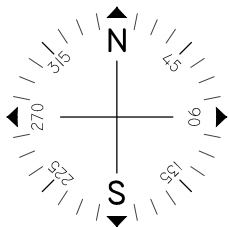


INSTALLATION OF NEW ROOF MOUNTED 9.62kW PV SYSTEM 2 MAIN ST GROTON, CT 06340

Village of Noank is requiring us to do what Solar City does and create 3-D images from multiple angles showing what the installaion system will look like installed on the home



Issued / Revisions

A2	AS BUILT	6/15/2016
R2	PANEL PLACEMENT	1/13/2016
R1	LAYOUT REVISION	1/7/2016
P1	ISSUED TO TOWNSHIP FOR PERMIT	8/27/2015
NO.	DESCRIPTION	DATE

Project Title:
JENNERWEIN, THOMAS
TRINITY ACCT #: 2015-58262

Project Address:
2 MAIN ST
GROTON, CT 06340

Drawing Title:
AS BUILT 9.62kW
SOLAR SYSTEM

Drawing Information	
DRAWING DATE:	8/27/2015
DRAWN BY:	JMG
REVISED BY:	JMG

System Information:	
TOTAL SYSTEM SIZE:	9.62kW
TOTAL MODULE COUNT:	37
MODULES USED:	CANADIAN SOLAR 260
MODULE SPEC #:	CS6P-260P
UTILITY COMPANY:	EVERSOURCE
UTILITY ACCT #:	51377692058
UTILITY METER #:	867045982
DEAL TYPE:	

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GENERAL NOTES

1. THE INSTALLATION CONTRACTOR IS RESPONSIBLE FOR INSTALLING ALL EQUIPMENT AND FOLLOWING ALL DIRECTIONS AND INSTRUCTIONS CONTAINED IN THE DRAWING PACKAGE AND INFORMATION RECEIVED FROM TRINITY.
2. THE INSTALLATION CONTRACTOR IS RESPONSIBLE FOR INSTALLING ALL EQUIPMENT AND FOLLOWING ALL DIRECTIONS AND INSTRUCTION CONTAINED IN THE COMPLETE MANUAL.
3. THE INSTALLATION CONTRACTOR IS RESPONSIBLE FOR READING AND UNDERSTANDING ALL DRAWINGS, COMPONENT AND INVERTER MANUALS PRIOR TO INSTALLATION. THE INSTALLATION CONTRACTOR IS ALSO REQUIRED TO HAVE ALL COMPONENT SWITCHES IN THE OFF POSITION AND FUSES REMOVED PRIOR TO THE INSTALLATION OF ALL FUSES BEARING SYSTEM COMPONENTS.
4. ONCE THE PHOTOVOLTAIC MODULES ARE MOUNTED, THE INSTALLATION CONTRACTOR SHOULD HAVE A MINIMUM OF ONE ELECTRICIAN WHO HAS ATTENDED A SOLAR PHOTOVOLTAIC INSTALLATION COURSE ON SITE.
5. FOR SAFETY, IT IS RECOMMENDED BY THE MANUFACTURE THAT THE INSTALLATION CREW ALWAYS HAVE A MINIMUM OF TWO PERSONS WORKING TOGETHER AND THAT EACH OF THE INSTALLATION CREW MEMBERS BE TRAINED IN FIRST AID AND CPR.
6. THIS SOLAR PHOTOVOLTAIC SYSTEM IS TO BE INSTALLED FOLLOWING THE CONVENTIONS OF THE NATIONAL ELECTRIC CODE. ANY LOCAL CODE WHICH MAY SUPERSEDE THE NEC SHALL GOVERN.
7. ALL SYSTEM COMPONENTS TO BE INSTALLED WITH THIS SYSTEM ARE TO BE "UL" LISTED. ALL EQUIPMENT WILL BE NEMA 3R OUTDOOR RATED UNLESS INDOORS.

GENERAL NOTES

IF ISSUED DRAWING IS MARKED WITH A REVISION CHARACTER OTHER THAN "A", PLEASE BE ADVISED THAT FINAL EQUIPMENT AND/OR SYSTEM CHARACTERISTICS ARE SUBJECT TO CHANGE DUE TO AVAILABILITY OF EQUIPMENT.

