Dynamic Energy™

November 17, 2021

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

Re: 40 Pepe Farms Road, Milford, CT – Proposed Rooftop Solar PV Project Petition for Declaratory Ruling

To Whom It May Concern,

Enclosed please find and original and 15 copies of the above noted petition and a filing fee of $625.00

In the Petition, Dynamic Energy Solutions, LLC as agent for Stag Industrial Holdings, LLC, respectfully requests that the Connecticut Siting Council approve location and construction of the 2.112 MW (DC)/ 1.5 MW (AC) rooftop solar photovoltaic renewable energy generating facility to be located at 40 Pepe Farm Road, Milford, CT 06460

We hope that you find the request satisfactory in form and nature. If you have any question or concerns, please feel free to contact me at any time.

Pat Hastings

SVP. PROJECT ENGINEERING & DELIVERY

O: 484.323.1155 | M: 484.467.4683 | dynamicenergy.com

1550 Liberty Ridge Drive, Suite 310, Wayne, PA 19087

phastings@dynamicenergy.com

Project Information Narrative

40 Pepe Farms Road Roof Top Solar Project

Dynamic Energy™

Petition Overview

Pursuant to Section 16-50k(a) and Section 4-176(a) of the Connecticut General Statutes ("CGS") and Section 16-50j-38 et seq. of the Regulations of Connecticut State Agencies ("RCSA"), Stag Industrial Holdings acting through its agent, Dynamic Energy Solutions, LLC requests that the Connecticut Siting Council (the “Council") issue a declaratory ruling approving the construction and operation of a 2.112 MW (DC)/ 1.5 MW (AC) Solar electric generating facility (the “Facility"), located on the roof of the existing commercial building in a Light Industrial zoned district at 40 Pepe Farms Road, Milford, CT

As demonstrated from the information included in the petition the Facility will result in no air emissions, complies with DEEP’s air and water quality standards, and will have no substantial adverse environmental effect. The project is having been contingently approved by the local Utility Co. (UI) and has been awarded participation in the Statewide Shared Clean Energy Facility (SCEF) Program.

The statewide SCEF Program was developed pursuant to Section 7(a)(1)(C) of Public Act 18-50, An Act Concerning Connecticut’s Energy Future, codified as Section 16-244z(a)(1)(C) of the General Statutes of Connecticut. The statewide SCEF Program seeks the deployment of new or incremental Class I renewable generation projects ranging in size from 100 to 4,000 kW (AC) for a 20-year term. Eligible projects are chosen through a competitive bidding procurement process each year, for a total of 6 years. The program capacity is up to 25 MW per year.

Project Proponent & Petitioner Contact Info

Dynamic Energy, LLC
1550 Liberty Ridge Drive, #310
Wayne, PA 19087
807-809-8884

Pat Hastings
SVP, Project Engineering and Delivery
phastings@dynamicenergy.com
484.323.1155

Site Selection & Description

The existing parcel is approx. 14.5 acres located at 40 Pepe Farm Road in Milford, Connecticut in a light industrial mixed use area. The Site is described by the Milford tax assessor as parcel # 16008 is zoned LI and is currently owned by Stag Industrial Holdings, LLC and operated by the Thule Group. The existing facility is buffered along the road almost entirely with mature trees and evergreen.

The proposed facility which includes solar modules, ballasted racking system and inverters will be installed on the roof of the existing commercial building on site. The electrical generation of the system will be fed into the existing UI power grid via electrical equipment and poles located on the property. That electrical equipment consists of a transformer, switchgear, metering equipment and data monitoring system mount on a concrete pad and or vault. The location of the electrical equipment is in the grassy area near the front of the building approximately 100 feet from the street.

Service Life

The proposed facility has an expected useful life of approx. 25-30 years.

Equipment

- 2.112 kW DC
- 1.5 MW AC
- 2,675 MWh Annual Production
    - Directly exported to Utility Grid per SCEF Program

The major components of the system include but are not limited to:

- 72 Cell Watt Solar Modules (Qty: 5280)
- Ballast Mount Racking System (DCE)
    - System sits on deck of existing TPO roof. The racking sites on feet made out of recycled rubber. There is a slip sheet layout between the existing roof membrane and the rubber.
    - Maximum system height to top of solar module is approx. 14-16 inches
- Inverters (Qty 30) 50kW AC String Inverters
    - Inverters will be mounted on the roof via inverter racking similar to racking for solar modules
    - Maximum Height if mounted inverter is approx. 24”
    - Inverter output circuits will be run from the roof in metal conduit down the side of the building wall. Conduits then travel underground to the AC collector equipment pad.

- AC Collector equipment (all collocated on 50’ x 20’ concrete pad in front of building)
    - 1 Pad Mounted Switchboard (approx. 72” high x 36”L x 36”W)
    - 1 2000kvA transformer (approx. 83” high x 80” Lx 83” W)
    - 1 Pad Mounted Disconnect Switch (approx. 93” high x 64” L x 44” W)
    - 1 Pad Mounted Metering Enclosure (approx. 47” high x 72”L x 54” W)
    - United Illuminating Company owned interconnection equipment.
        - The output of the AC collector equipment will leave the concrete pad area underground and to a UI owned and installed riser pole,
        - Pole Mounted GOAB switch – Pole mounted switch for Utility and Emergency disconnection
        - 1 new junction pole & 1 new stub pole to tie into existing utility lines at the street.
        - Utility poles are approximately 40’ heigh.
    - 1 new customer service transformer replacement.
        - UI is replacing the customer existing transformer given the age of the equipment.
        - The replacement will be located at the same location of the existing transformer (front of building)
    - Access to UI equipment
        - UI requires truck access to equipment which will consist of a pervious roll grass paver

- All equipment and systems have been designed and engineered to adhere to all local, state and federal code requirements. Including but not limited to:

    - National Fire Protection Association (NFPA)
    - Standard for Electrical Safety in the Workplace (NFPA 70E)
    - Fire Code (NFPA 1)
    - National Electrical Code (NEC)
    - American National Standards Institute (ANSI)
    - Institute of Electrical and Electronics Engineers (IEEE)
    - International Code Council (ICC)
    - International Building Code (IBC)
    - International Plumbing Code (IPC)
    - National Electrical Manufacturers Association (NEMA)
    - Underwriters Laboratories (UL)

Utility Approval

- United Illuminating Co has contingently approved construction and interconnection of the system. A system impact study has been complete and shows no major impact on existing electrical system.

- System Protection
    - o System Relay & Protection function are included in the customer side of the equipment via internal relay protection as well as supplemental relay protection in AC collector switchboard.
    - o Main system disconnects are located both at the pad mounted disconnect switch and Utility owned pole mounted GOAB (gang operated air break) switch.

Environmental Considerations

- Project will comply with air emissions rates, including carbon dioxide and any other greenhouse gasses, and compliance with applicable DEEP regulations
- Project will not increase or decrease existing water consumption and discharge rates
- Project is not located in any FEMA flood zones
- Project is not located in proximity of any DEEP Aquifer Protection Areas or Vernal Pool Areas
- Project DEEP ground water classification underlying the property is Class GB
    - o Class GB designated uses are industrial process water and cooling waters and baseflow for hydraulically-connected waterbodies and is presumed not suitable for human consumption without treatment
- FAA has determined the project as NO hazard to air navigation
- The project is located entirely on developed existing parcel
    - o Project is NOT located in Critical Habitat of any State or Federal listed Species
    - o Project is NOT located in Northern long-eared bat areas of concern in Connecticut
- Parcel is buffered (minus area at entrance) by mature trees and evergreens. The closest residential home is apporx 565 feet away. These are buffered approx. 250’ deep of mature trees and natural vegetation.

Construction Description and Sequence

- The proposed solar array is planned to consist of approximately 5,280 solar modules installed on a steel roof top ballasted racking mounting system. Equipment and material will be store onsite in existing parking lot staging area.All

materials and equipment will be stored in ground located in lockable shipping containers on parking lot staging area. The solar modules, racking and any necessary installation tools and equipment will lift to the roof via shooting boom forklift. The racking is installed first, then the solar modules and then the associated wiring to the inverters and down off the roof to the AC collector area. AC collector system will be mounted on a concrete pad. Once the concrete pad and equipment are installed the AC wiring from the inverters, switchboard transformers etc will be pulled and landed. United Illuminating Company will install Utility interconnection and new feeder will be run underground from the last Utility Pole to the AC Collector equipment. Local Building and Electrical inspections will take place and once approved the system will be tested, commissioned and approved for operation by the Utility Company.

- Construction timeline will be approximately 3-4 months
- Working hours are typically 7am-5pm
    - Given the nature of the project no extraneous noise during construction is expected.

- Total disturbance area is expected to be less than 3,000 sq ft.
    - This disturbance are will be limited to the grassy area in the front of the building where the pad mounted electrical equipment will be located.
    - A General Permit for discharge of stormwater will NOT be required given the actual amount of disturbance expected onsite (less than 1 acre)

- Semi-Annual proactive maintained of the system will occur by qualified individuals.
    - Maintenance activities consist of visual inspection, electrical testing or system typical to Solar PV system.
    - Maintenance access will be achieved thru the existing roof hatch
    - Landscaping and mowing will be consistent and continue with existing facility landscaping and mowing plans.

Decommissioning

Please see attached Decommissioning Plan Exhibit

Safety

Dynamic Energy follows all OSHA regulations and will provide a detailed project specific safety plan that will be followed during construction and available for inspection. A copy of the safety plan is available upon request. The solar array will be enclosed behind a locked fence to be installed during construction per NEC code.

Community Benefits

The solar array is primarily an electrical system and therefore will require licensed electricians to install a large portion of the equipment. Dynamic Energy will be working with local contractors which will provide direct and indirect economic benefit to the local community. This will provide jobs for local contractors throughout the project and provide training which can support their work on future installations with the experience gained on this project.

Operation and Maintenance Plan

Operations and maintenance shall begin once the Utility has provided approval to operate the solar system. The maintenance schedule will consist of regular site visits within the first ninety (90) days of the system operation with one (1) report and base line reading for all electrical equipment to be completed at ninety (90) days. The ninety (90) day report will be the beginning of the bi-annual maintenance service. The maintenance shall be scheduled for every six (6) months starting in April or October depending on which is closer to the date of the ninety (90) day report.

Access to the site shall be provided from the planned access road off Route 11. Locks shall be installed on all new gates. Access shall be provided to the local Fire Department with the use of a lock box located outside of the most exterior gate.

The following tasks will be conducted during inspections:

1. Repairs to the solar energy collecting and distribution equipment will be made as needed. For the inverters, this will include:
    a. Evaluating the invertors and equipment following installation to confirm proper installation.
    b. Confirm the inverters are secure and properly grounded.
    c. Confirm the termination is to manufacturer specifications.
    d. Confirm all wires are color coded correctly and remain protected from physical damage.
    e. Confirm the equipment is free from debris, moisture, rust and damage.
    f. Confirm the inverters seals are intact.
    g. Confirm Arc shields are installed.
    h. Confirm placards are installed.
    i. Maintain service clearance to the inverters and maintain access to all filters.
    j. Confirm the ground fault fuses are intact and check any fault codes that are displayed.
    k. Evaluate any thermal anomalies observed.
    l. Annually, an IV Curve Trace will be conducted and inferred scans.

2. Inspections of the solar array and connecting infrastructure will be made by the maintenance contractor during each visit.
3. Any erosion shall be repaired and stabilized.

List of Exhibits

Pat Hastings

From: Anderson, Stephen <Stephen.Anderson@ct.gov>
Sent: Thursday, November 18, 2021 4:33 PM
To: Weimar, Cameron
Cc: Pat Hastings
Subject: RE: Milford, CT Rooftop Solar Project - CT Citing Council

Hi Pat,

I did get confirmation on this, the 2 megawatt cutoff if based on AC, not DC so no letter required on this one.

Steve

From: Weimar, Cameron <Cam.Weimar@ct.gov>
Sent: Thursday, November 18, 2021 2:40 PM
To: Anderson, Stephen <Stephen.Anderson@ct.gov>
Cc: phastings@dynamicenergy.com; Morris, Crystal <Crystal.Morris@ct.gov>
Subject: FW: Milford, CT Rooftop Solar Project - CT Citing Council
Importance: High

Dear Pat,

Thank you for your request, I am forwarding it to Steve Anderson of our office, who handles our agency's solar petitions.

Hope this note finds you and your family well. Best, Cam

_____

Cameron Weimar, Ph.D.
cam.weimar@ct.gov 860 888 0130
Farmland Preservation Program
Connecticut Dept. of Agriculture
www.ctgrown.gov

Click here if you have questions about COVID-19 testing for your farm employees:
Testing Farm Employees COVID Resources for Farmers COVID questions: Email us at AGR.COVID19@ct.gov

---

From: Pat Hastings <phastings@dynamicenergy.com>
Sent: Thursday, November 18, 2021 1:02 PM

To: Weimar, Cameron <Cam.Weimar@ct.gov>
Cc: Morris, Crystal <Crystal.Morris@ct.gov>
Subject: Milford, CT Rooftop Solar Project - CT Citing Council
Importance: High

Good Afternoon,

I am reaching out to request some help with a requirement needed to request a petition for declaratory ruling for a Rooftop Solar PV Project located at 40 Pepe Farm Road, Milford, CT.
As part of the declaratory ruling application/request to the CT Citing Council, given the size of this project (2.1 MW DC) we need to provide a letter from the CT Dept of Agriculture that this project will not have any material impact on prime farmland. I seek you assistance in providing such letter/notice.

I hope that this will be an easy task for you as this project is going to be located on a roof of an existing building on a already developed light industrial zoned project.

I have attached some more details to help with this request.

Thanks.

Pat Hastings
SVP, PROJECT ENGINEERING & DELIVERY

O: 484.323.1155 | M: 484.467.4683 | **dynamicenergy.com**
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Pat Hastings

From: Martin, Christopher <Christopher.Martin@ct.gov>
Sent: Friday, November 19, 2021 8:35 AM
To: Pat Hastings
Cc: DEEP Forestry
Subject: RE: Milford, CT Rooftop Solar Project - CT Citing Council

Thank you for inquiring about core forest impact determination. Connecticut General Statutes only requires the Department to issue a letter regarding core forest material affect if clearing of trees is called for within the project proposal. Since this is roof top proposal on an existing building a letter from DEEP is not required.

Chapter 277a - Public Utility Environmental Standards Act

Sec. 16-50k. Certificate of environmental compatibility and public need. Transfer. Amendment. Excepted matters. Waiver.

(iii) for a solar photovoltaic facility with a capacity of two or more megawatts, to be located on prime farmland or forestland, excluding any such facility that was selected by the Department of Energy and Environmental Protection in any solicitation issued prior to July 1, 2017, pursuant to section 16a-3f, 16a-3g or 16a-3j, the Department of Agriculture represents, in writing, to the council that such project will not materially affect the status of such land as prime farmland or the Department of Energy and Environmental Protection represents, in writing, to the council that such project will not materially affect the status of such land as core forest.

Christopher R. Martin
Director/State Forester
Division of Forestry
Bureau of Natural Resources
Connecticut Department of Energy and Environmental Protection
79 Elm Street, Hartford, CT 06106-5127
Office: 860.424-3631, Mobile: 860-463-8702 | E: christopher.martin@ct.gov

Connecticut Department of ENERGY & ENVIRONMENTAL PROTECTION

www.ct.gov/deep

Conserving, improving and protecting our natural resources and environment;
Ensuring a clean, affordable, reliable, and sustainable energy supply.

www.ct.gov/deep/forestry

From: Pat Hastings <phastings@dynamicenergy.com>
Sent: Thursday, November 18, 2021 1:39 PM

To: DEEP Forestry <DEEP.Forestry@ct.gov>
Cc: Martin, Christopher <Christopher.Martin@ct.gov>
Subject: Milford, CT Rooftop Solar Project - CT Citing Council
Importance: High

Good Afternoon,

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Notice List

Connecticut Department of Administrative Services
165 Capitol Avenue, Suite 8
Hartford, CT 06106

Connecticut Department of Emergency Services and Public Protection
1111 Country Club Road
Middletown, CT 06457

Connecticut Department of Economic and Community Development
450 Columbus Boulevard
Hartford, CT 06103

Connecticut Public Utilities Regulatory Authority
Ten Franklin Square
New Britain, CT 06051

Connecticut Council on Environmental Quality
79 Elm Street
Hartford, CT 06106

Connecticut Department of Energy and Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

Connecticut Department of Labor
200 Folly Brook Boulevard
Wethersfield, CT 06109

Connecticut Department of Consumer Protection
450 Columbus Boulevard, Suite 901
Hartford, CT 06103

Connecticut DOT
2800 Berlin Turnpike P.O. Box 317546
Newington, CT 06131-7546

Connecticut Office of Policy and Management
450 Capitol Avenue
Hartford, CT 06106

Connecticut Department of Agriculture
450 Columbus Boulevard, Suite 701
Hartford, CT 06103

Connecticut Department of Public Health
410 Capitol Avenue
Hartford, CT 06106

Capitol Region Council of Governments
241 Main Street
Hartford CT 06106-5310

James J. Maroney
State Senator, District S14
Legislative Office Building
LOB Room 3300
Hartford, CT 06106-1591

Kathy Kennedy
Milford State Representative
Legislative Office Building, Room 4200
300 Capitol Avenue
Hartford 06106

City of Milford
110 River St
Milford, CT 06460

KC Funding LLC
PO Box 253
Milford, CT 06460

Louis Damato
183 Quarry Road
Milford, CT 06460

Benjamin G. Blake, Mayor
70 West River Street
Milford, CT 06460

MaryRose Palumbo, Milford Inland Wetland Officer
70 West River Street
Milford, CT 06460

Conservation Commission
Attn: Jeremy Grant, Staff Liason
70 West River Street
Milford, CT 06460

Milford Planning and Zoning Board
Attn: Susan LaFond
70 West River Street
Milford, CT 06460

CT Attorney General William Tong
165 Capitol Ave
Hartford, CT 06106

Dynamic Energy™

November 17, 2021

Connecticut Department of Administrative Services
165 Capitol Avenue, Suite 8
Hartford, CT 06106

Re: 40 Pepe Farms Road, Milford, CT – Proposed Rooftop Solar PV Project

To Whom It May Concern,

The purpose of this letter is to provide notice of intent to file a Petition for Declaratory Ruling for a renewable energy facility with the CT Citing Council for a 2.1 MW Roof Top Solar PV Project on the existing building/roof located at 40 Pepe Farms Road, Milford, CT (Zoned LI). This notice is required to be made as part of that request. The application to the CT Citing Council will be made on or around 11/19/2021.

If you have any question or concerns, please feel free to contact me at any time.

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New Britain, CT 06051

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Connecticut Council on Environmental Quality
79 Elm Street
Hartford, CT 06106
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79 Elm Street
Hartford, CT 06106-5127

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200 Folly Brook Boulevard
Wethersfield, CT 06109

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450 Columbus Boulevard, Suite 901
Hartford, CT 06103

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Connecticut Department of Transportation
2800 Berlin Turnpike P.O. Box 317546
Newington, CT 06131-7546

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November 17, 2021

Connecticut Department of Public Health
410 Capitol Avenue
Hartford, CT 06106

Re: 40 Pepe Farms Road, Milford, CT – Proposed Rooftop Solar PV Project

To Whom It May Concern,

The purpose of this letter is to provide notice of intent to file a Petition for Declaratory Ruling for a renewable energy facility with the CT Citing Council for a 2.1 MW Roof Top Solar PV Project on the existing building/roof located at 40 Pepe Farms Road, Milford, CT (Zoned LI). This notice is required to be made as part of that request. The application to the CT Citing Council will be made on or around 11/19/2021.

If you have any question or concerns, please feel free to contact me at any time.

Pat Hastings

SVP, PROJECT ENGINEERING & DELIVERY

O: 484.323.1155 | M: 484.467.4683 | dynamicenergy.com

1550 Liberty Ridge Drive, Suite 310, Wayne, PA 19087

phastings@dynamicenergy.com

Dynamic Energy™

November 17, 2021

Capitol Region Council of Governments
Executive Director Lyle Wray
241 Main Street
Hartford CT 06106-5310

Re: 40 Pepe Farms Road, Milford, CT – Proposed Rooftop Solar PV Project

To Whom It May Concern,

The purpose of this letter is to provide notice of intent to file a Petition for Declaratory Ruling for a renewable energy facility with the CT Citing Council for a 2.1 MW Roof Top Solar PV Project on the existing building/roof located at 40 Pepe Farms Road, Milford, CT (Zoned LI). This notice is required to be made as part of that request. The application to the CT Citing Council will be made on or around 11/19/2021.

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1550 Liberty Ridge Drive, Suite 310, Wayne, PA 19087

phastings@dynamicenergy.com

Dynamic Energy™

November 17, 2021

James J. Maroney
State Senator, District S14
Legislative Office Building
LOB Room 3300
Hartford, CT 06106-1591

Re: 40 Pepe Farms Road, Milford, CT – Proposed Rooftop Solar PV Project

To Whom It May Concern,

The purpose of this letter is to provide notice of intent to file a Petition for Declaratory Ruling for a renewable energy facility with the CT Citing Council for a 2.1 MW Roof Top Solar PV Project on the existing building/roof located at 40 Pepe Farms Road, Milford, CT (Zoned LI). This notice is required to be made as part of that request. The application to the CT Citing Council will be made on or around 11/19/2021.

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phastings@dynamicenergy.com

Dynamic Energy™

November 17, 2021

Kathy Kennedy
Milford State Representative
Legislative Office Building, Room 4200
300 Capitol Avenue
Hartford 06106

Re: 40 Pepe Farms Road, Milford, CT – Proposed Rooftop Solar PV Project

To Whom It May Concern,

The purpose of this letter is to provide notice of intent to file a Petition for Declaratory Ruling for a renewable energy facility with the CT Citing Council for a 2.1 MW Roof Top Solar PV Project on the existing building/roof located at 40 Pepe Farms Road, Milford, CT (Zoned LI). This notice is required to be made as part of that request. The application to the CT Citing Council will be made on or around 11/19/2021.

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1550 Liberty Ridge Drive, Suite 310, Wayne, PA 19087

phastings@dynamicenergy.com

Dynamic Energy™

November 17, 2021

City of Milford
110 River St
Milford, CT 06460

Re: 40 Pepe Farms Road, Milford, CT – Proposed Rooftop Solar PV Project

To Whom It May Concern,

The purpose of this letter is to provide notice of intent to file a Petition for Declaratory Ruling for a renewable energy facility with the CT Citing Council for a 2.1 MW Roof Top Solar PV Project on the existing building/roof located at 40 Pepe Farms Road, Milford, CT (Zoned LI). This notice is required to be made as part of that request. The application to the CT Citing Council will be made on or around 11/19/2021.

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1550 Liberty Ridge Drive, Suite 310, Wayne, PA 19087

phastings@dynamicenergy.com

Dynamic Energy™

November 17, 2021

KC Funding LLC
PO Box 253
Milford, CT 06460

Re: 40 Pepe Farms Road, Milford, CT – Proposed Rooftop Solar PV Project

To Whom It May Concern,

The purpose of this letter is to provide notice of intent to file a Petition for Declaratory Ruling for a renewable energy facility with the CT Citing Council for a 2.1 MW Roof Top Solar PV Project on the existing building/roof located at 40 Pepe Farms Road, Milford, CT (Zoned LI). This notice is required to be made as part of that request. The application to the CT Citing Council will be made on or around 11/19/2021.

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1550 Liberty Ridge Drive, Suite 310, Wayne, PA 19087

phastings@dynamicenergy.com

Dynamic Energy™

November 17, 2021

Louis Damato
183 Quarry Road
Milford, CT 06460

Re: 40 Pepe Farms Road, Milford, CT – Proposed Rooftop Solar PV Project

To Whom It May Concern,

The purpose of this letter is to provide notice of intent to file a Petition for Declaratory Ruling for a renewable energy facility with the CT Citing Council for a 2.1 MW Roof Top Solar PV Project on the existing building/roof located at 40 Pepe Farms Road, Milford, CT (Zoned LI). This notice is required to be made as part of that request. The application to the CT Citing Council will be made on or around 11/19/2021.

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1550 Liberty Ridge Drive, Suite 310, Wayne, PA 19087

phastings@dynamicenergy.com

Dynamic Energy™

November 17, 2021

Benjamin G. Blake, Mayor
70 West River Street
Milford, CT 06460

Re: 40 Pepe Farms Road, Milford, CT – Proposed Rooftop Solar PV Project

To Whom It May Concern,

The purpose of this letter is to provide notice of intent to file a Petition for Declaratory Ruling for a renewable energy facility with the CT Citing Council for a 2.1 MW Roof Top Solar PV Project on the existing building/roof located at 40 Pepe Farms Road, Milford, CT (Zoned LI). This notice is required to be made as part of that request. The application to the CT Citing Council will be made on or around 11/19/2021.

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1550 Liberty Ridge Drive, Suite 310, Wayne, PA 19087

phastings@dynamicenergy.com

Dynamic Energy™

November 17, 2021

MaryRose Palumbo, Milford Inland Wetland Officer
70 West River Street
Milford, CT 06460

Re: 40 Pepe Farms Road, Milford, CT – Proposed Rooftop Solar PV Project

To Whom It May Concern,

The purpose of this letter is to provide notice of intent to file a Petition for Declaratory Ruling for a renewable energy facility with the CT Citing Council for a 2.1 MW Roof Top Solar PV Project on the existing building/roof located at 40 Pepe Farms Road, Milford, CT (Zoned LI). This notice is required to be made as part of that request. The application to the CT Citing Council will be made on or around 11/19/2021.

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phastings@dynamicenergy.com

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November 17, 2021

Conservation Commission
Attn: Jeremy Grant, Staff Liason
70 West River Street
Milford, CT 06460

Re: 40 Pepe Farms Road, Milford, CT – Proposed Rooftop Solar PV Project

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The purpose of this letter is to provide notice of intent to file a Petition for Declaratory Ruling for a renewable energy facility with the CT Citing Council for a 2.1 MW Roof Top Solar PV Project on the existing building/roof located at 40 Pepe Farms Road, Milford, CT (Zoned LI). This notice is required to be made as part of that request. The application to the CT Citing Council will be made on or around 11/19/2021.

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1550 Liberty Ridge Drive, Suite 310, Wayne, PA 19087

phastings@dynamicenergy.com

Dynamic Energy™

November 17, 2021

Milford Planning and Zoning Board
Attn: Susan LaFond
70 West River Street
Milford, CT 06460

Re: 40 Pepe Farms Road, Milford, CT – Proposed Rooftop Solar PV Project

To Whom It May Concern,

The purpose of this letter is to provide notice of intent to file a Petition for Declaratory Ruling for a renewable energy facility with the CT Citing Council for a 2.1 MW Roof Top Solar PV Project on the existing building/roof located at 40 Pepe Farms Road, Milford, CT (Zoned LI). This notice is required to be made as part of that request. The application to the CT Citing Council will be made on or around 11/19/2021.

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1550 Liberty Ridge Drive, Suite 310, Wayne, PA 19087

phastings@dynamicenergy.com

Dynamic Energy™

November 17, 2021

CT Attorney General William Tong
165 Capitol Ave
Hartford, CT 06106

Re: 40 Pepe Farms Road, Milford, CT – Proposed Rooftop Solar PV Project

To Whom It May Concern,

The purpose of this letter is to provide notice of intent to file a Petition for Declaratory Ruling for a renewable energy facility with the CT Citing Council for a 2.1 MW Roof Top Solar PV Project on the existing building/roof located at 40 Pepe Farms Road, Milford, CT (Zoned LI). This notice is required to be made as part of that request. The application to the CT Citing Council will be made on or around 11/19/2021.

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- Adult Signature Restricted Delivery $

Postage $0.58

Total $7.38

Sent To: Connecticut Department of Consumer Protection
Street: 450 Columbus Boulevard, Suite 901
City: Hartford, CT 06103

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- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.58

Total $7.38

Sent To: Connecticut DOT
Street: 2800 Berlin Turnpike P.O. Box 317546
City: Newington, CT 06131-7546

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- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.58

Total $7.38

Sent To: Connecticut Department of Labor
Street: 200 Folly Brook Boulevard
City: Wethersfield, CT 06109

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- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.58

Total $7.38

Sent To: Connecticut Department of Emergency Services and Public Protection
Street: 1111 Country Club Road
City: Middletown, CT 06457

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New Britain, CT 06051

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- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.58

Total $7.38

Sent To: Connecticut Public Utilities Regulatory Authority
Street: Ten Franklin Square
City: New Britain, CT 06051

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Hartford, CT 06106

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- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.58

Total $7.38

Sent To: Connecticut Office of Policy and Management
Street: 450 Capitol Avenue
City: Hartford, CT 06106

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Postage $0.58

Total $7.38

Sent To: Connecticut Department of Agriculture
Street: 450 Columbus Boulevard, Suite 701
City: Hartford, CT 06103

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Postage $0.58

Total $7.38

Sent To: Connecticut Department of Administrative Services
Street: 165 Capitol Avenue, Suite 8
City: Hartford, CT 06106

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- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.58

Total $7.38

Sent To: Connecticut Department of Public Health
Street: 410 Capitol Avenue
City: Hartford, CT 06106

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- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.58

Total $7.38

Sent To: Connecticut Department of Economic and Community Development
Street: 450 Columbus Boulevard
City: Hartford, CT 06103

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- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.58

Total $7.38

Sent To: Kathy Kennedy
Street: Milford State Representative Legislative Office Building, Room 4200, 300 Capitol Avenue
City: Hartford 06106

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- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.58

Total $7.38

Sent To: MaryRose Palumbo, Milford Inland Wetland Officer
Street: 70 West River Street
City: Milford, CT 06460

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- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.58

Total $7.38

Sent To: KC Funding LLC
Street: PO Box 253
City: Milford, CT 06460

0822 27

Postmark Here
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11/18/2021
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- Return Receipt (electronic) $0.00
- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.58

Total $7.38

Sent To: Milford Planning and Zoning Board
Attn: Susan LaFond
Street: 70 West River Street
City: Milford, CT 06460

0822 27

Postmark Here
BLUE BELL, PA 19422
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Hartford, CT 06106

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- Return Receipt (electronic) $0.00
- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.58

Total $7.38

Sent To: Connecticut Council on Environmental Quality
Street: 79 Elm Street
City: Hartford, CT 06106

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Postmark Here
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NOV 18 2021
11/18/2021
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Milford, CT 06460

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☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.58
Total Postage and Fees	$7.38

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City of Milford
110 River St
Milford, CT 06460

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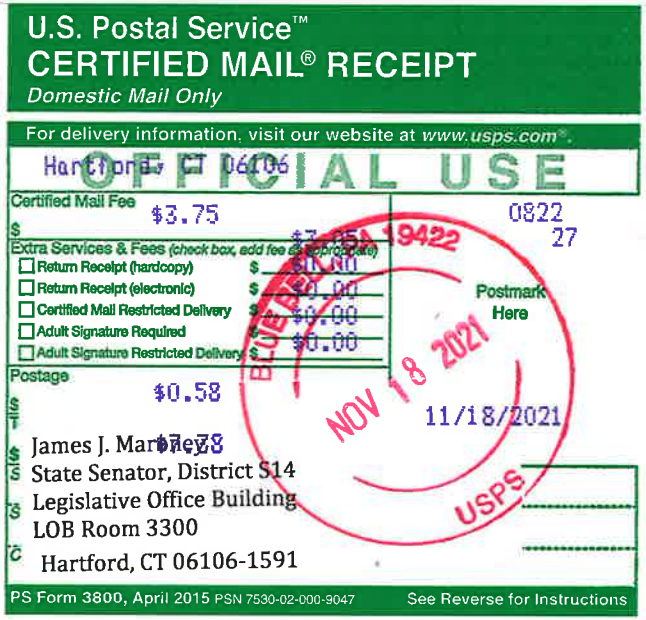

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- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.58

Total $7.38

Sent To: James J. Maroney
Street: State Senator, District 514
City: Legislative Office Building
LOB Room 3300
Hartford, CT 06106-1591

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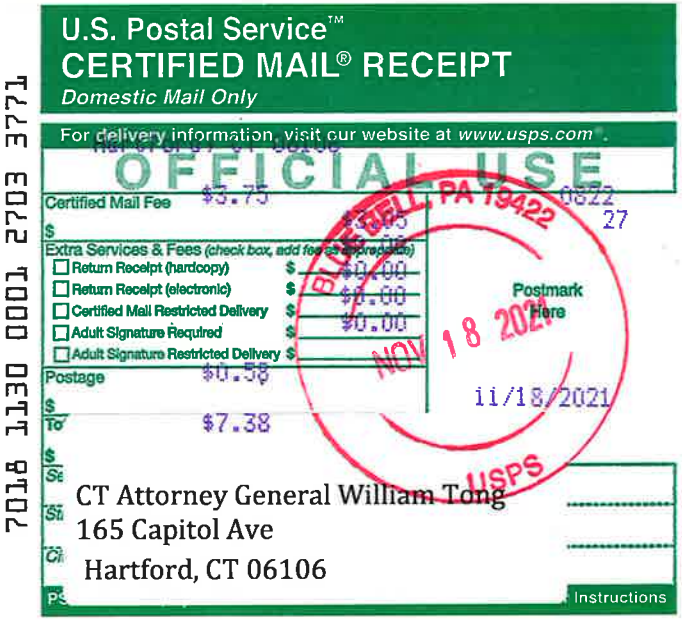

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- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.58

Total $7.38

To: CT Attorney General William Tong
Street: 165 Capitol Ave
City: Hartford, CT 06106

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11/18/2021

Instructions

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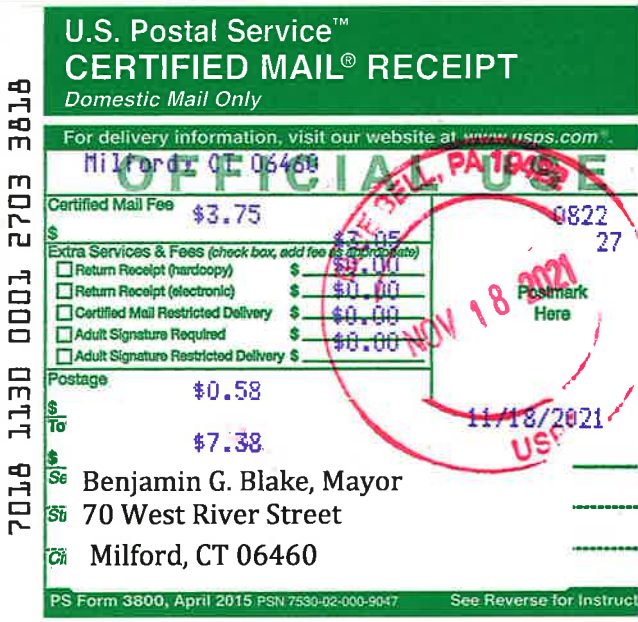

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Sent To: Connecticut Department of Energy
Street: and Environmental Protection
City: 79 Elm Street
Hartford, CT 06106-5127

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To: Capitol Region Council of
Street: Governments
City: 241 Main Street
Hartford CT 06106-5310

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PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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- Certified Mail Restricted Delivery $0.00
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Total $7.38

To: Louis Damato
Street: 183 Quarry Road
City: Milford, CT 06460

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PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Ins

7018 1130 0001 2703 3825

List of Exhibits

Exhibit A

STAG INDUSTRIAL HOLDINGS

40 PEPES FARM ROAD
MILFORD, CT 06460

SYSTEM DESCRIPTION

TOTAL SYSTEM SIZE:	2112 kW DC STC TOTAL
MODULE TYPE:	400W JA SOLAR
QUANTITY:	5280 MODULES
TOTAL STRINGS:	330 STRINGS
MODULES PER STRING:	16
TILT ANGLE:	10.0 DEGREES
AZIMUTH:	143.544 DEGREES

MODULE DESCRIPTION:

MAXIMUM POWER (W):	400 W
OPEN CIRCUIT VOLTAGE (Voc):	49.57 V
MAXIMUM POWER VOLTAGE (Vpm):	42.02 V
SHORT CIRCUIT CURRENT (Isc):	10.14 A
MAXIMUM POWER CURRENT (Ipm):	9.52 A
EFFICIENCY (%):	19.5 %
MAXIMUM SYSTEM VOLTAGE:	1500 VDC

INVERTER DESCRIPTION: CHINT POWER SYSTEMS

TYPE OF INVERTER:	50KW
TOTAL NUMBER OF INV:	30
MODEL NUMBER:	CPS-SCA50KTL
DIMENSIONS:	1000*600*260mm
CONTINUOUS POWER:	50KW
DC PEAK POWER TRACKING RANGE:	480-850V
CEC PEAK EFFICIENCY:	98.5%

RACKING DESCRIPTION:

RACKING MANUFACTURER:	DCE SOLAR
RACKING TYPE:	BALLASTED

PROJECT CONTACTS

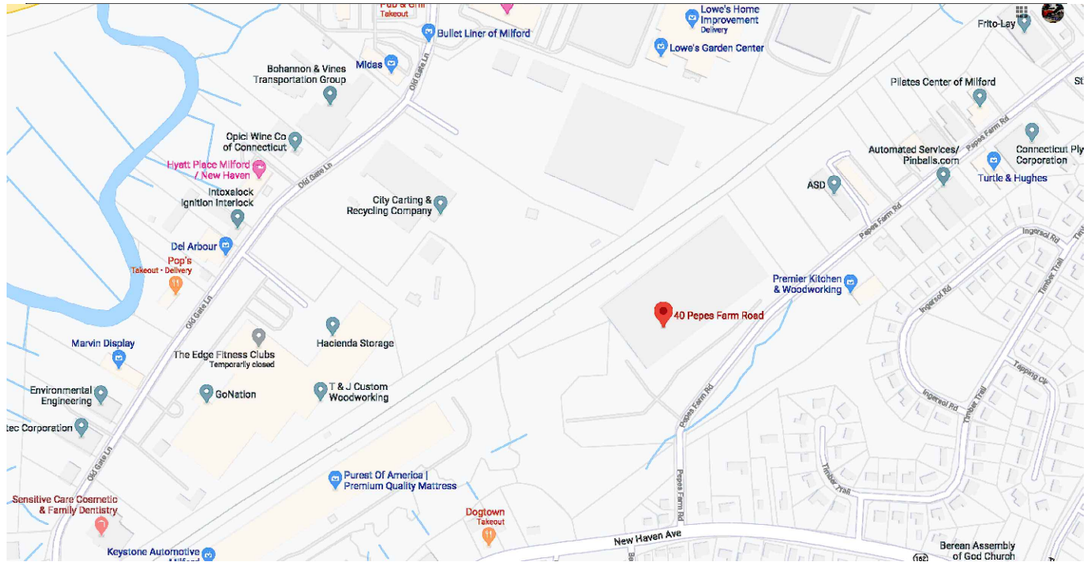
PROJECT MANAGER:
MANOLI ALLEXOPOULOS
1550 LIBERTY RIDGE DR., STE 310
WAYNE, PA 19087
PHONE: (717) 951-0518

CONSTRUCTION MANAGER:
MANOLI ALLEXOPOULOS
1550 LIBERTY RIDGE DR., STE 310
WAYNE, PA 19087
PHONE: (717) 951-0518

ELECTRICAL ENGINEER:
HENDRIK BURGER
1550 LIBERTY RIDGE DR., STE 310
WAYNE, PA 19087
PHONE: (484) 323-1154
LICENCE#: 31153

STRUCTURAL ENGINEER
JAMES A MARX, P.E.
10 HIGH MOUNTAIN ROAD
RINGWOOD, NJ 07456
ASCENT CONSULTING ENGINEERING
NORTH WINDS CENTER
LICENCE#: CT (NO. 17349)

1 AERIAL PHOTO
SCALE: N.T.S.



2 VICINITY MAP
SCALE: N.T.S.

DRAWING LIST

1

DESIGN CRITERIA:

WIND SPEED:	123 MPH EXP.B
GROUND SNOW LOAD:	30 PSF
ROOF SNOW LOAD:	30 PSF

APPLICABLE CODES

2018 CONNECTICUT STATE
BUILDING CODE
ELECTRICAL CODE NFPA 70, 2017 ED,

HENDRIK J. BURGER
PROFESSIONAL ENGINEER
1368 SHEEP HILL ROAD
POTTSTOWN, PA 19465

SEAL

Dynamic Energy™
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WAYNE, PA 19087
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FAX: 610-276-5403
WWW.DYNAMICENERGYUSA.COM

STAG INDUSTRIAL HOLDINGS
40 PEPES FARM ROAD
MILFORD, CT 06460

DRAWING ISSUE
- [ ] INTERCONNECTION
- [x] PERMITTING
- [ ] CONSTRUCTION
- [ ] RECORD

REV. #	DESCRIPTION:	DATE
0	PERMIT SET ISSUED	09-14-2021
1	LAYOUT REVISED	09-27-2021

DRAWING NAME
COVERSHEET

DRAWING NUMBER
G001

GENERAL NOTES & SPECIFICATIONS:

1. ALL ELECTRICAL WORK TO BE INSTALLED BY A QUALIFIED LICENSED ELECTRICIAN AND APPRENTICES WORKING UNDER THE DIRECT SUPERVISION OF THE LICENSED CONTRACTOR.
2. PERMISSION TO OPERATE THE SYSTEM IS NOT AUTHORIZED UNTIL FINAL INSPECTIONS AND APPROVALS ARE OBTAINED FROM THE LOCAL AUTHORITY HAVING JURISDICTION AND THE LOCAL UTILITY SERVICE PROVIDER.
3. THE METHOD OF ATTACHMENT CREATES A UNIFIED STRUCTURE TO MEET DEAD LOAD, WIND LOAD, AND SEISMIC REQUIREMENTS. SOLAR MODULES WILL BE SECURED TO THE EXISTING ROOF AS SPECIFIED ON THE STRUCTURAL SHEETS. EXISTING ROOF EQUIPMENT WILL NOT BE EFFECTED BY THE PV SYSTEM.
4. ALL FABRICATION AND MANUFACTURING SHALL BE PERFORMED BY CERTIFIED INDIVIDUALS IN APPROVED ASSEMBLY AND FABRICATION SHOPS PRIOR TO COMMENCEMENT OF ANY WORK.THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES NOTED AMONG SITE CONDITIONS, MANUFACTURER RECOMMENDATIONS, OR AUTHORITY HAVING JURISDICTION.
5. THIS PROPOSED SOLAR ELECTRIC POWER IS INTENDED TO OPERATE IN PARALLEL WITH POWER RECEIVED FROM THE UTILITY SERVICE PROVIDER.
6. IF THIS SYSTEMS IS INTENDED TO CONNECT TO THE EXISTING FACILITY POWER SYSTEM AT ONE POINT, POINT OF COMMON COUPLING (POCC). THIS CONNECTION SHALL BE IN COMPLIANCE WITH THE NEC ARTICLE 705.12 'POINT OF CONNECTION'. CONNECTIONS DIRECT TO GRID SHALL BE IN ACCORDANCE TO THE DRAWINGS AND APPLICABLE NEC AND UTILITY CODES.
7. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE AND NATIONAL CODES AND UTILITY COMPANY STANDARDS AS WELL AS THE REQUIREMENTS OF ALL PERMITS OBTAINED.
8. ALL MATERIALS SUPPLIED AND ALL WORK INSTALLED MUST COMPLY WITH OR EXCEED THE MINIMUM REQUIREMENTS SET FORTH BY THE NFPA, NEC, ANY LOCAL CODES AND UTILITY COMPANY REQUIREMENTS.
9. CAUTION SHALL BE TAKEN WHEN MOUNTING ASSOCIATED ELECTRICAL EQUIP. AND MECHANICAL EQUIPMENT SO IT DOES NOT SHADE THE ARRAY AT ANY TIME DAY OR YEAR..
10. EQUIPMENT SHALL BE INSTALLED IN A SECURE AREA.
11. MATERIALS USED OUTDOORS SHALL BE SUNLIGHT/UV RESISTANT.
12. MATERIALS SHALL BE DESIGNED TO WITHSTAND THE TEMPERATURES TO WHICH THEY ARE EXPOSED.
13. ONLY HIGH QUALITY FASTENERS SHALL BE USED (STAINLESS STEEL OR EQUIVALENT).
14. THE PV SYSTEM IS EXPECTED TO BE AS AESTHETICALLY PLEASING AS POSSIBLE AND SHOULD BE CONSTRUCTED WITH GOOD WORKMANSHIP AND CARE.
15. CONTRACTOR SHALL LIMIT HIS USE OF THE PREMISES FOR WORK, INCLUDING STORAGE TO ALLOW FOR OTHER CONTRACTORS WORK, OWNER OCCUPANCY AND PUBLIC USE. IN THE COURSE OF PERFORMING THE WORK, CONTRACTORS SHALL KEEP THE WORK AREA IN A CONDITION SUITABLE FOR THE PERFORMANCE OF THE OWNER'S DAILY FUNCTIONS. THE APPEARANCE OF THESE AREAS WILL BE SUBJECT TO APPROVAL BY OWNER. TAKE ALL PRECAUTIONS NECESSARY TO PROTECT OWNER'S FURNITURE AND EQUIPMENT IN WORK AREAS.
16. CONTRACTOR SHALL MAINTAIN A RECORD SET OF DRAWINGS SHOWING ALL CHANGES DURING THE CONSTRUCTION PROCESS. DELIVER THESE RECORD DRAWINGS TO DYNAMIC ENERGY AT COMPLETION OF PROJECT.
17. FIRESTOPPING
    a. WHERE CONDUITS AND OTHER ELECTRICAL RACEWAYS PASS THROUGH FIRE PARTITIONS, FIRE WALLS OR FLOORS, INSTALL A UL LISTED FIRE-STOP THAT PROVIDES AN EFFECTIVE BARRIER AGAINST THE SPREAD OF FIRE, SMOKE AND GASES. FIRE-STOP MATERIALS SHALL BE PACKED TIGHT, AND COMPLETELY FILL CLEARANCES BETWEEN RACEWAYS AND OPENINGS. FIRE-STOP MATERIALS SHALL CONFORM TO THE FOLLOWING:
        a.1. FIRESTOPPING MATERIAL SHALL MAINTAIN ITS DIMENSION AND INTEGRITY WHILE PREVENTING THE PASSAGE OF FLAME, SMOKE AND GASES UNDER CONSTRUCTIONS OF INSTALLATION AND USE WHEN EXPOSED TO THE ASTM 119 TIME-TEMPERATURE CURVE FOR A TIME PERIOD EQUIVALENT TO THE RATING OF THE ASSEMBLY PENETRATED. COTTON WASTE SHALL NOT IGNITE WHEN PLACED IN CONTACT WITH THE NON-FIRE SIDE DURING THE TEST. FIRESTOPPING MATERIAL SHALL BE NON-COMBUSTIBLE AS DEFINED BY ASTM E136 AND IN ADDITION, FOR INSULATION MATERIALS, MELT POINT SHALL BE A MINIMUM OF 1700 DEGREES FAHRENHEIT FOR 2-HOUR PROTECTION.
        a.2. MATERIALS SHALL BE 3M FIRE BARRIER, THOMAS AND BETTS FLAME SAFE, OR NELSON ELECTRIC FIRESTOP.
18. ALL SOLAR MODULES SHALL BE LISTED 1703. ALL INVERTERS SHALL BE UL LISTED 1741 CERTIFIED. ALL ELECTRICAL COMPONENTS AND MATERIALS SHALL BE LISTED FOR ITS PURPOSE AND INSTALLED IN A WORKMANLIKE MANNER. ALL OUTDOOR EQUIPMENT SHALL MEET APPROPRIATE NEMA STANDARDS.
18. ALL MATERIALS AND EQUIPMENT FOR THE WORK SHALL BE NEW UNLESS OTHERWISE SPECIFIED. ALL MATERIAL SHALL BE SUBJECT TO APPROVAL BY A DYNAMIC ENERGY.

