

NOTES:

1. LOCATIONS OF COMBINERS AND EQUIPMENT ARE APPROXIMATE; THEY ARE SUBJECT TO ON-SITE REQUIREMENTS AND SHOWN HERE FOR VISUAL CLARITY. INVERTERS AND AC COMBINERS ARE LOCATED ON THE PROTRUDING WEST WALL OF THE CENTER ROOF.

AS BUILT DRAWINGS

Drawn by: VC
Checked by: MJ
Date: 10/24/14
Job No.:

No.	Date
A	02/02/15

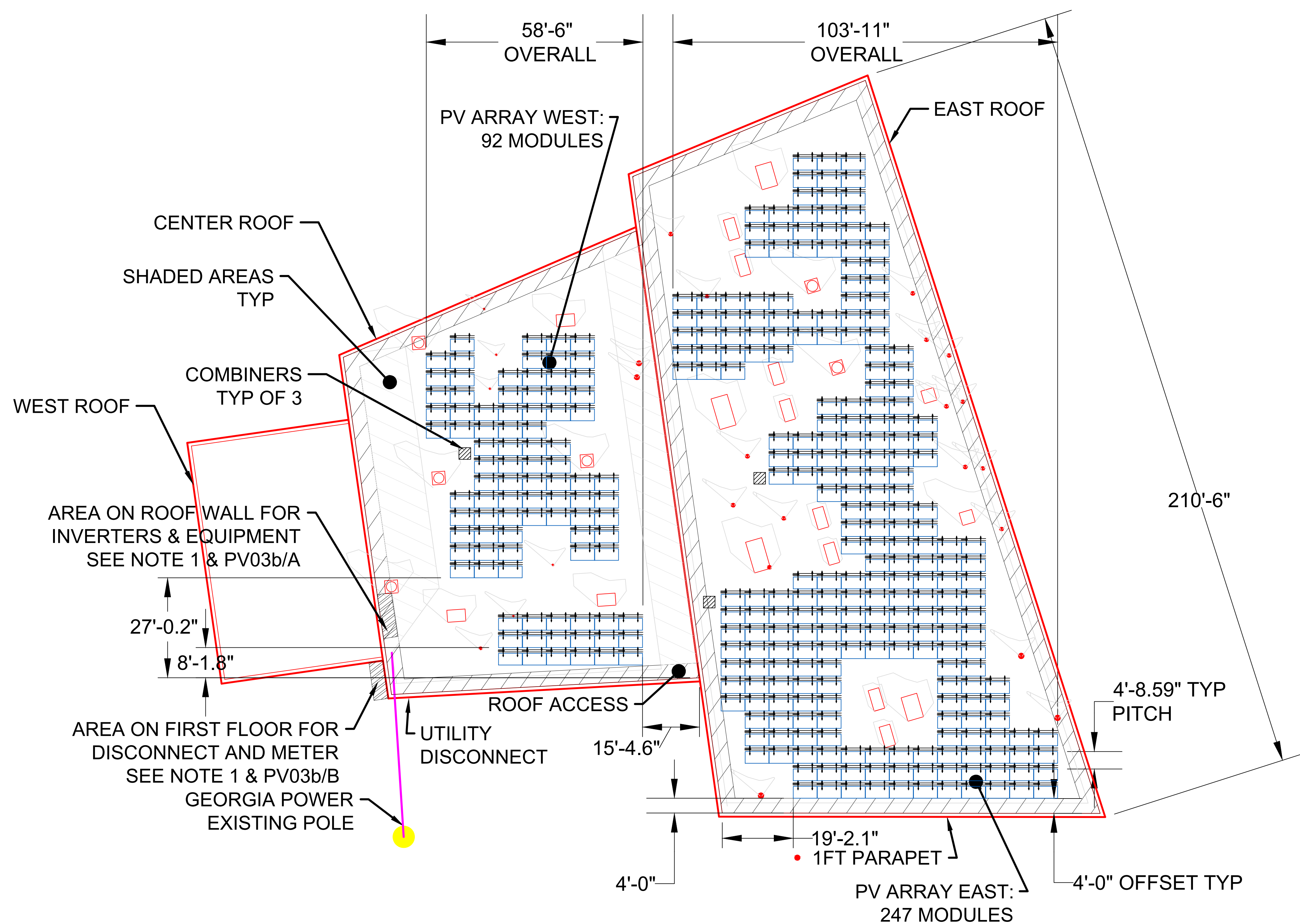
AGNES SCOTT FACILITIES BUILDING - SOLAR
401 E. College Ave., Decatur, GA 30030



Drawing Title:
LAYOUT

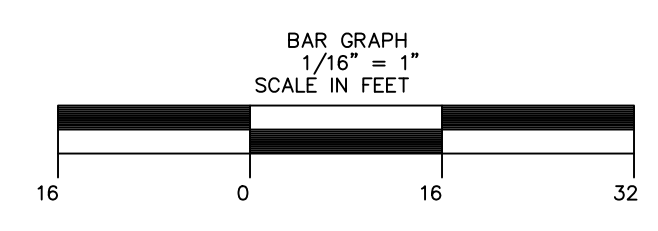
Scale:
NTS

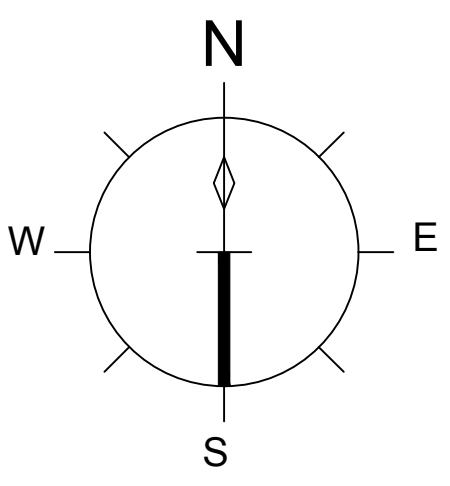
Drawing no.
PV02



Project:	AGNES SCOTT FACILITIES BUILDING - SOLAR
Address:	401 E. College Ave., Decatur, GA 30030
System Size:	100kW
MODULE:	338-Renesola 295W & 1-Renesola 290W
MODULE Qty:	339
Tilt:	11.9°
Azimuth:	180°
Mounting:	Roof-Mounted

A SYSTEM LAYOUT PLAN VIEW





NOTES:
1. EMT CONDUIT SUPPORTED BY SLEEPERS

LEGEND:

- DC STRINGS
- DC HOME RUNS: COMBINERS TO INVERTERS
- EQUIPMENT GROUND CONDUCTOR FOR RACKING - SEE DETAIL PV08/A

AS BUILT DRAWINGS

Drawn by: VC
Checked by: MJ
Date: 10/24/14
Job No.:

