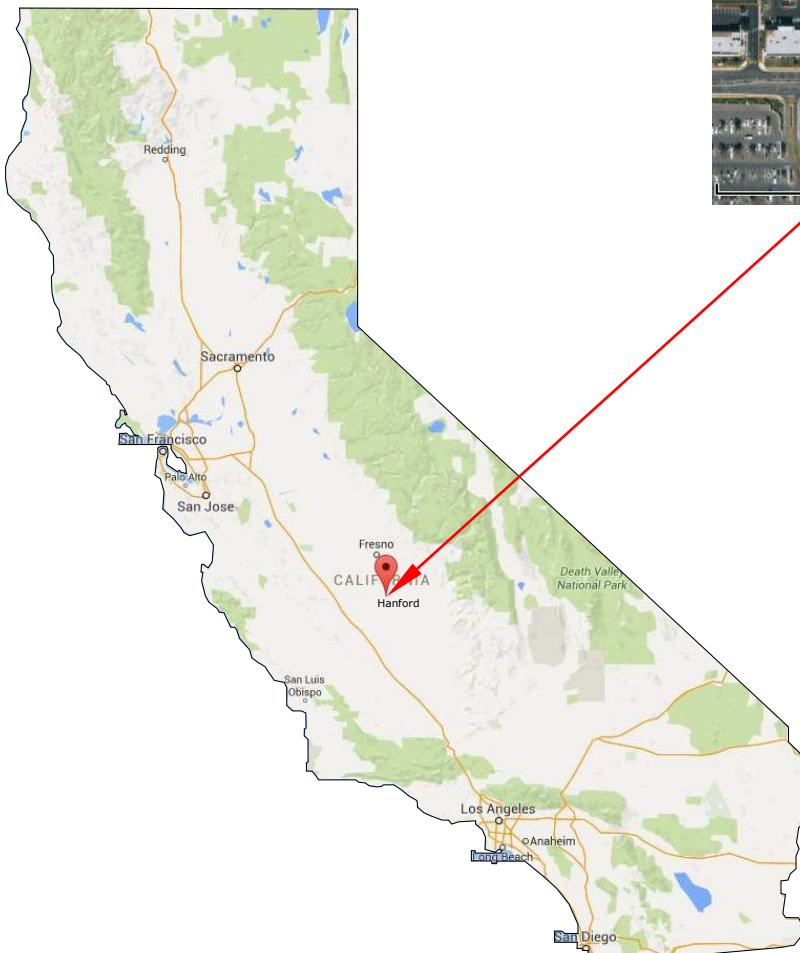


SOLAR PHOTOVOLTAIC SYSTEM

HANFORD MALL - ARRAY 1 HANFORD, CA



SITE INFORMATION

Site Latitude	36° 20' N
Occupancy Group	II
Zoning District	C-2
Flood Zone	X
Exposure Category	C
Seismic Design Category	D

SYSTEM SPECIFICATIONS

Cold Design Temperature	23° F
Max Operating Temperature	131° F
Total # of Inverters	20
Total # of Modules	2706
TOTAL DC SYSTEM SIZE	784.74 kW DC
Nominal AC Output Power	665 kW AC

GENERAL CONTRACTOR

BRIGHT POWER INC
DBA BPI
PO BOX 10637
NAPA, CA 94581
info@bpi-power.com
PHONE: (707) 252-9990
FAX: (707) 252-9992
WWW.BPI-POWER.COM
LICENSE NUMBER 930054
LICENSE CLASSIFICATION: A, C10

PROPERTY OWNER

PASSCO DIVERSIFIED II HM LC
1675 WEST LACEY BLVD
HANFORD, CA 93230
PHONE: (559)-583-1200 x 203

ELECTRICAL ENGINEER

HIMANSHU BHARTIYA, ME, EE, FPE, LEED AP
SACRAMENTO ENGINEERING CONSULTANTS
10555 OLD PLACERVILLE ROAD
SACRAMENTO, CA 95827
himanshu@saceng.com
PHONE: (916) 368-4468 ext. 105
FAX: (916) 368-4490

STRUCTURAL ENGINEER

JESSYCA COCHRAN, PE
JVC ENGINEERING
303 POST ST
NAPA, CA 94559
jvcstructural@yahoo.com
PHONE: (805) 801-9915

SCOPE OF WORK

THE PROJECT IS TO INSTALL A NEW PHOTOVOLTAIC SYSTEM.
ALL CONSTRUCTION SHALL COMPLY WITH THE CODES ADOPTED BY THE CITY
OF HANFORD, CA AS DESCRIBED IN
<http://www.ci.hanford.ca.us/depts/cd/building/codes/default.asp> INCLUDING
BUT NOT LIMITED TO 2013 CEC & 2013 CBC.

THE SYSTEM CONSISTS OF FLAT ROOF FIXED TILT SOLAR ARRAYS, PITCHED
METAL ROOF FLUSH MOUNT SOLAR ARRAYS, AND ASSOCIATED POWER
CONDITIONING EQUIPMENT.

THE SYSTEM WILL BE INTERCONNECTED TO AND WILL BE OPERATING IN
PARALLEL WITH THE ELECTRICAL UTILITY GRID PER THE REQUIREMENTS OF
SCE AND THE 2013 CEC.

SHEET INDEX

PV0	TITLE SHEET
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PV0.2	PARCEL MAP
PV0.3	ARRAY BREAKDOWN
PV0.4A	EXISTING SITE CONDITIONS
PV0.4B	EXISTING SITE CONDITIONS
PV0.5A	MODULE LAYOUT OVERVIEW
PV0.5B	MODULE LAYOUT OVERVIEW
PV0.6A	JC PENNEY'S ARRAY DIMENSIONS & INVERTER FOOTPRINT
PV0.6B	CINEMAS ARRAY DIMENSIONS & INVERTER FOOTPRINT
PV0.6C	MID ROOF ARRAY DIMENSIONS & INVERTER FOOTPRINT
PV0.7A	JC PENNEY'S - ROOF ATTACHMENT LAYOUT
PV0.7B	CINEMAS - ROOF ATTACHMENT LAYOUT
PV0.7C	MID ROOF - ROOF ATTACHMENT LAYOUT
PV1.0A	PHOTOVOLTAIC KEY PLAN
PV1.0B	PHOTOVOLTAIC SITE PLAN
PV1.1	ROOF-ARRAY PV PLAN
PV1.2	ROOF-ARRAY PV PLAN
PV1.3	ROOF-ARRAY PV PLAN
PV1.4	ROOF-ARRAY PV PLAN
PV1.5	METER-AREA PLAN
PV2.1A	SINGLE-LINE DIAGRAM
PV2.1B	SINGLE-LINE DIAGRAM
PV2.1C	SINGLE-LINE DIAGRAM
PV3.1	PV DETAILS
PV4.1	PV SIGNAGE
S1.0	RACKING DETAILS



PASSCO DIVERSIFIED II HM LC - HANFORD MALL
1675 W. LACEY BLVD
HANFORD, CA 93230
APN: 011-060-038

PVO

TITLE SHEET

DATE: 5-25-16

BY: JB

JOB NO.: C15-710

1	6/20/16	Updated code ref., deleted "prelim. approval"	JB
2	7/7/16	Added sheets to sheet index	JB

GENERAL NOTES																	
1.	ALL CONSTRUCTION SHALL COMPLY WITH THE CODES ADOPTED BY THE CITY OF HANFORD, CA AS DESCRIBED IN http://www.ci.hanford.ca.us/depts/cd/building/codes/default.asp INCLUDING BUT NOT LIMITED TO 2013 CEC & 2013 CBC.	8.	REFILL AND RESTORE THE WORK AS DIRECTED, DURING CONSTRUCTION AND PRIOR TO PROJECT COMPLETION, TO MAINTAIN ACCEPTABLE SURFACE CONDITIONS.	9.	ALL ADDITIONAL MATERIALS REQUIRED SHALL BE FURNISHED WITHOUT ADDITIONAL COST TO THE OWNER.	10.	UNLESS SHOWN OR SPECIFIED OTHERWISE, ALL CONSTRUCTION AND MATERIALS SHALL COMPLY WITH THE LATEST EDITION OF THE IBC, AND ANY OTHER CODES, REQUIREMENTS OR STANDARDS REQUIRED BY THE INSPECTING AGENCY AND AUTHORITIES HAVING JURISDICTION (AHJ).	11.	ANY WORK BEGUN PRIOR TO ATTAINING APPROVAL AND SIGNATURES OF AHJ WILL BE AT CONTRACTOR'S RISK, AND WILL ONLY BE ALLOWED IF PRE-APPROVED BY PROJECT OWNER.	12.	COORDINATE OPERATIONS WITH ALL REQUIRED MATERIALS TESTING SERVICES AS REQUIRED BY THESE DRAWINGS. EACH PHASE OF CONSTRUCTION SHALL BE TESTED AND APPROVED BY AHJ AS REQUIRED PRIOR TO PROCEEDING TO SUBSEQUENT PHASES.	13.	NOTIFY ALL UTILITY COMPANIES INVOLVED IN THE DEVELOPMENT PRIOR TO BEGINNING OF WORK.	14.	COMPLY WITH ALL CURRENTLY APPLICABLE SAFETY LAWS OF ALL JURISDICTIONAL BODIES. PROVIDE AND MAINTAIN ALL BARRICADES, SAFETY DEVICES, AND CONTROL OF TRAFFIC WITHIN AND AROUND THE CONSTRUCTION AREA. FOR ALL TRENCH EXCAVATION 5 FEET OR MORE IN DEPTH, OBTAIN PERMITS PRIOR TO BEGINNING ANY EXCAVATION.	15.	MAINTAIN CONTINUOUS TEMPORARY TRAFFIC BARRICADES, WITH OPERABLE FLASHING DEVICES, SPACED AT INTERVALS OF NOT TO EXCEED 50 FEET WHENEVER THE WORK AREA IS ADJACENT TO AN EXISTING TRAFFIC LANE AND THERE IS A PAVEMENT CUT, TRENCH, OR DITCH WHICH IS OVER 2 INCHES IN DEPTH, OR IF THE TRAFFIC LANE USED BY VEHICLES IS NOT PAVED. IF THE CUT, TRENCH OR DITCH IS MORE THAN 10 FEET FROM A TRAFFIC LANE, THEN THE BARRICADE SPACING MAY BE GREATER, PROVIDED THAT IT DOES NOT EXCEED 200 FEET.
16.	CONTRACTOR AGREES THAT, IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONTRACTOR SHALL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF THE CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY.	17.	ALL SCE-REQUIRED EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH CURRENT SCE STANDARDS.	18.	CONDUCT OPERATION ENTIRELY WITHIN THE PROJECT AREAS INDICATED IN THESE DRAWINGS.	19.	WHERE ANY WORK IS BEING DONE IN AN OFF-SITE EASEMENT, NOTIFY THE PROPERTY OWNER TWO WORKING DAYS PRIOR TO COMMENCING WORK WITHIN SAID EASEMENT.	20.	DO NOT DISPOSE OF CHLORINATED OR OTHER CHEMICALLY TREATED OR POLLUTED WATER INTO ANY DRAINAGE SYSTEM OR TO AREA SOILS.	21.	SOLAR MODULES ARE ENERGIZED WHEN EXPOSED TO LIGHT. THE LINE AND LOAD TERMINALS ON THE DC DISCONNECTS MAY BE ENERGIZED IN THE OPEN POSITION. SWITCH IS TO BE LABELED TO COMPLY WITH ARTICLE 690.17 OF THE NEC.	22.	PHOTOVOLTAIC SYSTEM SHALL BE CLEARLY MARKED IN ACCORDANCE WITH THE NEC LABELING REQUIREMENTS ARTICLE 690.	23.	CONTRACTOR SHALL PERFORM INITIAL HARDWARE CHECKS AND PV/WIRING CONDUCTIVITY CHECKS PRIOR TO TERMINATING ANY WIRES.	24.	GROUNDING OF THE PV SYSTEM SHALL COMPLY WITH NEC 690.45 AND 690.47.
25.	THE ELECTRICAL CONTRACTOR IS REQUIRED TO USE PERMANENTLY COLOR CODED INSULATION AND PROVIDE A COLOR CODE TO IDENTIFY DC AND AC CIRCUITS AND IN ACCORDANCE WITH NEC.	26.	IN EVERY PULL BOX, TERMINAL BOX, AND AT ALL PLACES WHERE WIRES MAY NOT BE READILY IDENTIFIED BY NAMEPLATE MARKINGS ON THE EQUIPMENT TO WHICH THEY CONNECT, IDENTIFY EACH CIRCUIT WITH A PLASTIC LABEL OR TAG FOR NUMBER, POLARITY, OR PHASE.	27.	RECORD DRAWINGS	28.	KEEP UP-TO-DATE AND ACCURATE A COMPLETE RECORD SET OF PRINTS FOR THE CONTRACT DRAWINGS SHOWING EVERY CHANGE FROM THE ORIGINAL DRAWINGS MADE DURING THE COURSE OF CONSTRUCTION INCLUDING FINAL LOCATION, ELEVATION, SIZES, MATERIALS, AND DESCRIPTION OF ALL WORK.	29.	RECORDS SHALL BE "REDLINED" ON A SET OF CONSTRUCTION PLAN DRAWINGS AT THE SITE. A COMPLETE SET OF CORRECTED AND COMPLETED RECORD DRAWING PRINTS SHALL BE SUBMITTED TO OWNER PRIOR TO SUBSTANTIAL COMPLETION AT SITE.								
MFG Model STC Rating Vmp Imp Voc Isc Voc temp. coeff. Isc temp. coeff.	ET Solar ET-M660290WB/WW 290W 290 W 32.12 V 9.03 A 39.68 V 9.59 A -0.31%/°C 0.02%/°C	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.		

PV MODULE INFO	MFG	ET Solar
Model	ET-M660290WB/WW 290W	
STC Rating	290 W	
Vmp	32.12 V	
Imp	9.03 A	
Voc	39.68 V	
Isc	9.59 A	
Voc temp. coeff.	-0.31%/°C	
Isc temp. coeff.	0.02%/°C	

Inverters	Inverter #1-#10	Inverter #11-#13	Inverter #14	Inverter #15	Inverter #16	Inverter #17	Inverter #18-#19	Inverter #20
Manufacturer Model	Solectria PVI-36TL	Solectria PVI-36TL	Solectria PVI-23TL	Solectria PVI-28TL	Solectria PVI-23TL	Solectria PVI-28TL	Solectria PVI-36TL	Solectria PVI-23TL
Voltage AC Nominal AC Output Power	480 36 kW	480 36 kW	480 23 kW	480 28 kW	480 23 kW	480 28 kW	480 36 kW	480 23 kW
CEC efficiency	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%
Number of Strings/inverter	7	6	4	5	4	5	7	3
Number of Panels/string	22	22	22	22	22	22	22	22
Number of Panels/inverter	154	132	88	110	88	110	154	66
STC DC subsystem size	446.60 kW	114.84 kW	25.52 kW	31.90 kW	25.52 kW	31.90 kW	89.32 kW	19.14 kW
PV Module Azimuth	227°	227°	137°	227°	227°	227°	227°	137°
PV Module Tilt	10°	10°	30°	10°	10°	30°	30°	30°
Racking MFG	Renusol							
Array Location	JC Penney's	Cinemas	Metal 6	Mid 5	Mid 6	Metal 7 Metal 8	Mid 7	Metal 9



PASSCO DIVERSIFIED II HM LC - HANFORD MALL
1675 W. LACEY BLVD
HANFORD, CA 93230
APN: 011-060-038

ARRAY 1
PVO.1
PROJECT DETAILS

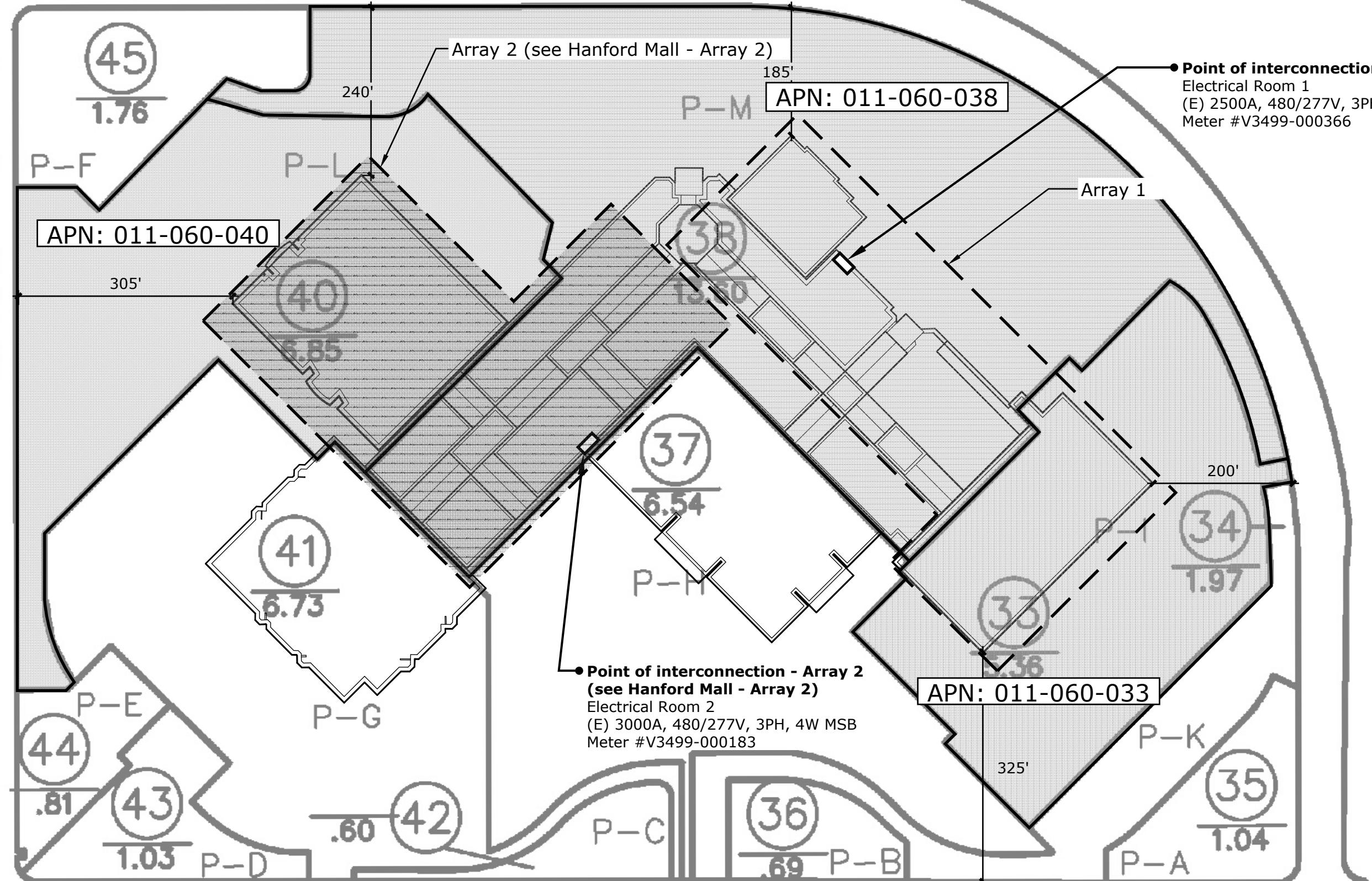
DATE: 5-25-16
BY: JB
JOB NO.: C15-710



PO BOX 10637
NAPA, CA 94581
PH: (707)-252-9990

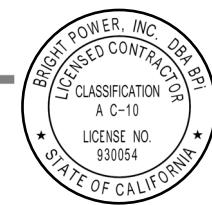
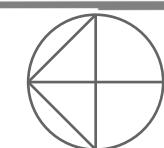
LACEY BLVD.

