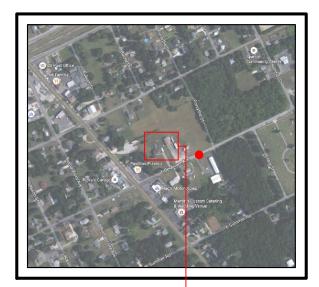
# INSTALLATION OF NEW GROUND MOUNTED 3.12kW PV SYSTEM **102 EAST DELAWARE AVENUE** LANDISVILLE, NJ 08326

#### **EAST DELAWARE AVENUE**





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 AVAILABLITY 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 LINDERSTANDING 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
- 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 FOUIPMENT WILL BE NEMA 3R OUTDOOR RATED UNLESS INDOORS.

#### GENERAL NOTES CONTINUED

- 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.
- ALL PORTIONS OF THIS SOLAR PHOTOVOLTAIC SYSTEM SHALL BE MARKED CLEARLY IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE ARTICLE
- 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.
- PRIOR TO THE SYSTEM START UP THE INSTALLATION CONTRACTOR SHALL ASSIST IN PERFORMING ALL INITIAL HARDWARE CHECKS AND DC WIRING CONDUCTIVITY CHECKS.
- FOR THE PROPER MAINTENANCE AND ISOLATION OF THE INVERTS REFER TO THE ISOLATION PROCEDURES IN THE
- THE LOCATION OF PROPOSED ELECTRIC AND TELEPHONE UTILITIES ARE SUBJECT APPROPRIATE UTILITY COMPANIES AND OWNERS.
- 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

- B) CURRENT PREVAILING UTILITY COMPANY SPECIFICATIONS. STANDARDS, AND REQUIREMENTS 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".
- ALL INFORMATION SHOWN MUST BE CERTIFIED PRIOR TO USE FOR CONSTRUCTION ACTIVITIES

#### **ABBREVIATIONS**

- AMP AMPERE ALTERNATING CURRENT AMP FRAME ABOVE FINISHED FLOOR ABOVE FINISHED GRADE AMERICAN WIRE GAUGE CONDUIT (GENERIC TERM OF
- RACEWAY, PROVIDE AS SPECIFIED) COMBINER BOX CIRCUIT
- CKT CT CU CURRENT TRANSFORMER COPPER DIRECT CURRENT DISCONNECT SWITCH DWG DRAWING

GND

- ELECTRICAL SYSTEM INSTALLER FMT ELECTRICAL METALLIC TUBING FS FUSIBLE SWITCH FUSE
- GROUND GFI GROUND FAULT INTERRUPTER FREQUENCY (CYCLES PER

#### **ABBREVIATIONS CONTINUED**

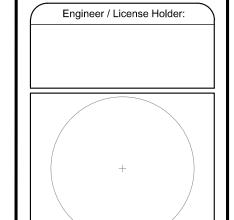
- JUNCTION BOX THOUSAND CIRCULAR MILS KILO-VOLT AMPERE kVA KILO-WATT kWH KILO-WATT HOUR MCB MAIN CIRCUIT BREAKER MDP MAIN DISTRIBUTION PANEL MLO MAIN LUG ONLY MOUNTED MTG MOUNTING
- NEUTRAL NATIONAL ELECTRICAL CODE NIC NO# NOT IN CONTRACT NUMBER
- OVER CURRENT PROTECTION OCP P
- POLF. PULL BOX PHASE
- PVC POLY-VINYL CHLORIDE CONDUIT POWER QTY QUANTITY RIGID GALVANIZED STEEL
- RGS SOLID NEUTRAL JSWBD SWITCHBOARD
- TYPICAL U.O.I. UNLESS OTHERWISE INDICATED
- WEATHERPROOF TRANSFORMER MOUNT 72 INCHES TO BOTTOM
  - OF ABOVE FINISHED FLOOR OR



SATELLITE VIEW SCALE: NTS

# SHEET INDEX

- PV-1 COVER SHEET W/ SITE INFO & NOTES
- PV-2 LAYOUT PLAN W/ MODULE LOCATIONS
- PV-3 ELECTRICAL 3 LINE DIAGRAM



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 (SYSTEM #2) TRINITY ACCT #: 2015-62193

