



February 6, 2025

Mr. Gregory Rondeau, Chairman
Planning Board
Town of Franklin
355 East Central Street
Franklin, MA 02038

**Re: *Site Plan Review Application
Solar Canopy & Ground Mount Project
50 Constitution Boulevard Franklin, MA (Parcel ID 319-015-000-000)
Atlantic Job #3402.00***

Dear Chairman Rondeau:

Enclosed, please find documents relative to a Site Plan Review Application for the 50 Constitution Boulevard Solar Canopy and Ground Mount Project being submitted on behalf of EMC Corporation (the Applicant). Per Section 185 Attachment 4 of the Franklin Zoning Bylaws, the proposed Large-Scale Ground-Mounted Solar Energy System project is a permitted use in the Industrial Zone but requires a Site Plan Review from the Planning Board. We have provided copies of the following items for the Planning Board's consideration per the requirements of Section 185-31 *Site Plan and Design Review* of the Town of Franklin Bylaws:

1. Two (2) full size copies and five (5) reduced size copies Site Development Plans prepared by Atlantic Design Engineers, Inc., Sheets 1-6, dated 2/6/25 – *attached under separate cover*;
2. Two (2) copies Form P Application for Approval of a Site Plan;
3. Two (2) copies of Waiver Request List;
4. Two (2) copies of Decommissioning Plan dated 2/6/25;
5. Two (2) copies Certificate of Ownership;
6. Two (2) copies Structural Site Plans;
7. One (1) copy Certified Abutters List;
8. One (1) copy Stormwater Drainage Analysis dated 2/6/2025;
9. One (1) copy Single Line Electrical Diagram;
10. The following checks:
 - \$1500.00 for Site Plan Review
 - \$50.00 for Fire Department Review
11. (1) Memory Stick containing all documents

Project Narrative

The proposed project locus is a ±39 -acre lot addressed as 50 Constitution Boulevard in Franklin, Massachusetts (“Site”) shown as Lot 15 on the Town of Franklin Assessor Map 319. The site is located within the Industrial Zoning District as well as the Adult Use and Biotechnology Overlay Districts. The site off of Constitution Boulevard is currently fully developed as the location of a Dell EMC manufacturing facility.

The Applicant, EMC Corporation, proposes to construct a ±2.0-acre ground-mounted and ±0.2-acre canopy mounted solar photovoltaic system in accordance with the Franklin Zoning Bylaw Section 185-31 *Site Plan and Design Review*.

The development consists of photovoltaic solar panels, racking systems (canopy and ground mounted), inverters, transformers with associated concrete pads, and below ground utilities.

The canopy portion of the project will be situated over the existing paved parking lot whereas the ground-mounted portion of the array will be situated over an existing grassed field area. The proposed solar development will not require tree clearing, will not significantly increase measurable impervious area or changes in existing on-site drainage patterns.

The ground-mounted array will also include perimeter fencing whereas the canopy mounted system is to be located over the existing parking lot. Interconnection will be on-site at the current Dell facility electrical room location.

Site circulation including fire truck access is unaffected by the proposed project. There are no proposed impacts to the existing site access or parking spaces. The development still has excess parking relative to zoning bylaw parking requirements. Existing lighting in the canopy area of the project will be replaced as needed.

The property has two (2) wetland systems on the site, which are located within the drainage basins along the south-east and southern property lines of the site. The wetland resource areas on the site were delineated by Goddard Consulting, LLC in December of 2024, and subsequently surveyed by Atlantic Design Engineers, Inc. An NOI has been filed simultaneously with this application.

The only impact to the 100' wetland buffer zone is the overhang of a canopy-mounted system, extending along the outer edge (80 to 100') of the buffer zone over an existing paved parking lot. There is no proposed disturbance or alteration to the ground surface or vegetation in any of the town or state designated buffer zones. All racking system foundations/piers as well as all underground utility lines and concrete electrical pads will be located outside of the buffer zone. A Notice of Intent (NOI) has been filed concurrently with the Town of Franklin Conservation Commission.

There will be no grading at the site and all existing stormwater features will be unaffected by the project. Please note that the proposed land disturbance activity of the project will be less than one (1)

*Mr. Gregory Rondeau, Chairman
Planning Board
Site Plan Review Application
50 Constitution Boulevard Franklin, MA
February 6, 2025 – Page 3*

acre (± 699 SF), thus in our opinion, the Stormwater Management Permit will not be required. Additionally, a list of waiver requests has been provided herein.

Erosion control will be provided in accordance with the DEP Stormwater Management Policy and Chapter 153 *Stormwater Management* within the Town of Franklin Bylaws.

A complete Stormwater Report documenting the projects compliance with the DEP Stormwater Management Standards has been provided. Erosion control measures (sediment logs or approved equal) will be in place and maintained at the proposed limit of work throughout construction to protect the on-site BVW's.

The proposed solar panels and associated equipment adhere to the required property line setbacks per Chapter 185 Attachments 4 and 9. The nearest residential lot/home is approximately ± 1500 feet west of the solar array panels.

The project complies with all applicable zoning requirements and setbacks including the minimum 75-foot setback from residential zones. The project is anticipated to be completed in approximately four to six months once construction has commenced.

If you have questions, please feel free to reach out to us at (508) 888-9282.

Very truly yours,

ATLANTIC DESIGN ENGINEERS, INC.



Richard J. Tabaczynski, P.E.
Vice President

CC: EMC Corporation



February 6, 2025

Mr. Gregory Rondeau, Chairman
Franklin Planning Board
355 East Central Street
Franklin, MA 02038

**RE: *Waiver Request List from Site Plan and Design Review Bylaw
Site Plan Approval Submittal
Solar Canopy and Ground Mount Project
50 Constitution Boulevard – Franklin, MA (Parcel ID 319-015-000-000)***

Dear Board Members:

We respectfully request on behalf of the applicant, EMC Corporation, the following list of waivers to the submission and design requirements of the Town of Franklin Site Plan and Design Review Bylaw for Site Plan Approval:

1. *Section §185-31.C(3)(i) – provide outdoor lighting, open space areas, snow storage and parking areas.*

The property is already fully developed and currently functions as a Dell manufacturing facility. Since the site is already fully developed with adequate infrastructure in place, the project will not require additional lighting, open space, snow management, or parking needs.

2. *Section §185-31.C(3)(k) – provide a complete landscaping plans, including existing vegetation and proposed plantings.*

Since the site is already fully developed, the project will not significantly impact existing landscaping or require new plantings.

3. *Section §185-31.C(3)(l) – provide a photometric plan.*

Since the site's existing lighting will remain significantly unchanged and the canopy racking systems will incorporate internal lighting, a photometric analysis is not necessary.

If you have any questions or require further information, please do not hesitate to contact me at (508) 888-9282.

Sincerely,

ATLANTIC DESIGN ENGINEERS, INC.



Richard J. Tabaczynski, P.E.
Vice President

SITE PLAN REVIEW APPLICATION FORM

&

CERTIFICATE OF OWNERSHIP

FORM P

APPLICATION FOR APPROVAL OF A SITE PLAN

To the Franklin Planning Board:

The undersigned, herewith, submits the accompanying Site Plan entitled "Site Development Plans for 50 Constitution Blvd Solar" for approval under the provisions of the Zoning By-Laws of the Town of Franklin covering Site Plans.

- 1. Name of Applicant: EMC Corporation
Address of Applicant: 176 South Street, Hopkinton, MA 01748
Phone No.: 508-435-1000 Email: _____

- 2. Name of Owner (if not the Applicant): EMC Corporation
Address of Owner: 176 South Street, Hopkinton, MA 01748
Phone No.: 508-435-1000 Email: _____

- 3. Name of Engineer: Atlantic Design Engineers, Inc.
Address of Engineer: PO Box 1051 Sandwich MA
Phone No.: (508) 888-9282 Email: rtaab@atlanticcompanies.com

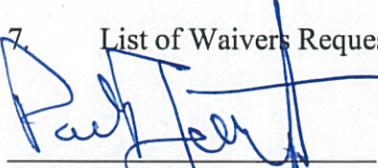
- 4. Deed of Property recorded with Norfolk Registry of Deeds in Book 12002, Page 222, (or Certificate of Title No. _____)

- 5. Location and Description of Property:
50 Constitution Blvd - Parcel ID 319-015-000-000

Square Footage of Building(s) N/A
Assessor's Map 319 Lot 015

- 6. Purpose of Site Plan: Proposed Ground and Canopy Mounted Solar Array

7. List of Waivers Requested (if any): Attach Form R for each waiver



Signature of Applicant

Paul Fitzgerald
Vice President
Real Estate & Facilities

Print Name of Applicant



Signature of Owner

Paul Fitzgerald
Vice President
Real Estate & Facilities

Print Name of Owner

CERTIFICATE OF OWNERSHIP

I the undersigned Applicant, do hereby certify to the Town of Franklin, through its Planning Board, that all parties of interest to the below-listed plan are identified in Section B: below,

SECTION A:

Type of Plan (circle one) ANR 81-P; Preliminary Subdivision

Definitive Subdivision; Site Plan; Special Permit

Title of Plan: Site Development Plans for 50 Constitution Blvd Prepared by Atlantic Design

Date of Plan: 2/6/2025 Assessor's Information: Parcel ID 319-015-000-000

Prepared by: Atlantic Design Engineers, Inc.

Applicant Name & Address: EMC Corporation

SECTION B:

Name of Record Owner(s): EMC Corporation

Address of Record Owner(s): 176 South Street
Hopkinton, MA 01748

****Attach Property Deed matching the owner name's listed above.**

*If in the name of a Trust, Corporation or Partnership, list the names and addresses of all Trustee(s), Corporate Officer(s) or Partner(s):

*If in the name of a Trust or Corporation, list the Beneficiary(ies) of the Trust or the Shareholder(s) of the Corporation:

*If in the name of a Trust or Corporation, list the date, county, book and page of recording of the Trust Instrument, or the date and State of incorporation:

Executed as a sealed instrument this 3 day of 20 25
Paul Fitzgerald
Signature of Applicant
Paul Fitzgerald
Signature of Owner
Paul Fitzgerald
Print name of Applicant
Paul Fitzgerald
Print name of Owner
Vice President
Real Estate & Facilities
Vice President
Real Estate & Facilities

COMMONWEALTH OF MASSACHUSETTS

Middlesex ss. 20 25

On this 3rd day of February 20 25, before me, the undersigned notary public, personally appeared Paul Fitzgerald (name of owner), proved to me through satisfactory evidence of identification, which were drivers license to be the person whose name is signed on the preceding document in my presence.

Lisa A. Hall
(Official signature and seal of notary)
Notary Public:
My Commission Expires: 4/5/30



Lisa A. Hall
NOTARY PUBLIC
Commonwealth of
Massachusetts
My Commission Expires
4/5/2030

QUITCLAIM DEED

Valerie A. Colbert, Trustee of Franklin Industrial Park Trust under Declaration of Trust dated October 1, 1981 and recorded with the Norfolk County Registry of Deeds (the "Registry") at Book 5961, Page 619 as amended by First Amendment dated August 4, 1987 recorded in said Registry in Book 7689, Page 134, and by Second Amendment dated January 31, 1994, recorded in said Registry in Book 10390, Page 244 (the "Grantor"), in consideration of Three Million Two Hundred Forty-Two Thousand Four Hundred Ninety-Eight Dollars (\$3,242,498.00), grants to EMC Corporation, a Massachusetts corporation, whose address is 171 South Street, Hopkinton, Massachusetts, (the "Grantee"), with Quitclaim Covenants, approximately 39.302 acres of land on Constitution Boulevard in the Franklin Industrial Park, Franklin, Norfolk County, Massachusetts, shown as Lot A-14 on a plan of land dated November 11, 1992, entitled "Plan of Land off Constitution Boulevard, Franklin Industrial Park, Franklin, Massachusetts (Norfolk County)", prepared by Civil Designs, Inc. of Boston, Massachusetts (the "1992 Plan"), which Plan is recorded as Plan No. 529 of 1993 in Plan Book 415.

Subject to, and with the benefit of, appurtenant easements for drainage purposes in the following areas on Lot A-14 shown on the 1992 Plan, in common with all others now or hereafter entitled thereto:

- (i) "40' Wide Drain Easement" along the southerly boundary of Lot A-14 as shown on the 1992 Plan (and designated on said Plan, together with the items referred to in Subparagraphs (ii) and (iii) hereof, as "Exist. Drain Easements");
- (ii) The irregular area along the southwesterly boundary of Lot A-14 as shown on the 1992 Plan, which connects with the easement area referred to in Subparagraph (i) hereof; and
- (iii) The "40' Wide Drain Easement" along the westerly boundary of Lot A-14 as shown on the 1992 Plan.

Together with the benefit of appurtenant easements for drainage purposes in the following areas west and south of Constitution Boulevard as shown by a plan dated August 24, 1989, revised through August 29, 1989, entitled "Plan of Land Owned by Copley-Franklin Industrial Park Trust" prepared by said Civil Designs, Inc., which is recorded with said Deeds as Plan No. 855B of 1989 in Plan Book 385 (the "1989 Plan"), in common with all others now or hereafter entitled thereto:

- a) At a location west of the "40' Wide Drain Easement" on Lot A-14 referred to in subparagraph (iii) of the preceding paragraph hereof, an area shown on the 1989 Plan as "20' Wide Drain Easement Not Previously Recorded";
- b) Then the irregular area west thereof shown as "Drain Easement" on the 1989 Plan (sometimes referred to as "Pond No. 2");
- c) Then the area south thereof shown as "40' Wide Drain Easement" on the 1989 Plan;
- d) Then the area south and east thereof shown as "Drain Easement" on the 1989 Plan (sometimes referred to as "Pond No. 3");
- e) Then the area south thereof labeled "30' Wide" on the 1989 Plan, which connects with a water course shown on said Plan (sometimes referred to as "Dix Brook"); and
- f) At a location south of the "40' Wide Drain Easement" and the irregular area on Lot A-14 referred to in subparagraphs (i) and (ii) of the preceding paragraph, an area shown on the 1989 Plan as "30' Wide Drain Easement," and
- g) Then southwest of Liberty Way (a public street) the northerly portion of an area shown as "30' Wide Utility Easement B-19" on the 1989 Plan, which area connects with Pond No. 3 and the 30' Wide area referred to in subparagraphs (d) and (e) of this paragraph.

RECEIVED RECORDED
NORFOLK COUNTY
97 SEP 23 PM 3:19

RECORDED
NORFOLK COUNTY REGISTRY OF DEEDS
DEDHAM, MA

CERTIFY

Barry J. Barry

BARRY J. BARRY

Also subject to, and ^{N O T}with the benefit of, an appurtenant ^{N O T}underground easement for sewerage purposes, in common ^Awith all others now or hereafter ^Aentitled thereto, in the area shown on the 1992 Plan as "New 30' Wide Sewer Easement A14 A" I A L

C O P Y

C O P Y

As shown by the 1992 Plan, Lot A-14 is also subject to a certain easement area in the southeast corner thereof designated "Exist. Utility Easement" (the "Utility Easement") a portion of which is located on Lot A-14 and on certain abutting lots to the east thereof (the "Abutting Lots"). The Utility Easement was created in a deed dated February 22, 1988 of one of the Abutting Lots from Grantor's predecessor in title to Michael L. Knight and Rona B. Knight, Trustees of The Ravan Realty Trust which deed is recorded with said Registry in Book 7890 Page 652 (the "Knight Deed") and also granted in common to the grantees of the remaining Abutting Lots, to wit, Robert J. Bubencik, Trustee of Aerie Realty Trust as to Lot A-2 (by deed dated February 2, 1988 recorded in Book 7881, Page 677) and Paula S. LaRosa and others, Trustees of Second Copley-Franklin Trust as to Lot A-3 (by deed dated December 7, 1987 recorded in Book 7830, Page 16) (hereinafter collectively referred to, together with additional deeds to others of land in Franklin Industrial Park whereunder like easement rights were granted, as the "Additional Deeds"), whereunder the Grantor reserved to itself, its successors and assigns and others, the right and easement to construct, install, operate, maintain, repair, replace and use, water, sewer, electric, telephone, gas and other utilities in, upon, over, under and across the Utility Easement. The Grantor hereby acknowledges, confirms and grants to Grantee the right to use the Utility Easement for all purposes which are not inconsistent with the easement originally reserved in the Knight Deed and the Additional Deeds as aforesaid and not inconsistent with the rights granted to the Town of Franklin in a deed dated January 1, 1990 recorded in Book 8554, Page 555 (whereunder the Utility Easement is referred to in Paragraph (8) of Exhibit "A"), provided, however, that: (a) Grantee shall not have the right to tap into or connect with existing sewerage pipes within said area (or any replacement thereof), and (b) Grantee shall not have the right to tap into or connect with existing storm drainage pipes located within said area (or any replacement thereof), except for the purpose of drawing water therefrom for use on Grantee's remaining premises, provided that the same can be accomplished without interfering with the use of said drainage pipes by others, the foregoing activity to be at Grantee's sole risk and expense in any event. Grantor further agrees that it shall not, without the prior written consent of Grantee hereunder, exercise its right to relocate drainage and utility areas as reserved in Paragraph 1 on page 2 of the Knight Deed (and similarly in the Additional Deeds), to the extent that any such areas are located on Lot A-14.

Reference is further made to those Protective Covenants dated as of May 1, 1987, which are recorded with said Registry at Book 7689, Page 385, as amended by a First Declaration of Amendment dated December 1, 1992, recorded with said Deeds in Book 9702, Page 603, as affected by a Confirmatory First Declaration of Amendment as to Protective Covenants dated as of December 12, 1994 recorded with said Deeds in Book 10798, Page 479 and as amended by a Second Declaration of Amendment dated March 29, 1995, recorded with said Deeds in Book 10848, Page 251. The Grantor hereby waives and amends the following Sections of the Protective Covenants with respect to Lot A-14:

- (A) Article II B (1) so as to provide that no more than forty (40%) percent of Lot A-14 may be covered with buildings and other structures, excluding, however, parking structures (which may exceed said 40% coverage), and excluding in any event, parking lots, loading areas, walkways and other surface improvements.
- (B) Article III G-5 so as to provide that the time for Grantor to approve the initial Site Plan (as defined thereunder) will be ten business days, and so as to provide that any change or addition to a plan will be approved in 5-business days; and further to provide that the Grantor will have the right to extend the approval time for only up to 5-business days (and not 30 days) if the volume or complexity of a plan reasonably requires such an

extension (provided also that written notice of such extension is given during the initial approval period); and

O F F I C I A L O F F I C I A L

(C) All Sections of said Protective Covenants relating to construction methods and materials for building on Lot A-14, provided that Grantee, its successors or assigns, use construction methods and materials already existing on other sites in the Franklin Industrial Park, (as defined in the Protective Covenants), excluding from the foregoing, however (i) any construction on the site at 857 Union Street, Franklin, Massachusetts conveyed to Multi-Fasteners, Inc. by deed dated June 14, 1988, recorded with the Registry in Book 1999 Page 100, and (ii) the provisions of Article II (C) (2) of said Protective Covenants, as amended.

WITNESS my hand and seal this 22nd day of September, 1997.

Valerie A. Colbert Trustee
Valerie A. Colbert, as Trustee of Franklin Industrial Park Trust, and not individually

STATE OF MASSACHUSETTS

COUNTY OF SUFFOLK

September 22, 1997

Then personally appeared the above-named Valerie A. Colbert, Trustee as aforesaid, and acknowledged the foregoing instrument to be her free act and deed and the free act and deed of Franklin Industrial Park Trust, before me.

Neil M. Glavin

Notary Public
My commission expires: May, 1999

RECORDS REG 17
NORFOLK
09/23/97
CANCELED
TAX 14785.00
CHK 14785.00
4808A017 14:08
EXCISE TAX
SEP 23 1997

300FT ABUTTERS LIST



137457

Abutter's List Request Form

Status: Active
Submitted On: 1/17/2025

Primary Location

50 CONSTITUTION BLVD
FRANKLIN, MA 02038

Owner

EMC CORPORATION C/O EMC
CORP - REAL ESTATE DEP
SOUTH ST 171 HOPKINTON,
MA 01748

Applicant

Rebecca Peduzzi
 508-888-9282
 rpeduzzi@atlanticcompanies.com
 Atlantic Design Engineers, Inc.
39 Pleasant Street
Sagamore, MA 02561

Abutter's List Request Form

Which Board/Commission is requiring this list?*

Conservation Commission

What is the purpose for the request?*

To obtain a 300-foot abutter list for a Notice of Intent filing with the Conservation Commission

How would you like to receive this abutters list?*

Emailed

What email address should we use to send you the abutters list?*

rpeduzzi@atlanticcompanies.com

General Parcel Information

Assessor's Parcel ID*

319-015-000-000

Property Street Address*

50 Constitution Boulevard

Property Owner Information

Property Owner*

EMC Corporation c/o EMC Corp.-RE
Dep.

Property Owner's Mailing Address*

171 South Street

Town/City*

Hopkinton

Zip/Postal Code*

01748

State*

MA

Property Owner Telephone Number*

(508) 541-4000

Requestor's Information

**Requestor/Applicant same as Property Owner
Information?***

No

Requestor's Name *

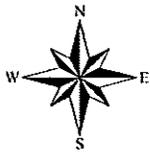
Rebecca Peduzzi c/o Atlantic Design
Engineers, Inc.

Requestor's Telephone Number

(508) 888-9282

Requestor's Address

39 Pleasant St., Sagamore, MA 02561



50 CONSTITUTION BLVD - 300' ABUTTERS

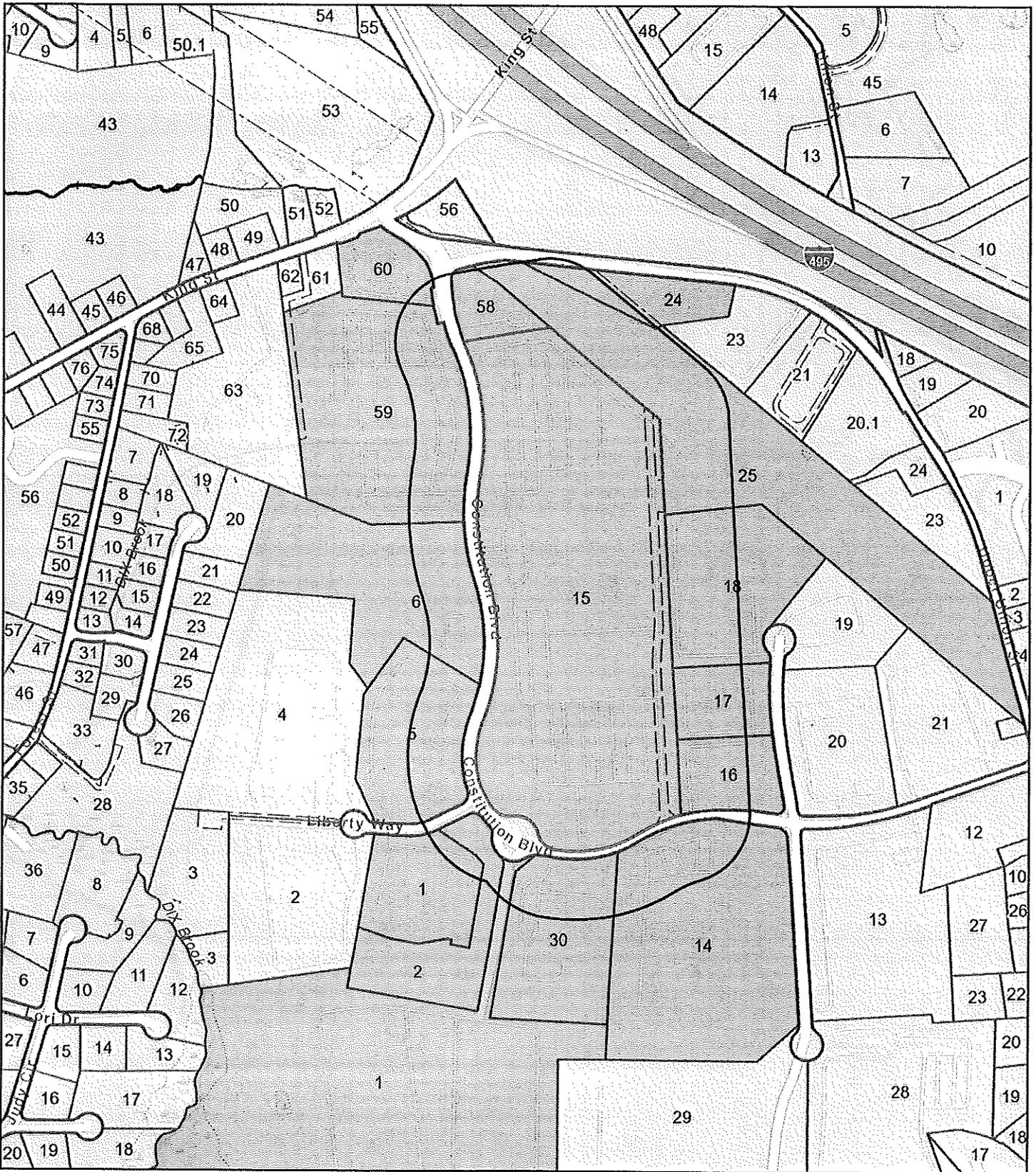
Town of Franklin, MA

1 inch = 600 Feet



www.cai-tech.com

January 30, 2025



This information is believed to be correct but is subject to change and is not warranted.