HANFORD MALL DRIVE



Scale: 1" = 150'

00 150 300



PASSCO DIVERSIFIED II HM LC - HANFORD MALL
1675 W. LACEY BLVD
HANFORD, CA 93230
APN: 011-060-038

PV0.2
PARCEL MAP

DATE: 5-25-16

BY: JB

JOB NO.: C15-710



PO BOX 10637
NAPA, CA 94581
PH: (707)-252-9990

1	6/20/16	Deleted 'prelim. approva'	JB

ELECTRICAL ROOM 1:

JC Penney's

Cinemas

Mid 5, Mid 6, Mid 7

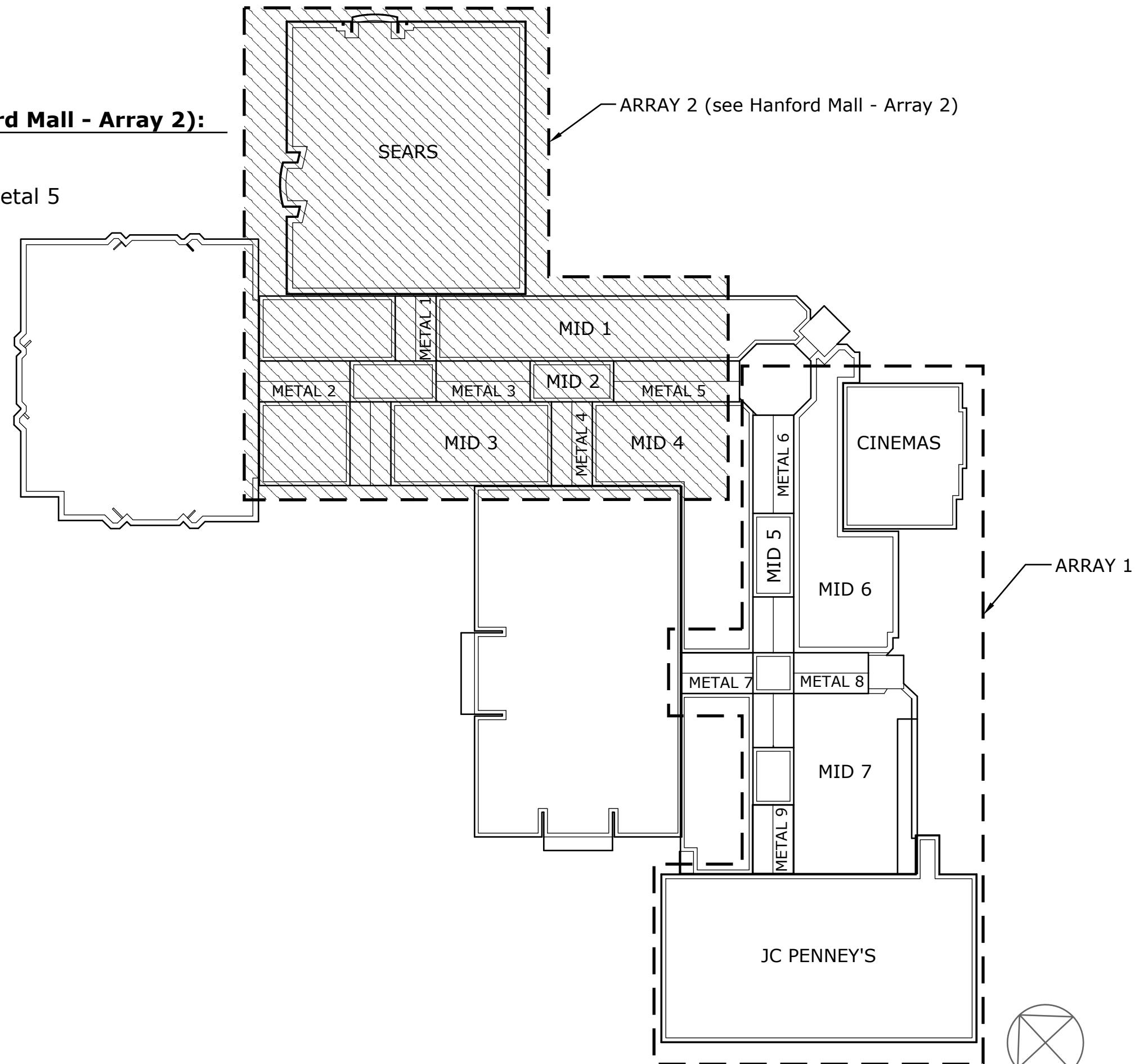
Metal 6, Metal 7, Metal 8, Metal 9

ELECTRICAL ROOM 2 (see Hanford Mall - Array 2):

Sears

Mid 1, Mid 2, Mid 3, Mid 4

Metal 1, Metal 2, Metal 3, Metal 4, Metal 5



PASSCO DIVERSIFIED II HM LC - HANFORD MALL
1675 W. LACEY BLVD
HANFORD, CA 93230
APN: 011-060-038

PV0.3
ARRAY
BREAKDOWN

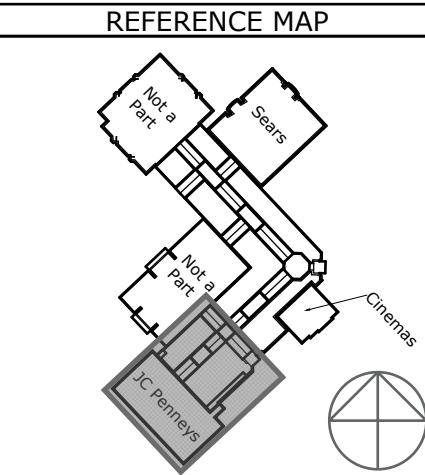
BREAKDOWN

DATE 5.25.16

DATE: 5-25-16

BY: JB

JOB NO : C15-710



Scale: 1" = 40'

00 40 80



PASSCO DIVERSIFIED II HM LC - HANFORD MALL
ARRAY 1
PVO.4A

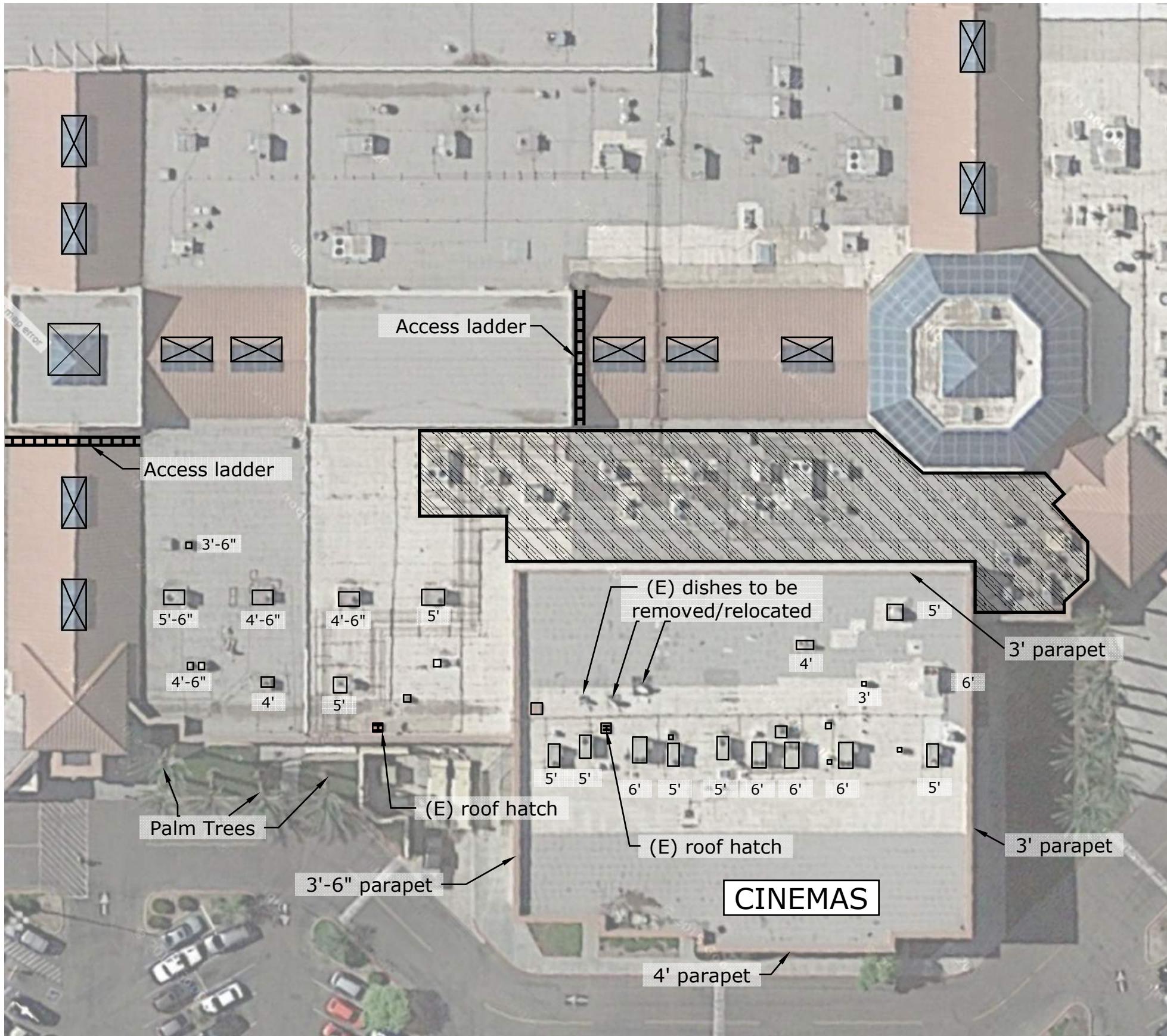
EXISTING SITE CONDITIONS

1675 W. LACEY BLVD
HANFORD, CA 93230
APN: 011-060-038

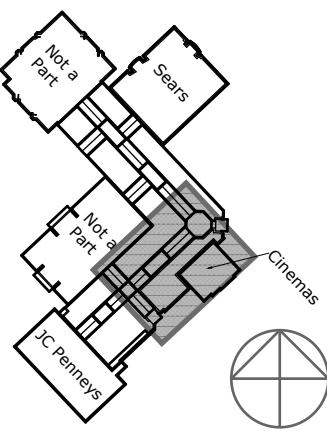
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JB	BY	BY
BP1		
PO BOX 10637 NAPA, CA 94581 PH: (707)-252-9990		



DATE: 5-25-16
BY: JB
JOB NO.: C15-710



REFERENCE MAP



Scale: 1" = 40'

00 40 80



PASSCO DIVERSIFIED II HM LC - HANFORD MALL
1675 W. LACEY BLVD
HANFORD, CA 93230
APN: 011-060-038



map error	1	6/20/16	Deleted 'prelim. approval'	JB

BRIGHT POWER, INC. DBA BP1

LICENSED CONTRACTOR

CLASSIFICATION

A C-10

LICENSE NO.

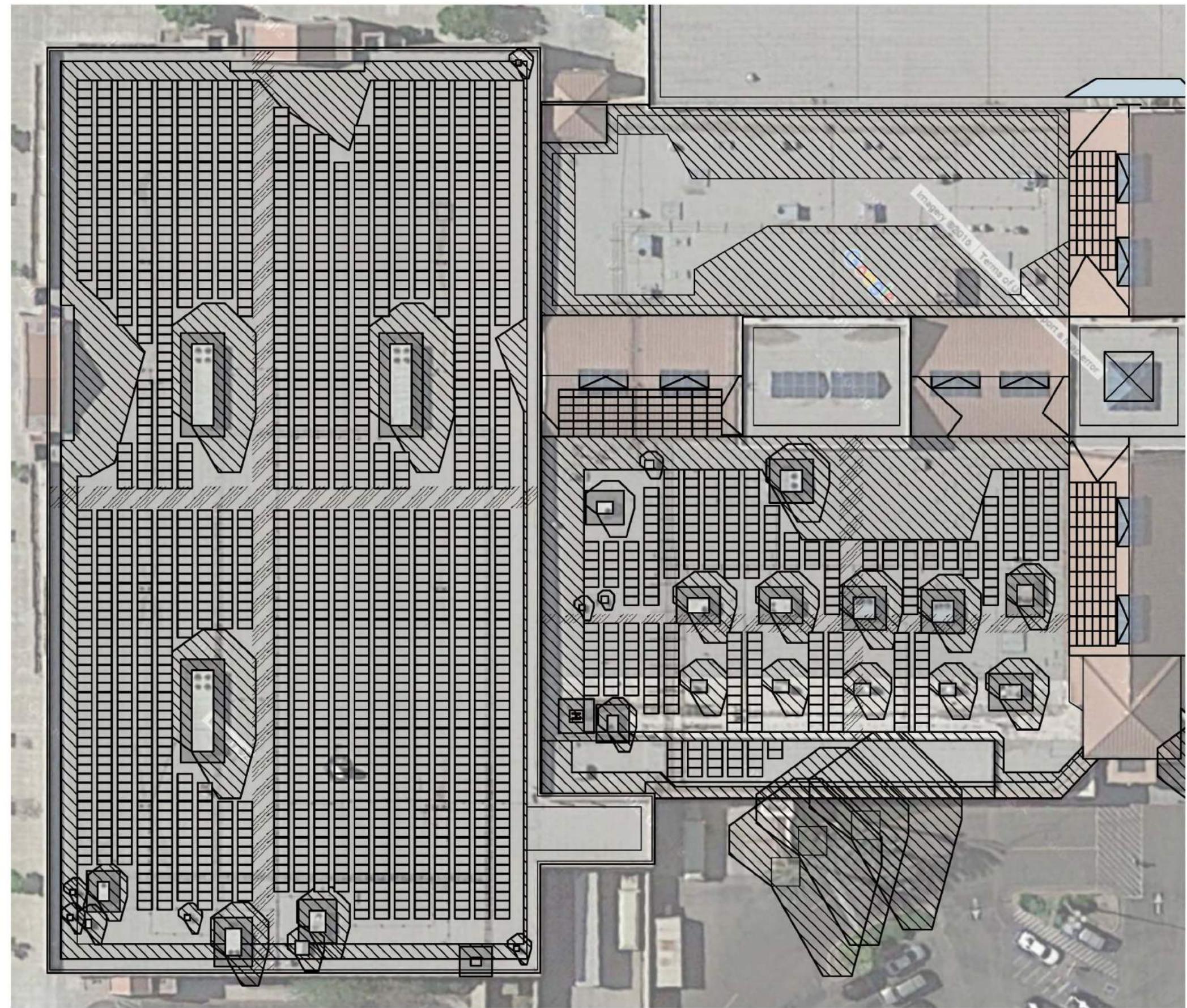
930054

STATE OF CALIFORNIA

DATE: 5-25-16

BY: JB

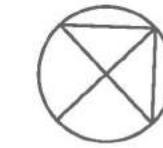
JOB NO.: C15-710



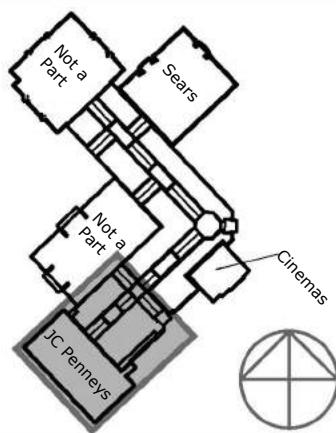
■: Shading Setback
■: 4' Equipment Access Perimeter
■: Fire Access Walkways

Scale: 1" = 40'

00 40 80



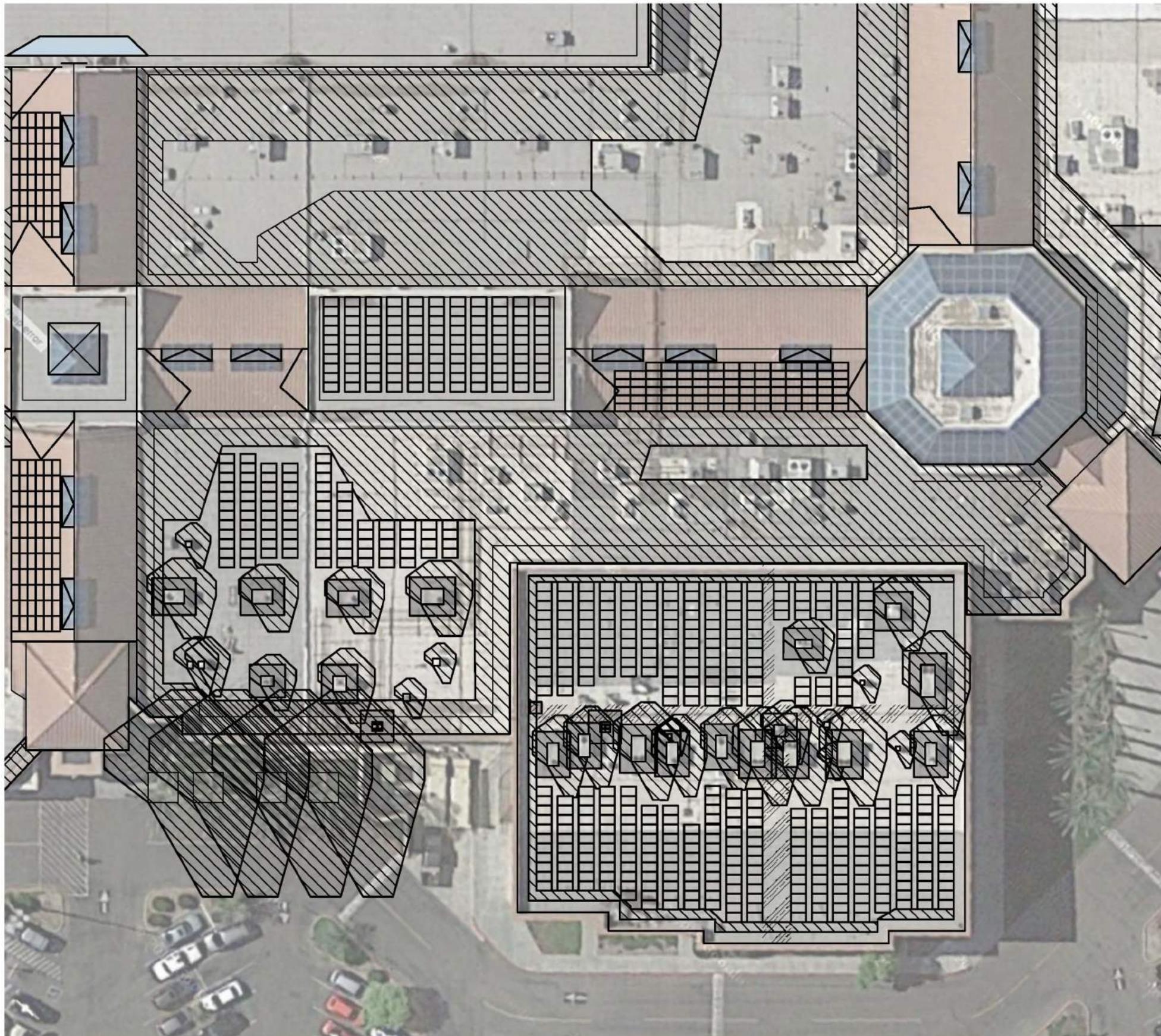
REFERENCE MAP



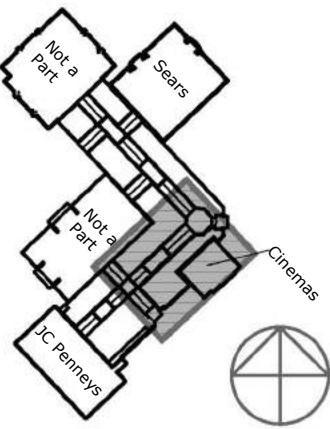
PASSCO DIVERSIFIED II HM LC - HANFORD MALL
ARRAY 1
 11675 W. LACEY BLVD
 HANFORD, CA 93230
 APN: 011-060-038

