



PHOTOVOLTAIC ARRAY
3 STRINGS OF 7 MODULES

UL LISTED
NEMA 3R BOX

SMA SB5000US
INVERTER

PV METER

AC DISCONNECT

EXISTING
SUB PANEL

HIT Double 195* - System specs

Module Wattage: 249W
 Module Vmp: 56.1 V
 Modules in series: 7
 String DC Wattage: 1743 W
 Module/String Imp: 4.45 A
 String/System Vmp: 392.7 V
 System Imp: 4.45 A
 System DC Wattage: 5229 W

Module Voc: 69.5 V
 # Series Strings: 3
 Module/String Isc: 4.85 A
 String/System Voc: 486.5 V
 System Isc: 4.85 A

$V_{max} = 7 * 69.5 * 1.13 = 549.8 \text{ V}$

WIRE SCHEDULE		CONDUIT
A	2 - #10AWG PV CABLE 1 - #10AWG BARE COPPER	NONE
B	6 - #10 AWG THHN 1 - #10 AWG THHN GND	3/4" EMT
C	3 - #10 AWG THHN 1 - #10 AWG THHN GND	3/4" EMT

*Using STC + 30% Specs

Wire Sizing

Row box to inverter

$I_{sc}(\#in\ parallel)(1.25)(1.25) = 4.85(1)(1.25)(1.25) = 7.6 \text{ A}$

Temperature corrected to 117F, => .76 factor

Conduit fill 7-9 CCC => .70 factor

For THHN, $7.6 / (.76 * .7) = 14.3 \text{ A}$

10 AWG

Inverter to sub panel

$I_{ac} \times 1.25 = 20.8 \times 1.25 = 26 \text{ A}$

Temp corrected to 104F, => .82 factor

Conduit fill 4-6 CCC => .90 factor

For THHN, $26 / (.82 \times .90) = 35.2 \text{ A}$

10 AWG

Output overcurrent protection is:

30A Breaker(2-pole)



TITLE:

3 LINE DIAGRAM - TEP TEST YARD

FOR: AZRISE

DRAWN BY: BMS

REV: 0

DATE: 06/18/12

SCALE: N/A

DRAWING NUMBER: 2012102