300 feet Abutters List Report

Franklin, MA
January 30, 2025

Subject Property:

Parcel Number: 319-015-000
CAMA Number: 319-015-000-000
Property Address: 50 CONSTITUTION BLVD

Mailing Address: EMC CORPORATION C/O EMC CORP -
REAL ESTATE DEP
171 SOUTH ST
HOPKINTON, MA 01748

Abutters:

Parcel Number: 313-058-000
CAMA Number: 313-058-000-000
Property Address: 2 CONSTITUTION BLVD

Mailing Address: BRIGHT HORIZONS CHILDRENS CENT
2 WELLS AVENUE
NEWTON, MA 02459

Parcel Number: 313-059-000
CAMA Number: 313-059-000-000
Property Address: 55 CONSTITUTION BLVD

Mailing Address: NBPIV CONSTITUTION II LLC C/O
NORTHBRIDGE PARTNERS LLC
401 EDGEWATER PLACE SUITE 265
WAKEFIELD, MA 01880

Parcel Number: 313-060-000
CAMA Number: 313-060-000-000
Property Address: 600 KING ST

Mailing Address: FRANKLIN TOWN OF
355 EAST CENTRAL STREET
FRANKLIN, MA 02038

Parcel Number: 314-024-000
CAMA Number: 314-024-000-000
Property Address: 801 UPPER UNION ST

Mailing Address: CANESI WILLIAM & THOMAS TRS
CANESI BROTHERS TRUST
801 UPPER UNION ST
FRANKLIN, MA 02038

Parcel Number: 314-025-000
CAMA Number: 314-025-000-000
Property Address: UPPER UNION ST

Mailing Address: NEW ENGLAND POWER CO PROPERTY
TAX DEPT
40 SYLVAN RD
WALTHAM, MA 02451-2286

Parcel Number: 319-014-000
CAMA Number: 319-014-000-000
Property Address: 125 CONSTITUTION BLVD

Mailing Address: MARDINI FRANKLIN LLC
3641 INTERCHANGE RD
COLUMBUS, OH 43204

Parcel Number: 319-015-000
CAMA Number: 319-015-000-000
Property Address: 50 CONSTITUTION BLVD

Mailing Address: EMC CORPORATION C/O EMC CORP -
REAL ESTATE DEP
171 SOUTH ST
HOPKINTON, MA 01748

Parcel Number: 319-016-000
CAMA Number: 319-016-000-000
Property Address: 120 CONSTITUTION BLVD

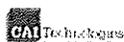
Mailing Address: LRF2 BOS CONSTITUTION BLVD LLC
C/O LONGPOINT PROPERTY GRP LLC
13218 WEST BROWARD BLVD
PLANTATION, FL 33325

Parcel Number: 319-017-000
CAMA Number: 319-017-000-000
Property Address: 10 DISCOVERY WAY

Mailing Address: AERIE REALTY LLC
10 DISCOVERY WAY
FRANKLIN, MA 02038

Parcel Number: 319-018-000
CAMA Number: 319-018-000-000
Property Address: 20 DISCOVERY WAY

Mailing Address: MORGAN GRAINGER LP
20 DISCOVERY WAY
FRANKLIN, MA 02038



www.cai-tech.com

This information is believed to be correct but is subject to change and is not warranted.

1/30/2025

Page 1 of 2



300 feet Abutters List Report

Franklin, MA
January 30, 2025

Parcel Number: 320-001-000
CAMA Number: 320-001-000-000
Property Address: 10 LIBERTY WAY

Mailing Address: LRF2 BOS LIBERTY WAY LLC C/O
LONGPOINT REALTY PARTNERS
13218 WEST BROWARD BOULEVARD
PLANTATION, FL 33325

Parcel Number: 320-005-000
CAMA Number: 320-005-000-000
Property Address: 101 CONSTITUTION BLVD

Mailing Address: 101 CONSTITUTION BLVD LLC C/O
KEYPOINT PARTNERS LLC
ONE VAN DE GRAAFF DRIVE - SUITE
402
BURLINGTON, MA 01803

Parcel Number: 320-006-000
CAMA Number: 320-006-000-000
Property Address: 77 CONSTITUTION BLVD

Mailing Address: IRON MOUNTAIN INFO MANAGEMENT
1101 ENTERPRISE DRIVE
ROYERSFORD, PA 19468

Parcel Number: 329-001-000
CAMA Number: 329-001-000-000
Property Address: 109 CONSTITUTION BLVD

Mailing Address: TEACHERS INSURANCE ANNUITY C/O
NEVEEN
PO BOX 30428
CHARLOTTE, NC 28230

Parcel Number: 329-002-000
CAMA Number: 329-002-000-000
Property Address: 105 CONSTITUTION BLVD

Mailing Address: APG FRANKLIN LLC C/O AVENTINE
PROPERTY GROUP IN
111 SOUTH WACKER DR SUITE 3350
CHICAGO, IL 60606

Parcel Number: 330-030-000
CAMA Number: 330-030-000-000
Property Address: 115 CONSTITUTION BLVD

Mailing Address: SCHWARZKOPF TECHNOLOGIES LLC
C/O PLANSEE
115 CONSTITUTION BLVD
FRANKLIN, MA 02038

Kevin W. Doyle, 1-30-25



www.cai-tech.com

This information is believed to be correct but is subject to change and is not warranted.

1/30/2025

Page 2 of 2

101 CONSTITUTION BLVD LLC
C/O KEYPOINT PARTNERS LLC
ONE VAN DE GRAAFF DRIVE -
SUITE 402
BURLINGTON, MA 01803

MARDINI FRANKLIN LLC
3641 INTERCHANGE RD
COLUMBUS, OH 43204

AERIE REALTY LLC
10 DISCOVERY WAY
FRANKLIN, MA 02038

MORGAN GRAINGER LP
20 DISCOVERY WAY
FRANKLIN, MA 02038

APG FRANKLIN LLC
C/O AVENTINE PROPERTY GRO
111 SOUTH WACKER DR SUITE
3350
CHICAGO, IL 60606

NBPIV CONSTITUTION II LLC
C/O NORTHBRIDGE PARTNERS
401 EDGEWATER PLACE SUITE 265
WAKEFIELD, MA 01880

BRIGHT HORIZONS CHILDRENS
2 WELLS AVENUE
NEWTON, MA 02459

NEW ENGLAND POWER CO
PROPERTY TAX DEPT
40 SYLVAN RD
WALTHAM, MA 02451-2286

CANESI WILLIAM & THOMAS T
CANESI BROTHERS TRUST
801 UPPER UNION ST
FRANKLIN, MA 02038

SCHWARZKOPF TECHNOLOGIES
C/O PLANSEE
115 CONSTITUTION BLVD
FRANKLIN, MA 02038

EMC CORPORATION
C/O EMC CORP - REAL ESTAT
171 SOUTH ST
HOPKINTON, MA 01748

TEACHERS INSURANCE ANNUIT
C/O NEVEEN
PO BOX 30428
CHARLOTTE, NC 28230

FRANKLIN TOWN OF
355 EAST CENTRAL STREET
FRANKLIN, MA 02038

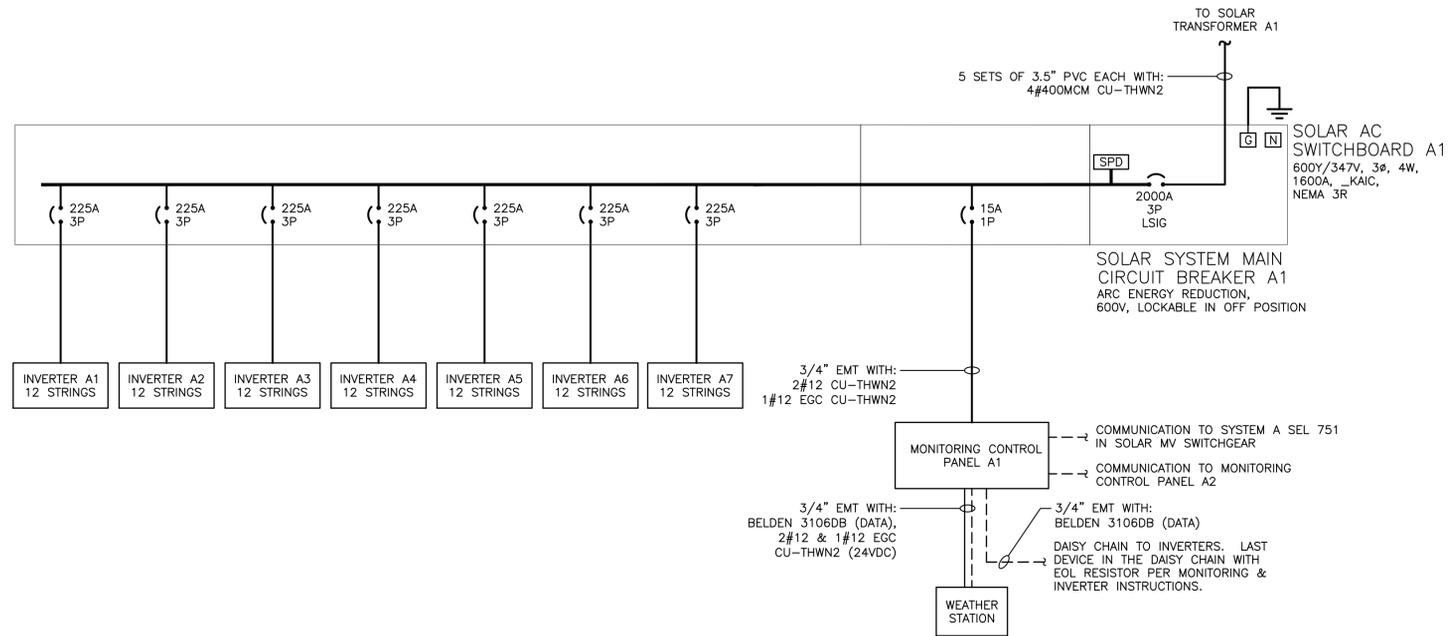
IRON MOUNTAIN INFO MANAGE
1101 ENTERPRISE DRIVE
ROYERSFORD, PA 19468

LRF2 BOS CONSTITUTION BLV
C/O LONGPOINT PROPERTY GR
13218 WEST BROWARD BLVD
PLANTATION, FL 33325

LRF2 BOS LIBERTY WAY LLC
C/O LONGPOINT REALTY PART
13218 WEST BROWARD
BOULEVARD
PLANTATION, FL 33325

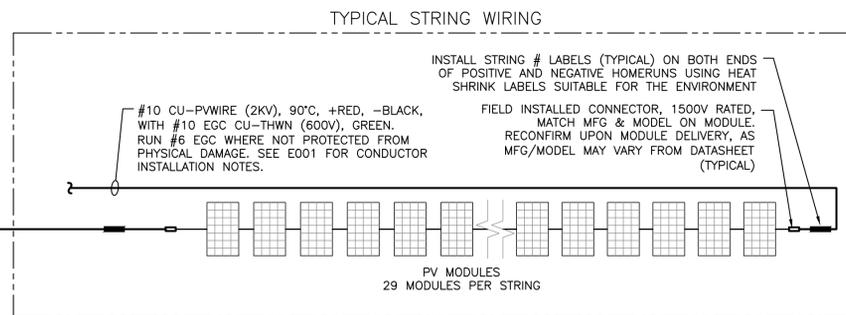
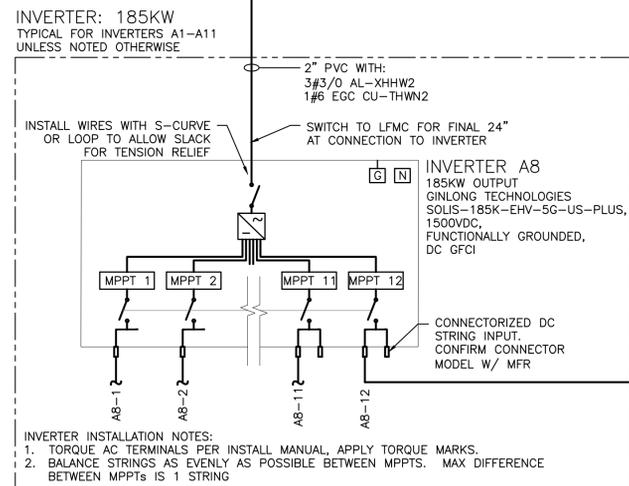
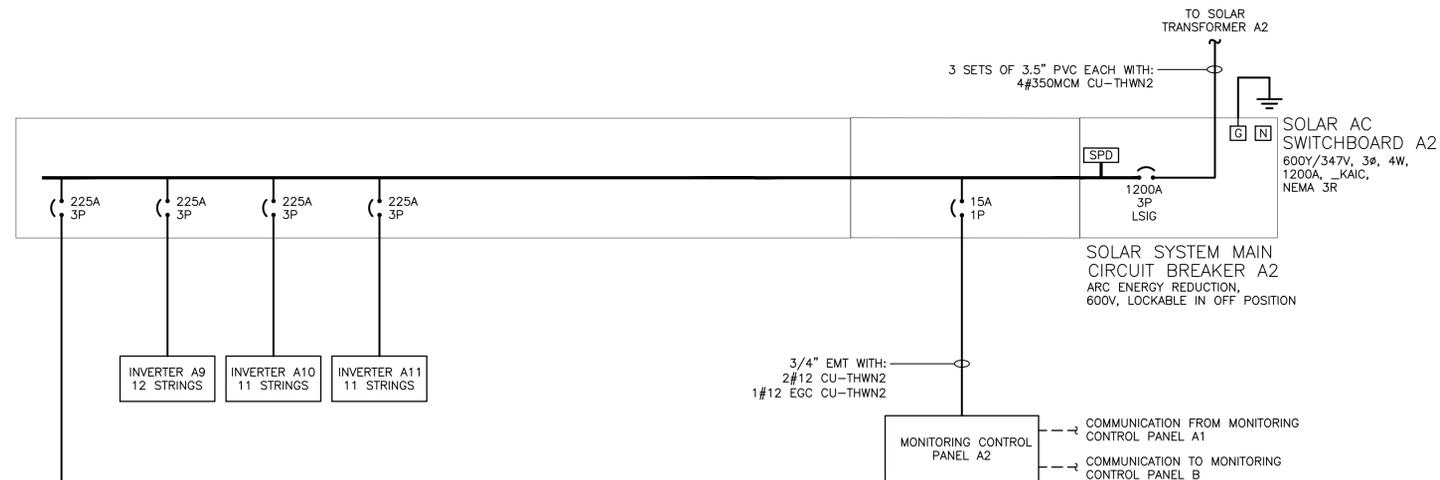
SINGLE-LINE ELECTRICAL DIAGRAM

RULER IN INCHES: 0 1/2 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18



INVERTER UL1741-SB Compliant						
ANSI ELEMENT #	Pickup	Real	Level	Delay (sec)	Curve	Description
27-1	304.84	528V	88.0%	2.00		Slow UV
27-2	173.21	300V	50.0%	1.10		Fast UV
59-1	381.05	660V	110.0%	2.00		Slow OV
59-2	415.69	720V	120.0%	0.16		Fast OV
81U-1	58.50	58.5Hz	97.5%	300.00		Slow UF
81U-2	56.50	56.5Hz	94.2%	0.16		Fast UF
81O-1	61.20	61.2Hz	102.0%	300.00		Slow OF
81O-2	62.00	62Hz	103.3%	0.16		Fast OF
PF Set Point		1.00				Power Factor Control
Var Control		OFF				Reactive Power Control
Ramp Rate		10%/1 sec				dkw / dt
Freq Control		OFF				Speed Control

2 INVERTER PROTECTION SETTINGS
SCALE: NONE



1 ONE LINE DIAGRAM - SYSTEM A 600V
SCALE: NONE

DRAWING TITLE
ONE LINE DIAGRAM -
SYSTEM A 600V

DRAWING #
E301

PROJECT: SOLAR ROOFTOP, CARPORT, AND GROUND MOUNT SYSTEM AT FRANKLIN 50 SOLAR PROJECT
50 CONSTITUTION BLVD, FRANKLIN, MA 02038

DEVELOPER: sunnova™

GENERAL CONTRACTOR: Honeywell

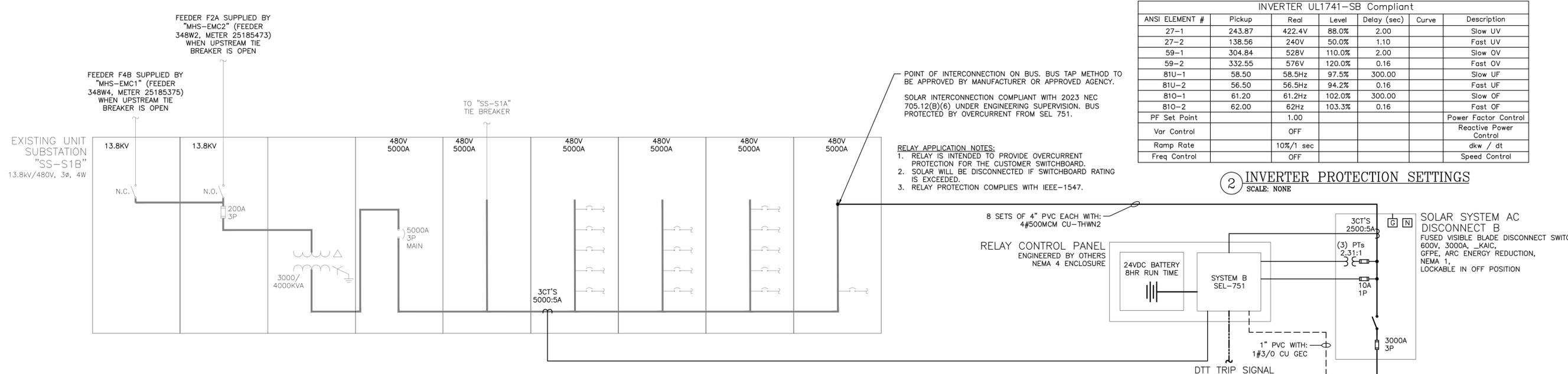
ENGINEER: RICHARD A. WINIS
RICHARD A. WINIS ELECTRICAL ENGINEERING, INC.
111 W. PUREPOWER BLVD., SUITE 100
FRANKLIN, MA 02038
MA LICENSE NO. 49915

REVISION DESCRIPTION: PM LENG CHK
DATE: 09/24/2024
08/25/2024: ROOFTOP INVERTER CHANGE BX ZC RI
05/07/2024: PHOTO-METRIC DESIGN BX ZC RI
05/07/2024: UPDATED SITE PLAN BX ZC RI
11/16/2023: CONCEPTUAL DESIGN BX ZC RI

DC SYSTEM SIZE: 4,615.13 kWDC
AC SYSTEM SIZE: 3,935.00 kWAC
MODULE TYPE: TRINA 655W BIFACIAL
MODULE QUANTITY: 7,046
ORIENTATION: TILT & AZIMUTH VARY

PAGE SIZE: 3.6" x 24"
PROJECT #: 07929

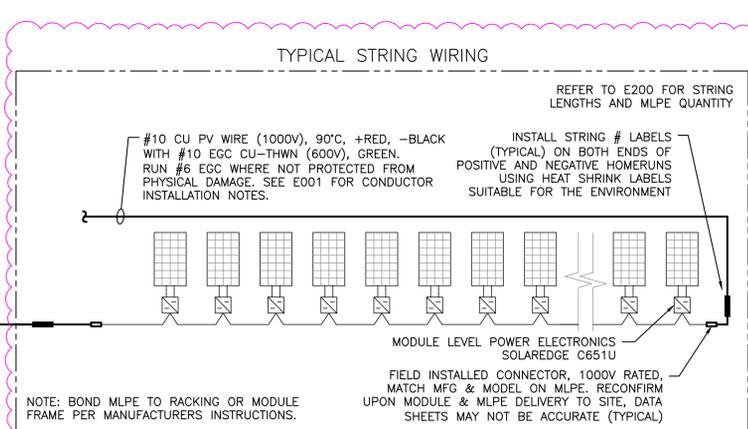
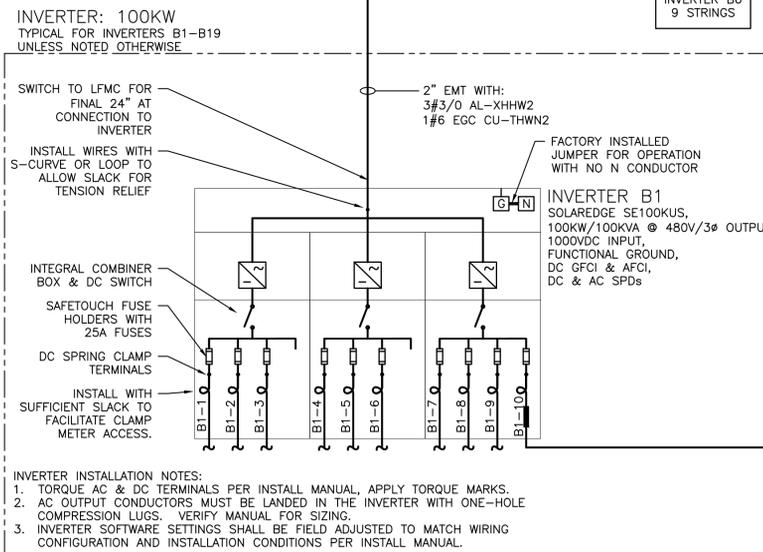
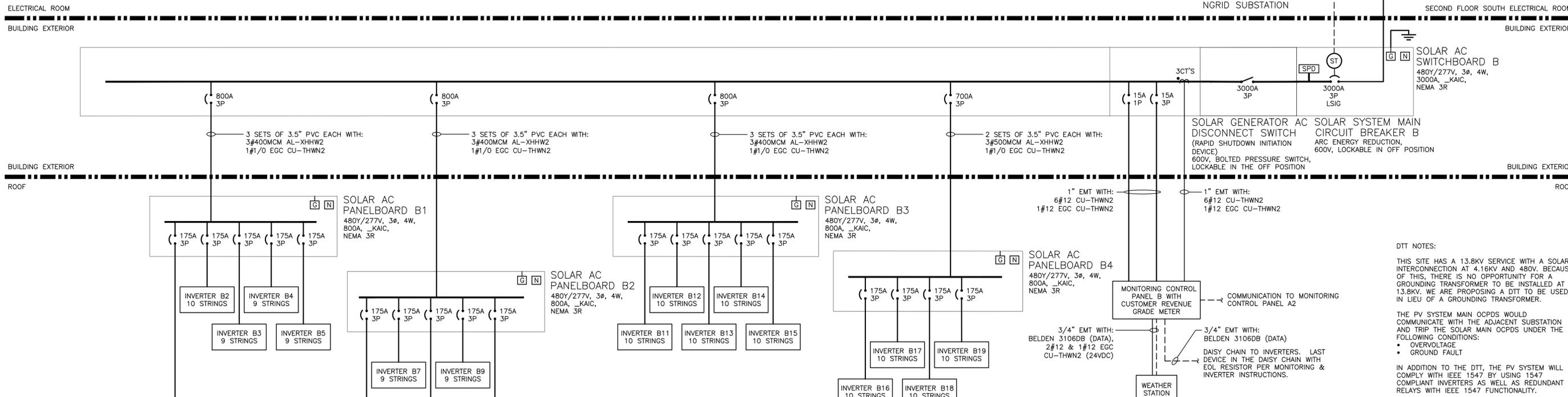
RULER IN INCHES: 0 1/2 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18



