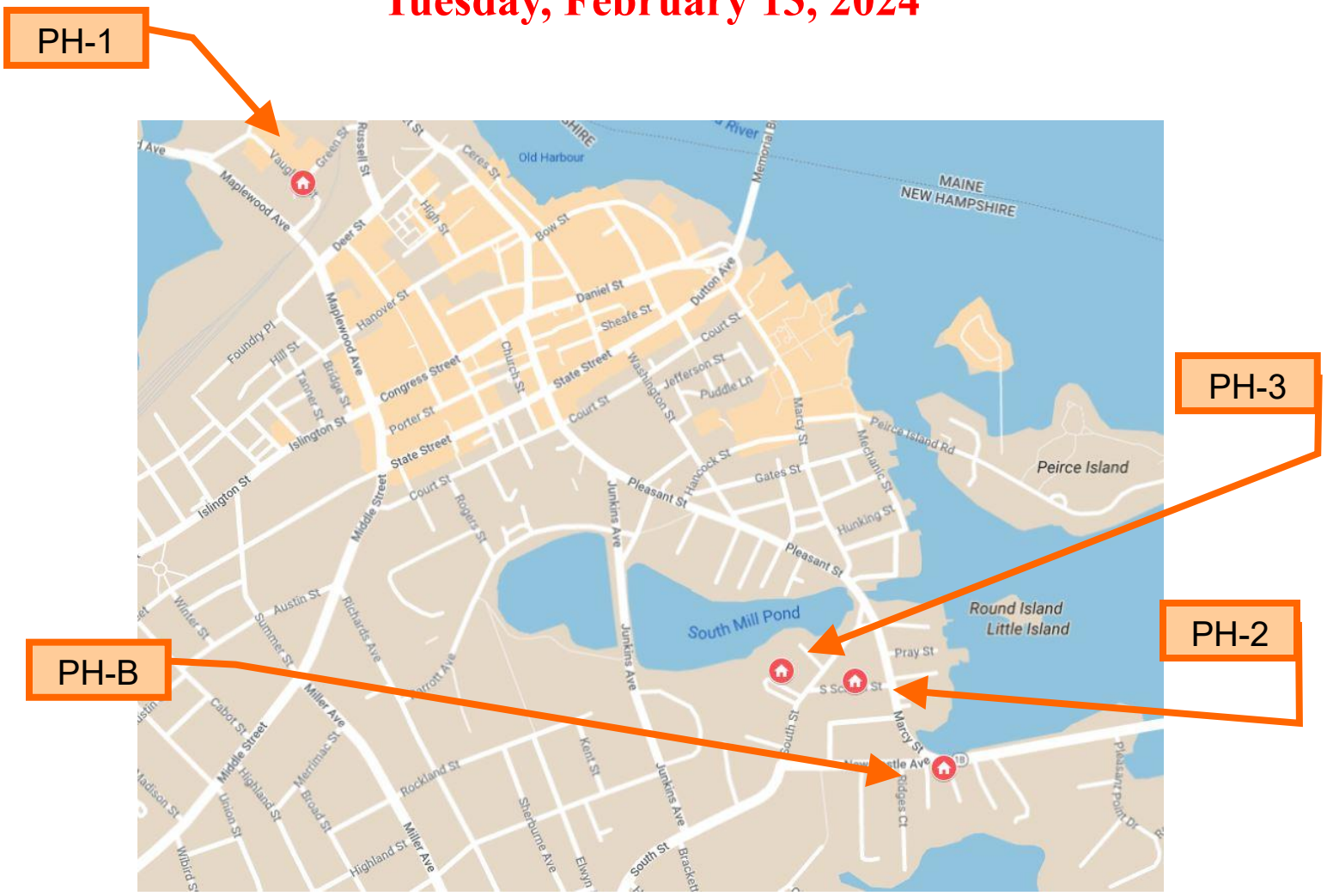
Historic District Commission

Staff Report

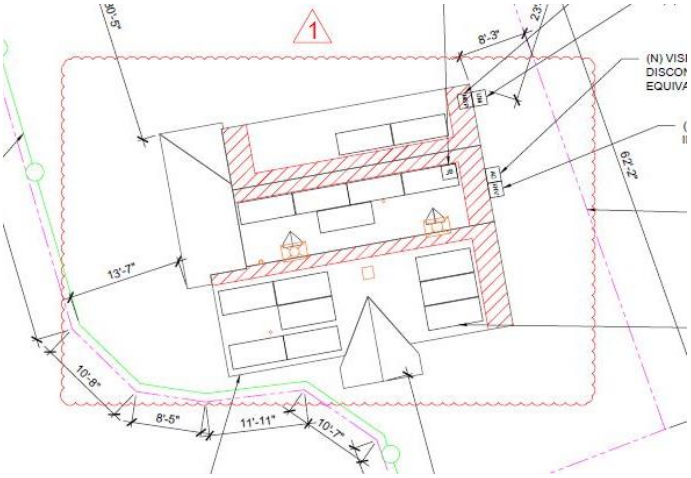
Tuesday, February 13, 2024



Project Address: **180 NEW CASTLE AVENUE**

Permit Requested: **CERTIFICATE OF APPROVAL**

Application: **PUBLIC HEARING B**



A. Property Information - General:

Existing Conditions:

- Zoning District: Single Residence B (SRB)
- Land Use: Residential
- Land Area: 4,260 SF +/-
- Estimated Age of Structure: c.1810
- Building Style: Federal
- Number of Stories:2.5
- Historical Significance: C
- Public View of Proposed Work: View from New Castle Avenue and Ball Street
- Unique Features: NA
- Neighborhood Association: South End

B. Proposed Work: To add roof-mounted solar panels.

C. Staff Comments and/ or Suggestions for Consideration:

The project proposal includes the following:

- Install roof mounted solar panels

HISTORIC SURVEY RATING

C

D. Purpose and Intent:

1. Preserve the integrity of the District
2. Assessment of the Historical Significance
3. Conservation and enhancement of property values
4. Maintain the special character of the District
5. Complement and enhance the architectural and historic character
6. Promote the education, pleasure and welfare of the District and the city residents and visitors

E. Review Criteria/Findings of Fact:

1. Consistent with special and defining character of surrounding properties
2. Compatibility of design with surrounding properties
3. Relation to historic and architectural value of existing structures
4. Compatibility of innovative technologies with surrounding properties

Freedom Forever
Planset Revision Letter

11/13/2023
REV #2

Attn. City of Portsmouth (NH):

The changes outlined in Revision Details have been applied to the plans corresponding to the following customer:

ANNE MOODEY
180 NEW CASTLE AVE , PORTSMOUTH, NH 03801

Revision Details:
1.Elevation updated.

All corresponding changes are notated on the plans by revision clouds.

Thank you for your time in reviewing these plans. Please reach out if you have any additional questions or concerns.

Construction Engineering
Freedom Forever
engineering@freedomforever.com

ROOF MOUNT PHOTOVOLTAIC SYSTEM

CODES:

THIS PROJECT COMPLIES WITH THE FOLLOWING:
2020 NH STATE BUILDING CODE
2020 NH STATE FIRE CODE
2018 INTERNATIONAL BUILDING CODE
2018 INTERNATIONAL RESIDENTIAL CODE
2018 INTERNATIONAL MECHANICAL CODE
2018 INTERNATIONAL PLUMBING CODE
2018 INTERNATIONAL FUEL GAS CODE
2018 INTERNATIONAL ENERGY CONSERVATION CODE
2018 INTERNATIONAL EXISTING BUILDING CODE
2018 INTERNATIONAL SWIMMING POOL AND SPA CODE
"2018 NFPA 1, FIRE CODE AS AMENDED BY SAF-FMO 300"
2018 NFPA 101 LIFE SAFETY CODE AS AMENDED BY SAF-FMO 300
2023 NATIONAL ELECTRICAL CODE
AS ADOPTED BY CITY OF PORTSMOUTH (NH)

VICINITY MAP:

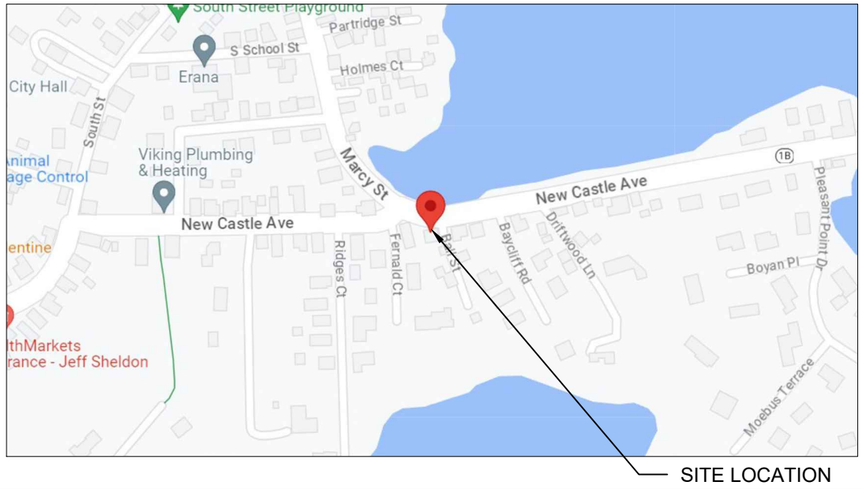


TABLE OF CONTENTS:

CONSTRUCTION NOTES:

CONDUIT AND CONDUCTOR SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING AS REQUIRED BY FIELD CONDITIONS.
ALL SOLAR ENERGY SYSTEM EQUIPMENT SHALL BE SCREENED TO THE MAXIMUM EXTENT POSSIBLE AND SHALL BE PAINTED A COLOR SIMILAR TO THE SURFACE UPON WHICH THEY ARE MOUNTED.
MODULES SHALL BE TESTED , LISTED AND INDENTIFIED WITH FIRE CLASSIFICATION IN ACCORDANCE WITH UL 2703. SMOKE AND CARBON MONOXIDE ALARMS ARE REQUIRED PER SECTION R314 AND 315 TO BE VERIFIED AND INSPECTED BY INSPECTOR IN THE FIELD.
DIG ALERT (811) TO BE CONTACTED AND COMPLIANCE WITH EXCAVATION SAFETY PRIOR TO ANY EXCAVATION TAKING PLACE
PHOTOVOLTAIC SYSTEM GROUND WILL BE TIED INTO EXISTING GROUND AT MAIN SERVICE FROM DC DISCONNECT/INVERTER AS PER 2023 NEC SEC 250.166(A).
SOLAR PHOTOVOLTAIC SYSTEM EQUIPMENT WILL BE INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF ART. 690 OF THE 2023 NEC
THE MAIN SERVICE PANEL WILL BE EQUIPPED WITH A GROUND ROD OR UFER
UTILITY COMPANY WILL BE NOTIFIED PRIOR TO ACTIVATION OF THE SOLAR PV SYSTEM
SOLAREDGE OPTIMIZERS ARE LISTED TO IEC 62109-1 (CLASS II SAFETY) AND UL 1741 STANDARDS
INSTALL CREW TO VERIFY ROOF STRUCTURE PRIOR TO COMMENCING WORK. EMT CONDUIT ATTACHED TO THE ROOF USING CONDUIT MOUNT.

THIS SYSTEM DESIGNED WITH:
WIND SPEED: 121
WIND EXPOSURE: B
SNOW LOAD: 50

CLIENT:
ANNE MOODEY
180 NEW CASTLE AVE, PORTSMOUTH, NH 03801
AHJ: CITY OF PORTSMOUTH (NH)
UTILITY: EVERSOURCE ENERGY (EASTERN MA)
METER: 72329222
APN: PRSM-000101-000023
PHONE: (603) 361-7031
EMAIL: AMOODEY1@GMAIL.COM

SYSTEM:
SYSTEM SIZE (DC): 15 X 385 = 5.775 kW
SYSTEM SIZE (AC): 5.000 kW @ 240V
MODULES: 15 X JINKO SOLAR: JKM385M-72HBL
OPTIMIZERS: 15 X SOLAREDGE P505
INVERTER: SOLAREDGE SE5000H-USRGM [SI1]

1

	REVISIONS	
NO.	REVISED BY	DATE
1	S.K.	11/8/2023
2	S.G.	11/13/2023
-	-	-

freedom FOREVER

FREEDOM FOREVER LLC
43445 BUSINESS PARK DR #110, TEMECULA, CA 92590
Tel: (800) 385-1075
GREG ALBRIGHT

CONTRACTOR LICENSE:
ELECTRICAL CONTRACTOR 0512C

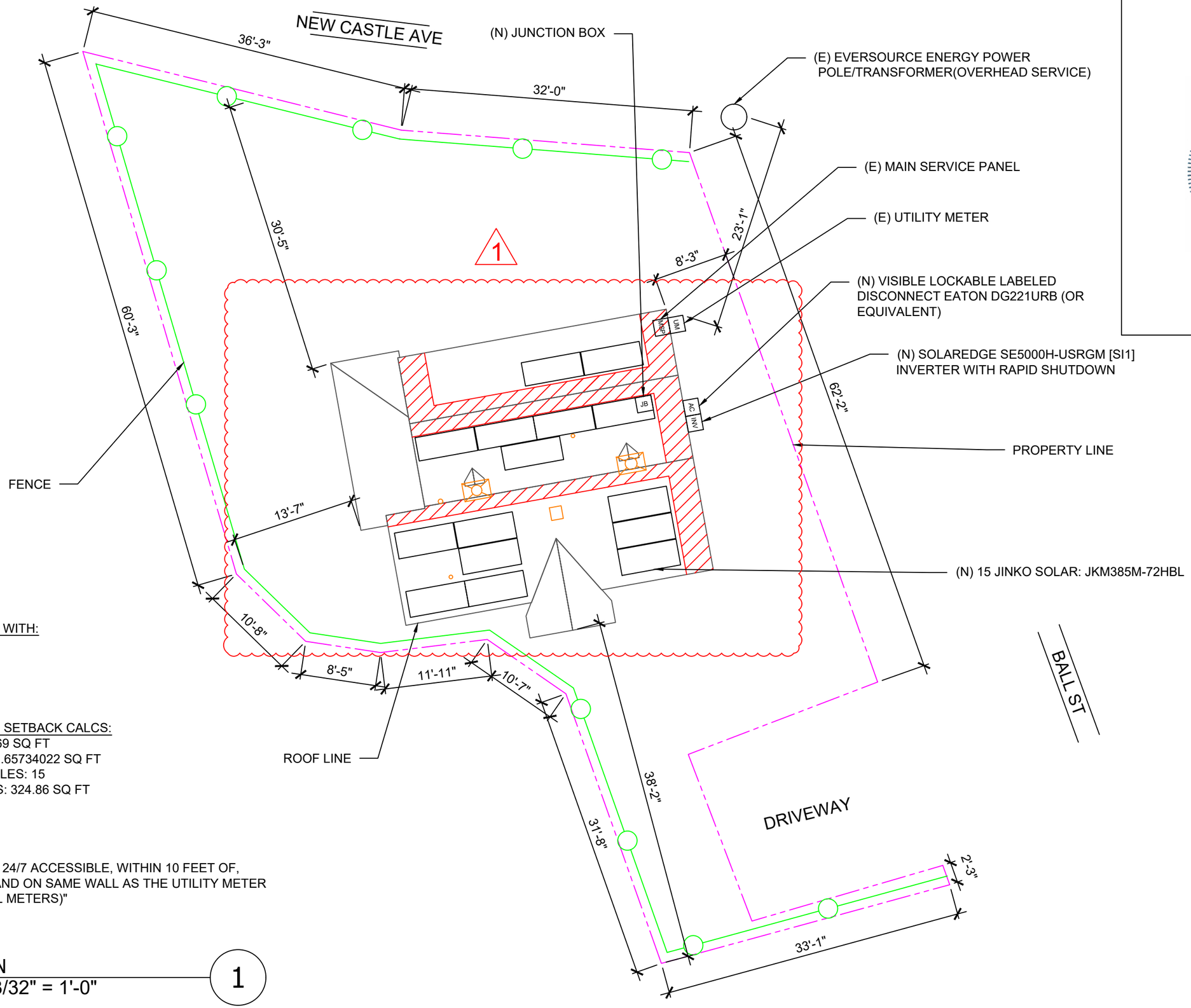
SITE LOCATION

JOB NO:	DATE:	DESIGNED BY:	SHEET:
369950	11/13/2023	S.G.	PV-1

LEGEND:

- CHIMNEY
- PIPE VENT
- MODULES
- CONDUIT
- SETBACK
- AC — AC DISCONNECT
- UM — UTILITY METER
- JB — JUNCTION BOX
- INV — INVERTER
- MSP — MAIN SERVICE PANEL

PV SYSTEM
5.775 kW-DC
5.000 kW-AC



THIS SYSTEM DESIGNED WITH:
WIND SPEED: 121
WIND EXPOSURE: B
SNOW LOAD: 50

TOTAL ROOF AREA RIDGE SETBACK CALCS:
TOTAL ROOF AREA: 1311.69 SQ FT
SINGLE MODULE AREA: 21.65734022 SQ FT
TOTAL NUMBER OF MODULES: 15
TOTAL AREA OF MODULES: 324.86 SQ FT
ROOF COVERAGE: 24.77%
FIRE SPRINKLERS : NO

"AC DISCONNECT SHALL BE 24/7 ACCESSIBLE, WITHIN 10 FEET OF, WITHIN VISIBLE SIGHT OF, AND ON SAME WALL AS THE UTILITY METER (EXCEPTION FOR PEDESTAL METERS)"

SITE PLAN
SCALE: 3/32" = 1'-0"
1

Structural Only

STATE OF NEW HAMPSHIRE
XIAOJIAN XIE
No. 17011
LICENSED
PROFESSIONAL ENGINEER

ROOF AREA: 1311.69 SQ FT

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SITE PLAN

JOB NO:	DATE:	DESIGNED BY:	SHEET:
369950	11/13/2023	S.G.	PV-2

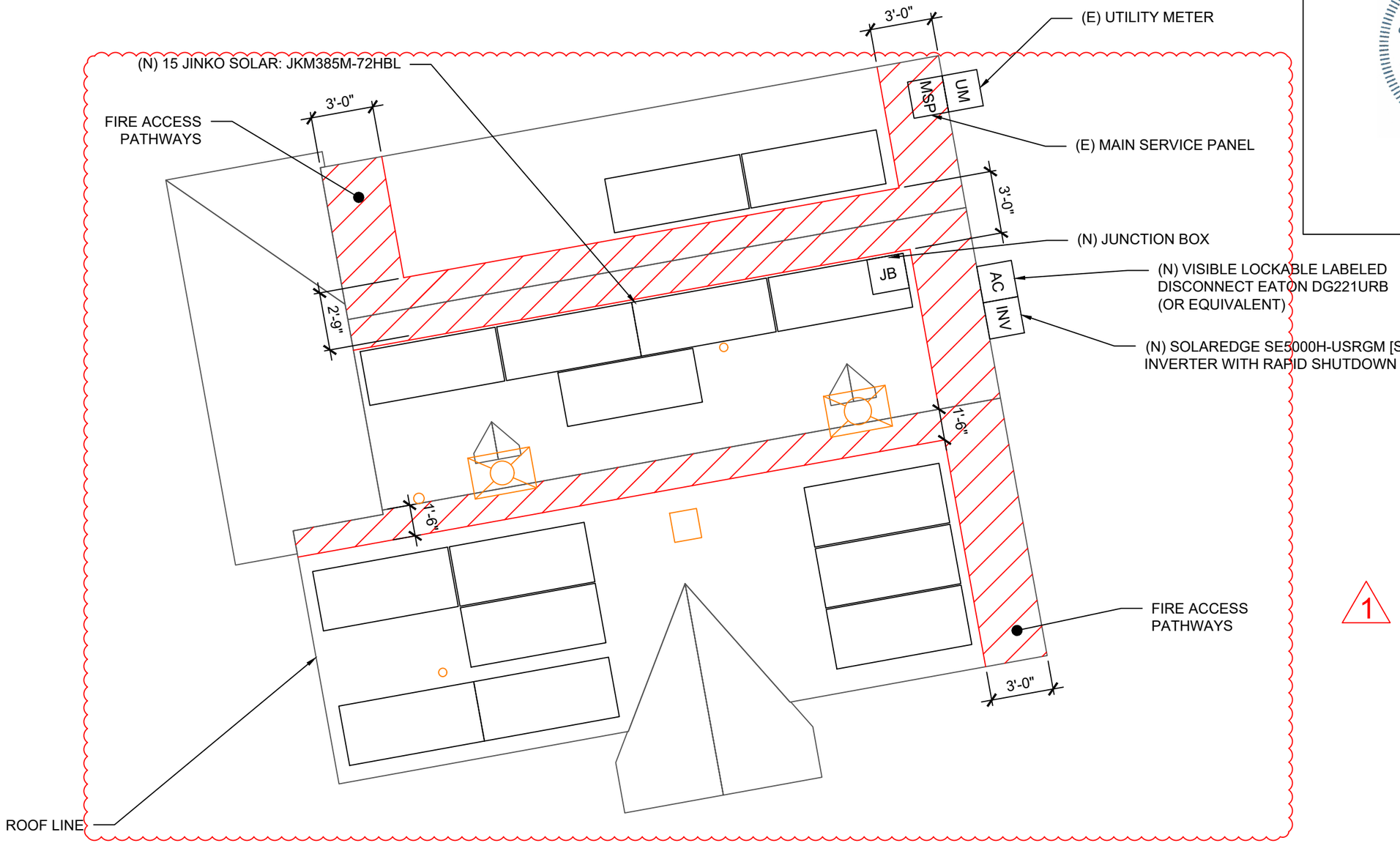
LEGEND:

- CHIMNEY
- PIPE VENT
- MODULES
- CONDUIT
- SETBACK
- AC — AC DISCONNECT
- UM — UTILITY METER
- JB — JUNCTION BOX
- INV — INVERTER
- MSP — MAIN SERVICE PANEL

PV SYSTEM
5.775 kW-DC
5.000 kW-AC

THIS SYSTEM DESIGNED WITH:
WIND SPEED: 121
WIND EXPOSURE: B
SNOW LOAD: 50

TOTAL ROOF AREA: 1311.69 SQ FT
TOTAL ARRAY AREA: 324.86 SQ FT
ARRAY COVERAGE: 24.77%
SYSTEM DISTRIBUTED WEIGHT: 2.29 LBS
UNIRAC: FLASHKIT PRO POINT-LOAD: 18.15 LBS



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ROOF PLAN
SCALE: 3/16" = 1'-0"

1

NOTES:
1. EMT CONDUIT ATTACHED TO THE ROOF USING CONDUIT MOUNTS
2. ATTACHED CLAMPS AT 25% FROM THE EDGE AND 50% FROM THE CENTER OF THE MODULES
3. JUNCTION BOX IS MOUNTED TO THE RAIL.

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ROOF PLAN WITH MODULES LAYOUT

JOB NO:	DATE:	DESIGNED BY:	SHEET:
369950	11/13/2023	S.G.	PV-2A

ROOF DETAILS:

TOTAL ROOF AREA: 1311.69 SQ FT
TOTAL ARRAY AREA: 324.86 SQFT
ARRAY COVERAGE: 24.77%
SYSTEM DISTRIBUTED WEIGHT: 2.29 LBS
UNIRAC: FLASHKIT PRO POINT-LOAD: 18.15 LBS

ROOF AREA STATEMENT						
ROOF	MODULE QUANTITY	ROOF PITCH	ARRAY PITCH	AZIMUTH	ROOF AREA	ARRAY AREA
ROOF 1	8	28	28	170	462.46 SQ FT	173.26 SQ FT
ROOF 2	5	37	37	170	345.37 SQ FT	108.29 SQ FT
ROOF 3	2	37	37	350	280.45 SQ FT	43.31 SQ FT
----	----	----	----	----	SQ FT	SQ FT
----	----	----	----	----	SQ FT	SQ FT
----	----	----	----	----	SQ FT	SQ FT
----	----	----	----	----	SQ FT	SQ FT
----	----	----	----	----	SQ FT	SQ FT
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ROOF DETAILS

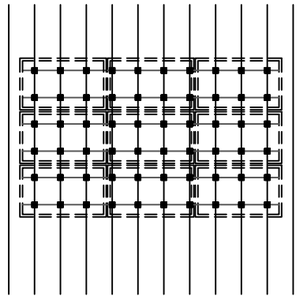
JOB NO:	DATE:	DESIGNED BY:	SHEET:
369950	11/13/2023	S.G.	PV-2B

TABLE 1 - ARRAY INSTALLATION

	ROOF PITCH	ROOFING TYPE	ATTACHMENT TYPE	FRAMING TYPE	MAX UNBRACED LENGTH(FT.)	STRUCTURAL ANALYSIS RESULT	PENETRATION PATTERN	MAX ATTACHMENT SPACING (IN.)	MAX RAIL OVERHANG(IN.)
ROOF 1	28	Comp Shingle	Unirac Flashkit Pro	2x8 RAFTER @ 32" O.C.	7.1	PASS	STAGGERED	32	10.66667
ROOF 2	37	Comp Shingle	Unirac Flashkit Pro	2x8 RAFTER @ 32" O.C.	7.1	PASS	STAGGERED	32	10.66667
ROOF 3	37	Comp Shingle	Unirac Flashkit Pro	2x8 RAFTER @ 32" O.C.	7.1	PASS	STAGGERED	32	10.66667

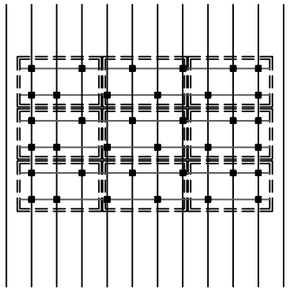
1. CONTRACTOR TO VERIFY FRAMING TYPE AND MAX UNBRACED LENGTH PRIOR TO INSTALLATION. IF THE ABOVE INFORMATION DOES NOT MATCH FIELD CONDITIONS, NOTIFY ENGINEER OF RECORD IMMEDIATELY.
2. WHERE COLLAR TIES OR RAFTER SUPPORTS EXIST, CONTRACTOR SHALL USE RAFTERS WITH COLLAR TIES AS ATTACHMENT POINTS.
3. MAX RAIL OVERHANG APPLICABLE FOR RAILED ATTACHMENT INSTALLATIONS.

1



STACKED DETAIL

For Illustration purposes only



STAGGERED DETAIL

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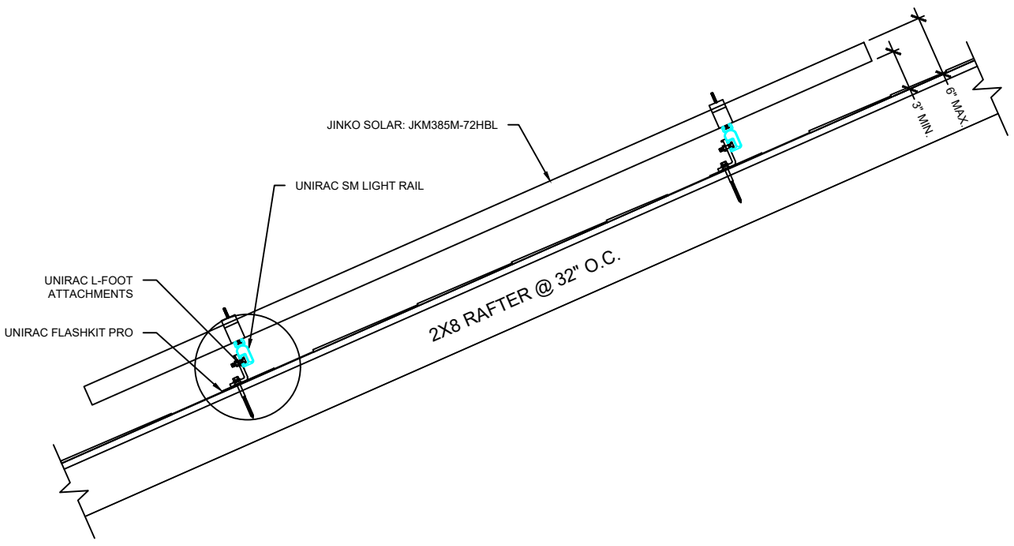
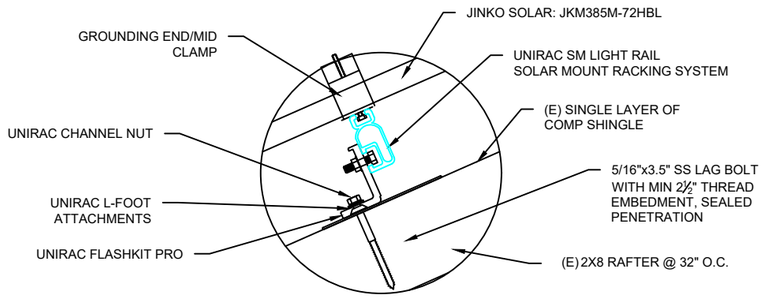


SOLAR PV ARRAY SECTION VIEW

Scale: NTS



ATTACHMENT DETAIL

Scale: NTS

Structural Only

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INVERTER: SOLAREDGE SE5000H-USRGM
[SI1]

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freedom FOREVER

FREEDOM FOREVER LLC
43445 BUSINESS PARK DR #110, TEMECULA, CA 92590
Tel: (800) 385-1075

GREG ALBRIGHT

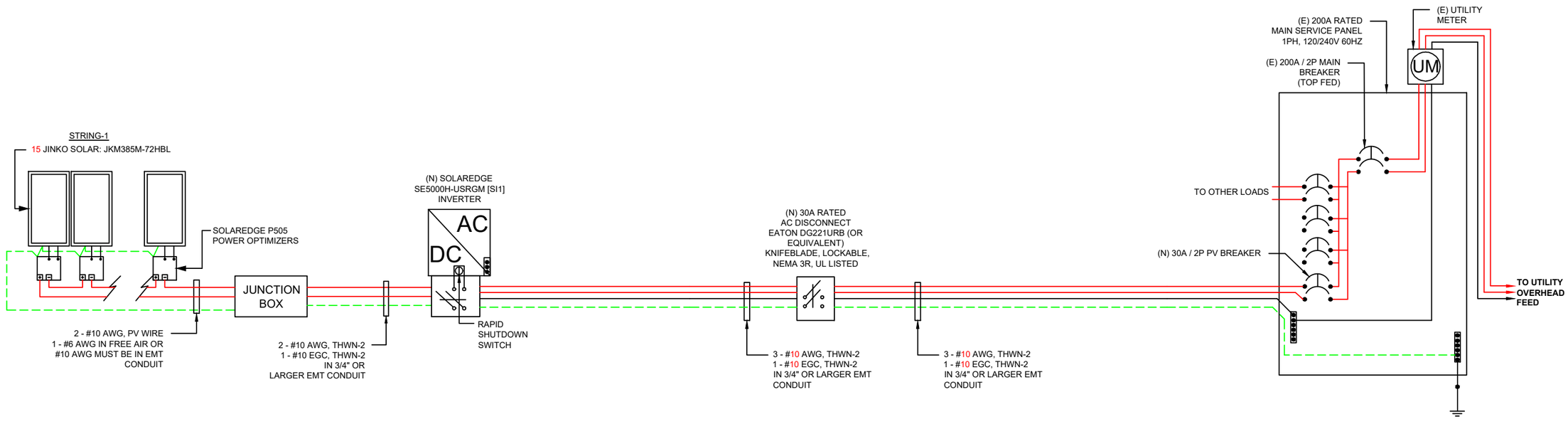
CONTRACTOR LICENSE:
ELECTRICAL CONTRACTOR 0512C

MOUNTING DETAILS

JOB NO:	DATE:	DESIGNED BY:	SHEET:
369950	11/13/2023	S.G.	PV-3

BACKFEED BREAKER SIZING						
MAX. CONTINUOUS OUTPUT 21.00A @ 240V						
21.00	X	1.25	=	26.25AMPS		30A BREAKER - OK
SEE 705.12 OF 2023 NEC						
200	X	1.20	=	240		
240	-	200	=	40A ALLOWABLE BACKFEED		

PV SYSTEM
5.775 kW-DC
5.000 kW-AC



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THREE LINE DIAGRAM

JOB NO:	DATE:	DESIGNED BY:	SHEET:
369950	11/13/2023	S.G.	PV-4

WIRE SCHEDULE												
RACEWAY #	EQUIPMENT				CONDUCTOR QTY.	AWG WIRE SIZE	STARTING ALLOWABLE AMPACITY @ 90°C 310.15(B)(16)	STARTING CURRENT APPLIED TO CONDUCTORS IN RACEWAY	TEMPERATURE CORRECTION FACTOR 310.15(B)(2)(a)	ADJUSTMENT FACTOR FOR MORE THAN 3 CONDUCTORS 310.15(B)(3)(a)	ADJUSTED CONDUCTOR AMPACITY @ 90°C	MAXIMUM CURRENT APPLIED TO CONDUCTORS IN RACEWAY
1	DC	MODULE	TO	OPTIMIZER	2	10	40	12.40	0.91	1	36.40	15.50
2	DC	OPTIMIZER	TO	JUNCTION BOX	2	10	40	15.00	0.91	1	36.40	18.75
3	DC	JUNCTION BOX	TO	INVERTER	2	10	40	15.00	0.91	1	36.40	18.75
4	AC	INVERTER	TO	AC DISCONNECT	3	10	40	21.00	0.91	1	36.40	26.25
5	AC	AC DISCONNECT	TO	POI	3	10	40	21.00	0.91	1	36.40	26.25

CONDUCTOR AMPACITY CALCULATIONS IN ACCORDANCE WITH NEC 690.8.

