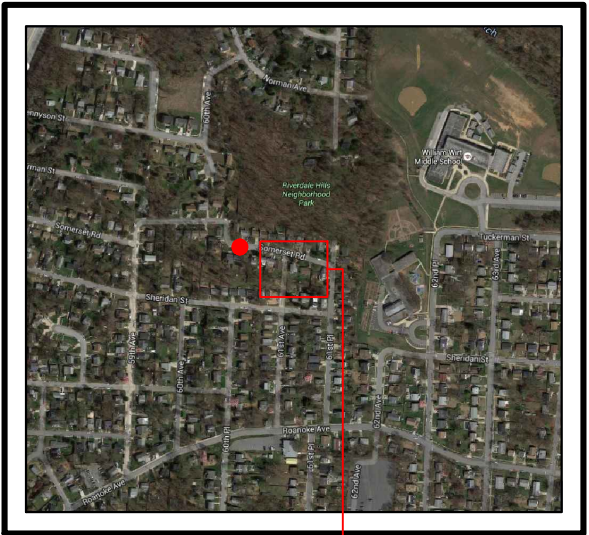


INSTALLATION OF NEW ROOF MOUNTED 10.92kW PV SYSTEM 6101 SOMERSET ROAD RIVERDALE, MD 20737

SOMERSET ROAD ●



 **VICINITY MAP**
SCALE: NTS

SITE

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
OC	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

PV SYSTEM SUMMARY

SYSTEM SIZE	: 6240W DC / 5000W AC
MODULE TYPE	: TRINA 260
INVERTER TYPE	: SOLAREDGE
# OF ARRAYS	: 1
ATTACHMENT METHOD	: UNIRAC SOLAR MOUNT BEAM W/ UNIRAC RAIL
INTERCONNECTION	: BACKFEED BREAKER
UTILITY COMPANY	: PEPCO

SHEET INDEX

PV-1	COVER SHEET W/ SITE INFO
PV-2	& GENERAL NOTES PLOT PLAN W/ HOUSE
PV-3	& EQUIPMENT / ELEVATION ROOF PLAN W/ MODULE LOCATIONS
PV-4	& DIMENSIONS STRUCTURAL DETAILS
PV-5	ELECTRICAL 3 LINE DIAGRAM
PV-6	LABELS
PV-7-13	DATA SHEETS

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.

Issued / Revisions

R1	SYSTEM SIZE INCREASE / INVERTER UPGRADE / 3 LINE REVISION	2/25/2016
P1	ISSUED TO TOWNSHIP FOR PERMIT	1/27/2016
NO.	DESCRIPTION	DATE

Project Title:

MCCORMICK, GEORGE
TRINITY ACCT #: 2015-75701

Project Address:

6101 SOMERSET ROAD
RIVERDALE, MD 20737

Drawing Title:

COVER SHEET

Drawing Information

DRAWING DATE:	1/27/2016
DRAWN BY:	JC
REVISED BY:	DMR

System Information:

TOTAL SYSTEM SIZE:	10.92kW
TOTAL MODULE COUNT:	42
MODULES USED:	TRINA 260
MODULE SPEC #:	TSM-260 PD05.08
UTILITY COMPANY:	PEPCO
UTILITY ACCT #:	5501 879 2097
UTILITY METER #:	1ND353895134
DEAL TYPE:	ORE

Rev. No.

R1

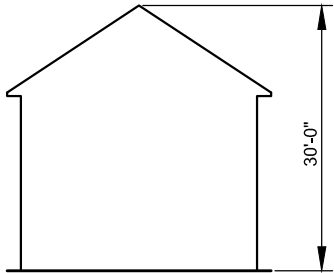
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PV - 1