#### Project Address:

**102 EAST DELAWARE AVENUE** LANDISVILLE. NJ 08326

#### Drawing Title:

PROPOSED 3.12kW SOLAR SYSTEM

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

System Information:			
TOTAL SYSTEM SIZE:	3.12kW		
TOTAL MODULE COUNT:	12		
MODULES USED:	TRINA 260		
MODULE SPEC #:	TSM-260 PD05.08		
UTILITY COMPANY:	ACE		
UTILITY ACCT #:	55000987184		
UTILITY METER #:	TEG011947443		
DEAL TYPE:	SUNNOVA		

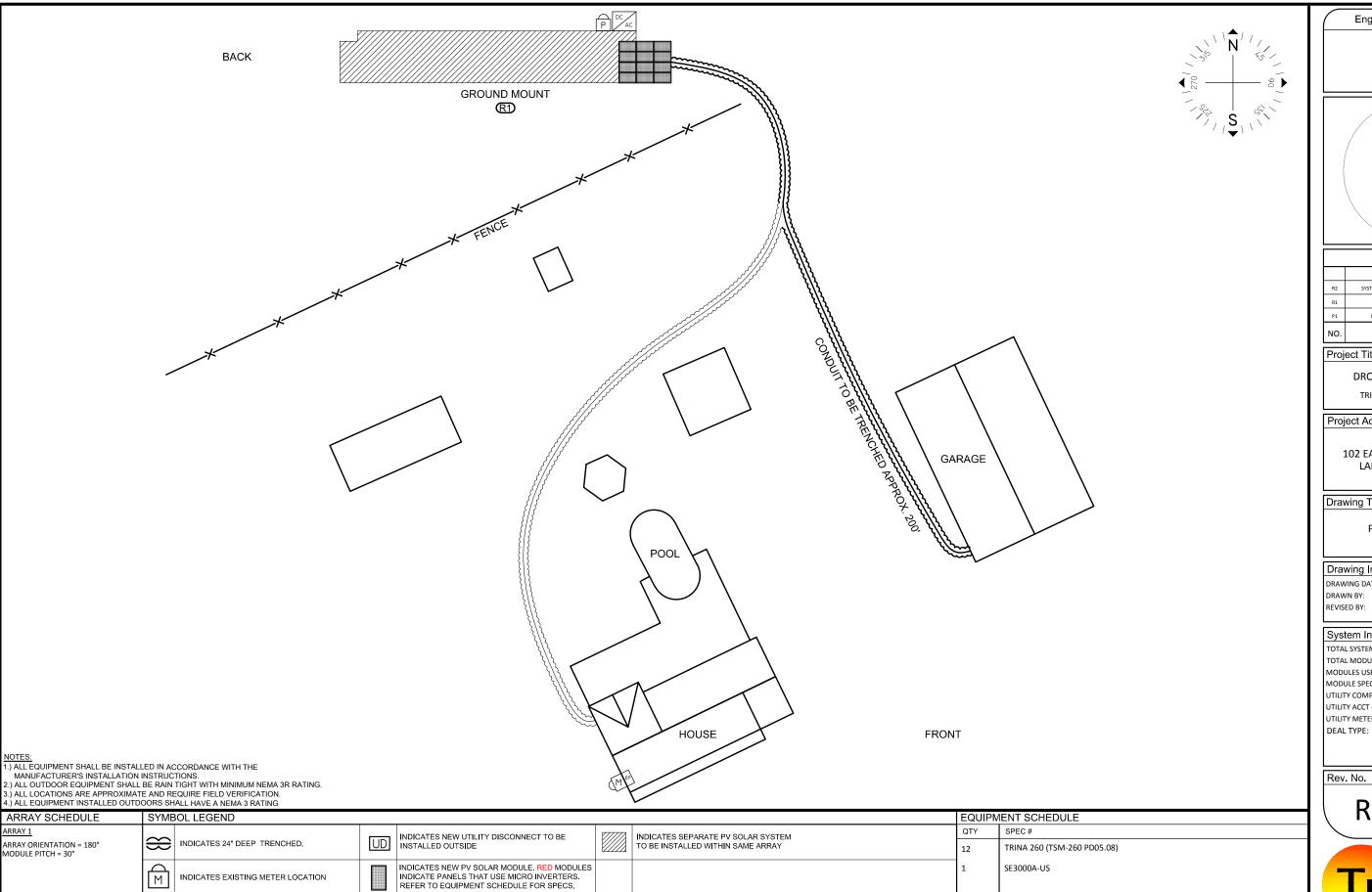
Rev. No.



