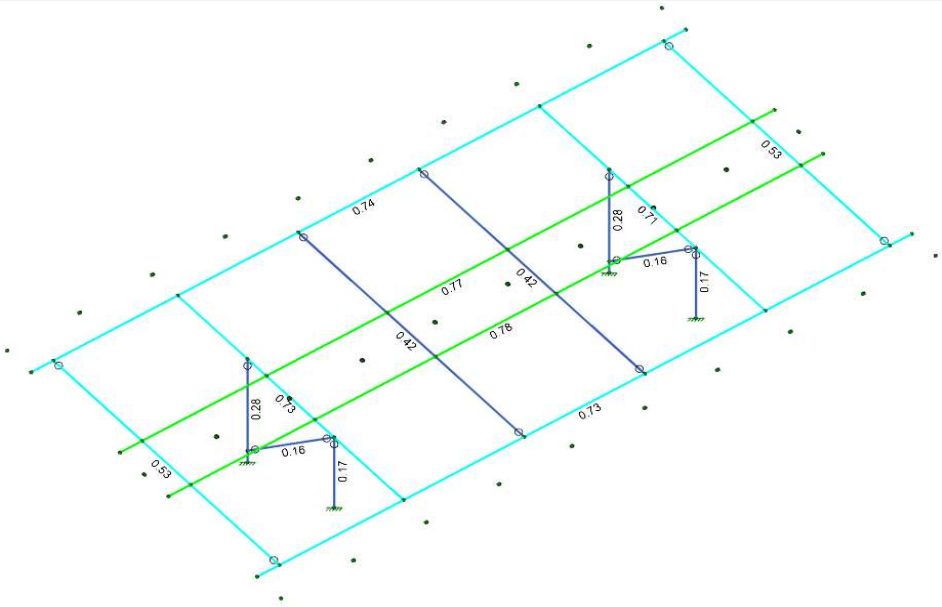
Cold-Formed Steel Section Sets

	Label	E (ksi)	G (ksi)	Nu	Thermal	Density	Yield (ksi)	Fu (ksi)
1	A653 SS Gr50	29500	11346	0.3	0.65	0.49	50	65
2	A653 SS Gr80	29500	11346	0.3	0.65	0.49	80	82

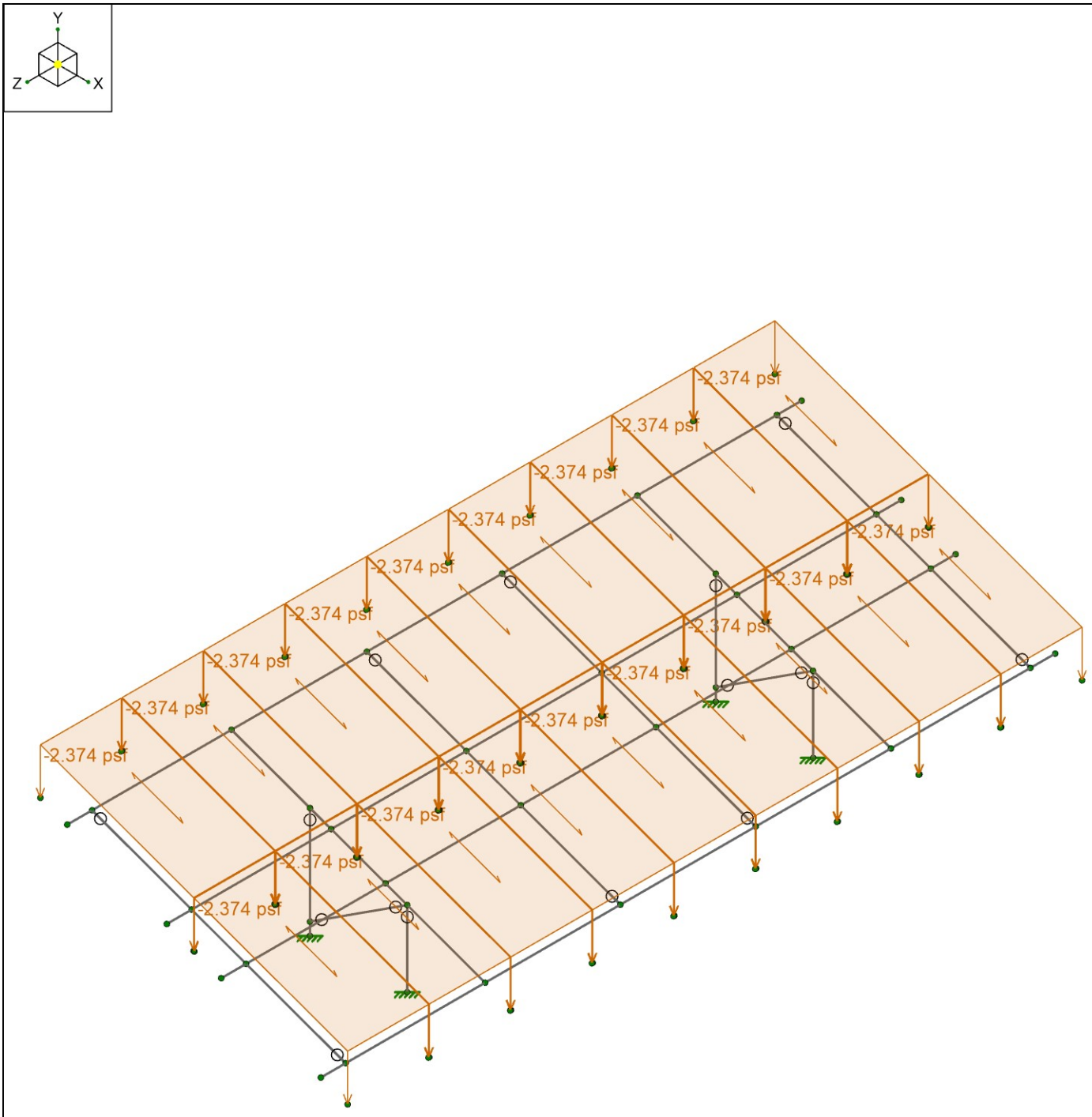
	Label	Shape	Type	Material	A(in2)	Iyy (in4)	Izz (in4)	J (in4)
1	Panel Beam	6.25Z3X1X16GAX55DEG	Beam	A653 SS Gr80	0.883	2.393	5.633	0.001
2	NS CEE Beam	8CS2X14GA-0.625	Beam	A653 SS Gr50	0.987	0.455	8.718	0.002
3	Kicker Brace	2.75CU1.75X14ga_CFA	HBrace	A653 SS Gr50	0.46	0.146	0.566	0.000956
4	Beam Brace	1.5CU0.75X0.058	HBrace	A653 SS Gr50	0.155	0.008	0.051	0.000174
5	CEE Post	8CS2X14GA-0.625	Column	A653 SS Gr50	1.97	1.97	17.225	0.009