PV0.5A
MODULE LAYOUT OVERVIEW
 DATE: 5-25-16
 BY: JB
 JOB NO.: C15-710

1	6/20/16	Deleted "prelim. approval"	JB
BPI			
PO BOX 10637 NAPA, CA 94581 PH: (707)-252-9990			



REFERENCE MAP



- : Shading Setback
- : 4' Equipment Access Perimeter
- : Fire Access Walkways

Scale: 1" = 40'

00 40 80



PASSCO DIVERSIFIED II HM LC - HANFORD MALL
ARRAY 1

11675 W. LACEY BLVD
HANFORD, CA 93230
APN: 011-060-038

PV0.5B
MODULE
LAYOUT
OVERVIEW
DATE: 5-25-16
BY: JB
JOB NO.: C15-710

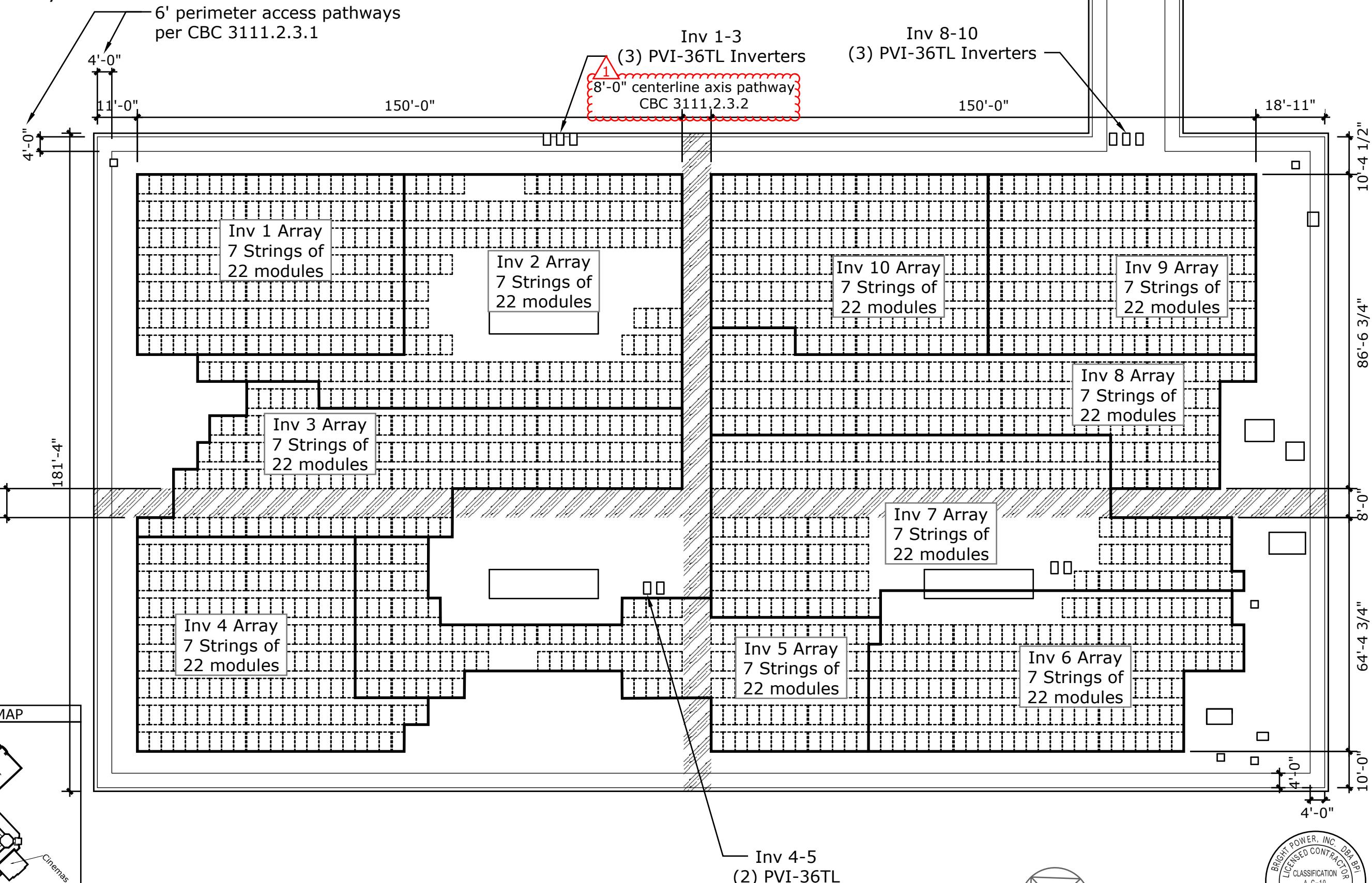
BP1	1	6/20/16	Deleted "prelim. approval"	JB
PO BOX 10637 NAPA, CA 94581 PH: (707)-252-9990				
REV. NO	REV. DATE			

Roof Array Configuration:

10 Solectria PVI-36TL Inverters

1,540 ET Solar ET-M660290WB/WW 290W Modules

444.60 kW DC Subsystem Size



PASSCO DIVERSIFIED II HM LC - HANFORD MALL
11675 W. LACEY BLVD
HANFORD, CA 93230
APN: 011-060-038

ARRAY 1
PV0.6A
JC PENNEY'S
ARRAY
DIMENSIONS &
INVERTER
FOOTPRINT
LICENSED CONTRACTOR
CLASSIFICATION
A C-10
LICENSE NO.
930054
DATE: 5-25-16
BY: JB
JOB NO.: C15-710



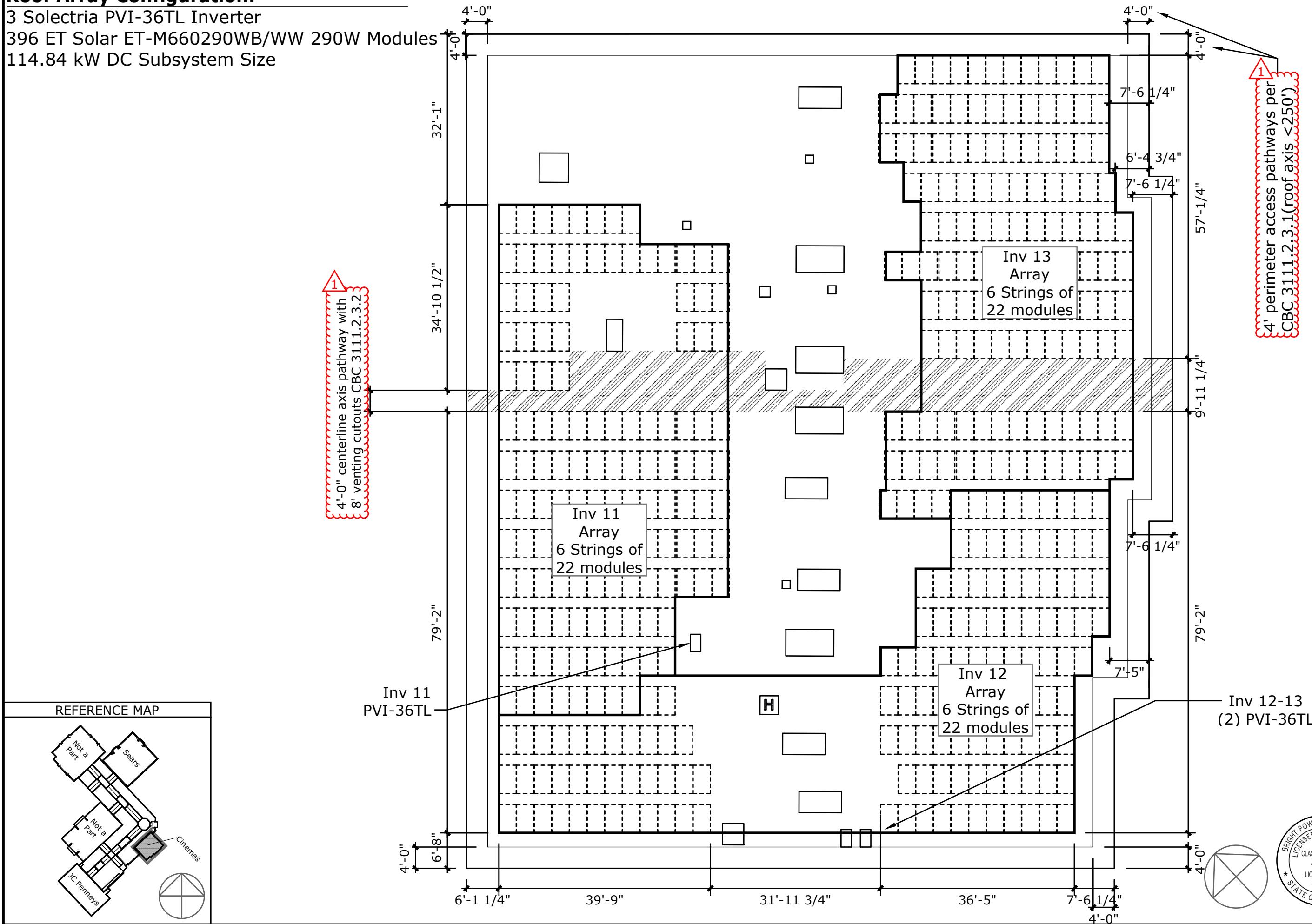
	1	6/20/16	Del. "prelim. approval", add access pathways	JB
BP1				

Roof Array Configuration:

3 Solectria PVI-36TL Inverter

396 ET Solar ET-M660290WB/WW 290W Modules

114.84 kW DC Subsystem Size



PASSCO DIVERSIFIED II HM LC - HANFORD MALL
ARRAY 1
PV0.6B

11675 W. LACEY BLVD
HANFORD, CA 93230
APN: 011-060-038

1	6/20/16	Det. "prelim. approval", add access pathways	JB
BP1			
PO BOX 10637 NAPA, CA 94581 PH: (707)-252-9990			
REV. NO	REV. DATE		



DATE: 5-25-16
BY: JB
JOB NO.: C15-710

Roof Array Configuration:

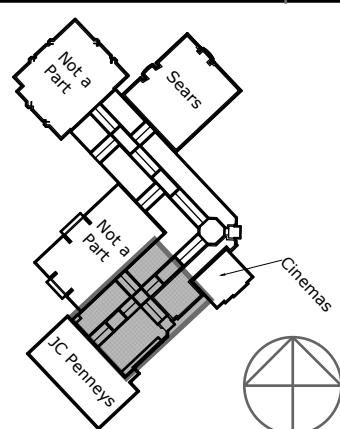
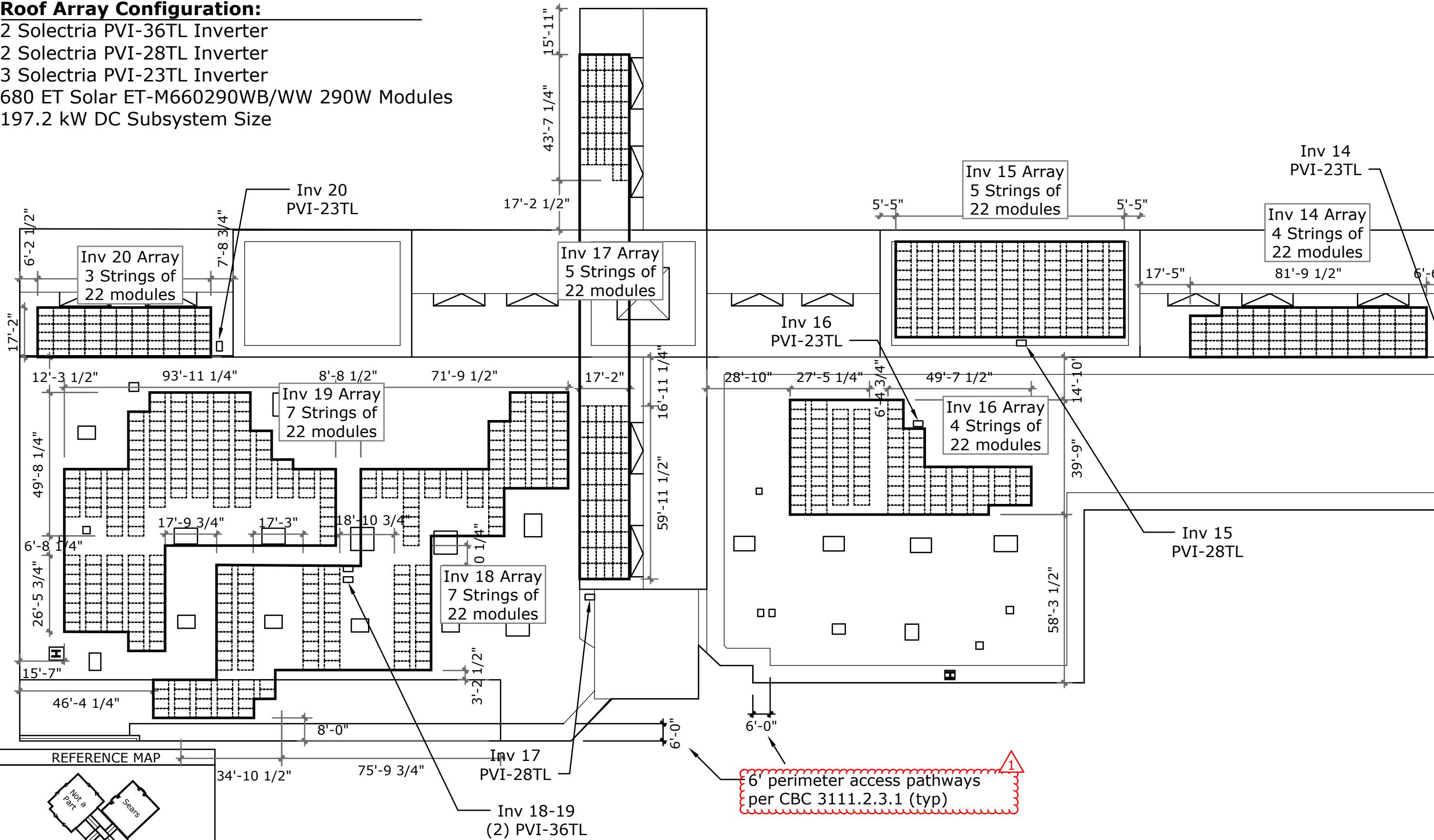
2 Solectria PVI-36TL Inverter

2 Solectria PVI-28TL Inverte

3 Solectria PVI-23TL Inverte

680 ET Solar ET-M660290WB/WW 290W Module

197.2 kW DC Subsystem Size



6' perimeter access pathways
per CBC 3111.2.3.1 (typ)

PASSCO DIVERSIFIED II HM LC - HANFORD MALL
11675 W. LACEY BLVD
HANFORD, CA 93230
APN: 011-060-038

PV0.6C

MID ROOF ARRAY DIMENSIONS & INVERTER FOOTPRINT

FOOTPRINT

BY: JB

JOB NO.: C15-710



PASSCO DIVERSIFIED II HM LC - HANFORD MALL
11675 W. LACEY BLVD
HANFORD, CA 93230
APN: 011-060-038

ARRAY 1

PVO.7A

JC PENNEY'S -
ROOF
ATTACHMENT
LAYOUT

LICENSING CONTRACTOR
CLASSIFICATION
A C-10
LICENSE NO.
930054

DATE: 7-7-16

BY: JB

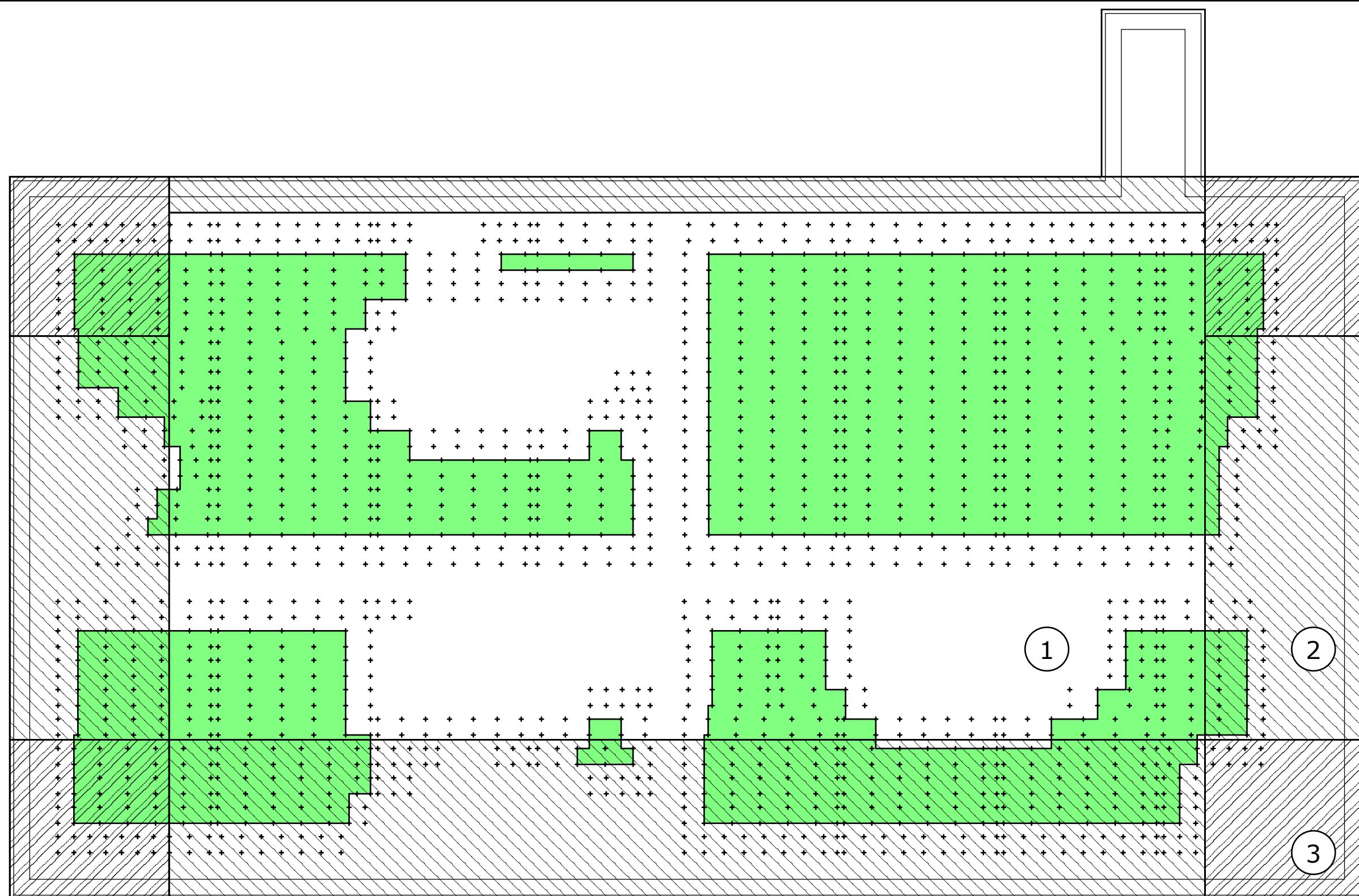
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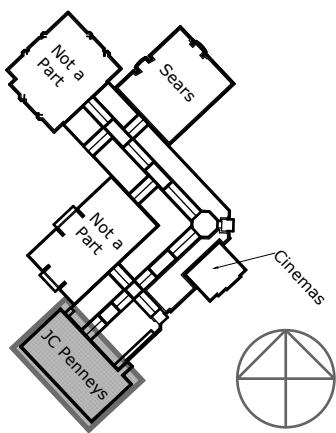
PO BOX 10637
NAPA, CA 94581
PH: (707)-252-9990