INVERTER UL1741-SB Compliant

ANSI ELEMENT #	Pickup	Real	Level	Delay (sec)	Curve	Description
27-1	243.87	422.4V	88.0%	2.00		Slow UV
27-2	138.56	240V	50.0%	1.10		Fast UV
59-1	304.84	528V	110.0%	2.00		Slow OV
59-2	332.55	576V	120.0%	0.16		Fast OV
81U-1	58.50	58.5Hz	97.5%	300.00		Slow UF
81U-2	56.50	56.5Hz	94.2%	0.16		Fast UF
81O-1	61.20	61.2Hz	102.0%	300.00		Slow OF
81O-2	62.00	62Hz	103.3%	0.16		Fast OF
PF Set Point		1.00				Power Factor Control
Var Control		OFF				Reactive Power Control
Ramp Rate		10%/1 sec				dkw / dt
Freq Control		OFF				Speed Control

2 INVERTER PROTECTION SETTINGS
SCALE: NONE



SEL 751 RELAY- SYSTEM B

SETTINGS ARE PRELIMINARY PENDING UTILITY APPROVAL AND NOT INTENDED FOR CONSTRUCTION

ANSI ELEMENT #	Unit	Pickup (Secondary)	Real (Primary)	Level	Def. Time Delay (s)	Time Dial	Total Clear Time (s)*	Total Clear Time (cyc)*	Curve	Description
27-1	L-N Volt	105.57	243.87	0.8800	1.95	-	2.00	120.00	-	Slow UV
27-2	L-N Volt	59.98	138.56	0.5000	1.05	-	1.10	66.00	-	Fast UV
59-1	L-N Volt	131.97	304.84	1.1000	1.95	-	2.00	120.00	-	Slow OV
59-2	L-N Volt	143.96	332.55	1.2000	0.11	-	0.16	9.60	-	Fast OV
79-UV	L-N Volt	110.01	254.13	0.9170	299.95	-	300.00	18000.00	-	Min Permissive Close Voltage
79-OV	L-N Volt	125.97	290.98	1.0500	299.95	-	300.00	18000.00	-	Max Permissive Close Voltage
59N	3V0 L-N Volt	20.39	47.11	0.1700	1.95	-	2.00	120.00	-	Zero Sequence Overvolt
81U-1	Hz	58.50	58.50	0.9750	299.95	-	300.00	18000.00	-	Slow UF
81U-2	Hz	56.50	56.50	0.9417	0.11	-	0.16	9.60	-	Fast UF
81O-1	Hz	61.20	61.20	1.0200	299.95	-	300.00	18000.00	-	Slow OF
81O-2	Hz	62.00	62.00	1.0333	0.11	-	0.16	9.60	-	Fast OF
79-UF	Hz	59.50	59.50	0.9917	299.95	-	300.00	18000.00	-	Min Permissive Close Frequency
79-OF	Hz	60.10	60.10	1.0017	299.95	-	300.00	18000.00	-	Max Permissive Close Frequency
51P	A	-	5000*	-	-	2	3.9 @2X	234.02 @2X	U4	Time Phase OC
74	-	-	-	-	0.05	-	0.05	3.00	-	Relay Alarm

*5000A IS THE SUM OF PRIMARY CURRENTS

3 RELAY PROTECTION SETTINGS
SCALE: NONE

1 ONE LINE DIAGRAM - SYSTEM B
SCALE: NONE

DRAWING TITLE
ONE LINE DIAGRAM - SYSTEM B

DATE: 09/24/2024
 REVISION DESCRIPTION: ROOFTOP INVERTER CHANGE
 DATE: 08/25/2024
 REVISION DESCRIPTION: PHOTO-METRIC DESIGN
 DATE: 05/07/2024
 REVISION DESCRIPTION: UPDATED SITE PLAN
 DATE: 11/16/2023
 REVISION DESCRIPTION: CONCEPTUAL DESIGN

ENGINEER: RICHARD A. WINIS
 ELECTRICAL ENGINEER
 LICENSE NO. 49815

GENERAL CONTRACTOR: Honeywell

DEVELOPER: sunnova

PROJECT # 07929

DC SYSTEM SIZE: 4,615.13 kWDC
 AC SYSTEM SIZE: 3,935.00 kWAC
 MODULE TYPE: TRINA 655W BIFACIAL
 MODULE QUANTITY: 7,046
 ORIENTATION: TILT & AZIMUTH VARY

PROJECT: SOLAR ROOFTOP, CARPORT, AND GROUND MOUNT SYSTEM AT FRANKLIN 50 SOLAR PROJECT
 50 CONSTITUTION BLVD., FRANKLIN, MA 02038

DRAWING # E302

DECOMMISSIONING PLAN



**Decommissioning Plan
for
Solar Canopy & Ground Mount Solar Project
50 Constitution Boulevard
Franklin, Massachusetts 02038**

Applicant:
EMC Corporation
176 South Street
Hopkinton, MA 01748

Prepared by:
Atlantic Design Engineers, Inc.
P.O. Box 1051
Sandwich, Massachusetts 02563

Date: February 6, 2025

Atlantic Project No. 3328.00



I. FACILITY DESCRIPTION

This Decommissioning Plan has been prepared for the proposed Solar Canopy and Ground Mount Solar Project to be constructed at 50 Constitution Boulevard in Franklin, Massachusetts. This plan describes the process for decommissioning the facility in accordance with state requirements and the Town of Franklin's Site Plan review process. The facility will consist of a ground mounted solar facility over an existing grassed field with a fenced in area of ± 2.0 -acres and a ± 0.2 -acre canopy mounted solar facility located over an existing paved parking lot.

The ground and canopy mounted solar facilities are proposed to consist of a total of 3770 photovoltaic modules and accompanying equipment.

The Facility will include the following site features which will require decommissioning at the end of the life of the project:

- Approximately 3770 photovoltaic (PV) modules.
- A ± 2.0 -acre ground-mounted PV racking system within a chain-link fence and a 20' wide locking chain link security access gate at the entrance to the array area;
- A ± 0.2 acre canopy mounted PV racking system over an existing paved parking lot.
- Piles supporting the PV modules and racking system;
- Two (2) pad-mounted transformers, four (4) inverters, and all other electrical equipment cabinets;
- Underground conduit and wires;

II. DECOMMISSIONING PLAN

The decommissioning of the facility will be a two-stage process consisting of Dismantling, Demolition and Disposal/Recycling followed by Site Restoration. The following is a description of each process.

Dismantlement, Demolition, and Disposal or Recycling

A significant portion of the components that comprise the facility will include recyclable or re-sealable components including copper, aluminum, galvanized steel, and the modules. Due to their re-sale monetary value, these components will be dismantled, disassembled, and recycled rather than being demolished and disposed of. A Salvage Estimate of materials or equipment of value has been included within the attached calculations. Salvage items, as listed in **Table A**, will be sold back to the manufacturer or to a recycling facility.

All electrical connections to the system will be disconnected and all connections will be tested locally to confirm that no electric current is running through them before proceeding. The facility will be dismantled following coordination with the utility company regarding timing and required procedures for disconnecting the facility from the utility distribution network. All electrical connections to the PV



modules will be severed at each module, and the modules will then be removed from their framework by cutting or dismantling the connections to the supports. Modules will be removed and sold to a purchaser or recycler. In the event of a total fracture of any modules, the interior materials are silicon-based and are not hazardous. Disposal of these materials at a landfill is permissible.

The ground-mounted PV system framework will be dismantled and recycled. The foundation system will be removed and recycled if feasible. All other associated structures will be demolished and removed from the site for recycling or disposal at the landowners discretion. This will include the site fencing and gates, which will likely be reclaimed or recycled. Concrete equipment slabs will be broken and removed to a depth of one foot below grade and clean concrete will be crushed and disposed of off-site or recycled (reused either on or off-site).

Per discretion of the landowner, once the PV modules have been removed, the canopy PV mounting system framework is to be left in place over the parking lot area of the subject property.

A final site walkthrough will be conducted to remove debris and/or trash generated during the decommissioning process. Any debris that may have been wind-blown to areas outside the immediate footprint of the facility being removed. Sanitary facilities will be provided on site for the workers performing the decommissioning of the facility.

Site Restoration

All areas disturbed during decommissioning will be re-graded to recreate a uniform slope similar in grade to conditions that existed prior to facility construction. The ground-mounted array area (± 2.0 -acres) will be replanted with a grass seed. Per discretion of the landowner, the canopy PV mounting system will remain in place to be used as a carport for on-site parking.

Permitting Requirements

Several approvals will be obtained prior to initiation of the decommissioning process. Permitting requirements will be determined at the time of decommissioning and updated based on current local, state, and federal regulations. The decommissioning process is anticipated to take approximately eight to ten weeks.

In accordance with the requirements of the Town of Franklin Zoning Bylaws, the owner/operator shall notify the Site Plan Review Authority (Planning Board) by certified mail of the proposed date of discontinued operations and the decommissioning will be completed no more than 150-days after the date of discontinued operation. Absent notice of a proposed date of decommissioning or written notice of extenuating circumstances, the solar photovoltaic installation shall be considered abandoned when it fails to operate for more than one year without the written consent of the Planning Board. Based upon current regulations, a building/demolition permit will be required from the Town of Franklin Building



Department for the decommissioning of this site because a building/demolition permit must be obtained for any demolition or change to the use of a structure.

III. DECOMMISSIONING COST ESTIMATE

Atlantic has reviewed multiple solar decommissioning cost estimates in the preparation of this decommissioning plan.

Assuming a 5.0% yearly inflation for the 20-year project life span and assuming salvage value, the proposed financial surety amount is **\$189,127.00**. **Table 1**, attached below shows an itemized estimate of decommissioning costs that have been taken into account within our estimate.

TABLE 1
SOLAR CANOPY AND GROUND MOUNT SOLAR PROJECT
50 CONSTITUTION BLVD FRANKLIN, MA
DATE: 02-6-2025

System Information Summary

Total System Module Count	3770
Total System Inverter Count	11
Racking Orientation	2 Up Vertical
Linear Feet of Racking	2932.91
Estimated Aluminum per Foot of Racking (lbs)	2
Estimated Steel Per Foot of Racking (lbs)	4.5
Estimated Length of Interconnection to Street (feet)	973
Anticipated Project Lifespan for Inflation Calculation (years)	20
Ballasted System (Y/N)	No

Decommissioning Summary

Estimated Business Days to Demolish (8 Man Crew - Rate of 350 modules, 2 Inverters & 500 Linear Feet of Racking/Day)	11
Estimated Total Number of 40 Yard Dumpsters (400 Modules/2INV/Miscellaneous Debris Per Container)	10
Dumpster Disposal Cost (\$1,000 per Dumpster for 21-day Period)	\$ 10,000.00
Labor Cost - 8 Man Crew (\$80/Hour)	\$ 56,320.00
Equipment Cost (\$225/Hour)	\$ 19,800.00
Site Repair (2.5% Labor & Equip Costs) & (10 lb grass seed/acre @ \$50/lb)	\$ 2,903.00
Total Current Day Decommissioning Estimate	\$ 89,023.00
Decommissioning Costs Using Lifespan with 5.0% Inflation	\$ 236,205.00

Salvage Value Summary

Estimated Copper Salvage (lbs)	3,892.00
Estimated Aluminum Salvage (lbs)	5,865.82
Estimated Steel Salvage (lbs)	13,198.10
Current Day Salvage Pricing for Copper (\$/lb)	\$ 3.50
Current Salvage Pricing for Aluminum (\$/lb)	\$ 0.50
Current Salvage Pricing for Steel (\$/lb)	\$ 0.09
Estimated Copper Salvage Value	\$ 13,622.00
Estimated Aluminum Salvage Value	\$ 2,932.91
Estimated Steel Salvage Value	\$ 1,187.83
Estimated Ballast Salvage (@ \$12/Ton With Metal - 2019)	\$ -
Estimated Total Salvage Value	\$ 17,743.00
Estimated Total Salvage Value Using Lifespan with 5.0% Inflation	\$ 47,078.00

(Mid City Scrap - 2/25)
(Mid City Scrap - 2/25)
(Mid City Scrap - 2/25)

Estimated Future Decommissioning Cost Including Estimated Future Salvage Value	\$ 189,127.00
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COPIES OF CHECKS

HOLD TO LIGHT TO VIEW TRUE WATERMARK IN PAPER HEAT SENSITIVE RED LOCK DISAPPEARS WHEN HEATED

ATLANTIC DESIGN ENGINEERS, INC.

P.O. BOX 1051
SANDWICH, MASSACHUSETTS 02563-1051
(508) 888-9282

**CAPE
COD 5**
www.capecodfive.com
53-7107/2113

2/4/2025

PAY TO THE ORDER OF **Town of Franklin**

\$ ****1,500.00**

One Thousand Five Hundred and 00/100*****

DOLLARS

Town of Franklin



[Handwritten Signature]

AUTHORIZED SIGNATURE

Security features. Details on back.

MEMO
Site Plan Review Fee

ATLANTIC DESIGN ENGINEERS, INC.

Town of Franklin

50 Constitution Blvd., Franklin

2/4/2025

1,500.00

Site Plan Review Fee

1,500.00

HOLD TO LIGHT TO VIEW TRUE WATERMARK IN PAPER HEAT SENSITIVE RED LOCK DISAPPEARS WHEN HEATED

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**CAPE
COD 5**
www.capecodfive.com
53-7107/2113

2/4/2025

PAY TO THE ORDER OF Town of Franklin

\$ **50.00

Fifty and 00/100*****

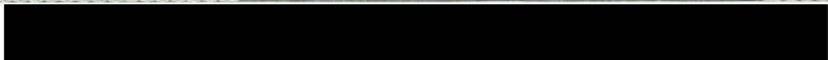
DOLLARS

Town of Franklin



[Handwritten Signature]
AUTHORIZED SIGNATURE

MEMO
Fire Dept. Review Fee



ATLANTIC DESIGN ENGINEERS, INC.

Town of Franklin

50 Constitution Blvd., Franklin

2/4/2025



50.00



Fire Dept. Review Fee

50.00

Security features. Details on back.

STRUCTURAL SITE PLANS

SOLAR CANOPY

FOR

Sunnova Energy

AT

Dell Campus
50 Constitution Blvd,
Franklin, MA 02038



terrasmart™

6715 STEGER DRIVE
 CINCINNATI, OH 45237
 513.242.2051
 FAX: 513.242.0816

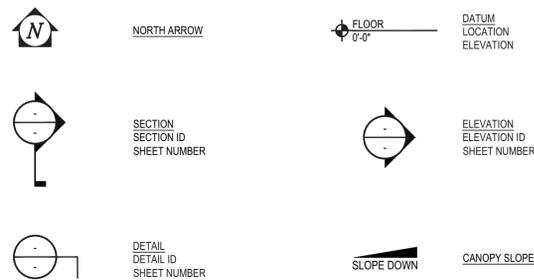
PROFESSIONAL SEAL

ENGINEER'S SEAL APPLIES TO DESIGN OF STRUCTURAL COMPONENTS ONLY

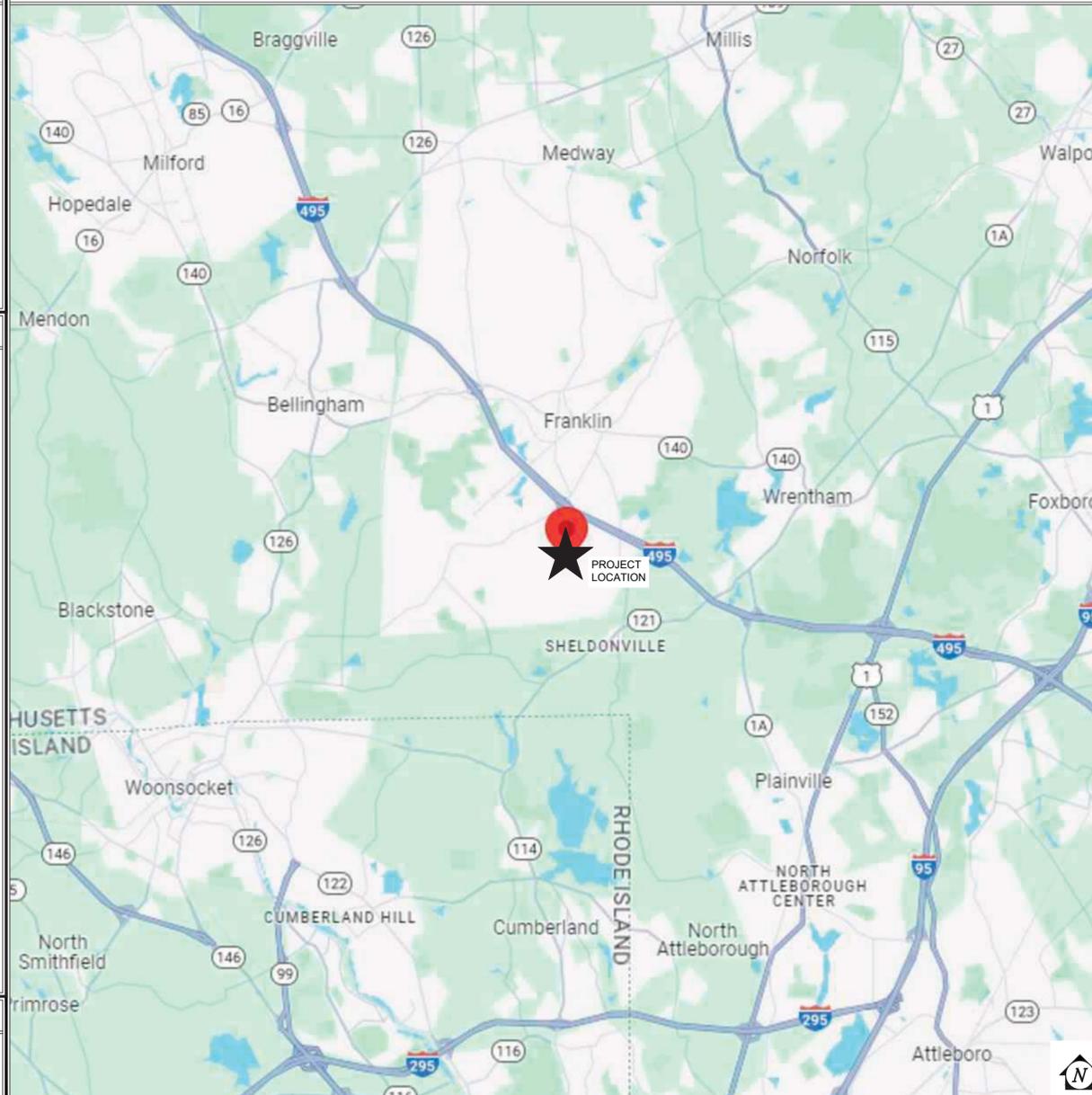


SOLAR CANOPY
 FOR
Sunnova Energy

SYMBOLS LEGEND



VICINITY MAP



DRAWING INDEX

SHT. No.	SHEET DESCRIPTION	REL. No.	SHT. No.	SHEET DESCRIPTION	REL. No.
SC001	COVER SHEET	5			
SC002	GENERAL NOTES AND MODULE SPECIFICATION SHEETS	5			
SC003	SITE PLAN	5			
SC101	FOUNDATION AND COLUMN PLAN	5			
SC102	FOUNDATION AND COLUMN PLAN	5			
SC103	FOUNDATION AND COLUMN PLAN	5			
SC104	COMPONENT PLAN	5			
SC105	COMPONENT PLAN	5			
SC106	COMPONENT PLAN	5			
SC301	CANOPY SECTION	5			
SC401	FOUNDATION AND BASE PLATE DETAILS	5			
SC501	COMPONENT DETAILS	5			

GOVERNING CODE

Massachusetts Building Code, 9th Edition

CONSTRUCTION TYPE: IIB

RISK CATEGORY: II

DESIGN LOADS:

- DEAD LOADS:
 - STRUCTURE: 5.0 PSF
 - GLAZING: 3.0 PSF
 - Z = 0.0 PSF
- ROOF LIVE LOAD = 12 PSF
- SNOW LOAD:
 - P_g = 40 PSF (GROUND SNOW)
 - P_f = 35.0 PSF (ROOF SNOW)
 - C_e = 1.0
 - C_t = 1.2
 - I_s = 1.00
- WIND LOAD: (MAIN WIND FORCE RESISTING SYSTEM)
 - V_{ult} = 129 MPH
 - V_{ref} = 100 MPH
 - I_w = 1.00
 - EXPOSURE: B
- SEISMIC: (LOADS PARALLEL AND PERPENDICULAR TO CANOPY FRAMES)
 - S_{ds} = 0.183
 - S_{d1} = 0.064
 - S_{d2} = 0.159
 - S_{d3} = 0.064
 - I_{pe} = 1.00
 - SITE CLASS: C
 - SEISMIC DESIGN CATEGORY: A
 - SEISMIC FORCE RESISTING SYSTEM = CANTILEVERED COLUMN SYSTEMS DETAILED TO CONFORM TO THE REQUIREMENTS FOR ORDINARY STEEL MOMENT FRAMES (CANT. COL.)
 - DESIGN BASE SHEAR: V = 1.905 PSF
 - C_s = 0.127
 - R = 1.25
 - EQUIVALENT LATERAL FORCE ANALYSIS

RESPONSIBILITY SCHEDULE

ITEM DESCRIPTION	N/A	TERRASMART		CUSTOMER		REMARKS
		FURN.	INST.	FURN.	INST.	
GEOTECHNICAL REPORT				●		
SITE SURVEY				●		EXISTING CONDITIONS - TOPO & LOCATE COLUMNS
CONSTRUCTION SURVEY				●		VERIFY COLUMN LOCATIONS
CORROSION ANALYSIS	●					
LOCATE SUBSURFACE UTILITIES/STRUCTURES				●		PRIVATE UTILITY LOCATE
SITE GRADING	●					
SPOILS REMOVAL				●		
FENCING				●		
TEMPORARY ELECTRIC				●		
PORTABLE TOILET				●		
MATERIAL UNLOADING				●		
MATERIAL STAGING				●		
DUMPSTER/REFUSE REMOVAL				●		
FOUNDATIONS				●		FOUNDATION ENGINEERING BY TERRASMART
ANCHOR BOLTS	●					
PV MODULES				●		
PV MODULE MOUNTING HDW	●					
PV MODULE RAIL	●					
PV MODULE GROUNDING HDW	●					
WIRE MANAGEMENT				●		
CANOPY GROUNDING				●		
SITE CLEAN-UP				●		
SPECIAL INSPECTIONS				●		
FOUNDATION GROUNDING				●		
OPTIONAL ADD-ONS						
RAISED PIERS			●			
DECKING	●					
GUTTERS & DOWNSPOUTS	●					
SNOW GUARDS	●					
FASCIA/PURLIN ENCLOSURE	●					

SOLAR CANOPY SYSTEM SPECIFICATIONS

PV MODULE TYPE	: TRINA SOLAR VERTEX	ACTIVE PV MODULES	: 2436
MODULE MODEL #	: TSM-DEG21C.20 - 655	SPARE PV MODULES	: -
ARRAY TYPE	: FIXED TILT	TOTAL PV MODULES	: 2436
ARRAY TILT	: 7 DEG.	TOTAL WATTS	: 1.59 MW DC

RELEASE RECORD

MARK	DATE	DESCRIPTION
5	02/05/25	STAMPED
4	11/12/24	STAMPED
3	06/28/24	STAMPED
2	06/26/24	90% REVIEW
1	02/21/24	50% REVIEW

PROJECT INFORMATION

TITLE & ADDRESS:	
Dell Campus	
50 Constitution Blvd,	
Franklin, MA 02038	
TERRASMART PROJECT No.: 2370049	
DRAWN BY: NCE	REVIEWED BY: MS
SHEET TITLE:	
COVER SHEET	
SHEET No.:	
SC001	

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GENERAL NOTES

CONSTRUCTION AND SAFETY:

- ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE APPLICABLE CONSTRUCTION CODE AND THE PROJECT SPECIFICATIONS.
- ENGINEER SHALL NOT BE RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES OF CONSTRUCTION SELECTED BY CONTRACTOR.
- CONTRACTOR SHALL FIELD MEASURE AND VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. ANY UNEXPECTED CONDITIONS OR DISCREPANCIES WITH THE DESIGN DOCUMENTS SHALL BE REPORTED TO THE ENGINEER PRIOR TO INSTALLATION OR ERECTION OF MATERIALS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONDITIONS OF THE JOB SITE INCLUDING SAFETY OF PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK.
- NO PERSONNEL SHALL STEP OR STAND ON PV MODULES (SOLAR PANELS) AT ANY TIME. CANOPY STRUCTURE AND PV MODULES ARE NOT DESIGNED FOR LIVE LOADS AND MAY VOID WARRANTY.