Designer: T. Mayhew
Job Number:
Model Name: NEW BRITAIN LANDFILL

Member Utilization Ration

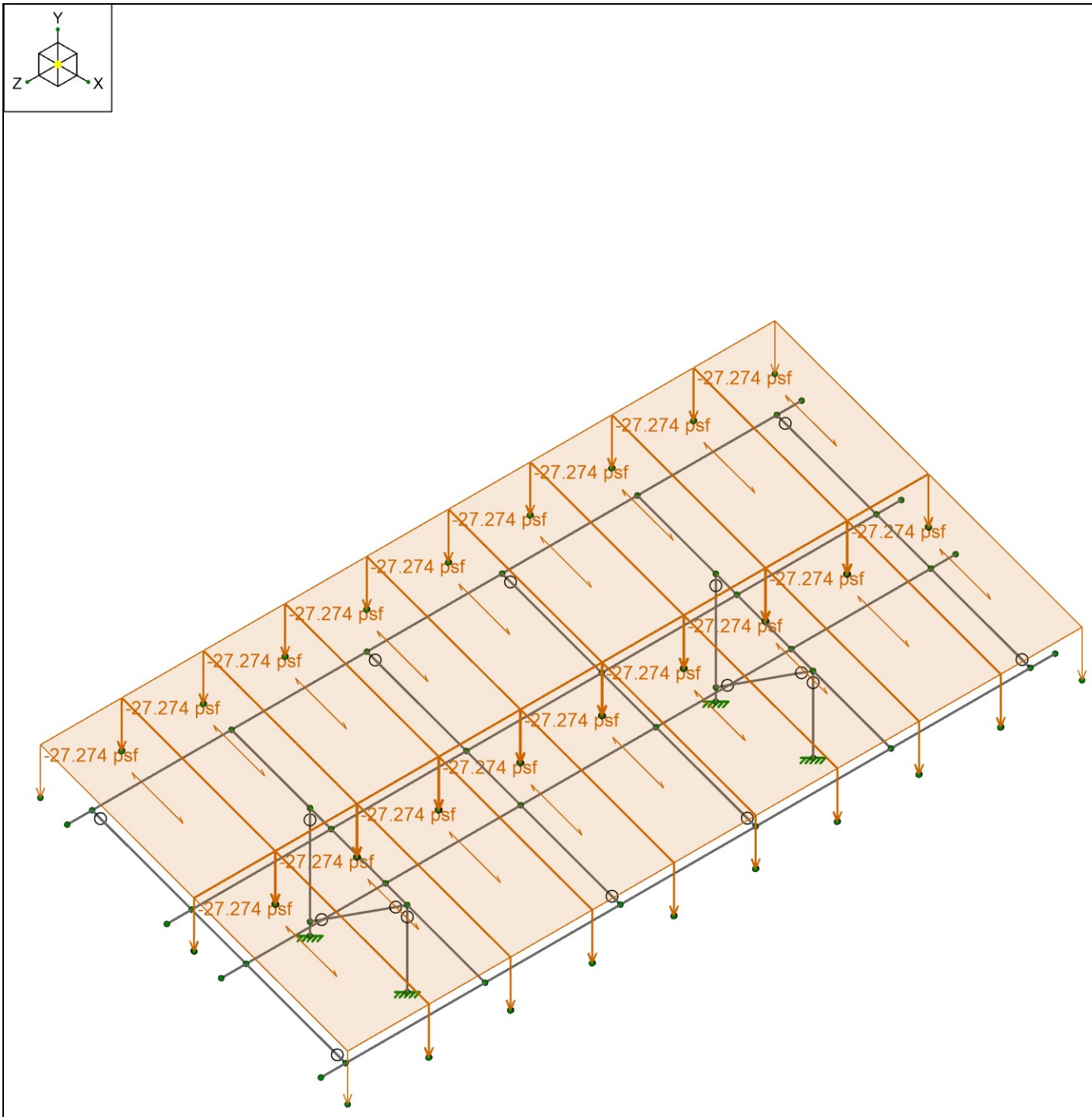


		Bending		Shear				
Member	Shape	Code Check	LC	Code Check	LC	M_{nzz} [in-kips]	C_b	Eqn
M1	8CS2X14GA-0.625	0.282	9	0.099	5	5124.58	5927.241	H1.2-1
M2	8CS2X14GA-0.625	0.28	9	0.099	5	5134.592	5927.241	H1.2-1
M3	8CS2X14GA-0.625	0.734	9	0.256	9	6844.394	5927.241	H1.2-1
M4	8CS2X14GA-0.625	0.707	9	0.255	9	7070.975	5927.241	H1.2-1
M5	2.75CU1.75X14ga_CF	0.164	5	0.001	9	726.004	3006.937	H1.2-1
M6	2.75CU1.75X14ga_CF	0.164	5	0.001	9	726.004	3006.937	H1.2-1
M7	6.25Z3X1X16GAX55DE	0.752	2	0.194	9	5166.837	4105.434	H1.2-1
M8	6.25Z3X1X16GAX55DE	0.776	2	0.196	9	5166.837	4105.434	H1.1-2
M9	6.25Z3X1X16GAX55DE	0.783	2	0.196	9	5166.837	4105.434	H1.2-1
M10	6.25Z3X1X16GAX55DE	0.739	2	0.19	9	5166.837	4105.434	H1.1-2
M11	1.5CU0.75X0.058	0.493	2	0.047	2	163.455	1028.775	H1.2-1