MISCELLANEOUS

1. ALL WASTE MATERIALS SHALL BE COLLECTED AND DISPOSED OF INTO METAL TRASH DUMPSTERS IN THE MATERIALS STORAGE AREA.
2. DUMPSTERS SHALL BE PLACED AWAY FROM STORMWATER CONVEYANCES AND DRAINS AND MEET ALL FEDERAL, STATE, AND MUNICIPAL REGULATIONS.
3. ONLY TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN THE DUMPSTER.
4. NO CONSTRUCTION MATERIALS SHALL BE BURIED ONSITE.
5. ALL PERSONNEL SHALL BE INSTRUCTED REGARDING THE CORRECT DISPOSAL OF TRASH AND CONSTRUCTION DEBRIS.
6. ALL HAZARDOUS WASTE MATERIALS SUCH AS OIL FILTERS, PETROLEUM PRODUCTS, PAINT, AND EQUIPMENT MAINTENANCE FLUIDS SHALL BE DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE, AND MUNICIPAL REGULATIONS.
7. WHEN ANY DIRECT OR INDIRECT DAMAGE OR INJURY IS DONE TO PUBLIC OR PRIVATE PROPERTY BY OR ON ACCOUNT OF ANY ACT, OMISSION, NEGLECT, OR MISCONDUCT IN THE EXECUTION OF THE WORK OR IN CONSEQUENCE OF THE NON-EXECUTION THEREOF ON THE PART OF CONTACTOR, SUCH PROPERTY SHALL BE RESTORED AT CONTACTOR EXPENSE TO A CONDITION SIMILAR OR EQUAL TO THAT EXISTING BEFORE SUCH DAMAGE OR INJURY WAS DONE.
8. OWNERS, EMPLOYEES, OR AGENTS OF PUBLIC OR PRIVATE SERVICES LOCATED WITHIN THE PROJECT LIMITS SHALL BE ALLOWED FREE AND FULL ACCESS WITH THE TOOLS, MATERIALS, AND EQUIPMENT NECESSARY TO INSTALL, OPERATE, MAINTAIN, PLACE, REPLACE, RELOCATE, AND REMOVE SERVICE FACILITIES. NO COMPENSATION WILL BE PAID TO CONTACTOR FOR ANY INCONVENIENCE CAUSED BY WORKING WITH THESE PARTIES OR AROUND OR WITH THEIR SERVICES.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES DONE TO SERVICES FROM THE BEGINNING OF CONSTRUCTION TO THE SATISFACTORY COMPLETION OF THE PROJECT, INCLUDING ALL DAMAGES TO WATER SUPPLIES AND SEWAGE SYSTEMS, INCLUDING BUT NOT LIMITED TO DAMAGE TO SPRINGS AND WELLS, SEPTIC TANKS, CESSPOOLS, AND UNDERGROUND PIPES, WHETHER LOCATED WITHIN OR OUTSIDE THE PROJECT RIGHT-OF-WAY OR WHETHER OR NOT SHOWN ON THE PLANS.
10. CONTRACTOR SHALL, WITHOUT CHARGE, REPLACE ANY WORK OR MATERIAL, WHICH DEVELOPS DEFECTS, EXCEPT ORDINARY WEAR AND TEAR, OR FAIL TO PERFORM SATISFACTORILY WITHIN 1 YEAR FROM DATE OF FINAL ACCEPTANCE. THIS PERTAINS TO VENDOR PROVIDED MATERIAL AND WORKMANSHIP.

SCOPE OF WORK:

1. INSTALL EQUIPMENT, CONDUIT, AND WIRING ACCORDING TO DYNAMIC ENERGY'S APPROVED PLANS AND THE PROVIDED MANUFACTURER'S INSTALLATION MANUALS.
2. A COPY OF THE APPROVED PERMIT PLANS SHALL BE AVAILABLE AT THE SITE FOR THE INSPECTOR'S USE DURING FIELD INSPECTION AND POSTED AS DICTATED BY THE AHJ.
3. ALL MATERIALS AND EQUIPMENT FOR THE WORK SHALL BE NEW, UNLESS OTHERWISE SPECIFIED. ALL MATERIAL SHALL BE SUBJECT TO APPROVAL BY DYNAMIC ENERGY.
4. CONTRACTOR SHALL PROVIDE ALL CUTTING, PATCHING, CONDUIT SLEEVES, EXCAVATION, BACKFILL, AND CONCRETE WORK.
    a. REVIEW WITH DYNAMIC ENERGY CONSTRUCTION MANAGER, THE LOCATION AND SIZE OF OPENINGS TO BE CUT INTO EXISTING CONSTRUCTION BEFORE STARTING OF CUTTING WORK.
    b. ALL CUTTING, ROUGH PATCHING AND FINISH PATCHING REQUIRED SHALL BE PROVIDED BY THE CONTRACTOR.
    c. WHERE CONDUITS PASS THROUGH MASONRY OR CONCRETE WALLS, FOUNDATIONS OR FLOORS, THE CONTRACTOR SHALL SET SUCH SLEEVES AS ARE NECESSARY FOR PASSAGE OF THE CONDUITS. SLEEVES SHALL BE SCHEDULE 40 GALVANIZED STEEL OF SUFFICIENT SIZE TO PROVIDE AIR SPACE AROUND THE CONDUIT PASSING THROUGH FOR FIREPROOFING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EXACT LOCATION OF SLEEVES PROVIDED UNDER HIS CONTRACT.
    d. CORE DRILL ALL OPENINGS REQUIRED IN EXISTING CONSTRUCTION USING A DRILL STOP FOR INSTALLATION OF EQUIPMENT AND MATERIAL.
    e. PROVIDE ALL EXCAVATION AND BACKFILL REQUIRED FOR WORK OF THIS PROJECT.
5. CONTRACTOR SHALL INSTALL ALL LABELS FOR CONDUITS CABLE TRAY,ETC. AS REQUIRED BY THE CURRENT NEC CODE.
6. CONTRACTOR INITIATED CHANGES SHALL BE SUBMITTED IN WRITING TO THE ENGINEER IN THE FORM OF A DESIGN CHANGE REQUEST FOR INFORMATION PRIOR TO MAKING ANY CHANGES. APPROVED CHANGES SHALL REQUIRE A DRAWING REVISION TO MAINTAIN CONTROL OVER THE ENGINEER APPROVED DESIGN. THE ELECTRICAL CONTRACTOR IS ADVISED THAT ALL DRAWINGS AND COMPONENT MANUALS ARE TO BE UNDERSTOOD PRIOR TO INSTALLATION. THE CONTRACTOR IS ADVISED TO HAVE ALL SWITCHES IN THE 'OFF' POSITION AND FUSES REMOVED PRIOR TO INSTALLATION OF FUSE-BEARING COMPONENTS.
7. PROVIDE ALL CONCRETE REQUIRED FOR WORK OF THIS PROJECT.
8. COMMISIONING OF THE COMPLETED INSTALLATION SHALL BE AS SPECIFIED IN THE CONTRACT AGREEMENT.

ROOF INSTALLATIONS: (WHERE APPLICABLE)

1. ALL FASTENERS SHALL BE CORROSION RESISTANT APPROPRIATE FOR SITE CONDITIONS. CONNECTORS SHALL BE TORQUED PER DEVICE LISTING OR ENGINEERING RECOMMENDATIONS. ALL ROOFING REPAIR MUST MAINTAIN EXISTING CLASS AND TYPE OF ROOF AND ALL WORK SHALL BE IN ACCORDANCE WITH THE ROOFING MANUFACTURER'S INSTALLATION REQUIREMENTS.
2. CABLE AND CONDUIT SHALL BE PROPERLY SUPPORTED , SHALL BE KEPT AT A MINIMUM 1" ABOVE ROOF SURFACE. SHALL NOT BE RUBBING ON ABRASIVE SURFACE I.E. ENDS OF RAILS, SHALL NOT BE PINCHED BETWEEN PANELS AND RAIL.
3. APPROPRIATE PROTECTION SHALL BE USED FOR ALL ROOF PENETRATIONS. CONTRACTORS SHALL HIRE OWNER'S ROOFING CONTRACTOR TO PROVIDE AND SEAL ALL ROOF PENETRATIONS.
4. CONDUITS PASSING THROUGH ROOFS OR OTHER SURFACES EXPOSED TO WEATHER SHALL BE PROPERLY FLASHED AND MADE WATER TIGHT.
5. PV WIRING SHALL BE SUPPORTED EVERY 24" OR AS PRACTICAL AND SHALL NOT TOUCH ANY ROOF SURFACES MANUFACTURED MODULE WIRES MUST BE SUPPORTED UNDER EVERY MODULE WITH STAINLESS STEEL CLIPS OR EQUIVALENT.
6. ALL ROOFTOP CONDUITS SHALL BE SUPPORTED BY THE HARD PLASTIC ROOF CADDY'S WHICH WILL KEEP THE CONDUIT AT A MINIMUM OF 4" ABOVE THE ROOF SURFACE HARD FOAM ROOF CADDY'S SHALL NOT BE USED WITHOUT APPROVAL FROM DYNAMIC ENERGY'S ENGINEER.
7. CONDUIT RUNS ON FLAT ROOFS SHOULD BE BALLASTED WHERE THEY MAY BE SUBJECT TO HIGH WINDS OR SHIFTING DUE TO ICE OR SNOW. THE BALLAST STRUCTURE MUST ALLOW THE CONDUIT TO EXPAND AND CONTRACT. BALLAST SPACING SHALL BE ON 20'-0" INTERVALS MAXIMUM. COORDINATE LOCATIONS WITH DYNAMIC ENERGY CONSTRUCTION MANAGER.
8. CONDUIT RUNS ON SLOPED ROOFS SHOULD BE SECURED IN SIMILAR FASHION AS ABOVE WITHOUT THE USE OF BALLASTING.COORDINATE METHOD AND LOCATIONS WITH DYNAMIC ENERGY CONSTRUCTION MANAGER.
9. CONDUITS RUNS SHALL BE TRANSITIONED TO SEALTITE WHEN RUN ON A ROOFTOP BETWEEN TWO STATIONARY TERMINATION POINTS TO ALLOW FOR EXPANSION AND CONTRACTION. SEALTITE SHALL NOT BE USED IN LENGTHS GREATER THAN 6;.
10. PVC CONDUIT SHALL NOT BE USED IN ANY RUN GREATER THAN 20' ON ROOFTOPS AND MUST HAVE THE ABILITY TO EXPAND AND CONTRACT
    PVC IS GENERALLY USED AS PHYSICAL PROTECTION FOR EXPOSED PV WIRES PVC MUST BE SUPPORTED AT INTERVALS TO PREVENT SAGGING ALLOWING CONTACT WITH ROOF SURFACE.

EXISTING CEILINGS:

11. CONTRACTOR WILL BE RESPONSIBLE TO REMOVE AND REPLCAE EXISTING CEILING TILE AND GRID SYSTEM AFFECTING THE INSTALLATION OF EQUIPMENT AND MATERIAL ABOVE CEILING.
12. DAMAGED TILE SHALL BE BROUGHT TO OWNER'S ATTENTION PRIOR TO REMOVAL. FAILURE TO DO SO SHALL MAKE CONTRACTOR RESPONSIBLE FOR REPLACEMENT OF DAMAGED CEILING TILE AND GRID SYSTEM AT NO COST OF OWNER.
14. CONTRACTOR SHALL BE RESPONSIBLE TO DISCONNECT, REMOVE, REPLACE AND RECONNECT EXISTING LIGHTING FIXTURES,SPEAKERS ETC., IN AFFECTED WORK AREAS UNLESS NOTED OTHERWISE.

HENDRIK J. BURGER
PROFESSIONAL ENGINEER
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SEAL

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STAG INDUSTRIAL HOLDINGS
40 PEPES FARM ROAD
MILFORD, CT 06460

DRAWING ISSUE
- [ ] INTERCONNECTION
- [x] PERMITTING
- [ ] CONSTRUCTION
- [ ] RECORD

REV #	DESCRIPTION:	DATE
0	PERMIT SET ISSUED	09-15-2021
1	LAYOUT REVISED	09-27-2021

DRAWING NAME
GENERAL & CONSTRUCTION NOTES

DRAWING NUMBER
G002

ELECTRICAL:

MODULES:

1. PV MODULE MANUFACTURER'S INSTRUCTIONS SHALL BE CAREFULLY FOLLOWED WHEN HANDLING OR INSTALLING THE MODULES.
2. DO NOT INSTALL DAMAGED MODULES.
3. WHERE PLUG CONNECTORS ARE USED FOR MODULE WIRING, MAKE SURE THAT CONNECTORS ARE FULLY ENGAGED PLUG CONNECTORS MUST BE OF THE SAME MAKE AND MODEL AND LISTED FOR THEIR USE CONNECTORS FROM DIFFERING MANUFACTURERS SHALL NOT BE USED TOGETHER.
4. AT NO TIME IS IT ACCEPTABLE TO WALK ON,SIT ON, REST ON, OR DROP, MODULES. ANY TIME THAT THIS IS DONE THE CONTRACTOR WILL BE RESPONSIBLE FOR REPLACEMENT COST OF THE MODULES.

INVERTERS:

5. ANTI-ISLANDING PROTECTION IS A REQUIREMENT OF UL 1741 AND IS INTENDED TO PREVENT THE OPERATION OF THE PV SYSTEM WHEN THE UTILITY GRID IS NOT OPERATIONAL.
6. THE INVERTER FOR THE PROPOSED ELECTRIC SYSTEM SHALL BE IDENTIFIED FOR USE IN SOLAR PHOTOVOLTIAC SYSTEMS. ALL EQUIPMENT SHALL BE UL APPROVED.

BALANCE OF SYSTEM:

7. ALL SOURCE CIRCUITS SHALL HAVE INDIVIDUAL SOURCE CIRCUIT PROTECTION FOR TESTING AND ISOLATION. ALL COMBINER BOXES SHALL HAVE DISCONNECTING MEANS NEAR THE COMBINER FOR ISOLATION AND TESTING.
8. ALL DISCONNECTS AND COMBINER SHALL BE SECURED FROM UNAUTHORIZED/UNQUALIFIED PERSONNEL BY LOCK OR LOCATION.
9. ALL DISCONNECTS , COMBINERS , PULL/SPLICE BOXES , AND ENCLOSURES SHALL BE LISTED FOR ITS PURPOSE.
10. STRING HOMERUNS SHALL BE PROPERLY LABELED BY NUMBERS AT THE BEGINNING AND END OF EACH CIRCUIT AND AT ALL CONNECTIONS IN HOMERUN.
11. STRING NUMBERS SHALL MATCH CONSTRUCTION DRAWING AND BE IN CORRECT LOCATION IN ARRAY.
12. PV WIRING SHALL BE SUPPORTED EVERY 24" OR AS PRACTICAL AND SHALL NOT TOUCH ANY ROOF SURFACES. MANUFACTURED MODULE WIRES MUST BE SUPPORTED UNDER EVERY MODULE WITH STAINLESS STEEL CLIPS OR EQUIVALENT.
13. ALL CONDUITS AND CABLE TRAYS SHALL BE SUPPORTED AT INTERVALS AS DEFINED IN THE NEC.
14. ONLY HEAVY DUTY UV WIRE TIES WITH EXTREME HIGH AND LOW TEMPERATURE RATINGS SHALL BE USED IN ALL APPLICATIONS.
15. COMBINERS, PULL/SPLICE BOXES, AND ENCLOSURES SHALL BE LISTED FOR ITS PURPOSE.

CONDUIT:

16. PROVIDE EXPANSION FITTINGS IN CONDUIT RUNS PER NEC.
17. MEYERS HUBS SHALL BE USED FOR ANY CONDUIT PENETRATIONS ENTERING THE TOP OF ANY EXTERIOR ENCLOSURE. NEMA 4 ENCLOSURES OR GREATER WILL REQUIRE MEYERS HUB FOR ANY PENETRATION WHENEVER PRACTICAL. CONDUIT ENTRY IN THE BOTTOM, OF ENCLOSURES IS PREFERABLE. MEYERS HUB FITTINGS SHALL BE USED WITH RGS & IMC CONDUIT ONLY TO MAINTAIN GROUNDING AND WATER SEAL.
18. EMT OR GRC CONDUITS SHALL BE USED FOR ALL EXTERIOR APPLICATIONS FOR DC FEEDERS AND AC WIRING.
19. ALL METALLIC CONDUIT SHALL BE BONDED APPROPRIATELY AT ONE END(MINIMUM) AND WHENEVER USED IN CONCENTRIC KNOCK OUTS.
20. ONLY COMPRESSION COUPLINGS AND CONNECTORS APPROVED FOR WET LOCATION SHALL BE USED FOR EMT CONDUIT (EXTERIOR ONLY).
21. BUSHINGS SHALL BE USED AT CONDUIT TERMINATION POINTS PER NEC UNLESS THE CONNECTOR HAS A BUILT IN PLASTIC THROAT.
22. EXTREME CARE MUST BE TAKEN WHEN USING COMPRESSION COUPLINGS AND CONNECTORS TO ASSURE THEY ARE SEATED FULLY AND TIGHTENED SO CONDUIT CANNOT SEPERATE.
23. ALL CONDUIT ENTRIES TO PANELS, SWITCHGEAR, WEATHERHEADS, INVERTERS OR COMBINER BOXES SHALL BE SEALED AS FOLLOWS:

23.1. DUCT SEALANT SHALL BE POLYWATER FST™ FOAM SEALANT. DUCT SEALANT SHALL BE A 2-PART, 98% CLOSED-CELL URETHANE FOAM. IT SHALL REACT AND SET IN 5-10 MINUTES AT 70°F. IT SHALL BE CAPABLE OF SEALING 3/4"-10 CONDUITS WITH MULTIPLE CABLE CONFIGURATIONS. DUCT SEALANT SHALL BE REENTERABLE. IT SHALL BE CAPABLE OF WITHSTANDING TEMPERATURES FROM -40°F TO 200°F; AND BE CHEMICALLY RESISTANT TO GASOLINE, OILS, DILUTE ACIDS AND BASES. DUCT SEALANT SHALL NOT AFFECT THE PHYSICAL OR ELECTRICAL PROPERTIES OF WIRE AND CABLE.

23. 2. DUCT SEALANT SHALL HAVE GOOD ADHESION TO DUCT AND CABLE JACKET SURFACES WITH GOOD STRUCTURAL STRENGTH. IT SHALL HAVE 120-lb COMPRESSIVE STRENGTH (ASTM D1621). DUCT SEALANT SHALL BE CAPABLE OF HOLDING 22FT. WATERHEAD PRESSURE CONTINUOUS OR 90FT. WATERHEAD PRESSURE SHORT-TERM. IT SHALL BLOCK UP TO 5 PSI GAS OR VAPOR CONTINUOUS. IT SHALL MEET NEC CODES FOR RACEWAY SEALS, MEET UL 94 FIRE RATING HBF AND BE UL RECOGNIZED.

WIRE AND TERMINATIONS:

GENERAL

1. ALL WIRE SHALL BE NEW AND CONTRACTOR SHALL PROVIDE THE MANUFACTURED DATE OF WIRE IF REQUESTED.
2. USE ONLY WIRE TYPES SPECIFIED OR AS ALLOWED BY THE NEC.
3. THHN/THWN/THHN-2/THWN-2 SHALL BE USED FOR FEEDER AND BRANCH CIRCUIT CONDUCTORS, UNLESS NOTED. CABLE INSULATION TYPE SHALL BE RATED FOR WET LOCATIONS AND HAVE A TEMPERATURE RATING OF 90°C OR BETTER.
4. PV CABLE , #10 COPPER, STRANDED, NEW 2000 VOLT, SHALL BE USED FOR PV STRING CONDUCTORS UNLESS NOTED. ALL PV WIRES BETWEEN PV MODULES & INVERTERS SHALL BE CONTINUOUS, WITHOUT ADDITIONAL CONNECTORS IN BETWEEN.UNLESS SPECIFIED BY THE ENGINEER.
5. ENSURE WIRE IS CONSISTENT WITH PLANS.
6. ALL WIRING TORQUE MUST BE DONE TO EQUIPMENT MANUFACTURERS SPECIFICATIONS AND MARKED AT EVERY TERMINATION.
7. ALL PHASE CONDUCTORS OF AN AC CIRCUIT OR FEEDER SHALL BE RUN IN THE SAME CONDUIT WHEN USING METAL RACEWAYS TO AVOID INDUCED CURRENTS AND OVERHEATING.
8. ALL AC & DC FEEDER CABLES INCLUDING STRING WIRES SHALL BE TESTED FOR INSULATION INTEGRITY WITH A MEGA OHM METER AT 1000 VOLTS FOR 1 MINUTE INTERVALS AND THE RESULTS MUST BE DOCUMENTED AND PUT IN THE JOB BINDER.
9. UNLESS SPECIFIED ALL WIRING SHALL BE COPPER.
10. ALUMINUM WIRING MAY BE USED WHEN SPECIFIED BUT SHALL NOT BE USED IN SIZES LESS THAN 2 AWG WITHOUT WRITTEN PERMISSION FROM DYNAMIC ENERGY.
11. BUSES, FEEDERS, BRANCH CIRCUIT CONDUCTORS, AND MEDIUM-VOLTAGE CABLES SHALL BE PROPERLY PHASED AND IDENTIFIED THROUGHOUT. INDIVIDUAL CONDUCTORS SHALL BE COLOR CODED AS NOTED BELOW:

CONDUCTOR	120/208V AND MEDIUM VOLTAGE	277/480V	462/800V
PHASE A	BLACK	BROWN	RED
PHASE B	RED	ORANGE	BLUE
PHASE C	BLUE	YELLOW	YELLOW
NEUTRAL	WHITE	GRAY	GRAY
GROUND	GREEN	GREEN	GREEN
ISOLATED GROUND	GREEN / YELLOW	GREEN / YELLOW	GREEN / YELLOW
CONDUCTOR	**DC**		
POSITIVE (+)	RED		
NEGATIVE (-)	BLACK		
GROUNDED CONDUCTOR	WHITE		
EQUIPMENT GROUND	GREEN		

A. BUSES AND CONNECTIONS SHALL BE IDENTIFIED LEFT TO RIGHT, TOP TO BOTTOM, OR FRONT TO REAR; SHALL READ A-B-C; AND SHALL BE COLOR-CODED PER THE TABLE ABOVE.

B. FEEDERS FOR ALL NEW CONSTRUCTION SHALL HAVE COLOR-CODED PHASE IDENTIFICATION AT ALL JUNCTION BOXES AND WHEREVER FEASIBLE, AND SHALL HAVE SOLID (CONTINUOUS) COLOR INSULATION FOR PHASE DESIGNATION.

12. DISSIMILAR METALS (SUCH AS STEEL AND ALUMINIUM) SHALL BE ISOLATED FROM SURFACE TO SURFACE CONTRACT USING NON-CONDUCTIVE SHIMS, WASHERS, OR OTHER METHODS.
13. ALUMINIUM SHALL NOT BE PLACED IN DIRECT CONTACT WITH CONCRETE MATERIALS.
14. PARALLEL CONDUCTORS MAY ONLY BE USED WHEN SPECIFIED, AND MUST ADHERE TO NEC ARTICLE 310.

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WIRE AND TERMINATIONS (CONTINUED):

15. WIRE TERMINATIONS

15.1. SHALL BE HIGH PRESSURE CRIMPS ON ALL ALUMINUM CABLE. CRIMPS MUST BE RATED FOR THE SPECIFIC APPLICATION AND WIRE TYPE UNLESS APPROVED OTHERWISE.

15.2 ANTI-OXIDIZING COMPOUND MUST BE USED ON ALL ALUMINUM TERMINATIONS.

15.3. STRANDED COPPER WIRE 10 AWG & LESS REQUIRES THE USE OF COMPRESSION TYPE TERMINATIONS UNLESS DEVICE IS RATED TO HANDLE THAT SIZE WIRE.

16. WHERE CONDUCTORS SIZE EXCEED THE RATING OF THE EQUIPMENT LUGS THE CONDUCTORS MAY TRANSITION EITHER USING ILSCO CLEAR TAPS OR POWER DISTRIBUTION BLOCKS OR BUTT SPLICES TO CONDUCTORS THAT WILL NOT EXCEED THE RATING OF THE EQUIPMENT LUGS. THE TRANSITION SHALL BE WITHIN 10' - 0" OF LUGS. THE SIZE OF TRANSITIONED CONDUCTORS SHALL BE SIZED TO MEET THE RATING OF THE OVERCURRENT PROTECTION DEVICES.

TRENCHING:

1. ALL TRENCHING SHALL BE DONE IN ACCORDANCE WITH PLANS AS SPECIFIED.
2. ALL TRENCHING SHALL MEET OR EXCEED NEC ARTICLE 300 MINIMUM COVER REQUIREMENTS.

A. DEPTH FROM GROUND LEVEL TO TOP OF CLEAN FILL (SCREENINGS OR EQUIVALENT) 24" BELOW FINISHED GRADE, MINIMUM.

B. SHALL HAVE A MINIMUM OF 4" OF SCREENINGS OR EQUIVALENT UNDER CONDUIT AND A MINIMUM OF 4" ABOVE. DIRECT BURIED WIRE, WHEN ALLOWED, WILL REQUIRE 6" OF SCREENINGS ABOVE AND 6" BELOW.

C. METALLIC TRACER TAPE SHALL BE USED WHICH STATES THE FOLLOWING: "CAUTION: BURIED ELECTRIC LINE BELOW", TAPE SHALL BE LOCATED APPROX. 12" BELOW GRADE.

3. TRENCHES MAY HAVE TO BE LEFT OPEN OVERNIGHT FOR INSPECTION PURPOSES. IF THIS IS THE CASE, PRECAUTIONS MUST BE TAKEN TO ASSURE THAT A PERSON OR OBJECT CAN NOT FALL INTO THE TRENCH. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SECURE THE TRENCH IN SUCH A MANNER TO PREVENT THIS FROM HAPPENING. CONTRACTOR SHOULD BE FAMILIAR WITH OSHA STANDARDS AND EMPLOY THE SAME.
4. TRENCHES WHICH MAY HAVE TO BE LEFT OPEN FOR AN EXTENDED PERIOD OF TIME SHALL FOLLOW # 3 ABOVE AND THE SIDEWALLS SHALL BE SECURED TO PREVENT COLLAPSE. TRENCH TOP SHALL BE COVERED TO PREVENT WATER, SNOW, AND DEBRIS FROM ENTERING AS WELL.
5. PICTURES SHALL BE TAKEN OF ALL PHASES OF THE TRENCHING AND PUT IN JOB BINDER.
6. APPROPRIATE INSPECTIONS SHALL BE MADE BY AHJ BEFORE CLOSING TRENCH.
7. RECORD DRAWINGS SHOWING THE EXACT LOCATION OF TRENCHES SHALL BE DRAWN UP BY CONTRACTOR AND PUT IN JOB BINDER. (ON "MASTER PLAN")
8. FINISH GRADING MUST BE EQUIVALENT TO THE ORIGINAL CONDITION OF THE GROUND PRIOR TO TRENCHING OR SPECIFICATION GIVEN. TRENCH SHALL BE COMPACTED (TAMPED) AT 8" DEPTH INTERVALS, TO ASSURE THAT THE TRENCH DOES NOT ALTER THE GROUND LEVEL INTEGRITY.
9. DO NOT DIG WITHOUT THE PROPER AUTHORIZATION PAPERWORK IN ORDER. CONTRACTOR SHALL OBTAIN THE SERVICES OF AN INDEPENDENT TESTING COMPANY FOR LOCATING AND THE IDENTIFYING OF ALL UNDERGROUND SITE UTILITIES IN THE AREAS OF PROPOSED EXCAVATION AND SHALL BE RESPONSIBLE FOR ANY DAMAGE OF EXISTING SITE UTILITIES OR SIMILAR.

ABBEVIATIONS:

A - AMPS
A.C. (AC) - ACTUATING CURRENT
AFG - ABOVE FINISHED GRADE
AHJ - AUTHORITY HAVING JURISDICTION
AWG - AMERICAN WIRE GAUGE
BFG - BELOW FINISHED GRADE
C - CONDUIT
Co. - COMPANY
D.C. (DC) - DIRECT CURRENT
DISC. - DISCONNECT
EC - ELECTRICAL CONTRACTOR
EMT - ELECTRICAL METALLIC TUBING
EX. - EXTERIOR
F - FURNISHED BY
GRD - GROUND
HV - HIGH VOLTAGE
I - INSTALLED BY
kW - KILOWATTS
kWh - KILOWATTS PER HOUR
LFMC - LIQUIDTIGHT FLEXIBLE METAL CONDUIT
LV - LOW VOLTAGE
MAX. - MAXIMUM
MIN. MINIMUM
MV - MEDIUM VOLTAGE
NEC - NATIONAL ELECTRIC CODE
NFPA - NATIONAL FIRE PROTECTION ASSOCIATION
OH - OVERHEAD LINE
PH - PHASE
PV - PHOTOVOLTAIC
PVC - POLYVINYLCHLORIDE
RGS - RIGID GALVANIZED STEEL
SPD - SURGE PROTECTION DEVICE
TYP. - TYPICAL
UL - UNDERWRITERS LABORATORIES
UV - ULTRA VIOLET
V - VOLTS
W - WATTS
Wi - WIRED BY

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- [ ] INTERCONNECTION
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- [ ] CONSTRUCTION
- [ ] RECORD

REV. #	DESCRIPTION:	DATE
0	PERMIT SET ISSUED	09-14-2021
1	LAYOUT REVISED	09-27-2021

DRAWING NAME
CONSTRUCTION NOTES (CONTINUED)

DRAWING NUMBER
G003

GROUNDING AND BONDING:

1. ALL MATERIALS REQUIRED FOR A COMPLETE GROUNDING INSTALLATION SHALL BE FURNISHED. GROUNDING COMPONENTS SHALL INCLUDE GROUND RODS, GROUND CONDUCTOR, GROUND BUS, ABOVE AND BELOW GRADE GROUNDING CONNECTIONS, GROUNDING LUGS, AND ANY OTHER HARDWARE REQUIRED FOR A COMPLETE GROUNDING SYSTEM.

2. ALL GROUNDING SHALL BE COMPLIANT WITH NEC AND AS REQUIRED BY IEEE, NEC, NESC AND APPLICABLE LOCAL CODES.

3. SUITABLE GROUNDING FACILITIES SHALL BE FURNISHED ON ELECTRICAL EQUIPMENT NOT SO EQUIPPED. THE GROUNDING FACILITIES SHALL CONSIST OF COMPRESSION TYPE TERMINAL CONNECTORS BOLTED TO THE EQUIPMENT FRAME OR ENCLOSURE.

4. THE CONDUIT SYSTEM IS NOT CONSIDERED TO BE A GROUNDING CONDUCTOR. NO EQUIPMENT GROUNDING CONDUCTOR SHALL BE SMALLER IN SIZE THAN 12 AWG, UNLESS IT IS A PART OF AN ACCEPTABLE CABLE ASSEMBLY.

5. GROUNDING SHALL COMPLY WITH THE NEC AND THE EQUIPMENT MANUFACTURER'S APPROVED TESTED PROCEDURE.

6. ALL ASSOCIATED EQUIPMENT, RACKS, FENCING COMBINERS, INVERTERS AND SIMILAR COMPONENTS SHALL BE ELECTRICALLY BONDED WITH APPROPRIATELY RATED WIRE, LUGS, CRIMPS &CONNECTORS.

7. ALL GROUNDING TERMINATIONS SHALL BE TIGHTENED TO APPROPRIATE TORQUE.

8. EACH ARRAY / ROW OF MODULES SHALL BE BONDED TO EACH OTHER AND THE ASSOCIATED EQUIPMENT GROUND. GROUNDING CONDUCTORS SHALL BE COPPER, SIZED PER NEC AND SHOWN ON THE PLANS.

9. GROUND RODS SHALL BE DRIVEN IN AT EACH COMBINER BOX (GROUND MOUNT ONLY) AND INVERTER. (USE SIZE SPECIFIED)

10. ALL WIRING SHALL BE SECURED UNDER ARRAY SO THERE IS NO HANGING OR DROOPING WIRES. ARRAY GROUNDING WIRES SHOULD BE INSULATED #6 AWG SOLID COPPER WIRE WITH A SUNLIGHT RESISTANT 90 DEGREE RATING (USE-2 OR EQUIVALENT).

11. CAREFUL MODULE LAYOUT SHOULD BE EMPLOYED FOR MOST EFFECTIVE MEANS OF WIRING AND NEAT WORKMANSHIP.

12. PV MODULES SHALL BE PROPERLY GROUNDED. MODULES SHALL BE GROUNDED WITH APPROPRIATE LUGS OR EQUIPMENT GROUNDING WASHERS (WEEBS) ON EACH MODULE AND MOUNTING RAILS TO OBTAIN CONTINUITY.

13. PROVIDE BONDING STRAPS AT ALL EXPANSION FITTINGS ON CABLE TRAYS AND ON RUNS OF CONDUIT THAT REQUIRE AN EXPANSION FITTING.

14. GROUND RODS SHALL BE COPPER CLAD, COLD DRAWN CARBON STEEL, MANUFACTURED IN ACCORDANCE WITH UL 467. THE COPPER CLADDING SHALL BE ELECTROLYTICALLY BONDED TO THE STEEL ROD OR BONDED BY A MOLTEN WELDING PROCESS. INDIVIDUAL GROUND RODS SHALL BE 3/4 INCH DIAMETER AND 10 FEET LONG. STAINLESS STEEL GROUND RODS SHALL BE INSTALLED WHERE SOILS CONDITIONS ARE CONSIDERED TO BE CORROSIVE OR CATHODIC PROTECTION INVOKED FOR PRESERVATION OF MATERIALS. GROUND RODS SHALL BE TYPE ERITECH AS MANUFACTURED BY ERICO, OR EQUIVALENT APPROVED BY THE ENGINEER

15. EXOTHERMAL CONNECTIONS SHALL BE A STANDARD DUTY COPPER MOLTEN WELD CONFORMING TO THE REQUIREMENTS OF IEEE 80. MOLDS AND POWDER CARTRIDGES USED FOR MAKING EXOTHERMAL CONNECTIONS SHALL BE FURNISHED BY THE SAME MANUFACTURER. EXOTHERMAL CONNECTIONS SHALL BE SIMILAR TO TYPE CADWELD AS MANUFACTURED BY ERICO, OR AN EQUIVALENT APPROVED BY SYSTEM OWNER.

16. GROUND LUGS SHALL BE SINGLE HOLE OR TWO HOLE, COMPLIANT WITH NEC BASED ON THE APPLICATION, AND COMPLIANT WITH THE COMMISSIONING CRITERIA FOR DISSIMILAR METALS. COPPER BARS CONFORMING TO THE REQUIREMENTS OF IEEE 837 AND UL 467. GROUND LUGS USED WITH THE EXOTHERMAL WELD PROCESS SHALL BE SIMILAR TO TYPE LA AS MANUFACTURED BY ERICO, OR AN SYSTEM OWNER ACCEPTABLE EQUAL. GROUND LUGS USED WITH THE COMPRESSION PROCESS SHALL BE SIMILAR TO TYPE YGHA AS MANUFACTURED BY BURNDY ELECTRICAL, OR AN SYSTEM OWNER ACCEPTABLE EQUAL.

17. GROUNDING (MEDIUM VOLTAGE AC COLLECTION SYSTEM): A MINIMUM OF 2/0 AWG BARE OR COATED COPPER GROUNDING CONDUCTOR, IN NON-CORROSIVE SOILS, SHALL BE INSTALLED IN THE SAME TRENCH, CONDUIT, OR RACEWAY AS THE AC COLLECTOR SYSTEM CABLES. IN CORROSIVE SOILS, AN APPROPRIATE GROUND (E.G., INSULATED CABLE OR TINNED COPPER GROUNDING CONDUCTOR) SHALL BE USED IN PLACE OF THE BARE COPPER GROUNDING CONDUCTOR.

18. GROUND SYSTEM RESISTANCE MEASUREMENTS:

    18.1. ALL GROUND RESISTANCE MEASUREMENTS SHALL BE MADE WITH THE FALL OF POTENTIAL OR SLOPE METHODS AS DEFINED IN IEEE 81.
    18.2. AFTER CONNECTION OF GROUND RODS TO THE GROUND SYSTEM, CONTRACTOR SHALL OBTAIN A GROUND RESISTANCE MEASUREMENT FROM A SELECTED LOCATION ON THE GROUND GRID, USING METHODS APPROVED BY THE SYSTEM OWNER. THIS DATA SHALL BE OBTAINED, IDENTIFIED AND RECORDED.
    18.3. THE GROUND RESISTANCE MEASUREMENT DATA MAY INDICATE THAT ADDITIONAL GROUND RODS ARE REQUIRED. CONTRACTOR SHALL FURNISH, INSTALL, AND CONNECT ADDITIONAL GROUND RODS AS NECESSARY.

19. GROUNDING COMMISSIONING: SYSTEM GROUNDING CONTRACTOR SHALL ENSURE THAT ALL COMPONENTS ARE PROPERLY GROUNDED ACCORDING TO DESIGN AND SPECIFICATIONS. GROUNDING CONNECTIONS SHALL BE INSPECTED BY AN AHJ OR OTHER INDEPENDENT QUALITY CONTROL INSPECTOR TO VERIFY PROPER INSTALLATION OF ALL COMPRESSION CLAMPS, cad WELDS, AND MECHANICAL CONNECTIONS. THE DC AND AC SYSTEM GROUNDINGS SHALL CONFORM TO ALL APPLICABLE CODES AND STANDARDS. VISUAL INSPECTIONS OF THE GROUNDING SYSTEMS SHALL BE DOCUMENTED IN A REPORT THAT INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING VERIFICATIONS:

    19.1. RACKING POSTS GROUNDED PER SPECIFICATIONS AND CONNECTED TO SYSTEM GRID.
    19.2. ALL CONNECTIONS VISUALLY VERIFIED.
        19.2.1. MECHANICAL ATTACHMENT: ANTI-OXIDATION COATINGS APPLIED, AS REQUIRED.
        19.2.2. LUGS FULLY SEATED.
        19.2.3. WHIP INSTALLED PER MANUFACTURER'S REQUIREMENTS.
        19.2.4. CONNECTIONS TO GROUNDING GRID INSPECTED: CAD WELDS, COMPRESSION CLAMPS.
    19.3. GROUNDING RODS
        19.3.1. RODS SET TO DEPTH PER AHJ.
        19.3.2. CLAMP FULLY ENGAGED.
        19.3.3. WHIP/CABLE FULLY ENGAGED.

