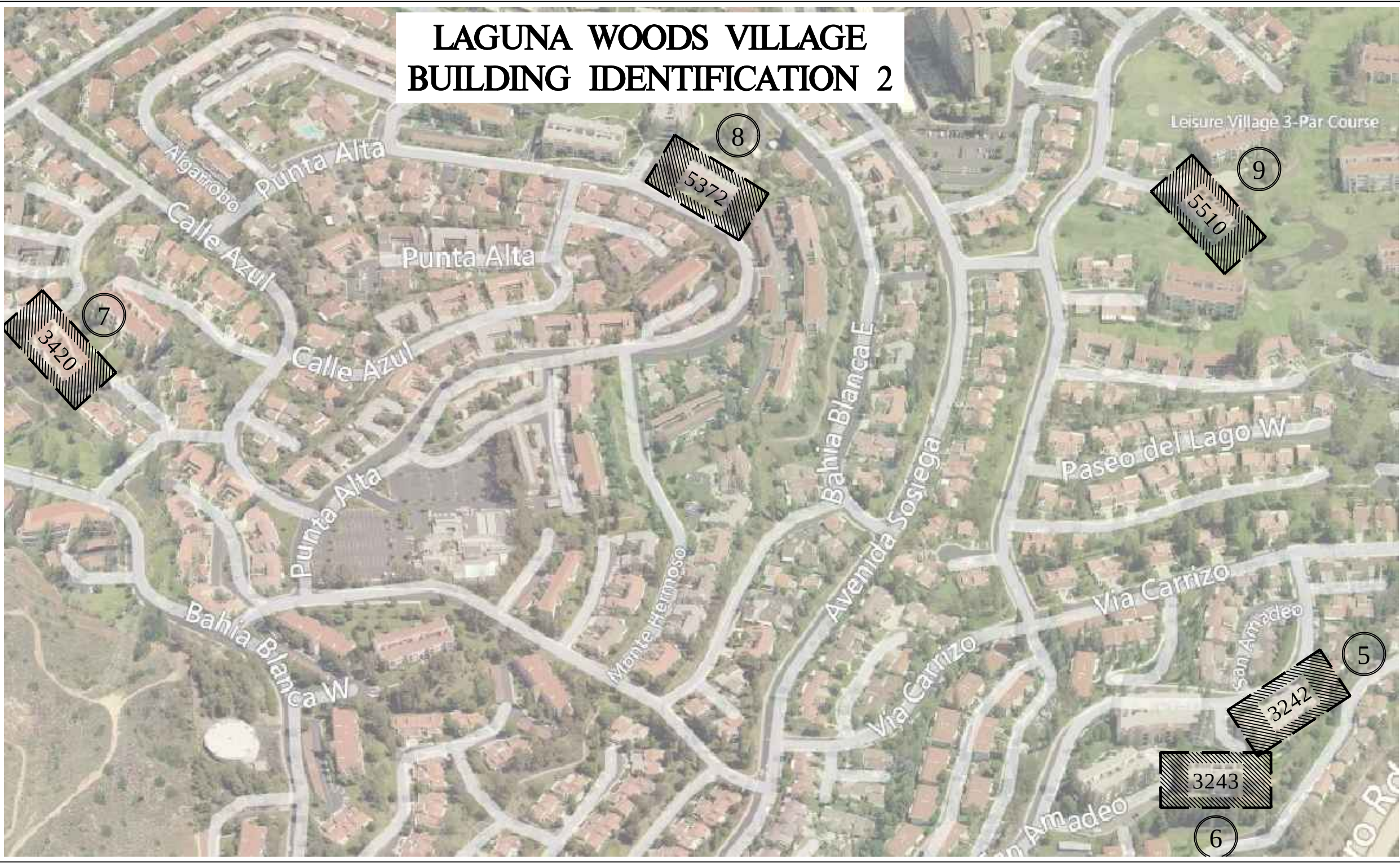