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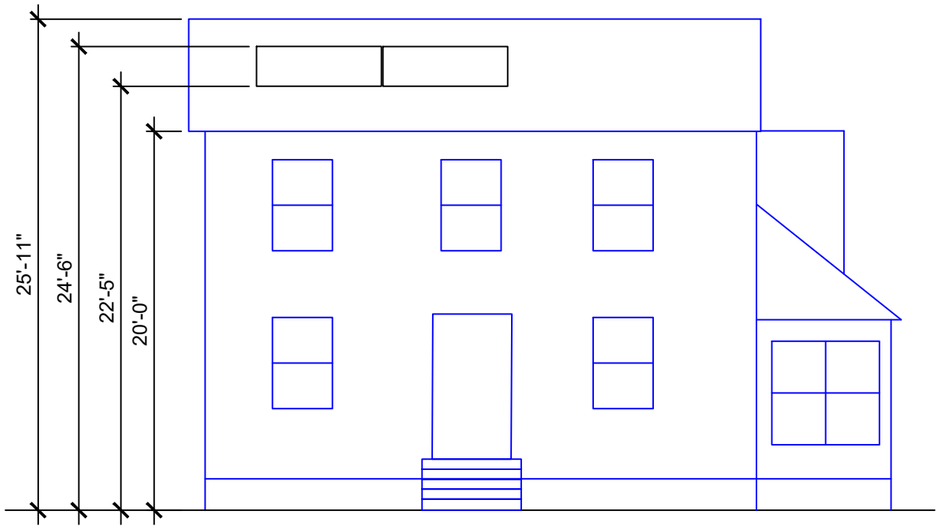
CONDUCTOR CALCULATIONS

JOB NO:	DATE:	DESIGNED BY:	SHEET:
369950	11/13/2023	S.G.	PV-5



FRONT OF HOUSE ELEVATION

BACK OF HOUSE ELEVATION

2

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BUILDING ELEVATION

JOB NO:	DATE:	DESIGNED BY:	SHEET:
369950	11/13/2023	S.G.	PV-5C

OCPD SIZES:

30A BREAKER

SERVICE LIST:

NONE

MATERIAL LIST:

QTY.	PART	PART #	DESCRIPTION
15	MODULES	PV-118-385	JINKO SOLAR: JKM385M-72HBL
15	OPTIMIZERS	OPT-130-505	SOLAREDGE P505 POWER OPTIMIZER - FRAME MOUNTED MODULE ADD-ON
1	JUNCTION BOX	RAC-261-527	600VDC NEMA 3R UL LISTED JUNCTION BOX
2	ELECTRICAL ACCESSORIES	EA-350-326	STAUBLI / MULTI-CONTACT MC4 CONNECTORS (FEMALE)
2	EQUIPMENT ACCESSORIES	EA-350-327	STAUBLI / MULTI-CONTACT MC4 CONNECTORS (MALE)
1	INVERTERS	INV-120-508	SE5000H-US [SI1] RGM 240V INVERTER UL1741 SA CERTIFIED INTEGRATED ARC FAULT PROTECTION AND RAPID SHUTDOWN
1	MONITORING EQUIPMENT	ME-180-502	SOLAREDGE CELL MODEM
1	DISCONNECTS	EE-321-030	30A RATED 240VAC NEMA 3R UL LISTED
41	FITTINGS/ANCHORS	RAC-241-250	UNIRAC: FLASHKIT PRO
15	RAILS	RAC-211-100	UNIRAC SM LIGHT RAIL 168 INCH (TOTAL 198 FEET NEEDED)
15	FITTINGS/ANCHORS	RAC-261-517	BND T-BOLT AND NUT SS
16	ENDS/MIDS	RAC-221-101	SM MIDCLAMP PRO DRK
16	ENDS/MIDS	RAC-221-209	SM ENDCLAMP PRO W/ END CLAMP
6	FITTINGS/ANCHORS	RAC-261-600	BND SPLICE BAR PRO SERIES MILL
16	FITTINGS/ANCHORS	RAC-261-510	MICRO MNT BND TBOLT SS
5	RAILS	RAC-211-209-NS	E-BOSS CONDUIT MOUNT COMP KIT
9	RAILS	RAC-211-200	E-BOSS RAIL TRAY
3	RAILS	RAC-211-206	E-BOSS BRIDGE TRAY
5	RAILS	RAC-211-207	E-BOSS BRIDGE CLIPS
30	FITTINGS/ANCHORS	RAC-260-300	BURNDY GROUND WEEB-LUG
26	FOOTINGS	RAC-241-100	UNIRAC L-FOOT SERRATED W/T-BOLT CLEAR (KIT)

MAIN PHOTOVOLTAIC SYSTEM DISCONNECT

690.13(B)

DO NOT DISCONNECT UNDER LOAD

NEC 690.15 (B) & NEC 690.33(D)(2)

⚠ WARNING

SINGLE 120-VOLT SUPPLY
DO NOT CONNECT
MULTIWIRE BRANCH CIRCUITS

NEC 710.15(C) & 692.9 (C)

⚠ WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

NEC 705.12(D) & NEC 690.59

⚠ WARNING

TURN OFF PHOTOVOLTAIC AC DISCONNECT PRIOR TO WORKING INSIDE PANEL

NEC 110.27(C) & OSHA 1910.145(F)(7)

⚠ WARNING

ELECTRICAL SHOCK HAZARD

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

706.15(C)(4) & 690.13(B)

⚠ WARNING

THIS EQUIPMENT FED BY MULTIPLE SOURCES:
TOTAL RATING OF ALL OVERCURRENT DEVICES EXCLUDING MAIN POWER SUPPLY SHALL NOT EXCEED AMPACITY OF BUSBAR

NEC 705.12(B)(3)(3)

⚠ WARNING

THE DISCONNECTION OF THE GROUNDED CONDUCTOR(S) MAY RESULT IN OVERVOLTAGE ON THE EQUIPMENT

NEC 690.31(E)

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

690.56(C)(3)

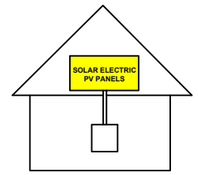
M

AC

INVERTER

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

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



IFC 605.11.3.1(1) & 690.56(C)

⚠ CAUTION

PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

NEC 705.12(D) & NEC 690.59

⚠ WARNING

POWER SOURCE OUTPUT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE.

NEC 705.12(C) & NEC 690.59

⚠ WARNING

ARC FLASH AND SHOCK HAZARD
APPROPRIATE PPE REQUIRED

24 INCH FLASH HAZARD BOUNDARY
3 CAL/CM^2 FLASH HAZARD AT 18 INCHES
480 VAC SHOCK HAZARD WHEN COVER IS REMOVED
42 INCH LIMITED APPROACH
12 INCH RESTRICTED APPROACH - 500 V CLASS 00 GLOVES
1 INCH PROHIBITED APPROACH - 500 V CLASS 00 GLOVES

LOCATION: 180 NEW CASTLE AVE,PORTSMOUTH, NH 03801

NEC 706.15(C) AND NEC 110.16

PHOTOVOLTAIC AC DISCONNECT

NEC 690.13(B)

PHOTOVOLTAIC AC DISCONNECT

RATED AC OUTPUT CURRENT: 21.00A
NOMINAL OPERATING AC VOLTAGE: 240V

NEC 690.54

SOLAR PV DC CIRCUIT

EVERY 10' ON CONDUIT AND ENCLOSURES
NEC 690.31

PHOTOVOLTAIC POWER SOURCE

EVERY 10' ON CONDUIT AND ENCLOSURES
NEC 690.31(D)(2)

MAXIMUM VOLTAGE	480	V
MAXIMUM CIRCUIT CURRENT	13.5	A
MAX DC-DC CONVERTER OUTPUT CURRENT	15	A

DC

J/B

PHOTOVOLTAIC DC DISCONNECT

NEC 690.13(B)

MAXIMUM DC VOLTAGE OF PV SYSTEM

NEC 690.53

⚠ WARNING

ELECTRICAL SHOCK HAZARD

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

DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR MODULES ARE EXPOSED TO SUNLIGHT

706.15(C)(4) & 690.13(B)

⚠ WARNING

ELECTRICAL SHOCK HAZARD

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

706.15(C)(4) & 690.13(B)

⚠ WARNING

TURN OFF PHOTOVOLTAIC AC DISCONNECT PRIOR TO WORKING INSIDE PANEL

NEC 110.27(C) & OSHA 1910.145(F)(7)

ARRAY

NEC 690.31(G)(3) & (4)

NOTES:

1. NEC ARTICLES 690 AND 705 AND IRC SECTION R324 MARKINGS SHOWN HEREON.
2. ALL MARKING SHALL CONSIST OF THE FOLLOWING:
   - A. UV RESISTANT SIGN MATERIAL WITH ENGRAVED OR MACHINE PRINTED LETTERS OR ELECTRO-PLATING.
   - B. RED BACKGROUND COLOR WHITE TEXT AND LINE WORK.
   - C. ARIAL FONT.
3. ALL SIGNS SHALL BE SIZED APPROPRIATELY AND PLACED IN THE LOCATIONS SPECIFIED. SIGNAGE CANNOT BE HAND-WRITTEN.
4. SIGNS SHALL BE ATTACHED TO THE SERVICE EQUIPMENT WITH POP-RIVETS OR SCREWS

CLIENT:
ANNE MOODEY
180 NEW CASTLE AVE, PORTSMOUTH, NH 03801
AHJ: CITY OF PORTSMOUTH (NH)
UTILITY: EVERSOURCE ENERGY (EASTERN MA)
METER: 72329222
APN: PRSM-000101-000023
PHONE: (603) 361-7031
EMAIL: AMOODEY1@GMAIL.COM

SYSTEM:
SYSTEM SIZE (DC): 15 X 385 = 5.775 kW
SYSTEM SIZE (AC): 5.000 kW @ 240V
MODULES: 15 X JINKO SOLAR: JKM385M-72HBL
OPTIMIZERS: 15 X SOLAREDGE P505
INVERTER: SOLAREDGE SE5000H-USRGM
[SI1]

REVISIONS		
NO.	REVISED BY	DATE
1	S.K.	11/8/2023
2	S.G.	11/13/2023
-	-	-

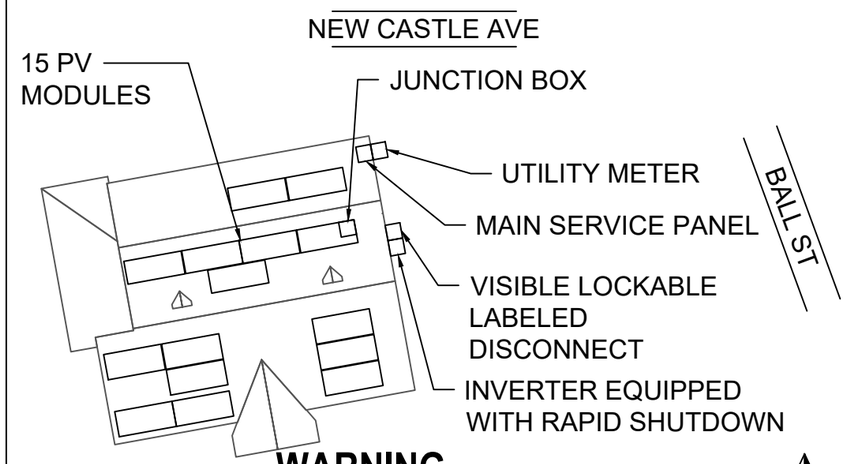
freedom FOREVER
FREEDOM FOREVER LLC
43445 BUSINESS PARK DR #110, TEMECULA, CA 92590
Tel: (800) 385-1075
GREG ALBRIGHT
CONTRACTOR LICENSE:
ELECTRICAL CONTRACTOR 0512C

LABELS

JOB NO:	DATE:	DESIGNED BY:	SHEET:
369950	11/13/2023	S.G.	PV-7

CAUTION:

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



WARNING

TURN OFF PHOTOVOLTAIC AC DISCONNECT PRIOR TO WORKING INSIDE PANEL

1

NOTES:

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2. ALL MARKING SHALL CONSIST OF THE FOLLOWING:
   - A. UV RESISTANT SIGN MATERIAL WITH ENGRAVED OR MACHINE PRINTED LETTERS OR ELECTRO-PLATING.
   - B. RED BACKGROUND COLOR WHITE TEXT AND LINE WORK.
   - C. AERIAL FONT.
3. ALL SIGNS SHALL BE SIZED APPROPRIATELY AND PLACED IN THE LOCATIONS SPECIFIED. SIGNAGE CANNOT BE HAND-WRITTEN.
4. SIGNS SHALL BE ATTACHED TO THE SERVICE EQUIPMENT WITH POP-RIVETS OR SCREWS.

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[SI1]

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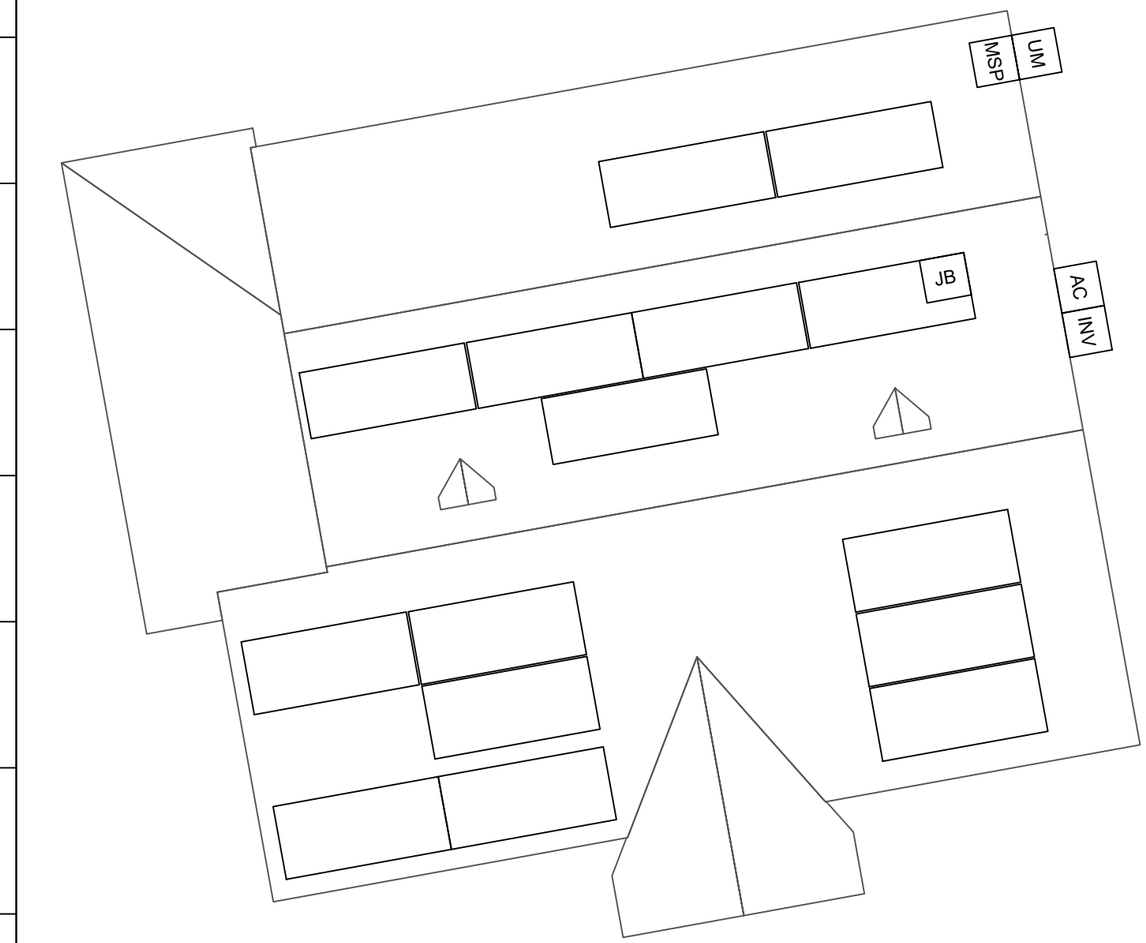
SITE PLACARD

JOB NO:	DATE:	DESIGNED BY:	SHEET:
369950	11/13/2023	S.G.	PV-7A

SOLAREDGE OPTIMIZER CHART

	1-10	11-20	21-30	31-40	41-50	51-60
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						



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OPTIMIZER CHART

JOB NO:	DATE:	DESIGNED BY:	SHEET:
369950	11/13/2023	S.G.	PV-8

SAFETY PLAN

INSTRUCTIONS:

1. USE SYMBOLS IN KEY TO MARK UP THIS SHEET.
2. SAFETY PLAN MUST BE MARKED BEFORE JOB STARTS AS PART OF THE PRE-PLAN
3. DOCUMENT ALL ADDITIONAL HAZARDS ON THIS PAGE & MAKE NOTES ON THE JHA SHEET

INCIDENT REPORTING:

INJURIES - CALL INJURY HOTLINE

(855) 400-7233

**If injury is life threatening, call 911 first THEN the Injury Hotline*

NON-INJURIES - USE MOBILE INCIDENT REPORTING
(Auto, Property Damage, Near Miss)

NEAREST OCCUPATIONAL/INDUSTRIAL CLINIC:

NAME: _____

ADDRESS: _____

NEAREST HOSPITAL:

NAME: _____

ADDRESS: _____

SAFETY COACH CONTACT INFORMATION:

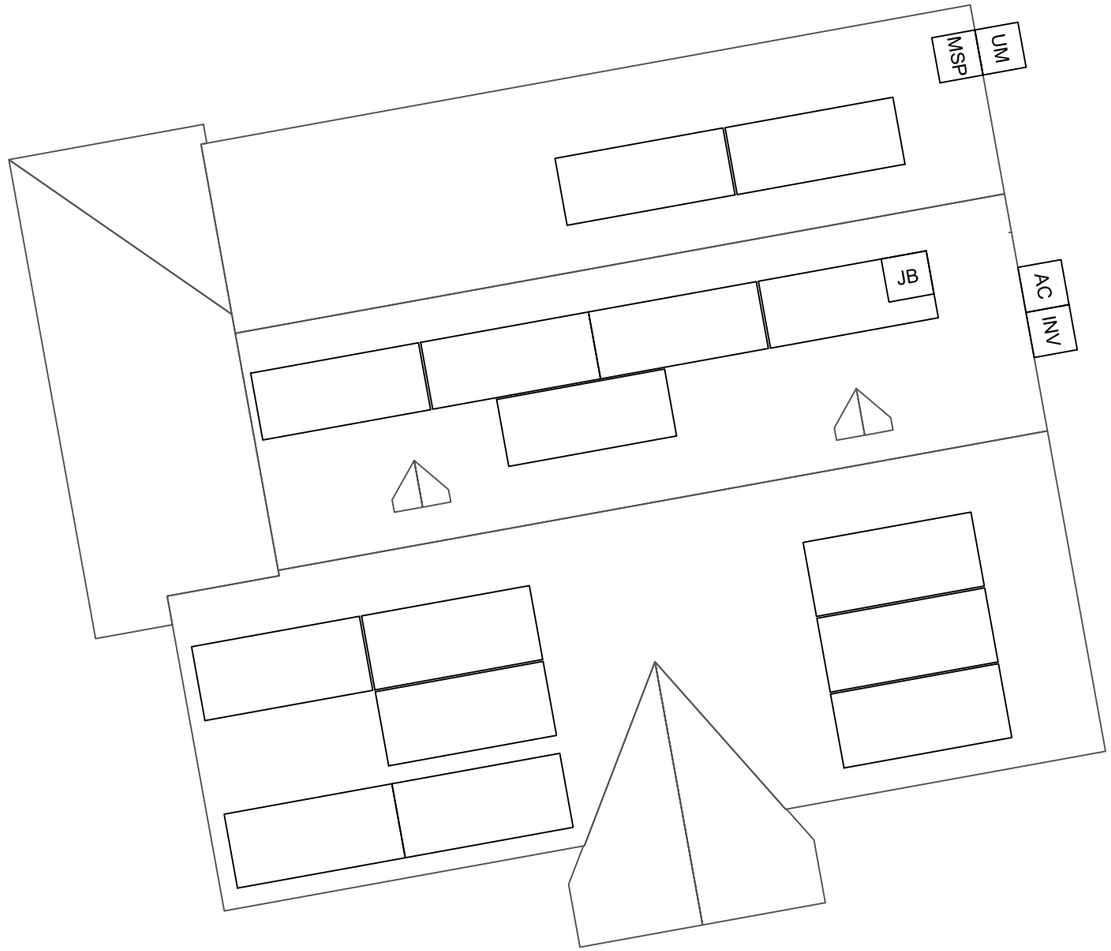
NAME: _____

PHONE NUMBER: _____

ALL EMPLOYEES ON SITE SHALL BE MADE AWARE OF THE SAFETY PLAN AND SIGN INDICATING THAT THEY ARE AWARE OF THE HAZARDS ON-SITE AND THE PLAN FOR WORKING SAFELY.

NAME	SIGNATURE
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

DATE: _____ TIME: _____



MARK UP KEY

- (P) PERMANENT ANCHOR
- (T) TEMPORARY ANCHOR
- IL INSTALLER LADDER
- B JUNCTION / COMBINER BOX
- S STUB-OUT
- SKYLIGHT
- NO LADDER ACCESS (STEEP GRADE OR GROUND LEVEL OBSTRUCTIONS)
- RESTRICTED ACCESS
- CONDUIT
- (GAS) GAS SHUT OFF
- (H_2O) WATER SHUT OFF
- (7) SERVICE DROP
- (Z) POWER LINES

BREAK AND WATER LOG

THIS LOG IS TO BE FILLED OUT ANY TIME THE TEMP EXCEEDS **90** DEGREES. THE CREW LEAD AND ROOF LEAD ARE RESPONSIBLE FOR ENSURING THIS IS COMPLETED AND UPLOADED AT THE END OF EVERYDAY WHEN TEMPS EXCEED **90** DEGREES

NAME	0800HRS	0900HRS	1000HRS	1100HRS	1200HRS	1300HRS	1400HRS	1500HRS	1600HRS

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SAFETY PLAN

JOB NO:	DATE:	DESIGNED BY:	SHEET:
369950	11/13/2023	S.G.	PV-9

JOB HAZARD ANALYSIS

Crew leader to fill out all sections below, hold a pre-job safety meeting with all personnel, and upload this completed document and the Safety Plan to Site Capture

Ladder Access

- Ladders must be inspected before each use.
- Extension ladders must be set up on a firm and level surface at a 4-to-1 rise to run angle (or 75 degrees) and the top must be secured to the structure. Extension style ladders placed on uneven, loose or slippery surfaces must additionally have the base firmly anchored or lashed so the base will not slip out.
- Extension ladders must be used with walk-through devices or the ladder must extend 36" above the stepping off point.
- A-frame ladders must only be climbed with the ladder spreader bars locked in the open position; A-frame ladders shall not be climbed while in the closed position (ex, closed and used while leaned against a structure).
- Additional notes:

Mobile Equipment

- Only Qualified operators will operate equipment; operators must maintain a certification on their person for the equipment being operated.
- Type(s) of mobile equipment (Type/Make/Model):
- Qualified operator(s):

Material Handling and Storage

- Materials will be staged/stored in a way that does not present a hazard to client, personnel or public. Materials stored on the roof will be physically protect from failing or sliding off.

Fall Protection

- A site-specific plan for fall prevention and protection is required prior to starting work and must remain onsite at all times until work is complete; a fall rescue plan must be outlined and discussed among the crew prior to work start.
- First-person-Up (FPU) must install their anchor and connect before any other task, including installing other anchors. The Last-Person-Down (LPD) must be the only person on a roof uninstalling fall protection.
- FPCP (name and title):
- FPU and LPD (name and title):

Electrical Safety

- The Electrical Qualified Person (EQP) is required onsite to perform electrical work.
- All electrical work will be performed with equipment in an electrically safe condition (de-energized) unless approval has been granted prior to work.
- Service drops and overhead electrical hazards will be indentified and protected from contact, as neccessary.
- EQP (name and tile):

Public Protection

- The safety of the Client and Public must be maintained at all times.
- The Client and the Public shall be prevented from entering the work zone through the use of barriers and/or signage, as required.
- Company, Client and Public property shall be protected from falling objects.
- Pets (including dogs) shall be secured by their owners prior to work start.
- The Client should not leave pets, family members, or others in charge or care of Employees, Contractors, or Temporary Workers.

- Crew leader responsible for communication with the client:
- Client and public is excluded from work area by barricades (N/A, Yes, No):

Training and Pre-Job Safety Briefing

- All employees onsite shall be made aware of the specific hazards of this project and review this HJA during a pre-job briefing, and their signature indicates awareness of site conditions and the plan to eliminate any hazards identified prior to and during the project.

- Crew leader (name/title):
- Crew member (name/title):
- Crew member (name/title):
- Crew member (name/title):
- Crew member (name/title):
- Crew member (name/title):

Airborne Contaminants:

- Asbestos-containing (Transite) piping (ACP) - Do not disturb (move, drill, cut fracture, etc.)
- Asbestos-containing thermal insulation (ACI) and Asbestos-containing duct wrapping (ACW) - do not disturb, no attic or crawlspace access is allowed if work to be performed could cause exposure to personnel, client or public.

- If yes, list specific tasks and protection in place:

Weather and Environment

- The site supervisor shall forecast the weather conditions at the job site, prior to crew arrival, in order to mitigate any hazards associated with inclement weather (heat, cold, wind, rain, etc.)
- The site supervisor will utilized a portable wind meter (anemometer) to verify actual onsite wind conditions, by checking at the ground and on any elevated work surface (ex, rooftop) prior to work start, at midday and prior to solar panel staging on a roof.
- Elevated work involving the moving or maneuvering of solar panels shall cease at 25mph (sustained wind) until wind subsides.
- Forecasted weather maximum temp (degrees f):

Heat Related Illness Prevention

- Employees shall have access to potable drinking water that is fresh, pure, and suitably cool. The water shall be located as close as practicable to the areas where employees are working. Water shall be supplied in sufficient quantity at the beginning of the work shift to provide at least one quart per employee per hour for drinking for the entire shift. Employees may begin the shift with smaller quantities of water if they identify the location and have effective means for replenishment during the shift to allow employees to drink on quart or more per hour. The frequent drinking of water shall be encouraged.
- Shade shall be present when temperature exceeds 80 degrees Fahrenheit. When the outdoor temperature in the work exceeds 80 degrees Fahrenheit, employees shall have and maintain one or more areas with shade at all times.
- New employees must be acclimatized. New employees will be monitored by their Crew Leader (site supervisor) for the first two (2) weeks of employment or longer when necessary.
- Employees will be allowed and encouraged to implement scheduled breaks during each shift. Employees must take cool-down breaks in the shade any time they feel the need to do so to protect them from overheating. Supervisors are REQUIRED to allow employees any break period they need during high heat conditions.
- Cool Vests are encouraged for all employees at all times during periods of high heat.
- Identify the location of the closet Occupational/Industrial Clinic or Hospital in case a crew member becomes ill.

What is the specific plan to provide and replenish sufficient water for all employees on site?

- If offsite replenish is necessary, where will you go to replenish water (location/address):
- Who will replenish the drinking water (name):

Restroom facilities

- Employees shall have access to restroom facilities with hand-washing stations. Use of onsite restroom is at the client's discretion (location is annotated below). If client does not give permission, location of suitable restroom facilities with hand-washing stations offsite will be provided. The onsite supervisor will identify location and make arrangements to ensure all employees have access at any point.
- Restroom facilities will be (circle one): Onsite - Offsite
- If Offsite, add location name and address:

Incident Reporting Procedure

- Contact your Site Supervisor
  - Name:
  - Phone:
- Contact your Manager
  - Name:
  - Phone:
- Contact your Site Supervisor
  - Name:
  - Phone:

With: Your full name, phone number, office location, brief description of what happen and when.

NOTE ADDITIONAL HAZARDS NOT ADDRESSED ABOVE
(add as many as necessary by using additional sheets)

Define the Hazard:	Method/steps to prevent incident:
Define the Hazard:	Method/steps to prevent incident:
Define the Hazard:	Method/steps to prevent incident:
Define the Hazard:	Method/steps to prevent incident:

CLIENT:
ANNE MOODEY
180 NEW CASTLE AVE, PORTSMOUTH, NH 03801
AHJ: CITY OF PORTSMOUTH (NH)
UTILITY: EVERSOURCE ENERGY (EASTERN MA)
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SAFETY PLAN

JOB NO:	DATE:	DESIGNED BY:	SHEET:
369950	11/13/2023	S.G.	PV-10

FOR INSTALLATION REFERENCE ONLY

SCAN QR CODE TO ACCESS REFERENCE LINK

FREEDOM REFERENCES

INSTALL HOTLINE

PV INSTALLATION REFERENCES

ENPHASE

SOLAREDGE

TESLA

BATTERY INSTALLATION REFERENCES

Enphase Storage Systems

SOLAREDGE Storage Systems

TESLA Storage Systems

NON-BACKUP Battery Systems

Misc. Quick Guide

V1.4

EAGLE 72HM G2 Black

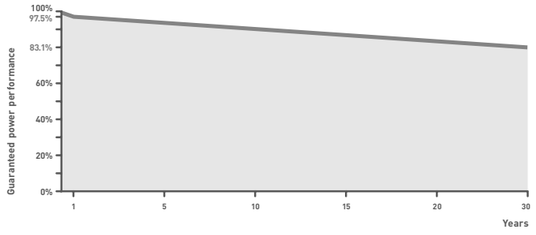
380-400 WATT • HALF CELL MONO PERC MODULE

Positive power tolerance of 0~+3%

- NYSE-listed since 2010, Bloomberg Tier 1 manufacturer
- Best-selling module globally for last 4 years
- Top performance in the strictest 3rd party labs
- 99.9% on-time delivery to the installer
- Automated manufacturing utilizing artificial intelligence
- Vertically integrated, tight controls on quality
- Premium solar panel factories in USA and Malaysia

LINEAR PERFORMANCE WARRANTY

25-Year Performance Warranty



Nomenclature:

JKM400M-72HBL

Code	Cell	Code	Backsheet	Code	Cell
null	Full	null	White	null	Normal
H	Half	B	Black	L	Diamond

- ISO9001:2008 Quality Standards
- ISO14001:2004 Environmental Standards
- IEC61215, IEC61730 certified products
- OHSAS18001 Occupational Health & Safety Standards
- UL1703 certified products

KEY FEATURES

Diamond Half Cell Technology
World-record breaking efficient mono PERC half cut solar cells deliver high power in a small footprint.

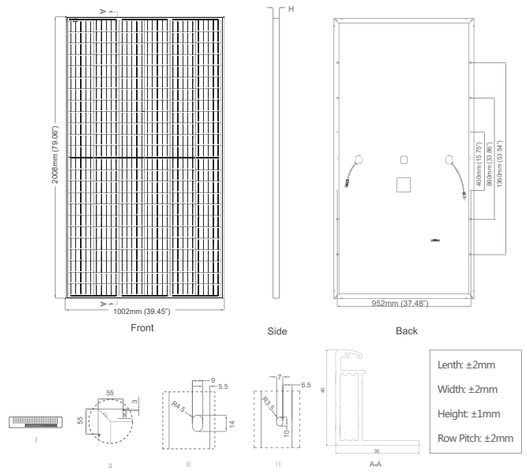
Designed for Long Life
Uses the same DuPont protective film as the Space Station, Mars Lander, and jetliners. 25-year warranty.

Shade Tolerant
Twin array design allows continued performance even with shading by trees or debris.

Power Boost in Cloudy Conditions
A special film diffuses light, boosting performance even with shading by trees or debris.

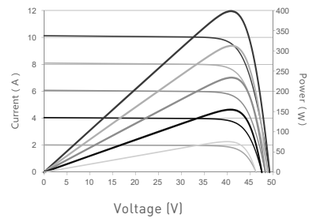
Protected Against All Environments
Certified to withstand humidity, heat, rain, marine environments, wind, hailstorms, and packed snow.

ENGINEERING DRAWINGS

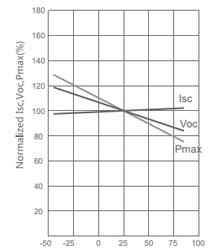


ELECTRICAL PERFORMANCE & TEMPERATURE DEPENDENCE

Current-Voltage & Power-Voltage Curves (400W)



Temperature Dependence of Isc, Voc, Pmax



MECHANICAL CHARACTERISTICS

Cells	Mono PERC Diamond Cell (158.75x158.75mm)
No. of Cells	144 (6x24)
Dimensions	2008x1002x40mm (79.06x39.45x1.57in)
Weight	22.5kg (49.6lbs)
Front Glass	3.2mm, Anti-Reflection Coating High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminum Alloy
Junction Box	IP67 Rated
Output Cables	12AWG, 2286mm (90in) or Customized Length
Fire Type	Type 1
Pressure Rating	5400Pa (Snow) & 2400Pa (Wind)
Connector	MC4

TEMPERATURE CHARACTERISTICS

Temperature Coefficients of Pmax	-0.35%/°C
Temperature Coefficients of Voc	-0.29%/°C
Temperature Coefficients of Isc	0.048%/°C
Nominal Operating Cell Temperature (NOCT)	45±2°C

MAXIMUM RATINGS

Operating Temperature (°C)	-40°C~+85°C
Maximum System Voltage	1000VDC (UL/IEC)
Maximum Series Fuse Rating	20A

PACKAGING CONFIGURATION

(Two pallets = One stack)

27pcs/pallets, 54pcs/stack, 594pcs/40' HQ Container

ELECTRICAL CHARACTERISTICS

Module Type	JKM380M-72HBL		JKM385M-72HBL		JKM390M-72HBL		JKM395M-72HBL		JKM400M-72HBL	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax)	380Wp	286Wp	385Wp	290Wp	390Wp	294Wp	395Wp	298Wp	400Wp	302Wp
Maximum Power Voltage (Vmp)	40.5V	38.6V	40.8V	38.8V	41.1V	39.1V	41.4V	39.3V	41.7V	39.6V
Maximum Power Current (Imp)	9.39A	7.42A	9.44A	7.48A	9.49A	7.54A	9.55A	7.60A	9.60A	7.66A
Open-circuit Voltage (Voc)	48.9V	47.5V	49.1V	47.7V	49.3V	48.0V	49.5V	48.2V	49.8V	48.5V
Short-circuit Current (Isc)	9.75A	7.88A	9.92A	7.95A	10.12A	8.02A	10.23A	8.09A	10.36A	8.16A
Module Efficiency STC (%)	18.89%		19.14%		19.38%		19.63%		19.88%	

***STC:** Irradiance 1000W/m² Cell Temperature 25°C AM = 1.5
NOCT: Irradiance 800W/m² Ambient Temperature 20°C AM = 1.5 Wind Speed 1m/s

*Power measurement tolerance: +/- 3%

JKM380-400M-72HBL-A3.1-US

BUILDING YOUR TRUST IN SOLAR. JINKOSOLAR.US

Power Optimizer

For North America

S440, S500

POWER OPTIMIZER

PV power optimization at the module level

- Specifically designed to work with SolarEdge residential inverters
- Detects abnormal PV connector behavior, preventing potential safety issues*
- Module-level voltage shutdown for installer and firefighter safety
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch loss, from manufacturing tolerance to partial shading
- Faster installations with simplified cable management and easy assembly using a single bolt
- Flexible system design for maximum space utilization
- Compatible with bifacial PV modules
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)

* Expected availability in 2022

solaredge.com

solaredge

Power Optimizer

For North America

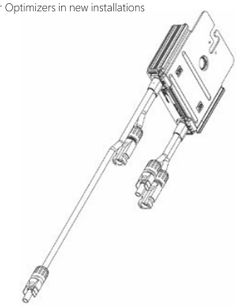
S440, S500

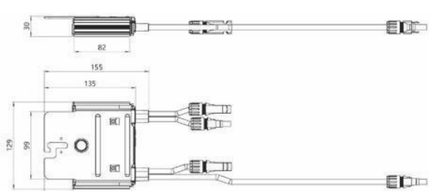
	S440	S500	Unit
INPUT			
Rated Input DC Power(1)	440	500	W
Absolute Maximum Input Voltage (Voc)	60		Vdc
MPPT Operating Range	8 - 60		Vdc
Maximum Short Circuit Current (Isc) of Connected PV Module	14.5	15	Adc
Maximum Efficiency	99.5		%
Weighted Efficiency	98.6		%
Overvoltage Category	II		
OUTPUT DURING OPERATION			
Maximum Output Current	15		Adc
Maximum Output Voltage	60		Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM INVERTER OR INVERTER OFF)			
Safety Output Voltage per Power Optimizer	1+/-0.1		Vdc
STANDARD COMPLIANCE			
Photovoltaic Rapid Shutdown System	NEC 2014, 2017 & 2020		
EMC	FCC Part 15 Class B, IEC61000-6-2, IEC61000-6-3		
Safety	IEC62109-1 (class II safety), UL1741		
Material	UL94 V-0, UV Resistant		
RoHS	Yes		
Fire Safety	VDE-AR-E 2100-712:2013-05		
INSTALLATION SPECIFICATIONS			
Maximum Allowed System Voltage	1000		Vdc
Dimensions (W x L x H)	129 x 153 x 30 / 5.07 x 6.02 x 1.18		mm / in
Weight (including cables)	655 / 1.5		gr / lb
Input Connector	MC4(2)		
Input Wire Length	0.1 / 0.32		m / ft
Output Connector	MC4		
Output Wire Length	(+) 2.3, (-) 0.10 / (+) 7.54, (-) 0.32		m / ft
Operating Temperature Range(3)	-40 to +85		°C
Protection Rating	IP68 / Type6B		
Relative Humidity	0 - 100		%

(1) Rated power of the module at STC will not exceed the power optimizer Rated Input DC Power. Modules with up to +5% power tolerance are allowed
(2) For other connector types please contact SolarEdge
(3) For ambient temperature above +70°C / +158°F power de-rating is applied. Refer to Power Optimizers Temperature De-Rating Technical Note for more details

PV System Design Using a SolarEdge Inverter		Single Phase HD-Wave	Three Phase for 208V grid	Three Phase for 277/480V grid	
Minimum String Length (Power Optimizers)	S440, S500	8	14	18	
Maximum String Length (Power Optimizers)		25		50(4)	
Maximum Nominal Power per String		5700 (6000 with SE7600-US-SE11400-U)	6000	12750	W
Maximum Allowed Connected Power per String (5) (Permitted only when the difference in connected power between strings is 1,000W or less)		Refer to Footnote 5	One String 7200W	15,000W	
			Two strings or more 7800W		
Parallel Strings of Different Lengths or Orientations		Y			