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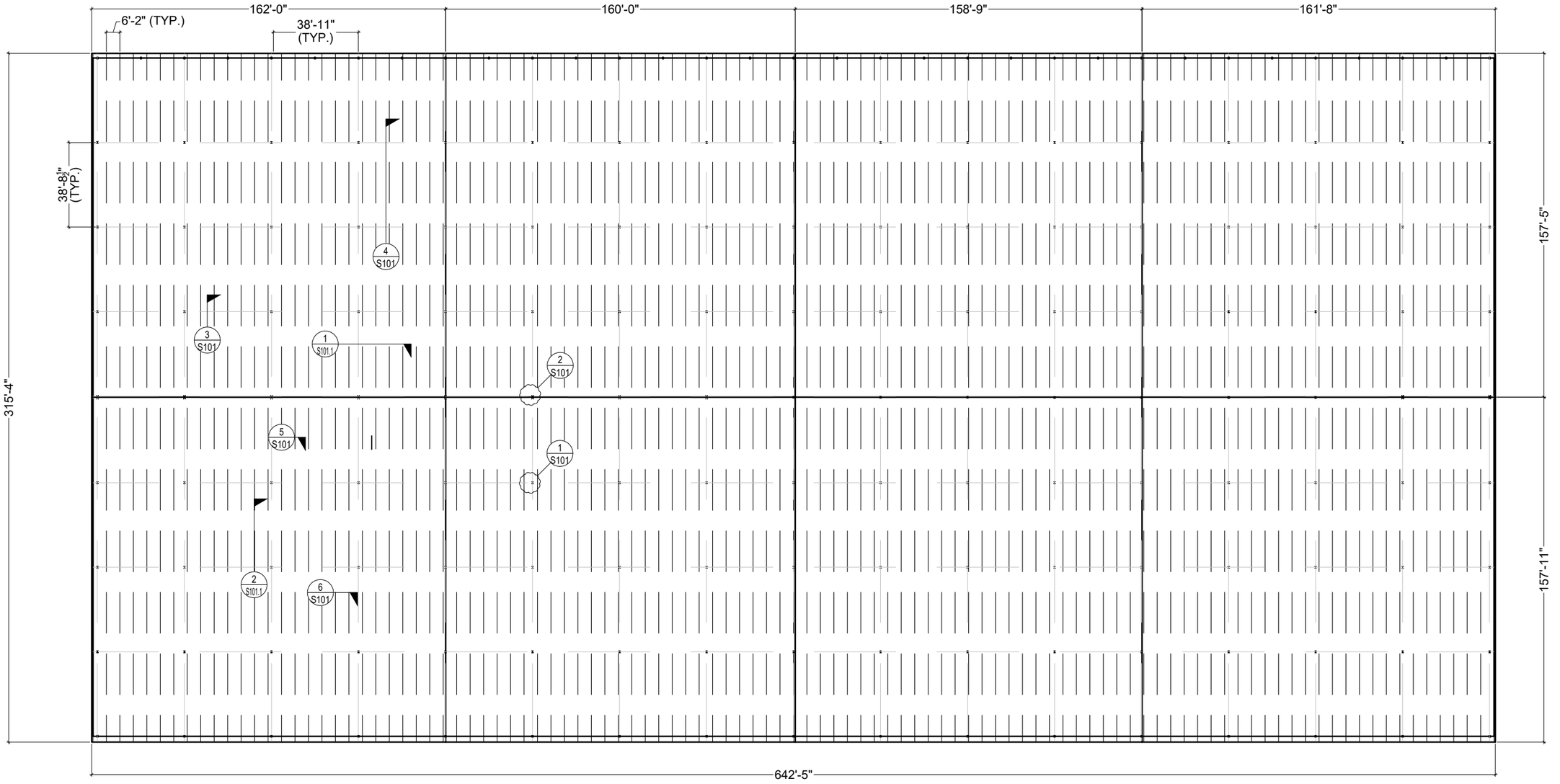
1	LAYOUT REVISED	09-27-2021

DRAWING NAME
CONSTRUCTION NOTES (CONTINUED)

DRAWING NUMBER
G004



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DRAWING NAME
BUILDING OVERVIEW

DRAWING NUMBER
S100

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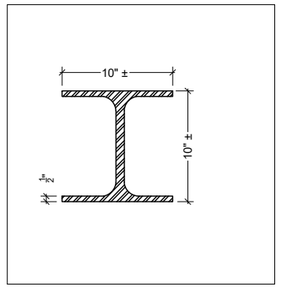

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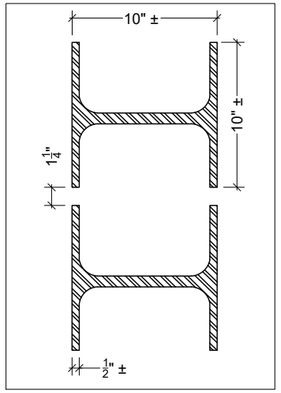

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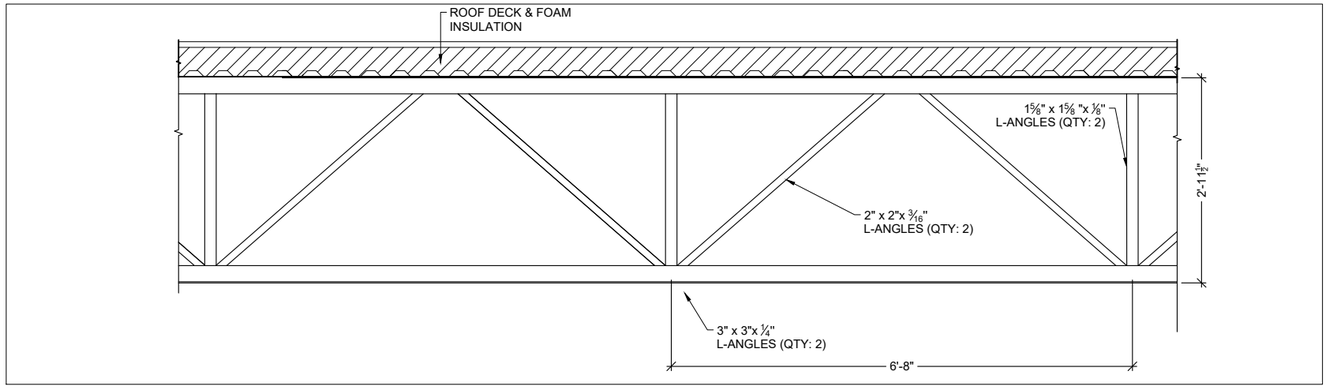

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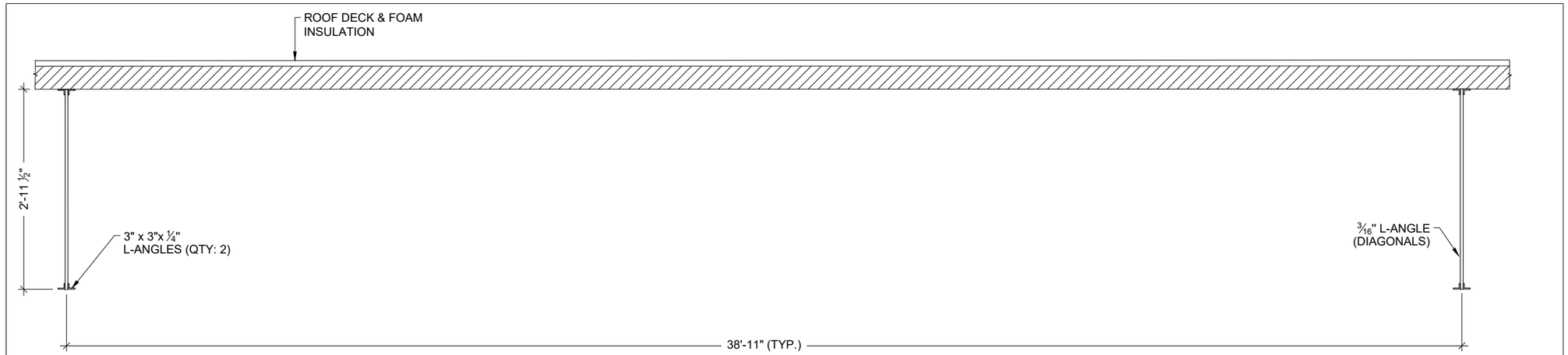

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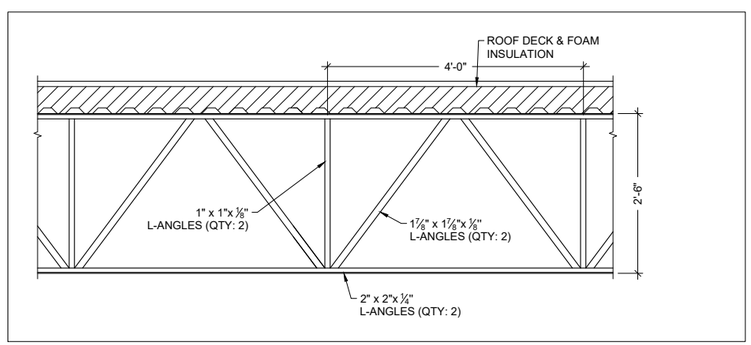

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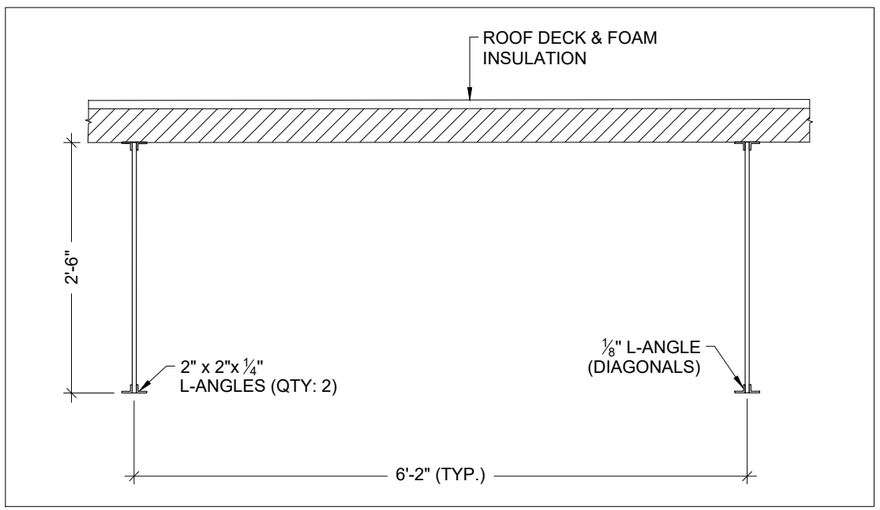

6 S101 EX STEEL DETAIL (SECTION)

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EXISTING STRUCTURAL LAYOUT & DETAILS

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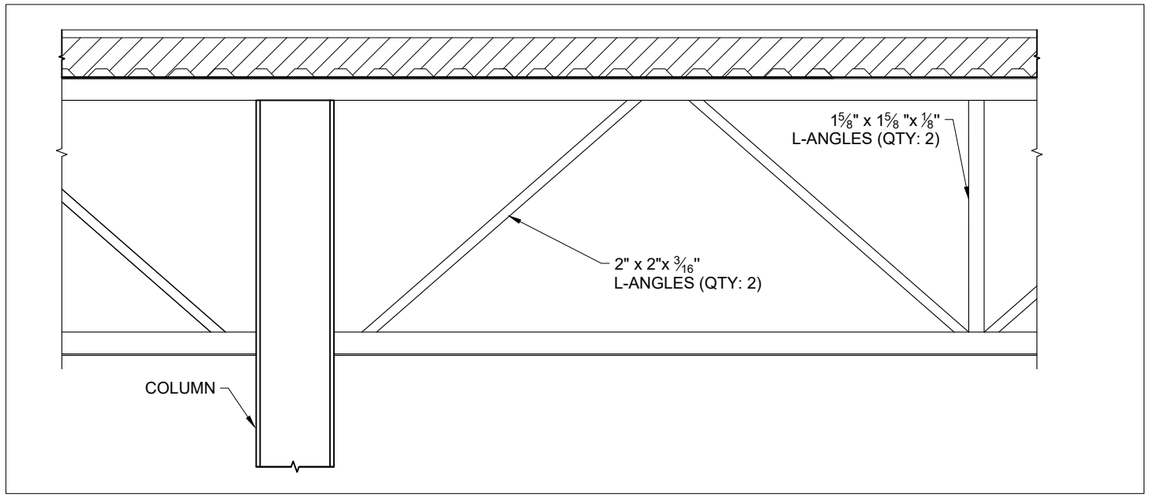
S101



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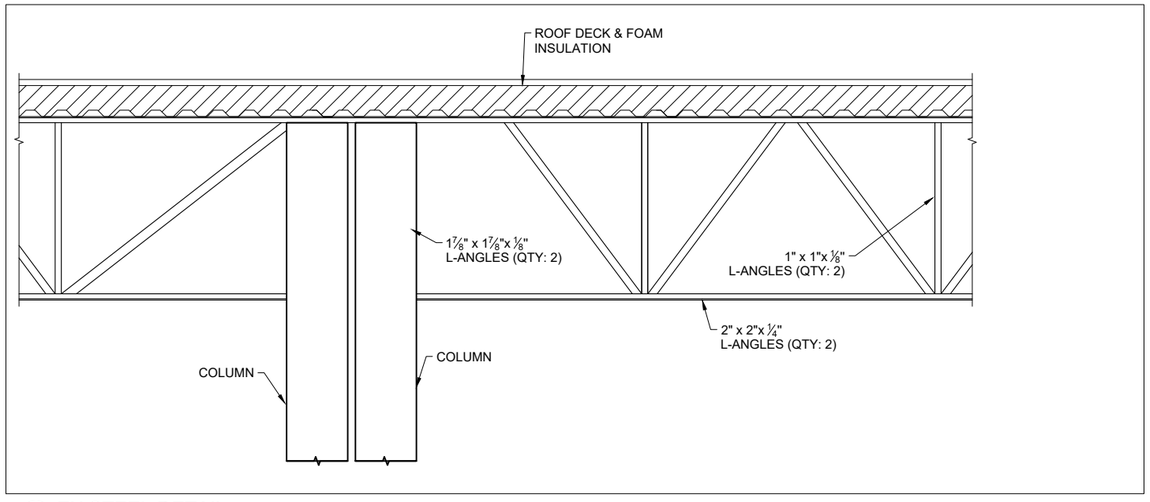

2 S101.1 EX STEEL DETAIL
(PURLIN SECTION)

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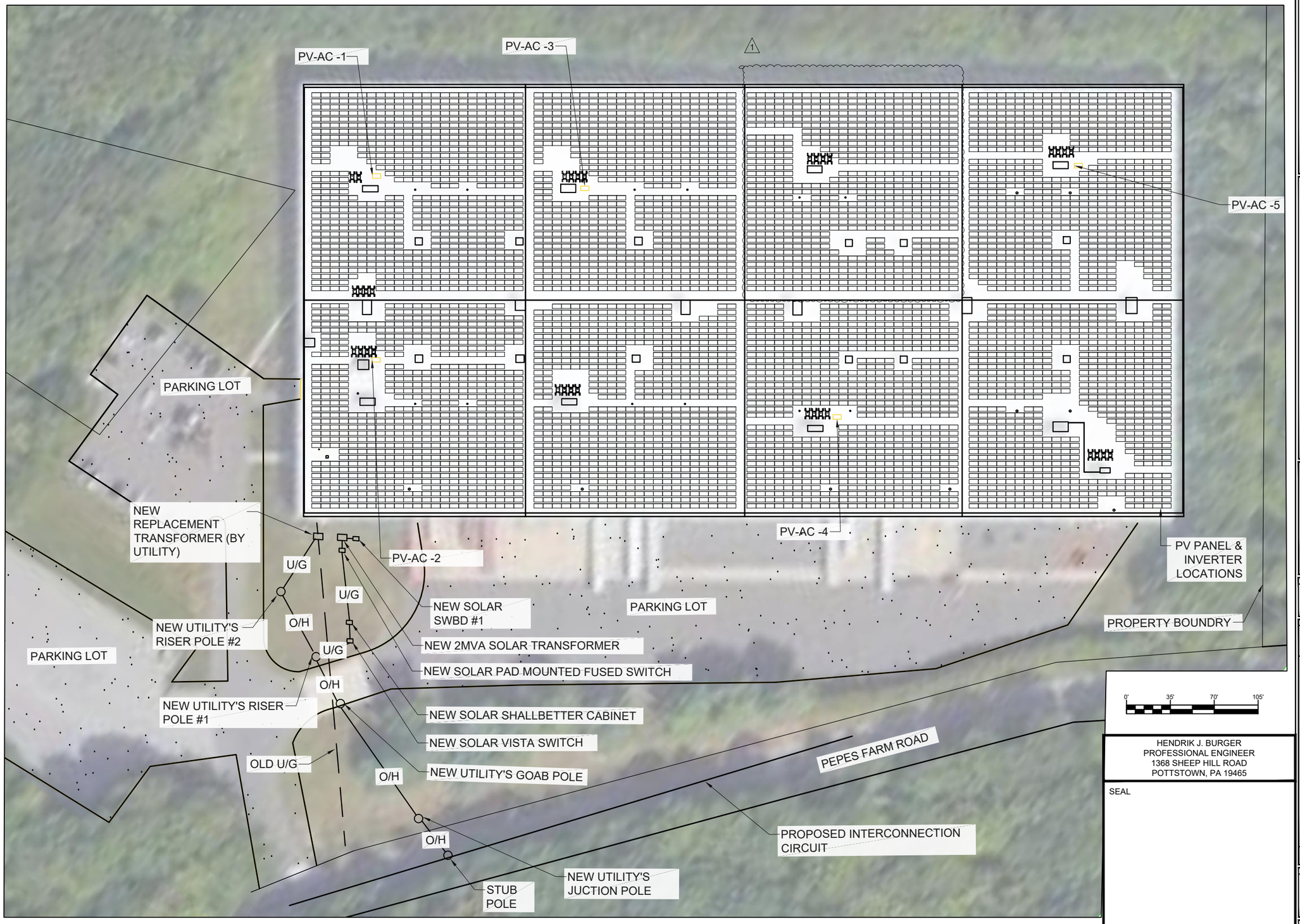

0' 35' 70' 105'

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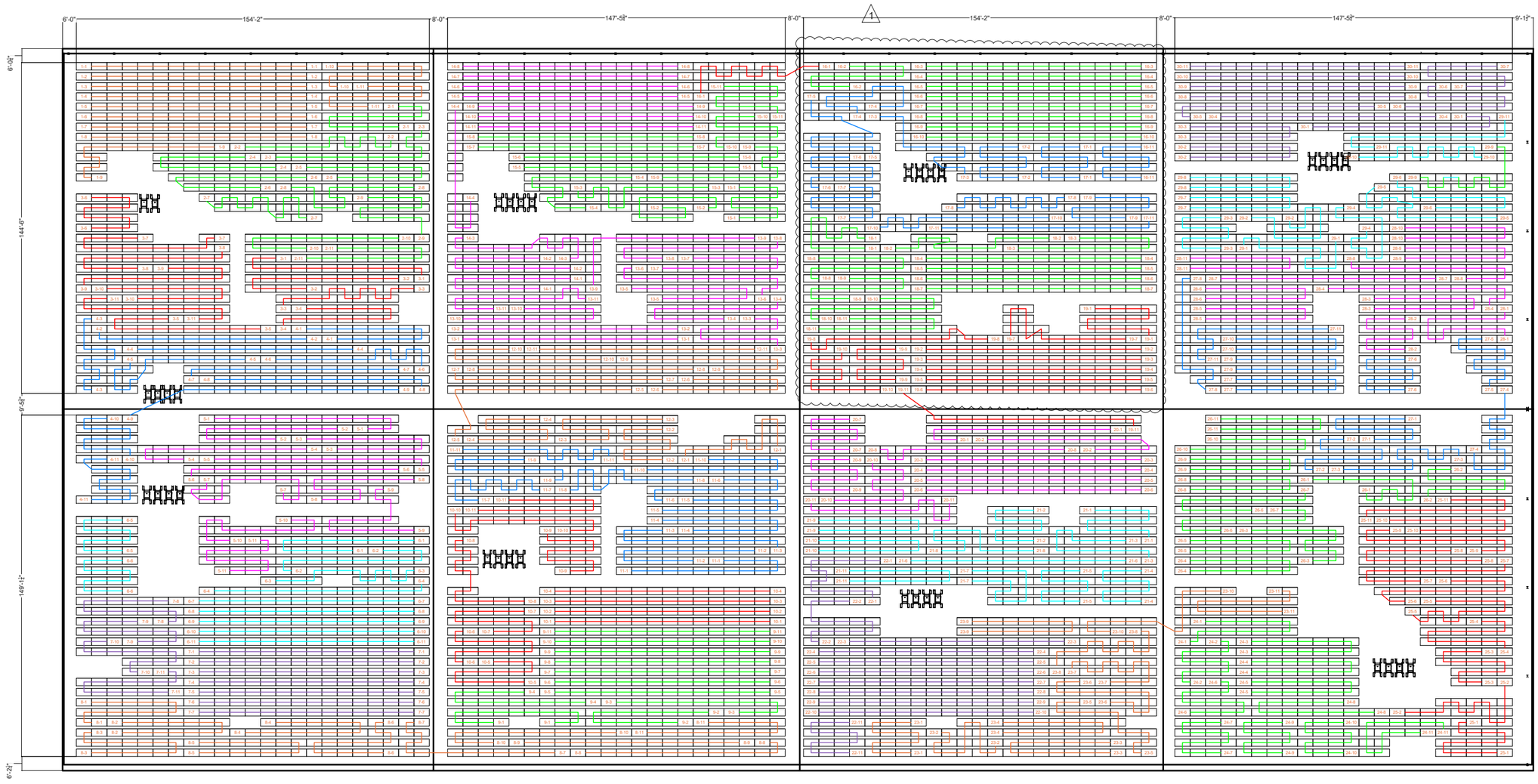
DRAWING NAME

PV PANEL & EQUIPMENT LAYOUT

DRAWING NUMBER

E100



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PV PANEL & EQUIPMENT LAYOUT

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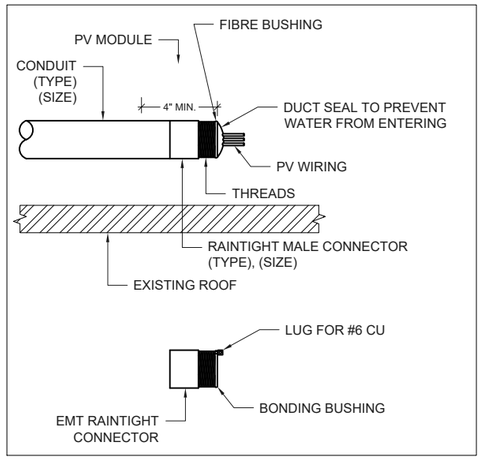
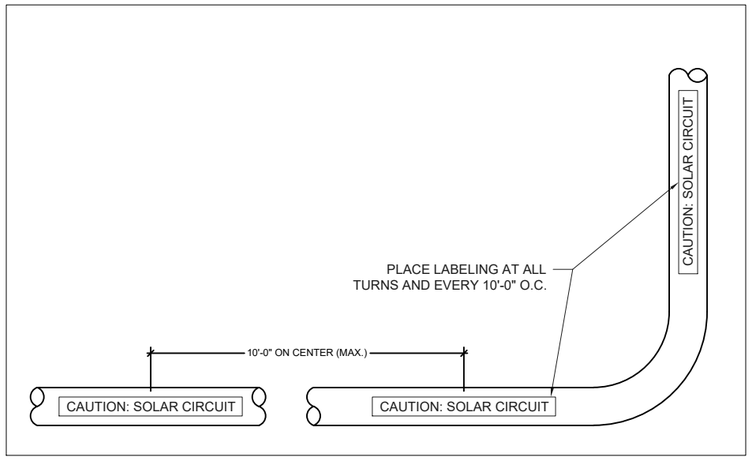
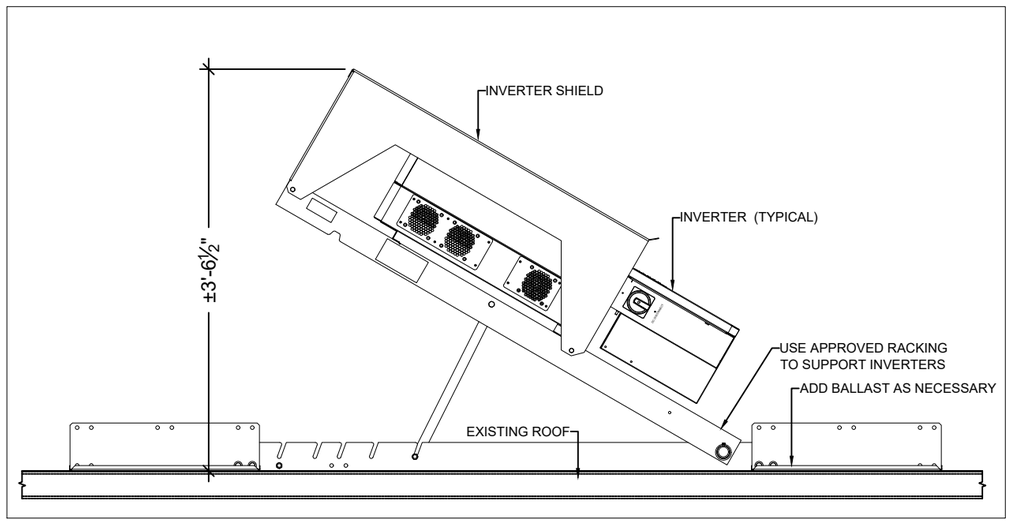
E100.1



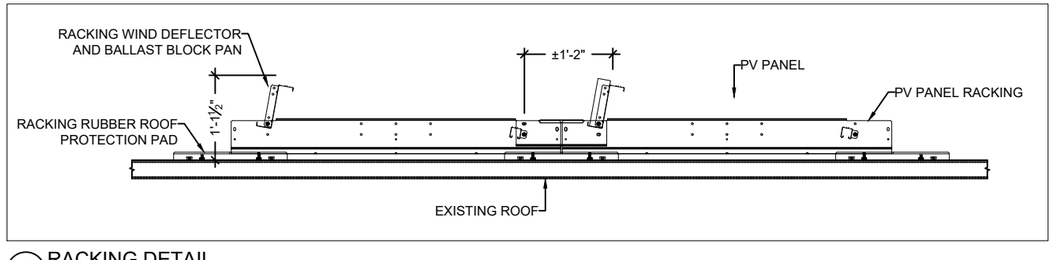
1 E101 **CONDUIT ROUTING DETAIL**
(UNDER PANEL DETAIL)



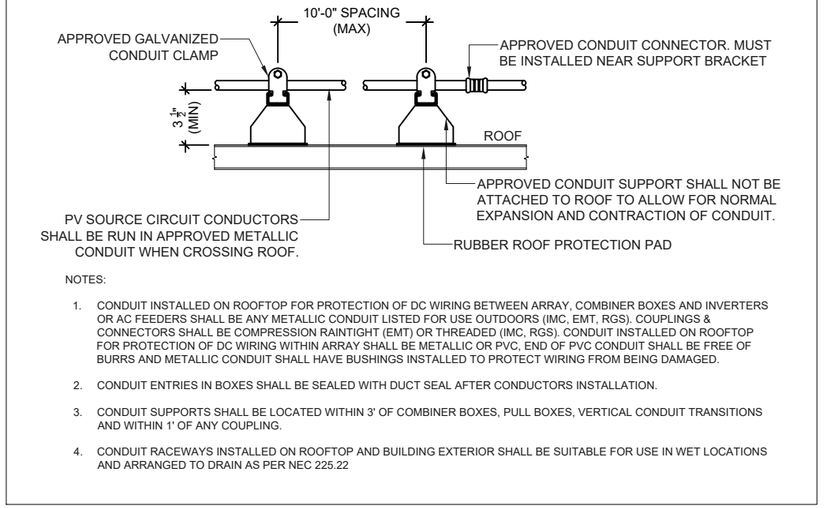
2 E101 **CONDUIT ROUTING DETAIL (TYP.)**
(ON ROOF DETAIL)



6 E101 **INVERTER RACKING DETAILS (TYP.)**
(ON GROUND LEVEL)



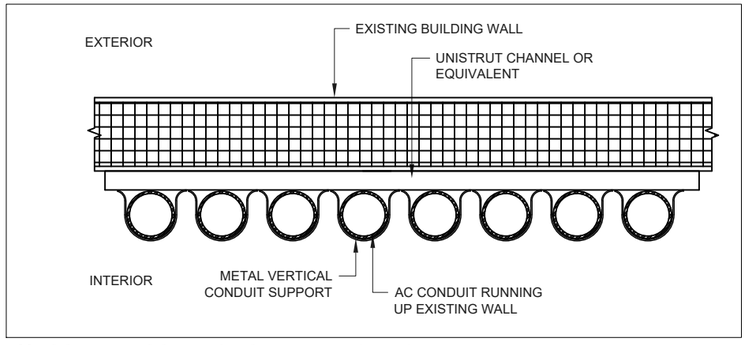
7 E101 **RACKING DETAIL**
(TYPICAL)



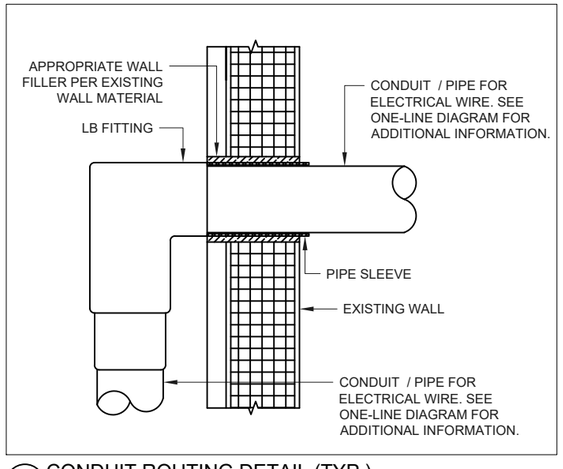
NOTES:

1. CONDUIT INSTALLED ON ROOFTOP FOR PROTECTION OF DC WIRING BETWEEN ARRAY, COMBINER BOXES AND INVERTERS OR AC FEEDERS SHALL BE ANY METALLIC CONDUIT LISTED FOR USE OUTDOORS (IMC, EMT, RGS). COUPLINGS & CONNECTORS SHALL BE COMPRESSION RAINTIGHT (EMT) OR THREADED (IMC, RGS). CONDUIT INSTALLED ON ROOFTOP FOR PROTECTION OF DC WIRING WITHIN ARRAY SHALL BE METALLIC OR PVC, END OF PVC CONDUIT SHALL BE FREE OF BURRS AND METALLIC CONDUIT SHALL HAVE BUSHINGS INSTALLED TO PROTECT WIRING FROM BEING DAMAGED.
2. CONDUIT ENTRIES IN BOXES SHALL BE SEALED WITH DUCT SEAL AFTER CONDUCTORS INSTALLATION.
3. CONDUIT SUPPORTS SHALL BE LOCATED WITHIN 3' OF COMBINER BOXES, PULL BOXES, VERTICAL CONDUIT TRANSITIONS AND WITHIN 1' OF ANY COUPLING.
4. CONDUIT RACEWAYS INSTALLED ON ROOFTOP AND BUILDING EXTERIOR SHALL BE SUITABLE FOR USE IN WET LOCATIONS AND ARRANGED TO DRAIN AS PER NEC 225.22

3 E101 **CONDUIT CONNECTION DETAIL (TYP.)**
(ON ROOF DETAIL)



4 E101 **CONDUIT CONNECTION DETAIL (TYP.)**
(WALL CONNECTION DETAIL)



5 E101 **CONDUIT ROUTING DETAIL (TYP.)**
(WALL PENETRATION DETAIL)

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STAG INDUSTRIAL HOLDINGS
40 PEPES FARM ROAD
MILFORD, CT 06460

HENDRIK J. BURGER
PROFESSIONAL ENGINEER
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SEAL

DRAWING ISSUE
- [ ] INTERCONNECTION
- [x] PERMITTING
- [ ] CONSTRUCTION
- [ ] RECORD

REV. #	DESCRIPTION:	DATE
0	PERMIT SET ISSUED	09-15-2021
1	LAYOUT REVISED	09-27-2021

DRAWING NAME
INVERTER, RACKING & CONDUIT DETAILS

DRAWING NUMBER
E101

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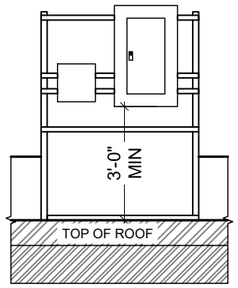
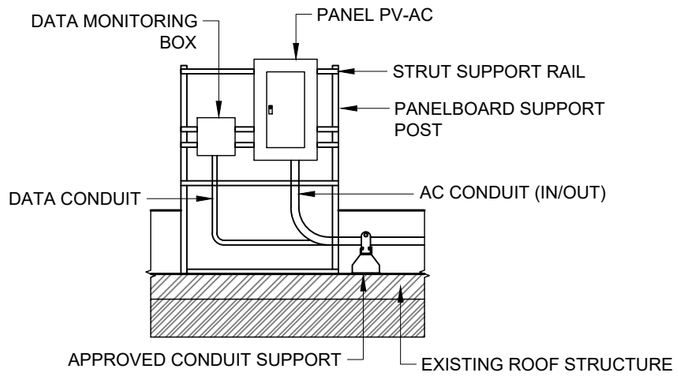
2 LOCATIONS



PANELBOARD STRUCTURAL SUPPORT TO BE DESIGNED BY CONTRACTOR TO ADEQUATELY SUPPORT EQUIPMENT & RESIST LATERAL MOVEMENT DUE TO WIND LOADS. FINAL SIZING TO BE FIELD VERIFIED IN CONJUNCTION WITH PURCHASED EQUIPMENT.

1 E102 SUPPORT RACKING (TYP.)
(FOR PANELBOARD & DATA MONITOR)

2 LOCATIONS



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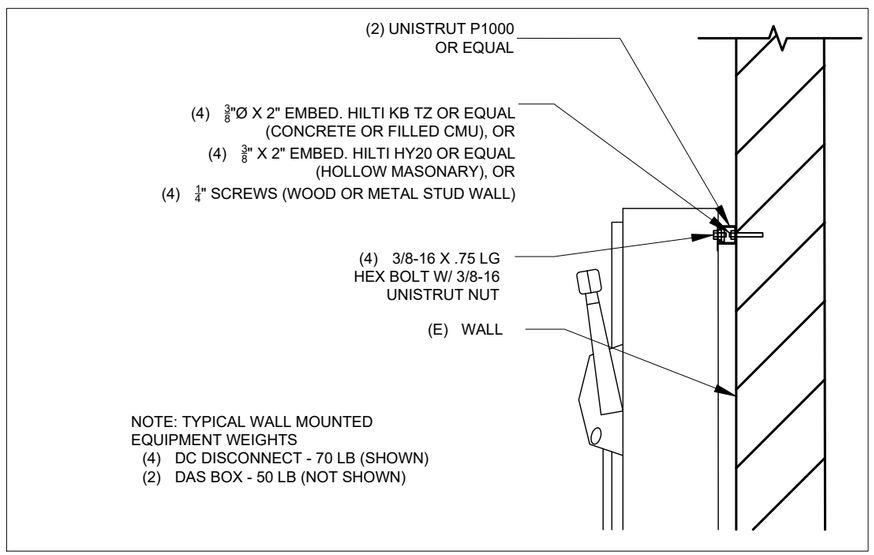
2 E102 SUPPORT RACKING (TYP.)
(FOR PANELBOARD & DATA MONITOR)



3 E102 WALL MOUNTED EQUIPMENT ANCHOR
(FOR PANELBOARD & DATA MONITOR)

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DRAWING ISSUE
- [ ] INTERCONNECTION
- [x] PERMITTING
- [ ] CONSTRUCTION
- [ ] RECORD

NO. #	DESCRIPTION	DATE
0	PERMIT SET ISSUED	09-14-2021
1	LAYOUT REVISED	09-27-2021

DRAWING NAME
PANELBOARD SUPPORT DETAILS

DRAWING NUMBER
E102

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GENERATION SUMMARY

NET OUTPUT: 1500.0 kW
1500.0 kW @ 100% PF = 62.75amps @ 13.8kV

INVERTER'S VOLTAGE RIDE THROUGH SETTINGS		
RIDE-THROUGH VOLTAGE %	OPERATION MODE	RIDE-THROUGH TIME (SECONDS)
V>120	CEASE TO ENERGIZE	N/A
117.5<V<=120	PERMISSIVE OPERATION	0.2
115<=V<=117.5	PERMISSIVE OPERATION	0.5
110<V<115	PERMISSIVE OPERATION	1
88<=V<=110	CONTINUOUS OPERATION	INFINITE
45<=V<0.65	PERMISSIVE OPERATION	0.32
30<V<45	PERMISSIVE OPERATION	0.16
V<30	CEASE TO ENERGIZE	N/A

INVERTER'S FREQUENCY RIDE THROUGH SETTINGS		
FREQUENCY RANGE (HZ)	OPERATION MODE	RIDE-THROUGH TIME (SECONDS)
f>62.0	N/A	N/A
61.2<f<=61.8	MANDATORY OPERATION	299
58.8<=f<=61.2	CONTINUOUS OPERATION	INFINITE
57.0<=f<=58.8	MANDATORY OPERATION	299
f<57.0	N/A	N/A

INVERTER FREQUENCY AND VOLTAGE PROTECTION SETTINGS			
DEVICE	TRIP SETTING	VALUE	TRIP TIME
27-1	50%	139V	1.1 SEC.
27-2	88%	244V	2.00 SEC.
59-1	110%	304V	2.00 SEC.
59-2	120%	332V	0.16 SEC.
81U-1		56.5HZ	0.16 SEC.
81U-2		58.5HZ	300 SEC.
81O-1		61.2HZ	300 SEC.
81O-2		62.0HZ	0.16 SEC.

NOTE:

1. INVERTERS TO BE UL1741 LISTED.
2. SEL 351A RELAY TO TRIP THE MAIN CIRCUIT BREAKER FOR ANSI 27,59,810,814,51C,51 N-C FUNCTIONS RELAY TO TRIP THE MAIN CIRCUIT BREAKER ON RELAY FAILURE OR LOSS OF THE DC SUPPLY VOLTAGE TO RELAY DC SYSTEM TROUBLE, AC SYSTEM TROUBLE(MAX 2 SEC DELAY).
3. E.C. SHALL VERIFY LOCATION/SIZE OF BONDING JUMPER, GROUNDING ELECTRODES AND GROUNDING ELECTRODES CONDUCT AT SERVICE ENTRANCE.
4. THE A.I.C. RATING OF THE PV- AC DISCONNECT SWITCH SHALL BE COORDINATED WITH THE RATING OF THE EXISTING PANEL AND UTILITY COMPANY.
5. COORDINATE METERING REQUIREMENTS WITH UTILITY COMPANY, UTILITY Co. SHALL INSTALL A NET METER.
6. ABB FT-1, OR EQUIVALENT TEST SWITCHES ISOLATING INPUTS AND OUTPUTS OF THE RELAY.
7. CHARGER & 8HR BATTERY BACKUP POWER.
8. UPS/BATTERY CHARGES 120V IN- 120V OUT, 3KVA.
9. DUPLEX RECEPTABLE(GFI) (WEATHER RESISTANT).
10. SURGE PROTECTION DEVICE, 160kA SPD, EATON SPD160 480Y-1-K OR EQUAL.
11. THE INVERTERS ARE EUIPPED WITH RAPID SHUTDOWN TRANSMITTER FOR RAPID SHUTDOWN ACTIVATION OF MODULE LEVEL SHUTDOWN POWER ELECTRONICS (NEC 2017 690.12 RAPID SHUTDOWN COMPLIANT)
12. UI WILL OWN THE PT'S & CT'S - THE CUSTOMER OWNS THE SHALLBETTER CABINET, CONDUITS & FOUNDATION.

FREQUENCY AND VOLTAGE PROTECTION SETTINGS			
DEVICE	TRIP SETTING	VALUE	TRIP TIME
27-1	50%	60V	1.1 SEC.
27-2	88%	106V	2.00 SEC.
59-1	110%	132V	2.00 SEC.
59-2	120%	144V	0.16 SEC.
* 81U-1		56.5HZ	0.16 SEC.
* 81U-2		58.5HZ	300 SEC.
81O		62.0HZ	0.16 SEC.

*SETTINGS INCLUDE BREAKER CLEARING TIME

E200 ONE-LINE DIAGRAM

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DRAWING ISSUE
- [ ] INTERCONNECTION
- [x] PERMITTING
- [ ] CONSTRUCTION
- [ ] RECORD

REV.#	DESCRIPTION:	DATE
0	PERMIT SET ISSUED	08-15-2021
1	LAYOUT REVISED	08-27-2021

DRAWING NAME: ONE-LINE DRAWING

DRAWING NUMBER: E200

10/11/2021 10:29:37 AM

INVERTER FREQUENCY AND VOLTAGE PROTECTION SETTINGS			
DEVICE	TRIP SETTING	VALUE	TRIP TIME
27-1	50%	139V	0.16 SEC.
27-2	88%	244V	2.00 SEC.
59-1	110%	304V	1.00 SEC.
59-2	120%	332V	0.16 SEC.
81U-1		58.5HZ	100 SEC.
81U-2		57.0HZ	0.16 SEC.
81O		60.5HZ	0.16 SEC.