No.	Date
A	02/02/15

MODULES FOR INVERTER C

MODULES FOR INVERTER B

MODULES FOR INVERTER A

SEE NOTE 1
AREA ON ROOF WALL FOR INVERTERS & EQUIPMENT

A LAYOUT WIRING - DC

AGNES SCOTT FACILITIES BUILDING - SOLAR
401 E. College Ave., Decatur, GA 30030



Drawing Title:	LAYOUT WITH WIRING - DC
Scale:	NTS
Drawing no.:	PV03a

Drawn by: VC
Checked by: MJ
Date: 10/24/14
Job No.:

No.	Date
A	02/02/15

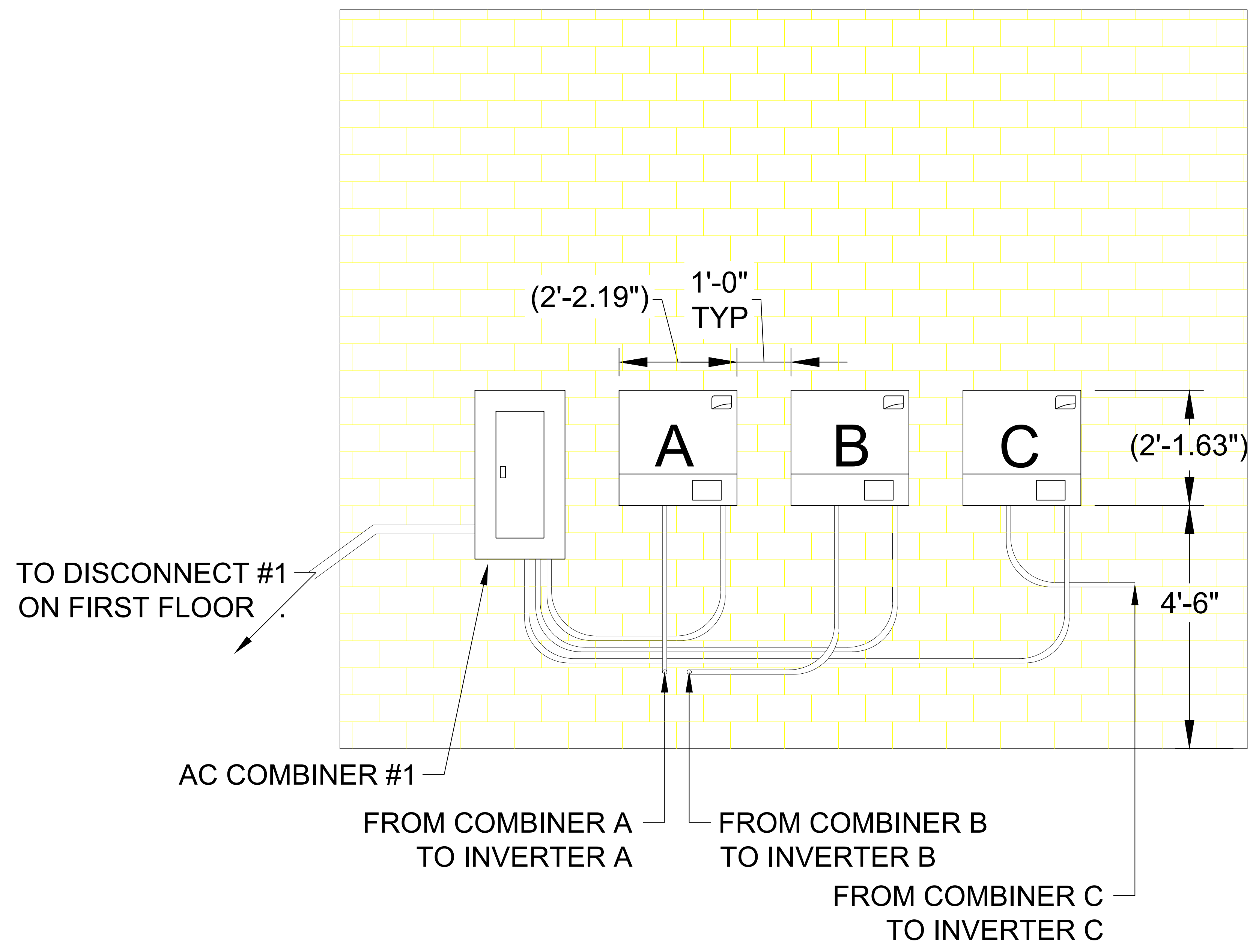
AGNES SCOTT FACILITIES BUILDING - SOLAR
401 E. College Ave., Decatur, GA 30030