GENERAL NOTES CONTINUED

8. THE DC VOLTAGE FROM THE PANELS IS ALWAYS PRESENT AT THE DC DISCONNECT ENCLOSURE AND THE DC TERMINALS OF THE INVERTER DURING DAYLIGHT HOURS. ALL PERSONS WORKING ON OR INVOLVED WITH THE PHOTOVOLTAIC SYSTEM ARE WARNED THAT THE SOLAR MODULES ARE ENERGIZED WHENEVER THEY ARE EXPOSED TO LIGHT.
9. ALL PORTIONS OF THIS SOLAR PHOTOVOLTAIC SYSTEM SHALL BE MARKED CLEARLY IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE ARTICLE 690.
10. PRIOR TO THE INSTALLATION OF THIS PHOTOVOLTAIC SYSTEM, THE INSTALLATION CONTRACTOR SHALL ATTEND A PRE-INSTALLTION MEETING FOR THE REVIEW OF THE INSTALLATION PROCEDURES, SCHEDULES, SAFETY AND COORDINATION.
11. PRIOR TO THE SYSTEM START UP THE INSTALLATION CONTRACTOR SHALL ASSIST IN PERFORMING ALL INITIAL HARDWARE CHECKS AND DC WIRING CONDUCTIVITY CHECKS.
12. FOR THE PROPER MAINTENANCE AND ISOLATION OF THE INVERTS REFER TO THE ISOLATION PROCEDURES IN THE OPERATION MANUAL.
13. THE LOCATION OF PROPOSED ELECTRIC AND TELEPHONE UTILITIES ARE SUBJECT TO FINAL APPROVAL OF THE APPROPRIATE UTILITY COMPANIES AND OWNERS.
14. ALL MATERIALS, WORKMANSHIP AND CONSTRUCTION FOR THE SITE IMPROVEMENTS SHOWN HEREIN SHALL BE IN ACCORDANCE WITH:
 - A) CURRENT PREVAILING MUNICIPAL AND/OR COUNTY SPECIFICATIONS, STANDARDS AND REQUIREMENTS

GENERAL NOTES CONTINUED

14. B) CURRENT PREVAILING UTILITY COMPANY SPECIFICATIONS, STANDARDS, AND REQUIREMENTS
15. THIS SET OF PLANS HAVE BEEN PREPARED FOR THE PURPOSE OF MUNICIPAL AND AGENCY REVIEW AND APPROVAL. THIS SET OF PLANS SHALL NOT BE UTILIZED AS CONSTRUCTION DRAWINGS UNTIL REVISED TO INDICATE "ISSUED FOR CONSTRUCTION".
16. ALL INFORMATION SHOWN MUST BE CERTIFIED PRIOR TO USE FOR CONSTRUCTION ACTIVITIES.

ABBREVIATIONS

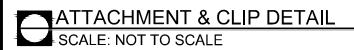
AMP	AMPERE
AC	ALTERNATING CURRENT
AL	ALUMINUM
AF	AMP. FRAME
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AWG	AMERICAN WIRE GAUGE
C	CONDUIT (GENERIC TERM OF SPECIFIED)
CB	COMBINER BOX
CKT	CIRCUIT
CT	CURRENT TRANSFORMER
CU	COPPER
DC	DIRECT CURRENT
DISC	DISCONNECT SWITCH
DWG	DRAWING
EC	ELECTRICAL SYSTEM INSTALLER
EMT	ELECTRICAL METALLIC TUBING
FS	FUSIBLE SWITCH
FU	FUSE
GND	GROUND
GFI	GROUND FAULT INTERRUPTER
HZ	FREQUENCY (CYCLES PER SECOND)

ABBREVIATIONS CONTINUED











JB	JUNCTION BOX
KCMIL	THOUSAND CIRCULAR MILS
KVA	KILO-VOLT AMPERE
KW	KILO-WATT
KWH	KILO-WATT HOUR
L	LINE
MCB	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTION PANEL
MLO	MAIN LUG ONLY
MTD	MOUNTED
MTG	MOUNTING
N	NEUTRAL
NEC	NATIONAL ELECTRICAL CODE
NIC	NOT IN CONTRACT
NO #	NUMBER
NTS	NOT TO SCALE
OC	OVER CURRENT PROTECTION
P	POLE
PB	PULL BOX
PH Ø	PHASE
PVC	POLY-VINYL CHLORIDE CONDUIT
PWR	POWER
QTY	QUANTITY
RGS	RIGID GALVANIZED STEEL
SN	SOLID NEUTRAL
JSWBD	SWITCHBOARD
TYP	TYPICAL
U.O.I.	UNLESS OTHERWISE INDICATED
WP	WEATHERPROOF
XFMR	TRANSFORMER
+72	MOUNT 72 INCHES TO BOTTOM OF ABOVE FINISHED FLOOR OR GRADE