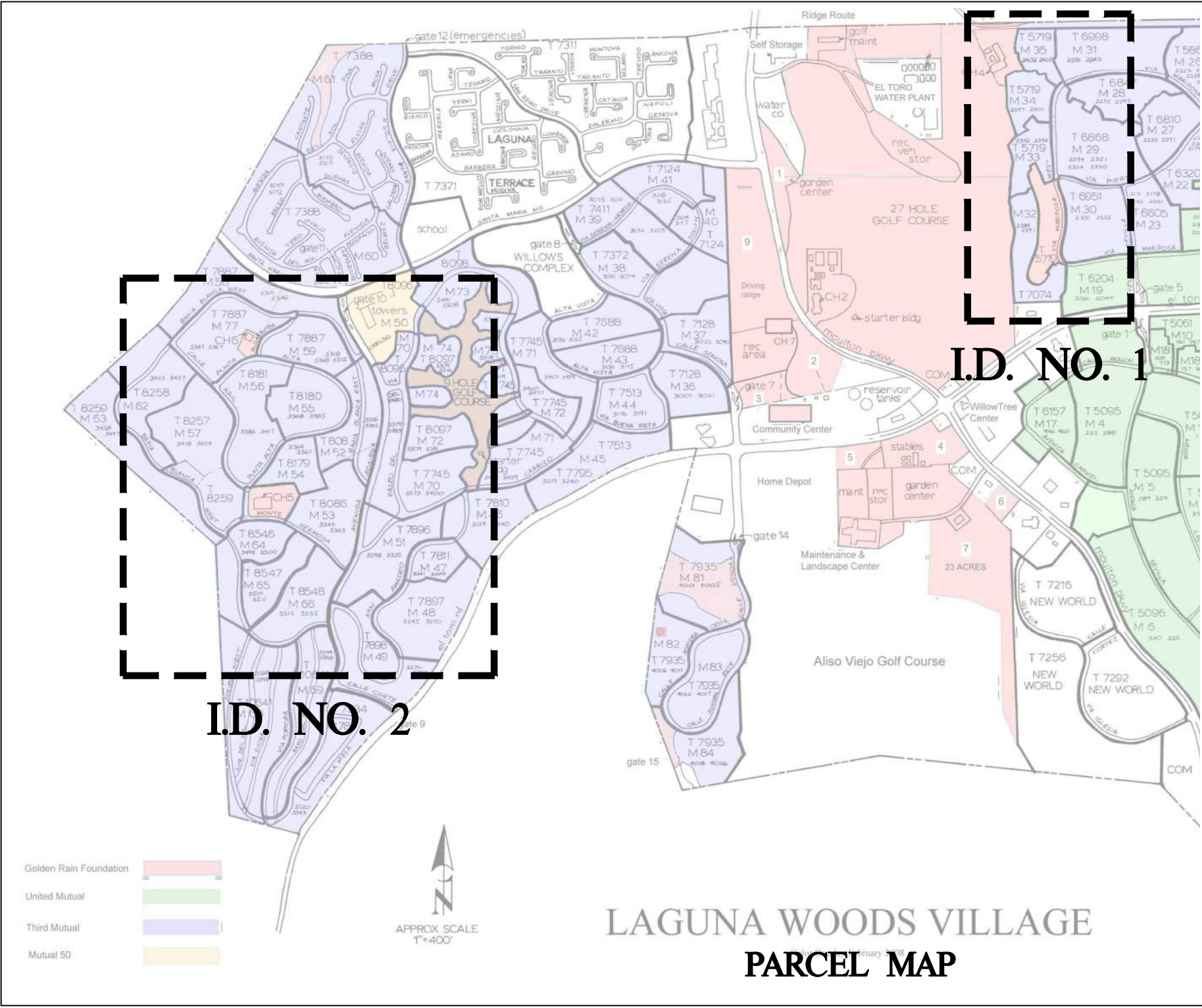




PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

24351 EL TORO RD.
LAGUNA WOODS, CA 92637

PROJECT DEVELOPER



SOLAR OPTIMUM, INC
501 WEST GLENOAKS BLVD.
GLENDALE, CA 91202
800-552-9970
WWW.SOLAROPTIMUM.COM
LICENSE NUMBER 972228 C10

CONTRACTOR



SOLAR OPTIMUM, INC
501 WEST GLENOAKS BLVD.
GLENDALE, CA 91202
800-552-9970
WWW.SOLAROPTIMUM.COM
LICENSE NUMBER 972228 C10

SIGNATURE



STAMP

CITY APPROVAL STAMP

REVISION

MARK	DATE	DESCRIPTION
△	11/14/16	AS BUILT
△	12/14/16	AS BUILT

DRAWN BY:

SCOTT

CHECKED BY:

T.T.T.

SCALE:

AS SHOWN

DATE:

12/21/16

SHEET TITLE

TITLE PAGE

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T1

841 KWDC PV SYSTEM INSTALLATION AT THIRD MUTUAL LAGAUNA WOODS VILLAGE 23451 EL TORO RD. LAGUNA WOODS, CA 92367

SCOPE OF WORK

INSTALLATION OF ROOF MOUNTED PHOTOVOLTAIC SYSTEM, TOTAL OF (12) BUILDINGS SYSTEM'S CONSIST OF:

BUILDING 1: 2393 VIA MARIPOSA WEST, SYSTEM DETAILS: 78.480KWDC (240) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)

(2) SMA TRI-POWER 24000TL-US, 24KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 29A

(1) SMA TRI-POWER 12000TL-US, 12KW 3PHASE INVERTER 3P/4W, 480/277Y. FLA 14.4A

(1) TRANSFORMER 75KVA 22KAIC PRIMARY 3PH 4W 480V/277Y SECONDARY 3PH 3W 480V DELTA

(1) 100A FUSED AC DISCONNECT AND 100A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC

(1) 200A SUB PANEL WITH 100A MAIN 480V 3PH 3W NEMA3R 22KAIC

(1) 100A FUSED AC DISCONNECT WITH 100A FUSES 480V 3PH 3W NEMA3R 22KAIC

BUILDING 2: 2394 VIA MARIPOSA WEST, SYSTEM DETAILS: 86.328KWDC (264) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)

(2) SMA TRI-POWER 24000TL-US, 24KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 29A

(1) SMA TRI-POWER 20000TL-US, 12KW 3PHASE INVERTER 3P/4W, 480/277Y. FLA 24A

(1) 200A FUSED AC DISCONNECT AND 110A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC

(1) 400A SUB-PANEL WITH 200A MAIN 480V 3PH 3W NEMA3R 22KAIC

(1) 200A MSP METER MAIN ONLY WITH 200A MCB 3PH 4W 480V NEMA3R 22K AIC

BUILDING 3: 2397 VIA MARIPOSA WEST, SYSTEM DETAILS: 75.864KWDC (232) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)

(2) SMA TRI-POWER 24000TL-US, 24KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 29A

(1) SMA TRI-POWER 12000TL-US, 12KW 3PHASE INVERTER 3P/4W, 480/277Y. FLA 14.4A

(1) TRANSFORMER 75KVA 22KAIC PRIMARY 3PH 4W 480V/277Y SECONDARY 3PH 3W 480V DELTA

(1) 100A FUSED AC DISCONNECT AND 100A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC

(1) 200A SUB PANEL WITH 100A MAIN 480V 3PH 3W NEMA3R 22KAIC

(1) 100A FUSED AC DISCONNECT WITH 100A FUSES 480V 3PH 3W NEMA3R 22KAIC

BUILDING 4: 2399 VIA MARIPOSA WEST, SYSTEM DETAILS: 66.708KWDC (204) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)

(1) SMA TRI-POWER 24000TL-US, 24KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 29A

(1) SMA TRI-POWER 15000TL-US, 15KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 18A

(1) SMA TRI-POWER 12000TL-US, 12KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 14.4A

(1) TRANSFORMER 75KVA 22KAIC PRIMARY 3PH 4W 480V/277Y SECONDARY 3PH 3W 480V DELTA

(1) 100A FUSED AC DISCONNECT AND 80A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC

(1) 200A SUB PANEL WITH 100A MAIN 480V 3PH 3W NEMA3R 22KAIC

(1) 100A FUSED AC DISCONNECT WITH 100A FUSES 480V 3PH 3W NEMA3R 22KAIC

BUILDING 5: 3242 SAN AMADEO, SYSTEM DETAILS: 69.324KWDC (212) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)

(1) SMA TRI-POWER 24000TL-US, 24KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 29A

(1) SMA TRI-POWER 20000TL-US, 20KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 24A

(1) SMA TRI-POWER 12000TL-US, 12KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 14.4A

(1) TRANSFORMER 75KVA 22KAIC PRIMARY 3PH 4W 480V/277Y SECONDARY 3PH 3W 480V DELTA

(1) 100A FUSED AC DISCONNECT AND 90A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC

(1) 200A SUB PANEL WITH 100A MAIN 480V 3PH 3W NEMA3R 22KAIC

(1) 100A FUSED AC DISCONNECT WITH 100A FUSES 480V 3PH 3W NEMA3R 22KAIC

BUILDING 6: 3243 SAN AMADEO, SYSTEM DETAILS: 60.495KWDC (185) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)

(1) SMA TRI-POWER 20000TL-US, 20KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 24A

(1) SMA TRI-POWER 15000TL-US, 15KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 18A

(1) SMA TRI-POWER 12000TL-US, 12KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 14.4A