MISCELLANEOUS:

- THIS SUBMITTAL/CONSTRUCTION SET WAS PRODUCED FROM DOCUMENTS RECEIVED FROM CUSTOMER ON 2/3/24. TERRASMAST, INC. IS NOT RESPONSIBLE FOR DISCREPANCIES FROM ACTUAL FIELD DIMENSIONS.
- THIS TERRASMAST, INC. CONSTRUCTION SET IS DESIGNED FROM PV MODULE DATA SHEET(S) PROVIDED BY THE CUSTOMER. CUSTOMER IS RESPONSIBLE FOR VERIFYING THAT THE PV MODULE(S) DELIVERED TO SITE MATCH DATA SHEET(S) PROVIDED TO TERRASMAST, INC. TERRASMAST, INC. IS NOT RESPONSIBLE FOR PV MODULE DIMENSIONAL DISCREPANCIES DUE TO FURNISHED PV MODULES NOT MATCHING CUSTOMER FURNISHED PV MODULE DATA SHEETS.

SPECIAL FIELD INSPECTIONS:

SPECIAL INSPECTION NOT REQUIRED BY TERRASMAST, INC. AS REQUIRED BY OWNER/CUSTOMER AND/OR AUTHORITY HAVING JURISDICTION, MINIMUM INSPECTION SHALL INCLUDE THE FOLLOWING NOTES AND TABLE:

- ALL SPECIAL INSPECTORS SHALL BE RETAINED BY OWNER/CUSTOMER. THE EXTENT OF THE INSPECTION SHALL COMPLY WITH THE CONTRACT DOCUMENTS, THE BUILDING CODE REQUIREMENTS, AND LOCAL JURISDICTION. IT IS THE OWNER'S/CUSTOMER'S RESPONSIBILITY TO GIVE PROPER NOTIFICATION TO THE SPECIAL INSPECTOR AND PROCEED WITH THE WORK ONLY AFTER THE SPECIAL INSPECTOR'S APPROVAL.
- FAILURE TO NOTIFY THE SPECIAL INSPECTOR MAY RESULT IN OWNER/CUSTOMER HAVING TO REMOVE WORK FOR THE PURPOSE OF INSPECTION AT THE OWNER'S/CUSTOMER'S EXPENSE.
- PREMATURE NOTIFICATION FOR INSPECTION WILL RESULT IN AN ADDITIONAL INSPECTION WITH ALL EXPENSES AND FEES PAID BY THE OWNER/CUSTOMER.
- SPECIAL INSPECTORS SHALL KEEP RECORDS OF ALL INSPECTIONS. RECORDS SHALL BE FURNISHED TO THE OWNER, ENGINEER OF RECORD, AND LOCAL JURISDICTION AS REQUIRED. ANY AND ALL DISCREPANCIES SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR. CORRECTIONS SHALL BE MADE AND A FINAL REPORT OF INSPECTIONS SHALL BE PROVIDED NOTING COMPLETION OF INSPECTIONS AND CORRECTIONS OF DISCREPANCIES. FAILURE TO CORRECT DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER OF RECORD AND THE LOCAL JURISDICTION AND MAY RESULT IN REMOVAL OF COMPLETED WORK AND ADDITIONAL WORK TO CORRECT DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.

IBC TABLE 1705		
STRUCTURAL STEEL/ALUMINUM FABRICATION	CONTINUOUS	PERIODIC
MATERIAL IDENTIFICATION		X
HIGH STRENGTH BOLTS - MATERIAL IDENTIFICATION OF BOLTS, NUTS AND WASHERS		X
WELD FILLER MATERIALS - IDENTIFICATION AND CONFIRMATION OF COMPLIANCE WITH DESIGN DOCUMENTS		X
STRUCTURAL STEEL/ALUMINUM ERECTION		
MATERIAL IDENTIFICATION		X
INSTALLATION OF HIGH STRENGTH BOLTS		X
WELDED CONNECTIONS		X
MEMBER SIZES AND PLACEMENT		X
GENERAL CONFORMANCE WITH DESIGN DOCUMENTS		X
CONCRETE CONSTRUCTION		
MATERIAL IDENTIFICATION		X
MIX DESIGN VERIFICATION		X
SIZE AND PLACEMENT OF REINFORCING STEEL		X
PLACEMENT OF CONCRETE USING PROPER TECHNIQUES	X	
CONCRETE SAMPLES FOR SLUMP, AIR CONTENT, TEMPERATURE, STRENGTH TESTS, ETC. IN ACCORDANCE WITH ACI 318	X	
PROPER MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES		X
FOUNDATIONS		
SIZE AND LOCATION OF FOUNDATION EXCAVATIONS		X
PLACEMENT OF REINFORCING STEEL AS REQUIRED		X

STRUCTURAL STEEL:

- ALL STRUCTURAL STEEL SHALL BE DESIGNED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST VERSION OF AISC "MANUAL OF STEEL CONSTRUCTION". LIGHT GAGE COLD-FORMED SECTIONS SHALL CONFORM TO LATEST VERSION OF AISI SPECIFICATIONS FOR COLD-FORMED STEEL STRUCTURAL MEMBERS.
- MATERIALS:
 - A. ROLLED SHAPES: ASTM A992 OR A572 GRADE 50, F_y = 50 KSI MINIMUM
 - B. PLATES: ASTM A529 GRADE 50, F_y = 50 KSI MINIMUM
 - C. TUBULAR SHAPES: ASTM A500 GRADE C, F_y = 50 KSI MINIMUM
 - D. FIELD BOLTS (TYP. U.N.O.): SAE J429 GRADE 5 AND/OR ASTM A325
 - E. SCREWS: #12 TEK'S - GALVANIZED
 - F. COLD-FORMED/LIGHT GAGE: ASTM A653
 - G. ANCHOR RODS: ASTM A193 B7 OR ASTM F1554 GRADE 105
 - H. STAINLESS STEEL: TYPE 304 MINIMUM
- TEK SCREWS ARE TO BE INSTALLED USING A 2500 RPM MAX. NON-IMPACTING VARIABLE SPEED DRILL WITH CLUTCH OUT.
- FIELD CONNECTIONS SHALL BE BOLTED EXCEPT WHERE WELDED CONNECTIONS ARE INDICATED ON THE STRUCTURAL DRAWINGS. ALL BOLTED CONNECTIONS SHALL BE INSTALLED TO THE "SNUG TIGHT" CONDITION DEFINED AS THE FULL EFFORT OF A MAN USING A NORMAL SPUD WRENCH OR A FEW IMPACTS OF AN IMPACT WRENCH. THE "SNUG TIGHT" CONDITION WILL ENSURE THE PILES OF CONNECTED MATERIAL ARE IN FIRM CONTACT.
- ALL PV MODULE MOUNTING HARDWARE SHALL BE INSTALLED AND TORQUED PER PV MODULE MANUFACTURER'S RECOMMENDATIONS. CONNECTIONS USING WEB BONDING WASHERS SHALL BE PER TERRASMAST, INC. INSTALLATION GUIDE - MINIMUM OF 12 FT-LBS FOR 5/16" MOUNTING HARDWARE AND 6 FT-LBS FOR 1/4" MOUNTING HARDWARE.
- ALL WELDING OF STEEL SHALL BE DONE IN ACCORDANCE WITH THE LATEST VERSION OF THE AMERICAN WELD SOCIETY'S SPECIFICATIONS - AWS D1.1. ELECTRODES SHALL BE E70 SERIES UNLESS NOTED OTHERWISE.
- GALVANIZING SPECIFICATIONS - GALVANIZING SHALL BE PER CONTRACT DOCUMENTS
 - A. HOT-DIPPED GALVANIZING SHALL BE PER ASTM A123.
 - B. PRE-GALVANIZED MATERIALS SHALL COMPLY WITH ASTM A653 - G90 MINIMUM.
 - C. ALL STRUCTURAL HARDWARE (NOT PV MODULE MOUNTING HARDWARE) SHALL BE GALVANIZED.
 - D. FIELD APPLIED GALVANIZING REPAIR COMPOUND (ZnC GALVILITE LIQUID OR EQUIVALENT) PER ASTM A780

MISCELLANEOUS FASTENERS:

- ALL BOLTS SHALL BE THE TYPE AND SIZE INDICATED ON DRAWINGS.
- ALL HARDWARE USED FOR MOUNTING PV MODULES SHALL BE STAINLESS STEEL UNLESS NOTED OTHERWISE.

WORK BY OTHERS:

- ALL SHADING ANALYSIS AND/OR PRODUCTION ANALYSIS SHALL BE PERFORMED AND VERIFIED BY OTHERS. TERRASMAST, INC. IS NOT RESPONSIBLE FOR PV SYSTEM DESIGN AS IT PERTAINS TO ELECTRICAL OR PV SYSTEM PRODUCTION.
- ITEMS AS DESIGNATED IN RESPONSIBILITY SCHEDULE ON SHEET G-001.

FOUNDATIONS/CONCRETE:

- THE FOUNDATION DESIGN IS BASED ON GEOTECHNICAL REPORT PREPARED BY: McPhail Associates, LLC. DATED 02/16/2024. BEARING CAPACITY OF SOIL AT PIER TIP: 6000 psf
- VARIATIONS IN SOIL CONDITIONS SHALL BE REPORTED TO GEOTECHNICAL ENGINEER AND ENGINEER OF RECORD RESPONSIBLE FOR FOUNDATION DESIGN PRIOR TO INSTALLATION OF ANY FOUNDATION MATERIALS.
- INSTALLER/CONTRACTOR SHALL COORDINATE PLACEMENT OF FOUNDATIONS AND/OR ANCHOR BOLTS PER DESIGN DRAWINGS AND/OR MANUFACTURER'S SPECIFICATIONS.
- TERRASMAST, INC. DESIGNS FOUNDATIONS BASED ON SOIL PROPERTIES OUTLINED IN CERTIFIED GEOTECHNICAL REPORTS. ALL DESIGNS ASSUME UNDISTURBED SOIL CONDITIONS, AND DO NOT TAKE INTO ACCOUNT TRENCHING NEAR FOUNDATIONS. FOR CASES WHERE TRENCHING FOR ELECTRICAL WORK IS AT OR NEAR A FOUNDATION, TERRASMAST, INC. RECOMMENDS A MINIMUM OF 3'-0" CLEAR FROM THE EDGE OF THE TRENCH TO THE EDGE OF THE FOUNDATION FOR "NORMAL GOOD SOIL CONDITIONS." IN CASES OF "POOR SOIL" CONDITIONS, TERRASMAST, INC. RECOMMENDS A MINIMUM CLEAR DISTANCE EQUAL TO OR GREATER THAN THE DEPTH OF THE FOUNDATION. IF IN DOUBT OF SOIL CONDITIONS, TERRASMAST, INC. RECOMMENDS CONSULTING A QUALIFIED GEOTECHNICAL ENGINEER TO ASSESS SOIL CONDITIONS AT THE SITE.

NOTE: TRENCHING/EXCAVATION WITHIN 3'-0" OF ANY FOUNDATION REQUIRES REPLACING THE ORIGINAL SOIL AND COMPACTION TO 95% STANDARD PROCTOR DENSITY. FOR FURTHER CLARIFICATION ON COMPACTION REQUIREMENTS, TERRASMAST, INC. RECOMMENDS CONSULTING A QUALIFIED GEOTECHNICAL ENGINEER.
- ALL CONCRETE WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE LATEST VERSION OF ACI 318 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE".
- CONCRETE MIX DESIGNS MUST HAVE ENGINEER OF RECORD APPROVAL PRIOR TO COMMENCEMENT OF ANY CONCRETE WORK.
- REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60 BILLET STEEL.
- MINIMUM CONCRETE COVER TO REINFORCING STEEL SHALL BE AS FOLLOWS: CONCRETE CAST AGAINST EARTH = 3.0".
- CONCRETE STRENGTH: 5000 PSI AT 28 DAYS MINIMUM (WITH +/-4" SLUMP).
- REINFORCEMENT DETAILS PER ACI 318 AND IBC.
- BASE PLATE GROUT: NON-SHRINK, MINIMUM 10000 PSI STRENGTH.
- NOMINAL AGGREGATE SIZE: 3/4".
- ALTERING OR SUBSTITUTING OF REINFORCEMENT MUST HAVE ENGINEER OF RECORD APPROVAL.
- PLACEMENT OF CONDUIT MUST HAVE ENGINEER OF RECORD APPROVAL.



terrasMart

6715 STEGER DRIVE
CINCINNATI, OH 45237
513.242.2051
FAX: 513.242.0816

PROFESSIONAL SEAL

ENGINEER'S SEAL APPLIES TO DESIGN OF STRUCTURAL COMPONENTS ONLY



SOLAR CANOPY
FOR
Sunnova Energy

PV MODULE SPECIFICATION SHEETS

BIFACIAL DUAL GLASS MONOCRYSTALLINE MODULE

PRODUCT: TSM-06G21C.20
POWER RANGE: 640-665W

665W MAXIMUM POWER OUTPUT

0~+5W POSITIVE POWER TOLERANCE

21.4% MAXIMUM EFFICIENCY

High customer value

- Lower LCOE (Levelized Cost of Energy), reduced BOS (Balance of System) cost, shorter payback time
- Lowest guaranteed first year and annual degradation
- Designed for compatibility with existing mainstream system components

High power up to 665W

- Up to 21.4% module efficiency with high density interconnect technology
- Multi-busbar technology for better light trapping effect, lower series resistance and improved current collection

High reliability

- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load

High energy yield

- Excellent IAM (Incident Angle Modifier) and low irradiation performance, validated by 3rd party certifications
- The unique design provides optimized energy production under inter-row shading conditions
- Lower temperature coefficient (-0.34%) and operating temperature
- Up to 25% additional power gain from back side depending on albedo

Trina Solar's Vertex Bifacial Dual Glass Performance Warranty

Electrical Data (STC)

Power (W)	640	645	650	655	660	665
Power Tolerance (Power/W)	0 ~ +5%					
Maximum Power Voltage (V _{mp})	37.3	37.5	37.7	37.9	38.1	38.3
Maximum Power Current (A _{mp})	17.19	17.23	17.27	17.31	17.35	17.39
Open Circuit Voltage (V _{oc})	45.1	45.3	45.5	45.7	45.9	46.1
Short Circuit Current (I _{sc}) (A)	18.26	18.31	18.35	18.40	18.45	18.50
Module Efficiency (m ² W ⁻¹) (%)	20.6	20.8	20.9	21.1	21.2	21.4

Electrical characteristics with different power bin (reference to 100% irradiance ratio)

Total Equivalent power - Power (W)	665	690	696	701	706	712
Maximum Power Voltage (V)	37.3	37.5	37.7	37.9	38.1	38.3
Maximum Power Current (A)	18.39	18.44	18.48	18.52	18.56	18.60
Open Circuit Voltage (V)	45.1	45.3	45.5	45.7	45.9	46.1
Short Circuit Current (I _{sc}) (A)	19.54	19.59	19.63	19.69	19.74	19.79

Electrical Data (NOCT)

Maximum Power (W)	484	488	492	495	499	504
Maximum Power Voltage (V)	34.7	34.8	35.1	35.2	35.4	35.6
Maximum Power Current (A)	13.94	13.98	14.01	14.05	14.10	14.16
Open Circuit Voltage (V)	42.5	42.7	42.8	43.0	43.2	43.4
Short Circuit Current (I _{sc}) (A)	14.71	14.75	14.79	14.83	14.87	14.91

Mechanical Data

Solar Cells: Monocrystalline
No. of cells: 132 cells
Module Dimensions: 2384x1303x35 mm (93.86"x51.38"x1.38 in)
Weight: 38.7 kg (85.3 lb)
Front Glass: 2.0 mm (0.08 in) High Transmittance, Air Cooled Heat Strengthened Glass
Encapsulant material: P65 EVA
Back Glass: 2.0 mm (0.08 in) Heat Strengthened Glass (White Grid Glass)
Frame: 35mm (1.38 in) Anodized Aluminum Alloy
J-Box: IP68 rated
Cables: Photovoltaic Technology Cable 4.0mm² (0.006 in²), Photobond 300/300 mm (11.81/11.81 in) Length can be customized
Connector: MC4 EVO2 / T54*

Temperature Ratings

NOCT (Nominal Operating Cell Temperature)	43°C (112°F)
Temperature Coefficient of Power	-0.34%/°C
Temperature Coefficient of Voc	-0.25%/°C
Temperature Coefficient of Isc	0.04%/°C

Maximum Ratings

Operational Temperature	-40°~+85°C
Maximum System Voltage	1500V DC (IEC)
Maximum DC (DC)	1500V DC (UL)
Max Series Fuse Rating	35A

Warranty

- 12 Year Product Workmanship Warranty
- 30 Year Power Warranty
- 2% first year degradation
- 0.45% Annual Power Attenuation (Please refer to product warranty for details)

PACKAGING CONFIGURATION

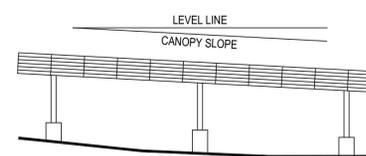
- Modules per box: 31 pieces
- Modules per 40' container: 455 pieces

CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.
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Version number: TSM_NA_EN_2022_B www.trinasolar.com

FINISH SCHEDULE

ITEM DESCRIPTION	N/A	HDG	POWDER COAT	PAINT	PREGALV	STAINLESS STEEL	ALUMINUM	PVC	REMARKS
COLUMN ASSEMBLIES		●							
TOP BEAM/TRUSS ASSEMBLIES		●							
KNEE BRACE & BRACKETS	●								
PURLIN BRACKETS		●							
PURLINS					●				
DECKING	●								
GUTTERS	●								
DOWNSPOUTS	●								
FASCIA/PURLIN ENCLOSURE	●								
SNOW GUARDS	●								
RAILS	●								
ANGLE BRACING					●				
STRUCTURAL HARDWARE		●							
MODULE HARDWARE & CLIPS						●	●		

CANOPY TOPOGRAPHIC RELATIONSHIP



- KEY POINTS**
- CANOPY STRUCTURE IS PARALLEL TO AVERAGE SITE GRADE
 - CANOPY SLOPE MAY VARY PER STRUCTURE
 - COLUMN LENGTHS MAY VARY
 - TOPS OF PIERS MAY VARY

RELEASE RECORD

MARK	DATE	DESCRIPTION
5	02/05/25	STAMPED
4	11/12/24	STAMPED
3	06/28/24	STAMPED
2	06/26/24	90% REVIEW
1	02/21/24	50% REVIEW

PROJECT INFORMATION

TITLE & ADDRESS:

Deil Campus

**50 Constitution Blvd,
Franklin, MA 02038**

TERRASMAST PROJECT No.:
2370049

DRAWN BY: NCE
REVIEWED BY: MS

SHEET TITLE:
GENERAL NOTES
AND MODULE
SPECIFICATION SHEETS

SHEET No.:

SC002



terrasmart
 6715 STEGER DRIVE
 CINCINNATI, OH 45237
 513.242.2051
 FAX: 513.242.0816

PROFESSIONAL SEAL

ENGINEER'S SEAL APPLIES TO DESIGN OF STRUCTURAL COMPONENTS ONLY



SOLAR CANOPY

FOR

Sunnova Energy

RELEASE RECORD

MARK	DATE	DESCRIPTION
5	02/05/25	STAMPED
4	11/12/24	STAMPED
3	06/28/24	STAMPED
2	06/26/24	90% REVIEW
1	02/21/24	50% REVIEW

PROJECT INFORMATION

TITLE & ADDRESS:
Dell Campus

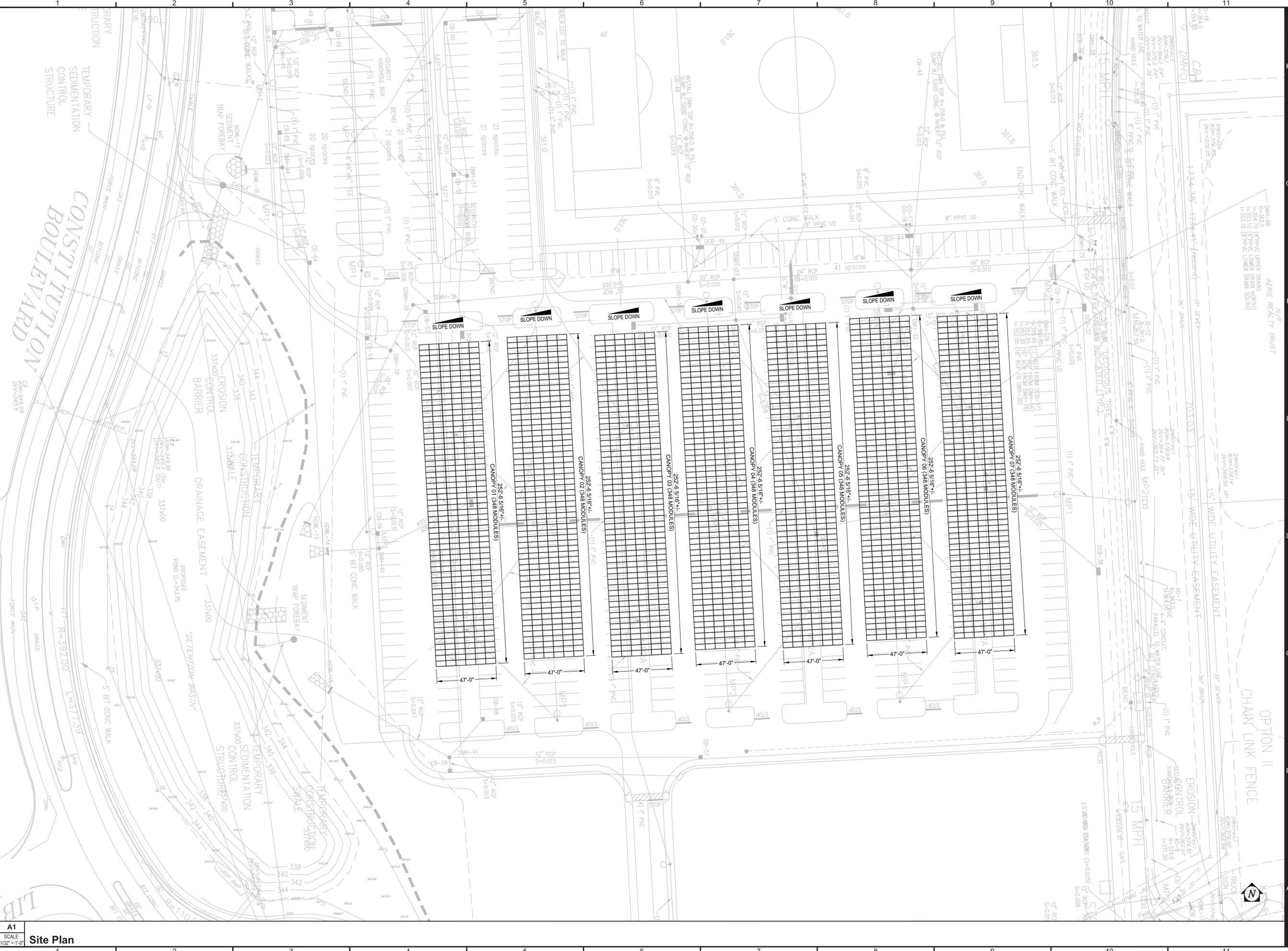
**50 Constitution Blvd,
 Franklin, MA 02038**