(4) A string with more than 30 optimizers does not meet NEC rapid shutdown requirements; safety voltage will be above the 30V requirement
(5) If the inverters rated AC power ≤ maximum nominal power per string, then the maximum power per string will be able to reach up to the inverters maximum input DC power. Refer to: https://www.solaredge.com/sites/default/files/se-power-optimizer-single-string-design-application-note.pdf
(6) It is not allowed to mix S-series and P-series Power Optimizers in new installations





Intertek

RoHS

Single Phase Inverter with HD-Wave Technology

for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US /
SE7600H-US / SE10000H-US / SE11400H-US

INVERTERS

12-25 YEAR WARRANTY

Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking 99% weighted efficiency
- Quick and easy inverter commissioning directly from a smartphone using the SolarEdge SetApp
- Fixed voltage inverter for longer strings
- Integrated arc fault protection and rapid shutdown for NEC 2014, NEC 2017 and NEC 2020 per article 690.11 and 690.12
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- Small, lightweight, and easy to install both outdoors or indoors
- Built-in module-level monitoring
- Optional: Faster installations with built-in consumption metering (1% accuracy) and production revenue grade metering (0.5% accuracy, ANSI C12.20)

solaredge.com

solaredge

Single Phase Inverter with HD-Wave Technology

for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US/
SE7600H-US / SE10000H-US / SE11400H-US

MODEL NUMBER	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
APPLICABLE TO INVERTERS WITH PART NUMBER	SEXXXXH-XXXXXBXX4							
OUTPUT								
Rated AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
Maximum AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
AC Output Voltage Min.-Nom.-Max. (211 - 240 - 264)	✓	✓	✓	✓	✓	✓	✓	Vac
AC Output Voltage Min.-Nom.-Max. (183 - 208 - 229)	-	✓	-	✓	-	-	✓	Vac
AC Frequency (Nominal)	59.3 - 60 - 60.5(1)							Hz
Maximum Continuous Output Current @240V	12.5	16	21	25	32	42	47.5	A
Maximum Continuous Output Current @208V	-	16	-	24	-	-	48.5	A
Power Factor	1, Adjustable - 0.85 to 0.85							
GFDI Threshold	1							A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes							
INPUT								
Maximum DC Power @240V	4650	5900	7750	9300	11800	15500	17650	W
Maximum DC Power @208V	-	5100	-	7750	-	-	15500	W
Transformer-less, Ungrounded	Yes							
Maximum Input Voltage	480							Vdc
Nominal DC Input Voltage	380				400			Vdc
Maximum Input Current @240V(2)	8.5	10.5	13.5	16.5	20	27	30.5	Adc
Maximum Input Current @208V(2)	-	9	-	13.5	-	-	27	Adc
Max. Input Short Circuit Current	45							Adc
Reverse-Polarity Protection	Yes							
Ground-Fault Isolation Detection	600kΩ Sensitivity							
Maximum Inverter Efficiency	99	99.2						%
CEC Weighted Efficiency	99						99 @ 240V 98.5 @ 208V	%
Nighttime Power Consumption	< 2.5							W

(1) For other regional settings please contact SolarEdge support
(2) A higher current source may be used; the inverter will limit its input current to the values stated

/ Single Phase Inverter with HD-Wave Technology

for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US/
SE7600H-US / SE10000H-US / SE11400H-US

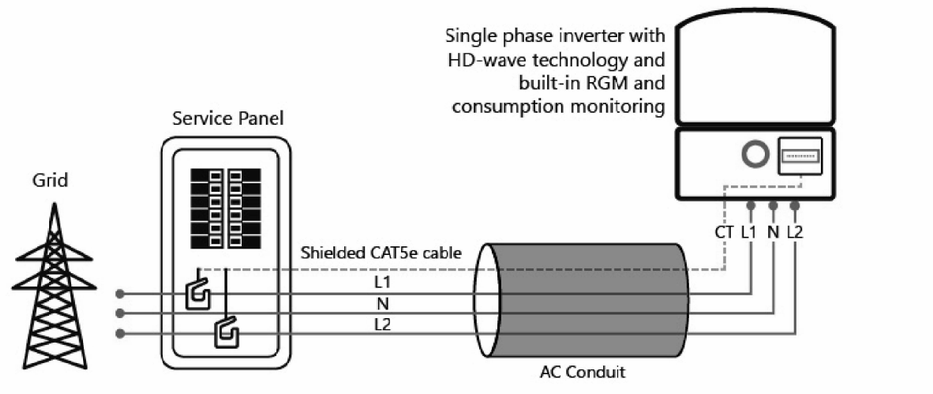
MODEL NUMBER	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
ADDITIONAL FEATURES								
Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional), Cellular (optional)							
Revenue Grade Metering, ANSI C12.20	Optional[3]							
Consumption metering								
Inverter Commissioning	With the SetApp mobile application using Built-in Wi-Fi Access Point for Local Connection							
Rapid Shutdown - NEC 2014, NEC 2017 and NEC 2020, 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect							
STANDARD COMPLIANCE								
Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07							
Grid Connection Standards	IEEE1547, Rule 21, Rule 14 (HI)							
Emissions	FCC Part 15 Class B							
INSTALLATION SPECIFICATIONS								
AC Output Conduit Size / AWG Range	1" Maximum / 14-6 AWG					1" Maximum /14-4 AWG		
DC Input Conduit Size / # of Strings / AWG Range	1" Maximum / 1-2 strings / 14-6 AWG					1" Maximum / 1-3 strings / 14-6 AWG		
Dimensions with Safety Switch (HxWxD)	17.7 x 14.6 x 6.8 / 450 x 370 x 174					21.3 x 14.6 x 7.3 / 540 x 370 x 185		in / mm
Weight with Safety Switch	22 / 10		25.1 / 11.4		26.2 / 11.9	38.8 / 17.6		lb / kg
Noise	< 25				<50			dBA
Cooling	Natural Convection							
Operating Temperature Range	-40 to +140 / -40 to +60[4]							°F / °C
Protection Rating	NEMA 4X (Inverter with Safety Switch)							

(3) Inverter with Revenue Grade Meter P/N: SExxxxH-US000BNC4; Inverter with Revenue Grade Production and Consumption Meter P/N: SExxxxH-US000BNI4 . For consumption metering, current transformers should be ordered separately: SEACT0750-200NA-20 or SEACT0750-400NA-20. 20 units per box

(4) Full power up to at least 50°C / 122°F; for power de-rating information refer to: https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf

How to Enable Consumption Monitoring

By simply wiring current transformers through the inverter's existing AC conduits and connecting them to the service panel, homeowners will gain full insight into their household energy usage helping them to avoid high electricity bills



RoHS

Eaton DG221URB

Catalog Number: DG221URB

Eaton General duty non-fusible safety switch, single-throw, 30 A, 240 V, NEMA 3R, Rainproof, Painted galvanized steel, Two-pole, Two-wire

General specifications

Product Name Eaton general duty non-fusible safety switch	Catalog Number DG221URB
	UPC 782113120232
Product Length/Depth 6.88 in	Product Height 10.81 in
Product Width 6.38 in	Product Weight 6 lb
Warranty Eaton Selling Policy 25-000, one (1) year from the date of installation of the Product or eighteen (18) months from the date of shipment of the Product, whichever occurs first.	Certifications UL Listed
	Catalog Notes WARNING! Switch is not approved for service entrance unless a neutral kit is installed.

Product specifications

Product Category
General duty safety switch

Enclosure material
Painted galvanized steel

Type
Non-fusible, single-throw

Fuse configuration
Non-fusible

Number of wires
2

Enclosure
NEMA 3R

Voltage rating
240V

Amperage Rating
30A

Number Of Poles
Two-pole

Resources

Catalogs
Eaton's Volume 2—Commercial Distribution

Multimedia
Double Up on Safety

Switching Devices Flex Center

Specifications and datasheets
Eaton Specification Sheet - DG221URB

Eaton Corporation plc
Eaton House
30 Pembroke Road
Dublin 4, Ireland
Eaton.com

Eaton.com/socialmedia

FLASHKIT PRO

UNIRAC®
FEATURING SHED & SEAL TECHNOLOGY

FLASHKIT PRO is the complete attachment solution for composition shingle roofs. Featuring Unirac's patented **SHED & SEAL** technology, a weather proof system which provides the ultimate protection against roof leaks. Kitted in 10 packs for maximum convenience, flashings and hardware are available in Mill or Dark finishes. With **FLASH**KIT pro, you have everything you need for a quick, professional installation.

UNIRAC 25 YEAR FULL-SYSTEM WARRANTY

TRUSTED WATER SEAL FLASHINGS
FEATURING SHED & SEAL TECHNOLOGY

YOUR COMPLETE SOLUTION
Flashings, lags, continuous slot L-Feet and hardware

CONVENIENT 10 PACKS
Packaged for speed and ease of handling

THE COMPLETE ROOF ATTACHMENT SOLUTION

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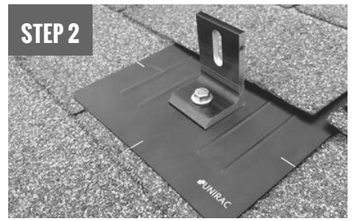
FLASHKIT PRO

INSTALLATION GUIDE

UNIRAC®
FEATURING SHED & SEAL TECHNOLOGY

FLASHKIT PRO IS THE COMPLETE FLASHING AND ATTACHMENT SOLUTION FOR COMPOSITION ROOFS.

INSTALL **FLASH**KIT PRO FLASHING



INSTALL L-FOOT

ATTACH L-FOOT TO RAIL

PRE-INSTALL

- Locate roof rafters and snap chalk lines to mark the installation point for each roof attachment.
- Drill a 7/32" pilot hole at each roof attachment. Fill each pilot hole with sealant.

STEP 1 INSTALL **FLASH**KIT PRO FLASHING

- Add a U-shaped bead of roof sealant to the underside of the flashing with the open side of the U pointing down the roof slope. Slide the aluminum flashing underneath the row of shingles directly up slope from the pilot hole as shown. Align the indicator marks on the lower end of the flashing with the chalk lines on the roof to center the raised hole in the flashing over the pilot hole in the roof. When installed correctly, the flashing will extend under the two courses of shingles above the pilot hole.

STEP 2 INSTALL L-FOOT

- Fasten L-foot and Flashing into place by passing the included lag bolt and pre-installed stainless steel-backed EPDM washer through the L-foot EPDM grommet, and the raised hole in the flashing, into the pilot hole in the roof rafter.
- Drive the lag bolt down until the L-foot is held firmly in place. It is normal for the EPDM on the underside of the stainless steel backed EPDM washer to compress and expand beyond the outside edge of the steel washer when the proper torque is applied.

TIP:

- Use caution to avoid over-torqueing the lag bolt if using an impact driver.
- Repeat Steps 1 and 2 at each roof attachment point.

STEP 3 ATTACH L-FOOT TO RAIL

- Insert the included 3/8"-16 T-bolts into the lower slot on the Rail (sold separately), spacing the bolts to match the spacing between the roof attachments.
- Position the Rail against the L-Foot and insert the threaded end of the T-Bolt through the continuous slot in the L-Foot. Apply anti-seize to bolt threads to prevent galling of the T-bolt and included 3/8" serrated flange nut. Place the 3/8" flange nut on the T-bolt and finger tighten. Repeat STEP 3 until all L-Feet are secured to the Rail with a T-bolt. Adjust the level and height of the Rail and torque each bolt to 30ft-lbs.

FASTER INSTALLATION. 25-YEAR WARRANTY.

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SOLARMOUNT

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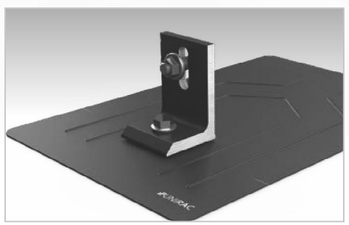
SOLARMOUNT is the professionals' choice for residential PV mounting applications. Every aspect of the system is designed for an easier, faster installation experience. **SOLAR**MOUNT is a complete solution with revolutionary universal clamps, **FLASHKIT** PRO, full system UL 2703 certification and 25-year warranty. Not only is **SOLAR**MOUNT easy to install, but best-in-class aesthetics make it the most attractive on any block!

New & Improved:

THE PROFESSIONALS' CHOICE

With Superior Aesthetics



NOW FEATURING FLASHKIT PRO

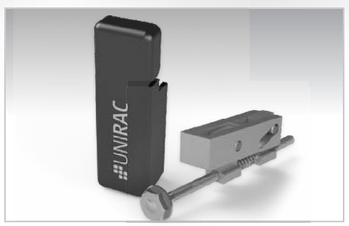
The Complete Roof Attachment Solution

FEATURING SHED & SEAL TECHNOLOGY

NOW WITH UNIVERSAL MIDCLAMPS

Accommodates 30mm-51mm module frames

One tool, one-person installs are here!



REVOLUTIONARY NEW ENDCLAMPS

Concealed design and included End Caps

THE PROFESSIONALS' CHOICE FOR RESIDENTIAL RACKING

BEST INSTALLATION EXPERIENCE • CURB APPEAL • COMPLETE SOLUTION • UNIRAC SUPPORT

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ONE SYSTEM - MANY APPLICATIONS

Quickly set modules flush to the roof on steep pitched roofs. Orient a large variety of modules in Portrait or Landscape. Tilt the system up on flat or low slow roofs. Components available in mill, clear, and dark finishes to optimize your design financials and aesthetics.

BETTER RESULTS

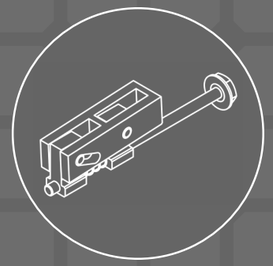
MAXIMIZE PROFITABILITY ON EVERY JOB

Trust Unirac to help you minimize both system and labor costs from the time the job is quoted to the time your teams get off the roof. Faster installs. Less Waste. More Profits.

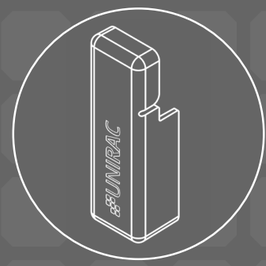
BETTER SUPPORT

WORK WITH THE INDUSTRIES MOST EXPERIENCED TEAM

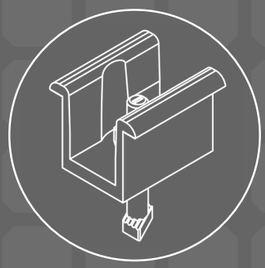
Professional support for professional installers and designers. You have access to our technical support and training groups. Whatever your support needs, we've got you covered. Visit Unirac.com/solarmount for more information.



CONCEALED UNIVERSAL ENDCLAMPS



END CAPS INCLUDED WITH EVERY ENDCLAMP



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U-BUILDER ONLINE DESIGN TOOL SAVES TIME & MONEY

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MECHANICAL LOADING
SYSTEM FIRE CLASSIFICATION

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UNMATCHED EXPERIENCE | CERTIFIED QUALITY | ENGINEERING EXCELLENCE | BANKABLE WARRANTY | DESIGN TOOLS | PERMIT DOCUMENTATION

TECHNICAL SUPPORT

Unirac's technical support team is dedicated to answering questions & addressing issues in real time. An online library of documents including engineering reports, stamped letters and technical data sheets greatly simplifies your permitting and project planning process.

CERTIFIED QUALITY PROVIDER

Unirac is the only PV mounting vendor with ISO certifications for 9001:2008, 14001:2004 and OHSAS 18001:2007, which means we deliver the highest standards for fit, form, and function. These certifications demonstrate our excellence and commitment to first class business practices.

BANKABLE WARRANTY

Don't leave your project to chance, Unirac has the financial strength to back our products and reduce your risk. Have peace of mind knowing you are providing products of exceptional quality. SOLARMOUNT is covered by a 25 year limited product warranty and a 5 year limited finish warranty.

ENHANCE YOUR REPUTATION WITH QUALITY RACKING SOLUTIONS BACKED BY ENGINEERING EXCELLENCE AND A SUPERIOR SUPPLY CHAIN

PUB2018AUG31 - PRINTED UPDATE

FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR CALL (505) 248-2702

Certificate of Compliance

Certificate: 70131735 **Master Contract:** 266909

Project: 80082031 **Date Issued:** 2021-06-02

Issued To: **Unirac**
1411 Broadway NE
Albuquerque, New Mexico, 87102
United States

Attention: Klaus Nicolaedis

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.

Issued by: Michael Hoffnagle
Michael Hoffnagle

C US

PRODUCTS

CLASS - C531302 - POWER SUPPLIES - PHOTOVOLTAICS-PV Racking and clamping systems
CLASS - C531382 - POWER SUPPLIES - PHOTOVOLTAICS-PV Racking and clamping systems - Certified to US Standards

Models:	SM	-	SOLARMOUNT Flush-to-Roof is an extruded aluminum rail PV racking system that is installed parallel to the roof in landscape or portrait orientations.
	ULA	-	Unirac Large Array is a ground mount system using the SolarMount (SM) platform for the bonding and grounding of PV modules.

Solarmount

The system listed is designed to provide bonding/grounding, and mechanical stability for photovoltaic modules. The system is secured to the roof with the L-Foot components through the roofing material to building structure. Modules are secured to the racking system with stainless steel or aluminum mid clamps and Aluminum end clamps. The modules are bonded to the racking system with the stainless-steel bonding mid clamps with piercing points. The system is grounded with 10 AWG copper wire to bonding/grounding lugs. Fire ratings of Class A with Type 1, 2, 3, 10, 19, 22 or 25 for steep slope. Tested at 5" interstitial gap which allows installation at any stand-off height.

The grounding of the system is intended to comply with the latest edition of the National Electrical Code, to include NEC 250 & 690. Local codes compliance is required, in addition to national codes. All grounding/bonding connections are to be torqued in accordance with the Installation Manual and the settings used during the certification testing for the current edition of the project report.

The system may employ optimizers/micro-inverters and used for grounding when installed per installation instructions.

UL 2703 Mechanical Load ratings:

Downward Design Load (lb/ft²)	113.5
Upward Design Load (lb/ft²)	50.7
Down-Slope Load (lb/ft²)	16.13

Test Loads:

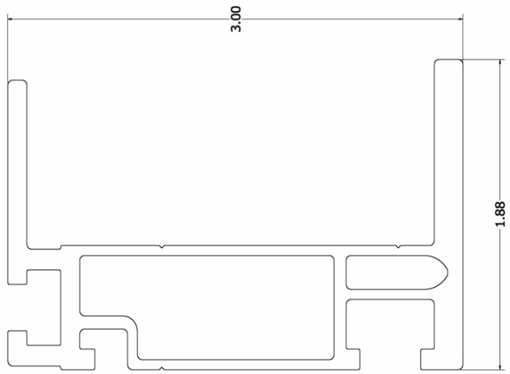
Downward Load (lb/ft²)	170.20
Upward Load (lb/ft²)	76.07
Down-Slope Load (lb/ft²)	24.2

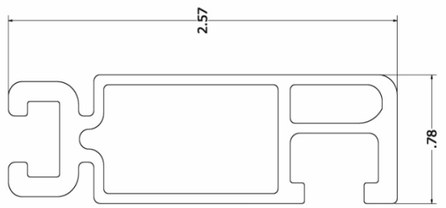
Unirac Large Array

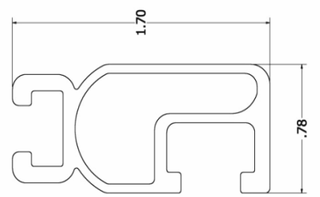
ULA is a ground mount system using the SolarMount (SM) platform for the bonding and grounding of PV modules. ULA aluminum components merge with SM rails and installer-supplied steel pipe. The SM rail system is secured to the horizontal Pipe using the Rail Bracket components. The Rear and Front cap secures the horizontal Pipe to the vertical Pipe. The Front cap is also used to secure the Cross brace. A Slider is attached to the vertical Pipe to secure the Cross brace. The SM rails, caps, slider, rail brackets, and cross braces materials are 6105-T5 aluminum extrusion. Fasteners materials are 304 stainless steel. Horizontal and vertical pipe materials meet the minimum requirements of ASTM A53 for galvanized steel pipe in 2" and 3" diameter.

The mechanical load ratings from the SM test data will be applied to the ULA model.

Fire Testing is not applicable due to being a ground mount system.







Properties	SOLARMOUNT Light	SOLARMOUNT Rail Profile 2	SOLARMOUNT HD	Units
BEAM HEIGHT	1.70	2.57	3.00	in
APPROX WEIGHT	0.491	0.728	1.271	plf
CROSS SECTION AREA	0.409	0.625	1.059	in^2
SECTION MODULUS (X-AXIS)	0.15	0.363	0.898	in^3
SECTION MODULUS (Y-AXIS)	0.067	0.113	0.221	in^3
MOMENT OF INERTIA (X-AXIS)	0.13	0.467	1.45	in^4
MOMENT OF INERTIA (Y-AXIS)	0.026	0.045	0.267	in^4
RADIUS OF GYRATION (X-AXIS)	0.564	0.865	1.17	in
RADIUS OF GYRATION (Y-AXIS)	0.254	0.269	0.502	in

TÜV Rheinland PTL

Certificate

Certificate no. US 82160015 01

License Holder:
Unirac Inc.
1411 Broadway NE
Albuquerque NM 87102
USA

Manufacturing Plant:
Unirac Inc.
1411 Broadway NE
Albuquerque NM 87102
USA

Test report no.: USA- 31440029 005
Tested to: UL 2703:2015

Client Reference: Tom Young

Certified Product: Module Rack Mounting System — **License Fee - Units**

Model Designation: SolarMount (SM) — 7

Max System Voltage of PV Module: 1000 VDC
Max Size of PV Module: 20.8 sq.ft. surface area
Max Overcurrent Protection Rating of PV Module:
30 A when using the qualified grounding lugs;
20 A when using the Enphase micro inverter EGC.

Fire Rating: Class A when installed with
Type 1, Type 2, Type3, or Type 10 fire rated modules.

(continued)

7

Appendix: 1,1-5

Licensed Test mark:

TÜVRheinland US

Date of Issue (day/mo/yr)
27/07/2016

March 31, 2020

Unirac
1411 Broadway Blvd. NE
Albuquerque, NM 87102

Attn.: Unirac - Engineering Department

Re: Engineering Certification for the Unirac U-Builder 2.0 SOLARMOUNT Flush Rail

PZSE, Inc. - Structural Engineers has reviewed the Unirac SOLARMOUNT rails, proprietary mounting system constructed from modular parts which is intended for rooftop installation of solar photovoltaic (PV) panels; and has reviewed the U-builder Online tool. This U-Builder software includes analysis for the SOLARMOUNT LIGHT rail, SOLARMOUNT STANDARD rail, and SOLARMOUNT HEAVY DUTY rail with Standard and Pro Series hardware. All information, data and analysis contained within are based on, and comply with the following codes and typical specifications:

1. Minimum Design Loads for Buildings and other Structures, ASCE/SEI 7-05 and ASCE/SEI 7-10
2. 2006-2015 International Building Code, by International Code Council, Inc.
3. 2006-2015 International Residential Code, by International Code Council, Inc.
4. AC428, Acceptance Criteria for Modular Framing Systems Used to Support Photovoltaic (PV) Panels, November 1, 2012 by ICC-ES.
5. 2015 Aluminum Design Manual, by The Aluminum Association, 2015

Following are typical specifications to meet the above code requirements:

Design Criteria: Ground Snow Load = 0 - 100 (psf)
Basic Wind Speed = 85 - 190 (mph)
Roof Mean Height = 0 - 60 (ft)
Roof Pitch = 0 - 45 (degrees)
Exposure Category = B, C & D

Attachment Spacing: Per U-builder Engineering report.

Cantilever: Maximum cantilever length is L/3, where "L" is the span noted in the U-Builder online tool.

Clearance: 2" to 10" clear from top of roof to top of PV panel.

Tolerance(s): 1.0" tolerance for any specified dimension in this report is allowed for installation.

Installation Orientation: See SOLARMOUNT Rail Flush Installation Guide.
Landscape - PV Panel long dimension is parallel to ridge/eave line of roof and the PV panel is mounted on the long side.
Portrait - PV Panel short dimension is parallel to ridge/eave line of roof and the PV panel is mounted on the short side.

Components and Cladding Roof Zones:
The Components and Cladding Roof Zones shall be determined based on ASCE 7-05 and ASCE 7-10 Component and Cladding design.

Notes:
1) U-builder Online tool analysis is only for Unirac SM SOLARMOUNT Rail Flush systems only and do not include roof capacity check.
2) Risk Category II per ASCE 7-10.
3) Topographic factor, kzt is 1.0.
4) Average parapet height is 0.0 ft.
5) Wind speeds are LRFD values.
6) Attachment spacing(s) apply to a seismic design category E or less.

Design Responsibility:
The U-Builder design software is intended to be used under the responsible charge of a registered design professional where required by the authority having jurisdiction. In all cases, this U-builder software should be used under the direction of a design professional with sufficient structural engineering knowledge and experience to be able to:

- Evaluate whether the U-Builder Software is applicable to the project, and
- Understand and determine the appropriate values for all input parameters of the U-Builder software.

This letter certifies that the Unirac SM SOLARMOUNT Rails Flush, when installed according to the U-Builder engineering report and the manufacture specifications, is in compliance with the above codes and loading criteria.

This certification excludes evaluation of the following components:

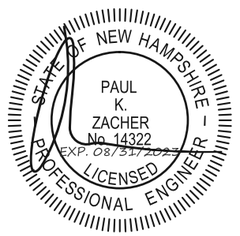
1) The structure to support the loads imposed on the building by the array; including, but not limited to: strength and deflection of structural framing members, fastening and/or strength of roofing materials, and/or the effects of snow accumulation on the structure.
2) The attachment of the SM SOLARMOUNT Rails to the existing structure.
3) The capacity of the solar module frame to resist the loads.

This requires additional knowledge of the building and is outside the scope of the certification of this racking system.

If you have any questions on the above, do not hesitate to call.

Prepared by:
PZSE, Inc. – Structural Engineers
Roseville, CA

DIGITALLY SEALED



Project Address: **64 VAUGHAN STREET**

Permit Requested: **CERTIFICATE OF APPROVAL**

Application: **PUBLIC HEARING 1**

A. Property Information - General:

Existing Conditions:

- Zoning District: CD5
- Land Use: Commercial
- Land Area: 15,242 SF +/-
- Estimated Age of Structure: c.1900
- Building Style: Vernacular Commercial
- Historical Significance: C
- Public View of Proposed Work: View from Vaughan Mall and Hanover Streets
- Unique Features: NA
- Neighborhood Association: Downtown

B. Proposed Work: To add a roof top pavilion.

C. Staff Comments and/ or Suggestions for Consideration:

The project proposal includes the following:

- To add a rooftop pavilion

HISTORIC SURVEY RATING

C

D. Purpose and Intent:

1. Preserve the integrity of the District
2. Assessment of the Historical Significance
3. Conservation and enhancement of property values
4. Maintain the special character of the District
5. Complement and enhance the architectural and historic character
6. Promote the education, pleasure and welfare of the District and the city residents and visitors

E. Review Criteria/Findings of Fact:

1. Consistent with special and defining character of surrounding properties
2. Compatibility of design with surrounding properties
3. Relation to historic and architectural value of existing structures
4. Compatibility of innovative technologies with surrounding properties

JSA
ARCHITECTS
INTERIORS
PLANNERS

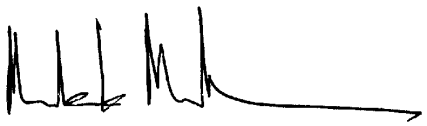
January 4, 2024

City of Portsmouth
Planning Department
1 Junkins Avenue
Portsmouth, NH 03801

Attn: Historic District Commission
Re: 64 Vaughan mall (LU-20-214)

The applicant (Novocure) for the renovation/addition to 64 Vaughan Mall is requesting a public hearing at the February 7, 2024 HDC meeting for the proposed penthouse addition. The Penthouse is noted on the attached drawings dated 12/15/23.

Respectfully Submitted,



Mark K. Moeller, AIA LEED AP
Principal

cc: Dean Smith, Novocure

HDC-1

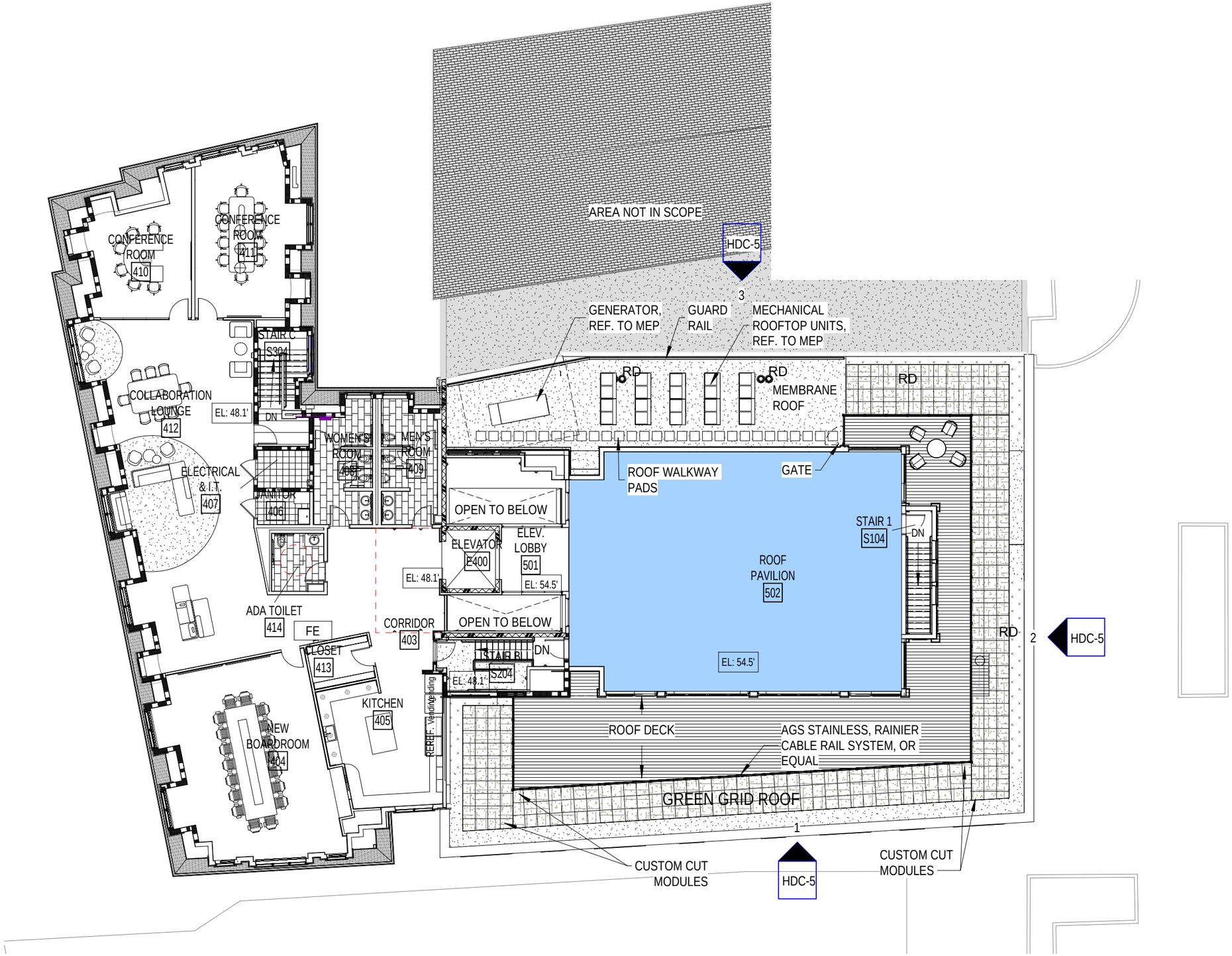
Aerial Perspective

Novocure Flagship at 64 Vaughan Mall

12/15/2023

SCALE:

JSA
ARCHITECTS
INTERIORS
PLANNERS



HDC-2

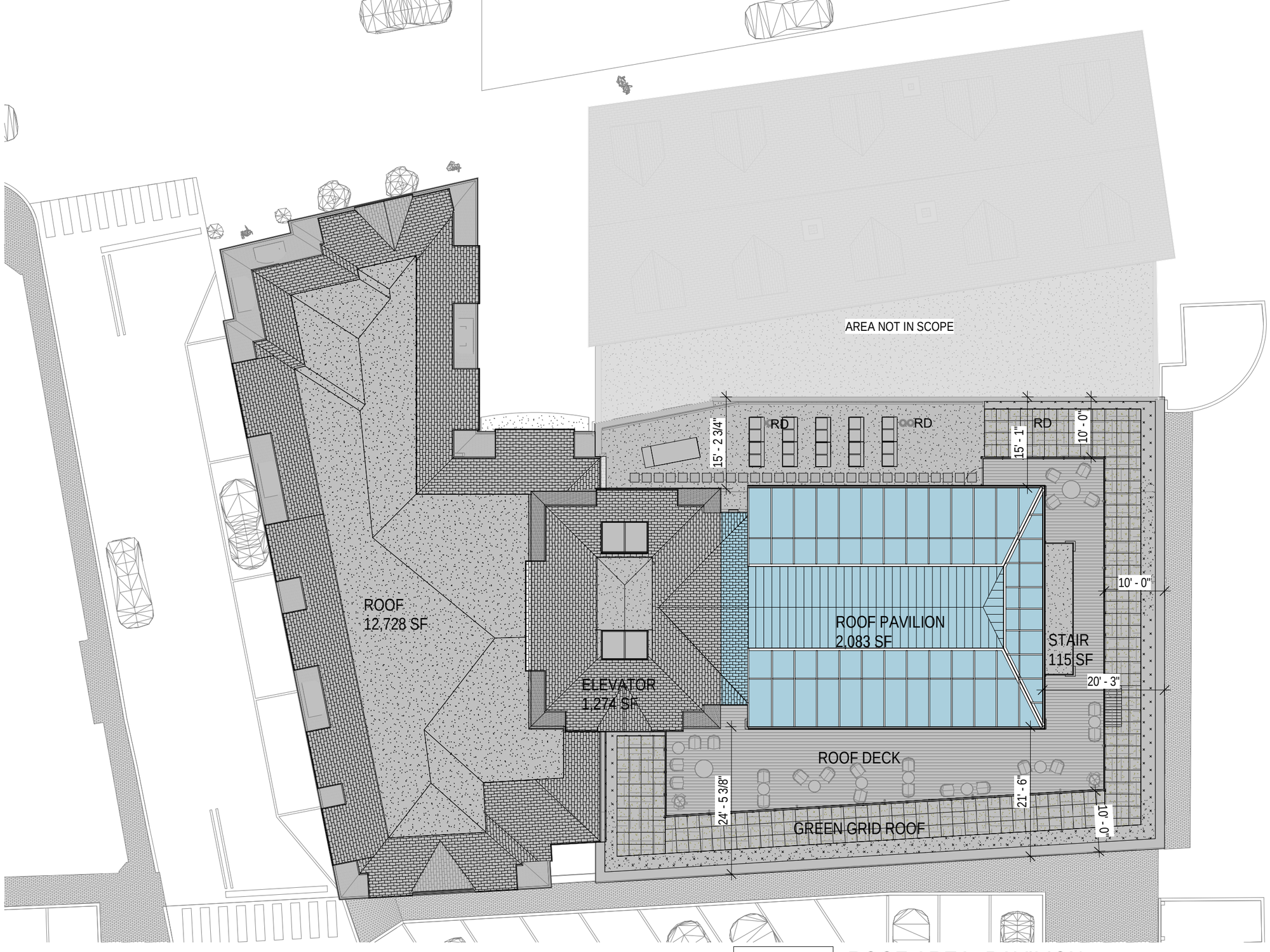
FOURTH FLOOR PLAN

Novocure Flagship at 64 Vaughan Mall

12/15/2023

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

JSA ARCHITECTS INTERIORS PLANNERS



HDC-3

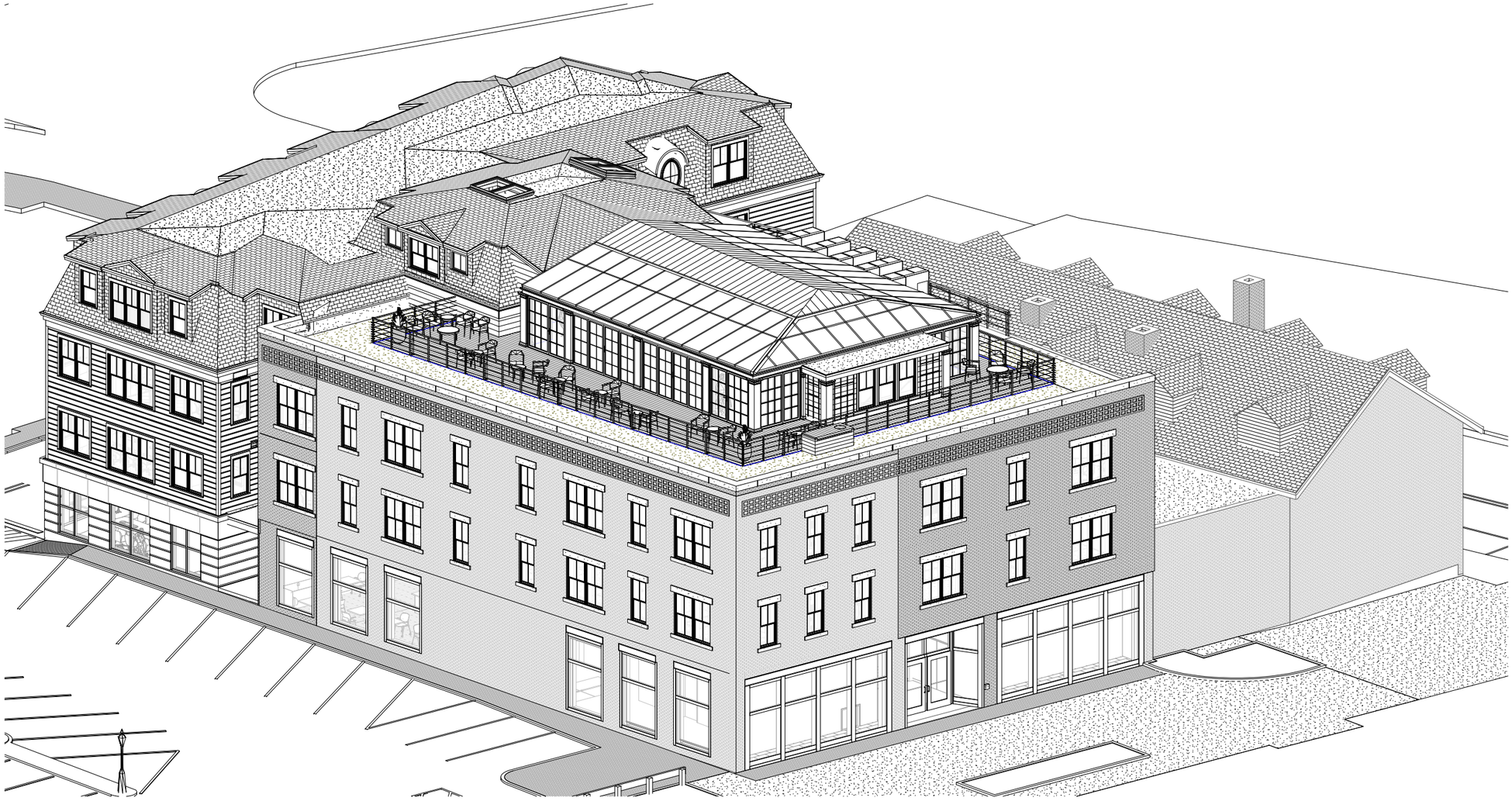
ROOF AREA- PAVILION

Novocure Flagship at 64 Vaughan Mall

12/15/2023

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

JSA ARCHITECTS INTERIORS PLANNERS



HDC-4

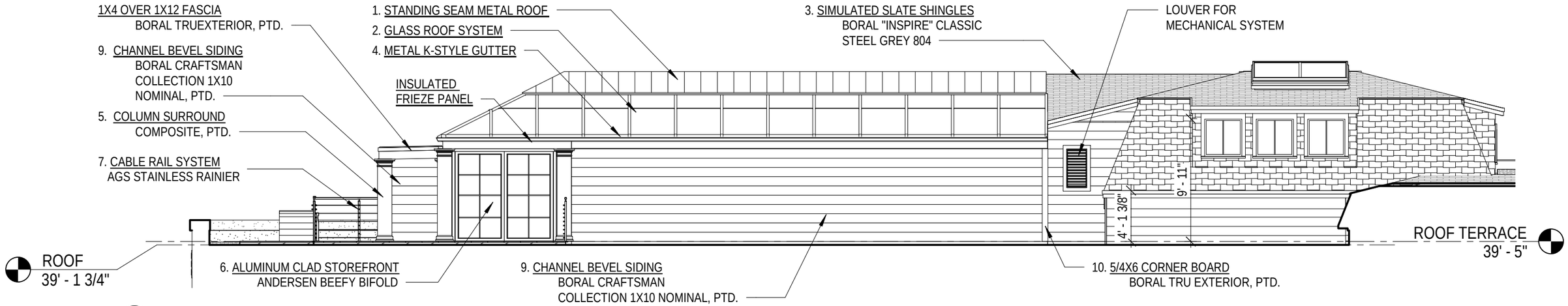
SOUTHEAST AXONOMETRIC - PROPOSED PAVILLION

Novocure Flagship at 64 Vaughan Mall

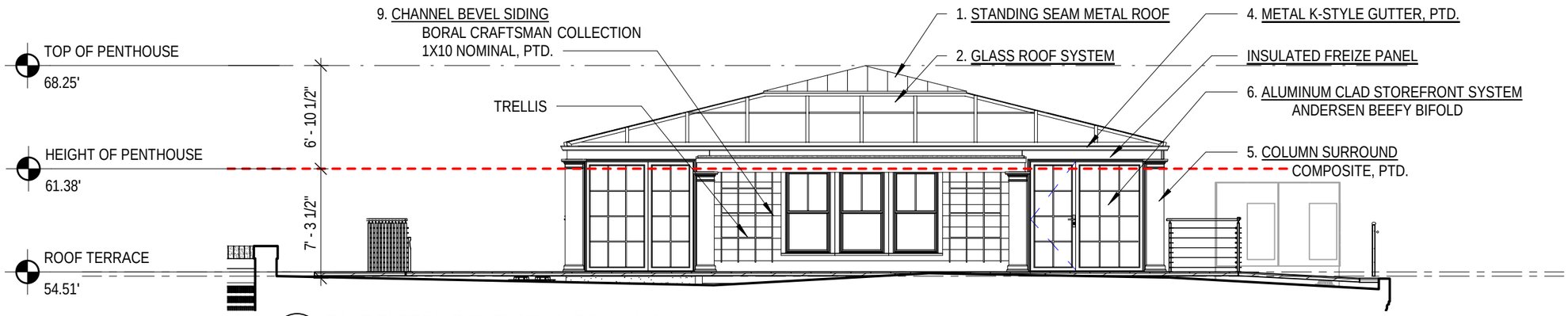
12/15/2023

SCALE:

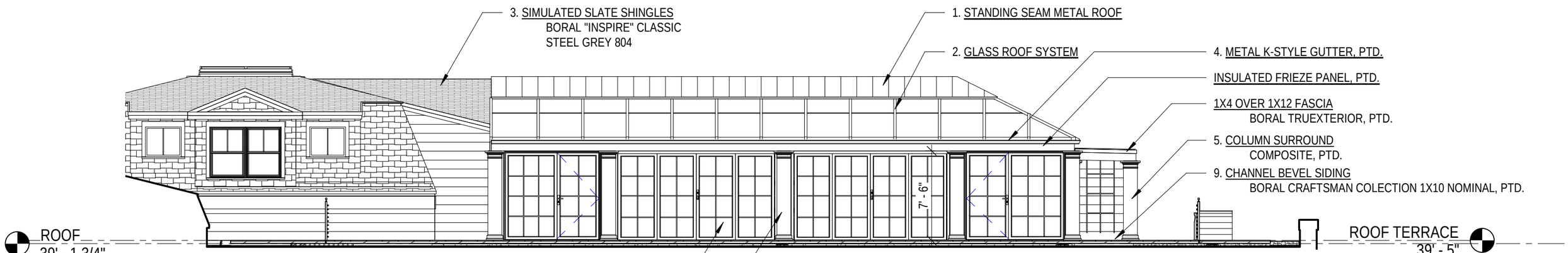
JSA ARCHITECTS INTERIORS PLANNERS



3 NORTH EXTERIOR ELEVATION PAVILLION
1/8" = 1'-0"



2 EAST EXTERIOR ELEVATION PAVILLION
1/8" = 1'-0"



1 SOUTH EXTERIOR ELEVATION PAVILLION
1/8" = 1'-0"

HDC-5

PAVILION ELEVATIONS

Novocure Flagship at 64 Vaughan Mall

12/15/2023
SCALE: 1/8" = 1'-0"

JSA
ARCHITECTS
INTERIORS
PLANNERS

1 NORTH EXTERIOR ELEVATION PAVILLION - COLOR
1/8" = 1'-0"

2 EAST EXTERIOR ELEVATION PAVILLION - COLOR
1/8" = 1'-0"

3 SOUTH EXTERIOR ELEVATION PAVILLION - COLOR
1/8" = 1'-0"

HDC-5.5

PAVILION COLOR ELEVATIONS

Novocure Flagship at 64 Vaughan Mall

12/15/2023
SCALE: 1/8" = 1'-0"

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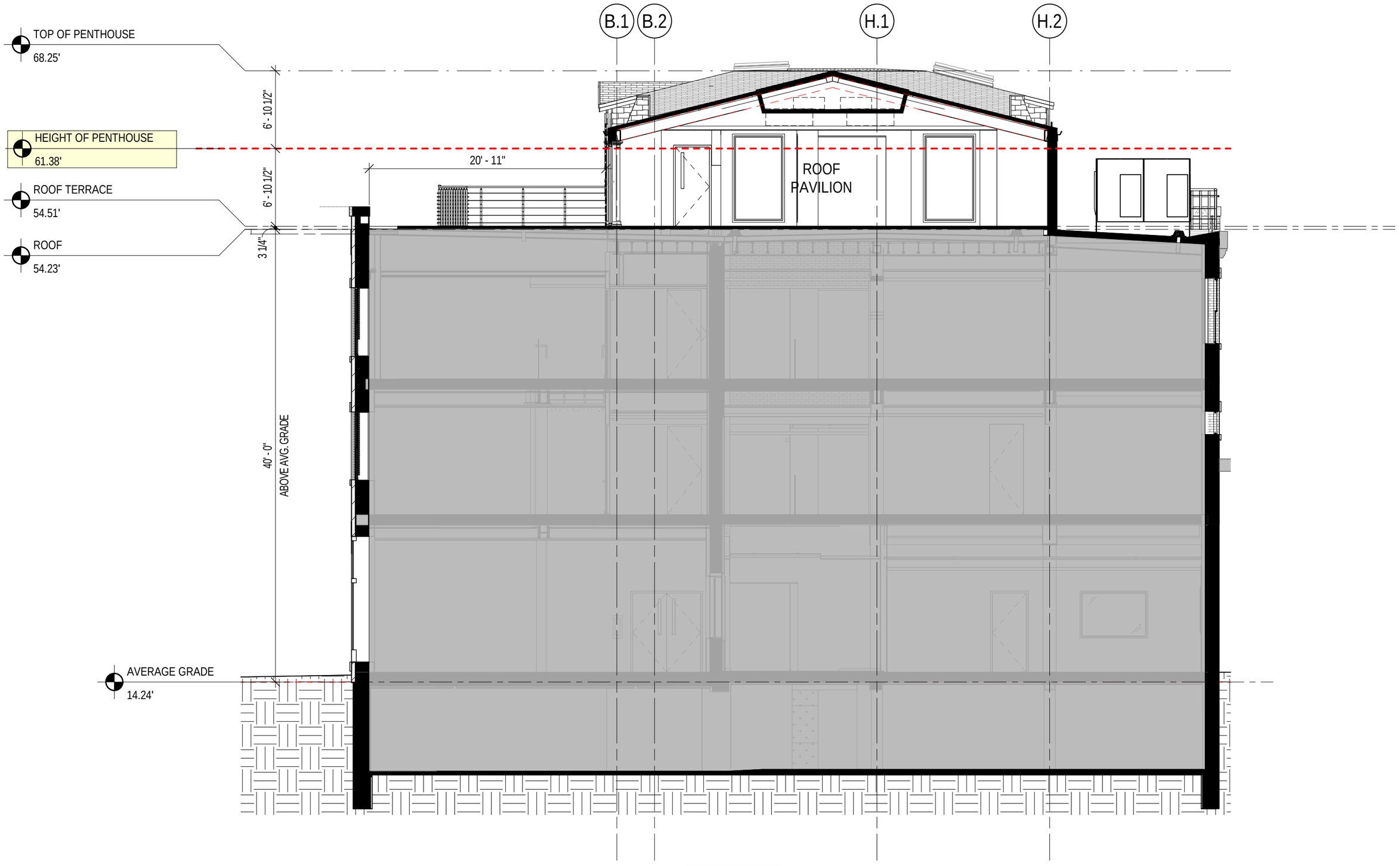
ARCHITECTS
INTERIORS
PLANNERS



HDC-6

ENLARGED BUILDING SECTION

Novocure Flagship at 64 Vaughan Mall

12/15/2023

SCALE: 1/8" = 1'-0"

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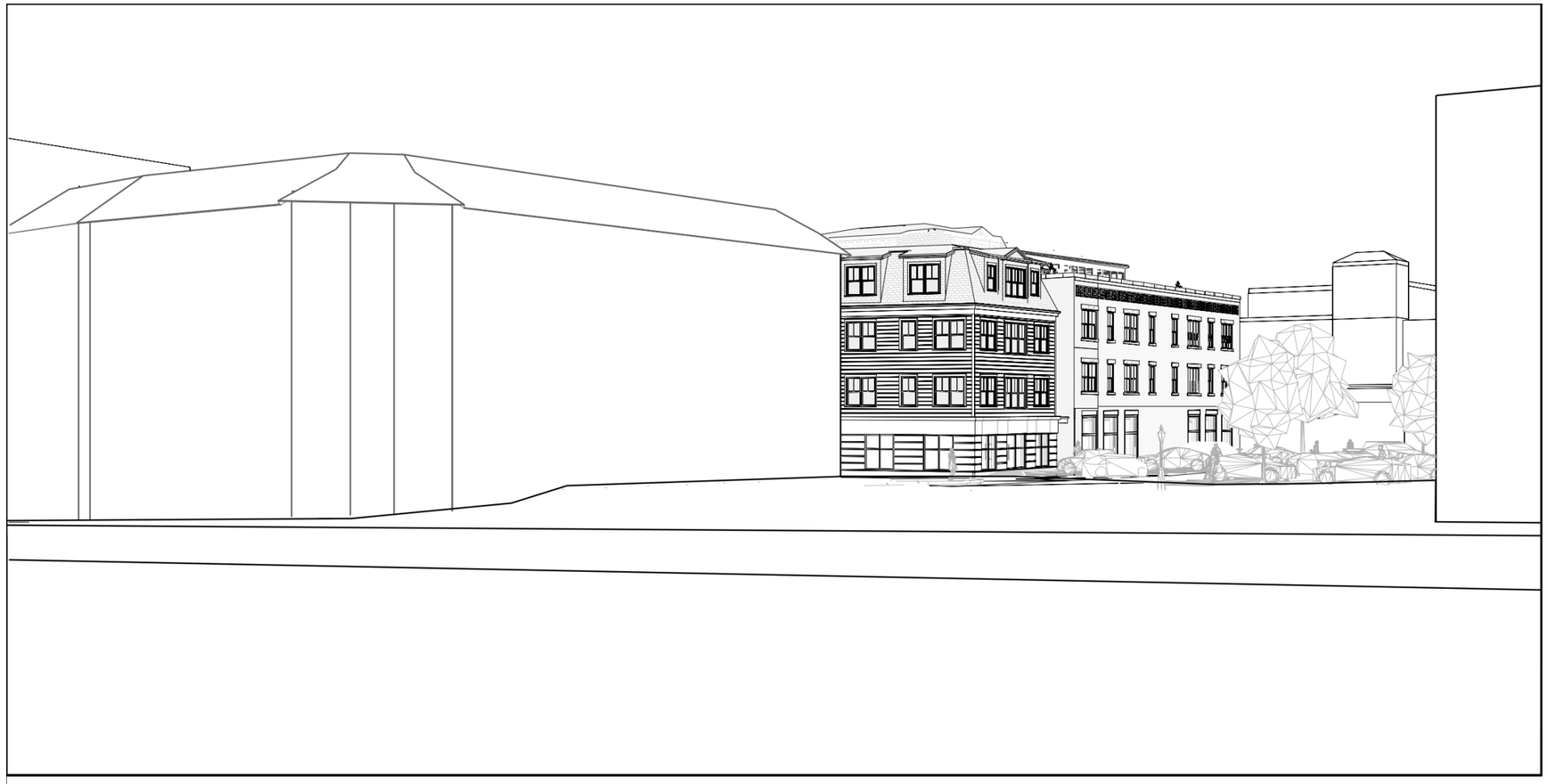
INTERIORS
PLANNERS



HDC-7

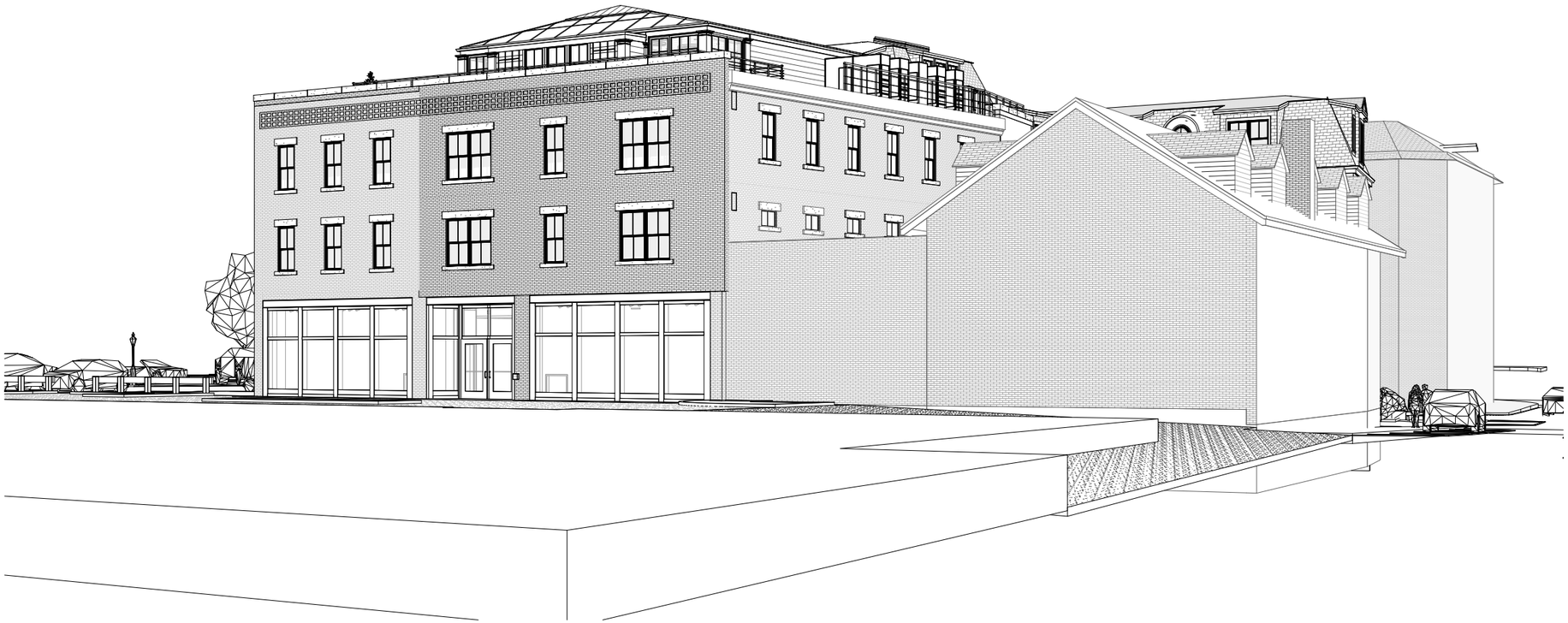
BRIDGE STREET PARKING LOT

Novocure Flagship at 64 Vaughan Mall

12/15/2023

SCALE:

JSA
ARCHITECTS
INTERIORS
PLANNERS



HDC-8

HANOVER AND FLEET STREET

Novocure Flagship at 64 Vaughan Mall

12/15/2023

SCALE:

JSA
ARCHITECTS
INTERIORS
PLANNERS

HDC-9

WORTH LOT VIEW 01

Novocure Flagship at 64 Vaughan Mall

12/15/2023

SCALE:

JSA
ARCHITECTS
INTERIORS
PLANNERS

HDC-10

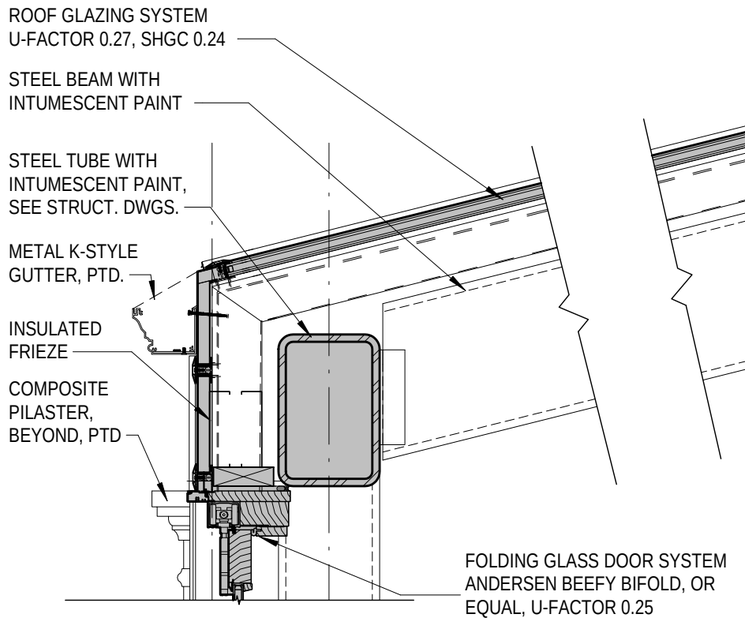
WORTH LOT VIEW 02

Novocure Flagship at 64 Vaughan Mall

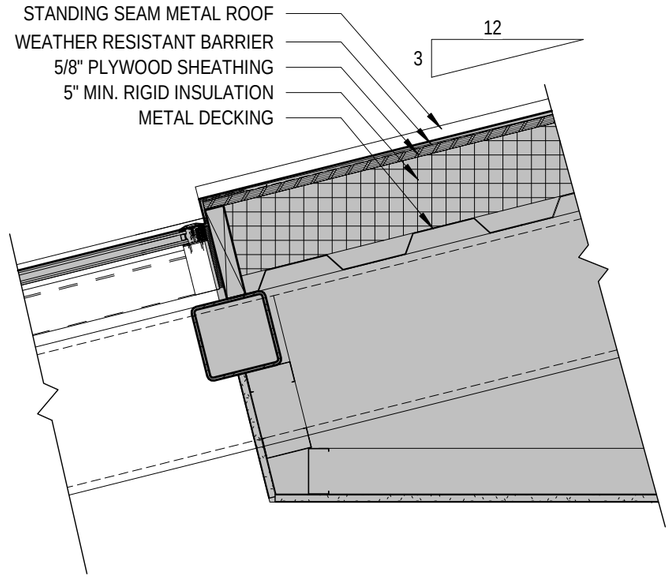
12/15/2023

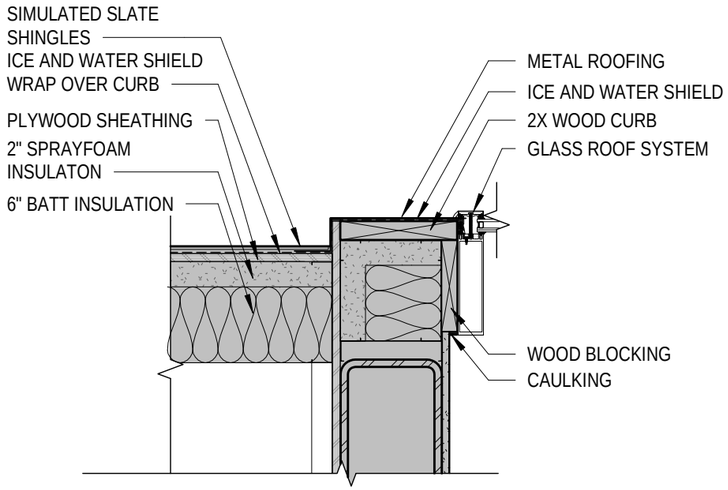
SCALE:

JSA ARCHITECTS INTERIORS PLANNERS

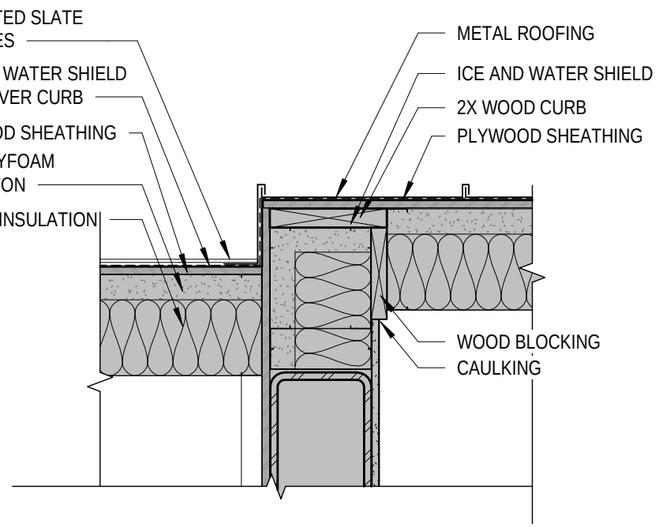


1 ROOF DETAIL -TYPICAL EAVE-Andersen
1" = 1'-0"

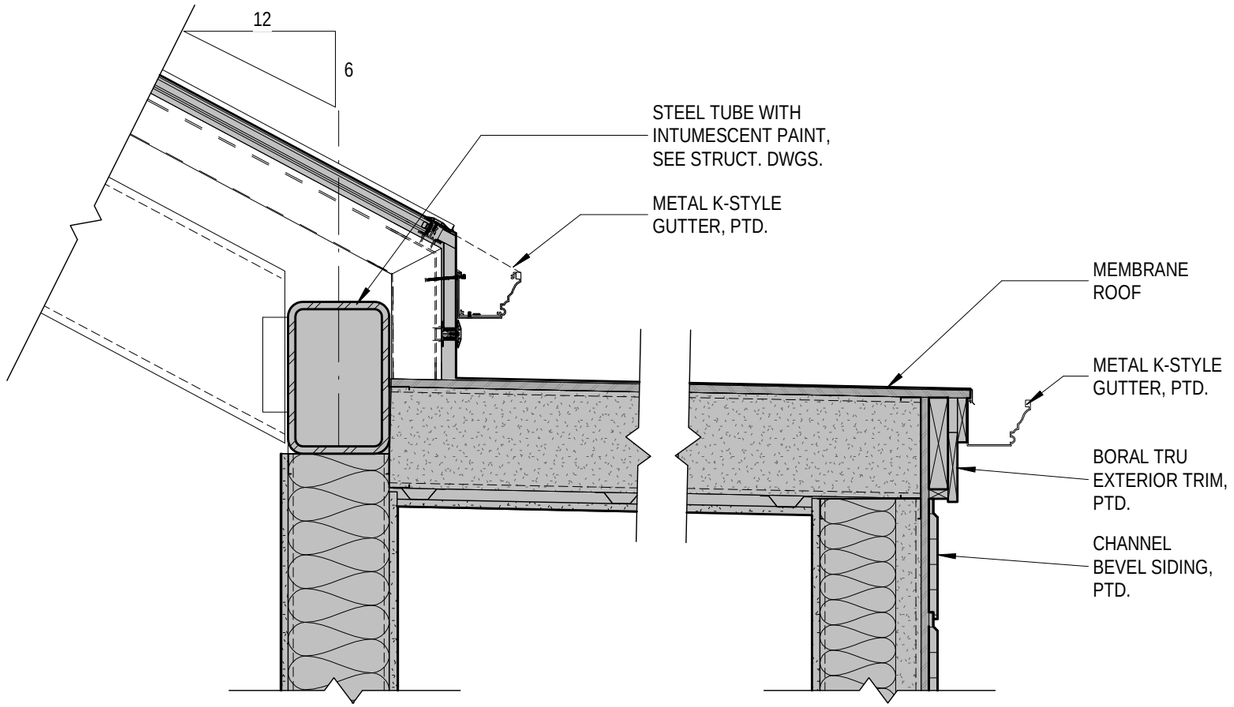




4 PAVILION ROOF GABLE END DETAIL- HDC
1" = 1'-0"



3 PAVILION ROOF GABLE END DETAIL- Standing Seam- HDC
1" = 1'-0"



2 ROOF DETAIL -Eave over Stair 1
1" = 1'-0"

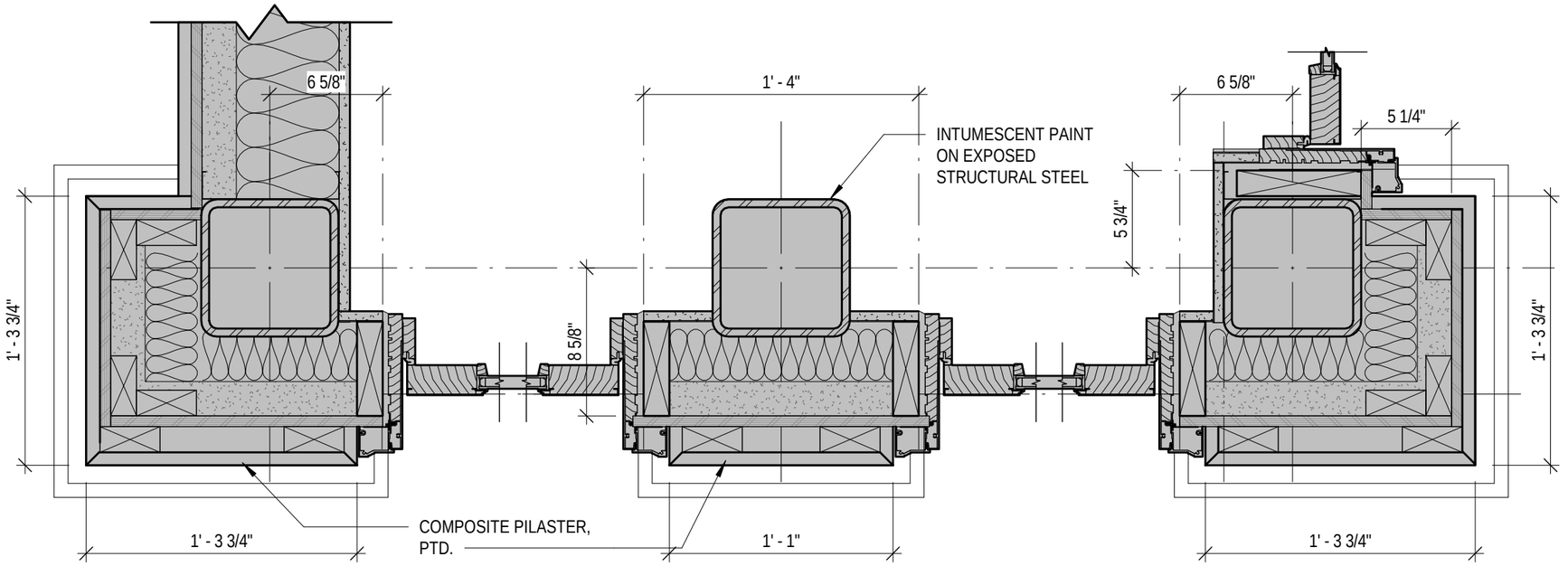
HDC-11

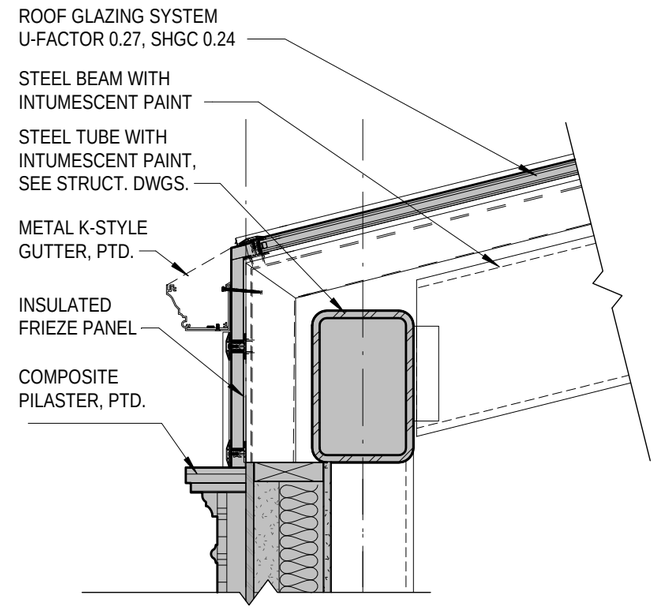
DETAILS

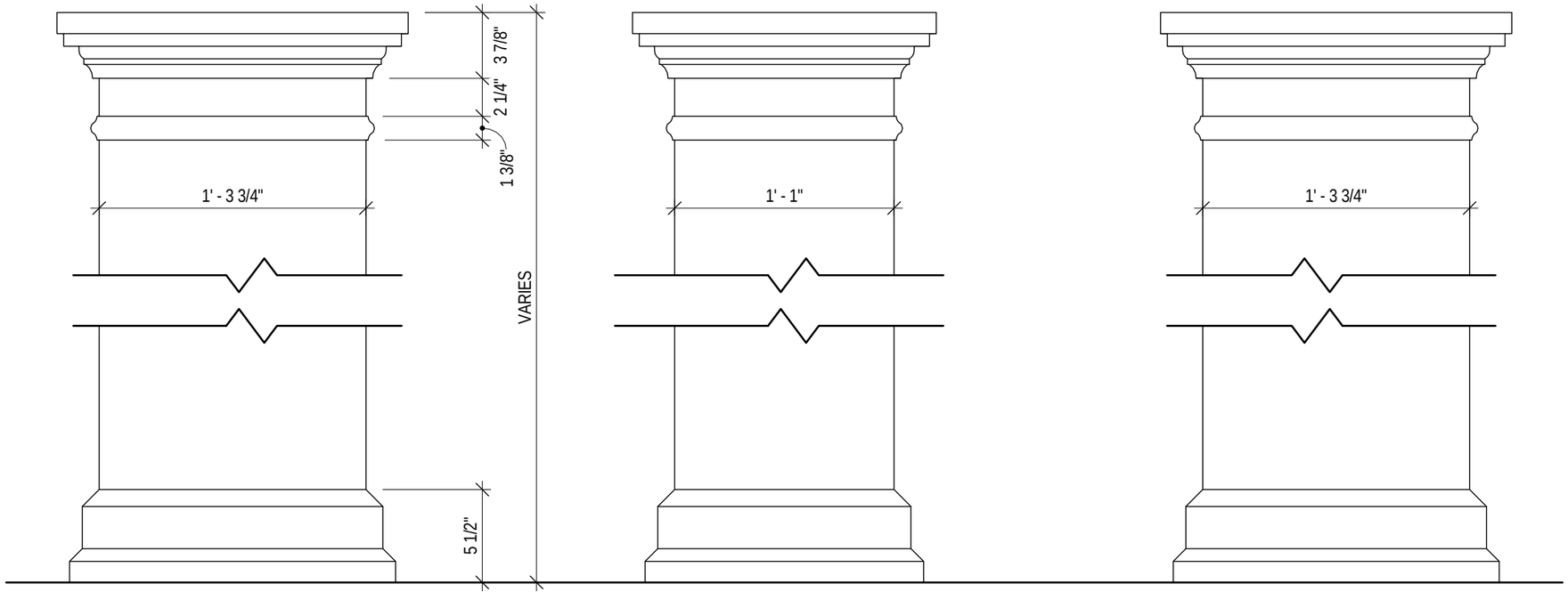
Novocure Flagship at 64 Vaughan Mall

12/15/2023
SCALE: 1" = 1'-0"

