System description

System size: 10kW
ABB, PVI-4.2-OUTD-US (240)
Suniva, OPT 265-60-4-1B0

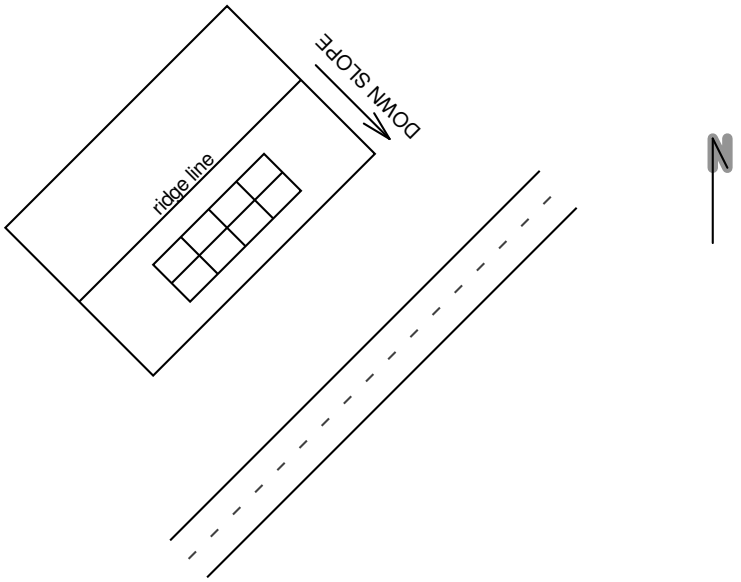
# PV System Design

Created on: 2016-03-02
Based on 2011 NEC & 5th Edition (2014) FBC

John Smith (licence #:123456789)

Site address:
1679 Clearlake Rd
Cocoa, Broward, FL, 32922-5703

System:
9549 Pmp DC
ABB PVI-4.2-OUTD-US (240)
Suniva OPT 265-60-4-1B0

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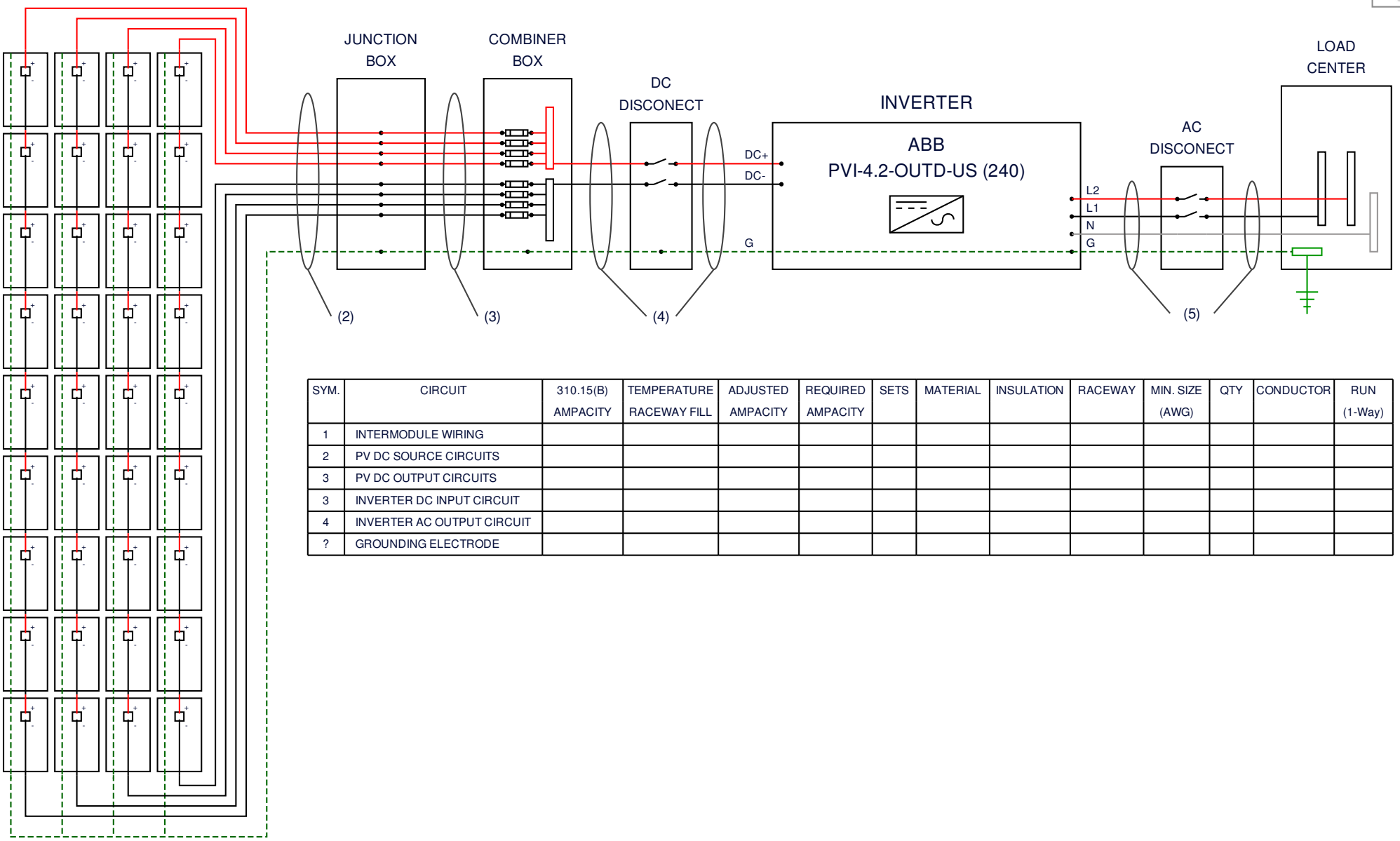
# Notes

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 | | | | | | | | | | | | |

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W-001

## Contractor

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

## Location

| | |
|---|---|
| County | Broward |
| Address | 1679 Clearlake Rd |
| City | Cocoa |
| Zip Code | 32922-5703 |
| Exposure Category | D |
| Risk Category | II |

## Roof

| | |
|---|---|
| Eave Height | 10.00 |
| Ridge Height | 19.49 |
| Least Horizontal Distance | 60.00 |
| System Type | Shingle |
| Wood Structural Member Type | Trusses |
| Number of sections | 1.00 |
| Slope | 4:12 |
| Slope Length | 30.00 |
| Eave Width | 60.00 |
| Mean Height | 14.74 |
| A | 5.90 |
| Uplift Pressure Min | -47.00 |

## Array

| | |
|---|---|
| Module Make | Suniva |
| Module Model | OPT 265-60-4-1B0 |
| Module Orientation | Portrait |
| Modules Per String | 9.00 |
| Number Of Strings | 4.00 |
| Isc | 36.48 |
| Voc | 344.70 |
| Imp | 34.56 |
| Vmp | 276.30 |
| Pmp | 9548.93 |
| Number Of Modules | 36.00 |
| Isc OCPD | 57.00 |

## Inverter

| | |
|---|---|
| Distance To Loadcenter | 34.00 |
| 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 | 9.00 |

## Module

| | |
|---|---|
| Pmp | 265.00 |
| Isc | 9.12 |
| Voc | 38.30 |
| Imp | 8.64 |
| Vmp | 30.70 |
| 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