TERRASMART PROJECT No.:
2370049

DRAWN BY: NCE
 REVIEWED BY: MS

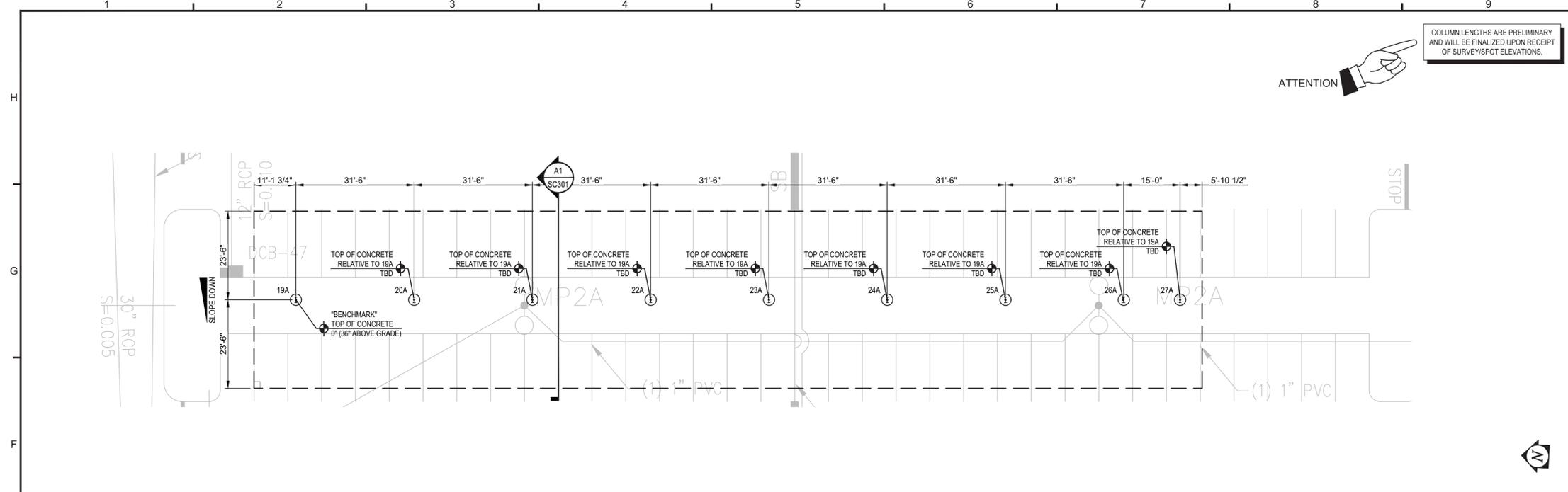
SHEET TITLE:
SITE PLAN

SHEET No.:
SC003

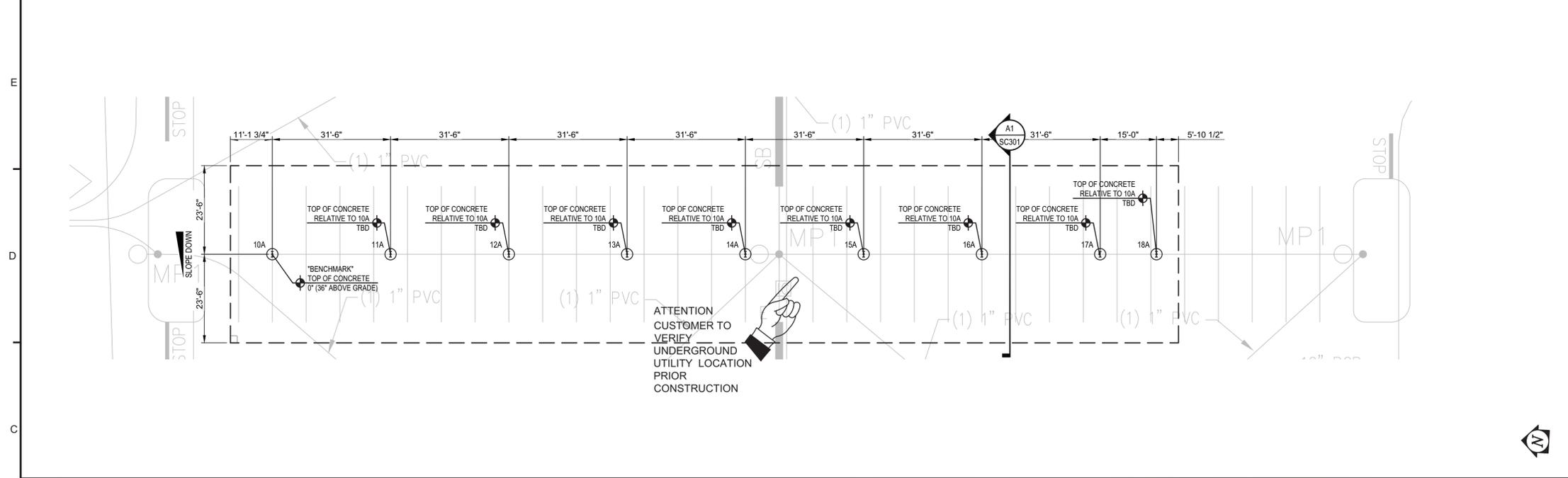


Site Plan

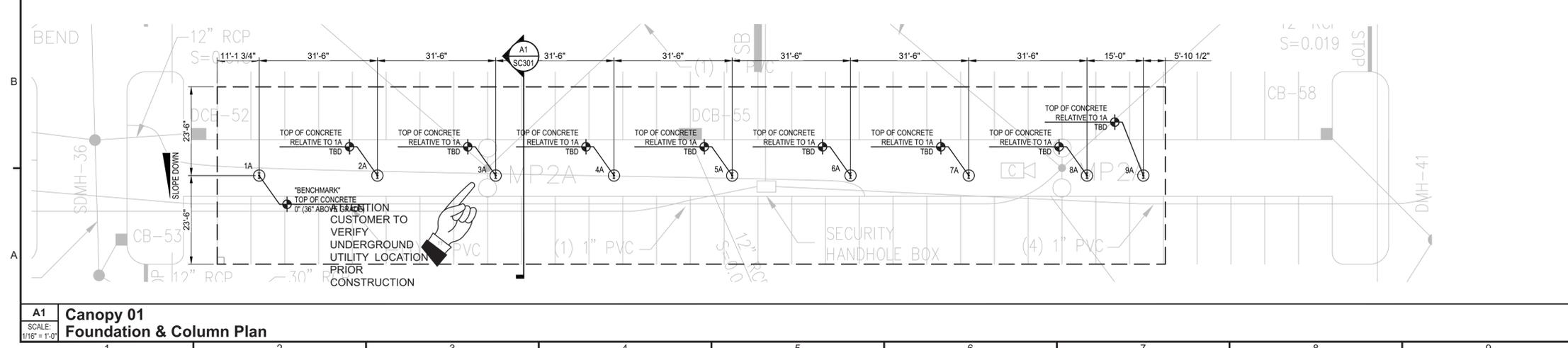
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F1 Canopy 03
Foundation & Column Plan
 SCALE: 1/16" = 1'-0"



C1 Canopy 02
Foundation & Column Plan
 SCALE: 1/16" = 1'-0"



A1 Canopy 01
Foundation & Column Plan
 SCALE: 1/16" = 1'-0"

COLUMN SCHEDULE				
MARK	FNDN. TYPE	DESCRIPTION	PRELIM. LENGTH	LEVELING NUT
CANOPY 01				
1	A	W21 x 62 COLUMN	13'-6"	T.B.D.
2	A	W21 x 62 COLUMN	13'-6"	T.B.D.
3	A	W21 x 62 COLUMN	13'-6"	T.B.D.
4	A	W21 x 62 COLUMN	13'-6"	T.B.D.
5	A	W21 x 62 COLUMN	13'-6"	T.B.D.
6	A	W21 x 62 COLUMN	13'-6"	T.B.D.
7	A	W21 x 62 COLUMN	13'-6"	T.B.D.
8	A	W21 x 62 COLUMN	13'-6"	T.B.D.
9	A	W21 x 62 COLUMN	13'-6"	T.B.D.
10	A	W21 x 62 COLUMN	13'-6"	T.B.D.
11	A	W21 x 62 COLUMN	13'-6"	T.B.D.
12	A	W21 x 62 COLUMN	13'-6"	T.B.D.
13	A	W21 x 62 COLUMN	13'-6"	T.B.D.
14	A	W21 x 62 COLUMN	13'-6"	T.B.D.
15	A	W21 x 62 COLUMN	13'-6"	T.B.D.
16	A	W21 x 62 COLUMN	13'-6"	T.B.D.
17	A	W21 x 62 COLUMN	13'-6"	T.B.D.
18	A	W21 x 62 COLUMN	13'-6"	T.B.D.
CANOPY 02				
19	A	W21 x 62 COLUMN	13'-6"	T.B.D.
20	A	W21 x 62 COLUMN	13'-6"	T.B.D.
21	A	W21 x 62 COLUMN	13'-6"	T.B.D.
22	A	W21 x 62 COLUMN	13'-6"	T.B.D.
23	A	W21 x 62 COLUMN	13'-6"	T.B.D.
24	A	W21 x 62 COLUMN	13'-6"	T.B.D.
25	A	W21 x 62 COLUMN	13'-6"	T.B.D.
26	A	W21 x 62 COLUMN	13'-6"	T.B.D.
27	A	W21 x 62 COLUMN	13'-6"	T.B.D.
CANOPY 03				
28	A	W21 x 62 COLUMN	13'-6"	T.B.D.
29	A	W21 x 62 COLUMN	13'-6"	T.B.D.
30	A	W21 x 62 COLUMN	13'-6"	T.B.D.
31	A	W21 x 62 COLUMN	13'-6"	T.B.D.
32	A	W21 x 62 COLUMN	13'-6"	T.B.D.
33	A	W21 x 62 COLUMN	13'-6"	T.B.D.
34	A	W21 x 62 COLUMN	13'-6"	T.B.D.
35	A	W21 x 62 COLUMN	13'-6"	T.B.D.
36	A	W21 x 62 COLUMN	13'-6"	T.B.D.
37	A	W21 x 62 COLUMN	13'-6"	T.B.D.
38	A	W21 x 62 COLUMN	13'-6"	T.B.D.
39	A	W21 x 62 COLUMN	13'-6"	T.B.D.
40	A	W21 x 62 COLUMN	13'-6"	T.B.D.
41	A	W21 x 62 COLUMN	13'-6"	T.B.D.
42	A	W21 x 62 COLUMN	13'-6"	T.B.D.
43	A	W21 x 62 COLUMN	13'-6"	T.B.D.
44	A	W21 x 62 COLUMN	13'-6"	T.B.D.
45	A	W21 x 62 COLUMN	13'-6"	T.B.D.
46	A	W21 x 62 COLUMN	13'-6"	T.B.D.
47	A	W21 x 62 COLUMN	13'-6"	T.B.D.
48	A	W21 x 62 COLUMN	13'-6"	T.B.D.
49	A	W21 x 62 COLUMN	13'-6"	T.B.D.
50	A	W21 x 62 COLUMN	13'-6"	T.B.D.
51	A	W21 x 62 COLUMN	13'-6"	T.B.D.
52	A	W21 x 62 COLUMN	13'-6"	T.B.D.
53	A	W21 x 62 COLUMN	13'-6"	T.B.D.
54	A	W21 x 62 COLUMN	13'-6"	T.B.D.
55	A	W21 x 62 COLUMN	13'-6"	T.B.D.
56	A	W21 x 62 COLUMN	13'-6"	T.B.D.
57	A	W21 x 62 COLUMN	13'-6"	T.B.D.
58	A	W21 x 62 COLUMN	13'-6"	T.B.D.
59	A	W21 x 62 COLUMN	13'-6"	T.B.D.
60	A	W21 x 62 COLUMN	13'-6"	T.B.D.
61	A	W21 x 62 COLUMN	13'-6"	T.B.D.
62	A	W21 x 62 COLUMN	13'-6"	T.B.D.
63	A	W21 x 62 COLUMN	13'-6"	T.B.D.
64	A	W21 x 62 COLUMN	13'-6"	T.B.D.
65	A	W21 x 62 COLUMN	13'-6"	T.B.D.
66	A	W21 x 62 COLUMN	13'-6"	T.B.D.
67	A	W21 x 62 COLUMN	13'-6"	T.B.D.
68	A	W21 x 62 COLUMN	13'-6"	T.B.D.
69	A	W21 x 62 COLUMN	13'-6"	T.B.D.
70	A	W21 x 62 COLUMN	13'-6"	T.B.D.
71	A	W21 x 62 COLUMN	13'-6"	T.B.D.
72	A	W21 x 62 COLUMN	13'-6"	T.B.D.
73	A	W21 x 62 COLUMN	13'-6"	T.B.D.
74	A	W21 x 62 COLUMN	13'-6"	T.B.D.
75	A	W21 x 62 COLUMN	13'-6"	T.B.D.
76	A	W21 x 62 COLUMN	13'-6"	T.B.D.
77	A	W21 x 62 COLUMN	13'-6"	T.B.D.
78	A	W21 x 62 COLUMN	13'-6"	T.B.D.
79	A	W21 x 62 COLUMN	13'-6"	T.B.D.
80	A	W21 x 62 COLUMN	13'-6"	T.B.D.
81	A	W21 x 62 COLUMN	13'-6"	T.B.D.
82	A	W21 x 62 COLUMN	13'-6"	T.B.D.
83	A	W21 x 62 COLUMN	13'-6"	T.B.D.
84	A	W21 x 62 COLUMN	13'-6"	T.B.D.
85	A	W21 x 62 COLUMN	13'-6"	T.B.D.
86	A	W21 x 62 COLUMN	13'-6"	T.B.D.
87	A	W21 x 62 COLUMN	13'-6"	T.B.D.
88	A	W21 x 62 COLUMN	13'-6"	T.B.D.
89	A	W21 x 62 COLUMN	13'-6"	T.B.D.
90	A	W21 x 62 COLUMN	13'-6"	T.B.D.
91	A	W21 x 62 COLUMN	13'-6"	T.B.D.
92	A	W21 x 62 COLUMN	13'-6"	T.B.D.
93	A	W21 x 62 COLUMN	13'-6"	T.B.D.
94	A	W21 x 62 COLUMN	13'-6"	T.B.D.
95	A	W21 x 62 COLUMN	13'-6"	T.B.D.
96	A	W21 x 62 COLUMN	13'-6"	T.B.D.
97	A	W21 x 62 COLUMN	13'-6"	T.B.D.
98	A	W21 x 62 COLUMN	13'-6"	T.B.D.
99	A	W21 x 62 COLUMN	13'-6"	T.B.D.
100	A	W21 x 62 COLUMN	13'-6"	T.B.D.

COLUMN SETTING NOTES:
 1. ALL COLUMN DIMENSIONS SHOWN ARE ϵ TO ϵ OF COLUMN.
 2. LOCATION OF UNDERGROUND UTILITIES SHALL BE VERIFIED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
 3. DIMENSIONS SHOWN ON PLAN SHALL BE VERIFIED IN THE FIELD.
 4. LAYOUT IS SUBJECT TO CHANGE PER REQUEST AND/OR EXISTING CONDITIONS IN THE FIELD.
 5. REFERENCE SHEET SC401 FOR ADDITIONAL FOUNDATION INFORMATION.
 6. "LENGTH" REFERS TO THE CUT LENGTH OF THE COLUMN ON ITS LONGEST FACE.
 7. COLUMN LENGTHS PRELIMINARY. FINAL COLUMN LENGTHS WILL BE DETAILED IN SHOP DRAWINGS.
PIER NOTES:
 1. 0' ELEVATION AT THE BENCHMARK PIER IS FOR REFERENCE ONLY AND IS NOT RELATED TO SEA LEVEL.
 2. TOP OF CONCRETE ELEVATION OF PIER IS IN RELATION TO CORRESPONDING BENCHMARK PIER.
 3. REFER TO SHEET SC401 FOR FOUNDATION & LEVELING NUT DETAILS.
 4. REFER TO SHEET SC401 FOR LEVELING NUT ADJUSTMENT DETAIL.

terrasmart
 6715 STEGER DRIVE
 CINCINNATI, OH 45237
 513.242.2051
 FAX: 513.242.0816

PROFESSIONAL SEAL

MOHAMED A. ALY
 STRUCTURAL ENGINEER
 No. 50028
 REGISTERED PROFESSIONAL ENGINEER
 COMMONWEALTH OF MASSACHUSETTS

SOLAR CANOPY
 FOR
Sunnova Energy

RELEASE RECORD

MARK	DATE	DESCRIPTION
5	02/05/25	STAMPED
4	11/12/24	STAMPED
3	06/28/24	STAMPED
2	06/26/24	90% REVIEW
1	02/21/24	50% REVIEW

PROJECT INFORMATION

TITLE & ADDRESS:
Dell Campus

**50 Constitution Blvd,
 Franklin, MA 02038**

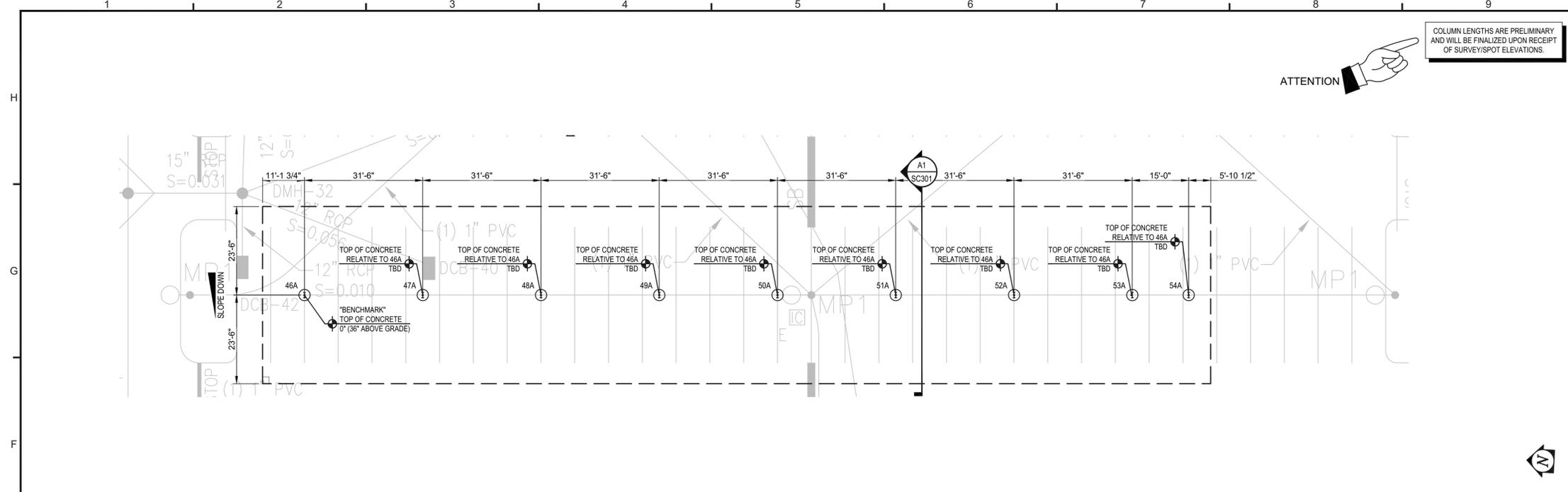
TERRASMART PROJECT No.:
 2370049

DRAWN BY: NCE
 REVIEWED BY: MS

SHEET TITLE:
FOUNDATION AND COLUMN PLAN

SHEET No.:
SC101

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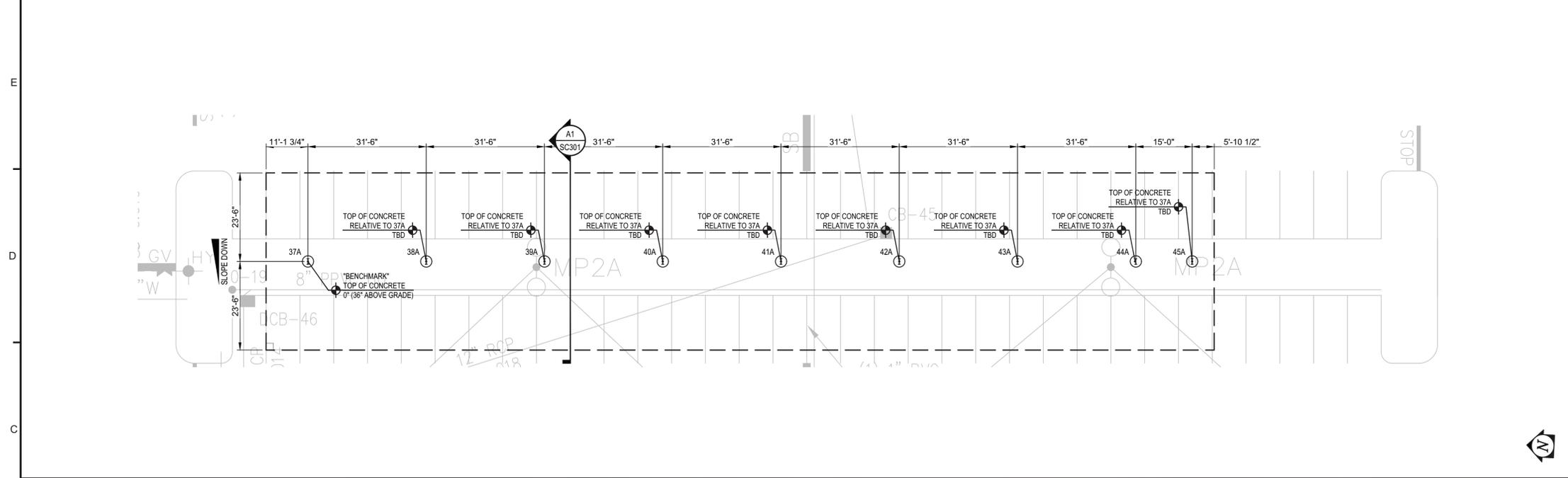
COLUMN SCHEDULE				
MARK	FNDN. TYPE	DESCRIPTION	PRELIM. LENGTH	LEVELING NUT
28	A	W21 x 62 COLUMN	13'-6"	T.B.D.
29	A	W21 x 62 COLUMN	13'-6"	T.B.D.
30	A	W21 x 62 COLUMN	13'-6"	T.B.D.
31	A	W21 x 62 COLUMN	13'-6"	T.B.D.
32	A	W21 x 62 COLUMN	13'-6"	T.B.D.
33	A	W21 x 62 COLUMN	13'-6"	T.B.D.
34	A	W21 x 62 COLUMN	13'-6"	T.B.D.
35	A	W21 x 62 COLUMN	13'-6"	T.B.D.
36	A	W21 x 62 COLUMN	13'-6"	T.B.D.
37	A	W21 x 62 COLUMN	13'-6"	T.B.D.
38	A	W21 x 62 COLUMN	13'-6"	T.B.D.
39	A	W21 x 62 COLUMN	13'-6"	T.B.D.
40	A	W21 x 62 COLUMN	13'-6"	T.B.D.
41	A	W21 x 62 COLUMN	13'-6"	T.B.D.
42	A	W21 x 62 COLUMN	13'-6"	T.B.D.
43	A	W21 x 62 COLUMN	13'-6"	T.B.D.
44	A	W21 x 62 COLUMN	13'-6"	T.B.D.
45	A	W21 x 62 COLUMN	13'-6"	T.B.D.
46	A	W21 x 62 COLUMN	13'-6"	T.B.D.
47	A	W21 x 62 COLUMN	13'-6"	T.B.D.
48	A	W21 x 62 COLUMN	13'-6"	T.B.D.
49	A	W21 x 62 COLUMN	13'-6"	T.B.D.
50	A	W21 x 62 COLUMN	13'-6"	T.B.D.
51	A	W21 x 62 COLUMN	13'-6"	T.B.D.
52	A	W21 x 62 COLUMN	13'-6"	T.B.D.
53	A	W21 x 62 COLUMN	13'-6"	T.B.D.
54	A	W21 x 62 COLUMN	13'-6"	T.B.D.