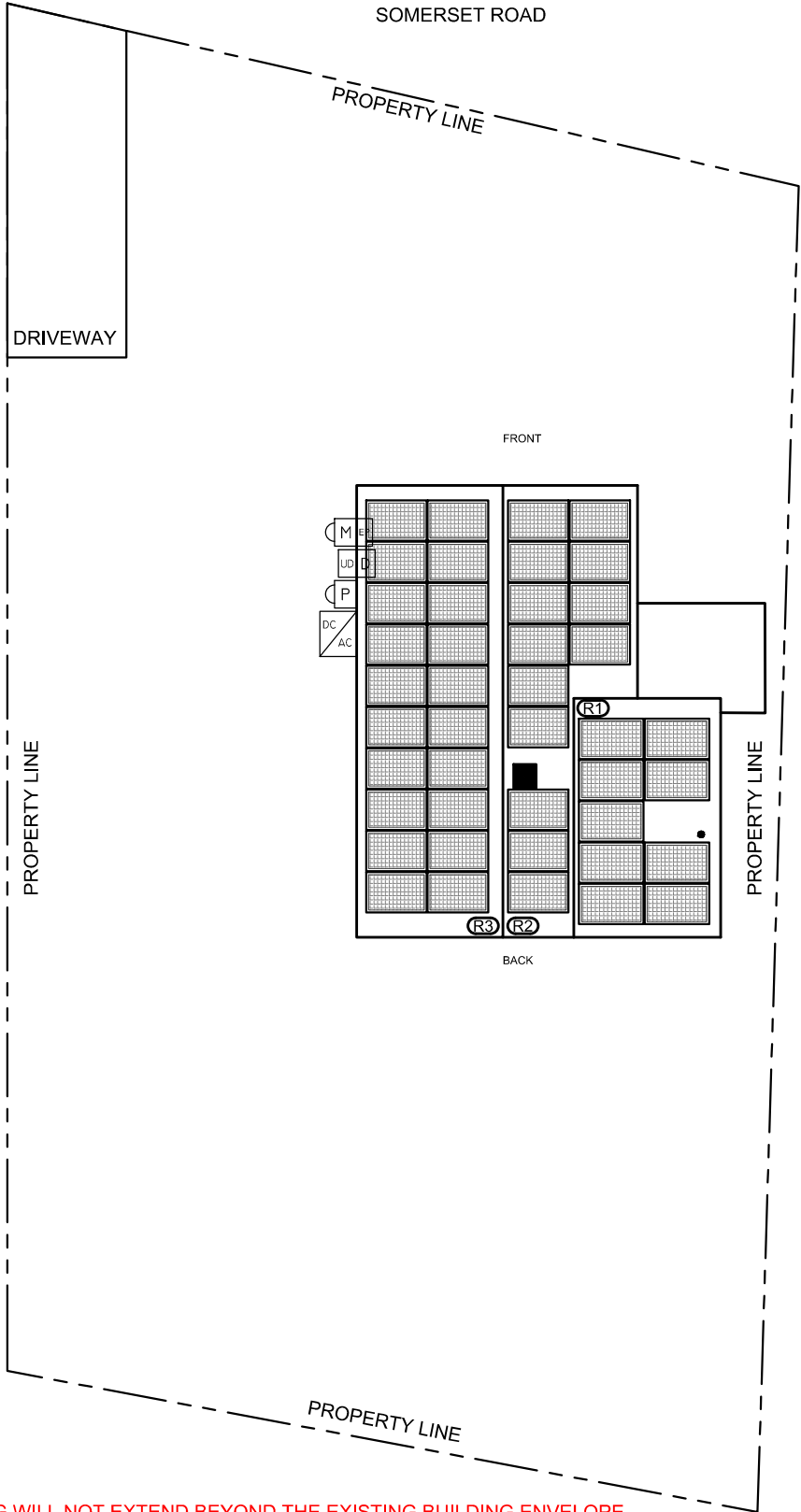
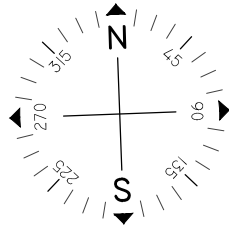
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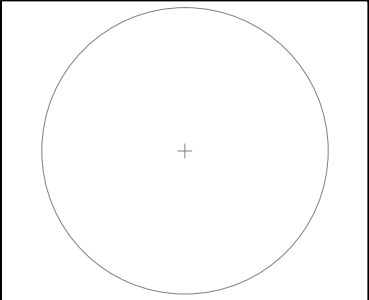
SOLAR MODULES SHALL NOT EXCEED PEAK HEIGHT.