Sheet



2211 Allenwood Road Wall, New Jersey 07719



INDICATES EXISTING ELECTRICAL PANEL

INDICATES NEW MAIN DISCONNECT TO BE GROUPED WITH MAIN PANEL

LOCATION: IN GARAGE

INDICATES NEW PRODUCTION METER TO BE

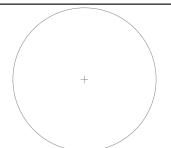
REFER TO EQUIPMENT SCHEDULE FOR SPECS.

INDICATES NEW INVERTER TO BE

INSTALLED OUTSIDE.

INSTALLED OUTSIDE.

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 (SYSTEM #2)

TRINITY ACCT #: 2015-62193

## Project Address:

102 EAST DELAWARE AVENUE LANDISVILLE, NJ 08326

#### Drawing Title:

PROPOSED 3.12kW SOLAR SYSTEM

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

3.12kW

TRINA 260

TSM-260 PD05.08

#### System Information: TOTAL SYSTEM SIZE: TOTAL MODULE COUNT:

MODULES USED: MODULE SPEC #: UTILITY COMPANY: UTILITY ACCT #: UTILITY METER #:

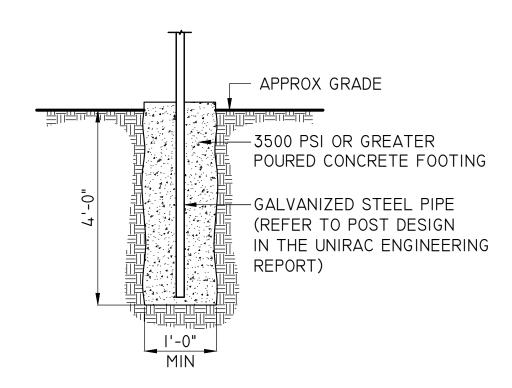
55000987184 TEG011947443 SUNNOVA

Sheet

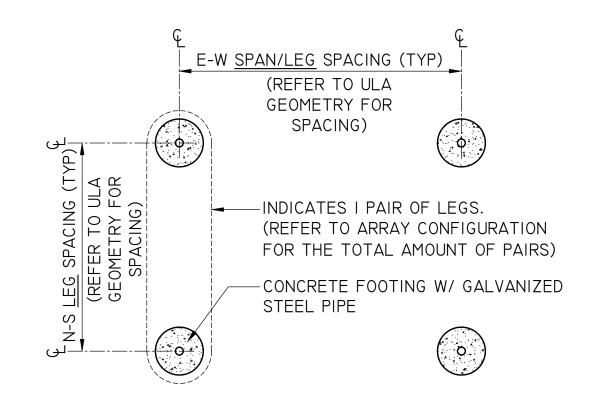


2211 Allenwood Road Wall, New Jersey 07719

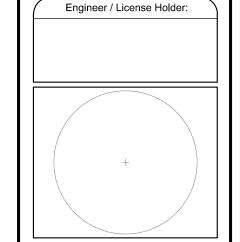
877-797-2978 www.Trinity-Solar.com











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 (SYSTEM #2)
TRINITY ACCT #: 2015-62193

Project Address:

102 EAST DELAWARE AVENUE LANDISVILLE, NJ 08326

Drawing Title:

PROPOSED 3.12kW SOLAR SYSTEM

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

System Information:

TOTAL SYSTEM SIZE: 3.12kW

TOTAL MODULE COUNT: 12

MODULES USED: TRINA 260

MODULE SPEC #: TSM-260 PD05.08

UTILITY COMPANY: ACE

UTILITY ACCT #: 55000987184

UTILITY METER #: TEG011947443

DEAL TYPE: SUNNOVA

Rev. No.