REV. NO

REV. DATE



REFERENCE MAP



Wind Zone	Edge	Sheltered
Zone 3	4 ft	7 ft
Zone 2	5 ft	7 ft
Zone 1	6 ft	8 ft
Zone 0	7 ft	10 ft

+= Roof Attachment

= Wind Zone 3

= Wind Zone 2

= Wind Zone 1

= Sheltered Zone



+ = Roof Attachment

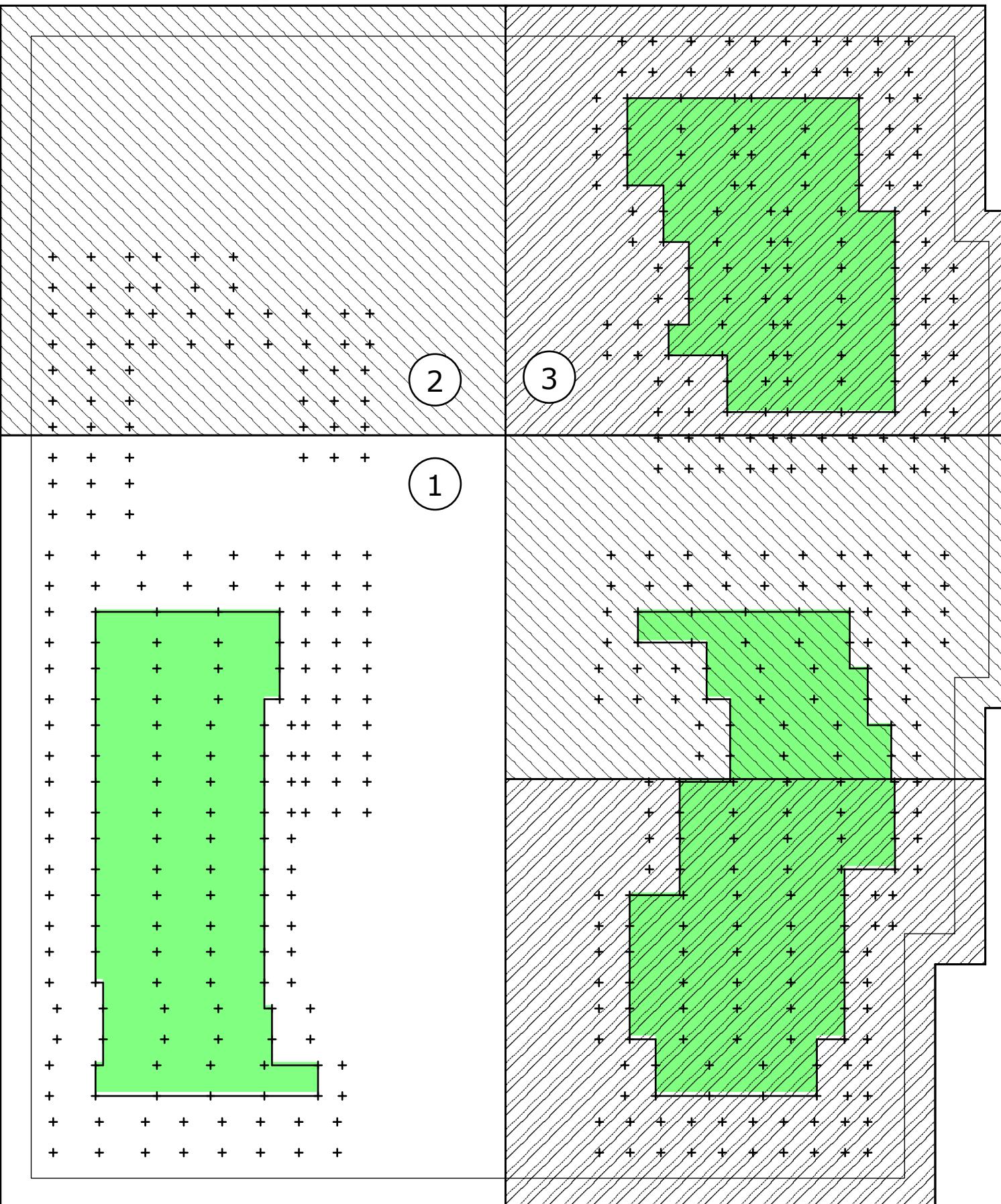
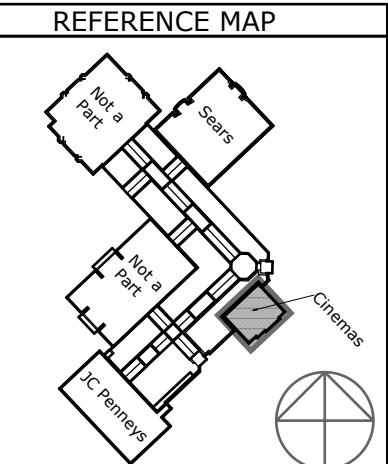
= Wind Zone 3

= Wind Zone 2

= Wind Zone 1

= Sheltered Zone

Max Rail Spans		
Wind Zone	Edge	Sheltered
Zone 3	4 ft	7 ft
Zone 2	5 ft	7 ft
Zone 1	6 ft	8 ft
Zone 0	7 ft	10 ft



PASSCO DIVERSIFIED II HM LC - HANFORD MALL
11675 W. LACEY BLVD
HANFORD, CA 93230
APN: 011-060-038

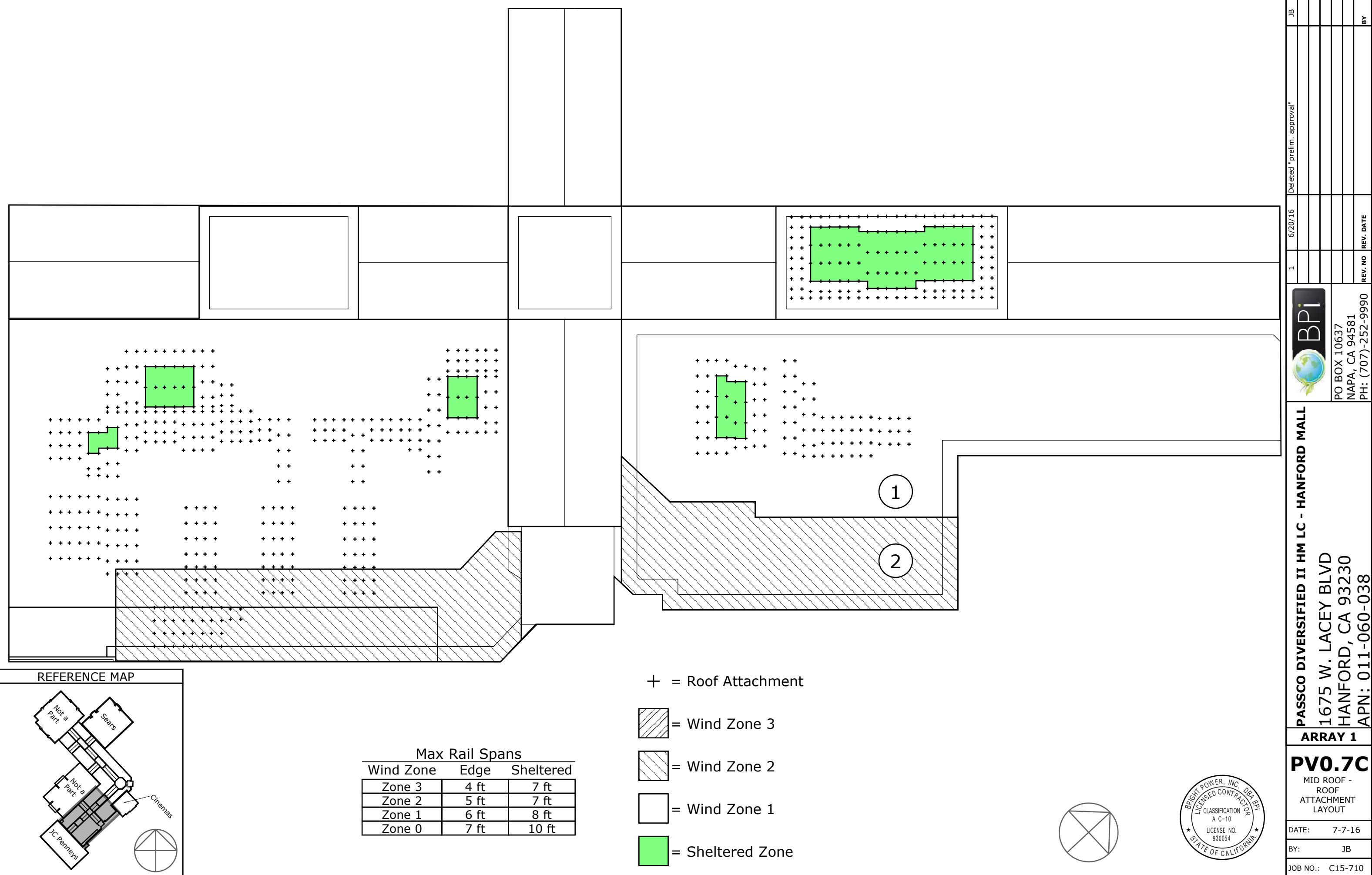
PVO.7B
CINEMAS - ROOF
ATTACHMENT
LAYOUT

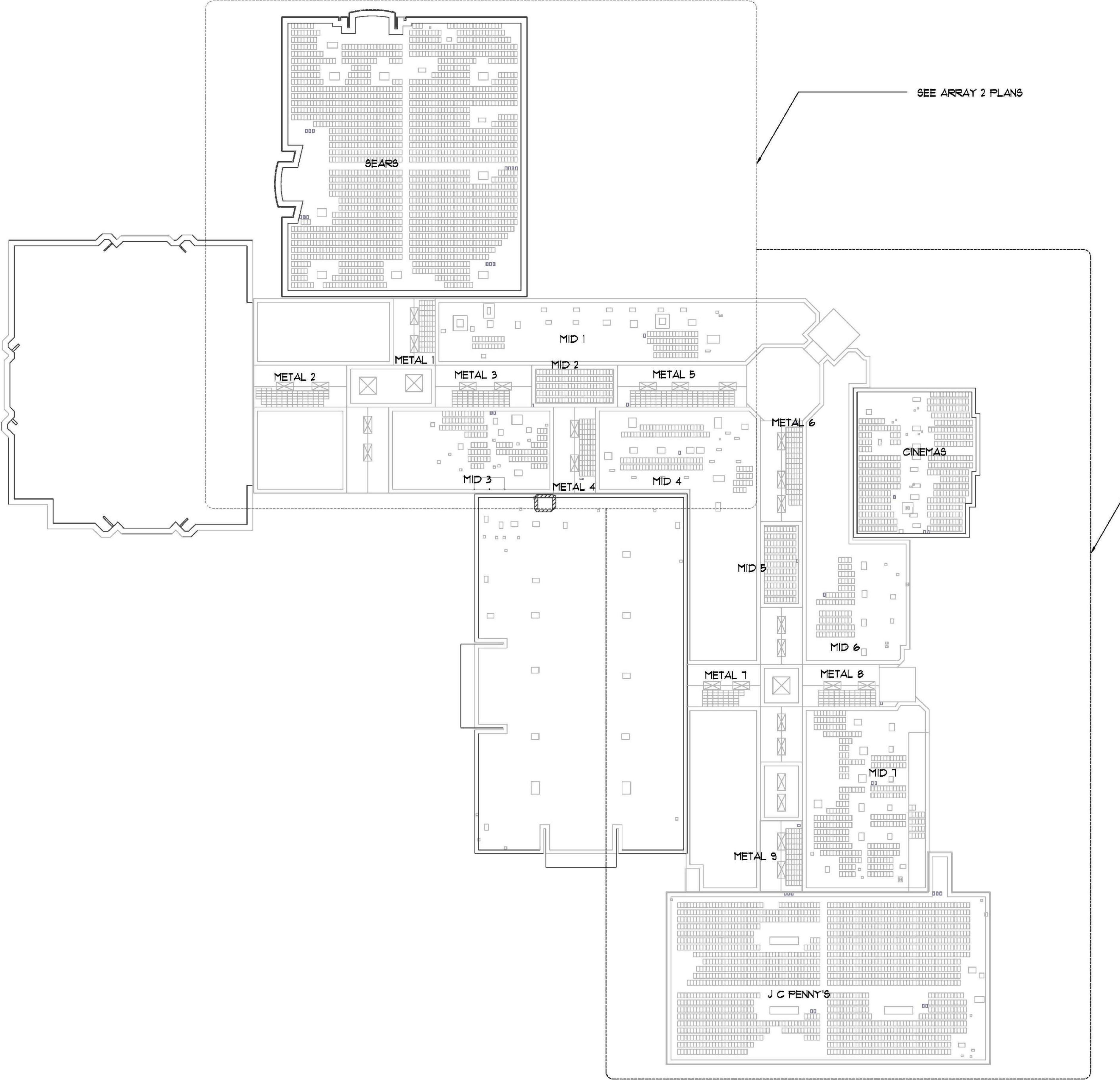
DATE: 7-7-16
BY: JB
JOB NO.: C15-710



BPi
PO BOX 10637
NAPA, CA 94581
PH: (707)-252-9990







PHOTOVOLTAIC KEY PLAN

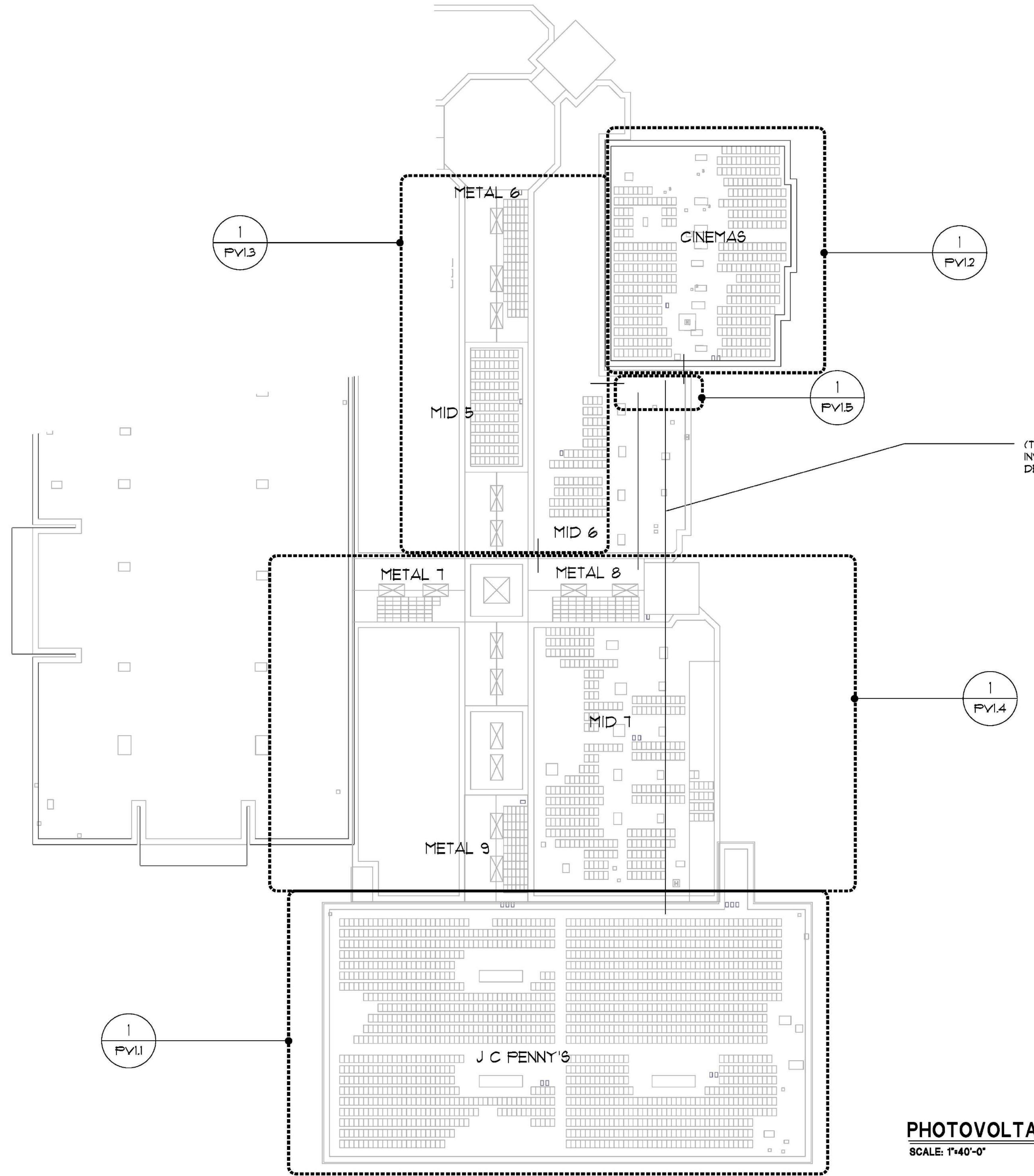
SCALE: 1'-0"-0"