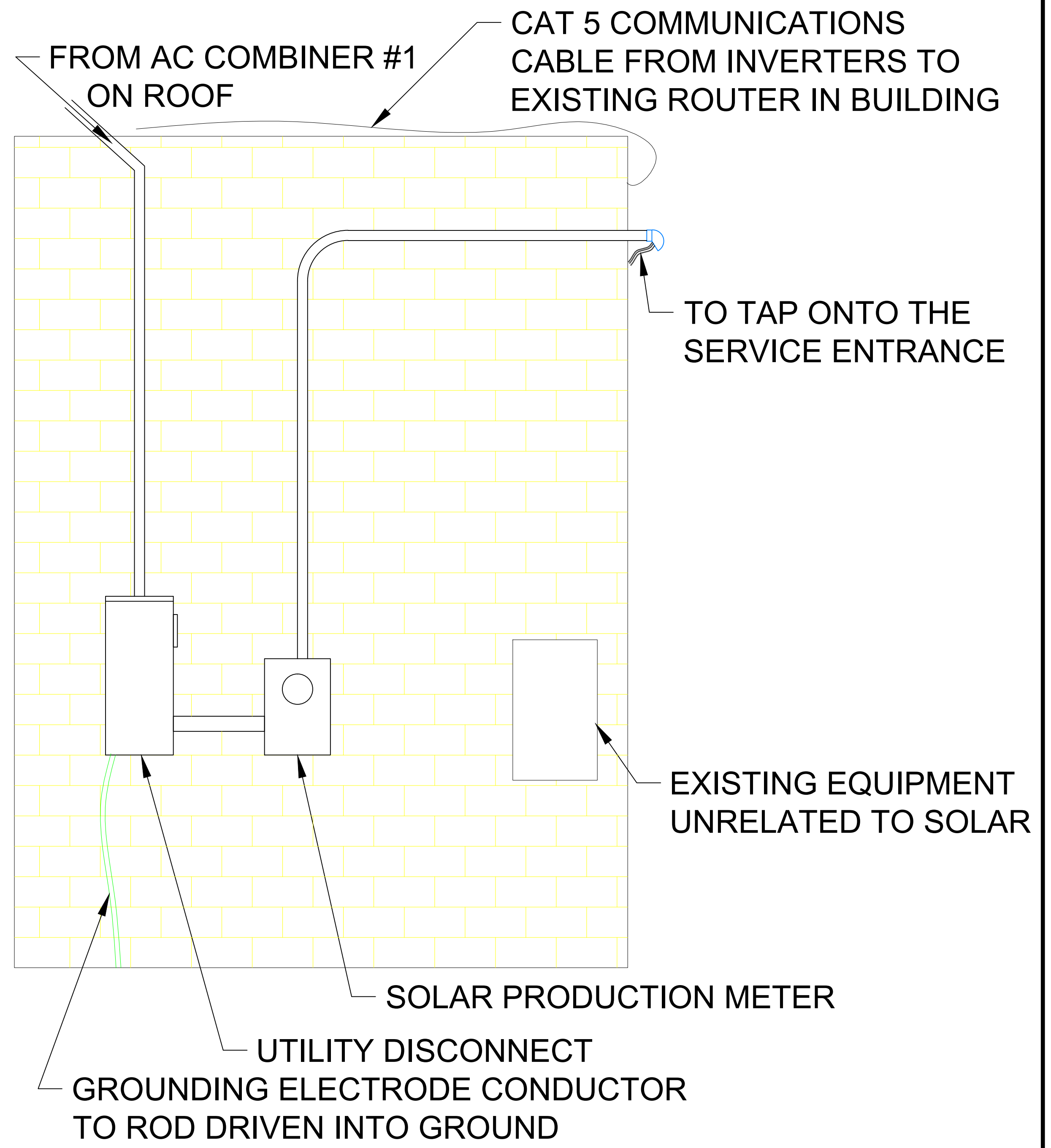
Drawing Title:
LAYOUT WITH WIRING - AC

Scale:
NTS

Drawing no.
PV03b



A EQUIPMENT MOUNTING - AC
PROTRUDING ROOF WALL



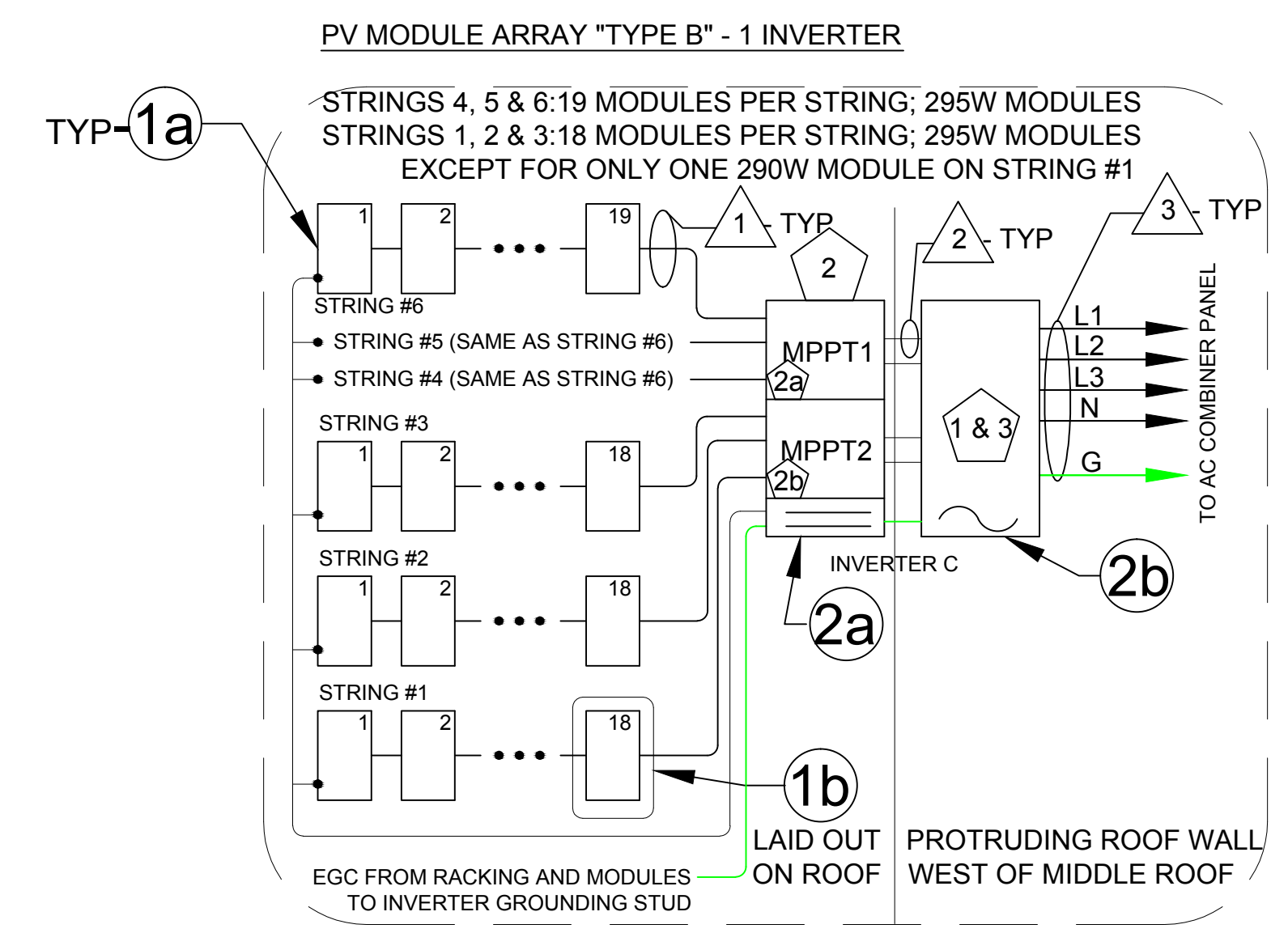
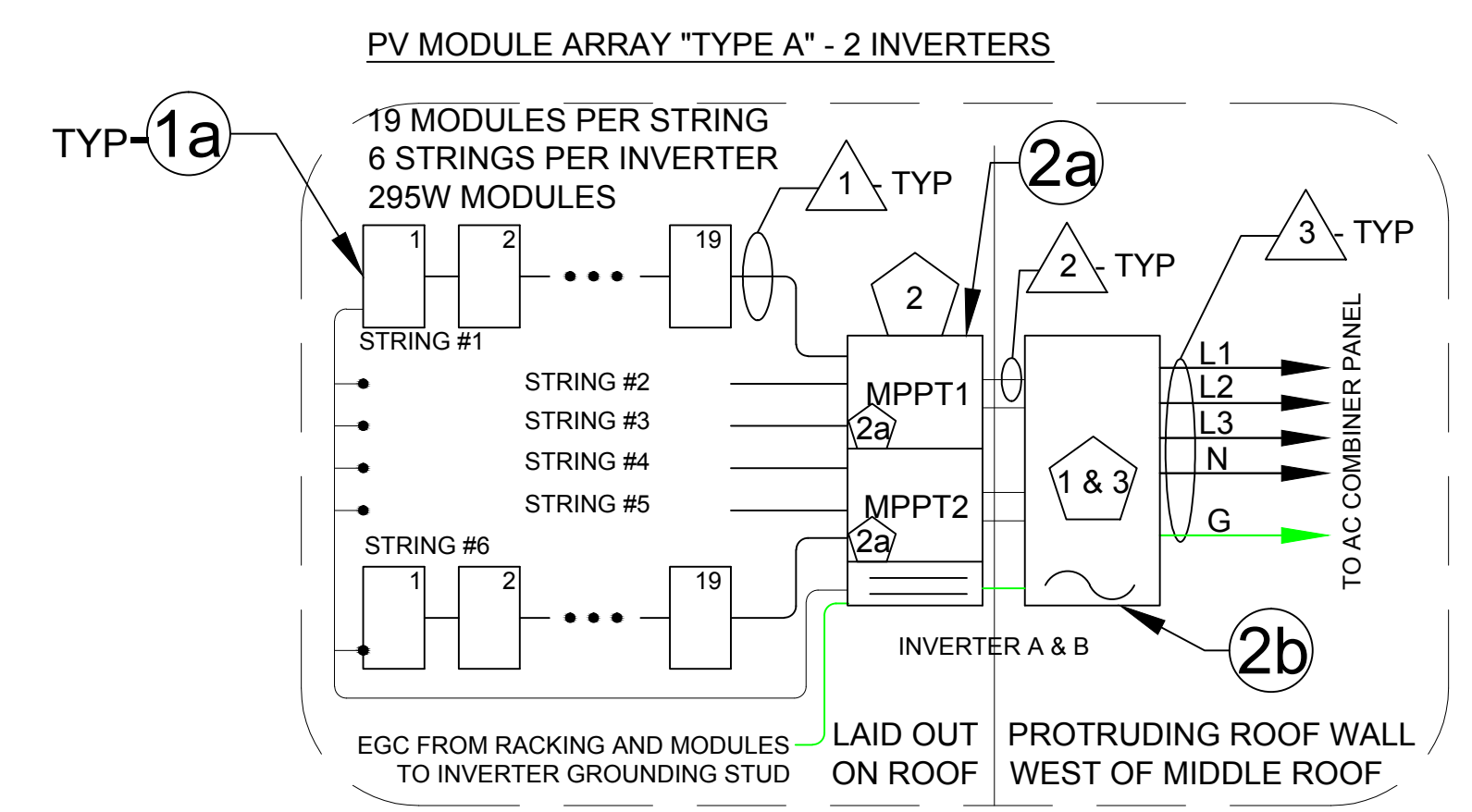
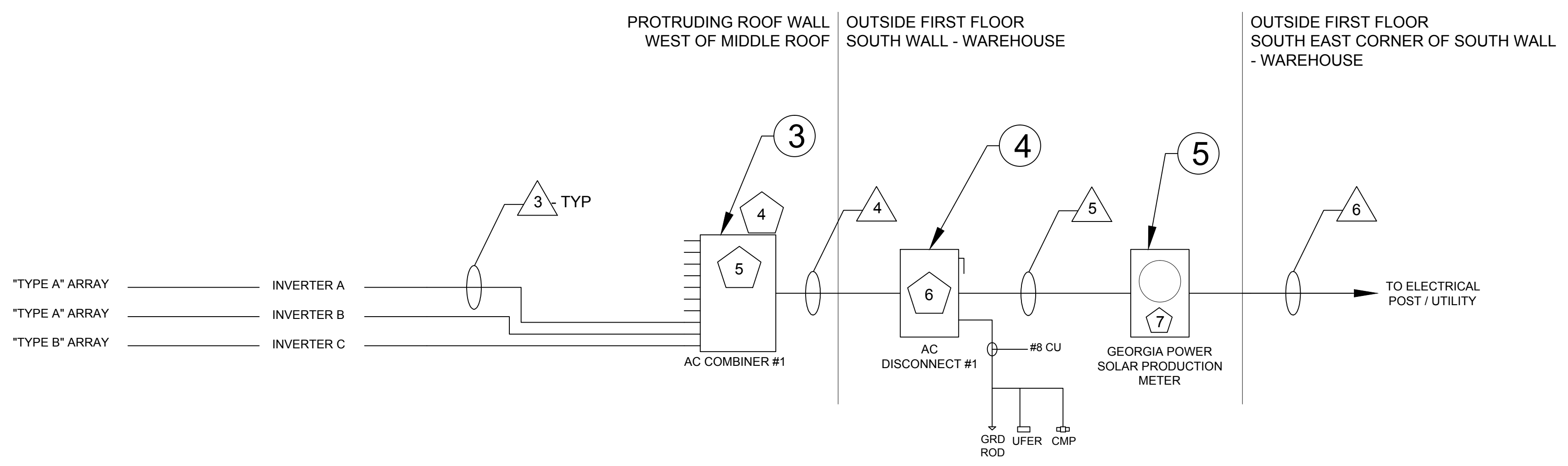
B EQUIPMENT MOUNTING - AC
OUTSIDE FIRST FLOOR: SOUTH WALL - WAREHOUSE

Drawn by: VC
 Checked by: MJ
 Date: 10/24/14
 Job No.:
 Revisions:
 No. Date
 A 12/10/14
 A 02/02/15

AGNES SCOTT FACILITIES BUILDING - SOLAR
 401 E. College Ave., Decatur, GA 30030



Drawing Title:
 SINGLE LINE
 Scale:
 NTS
 Drawing no.
 PV04a



SYSTEM SUMMARY

MODULE WATTAGE	295W & 290W
TOTAL NUMBER OF STRINGS IN PARALLEL	18
NUMBER OF MODULES IN SERIES	18 & 19
TOTAL NUMBER OF INVERTERS	3
