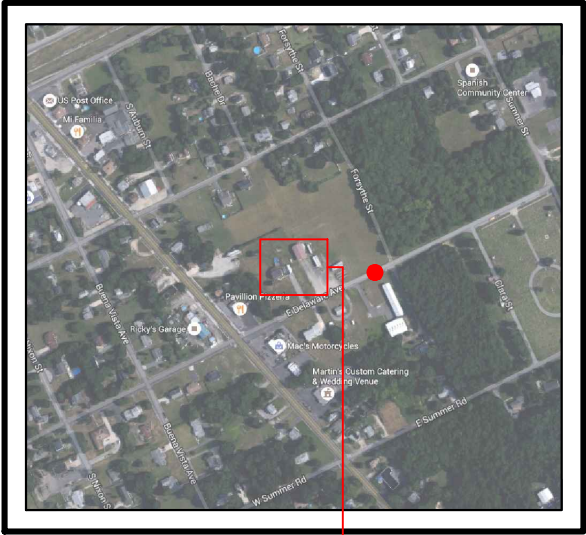


INSTALLATION (2) OF NEW
GROUND MOUNTED PV SYSTEMS
SYSTEM #1 - 20.80kW SYSTEM #2 - 3.120kW
102 EAST DELAWARE AVENUE
LANDISVILLE, NJ 08326

EAST DELAWARE AVENUE●



VICINITY MAP
SCALE: NTS

SITE

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

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 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 RACEWAY, PROVIDE AS 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

OCP OVER CURRENT PROTECTION

P POLE

PB PULL BOX

PH ∅ 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

SATELLITE VIEW
SCALE: NTS



SHEET INDEX

- PV-1 COVER SHEET W/ SITE INFO & NOTES

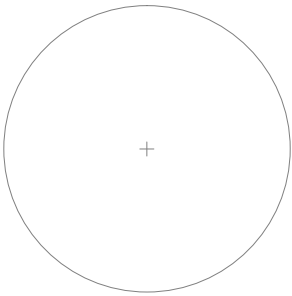
PV-2 LAYOUT PLAN W/ MODULE LOCATIONS

PV-3 ARRAY FOOTING DETAILS

PV-4 ELECTRICAL 3 LINE DIAGRAM (SYSTEM #1)

PV-5 ELECTRICAL 3 LINE DIAGRAM (SYSTEM #2)

Engineer / License Holder:



Issued / Revisions

R2	SYSTEM SIZE DECREASE / LAYOUT REVISION	6/3/2016
R1	CONSTRUCTION DWG	2/11/2016
P1	ISSUED TO TOWNSHIP FOR PERMIT	9/21/2015
NO.	DESCRIPTION	DATE

Project Title:

DROGO,TERI-
(SYSTEMS #1 & #2)
TRINITY ACCT #: 2015-62193

Project Address:

102 EAST DELAWARE AVENUE
LANDISVILLE, NJ 08326

Drawing Title:

PROPOSED 23.92kW
SOLAR SYSTEM

Drawing Information

DRAWING DATE:	9/21/2015
DRAWN BY:	JC
REVISED BY:	DMR

System Information:

TOTAL SYSTEM SIZE:	23.92kW
TOTAL MODULE COUNT:	92
MODULES USED:	TRINA 260
MODULE SPEC #:	TSM-260 PD05.08
UTILITY COMPANY:	ACE
UTILITY ACCT #:	SEE LAYOUT
UTILITY METER #:	SEE LAYOUT
DEAL TYPE:	SUNNOVA

Rev. No.