HEIGHT FROM GROUND LEVEL TO PEAK OF ROOF
SCALE: NOT TO SCALE



- NOTES:
- 1.) ALL LOCATIONS ARE APPROXIMATE AND REQUIRE FIELD VERIFICATION.
 - 2.) ROOFTOP SOLAR INSTALLATION ONLY PV ARRAY AND ALL ASSOCIATED RACKING WILL NOT EXTEND BEYOND THE EXISTING BUILDING ENVELOPE

ARRAY SCHEDULE		SYMBOL LEGEND		PLUMBING SCHEDULE	EQUIPMENT SCHEDULE	
R1 ARRAY ORIENTATION = 91° MODULE PITCH = 9°		(R1)	INDICATES ROOF DESIGNATION . REFER TO ARRAY SCHEDULE FOR MORE INFORMATION		QTY	SPEC #
		UD	INDICATES NEW UTILITY DISCONNECT TO BE INSTALLED OUTSIDE		42	TRINA 260 (TSM-260 PD05.08)
		M	INDICATES EXISTING METER LOCATION	OTHER OBSTRUCTIONS	1	SE10000A-US
		EP	INDICATES EXISTING ELECTRICAL PANEL LOCATION: IN BASEMENT			
R2 ARRAY ORIENTATION = 91° MODULE PITCH = 20°						
R3 ARRAY ORIENTATION = 271° MODULE PITCH = 20°						



Issued / Revisions		
R1	SYSTEM SIZE INCREASE / INVERTER UPGRADE / 3 LINE REVISION	2/25/2016
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NO.	DESCRIPTION	DATE

Project Title:
MCCORMICK, GEORGE
TRINITY ACCT #: 2015-75701

Project Address:
6101 SOMERSET ROAD
RIVERDALE, MD 20737

Drawing Title:
PLOT PLAN

Drawing Information	
DRAWING DATE:	1/27/2016
DRAWN BY:	JC
REVISED BY:	DMR

System Information:	
TOTAL SYSTEM SIZE:	10.92kW
TOTAL MODULE COUNT:	42
MODULES USED:	TRINA 260
MODULE SPEC #:	TSM-260 PD05.08
UTILITY COMPANY:	PEPCO
UTILITY ACCT #:	5501 879 2097
UTILITY METER #:	1ND353895134
DEAL TYPE:	ORE

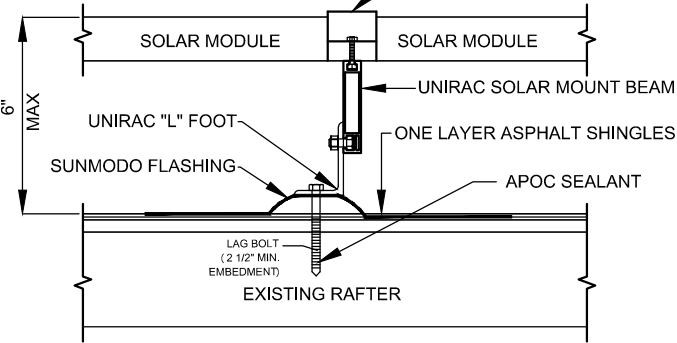
Rev. No.	Sheet
R1	PV - 2



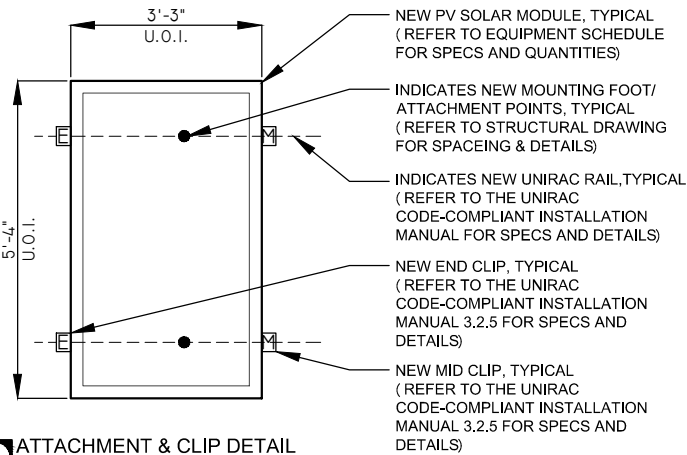
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SIZE OF EXISTING RAFTER: 2" x 6"
RAFTER SPACING: 16" o.c.
ROOF PITCH R1: 9° (ASPHALT SHINGLE)
ROOF PITCH R2: 20° (ASPHALT SHINGLE)
ROOF PITCH R3: 20° (ASPHALT SHINGLE)
ADDITIONAL SUPPORT PROVIDED: NO
THE EXISTING ROOF RAFTERS AT THIS RESIDENCE CAN ADEQUATELY SUPPORT THE PROPOSED SOLAR PV PANEL ASSEMBLY (5 LBS. PSF) AND THE SNOW LOADS (14 LBS. PSF) . IN ADDITION, THE 3" STAINLESS STEEL LAG SCREWS INSTALLED AT 4' o.c. MEET THE UPLIFT REQUIREMENTS OF 4 SCREW MINIMUM PER ASSEMBLY, 6 SCREWS ARE PROVIDED. THIS INSTALLATION MEETS THE REQUIREMENTS OF THE RESIDENTIAL CODE OF NEW YORK STATE AND HAS BEEN FOUND TO BE ACCEPTABLE BY MY OFFICE.