SYMBOL LEGEND

- MEDIUM VOLTAGE GANG OPERATED AIR BREAK SWITCH
- MEDIUM VOLTAGE FUSE CUT-OUT SWITCH
- MEDIUM VOLTAGE CIRCUIT BREAKER
- FUSE
- FUSE
- LV CIRCUIT BREAKER
- POTENTIAL TRANSFORMER
- CURRENT TRANSFORMER
- DISCONNECT SWITCH
- BATTERY
- O/H LINE WOOD POLE
- METERING
- O/H OVERHEAD LINE
- AC / DC INVERTER
- U/G UNDERGROUND LINE
- WIRE SYMBOL
- DUPLEX RECEPTACLE (GFI)
- 3 PHASE POWER TRANSFORMER (WYE GRD - WYE GRD)
- 3 PHASE POWER TRANSFORMER (DELTA GRD - WYE GRD)
- 4-POSITION T-BLADE SWITCH
- SURGE ARRESTER (MOV)
- GROUND CONNECTION
- GROUND BUSBAR
- NEUTRAL BUSBAR
- PV SOLAR MODULE
- 15KV CLASS 200A LOAD BREAK ELBOW
- TB TEST BLOCK

ONE-LINE LEGENDS & SETTINGS

E201

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REV. #	DESCRIPTION:	DATE
0	PERMIT SET ISSUED	09-15-2021
1	LAYOUT REVISED	09-27-2021

DRAWING NAME
ONE-LINE LEGENDS & SETTINGS

DRAWING NUMBER
E201

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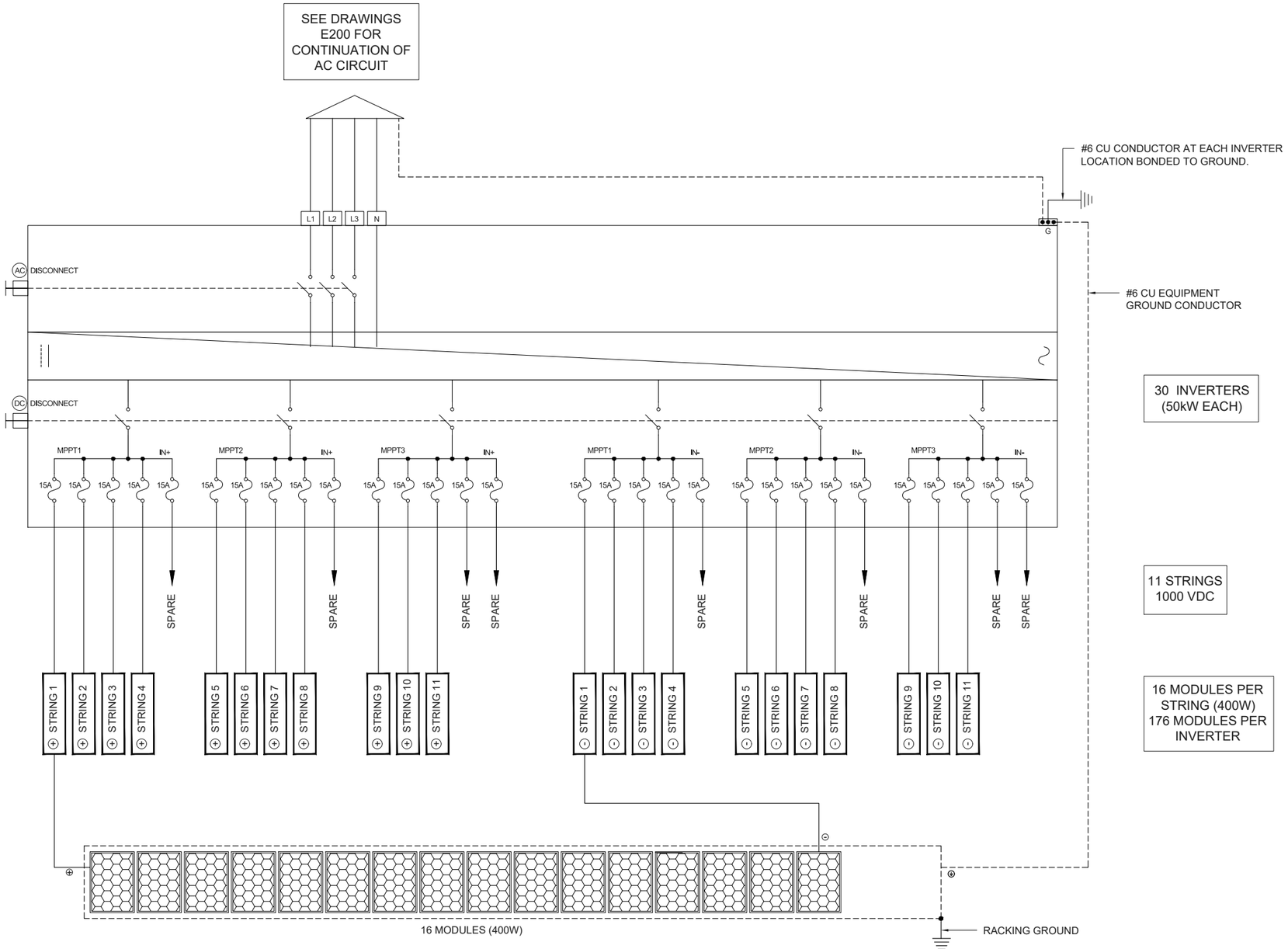

STRING LAYOUT & COMBINING ARCHITECTURE

E202 (FOR 18 PANELS)

NOTE:

PV ARRAY UNGROUNDED AND IN ACCORDANCE WITH NEC 690.35

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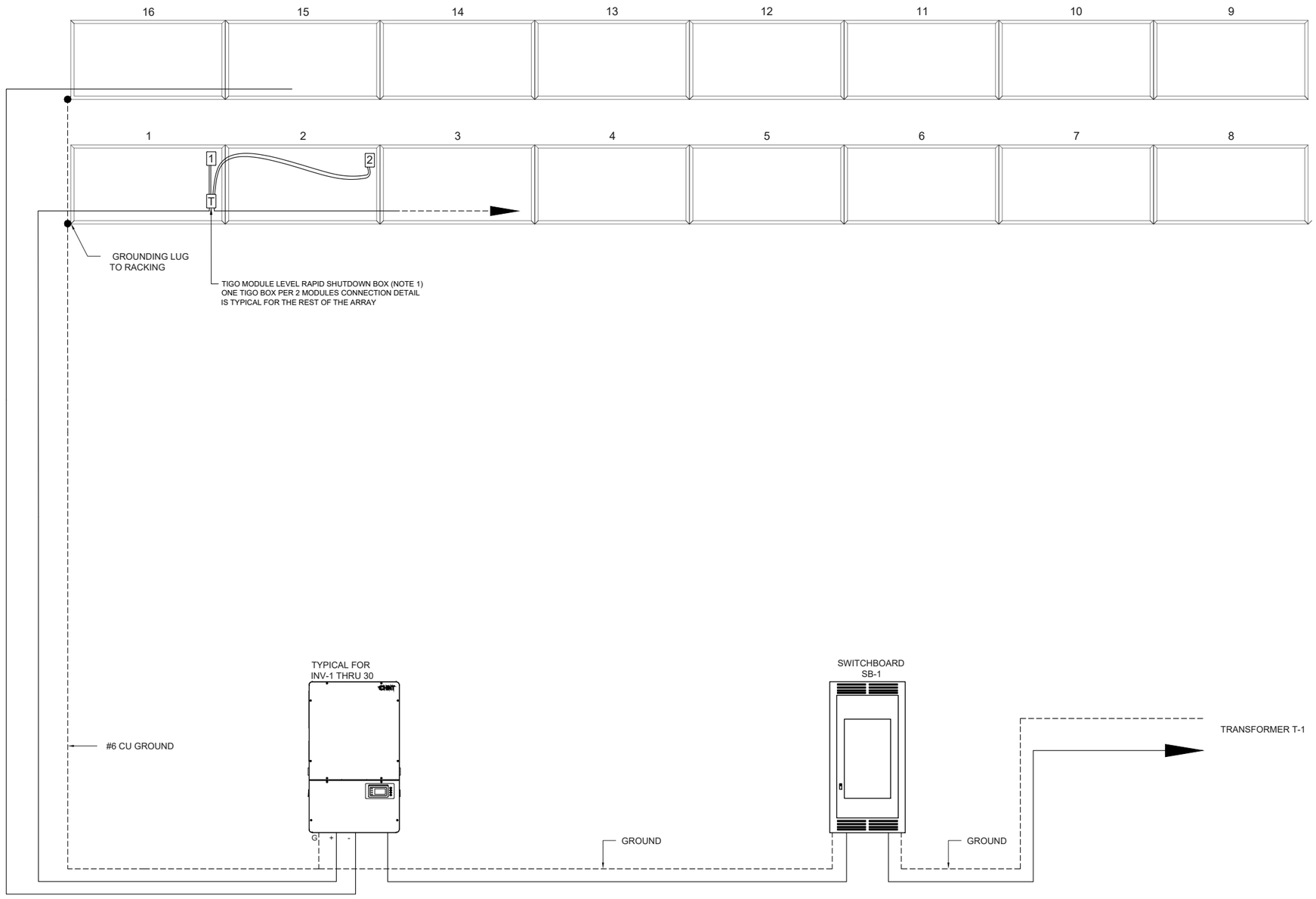
NO. #	DESCRIPTION:	DATE
0	PERMIT SET ISSUED	09-15-2021
1	LAYOUT REVISED	09-27-2021

DRAWING NAME
STRING LAYOUT & COMBINING ARCHITECTURE (FOR 16 PANELS)

DRAWING NUMBER
E202

TYPICAL FOR 11 STRINGS OF 16



NOTE 2:

PV WIRE INSTALLATION REQUIREMENT

INSTALLATION BEST PRACTICES FOR MODULE LEVEL RAPID SHUTDOWN SHUTDOWN

Recommended ✓	Avoid ✗
Run positives and negatives of strings and home runs together	Do not separately run all positives together and all negatives together
Keep conduit associated with different transmitters as far apart as possible	Running conductors in conduit does not significantly help mitigating potential cross-talk
Cable trays containing conductors from multiple transmitters should be as short as possible	The longer the cable tray the higher chance of experiencing cross talks between transmitters
Once inside a cable tray keep strings (+) and (-) as close as possible to a twisted pair	Keeping the positive and negative conductors of a string apart inside a cable tray is not recommended

NOTE:

1. TIGO TS4-A-2F
2. SEE TIGO MANUFACTURER INSTALLATION REQUIREMENTS

REFERENCE E200 FOR ADDITIONAL INFORMATION

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- [ ] RECORD

REV. #	DESCRIPTION:	DATE
0	PERMIT SET ISSUED	09-14-2021
1	LAYOUT REVISED	09-27-2021

DRAWING NAME
STRING LAYOUT & COMBINING ARCHITECTURE (FOR 15 PANELS)

DRAWING NUMBER
E202.1

INVERTER SCHEDULE

DESIGN	KW OUTPUT	VOLTAGE	PHASE	AC DISC. SW./FU.	DC DISC. SW./FU.	NO. OF DC SUB-COMBINER FUSES	DC FUSE SIZES (UL LISTED FOR USE IN PV SYSTEMS)	DC STRING MONITORING REQ'D (YES/NO)	REMARKS
INV-1 TO 30*	50	480	3	YES	YES	15	20	NO	AFCI PROTECTION

* INVERTERS SHALL BE CPS-SCA50KTL

INVERTER ELECTRICAL CHARACTERISTICS

INVERTER IDENTIFICATION	INV-1 THRU INV-30			
INVERTER SIZE	50 kW			
QUANTITY OF STRINGS	11			
QUANTITY OF MODULES (PER STRING)	16			
OPEN CIRCUIT VOLTAGE (PER STRING)	793.12 V			
MINIMUM AMBIENT TEMPERATURE DESIGN RANGE (°C)	-19.7 °			
TEMPERATURE COFFICIENT (-0.29% / °C, PER MANUFACTURER)	1.216			
MAXIMUM SYSTEM DC VOLTAGE	889.6 V			
SHORT CIRCUIT CURRENT (PER STRING)	10.14 A			
PV SOURCE CIRCUIT MODULE FACTOR [NEC 690.8(A)(1)]	1.25			
MINIMUM PV SOURCE CIRCUIT AMPACITY	12.7 A			
ASHREA DESIGN TEMPERATURES	EXTREME MIN: -15°C			

SYSTEM CONFIGURATION

MINIMUM PHOTOVOLTAIC OUTPUT CIRCUIT AMPACITY	139.4 A			
MAXIMUM PHOTOVOLTAIC SYSTEM DC VOLTAGE	889.6 V			
INPUT PEAK POWER (MODULE Pmax x QUANTITY)	70.4 kW			

LV SWITCHBOARD SB-1

277/480 VOLTS - 3 PHASE - 4 WIRE
PROVIDE 3200 AMP BUS,
BRACED FOR 65,000 AMPS, SYMMETRICAL (MIN.)
(NEMA 3R ENCLOSURE)

DESIGN	FRAME RATING	POLES	TRIP AMPS	VOLTS	REMARKS
1**	3200	3	2500	480	MAIN CIRCUIT BREAKER
2	600	3	600	480	PV-AC1
3	600	3	600	480	PV-AC2
5	600	3	600	480	PV-AC3
6	600	3	600	480	PV-AC4
7	600	3	600	480	PV-AC5
8	100	3	15	480	REFERENCE VOLTAGE
9	100	1	15	480	DAS POWER SUPPLY
10	100	3	30	480	AUX TRFR
11	100	3	-	480	PROVISION

** CIRCUIT BREAKER EQUIPPED WITH LSIG ELECTRONIC TRIP UNIT WITH ARC FLASH MAINTENANCE SWITCH.
*** SPD - SURGE PROTECTOR DEVICE 160KA SPD
EATON SPD160480Y-1-K OR EQUAL

PANEL PV-AC1 THRU PV-AC-5

277/480 VOLTS - 3 PHASE - 4 WIRE
PROVIDE 600 AMP BUS. BRACED FOR 35,000 AMPS SYMMETRICAL (MIN)
(NEMA 3R ENCLOSURE)

DESIGN	FRAME SIZE	POLES	DEM. LOAD (KW)	BREAKER SIZE	REMARKS (TYPICAL FOR 5 PANELS)
0	600	3		-	M.L.O
1	100	3	50	90	INV-1
2	100	3	50	90	INV-2
3	100	3	50	90	INV-3
4	100	3	50	90	INV-4
5	100	3	50	90	INV-5
6	100	3	50	90	INV-6
7	100	3	-	-	PROVISION

NOTE: VERIFY EQUIPMENT LUG SIZE WITH CONDUCTORS PRIOR TO ORDERING

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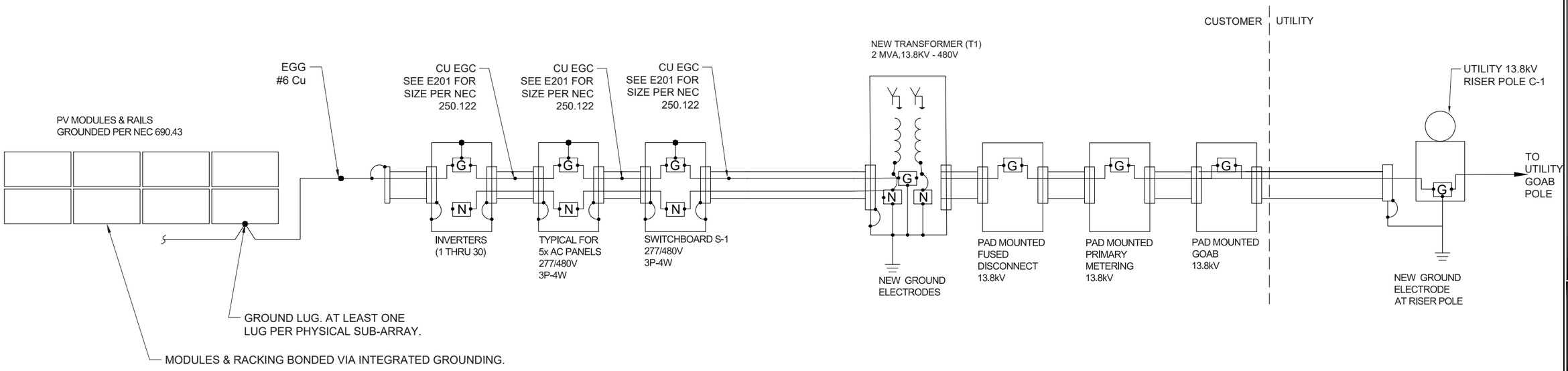
NO.	DESCRIPTION:	DATE
0	PERMIT SET ISSUED	09-14-2021
1	LAYOUT REVISED	09-27-2021

DRAWING NAME
CALCULATIONS & EQUIPMENT SCHEDULE

DRAWING NUMBER
E203



E204 TYPICAL PV-GROUNDING DIAGRAM

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DRAWING NAME
TYPICAL PV-GROUNDING DIAGRAM

DRAWING NUMBER
E204

CPS

Datasheet

50/60kW, 1000Vdc String Inverters for North America

The 50 & 60kW (55 & 66kVA) medium power CPS three phase string inverters are designed for ground mount, large rooftop and carport applications. The units are high performance, advanced and reliable inverters designed specifically for the North American environment and grid. High efficiency at 98.8% peak and 98.5% CEC, wide operating voltages, broad temperature ranges and a NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications. The CPS 50/60kW products ship with either the standard wire-box or the H4 style wire-box, each fully integrated and separable with touch safe fusing, monitoring, and AC and DC disconnect switches. The CPS Flex Gateway enables monitoring, controls and remote product upgrades.

Key Features

- 55 & 66kVA rating allows max rated Active Power @±0.91 PF
- Selectable Max AC Apparent Power of 50/55kVA and 60/66kVA
- NEC 2014/17 compliant & UL listed Arc-Fault circuit protection
- 0-90° Mounting orientation for lay flat roof installs
- Touch safe DC Fuse holders adds convenience and safety
- Optional Flex Gateway enables remote FW upgrades
- Integrated AC & DC disconnect switches
- 3 MPPT's with 5 inputs each for maximum flexibility
- Copper and Aluminum compatible AC connections
- NEMA Type 4X outdoor rated, tough tested enclosure
- UL1741 SA Certified to CA Rule 21
- Separable wire-box design for fast service
- Standard 10 year warranty with extensions to 20 years
- Generous 1.5 DC/AC Inverter Load Ratio

CPS SCA50KTL-DO/US-480
CPS SCA60KTL-DO/US-480

50/60kW Standard Wire-box

50/60kW H4 Wire-box

Chint Power Systems America
7060 Koll Center Parkway, Suite 318 Pleasanton, CA 94566
Tel: 855-584-7168 Mail: AmericaSales@chintpower.com Web: www.chintpowersystems.com

CPS

Technical Data

Model Name	CPS SCA50KTL-DO/US-480	CPS SCA60KTL-DO/US-480
DC Input		
Max. PV Power	75kW (30kW per MPPT)	90kW (33kW per MPPT)
Max. DC Input Voltage	1000Vdc	
Operating DC Input Voltage Range	200-950Vdc	
Start-up DC Input Voltage / Power	330V / 80W	
Number of MPP Trackers	3	
MPPT Voltage Range @ PF>0.99[1]	480-850Vdc	540-850Vdc
Max. PV Short-Circuit Current (Isc x 1.25)	204A (68A per MPPT)	
Number of DC Inputs	15 inputs, 5 per MPPT	
DC Disconnection Type	Load rated DC switch	
DC Surge Protection	Type II MOV, 2800V_C, 20kA I_{TN} (8/20μS)	
AC Output		
Rated AC Output Power @ PF>0.99 to ±0.91[2]	50kW	60kW
Max. AC Apparent Power (Selectable)	50/55kVA	60/66kVA
Rated Output Voltage	480Vac	
Output Voltage Range[3]	422 - 528Vac	
Grid Connection Type	3Φ / PE / N (Neutral optional)	
Max. AC Output Current @480Vac	60.2/66.2A	72.2/79.4A
Rated Output Frequency	60Hz	
Output Frequency Range[3]	57 - 63Hz	
Power Factor	>0.99 (±0.8 adjustable)	
Current THD @ Rated Load	<3%	
Max. Fault Current Contribution (1 Cycle RMS)	84.1A	
Max. OCPD Rating	110A	125A
AC Disconnection Type	Load rated AC switch	
AC Surge Protection	Type II MOV, 1240V_C, 15kA I_{TN} (8/20μS)	
System and Performance		
Topology	Transformerless	
Max. Efficiency	98.8%	
CEC Efficiency	98.5%	
Stand-by / Night Consumption	<1W	
Environment		
Enclosure Protection Degree	NEMA Type 4X	
Cooling Method	Variable speed cooling fans	
Operating Temperature Range[4]	-22°F to +140°F / -30°C to +60°C[4]	
Non-Operating Temperature Range[5]	No low temp minimum to +158°F / +70°C maximum[5]	
Operating Humidity	0 to 100%	
Operating Altitude	13,123.4ft / 4000m (derating from 9842.5ft / 3000m)	
Audible Noise	<60dBA @ 1m and 25°C	
Display and Communication		
User Interface and Display	LCD+LED	
Inverter Monitoring	SunSpec, Modbus RS485	
Site Level Monitoring	CPS Flex Gateway (1 per 70 inverters)	
Modbus Data Mapping	CPS	
Remote Diagnostics / FW Upgrade Functions	Standard / (with Flex Gateway)	
Mechanical		
Dimensions (HxWxD)	39.4 x 23.6 x 10.24in. (1000 x 600 x 260mm)	
Weight	Inverter: 123.5lbs/56kg; Wire-box: 33lbs/15kg	
Mounting / Installation Angle[6]	0 to 90 degrees from horizontal (vertical, angled, or lay flat)[6]	
AC Termination[7]	M8 Stud Type Terminal Block (Wire range: #6 - 3/0AWG CU/AL[7], Lugs not supplied)	
DC Termination	Screw Clamp Fuse Holder (Wire range: #14 - #6AWG CU), Optional H4 (Amphenol)	
Fused String Inputs (5 per MPPT)[8]	15A fuses provided (Fuse values up to 30A acceptable)[8]	
Safety		
Certifications and Standards	UL1741SA-2016, UL1699B, CSA-C22.2 NO.107.1-01, IEEE1547a-2014; FCC PART15	
Selectable Grid Standard and SRD	IEEE1547a-2014, CA Rule 21	
Smart-Grid Features	Voltage-RideThru, Frequency-RideThru, Soft-Start, Volt-Var, Frequency-Watt, Volt-Watt	
Warranty		
Standard	10 years	
Extended Terms	15 and 20 years	

1) See user manual for further information regarding MPPT Voltage Range when operating at non-unity PF.
2) Active Power Derating begins; at PF=±0.91 to ±0.8 when Max AC Apparent Power is set to 55 or 66kVA.
3) The "Output Voltage Range" and "Output Frequency Range" may differ according to the specific grid standard.
4) Active Power Derating begins; at 40°C when PF=±0.9 and MPPT ≥Vmin, at 45°C when PF=1 and MPPT ≥Vmin, and at 50°C when PF=1 and MPPT V ≥ 760Vdc.
5) See user manual for further requirements regarding non-operating conditions.
6) Shade Cover accessory required for installation angles of 75 degrees or less.
7) AL requires bi-metallic compression lug or bi-metallic adapter.
8) Fuses values above 20A have additional spacing requirements or require the use of the Y-comb adapter. See user manual for details.

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DRAWING ISSUE
- [ ] INTERCONNECTION
- [x] PERMITTING
- [ ] CONSTRUCTION
- [ ] RECORD

REV. #	DESCRIPTION	DATE
0	PERMIT SET ISSUED	08-15-2021
1	LAYOUT REVISED	09-27-2021

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1368 SHEEP HILL ROAD
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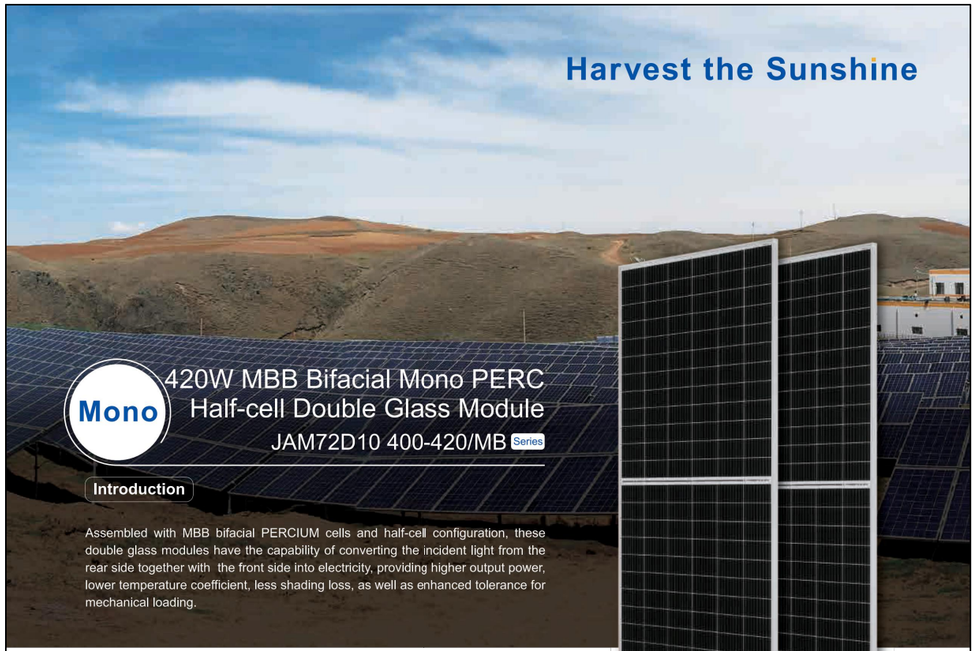
SEAL

DRAWING NAME
INVERTER DETAILS

DRAWING NUMBER
E300



Introduction

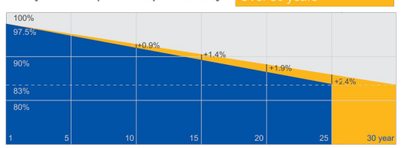
Assembled with MBB bifacial PERCIUM cells and half-cell configuration, these double glass modules have the capability of converting the incident light from the rear side together with the front side into electricity, providing higher output power, lower temperature coefficient, less shading loss, as well as enhanced tolerance for mechanical loading.

- Higher output power
- More reliable, more stable power generation
- Less shading effect
- Lower temperature coefficient

Superior Warranty

- 12-year product warranty
- 30-year linear power output warranty

0.5% Annual Degradation Over 30 years



Additional Value From 30-Year Warranty ■ JA Standard

Comprehensive Certificates

- IEC 61215, IEC 61730, UL 61215, UL 61730
- ISO 9001: 2015 Quality management systems
- ISO 14001: 2015 Environmental management systems
- OHSAS 18001: 2007 Occupational health and safety management systems
- IEC TS 62941: 2016 Terrestrial photovoltaic (PV) modules – Guidelines for increased confidence in PV module design qualification and type approval

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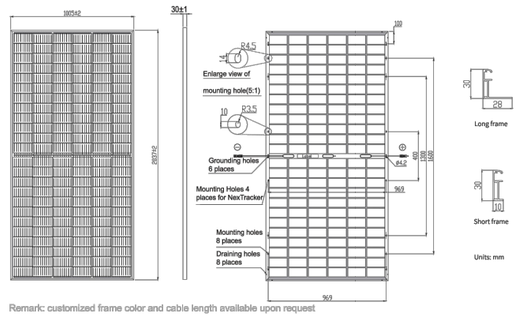
www.jasolar.com

Specifications subject to technical changes and tests.
JA Solar reserves the right of final interpretation.

JA SOLAR

JAM72D10 400-420/MB Series

MECHANICAL DIAGRAMS



Remark: customized frame color and cable length available upon request

SPECIFICATIONS

Cell	Mono
Weight	25.0kg±3%
Dimensions	2037±2mm×1005±2mm×30±1mm
Cable Cross Section Size	4mm²（12AWG）
No. of cells	144(6×24)
Junction Box	IP68, 3 diodes
Connector	QC 4.10-35
Cable Length (Including Connector)	Portrait:300mm(+)/400mm(-); Landscape:1200mm(+)/1200mm(-)
Packaging Configuration	34 Per Pallet
Front Glass/Back Glass	2.0mm/2.0mm

ELECTRICAL PARAMETERS AT STC

TYPE	JAM72D10 -400/MB	JAM72D10 -405/MB	JAM72D10 -410/MB	JAM72D10 -415/MB	JAM72D10 -420/MB
Rated Maximum Power(Pmax) [W]	400	405	410	415	420
Open Circuit Voltage(Voc) [V]	49.57	49.82	50.08	50.35	50.62
Maximum Power Voltage(Vmp) [V]	42.02	42.28	42.54	42.80	43.04
Short Circuit Current(Isc) [A]	10.14	10.20	10.26	10.32	10.37
Maximum Power Current(Imp) [A]	9.52	9.58	9.64	9.70	9.76
Module Efficiency [%]	19.5	19.8	20.0	20.3	20.5
Power Tolerance	0~+5W				
Temperature Coefficient of Isc(α_Isc)	+0.044%/℃				
Temperature Coefficient of Voc(β_Voc)	-0.272%/℃				
Temperature Coefficient of Pmax(γ_Pmp)	-0.354%/℃				
STC	Irradiance 1000W/m², cell temperature 25°C, AM1.5G				

Remark: Electrical data in this catalog do not refer to a single module and they are not part of the offer.They only serve for comparison among different module types.
*Bifaciality=Pmax,rear/Rated Pmax,front

ELECTRICAL CHARACTERISTICS WITH DIFFERENT REAR SIDE POWER GAIN(REFRENCE TO 410W FRONT)

Backside Power Gain	5%	10%	15%	20%	25%
Rated Max Power(Pmax) [W]	431	451	472	492	513
Open Circuit Voltage(Voc) [V]	50.10	50.10	50.10	50.20	50.20
Max Power Voltage(Vmp) [V]	42.55	42.55	42.55	42.65	42.65
Short Circuit Current(Isc) [A]	10.76	11.28	11.79	12.30	12.81
Max Power Current(Imp) [A]	10.12	10.60	11.08	11.54	12.02

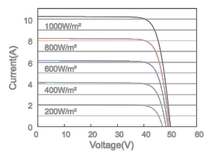
*For NexTracker installations static loading performance: front load measure 2400Pa, while back load measures 1800Pa.

OPERATING CONDITIONS

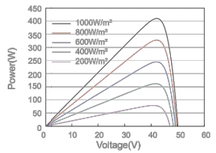
Maximum System Voltage	1500V DC(UL)
Operating Temperature	-40°C~+85°C
Maximum Series Fuse	20A
Maximum Static Load,Front* Maximum Static Load,Back*	5400Pa(112 lb/ft²) 2400Pa(50 lb/ft²)
NOCT	45±2°C
Bifaciality*	70%±5%
Fire Performance	Type 29

CHARACTERISTICS

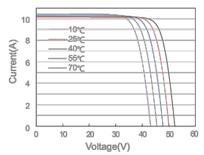
Current-Voltage Curve JAM72D10-410/MB



Power-Voltage Curve JAM72D10-410/MB



Current-Voltage Curve JAM72D10-410/MB



Premium Cells, Premium Modules

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DRAWING ISSUE
- [ ] INTERCONNECTION
- [x] PERMITTING
- [ ] CONSTRUCTION
- [ ] RECORD

REV. #	DESCRIPTION	DATE
0	PERMIT SET ISSUED	09-15-2021
1	LAYOUT REVISED	09-27-2021

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PROFESSIONAL ENGINEER
1368 SHEEP HILL ROAD
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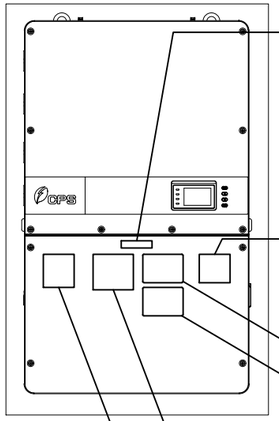
SEAL

DRAWING NAME
MODULE DETAILS

DRAWING NUMBER
E301

GROUND MOUNT INSTALLATION



INVERTER INV-1

PHOTOVOLTAIC SYSTEM
INVERTER AC
DISCONNECT SWITCH

WARNING:
ELECTRIC SHOCK HAZARD. DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDE MAY BE ENERGIZED IN THE OPEN POSITION.

AC DISCONNECT RATING:
OPERATING CURRENT: ---- AMPS (FLA)
OPERATING VOLTAGE: ---- VOLTS

⚠WARNING

ELECTRIC SHOCK HAZARD

TERMINALS ON BOTH LINE AND LOAD SIDE MAY BE ENERGIZED IN THE OPEN POSITION

PHOTOVOLTAIC SYSTEM
INVERTER DC
DISCONNECT SWITCH
(PER NEC 690.53)

WARNING:
ELECTRIC SHOCK HAZARD. DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDE MAY BE ENERGIZED IN THE OPEN POSITION.

DC DISCONNECT RATING:
MAX. POWER POINT CURRENT: ---- AMPS
MAX. POWER POINT VOLTAGE: ---- VOLTS
SHORT CIRCUIT CURRENT: ---- AMPS
MAX. SYSTEM VOLTAGE: ---- VOLTS

⚠WARNING

Arc Flash and Shock Risks

XX in- Arc Flash Protection Boundary
X.X cal/cm^2- Incident Energy Flash Risk at XX in

Appropriate PPE Required for both Arc Flash and Shock Risks:
Clothing: Arc-rated shirt & pants + arc-rated coverall + arc-rated arc flash suit
Foot Protection: Leather footwear
Safety glasses, electrically rated hard hat with hood and face shield.
Hearing Protection. Arc-rated Gloves

XXX VAC- Shock Risk with covers/doors open
XX in- Limited Approach Boundary
XX in- Restricted Approach Boundary
XX cal/cm^2- Minimum Arc Rating
Shock Risk
XX/XX/XXXX
Bus: INV-01 PROT: FDR INV-1
0001

LOCATION OF EQUIPMENT NAME & REFERENCE NUMBER. PLACARDS MUST BE PLACED ON EQUIPMENT BY THIS DESIGNATION. CALULATIONS ARE SPECIFIC TO EQUIPMENT.

⚠WARNING

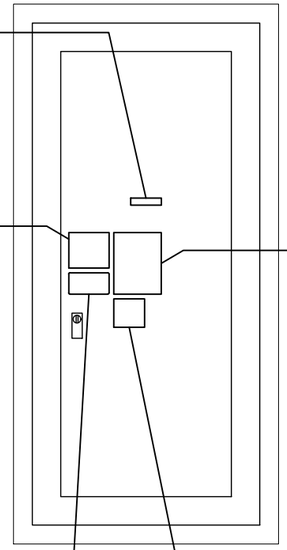
ELECTRIC SHOCK HAZARD

IF GROUND FAULT IS INDICATED ALL NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED

1 E400 INVERTER PLACARD LOCATIONS

STANDARD INSTALLATION

PANELBOARD PV-ACX



⚠WARNING

Arc Flash and Shock Risks

XX in- Arc Flash Protection Boundary
X.X cal/cm^2- Incident Energy Flash Risk at XX in

Appropriate PPE Required for both Arc Flash and Shock Risks:
Clothing: Arc-rated shirt & pants + arc-rated coverall + arc-rated arc flash suit
Foot Protection: Leather footwear
Safety glasses, electrically rated hard hat with hood and face shield.
Hearing Protection. Arc-rated Gloves

XXX VAC- Shock Risk with covers/doors open
XX in- Limited Approach Boundary
XX in- Restricted Approach Boundary
XX cal/cm^2- Minimum Arc Rating
Shock Risk
XX/XX/XXXX
Bus: AC-1 Prot: S-1_AC-1 FDR
0003

LOCATION OF EQUIPMENT NAME & REFERENCE NUMBER. PLACARDS MUST BE PLACED ON EQUIPMENT BY THIS DESIGNATION. CALULATIONS ARE SPECIFIC TO EQUIPMENT.

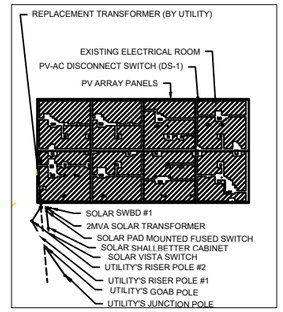
⚠WARNING

ONLY EQUIPMENT ASSOCIATED WITH THE PHOTOVOLTAIC SYSTEM MAY BE CONNECTED TO THIS PANEL

3 E400 PANELBOARD PLACARD LOCATIONS

CAUTION

POWER TO THIS SERVICE IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN

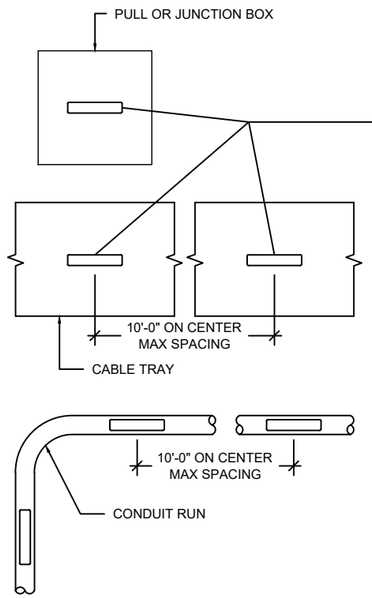


PHOTOVOLTAIC SYSTEM
TOTAL AC
DISCONNECT SWITCH

WARNING:
ELECTRIC SHOCK HAZARD. DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDE MAY BE ENERGIZED IN THE OPEN POSITION.

AC DISCONNECT RATING:
OPERATING CURRENT: AMPS AMPS (FLA)
OPERATING VOLTAGEVOLTAGE VOLTS

STANDARD INSTALLATION



WARNING: PHOTOVOLTAIC POWER SOURCE

NOTES:
1. TO BE REFLECTIVE LAMINATED STICKER WITH

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DRAWING ISSUE
- [ ] INTERCONNECTION
- [x] PERMITTING
- [ ] CONSTRUCTION
- [ ] RECORD

REV.#	DESCRIPTION:	DATE
0	PERMIT SET ISSUED	09-15-2021
1	LAYOUT REVISED	09-27-2021

DRAWING NAME
EQUIPMENT PLACARD LOCATIONS

DRAWING NUMBER
E400

HENDRIK J. BURGER
PROFESSIONAL ENGINEER
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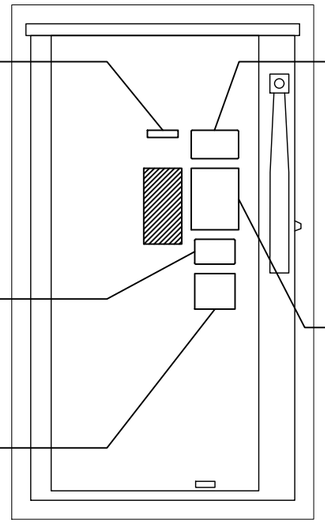
POTTSTOWN, PA 19465

SEAL

DISC. SWITCH XXX

STANDARD INSTALLATION



⚠WARNING

ELECTRIC SHOCK HAZARD

TERMINALS ON BOTH LINE AND LOAD SIDE MAY BE ENERGIZED IN THE OPEN POSITION

⚠DANGER

Arc Flash and Shock Risks

XX in- Arc Flash Protection Boundary

X.X cal/cm^2- Incident Energy Flash Risk at XX in

Appropriate PPE Required for both Arc Flash and Shock Risks:

Clothing: DO NOT WORK ON LIVE!
Foot Protection: DO NOT WORK ON LIVE!
DO NOT WORK ON LIVE!
DO NOT WORK ON LIVE!

XXX VAC Shock Risk with covers/doors open
XX in- Limited Approach Boundary
XX in- Restricted Approach Boundary — Shock Risk
XX cal/cm^2- Minimum Arc Rating — XX/XX/XXXX
Bus: XXXXXXX — # XXXX

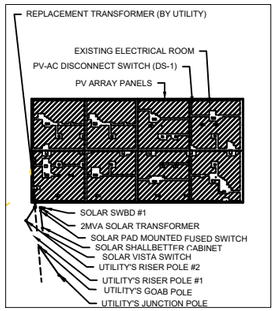
LOCATION OF EQUIPMENT NAME & REFERENCE NUMBER. PLACARDS MUST BE PLACED ON EQUIPMENT BY THIS DESIGNATION. CALULATIONS ARE SPECIFIC TO EQUIPMENT.

NOTICE

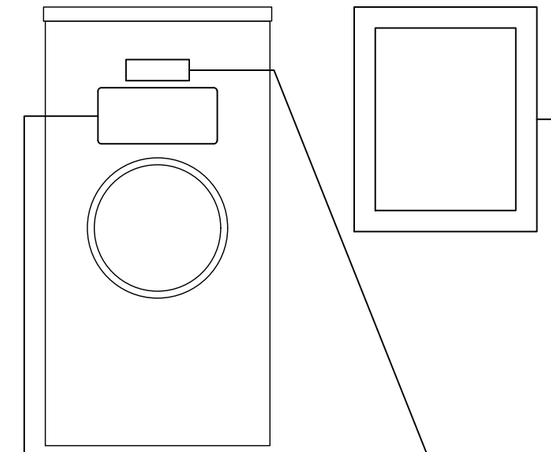
PHOTOVOLTAIC AC SYSTEM DISCONNECT FOR UTILITY OPERATION

CAUTION

POWER TO THIS SERVICE IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN



1 E401 DISCONNECT SWITCH PLACARD LOCATIONS

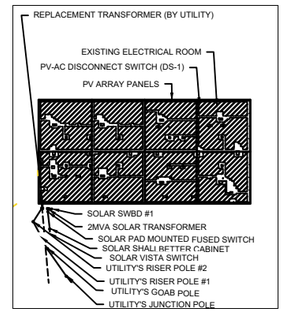


CUSTOMER OWNED PARALLEL GENERATION SAFETY DISCONNECT SWITCH IS LOCATED ADJACENT TO

PHOTOVOLTAIC GENERATION METER
S/N _____

CAUTION

POWER TO THIS SERVICE IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN



NOTES:
1. SITE MAP LABEL MUST BE MOUNTED ON OR ADJACENT TO PHOTOVOLTAIC GENEREATION METER.

2 E401 PHOTOVOLTAIC METER PLACARD LOCATIONS

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DRAWING ISSUE
- ☐ INTERCONNECTION
- ☒ PERMITTING
- ☐ CONSTRUCTION
- ☐ RECORD

NO. #	DESCRIPTION	DATE
0	PERMIT SET ISSUED	09-14-2021
1	LAYOUT REVISED	09-27-2021

DRAWING NAME
EQUIPMENT PLACARD LOCATIONS

DRAWING NUMBER
E401

HENDRIK J. BURGER
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POTTSTOWN, PA 19465

SEAL

A

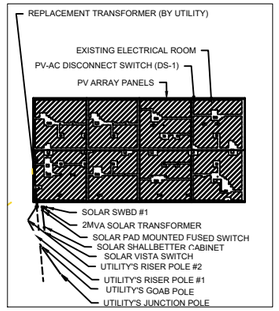
5"

LABEL LOCATION:DISC. SWITCHES PV-AC,UTILITY METER, EXIST. SERVICE MAIN PANEL, PANEL PV-AC, SWITCHBOARD
REQUIRED LABEL QUANTITY:6

6½"

CAUTION

POWER TO THIS SERVICE IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN



(NOTE 1)

B

3½"

LABEL LOCATION: PAD GOAB
REQUIRED LABEL QUANTITY:1

3"

PHOTOVOLTAIC SYSTEM
TOTAL AC
DISCONNECT SWITCH

WARNING:
ELECTRIC SHOCK HAZARD. DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDE MAY BE ENERGIZED IN THE OPEN POSITION.

AC DISCONNECT RATING:
OPERATING CURRENT: 63 AMPS (FLA)
OPERATING VOLTAGE: 13.8KV VOLTS

(NOTE 1)

B1

3½"

LABEL LOCATION: INVERTER-1 THRU 30 DC COMPARTMENT
REQUIRED LABEL QUANTITY: 30

3"

PHOTOVOLTAIC SYSTEM
INVERTER AC
DISCONNECT SWITCH

WARNING:
ELECTRIC SHOCK HAZARD. DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDE MAY BE ENERGIZED IN THE OPEN POSITION.

AC DISCONNECT RATING:
OPERATING CURRENT: 60 AMPS (FLA)
OPERATING VOLTAGE: VOLTS

(NOTE 1)

B2

3½"

LABEL LOCATION: INVERTER-1 THRU 30 DC COMPARTMENT
REQUIRED LABEL QUANTITY: 30

3½"

PHOTOVOLTAIC SYSTEM
EQUIPMENTTITLE
DISCONNECT SWITCH
(PER NEC 690.53)

WARNING:
ELECTRIC SHOCK HAZARD. DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDE MAY BE ENERGIZED IN THE OPEN POSITION.