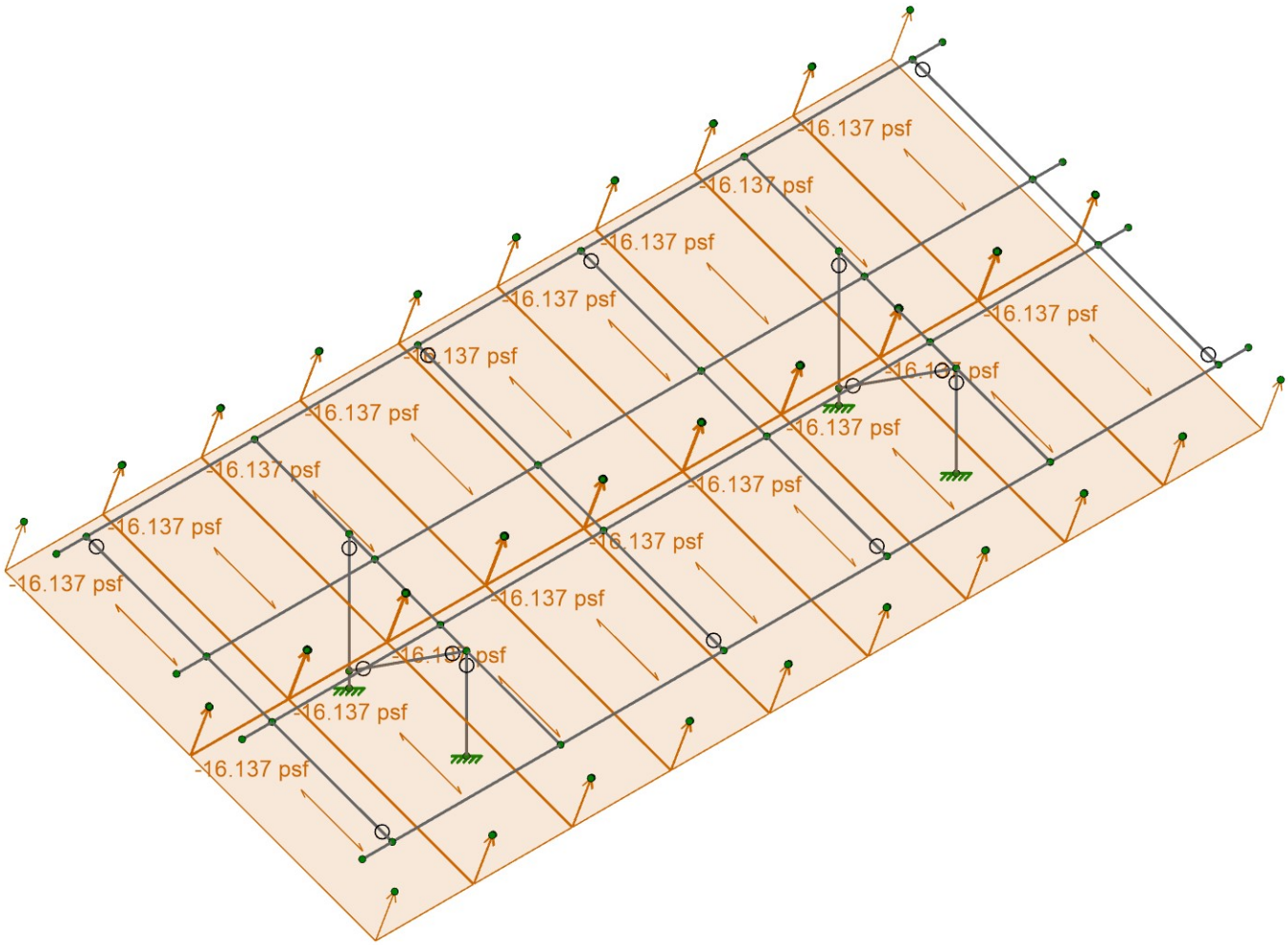
Loads: BLC 1, D

DCE SOLAR	(Rev. C) - New Britain Landfill	SK-1
T. Mayhew		Apr 05, 2023
Customer: C-TEC SOLAR, LLC		(REV-C) - New Britain Landfill.r3d



Loads: BLC 2, S

DCE SOLAR	(Rev. C) - New Britain Landfill	SK-2
T. Mayhew		Apr 05, 2023
Customer: C-TEC SOLAR, LLC		(REV-C) - New Britain Landfill.r3d