*NOTE: GRAVITY FOOT SAME DETAIL WITHOUT LAG BOLT



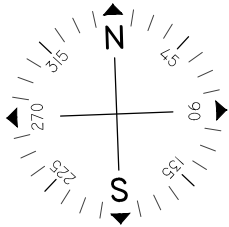
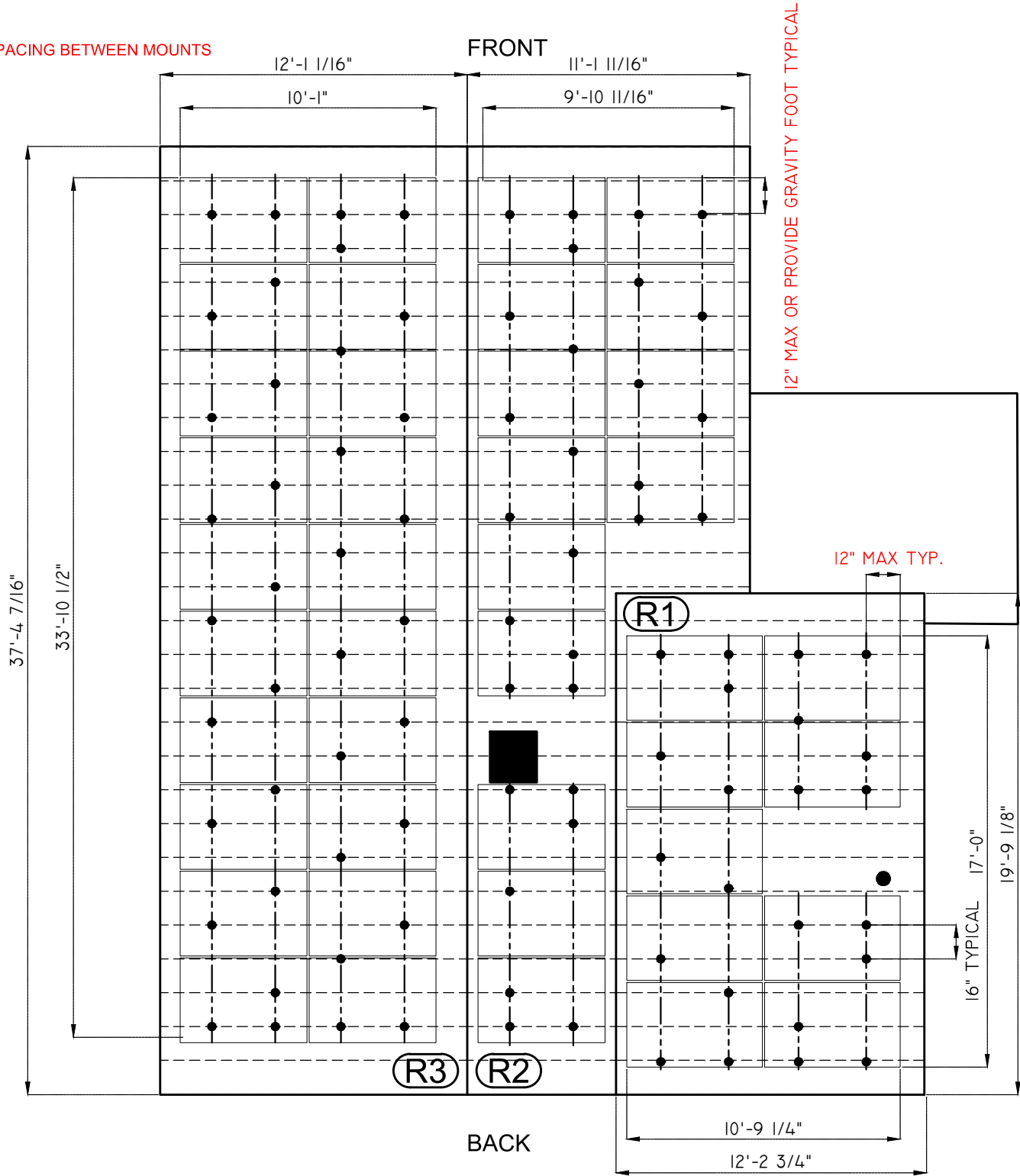
PV MODULE ATTACHMENT ON ASPHALT SHINGLE ROOF
SCALE: NOT TO SCALE