DC DISCONNECT RATING:
MAX. POWER POINT CURRENT: 103 AMPS
MAX. POWER POINT VOLTAGE: 672 VOLTS
SHORT CIRCUIT CURRENT: 112 AMPS
MAX. SYSTEM VOLTAGE: 890 VOLTS

(NOTE 1)

D

4¼"

LABEL LOCATION: WIREWAY AT INVERTERS, DISC. SWITCH, PANEL PV-AC , ECB
REQUIRED LABEL QUANTITY:10

2⅝"

WARNING

ELECTRIC SHOCK HAZARD

TERMINALS ON BOTH LINE AND LOAD SIDE MAY BE ENERGIZED IN THE OPEN POSITION

E

5"

LABEL LOCATION: DISC. SWITCH PV-AC
REQUIRED LABEL QUANTITY: 1

3"

NOTICE

PHOTOVOLTAIC AC SYSTEM DISCONNECT FOR UTILITY OPERATION

(SEE NOTE 2)

L

3¼"

LABEL LOCATION: DISC SWITCH PV-AC
REQUIRED LABEL QUANTITY: 2

¾"

DISC. SWITCH XXX

NOTE: ONE LABEL REQUIRED FOR EACH DISCONNECT SWITCH . USE APPROPRIATE DESIGNATION FOR EACH LABEL. (NOTE 1)

M

3¼"

LABEL LOCATION: INVERTER -1 THRU 12
REQUIRED LABEL QUANTITY: 12

¾"

INVERTER INV-X

NOTE: ONE LABEL REQUIRED FOR EACH INVERTER . USE APPROPRIATE DESIGNATION FOR EACH LABEL. (NOTE 1)

N

4¼"

LABEL LOCATION: JUNCTION/PULL BOX & INVERTER
REQUIRED LABEL QUANTITY: 20

3"

WARNING

ELECTRIC SHOCK HAZARD

THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED

(PV LABEL 05-104)

O

4¼"

LABEL LOCATION: PV PANEL AC
REQUIRED LABEL QUANTITY: 3

2"

WARNING

DUAL POWER SUPPLY

SOURCES: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM

(PV LABEL 05-211)

F

2¼"

LABEL LOCATION: PV SUB-METER ENCLOSURE
REQUIRED LABEL QUANTITY: 2

¾"

PHOTOVOLTAIC GENERATION METER
S/N _____

(NOTE 1)

H

4¼"

LABEL LOCATION: PANEL PV-AC
REQUIRED LABEL QUANTITY: 2

2¼"

WARNING

ONLY EQUIPMENT ASSOCIATED WITH THE PHOTOVOLTAIC SYSTEM MAY BE CONNECTED TO THIS PANEL

J

3¼"

LABEL LOCATION: PANEL PV-AC
REQUIRED LABEL QUANTITY: 2

¾"

PANELBOARD PV-ACX

NOTE: ONE LABEL REQUIRED FOR EACH PANEL . USE APPROPRIATE DESIGNATION FOR EACH LABEL. (NOTE 1)

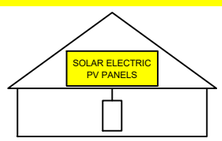
P

3⅝"

LABEL LOCATION: PV PANEL AC
REQUIRED LABEL QUANTITY: 4

5¼"

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN



TURN RAPID SHUTDOWN SWITCH TO THE 'OFF' POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY

(PV LABEL 05-112)

Q

4¼"

LABEL LOCATION: PV PANEL AC
REQUIRED LABEL QUANTITY: 4

1 3/16"

PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN.

(PV LABEL 02-317) (NOTE 1)

R

4"

LABEL LOCATION: PV PANEL AC
REQUIRED LABEL QUANTITY: 1

2"

PHOTOVOLTAIC SYSTEM
⚠ AC DISCONNECT ⚠

OPERATING VOLTAGE 13.8kV VOLTS
OPERATING CURRENT 63 AMPS

(PV LABEL 03-210)

S

4¼"

NOTE: ARC FLASH LABELS PROVIDED BY DYNAMIC ENERGY BASED ON ARC FLASH STUDY RESULTS.

3¾"

DANGER

Arc Flash and Shock Risks

XX in- Arc Flash Protection Boundary

X.X cal/cm^2- Incident Energy Flash Risk at XX in

Appropriate PPE Required for both Arc Flash and Shock Risks:
Clothing: DO NOT WORK ON LIVE!
Foot Protection: DO NOT WORK ON LIVE!
DO NOT WORK ON LIVE!
DO NOT WORK ON LIVE!

XXX VAC- Shock Risk with covers/doors open
XX in- Limited Approach Boundary
XX in- Restricted Approach Boundary
XX cal/cm^2- Minimum Arc Rating
Shock Risk
XX/XX/XXXX

Bus: XXXXXXXX
XXXX

NOTE: ARC FLASH LABELS PROVIDED BY DYNAMIC ENERGY BASED ON ARC FLASH STUDY RESULTS.

GENERAL NOTES FOR LABELING AND MARKING EQUIPMENT:

1. TEXT LABELS WILL BE ETCHED WITH WHITE GRAPHICS ONTO 1/16" RED PLASTIC PLACARDS. THE LABEL WILL BE ATTACHED TO THE APPROPRIATE COMPONENT ENCLOSURES IN CONSPICUOUS PLACES USING HEAVY DUTY TWO-SIDED TAPE.
2. LABEL WILL BE ETCHED WITH BLACK LETTERS ONTO WHITE PLASTIC PLACARD AND WHITE LETTERS ONTO BLUE PLASTIC PLACARD, AS INDICATED. THE LABEL WILL BE ATTACHED TO THE APPROPRIATE COMPONENT ENCLOSURES IN CONSPICUOUS PLACES USING HEAVY DUTY TWO SIDED TAPE.

Dynamic Energy™
PHONE: 877-809-8884
FAX: 610-276-5403
WWW.DYNAMICENERGYUSA.COM
1550 LIBERTY RIDGE DRIVE
SUITE 310
WAYNE, PA 19087

STAG INDUSTRIAL HOLDINGS
40 PEPES FARM ROAD
MILFORD, CT 06460

DRAWING ISSUE
- [ ] INTERCONNECTION
- [x] PERMITTING
- [ ] CONSTRUCTION
- [ ] RECORD

REV. #	DESCRIPTION:	DATE
0	PERMIT SET ISSUED	09-15-2021
1	LAYOUT REVISED	09-27-2021

HENDRIK J. BURGER
PROFESSIONAL ENGINEER
1368 SHEEP HILL ROAD
POTTSTOWN, PA 19465

SEAL

DRAWING NAME
EQUIPMENT LABELS

DRAWING NUMBER
E402

0' 30' 60' 90'

HENDRIK J. BURGER
PROFESSIONAL ENGINEER
1368 SHEEP HILL ROAD
POTTSTOWN, PA 19465

SEAL

Dynamic Energy™

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DRAWING ISSUE

- [ ] INTERCONNECTION
- [ ] PERMITTING
- [ ] CONSTRUCTION
- [ ] RECORD

REV. #	DESCRIPTION	DATE
0	PERMIT SET ISSUED	09-15-2021
1	LAYOUT REVISED	09-27-2021

DRAWING NAME

STAGING PLAN

DRAWING NUMBER

E500

10/11/2021 10:30:19 AM

PV-AC -1

PV-AC -3

PV-AC -5

PV-AC -2

PARKING LOT

SOLAR CONDUIT(S) FROM PAD
UP SIDE OF BUILDING TO ROOF.
MODULES AND INVERTERS ON ROOF

NEW SERVICE TRANSFORMER FOR
BUILDING SERVER. EXISTING
TRANSFORMER TO BE REMOVED.
EXISTING SERVICE TO BE REFED
FROM NEW SERVICE TRANSFORMER

5'-0" 5'-0" 5'-0"

12'-0"

12'-8"

PV-AC -4

PV PANEL &
INVERTER
LOCATIONS

NEW TRANSFORMER, SWITCHGEAR AND FUSED DISCONNECT CONCRETE PAD

NEW SOLAR SWBD #1

NEW 2MVA SOLAR TRANSFORMER

NEW PAD MOUNTED FUSED DISCONNECT

NEW PRIMARY METERING CABINET / SOLAR SHALLBETTER CABINET

NEW SOLAR VISTA SWITCH

NEW GRAVEL ACCESS ROAD TO EQUIPMENT

GREEN=NEW UNDERGROUND UTILITY LINES

NEW GRAVEL ACCESS ROAD
TO TRANSFORMER

PARKING LOT

PARKING LOT

PROPERTY BOUNDRY

NEW UTILITY'S RISER POLE

NEW UTILITY'S RISER

12'-0"

NEW UTILITY'S GOAB POLE

RED=NEW OVERHEAD UTILITY LINES

PEPES FARM ROAD

PROPOSED INTERCONNECTION
CIRCUIT

NEW UTILITY'S JUCTION POLE

0' 32' 64' 96'

HENDRIK J. BURGER
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POTTSTOWN, PA 19465

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STAG INDUSTRIAL HOLDINGS
40 PEPES FARM ROAD
MILFORD, CT 06460

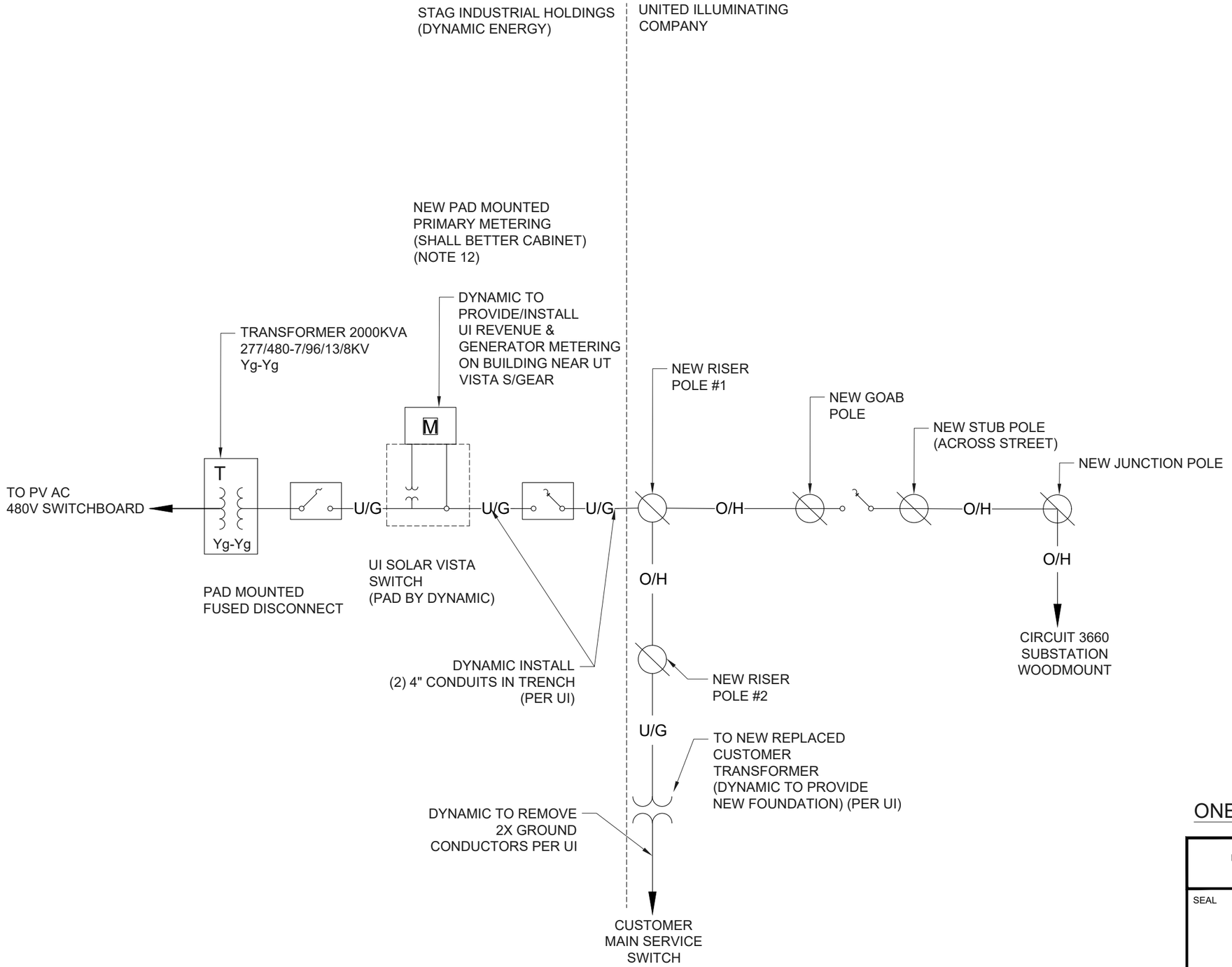
N
W E
S

DRAWING ISSUE
- [ ] INTERCONNECTION
- [x] PERMITTING
- [ ] CONSTRUCTION
- [ ] RECORD

NO.	DESCRIPTION	DATE
1	PERMIT SET ISSUED	09-14-2021
2	LAYOUT REVISED	09-27-2021

DRAWING NAME
OVERVIEW

DRAWING NUMBER
U1



ONE-LINE DIAGRAM

HENDRIK J. BURGER
PROFESSIONAL ENGINEER
1368 SHEEP HILL ROAD
POTTSTOWN, PA 19465

SEAL

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STAG INDUSTRIAL HOLDINGS
40 PEPES FARM ROAD
MILFORD, CT 06460

DRAWING ISSUE
- [ ] INTERCONNECTION
- [x] PERMITTING
- [ ] CONSTRUCTION
- [ ] RECORD

NO. #	DESCRIPTION:	DATE
0	PERMIT SET ISSUED	09-14-2021
1	LAYOUT REVISED	09-27-2021

DRAWING NAME
OVERVIEW

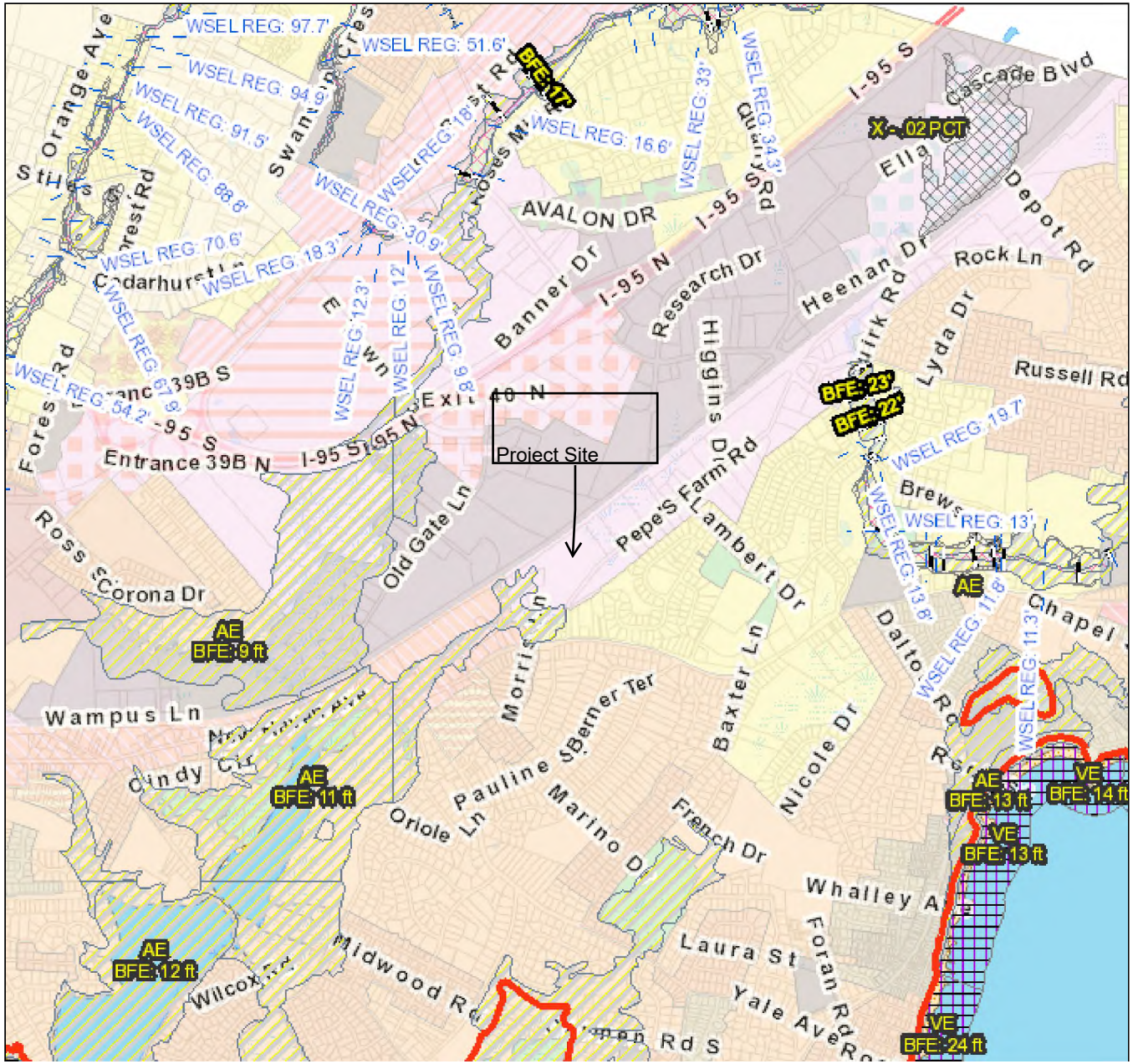
DRAWING NUMBER
U2

Exhibit B

City of Milford

Geographic Information System (GIS)

Date Printed: 11/19/2021



MAP DISCLAIMER - NOTICE OF LIABILITY

This map is for assessment purposes only. It is not for legal description or conveyances. All information is subject to verification by any user. The City of Milford and its mapping contractors assume no legal responsibility for the information contained herein.

Approximate Scale: 1 inch = 2000 feet

0 2,000 Feet

N W E S

City of Milford, CT

Property Listing Report

Map Block Lot	068 711 17A	Bldg #	1	Sec #	1	PID	16008	Account	003076

Property Information

Property Location	40 PEPES FARM RD
Owner	STAG INDUSTRIAL HOLDINGS LLC
Co-Owner	na
Mailing Address	ONE FEDERAL ST 23RD FL BOSTON MA 02210
Land Use	4010 IND WHSES MDL-96
Land Class	I
Zoning Code	LI
Census Tract	AB980

Neighborhood	J
Acreage	14.56
Utilities	All Public,Public Sewer
Lot Setting/Desc	UNKNOWN UNKNOWN
Book / Page	03723/0279
Fire District	3

Photo

Sketch

Primary Construction Details

Year Built	1981
Building Desc.	IND WHSES MDL-96
Building Style	Warehouse
Building Grade	GOOD
Stories	1
Occupancy	1.00
Exterior Walls	Brick/Stn Vene
Exterior Walls 2	Aluminum Sidng
Roof Style	Flat
Roof Cover	Tar & Gravel
Interior Walls	Minim/Masonry
Interior Walls 2	Drywall/Sheet
Interior Floors 1	Concr-Finished
Interior Floors 2	Carpet

Heating Fuel	Gas
Heating Type	Hot Air-no Duc
AC Type	XF Per Sq Ft
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	
Bath Style	NA
Kitchen Style	NA
Fin Bsmt Area	
Fin Bsmt Quality	
Bsmt Gar	
Fireplaces	0

(*Industrial / Commercial Details)

Building Use	Industrial
Building Condition	3
Sprinkler %	NA
Heat / AC	HEAT/AC SPLIT
Frame Type	STEEL
Baths / Plumbing	AVERAGE
Ceiling / Wall	CEILING ONLY
Rooms / Prtns	AVERAGE
Wall Height	30.00
First Floor Use	NA
Foundation	NA

Report Created On 11/19/2021

City of Milford, CT

Property Listing Report

Map Block Lot	068 711 17A	Bldg #	1	Sec #	1	PID	16008	Account	003076

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	9972570	6980800
Extras	427090	298960
Improvements		
Outbuildings	218830	153190
Land	2066720	1446700
Total	12685210	8879650

Outbuilding and Extra Features

Type	Description
PAVING-ASPHALT	134500 S.F.
LOAD LEVELERS	18 UNITS
SPRINKLERS-WET	199680 S.F.
AIR CONDITION	9117 UNITS
FENCE-6' CHAIN	340 L.F.
LIGHTS-IN W/PL	15 UNITS

Sub Areas

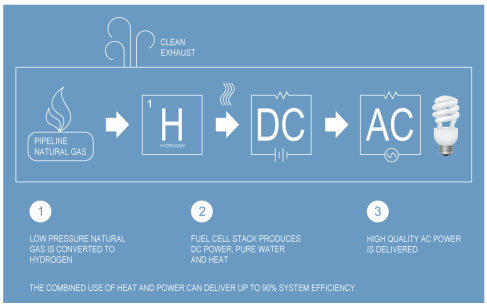
Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Office, (Average)	9117	9117
First Floor	190563	190563
Total Area	199680	199680

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
STAG INDUSTRIAL HOLDINGS LLC	03723/0279	2017-03-02	13250000
CPI 40 PEPES FARM LLC	03609/0285	2014-12-03	6600000
SREF PEPE LLC	03122/0282	2006-10-20	14560000
PEPES FARM LLC	02977/0678	2005-04-20	12400000
CABOT ACQUISITION LLC	02607/0643	2002-08-12	0
CP INVESTMENT PROPERTIES IX INC	02261/0563	1998-02-11	0
CC & FRA INVESTMENT PROPERTIES	01684/0327	1988-11-07	0

Report Created On 11/19/2021

Exhibit C



Distribution Generation Interconnection Impact Study

Dynamic Energy Solutions LLC - Stag Industrial Holdings
40 Pepes Farm Rd, Milford, CT 06460

June 25, 2021

Prepared For:
The United Illuminating Company
180 Marsh Hill Road, Orange, CT 06477

Submitted By:
Hussain Biyawerwala

Investigators:

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This distribution system impact study evaluates the effect of a proposed Distributed Generation (DG) interconnection, located at 40 Pepes Farm Rd, Milford, on the operation and performance of the electric distribution system. A system model was developed to simulate the DG interconnection under various operating conditions.

The results of the simulations have shown that this proposed DG interconnection of 1500 kW of PV solar generator system would result in minor adverse impacts on the Electric Distribution Company (EDC) distribution system as described below:

Analysis	Criteria	Results	Upgrades	Notes
Voltage	95%< V <105%	PASS		Pre-existing under voltage during minimum load condition.
Voltage Change	ΔV<1% at PCC	PASS		
Load Flow	No Violation	PASS		No Reverse Power through substation transformer
System Imbalance	UI Criterion	PASS		
Ferroresonance	Wye-grounded at high side	PASS after upgrade	Utility owned Vista Switch	Developer proposes a secondary SEL 651R relay & 50, 50P relay at high side.
Risk of Islanding	Inverter anti-islanding feature	PASS after upgrade	Utility owned Vista Switch	Developer proposes a secondary SEL 651R relay & 50, 50P relay at high side.
Contingency Analysis	All criteria for voltage, voltage change, load flow and system imbalance	FAIL*		Voltage change at POI > 1.0 % (1.07%)

Table #1: Results Summary

* After further review of the 'Contingency Analysis' UI has determined that there will be minor or no adverse effect to the Distribution System.

INTRODUCTION AND SYSTEM DESCRIPTION

Dynamic Energy Solutions LLC has requested the interconnection of 1500 kW of PV distributed generation named Stag Industrial Holdings at 40 Pepes Farm Rd, Milford. The project has requested approval for the interconnection of 1500 kW of PV generation through one customer proposed transformer (1) 2000 kVA 13.8kV/0.48kV, Wye Grounded/Wye Grounded interconnection transformer with an impedance of 5.75%.

The proposed DG is to be interconnected to The United Illuminating Co. (UI) distribution system through the Woodmont Substation Feeder #3660. Feeder #3660 will be the normal supply while Woodmont Substation Feeder #3650 will be the backup supply to the DG site load during peak and minimum loading conditions.

Figure #1 shows the one-line diagram of the proposed system design and the proposed connection to the interconnecting feeder for the 1500 kW PV generation. Figure #2 shows the overall developed CYMDIST system model for the proposal.

The purpose of this study is to evaluate the proposed DG interconnection and its impact on the UI distribution system. The following items have been identified as the main concerns for the DG interconnection to the UI system:

a) Voltage Change Analysis - evaluation of the steady-state and change in distribution voltage levels at the substation bus associated with interconnection and separation of the generating facility. This will investigate the voltage change at both peak and minimum substation bus loading periods.

b) Voltage Fluctuation Analysis - control settings on existing automatic regulation devices will be examined to determine if the proposed generation will adversely impact the regulating equipment controls or the regulating equipment's duty.

c) System Imbalance Impacts - evaluation of potential for excessive bus imbalance associated with the generating facility when interconnected.

d) Potential for ferroresonance - the potential for the occurrence of ferroresonance upon switching at the service entrance will be investigated.

e) Unintentional Islanding – potential for an unintentional islanding condition in which the generator continues to supply power to a location even though electrical grid power from the local Electric Power System (EPS) is no longer present.

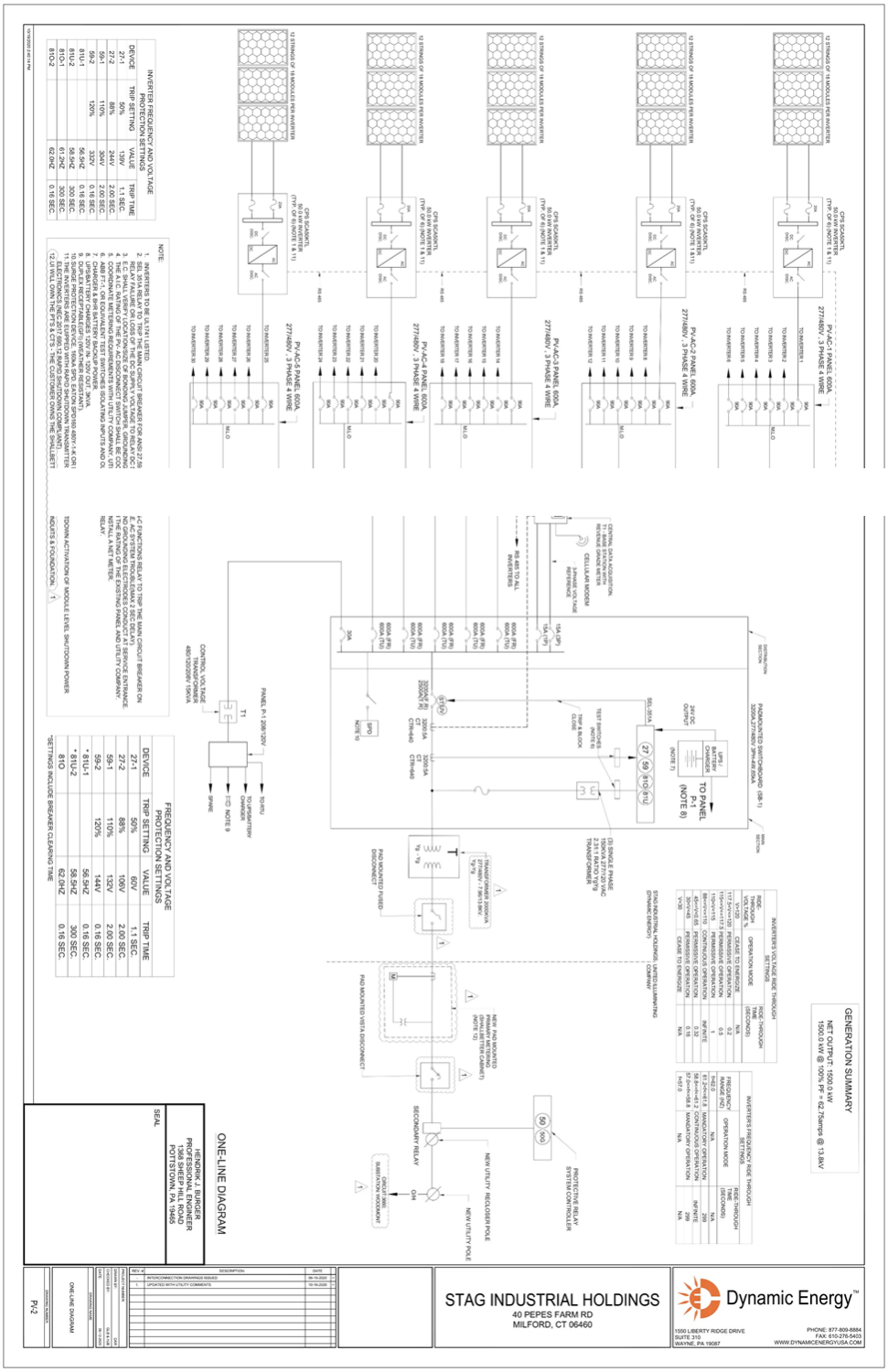


Figure #1. One-line Diagram of Proposed 1500 kW DG Interconnections.

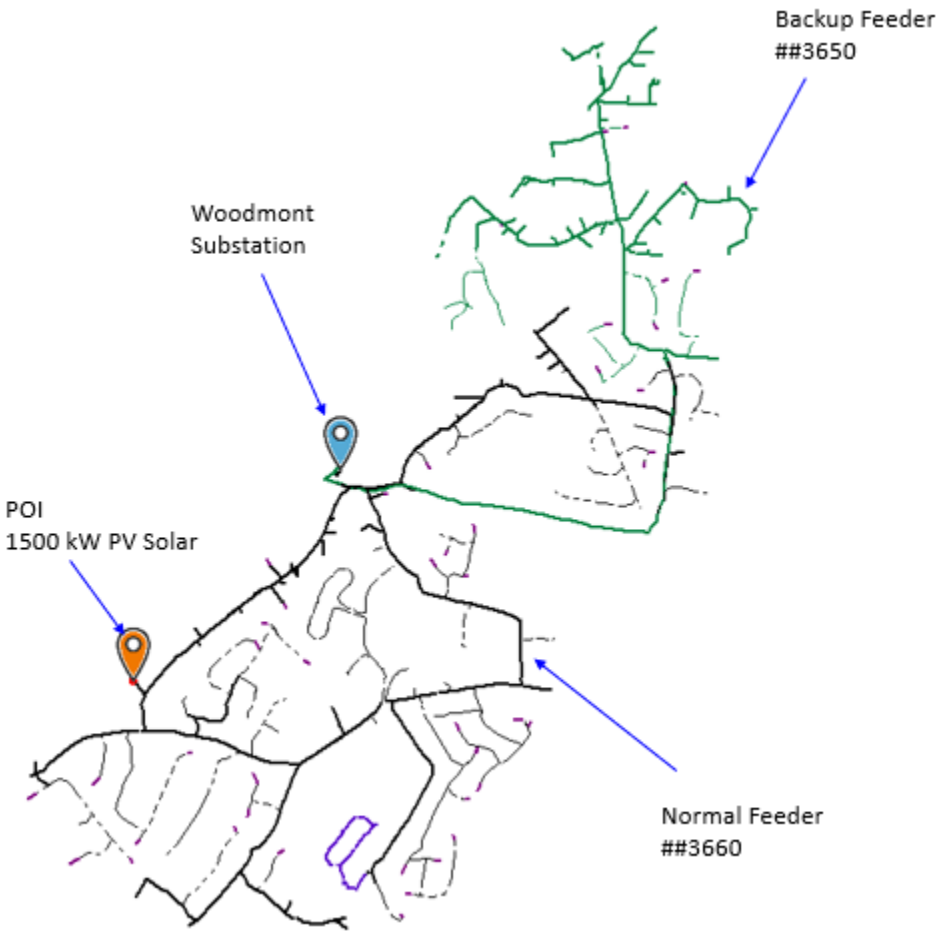


Figure #2: The CYMDIST Model Detail of the Stag Industrial Holdings at 40 Pepes Farm Rd, Milford, Customer's 1500 kW DG

2. STUDY MODELS AND ASSUMPTIONS

As Figure #2 shows, a system model has been developed in the CYMDIST power system simulation software. This model represents the PV generator, the interconnection transformer, and the interconnecting distribution feeder. Below is a list of assumptions made as part of the modeling and analysis:

- The proposed DG Interconnection Request received on 06/16/2020 and as depicted on the drawing by Dynamic Energy for Dynamic Energy Solutions, LLC. The Revised IA Drawings dated 10/16/2020 will be used in the study.

- The system model considered both peak and minimum load conditions on the normal and backup supply feeder, using July 2020 and April 2020 load information respectively, for the area customers and total demand of the feeders.

- All other customers' existing parallel generators and all generation on the feeders proposed prior to Dynamic Energy Solutions LLC (generation in the "queue" before Dynamic Energy Solutions LLC) are assumed to be in service.

- The proposed DG unit will be connected to the UI 13.8 kV distribution system through customer proposed one (1) 2000 kVA 13.8 kV/0.48 kV, Wye Grounded/Wye Grounded interconnection transformer with an impedance of 5.75% and X/R ratio of 2.22. The transformer is assumed to be solidly grounded. The transformer is utility-grade and has a Basic Insulation Level (BIL) of 95 kV.

- There is no emergency generation that will contribute to the site generation when the proposed DG is not interconnected.

- Loads are modeled as constant power type.

- The voltage at the source node of the feeders is operated at 1.03 per unit average (14.2 kV) during peak load periods.

- The voltage at the source node of the feeders is operated at 1.00 per unit average (13.8 kV) during minimum load periods.

- The generating facility will be connected to the UI 13.8 kV distribution system near Pole 6317, 40 Pepes Farm Rd on the feeder #3660, Woodmont Substation.

3. INTERCONNECTION EVALUATION

The system models described above have been used to complete the required analyses and simulations under different operating conditions. The sections below investigate the identified DG interconnection screens per the results of the conducted simulations. As was described in Section 2, the feeder steady-state voltage and voltage change study items that follow were performed considering these individual scenarios:

Scenario A:

1. 1500 kW PV interconnected to the normal supply Feeder #3660 during peak load conditions and all available generation on-line at that time.

2. 1500 kW PV interconnected to the backup supply Feeder #3650, feeding all the normal supply Feeder #3660 during peak load conditions and all available generation on-line at that time.

Scenario B:

1. 1500 kW PV interconnected to the normal supply Feeder #3660 during minimum load conditions and all available generation on-line at that time.

2. 1500 kW PV interconnected to the backup supply Feeder #3650, feeding all the normal supply Feeder #3660 during minimum load conditions and all available generation on-line at that time.

3.1 VOLTAGE CHANGE ANALYSIS

Voltage regulation is often a key issue when interconnecting DG to the utility system. One of the most significant limiting factors is how much the voltage changes when all DG is suddenly disconnected. These voltage changes may impact the safety, power quality, and reliability of supply to other customers which are served by the same feeder that the proposed DG will be interconnected to.

For these reasons it is recommended that for renewable generation such as photovoltaic generation, voltage changes of more than 1% will trigger closer scrutiny. Standard utility voltage regulating equipment, including substation transformer load tap changers (LTC) and pole type voltage regulators may not be able to compensate for larger changes in voltage in a timely manner.

Assuming that the generator will be operated in a constant power factor mode with a power factor of unity, this analysis simulates a sudden disconnection/loss of the 1500 kW PV generation, plus all other same type generation, and calculates the resulting voltage drop at the interconnecting DG PCC location on the feeder. The voltage changes are analyzed at the distribution feeder source, located at Woodmont Substation, at peak and minimum load periods, with maximum available generation.

Steady State Voltage – Peak Load: Figure #3 shows the voltage drop profile of Feeder #3660 under normal operating conditions before and after the proposed 1500 kW (at full output) generator interconnects with the electric system. Table #2 below shows the voltage levels (on a 120.0 Volt base) up to the POI at near Pole 6317 located within the ROW before and after the interconnection of the proposed 1500 kW PV generator. The voltage levels after the interconnection of the proposed 1500 kW PV generator are within acceptable levels.

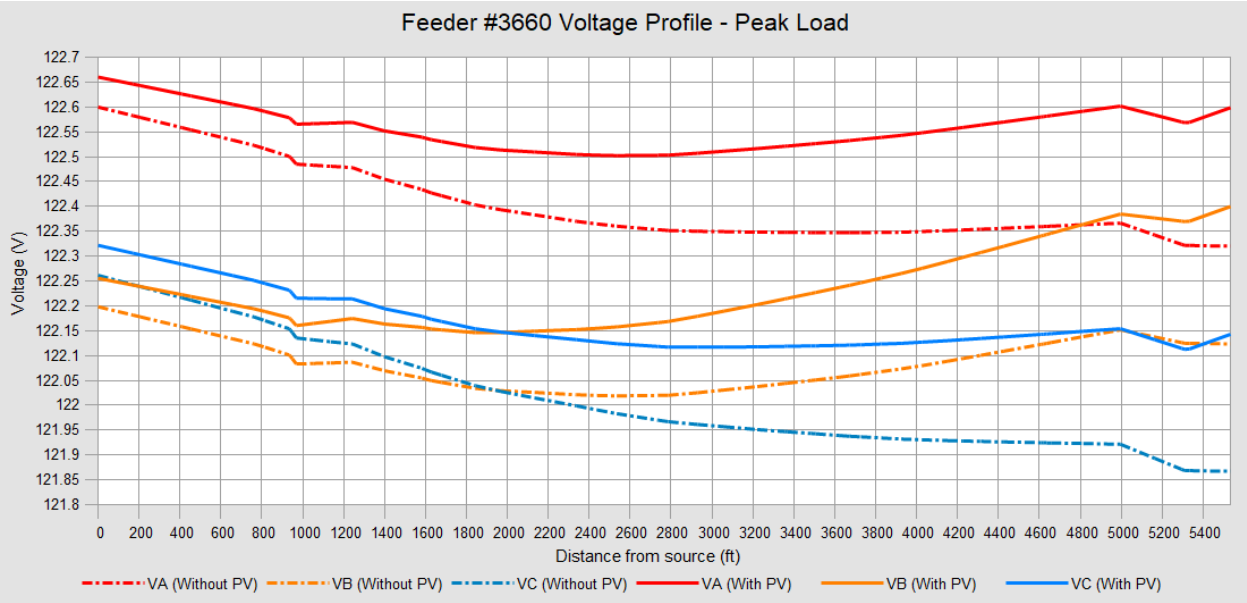


Figure #3: The Voltage Profile of Feeder #3660 from Woodmont Substation to the Customer POI near Pole 6317 at Peak Load Periods Before (dashed line) and After (solid line) with Full 1500 kW Generation (Scenario A) (120.0 Volt Base)

Phase Designation	Before DG (V)	After DG (V)	Delta (V) @ POI
A	122.32	122.60	0.28
B	122.12	122.40	0.28
C	121.87	122.14	0.27

Table #2: The Voltage Levels Before and After on Customer POI Near Pole 6317 at Peak Load Periods Before and After with Full 1500 kW Generation (Scenario A) (120.0 Volt Base)

Steady State Voltage – Minimum Load: Figure #4 shows the voltage drop profile of Feeder #3660 under normal operating conditions before and after the proposed 1500 kW (at full output) generator interconnects with the electric system. Table #3 below shows the voltage levels (on a 120.0 Volt base) up to the POI at Pole 6317 located within the ROW before and after the interconnection of the proposed 1500 kW PV generator. The voltage levels after the interconnection of the proposed 1500 kW PV generator are within acceptable levels.

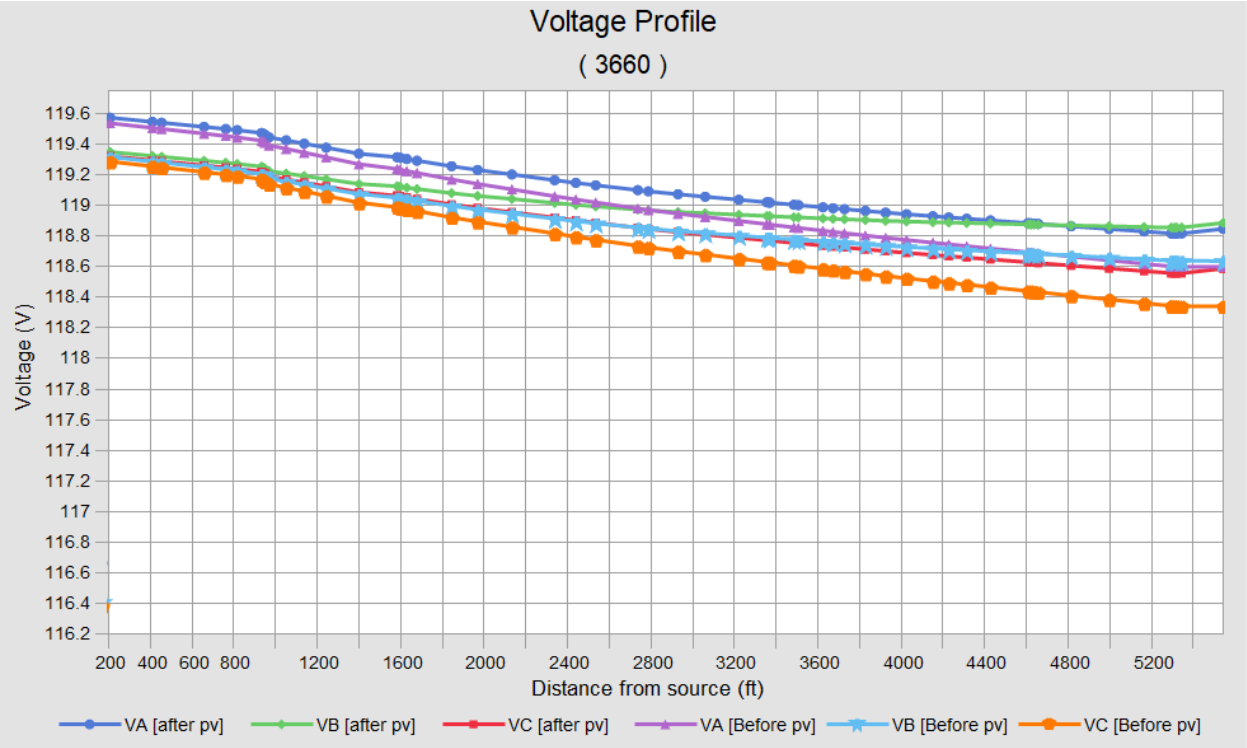


Figure #4: The Voltage Profile of Feeder #3660 from Woodmont Substation to the POI near Pole 6317 at Minimum Load Periods with Before (dashed line) and After (solid line) with Maximum Available Generation (Scenario B) (120 V Base)

Phase Designation	Before DG (V)	After DG (V)	Delta (V) @ POI
A	**118.6**	**118.8**	0.2
B	**118.7**	**118.9**	0.2
C	**118.4**	**118.6**	0.2

Table #3: The Voltage Levels Before and After on Customer POI near Pole 6317 at Minimum Load Period before and after with Full 1500 kW Generation (Scenario B) (120.0 Volt Base)

The worst-case scenario, maximum project output under minimum load conditions, reverse power flow through the Feeder #3660 is not observed.

Voltage Change – Scenario A (1500 kW DG, Peak Load): Table #4 shows the average voltage change measured at the customer's riser near Pole 6317 (POI) due to the sudden loss of the 1500 kW PV when interconnected to Feeder #3660. The voltage changes are 0.16%, 0.16% and 0.16% on Phase A, B and C, respectively. This voltage change is less than the 1% change threshold value that would be of concern.