Loads: BLC 3, W1

DCE SOLAR	(Rev. C) - New Britain Landfill	SK-3
T. Mayhew		Apr 05, 2023
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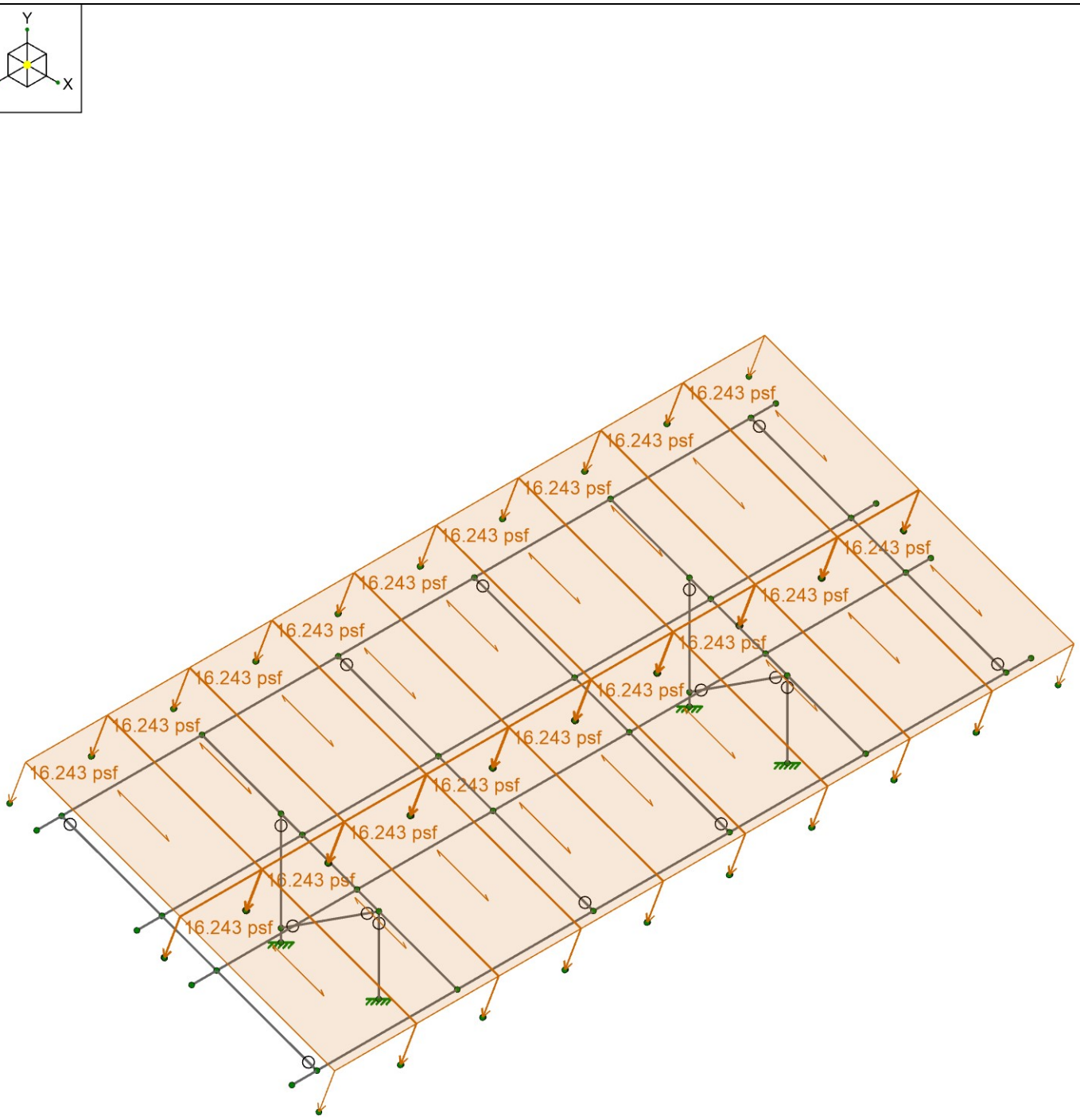

Loads: BLC 4, W2

DCE SOLAR	(Rev. C) - New Britain Landfill	SK-4
T. Mayhew		Apr 05, 2023
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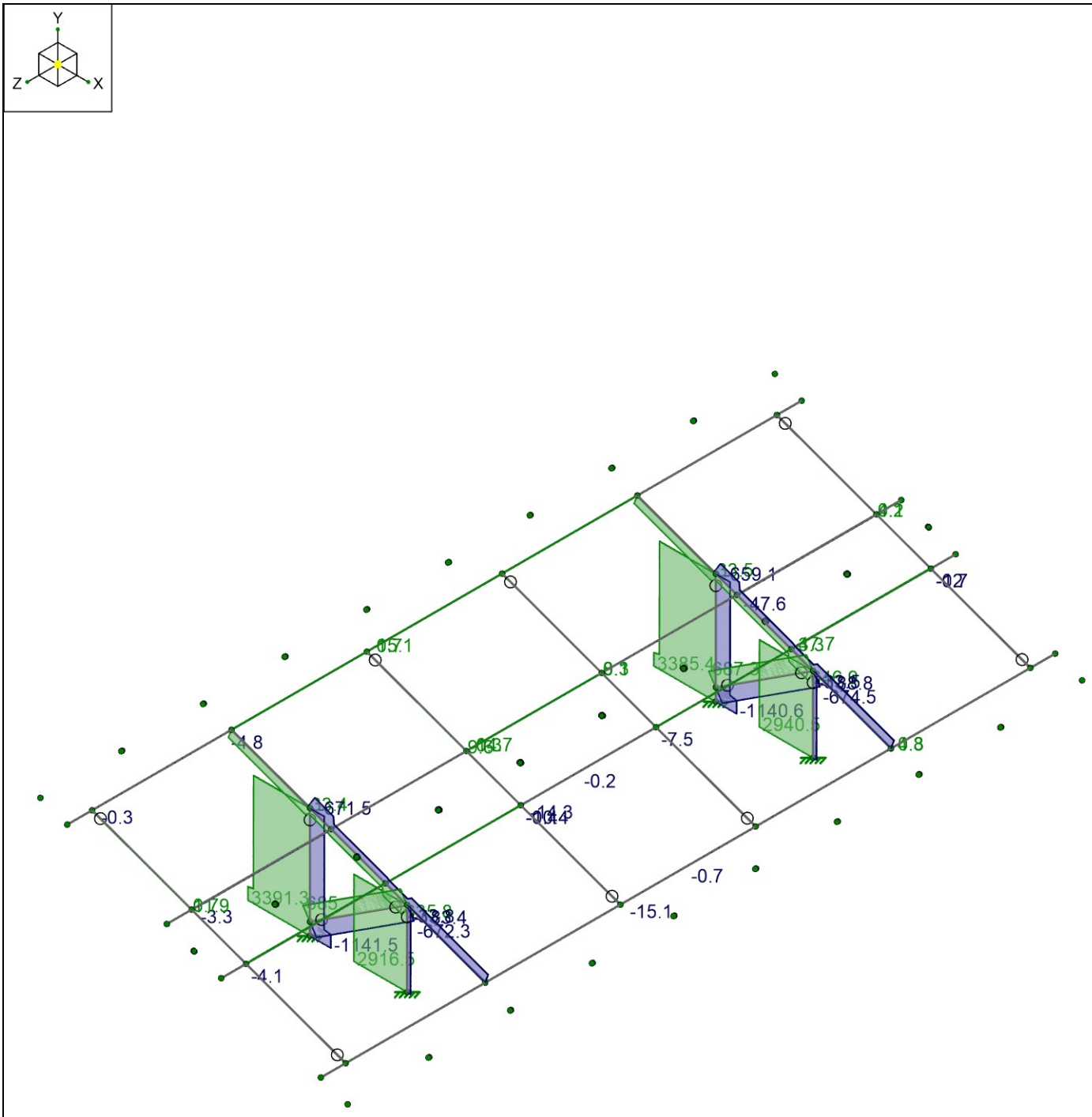