ATTACHMENT & CLIP DETAIL
SCALE: NOT TO SCALE

NOTE : REFER TO MODULE SPECS FOR ACTUAL MODULE DIMENSIONS

48" MAX. SPACING BETWEEN MOUNTS



NOTES:

- 1.) ALL LOCATIONS ARE APPROXIMATE AND REQUIRE FIELD VERIFICATION.
- 2.) ROOFTOP SOLAR INSTALLATION ONLY PV ARRAY AND ALL ASSOCIATED RACKING WILL NOT EXTEND BEYOND THE EXISTING BUILDING ENVELOPE

ARRAY SCHEDULE		SYMBOL LEGEND		PLUMBING SCHEDULE	EQUIPMENT SCHEDULE	
R1 ARRAY ORIENTATION = 91° MODULE PITCH = 9°		---	INDICATES EXISTING ROOF RAFTERS (REFER TO STRUCTURAL DRAWING FOR RAFTER SIZ & SPACING)		QTY	SPEC #
		---	INDICATES NEW UNIRAC RAIL, TYPICAL (REFER TO THE UNIRAC CODE-COMPLIANT INSTALLATION MANUAL FOR SPECS AND DETAILS)		42	TRINA 260 (TSM-260 PD05.08)
		●	INDICATES NEW MOUNTING FOOT / ATTACHMENT POINTS, TYPICAL		1	SE10000A-US
		■	INDICATES NEW PV SOLAR MODULE. RED MODULES INDICATE PANELS THAT USE MICRO INVERTERS. (REFER TO EQUIPMENT SCHEDULE FOR SPECS.)			
R2 ARRAY ORIENTATION = 91° MODULE PITCH = 20°				OTHER OBSTRUCTIONS		
R3 ARRAY ORIENTATION = 271° MODULE PITCH = 20°						

Issued / Revisions		
R1	SYSTEM SIZE INCREASE / INVERTER UPGRADE / 3 LINE REVISION	2/25/2016
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NO.	DESCRIPTION	DATE

Project Title:
MCCORMICK, GEORGE
TRINITY ACCT #: 2015-75701

Project Address:
6101 SOMERSET ROAD
RIVERDALE, MD 20737

Drawing Title:
STRUCTURAL

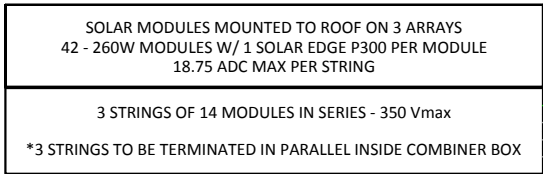
Drawing Information	
DRAWING DATE:	1/27/2016
DRAWN BY:	JC
REVISED BY:	DMR

System Information:	
TOTAL SYSTEM SIZE:	10.92kW
TOTAL MODULE COUNT:	42
MODULES USED:	TRINA 260
MODULE SPEC #:	TSM-260 PD05.08
UTILITY COMPANY:	PEPCO
UTILITY ACCT #:	5501 879 2097
UTILITY METER #:	1ND353895134
DEAL TYPE:	ORE

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MOUNTED
UNDER SOLAR MODULE
NEC 690.34

8"x8"
JUNCTION
BOX

F

D

ARRAY CIRCUIT WIRING NOTES

Licensed Electrician Assumes all Responsibility for
Determining Onsite Conditions and Executing Installation
in Accordance with NEC 2011

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)]: $(15.00 \times 1.25)^3 = 56.25A$