		PEAK		
		VA	VB	VC
@ POI (100% drop)	V1	122.60	122.40	122.14
	V2	122.32	122.12	121.87
	Diff.	0.23%	0.23%	0.22%

Table #4: The Voltage Change on the Normal Feeder #3660 at Customer POI near Pole 6317 upon Sudden Loss of the 1500 kW PV Generator at Peak Load Periods (Scenario A) using Static Method of Voltage Change.

There is an insignificant voltage change at Woodmont Substation Bus #2 (Bus having the Normal Feeder #3660) for a sudden loss of the generating facility.

In the event of a contingency on Feeder #3660 at peak load periods the DG site load of the Feeder will be transferred to Woodmont Substation Feeder #3650, which is the backup to this area.

		PEAK		
		VA	VB	VC
@ POI (100% drop)	V1	116.99	116.85	115.61
	V2	**115.71**	**115.64**	**114.36**
	Diff.	1.07%	1.01%	1.04%

Table #5: The Voltage Change on the Backup Feeder #3650 at Customer POI Pole 6317 upon Sudden Loss of the 1500 kW PV Generator at Peak Load Periods (Scenario A) using Static Method of Voltage Change.

Table #5 shows the average voltage change measured at the customer's POI Pole 6317 due to the sudden loss of the 1500 kW PV generator when Feeder #3650 backs up Feeder #3660. The voltage changes are 1.07%, 1.01% and 1.04% on Phase A, B and C, respectively, which is more than the 1% voltage change threshold value that would be of concern. *After further review, the proposed project would have minor or no adverse effect on the Distribution System during the contingency conditions when Feeder #3650 picks up the full load from Feeder #3660. Note, it is unlikely Feeder #3650 would be required to support the entire load from feeder #3660; this load would generally be shared between several cricuits if the need arises.*

Voltage Change – Scenario B (1500 kW DG, Minimum Load): Table #6 shows the average voltage change measured at the customer's POI Pole 6317 due to the sudden loss of the 1500 kW PV generator when interconnected to Feeder #3660. The voltage changes are 0.22%, 0.21% and

0.21% on Phase A, B and C, respectively. This voltage change is less than the 1% change threshold value that would be of concern.

		MINIMUM		
		VA	VB	VC
@ POI (100% drop)	V1	**118.8**	**118.9**	**118.6**
	V2	**118.6**	**118.6**	**118.3**
	Diff.	-0.17%	-0.25%	-0.25%

Table #6: The Voltage Change on the Normal Feeder #3660 at Customer POI Pole #3660 upon Sudden Loss of the 1500 kW PV Generator at Minimum Load Periods (Scenario B) using Static Method of Voltage Change.

There is an insignificant voltage change at Woodmont Substation Bus #2 (Bus having the Normal Feeder #3660) for a sudden loss of the PV generator.

3.2 VOLTAGE FLUCTUATION ANALYSIS

The distribution system will experience a change in the primary voltage as a result of the connection or sudden loss of the proposed 1500 kW PV at peak load (Scenario A) or at minimum load (Scenario B). The voltage fluctuation analysis investigated the extent that this voltage change would affect the distribution system voltage regulating equipment, including the voltage change at Woodmont Substation. The control settings of this equipment were examined to determine if the proposed generation will adversely impact the equipment's settings or its service duty.

For the normal operating case with Feeder #3660 supplying the customer, there is minimal voltage change at the Woodmont Substation Bus for the loss of the 1500 kW PV generation at peak load (Scenario A) or minimum load (Scenario B). Since the voltage change measured at the substation is minimal, it will not affect the load tap changers on the substation transformers because the voltage change is less than the 1 V bandwidth of change needed for the tap changer controls to initiate movement.

The typical maximum number of fluctuations of PV output due to variations in cloud cover based on industry available data is approximately 2.5 fluctuations per minute from maximum to minimum output. The greatest voltage change that can be expected was determined to be 0.23% on POI during peak load. Therefore, the result of the voltage fluctuation analysis is that a voltage flicker of no more than 0.23% may occur no more than three times per minute, and this would be below the industry accepted threshold of irritation.

3.3 SYSTEM IMBALANCE IMPACTS

The UI 13.8 kV distribution system is normally imbalanced like nearly all U.S. utility distribution systems. The available load data suggests that the main feeder (Feeder #3660) total demand is fairly balanced with imbalance of approximately 3.63 % at peak and 1.30 % at minimum load conditions. Upon the proposed project interconnection, the imbalance is increased to 4.70 % at peak and decreased to 0.95% at minimum load conditions. The proposed configuration of the 1500 kW PV generator with the existing utility 2000 kVA 13.8 kV/0.48 kV, Wye Grounded/Wye Grounded interconnection transformer need to be able to handle any zero-sequence currents absorbed from this unbalance. The DG will share the system zero sequence load current with the substation transformers. In all cases the imbalance is within the EDC's operating tolerance. The proposed generation configuration operating at unity power factor is not expected to adversely impact any existing customer load imbalance but will slightly worsen it.

3.4 POTENTIAL FOR FERRORESONANCE

Ferroresonance refers to a special kind of resonance that involves system capacitance and the iron-core inductance of a transformer. Typically, the system capacitance of concern is the 15kV underground (UG) service entrance cable capacitance since it is most likely to be isolated with the transformer.

Ferroresonance generally occurs during a system imbalance, usually during switching, or when there is an open-phase condition with the conductor supplying the transformer. This unbalanced condition places capacitance in series with transformer magnetizing impedance. This can result in high over-voltages that may lead to failures in transformers, cables, arresters, and customer equipment.

The transformer's primary connection is a critical parameter in the analysis of ferroresonance. Certain transformer winding connections are highly susceptible to ferroresonance and some winding connections are less susceptible to ferroresonance. Transformers that are delta connected on the primary side (13.8 kV) are more susceptible to ferroresonance than those connected grounded wye. Also, there is a greater chance of ferroresonance when the transformer is lightly loaded, which will be the case due to a DG feeding into the distribution system when the customer's load falls below that of the DG's output.

Over-voltages greater than 1.25 p.u. can damage equipment during an open-phase condition. Analysis indicates that a primary UG cable run from the switching device to the transformer that has a high capacitance in combination with a lightly loaded transformer can lead to a ferroresonance susceptible condition.

The utility owned existing one 2000 kVA 13.8 kV/0.48 kV, Wye Grounded/Wye Grounded interconnection transformers will be less susceptible to a ferroresonant condition for any length

of cable due to the grounded primary of the transformer. The developer has secondary SEL 351R relay protection, also a 50, 50G relay at high side to eliminate the concerns. However, it is required to have a Utility owned PCC recloser with SEL 651R.

3.5 UNINTENTIONAL ISLANDING

The generator must adhere to IEEE Standard 1547 that mandates a DG must detect an unintentional islanding condition and cease to energize the Electric Power System (EPS) within two seconds of the occurrence. An islanding condition results whenever the DG continues to power a location even though electrical grid power from the local EPS is no longer present. This would occur if the feeder breaker were opened for any reason other than for a fault on the feeder, or if any other manual switching device in the feeder main line to the DG is opened. It should be noted that there may be interaction with other generators on the feeder.

The issues that arise from islanding depend on the DG system configuration like transformer connections and type of generation. In the case of the Stag Industrial Holdings (40 Pepes Farm Rd, Milford) PV project, the anti-islanding protection schemes in the inverters are expected to halt export of power when the potential for an islanding condition is detected.

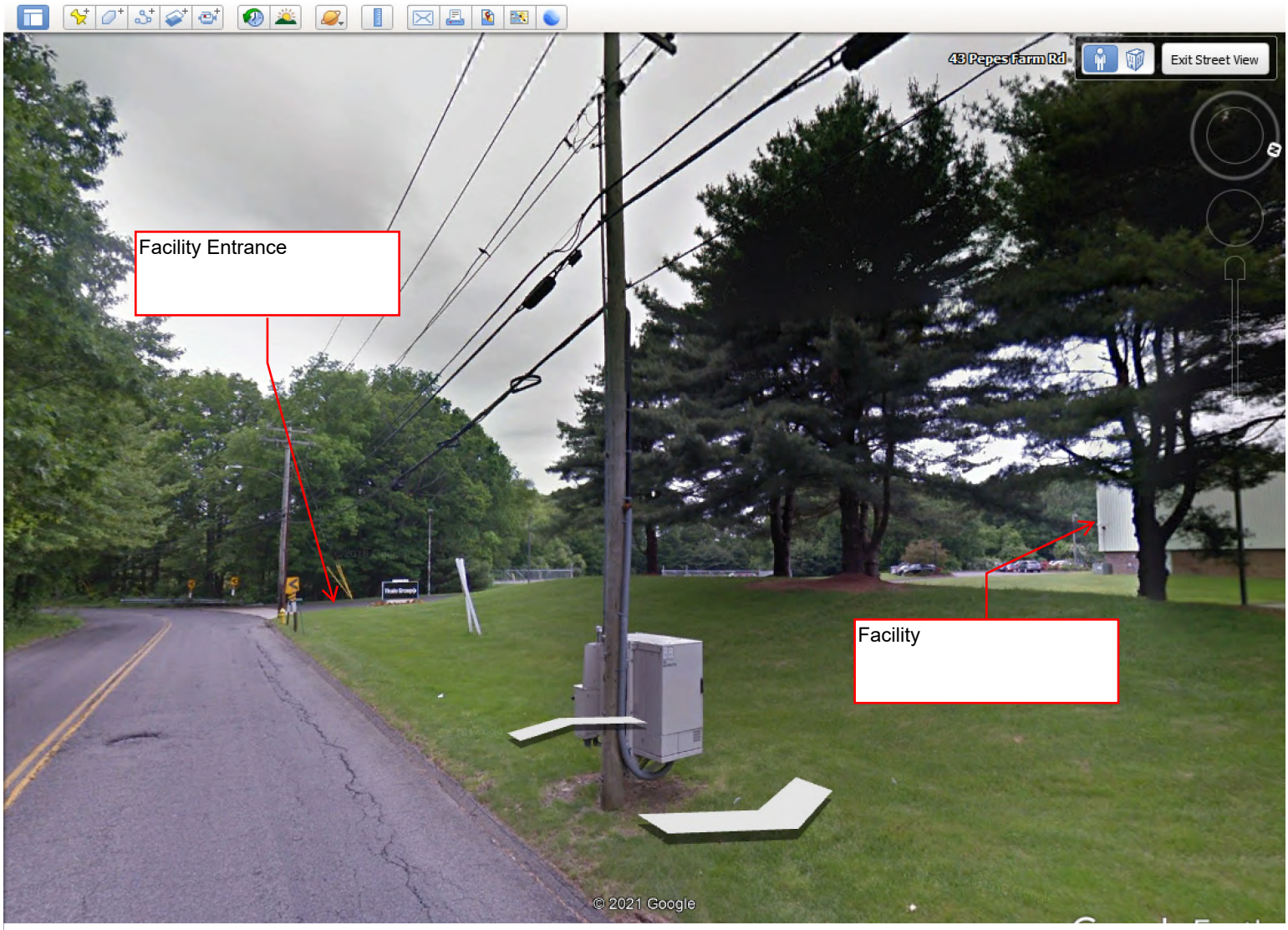
Exhibit D


Ruler
Line
Path
Polygon
Circle
3D path
3D polygon
Measure the distance between two points on the ground
Map Length: 266.46 Feet
Ground Length: 266.46
Heading: 316.90 degrees
Mouse Navigation
Save
Clear
40 Pepes Farm Rd
Thule Group
Class's Beverage & Ice Systems
Thatis ShowBiz Dance Theatre
Pepes Farm Rd
Timber Trail
New Haven Ave
1985
Google Earth
41°13'54.80" N 73°01'42.49" W elev 0 ft eye alt 1103 ft

Traveling North on Pepe Farm Road

Traveling North on Pepe Farm Road

Traveling South on Pepe Farm Road



Traveling South on Pepe Farm Road

Traveling South on Pepe Farm Road

Exhibit E

FEMA's National Flood Hazard Layer (NFHL) Viewer

with Web AppBuilder for ArcGIS

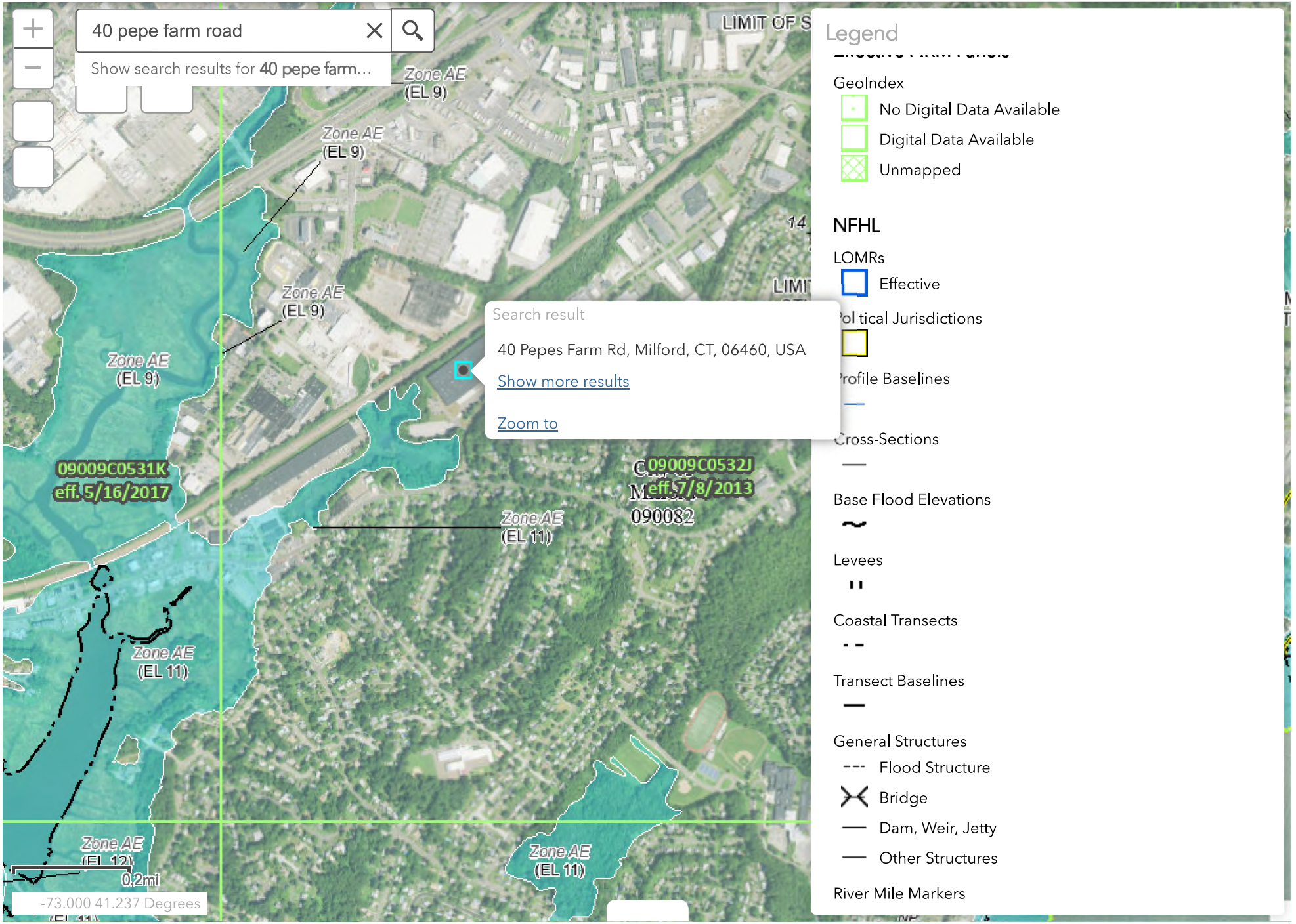


Exhibit F

Connecticut Aquifer Protection Areas

Connecticut Department of Energy and Environmental Protectic

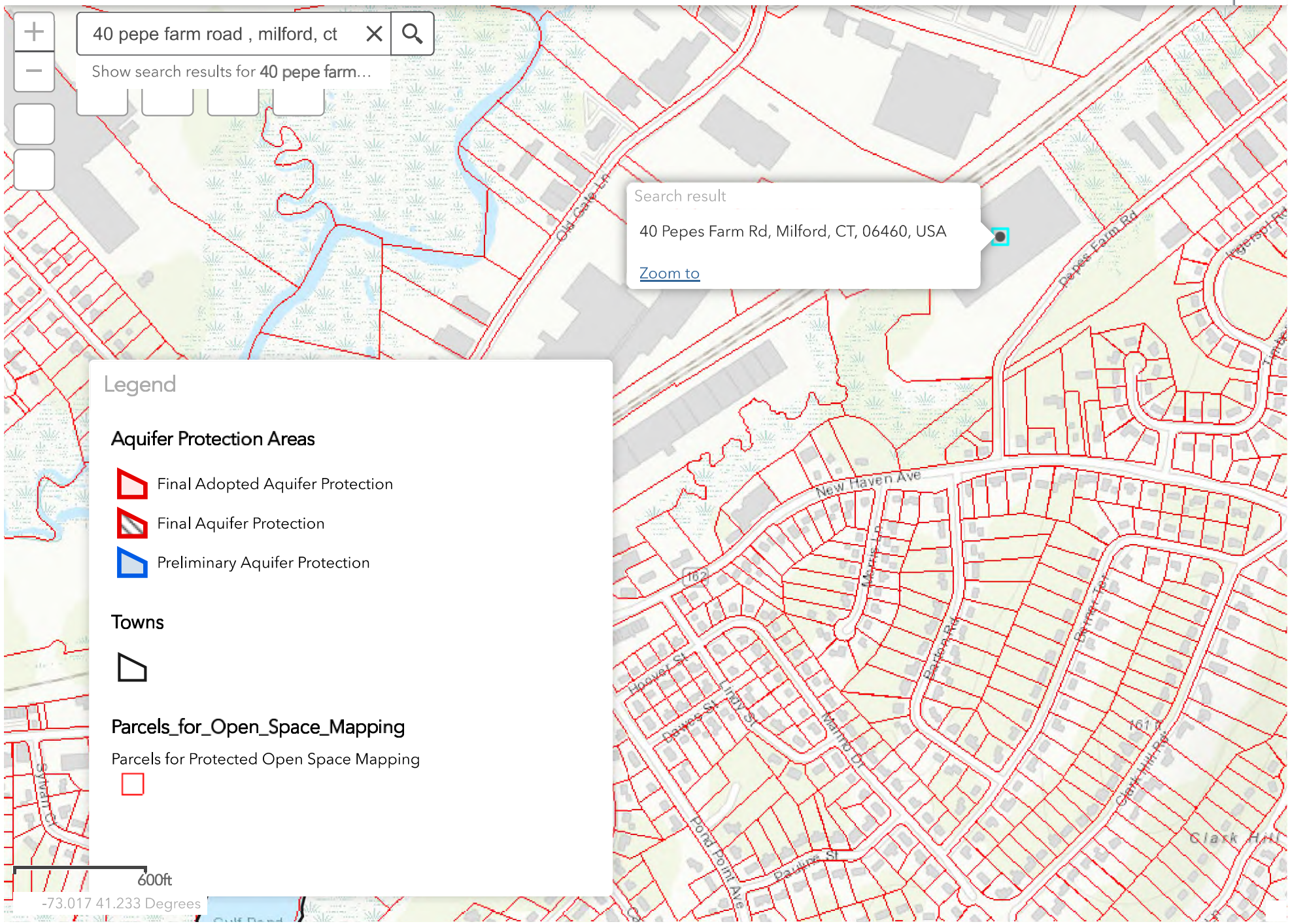


Exhibit G

WATER QUALITY CLASSIFICATIONS
MILFORD, CT

SURFACE WATER QUALITY CLASSES

A	A
AA	AA
B, B*	B, B*
SA	SA
SB	SB

NOTES:
Surface Water Classifications beginning with S refer to Coastal and Marine Surface Water.
B* is a subset of Class B where no direct wastewater discharges are allowed other than those consistent with Class AA, A and SA surface waters.

GROUND WATER QUALITY CLASSES

GA (white background)
GAA, GAAs
GA, GAA may not meet current standards
GB
GC

Area of Contribution to Public Supply Well

Final Aquifer Protection Area (Level A)
Major Basin Boundary

EXPLANATION

WATER QUALITY CLASSIFICATIONS (WQC) MAPS are one of the elements of the Water Quality Standards (WQS) for the State of Connecticut. The WQS are a part of Connecticut's clean water program and are essential for protecting and improving water quality. The WQS follow the principles of Connecticut's Clean Water Act which is in Chapter 446K of the Connecticut General Statutes. The WQS provide policy guidance in many areas, for example decisions on acceptable discharges to water resources, siting of landfills, remediation or prioritization of municipal sewerage system projects. The first two elements of the WQS are the Standards, which set an overall policy for management of water quality, and the Criteria, which are descriptive and numerical standards that describe the allowable parameters and goals for various water quality classifications. A discussion of these two elements is found in the Water Quality Standards document available on the CT DEEP website. The third element is the Classifications and the Water Quality Classification Maps which show the Classification assigned to each surface and groundwater resource throughout the State. The WQS are adopted using a public participation process. The WQC maps are also adopted using a public participation process but go through hearings separately from the Standards and Criteria hearings. Revision and adoption of the WQC data occurs in accordance with the public participation procedures contained in Section 22a-42c of the Connecticut General Statutes. Ground WQC is subject to Connecticut regulation and changes must be reviewed and adopted. All changes to the Surface WQC require an adoption process which is subject to federal review and approval in addition to CT regulation. The adoption dates for the WQC by major drainage basin are Housatonic River, Hudson River and Southwest Coastal Basins - March 1999; Connecticut River and South Central Coastal Basins - February 1993; Thames River, Pawcatuck River and Southeast Coastal Basins - December 1986. Surface Water Classifications do not change after the adoption date until the next major revision. Ground Water Classifications may change after the adoption date under specific circumstances. The map may have more than one WQC adoption date because a town may be in more than one major drainage basin.

SURFACE WATERS in Connecticut are divided into freshwater classified as AA, A, B or B* and saline waters classified as SA or SB. Class AA designated uses are existing or proposed drinking water supplies; habitat for fish and other aquatic life and wildlife; recreation; and water supply for industry and agriculture. Class A designated uses are habitat for fish and other aquatic life and wildlife; potential drinking water supplies; recreation; navigation; and water supply for industry and agriculture. Class SA designated uses are habitat for marine fish, other aquatic life and wildlife; shellfish harvesting for direct human consumption; recreation; industrial water supply; and navigation. Class B designated uses are habitat for fish and aquatic life and wildlife; recreation; navigation; and industrial and agricultural water supply. Class B*, applicable to Candlewood Lake, is a subset of Class B and is identical in all ways to the designated uses, criteria and standards for Class B waters except for the restriction on direct discharges. Class SB designated uses are habitat for marine fish and aquatic life and wildlife; commercial shellfish harvesting; recreation; industrial water supply; and navigation.

Surface waters which are not specifically classified shall be considered as Class A or Class AA. Surface waters in GA ground water areas are assumed Class A or Class SA unless otherwise indicated. Surface waters in GAA ground water areas are assumed Class AA unless otherwise indicated.

On the WQC map a surface water quality goal of A is represented by blue colored water bodies. Surface water quality goal of AA is represented by purple colored water bodies. Surface water quality goal of B is represented by gold colored water bodies.

GROUND WATERS in Connecticut are classified as GAA, GA, GB and GC. Class GAA designated uses are existing or potential public supply of water suitable for drinking without treatment and baseflow for hydraulically-connected surface water bodies. The Class GAAs is a subclass of GAA for ground water that is tributary to a public water supply reservoir. The area of contribution to a public water supply well is represented by a 500-foot radius around the well and is assumed to be Class GAA unless otherwise classified. Class GA designated uses are existing private and potential public or private supplies of water suitable for drinking without treatment and baseflow for hydraulically-connected surface water bodies. All ground waters not specifically classified are considered as Class GA. Class GB designated uses are industrial process water and cooling waters and baseflow for hydraulically-connected water bodies and is presumed not suitable for human consumption without treatment. Class GC designated uses are assimilation of discharges authorized by the Commissioner pursuant to Section 22a-430 of the General Statutes.

On the WQC map GA is represented by white colored land areas. Class GAA and class GAAs are represented by blue colored land areas. The area of contribution to a public water supply well is shown by a blue cross-hatch overprint. A notation of GAA followed by a size abbreviation indicates a watershed that contributes to the public water supply for a state other than Connecticut. Class GA or Class GAA areas that currently may not be meeting the GA or GAA standards are represented on the WQC maps by tan colored land areas. Class GB is represented by green colored land areas. Class GC is represented by magenta colored land areas.

FINAL AQUIFER PROTECTION AREAS (Level A) are included on the WQC maps for informational purposes. These areas are anticipated to be reclassified GAA during the next major basin updates, subject to public participation. The Aquifer Protection Program helps protect Connecticut's public drinking water resources by delineating aquifer protection areas (also called wellhead protection areas) for public supply wells and establishing land use regulations within these areas. These areas represent the land area contributing ground water to active public water supply wells or well fields that serve more than 1000 people and are set in sand and gravel aquifers (stratified drift deposits).

DATA SOURCES

WATER QUALITY CLASSIFICATIONS DATA – Water quality classifications shown on this map are based on information from the following digital spatial datasets that are typically shown together – Ground Water Quality Classifications Poly, Surface Water Quality Classifications Line, and Surface Water Quality Classifications Poly. The map legend above reflects the content of these three data sources. These WQC data were initially compiled on 1:24,000-scale 7.5 minute USGS topographic quadrangle maps and later digitized at 1:24,000 scale. For example, the Surface Water Quality Classifications Line and Surface Water Quality Classifications Poly digital data assigns surface water quality classifications to water bodies such as rivers, streams, reservoirs, lakes, ponds and coves found in 1:24,000-scale hydrography data available from CT DEEP. The hydrography may not include all the waterbodies in Connecticut. The Ground Water Quality Classifications Poly data assigns ground water quality classifications, at 1:24,000 scale, to the remaining land areas in Connecticut.

AQUIFER PROTECTION AREA DATA – Aquifer Protection Areas shown on this map are from the Aquifer Protection Area digital dataset which contains polygon data intended to be used at 1:24,000 scale. The dataset contains regulated areas classified as Level A Aquifer Protection Area (Final) and Level B Aquifer Protection Area (Preliminary). The Level B areas are not shown on the WQC maps. The data was collected from 1991 to the present and is actively updated as Final area mapping replaces earlier Preliminary areas. The Aquifer Protection Areas are delineated by the individual water companies owning the well fields and submitted to the CT DEEP for approval. Preliminary mapping provides a general estimate of the area contributing ground water to the well field. Final mapping is based on extensive, site-specific, detailed modeling of the ground water flow system. CT DEEP may adjust Final area boundaries to be consistent with 1:24,000 scale topography and base map data where appropriate during the approval process.

MAJOR DRAINAGE BASIN DATA – Major drainage basins shown on this map are from Major Basin Line data developed by CT DEEP and intended to be used at 1:24,000 scale.

BASE MAP DATA - Based on data originally from 1:24,000-scale USGS 7.5 minute topographic quadrangle maps published between 1969 and 1992. It includes political boundaries, railroads, airports, hydrography, geographic names and geographic places. Streets and street names are from Tele Atlas® copyrighted data. Base map information is neither current nor complete.

RELATED INFORMATION
This map is intended to be printed at its original dimensions in order to maintain the 1:24,000 scale (1 inch = 2000 feet).
WATER QUALITY STANDARDS - Go to the CT DEEP website for a summary and the full text of the "Water Quality Standards" and for other information on water quality.
AQUIFER PROTECTION AREAS - Go to the CT DEEP website for more information.

ADOPTED DATES

Water Quality Standards
February 25, 2011

Thames River, Pawcatuck River and Southeast Coastal Basins: December 1986

Connecticut River and South Central Coastal Basins: February 1993

Housatonic River, Hudson River and Southwest Coastal Basins: March 1999

MAP LOCATION

MAJOR BASINS
1 Pawcatuck
2 Southeast Coast
3 Thames
4 Connecticut
5 South Central Coast
6 Housatonic
7 Southwest Coast
8 Hudson

State Plane Coordinate System of 1983. Zone 2606
Lambert Conformal Conic Projection
North American Datum of 1983

SCALE 1:24,000 (1 inch = 2000 feet) when map is printed at original size

STATE OF CONNECTICUT
DEPARTMENT OF
ENERGY & ENVIRONMENTAL PROTECTION
79 Elm Street
Hartford, CT 06106-5127

Map created by CT DEEP
October 2018

Map is not colorfast
Protect from light and moisture

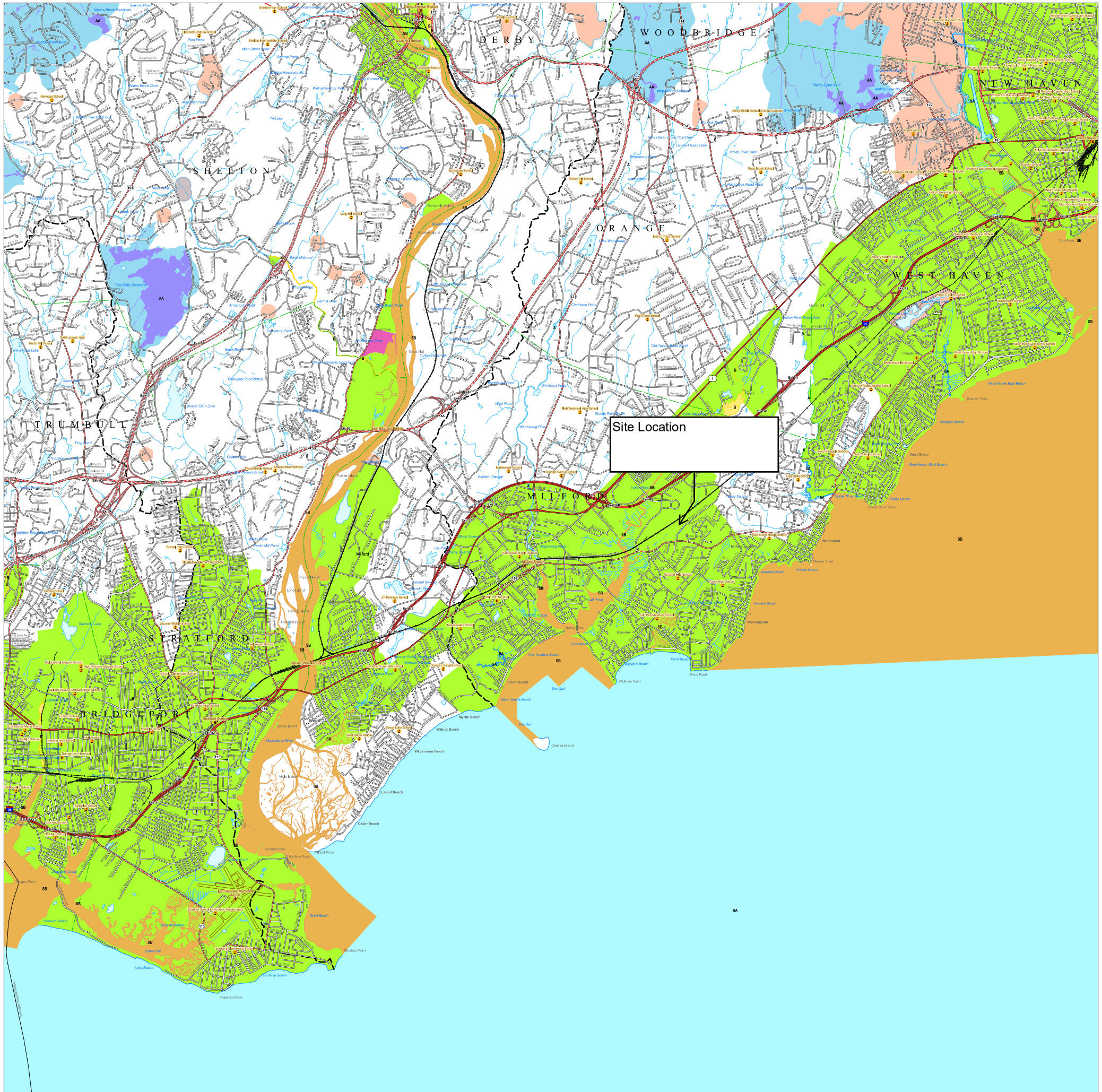
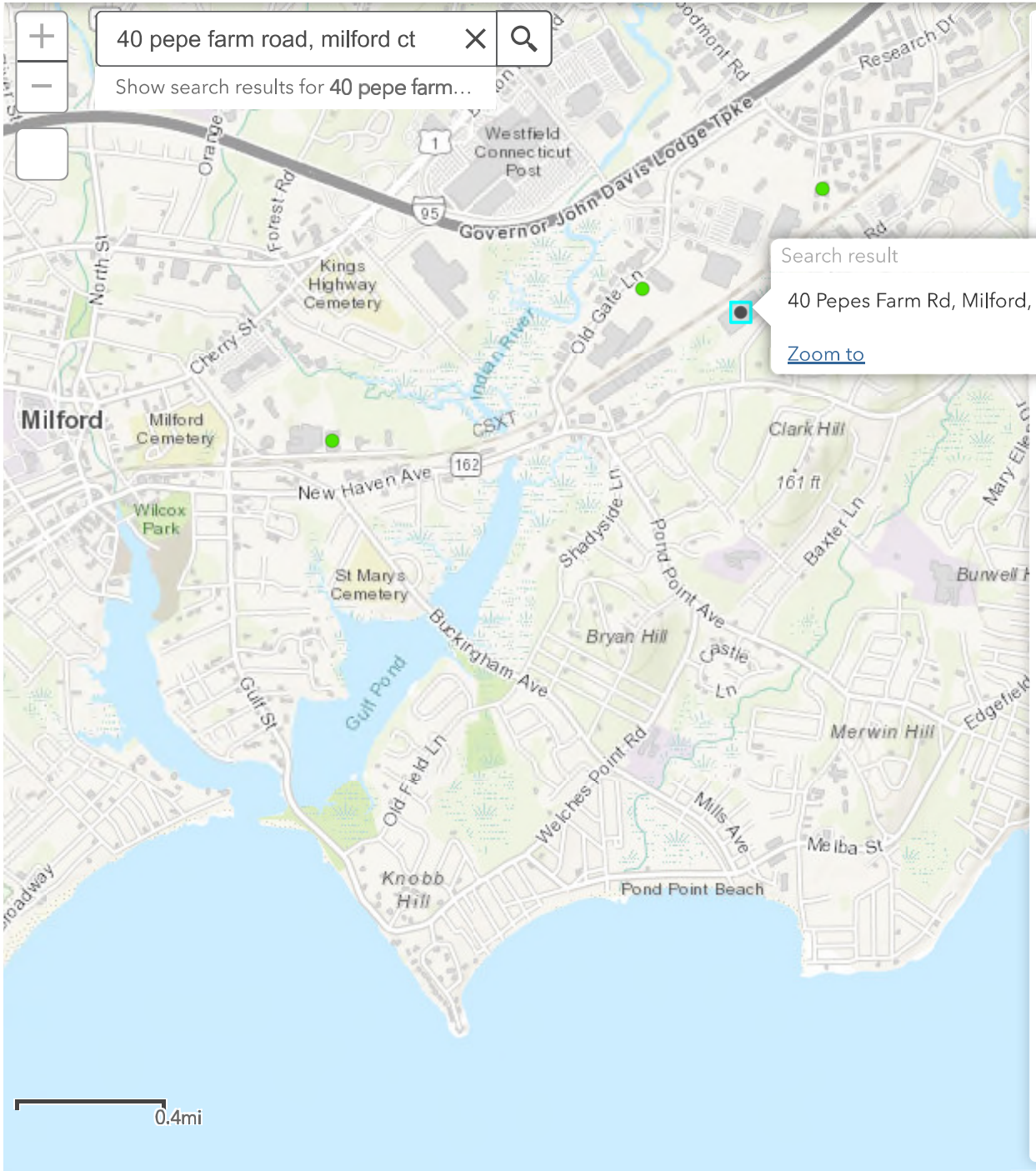


Exhibit H

Connecticut Environmental Land Use Restrictions

Connecticut Department of Energy and Enviro



About

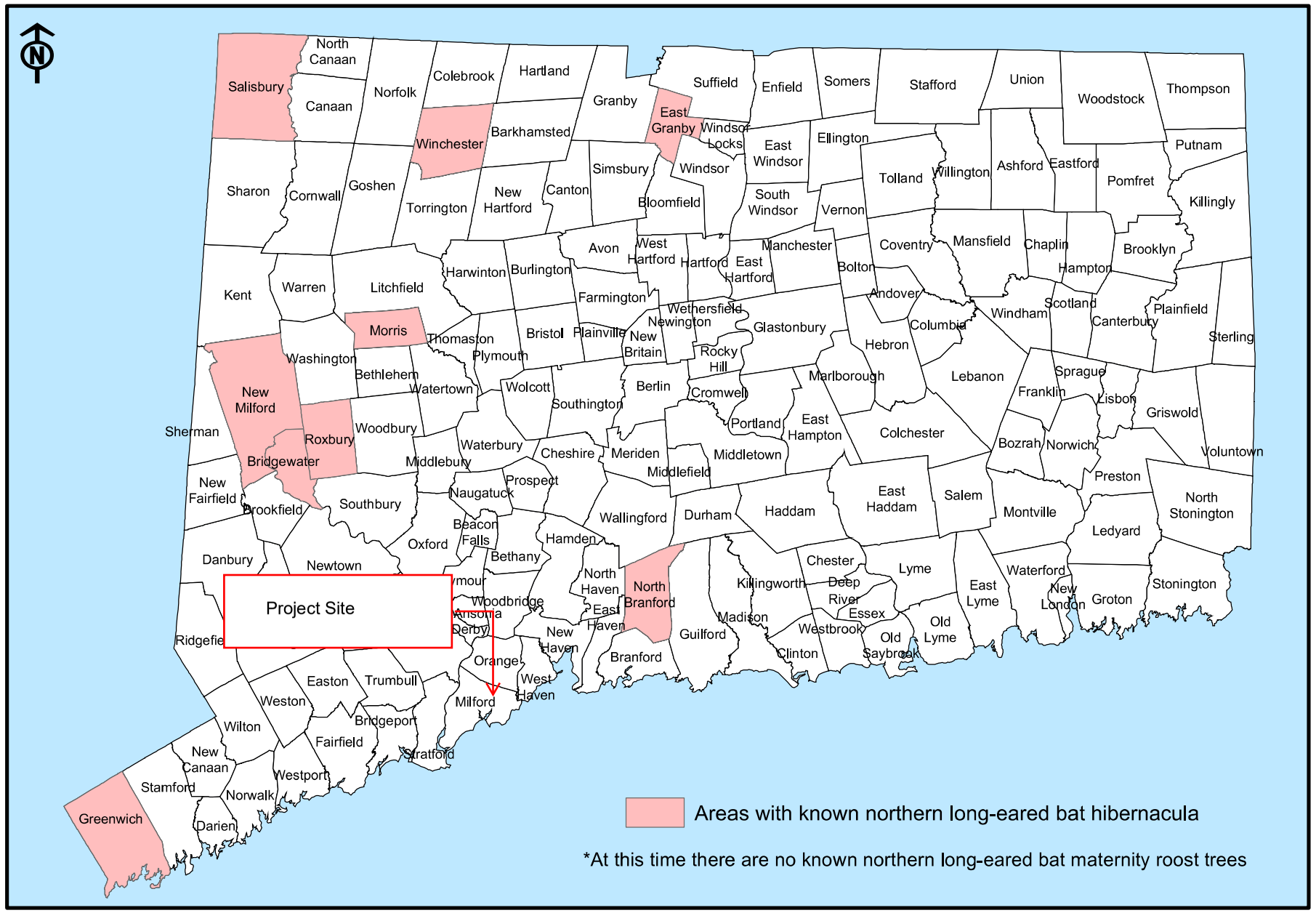
An Environmental Land Use Restriction (ELUR) is an easement granted to the Commissioner of DEEP by the property owner that is recorded on the municipal land records. The purpose of an ELUR is to minimize the risk of human exposure to pollutants and hazards to the environment by preventing specific uses or activities at a ion of a property. An ELUR is a tool remedial goals for a property to be exposure risk associated with its use.

tion, please see the Environmental Land Use Restrictions page or contact the ELUR Coordinator at deep.eur@ct.gov

This map was last updated on January 6, 2021

Exhibit I

Northern long-eared bat areas of concern in Connecticut to assist with Federal Endangered Species Act Compliance



March 6, 2019

For information on federal requirements visit http://www.fws.gov/midwest/endangered/mammals/nleb/

Exhibit J

U.S. Fish and Wildlife Service

National Wetlands Inventory

40 Pepe Farm Road

November 20, 2021

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

Exhibit K

Natural Diversity Data Base Areas

MILFORD, CT

June 2021

State and Federal Listed Species

Critical Habitat

Town Boundary

NOTE: This map shows general locations of State and Federal Listed Species and Critical Habitats. Information on listed species is collected and compiled by the Natural Diversity Data Base (NDDB) from a variety of data sources . Exact locations of species have been buffered to produce the generalized locations.

This map is intended for use as a preliminary screening tool for conducting a Natural Diversity Data Base Review Request. To use the map, locate the project boundaries and any additional affected areas. If the project is within a hatched area there may be a potential conflict with a listed species. For more information, complete a Request for Natural Diversity Data Base State Listed Species Review form (DEP-APP-007), and submit it to the NDDB along with the required maps and information. More detailed instructions are provided with the request form on our website.

www.ct.gov/deep/nddbrequest

Use the CTECO Interactive Map Viewers at http://cteco.uconn.edu to more precisely search for and locate a site and to view aerial imagery with NDDB Areas.