1
PV1.0A

N



PASSCO DIVERSIFIED II HM LLC	BPI
- HANFORD MALL - ARRAY 1	
1675 W. Lacey Blvd, Hanford, CA 93230	
APN: 011-060-038	
PHOTOVOLTAIC KEY PLAN	
PV1.0A	
DATE: NOV 2015	
JOB NO.: 15922	



PHOTOVOLTAIC SITE PLAN

SCALE: 1'-40'-0"



PASSCO DIVERSIFIED II HM LLC
- HANFORD MALL - ARRAY 1
1675 W. Lacey Blvd, Hanford, CA 93230
APN: 011-060-038

BPI	REV. NO.	REV. DATE
PO BOX 10637		
NAPA, CA 94581		
PH: (707) 252-9990		

PHOTOVOLTAIC
SITE
PLAN

PV1.0B

DATE: NOV 2015

JOB NO.: 15922

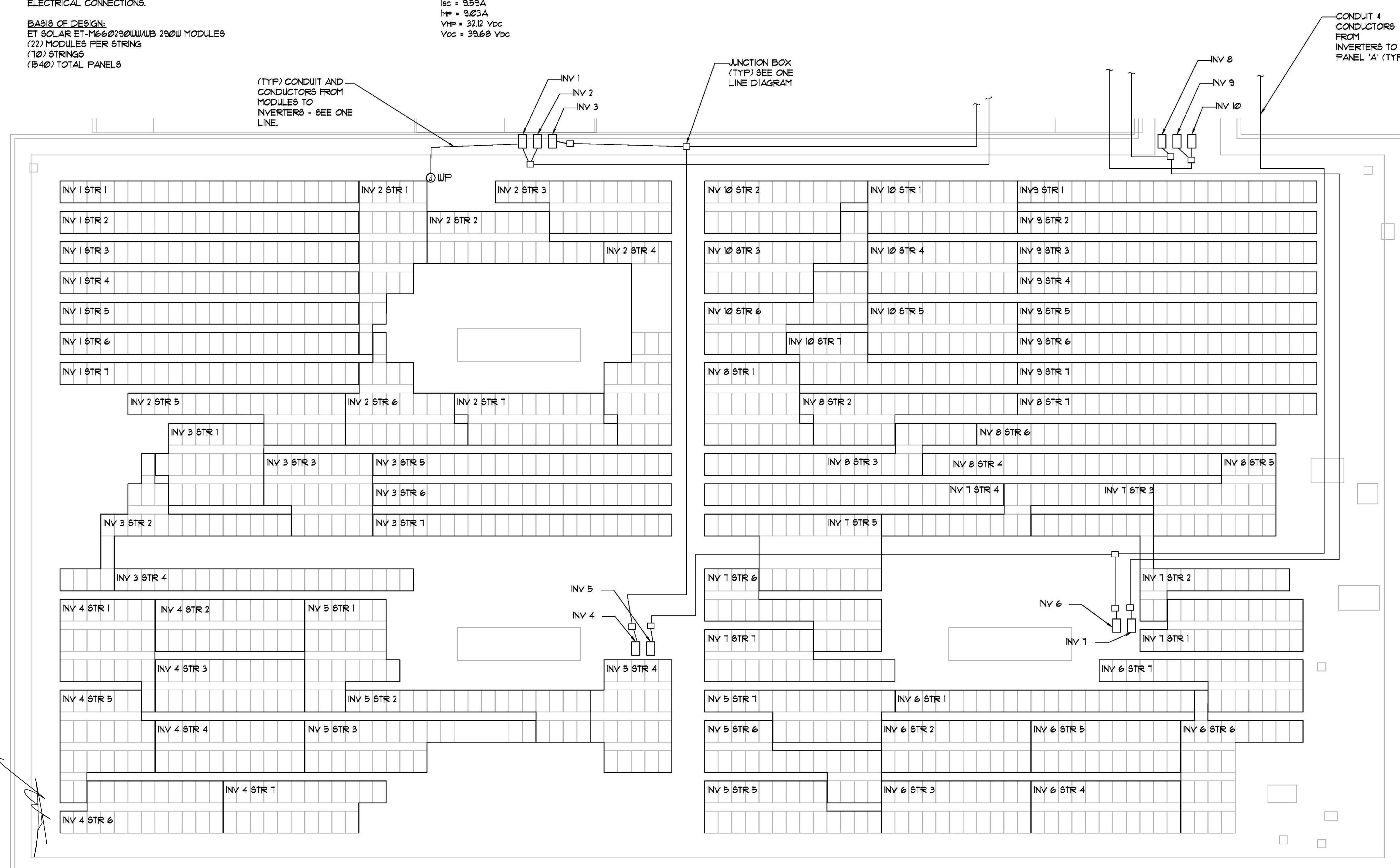
BY

1540 ROOF MOUNTED SOLAR PHOTOVOLTAIC PANELS. SEE
STRUCTURAL SUBMITTALS FOR MOUNTING. SEE PV2.I FOR
ELECTRICAL CONNECTIONS.

BASIS OF DESIGN:
ET SOLAR ET-M60290WU/WB 290W MODULES
(22) MODULES PER STRING
(10) STRINGS
(1540) TOTAL PANELS

P_{MAX} = 290 WATTS
I_{SC} = 9.59A
I_{MP} = 9.03A
V_{MP} = 32.12 VDC
V_{OC} = 39.68 VDC

(TYP) CONDUIT AND
CONDUCTORS FROM
MODULES TO
INVERTERS - SEE ONE
LINE.



ROOF ARRAY PHOTOVOLTAIC PLAN J C PENNY'S

SCALE: 1'-12"-0"

1
PV1.1

N



PASSCO DIVERSIFIED II HM LLC
- HANFORD MALL - ARRAY 1
1675 W. Lacey Blvd, Hanford, CA 93230
APN: 011-060-038

ROOF-ARRAY
PV
PLAN

PV1.1

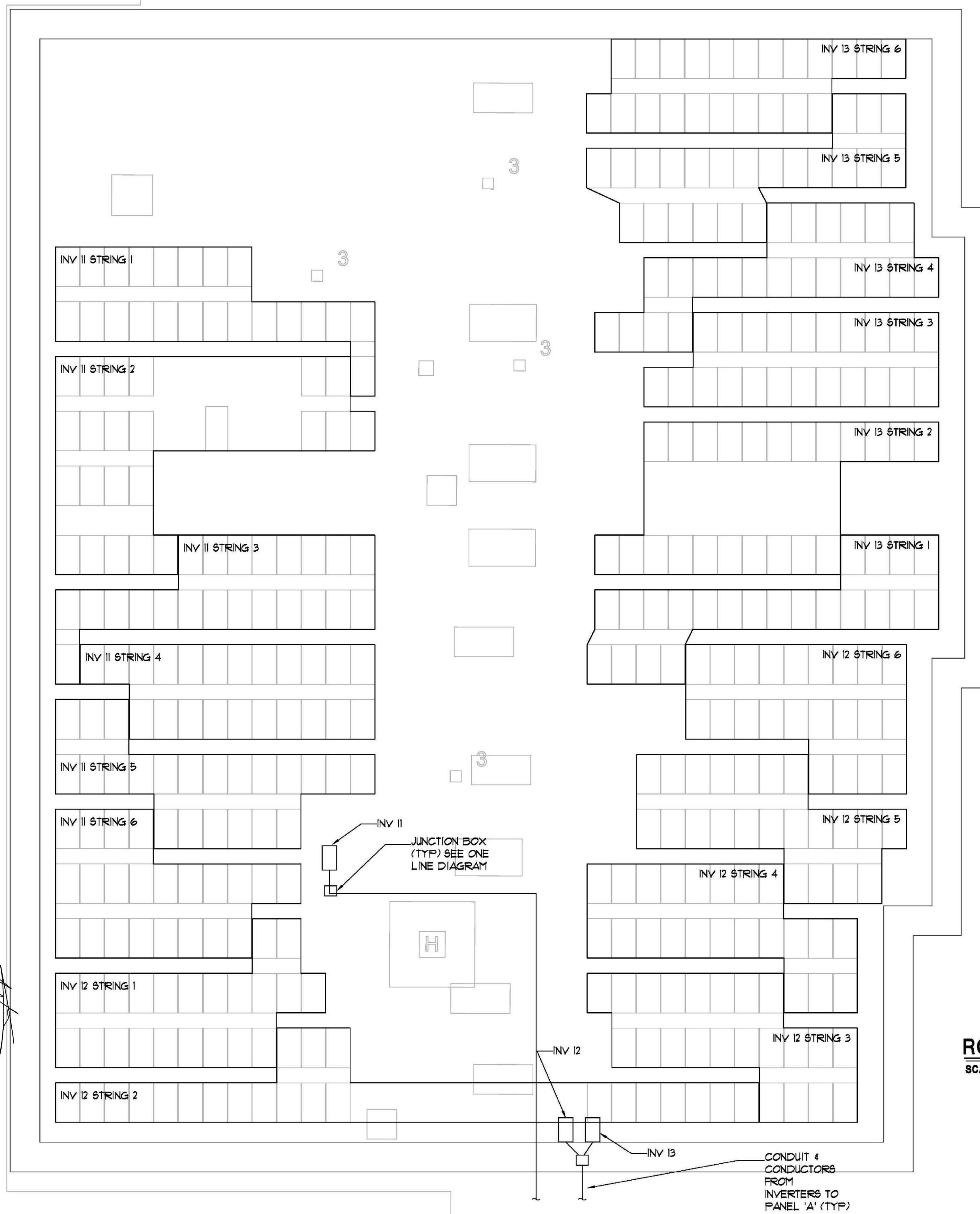
DATE: NOV 2015
JOB NO.: 1522

BY

REV. NO. REV. DATE



PO BOX 10637
NAPA, CA 94581
PH: (707) 252-9990



396 ROOF MOUNTED SOLAR PHOTOVOLTAIC PANELS. SEE STRUCTURAL SUBMITTALS FOR MOUNTING. SEE PV2.1 FOR ELECTRICAL CONNECTIONS.

BASIS OF DESIGN:
ET SOLAR ET-M60290UW/UB 290W MODULES
(22) MODULES PER STRING
(18) STRINGS
(396) TOTAL PANELS

P_{MAX} = 290 WATTS
I_{SC} = 9.59A
I_{MP} = 9.03A
V_{MP} = 32.12 VDC
V_{OCC} = 39.68 VDC

ROOF ARRAY PHOTOVOLTAIC PLAN CINEMAS

SCALE: 1/8"-1'-0"

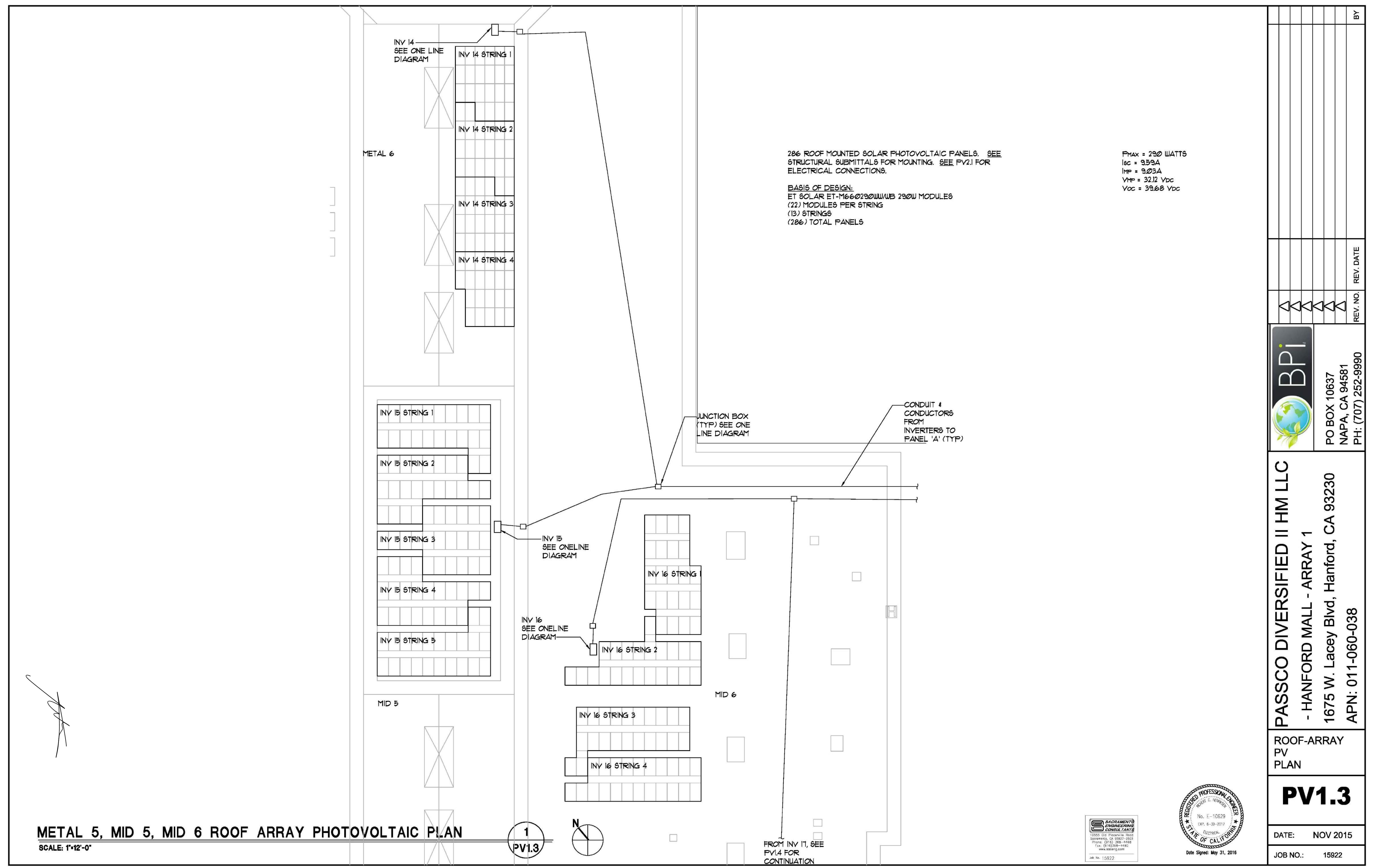


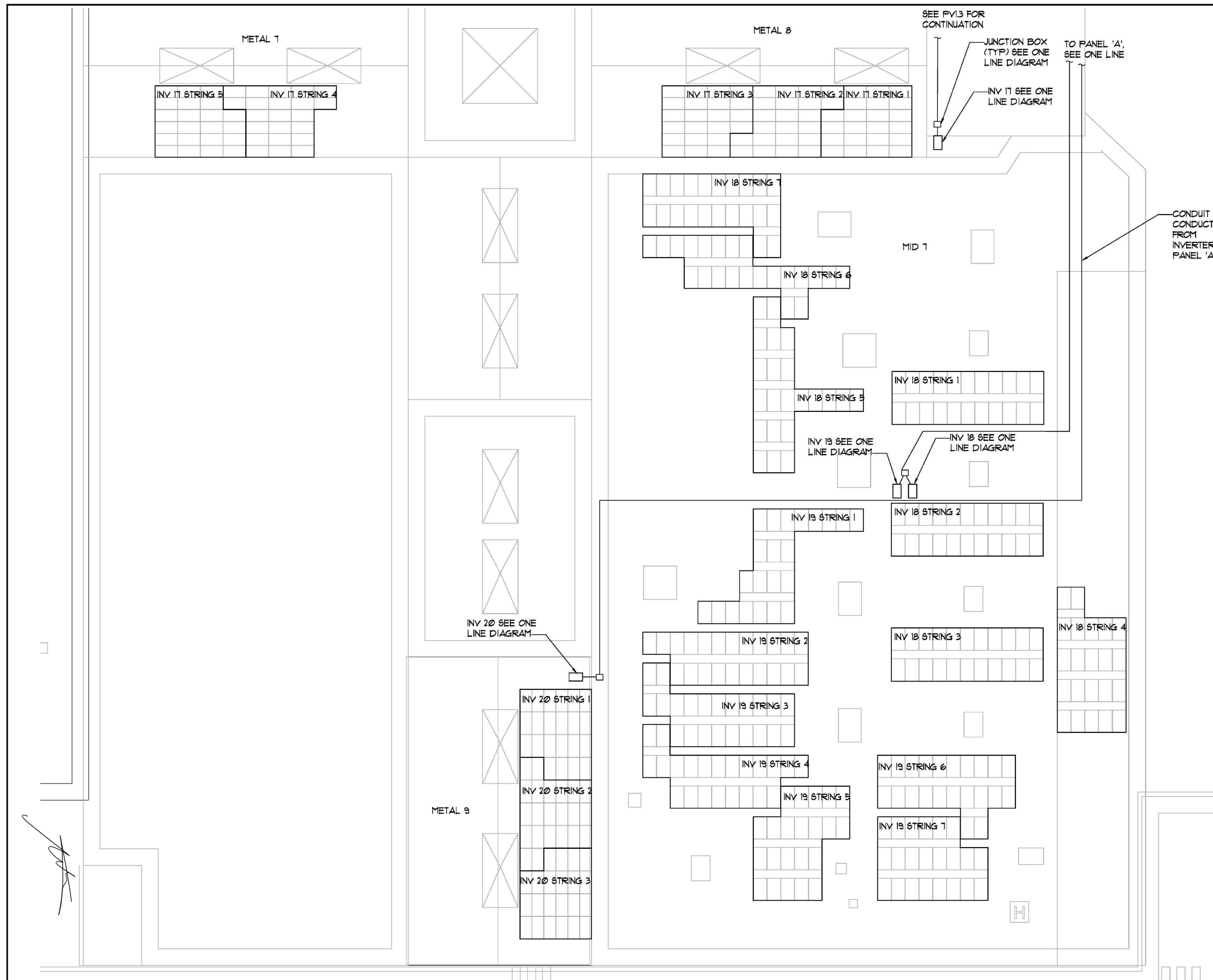
PASSCO DIVERSIFIED II HM LLC
- HANFORD MALL - ARRAY 1
1675 W. Lacey Blvd, Hanford, CA 93230
APN: 011-060-038

ROOF-ARRAY
PV
PLAN

PV1.2

DATE: NOV 2015
JOB NO.: 15222





MID 7, METAL 7,8,9 ROOF ARRAY PHOTOVOLTAIC PLAN

SCALE: 1"-12'-0"

1
PV1

=

The logo for Sacramento Engineering Consultants features a stylized 'S' icon followed by the company name in a serif font.