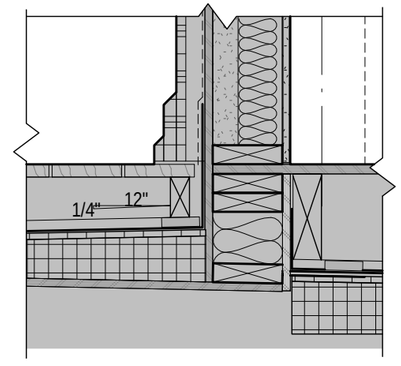
JSA
ARCHITECTS
INTERIORS
PLANNERS







1 PAVILION DOOR JAMB AND PILASTER DETAIL- Andersen
1 1/2" = 1'-0"



2 ROOF DETAIL -TYPICAL EAVE @ COLUMN
1" = 1'-0"

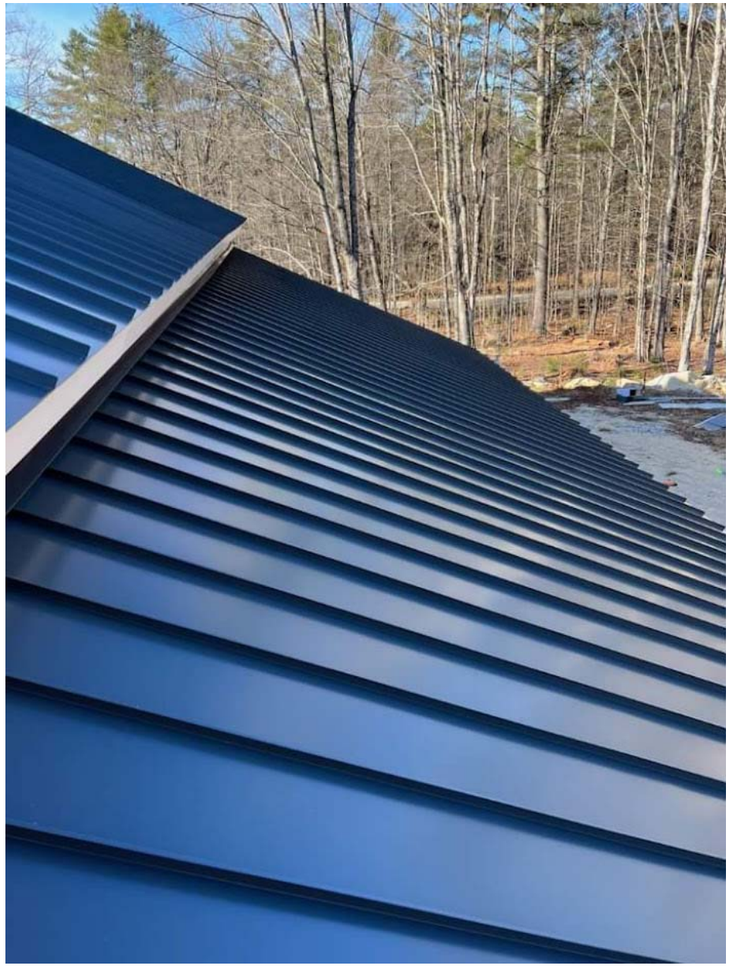
HDC-12

DOOR JAMB AND PILASTER DETAIL

Novocure Flagship at 64 Vaughan Mall

12/15/2023
SCALE: As indicated

JSA ARCHITECTS INTERIORS PLANNERS



1. STANDING SEAM METAL ROOFING

2. ALUMINUM/GLASS STRUCTURE

HDC-13

MATERIALS

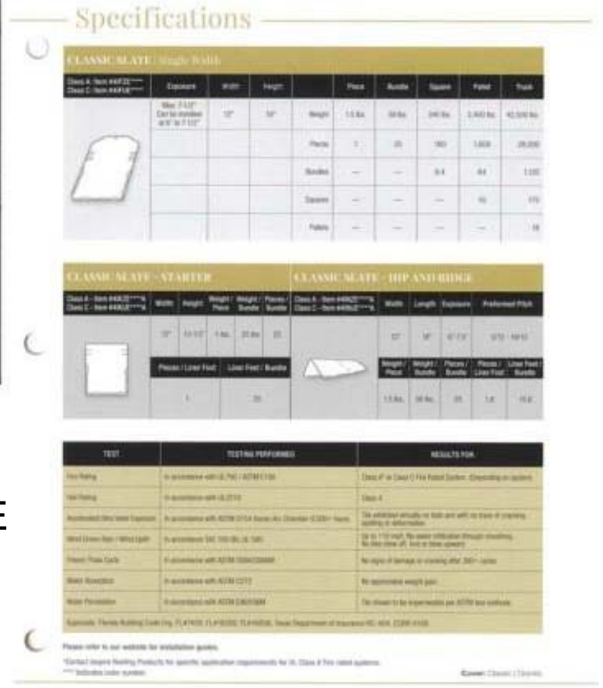
Novocure Flagship at 64 Vaughan Mall

12/15/2023

SCALE:

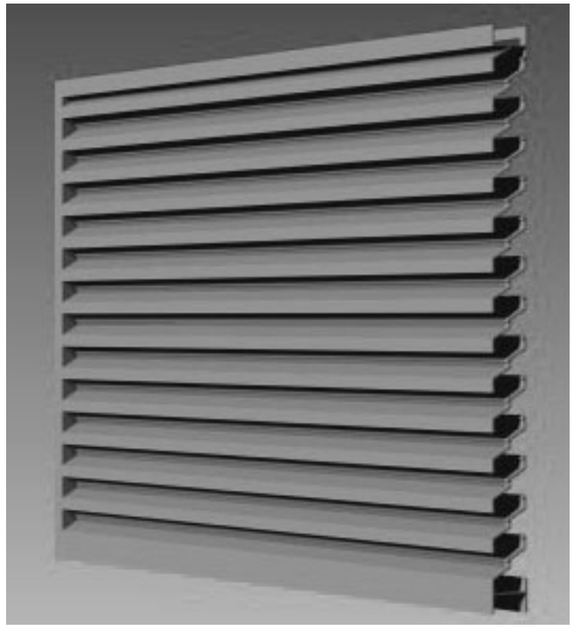
JSA ARCHITECTS INTERIORS PLANNERS

Steel Grey



3. SIMULATED SLATE SHINGLE
BORAL INSPIRE CLASSIC SLATE
STEEL GREY 804

4. PAINTED METAL K STYLE GUTTER



LOUVER FOR MECHNANICAL SYSTEM

5. CORNER POST COLUMN SURROUND

INSULATED ALUMINUM PANEL-BLACK

ANDERSEN WINDOWS & DOORS

BEEFY BIFOLD DOORS

Architectural Collection

BRING THE OUTDOORS IN

Maximize large openings with Beefy Bifold doors from Andersen. With a robust design, their heavy-duty hardware system supports larger door panels without sacrificing ease of operation, opening a space to the outdoors effortlessly.

KEY FEATURES

- Up to 40' wide and 13' 6" tall, with panels up to 5' wide
- Wood, aluminum or aluminum wood-clad construction
  - All aluminum and aluminum wood-clad panels have rails and stiles that are 3 ½" wide and a thickness of 3 ⁹⁄₁₆"
  - All wood panels up to 10' tall have stiles that are 3 ⅛" wide with a bottom rail height of 7 ¼" and a thickness of 2 ⅛"
- Center-pivoting design with internal shoot-bolt locking hardware
- Panels stack perpendicular to the wall to maximize the size of the opening
- Door jamb is less than 4" wide and can fit into almost all existing wall conditions
- Variety of glass options
- High-quality AAMA 2605 finish

FLUSH SILL

Flush sill with a built-in drainage system allows for a seamless transition while offering protection from the weather. The track is a corrosion-resistant stainless steel U-channel that only sits ⅛" above the finished floor.

CONFIGURATIONS

- Vary the number of panels to fit any opening
- Use as a pass-through window for a kitchen or bar area
- Corner bifold without a meeting post creates a dramatic design
- Individually-operable doors can be built into most door configurations for more exit options. Operable doors are great for frequent entries and exits, without needing to unlock the entire system.

6. FOLDING DOORS

ANDERSEN- ALUMINUM CLAD WOOD

HDC-15

MATERIALS

Novocure Flagship at 64 Vaughan Mall

12/15/2023

SCALE:

JSA ARCHITECTS INTERIORS PLANNERS

RAINIER

Cable Railing

- Choose from an array of fitting options
- Factory prepared cable/fitting assemblies available for quick installation

7. CABLE RAILING

POWDER COATED ALUMINUM- BLACK

dassoXTR

dassoXTR Fused Bamboo® is manufactured using dasso's patented process, creating an extremely dense, durable solid product for several different types of exterior applications. dassoXTR Fused Bamboo® has a Class A Fire Rating and zero VOCs. It's the sustainable, natural alternative to traditional wood.

END MATCHED – Tongue & Grooved Ends
Allows installation on or off the joists

REVERSIBLE FACES – unlimited design possibilities
Install smooth or reeded face up

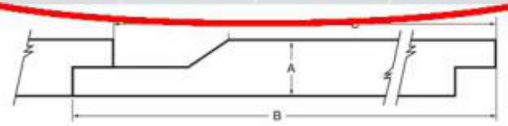
- Dimensionally stable (no expand & contract)
- No VOCs
- Class A Fire Rated
- Installs 35% faster
- Over 100 million SqFt installed worldwide

2 COLORS AVAILABLE

8. DECKING

FUSED BAMBOO- CLASSIC ESPRESSO COLOR

Nominal Size	Actual Thickness (A)	Actual Width (B)	Reveal (C)
1 x 6	11/16"	5-1/2"	4-31/32"
1 x 8	11/16"	7-1/2"	6-31/32"
1 x 10	11/16"	9-1/2"	8-31/32"



5/8 Trim Sizes		1X Trim Sizes		5/4 Trim Sizes		2X Trim Sizes	
Nominal	Actual	Nominal	Actual	Nominal	Actual	Nominal	Actual
–	–	–	–	–	–	2 x 2	1-1/2" x 1-1/2"
–	–	1 x 3	3/4" x 2-1/2"	5/4 x 3	1" x 2-1/2"	–	–
5/8 x 4	5/8" x 3-1/2"	1 x 4	3/4" x 3-1/2"	5/4 x 4	1" x 3-1/2"	2 x 4	1-1/2" x 3-1/2"
–	–	1 x 5	3/4" x 4-1/2"	5/4 x 5	1" x 4-1/2"	–	–
5/8 x 6	5/8" x 5-1/2"	1 x 6	3/4" x 5-1/2"	5/4 x 6	1" x 5-1/2"	2 x 6	1-1/2 x 5-1/2"
5/8 x 8	5/8" x 7-1/4"	1 x 8	3/4" x 7-1/4"	5/4 x 8	1" x 7-1/4"	2 x 8	1-1/2" x 7-1/4"
5/8 x 10	5/8" x 9-1/4"	1 x 10	3/4" x 9-1/4"	5/4 x 10	1" x 9-1/4"	2 x 10	1-1/2" x 9-1/4"
5/8 x 12	5/8" x 11-1/4"	1 x 12	3/4" x 11-1/4"	5/4 x 12	1" x 11-1/4"	2 x 12	1-1/2" x 11-1/4"

TruExterior® Trim is reversible with woodgrain on one side and a smooth finish on the reverse. Available in a 16' length.

Reversible Smooth/Woodgrain Finish

*Please see TruExterior® Siding & Trim Limited Warranties and Product Data Sheets for proprietary test results, located at TruExterior.com.

9. HORIZONTAL SIDING AND TRIM- PAINTED
BORAL TRU EXTERIOR CRAFTSMANS COLLECTION
CHANNEL BEVEL 1X10

10. BORAL TRU EXTERIOR TRIM

Design

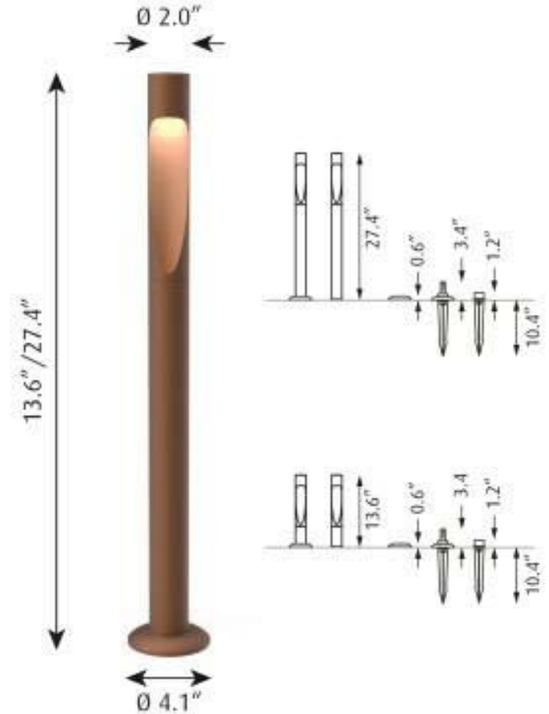
Christian Flindt

Product description

Beautifully crafted slender post with a carved surface that is gently illuminated. Top section conceals downward facing LED . A horizontal connection line underline the two parts of the bollard. Available in two heights, 13.6 IN and 27.4 IN. Available in three
different mounting methods: with a base plate for anchoring onto decks; an anchor for casting in new concrete pad; or a spike for placing in soil or gravel. Part of a family.

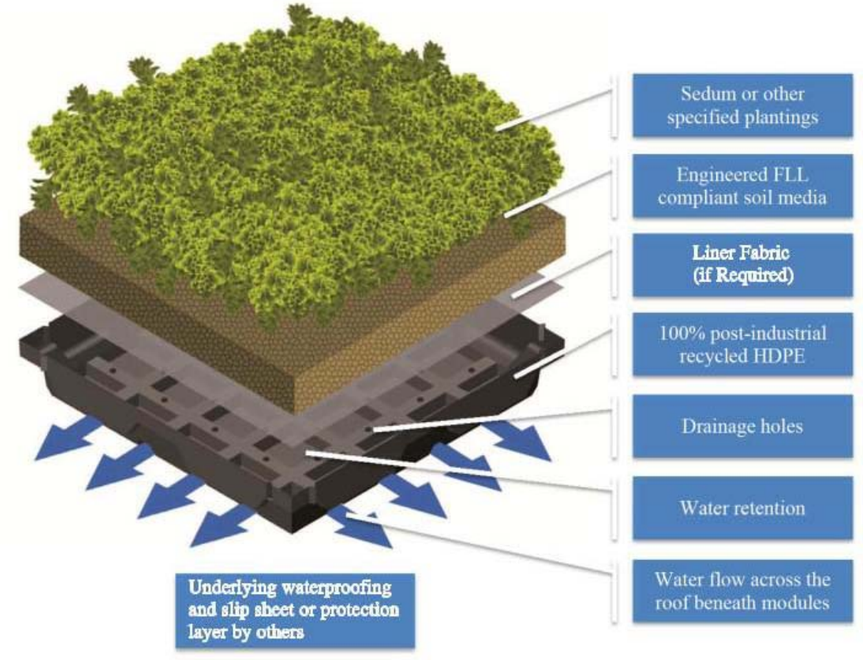
Variant options

Dimension	Color	Mounting	Light source	Lumen	Voltage frequency	Class
LONG	Black texture	Anchor w/o power supply	LED 2700K	-	24V	-
SHORT	Corten color	Base w/o power supply	LED 3000K	215		III
	Natural paint aluminum	Spike w/o power supply	LED 4000K	248		
				252		
				291		



12. DECK LIGHTING BOLLARD

11. GREEN GRID VEGETATIVE ROOF SYSTEM



Project Address: **37 SOUTH SCHOOL STREET**

Permit Requested: **CERTIFICATE OF APPROVAL**

Application: **PUBLIC HEARING 2**

A. Property Information - General:

Existing Conditions:

- Zoning District: General Residence B (GRB)
- Land Use: Residential
- Land Area: 8,360 SF +/-
- Estimated Age of Structure: c.1810
- Building Style: Federal
- Number of Stories:2.5
- Historical Significance: C
- Public View of Proposed Work: South School Street
- Unique Features: NA
- Neighborhood Association: South End

B. Proposed Work: to add a single-story side addition with new rear porch.

C. Staff Comments and/ or Suggestions for Consideration:

The project proposal includes the following:

- Construct 1-story addition to the right side of the structure
- Construct new rear porch.

HISTORIC SURVEY RATING

C

D. Purpose and Intent:

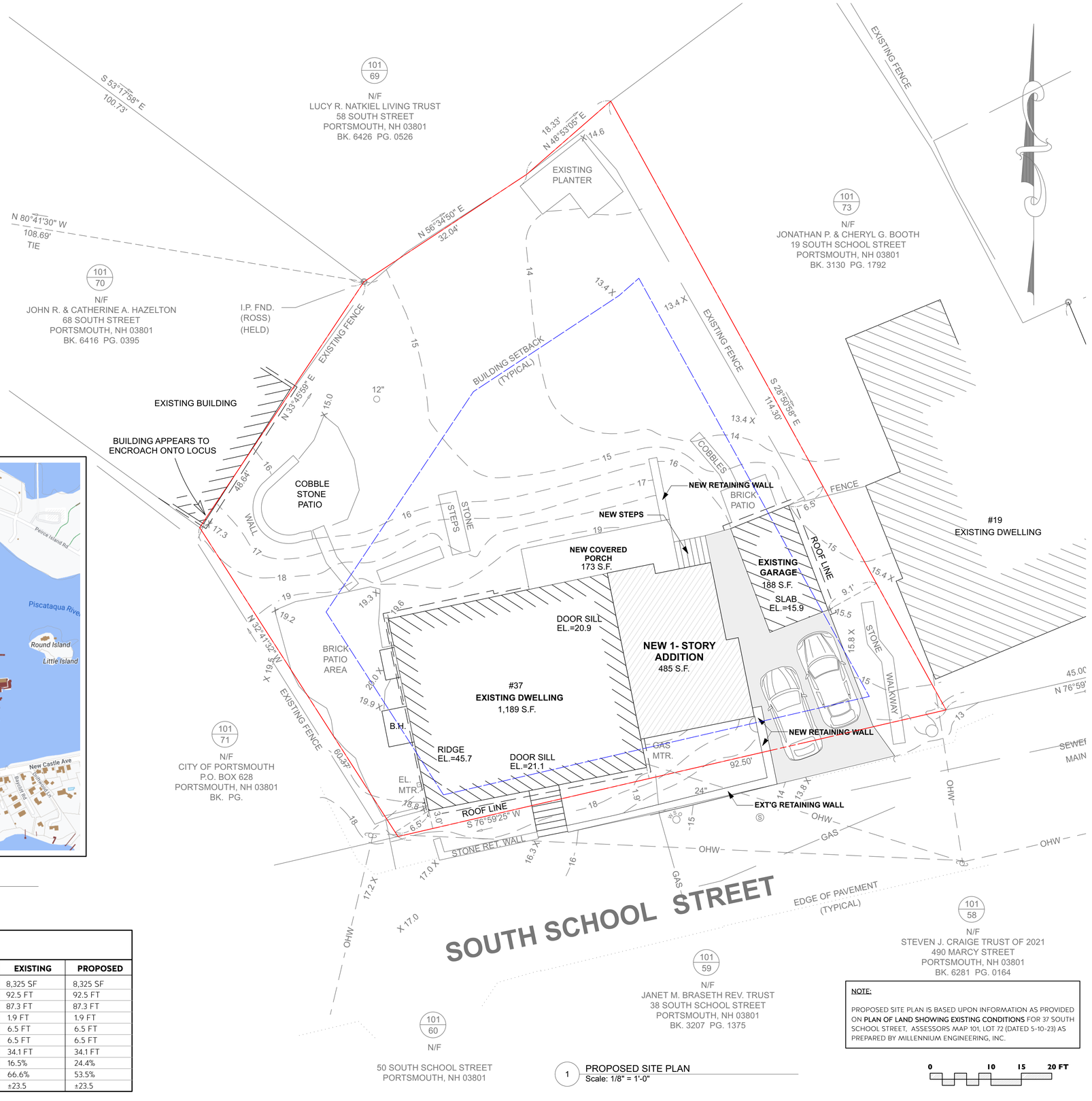
7. Preserve the integrity of the District
8. Assessment of the Historical Significance
9. Conservation and enhancement of property values
10. Maintain the special character of the District
11. Complement and enhance the architectural and historic character
12. Promote the education, pleasure and welfare of the District and the city residents and visitors

E. Review Criteria/Findings of Fact:

5. Consistent with special and defining character of surrounding properties
6. Compatibility of design with surrounding properties
7. Relation to historic and architectural value of existing structures
8. Compatibility of innovative technologies with surrounding properties

DRAWING LIST	
A0.0	COVER SHEET/SITE PLAN
A0.1	EXISTING PHOTOS
A0.2	NEIGHBORHOOD CONTEXT PHOTOS
A1.1	PROPOSED/EXISTING FIRST FLOOR PLANS
A1.2	PROPOSED/EXISTING SECOND FLOOR PLANS
A2.1	PROPOSED/EXISTING FRONT ELEVATION
A2.2	PROPOSED/EXISTING RIGHT SIDE ELEVATION
A2.3	PROPOSED/EXISTING REAR ELEVATION
A2.4	PROPOSED/EXISTING LEFT SIDE ELEVATION
A3.1	PROPOSED DETAILS/SPECIFICATIONS
A3.2	PROPOSED DETAILS/SPECIFICATIONS

2 LOCATION MAP
Scale: NOT TO SCALE



NOTE:

PROPOSED SITE PLAN IS BASED UPON INFORMATION AS PROVIDED ON **PLAN OF LAND SHOWING EXISTING CONDITIONS** FOR 37 SOUTH SCHOOL STREET, ASSESSORS MAP 101, LOT 72 (DATED 5-10-23) AS PREPARED BY MILLENNIUM ENGINEERING, INC.

1 PROPOSED SITE PLAN
Scale: 1/8" = 1'-0"

0 10 15 20 FT

ZONING MATRIX RESIDENCE GRB - Single Family			
ITEM	**REQUIRED**	**EXISTING**	**PROPOSED**
LOT AREA	5,000 SF	8,325 SF	8,325 SF
LOT FRONTAGE	80 FT	92.5 FT	92.5 FT
LOT DEPTH	60 FT	87.3 FT	87.3 FT
FRONT YARD	5 FT	1.9 FT	1.9 FT
SIDE YARD A	10 FT	6.5 FT	6.5 FT
SIDE YARD B	10 FT	6.5 FT	6.5 FT
REAR YARD	25 FT	34.1 FT	34.1 FT
BUILDING COVERAGE	30%	16.5%	24.4%
OPEN SPACE	25%	66.6%	53.5%
HEIGHT	35	±23.5	±23.5

CAD File Name
37SouthSchoolSt_APP_CoverSheet.vwx

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NEWBURYPORT, MA 01950
T. 978.465.3535
WWW.SCOTTBROWNARCHITECT.COM

ADDITIONS/ALTERATIONS TO THE:

PATSKY-WOODS RESIDENCE

37 SOUTH SCHOOL STREET
PORTSMOUTH, NH 03801

REVISION & REISSUE NOTES		
No.	Date	Notes
A	12/15/23	HDC SUBMISSION
B	1/16/24	HDC REVISIONS

Project #	Project Manager	Date
2023-11	X.X.	1-16-24

Scale: AS NOTED

COVER SHEET/PROPOSED SITE PLAN

A0.0

EAVE DETAIL

NORTHEAST VIEW

SOUTHEAST VIEW

WINDOW SILL DETAIL

NORTHWEST VIEW

SOUTHWEST VIEW

CAD File Name:
37 South School St_APP_Plans.vwx

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2023-11	X.X.	1-16-24

Scale: AS NOTED

EXISTING PHOTOS

A0.1

(7) : SOUTH STREET PLAYGROUND

(8) : 19 SOUTH SCHOOL ST

(9) : 478 MARCY STREET

(3) : 50 SOUTH SCHOOL STREET

(4) : 38 SOUTH SCHOOL STREET

(5) : 490 MARCY STREET GARAGE

(6) : 490 MARCY STREET

(1) : 86 SOUTH SCHOOL STREET

(2) : 76 SOUTH SCHOOL STREET

KEY PLAN

CAD File Name
37 South School SI_APP_Plans.vwx

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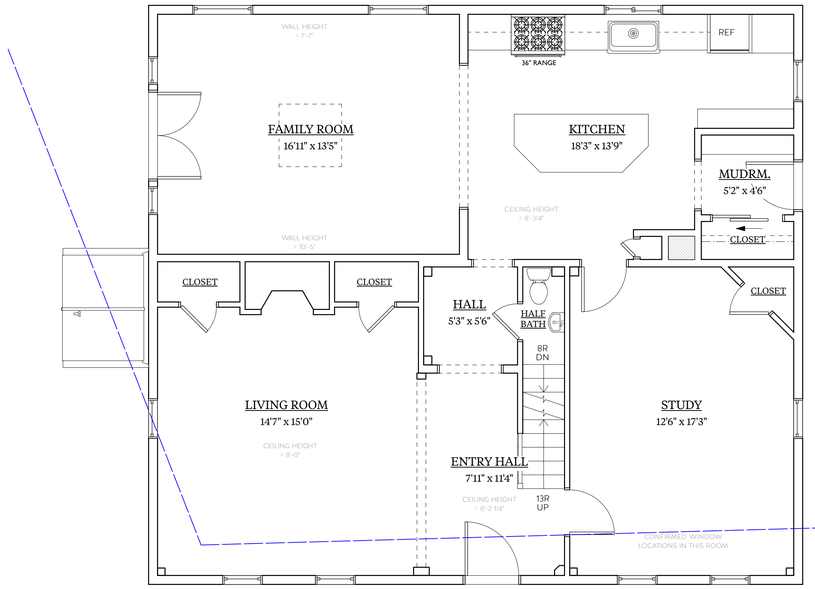
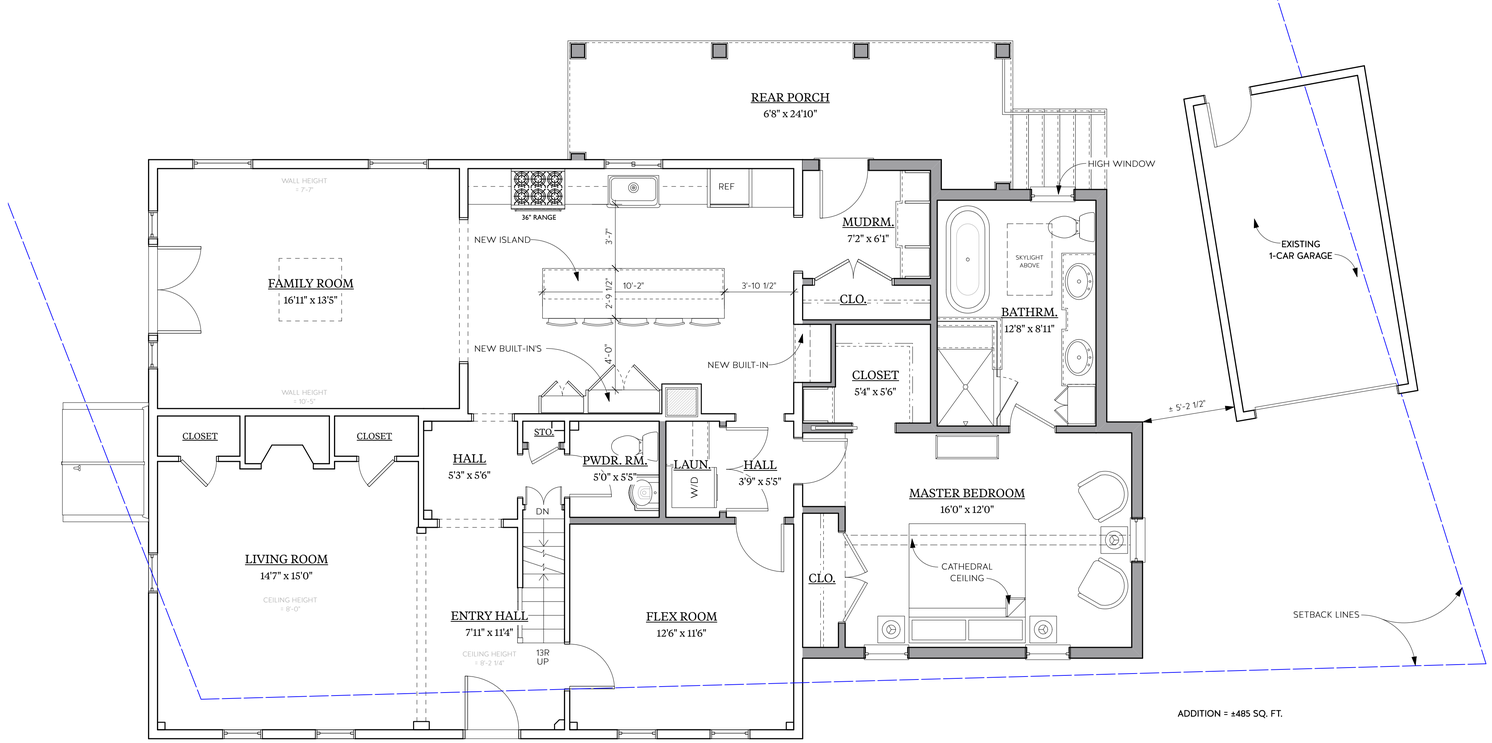
Scale: AS NOTED

NEIGHBORHOOD CONTEXT PHOTOS

A0.2



2 EXISTING FIRST FLOOR PLAN
Scale: 1/4" = 1'-0"



1 PROPOSED FIRST FLOOR PLAN
Scale: 1/4" = 1'-0"

CAD File Name
37 South School SL_APP_Plans.vwx

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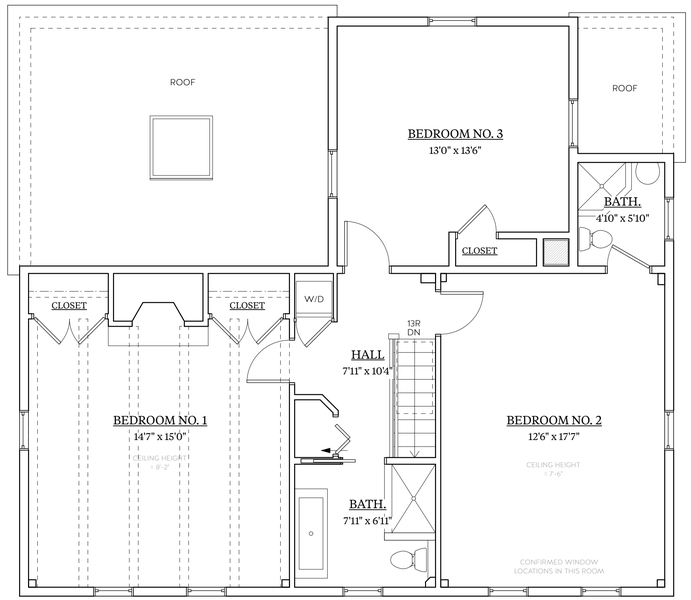
2023-11	X.X.	1-16-24

Scale: AS NOTED

FIRST FLOOR PLANS

A1.1



2 EXISTING SECOND FLOOR PLAN
Scale: 1/4" = 1'-0"

1 PROPOSED SECOND FLOOR PLAN
Scale: 1/4" = 1'-0"

CAD File Name:
37 South School St_APP_Plans.vwx

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PORTSMOUTH, NH 03801

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2023-11	X.X.	1-16-24

Scale: AS NOTED

SECOND FLOOR PLANS

A1.2

2 EXISTING SOUTH (FRONT) ELEVATION
Scale: 1/4" = 1'-0"

1 PROPOSED SOUTH (FRONT) ELEVATION
Scale: 1/4" = 1'-0"

CAD File Name
37 South School SL_APP_Plans.vwx

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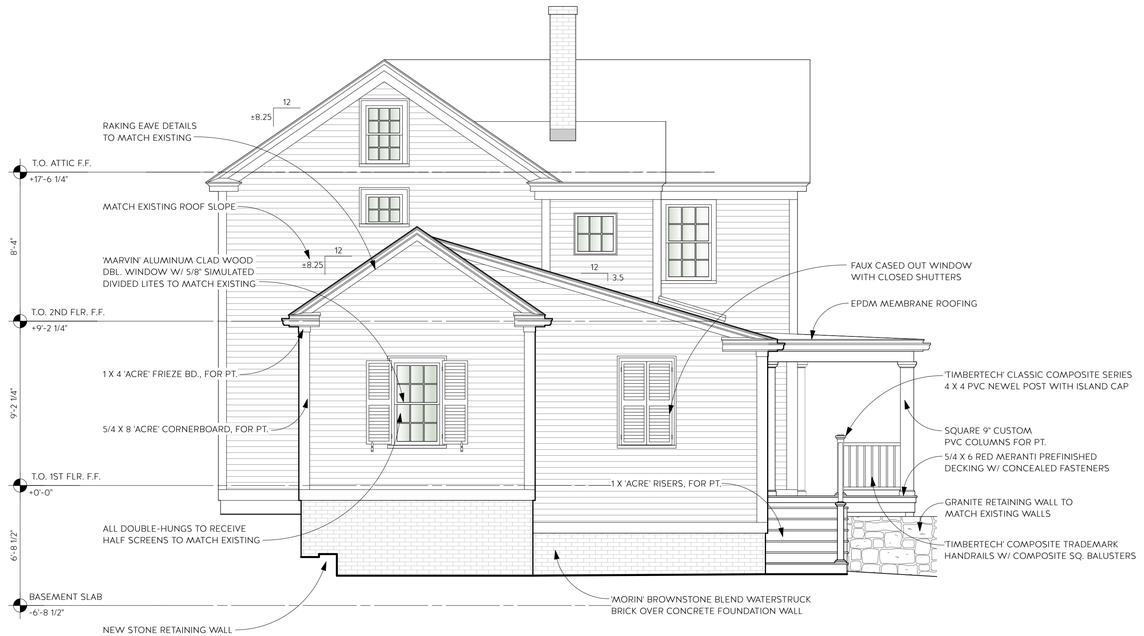
Project #	Project Manager	Date
2023-11	X.X.	1-16-24