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CINCINNATI, OH 45237
513.242.2051
FAX: 513.242.0816

PROFESSIONAL SEAL

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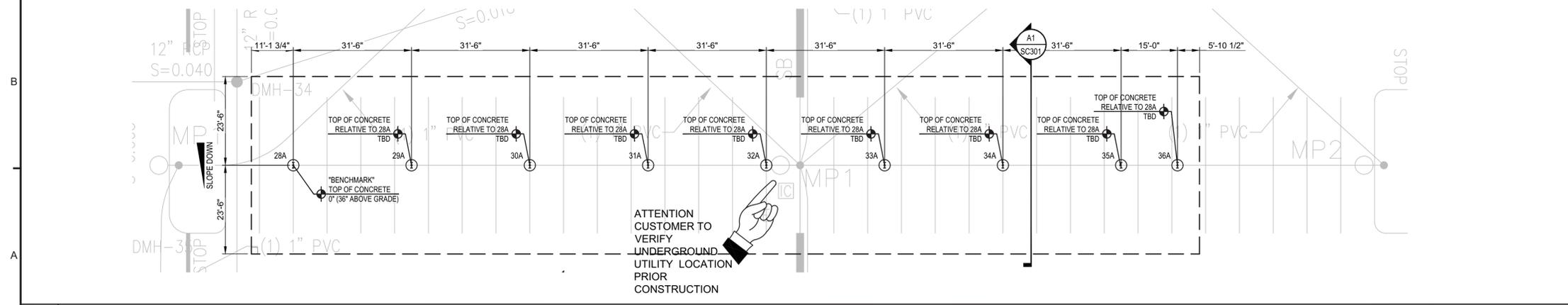
F1 Canopy 06
Foundation & Column Plan



- COLUMN SETTING NOTES:**
- ALL COLUMN DIMENSIONS SHOWN ARE ϵ TO ϵ OF COLUMN.
 - LOCATION OF UNDERGROUND UTILITIES SHALL BE VERIFIED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
 - DIMENSIONS SHOWN ON PLAN SHALL BE VERIFIED IN THE FIELD.
 - LAYOUT IS SUBJECT TO CHANGE PER REQUEST AND/OR EXISTING CONDITIONS IN THE FIELD.
 - REFERENCE SHEET SC401 FOR ADDITIONAL FOUNDATION INFORMATION.
 - "LENGTH" REFERS TO THE CUT LENGTH OF THE COLUMN ON ITS LONGEST FACE.
 - COLUMN LENGTHS PRELIMINARY. FINAL COLUMN LENGTHS WILL BE DETAILED IN SHOP DRAWINGS.
- PIER NOTES:**
- 0' ELEVATION AT THE BENCHMARK PIER IS FOR REFERENCE ONLY AND IS NOT RELATED TO SEA LEVEL.
 - TOP OF CONCRETE ELEVATION OF PIER IS IN RELATION TO CORRESPONDING BENCHMARK PIER.
 - REFER TO SHEET SC401 FOR FOUNDATION & LEVELING NUT DETAILS.
 - REFER TO SHEET SC401 FOR LEVELING NUT ADJUSTMENT DETAIL.

SOLAR CANOPY
FOR
Sunnova Energy

C1 Canopy 05
Foundation & Column Plan



RELEASE RECORD

MARK	DATE	DESCRIPTION
5	02/05/25	STAMPED
4	11/12/24	STAMPED
3	06/28/24	STAMPED
2	06/26/24	90% REVIEW
1	02/21/24	50% REVIEW

PROJECT INFORMATION

TITLE & ADDRESS:
Dell Campus

**50 Constitution Blvd,
Franklin, MA 02038**

TERRASMART PROJECT No.:
2370049

DRAWN BY: NCE
REVIEWED BY: MS

SHEET TITLE:
**FOUNDATION AND
COLUMN PLAN**

SHEET No.:
SC102

A1 Canopy 04
Foundation & Column Plan

S:\REI\SiteDesign\2023\Jobs\2370049 - Sunnova Energy - Dell Campus, MA\Drawings\2370049.dwg, 2:50:05 PM, 12/5/24

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ATTENTION 

COLUMN LENGTHS ARE PRELIMINARY AND WILL BE FINALIZED UPON RECEIPT OF SURVEY/SPOT ELEVATIONS.

COLUMN SCHEDULE				
MARK	FNDN. TYPE	DESCRIPTION	PRELIM. LENGTH	LEVELING NUT
55	A	W21 x 62 COLUMN	13'-6"	T.B.D.
56	A	W21 x 62 COLUMN	13'-6"	T.B.D.
57	A	W21 x 62 COLUMN	13'-6"	T.B.D.
58	A	W21 x 62 COLUMN	13'-6"	T.B.D.
59	A	W21 x 62 COLUMN	13'-6"	T.B.D.
60	A	W21 x 62 COLUMN	13'-6"	T.B.D.
61	A	W21 x 62 COLUMN	13'-6"	T.B.D.
62	A	W21 x 62 COLUMN	13'-6"	T.B.D.
63	A	W21 x 62 COLUMN	13'-6"	T.B.D.

COLUMN SETTING NOTES:

- ALL COLUMN DIMENSIONS SHOWN ARE ϵ TO ϵ OF COLUMN.
- LOCATION OF UNDERGROUND UTILITIES SHALL BE VERIFIED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
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- REFERENCE SHEET SC401 FOR ADDITIONAL FOUNDATION INFORMATION.
- "LENGTH" REFERS TO THE CUT LENGTH OF THE COLUMN ON ITS LONGEST FACE.
- COLUMN LENGTHS PRELIMINARY. FINAL COLUMN LENGTHS WILL BE DETAILED IN SHOP DRAWINGS.

PIER NOTES:

- 0" ELEVATION AT THE BENCHMARK PIER IS FOR REFERENCE ONLY AND IS NOT RELATED TO SEA LEVEL.
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- REFER TO SHEET SC401 FOR FOUNDATION & LEVELING NUT DETAILS.
- REFER TO SHEET SC401 FOR LEVELING NUT ADJUSTMENT DETAIL.



terrasmart
 6715 STEGER DRIVE
 CINCINNATI, OH 45237
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 FAX: 513.242.0816

PROFESSIONAL SEAL

ENGINEER'S SEAL APPLIES TO DESIGN OF STRUCTURAL COMPONENTS ONLY.



SOLAR CANOPY FOR Sunnova Energy

RELEASE RECORD

MARK	DATE	DESCRIPTION
5	02/05/25	STAMPED
4	11/12/24	STAMPED
3	06/28/24	STAMPED
2	06/26/24	90% REVIEW
1	02/21/24	50% REVIEW

PROJECT INFORMATION

TITLE & ADDRESS:
Dell Campus

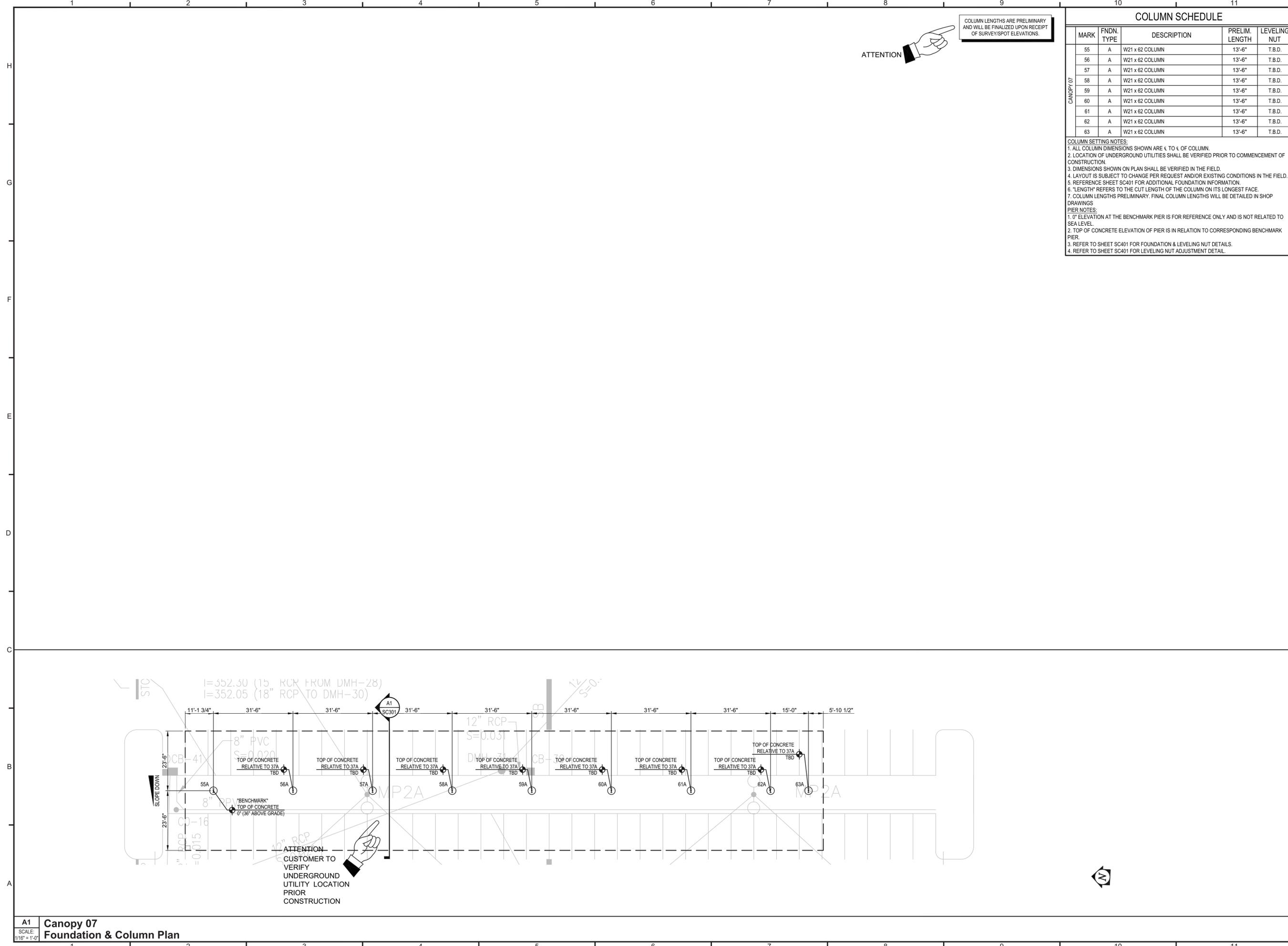
50 Constitution Blvd,
 Franklin, MA 02038

TERRASMART PROJECT No.:
 2370049

DRAWN BY: NCE REVIEWED BY: MS

SHEET TITLE:
FOUNDATION AND COLUMN PLAN

SHEET No.:
SC103



A1 Canopy 07 Foundation & Column Plan

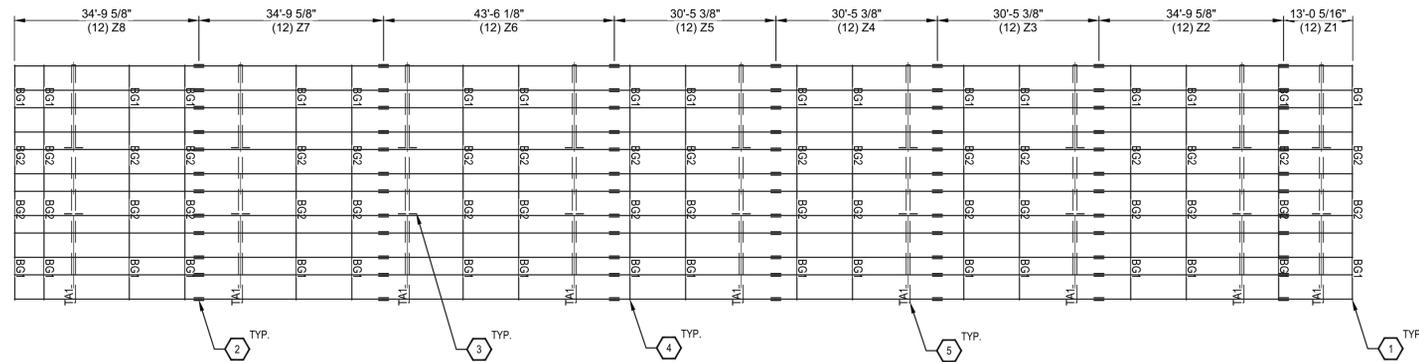
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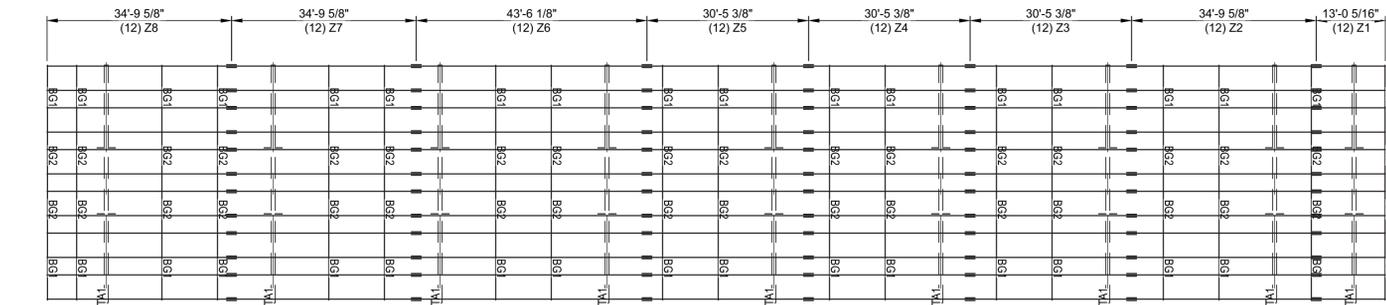
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KEY NOTES

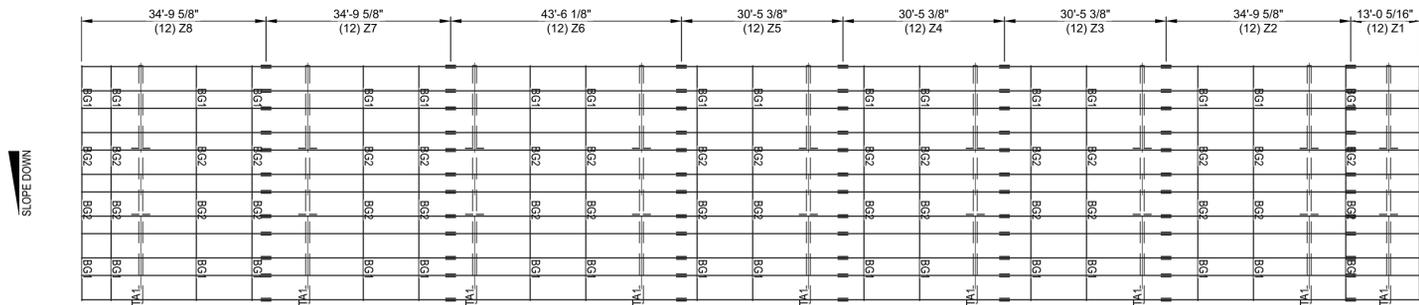
- PURLIN BRIDGING REQUIRED AT END OF THE CANOPY - REFER TO DETAIL A10 ON SHEET SC501 - REFER TO DETAIL A8 ON SHEET SC501 FOR BRIDGING SPLICE
- PURLIN SPLICE - REFER TO DETAIL A1 ON SHEET SC501
- TOP BEAM BRACE - REFER TO DETAIL C6 ON SHEET SC501
- PURLIN BRIDGING REQUIRED AT ALL BAYS - REFER TO DETAIL A6 ON SHEET SC501 - REFER TO DETAIL A8 ON SHEET SC501 FOR BRIDGING SPLICE
- TOP BEAM BELOW.



F1 CANOPY 03
Component Plan
SCALE: 1/16" = 1'-0"



C1 CANOPY 02
Component Plan
SCALE: 1/16" = 1'-0"

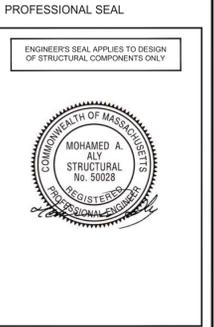


A1 CANOPY 01
Component Plan
SCALE: 1/16" = 1'-0"

COMPONENT SCHEDULE

MARK	DESCRIPTION	LENGTH	QTY.
TA1	TOP BEAM W24x68	45'-0"	9
Z1	13.25" 10 Ga. GALVANIZED ZEE	13'-0 5/16"	12
Z2	13.25" 10 Ga. GALVANIZED ZEE	34'-9 5/8"	12
Z3	13.25" 10 Ga. GALVANIZED ZEE	30'-5 3/8"	12
Z4	13.25" 10 Ga. GALVANIZED ZEE	30'-5 3/8"	12
Z5	13.25" 10 Ga. GALVANIZED ZEE	30'-5 3/8"	12
Z6S	13.25" 10 Ga. GALVANIZED ZEE - STARTER	43'-6 1/8"	12
Z7	13.25" 10 Ga. GALVANIZED ZEE	34'-9 5/8"	12
Z8	13.25" 10 Ga. GALVANIZED ZEE	34'-9 5/8"	12
BG1	12 Ga. FORMED ANGLE	12'-0"	36
BG2	12 Ga. FORMED ANGLE	10'-2 5/8"	36
SG1	SNOW GUARD - 8" x 8" x 5/8"	38'-1"	1
SG2	SNOW GUARD - 8" x 8" x 5/8"	36'-0"	1
SG3	SNOW GUARD - 8" x 8" x 5/8"	31'-5 5/8"	4
SG4	SNOW GUARD - 8" x 8" x 5/8"	36'-0"	1
SG5	SNOW GUARD - 8" x 8" x 5/8"	38'-1"	1
TA1	TOP BEAM W24x68	45'-0"	9
Z1	13.25" 10 Ga. GALVANIZED ZEE	13'-0 5/16"	12
Z2	13.25" 10 Ga. GALVANIZED ZEE	34'-9 5/8"	12
Z3	13.25" 10 Ga. GALVANIZED ZEE	30'-5 3/8"	12
Z4	13.25" 10 Ga. GALVANIZED ZEE	30'-5 3/8"	12
Z5	13.25" 10 Ga. GALVANIZED ZEE	30'-5 3/8"	12
Z6S	13.25" 10 Ga. GALVANIZED ZEE - STARTER	43'-6 1/8"	12
Z7	13.25" 10 Ga. GALVANIZED ZEE	34'-9 5/8"	12
Z8	13.25" 10 Ga. GALVANIZED ZEE	34'-9 5/8"	12
BG1	12 Ga. FORMED ANGLE	12'-0"	36
BG2	12 Ga. FORMED ANGLE	10'-2 5/8"	36
SG1	SNOW GUARD - 8" x 8" x 5/8"	38'-1"	1
SG2	SNOW GUARD - 8" x 8" x 5/8"	36'-0"	1
SG3	SNOW GUARD - 8" x 8" x 5/8"	31'-5 5/8"	4
SG4	SNOW GUARD - 8" x 8" x 5/8"	36'-0"	1
SG5	SNOW GUARD - 8" x 8" x 5/8"	38'-1"	1
TA1	TOP BEAM W24x68	45'-0"	9
Z1	13.25" 10 Ga. GALVANIZED ZEE	13'-0 5/16"	12
Z2	13.25" 10 Ga. GALVANIZED ZEE	34'-9 5/8"	12
Z3	13.25" 10 Ga. GALVANIZED ZEE	30'-5 3/8"	12
Z4	13.25" 10 Ga. GALVANIZED ZEE	30'-5 3/8"	12
Z5	13.25" 10 Ga. GALVANIZED ZEE	30'-5 3/8"	12
Z6S	13.25" 10 Ga. GALVANIZED ZEE - STARTER	43'-6 1/8"	12
Z7	13.25" 10 Ga. GALVANIZED ZEE	34'-9 5/8"	12
Z8	13.25" 10 Ga. GALVANIZED ZEE	34'-9 5/8"	12
BG1	12 Ga. FORMED ANGLE	12'-0"	36
BG2	12 Ga. FORMED ANGLE	10'-2 5/8"	36
SG1	SNOW GUARD - 8" x 8" x 5/8"	38'-1"	1
SG2	SNOW GUARD - 8" x 8" x 5/8"	36'-0"	1
SG3	SNOW GUARD - 8" x 8" x 5/8"	31'-5 5/8"	4
SG4	SNOW GUARD - 8" x 8" x 5/8"	36'-0"	1
SG5	SNOW GUARD - 8" x 8" x 5/8"	38'-1"	1

- COMPONENT SETTING NOTES:
- ALL COMPONENT DIMENSIONS SHOWN ARE END TO END.
 - LAYOUT IS SUBJECT TO CHANGE PER REQUEST AND/OR EXISTING CONDITIONS IN THE FIELD.
 - REFERENCE SHEET SC501 FOR ADDITIONAL COMPONENT CONNECTION INFORMATION.
 - PURLIN MARKS ENDING WITH "S" REFER TO STARTER PURLINS AND ARE INTENDED TO BE INSTALLED FIRST WITHIN THAT CANOPY.
 - ERECT TOP BEAM WITH PIECE MARK ORIENTED TO MATCH LOCATION SHOWN ON PLAN.