R2

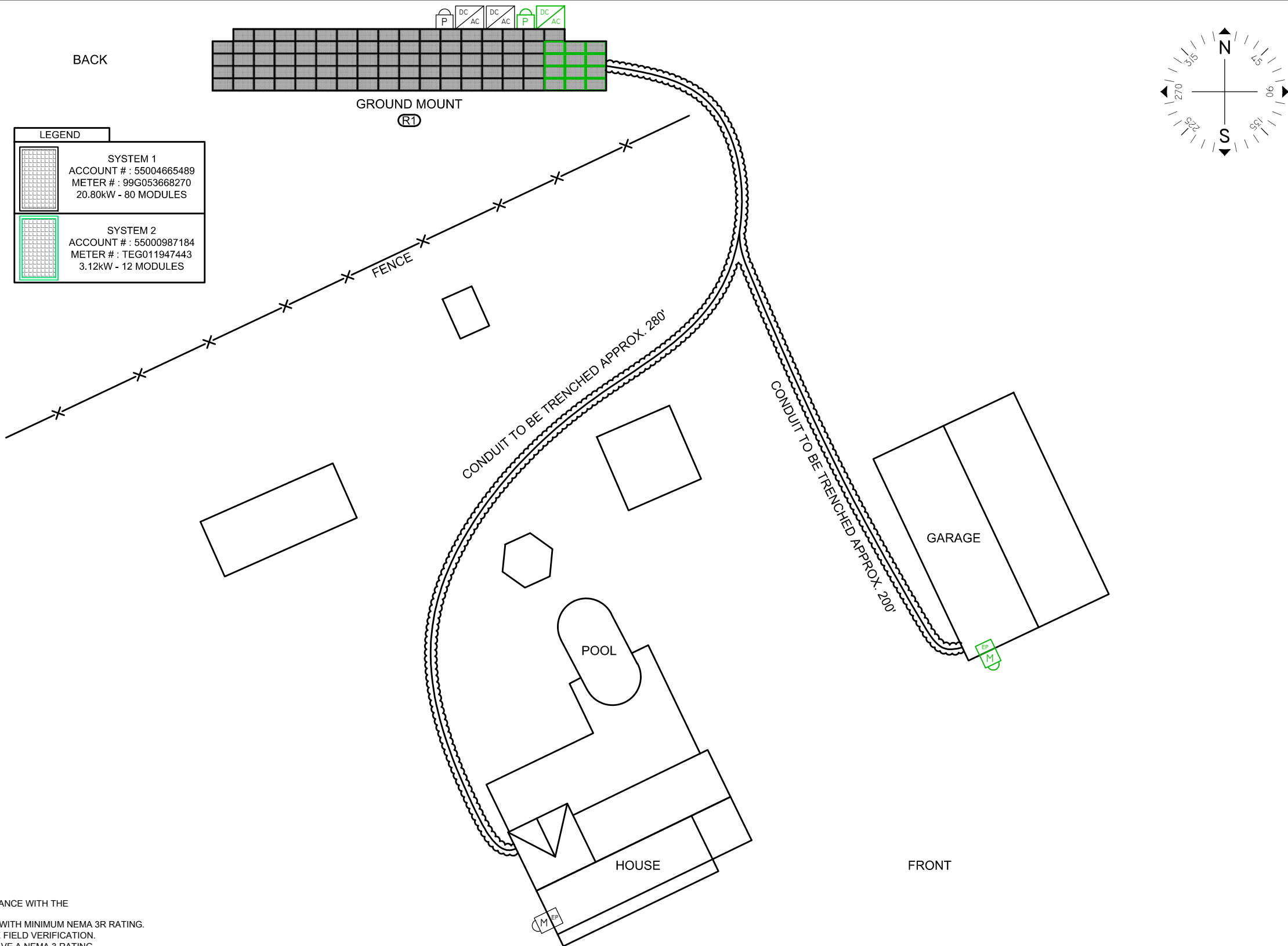
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NOTES:

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

ARRAY SCHEDULE		SYMBOL LEGEND				EQUIPMENT SCHEDULE	
ARRAY 1 ARRAY ORIENTATION = 180° MODULE PITCH = 30°		INDICATES 24" DEEP TRENCHED.		INDICATES NEW UTILITY DISCONNECT TO BE INSTALLED OUTSIDE		QTY	SPEC #
		INDICATES EXISTING METER LOCATION		INDICATES NEW PV SOLAR MODULE. RED MODULES INDICATE PANELS THAT USE MICRO INVERTERS. REFER TO EQUIPMENT SCHEDULE FOR SPECS.		92	TRINA 260 (TSM-260 PD05.08)
		INDICATES EXISTING ELECTRICAL PANEL LOCATION: INSIDE		INDICATES NEW PRODUCTION METER TO BE INSTALLED OUTSIDE.		1	SE10000A-US
		INDICATES NEW MAIN DISCONNECT TO BE GROUPED WITH MAIN PANEL		INDICATES NEW INVERTER TO BE INSTALLED OUTSIDE. REFER TO EQUIPMENT SCHEDULE FOR SPECS.		1	SE6000A-US
						1	SE3000A-US

Engineer / License Holder:

Issued / Revisions

NO.	DESCRIPTION	DATE
R2	SYSTEM SIZE DECREASE / LAYOUT REVISION	6/3/2016
R1	CONSTRUCTION DWG	2/11/2016
P1	ISSUED TO TOWNSHIP FOR PERMIT	9/21/2015

Project Title:

DROGO,TERI-
(SYSTEMS #1 & #2)
TRINITY ACCT #: 2015-62193

Project Address:

102 EAST DELAWARE AVENUE
LANDISVILLE, NJ 08326

Drawing Title:

PROPOSED 23.92kW
SOLAR SYSTEM

Drawing Information

DRAWING DATE:	9/21/2015
DRAWN BY:	JC
REVISED BY:	DMR

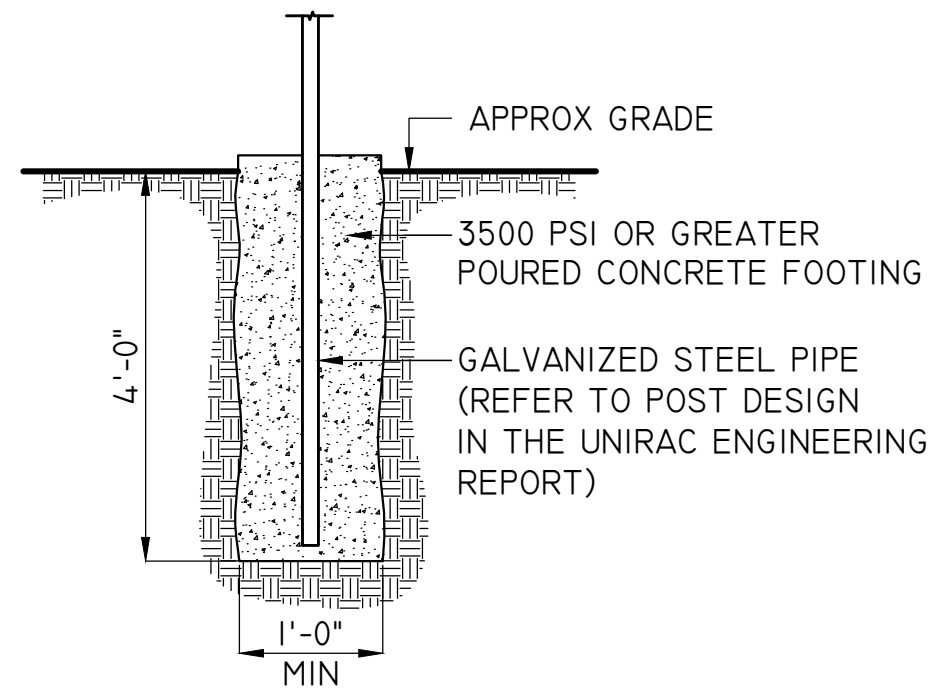
System Information:

TOTAL SYSTEM SIZE:	23.92kW
TOTAL MODULE COUNT:	92
MODULES USED:	TRINA 260
MODULE SPEC #:	TSM-260 PD05.08
UTILITY COMPANY:	ACE
UTILITY ACCT #:	SEE LAYOUT
UTILITY METER #:	SEE LAYOUT
DEAL TYPE:	SUNNOVA

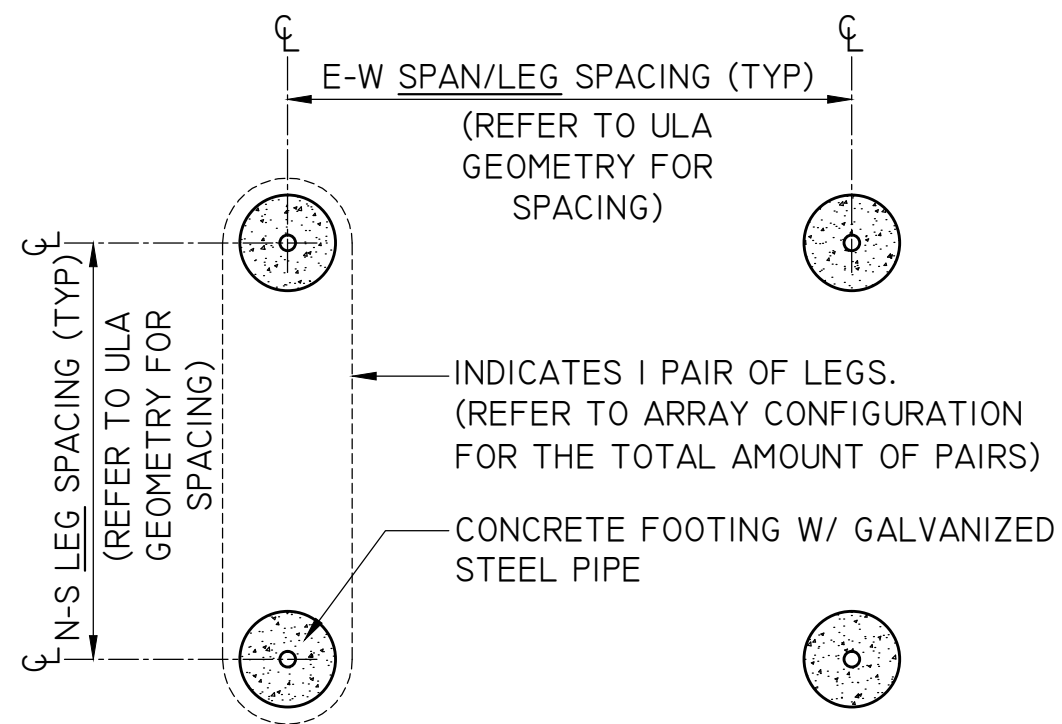
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R2	PV - 2

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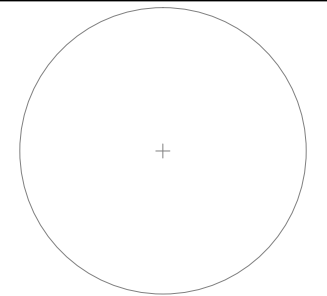


CONCRETE FOOTING DETAIL
 SCALE: NTS REFER TO UNIRAC ENGINEER REPORT FOR SPECIFICATIONS



CONCRETE FOOTING LAYOUT
 SCALE: NTS REFER TO UNIRAC ULA QUOTATIONS FOR SPECIFICATIONS

Engineer / License Holder:



Issued / Revisions

NO.	DESCRIPTION	DATE
R2	SYSTEM SIZE DECREASE / LAYOUT REVISION	6/3/2016
R1	CONSTRUCTION DWG	2/11/2016
P1	ISSUED TO TOWNSHIP FOR PERMIT	9/21/2015

Project Title:

DROGO,TERI-
 (SYSTEMS #1 & #2)
 TRINITY ACCT #: 2015-62193

Project Address:

102 EAST DELAWARE AVENUE
 LANDISVILLE, NJ 08326

Drawing Title:

PROPOSED 23.92kW
 SOLAR SYSTEM

Drawing Information

DRAWING DATE:	9/21/2015
DRAWN BY:	JC
REVISED BY:	DMR

System Information:

TOTAL SYSTEM SIZE:	23.92kW
TOTAL MODULE COUNT:	92
MODULES USED:	TRINA 260
MODULE SPEC #:	TSM-260 PD05.08
UTILITY COMPANY:	ACE
UTILITY ACCT #:	SEE LAYOUT
UTILITY METER #:	SEE LAYOUT
DEAL TYPE:	SUNNOVA

Rev. No.

R2

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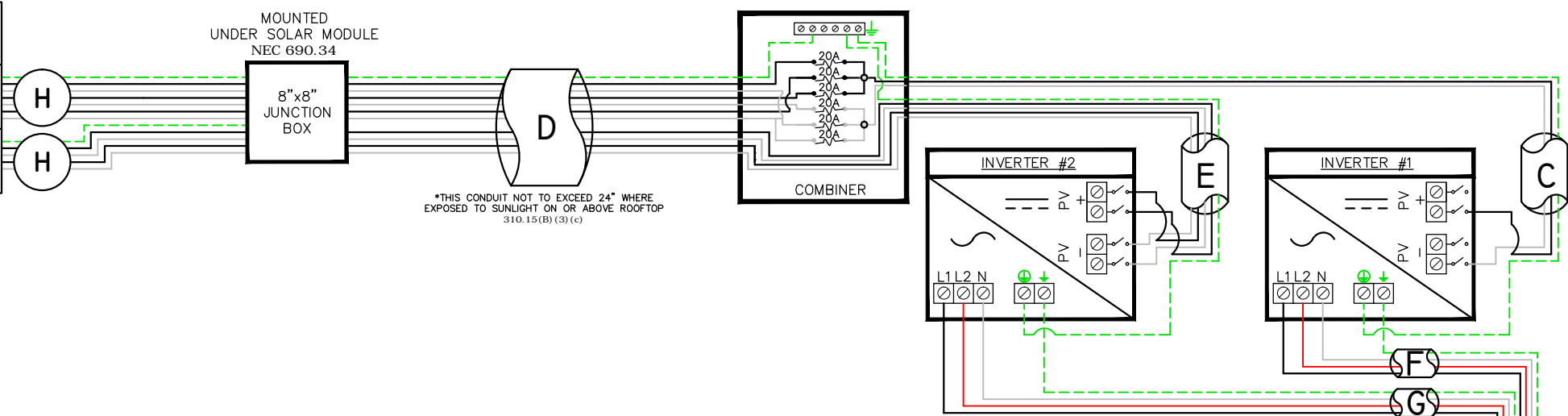
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SOLAR MODULES GROUND MOUNTED ON 1 ARRAY 80 - 260W MODULES W/ 1 SOLAR EDGE P300 PER MODULE 18.75 ADC MAX PER STRING
2 STRINGS OF 17 MODULES IN SERIES - 350 Vmax 1 STRING OF 16 MODULES IN SERIES - 350 Vmax *3 STRINGS TO BE TERMINATED IN PARALLEL INSIDE COMBINER BOX
2 STRINGS OF 15 MODULES IN SERIES - 350 Vmax *2 STRINGS TO BE TERMINATED IN PARALLEL INSIDE INVERTER 2



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 3R RATING.