SHEET INDEX

- PV-1 COVER SHEET W/ SITE INFO & NOTES
- PV-2 ROOF PLAN W/ MODULE LOCATIONS
- PV-3 PANEL LOCATION
- PV-4 ELECTRICAL 3 LINE DIAGRAM



- 1.) ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- 2.) ALL OUTDOOR EQUIPMENT SHALL BE RAIN TIGHT WITH MINIMUM NEMA 3R RATING.
- 3.) ALL LOCATIONS ARE APPROXIMATE AND REQUIRE FIELD VERIFICATION.
- 4.) ROOFTOP SOLAR INSTALLATION ONLY PV ARRAY WILL NOT EXTEND BEYOND THE EXISTING BUILDING ENVELOPE

ARRAY SCHEDULE		SYMBOL LEGEND				PLUMBING SCHEDULE	EQUIPMENT SCHEDULE	
<u>R1</u> ARRAY ORIENTATION = 115° MODULE PITCH = 30°		INDICATES ROOF DESIGNATION . REFER TO ARRAY SCHEDULE FOR MORE INFORMATION		INDICATES NEW UTILITY DISCONNECT TO BE INSTALLED OUTSIDE		NEW END CLIP, TYPICAL (REFER TO THE UNIRAC CODE-COMPLIANT INSTALLATION MANUAL SECTION 3.2.5 FOR SPECS AND DETAILS)	37	CANADIAN SOLAR 260 (CS6P-260P)
<u>R2</u> ARRAY ORIENTATION = 295° MODULE PITCH = 30°		INDICATES EXISTING METER LOCATION		INDICATES NEW PV SOLAR MODULE. RED MODULES INDICATE PANELS THAT USE MICRO INVERTERS. REFER TO EQUIPMENT SCHEDULE FOR SPECS.		NEW MID CLIP, TYPICAL (REFER TO THE UNIRAC CODE-COMPLIANT INSTALLATION MANUAL SECTION 3.2.5 FOR SPECS AND DETAILS)		
<u>R3</u> ARRAY ORIENTATION = 205° MODULE PITCH = 30°		INDICATES EXISTING ELECTRICAL PANEL LOCATION: IN BASEMENT		INDICATES NEW PRODUCTION METER TO BE INSTALLED OUTSIDE.	---	NEW UNIRAC RAIL,TYPICAL (REFER TO THE UNIRAC CODE-COMPLIANT INSTALLATION MANUAL FOR SPECS AND DETAILS)	OTHER OBSTRUCTIONS	
		INDICATES NEW MAIN DISCONNECT TO BE GROUPED WITH MAIN PANEL		INDICATES NEW INVERTER TO BE INSTALLED OUTSIDE. REFER TO EQUIPMENT SCHEDULE FOR SPECS.	●	NEW MOUNTING FOOT/ ATTACHMENT POINTS, TYPICAL (REFER TO ENGINEERING LETTER FOR SPACING AND DETAILS)	1	SE7600A-US

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Project Title:	JENNERWEIN, THOMAS
	TRINITY ACCT #: 2015-58262

