System description

System size: 11kW
ABB, PVI-4.2-OUTD-US (240)
Suniva, OPT 280-60-4-1B0

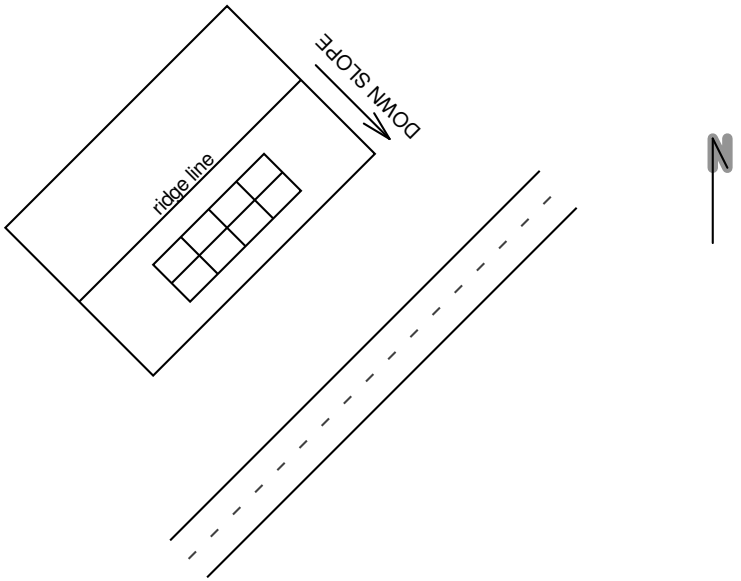
PV System Design

Created on: 2016-02-29
Based on 2011 NEC & 5th Edition (2014) FBC

John Smith (licence #:123456789)