TOTAL NUMBER OF MODULES	338-295W
	1-290W
TOTAL SYSTEM POWER @ STC (DC)	100kW

LEGEND:

#	COMPONENT
#	CONDUCTOR/ CONDUIT
#	SIGN - SEE PV 04b

CONDUIT SCHEDULE

ID	CONDUCTOR TYPE AND SIZE	NUMBER OF CONDUCTORS	NEUTRAL SIZE	GROUND SIZE	CONDUIT SIZE	FROM	TO	MAX DISTANCE (FT)
1	#10 AWG PV WIRE CU	12 PER CONNECTION UNIT	-	#6 CU	FREE AIR/CORD GRIP	MODULES	CONNECTION UNIT	120
2	#6 AWG PV WIRE CU	4 DC WIRES PER INVERTER	-	#8 CU	1.5" EMT	CONNECTION UNIT	INVERTER	150
3	#8 THWN-2 CU	4-WIRE (3+N+GND)	#8 CU	#8 CU	1" EMT	INVERTER	AC COMBINER	25
4	1/0 THWN-2 ALUM	4-WIRE (3+N+GND)	#4 ALUM	#4 ALUM	1 1/2" - 2" EMT	AC COMBINER BOX	AC DISCONNECT	20
5	1/0 THWN-2 ALUM	3-WIRE (3+N)	#4 ALUM	-	1 1/2" EMT	AC DISCONNECT	METER	80
6	1/0 THWN-2 ALUM	3-WIRE (3+N)	#4 ALUM	-	1 1/2" EMT	METER	POST	20