1

DATE: NOV 2015

JOB NO.: 15922

BY

REV. NO. | REV. DATE

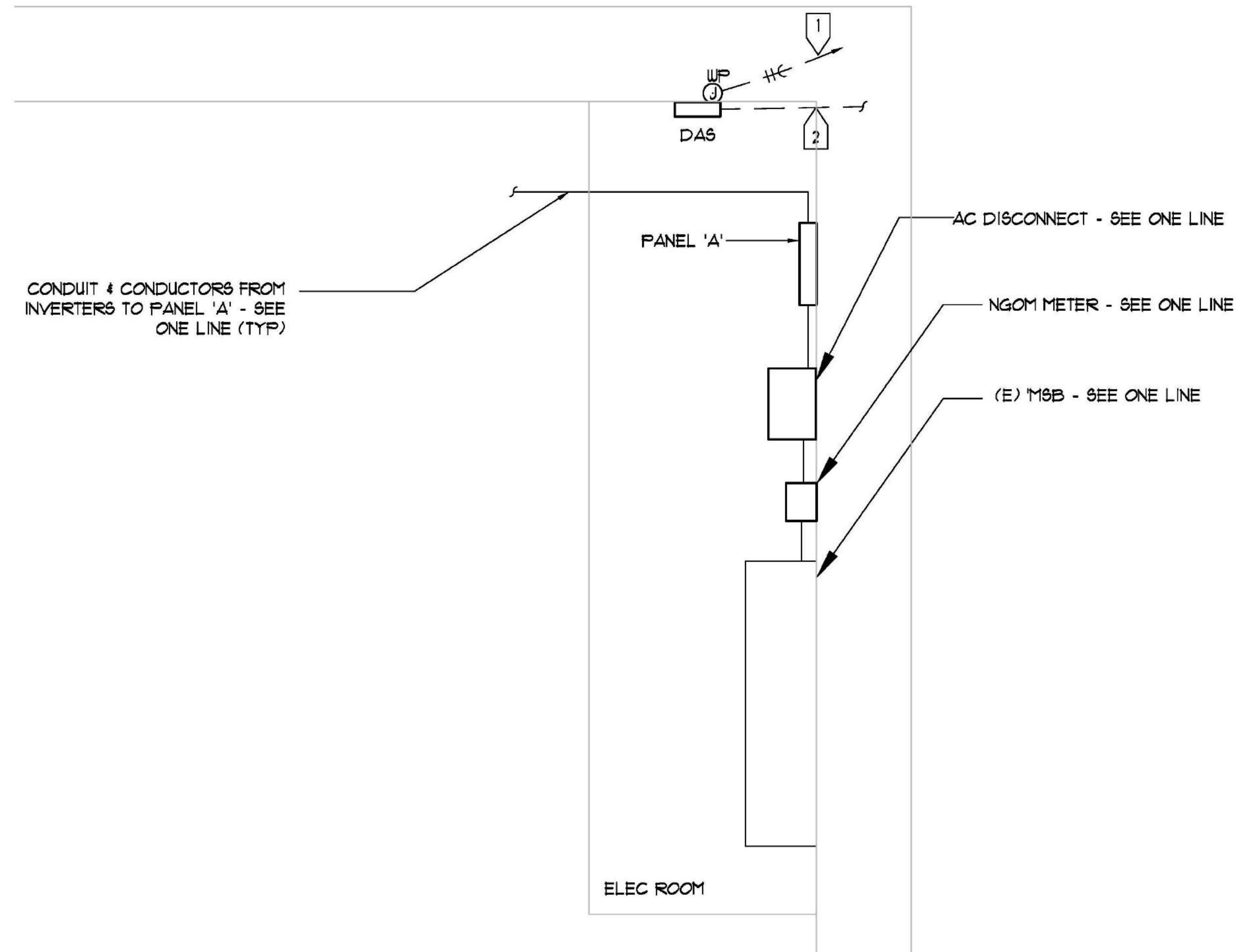
PH: (707) 252-9990

A-N: 01-1-080-038

卷之三

NUMBERED NOTES

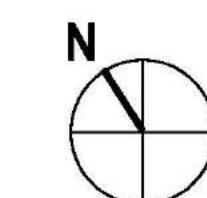
- 1 (2) #10, #10 G IN $\frac{3}{4}$ "C. TO NEAREST PANEL. PROVIDE 20A/IP BREAKER IN EXISTING PANEL, AND CONNECT DAS CIRCUIT TO NEW BREAKER
 - 2 (1) 1" DATA CONDUIT TO DATA CONNECTION POINT - SEE ONE LINE. FIELD ROUTE UNDERGROUND OUTSIDE BUILDING, AND SURFACE MOUNT INSIDE. ALTERNATELY, WIRELESS CONNECTION MAY BE PROVIDED.

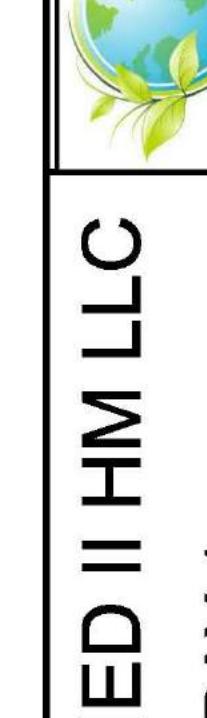


METER AREA PLAN

SCALE: 1/4"=1'-0"

1



		PASSCO DIVERSIFIED II HM LLC - HANFORD MALL - ARRAY 1 1675 W. Lacey Blvd, Hanford, CA 93230 APN: 011-060-038 METER-AREA PLAN PV1.5	
		DATE: NOV 2015 JOB NO.: 15922	
<p align="center">PASSCO DIVERSIFIED II HM LLC</p> <p align="center">- HANFORD MALL - ARRAY 1</p> <p align="center">1675 W. Lacey Blvd, Hanford, CA 93230</p> <p align="center">APN: 011-060-038</p> <p align="center">METER-AREA</p> <p align="center">PLAN</p> <p align="center">PV1.5</p>			
<p align="center">Date Signed: May 31, 2016</p>			

Array Configuration:
3 SOLECTRIA PVI 23TL INVERTERS, 2 PVI 28TL INVERTERS
15 SOLECTRIA PVI 36TL INVERTERS
123 Strings
2706 Modules Total
22 ET SOLAR ET-M660290WW/WB 290W MODULES per String

Note: For specifications of solar equipment see attached cut sheets.

INTERCONNECTION STANDARDS COMPLIANCE

The Inverters listed have been tested and listed by Underwriters Laboratories to be in compliance with UL1741 Statistic Inverters And Charge Controllers For Use In Photovoltaic Power Systems, as well as IEEE-929-2000 Recommended Practice For Utility Interface Of Photovoltaic (PV) Systems.

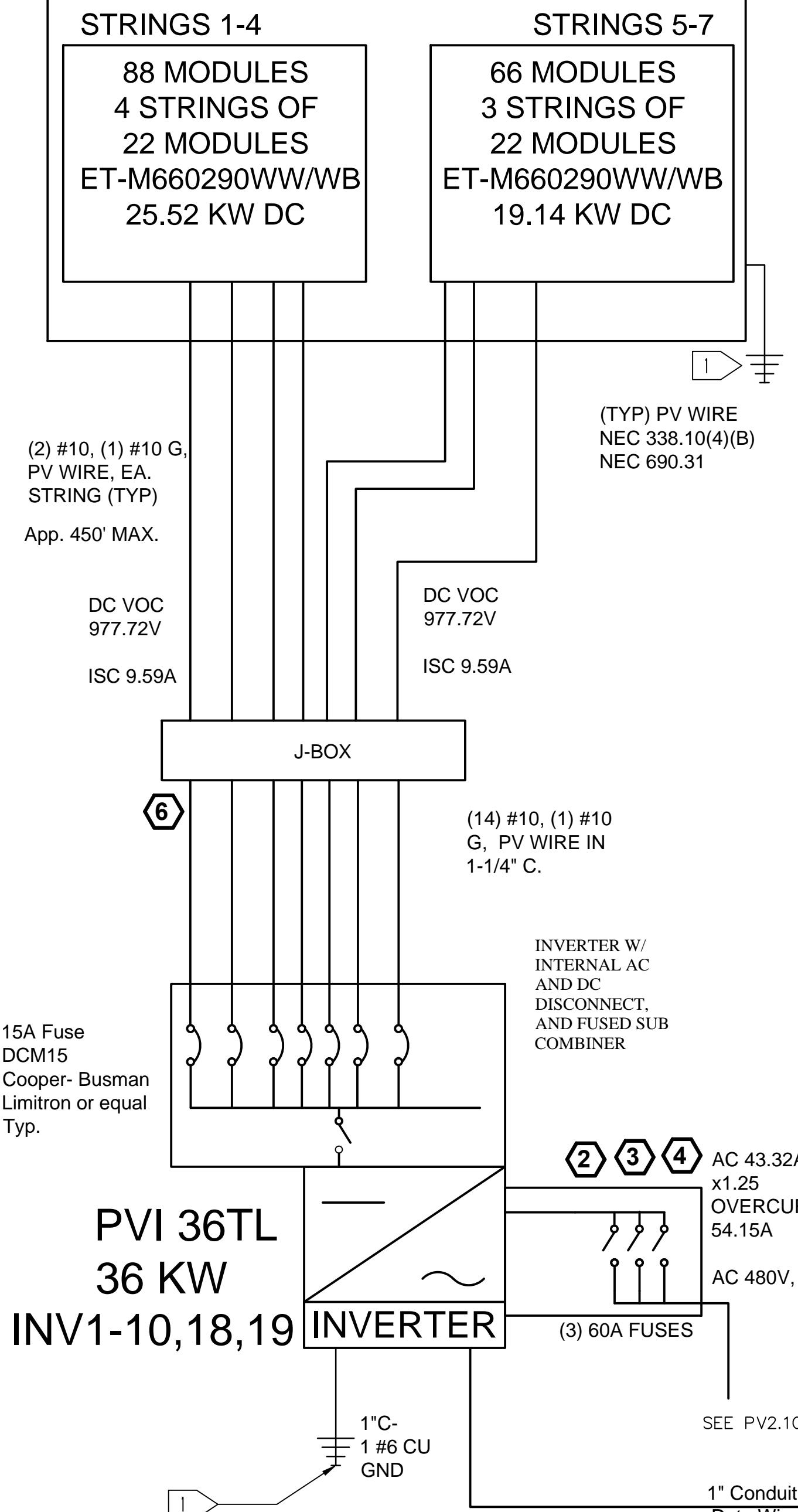
AC Disconnect is accessible, and lockable.

IEEE-929-2000 provides guidance regarding equipment and function necessary to ensure compatible operation of photovoltaic systems which are connected in parallel with the electric utility. UL 1741 is the standard applied by Underwriters Laboratory to the Inverter to verify it meets the recommendations of IEEE-929-2000.

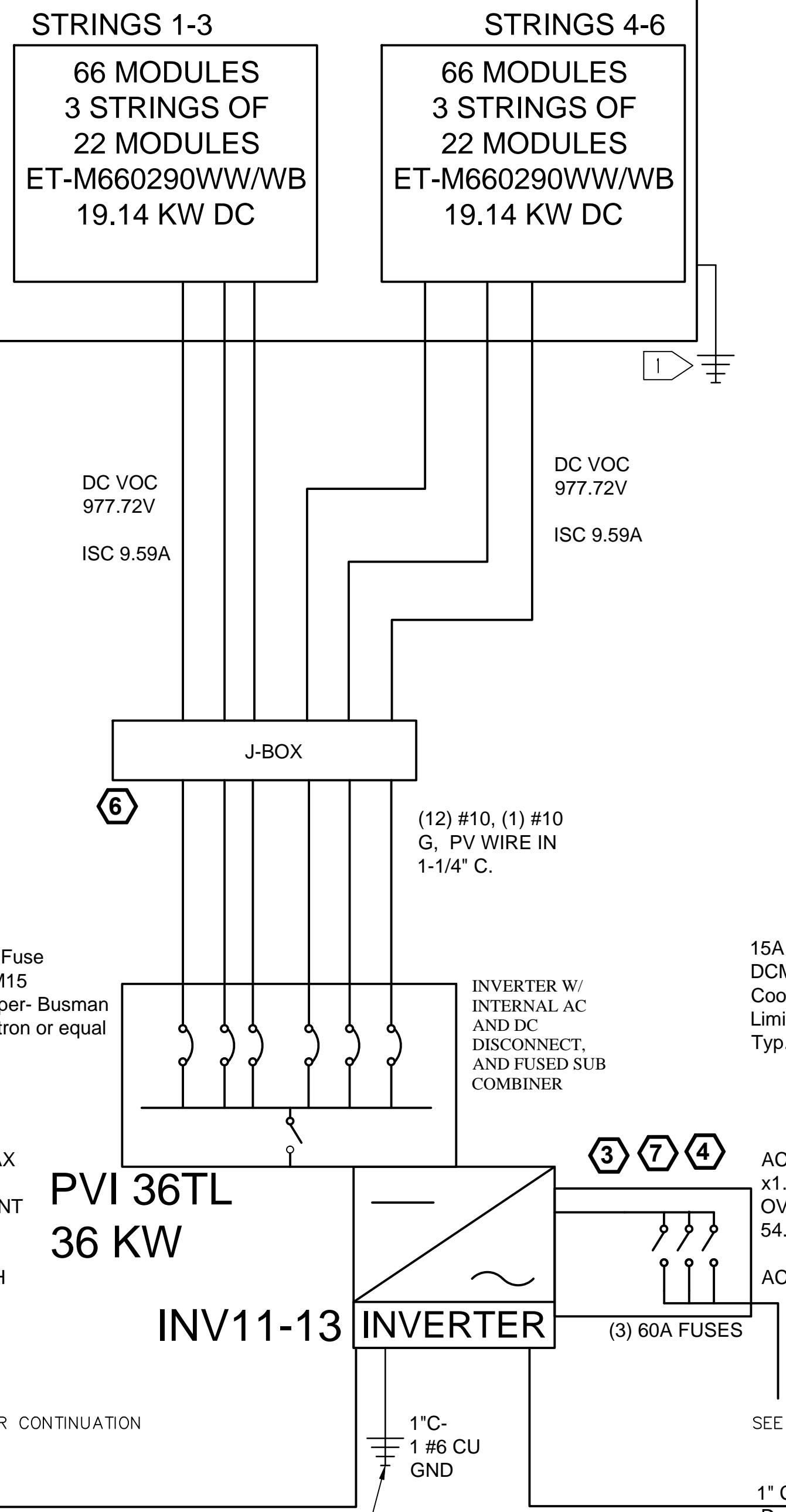
Refer to both documents for details of these Recommendations and test procedures.

Single line diagrammatic only actual layout determined by existing conditions.
All hazardous transmission lines to be labeled:
"CAUTION-Electrical Hazard"

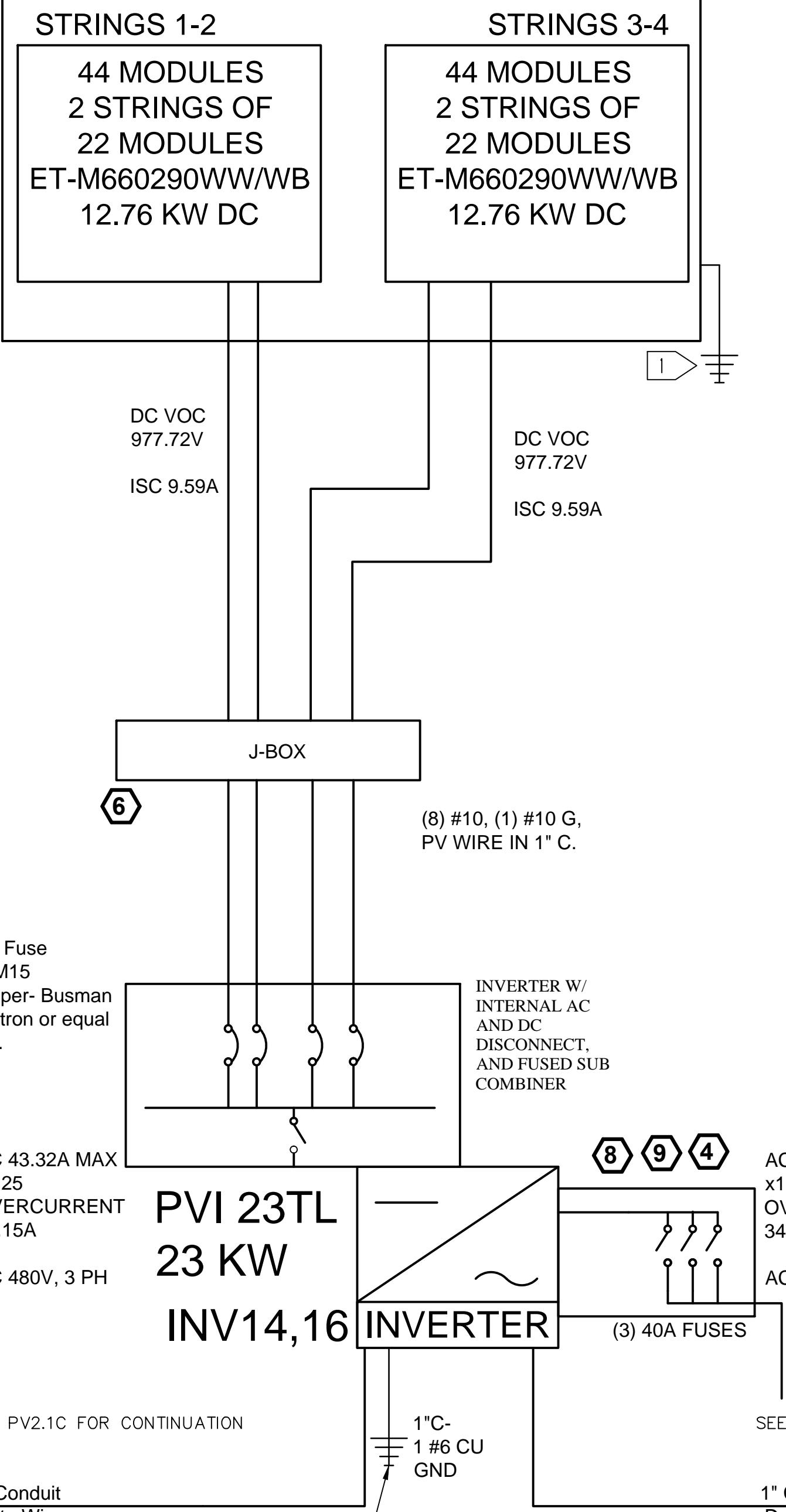
INVERTER 1-10,18-19



INVERTER 11-13



INVERTER 14,16



NUMBERED NOTES

- 1 PROVIDE #6 CU GROUNDING ELECTRODE CONDUCTOR TO BUILDING GROUND, PER ARTICLE 250, CEC.