Envelope Only Solution
Member Axial Forces (lbs) (Enveloped)

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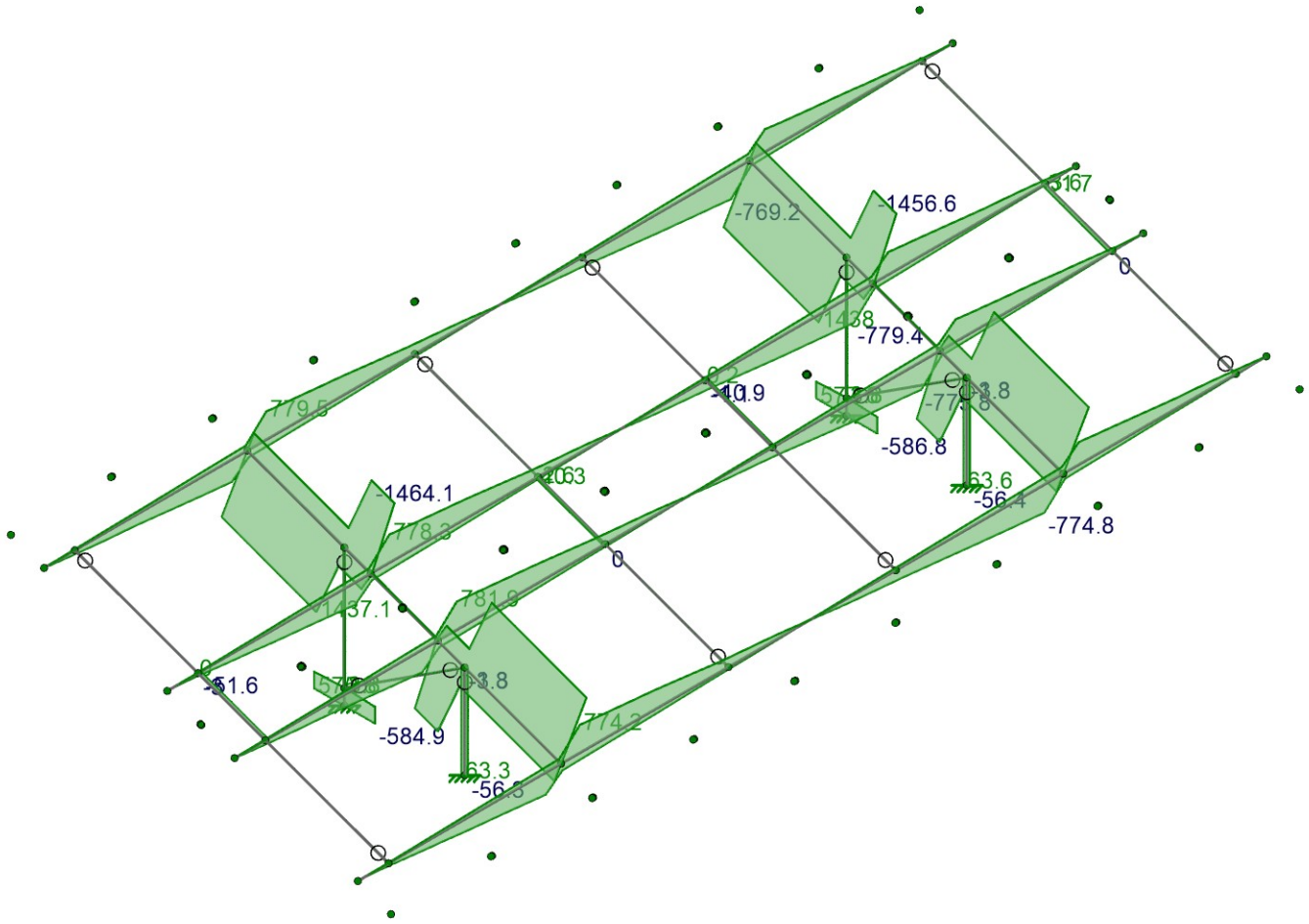
T. Mayhew		Apr 05, 2023
Customer: C-TEC SOLAR, LLC		(REV-C) - New Britain Landfill.r3d



Envelope Only Solution
Member y Shear Forces (lbs) (Enveloped)