Scale: AS NOTED

ELEVATIONS

A2.1

2 EXISTING EAST (RIGHT SIDE) ELEVATION
Scale: 1/4" = 1'-0"



1 PROPOSED EAST (RIGHT SIDE) ELEVATION
Scale: 1/4" = 1'-0"

CAD File Name:
37 South School SL_APP_Plans.vwx

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PORTSMOUTH, NH 03801

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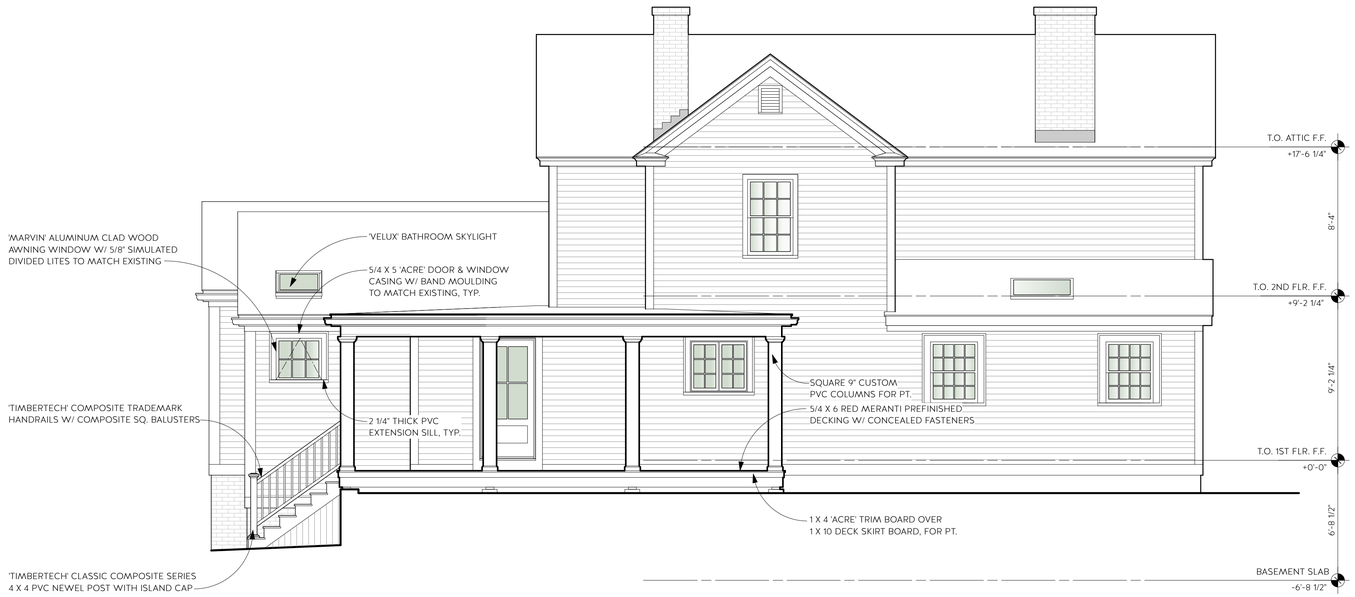
Project #	Project Manager	Date
2023-11	X.X.	1-16-24

Scale: AS NOTED

ELEVATIONS

A2.2

2 EXISTING NORTH (REAR) ELEVATION
Scale: 1/4" = 1'-0"



1 PROPOSED NORTH (REAR) ELEVATION
Scale: 1/4" = 1'-0"

CAD File Name
37 South School St_APP_Plans.vwx

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PORTSMOUTH, NH 03801

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B	1/16/24	HDC REVISIONS

Project #	Project Manager	Date
2023-11	X.X.	1-16-24

Scale: AS NOTED

ELEVATIONS

A2.3

2 EXISTING WEST (LEFT SIDE) ELEVATION
Scale: 1/4" = 1'-0"

1 PROPOSED WEST (LEFT SIDE) ELEVATION
Scale: 1/4" = 1'-0"

CAD File Name
37 South School St_APP_Plans.vwx

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37 SOUTH SCHOOL STREET
PORTSMOUTH, NH 03801

REVISION & REISSUE NOTES

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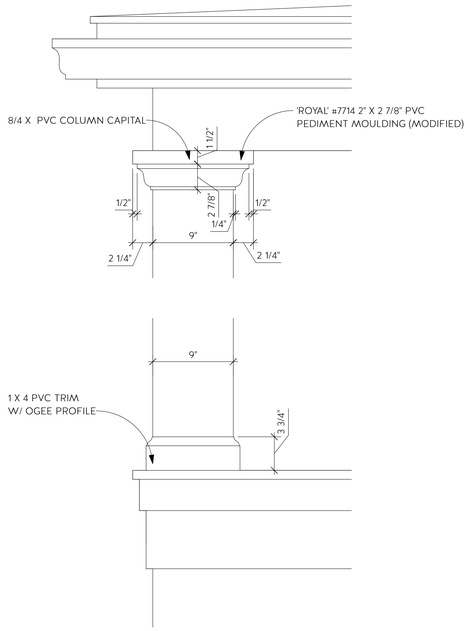
B	1/16/24	HDC REVISIONS

Project #	Project Manager	Date
2023-11	X.X.	1-16-24

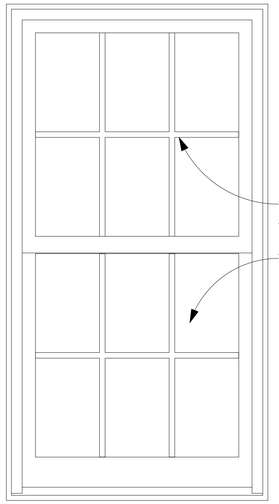
Scale: AS NOTED

ELEVATIONS

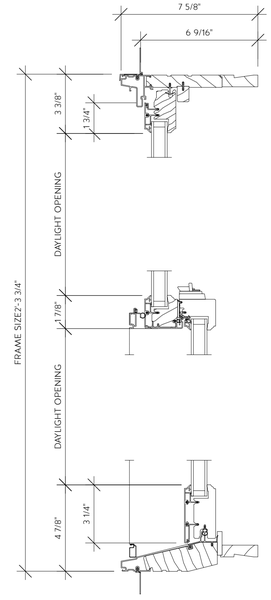
A2.4



5 COLUMN DETAIL
Scale: 1 1/2" = 1'-0"

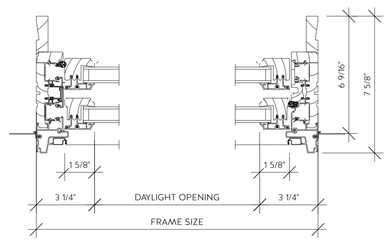


4 MARVIN SIGNATURE DOUBLE HUNG ELEVATION
Scale: 1 1/2" = 1'-0"



2 MARVIN SIGNATURE DOUBLE HUNG HEAD JAMB TO SILL
Scale: 3" = 1'-0"

3 MARVIN SIGNATURE DOUBLE HUNG WINDOW
PRODUCT REFERENCE:
Window Lites and Colors Not Accurate



1 MARVIN SIGNATURE DOUBLE HUNG FRAME WIDTH
Scale: 3" = 1'-0"

3" = 1'-0" 0 2 4 6 8 IN

1 1/2" = 1'-0" 0 4 8 12 16 IN

CAD File Name:
37 South School SL_APP_Plans.vwx

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PATSKY-WOODS RESIDENCE

37 SOUTH SCHOOL STREET
PORTSMOUTH, NH 03801

REVISION & REISSUE NOTES

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Project #	Project Manager	Date
2023-11	X.X.	1-16-24

Scale: AS NOTED

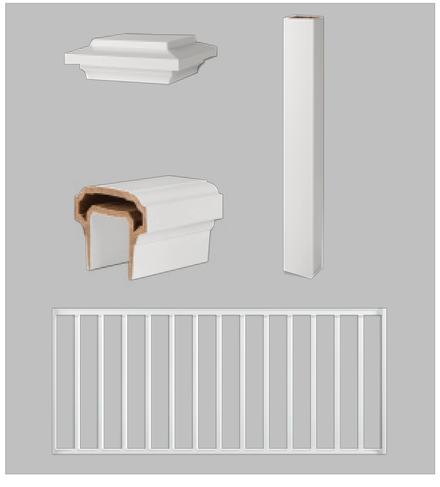
EXTERIOR DETAILS/ SPECIFICATIONS

A3.1

SHUTTERS
INTEX MILLWORK SOLUTIONS, CPVC
LOUVERED SHUTTERS, IN BLACK

SHUTTER HARDWARE
NEW ENGLAND STYLE SHUTTER HINGE SET,
GEORGETOWN STYLE SHUTTER TIEBACKS

RAILING REFERENCE
4X4 ISLAND CAP NOT SHOWN

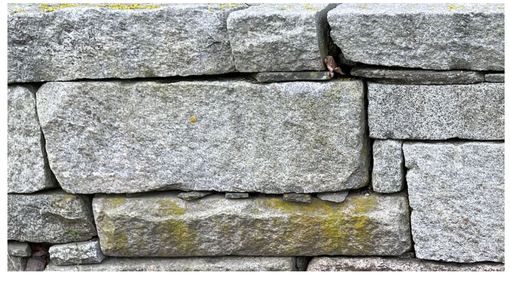


RAILING MATERIALS
TIMBERTECH CLASSIC COMPOSITE SERIES, PREMIER TOP RAIL,
COMPOSITE BALUSTERS, 4X4 POST, 4X4 ISLAND CAP, WHITE

COMPOSITE TRIM BOARD
ACRE COMPOSITE TRIM

DECKING MATERIAL
BOSTON CEDAR - OUTBACK DECKING

BRICK TYPE
MORIN BRICK - BROWNSTONE BLEND



STONE MATERIAL
RECLAIMED GRANITE BLOCK WALLSTONE-SPLIT BLOCK MIX

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ADDITIONS/ALTERATIONS TO THE:

PATSKY-WOODS RESIDENCE

37 SOUTH SCHOOL STREET
PORTSMOUTH, NH 03801

REVISION & REISSUE NOTES

No.	Date	Notes
A	12/15/23	HDC SUBMISSION
B	1/16/24	HDC REVISIONS

Project #	Project Manager	Date
2023-11	X.X.	1-16-24

Scale: AS NOTED

EXTERIOR DETAILS/ SPECIFICATIONS

A3.2

CAD File Name:
37 South School St_APP_Plans.vwx

Project Address: **125 SOUTH STREET**

Permit Requested: **CERTIFICATE OF APPROVAL**

Application: **PUBLIC HEARING 3**

A. Property Information - General:

Existing Conditions:

- Zoning District: General Residence B (GRB)
- Land Use: Residential
- Land Area: 13,939 SF +/-
- Estimated Age of Structure: c.1961
- Building Style: Cape
- Number of Stories:1.5
- Historical Significance: Not listed in Historical Survey
- Public View of Proposed Work: Johnson Court
- Unique Features: NA
- Neighborhood Association: South End

B. Proposed Work: to add roof mounted solar panels.

C. Staff Comments and/ or Suggestions for Consideration:

The project proposal includes the following:

- Add roof top mounted solar panels.

D. Purpose and Intent:

13. Preserve the integrity of the District
14. Assessment of the Historical Significance
15. Conservation and enhancement of property values
16. Maintain the special character of the District
17. Complement and enhance the architectural and historic character
18. Promote the education, pleasure and welfare of the District and the city residents and visitors

E. Review Criteria/Findings of Fact:

9. Consistent with special and defining character of surrounding properties
10. Compatibility of design with surrounding properties
11. Relation to historic and architectural value of existing structures
12. Compatibility of innovative technologies with surrounding properties

PROJECT DESCRIPTION:

(18) 415W ROOF MOUNTED SOLAR PHOTOVOLTAIC MODULES
SYSTEM SIZE: 7.47 kW DC STC

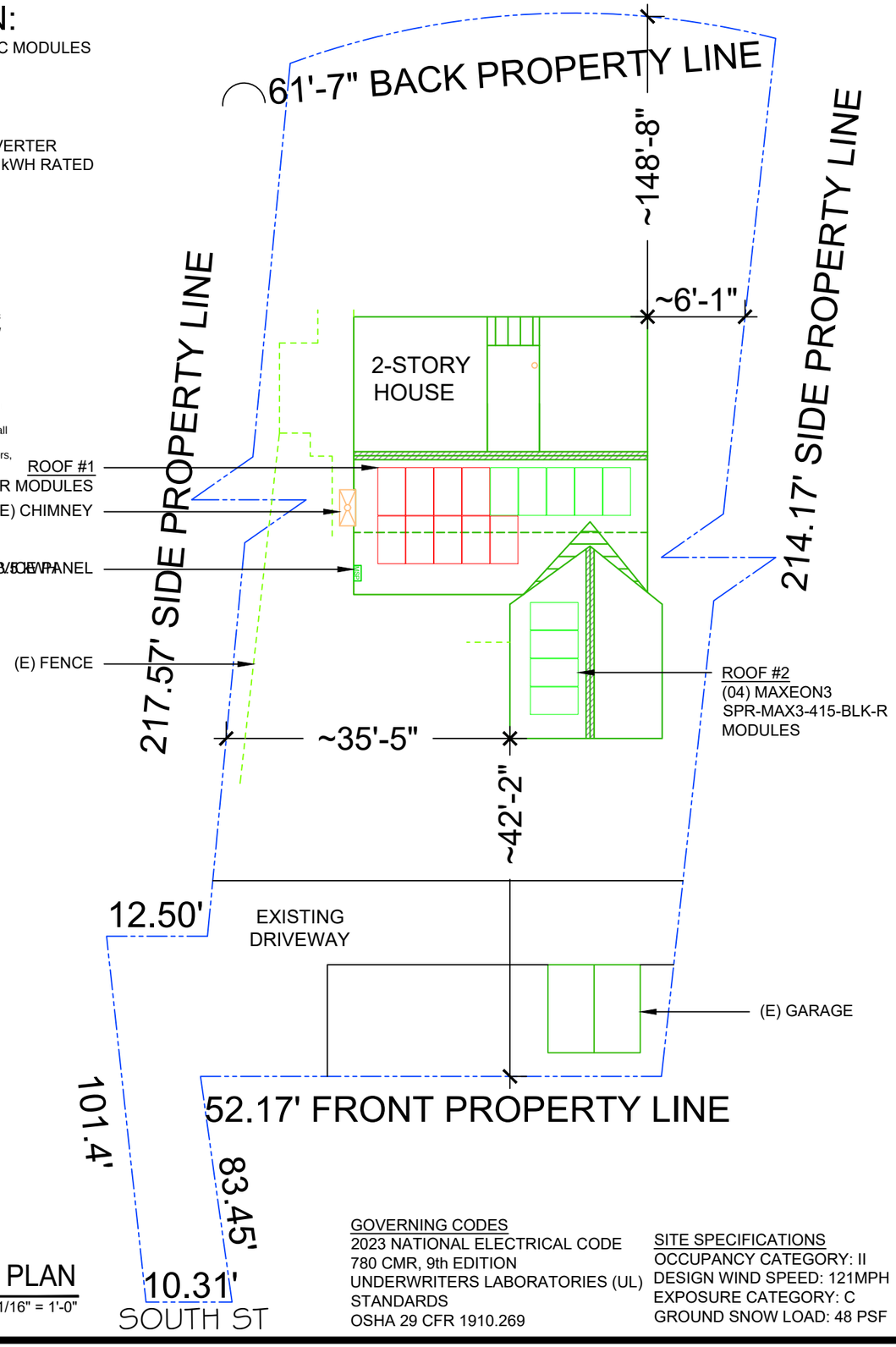
EQUIPMENT SUMMARY
(18) MAXEON3 SPR-MAX3-415-BLK-R MODULES
(1) SOLAREDGE HOME HUB SE7600H-US (240) INVERTER
(1) TESLA POWERWALL ESS UNIT, 5.0 kW AC, 13.5 kWH RATED

VECTOR ENGINEERS®
651 W. GALENA PARK BLVD. STE. 101
DRAPER, UTAH 84020
PHONE (801) 990-1775
WWW.VECTORSE.COM

Firm License Number: COA 01838

VSE Project Number: U1883-1948-231

Vector Structural Engineering has reviewed the existing structure with loading from the solar array and screw connections to the existing framing. The design of the racking system, racking connections, and all other structural is by others. Mechanical, architectural, and all other nonstructural aspects of the design are by others. Electrical is by others, unless stamped by Dean Levorsen.



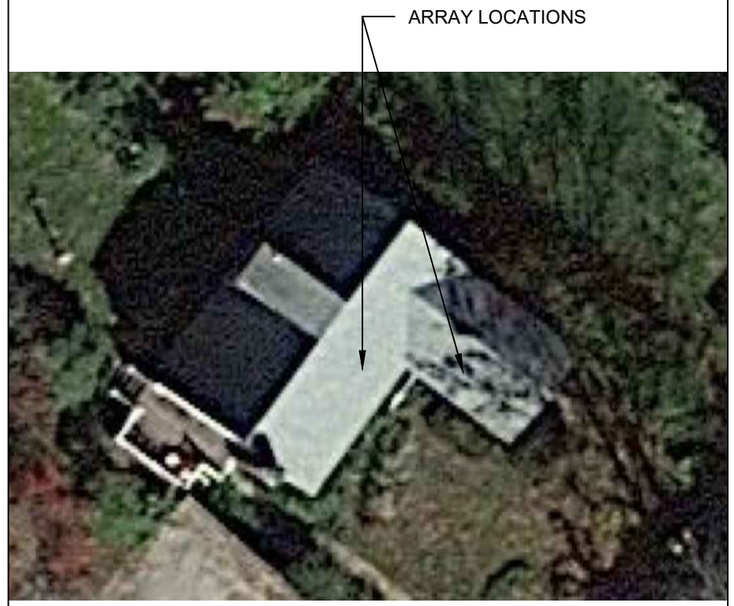
ROOF DESCRIPTION		
ROOF	ROOF TILT	AZIMUTH
#1	40°	126°
#2	36°	216°

SHEET INDEX

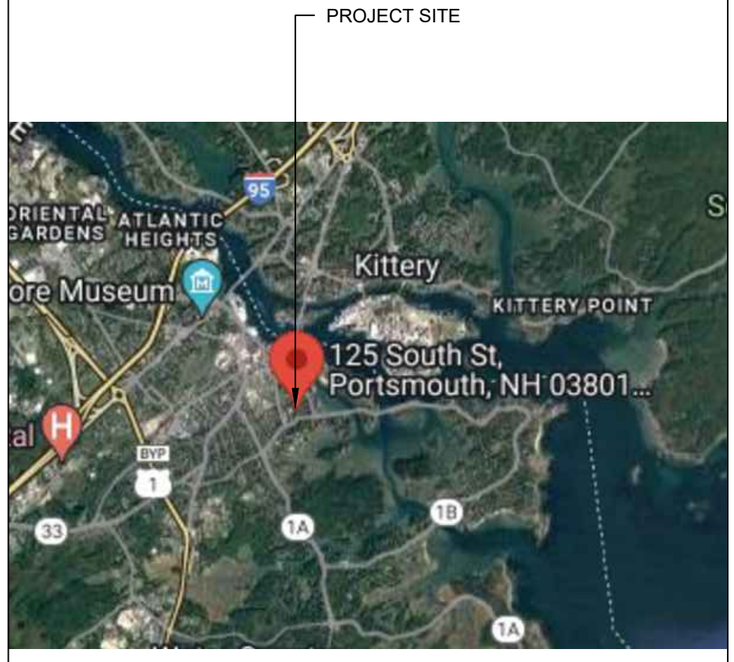
1 SITE PLAN WITH ROOF PLAN
PV-1
SCALE: 1/16" = 1'-0"

GOVERNING CODES
2023 NATIONAL ELECTRICAL CODE
780 CMR, 9th EDITION
UNDERWRITERS LABORATORIES (UL) STANDARDS
OSHA 29 CFR 1910.269

SITE SPECIFICATIONS
OCCUPANCY CATEGORY: II
DESIGN WIND SPEED: 121MPH
EXPOSURE CATEGORY: C
GROUND SNOW LOAD: 48 PSF



HOUSE PHOTO
SCALE: NTS



VICINITY MAP
SCALE: NTS

PROJECT ENGINEER
BROCK NOYES

REVISIONS

DESCRIPTION	DATE	REV

solaris RENEWABLES

CONTRACTOR INFORMATION

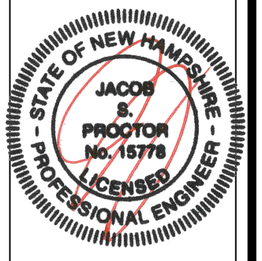
SOLARIS RENEWABLES
781.270.6555 OFFICE
3 ELECTRONICS AVENUE | DANVERS MA 019234
WWW.SOLARISRENEWABLES.COM
MA REG #178137

DATE: 11/21/2023

PROJECT NAME
JAMES SPARRELL & KATHERINE TOWLER
125 SOUTH STREET
PORTSMOUTH, NH 03801
JOB#: MA02-24-0004
APN NO: M0110 B0009L

PROJECT DETAIL
7.47 KW STC
7.6 KW AC

ENGINEERING APPROVAL



12/05/2023

SHEET NAME
SITE PLAN & VICINITY MAP

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-1

MODULE TYPE, DIMENSIONS & WEIGHT

MODULE TYPE = MAXEON3 SPR-MAX3-415-BLK-R
MODULE WEIGHT = 46.7 LBS
MODULE DIMENSIONS = 71.34"x 41.18" = 20.40 SF

ROOF DESCRIPTION

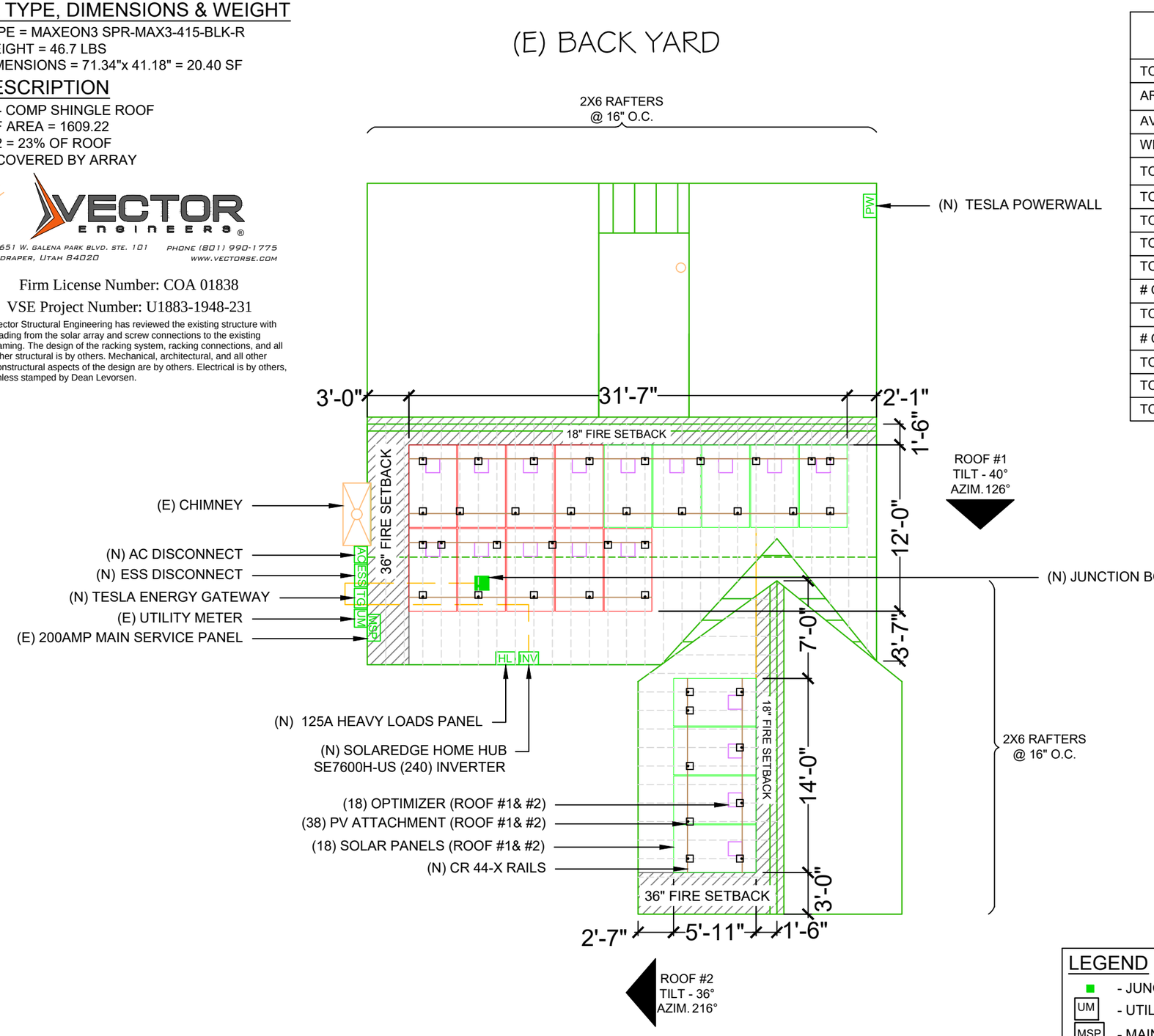
ROOF TYPE - COMP SHINGLE ROOF
TOTAL ROOF AREA = 1609.22
367.2/1609.22 = 23% OF ROOF
FACE AREA COVERED BY ARRAY

VECTOR ENGINEERS®
651 W. GALENA PARK BLVD. STE. 101
DRAPER, UTAH 84020
PHONE (801) 990-1775
WWW.VECTORSE.COM

Firm License Number: COA 01838

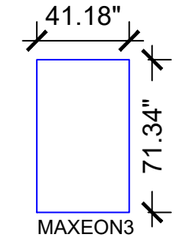
VSE Project Number: U1883-1948-231

Vector Structural Engineering has reviewed the existing structure with loading from the solar array and screw connections to the existing framing. The design of the racking system, racking connections, and all other structural is by others. Mechanical, architectural, and all other nonstructural aspects of the design are by others. Electrical is by others, unless stamped by Dean Levorsen.



LOAD CALCULATION

TOTAL # OF PANELS	18
AREA COVERED (SQ. FT.)	350.46
AVG. LOAD PER CONNECTION POINT (LBS)	21.30
WEIGHT PER SQ. FT. OF SOLAR ARRAY (PSF)	2.31
TOTAL WEIGHT OF MODULES	734.58
TOTAL WEIGHT OF OPTIMIZERS	37.80
TOTAL WEIGHT OF RACKING COMPONENTS	36.92
TOTAL SYSTEM WEIGHT (LBS)	809.30
TOTAL RAIL LENGTH (FT.)	124
# OF 13'-10" CR-44-X RAILS (166")	9
TOTAL RAIL LENGTH FIELD (FT)	124.50
# OF CR-44-X RAIL SPLICES	6
TOTAL # OF MID-CLAMPS	30
TOTAL # OF END-CLAMPS	12
TOTAL # OF L-FOOT ASSEMBLIES	38



MAXEON3
SPR-MAX3-415-BLK-R
MODULE

LEGEND

- JUNCTION BOX
- UM - UTILITY METER
- MSP - MAIN SERVICE PANEL
- INV - INVERTER
- HL - HEAVY LOADS PANEL
- AC - AC DISCONNECT
- RAFTER
- ¾" EMT CONDUIT
- ROOF OBSTRUCTION
- EXTERIOR CONDUIT
- CHIMNEY
- PW - TESLA POWERWALL
- GW - TESLA ENERGY GATEWAY
- ED - ESS DISCONNECT

1 ROOF PLAN & MODULES
PV-2
SCALE: 1/8" = 1'-0"

PROJECT ENGINEER
BROCK NOYES

REVISIONS

DESCRIPTION	DATE	REV

solaris RENEWABLES

CONTRACTOR INFORMATION

SOLARIS RENEWABLES
781.270.6555 OFFICE
3 ELECTRONICS AVENUE | DANVERS
MA 019234
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MA REG #178137

DATE: 11/21/2023

PROJECT NAME
JAMES SPARRELL & KATHERINE TOWLER
125 SOUTH STREET
PORTSMOUTH, NH 03801
JOB#: MA02-24-0004
APN NO: M0110 B0009L

PROJECT DETAIL
7.47 KW STC
7.6 KW AC

ENGINEERING APPROVAL

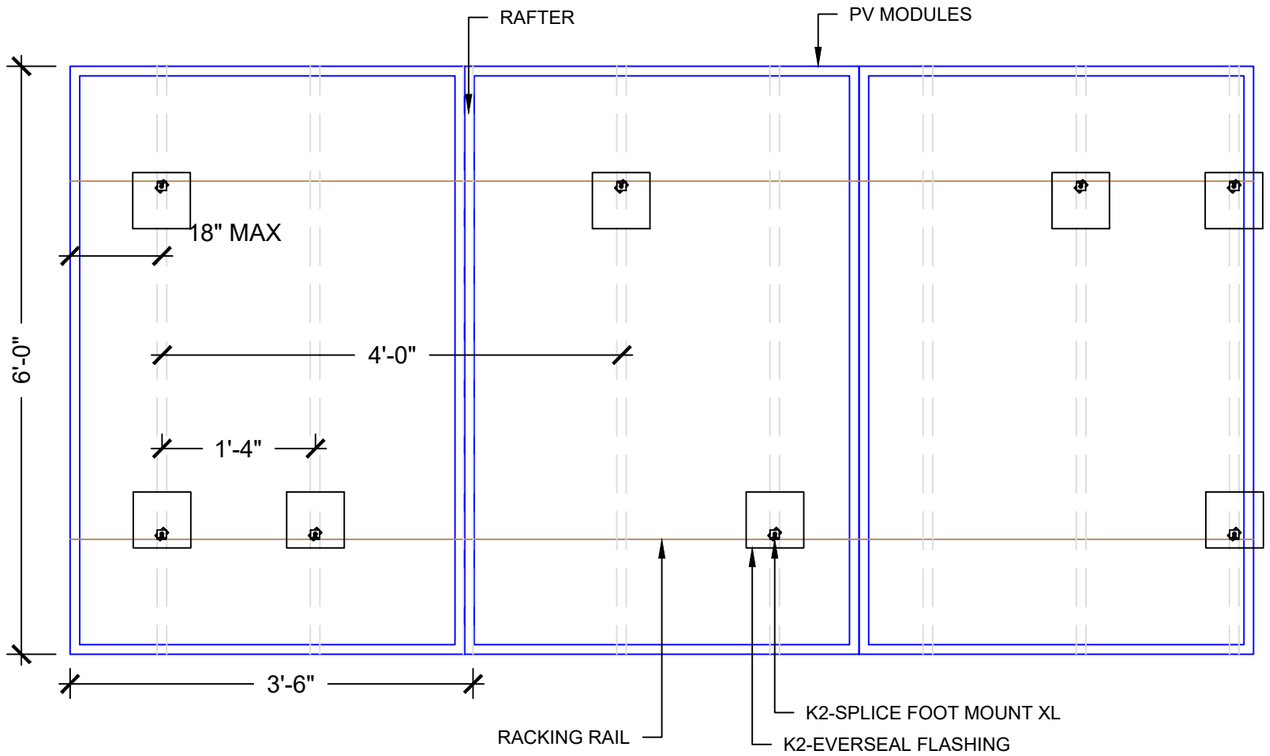
STATE OF NEW HAMPSHIRE – JACOB S. PROCTOR No. 15778 LICENSED PROFESSIONAL ENGINEER

12/05/2023

SHEET NAME
ROOF PLAN & MODULES

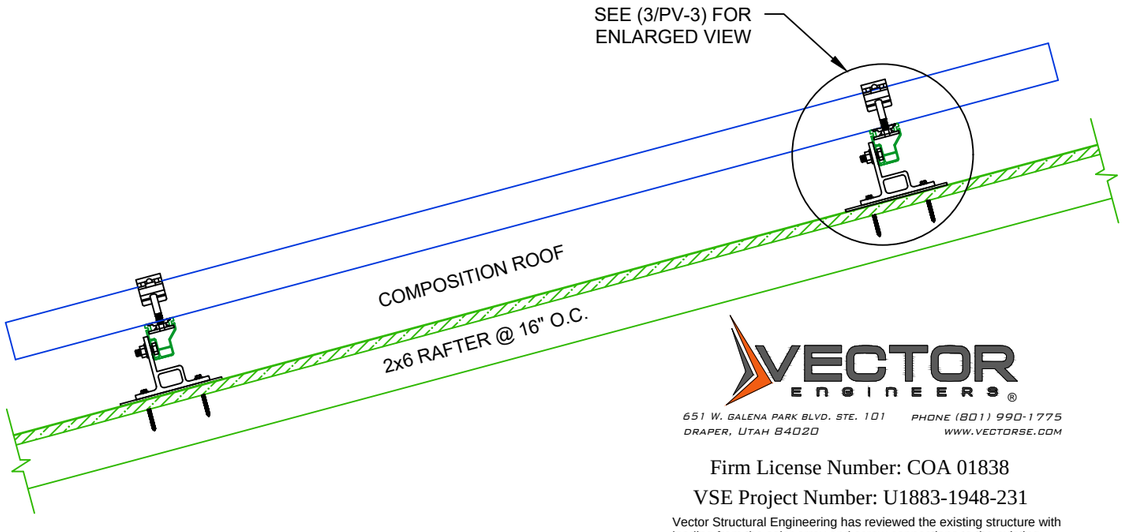
SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-2



1 MOUNTING PLAN VIEW

PV-3 SCALE: NTS



2 MOUNTING METHOD

PV-3 SCALE: NTS

VECTOR ENGINEERS®
651 W. GALENA PARK BLVD. STE. 101
DRAPER, UTAH 84020
PHONE (801) 990-1775
WWW.VECTORSE.COM

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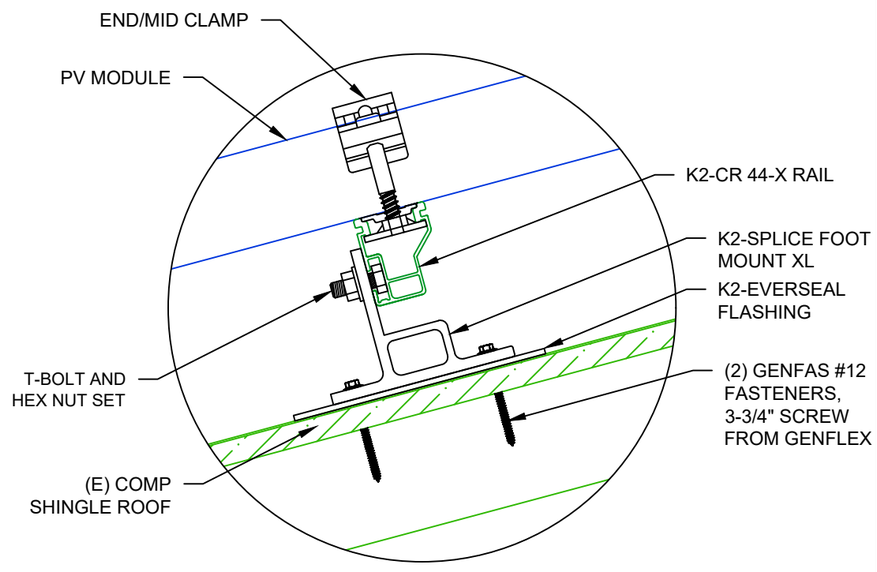
CONSTRUCTION NOTES

1.) CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO INITIATING CONSTRUCTION.
2.) CONTRACTOR SHALL REVIEW ALL MANUFACTURER INSTALLATION DOCUMENTS PRIOR TO INITIATING CONSTRUCTION.
3.) ALL EQUIPMENT SHALL BE LISTED BY U.L. (OR EQUAL) AND LISTED FOR ITS SPECIFIC APPLICATION.
4.) ALL EQUIPMENT SHALL BE RATED FOR THE ENVIRONMENT IN WHICH IT IS INSTALLED.
5.) ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
6.) ACCESS TO ELECTRICAL COMPONENTS OVER 150 VOLTS TO GROUND SHALL BE RESTRICTED TO QUALIFIED PERSONNEL.
7.) ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 VOLTS AND 90°C WET ENVIRONMENT, UNLESS OTHERWISE NOTED.
8.) WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, CONTRACTOR SHALL SIZE THEM ACCORDING TO APPLICABLE CODES.
9.) PV MODULE FRAMES SHALL BE BONDED TO RACKING RAIL OR BARE COPPER G.E.C. PER THE MODULE MANUFACTURER'S LISTED INSTRUCTION SHEET.
10.) PV MODULE RACKING RAIL SHALL BE BONDED TO BARE COPPER G.E.C. VIA WEEB LUG, ILSCO GBL-4DBT LAY-IN LUG, OR EQUIVLENT LISTED LUG.
11.) GROUNDING ELECTRODE CONDUCTOR (G.E.C.) SHALL BE CONTINUOUS AND/OR IRREVERSIBLY SPLICED/WELDED.
12.) ALL JUNCTION BOXES, COMBINER BOXES, AND DISCONNECTS SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION.
13.) ROOF ACCESS POINTS SHALL BE AT A STRONG POINT ON THE BUILDING AND NOT REQUIRE THE PLACEMENT OF LADDERS OVER EXTERIOR WALL OPENINGS.
14.) WORKING SPACE AROUND ELECTRIAL EQUPMENT SHALL COMPLY WITH NEC 110.26