**2706 ET SOLAR
ET-M660290WW/WB
290W Modules
784.74 kW DC Power**

ELECTRICAL SIGNAGE NOTES REFER TO PV4.1 FOR DETAILS	
②	PHOTOVOLTAIC ARRAY DC DISCONNECT OPERATING CURRENT: 63.32 A OPERATING VOLTAGE: 791.44 V MAX. SYSTEM VOLTAGE: 977.72 V SHORT-CIRCUIT CURRENT: 67.13A
③	PHOTOVOLTAIC ARRAY AC DISCONNECT OPERATING CURRENT: 43.32 A OPERATING VOLTAGE: 480 V
④	WARNING! THE DIRECT CURRENT CIRCUIT CONDUCTORS OF THIS SYSTEM ARE UNARMED AND MAY BE ENERGIZED WITH RESPECT TO GROUND DUE TO LEAKAGE PATHS AND OR GROUND FAULTS.
⑥	CAUTION: SOLAR CIRCUIT
⑦	PHOTOVOLTAIC ARRAY DC DISCONNECT OPERATING CURRENT: 54.18 A OPERATING VOLTAGE: 791.44 V MAX. SYSTEM VOLTAGE: 977.72 V SHORT-CIRCUIT CURRENT: 57.54A
⑧	PHOTOVOLTAIC ARRAY AC DISCONNECT OPERATING CURRENT: 27.68 A OPERATING VOLTAGE: 480 V
⑨	PHOTOVOLTAIC ARRAY DC DISCONNECT OPERATING CURRENT: 16.12 A OPERATING VOLTAGE: 791.44 V MAX. SYSTEM VOLTAGE: 977.72 V SHORT-CIRCUIT CURRENT: 38.38A

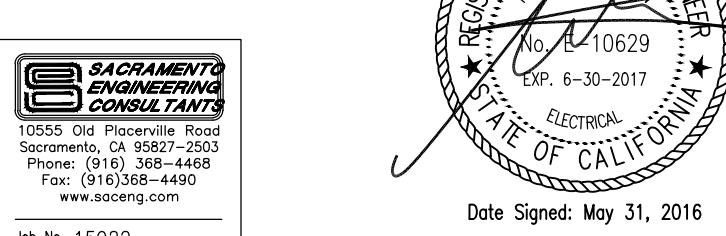
PASSCO DIVERSIFIED II HM LLC
- HANFORD MALL - ARRAY 1
1675 W. Lacey Blvd, Hanford, CA 93230
APN: 011-060-038

SINGLE-LINE
DIAGRAM

PV2.1A

DATE: NOV 2015

JOB NO.: 15922



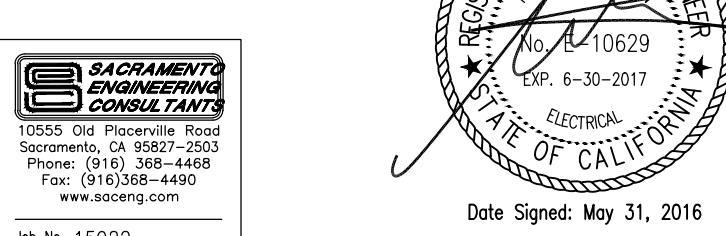
Module Model	ET-M660290WW/WB	Modules per string <u>String output</u>	22	Voltage Correction Factor <u>Corrected String Output</u>	1.12 (Table A)
Module Max Power	290 W				
Maximum Power Voltage (VPMAX)	32.12 V	706.64 V		791.44 V	
Maximum Power Current (IPMAX)	9.03 A	9.03 A		9.03 A	
Open-circuit voltage (VOC)	39.68 V	872.96 V		977.72 V (Not to Exceed 1000V)	
Short-circuit current (ISC)	9.59 A	9.59 A		9.59 A	
Fuse Size	15 A				

22 panel STRING Output			
# of Strings	1	Factored	1.25
Max Voltage	791.44 V	791.44	791.44 V
Max Current	9.03 A	11.29	14.11 A
Open Circuit Voltage	977.7152 V	977.72	977.72 V
Short Circuit Current	9.59 A	11.99	14.98 A

Table A (NEC 690.7)			
Celsius	Fahrenheit	Factor	
14 to 10	58 to 50	1.06	
9 to 5	49 to 41	1.08	
4 to 0	40 to 32	1.1	
(-1 to -5)	31 to 23	1.12	
(-6 to -10)	22 to 14	1.14	

INV #11-13 CALCULATIONS			
MPPT#	# OF STRINGS	# OF PANELS	KW
1	3	66	19.14
2	3	66	19.14
TOTAL	6	132	38.28

INV #14,16 CALCULATIONS			
MPPT#	# OF STRINGS	# OF PANELS	KW
1	2	44	12.76
2	2	44	12.76
TOTAL	4	88	25.52



Array Configuration:
3 SOLECTRIA PVI 23TL INVERTERS, 2 PVI 28TL INVERTERS
15 SOLECTRIA PVI 36TL INVERTERS
123 Strings
2706 Modules Total
22 ET SOLAR ET-M660290WW/WB 290W MODULES per String

Note: For specifications of solar equipment see attached cut sheets.

INTERCONNECTION STANDARDS COMPLIANCE

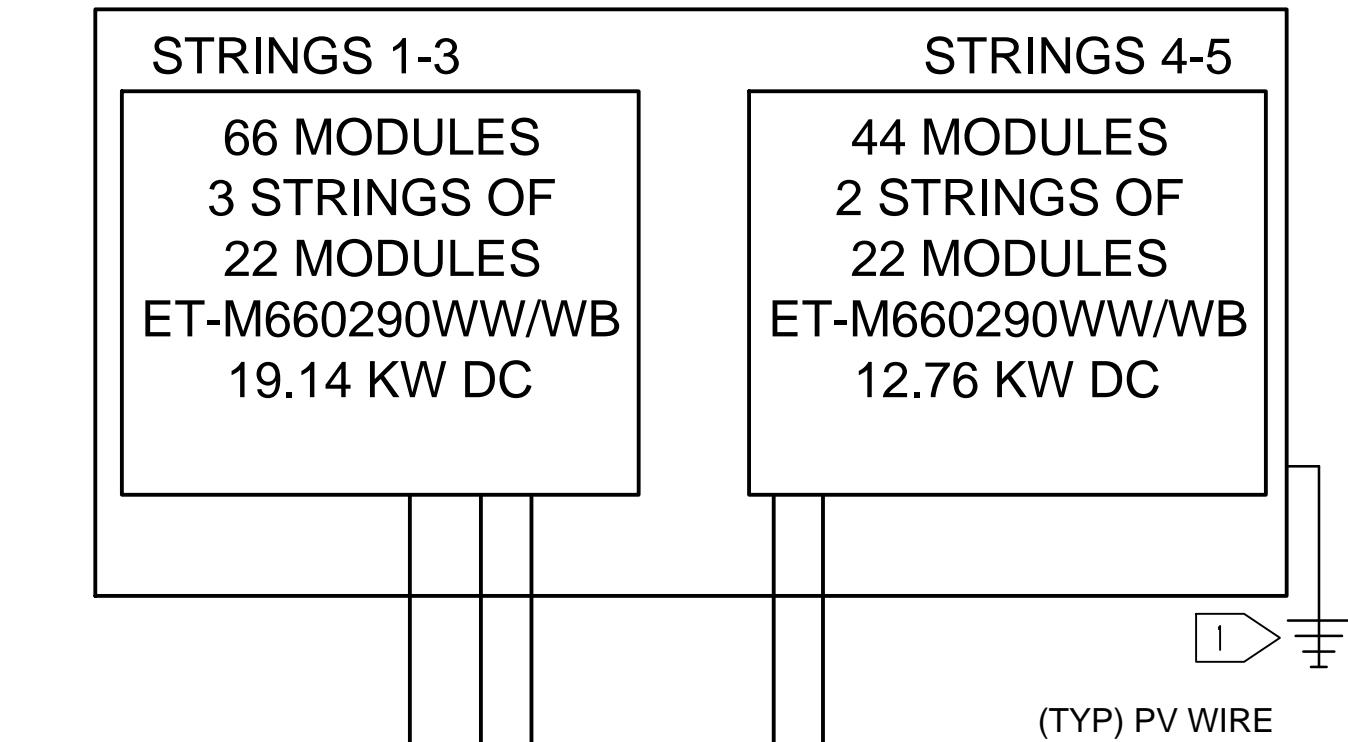
The Inverters listed have been tested and listed by Underwriters Laboratories to be in compliance with UL1741 Statistic Inverters And Charge Controllers For Use In Photovoltaic Power Systems, as well as IEEE-929-2000 Recommended Practice For Utility Interface Of Photovoltaic (PV) Systems.

IEEE-929-2000 provides guidance regarding equipment and function necessary to ensure compatible operation of photovoltaic systems which are connected in parallel with the electric utility. UL 1741 is the standard applied by Underwriters Laboratory to the Inverter to verify it meets the recommendations of IEEE-929-2000.

AC Disconnect is accessible, and lockable.

Single line diagrammatic only actual layout determined by existing conditions.
All hazardous transmission lines to be labeled:
"CAUTION-Electrical Hazard"

INVERTER 15,17



(2) #10, (1) #10 G,
PV WIRE, EA.
STRING (TYP)
App. 450' MAX.
DC VOC
977.72V
ISC 9.59A

(TYP) PV WIRE
NEC 338.10(4)(B)
NEC 690.31

DC VOC
977.72V
ISC 9.59A

J-BOX
(10) #10, (1) #10
G, PV WIRE IN
1-1/4" C.

15A Fuse
DCM15
Cooper-Busman
Limitron or equal
Typ.

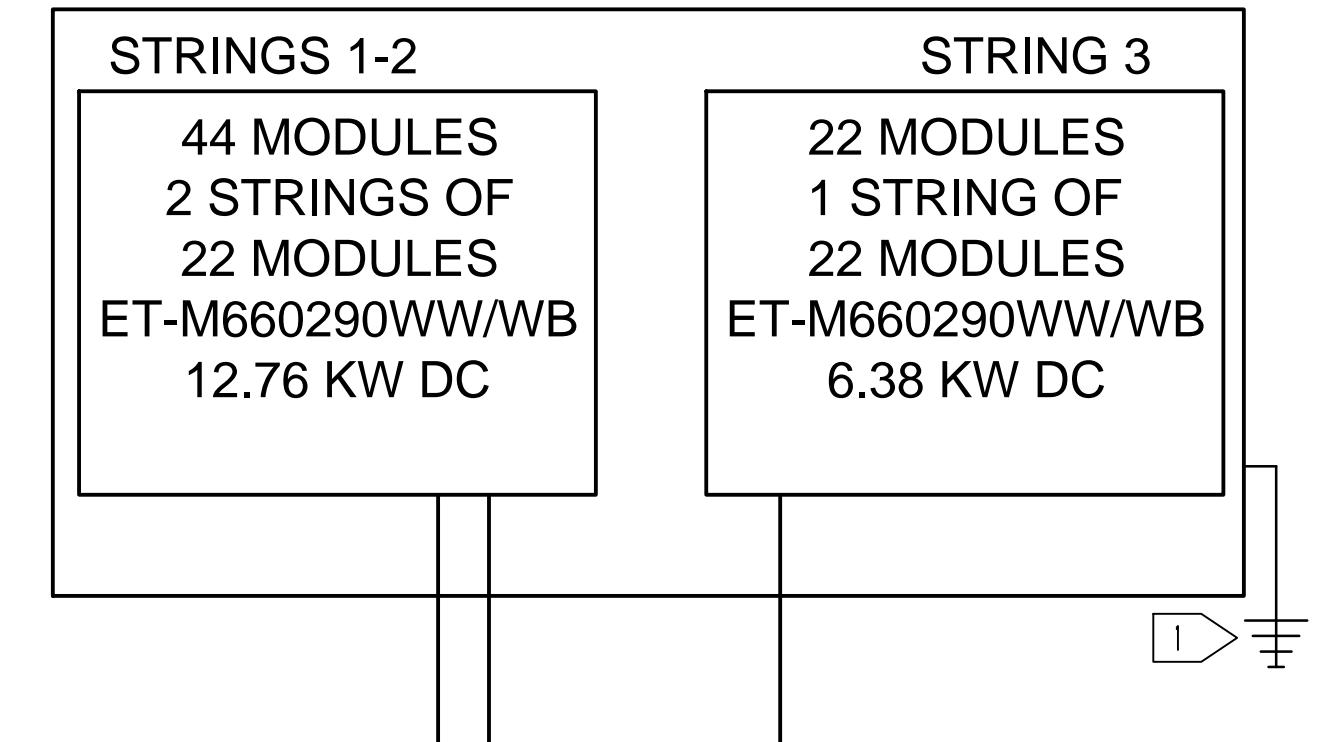
INVERTER W/
INTERNAL AC
AND DC
DISCONNECT,
AND FUSED SUB
COMBINER

PVI 28TL
28 KW
INV15,17

SEE PV2.1B
FOR
CONTINUATION

1" Conduit
Data Wire
1#6 CU
GND

INVERTER 20



DC VOC
977.72V
ISC 9.59A

DC VOC
977.72V
ISC 9.59A

J-BOX
(6) #10, (1) #10 G,
PV WIRE IN 1" C.

15A Fuse
DCM15
Cooper-Busman
Limitron or equal
Typ.

INVERTER W/
INTERNAL AC
AND DC
DISCONNECT,
AND FUSED SUB
COMBINER

PVI 23TL
23 KW
INV20

SEE PV2.1C FOR CONTINUATION

1" Conduit
Data Wire
1#6 CU
GND

AC Disconnect is accessible, and lockable.

NUMBERED NOTES

1 PROVIDE #6 CU GROUNDING ELECTRODE CONDUCTOR TO BUILDING GROUND, PER ARTICLE 250, CEC.

**2706 ET SOLAR
ET-M660290WW/WB
290W Modules
784.74 kW DC Power**

INV #15,17 CALCULATIONS			
MPPT#	# OF STRINGS	# OF PANELS	KW
1	3	66	19.14
2	2	44	12.76
TOTAL	5	110	31.90

INV #20 CALCULATIONS			
MPPT#	# OF STRINGS	# OF PANELS	KW
1	2	44	12.76
2	1	22	6.38
TOTAL	3	66	19.14

SYSTEM 1 CALCULATIONS			
INV#	# OF STRINGS	# OF PANELS	KW
1	7	154	44.66
2	7	154	44.66
3	7	154	44.66
4	7	154	44.66
5	7	154	44.66
6	7	154	44.66
7	7	154	44.66
8	7	154	44.66
9	7	154	44.66
10	7	154	44.66
11	6	132	38.28
12	6	132	38.28
13	6	132	38.28
14	4	88	25.52
15	5	110	31.90
16	4	88	25.52
17	5	110	31.90
18	7	154	44.66
19	7	154	44.66
20	3	66	19.14
TOTAL	123	2706	784.74

- ④ WARNING! ELECTRIC SHOCK HAZARD. THE DIRECT CURRENT CIRCUIT CONDUCTORS OF THIS PV SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED WITH RESPECT TO GROUND DUE TO LEAKAGE PATHS AND OR GROUND FAULTS.
- ⑥ CAUTION: SOLAR CIRCUIT
- ⑧ PHOTOVOLTAIC ARRAY AC DISCONNECT OPERATING CURRENT: 33.68 A OPERATING VOLTAGE: 480 V
- ⑩ PHOTOVOLTAIC ARRAY AC DISCONNECT OPERATING CURRENT: 33.68 A OPERATING VOLTAGE: 480 V
- ⑪ PHOTOVOLTAIC ARRAY DC DISCONNECT OPERATING CURRENT: 45.15 A OPERATING VOLTAGE: 977.72 V MAX. SYSTEM VOLTAGE: 977.72 V SHORT-CIRCUIT CURRENT: 47.98A
- ⑫ PHOTOVOLTAIC ARRAY DC DISCONNECT OPERATING CURRENT: 45.15 A OPERATING VOLTAGE: 977.72 V MAX. SYSTEM VOLTAGE: 977.72 V SHORT-CIRCUIT CURRENT: 28.77A

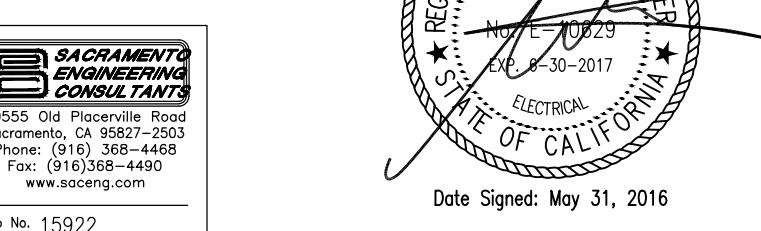
PASSCO DIVERSIFIED II HM LLC
- HANFORD MALL - ARRAY 1
1675 W. Lacey Blvd, Hanford, CA 93230
APN: 011-060-038

SINGLE-LINE
DIAGRAM

PV2.1B

DATE: NOV 2015

JOB NO.: 15922

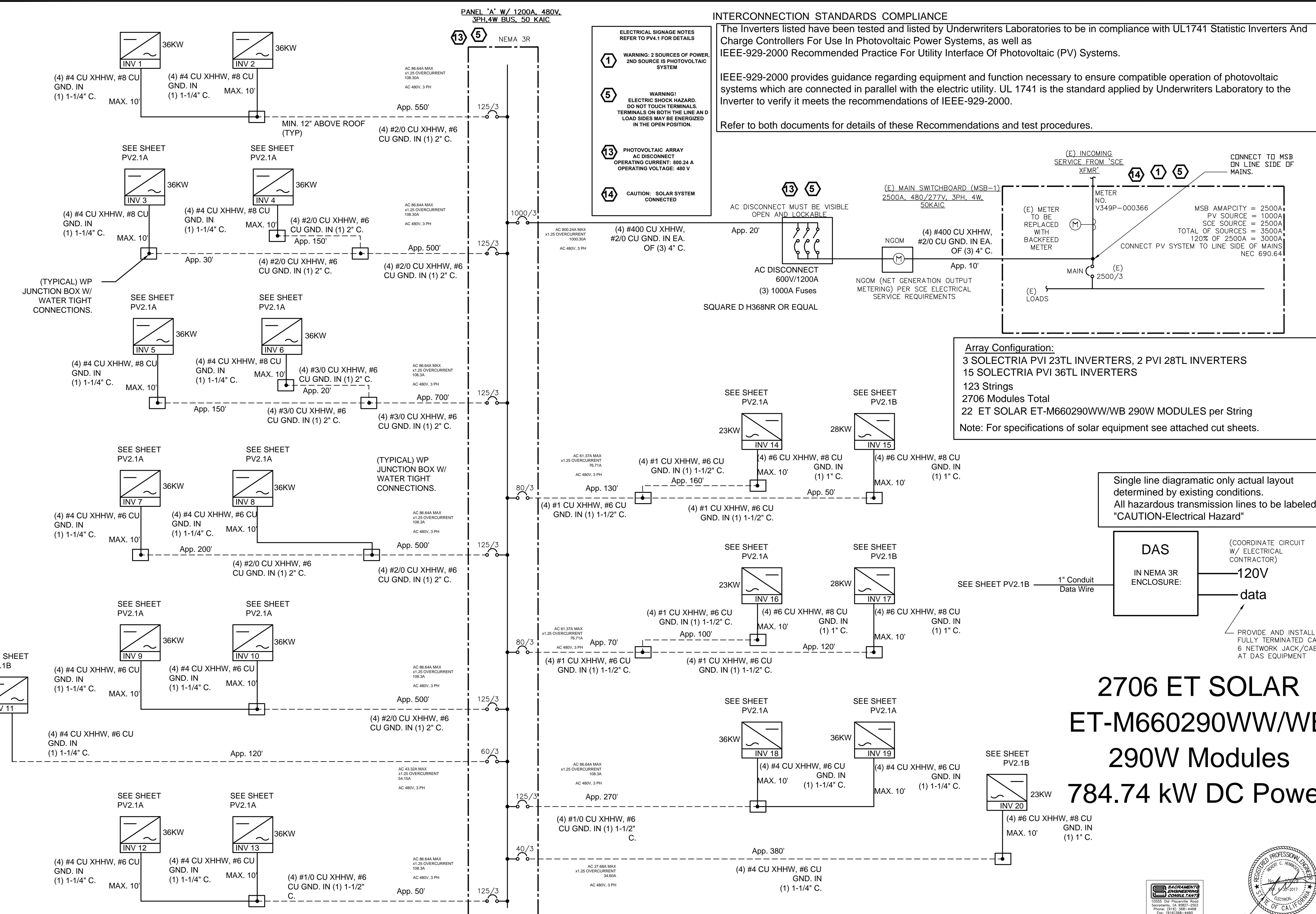


REGISTERED PROFESSIONAL ENGINEER
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GEOSCIENTIST
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Job No. 15922