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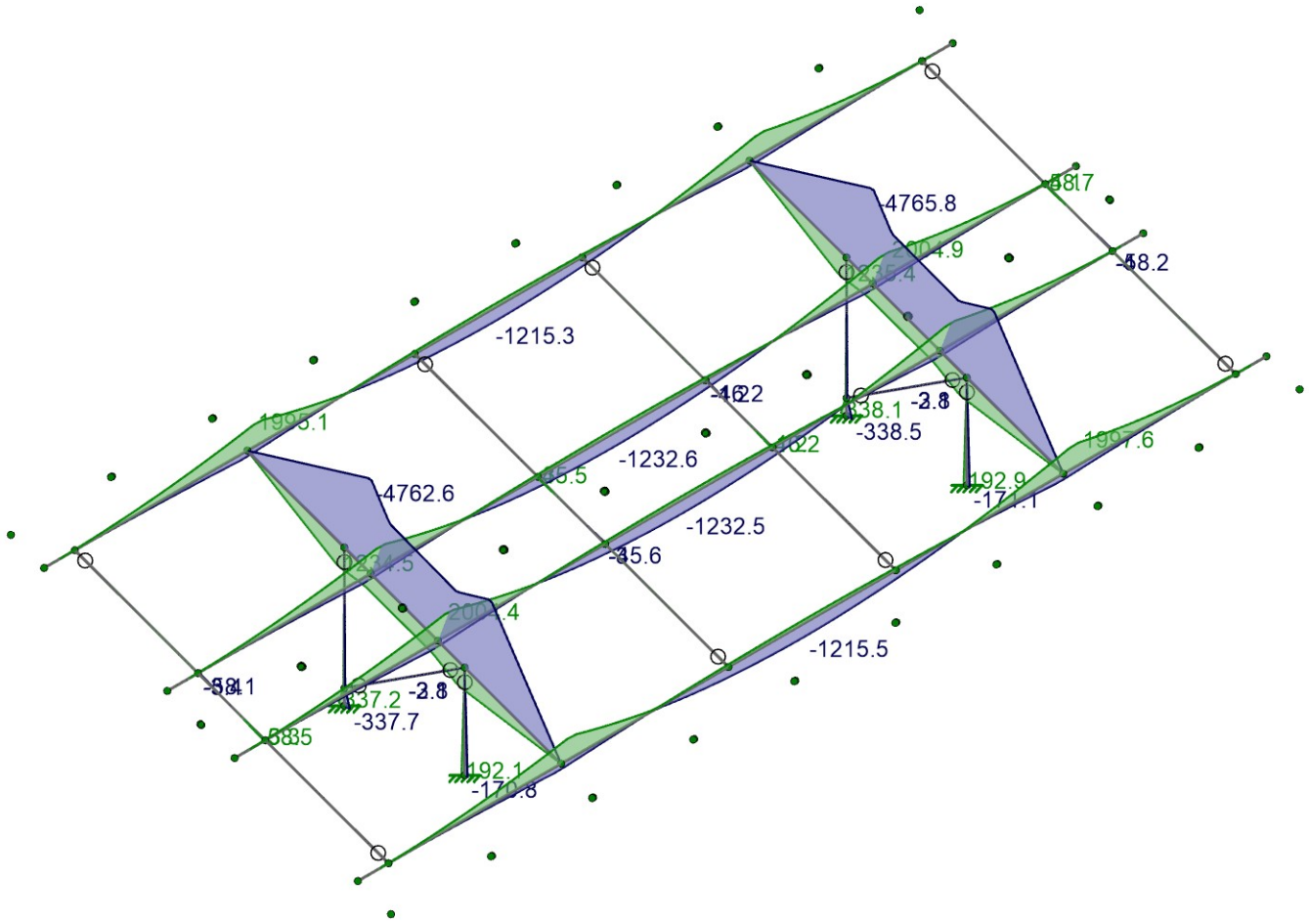
T. Mayhew		Apr 05, 2023
Customer: C-TEC SOLAR, LLC		(REV-C) - New Britain Landfill.r3d



Envelope Only Solution
Member z Bending Moments (lb-ft) (Enveloped)

DCE SOLAR	(Rev. C) - New Britain Landfill	SK-7
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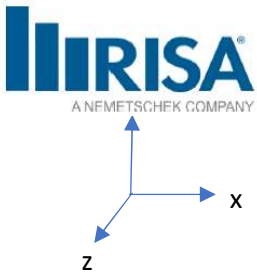
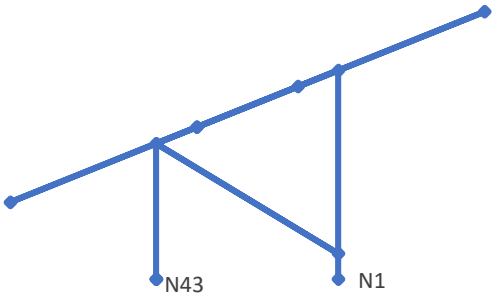
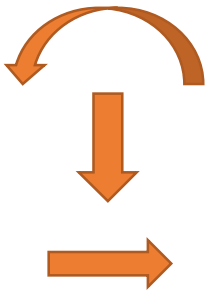
Customer: C-TEC SOLAR, LLC		(REV-C) - New Britain Landfill.r3d

FOUNDATION DESIGN REACTIONS

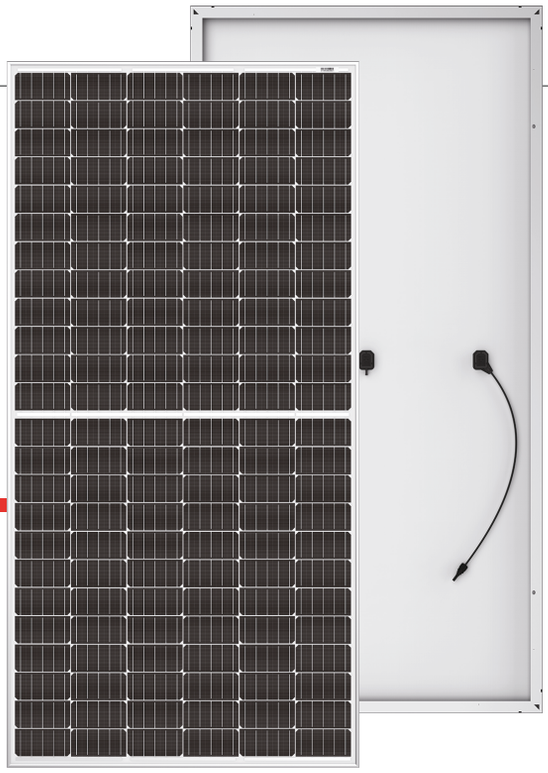






LC #	Description	Node	Lateral X (kips)	Vertical Y (kips)	Moment Mzz (kip-ft)
1	D	N1	0.003	0.448	0.000
2	D+S	N1	0.025	3.120	0.008
3	D+0.75S	N1	0.020	2.451	0.006
4	D+0.6W1	N1	-0.576	-0.913	0.336
5	D+0.6W2	N1	0.586	1.819	-0.339
6	D+0.7Ex	N1	-0.024	0.427	0.016
7	D+0.7Ez	N1	0.000	0.447	0.002
8	D+0.45W1+0.75S	N1	-0.414	1.428	0.259
9	D+0.45W2+0.75S	N1	0.457	3.480	-0.248
10	D+0.525Ex+0.75S	N1	-0.001	2.435	0.019
11	D+0.525Ez+0.75S	N1	0.017	2.449	0.008
12	0.6D+0.6W1	N1	-0.577	-1.093	0.336
13	0.6D+0.6W2	N1	0.584	1.640	-0.339
14	0.6D+0.7Ex	N1	-0.026	0.248	0.016
15	0.6D+0.7Ez	N1	-0.001	0.267	0.002