Site address:
1679 Clearlake Rd
Cocoa, Brevard, FL, 32780

System:
11203 Pmp DC
ABB PVI-4.2-OUTD-US (240)
Suniva OPT 280-60-4-1B0



Contents

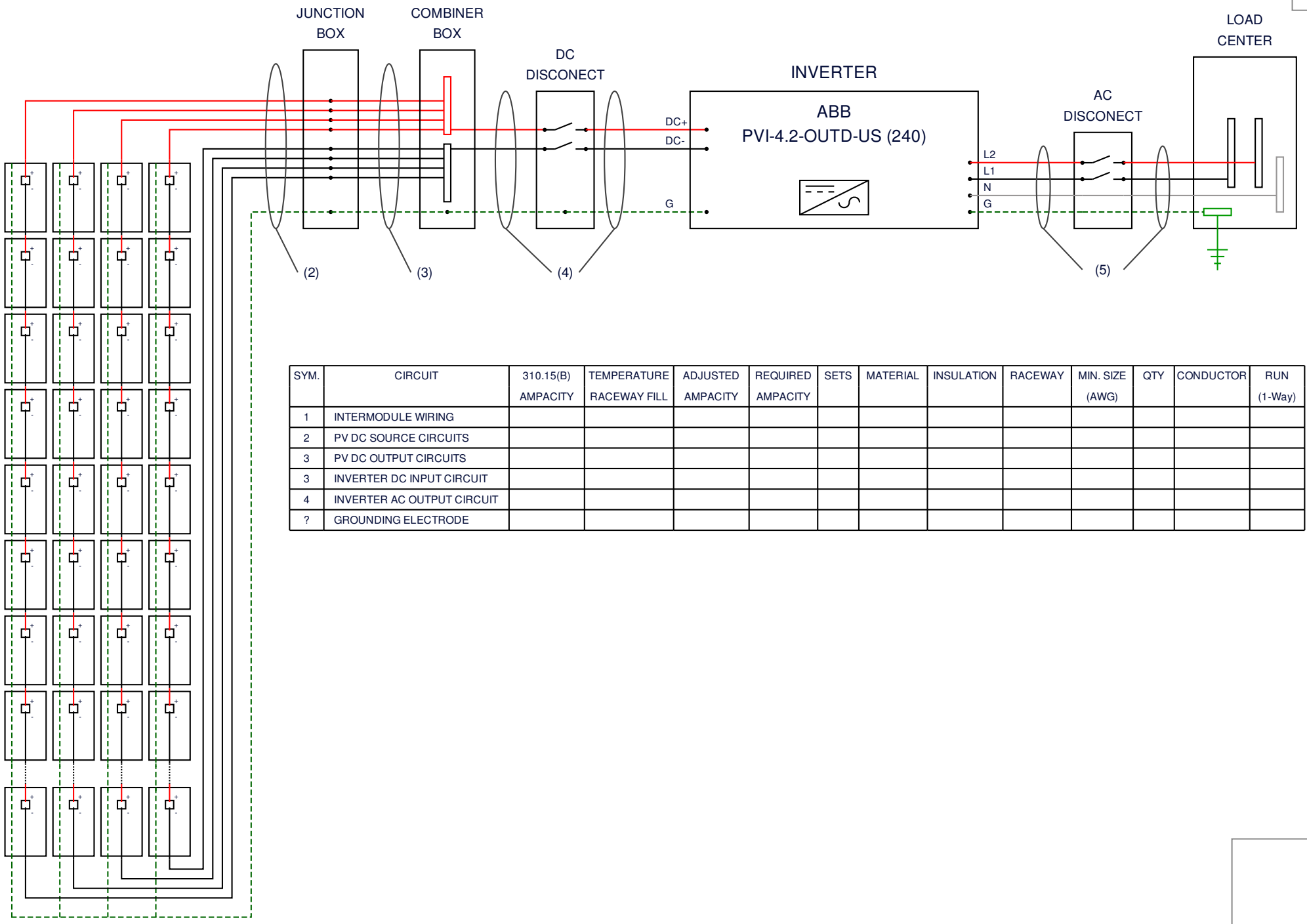
Notes

System Limitations:
The array must be installed on a residential building with a risk category of II
10 kW maximum, grid connected, no battery backup.
Rooftop mounted, no more than 9 inches above the roof surface.
600 amps maximum DC current.

Requirements:
The Licensed Solar Installer shall comply with the requirements of the Authority Having Jurisdiction (AHJ) and use properly licensed subcontractors for work in conjunction with the PV installation that exceeds the scope of their license.
The PV array design and components will:
- Be installed on defined, permitted roof structure.
- Comply with all requirements of the Authority Having Jurisdiction for fire ratings.
- Comply with all of the the requirements of the 2011 version of the NEC Article 690.
- Be listed and labeled per the requirements of UL 1703.
- Be listed installed in accordance with the manufacturer's installation requirements.
- Have a Florida Solar Energy Center System Certification.
- Installed in Zone P(1) Field of the roof only
- Installed on a Gable Roof only
- Meet the roof uplift pressures for installation in the Field (Zone P 1) of Roof.
- Installed Parallel to the Roof Surface.

The supporting wood structural members spaced a maximum of 2 feet on center

Instructions:
Wood structural members must be a 2x4 or larger.
Follow NEC and local signage requirements.



SYM.	CIRCUIT	310.15(B) AMPACITY	TEMPERATURE RACEWAY FILL	ADJUSTED AMPACITY	REQUIRED AMPACITY	SETS	MATERIAL	INSULATION	RACEWAY	MIN. SIZE (AWG)	QTY	CONDUCTOR	RUN (1-Way)
1	INTERMODULE WIRING												
2	PV DC SOURCE CIRCUITS												
3	PV DC OUTPUT CIRCUITS												
3	INVERTER DC INPUT CIRCUIT												
4	INVERTER AC OUTPUT CIRCUIT												
?	GROUNDING ELECTRODE												

PV System Design
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Cocoa, Brevard, FL, 32780

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W-001

Contractor

Contractor Name	John Smith
Contractor License	123456789.00
License Type	State Certified Solar Contractor

Location

County	Brevard
Address	1679 Clearlake Rd
City	Cocoa
Zip Code	32780.00
Exposure Category	D
Risk Category	II

Roof

Eave Height	23.00
Ridge Height	37.23
Least Horizontal Distance	45.00
System Type	Shingle
Wood Structural Member Type	Rafters
Number of sections	1.00
Slope	4:12
Slope Length	45.00
Eave Width	45.00
Mean Height	30.12
A	4.50
Uplift Pressure Min	-51.50

Array

Module Make	Suniva
Module Model	OPT 280-60-4-1B0
Module Orientation	Portrait
Modules Per String	10.00
Number Of Strings	4.00
Isc	37.24
Voc	388.00
Imp	35.12
Vmp	319.00
Pmp	11203.28
Number Of Modules	40.00
Isc OCPD	58.19