(1) TRANSFORMER 75KVA 22KAIC PRIMARY 3PH 4W 480V/277Y SECONDARY 3PH 3W 480V DELTA

(1) 100A FUSED AC DISCONNECT AND 80A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC

(1) 200A SUB PANEL WITH 100A MAIN 480V 3PH 3W NEMA3R 22KAIC

(1) 100A FUSED AC DISCONNECT WITH 100A FUSES 480V 3PH 3W NEMA3R 22KAIC

BUILDING 7: 3420 CALLE AZUL, SYSTEM DETAILS: 48.396KWDC (148) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)

(1) SMA TRI-POWER 24000TL-US, 24KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 29A

(1) SMA TRI-POWER 15000TL-US, 15KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 18A

(1) TRANSFORMER 50KVA 22KAIC PRIMARY 3PH 4W 480V/277Y SECONDARY 3PH 3W 480V DELTA

(1) 100A FUSED AC DISCONNECT AND 60A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC

(1) 200A SUB PANEL WITH 100A MAIN 480V 3PH 3W NEMA3R 22KAIC

(1) 100A FUSED AC DISCONNECT WITH 100A FUSES 480V 3PH 3W NEMA3R 22KAIC

BUILDING 8: 5372 PUNTA ALTA, SYSTEM DETAILS: 69.324KWDC (212) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)

(1) SMA TRI-POWER 24000TL-US, 24KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 29A

(1) SMA TRI-POWER 20000TL-US, 20KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 24A

(1) SMA TRI-POWER 12000TL-US, 12KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 14.4A

(1) TRANSFORMER 75KVA 22KAIC PRIMARY 3PH 4W 480V/277Y SECONDARY 3PH 3W 480V DELTA

(1) 100A FUSED AC DISCONNECT AND 90A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC

(1) 200A SUB PANEL WITH 100A MAIN 480V 3PH 3W NEMA3R 22KAIC

(1) 100A FUSED AC DISCONNECT WITH 100A FUSES 480V 3PH 3W NEMA3R 22KAIC

BUILDING 9: 5510 PASEO DEL LAGO WEST, SYSTEM DETAILS: 47.088KWDC (144) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)

(1) SMA TRI-POWER 24000TL-US, 24KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 29A

(1) SMA TRI-POWER 12000TL-US, 20KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 14.4A

(1) TRANSFORMER 50KVA 22KAIC PRIMARY 3PH 4W 480V/277Y SECONDARY 3PH 3W 480V DELTA

(1) 100A FUSED AC DISCONNECT AND 80A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC

(1) 200A SUB PANEL WITH 100A MAIN 480V 3PH 3W NEMA3R 22KAIC

(1) 100A FUSED AC DISCONNECT WITH 100A FUSES 480V 3PH 3W NEMA3R 22KAIC

BUILDING 10: 2353 VIA MARIPOSA ST, SYSTEM DETAILS: 78.480KWDC (240) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)

(2) SMA TRI-POWER 24000TL-US, 24KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 29A

(1) SMA TRI-POWER 12000TL-US, 12KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 14.4A

(1) TRANSFORMER 75KVA 22KAIC PRIMARY 3PH 4W 480V/277Y SECONDARY 3PH 3W 480V DELTA

(1) 100A FUSED AC DISCONNECT AND 100A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC

(1) 200A SUB PANEL WITH 100A MAIN 480V 3PH 3W NEMA3R 22KAIC

(1) 100A FUSED AC DISCONNECT WITH 100A FUSES 480V 3PH 3W NEMA3R 22KAIC

BUILDING 11: 2381 VIA MARIPOSA ST, SYSTEM DETAILS: 81.750KWDC (250) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)

(2) SMA TRI-POWER 24000TL-US, 24KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 29A

(1) SMA TRI-POWER 20000TL-US, 15KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 24A

(1) 200A FUSED AC DISCONNECT AND 110A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC

(1) 400A SUB-PANEL WITH 200A MAIN 480V 3PH 3W NEMA3R 22KAIC

(1) 200A MSP METER MAIN ONLY WITH 200A MCB 3PH 4W 480V NEMA3R 22K AIC

BUILDING 12: 2400 VIA MARIPOSA WEST, SYSTEM DETAILS: 79.788KWDC (244) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)

(2) SMA TRI-POWER 24000TL-US, 24KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 29A

(1) SMA TRI-POWER 15000TL-US, 15KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 18A