Date Signed: May 31, 2016

BY

BPI
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REV. NO. REV. DATE



SACRAMENTO
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LAND SURVEYING
AND GEOLOGICAL
BOARDS
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www.sbec.org
Job No. 15922

**2706 ET SOLAR
ET-M660290WW/WB
290W Modules
784.74 kW DC Power**

CABLE SIZING CALCULATIONS									ALUMINUM OPTION		
ARRAY	RUNS	CU WIRE	CU CABLE AMPACITY	LOAD (AMPS)	FACTOR	REQUIRED CABLE AMPACITY	MAX. PERMISSIBLE OCP	OCP PROVIDED	RUNS	AL WIRE	AL CABLE AMPACITY
TYP STR 22 MOD	1	#10	35.00	9.59	1.5625	14.98	15.00	15.00	1	#8	40.00
INV 1-13, 18-19 (36 KW)	1	#4	85.00	43.32	1.25	54.15	60.00	60.00	1	#2	90.00
INV 14,16,20 (23 KW)	1	#6	65.00	27.68	1.25	34.60	40.00	40.00	1	#4	65.00
INV 15,17 (28 KW)	1	#6	65.00	33.69	1.25	42.12	50.00	50.00	1	#4	65.00
INV 1,2	1	#2/0	175.00	86.64	1.25	108.30	125.00	125.00	1	#4/0	180.00
INV 3	1	#2/0	175.00	43.32	1.25	54.15	60.00	60.00	1	#4/0	180.00
INV 4	1	#2/0	175.00	43.32	1.25	54.15	60.00	60.00	1	#4/0	180.00
INV 3,4	1	#2/0	175.00	86.64	1.25	108.30	125.00	125.00	1	#4/0	180.00
INV 5,6	1	#3/0	200.00	86.64	1.25	108.30	125.00	125.00	1	#250	205.00
INV 7	1	#2/0	200.00	43.32	1.25	54.15	60.00	60.00	1	#4/0	180.00
INV 7,8	1	#2/0	200.00	86.64	1.25	108.30	125.00	125.00	1	#4/0	180.00
INV 9,10	1	#2/0	200.00	86.64	1.25	108.30	125.00	125.00	1	#4/0	180.00
INV 11	1	#4	85.00	43.32	1.25	54.15	60.00	60.00	1	#2	90.00
INV 12,13	1	#1/0	150.00	86.64	1.25	108.30	125.00	125.00	1	#3/0	155.00
INV 14	1	#1	130.00	27.68	1.25	34.60	40.00	40.00	1	#2/0	135.00
INV 15	1	#1	130.00	33.69	1.25	42.12	50.00	50.00	1	#2/0	135.00
INV 14,15	1	#1	130.00	61.37	1.25	76.71	80.00	80.00	1	#2/0	135.00
INV 16	1	#1	130.00	27.68	1.25	34.60	40.00	40.00	1	#2/0	135.00
INV 17	1	#1	130.00	33.69	1.25	42.12	50.00	50.00	1	#2/0	135.00
INV 16,17	1	#1	130.00	61.37	1.25	76.71	80.00	80.00	1	#2/0	135.00
INV 18,19	1	#1/0	150.00	86.64	1.25	108.30	125.00	125.00	1	#3/0	155.00
INV 20	1	#4	85.00	27.68	1.25	34.60	40.00	40.00	1	#2	90.00
PANEL 'A'	3	#400	1005	800.24	1.25	1000.30	1000.00	1000	3	#600	1020.00
DISC	3	#400	1005	800.24	1.25	1000.30	1000.00	1000	3	#600	1020.00

VOLTAGE DROP CALCULATOR																
JOB NAME: JOB #:		HANFORD MALL METER 1 15922			ENTER	FOR	NOTES: 1 AL IN AIR 2 CU IN PVC 3 CU IN EMT 4 AL IN PVC 5 CU IN AIR 6 AL IN EMT P.F. = POWER FACTOR % V.D. = VOLTAGE DROP % CB = COMBINER BOX									
ARRAY	CONSTANT	DISTANCE	RUNS	WIRE	I	R	VOLTS	PHASE	VD	% V.D.	CONSTANT	RUNS	WIRE	R	VD	% V.D.
TYP STR 22 MOD	5	450	1	#10	9.03	1.21	791.44	1	9.83	1.24	1	1	#8	1.26	10.24	1.29
INV 1-13, 18-19 (36 KW)	3	10	1	#4	43.32	0.31	480	3	0.23	0.05	6	1	#2	0.32	0.24	0.05
INV 14,16,20 (23 KW)	3	10	1	#6	27.68	0.49	480	3	0.23	0.05	6	1	#4	0.51	0.24	0.05
INV 15,17 (28 KW)	3	10	1	#6	33.69	0.49	480	3	0.29	0.06	6	1	#4	0.51	0.30	0.06
INV 1,2	3	550	1	#2/0	86.64	0.1	480	3	8.24	1.72	6	1	#4/0	0.1	8.24	1.72
INV 3	3	30	1	#2/0	43.32	0.1	480	3	0.22	0.05	6	1	#4/0	0.1	0.22	0.05
INV 4	3	150	1	#2/0	43.32	0.1	480	3	1.12	0.23	6	1	#4/0	0.1	1.12	0.23
INV 3,4	3	500	1	#2/0	86.64	0.1	480	3	7.49	1.56	6	1	#4/0	0.1	7.49	1.56
INV 5	3	150	1	#3/0	43.32	0.079	480	3	0.89	0.19	6	1	#250	0.086	0.97	0.20
INV 6	3	20	1	#3/0	43.32	0.079	480	3	0.12	0.02	6	1	#250	0.086	0.13	0.03
INV 5,6	3	700	1	#3/0	86.64	0.079	480	3	8.29	1.73	6	1	#250	0.086	9.02	1.88
INV 7	3	200	1	#2/0	43.32	0.1	480	3	1.50	0.31	6	1	#4/0	0.1	1.50	0.31
INV 7,8	3	500	1	#2/0	86.64	0.1	480	3	7.49	1.56	6	1	#4/0	0.1	7.49	1.56
INV 9,10	3	500	1	#2/0	86.64	0.1	480	3	7.49	1.56	6	1	#4/0	0.1	7.49	1.56
INV 11	3	120	1	#4	43.32	0.31	480	3	2.79	0.58	6	1	#2	0.32	2.88	0.60
INV 12,13	3	50	1	#1/0	86.64	0.12	480	3	0.90	0.19	6	1	#3/0	0.13	0.97	0.20
INV 14	3	160	1	#1	27.68	0.16	480	3	1.23	0.26	6	1	#2/0	0.16	1.23	0.26
INV 15	3	50	1	#1	33.69	0.16	480	3	0.47	0.10	6	1	#2/0	0.16	0.47	0.10
INV 14,15	3	130	1	#1	61.37	0.16	480	3	2.21	0.46	6	1	#2/0	0.16	2.21	0.46
INV 16	3	100	1	#1	27.68	0.16	480	3	0.77	0.16	6	1	#2/0	0.16	0.77	0.16
INV 17	3	120	1	#1	33.69	0.16	480	3	1.12	0.23	6	1	#2/0	0.16	1.12	0.23
INV 16,17	3	70	1	#1	61.37	0.16	480	3	1.19	0.25	6	1	#2/0	0.16	1.19	0.25
INV 18,19	3	270	1	#1/0	86.64	0.12	480	3	4.86	1.01	6	1	#3/0	0.13	5.26	1.10
INV 20	3	380	1	#4	27.68	0.31	480	3	5.64	1.18	6	1	#2	0.32	5.82	1.21
PANEL 'A'	3	20	3	#400	800.24	0.035	480	3	0.32	0.07	6	3	#600	0.038	0.35	0.07
DISC	3	10	3	#400	800.24	0.035	480	3	0.16	0.03	6	3	#600	0.038	0.18	0.04
MAX VOLTAGE DROP IN SINGLE RUN (%)										1.73						
TOTAL VOLTAGE DROP (A/C + D/C) %										4.30						



PASSCO DIVERSIFIED II HM LLC
- HANFORD MALL - ARRAY 1
1675 W. Lacey Blvd, Hanford, CA 93230

PV DETAILS

PV3.1

Journal of Oral Rehabilitation 2003; 30: 103–109

JOB NO : 15023



All Text to Be:
Color: White Text
Red Background

Material: ABS UV
Font: Arial

Scale 1:1



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APN: 011-060-038

PV SIGNAGE

PV4.1

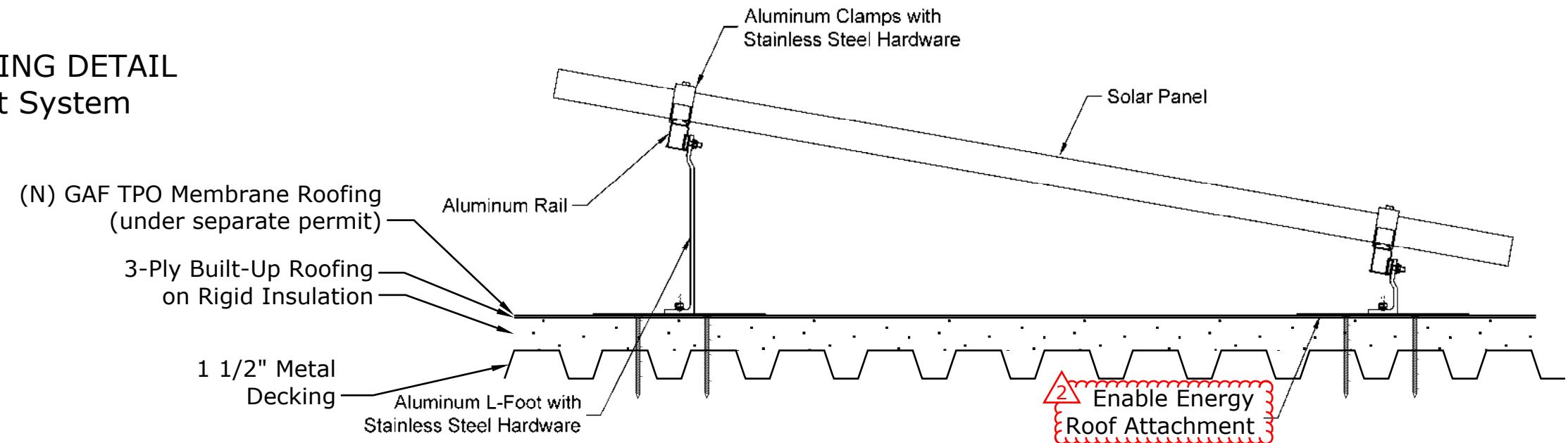
NOV 2017

JOB NO.: 15922

BY

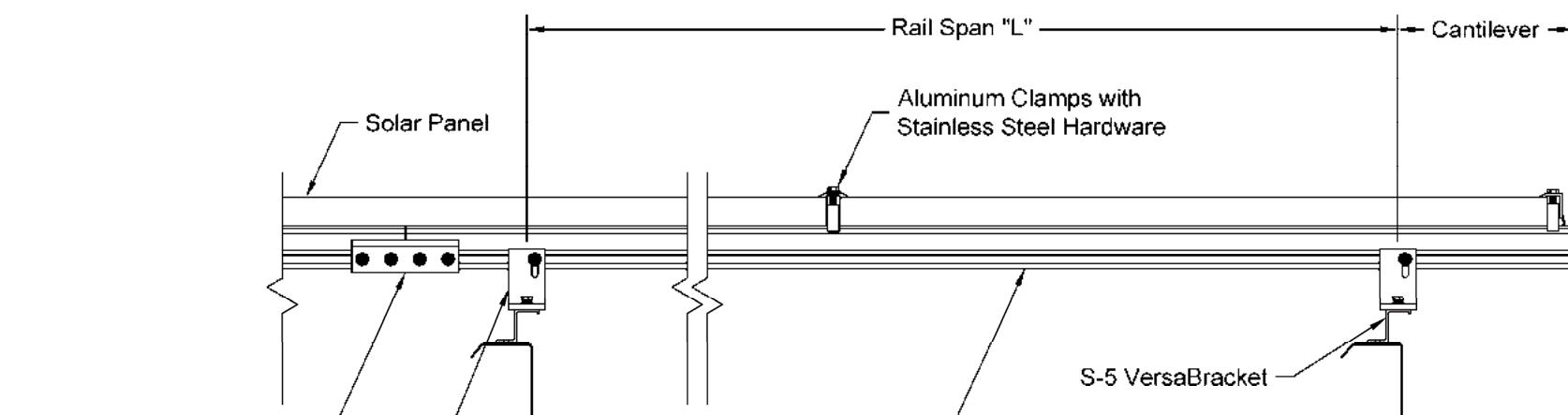
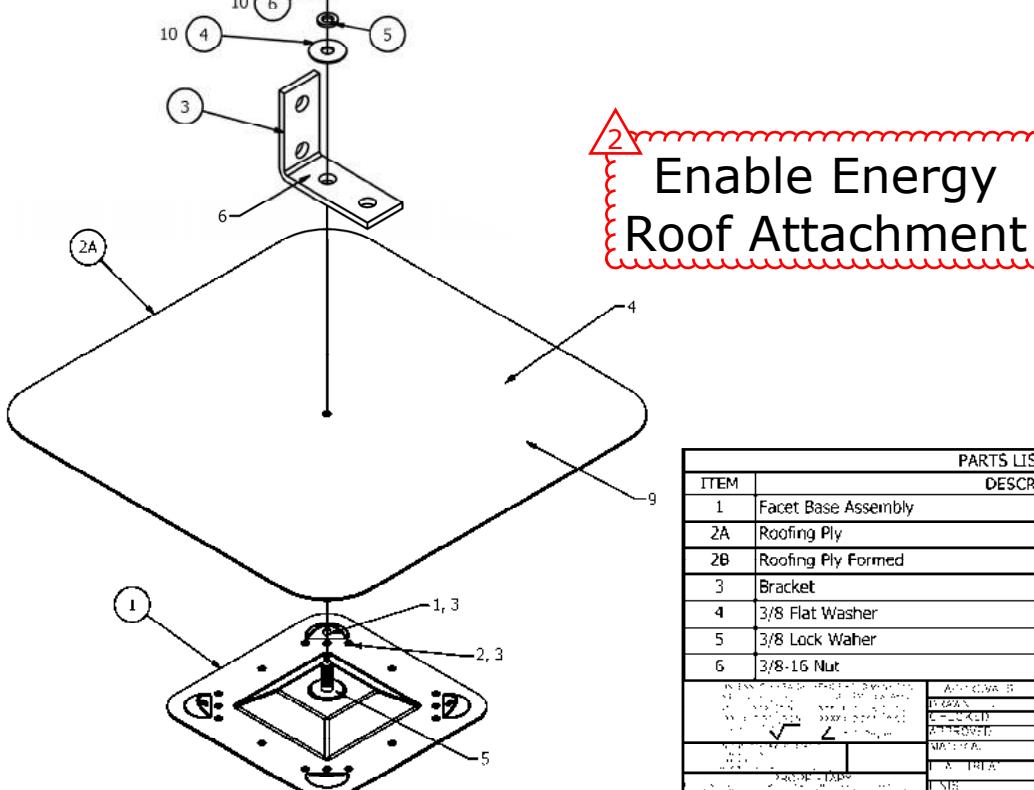
FLAT ROOF RACKING DETAIL

Renusol VS Tilt System



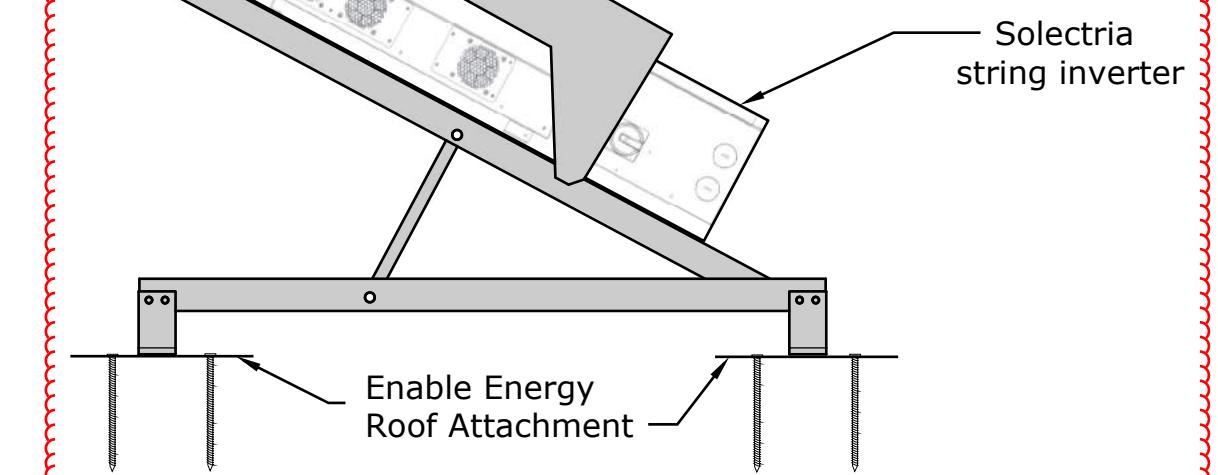
METAL ROOF RACKING DETAIL

Renusol VS Flush Mount



Inverter Mounting Detail

Bentek PowerRack-AL



PASSCO DIVERSIFIED II HM LC - HANFORD MALL
1675 W. LACEY BLVD
HANFORD, CA 93230
APN: 011-060-038

ARRAY 1

S1.0
RACKING DETAILS

DATE: 5-25-16
BY: JB
JOB NO.: C15-710



1	6/20/16	Updated roof anchor, del. "prelim approval"	JB
2	7/7/16	Updated roof attachment & inverter mounting	JB

1	6/20/16	Updated roof anchor, del. "prelim approval"	JB
2	7/7/16	Updated roof attachment & inverter mounting	JB