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

$57.00A \geq 56.25A$, THEREFORE WIRE SIZE IS VALID

TOTAL AC REQUIRED CONDUCTOR AMPACITY
 $42.00A \times 1.25 = 52.50A$

AWG #6, DERATED AMPACITY
AMBIENT TEMP: 30°C, TEMP DERATING: 1.0
RACEWAY DERATING ≤ 3 CCC: N/A
 $75A \times 1.0 = 75A$

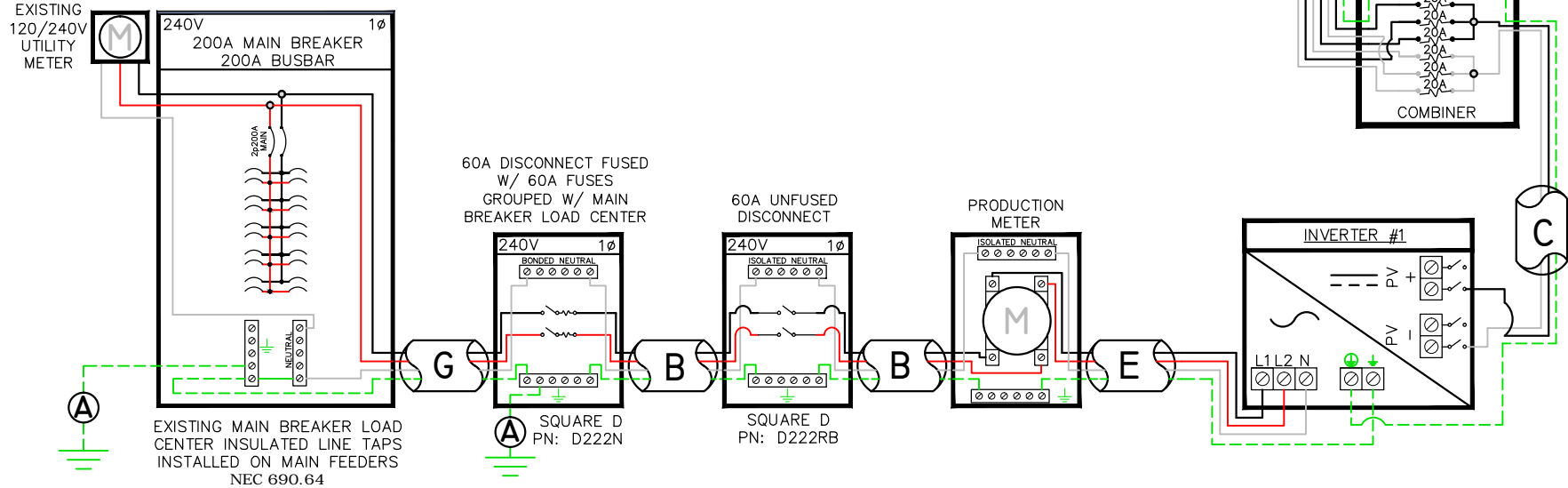
$75A \geq 52.50A$, THEREFORE AC WIRE SIZE IS VALID

CALCULATION FOR PV OVERCURRENT PROTECTION

TOTAL INVERTER CURRENT: 42.00A

$42.00A \times 1.25 = 52.50A$

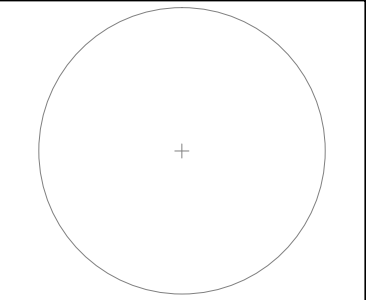
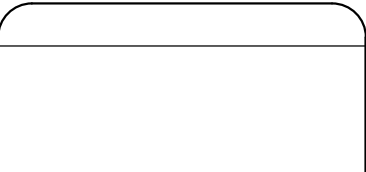
---> 60A OVERCURRENT PROTECTION IS VALID



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

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



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R1	SYSTEM SIZE INCREASE / INVERTER UPGRADE / 3 LINE REVISION	2/25/2016
P1	ISSUED TO TOWNSHIP FOR PERMIT	1/27/2016
NO.	DESCRIPTION	DATE

Project Title:
MCCORMICK, GEORGE
TRINITY ACCT #: 2015-75701

Project Address:
**6101 SOMERSET ROAD
RIVERDALE, MD 20737**

Drawing Title:
3-LINE DIAGRAM

Drawing Information	
DRAWING DATE:	1/27/2016
DRAWN BY:	JC
REVISED BY:	DMR

System Information:	
TOTAL SYSTEM SIZE:	10.92kW
TOTAL MODULE COUNT:	42
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UTILITY METER #:	1ND353895134
DEAL TYPE:	ORE

Rev. No.	Sheet
R1	PV - 5



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