SOLAR CANOPY
FOR
Sunnova Energy

RELEASE RECORD

MARK	DATE	DESCRIPTION
5	02/05/25	STAMPED
4	11/12/24	STAMPED
3	06/28/24	STAMPED
2	06/26/24	90% REVIEW

PROJECT INFORMATION

TITLE & ADDRESS:
Dell Campus

**50 Constitution Blvd,
Franklin, MA 02038**

TERRASMART PROJECT No.:
2370049

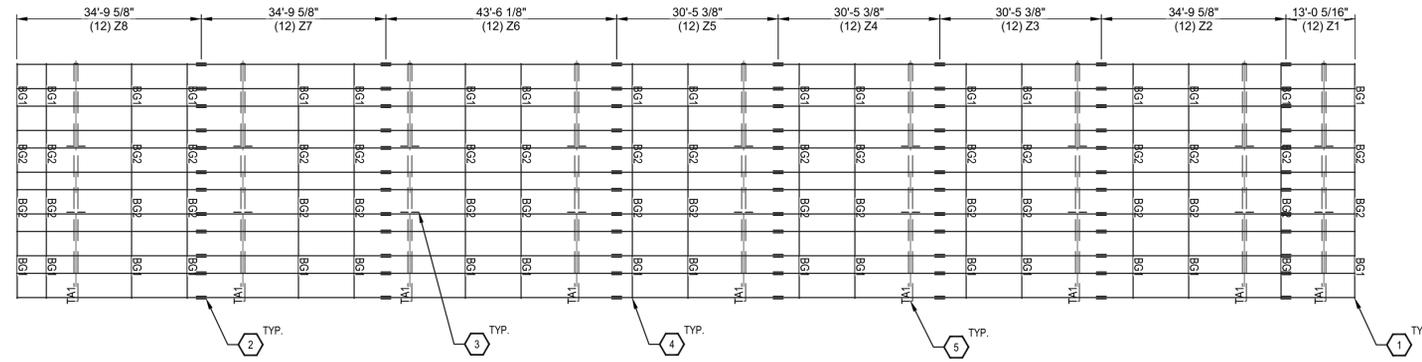
DRAWN BY: NCE
REVIEWED BY: MS

SHEET TITLE:
COMPONENT PLAN

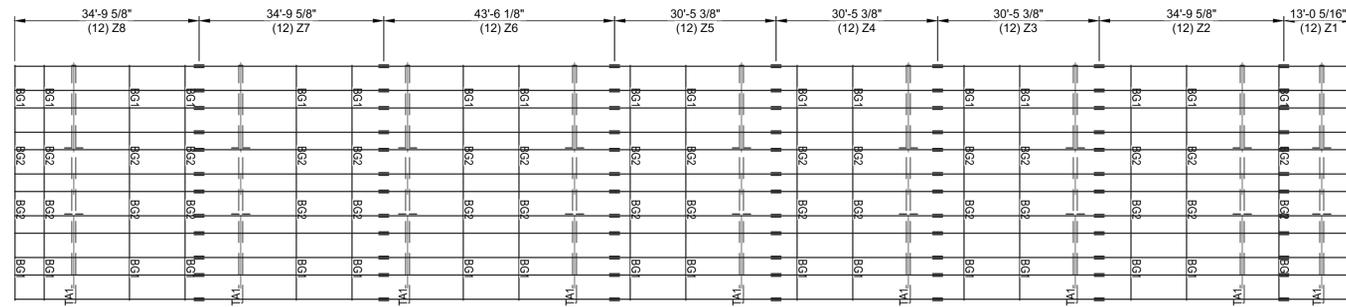
SHEET No.:
SC104

KEY NOTES

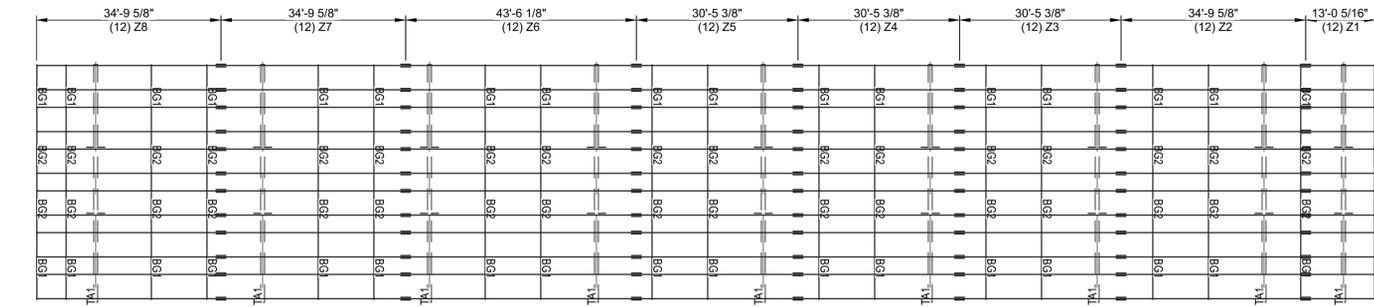
- PURLIN BRIDGING REQUIRED AT END OF THE CANOPY - REFER TO DETAIL A10 ON SHEET SC501 - REFER TO DETAIL A8 ON SHEET SC501 FOR BRIDGING SPLICE
- PURLIN SPLICE - REFER TO DETAIL A1 ON SHEET SC501
- TOP BEAM BRACE - REFER TO DETAIL C6 ON SHEET SC501
- PURLIN BRIDGING REQUIRED AT ALL BAYS - REFER TO DETAIL A6 ON SHEET SC501 - REFER TO DETAIL A8 ON SHEET SC501 FOR BRIDGING SPLICE
- TOP BEAM BELOW.



F1 CANOPY 06
Component Plan
SCALE: 1/16" = 1'-0"



C1 CANOPY 05
Component Plan
SCALE: 1/16" = 1'-0"

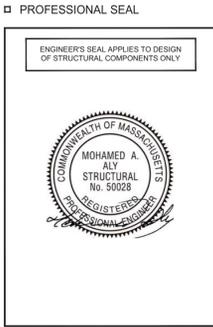


A1 CANOPY 04
Component Plan
SCALE: 1/16" = 1'-0"

COMPONENT SCHEDULE

MARK	DESCRIPTION	LENGTH	QTY.
TA1	TOP BEAM W24x68	45'-0"	9
Z1	13.25" 10 Ga. GALVANIZED ZEE	13'-0 5/16"	12
Z2	13.25" 10 Ga. GALVANIZED ZEE	34'-9 5/8"	12
Z3	13.25" 10 Ga. GALVANIZED ZEE	30'-5 3/8"	12
Z4	13.25" 10 Ga. GALVANIZED ZEE	30'-5 3/8"	12
Z5	13.25" 10 Ga. GALVANIZED ZEE	30'-5 3/8"	12
Z6S	13.25" 10 Ga. GALVANIZED ZEE - STARTER	43'-6 1/8"	12
Z7	13.25" 10 Ga. GALVANIZED ZEE	34'-9 5/8"	12
Z8	13.25" 10 Ga. GALVANIZED ZEE	34'-9 5/8"	12
BG1	12 Ga. FORMED ANGLE	12'-0"	36
BG2	12 Ga. FORMED ANGLE	10'-2 5/8"	36
SG1	SNOW GUARD - 8" x 8" x 5/8"	38'-1"	1
SG2	SNOW GUARD - 8" x 8" x 5/8"	36'-0"	1
SG3	SNOW GUARD - 8" x 8" x 5/8"	31'-5 5/8"	4
SG4	SNOW GUARD - 8" x 8" x 5/8"	36'-0"	1
SG5	SNOW GUARD - 8" x 8" x 5/8"	38'-1"	1
TA1	TOP BEAM W24x68	45'-0"	9
Z1	13.25" 10 Ga. GALVANIZED ZEE	13'-0 5/16"	12
Z2	13.25" 10 Ga. GALVANIZED ZEE	34'-9 5/8"	12
Z3	13.25" 10 Ga. GALVANIZED ZEE	30'-5 3/8"	12
Z4	13.25" 10 Ga. GALVANIZED ZEE	30'-5 3/8"	12
Z5	13.25" 10 Ga. GALVANIZED ZEE	30'-5 3/8"	12
Z6S	13.25" 10 Ga. GALVANIZED ZEE - STARTER	43'-6 1/8"	12
Z7	13.25" 10 Ga. GALVANIZED ZEE	34'-9 5/8"	12
Z8	13.25" 10 Ga. GALVANIZED ZEE	34'-9 5/8"	12
BG1	12 Ga. FORMED ANGLE	12'-0"	36
BG2	12 Ga. FORMED ANGLE	10'-2 5/8"	36
SG1	SNOW GUARD - 8" x 8" x 5/8"	38'-1"	1
SG2	SNOW GUARD - 8" x 8" x 5/8"	36'-0"	1
SG3	SNOW GUARD - 8" x 8" x 5/8"	31'-5 5/8"	4
SG4	SNOW GUARD - 8" x 8" x 5/8"	36'-0"	1
SG5	SNOW GUARD - 8" x 8" x 5/8"	38'-1"	1
TA1	TOP BEAM W24x68	45'-0"	9
Z1	13.25" 10 Ga. GALVANIZED ZEE	13'-0 5/16"	12
Z2	13.25" 10 Ga. GALVANIZED ZEE	34'-9 5/8"	12
Z3	13.25" 10 Ga. GALVANIZED ZEE	30'-5 3/8"	12
Z4	13.25" 10 Ga. GALVANIZED ZEE	30'-5 3/8"	12
Z5	13.25" 10 Ga. GALVANIZED ZEE	30'-5 3/8"	12
Z6S	13.25" 10 Ga. GALVANIZED ZEE - STARTER	43'-6 1/8"	12
Z7	13.25" 10 Ga. GALVANIZED ZEE	34'-9 5/8"	12
Z8	13.25" 10 Ga. GALVANIZED ZEE	34'-9 5/8"	12
BG1	12 Ga. FORMED ANGLE	12'-0"	36
BG2	12 Ga. FORMED ANGLE	10'-2 5/8"	36
SG1	SNOW GUARD - 8" x 8" x 5/8"	38'-1"	1
SG2	SNOW GUARD - 8" x 8" x 5/8"	36'-0"	1
SG3	SNOW GUARD - 8" x 8" x 5/8"	31'-5 5/8"	4
SG4	SNOW GUARD - 8" x 8" x 5/8"	36'-0"	1
SG5	SNOW GUARD - 8" x 8" x 5/8"	38'-1"	1

- COMPONENT SETTING NOTES:
- ALL COMPONENT DIMENSIONS SHOWN ARE END TO END.
 - LAYOUT IS SUBJECT TO CHANGE PER REQUEST AND/OR EXISTING CONDITIONS IN THE FIELD.
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 - PURLIN MARKS ENDING WITH "S" REFER TO STARTER PURLINS AND ARE INTENDED TO BE INSTALLED FIRST WITHIN THAT CANOPY.
 - ERECT TOP BEAM WITH PIECE MARK ORIENTED TO MATCH LOCATION SHOWN ON PLAN.



SOLAR CANOPY
FOR
Sunnova Energy

RELEASE RECORD

MARK	DATE	DESCRIPTION
5	02/05/25	STAMPED
4	11/12/24	STAMPED
3	06/28/24	STAMPED
2	06/26/24	90% REVIEW

PROJECT INFORMATION

TITLE & ADDRESS:
Dell Campus

50 Constitution Blvd,
Franklin, MA 02038

TERRASMARK PROJECT No.:
2370049

DRAWN BY: NCE
REVIEWED BY: MS

SHEET TITLE:
COMPONENT PLAN

SHEET No.:
SC105

KEY NOTES

- PURLIN BRIDGING REQUIRED AT END OF THE CANOPY - REFER TO DETAIL A10 ON SHEET SC501 - REFER TO DETAIL A8 ON SHEET SC501 FOR BRIDGING SPLICE
- PURLIN SPLICE - REFER TO DETAIL A1 ON SHEET SC501
- TOP BEAM BRACE - REFER TO DETAIL C6 ON SHEET SC501
- PURLIN BRIDGING REQUIRED AT ALL BAYS - REFER TO DETAIL A6 ON SHEET SC501 - REFER TO DETAIL A8 ON SHEET SC501 FOR BRIDGING SPLICE
- TOP BEAM BELOW.

COMPONENT SCHEDULE

MARK	DESCRIPTION	LENGTH	QTY.
TA1	W24 x 68	45'-0"	9
Z1	13.25" 10 Ga. GALVANIZED ZEE	13'-0 5/16"	12
Z2	13.25" 10 Ga. GALVANIZED ZEE	34'-9 5/8"	12
Z3	13.25" 10 Ga. GALVANIZED ZEE	30'-5 3/8"	12
Z4	13.25" 10 Ga. GALVANIZED ZEE	30'-5 3/8"	12
Z5	13.25" 10 Ga. GALVANIZED ZEE	30'-5 3/8"	12
Z6S	13.25" 10 Ga. GALVANIZED ZEE - STARTER	43'-6 1/8"	12
Z7	13.25" 10 Ga. GALVANIZED ZEE	34'-9 5/8"	12
Z8	13.25" 10 Ga. GALVANIZED ZEE	34'-9 5/8"	12
BG1	12 Ga. FORMED ANGLE	12'-0"	36
BG2	12 Ga. FORMED ANGLE	10'-2 5/8"	36

- COMPONENT SETTING NOTES:
- ALL COMPONENT DIMENSIONS SHOWN ARE END TO END.
 - LAYOUT IS SUBJECT TO CHANGE PER REQUEST AND/OR EXISTING CONDITIONS IN THE FIELD.
 - REFERENCE SHEET SC501 FOR ADDITIONAL COMPONENT CONNECTION INFORMATION.
 - PURLIN MARKS ENDING WITH "S" REFER TO STARTER PURLINS AND ARE INTENDED TO BE INSTALLED FIRST WITHIN THAT CANOPY.
 - ERECT TOP BEAM WITH PIECE MARK ORIENTED TO MATCH LOCATION SHOWN ON PLAN.



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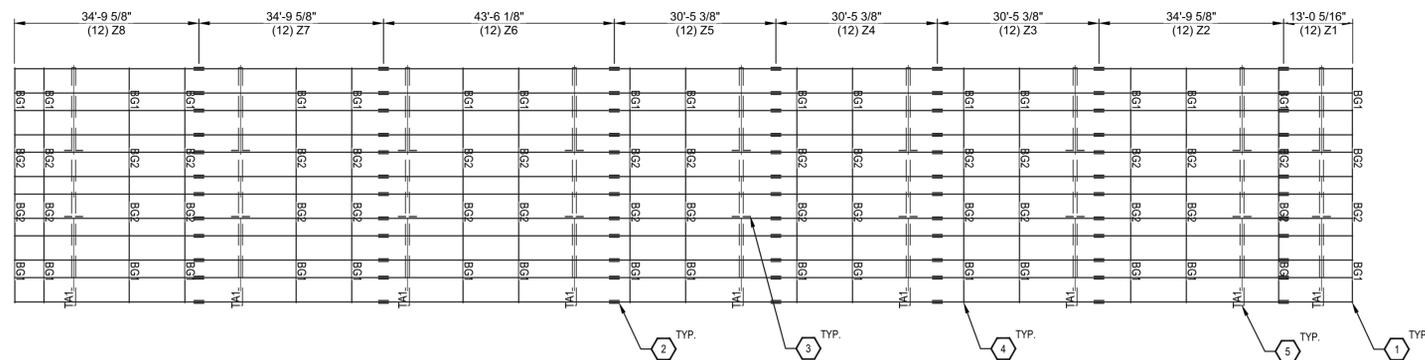
SOLAR CANOPY FOR Sunnova Energy

RELEASE RECORD

MARK	DATE	DESCRIPTION
5	02/05/25	STAMPED
4	11/12/24	STAMPED
3	06/28/24	STAMPED
2	06/26/24	90% REVIEW

PROJECT INFORMATION

TITLE & ADDRESS: Dell Campus	
50 Constitution Blvd, Franklin, MA 02038	
TERRASMART PROJECT No.: 2370049	
DRAWN BY: NCE	REVIEWED BY: MS
SHEET TITLE: COMPONENT PLAN	
SHEET No.: SC106	



A1 CANOPY 07
Component Plan

SCALE: 1/16" = 1'-0"

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3	06/28/24	STAMPED
2	06/26/24	90% REVIEW
1	02/21/24	50% REVIEW

PROJECT INFORMATION

TITLE & ADDRESS:
Dell Campus

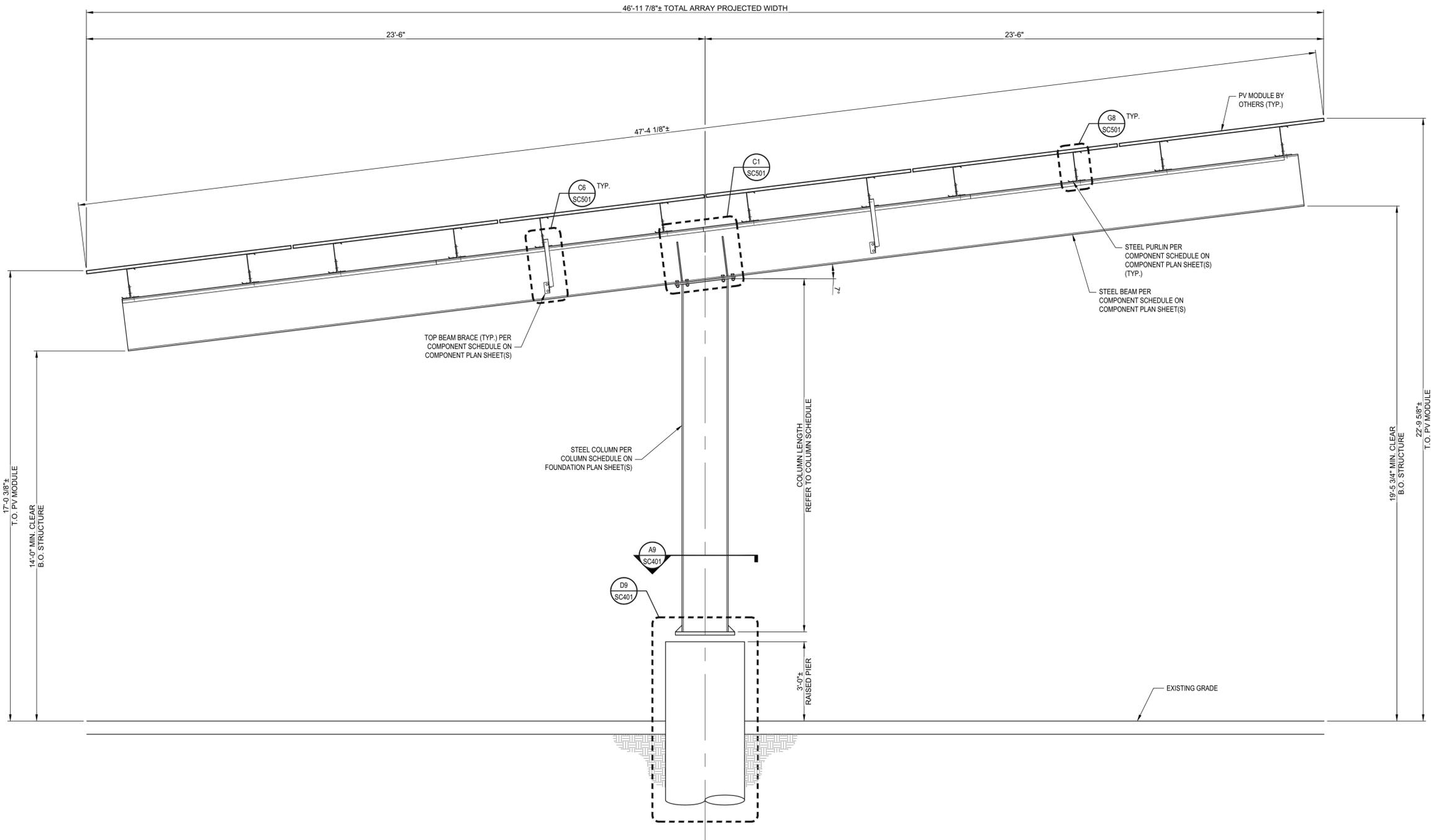
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TERRASMART PROJECT No.:
 2370049

DRAWN BY: NCE REVIEWED BY: MS

SHEET TITLE:
CANOPY SECTION

SHEET No.:
SC301

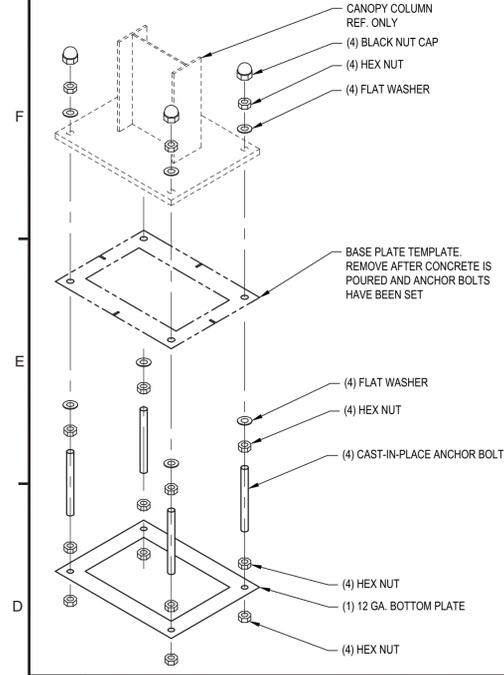
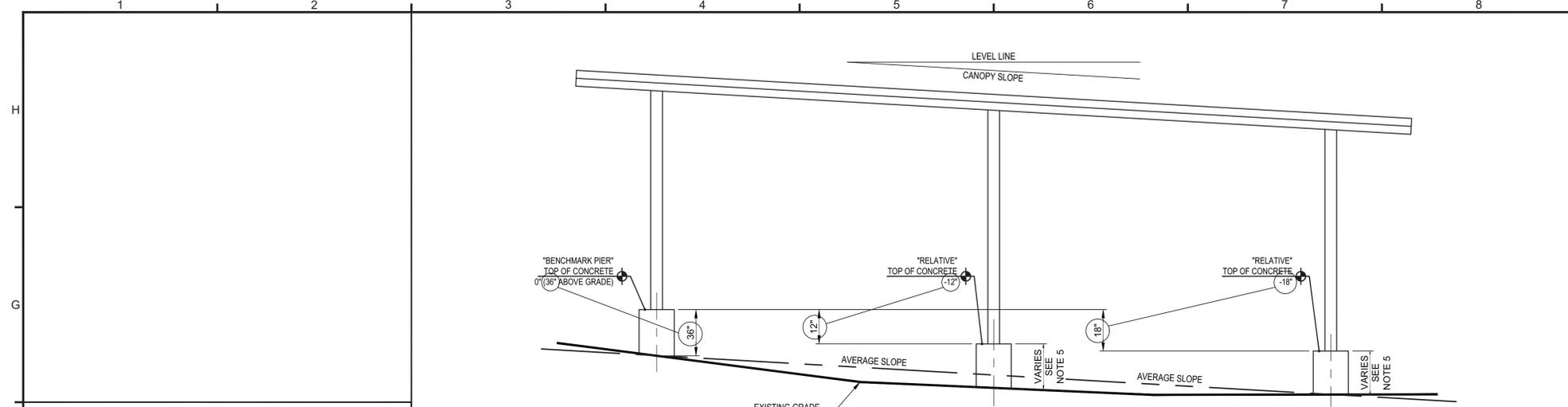


A1 Canopies 1 - 7 Section

SCALE: 1/2" = 1'-0"

S:\REI\SolarDesign\2023\Jobs\2370049 - Sunnova Energy - Dell Campus, MA\Drawings\2370049.dwg, 2/5/2025 12:51:48 PM, hwpb

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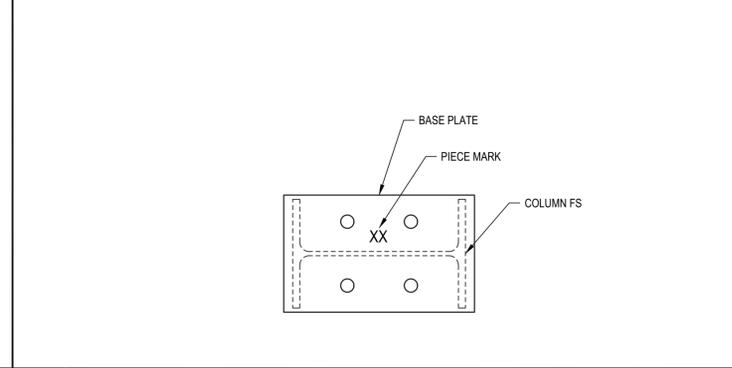
KEY POINTS

- CANOPY ARRAY IS PARALLEL TO AVERAGE SITE GRADE
- CANOPY ARRAY SLOPE MAY VARY PER STRUCTURE
- COLUMN LENGTHS MAY VARY
- REFER TO FOUNDATION PLAN FOR ACTUAL "BENCHMARK" LOCATION AND ADDITIONAL FOUNDATION LOCATIONS
- HOLDING A "RELATIVE" FOUNDATION TOP OF CONCRETE IN RELATION TO THE "BENCHMARK" FOUNDATION TOP OF CONCRETE IS CRITICAL. FINISHED FOUNDATION HEIGHTS MAY ONLY VARY RELATIVE TO ADJACENT GRADE AND NOT THE "BENCHMARK" FOUNDATION
- COLUMN LENGTHS ARE CALCULATED USING THE INDIVIDUAL FOUNDATION "TOP OF CONCRETE" ELEVATIONS

F3 Top Of Concrete Layout Key
SCALE: 1/12" = 1'-0"

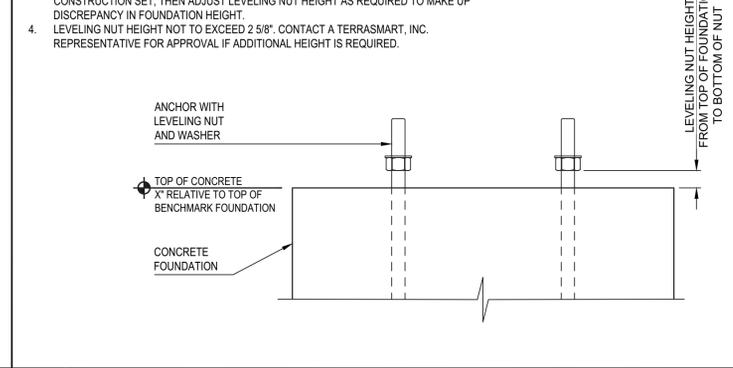
NOTE:

- REFER TO FOUNDATION PLAN FOR COLUMN PIECE MARK SCHEDULE.
- PIECE MARK LOCATED ON UNDERSIDE OF BASE PLATE.
- DETAIL FOR REFERENCE ONLY. BASE PLATE AND COLUMN SHAPE WILL VARY PER PROJECT.