QUESTIONS: Department of Energy and Environmental Protection (DEEP)
79 Elm St, Hartford, CT 06106
email: deep.nddbrequest@ct.gov
Phone: (860) 424-3011

Connecticut Department of Energy & Environmental Protection
Bureau of Natural Resources
Wildlife Division

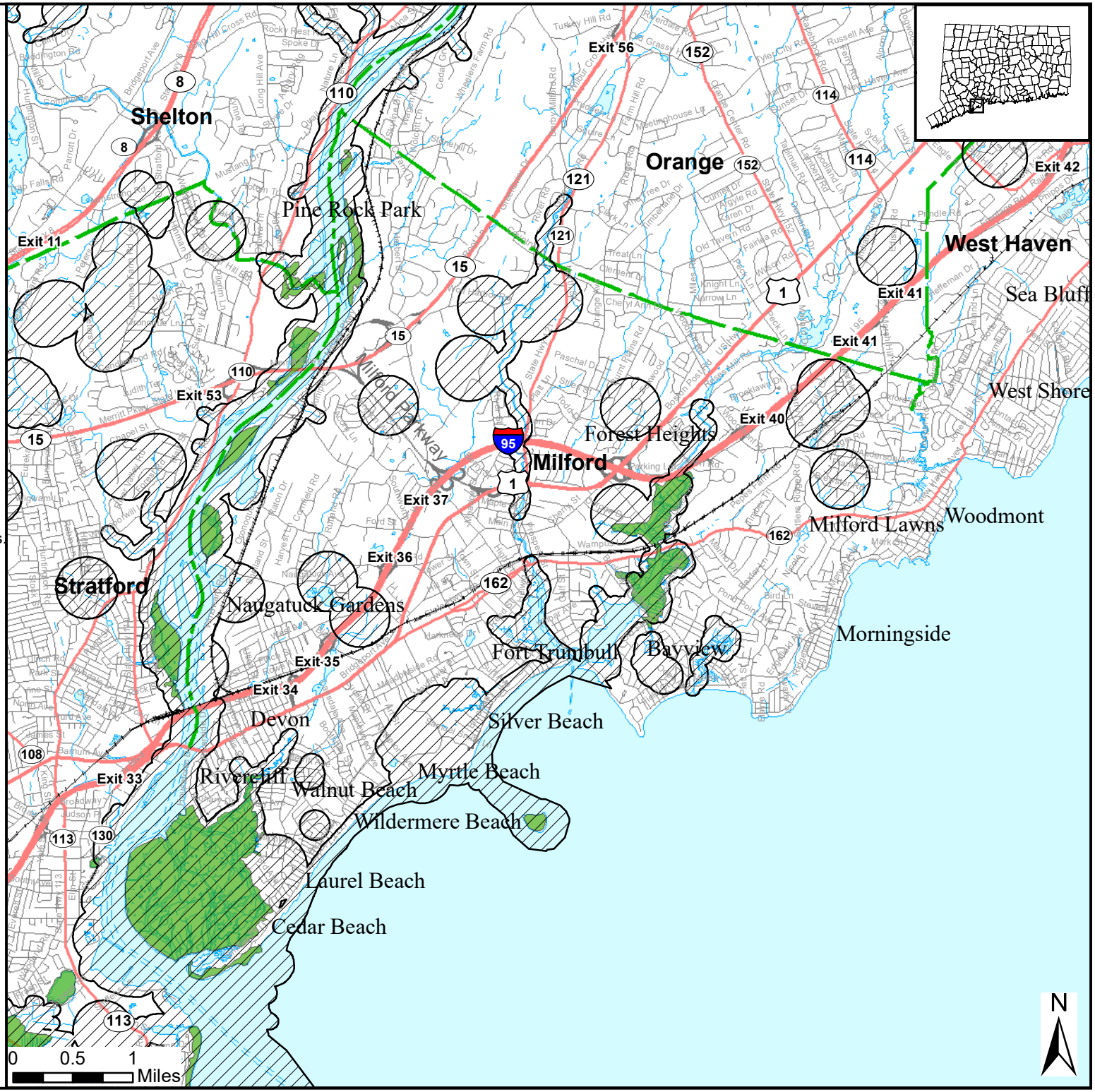


Exhibit L

Dynamic Energy Solutions, LLC
Stag Pepe Farm
Decommissioning Plan

Provided by:
Dynamic Energy Solutions, LLC
484.318.8800 / www.dynamicenergyusa.com

Table of Contents

Executive Summary

The decommissioning plan has been prepared to account for all activities related to removal and restoration of this site during and after decommissioning. The site shall include one project with a nameplate rating of 1.5 MW AC. The decommissioning plan provides all necessary steps for the decommissioning phase of the project. Decommissioning involves the removal of all rooftop, surface and sub-surface equipment. All structures including their foundations and all electrical equipment and material shall be removed.

The Decommissioning of the project will follow all local, state and federal guidelines for removal, recycling and disposal of all equipment. As with any construction, a company representative manager will be responsible for providing detailed plans for locations for recycling and disposal. They will also be responsible for providing site safety plans and meeting all safety expectations.

Introduction

The anticipated operational life of this PV solar facility is 25-30 years. All guidelines set forth by Local, State and Federal governing bodies of that time shall be followed for removal, recycling, disposal and safety. The decommissioning shall be complete when all structures have been removed from the site to the extent they are not otherwise in, or proposed to be placed into, productive use and the site is restored to the condition it was in prior to the erection of the PV solar facility. All decommissioning activities shall be overseen by the authority having jurisdiction and are subject to all permitting regulations and requirements.

Site Restoration

Once solar facility has been removed, it is expected that the site will be returned to as close to its original conditions as possible. Some minor grading may be required; topsoil (if removed) will be reapplied to allow for reseeding and growth.

Decommissioning of the Solar Facility

Equipment Dismantling and Removal

(Approximately 6 weeks decommissioning timeframe)

1. Obtain permit from the Town
2. Disconnect all utility grid power
3. Move all disconnects to the off position
4. Disconnect all above ground wirings, cables, and electrical connections
5. Remove all PV Modules
6. Remove Inverters, racking and associated equipment
7. Remove all electrical switchgear, transformers, and their foundations
8. Remove DAS equipment, feeders, and conduit
9. Excavate and remove Underground feeders and conduit
10. Remove all MV feeders and utility poles

Exhibit M

July 23, 2021

Attn: Mr. Pat Hastings
Dynamic Energy (484) 318-8802
1550 Liberty Ridge Drive, Suite 310
Wayne, PA 19087

RE: STAG – Pepe Farms
Roof Framing Analysis
40 Pepes Farm Road
Milford, CT 06460 SEI Project No.: 21355.00

Dear Mr. Hastings,

Structural Enginuity Inc. (SEI) has analyzed the existing building for a new roof solar array using the 2018 Connecticut State Building Code. Based on Dynamic Energy's site observations, the roof framing is understood to consist of a metal deck on 30" deep joists spaced 6'-2'' apart and spanning between 36" deep joist girders. The building uses steel columns consisting of wide flange shapes.

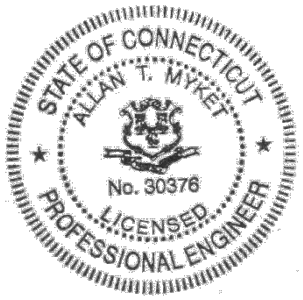
The exiting roof has been analyzed to support a new solar array system. The building construction can support a new solar PV array with a maximum average load of 6.0 psf. These proposed loads and the analysis of the existing members can be seen in SEI's attached calculations. This weight is typically enough to accommodate a fully ballasted racking system. Therefore, it is SEI's professional opinion that the existing roof framing is structurally adequate to support the proposed solar array system. It should be noted that the proposed loading is assuming that the proposed solar array covers the entirety of the roof and the existing framing may be able to support a higher load for an array that is limited to only a portion of the roof surface. If a higher load is necessary, SEI would need to further analyze the detailed racking layout in order to determine if the framing is acceptable.

Please contact our office, at your convenience, should you have any further questions relating to this matter.

Sincerely,

Peter Martin
Engineer III
pmartin@structuralenginuityinc.com

Allan T. Myket, P.E.
President/Founder
amyket@structuralenginuityinc.com



7/23/2021

Structural Enginuity Inc.

Attachments:
- SEI Roof Structural Framing Analysis
- Dynamic Energy Drawings

Structural Enginuity, Inc.
1815 W. Diehl Rd, Ste 100
Naperville, IL 60563
(630) 219-1997
www.structuralenginuityinc.com

Project Name:	STAG Industrial Holdings
Project No.:	21355.00
Client Name:	Dynamic Energy
Date:	7/23/2021

Project Name: STAG INDUSTRIAL HOLDINGS
Roof Structural Analysis
40 Peper Farm Road
Milford, CT 06460

Project Client: Dynamic Energy™
1550 Liberty Ridge Drive, Suite 310
Wayne, PA 19087
(877) 809-8884

Client Contact: Pat Hastings
phastings@dynamicenergy.com

Design References: 2018 Connecticut State Building Code
ASCE 7-16

Scope of Work:

Provide structural engineering services required in the preparation of construction contract documents for the installation of solar panels at the address listed above. The racking system and proposed array layout, provided by client, will be used in conformance with the 2018 Connecticut State Building Code to determine if the existing structure has the capacity to support the addition of the array.

Existing Structure:

The storage facility Is approximately 642'-5" x 315'-4" with a flat roof. The roof is supported by 30" deep open web steel joists which run to 36" deep joist girders.

Loads

Structural Enginuity, Inc.
1815 W. Diehl Rd, Ste 100
Naperville, IL 60563
(630) 219-1997
www.structuralenginuityinc.com

Project Name:	STAG Industrial Holdings
Project No.:	21355.00
Client Name:	Dynamic Energy
Date:	7/23/2021

DEAD LOADS

Building Section: Roof 1

Building Section Description: Solar PV modules to be mounted on roof with a ballasted racking system. The roof consists of a waterproofing membrane over rigid insulation and a metal deck. The deck is supported by open web metal bar joists

Existing Dead Loads

Roof deck with foam insulation	3	psf
Metal Deck	3	psf
Steel Joists	3	psf
MEP & Misc	5	psf
	14	psf

Proposed Dead Loads

Proposed Solar Array	6	psf

LIVE LOADS

Building Section: Main Roof

Proposed Live Loads

Roofs - Ordinary flat pitched, and curved roofs[1]	20	psf	*IBC 2018 Table 1607.1*

Note 1: Per IBC 2018 1607.13.5.1: Roof live loads need not be applied to the area covered by photovoltaic panels where the clear space between the panels and the roof surface is 24 inches or less.

Structural Enginuity, Inc.
1815 W. Diehl Rd, Ste 100
Naperville, IL 60563
(630) 219-1997
www.structuralenginuityinc.com

Project Name:	STAG Industrial Holdings
Project No.:	21355.00
Client Name:	Dynamic Energy
Date:	7/23/2021

SNOW LOADS

Ground snow load, p_g	30	psf	*CT BC 2018 Appendix N*
Exposure Factor, C_e	1		*ASCE Table 7.3-1*
Thermal Factor, C_t	1.2		*ASCE Table 7.3-2*
Importance Factor, I_s	1		*ASCE Table 1.5-2*

Flat roof snow load, $p_f = 0.7C_eC_tI_sp_g$ 25.2 psf *ASCE Equation 7.3-1*

Building Section: Main Roof

Roof Slope	1.2	degrees	
Roof Slopw Factor, C_s	1		*ASCE Fig 7.4-1*

Minimum snow load for roofs with slopes less than 15 degrees

$p_m = 20I_s$	20	psf	*ASCE 7.3.4*
Controlling snow load	**25.2**	**psf**	

Decking Check

Structural Enginuity, Inc.
1815 W. Diehl Rd, Ste 100
Naperville, IL 60563
(630) 219-1997
www.structuralenginuityinc.com

Project Name:	STAG Industrial Holdings
Project No.:	21355.00
Client Name:	Dynamic Energy
Date:	7/23/2021

DECKING:

Assume Vulcraft 1.5B 22 Gauge roof deck
3 span condition
6'-2'' ft span

Per inspection, existing metal deck is type 1.5B deck manufactured by Vulcraft.

Allowable loading	87	psf		*Vulcraft Deck Catalog*
Roof loading				
Dead Load	14	psf		
Roof Live Load	20	psf		
Snow Load	25.2	psf		
Proposed Solar Array	6	psf		
Load combinations				
D	14	psf		
D+Lr	34	psf		
D+S+Solar	45.20	psf	**CONTROLS**	
D+0.75Lr	29	psf		
D+0.75S	32.9	psf		

Controlling load combination **45.2 psf < Allowable load = 87 psf** **OK**

Vulcraft 1.5B 22 Gauge deck OK

Framing Check

GENERAL STANDARD JOIST ANALYSIS

For Steel Joists Considered as Simple-Span Beams
Subjected to Non-Standard Loads

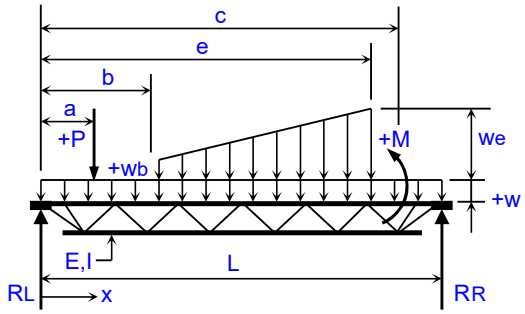
Job Name:		Subject:			
Job Number:		Originator:		Checker:	

Input Data:

Joist Data:

Designation =	K-series	
Span, L =	38.7100	ft.
Modulus, E =	29000000	psi
Inertia, Ix =	382.86	in.^4

W(LL) = 253



Nomenclature

Original Design or Capacity Loads:

Full Uniform:

w = 336 plf

	Start		End			
Distributed:	b (ft.)	wb (plf)	e (ft.)	we (plf)	**Point Loads:**	a (ft.)	P (lbs.)
#1:					#1:		
#2:					#2:		
#3:					#3:		
#4:					#4:		
#5:					#5:		
#6:					#6:		
#7:					#7:		
#8:					#8:		
					#9:		
					#10:		
					#11:		
					#12:		
					#13:		
					#14:		
					#15:		

Moments:	c (ft.)	M (ft-lbs)
#1:		
#2:		
#3:		
#4:		

New Design Loads:

Full Uniform:

w = plf

	Start		End				
Distributed:	b (ft.)	wb (plf)	e (ft.)	we (plf)		**Point Loads:**	a (ft.)	P (lbs.)
#1:	0.0000	86.33333	38.7100	86.33333	Dead Load	#1:		
#2:	0.0000	155.4	38.7100	155.4	Snow Loac	#2:		
#3:	0.0000	37	38.7100	37	Solar Load	#3:		
#4:						#4:		
#5:						#5:		
#6:						#6:		
#7:						#7:		
#8:						#8:		
						#9:		
						#10:		
						#11:		
						#12:		
						#13:		
						#14:		
						#15:		

Moments:	c (ft.)	M (ft-lbs)
#1:		
#2:		
#3:		
#4:		

Results of Joist Analysis:

Original Design or Capacity Loads:

End Reactions:

RL = 6503.3 lbs. RR = 6503.3 lbs.

Minimum Design Web Member Shear:

Vw(min) = 1625.82 lbs. (25% of maximum end reaction for K-series and LH-series joists per SJI Spec's.)

Maximum Moments:

+Mx(max) = 62935.5 ft-lbs @ x = 19.36 ft.
-Mx(max) = 0.0 ft-lbs @ x = 0.00 ft.

***Maximum Deflections:**

-Δ(max) = -1.758 in. @ x = 19.36 ft.
+Δ(max) = 0.000 in. @ x = 0.00 ft.
Δ(ratio) = L/264

**Note: deflections shown above include a 15% increase above the values calculated using traditional "simple-beam" flexure in order to more closely match actual test results obtained by SJI.*

New Design Loads:

End Reactions:

RL = 5394.9 lbs. RR = 5394.9 lbs.

Maximum Moments:

+Mx(max) = 52209.0 ft-lbs @ x = 19.36 ft.
-Mx(max) = 0.0 ft-lbs @ x = 0.00 ft.

***Maximum Deflections:**

-Δ(max) = -1.459 in. @ x = 19.36 ft.
+Δ(max) = 0.000 in. @ x = 0.00 ft.
Δ(ratio) = L/318

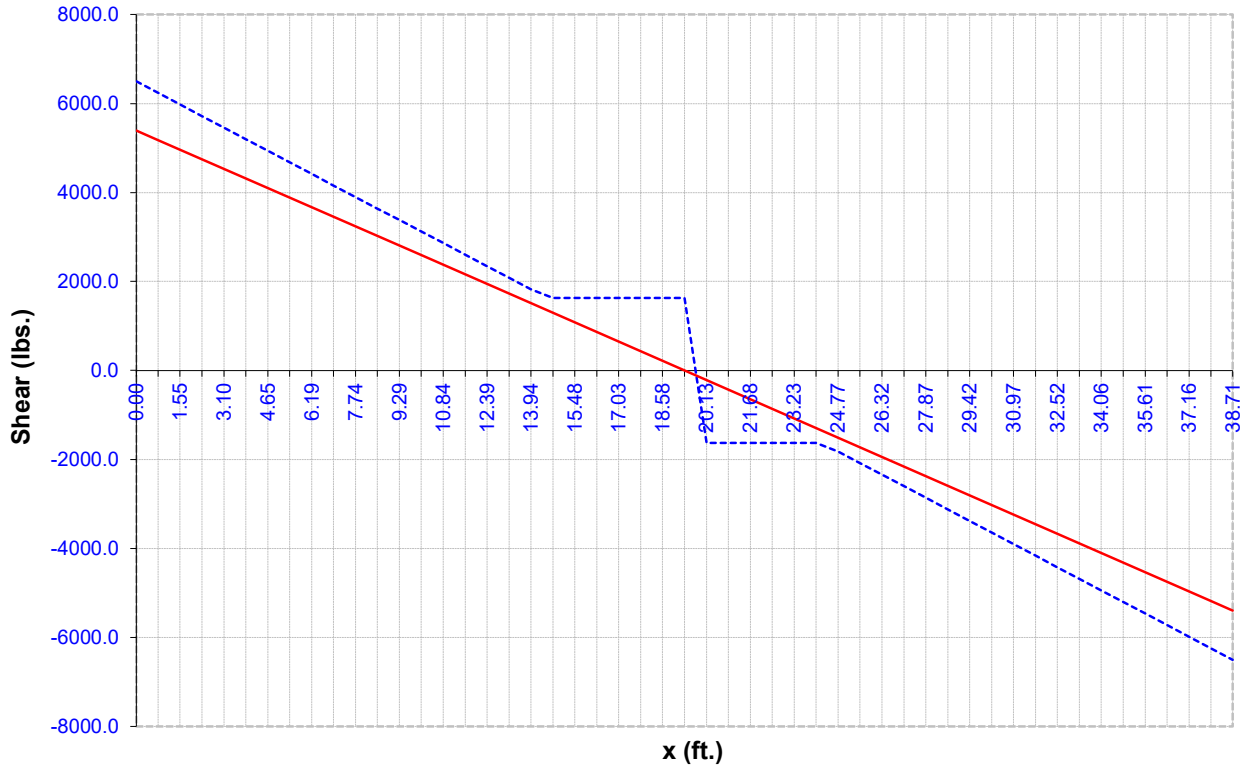
**Note: deflections shown above include a 15% increase above the values calculated using traditional "simple-beam" flexure in order to more closely match actual test results obtained by SJI.*

Maximum Stress Ratios:

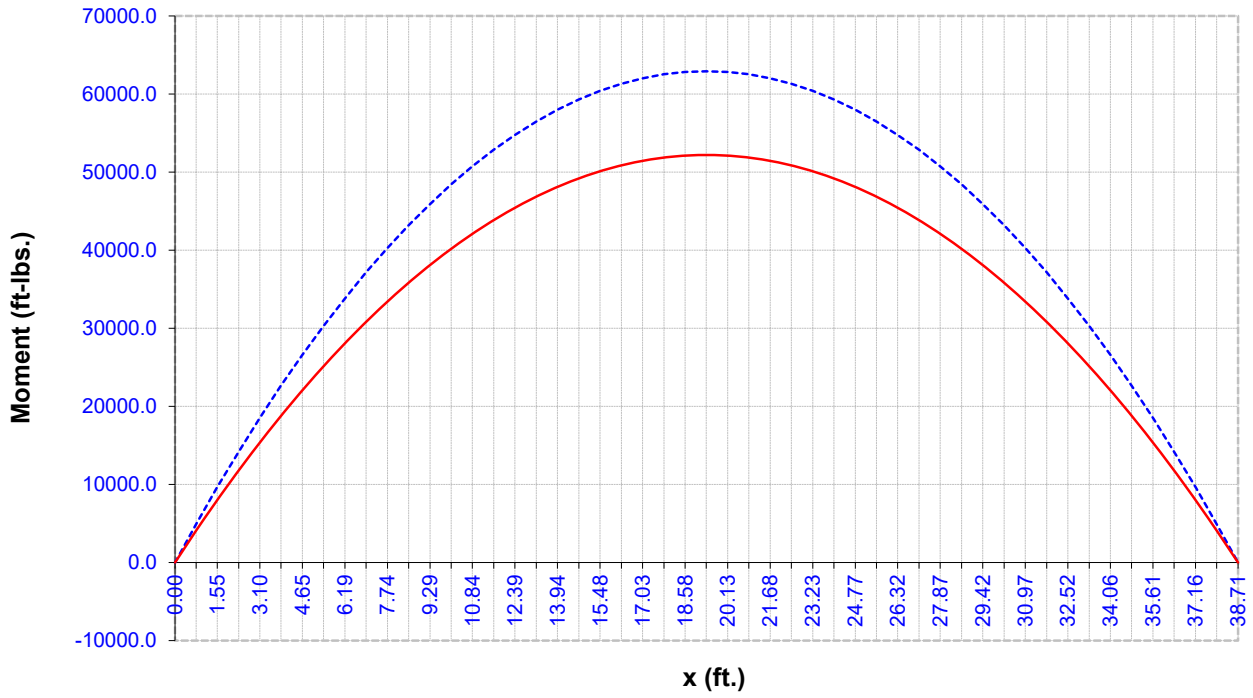
S.R. = **0.830** for Shear @ x = 34.06 ft.
S.R. = **0.830** for Moment @ x = 36.39 ft.

Comments:

Shear Diagram



Moment Diagram



= curves for original design or capacity loads

= curves for new design loads

Appendix A: DynamiC Energy Drawings

STAG INDUSTRIAL HOLDINGS

40 PEPES FARM ROAD
MILFORD, CT 06460

SYSTEM DESCRIPTION

TOTAL SYSTEM SIZE:	2160 kW DC STC TOTAL
MODULE TYPE:	400W JINKO
QUANTITY:	5400 MODULES
TOTAL STRINGS:	156 STRINGS
MODULES PER STRING:	15
TILT ANGLE:	10.0 DEGREES
AZIMUTH:	143.544 DEGREES

MODULE DESCRIPTION:

MAXIMUM POWER (W):	400 W
OPEN CIRCUIT VOLTAGE (Voc):	49.8 V
MAXIMUM POWER VOLTAGE (Vpm):	41.7 V
SHORT CIRCUIT CURRENT (Isc):	10.36 A
MAXIMUM POWER CURRENT (Ipm):	9.60 A
EFFICIENCY (%):	19.88 %
MAXIMUM SYSTEM VOLTAGE:	1500 VDC

INVERTER DESCRIPTION: CHINT POWER SYSTEMS

TYPE OF INVERTER:	50KW
TOTAL NUMBER OF INV:	30
MODEL NUMBER:	CPS-SCA50KTL
DIMENSIONS:	1000*600*260mm
CONTINUOUS POWER:	50KW
DC PEAK POWER TRACKING RANGE:	480-850V
CEC PEAK EFFICIENCY:	98.5%

RACKING DESCRIPTION:

RACKING MANUFACTURER:	DCE SOLAR
RACKING TYPE:	BALLASTED

PROJECT CONTACTS

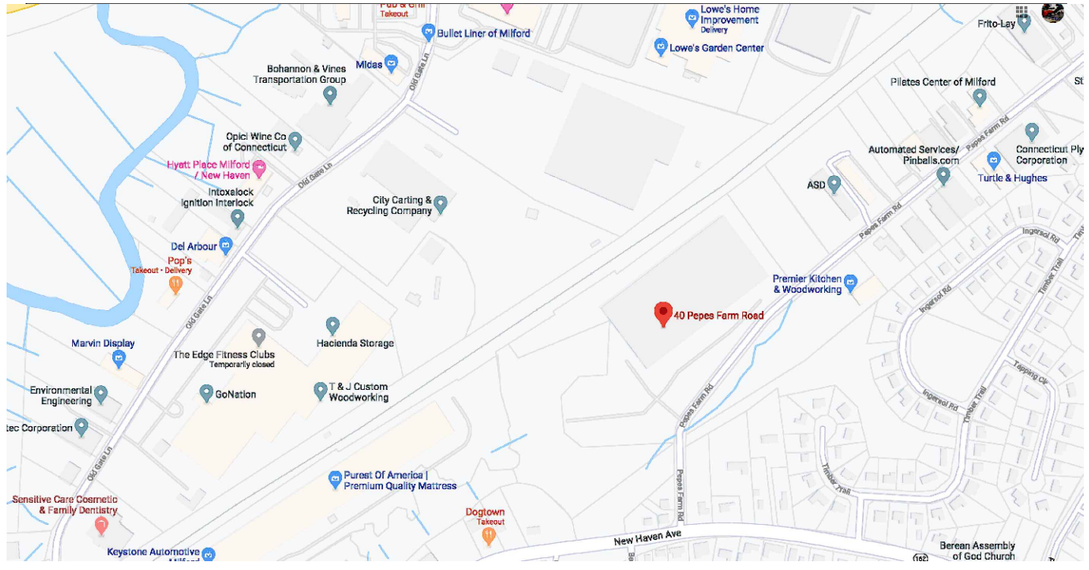
PROJECT MANAGER:
MANOLI ALLEXOPOULOS
1550 LIBERTY RIDGE DR., STE 310
WAYNE, PA 19087
PHONE: (717) 951-0518

CONSTRUCTION MANAGER:
MANOLI ALLEXOPOULOS
1550 LIBERTY RIDGE DR., STE 310
WAYNE, PA 19087
PHONE: (717) 951-0518

ELECTRICAL ENGINEER:
HENDRIK BURGER
1550 LIBERTY RIDGE DR., STE 310
WAYNE, PA 19087
PHONE: (484) 323-1154
LICENCE#: 31153

STRUCTURAL ENGINEER
JAMES A MARX, P.E.
10 HIGH MOUNTAIN ROAD
RINGWOOD, NJ 07456
ASCENT CONSULTING ENGINEERING
NORTH WINDS CENTER
LICENCE#: CT (NO. 17349)

1 AERIAL PHOTO
SCALE: N.T.S.



2 VICINITY MAP
SCALE: N.T.S.

DRAWING LIST

DESIGN CRITERIA:

WIND SPEED:	123 MPH EXP.B
GROUND SNOW LOAD:	30 PSF
ROOF SNOW LOAD:	30 PSF

APPLICABLE CODES

2018 CONNECTICUT STATE
BUILDING CODE
ELECTRICAL CODE NFPA 70, 2017 ED,

STRUCTURAL ENGINUITY
1815 W. DIEHL RD SUITE 100
NAPERSVILLE, IL 60563

SEAL

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FAX: 610-276-5403
WWW.DYNAMICENERGYUSA.COM

STAG INDUSTRIAL HOLDINGS
40 PEPES FARM ROAD
MILFORD, CT 06460

DRAWING ISSUE
- [ ] INTERCONNECTION
- [x] PERMITTING
- [ ] CONSTRUCTION
- [ ] RECORD

REV. #	DESCRIPTION: PERMIT SET ISSUED	DATE: 05-04-2019
1		

DRAWING NAME
COVERSHEET

DRAWING NUMBER
G001

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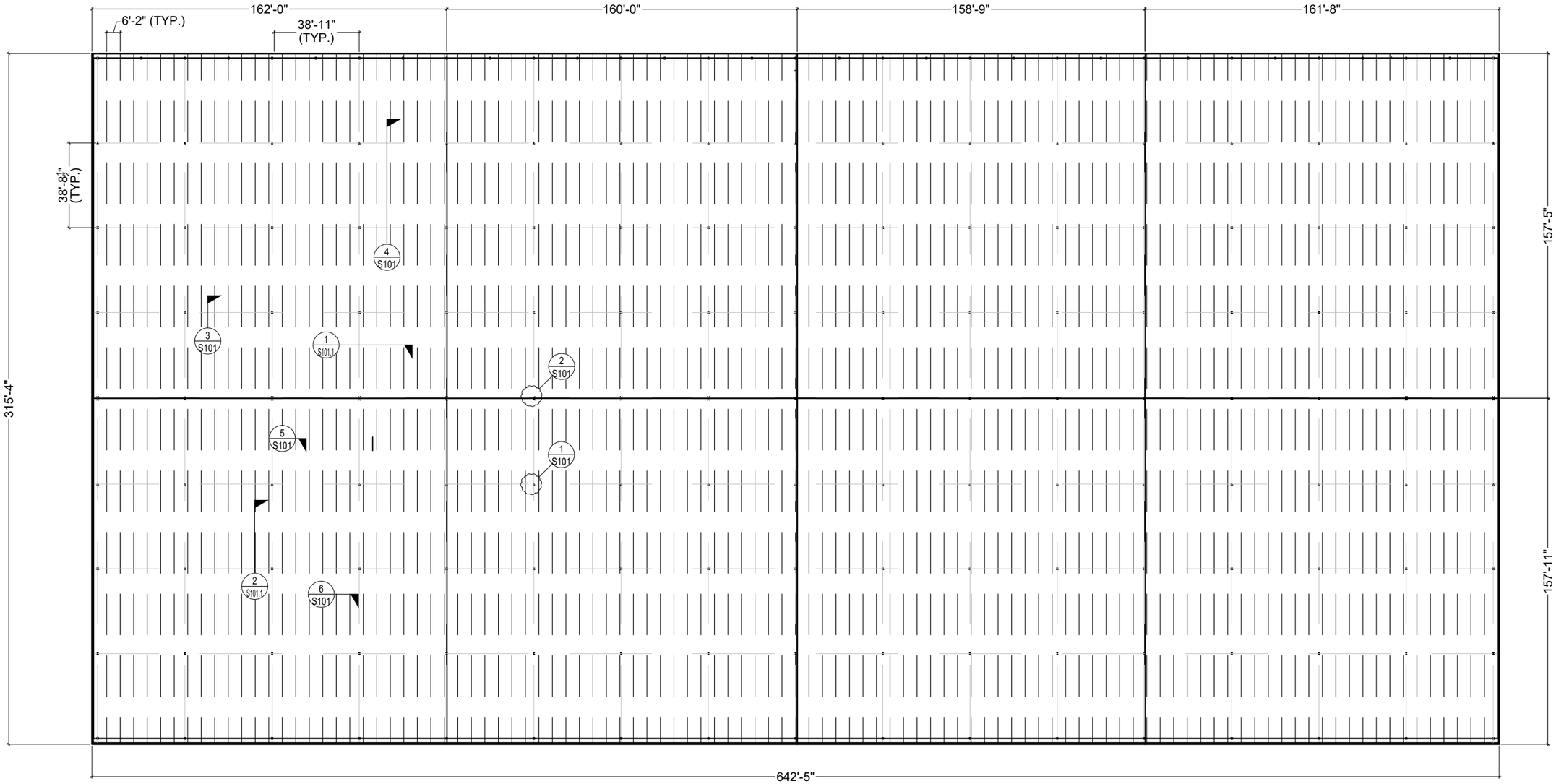

0' 25' 50' 75'

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- [ ] INTERCONNECTION
- [x] PERMITTING
- [ ] CONSTRUCTION
- [ ] RECORD

REV. #	DESCRIPTION:	DATE
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DRAWING NAME
BUILDING OVERVIEW

DRAWING NUMBER
S100

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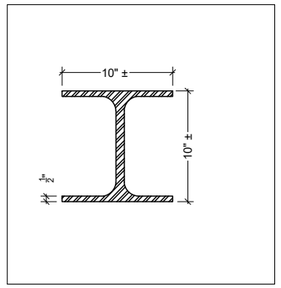
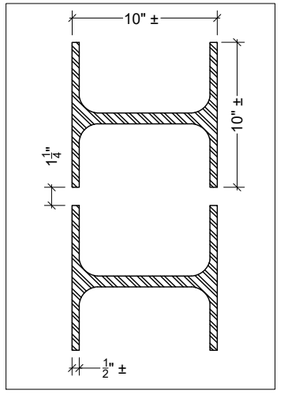
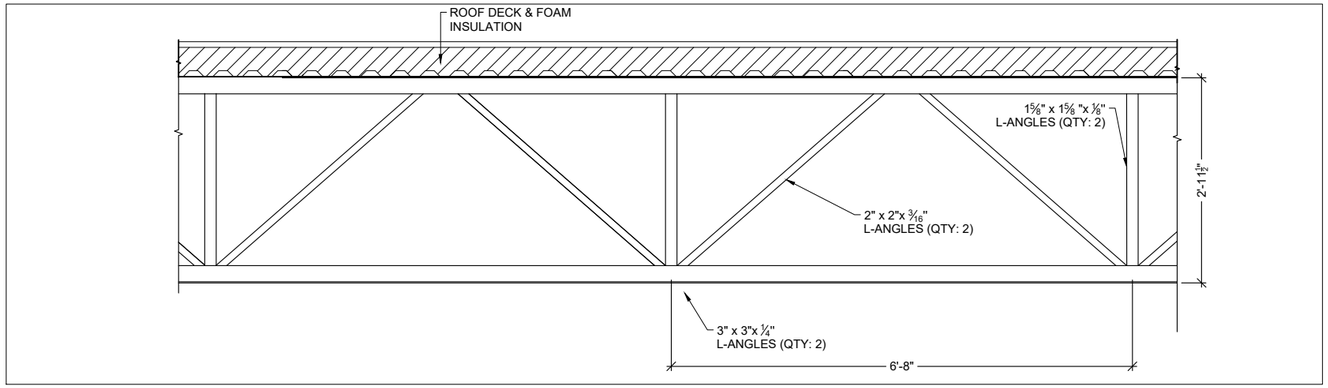


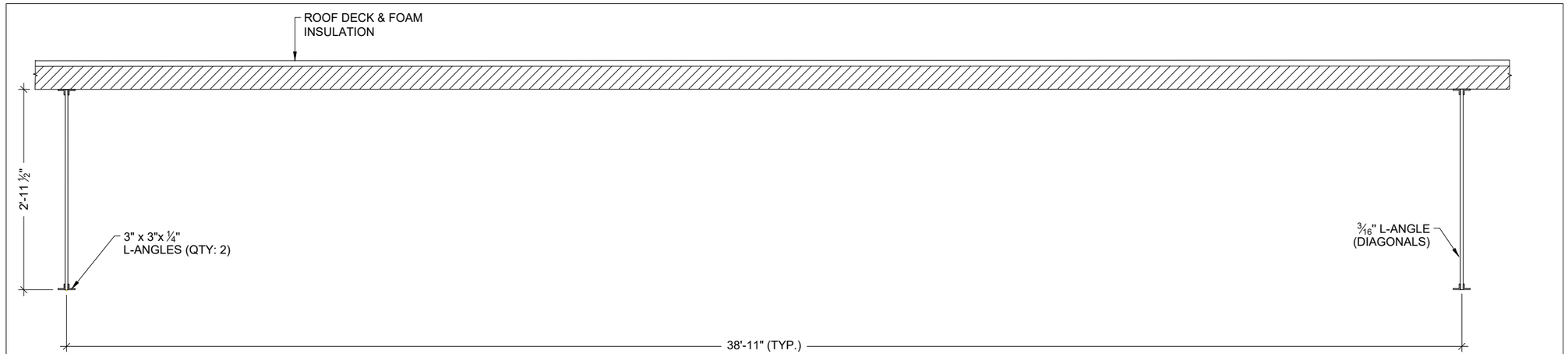
1 S101 EX STEEL DETAIL (COLUMNS)



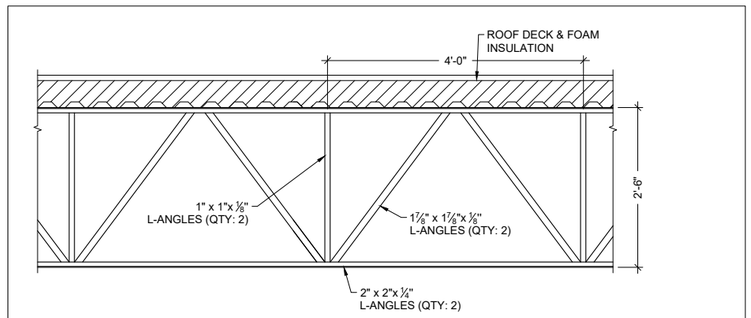
2 S101 EX STEEL DETAIL (BEAMS)



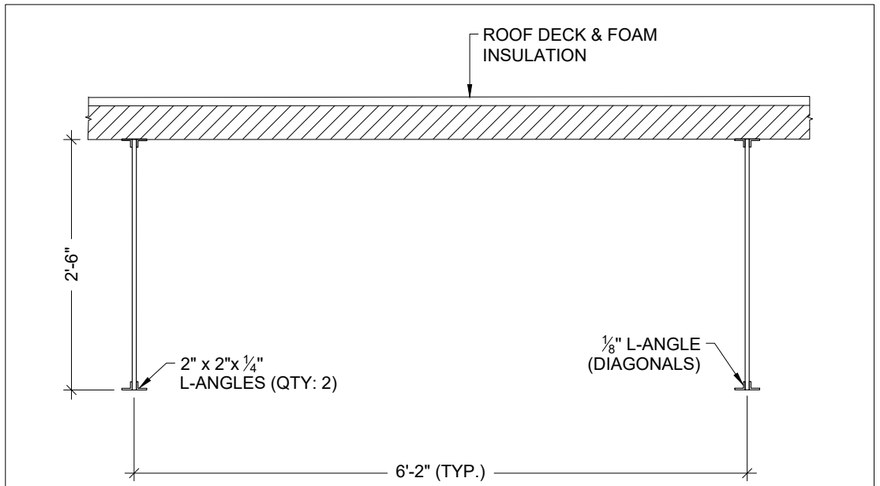
3 S101 EX STEEL DETAIL (BEAMS)



4 S101 EX STEEL DETAIL (SECTION)



5 S101 EX STEEL DETAIL (PURLINS)



6 S101 EX STEEL DETAIL (SECTION)

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STRUCTURAL ENGINUITY
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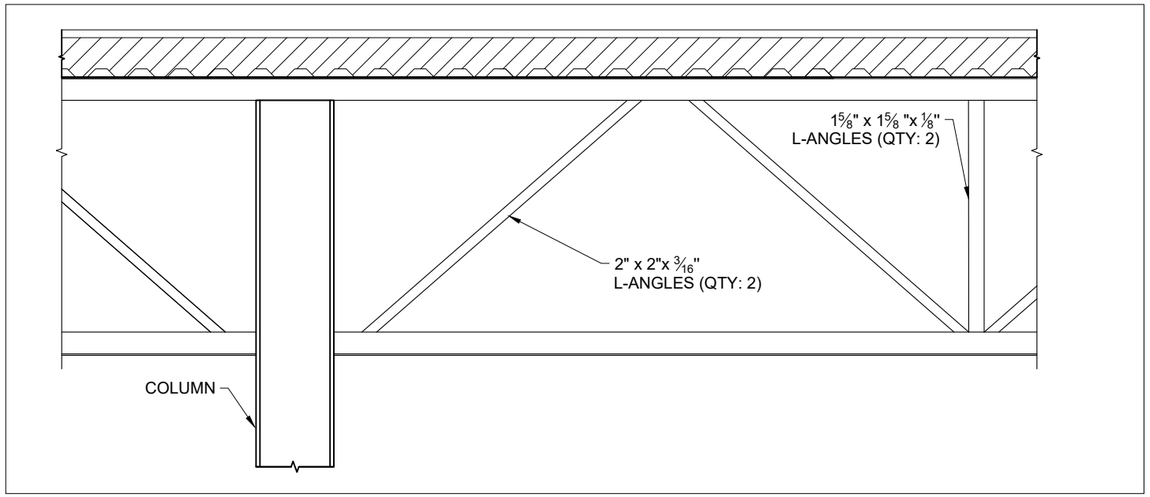
DRAWING ISSUE
- ☐ INTERCONNECTION
- ☒ PERMITTING
- ☐ CONSTRUCTION
- ☐ RECORD

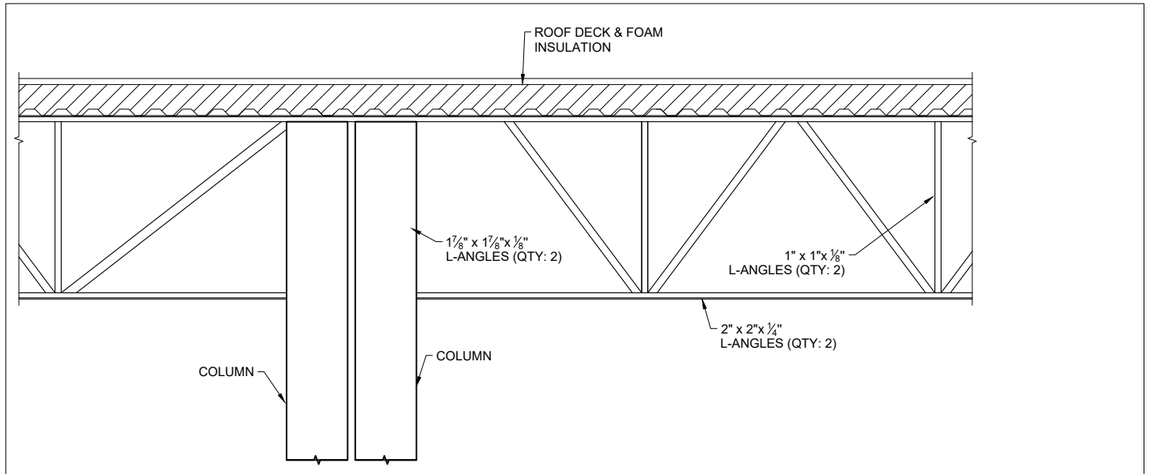
NO.	DESCRIPTION	DATE
1	PERMIT SET ISSUED	06-04-2019

DRAWING NAME
EXISTING STRUCTURAL LAYOUT & DETAILS

DRAWING NUMBER
S101



1 S101.1 EX STEEL DETAIL
(BEAM SECTION)



2 S101.1 EX STEEL DETAIL
(PURLIN SECTION)

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DRAWING ISSUE
- [ ] INTERCONNECTION
- [x] PERMITTING
- [ ] CONSTRUCTION
- [ ] RECORD

REV. #	DESCRIPTION:	DATE
1	PERMIT SET ISSUED	06-04-2019

DRAWING NAME
EXISTING STRUCTURAL LAYOUT & DETAILS

DRAWING NUMBER
S101.1

Exhibit N

Harvest the Sunshine

Mono

420W MBB Bifacial Mono PERC Half-cell Double Glass Module

JAM72D10 400-420/MB Series

Introduction

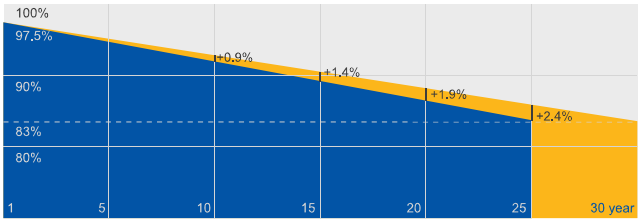
Assembled with MBB bifacial PERCIUM cells and half-cell configuration, these double glass modules have the capability of converting the incident light from the rear side together with the front side into electricity, providing higher output power, lower temperature coefficient, less shading loss, as well as enhanced tolerance for mechanical loading.

- Higher output power
- More reliable, more stable power generation
- Less shading effect
- Lower temperature coefficient

Superior Warranty

- 12-year product warranty
- 30-year linear power output warranty

0.5% Annual Degradation Over 30 years



Additional Value From 30-Year Warranty JA Standard

Comprehensive Certificates

- IEC 61215, IEC 61730, UL 61215, UL 61730
- ISO 9001: 2015 Quality management systems
- ISO 14001: 2015 Environmental management systems
- OHSAS 18001: 2007 Occupational health and safety management systems
- IEC TS 62941: 2016 Terrestrial photovoltaic (PV) modules – Guidelines for increased confidence in PV module design qualification and type approval

JA SOLAR

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ECO-TOP

ROOFTOP MOUNTING SYSTEMS

Elevating the Future for Solar

DCE SOLAR

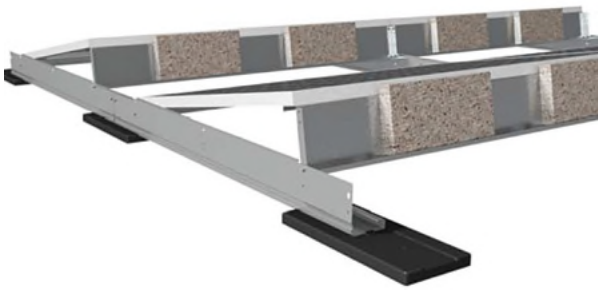
ECO-TOP

The Eco-Top rooftop system's modular design makes installation and system design fast and easy.