Inverter

Distance To Loadcenter	54.00
Inverter Make	ABB
Inverter Model	PVI-4.2-OUTD-US (240)
Location	Inside
Nominal Inverter Power	4200.00
Max Inverter Power	4600.00
Grid Voltage	240.00
Mppt Channels	2.00
Mttp Channel Power	3000.00
Vmax	600.00
Vstart	200.00
Mppt Min	140.00
Mppt Max	530.00
Conductors	ground, neutral, L1, L2
Num Conductors	4.00
Loadcenter Type	240V/120V

Attachment System

Make	UNIRAC
Model	SM SOLARMOUNT
Array Offset From Roof	23.00

Module

Pmp	280.00
Isc	9.31
Voc	38.80
Imp	8.78
Vmp	31.90
Width	982.00
Length	1652.00
Max Series Fuse	15.00

ALL LABELS TO COMPLY WITH [2011 NEC 110.21] OR
[2014 NEC 110.21(B)]; LABELS SHALL BE OF SUFFICIENT
DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.

AT EACH DC JUNCTION BOX:
[690.35(F)] LABEL
WARNING: ELECTRIC SHOCK HAZARD
THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE
UNGROUNDED AND MAY BE ENERGIZED

ALONG INDOOR DC WIRING AT (MAX.) 10' INTERVALS:
[690.31(E)]
PHOTOVOLTAIC POWER SOURCE
AT DC DISCONNECT:
[690.14(C)(2)] DC DISCONNECT LABEL
DC DISCONNECT
[690.53] PV POWER SOURCE DC RATING
RATED CURRENT AT MAXIMUM POWER: 17.1A
RATED VOLTAGE AT MAXIMUM POWER: 161V
MAXIMUM SYSTEM VOLTAGE: 545V
MAXIMUM SYSTEM CURRENT: 23.2A
** CONTRACTOR TO MODIFY TO MEET FIELD CONDITIONS

AT AC DISCONNECTS:
[690.15]
AC DISCONNECT
AT PV INTERCONNECTION POINTS:
[690.54] PV POWER SOURCE AC RATING (QTY: 2)
RATED CURRENT: 21A
RATED VOLTAGE: 240/120V
[690.54]
PV POWER SOURCE AC RATING (QTY: 1)
RATED CURRENT: 42A
RATED VOLTAGE: 240/120V

AT NEW PV COMBINING PANELBOARD AT SERVICE ENTRANCE:
SOLAR PV COMBINING PANELBOARD ONLY. NO LOAD CIRCUIT
BREAKERS MAY BE ADDED.

AT MOST ACCESSIBLE PV SYSTEM AC DISCONNECT, AND AT
UTILITY SERVICE DISCONNECT:
[705.10] DISCONNECT LOCATIONS
SYSTEM SPECIFIC. COULD INCLUDE EITHER CLEAR TEXT
DESCRIPTION OR A MAP OF SITE DESCRIBING LOCATIONS OF
BOTH DISCONNECTS: 1) UTILITY SERVICE DISCONNECT AND
2) PV SYSTEM DISCONNECT
(TWO PLACARDS REQUIRED IF DISCONNECTS ARE NOT
CO-LOCATED)

(IF APPLICABLE) AT BACKFED BREAKER IN CUSTOMER EQUIPMENT:
[705.12(D)(4)]: SIMILAR LABEL TO
DUAL POWER SOURCES: BUILDING SERVED BY UTILITY SERVICE
AND PHOTOVOLTAIC SYSTEM
AT EACH PANELBOARD UPSTREAM OF PV INVERTER BREAKER.

[705.12(D)(7)]: IN A PANELBOARD, WHEN THE SUM OF ITS UTILITY
SUPPLY BREAKER AND ITS PV INVERTER BREAKER EXCEED ITS
RATING, BREAKERS SHALL BE LOCATED AT OPPOSITE ENDS OF
THE BUS WITH THIS LABEL NEAR THE PV INVERTER BREAKER
(EQUIVALENT WORDING ACCEPTABLE):
WARNING
INVERTER OUTPUT CONNECTION
DO NOT RELOCATE THIS OVERCURRENT DEVICE

COLOR CODING:
DC+: BLACK
DC-: BLACK (OPTION: ORANGE)
GROUND: GREEN OR BARE
AC L1: BLACK; L2: RED; N: WHITE OR GREY