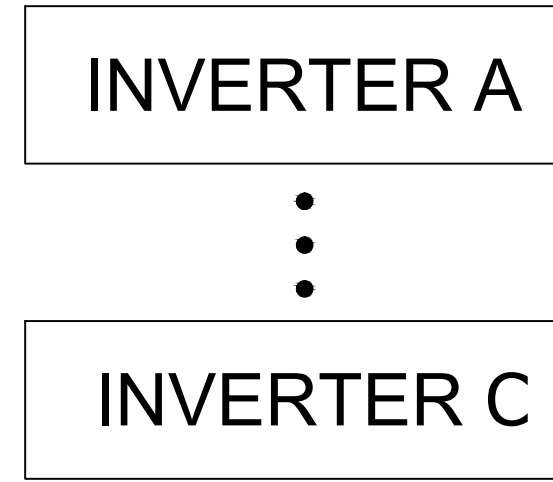
COMPONENT SCHEDULE

NO.	ITEM	PART NO.	DESCRIPTION	QTY
1a	SOLAR MODULE	JC295M-24/Abh	RENESOLA 295W	338
1b	SOLAR MODULE	JC290M-24/Abh	RENESOLA 290W	1
2a	COMBINER BOX	SMA TRIPOWER CONNECTION UNIT 1000-US	SMA 24KW - CONNECTION UNIT FOR 3-PHASE INVERTER, 480V, NEMA 3R; EACH INPUT FUSED AT 15A.	3
2b	INVERTER	SMA TRIPOWER STP 24000TL-US-10	SMA 24KW - 3-PHASE INVERTER, 480V, NEMA 3R.	3
3	AC COMBINER BOX	P1E18MC250A	SIEMENS 277/480VAC, 3Ø; 4-WIRE MLO PANELBOARD; 125A; NEMA 3R WITH NEUTRAL KIT AND GROUND KIT; 40A BREAKER PER INVERTER (3 BREAKERS NEEDED FOR SYSTEM)	1
4	AC DISCONNECT	HF364NR	SIEMENS HEAVY DUTY, 3-POLE, 600V, 200A; FUSED AT 125A; NEMA 3R WITH NEUTRAL KIT AND GROUND KIT; OR EQUIVALENT MANUFACTURER	1
5	METER	TBD	PRODUCTION METER	1

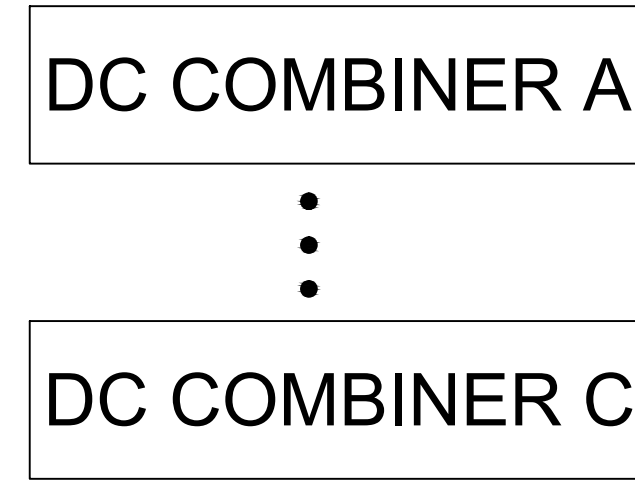
EQUIPMENT NOTES:

1. RED LABELS WITH WHITE LETTERS. "WARNING" SHALL BE 3/8" TALL.
ALL OTHER LETTERS SHALL BE 1/4" TALL.

1 FOR INVERTERS "A" THROUGH "C".
3 TOTAL



2 FOR DC COMBINERS "A" THROUGH "C".
3 TOTAL



2a LABEL PER SECTION 690.17(4), 690.53.
DC COMBINER C - MPPT 1, DC COMBINER B - MPPT 1&2,
DC COMBINER A - MPPT 1&2; TOTAL QUANTITY: 5

WARNING! DC VOLTAGE IS ALWAYS PRESENT WHEN MODULES ARE EXPOSED TO SUNLIGHT	
MAXIMUM POWER-POINT CURRENT (Imp):	24.39A
MAXIMUM POWER-POINT VOLTAGE (Vmp):	689.7V
MAXIMUM SYSTEM VOLTAGE (Voc @Tmin):	941.0V
NEC MAXIMUM CURRENT (Isc x 1.25):	32.33A
WARNING ELECTRIC SHOCK HAZARD DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDE MAY BE ENERGIZED IN THE OPEN POSITION	

2b LABEL PER SECTION 690.17(4), 690.53.
DC COMBINER C - MPPT 2; TOTAL QUANTITY: 1

WARNING! DC VOLTAGE IS ALWAYS PRESENT WHEN MODULES ARE EXPOSED TO SUNLIGHT	
MAXIMUM POWER-POINT CURRENT (Imp):	24.39A
MAXIMUM POWER-POINT VOLTAGE (Vmp):	653.4V
MAXIMUM SYSTEM VOLTAGE (Voc @Tmin):	891.5V
NEC MAXIMUM CURRENT (Isc x 1.25):	32.33A
WARNING ELECTRIC SHOCK HAZARD DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDE MAY BE ENERGIZED IN THE OPEN POSITION	

3 AT INVERTER PER SECTION 690.56(B) AND 690.54
QUANTITY: 3

THE UTILITY DISCONNECTING MEANS FOR THIS PHOTOVOLTAIC SYSTEM IS AT THE DISCONNECT LOCATED OUTDOORS ON THE FIRST FLOOR OF THIS BUILDING ON THE SOUTH WEST CORNER FACING THE AVERY ST ENTRANCE.
MAX AC OUTPUT CURRENT = 29 A NOMINAL AC VOLTAGE = 480 V
THIS PHOTOVOLTAIC SYSTEM INTERCONNECTS TO THE ELECTRICAL GRID AT THE ELECTRICAL POST LOCATED AT THE SOUTH WEST CORNER OF THIS BUILDING NEAR THE AVERY ST ENTRANCE.

4. LOAD CENTER (AC COMBINERS #1) PER NEC 690.17 AND 690.54
QUANTITY: 1

INTERACTIVE POWER FLOWING THROUGH THIS PANEL
WARNING! ELECTRICAL SHOCK HAZARD DEDICATED SOLAR PHOTOVOLTAIC COMBINING PANELBOARD PANELBOARD CONTAINS BACKFED CIRCUIT BREAKERS THAT MAY BE ENERGIZED IN THE OPEN POSITION DO NOT CONNECT ADDITIONAL LOADS !