Project Address:
2 MAIN ST GROTON, CT 06340

Drawing Title:
AS BUILT 9.62kW SOLAR SYSTEM

Drawing Information	
DRAWING DATE:	8/27/2015
DRAWN BY:	JMG
REVISED BY:	JMG

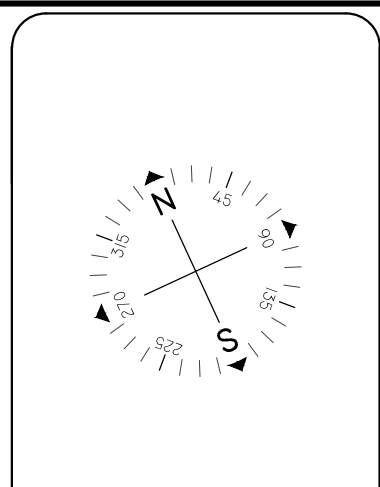
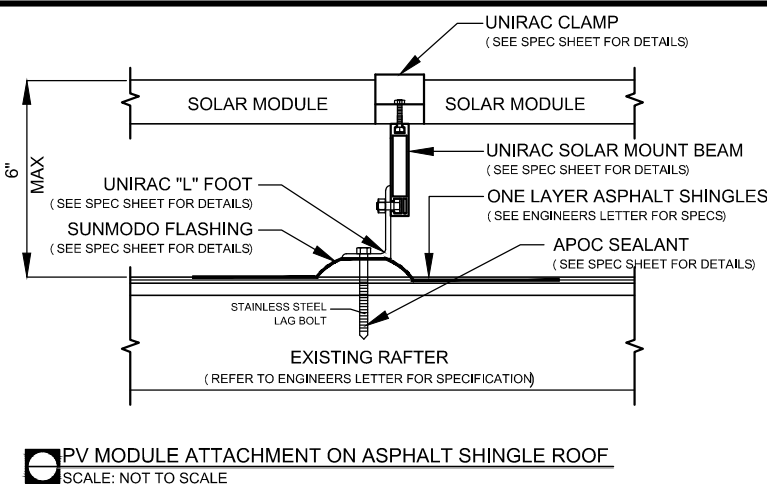
System Information:	
TOTAL SYSTEM SIZE:	9.62kW
TOTAL MODULE COUNT:	37
MODULES USED:	CANADIAN SOLAR 260
MODULE SPEC #:	C56P-260P
UTILITY COMPANY:	EVERSOURCE
UTILITY ACCT #:	51377692058
UTILITY METER #:	867045982
DEAL TYPE:	

Rev. No.	Sheet
A2	PV - 2



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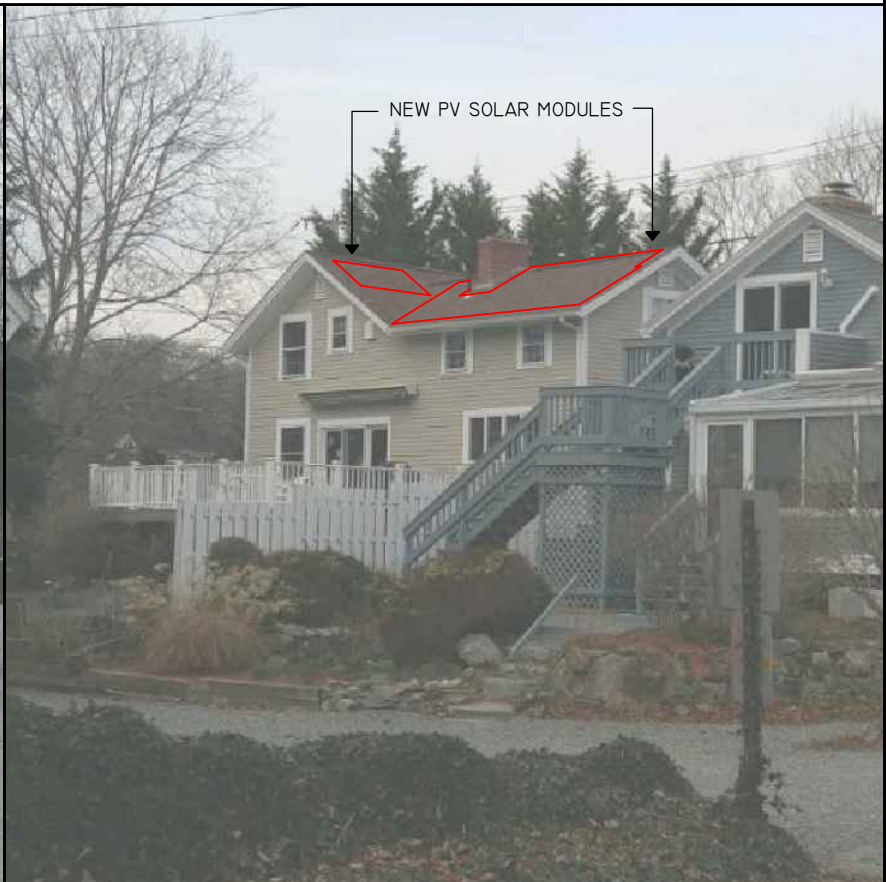
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DEAL TYPE:	