- The most effective wire support system available
- Integrated (UL approved) grounding
- Class A fire rated (UL approved)
- Module tilting for ease of maintenance
- Lowest system weight
- SEAOC compliant
- Fast to install

Integral Wind Deflector

Integral wind deflector minimizes system loading and also functions as a ballast tray, providing a location to place ballast in the array.



Structural Components

All components are constructed from g115 galvanized steel. Additionally, entire assembly has been rated as Class A fire rated by UL for fire safety.

Fasteners

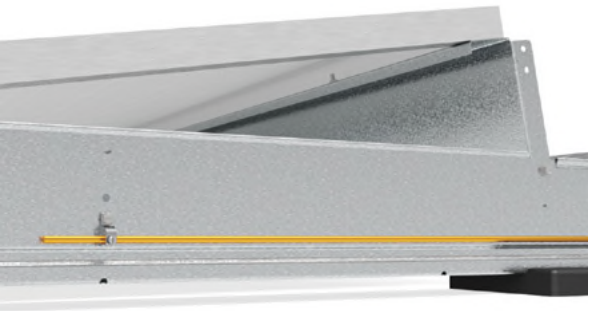
- Serrated flange heads
- Vibration resistance and integral grounding and bonding
- All nuts are wax coated to eliminate galling

Molded Rubber Pad

Durable recycled rubber ballast pads provide a safe mounting surface with a high coefficient of friction. This results in reduced system loads, while protecting all equipment by minimizing vibration. In most cases the rubber pad eliminates the need for a slip sheet.

- UV Resistant (extended lifespan)
- Recycled Rubber (LEED credits)

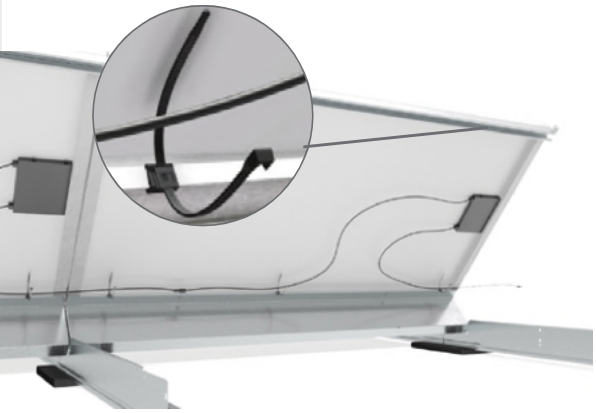
ECO-TOP



Grounding and Bonding

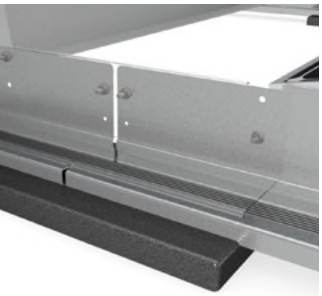
Grounding and bonding via serrated hardware certified to UL SDT 2703 (listing available upon request). It is recommended that a ILSCO GBL-4DBT ground lug be used.

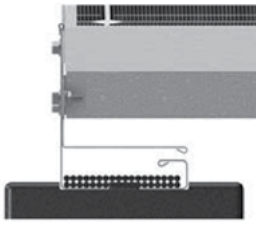
Grounding lug attaches to the N-S Beam.



Wire Clips

UV-rated flexible wire ties with easy to install push clips. Wire clips can be mounted anywhere on the rear panel beam. (UL Approved)

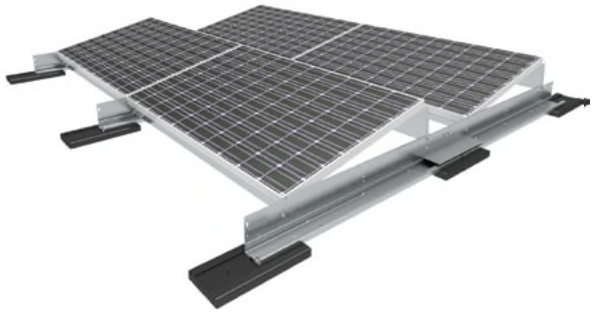




Front View

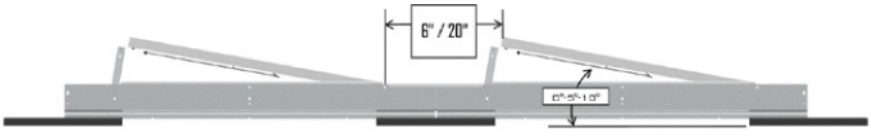
Integrated Wire Support

Flexible, UV protected Wire Support provided on every panel. Wires can be easily added before or after panel assembly.



PV Module Tilting

Modules can quickly and securely be tilted for ease of wiring and maintenance.



TECHNICAL SPECIFICATIONS

Tilt Angle	5° / 10°
Module Suitability	All Major Brands
Shade Spacing	6in. / 20in.
Warranty	20 Years

DCE SOLAR serves as market leader in industrial grade solar mounting hardware and consulting. DCE Solar leverages world-class engineering, fabrication facilities and American master craftsmen to create a full catalog of superior fixed-tilt mounting solutions for ground arrays and fixed-tilt solutions for roofs.

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info@DCEsolar.com **www.DCEsolar.com**

50/60kW, 1000Vdc String Inverters for North America

The 50 & 60kW (55 & 66kVA) medium power CPS three phase string inverters are designed for ground mount, large rooftop and carport applications. The units are high performance, advanced and reliable inverters designed specifically for the North American environment and grid. High efficiency at 98.8% peak and 98.5% CEC, wide operating voltages, broad temperature ranges and a NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications. The CPS 50/60kW products ship with either the standard wire-box or the H4 style wire-box, each fully integrated and separable with touch safe fusing, monitoring, and AC and DC disconnect switches. The CPS Flex Gateway enables monitoring, controls and remote product upgrades.

CPS SCA50KTL-DO/US-480
CPS SCA60KTL-DO/US-480

Key Features

- 55 & 66kVA rating allows max rated Active Power @±0.91PF
- Selectable Max AC Apparent Power of 50/55kVA and 60/66kVA
- NEC 2014/17 compliant & UL listed Arc-Fault circuit protection
- 0-90° Mounting orientation for lay flat roof installs
- Touch safe DC Fuse holders adds convenience and safety
- Optional Flex Gateway enables remote FW upgrades
- Integrated AC & DC disconnect switches
- 3 MPPT's with 5 inputs each for maximum flexibility
- Copper and Aluminum compatible AC connections
- NEMA Type 4X outdoor rated, tough tested enclosure
- UL1741 SA Certified to CA Rule 21
- Separable wire-box design for fast service
- Standard 10 year warranty with extensions to 20 years
- Generous 1.5 DC/AC Inverter Load Ratio

50/60kW Standard Wire-box

50/60kW H4 Wire-box

Chint Power Systems America
7060 Koll Center Parkway, Suite 318 Pleasanton, CA 94566
Tel: 855-584-7168 Mail: AmericaSales@chintpower.com Web: www.chintpowersystems.com

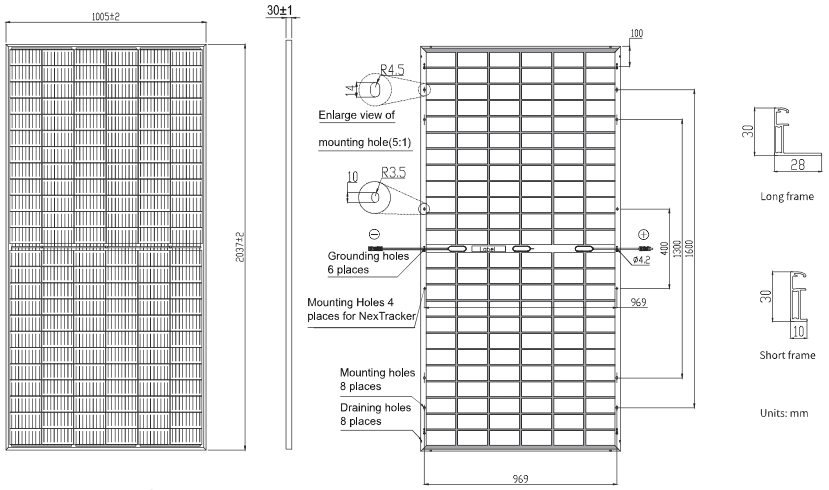
Model Name	CPS SCA50KTL-DO/US-480	CPS SCA60KTL-DO/US-480
DC Input		
Max. PV Power	75kW (30kW per MPPT)	90kW (33kW per MPPT)
Max. DC Input Voltage	1000Vdc	
Operating DC Input Voltage Range	200-950Vdc	
Start-up DC Input Voltage / Power	330V / 80W	
Number of MPP Trackers	3	
MPPT Voltage Range @ PF>0.99[1]	480-850Vdc	540-850Vdc
Max. PV Short-Circuit Current (Isc x 1.25)	204A (68A per MPPT)	
Number of DC Inputs	15 inputs, 5 per MPPT	
DC Disconnection Type	Load rated DC switch	
DC Surge Protection	Type II MOV, 2800V_C, 20kA I_{TM} (8/20μS)	
AC Output		
Rated AC Output Power @ PF>0.99 to ±0.91[2]	50kW	60kW
Max. AC Apparent Power (Selectable)	50/55kVA	60/66kVA
Rated Output Voltage	480Vac	
Output Voltage Range[3]	422 - 528Vac	
Grid Connection Type	3Φ / PE / N (Neutral optional)	
Max. AC Output Current @480Vac	60.2/66.2A	72.2/79.4A
Rated Output Frequency	60Hz	
Output Frequency Range[3]	57 - 63Hz	
Power Factor	>0.99 (±0.8 adjustable)	
Current THD @ Rated Load	<3%	
Max. Fault Current Contribution (1 Cycle RMS)	64.1A	
Max. OCPD Rating	110A	125A
AC Disconnection Type	Load rated AC switch	
AC Surge Protection	Type II MOV, 1240V_C, 15kA I_{TM} (8/20μS)	
System and Performance		
Topology	Transformerless	
Max. Efficiency	98.8%	
CEC Efficiency	98.5%	
Stand-by / Night Consumption	<1W	
Environment		
Enclosure Protection Degree	NEMA Type 4X	
Cooling Method	Variable speed cooling fans	
Operating Temperature Range[4]	-22°F to +140°F / - 30°C to +60°C[4]	
Non-Operating Temperature Range[5]	No low temp minimum to +158°F / +70°C maximum[5]	
Operating Humidity	0 to 100%	
Operating Altitude	13,123.4ft / 4000m (derating from 9842.5ft / 3000m)	
Audible Noise	<60dBA @ 1m and 25°C	
Display and Communication		
User Interface and Display	LCD+LED	
Inverter Monitoring	SunSpec, Modbus RS485	
Site Level Monitoring	CPS Flex Gateway (1 per 70 inverters)	
Modbus Data Mapping	CPS	
Remote Diagnostics / FW Upgrade Functions	Standard / (with Flex Gateway)	
Mechanical		
Dimensions (HxWxD)	39.4 x 23.6 x 10.24in. (1000 x 600 x 260mm)	
Weight	Inverter: 123.5lbs/56kg; Wire-box: 33lbs/15kg	
Mounting / Installation Angle[6]	0 to 90 degrees from horizontal (vertical, angled, or lay flat)[6]	
AC Termination[7]	M8 Stud Type Terminal Block (Wire range: #6 - 3/0AWG CU/AL[7], Lugs not supplied)	
DC Termination	Screw Clamp Fuse Holder (Wire range: #14 - #6AWG CU), Optional H4 (Amphenol)	
Fused String Inputs (5 per MPPT)[8]	15A fuses provided (Fuse values up to 30A acceptable)[8]	
Safety		
Certifications and Standards	UL1741SA-2016, UL1699B, CSA-C22.2 NO.107.1-01, IEEE1547a-2014; FCC PART15	
Selectable Grid Standard and SRD	IEEE1547a-2014, CA Rule 21	
Smart-Grid Features	Voltage-RideThru, Frequency-RideThru, Soft-Start, Volt-Var, Frequency-Watt, Volt-Watt	
Warranty		
Standard	10 years	
Extended Terms	15 and 20 years	

1) See user manual for further information regarding MPPT Voltage Range when operating at non-unity PF.
2) Active Power Derating begins; at PF=±0.91 to ±0.8 when Max AC Apparent Power is set to 55 or 66kVA.
3) The "Output Voltage Range" and "Output Frequency Range" may differ according to the specific grid standard.
4) Active Power Derating begins; at 40°C when PF=±0.9 and MPPT ≥Vmin, at 45°C when PF=1 and MPPT ≥Vmin, and at 50°C when PF=1 and MPPT V ≥ 700Vdc.
5) See user manual for further requirements regarding non-operating conditions.
6) Shade Cover accessory required for installation angles of 75 degrees or less.
7) AL requires bi-metallic compression lug or bi-metallic adapter.
8) Fuses values above 20A have additional spacing requirements or require the use of the Y-comb adapter. See user manual for details.

JA SOLAR

JAM72D10 400-420/MB Series

MECHANICAL DIAGRAMS



Remark: customized frame color and cable length available upon request

SPECIFICATIONS

Cell	Mono
Weight	25.0kg±3%
Dimensions	2037±2mm×1005±2mm×30±1mm
Cable Cross Section Size	4mm² (12AWG)
No. of cells	144(6×24)
Junction Box	IP68, 3 diodes
Connector	QC 4.10-35
Cable Length (Including Connector)	Portrait:300mm(+)/400mm(-); Landscape:1200mm(+)/1200mm(-)
Packaging Configuration	34 Per Pallet
Front Glass/Back Glass	2.0mm/2.0mm

ELECTRICAL PARAMETERS AT STC

TYPE	JAM72D10 -400/MB	JAM72D10 -405/MB	JAM72D10 -410/MB	JAM72D10 -415/MB	JAM72D10 -420/MB
Rated Maximum Power(Pmax) [W]	400	405	410	415	420
Open Circuit Voltage(Voc) [V]	49.57	49.82	50.08	50.35	50.62
Maximum Power Voltage(Vmp) [V]	42.02	42.28	42.54	42.80	43.04
Short Circuit Current(Isc) [A]	10.14	10.20	10.26	10.32	10.37
Maximum Power Current(Imp) [A]	9.52	9.58	9.64	9.70	9.76
Module Efficiency [%]	19.5	19.8	20.0	20.3	20.5
Power Tolerance	0~+5W				
Temperature Coefficient of Isc(α_Isc)	+0.044%/°C				
Temperature Coefficient of Voc(β_Voc)	-0.272%/°C				
Temperature Coefficient of Pmax(γ_Pmp)	-0.354%/°C				
STC	Irradiance 1000W/m², cell temperature 25°C, AM1.5G				

Remark: Electrical data in this catalog do not refer to a single module and they are not part of the offer.They only serve for comparison among different module types.
*Bifaciality=Pmax,rear/Rated Pmax,front

ELECTRICAL CHARACTERISTICS WITH DIFFERENT REAR SIDE POWER GAIN(REFRENCE TO 410W FRONT)

Backside Power Gain	5%	10%	15%	20%	25%
Rated Max Power(Pmax) [W]	431	451	472	492	513
Open Circuit Voltage(Voc) [V]	50.10	50.10	50.10	50.20	50.20
Max Power Voltage(Vmp) [V]	42.55	42.55	42.55	42.65	42.65
Short Circuit Current(Isc) [A]	10.76	11.28	11.79	12.30	12.81
Max Power Current(Imp) [A]	10.12	10.60	11.08	11.54	12.02

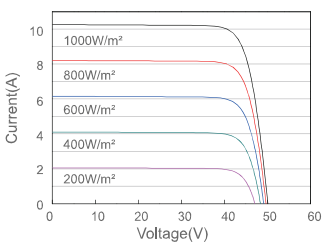
*For NexTracker installations static loading performance: front load measure 2400Pa, while back load measures 1800Pa.

OPERATING CONDITIONS

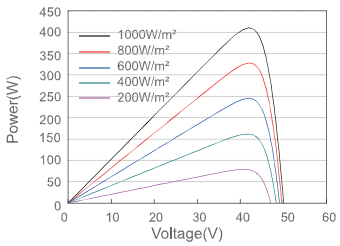
Maximum System Voltage	1500V DC(UL)
Operating Temperature	-40°C~+85°C
Maximum Series Fuse	20A
Maximum Static Load,Front* Maximum Static Load,Back*	5400Pa(112 lb/ft²) 2400Pa(50 lb/ft²)
NOCT	45±2°C
Bifaciality*	70%±5%
Fire Performance	Type 29

CHARACTERISTICS

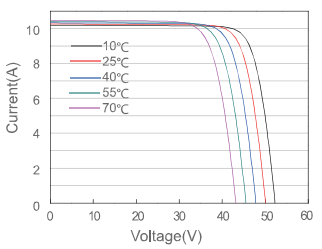
Current-Voltage Curve JAM72D10-410/MB



Power-Voltage Curve JAM72D10-410/MB



Current-Voltage Curve JAM72D10-410/MB



PROLEC GE

Powering reliable solutions for you

Three-Phase Pad-Mounted Transformers

Prolec GE offers a complete line of liquid-filled Three-Phase Pad-Mounted distribution transformers that meet applicable IEEE standards. These transformers are specifically designed for commercial and residential applications, such as hotels, hospitals, universities, among others. Our transformers are designed for outdoor installation with cabinets meeting C57.12.34 & C57.12.28.

Prolec GE Three-Phase Pad-Mounted Transformers use aluminum or copper windings and are optimized to maximize efficiency and footprint.

Standard offering

- Rating
  - Up to 3,750 kVA ONAN
- High Voltage
  - Up to 34,500 V Delta or Wye Connected
  - BIL up to 200 kV
  - Loop feed
  - Dead front
  - Bushing wells
- Low Voltage
  - Up to 1200 V Delta or Wye Connected
  - BIL up to 60 kV
- Frequency: 60 Hz
- 5-legged Core
- Temperature rise: 65°C
- Cooling class: ONAN
- Insulating fluid: Mineral oil
- Impedance: per C57.12.34
- Altitude: 3,300 FASL
- Mild steel tank & cabinet
- Powder paint system; Color: Green Munsell 7GY 3.29/1.5 or ANSI 70
- Built to all applicable IEEE C57.12.34
- Operation Step down
- Windings per Prolec GE standard

Optional features

- Rating 3,750 – 5,000 kVA
- High Voltage
  - Copper windings
  - Tap changer with 7 positions
  - Radial feed
  - Live front
  - Bushing wells + Inserts
  - Tap changer: ± 2, 2.5%
  - Integral bushing
  - Porcelain bushing
- Low Voltage
  - Copper windings
  - Epoxy, 2 pieces bushings, up to 12 holes blade
  - Epoxy, 1 piece bushings up to 12 holes blade
- Frequency: 50 Hz
- Temperature rise: 55°C, 55/65°C
- Cooling class: KNAN
- Insulating fluid: Natural ester fluid (VG-100 or FR3)
- Impedance per customer request
- Electrostatic shield
- Altitude up to 14850 FASL
- Internal switch
- Bay-O-Net expulsion fuses + current limiting fuses
- Under-oil internal arresters
- Stainless Steel 409 tank & cabinet
- Stainless Steel 304 tank & cabinet
- Infrared window
- Powder paint system & liquid finish color per customer request
- Seismic designs IBC Certified
- Operation Step-Up

PROLEC GE

Powering reliable solutions for you

Standard voltages

Standard Primary	
Voltage Ratings	**Minimum BIL (kV)**
Delta or Wye	
2400	45
4160	60
4800	60
7200	75
7620	75
12000	95
12470	95
13200	95
13800	95
16340	95

Grounded Wye	
4160GrdY/2400	65
12470GrdY/7200	95
13200GrdY/7620	95
13800GrdY/7970	95
22860GrdY/13200	125
23900GrdY/13800	125
24940GrdY/14400	125
34500GrdY/19920	150

Standard ratings

Standard kVA Ratings		
45	225	1000
75	300	1500
112.5	500	2000
150	750	2500

Overall typical dimensions for reference

kVA	Height	Width	Depth	Typ Weight (Lb)	Typ Gal Oil
75	66	46	65	2,550	136
112.5	66	46	65	2,750	145
150	69	46	66	2,900	145
225	69	50	69	3,500	164
300	69	53	71	3,800	171
500	74	62	70	5950	284
750	75	72	72	6,950	275
1000	78	75	75	7,800	315
1500	83	80	83	10,600	375
2000	86	85	89	12,000	440
2500	87	88	96	14,000	490

For kVAs not listed, contact factory.
Dimensions and weights are approximate and subject to change without notice and should not be used for construction purposes.

Standards and certifications available

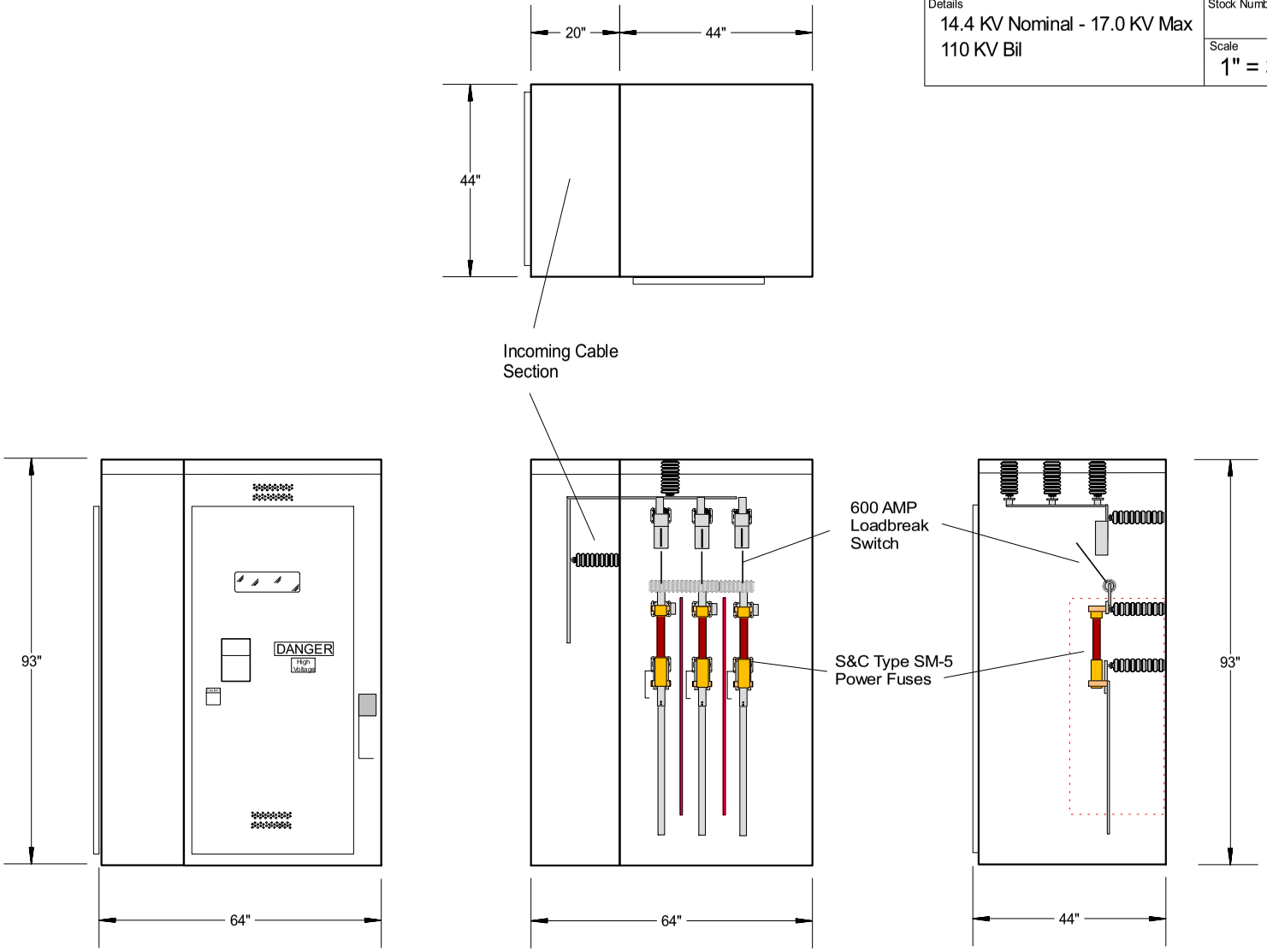
UL LISTED · c UL LISTED · FM APPROVED · EISMIC CERTIFIED · ecomagination

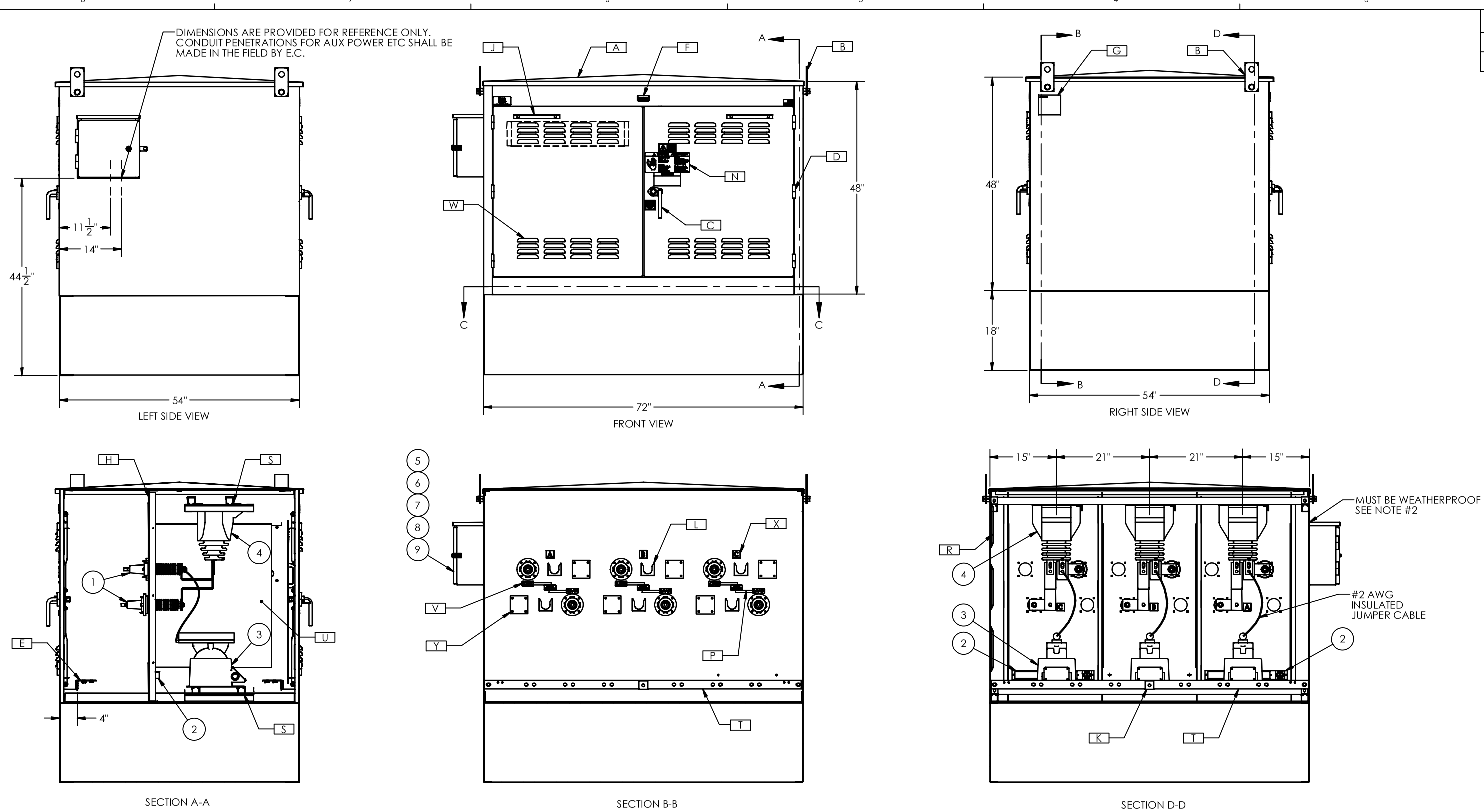
For more information contact your local GE Sales Representative or visit our website at www.prolecge.com
Phone: Toll free 1 800-437-7653 (US & Canada) / +52 (81) 8030-2341 (Mexico) / Fax: +52 (81) 8030-2323 or 2325

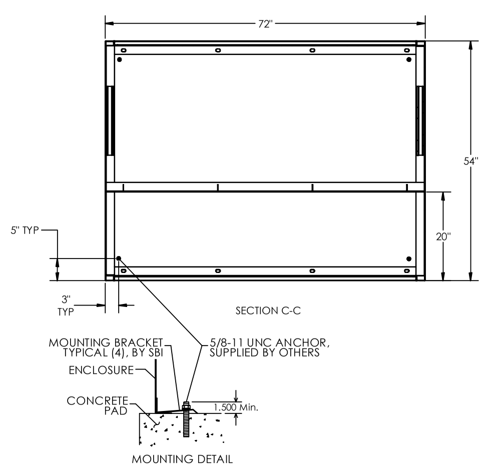
T&R ELECTRIC SUPPLY COMPANY INCORPORATED
"THE TRANSFORMER PEOPLE"
http://www.t-r.com
E-mail: sales@trelectric.com
Toll Free: 1-800-843-7994
Local: 605-534-3555
Fax: 605-534-3861

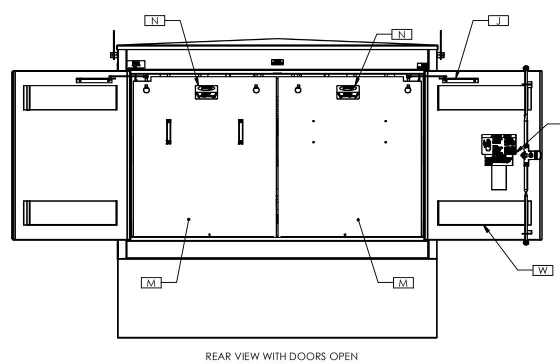
Fused Disconnect Line Up 15.5KV

Details	Stock Number	Record ID
14.4 KV Nominal - 17.0 KV Max 110 KV Bil		
	Scale: 1" = 36"	Draftsman: JB Salesman: Dan Bowen March 3, 2020









REVISION

REV.	DESCRIPTION	DATE	REVISED BY
1	FOR SUBMITTAL	07/01/2016	J.RADKE

CONSTRUCTION

- NEMA TYPE 3R, 12 GAUGE STAINLESS STEEL, SOLID WELD CONSTRUCTION, WELDS AND SEAMS GROUND SMOOTH.
- FINISH COAT IS MUNSELL 7GY 3.29/1.5 GREEN. PAINT FINISH MEETS/EXCEEDS A.N.S.I. C57.12.28 PAINT SPECIFICATIONS FOR PADMOUNT EQUIPMENT ENCLOSURE INTEGRITY.
- INSULATING, "NO-DRIP" COMPOUND IS APPLIED TO THE INSIDE SURFACE OF THE ENCLOSURE ROOF, TO PREVENT CONDENSATION.
- TYPE 304L STAINLESS STEEL HARDWARE.
- GASKETED DOORS. NEOPRENE GASKET, SECURED WITH A WATER AND OIL RESISTANT ADHESIVE.

FEATURES:

A CROSS KINKED REMOVABLE ROOF FOR ADDED STRENGTH AND PREVENTING STANDING MOISTURE.
B LIFTING PLATES (REMOVABLE) WITH BLIND MOUNTING HOLES.
C "PROGRESS LATCH" 3-POINT POSITIVE LATCH MECHANISM, SECURED BY CAPTIVE, RECESSED PENTA-HEAD BOLT AND SHIELDED PADLOCK SHACKLE.
D HINGE. LOOSE JOINT PIN (304L STAINLESS STEEL) SOLID WELDED TO DOOR/CABINET (ALLOWS DOORS TO BE REMOVED IN THE OPEN POSITION ONLY).
E GROUND PADS (304L STAINLESS STEEL) WITH 1/2"-13 UNC THREADED HOLES FOR INSTALLING CUSTOMER SUPPLIED GROUND CONNECTORS. (UNPAINTED, WELDED TO EQUIPMENT WALLS).
F COMPARTMENT LABELS INDICATING FUSE, ELBOW, SWITCH, CAPACITOR, INSTRUMENT, ETC., LOCATED ABOVE COMPARTMENT DOORS.
G MANUFACTURE'S DATA PLATE (CONTAINS INFORMATION LISTED UNDER SYSTEM RATING). NON-CORROSIVE, PERMENANTLY STAMPED AND ATTACHED TO ENCLOSURE.
H EQUIPMENT WALL. FULL HEIGHT, SUPPORTS ROOF FOR EXTRA STRENGTH.
J DOOR STAYS (RETAINED) HOLD DOORS IN 90°, 110°, 140° OPEN POSITIONS.
K CENTER GROUND BUS SUPPORT.
L PARKING STANDS (304L STAINLESS STEEL) WELDED TO EQUIPMENT WALL.
M BARRIERS. LEXAN COMPARTMENT BARRIERS. TWO (2) COMPARTMENT BARRIERS ARE HANGING TYPE WITH TWO (2) NON-CONDUCTIVE HANDLES PER BARRIER.
N SIGNS AND/OR LABELS. "CAUTION, KEEP OUT, HIGH VOLTAGE", LOCATED ABOVE LATCHING DEVICE. "WARNING, SECURE DOORS", LOCATED ABOVE LATCHING DEVICE. NEMA "MR. OUCH, DANGER", ON INTERIOR OF DOORS AND COMPARTMENT BARRIERS. "WARNING, INSTALLATION AND OPERATION", LOCATED ON INTERIOR OF DOORS. "DANGER, KEEP OUT, HIGH VOLTAGE", LOCATED ON COMPARTMENT BARRIERS.
P MIMIC BUS. HIGH VISIBILITY FEDERAL SAFETY YELLOW, TO INDICATE THE ONE LINE DIAGRAM. LOCATED ON EQUIPMENT WALL. (ELBOW SIDE)
R 1/4" STAINLESS STEEL ROD FOR SECONDARY WIRE TRAINING AND SUPPORT. ONLY ON WALL OPPOSITE METER SOCKET.
S REMOVABLE METERING TRANSFORMER STRUT. TRANSFORMER STRUT CONSTRUCTED TO ACCEPT ALL NEMA OUTDOOR TRANSFORMERS.
T GROUND BUS BAR 1/4" X 2", FLASH SILVER PLATE FULL ROUND EDGE CDA110 WITH NEMA 2 HOLE PATTERN
U PHASE BARRIERS. 3/16" GPO-3, GLASS POLYESTER.
V IDENTIFICATION LABELS "LINE" AND "LOAD".
W LOUVERED DOOR PANELS WITH FILTER POCKETS.
X PHASE IDENTIFICATION LABELS. (A, B, C) FRONT AND REAR
Y BUSHING WELL HOLE COVERS.

SHALLBETTER
3110 Progress Drive
Oshkosh, WI 54901
p: 920-232-8888
www.shallbetter.com

NOMINAL SYSTEM VOLTAGE		KV
MAXIMUM DESIGN VOLTAGE	15	KV
BASIC INSULATION LEVEL (BIL)	95	KV
CONTINUOUS CURRENT	600	AMP
MODEL NUMBER:	SPMD-31511-66-SS-UIC	
SERIAL NUMBER:	-	
CUSTOMER NUMBER:	-	
DATE OF MANUFACTURE:	SO55731 XX/2016	

NOTES:
1) PT'S, CT'S AND INTERNAL WIRING SHALL BE PSI INSTALLED. OWNERSHIP OF CT'S, PT'S AND INTERNAL WIRING WILL BE TRANSFERRED TO UI UPON DELIVERY AND ACCEPTANCE.

2) CLOSE NIPPLES & RELATED HARDWARE CONSISTING OF:
- 2 - 1 1/2" CLOSE NIPPLE, 1 3/4" LENGTH, FLOORSTOCK
- 4 - 1 1/2" NEC WEATHERPROOF LOCKNUT, GRAYBAR CAT#LS105
- 2 - 1 1/2" O-RING, SI#27907
- 4 - 1 1/2" PLASTIC PROTECTIVE CAP, FLOORSTOCK

Powergrid Solutions Inc. | SHALLBETTER | 3110 Progress Dr. Oshkosh, WI 54901 (920) 232-8888

PROPRIETARY AND CONFIDENTIAL

WELD DIMENSIONS ARE INTERPRETED AS FOLLOWS: ALL HORIZONTAL MEASURMENTS ARE FROM OUTSIDE OF CABINET. VERTICAL DIMENSIONS ARE FROM EITHER THE SWITCHGEAR FLOOR, TOP OF CHANNEL BASE OR FROM BOTTOM OF ENCLOSURE IF NO BASE EXISTS. IF MEASURING FROM INSIDE OF CABINET, DEDUCT A MATERIAL THICKNESS FROM THE GIVEN DIMENSIONS. ASSEMBLY DIMENSIONS ARE INTERPRETED AS FOLLOWS: ALL HORIZONTAL MEASURMENTS ARE FROM OUTSIDE OF CABINET. VERTICAL DIMENSIONS ARE FROM OUTSIDE OF CABINET.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES. TOLERANCES: X° ANGULAR ±2°; X/X FRACTIONAL ±1/16"; X.XX TWO PLACE DECIMAL ±.06; X.XXX THREE PLACE DECIMAL ±.030. INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.5M-2004. THIRD ANGLE PROJECTION. AS WELDED\ AS ASSEMBLED

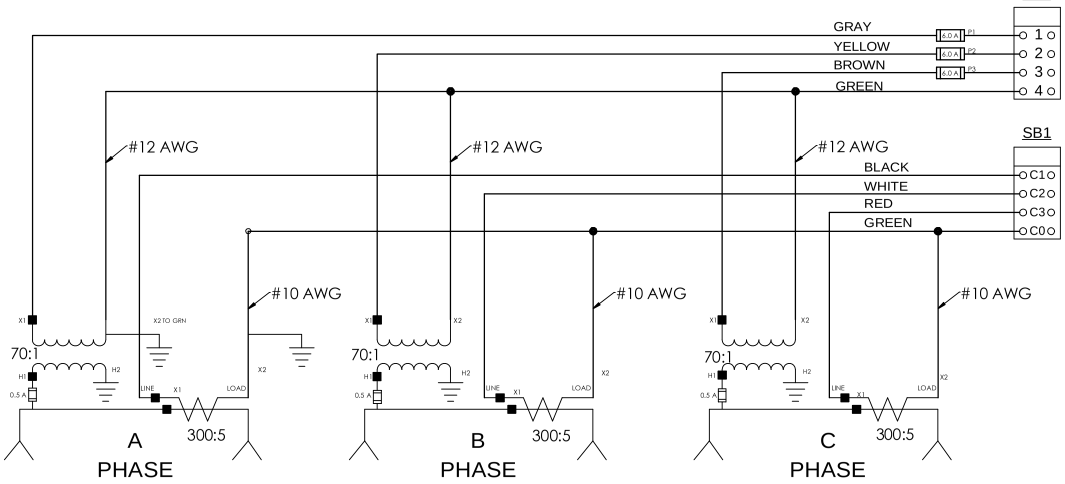
DRAWN BY: J.RADKE	DATE: 06/27/2016
REVIEWED BY:	DATE:
APPROVED BY:	DATE:
P.O. NUMBER:	
CATALOG NO.:	

DESCRIPTION: 15KV, 600A, 95KV BIL PADMOUNT DEADFRONT PRIMARY METERING UNITED ILLUMINATING

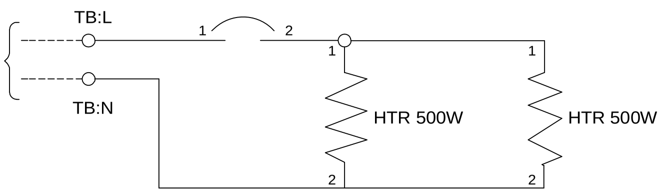
SIZE: D | S.O. NUMBER: | DRAWING NUMBER: | REVISION: 1

DO NOT SCALE DRAWING | SCALE: 1:14 | SHEET 1 OF 2

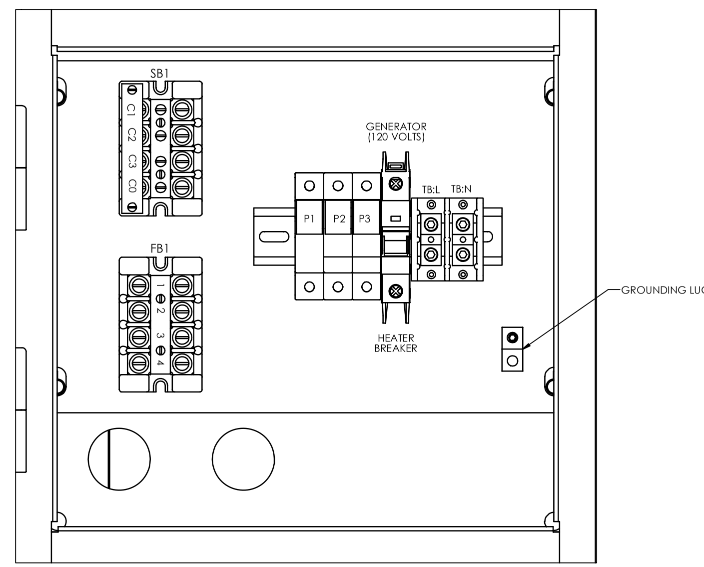
REVISION			
REV.	DESCRIPTION	DATE	REVISED BY
1	FOR SUBMITTAL	07/01/2016	J.RADKE



WIRING DIAGRAM



STRIP HEATER WIRING DIAGRAM
BOTH TERMINAL BLOCK IN ENCLOSURE



LV BOX LAYOUT

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Oshkosh, WI 54901
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UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES. AS WELDED \ AS ASSEMBLED

TOLERANCES:		
X°	ANGULAR:	±2°
X/X	FRACTIONAL:	±1/16"
X.XX	TWO PLACE DECIMAL:	±.06
X.XXX	THREE PLACE DECIMAL:	±.030

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.5M-2004

THIRD ANGLE PROJECTION

DRAWN BY: J.RADKE DATE: 06/27/2016
REVIEWED BY: DATE:
APPROVED BY: DATE:
P.O. NUMBER:
CATALOG NO.:

DESCRIPTION:
15KV, 600A, 95KV BIL
PADMOUNT DEADFRONT PRIMARY METERING
UNITED ILLUMINATING

SIZE D | S.O. NUMBER: | DRAWING NUMBER: | REVISION: 1

DO NOT SCALE DRAWING | SCALE: 1:12 | SHEET 2 OF 2