QUANTITY: 1

AC COMBINER #1
PANEL COMBINES THE AC OUTPUT FROM INVERTERS A-C LOCATED NEAR THIS PANEL MAX AC OUTPUT CURRENT = 87 A NOMINAL AC VOLTAGE = 480 V

5. BREAKER AT AC COMBINER PER SECTION 690.54, AND 705.12(D)(7)

WARNING! INVERTER OUTPUT CONNECTION DO NOT RELOCATE THIS OVERCURRENT DEVICE
WARNING! DISCONNECT IS ENERGIZED FROM TWO SOURCES: SOLAR SYSTEM AND UTILITY GRID

6. AT SERVICE DISCONNECT PER SECTION 690.56(B)

AC DISCONNECT #1
THIS SWITCH DISCONNECTS THE PHOTOVOLTAIC SYSTEM LOCATED ON THE ROOF OF THIS BUILDING; THE DC SOLAR POWER DISCONNECT IS LOCATED ON THE ROOF AT DC COMBINERS A-C. THE OUTPUTS FROM THE SOLAR INVERTERS ARE COMBINED ON AC PANEL #1, WHICH IS ALSO ON ROOF. MAX AC OUTPUT CURRENT = 87 A NOMINAL AC VOLTAGE = 480 V
AC DISCONNECT FOR SOLAR PV SYSTEM

7. AT PRODUCTION METER

PV SYSTEM ELECTRICAL PRODUCTION METER
--

Drawn by: VC
Checked by: MJ
Date: 10/24/14
Job No.:

Revisions:	
No.	Date
A	02/02/15

AGNES SCOTT FACILITIES BUILDING - SOLAR
401 E. College Ave., Decatur, GA 30030



Drawing Title:
SIGNAGE DETAILS

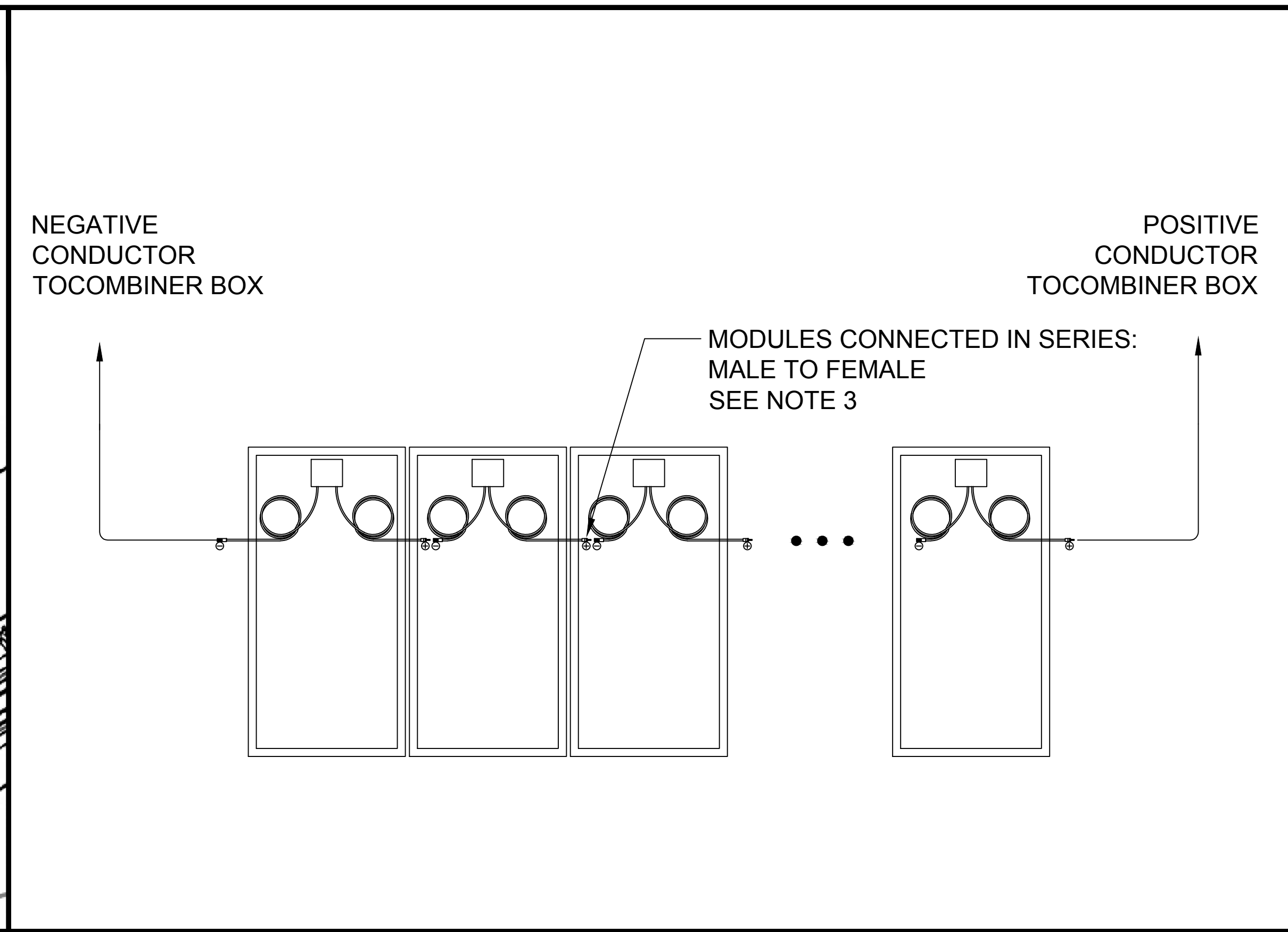
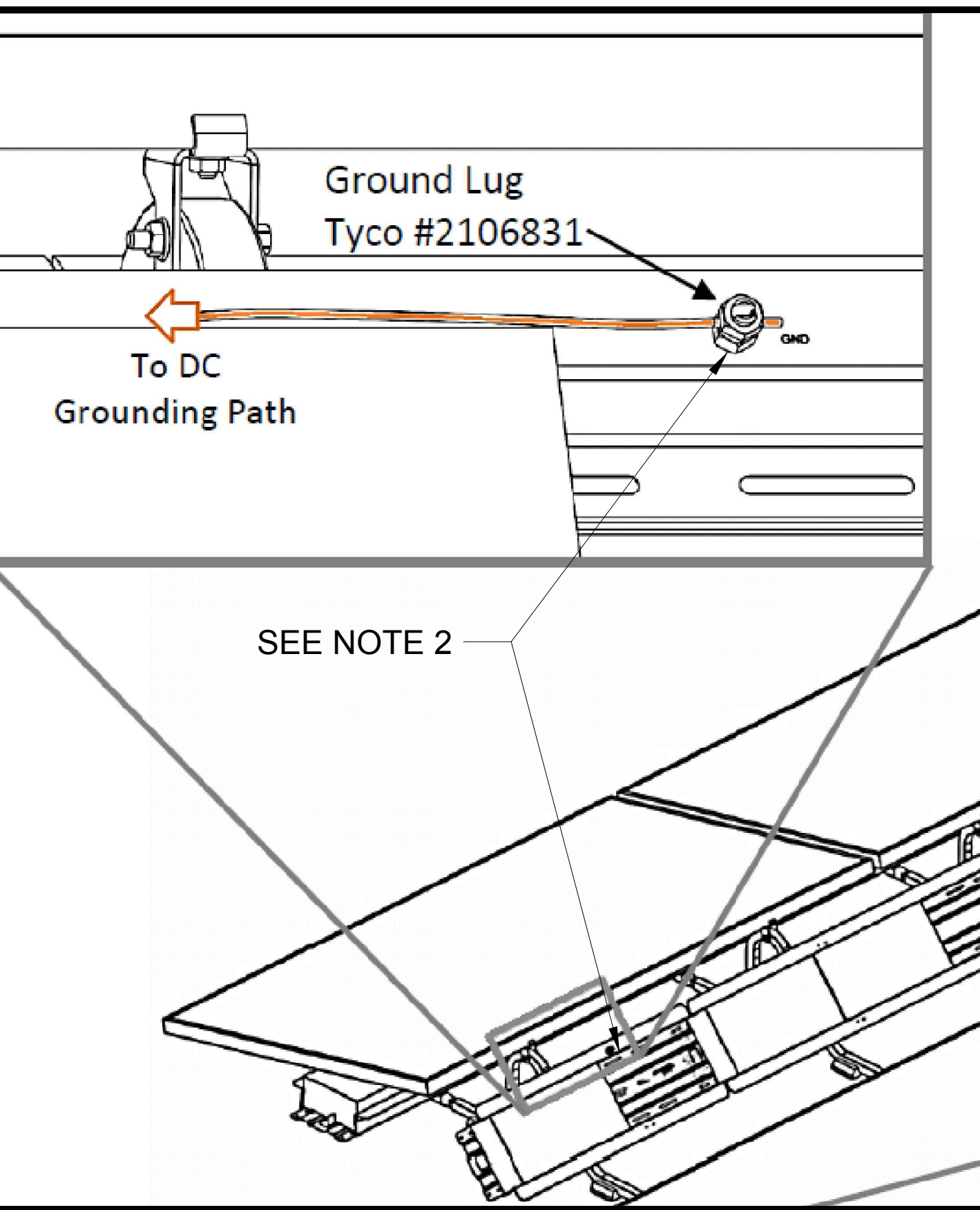
Scale:
NTS