LC #	Description	Node	Lateral X (kips)	Vertical Y (kips)	Moment Mzz (kip-ft)
1	D	N43	-0.003	0.356	0.009
2	D+S	N43	-0.025	2.927	0.078
3	D+0.75S	N43	-0.020	2.285	0.061
4	D+0.6W1	N43	-0.061	-0.031	0.184
5	D+0.6W2	N43	0.055	0.745	-0.168
6	D+0.7Ex	N43	-0.007	0.377	0.018
7	D+0.7Ez	N43	-0.003	0.359	0.010
8	D+0.45W1+0.75S	N43	-0.063	1.996	0.192
9	D+0.45W2+0.75S	N43	0.024	2.576	-0.072
10	D+0.525Ex+0.75S	N43	-0.023	2.301	0.068
11	D+0.525Ez+0.75S	N43	-0.020	2.288	0.061
12	0.6D+0.6W1	N43	-0.060	-0.174	0.181
13	0.6D+0.6W2	N43	0.056	0.603	-0.171
14	0.6D+0.7Ex	N43	-0.006	0.235	0.015
15	0.6D+0.7Ez	N43	-0.002	0.217	0.006



THE TALLMAX M PLUS

FRAMED 144 HALF-CELL MODULE

PRODUCTS	COLOR OF FRAME	POWER RANGE
TSM-DE14H(II)	Silver	345-395W
TSM-DE14H.08(II)	Black	345-395W

144-Cell
MONOCRYSTALLINE MODULE

345-395W
POWER OUTPUT RANGE

19.9%
MAXIMUM EFFICIENCY

0~+5W
POSITIVE POWER TOLERANCE

Founded in 1997, Trina Solar is the world's leading comprehensive solutions provider for solar energy. we believe ciose cooperation with our partners is critical to success. Trina Solar now distributes its PV products to over 60 countries all over the world. Trina is able to provide exceptional service to each customer in each market and supplement our innovative, reliable products with the backing of Trina as a strong, bankable partner. We are committed to building strategic, mutually beneficial collaboration with installers, developers, distributors and other partners.

Comprehensive Products And System Certificates

IEC61215/UL1703/IEC61730/IEC61701/IEC62716
ISO 9001: Quality Management System
ISO 14001: Environmental Management System
ISO14064: Greenhouse gases Emissions Verification
OHSAS 18001: Occupation Health and Safety Management System

Trinasolar

Increased value

- Reduce BOS cost with high power bin and 1500V system voltage
- Low thermal coefficients for greater energy production at higher temperature

Half-cell design brings higher efficiency

- New cell string layout and split J-box location to reduce the energy loss caused by inter-row shading
- Integrated LRF(Light Redirecting Film) to enhance power, specially for ground-mount applications
- Lower cell connection power losses due to half-cell layout (144 monocrystalline)

Highly reliable due to stringent quality control

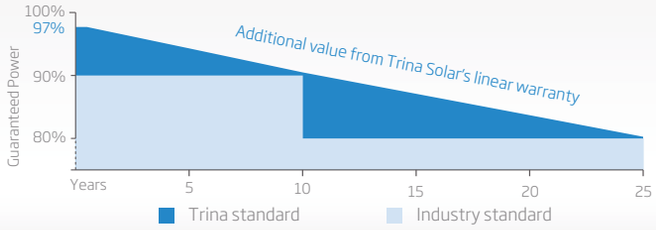
- Over 30 in-house tests (UV, TC, HF etc)
- Increased module robustness to minimize micro-cracks
- PID resistant and free of snail trails
- Internal test requirement of Trina more stringent than certification authority

Certified to withstand the most challenging environmental conditions

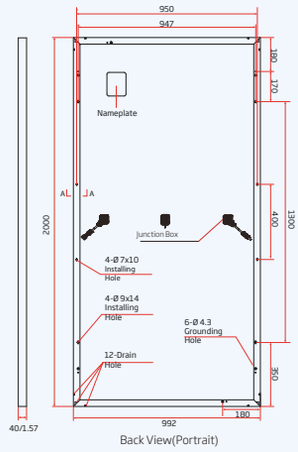
- 2400 Pa negative load
- 5400 Pa positive load

LINEAR PERFORMANCE WARRANTY

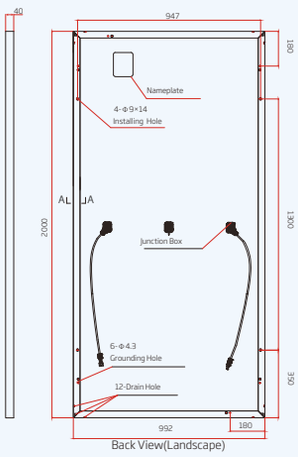
10 Year Product Warranty · 25 Year Linear Power Warranty



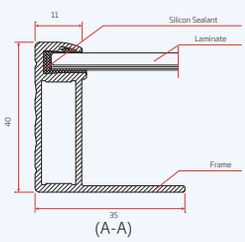
DIMENSIONS OF PV MODULE(mm)



Back View(Portrait)

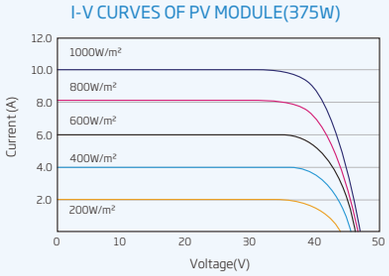


Back View(Landscape)

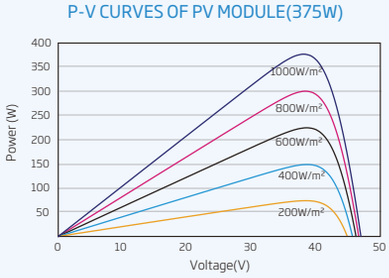


(A-A)

I-V CURVES OF PV MODULE(375W)



P-V CURVES OF PV MODULE(375W)



ELECTRICAL DATA (STC)

Peak Power Watts-P_{MAX} (Wp)*	345	350	355	360	365	370	375	380	385	390	395
Power Output Tolerance-P_{MAX} (W)	0 ~ +5										
Maximum Power Voltage-V_{MPP} (V)	38.2	38.4	38.6	38.8	39.0	39.2	39.4	39.6	40.1	40.5	40.8
Maximum Power Current-I_{MPP} (A)	9.04	9.13	9.21	9.28	9.37	9.44	9.52	9.60	9.61	9.64	9.69
Open Circuit Voltage-V_{OC} (V)	46.3	46.5	46.9	47.2	47.4	47.6	47.8	48.0	48.5	49.7	50.1
Short Circuit Current-I_{SC} (A)	9.55	9.60	9.68	9.73	9.83	9.88	9.93	9.99	10.03	10.08	10.13
Module E°ciency η_m (%)	17.4	17.6	17.9	18.1	18.4	18.6	18.9	19.2	19.4	19.7	19.9

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5.
*Measuring tolerance: ±3%.