3 MOUNTING METHOD

PV-3 SCALE: NTS

PROJECT ENGINEER
BROCK NOYES

REVISIONS

DESCRIPTION	DATE	REV

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CONTRACTOR INFORMATION

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MA REG #178137

DATE: 11/21/2023

PROJECT NAME

JAMES SPARRELL & KATHERINE TOWLER

125 SOUTH STREET
PORTSMOUTH, NH 03801

JOB#: MA02-24-0004

APN NO: M0110 B0009L

PROJECT DETAIL

7.47 KW STC
7.6 KW AC

ENGINEERING APPROVAL

STATE OF NEW HAMPSHIRE - JACOB S. PROCTOR No. 15778 LICENSED PROFESSIONAL ENGINEER -

12/05/2023

SHEET NAME

MOUNTING & POC DETAIL

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-3

ARRAY CONFIGURATION	
SYSTEM: 7.47 KWSTC, 7.6 KW AC	
TOTAL PV MODULE QTY: 18	
INVERTER I.D. #	INV#1
INVERTER AC POWER (KW):	7.6
PV POWER (KW STC)	7.47
MODULE TOTAL QTY	18
DC:AC RATIO	0.98

INPUT 'A' & 'B'	
STRING QTY:	2
STRING LENGTH	9
MAX. OPEN CIRCUIT VOLTAGE	480
OPERATING VOLTAGE	380
MAX. SHORT CIRCUIT CURRENT	37.5
OPERATING CURRENT	30

PV MODULE SPECIFICATIONS	
MODEL NO.	MAXEON3 SPR-MAX3-415-BLK-R
WEIGHT:	46.7 LBS
DIMENSIONS:	71.34"X41.18"X1.57" INCH
MODULE POWER @ STC:	415 W
VOC (OPEN-CIRCUIT VOLTAGE):	40.7 V
VMP (MAX-POWER VOLTAGE):	35.3 V
ISC (SHORT-CIRCUIT CURRENT):	12.64 A
IMP (MAX-POWER CURRENT):	11.75 A

INVERTER SPECIFICATIONS	
MODEL NO.	SOLAREDGE HOME HUB: SE7600H-US
POWER RATING:	7.6 KW AC
NOMINAL VOLTAGE:	240 V
MAX OUTPUT CURRENT:	32A
CEC WEIGHTED EFFICIENCY:	99%
MAXIMUM DC VOLTAGE:	480 V
INVERTER QUANTITY:	1

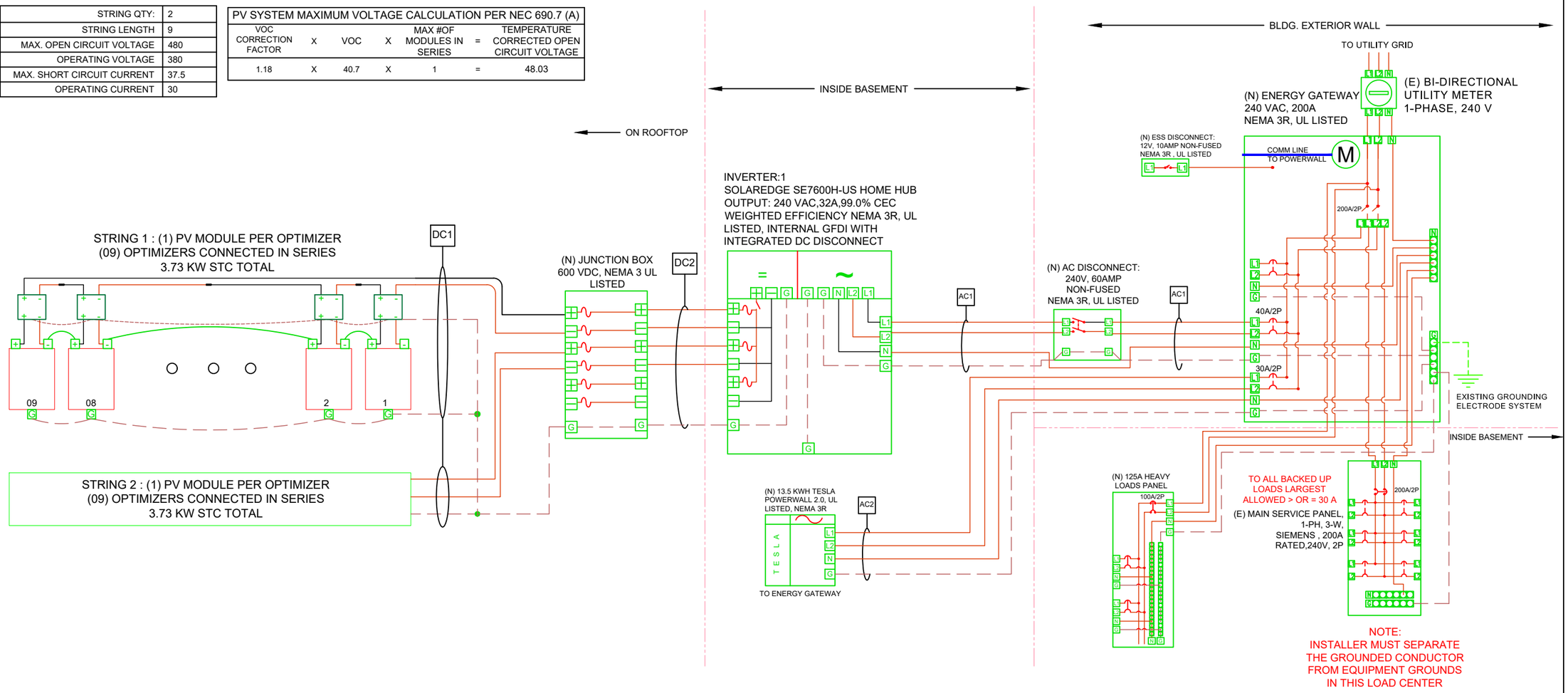
POWER OPTIMIZER SPECIFICATIONS	
MODEL NO.	SOLAREDGE: S440
MAX INPUT POWER:	440 W
MAX VOC:	60 V
OUTPUT CURRENT:	15 A
OUTPUT VOLTAGE:	60 V
MIN. STRING LENGHT:	8
MAX. STRING LENGHT:	25
MAX. STRING POWER:	6800 W

PV SYSTEM MAXIMUM VOLTAGE CALCULATION PER NEC 690.7 (A)						
VOC CORRECTION FACTOR	X	VOC	X	MAX #OF MODULES IN SERIES	=	TEMPERATURE CORRECTED OPEN CIRCUIT VOLTAGE
1.18	X	40.7	X	1	=	48.03

WIRE AND CONDUIT SCHEDULE						
TAG	COND QTY	COND SIZE	COND TYPE	GND QTY	GND SIZE	GND TYPE
DC1	2/STRINGS	AWG#10	PV-WIRE	1	AWG#6	BARE CU
DC2	4	AWG#10	THWN-2	1	AWG#10	THWN-2
AC1	3	AWG#8	THWN-2	1	AWG#10	THWN-2
AC2	3	AWG#8	THWN-2	1	AWG#10	THWN-2

AC SYSTEM SUMMARY	
NOMINAL SYSTEM VOLTAGE:	240 VOLTS AC
MAX.CURRENT PER 690.8(A)(3):	32 A
MAX.CURRENT PER 690.8(B)(1):	40.00 A

NOTE:
STORAGE CHARGING CAPABILITY:
GENERATION ONLY STORAGE
DISCHARGING CAPABILITY:ONSITE LOAD ONLY



TAG	CIRCUIT ORIGIN	CIRCUIT DESTINATION	CONDUCTOR SPECIFICATIONS				REQUIRED CONDUCTOR AMPACITY							AMPACITY CHECK #1		
			MATERIAL	TEMP. RATING	TRADE SIZE	AMPACITY @ 30°C PER 310.15(B)(16)	OPTIMIZER OUTPUT CURRENT	X	#OF PARALLEL STRINGS	=	MAX CURRENT PER 690.8(A)(3)	X 125% PER 690.8(B)(1)	= MAX CURRENT PER 690.8(B)(1)	MAX CURRENT PER 690.8(B)(1)	<	CONDUCTOR AMPACITY
DC1	PV STRING	JUNCTION BOX	COPPER	90°	AWG#10	40 AMPS	15.0	X	1	=	15.0 AMPS	X 1.25	= 18.75	18.75 AMPS	<	40 AMPS
DC2	JUNCTION BOX	INVERTER	COPPER	90°	AWG#10	40 AMPS	15.0	X	1	=	15.0 AMPS	X 1.25	= 18.75	18.75 AMPS	<	40 AMPS

AMPACITY CHECK FOR AC DISCONNECT CONDUCTORS	
CONDUCTOR # of c.c.c 's	3
AMPACITY	DERATE PER 310.15(B)(3)(a) 1.00
55 AMPS	
55 AMPS X 1.00 = 55A	
55 A X .94(temp) = 51.70A > 40.00A	

TAG	CIRCUIT ORIGIN	CIRCUIT DESTINATION	CONDUCTOR SPECIFICATIONS				REQUIRED CONDUCTOR AMPACITY							AMPACITY CHECK #1			CORRECTED AMPACITY CALCULATION					AMPACITY CHECK #2		
			MATERIAL	TEMP. RATING	TRADE SIZE	AMPACITY @ 30°C PER 310.15(B)(16)	INVERTER OUTPUT CURRENT	X	#OF INVERTERS	=	MAX CURRENT PER 690.8(A)(3)	X 125% PER 690.8(B)(1)	= MAX CURRENT PER 690.8(B)(1)	MAX CURRENT PER 690.8(B)(1)	<	CONDUCTOR AMPACITY	CONDUCTOR AMPACITY	X	TEMP DERATE	X CONDUIT FILL DERATE	=	DERATED CONDUCTOR AMPACITY	MAX CURRENT PER 690.8(B)(1)	<	DERATED CONDUCTOR AMPACITY
AC1	INVERTER	TESLA ENERGY GATEWAY	COPPER	90°	AWG#8	55 AMPS	32	X	1	=	32.0 AMPS	X 1.25	= 40.00	40.00 AMPS	<	55 AMPS	55	X	0.94	X 1.00	=	51.70	40.00 AMPS	<	51.70 AMPS

PROJECT ENGINEER
BROCK NOYES

REVISIONS		
DESCRIPTION	DATE	REV

solaris RENEWABLES

CONTRACTOR INFORMATION

SOLARIS RENEWABLES
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3 ELECTRONICS AVENUE | DANVERS MA 019234
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MA REG #178137

DATE: 11/21/2023

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125 SOUTH STREET
PORTSMOUTH, NH 03801

JOB#: MA02-24-0004

APN NO: M0110 B0009L

PROJECT DETAIL
7.47 KW STC
7.6 KW AC

ENGINEERING APPROVAL

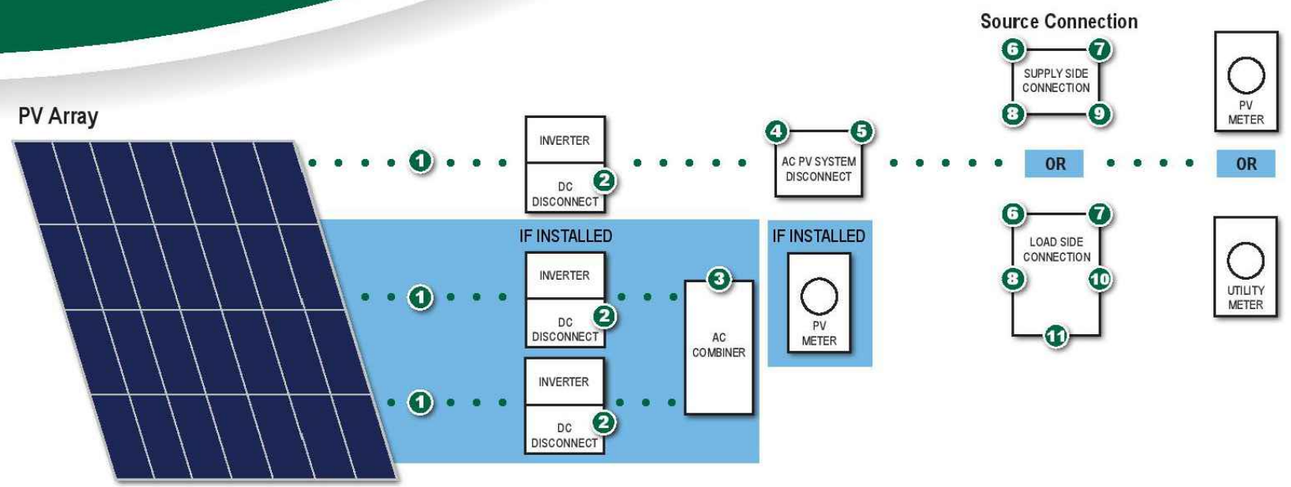
SHEET NAME
ELECTRICAL LINE DIAGRAM

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-4

PV SYSTEM **LABELING**

Requirements for the 2020 Massachusetts Electrical Code[1]



General Labeling Guidance

There are several marking and labeling requirements for PV systems and a variety of interpretations. This document provides a summary of the most common requirements and an example of each location. Because of the wide range of installations, systems may require fewer labels, or additional labels not outlined here.

When providing code-required markings, consideration should be given to environmental conditions and overall clarity of the content relative to its location. Excessive labeling may be confusing. Red and white labels should only be used when required by a specific code or ANSI standard. Section 110.21(B) requires permanent labels, not handwritten, and suitable for the environment in which they are installed. It also recommends the labels to follow ANSI Z535.4-2011 Product Safety Signs and Labels.

DANGER | WARNING | CAUTION | NOTICE

Example of ANSI Z535.4-2011 markings

Although placards are generally the most durable option, they need to be designed for exposure

Excessive labeling may be confusing

[1]The Massachusetts Electrical Code (MEC) is based on the National Electrical Code (NEC), with specific amendments. All code references in this document are to the 2020 edition of the MEC unless otherwise noted.

1 DC Raceway Label
Section 690.31(D)(2)
- On or in a building, unless location/purpose is evident
- Raceways, enclosures, every 10', suitable for environment
- Minimum 3/8" CAPS White on Red, Reflective

PHOTOVOLTAIC POWER SOURCE
OR
SOLAR PV DC CIRCUIT

2 DC PV Circuits
Section 690.53
- Maximum system voltage calculated in accordance with 690.7
- At one of the following locations:
  - DC PV system disconnect
  - PV system electronic power conversion equipment
  - Distribution equipment associated with the PV system

PV MAX SYSTEM VOLTAGE ☐ Vdc

3 Section 705.12(B)(3)(3) "AC Combiner Panel"
- Sum of ampere ratings, excluding source OCPD
- Label applied adjacent to distribution equipment
- The following or equivalent wording:

WARNING
THIS EQUIPMENT FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVERCURRENT DEVICES, EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE, SHALL NOT EXCEED AMPACITY OF BUSBAR.

4 PV System Disconnect
Section 690.13(B):
- See Figure 690.1(b) diagrams for location in system
- Disconnects PV from all other wiring systems
- Installed in a readily accessible location
- Permanently marked: PV SYSTEM DISCONNECT, or equivalent
- Where line/load may be energized in open (off) position:
  - Marked with the following or equivalent:

PV SYSTEM DISCONNECT
Example of PV System Disconnect Identification

WARNING
ELECTRICAL SHOCK HAZARD
TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION
Example of Line/Load Energized marking

5 Buildings with Rapid Shutdown
Section 690.56(C)(2)
- Switch label that includes the following:
  - Minimum 3/8" CAPS, White on Red, Reflective
- *Required for all system types!*

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

6 AC Power Source
Section 690.54
- "All interactive system(s) points of interconnection with other sources shall be marked…"
- Accessible location at disconnecting means, as a power source:
  - Rated AC output current
  - Nominal operating AC voltage

PHOTOVOLTAIC POWER SOURCE
RATED AC OUTPUT CURRENT 40.00 Aac
NOMINAL OPERATING VOLTAGE 240 Vac

7 Identification of Power Sources
Section 690.56 (Informational Note)
- MA Fire Code (527 CMR 1) requires signage:
  - Adjacent to building or service disconnect
  - Identifies responsible party for operation of system
  - Provides contact information

PV SYSTEM INSTALLATION BY:
ABC SOLAR
CONTACT PHONE: 857-600-8995
IN CASE OF EMERGENCY DIAL 911

8 Buildings with Rapid Shutdown
Section 690.56(C)
- Located at each service equipment location where PV is connected "or approved readily visible location"
- Shall indicate location of initiation device
- Shall include simple diagram of building and roof

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

9 Service Disconnect Directory
Sections 690.56(B)/705.10/712.10
- Permanent plaque or directory installed at either:
  - Each service equipment location
  - Approved readily visible location
- Marked with the following wording:
- Denote location of each power source disconnect
- Grouped with other plaques or directories
- Correctly oriented with respect to diagram's location

CAUTION
THIS BUILDING IS POWERED BY MULTIPLE SOURCES. UTILITY AND SOLAR PHOTOVOLTAIC SYSTEM. DISCONNECT LOCATIONS ARE SHOWN BELOW

10 Load-Side Source Connections
Section 705.12(C) Power Source Identification
- Equipment containing overcurrent devices supplying power to busbar or conductor
- Supplied from multiple sources
- "Marked to indicate the presence of all sources"

WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

11 Section 705.12(B)(3)(2) "Do Not Relocate"
- Two sources, opposite ends of busbar
- Label applied adjacent to back-fed breaker
- The following or equivalent wording:

WARNING
POWER SOURCE OUTPUT CONNECTION
DO NOT RELOCATE
THIS OVERCURRENT DEVICE.

PROJECT ENGINEER
BROCK NOYES

REVISIONS

DESCRIPTION	DATE	REV

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PORTSMOUTH, NH 03801

JOB#: MA02-24-0004

APN NO: M0110 B0009L

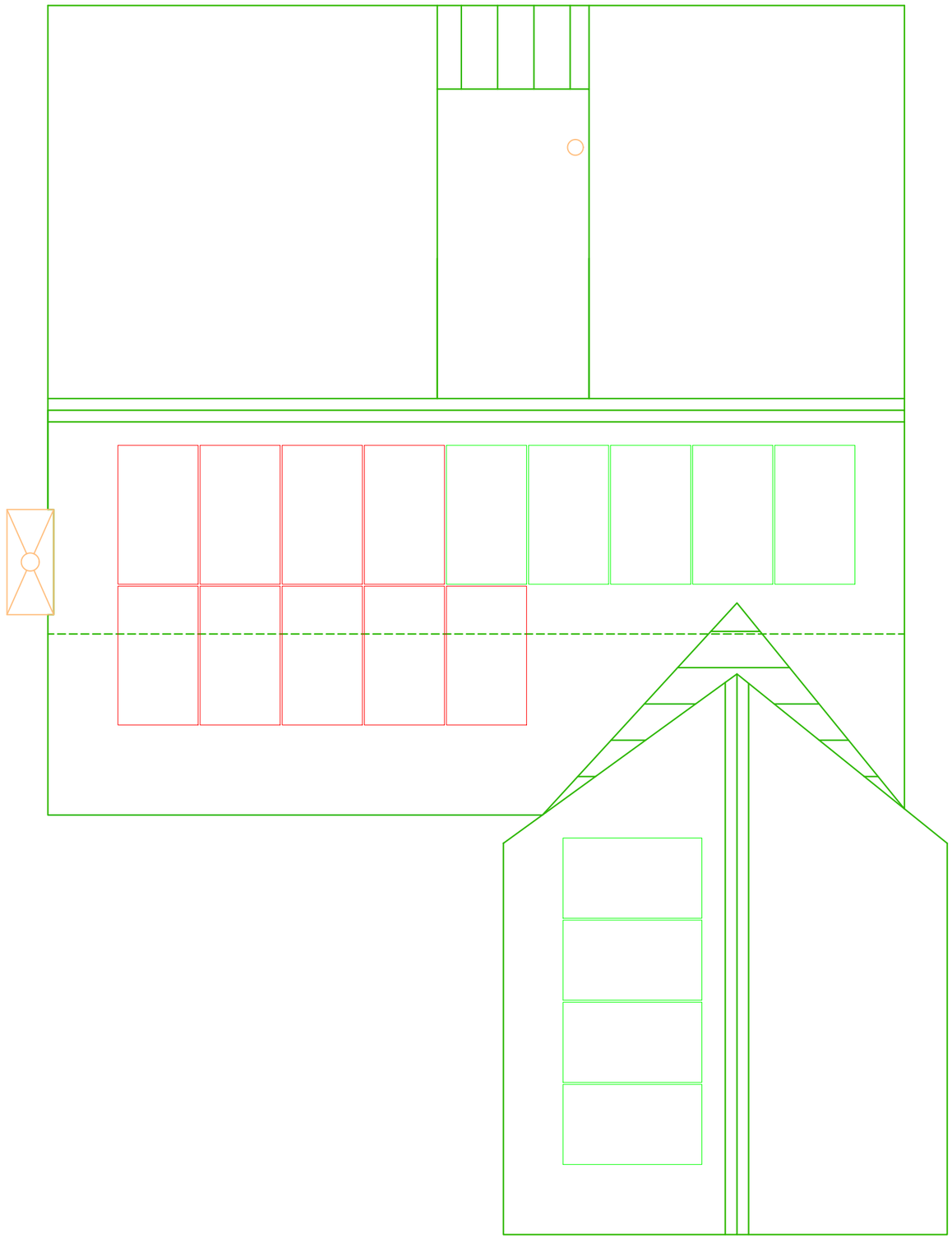
PROJECT DETAIL
7.47 KW STC
7.6 KW AC

ENGINEERING APPROVAL

SHEET NAME
PLACARDS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-5



ROOF DESCRIPTION		
ROOF	ROOF TILT	AZIMUTH
#1	40°	126°
#2	36°	216°

PROJECT ENGINEER
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APN NO: M0110 B0009L

PROJECT DETAIL

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7.6 KW AC

ENGINEERING APPROVAL

SHEET NAME
LAYOUT MAP

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-6

maxeon

PRELIMINARY DATASHEET

MAXEON 3 SOLAR PANEL

410–420 W | Up to 22.2% Efficient

Ideal for residential applications

Black backsheet, black frame

More Lifetime Energy

Designed to maximise energy generation through leading efficiency, enhanced performance in high temperatures, and higher energy conversion in low-light conditions like mornings, evenings and cloudy days.

Uncompromising Durability

Engineered to power through all types of weather conditions with crack-resistant cells and reinforced connections that protect against fatigue and corrosion, to an electrical architecture that mitigates the impact of shade and prevents hot-spot formation.

HOT-SPOT PROTECTED

Superior Sustainability

Clean ingredients, responsible manufacturing, and lasting energy production for 40 years make Maxeon panels the most sustainable choice in solar.

maxeon 40 YEAR WARRANTY Power | Product | Service

The Industry's Longest Warranty

Maxeon panels are covered by a 40-year warranty[1] backed by extensive third-party testing and field data from more than 33 million panels deployed worldwide.

Product and power coverage	40 Years
Year 1 minimum warranted output	98.0%
Maximum annual degradation	0.25%

Learn more about the SPR-MAX3-XXX-BLK-R
maxeon.com/us

MAXEON 3 POWER: 410–420 W | EFFICIENCY: Up to 22.2%

PRELIMINARY DATASHEET

Electrical Data

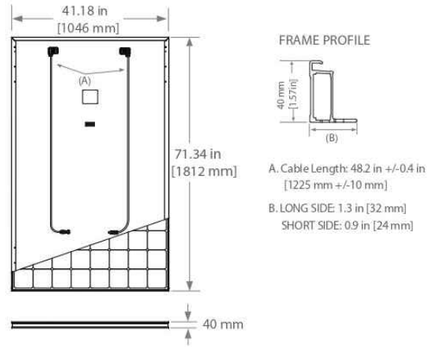
	SPR-MAX3-420-BLK-R	SPR-MAX3-415-BLK-R	SPR-MAX3-410-BLK-R
Nominal Power (Pnom)[2]	420 W	415 W	410 W
Power Tolerance	+5/0%	+5/0%	+5/0%
Panel Efficiency	22.2%	21.9%	21.6%
Rated Voltage (Vmpp)	35.5 V	35.3 V	35.1 V
Rated Current (Impp)	11.82 A	11.75 A	11.68 A
Open-Circuit Voltage (Voc)	40.7 V	40.7 V	40.7 V
Short-Circuit Current (Isc)	12.65 A	12.64 A	12.63 A
Max. System Voltage	1000 V UL		
Maximum Series Fuse	20 A		
Power Temp Coef.	−0.27% / °C		
Voltage Temp Coef.	−0.236% / °C		
Current Temp Coef.	0.058% / °C		

Warranties, Certifications and Compliance

Standard Tests[3]	UL1703 (Type 2 Fire Rating) (Pending)
Quality Management Certs	ISO 9001:2015, ISO 14001:2015
Ammonia Test	IEC 62716 (Pending)
Desert Test	IEC 60068-2-68, MIL-STD-810G (Pending)
Salt Spray Test	IEC 61701 (maximum severity) (Pending)
PID Test	1000 V: IEC 62804 (Pending)
Available Listings	UL (Pending)
IFLI Declare Label	First solar panel labeled for ingredient transparency and LBC-compliance.[4]
Cradle to Cradle Certified™ Bronze	First solar panel line certified for material health, water stewardship, material reutilization, renewable energy & carbon management, and social fairness.[5]
Green Building Certification Contribution	Panels can contribute additional points toward LEED and BREEAM certifications.
EHS Compliance	RoHS, OHSAS 18001:2007, Recycle Scheme, REACH SVHC-163

Operating Condition And Mechanical Data

Temperature	−40°F to +185°F (−40°C to +85°C)
Impact Resistance	1 inch (25 mm) diameter hail at 52 mph (23 m/s)
Solar Cells	112 Monocrystalline Maxeon Gen 3
Tempered Glass	High-transmission tempered anti-reflective
Junction Box	IP-68, Stäubli (MC4), 2 bypass diodes
Weight	46.7 lbs (21.2 kg)
Max. Load[6]	Wind: 50 psf, 2400 Pa, 244 kg/m² back Snow: 112 psf, 5400 Pa, 550 kg/m² front
Frame	Class 1 black anodized (highest AAMA rating)



LEAD FREE RoHS COMPLIANT

Declare.

CERTIFIED cradle to cradle BRONZE

Please read the safety and installation instructions.
Visit Visit www.maxeon.com/us/InstallGuideUL.
Paper version can be requested through
techsupport.ROW@maxeon.com.

1 40-year warranty is not available in all countries or all installations and requires registration, otherwise our 25-year warranty applies. Service availability varies by country and installation provider.
2 Standard Test Conditions (1000 W/m² irradiance, AM 1.5, 25° C). NREL calibration Standard: SOMS current, LACCS FF and Voltage.
3 Type 2 fire rating per UL1703:2013, Class C fire rating per UL1703:2002.
4 Maxeon DC panels first received the International Living Future Institute Declare Label in 2016.
5 Maxeon DC panels are Cradle to Cradle Certified™ Bronze - www.c2ccertified.org. Cradle to Cradle Certified™ is a certification mark licensed by the Cradle to Cradle Products Innovation Institute.
6 Safety factor 1.5 included.

Made in Philippines (Cells)
Assembled in Mexico (Module)
Specifications included in this datasheet are subject to change without notice.

maxeon

545906 REV A / LTR_US
Publication Date: June 2022

PROJECT ENGINEER
BROCK NOYES

REVISIONS

DESCRIPTION	DATE	REV

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CONTRACTOR INFORMATION

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WWW.SOLARISRENEWABLES.COM
MA REG #178137

DATE: 11/21/2023

PROJECT NAME
JAMES SPARRELL & KATHERINE TOWLER
125 SOUTH STREET
PORTSMOUTH, NH 03801
JOB#: MA02-24-0004
APN NO: M0110 B0009L

PROJECT DETAIL
7.47 KW STC
7.6 KW AC

ENGINEERING APPROVAL

SHEET NAME
MODULE SPECIFICATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-7

SolarEdge Home Hub Inverter

For North America

SE3800H-US / SE5700H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US[1]

HOME BACKUP

Optimized battery storage with HD-Wave technology

- Record-breaking 99% weighted efficiency with 200% DC oversizing
- Small, lightweight, and easy to install
- Modular design, future ready with optional upgrades to:
  - DC-coupled storage for full or partial home backup
  - Built-in consumption monitoring
  - Direct connection to the SolarEdge Home EV Charger
- Multi-inverter, scalable storage solution, with enhanced battery power up to 10kW
- Integrated arc fault protection and rapid shutdown for NEC 2014 – 2023, per article 690.11 and 690.12
- Embedded revenue grade production data, ANSI C12.20 Class 0.5

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SolarEdge Home Hub Inverter

For North America

SE3800H-US / SE5700H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US[1]

Applicable to inverters with part number	SEXXXXH-USMNBBXXX / SEXXXXH-USSNBBXXX						
	SE3800H-US	SE5700H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	Units
OUTPUT – AC ON GRID							
Rated AC Power	3800 @ 240V 3300 @ 208V	5760 @ 240V 5000 @ 208V	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	W
Maximum AC Power Output	3800 @ 240V 3300 @ 208V	5760 @ 240V 5000 @ 208V	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208	W
AC Output Voltage (Nominal)	208 / 240						Vac
AC Output Voltage (Range)	183 – 264						Vac
AC Frequency Range (min - nom - max)	59.3 – 60 – 60.5[2]						Hz
Maximum Continuous Output Current @ 240V	16	24	25	32	42	47.5	A
Maximum Continuous Output Current @ 208V	16	24	24	-	-	48	A
GFDI Threshold	1						A
Total Harmonic Distortion (THD)	< 3						%
Power Factor	1, adjustable -0.85 to 0.85						
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes						
Charge Battery from AC (if allowed)	Yes						
Typical Nighttime Power Consumption	< 2.5						W
OUTPUT – AC BACKUP[3]							
Rated AC Power in Backup Operation[4]	7600	5760	6000	7600 11400*	10000 11400*	11400	W
AC L-L Output Voltage Range in Backup	211 – 264						Vac
AC L-N Output Voltage Range in Backup	105 – 132						Vac
AC Frequency Range in Backup (min - nom - max)	55 – 60 – 65						Hz
Maximum Continuous Output Current in Backup Operation	32	24	25	32 47.5	42 47.5	47.5	A
GFDI	1						A
THD	< 5						%
OUTPUT – SOLAREDGE HOME EV CHARGER AC							
Rated AC Power	9600						W
AC Output Voltage Range	211 – 264						Vac
On-Grid AC Frequency Range (min - nom - max)	59.3 – 60 – 60.5						Hz
Maximum Continuous Output Current @240V (grid, PV and battery)	40						Aac
INPUT – DC (PV AND BATTERY)							
Transformer-less, Ungrounded	Yes						
Max Input Voltage	480						Vdc
Nom DC Input Voltage	380						Vdc
Reverse-Polarity Protection	Yes						
Ground-Fault Isolation Detection	600kΩ Sensitivity						
INPUT – DC (PV)							
Maximum DC Power @ 240V	7600	11520	12000	15200	20000	22800	W
Maximum DC Power @ 208V	6600	10000	10000	-	-	20000	W
Maximum Input Current[5] @ 240V	20	16	16.5	20 30	30	30	Adc
Maximum Input Current[5] @ 208V	9	13.5	13.5	-	-	27	Adc
Max. Input Short Circuit Current	45						
Maximum Inverter Efficiency	99.2						%
CEC Weighted Efficiency	99					99 @ 240V 98.5 @ 208V	%
2-pole Disconnection	Yes						

* Supported with P/N SExxxxH-USMNxxxxxx.

(1) These specifications apply to inverters with part numbers SExxxxH-USMNxxxxx or SExxxxH-USSNxxxxxx and connection unit model number DCD-1PH-US-PxH-F-x.

(2) For other regional settings please contact SolarEdge support.

(3) Not designed for standalone applications and requires AC for commissioning. Backup functionality is only supported for 240V grid.

(4) Rated AC power in Backup Operation is valid for installations with multiple inverters. For a single backup inverter operation, rated AC power in Backup is 90% of the value stated.

(5) A higher current source may be used; the inverter will limit its input current to the values stated.

PROJECT ENGINEER
BROCK NOYES

REVISIONS

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PROJECT NAME

JAMES SPARRELL & KATHERINE TOWLER

125 SOUTH STREET
PORTSMOUTH, NH 03801

JOB#: MA02-24-0004

APN NO: M0110 B0009L

PROJECT DETAIL

7.47 KW STC
7.6 KW AC

ENGINEERING APPROVAL

SHEET NAME
INVERTER SPECIFICATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-8

SolarEdge Home Hub Inverter

For North America

SE3800H-US / SE5700H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US[1]

Applicable to inverters with part number	SEXXXXH-USMNBBXXX / SEXXXXH-USSNBBXXX						
	SE3800H-US	SE5700H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	Units
OUTPUT – DC (BATTERY)							
Supported Battery Types	SolarEdge Home Battery, LG RESU Prime						
Number of Batteries per Inverter	Up to 3 SolarEdge Home Battery, up to 2 LG RESU Prime						
Continuous Power[6]	7600 @ 240V 3800 @ 208V	5760 @ 240V 5000 @ 208V	6000	11400		11400 @ 240V 10000 @ 208V	W
Peak Power[6]	7600 @ 240V 3800 @ 208V	5760 @ 240V 5000 @ 208V	6000	11400		11400 @ 240V 10000 @ 208V	W
Max Input Current	20	26.5					Adc
2-pole Disconnection	Up to inverter rated backup power						
SMART ENERGY CAPABILITIES							
Consumption Metering	Built-in[7]						
Backup & Battery Storage	With Backup Interface (purchased separately) for service up to 200A; up to 3 inverters						
EV Charging	Direct connection to SolarEdge Home EV Charger						
ADDITIONAL FEATURES							
Supported Communication Interfaces	RS485, Ethernet, Cellular[8,9], Wi-Fi[8], SolarEdge Home Network						
Revenue Grade Metering, ANSI C12.20	Built-in[7]						
Integrated AC, DC and Communication Connection Unit	Yes						
Inverter Commissioning	With the SetApp mobile application using built-in Wi-Fi Access Point for local connection						
DC Voltage Rapid Shutdown (PV and Battery)	Yes, according to NEC 2014 – 2023 per article 690.11 and 690.12						
STANDARD COMPLIANCE							
Safety	UL1741, UL1741 SA, UL1741 SB, UL1741 PCS, UL1699B, UL1998, UL9540, CSA 22.2						
Grid Connection Standards	IEEE1547-2018, Rule 21, Rule 14H, CSA C22.3 No. 9						
Emissions	FCC part 15 class B						
INSTALLATION SPECIFICATIONS							
AC Output and EV AC Output Conduit Size / AWG Range	1" maximum / 14-4 AWG						
DC Input (PV and Battery) Conduit Size / AWG Range	1" maximum / 14-6 AWG						
Dimensions with Connection Unit (H x W x D)	17.7 x 14.6 x 6.8 / 450 x 370 x 174			17.7 x 14.6 x 6.8 / 450 x 370 x 174**	21.06 x 14.6 x 7.3 / 535 x 370 x 185**	21.06 x 14.6 x 8.2 / 535 x 370 x 208***	in / mm
				21.06 x 14.6 x 8.2 / 535 x 370 x 208***			
Weight with Connection Unit	30.8 / 14			30.8 / 14**	41.7 / 18.9**	44.9 / 20.3***	lb / kg
				44.9 / 20.3***			
Noise	< 50						dBA
Cooling	Natural Convection						
Operating Temperature Range	-40 to +140 / -40 to +60[10]						°F / °C
Protection Rating	NEMA 4X						

** Supported with PN SEXXXXH-USSNBBXX4 or SEXXXXH-USMNBBXX4.
*** Supported with PN SEXXXXH-USSNBBXX5 or SEXXXXH-USMNBBXX5.
(6) Discharge power is limited up to the inverter rated AC power for on-grid and backup applications, as well as up to the installed batteries' rating.
(7) For consumption metering current transformers should be ordered separately: SECT-SPL-225A-T-20 or SEACT0750-400NA-20 units per box. Revenue grade metering is only for production metering.
(8) Information concerning the Data Plan's terms & conditions is available in the following link: SolarEdge Communication Plan Terms and Conditions.
(9) The part number SEXXXXH-USXNBB**X**XX only supports the Wi-Fi communication interface, and the part number SEXXXXH-USXNBB**L**XX only supports the cellular communication interface.
(10) Full power up to at least 50°C / 122°F; for power de-rating information refer to the Temperature Derating Technical Note for North America.