Drawing no.
PV04b

- NOTES:**
1. READ PANEL CLAW'S POLAR BEAR III SYSTEM ASSEMBLY INSTRUCTIONS AND PANEL CLAW'S DRAWINGS FOR THE MANUFACTURER'S INSTRUCTIONS ON RACKING AND GROUNDING. SEE RACKING EQUIPMENT GROUNDING LAYOUT ON PV03a.
 2. GROUND LUG LOCATED IN HOLE OF BALLAST TRAY SPECIFICALLY DESIGNATED FOR GROUNDING AND MARKED "GND".
 3. MODULES SHALL BE WIRED FROM POSITIVE TO NEGATIVE IN SERIES, IN THE ORDER DEPICTED ON PV03a, AND WITH THE APPROPRIATE WIRING METHODS AS STATED ON NEC 690 SECTION IV.

Drawn by: VC
 Checked by: MJ
 Date: 10/24/14
 Job No.:
 Revisions:

No.	Date
A	02/02/15

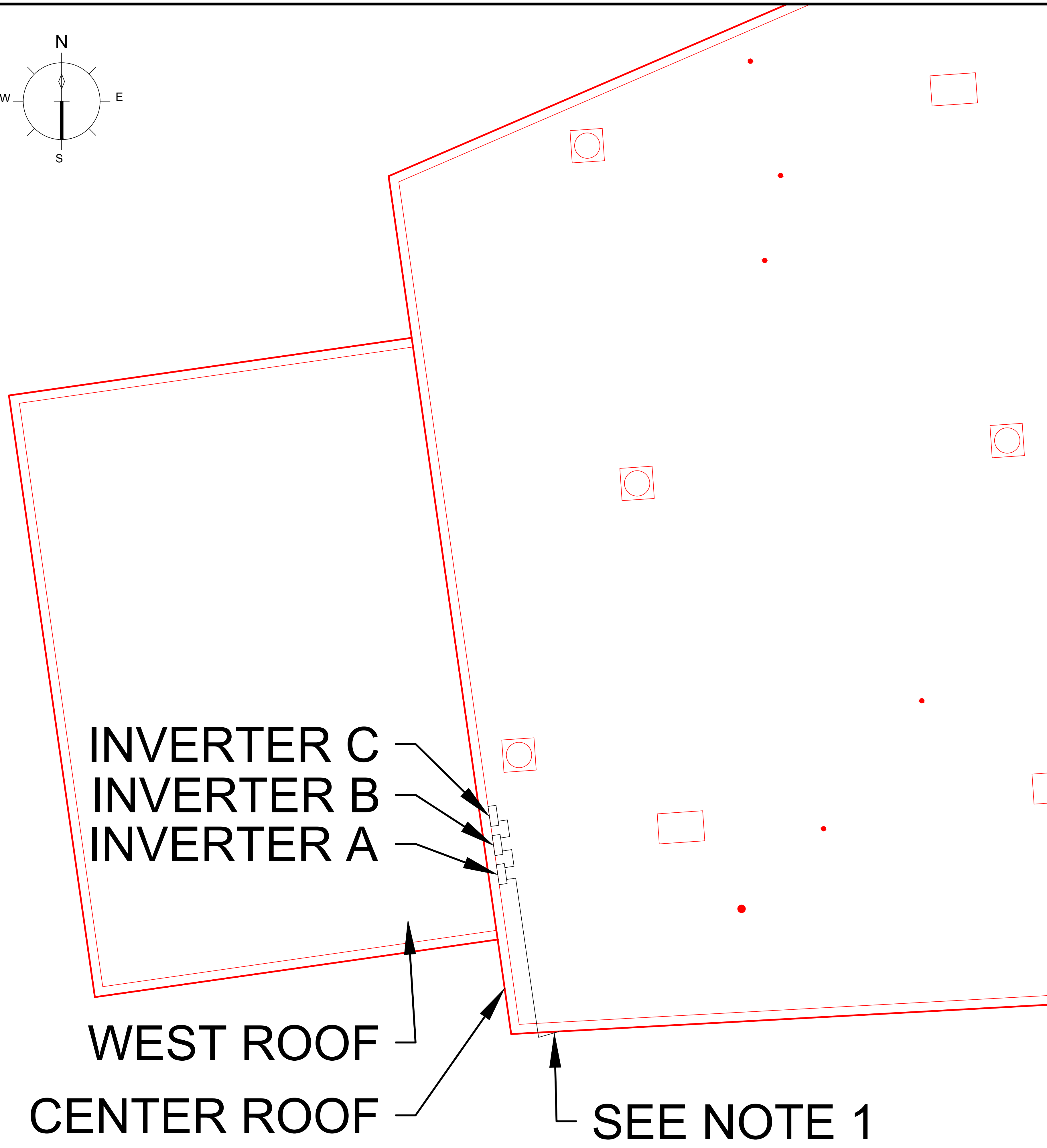
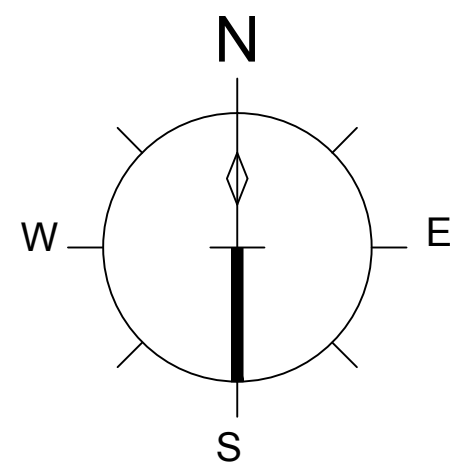