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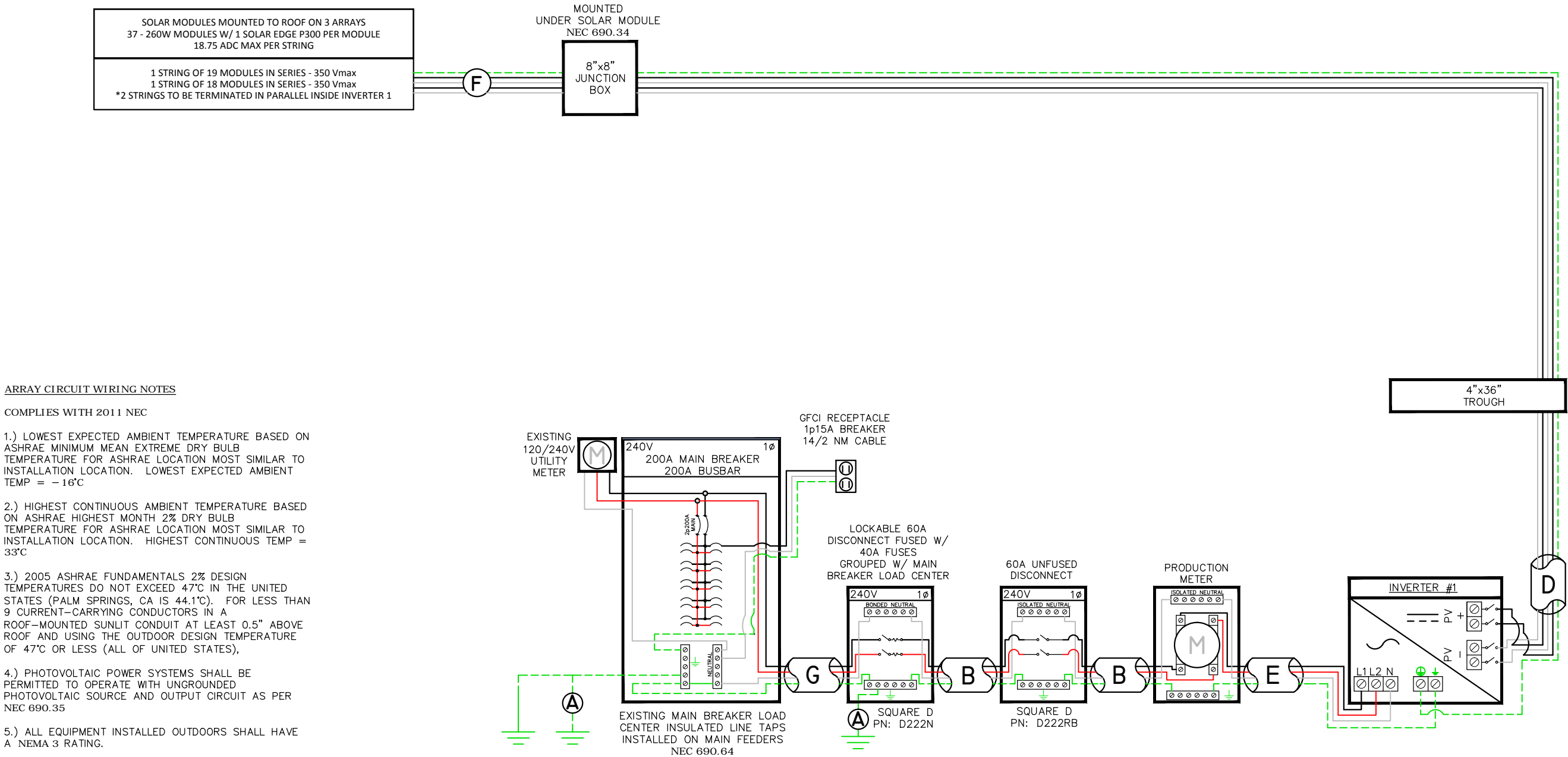
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NOTES:

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ARRAY SCHEDULE		SYMBOL LEGEND					PLUMBING SCHEDULE	EQUIPMENT SCHEDULE	
<u>R1</u> ARRAY ORIENTATION = 115° MODULE PITCH = 30° <u>R2</u> ARRAY ORIENTATION = 295° MODULE PITCH = 30° <u>R3</u> ARRAY ORIENTATION = 205° MODULE PITCH = 30°		INDICATES ROOF DESIGNATION . REFER TO ARRAY SCHEDULE FOR MORE INFORMATION		INDICATES NEW UTILITY DISCONNECT TO BE INSTALLED OUTSIDE		NEW END CLIP, TYPICAL (REFER TO THE UNIRAC CODE-COMPLIANT INSTALLATION MANUAL SECTION 3.2.5 FOR SPECS AND DETAILS)		QTY	SPEC #
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							OTHER OBSTRUCTIONS		