NOTE:

- REFER TO COLUMN SCHEDULE FOR FOUNDATION HEIGHTS AND LEVELING NUT HEIGHTS.
- FIELD VERIFY ALL FOUNDATION HEIGHTS.
- IF ACTUAL FOUNDATION HEIGHT IS DIFFERENT FROM DESIGNED VALUE WITHIN THIS CONSTRUCTION SET, THEN ADJUST LEVELING NUT HEIGHT AS REQUIRED TO MAKE UP DISCREPANCY IN FOUNDATION HEIGHT.
- LEVELING NUT HEIGHT NOT TO EXCEED 2 5/8\"/>



D1 Anchor Connection Exploded View
SCALE: 1/12" = 1'-0"

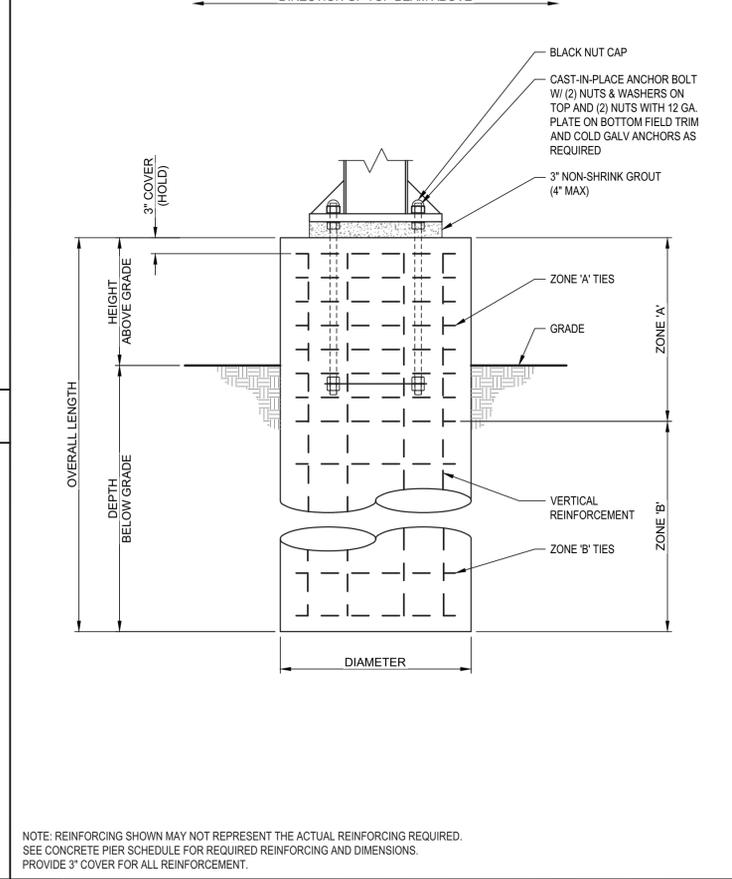
D3 Column Piece Mark Detail
SCALE: 1/12" = 1'-0"

D6 Leveling Nut Detail Side View
SCALE: 1/12" = 1'-0"

TYPE	SIZE				REINFORCEMENT		
	DIAMETER	TOP OF FOUNDATION	DEPTH BELOW GRADE	APPROX. OVERALL LENGTH	VERTICAL REINFORCEMENT	ZONE 'A' REINFORCEMENT TIES	ZONE 'B' REINFORCEMENT TIES
A	36"	RAISED	10'-6"	13'-6"	(12) #6 BARS	#5 BARS @ 4" O.C. FOR 36"	#5 BARS @ 10" O.C. FOR REMAINDER

NOTE:

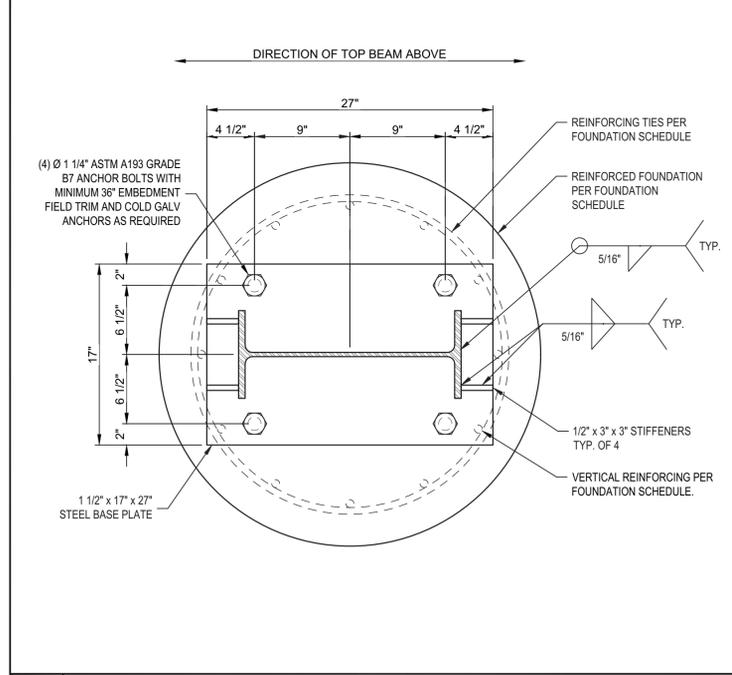
- ALL REINFORCING TO HAVE 3" MINIMUM COVER
- REFERENCE THE FOUNDATION PLAN FOR DESIGNED HEIGHT ABOVE GRADE VALUES. SEE LEVELING NUT DETAIL FOR ADJUSTMENTS.



D9 Typical Pier Side View
SCALE: 3/4" = 1'-0"



A9 Base Plate Detail
SCALE: 1/12" = 1'-0"



A9 Base Plate Detail
SCALE: 1/12" = 1'-0"

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2	06/26/24	90% REVIEW

PROJECT INFORMATION

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Dell Campus

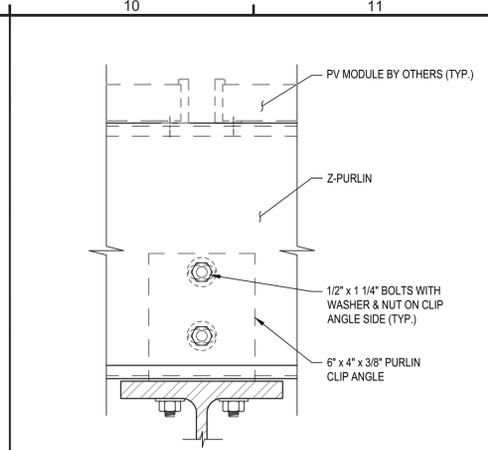
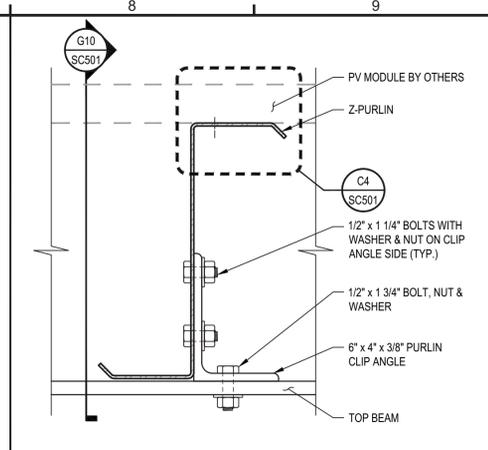
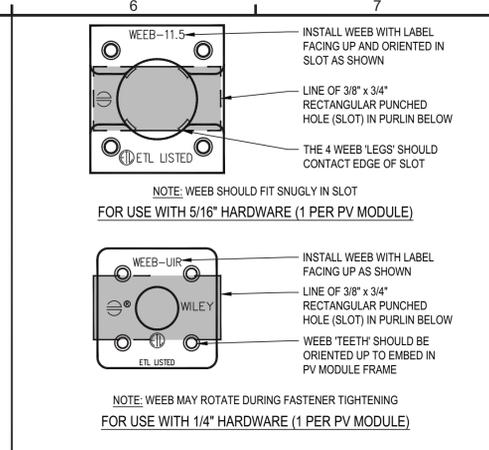
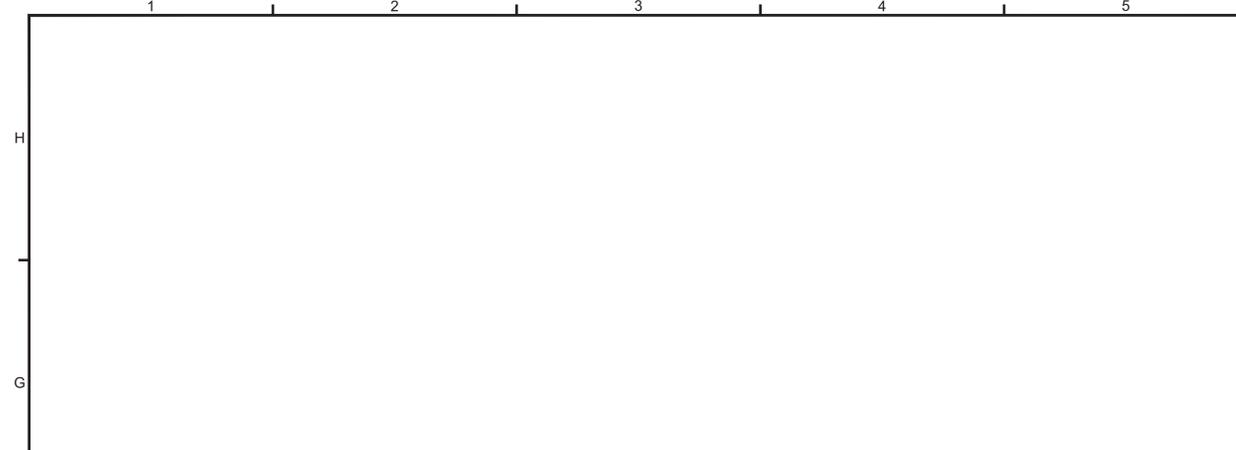
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TERRASMART PROJECT No.:
2370049

DRAWN BY: NCE
REVIEWED BY: MS

SHEET TITLE:
FOUNDATION AND BASE PLATE DETAILS

SHEET No.:
SC401



G6 WEEB PV Module Bonding Washer Detail
SCALE: NONE

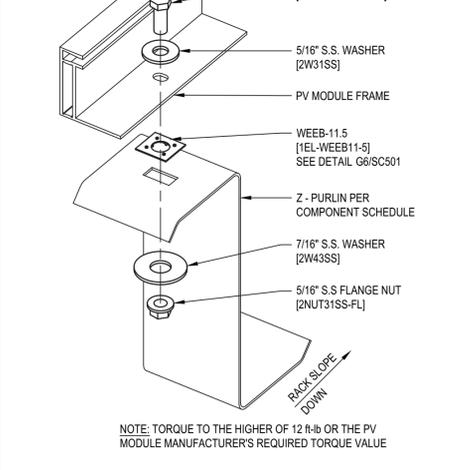
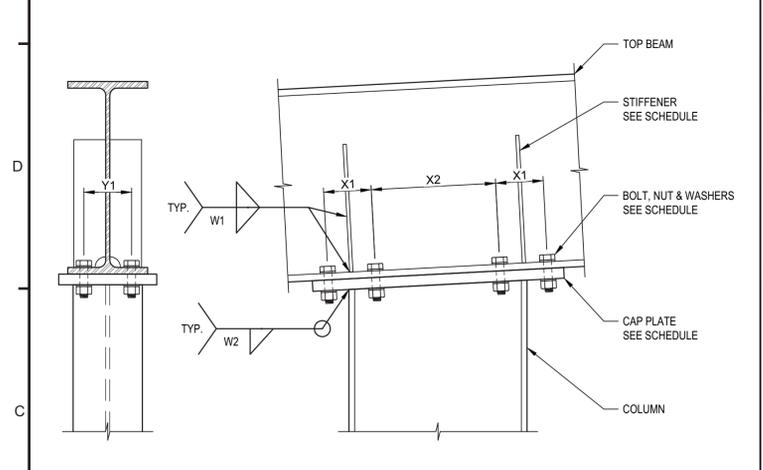
G8 Purlin Connection Transverse Detail
SCALE: 3\"/>

G10 Purlin Connection Longitudinal Section
SCALE: 3\"/>

TOP BEAM CONNECTION SCHEDULE

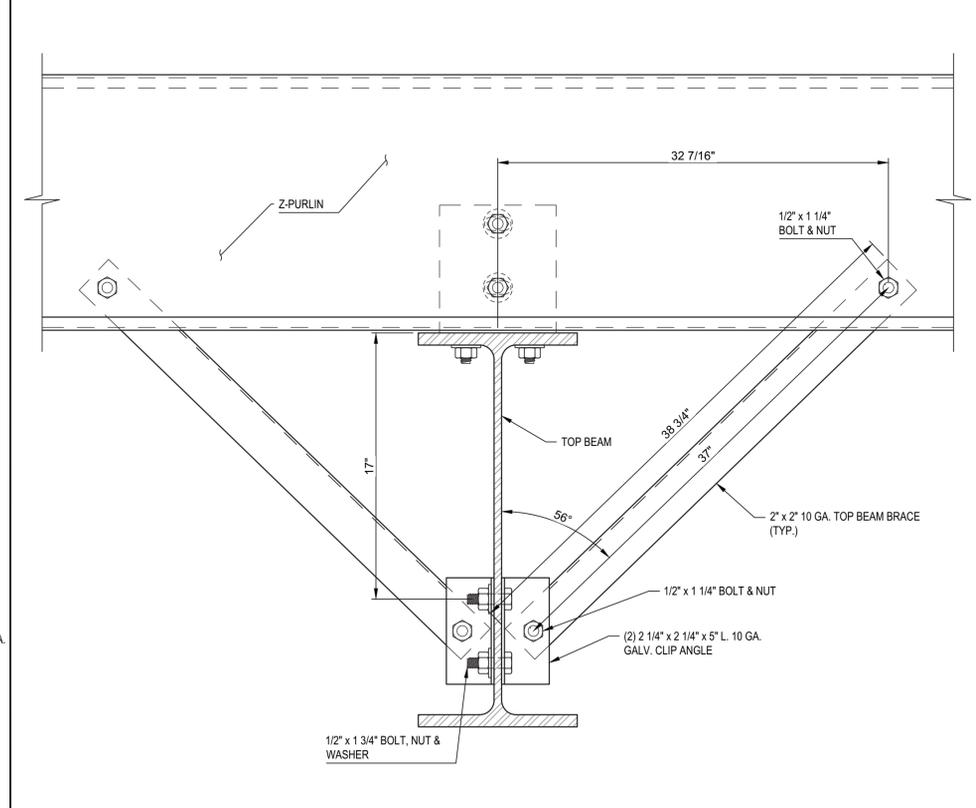
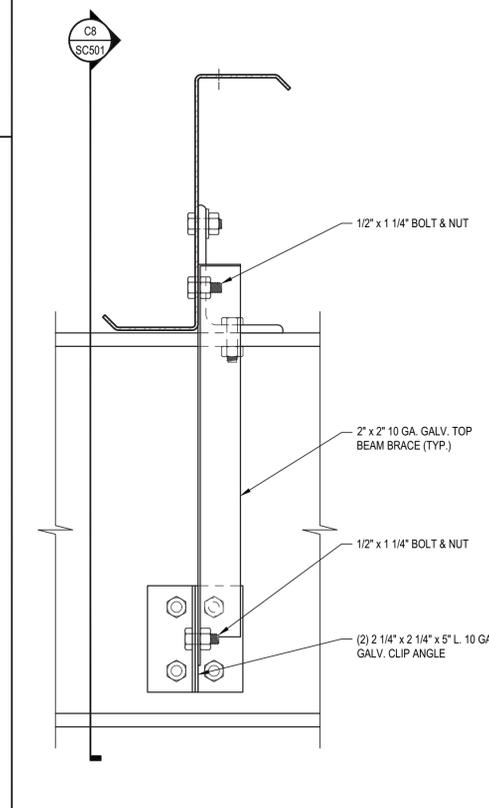
CANOPY	CAP PLATE			STIFFENER PLATE SIZE	WELD SIZE			BOLT SIZE	
	PLATE SIZE	X1	X2		Y1	W1	W2		W3
01 - 07	3/4" x 9 1/2" x 27 1/2"	4 1/2"	16 1/2"	5 1/2"	1/2" x 3 1/2" x 18"	3/16"	5/16"	-	3/4" x 2 3/4" A325

NOTE: DRAWING IS A TYPICAL DEPICTION AND MAY NOT REPRESENT ACTUAL DIMENSIONS OF PARTS.



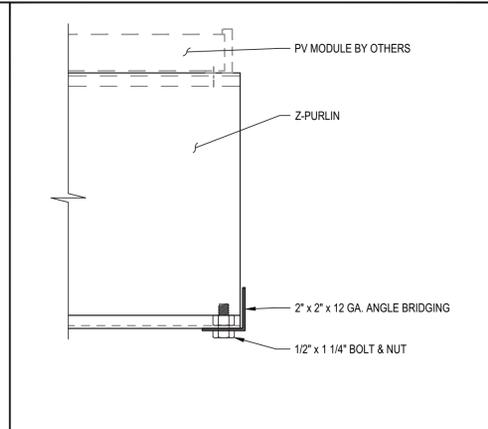
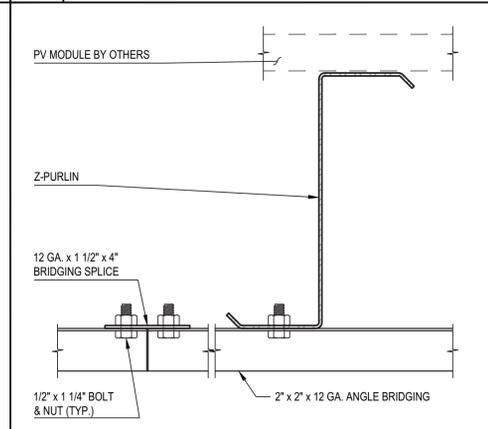
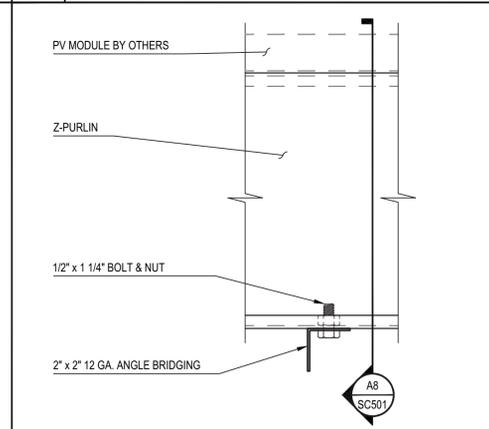
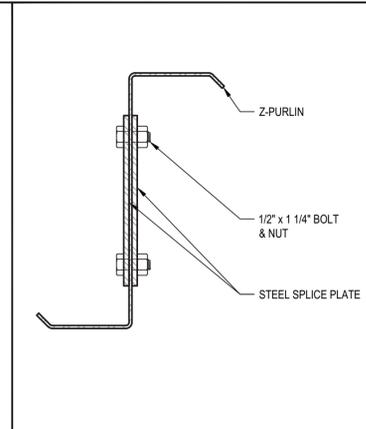
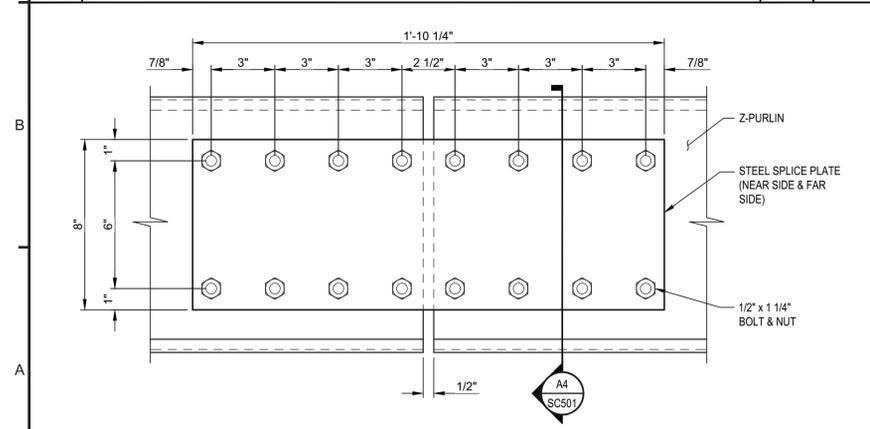
C1 Top Beam To Column Connection Detail
SCALE: 1-1/2\"/>

C4 Expanded PV Module Frame to Z-Purlin Connection Detail
SCALE: NONE



C6 Top Beam Flange Brace Connection Detail
SCALE: 3\"/>

C8 Top Beam Flange Brace Connection Section
SCALE: 3\"/>



A1 Purlin Splice Connection
SCALE: 3\"/>

A4 Purlin Splice Connection
SCALE: 3\"/>

A6 Purlin Bridging Intermediate Condition
SCALE: 3\"/>

A8 Purlin Bridging Splice Connection
SCALE: 3\"/>

A10 Purlin Bridging End Condition
SCALE: 3\"/>

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STRUCTURAL
No. 50228

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TITLE & ADDRESS:
Dell Campus
50 Constitution Blvd, Franklin, MA 02038
TERRASMARK PROJECT No.: 2370049
DRAWN BY: NCE
REVIEWED BY: MS
SHEET TITLE:
COMPONENT DETAILS
SHEET No.:
SC501