A GROUNDING
 RACKING - SEE NOTE 1

B MODULE WIRING
 SERIES WIRING METHOD

AGNES SCOTT FACILITIES BUILDING - SOLAR
 401 E. College Ave., Decatur, GA 30030





NOTES:

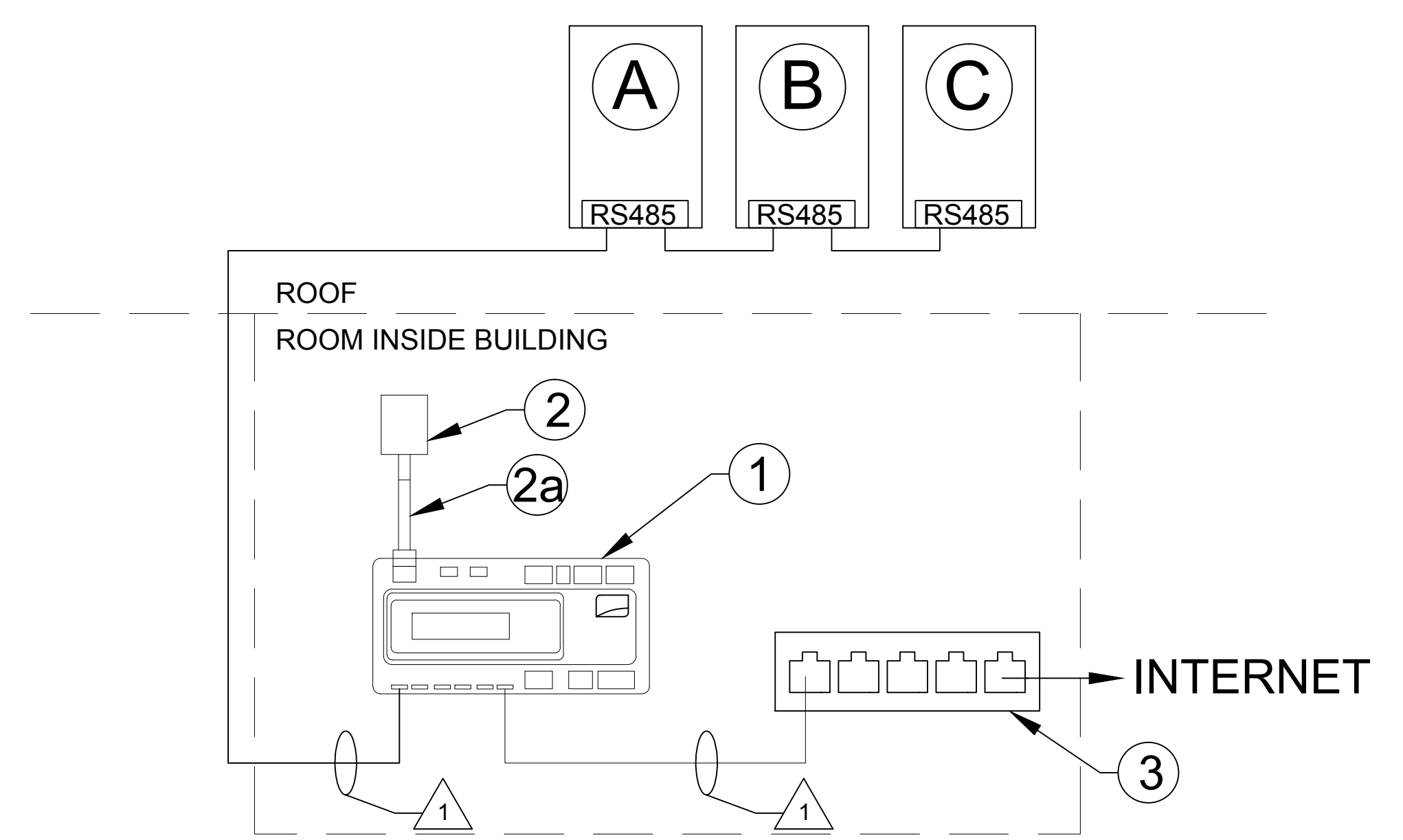
1. CAT5 MONITORING CABLE ROUTED THROUGH EXISTING PENETRATION INTO ROOM INSIDE BUILDING WITH EXISTING ROUTER AND INTERNET CONNECTION.
2. INVERTER COMMUNICATION RS485 CABLES ARE CONNECTED IN A DAISY-CHAIN CONFIGURATION.

○ COMPONENT SCHEDULE

No.	Item	Part No.	Description	Qty
1	CLUSTER CONTROLLER	SMA CLUSTER CONTROLLER	MONITORING/COMMUNICATIONS BOX	1
2	24V SUPPLY	TBD	24V POWER SUPPLY	1
2a	3-PIN PLUG	N/A	3-PIN PLUG THAT COMES WITH CLUSTER CONTROLLER	N/A
3	ROUTER	N/A	ROUTER	EXISTING

△ CONDUCTOR SCHEDULE

ID	CONDUCTOR TYPE	NUMBER OF CONDUCTORS	DESCRIPTION	FROM	TO
1	CAT5	1	CAT5 CABLE	INVERTERS	ROUTER



Revisions:

No.	Date
A	02/02/15