ARRAY CIRCUIT WIRING NOTES

COMPLIES WITH 2011 NEC

1.) LOWEST EXPECTED AMBIENT TEMPERATURE BASED ON ASHRAE MINIMUM MEAN EXTREME DRY BULB TEMPERATURE FOR ASHRAE LOCATION MOST SIMILAR TO INSTALLATION LOCATION. LOWEST EXPECTED AMBIENT TEMP = -16°C

2.) HIGHEST CONTINUOUS AMBIENT TEMPERATURE BASED ON ASHRAE HIGHEST MONTH 2% DRY BULB TEMPERATURE FOR ASHRAE LOCATION MOST SIMILAR TO INSTALLATION LOCATION. HIGHEST CONTINUOUS TEMP = 33°C

3.) 2005 ASHRAE FUNDAMENTALS 2% DESIGN TEMPERATURES DO NOT EXCEED 47°C IN THE UNITED STATES (PALM SPRINGS, CA IS 44.1°C). FOR LESS THAN 9 CURRENT-CARRYING CONDUCTORS IN A ROOF-MOUNTED SUNLIT CONDUIT AT LEAST 0.5" ABOVE ROOF AND USING THE OUTDOOR DESIGN TEMPERATURE OF 47°C OR LESS (ALL OF UNITED STATES),

4.) PHOTOVOLTAIC POWER SYSTEMS SHALL BE PERMITTED TO OPERATE WITH UNGROUNDED PHOTOVOLTAIC SOURCE AND OUTPUT CIRCUIT AS PER NEC 690.35

5.) ALL EQUIPMENT INSTALLED OUTDOORS SHALL HAVE A NEMA 3 RATING.

CALCULATIONS FOR CURRENT CARRYING CONDUCTORS

REQUIRED CONDUCTOR AMPACITY PER STRING
[NEC 690.8(B)(1)]: (15.00*1.25)1 = 18.75A

AWG #10, DERATED AMPACITY
AMBIENT TEMP: 55°C, TEMP DERATING FACTOR: .76
RACEWAY DERATING = 4 CCC: 0.80
(40*.76)0.80 = 24.32A

24.32A ≥ 18.75A, THEREFORE WIRE SIZE IS VALID

TOTAL AC REQUIRED CONDUCTOR AMPACITY
32.00A*1.25 = 40.00A

AWG #8, DERATED AMPACITY
AMBIENT TEMP: 30°C, TEMP DERATING: 1.0
RACEWAY DERATING ≤ 3 CCC: N/A
55A*1.0 = 55A

55A ≥ 40.00A, THEREFORE AC WIRE SIZE IS VALID

CALCULATION FOR PV OVERCURRENT PROTECTION

TOTAL INVERTER CURRENT: 32.00A
32.00A*1.25 = 40.00A
--> 40A OVERCURRENT PROTECTION IS VALID

PV MODULE SPECIFICATIONS	
CANADIAN SOLAR 260 (CS6P-260P)	
Imp	8.56
Vmp	30.4
Voc	37.5
Isc	9.12

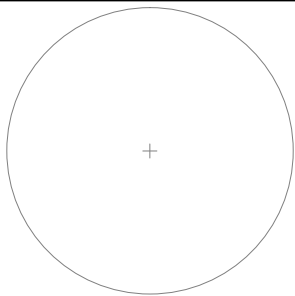
INVERTER #1 - SE7600A-US			
DC		AC	
Imp	23.5	Pout	7600
Vmp	350	Iout	32
Voc	500	Imax	40
Isc	30	Vnom	240

A	#6 THWN-2 GEC TO EXISTING GROUND ROD
B	1" EMT W/ 2-#8 THWN-2, 1-#10 THWN-2, 1-#10 THWN-2 GROUND
C	1" EMT W/ 4-#10 THWN-2, 1-#10 THWN-2 GROUND
D	1" EMT W/ 4-#10 THWN-2, 1-#10 THWN-2 GROUND
E	1" EMT W/ 2-#8 THWN-2, 1-#10 THWN-2, 1-#10 THWN-2 GROUND
F	#12 PV WIRE W/ #8 BARE COPPER BOND TO MODULES AND RAILS
G	1" FMC W/ 3-#6 THWN-2, 1-#8 THWN-2 GROUND

Engineer / License Holder:

Charles P Bonicker

Trinity Heating & Air,
Inc DBA Trinity Solar
2211 Allenwood Rd. Wall, NJ 07719



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