ELECTRICAL DATA (NOCT)

Maximum Power-P_{MAX} (Wp)	257	261	265	268	272	276	280	284	287	291	295
Maximum Power Voltage-V_{MPP} (V)	35.4	35.7	35.9	36.2	36.3	36.6	36.9	37.1	37.4	37.9	38.3
Maximum Power Current-I_{MPP} (A)	7.26	7.32	7.38	7.42	7.49	7.54	7.59	7.64	7.67	7.68	7.74
Open Circuit Voltage-V_{OC} (V)	43.2	43.3	43.7	44.0	44.2	44.4	44.5	44.7	45.2	46.3	46.5
Short Circuit Current-I_{SC} (A)	7.71	7.75	7.82	7.86	7.94	7.98	8.02	8.07	8.10	8.14	8.17

NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s.

MECHANICAL DATA

Solar Cells	Monocrystalline 156.75 × 78.375 mm (6.17× 3.09 inches)
Cell Orientation	144 cells (6 × 24)
Module Dimensions	2000 × 992 × 40 mm (78.74 × 39.06 × 1.57 inches)
Weight	23 kg (50.7 lb)
Glass	3.2 mm (0.13 inches), High Transmission, AR Coated Heat Strengthened Glass
Encapsulant Material	EVA(White/Transparent)
Backsheet	White
Frame	40 mm (1.57 inches) Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm² (0.006 inches²), Portrait: N 140mm/P 285mm (5.51/11.22 inches) Landscape: N 1400 mm /P 1400 mm (55.12/55.12 inches)
Connector	TS4

TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature)	44°C (±2°C)
Temperature Coefficient of P_{MAX}	- 0.37%/°C
Temperature Coefficient of V_{OC}	- 0.29%/°C
Temperature Coefficient of I_{SC}	0.05%/°C

MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum System Voltage	1500V DC (IEC)
	1500V DC (UL)
Max Series Fuse Rating	20A

(DO NOT connect Fuse in Combiner Box with two or more strings in parallel connection)

WARRANTY

10 year Product Workmanship Warranty

25 year Linear Power Warranty

(Please refer to product warranty for details)

PACKAGING CONFIGURATION

Modules per box: 27 pieces

Modules per 40' container: 594 pieces

TABLE OF CONTENTS

2022 CONNECTICUT STATE BUILDING CODE

(Amd) **1603.1.6 Geotechnical information.** The following geotechnical information, as applicable, shall be shown on the construction documents.:

1. Design load-bearing values of soils and required bearing layer.
2. Design capacities (axial, including uplift, and lateral) and required bearing layer for deep foundations.

(Add) **1607.3.1 Group R-1 bed and breakfast establishments.** *Live loads* shall comply with the requirements of Table 1607.1 for one- and two-family *dwellings*.

(Add) **1608.1.1 Flat roof snow loads.** The flat roof snow *load*, p_f, shall be calculated in accordance with Section 7.3 of ASCE 7. The calculated value of p_f shall not be less than 30 pounds per square foot and shall be used in the calculation of sloped roof snow loads in accordance with Section 7.4 of ASCE 7. The provisions of Section 7.3.4 of ASCE 7 shall not be used.

(Add) **1608.1.2 Sloped roof snow loads.** The sloped roof snow *load*, p_s, shall be calculated in accordance with Section 7.4 of ASCE 7. The value of p_f used in such calculation shall not be less than 30 pounds per square foot, except where permitted in Section 1608.1.3. Values for "unobstructed slippery roofs" in Figure

(Add) APPENDIX P MUNICIPALITY – SPECIFIC STRUCTURAL DESIGN PARAMETERS

Municipality	Basic Design Wind Speeds, V (mph)				Allowable Stress Design Wind Speeds, V_{asd} (mph)				Ground Snow Load p_g (psf)	MCE Ground Accelerations		Wind-Borne Debris Region[1]		Hurricane-Prone Region
	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV		S_S (g)	S_1 (g)	Risk Cat. III Occup. I-2	Risk Cat. IV	
Andover	110	120	130	135	85	93	101	105	30	0.193	0.055			Yes
Ansonia	110	120	130	135	85	93	101	105	30	0.202	0.054			Yes
Ashford	110	120	130	135	85	93	101	105	35	0.181	0.055			Yes
Avon	110	120	125	130	85	93	97	101	35	0.180	0.054			Yes
Barkamsted	110	115	125	130	85	89	97	101	35	0.170	0.054			
Beacon Falls	110	120	130	135	85	93	101	105	30	0.199	0.054			Yes
Berlin	110	120	130	135	85	93	101	105	30	0.201	0.055			Yes
Bethany	110	120	130	135	85	93	101	105	30	0.199	0.054			Yes
Bethel	110	120	125	130	85	93	97	101	30	0.223	0.056			Yes
Bethlehem	110	120	125	130	85	93	97	101	35	0.186	0.054			Yes
Bloomfield	110	120	130	135	85	93	101	105	30	0.182	0.055			Yes
Bolton	110	120	130	135	85	93	101	105	30	0.191	0.055			Yes
Bozrah	115	125	135	140	89	97	105	108	30	0.197	0.054			Yes
Branford	115	125	135	135	89	97	105	105	30	0.201	0.053	Type B	Type B	Yes
Bridgeport	110	120	130	135	85	93	101	105	30	0.211	0.054		Type B	Yes
Bridgewater	110	120	125	130	85	93	97	101	35	0.201	0.055			