Sheet

PV - 3



2211 Allenwood Road Wall, New Jersey 07719

877-797-2978 www.Trinity-Solar.com



#### 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 TFMP =  $-16^{\circ}\mathrm{C}$
- 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)1 = 18.75A

AWG #10, DERATED AMPACITY AMBIENT TEMP:  $55^{\circ}$ C, TEMP DERATING FACTOR: .76 RACEWAY DERATING = 2 CCC: 1.00 ( $40^{*}$ .76)1.00 = 30.40A

30.40A ≥ 18.75A, THEREFORE WIRE SIZE IS VALID

TOTAL AC REQUIRED CONDUCTOR AMPACITY 14.00A\*1.25 = 17.50A

AWG #10, DERATED AMPACITY
AMBIENT TEMP: 30°C, TEMP DERATING: 1.0
RACEWAY DERATING ≤ 3 CCC: N/A
40A\*1.0 = 40A

40A  $\stackrel{>}{\scriptstyle{\sim}}$  17.50A, THEREFORE AC WIRE SIZE IS VALID

CALCULATION FOR PV OVERCURRENT PROTECTION
TOTAL INVERTER CURRENT: 14.00A
14.00A\*1.25 = 17.50A
--> 20A OVERCURRENT PROTECTION IS VALID

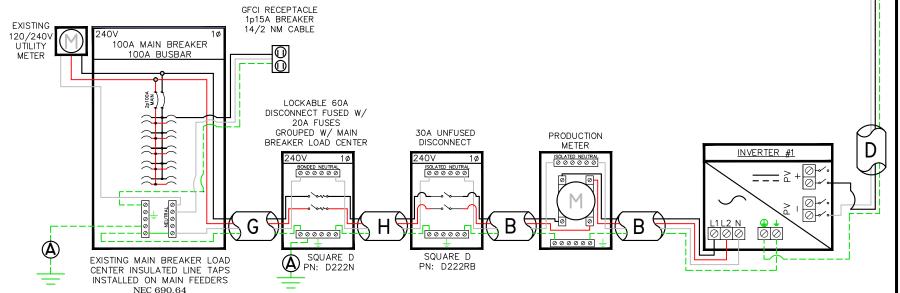
INVERTER #1 - SE3000A-US

DC AC

Imp 8.91 Pout 3000

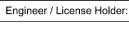
Vmp 350 lout 14

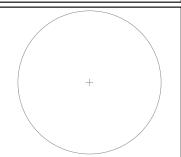
Voc 500 Imax 17.5



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

А	#6 THWN-2 GEC TO EXISTING GROUND ROD	G	3/4" FMC W/ 3-#6 THWN-2, 1-#8 THWN-2 GROUND
В	3/4" EMT W/ 3-#10 THWN-2, 1-#10 THWN-2 GROUND	Н	1" PVC W/ 2-#8 THWN-2, 1-#8 THWN-2, 1-#8 THWN-2 GROUND (TRENCHED APPROX. 200')
С	(NOT USED)		
D	3/4" EMT W/ 2-#10 THWN-2, 1-#10 THWN-2 GROUND		
Е	3/4" EMT W/ 3-#10 THWN-2, 1-#10 THWN-2 GROUND		
F	#12 PV WIRE W/ #8 BARE COPPER BOND TO MODULES AND RAILS		





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 (SYSTEM #2)

TRINITY ACCT #: 2015-62193

#### Project Address:

102 EAST DELAWARE AVENUE LANDISVILLE, NJ 08326

וטו	aw	ıng	TILLE	3

PROPOSED 3.12kW SOLAR SYSTEM

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

System Information:	
TOTAL SYSTEM SIZE:	3.12kW
TOTAL MODULE COUNT:	12
MODULES USED:	TRINA 260
MODULE SPEC #:	TSM-260 PD05.08
UTILITY COMPANY:	ACE
UTILITY ACCT #:	55000987184
UTILITY METER #:	TEG011947443
DEAL TYPE:	SUNNOVA



PV - 4

Sheet



2211 Allenwood Road Wall, New Jersey 07719 877-797-2978 www.Trinity-Solar.com