CALCULATIONS FOR CURRENT CARRYING CONDUCTORS
REQUIRED CONDUCTOR AMPACITY PER STRING
[NEC 690.8(B)(1)]: (15.00*1.25)3 = 56.25A

AWG #6, DERATED AMPACITY
AMBIENT TEMP: 55°C, TEMP DERATING FACTOR: .76
RACEWAY DERATING = 2 CCC: 1.00
(75*.76)1.00 = 57.00A

57.00A ≥ 56.25A, THEREFORE WIRE SIZE IS VALID

TOTAL AC REQUIRED CONDUCTOR AMPACITY
67.00A*1.25 = 83.75A

AWG #4, DERATED AMPACITY
AMBIENT TEMP: 30°C, TEMP DERATING: 1.0
RACEWAY DERATING ≤ 3 CCC: N/A
95A*1.0 = 95A

95A ≥ 83.75A, THEREFORE AC WIRE SIZE IS VALID

CALCULATION FOR PV OVERCURRENT PROTECTION
TOTAL INVERTER CURRENT: 67.00A
67.00A*1.25 = 83.75A
--> 90A OVERCURRENT PROTECTION IS VALID

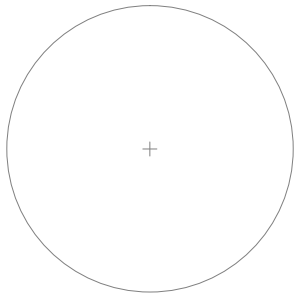
PV MODULE SPECIFICATIONS	
TRINA 260 (TSM-260 PD05.08)	
Imp	8.5
Vmp	30.6
Voc	38.2
Isc	9

INVERTER #1 - SE10000A-US			
DC		AC	
Imp	30.5	Pout	10000
Vmp	350	Iout	42
Voc	500	Imax	52.5
Isc	45	Vnom	240

INVERTER #2 - SE6000A-US			
DC		AC	
Imp	18	Pout	6000
Vmp	350	Iout	25
Voc	500	Imax	31.25
Isc	30	Vnom	240

A	#6 THWN-2 GEC TO EXISTING GROUND ROD	G	3/4" EMT W/ 2-#8 THWN-2, 1-#10 THWN-2, 1-#10 THWN-2 GROUND
B	1" EMT W/ 2-#4 THWN-2, 1-#8 THWN-2, 1-#8THWN-2 GROUND	H	#12 PV WIRE W/ #8 BARE COPPER BOND TO MODULES AND RAILS
C	3/4" EMT W/ 2-#6 THWN-2, 1-#10 THWN-2 GROUND	I	1" FMC W/ 3-#4 THWN-2, 1-#8 THWN-2 GROUND
D	3/4" EMT W/ 6-#10 THWN-2, 1-#10 THWN-2 GROUND	J	1 1/2" PVC W/ 2-2/0 THWN-2, 1-#1 THWN-2, 1-#1 THWN-2 GROUND (CONDUIT TO BE TRENCHED APPROX. 270')
E	3/4" EMT W/ 4-#10 THWN-2, 1-#10 THWN-2 GROUND		
F	3/4" EMT W/ 2-#6 THWN-2, 1-#10 THWN-2, 1-#10 THWN-2 GROUND		

Engineer / License Holder:



Issued / Revisions

NO.	DESCRIPTION	DATE
R1	CONSTRUCTION DWG	2/11/2016
P1	ISSUED TO TOWNSHIP FOR PERMIT	9/21/2015

Project Title:

DROGO,TERI- (SYSTEM #1)
TRINITY ACCT #: 2015-62193

Project Address:

102 EAST DELAWARE AVENUE
LANDISVILLE, NJ 08326

Drawing Title:

PROPOSED 20.8kW
SOLAR SYSTEM

Drawing Information

DRAWING DATE:	9/21/2015
DRAWN BY:	JC
REVISED BY:	JES

System Information:

TOTAL SYSTEM SIZE:	20.8kW
TOTAL MODULE COUNT:	80
MODULES USED:	TRINA 260
MODULE SPEC #:	TSM-260 PD05.08
UTILITY COMPANY:	ACE
UTILITY ACCT #:	55004665489
UTILITY METER #:	99G053668270
DEAL TYPE:	SUNNOVA

Rev. No.

R1

Sheet

PV - 4



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