PROJECT ENGINEER
BROCK NOYES

REVISIONS

DESCRIPTION	DATE	REV

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CONTRACTOR INFORMATION

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WWW.SOLARISRENEWABLES.COM
MA REG #178137

DATE: 11/21/2023

PROJECT NAME

JAMES SPARRELL & KATHERINE TOWLER

125 SOUTH STREET
PORTSMOUTH, NH 03801

JOB#: MA02-24-0004

APN NO: M0110 B0009L

PROJECT DETAIL

7.47 KW STC
7.6 KW AC

ENGINEERING APPROVAL

SHEET NAME
INVERTER SPECIFICATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-8.1

Residential Power Optimizer

For North America

S440 / S500B / S650B

POWER OPTIMIZER

PV power optimization at the module level

- Specifically designed to work with SolarEdge residential inverters
- Detects abnormal PV connector behavior, preventing potential safety issues
- Module-level voltage shutdown for installer and firefighter safety
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch loss, from manufacturing tolerance to partial shading
- Faster installations with simplified cable management and easy assembly using a single bolt
- Flexible system design for maximum space utilization
- Compatible with bifacial PV modules
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)

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Residential Power Optimizer

For North America

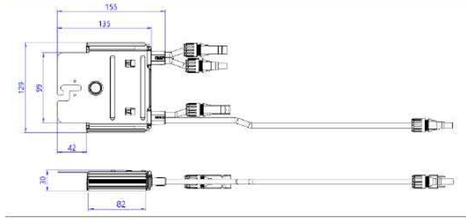
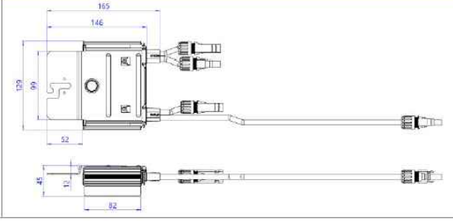
S440 / S500B / S650B

	S440	S500B	S650B	
INPUT				
Rated Input DC Power(1)	440	500	650	W
Absolute Maximum Input Voltage (Voc)	60	125	85	Vdc
MPPT Operating Range	8 – 60	12.5 – 105	12.5 – 85	Vdc
Maximum Short Circuit Current (Isc) of Connected PV Module	14.5	15		Adc
Maximum Efficiency	99.5			%
Weighted Efficiency	98.6			%
Overvoltage Category	II			
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)				
Maximum Output Current	15			Adc
Maximum Output Voltage	60	80		Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR INVERTER OFF)				
Safety Output Voltage per Power Optimizer	1 ± 0.1			Vdc
STANDARD COMPLIANCE				
Photovoltaic Rapid Shutdown System	NEC 2014 – 2023			
EMC	FCC Part 15 Class B, IEC61000-6-2, IEC61000-6-3			
Safety	IEC62109-1 (class II safety), UL1741			
Material	UL94 V-0, UV Resistant			
RoHS	Yes			
Fire Safety	VDE-AR-E 2100-712:2013-05			
INSTALLATION SPECIFICATIONS				
Maximum Allowed System Voltage	1000			Vdc
Dimensions (W x L x H)	129 x 155 x 30 / 5.07 x 6.10 x 1.18	129 x 165 x 45 / 5.07 x 6.49 x 1.77		mm / in
Weight	720 / 1.6	790 / 1.74		gr / lb
Input Connector	MC4[2]			
Input Wire Length	0.1 / 0.32			m / ft
Output Connector	MC4			
Output Wire Length	(+) 2.3; (-) 0.10 / (+) 7.54; (-) 0.32			m / ft
Operating Temperature Range(3)	-40 to +85			°C
Protection Rating	IP68 / NEMA6P			
Relative Humidity	0 – 100			%

(1) Rated power of the module at STC will not exceed the power optimizer Rated Input DC Power. Modules with up to +5% power tolerance are allowed.
(2) For other connector types please contact SolarEdge.
(3) Power de-rating is applied for ambient temperatures above +85°C / +185°F for S440, and for ambient temperatures above +75°C / 167°F for S500B. Refer to the Power Optimizers Temperature Derating Technical Note for more details.

PV System Design Using a SolarEdge Inverter(4)		SolarEdge Home Wave/Hub Single Phase	Three Phase for 208V Grid	Three Phase for 277/480V Grid	
Minimum String Length (Power Optimizers)	S440	8	10	18	
	S500B, S650B	6	8	14	
Maximum String Length (Power Optimizers)		25		50(5)	
Maximum Nominal Power per String		5700	6000	12,750	W
Maximum Allowed Connected Power per String(6) (In multiple string designs, the maximum is permitted only when the difference in connected power between strings is 1,000W or less)		6800(7)	One string: 7200	15,000	W
			Two strings or more: 7800		
Parallel Strings of Different Lengths or Orientations		Yes			

(4) It is not allowed to mix S-series and P-series Power Optimizers in new installations in the same string.
(5) A string with more than 30 optimizers does not meet NEC rapid shutdown requirements; safety voltage will be above the 30V requirement.
(6) If the inverter's rated AC power ≤ maximum nominal power per string, then the maximum connected power per string will be able to reach up to the inverters maximum input DC power. Refer to the Single String Design Guidelines Application Note for more details.
(7) For inverters with a rated AC power ≥ 7600W that are connected to at least two strings.

S440 (Flat Bracket)	S500B, S650B (Bent Bracket)
	

Intertek RoHS

PROJECT ENGINEER
BROCK NOYES

REVISIONS

DESCRIPTION	DATE	REV

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CONTRACTOR INFORMATION

SOLARIS RENEWABLES
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DATE: 11/21/2023

PROJECT NAME

JAMES SPARRELL & KATHERINE TOWLER

125 SOUTH STREET
PORTSMOUTH, NH 03801

JOB#: MA02-24-0004

APN NO: M0110 B0009L

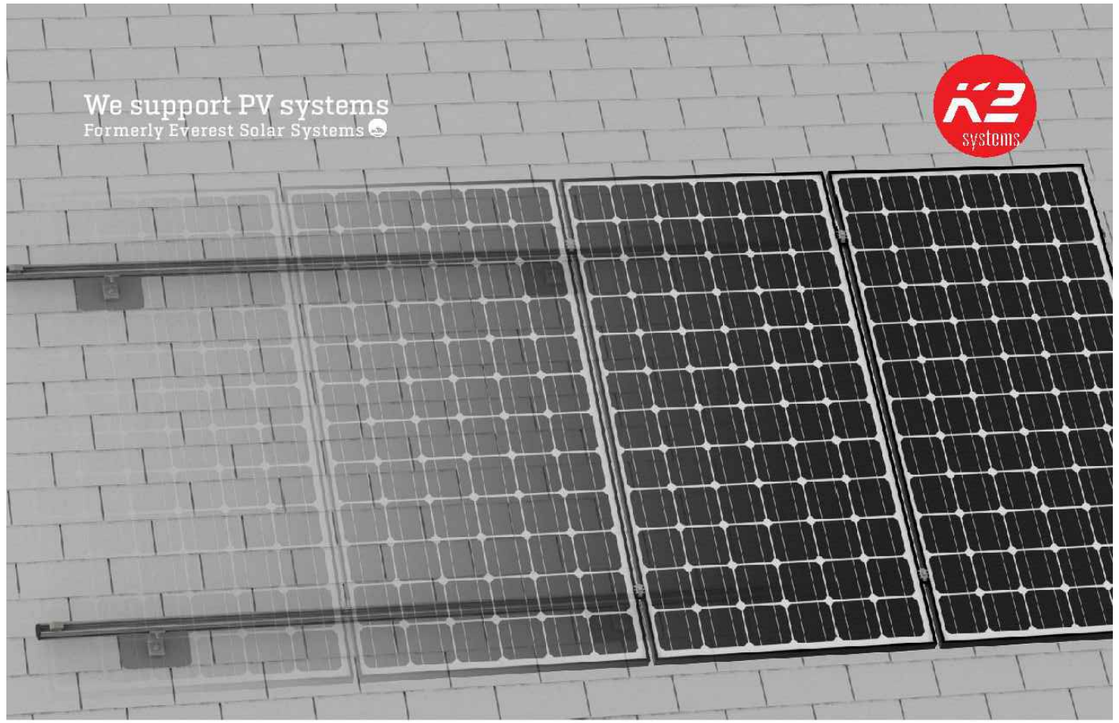
PROJECT DETAIL
7.47 KW STC
7.6 KW AC

ENGINEERING APPROVAL

SHEET NAME
OPTIMIZER SPECIFICATION

SHEET SIZE
ANSI B
11" X 17"

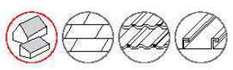
SHEET NUMBER
PV-9



CrossRail System

PRODUCT SHEET

- High quality, German-engineered system for residential and commercial installations
- 4 rail sizes available to suit all structural conditions
- Universal components for all rail types
- Use 2 innovative components to turn this system into Shared Rail or Tilt Up
- MK3 technology provides highest rail engagement
- Roof attachments for all roof types
- 100% code compliant, structural validation for all solar states
- Fast installation with minimal component count result in low total installed cost



Components

CrossRail 44-X

Part Number	Description
4000019	CrossRail 44-X, 166", Mill
4000020	CrossRail 44-X, 166", Dark
4000021	CrossRail 44-X, 180", Mill
4000022	CrossRail 44-X, 180", Dark

CrossRail 48-X

Part Number	Description
4000662	CrossRail 48-X, 166", Mill
4000663	CrossRail 48-X, 166", Dark

CrossRail 48-XL

Part Number	Description
4000695	CrossRail 48-XL, 166", Mill
4000705	CrossRail 48-XL, 166", Dark

CrossRail 80

Part Number	Description
4000508	CrossRail 80 168" Rail Mill

CrossRail Mid Clamp

Part Number	Description
4000601-H	CR MC Silver, 30-47mm, Shared RL 30-37mm 13mm Hex
4000602-H	CR MC Dark, 30-47mm, Shared RL 30-37mm 13mm Hex
4000688-H	SR MC Silver, 38-50mm, Shared RL 28-46mm 13mm Hex
4000689-H	SR MC Silver, 38-50mm, Shared RL 28-46mm 13mm Hex

CrossRail End Clamp

Part Number	Description
4000429	CR EC Silver 35-50mm, SR 33-40mm
4000430	CR EC Dark 35-50mm, SR 33-40mm
4000003	SR EC Silver 46-50mm
4000004	SR EC Dark 46-50mm

Yeti Clamp

Part Number	Description
4000050-H	Yeti Hidden EC for CR, 13mm Hex Set

Aluminum End Clamp

Part Number	Description
4005344	CrossRail EC Silver, AL 32-33mm
4005169	CrossRail EC Silver, AL 34-36mm
4005290	CrossRail EC Silver, AL 37-38mm
4005170	CrossRail EC Silver, AL 39-41mm
4005291	CrossRail EC Silver, AL 42-44mm
4005171	CrossRail EC Silver, AL 45-47mm
4005292	CrossRail EC Silver, AL 48mm
4005172	CrossRail EC Silver, AL 49-50mm

CrossRail Rail Connector

Part Number	Description
4000051	Rail Connector CR 44-X, Set, Mill
4000052	Rail Connector CR 44-X, Set, Dark
4000385	RailConn CR48-X,48-XL Struct Set, Mill
4000386	RailConn CR48-X,48-XL Struct Set, Dark
4001196	Rail Connecctor UL 2703 Set, CR80, Mill

L-Foot & T-Foot

Part Number	Description
4000630	L-Foot Slotted Set, Mill
4000631	L-Foot Slotted Set, Dark
4000080	T-Foot X 6" Kit, Mill

Tile Hooks

Part Number	Description
4000034	Flat Tile Hook Set, w/Lags
4001294	Tile Hook 3S Wide Base w/Hardware

Standing Seam PowerClamps

Part Number	Description
4000016	Standing Seam PowerClamp, Mini, Set
4000017	Standing Seam PowerClamp, Standard, Set

PROJECT ENGINEER
BROCK NOYES

REVISIONS

DESCRIPTION	DATE	REV

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PORTSMOUTH, NH 03801

JOB#: MA02-24-0004

APN NO: M0110 B0009L

PROJECT DETAIL
7.47 KW STC
7.6 KW AC

ENGINEERING APPROVAL

SHEET NAME
RAIL SPECIFICATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-10

EverFlash Flashings

Part Number	Description
4000366	EverFlash eComp Kit, Dark
4000367	EverFlash eComp Kit, Mill
4000679	EverFlash eComp Kit, Mill LF, Dark Flash

Everest Ground Lug

Part Number	Description
4000006-H	Everest Ground Lug, 13mm Hex

CR Microinverter & Opt Mounting Kit

Part Number	Description
4000629-H	CR Microinverter & Opt, 13mm Hex Kit

Wire Management

Part Number	Description
4000069	Wire Management Clip, TC
4000382	HEYClip SunRunner Cable Slip SS, S6404
4005394	Wire Mangement Clip, Omega, Black

End Caps

Part Number	Description
4000176	EndCap 44-X, K2
4000431	CrossRail Flat EndCap, CR 48-X, 48-XL
4001221	EndCap, Black, CR80

CR 48-X/48-XL Sleeve

Part Number	Description
4000177	Sleeve CR 44-X
4000583	CrosRail 3" Black Sleeve 48-X, 48-XL

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7.6 KW AC

ENGINEERING APPROVAL

SHEET NAME
RAIL SPECIFICATION

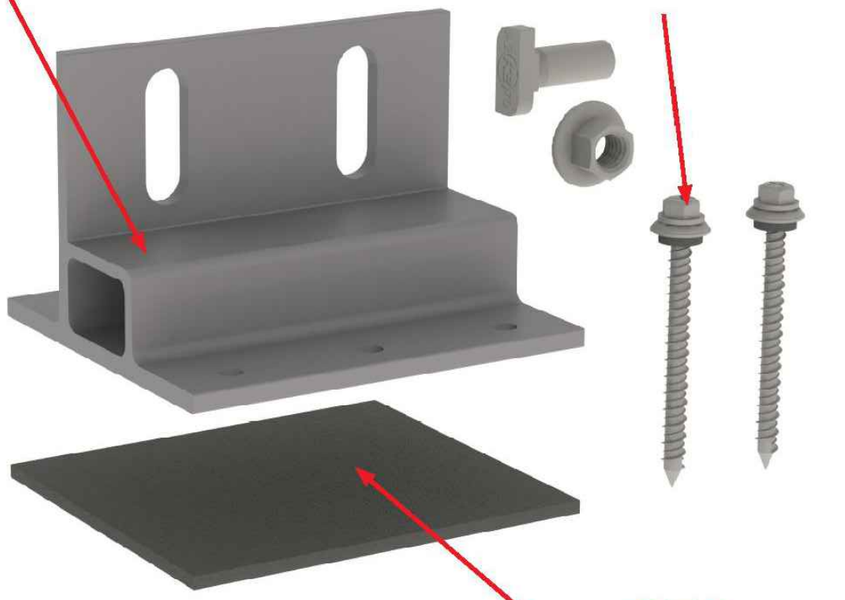
SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-10.1

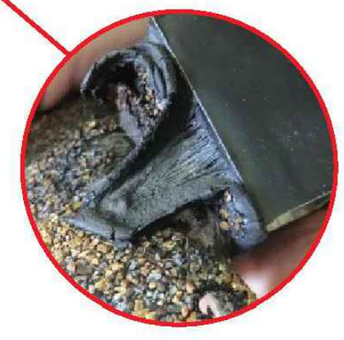
We support PV systems
Formerly Everest Solar Systems

Rail Shelf
- Allows for easier rail support
- Aligns CrossRail T-Bolt channel

Self-Tapping Screws
- Self-sealing; no sealant required
- Self-tapping; no pilot holes required
- 2 screws included per mount



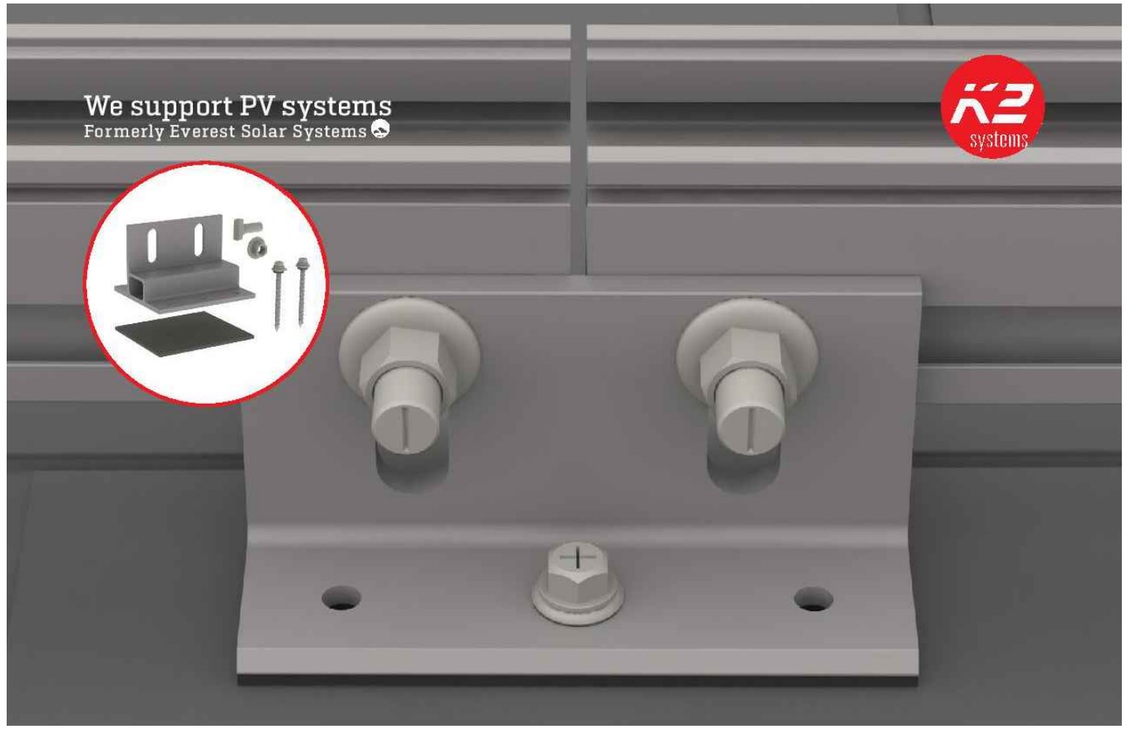
K2 EverSeal
- Pre-installed butyl flexible flashing
- 20+ years of proven water sealing technology
- TAS 100(A) and Wind Driven Rain tested and approved



Splice Foot X & XL

Patent Pending

PRODUCT SHEET



Splice Foot X & XL

Patent Pending

PRODUCT SHEET

Part Number	Description
4000113	Splice Foot X Kit,Mill
4000162	Splice Foot XL Kit, Mill

- All-in-one mount and splice foot
- K2 EverSeal technology
- 20+ years of proven water sealing technology on asphalt
- Self drilling lag screws = less tools needed
- Optimized for CrossRail systems and components
- No L-Foot needed
- T-Bolt hardware included

PROJECT ENGINEER
BROCK NOYES

REVISIONS

DESCRIPTION	DATE	REV

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CONTRACTOR INFORMATION

SOLARIS RENEWABLES
781.270.6555 OFFICE
3 ELECTRONICS AVENUE | DANVERS MA 019234
WWW.SOLARISRENEWABLES.COM
MA REG #178137

DATE: 11/21/2023

PROJECT NAME

JAMES SPARRELL & KATHERINE TOWLER

125 SOUTH STREET
PORTSMOUTH, NH 03801

JOB#: MA02-24-0004

APN NO: M0110 B0009L

PROJECT DETAIL
7.47 KW STC
7.6 KW AC

ENGINEERING APPROVAL

SHEET NAME
ATTACHMENT SPECIFICATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-11

GENFLEX Roofing Systems

Effective July 1, 2012
Replaces All Previous

Fastening Accessories Product List

Fasteners (Stocked)

Description	Product Number	Size	Unit Quantity	Ship Wt (lb)
GenFast™ #12 Fastener (For Insulation Attachment Only)	W590051200	1-5/8"	1000/bkt	11
	W590051201	2-1/4"	1000/bkt	15
	W590051202	2-7/8"	1000/bkt	19
	W590051203	3-1/4"	1000/bkt	21
	W590051204	3-3/4"	1000/bkt	24
	W590051205	4-1/2"	1000/bkt	28
	W590051206	5"	1000/bkt	32
	W590051207	6"	1000/bkt	38
	W590051208	7"	1000/bkt	44
	W590051209	8"	1000/bkt	50
GenFast™ #14 Fastener	W590051412	1-1/4"	1000/bkt	12
	W590051413	1-3/4"	1000/bkt	16
	W590051401	2"	1000/bkt	18
	W590051402	3"	1000/bkt	26
	W590051403	4"	1000/bkt	34
	W590051415	5"	**500/bkt**	22
	W590051416	6"	**500/bkt**	26
	W590051406	7"	500/bkt	30
	W590051407	8"	500/bkt	34
	W590051408	10"	500/bkt	40
	W590051419	12"	**250/bkt**	25
	W590051420	14"	**250/bkt**	29
	W590051411	16"	250/bkt	37
GenFast™ #15 WH (Washer Head) Fastener	W590051500	1-1/4"	1000/bkt	14
	W590051501	2"	1000/bkt	20
	W590051502	3"	1000/bkt	30
	W590051503	4"	1000/bkt	38
	W590051504	5"	500/bkt	24
	W590051505	6"	500/bkt	29
	W590051506	7"	500/bkt	34
	W590051507	8"	500/bkt	38
	W590051508	10"	500/bkt	47
	W590051509	12"	500/bkt	56
GenFast™ #12 Preassembled Fastener & Plate	W590055114	2-1/4"	250/ctn	13
	W590055115	2-7/8"	250/ctn	14
	W590055116	3-1/4"	250/ctn	15
	W590055117	3-3/4"	250/ctn	16
	W590055118	4-1/2"	250/ctn	17
	W590055119	5"	250/ctn	18
	W590055120	6"	250/ctn	19
	W590055121	7"	250/ctn	21
	W590055122	8"	250/ctn	22
	W590055123	9"	250/ctn	26
	W590055124	10"	200/ctn	23
	W590055125	11"	200/ctn	25
	W590055126	12"	200/ctn	27
	W590055127	14"	150/ctn	23
GenFast™ #15 Preassembled Fastener & Plate	W590055141	2"	250/ctn	19
	W590055142	3"	250/ctn	21
	W590055143	4"	250/ctn	24
	W590055144	5"	250/ctn	26
	W590055145	6"	250/ctn	28
	W590055146	7"	250/ctn	30
	W590055147	8"	250/ctn	32
	W590055148	10"	200/ctn	30
	W590055149	12"	200/ctn	37

PROJECT ENGINEER
BROCK NOYES

REVISIONS

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CONTRACTOR INFORMATION

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JAMES SPARRELL & KATHERINE TOWLER
125 SOUTH STREET
PORTSMOUTH, NH 03801
JOB#: MA02-24-0004
APN NO: M0110 B0009L

PROJECT DETAIL
7.47 KW STC
7.6 KW AC

ENGINEERING APPROVAL

SHEET NAME
ATTACHMENT SPECIFICATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-12

GENFAST™ #12 FASTENER

Item Description	Item Number
1⅝"	W590051200
2¼"	W590051201
3"	W590051210
4"	W590051211
5"	W590051206
6"	W590051207
7"	W590051208
8"	W590051209

Product Information

Description

GenFast #12 Fasteners may be used in any GenFlex system for attachment of roofing insulation using GenFlex 3" Insulation Plates to steel and wood roof decks. GenFast #12 Fasteners can not be used to secure or attach membrane systems to approved decks.

GenFlex GenFast Insulation Fasteners are manufactured to conform to the physical property requirements of Factory Mutual Speecification #4470.

Method of Application

1. GenFast #12 Fasteners can be installed using a #3 Phillips tip provided with every bucket and a variable speed drill. Each fastener must be installed in combination with a FenFlex 3" Round Insulation Plate taking care not to over or under drive the fastener. Threads from the fastener must engage and penetrate the decking material per current GenFlex Technical Specifications. Fastener length can be determined by using the following deck penetration requirements:
   - Steel Deck: Minimum of ¾" (19.1 mm) required penetration
   - Wood Deck: Minimum of 1" (25 mm) required penetration
   - Concrete Deck: Not Acceptable
2. Each fastener must be installed in combination with the appropriate plate taking care not to over or under drive the fastener.
3. Threads from the fastener must engage and penetrate the decking material per GenFlex current Technical Specifications.
4. Check current GenFlex specifications for exceptions and/or changes.

Storage

Fasteners should be protected from moisture and kept dry at all times. If stored out of doors, place on skids in a dry area and cover with a breathable tarp.

Product Data Sheets

Precautionary Data

- Eye protection is recommended when installing the fasteners.
- Refer to Safety Data Sheet (SDS) for additional information.

*LEED® Information

Post Consumer Recycled Content: 25%
Pre Consumer Recycled Content: 0%
*NOTE: LEED® is a registered trademark of the U.S. Green Building Council.

FM APPROVED

Product Data

Typical Properties	
Property	**Typical Values**
Material	SAE 1022 Heat Treated Steel
Diameter	Nominal 0.2135" (5.42 mm): Major Dia., 15½" Thread
Thread	Modified Buttress
Head Style	Deep #3 Phillips Pan Head
Head Outside Diameter	0.448" (11.4 mm)
Corrosion Coating	CR-10
Fastener Tip	Drill Point Design

Packaging

Screw Length	Thread Length	Pieces/Bucket
1⅝" (41.3 mm)	1⅜" (35 mm)	1000
2¼" (57 mm)	1⅞" (47.6 mm)	1000
3" (76 mm)	3" (76 mm)	1000
4" (101.6 mm)	3" (76 mm)	1000
5" (127 mm)	3½" (88.9 mm)	1000
6" (152 mm)	3½" (88.9 mm)	1000
7" (178 mm)	3½" (88.9 mm)	1000
8" 203 mm)	3½" (88.9 mm)	1000

Please contact Quality Building Services Technical Department at 1-800-443-4272 option 1, for further information.

PROJECT ENGINEER
BROCK NOYES

REVISIONS

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125 SOUTH STREET
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APN NO: M0110 B0009L

PROJECT DETAIL
7.47 KW STC
7.6 KW AC

ENGINEERING APPROVAL

SHEET NAME
ATTACHMENT SPECIFICATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-12.1

POWERWALL

Tesla Powerwall is a fully-integrated AC battery system for residential or light commercial use. Its rechargeable lithium-ion battery pack provides energy storage for solar self-consumption, time-based control, and backup.

Powerwall's electrical interface provides a simple connection to any home or building. Its revolutionary compact design achieves market-leading energy density and is easy to install, enabling owners to quickly realize the benefits of reliable, clean power.

PERFORMANCE SPECIFICATIONS

AC Voltage (Nominal)	120/240 V
Feed-In Type	Split Phase
Grid Frequency	60 Hz
Total Energy	14 kWh[1]
Usable Energy	13.5 kWh[1]
Real Power, max continuous	5 kW (charge and discharge)
Real Power, peak (10 s, off-grid/backup)	7 kW (charge and discharge)
Apparent Power, max continuous	5.8 kVA (charge and discharge)
Apparent Power, peak (10 s, off-grid/backup)	7.2 kVA (charge and discharge)
Maximum Continuous Current	24 A
Maximum Output Fault Current	32 A
Overcurrent Protection Device	30 A
Load Start Capability	88 - 106 A LRA[2]
Imbalance for Split-Phase Loads	100%
Power Factor Output Range	+/- 1.0 adjustable
Power Factor Range (full-rated power)	+/- 0.85
Internal Battery DC Voltage	50 V
Maximum Supply Fault Current	10 kA
Round Trip Efficiency	90%[1,3]
Warranty	10 years

[1]Values provided for 25°C (77°F), 3.3 kW charge/discharge power.
[2]Load start capability may vary.
[3]AC to battery to AC, at beginning of life.

COMPLIANCE INFORMATION

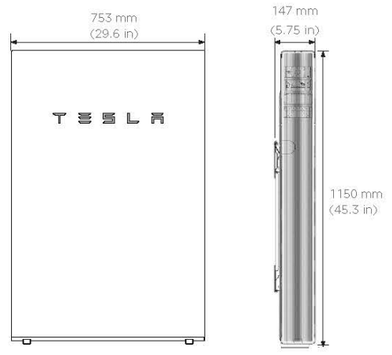
Certifications	UL 1642, UL 1741, UL 1741 SA, UL 1741 SB, UL 1973, UL 9540, IEEE 1547-2018, UN 38.3
Grid Connection	Worldwide Compatibility
Emissions	FCC Part 15 Class B, ICES 003
Environmental	RoHS Directive 2011/65/EU
Seismic	AC156, IEEE 693-2005 (high)
Fire Testing	Meets the unit level performance criteria of UL 9540A

TESLA

MECHANICAL SPECIFICATIONS

Dimensions	1150 x 753 x 147 mm (45.3 x 29.6 x 5.75 in)[4]
Weight	114 kg (251.3 lbs)[4]
Mounting options	Floor or wall mount

[4]Dimensions and weight differ slightly if manufactured before March 2019. Contact Tesla for additional information.



ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-20°C to 50°C (-4°F to 122°F)[5]
Operating Humidity (RH)	Up to 100%, condensing
Storage Conditions	-20°C to 30°C (-4°F to 86°F) Up to 95% RH, non-condensing State of Energy (SoE): 25% initial
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Type	NEMA 3R
Ingress Rating	IP67 (Battery & Power Electronics) IP56 (Wiring Compartment)
Wet Location Rating	Yes
Noise Level @ 1m	< 40 dBA at 30°C (86°F)

[5]Performance may be de-rated at operating temperatures below 10°C (50°F) or greater than 43°C (109°F).

PROJECT ENGINEER
JORDON HALL

REVISIONS

DESCRIPTION	DATE	REV

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CONTRACTOR INFORMATION

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103 ELECTRONICS AVENUE
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125 SOUTH STREET
PORTSMOUTH, NH 03801
JOB#: MA02-24-0004
APN NO: M0110 B0009L

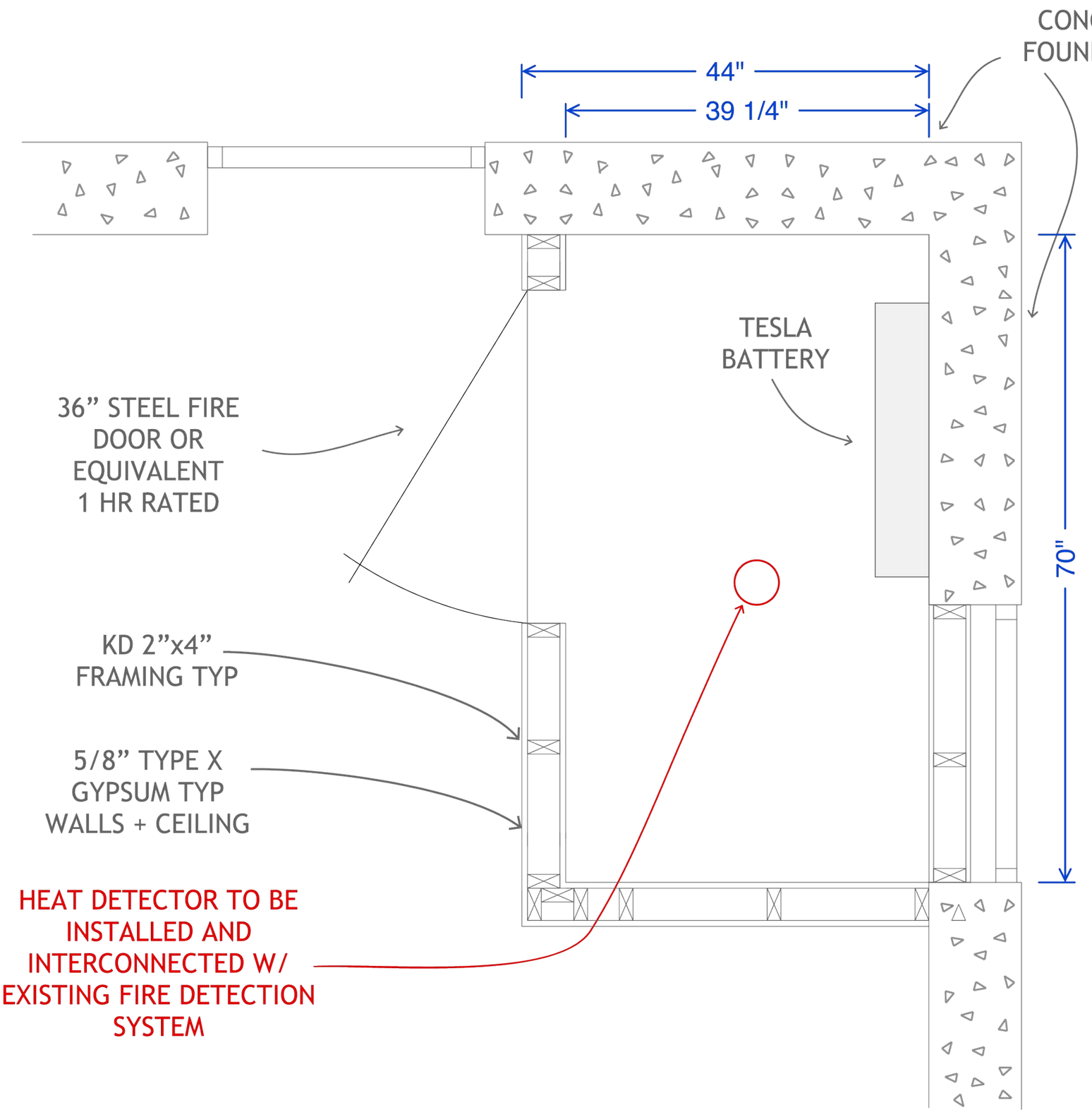
PROJECT DETAIL
5.0 KW AC

ENGINEERING APPROVAL

SHEET NAME
ESS SPECIFICATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-13



PROJECT ENGINEER
JORDON HALL

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125 SOUTH STREET
PORTSMOUTH, NH 03801

JOB#: MA02-24-0004

APN NO: M0110 B0009L

PROJECT DETAIL

5.0 KW AC

ENGINEERING APPROVAL

SHEET NAME
FIRE ROOM DETAIL

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-14

Rooftop Solar Array Mock-up photos

SPARRELL James & TOWLER Katherine • 125 South Street, Portsmouth, NH

Fig. 1: Aerial view

Fig. 2: Ground view

Arrays shown are not to scale.