(1) TRANSFORMER 112KVA 22KAIC PRIMARY 3PH 4W 480V/277Y SECONDARY 3PH 3W 480V DELTA

(1) 100A FUSED AC DISCONNECT AND 100A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC

(1) 200A SUB PANEL WITH 100A MAIN 480V 3PH 3W NEMA3R 22KAIC

(1) 100A FUSED AC DISCONNECT WITH 100A FUSES 480V 3PH 3W NEMA3R 22KAIC

GENERAL PROPERTY DETAILS

ROOF INFORMATION:

1. ROOF MATERIAL: TPO

2. ROOF ACCESS: ROOF ACCESS LADDER

3. ROOF TRUSS: 2" X 4" @ 24" O.C.

4. ROOF PITCH: FLAT

5. ROOF ATTIC: N/A

6. TRENCHING REQUIRED: YES, WHERE UPGRADE IS REQUIRED COORDINATE WITH UTILITY.

7. SINGLE STORY: NO: 4 STORY BUILDING.
1ST LEVEL PARKING AND 3 FLOOR HABITABLE AREA.

8. PANEL UPGRADE: YES.
(E) 100A MAIN SERVICE PANEL @ 480V
(N) 200A MAIN SERVICE PANEL @ 480V SEE SINGLE LINE FOR DETAIL.

9. SERVICE UPGRADE: YES
(E) 100A MAIN SERVICE PANEL
(N) 200A MAIN SERVICE PANEL WITH 100A MAIN

DRAWING INDEX

(T) SHEETS: TILE PAGE AND NOTES	(T)
(S) SHEETS: GENERAL SITE PLAN	(S)
(STR) SHEETS: BALLAST AND PENETRATION PLAN	(STR)
(ST) SHEETS: STRING LAYOUTS	(ST)
(ELV) SHEETS: ELEVATIONS	(ELV)
(E) SHEETS: SINGLE LINES	(E)
(L) SHEETS: LABELS	(L)
(F) SHEETS: FIRE CLEARANCE PLAN	(F)
(SP) SHEETS: SPECIFICATIONS	(SP)
(AS) SHEETS: ASSEMBLY SHEETS	(AS)

ADDITIONAL SCOPE OF WORK FOR P.O.C.

EACH BUILDING HAS AN EXISTING SINGLE PHASE 120/240V 3W SERVICE AND A THREE PHASE 480V 3W SERVICE.

THE P.O.C. WILL BE ON THE LOAD SIDE OF A NEW 200A SUB PANEL WITH 100A MAIN ON THE 480V 3W SERVICE. SEE SINGLE LINE

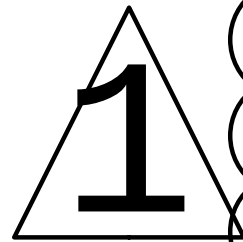
INTERCEPT EXISTING FEEDER INTO NEW 100A FUSED AC DISCONNECT AND ADD NEW 200A SUB PANEL WITH 100A MAIN. SEE SINGLE LINE

FINALLY INSTALL TRANSFORMER BETWEEN PV POINT OF CONNECTION AND MSP TOO ADD NEUTRAL CONDUCTOR FOR VOLTAGE REFERENCE. SEE SINGLE LINE

THIS WILL GIVE EACH SERVICE PANEL A MAXIMUM PV BACK FEED OF 140A.

WHERE IT IS REQUIRED TO UPGRADE THE MSP TO 4W, UPGRADE TO NEW 200A MSP METER MAIN ONLY AND ADD NEW 400A SUB PANEL WITH 200A MAIN.

EACH OUTPUT OF THE INVERTER'S WILL BE COMBINED ON THE ROOF AND (1) CONDUIT WILL BE ROUTED THRU THE GARBAGE/LADUNRY ROOM WALL TO THE MAIN PV AC DISCONNECT LOCATED ADJACENT TO THE MSP.



INSTALLATION OF ROOF MOUNTED PHOTOVOLTAIC SYSTEM, TOTAL OF (12) BUILDINGS
SYSTEM'S CONSIST OF:

BUILDING 1: 2393 VIA MARIPOSA WEST, SYSTEM DETAILS: 78.480KWDC
(240) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)
(2) SMA TRI-POWER 24000TL-US, 24KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 29A
(1) SMA TRI-POWER 12000TL-US, 12KW 3PHASE INVERTER 3P/4W, 480/277Y. FLA 14.4A
(1) TRANSFORMER 75KVA 22KAIC PRIMARY 3PH 4W 480V/277Y SECONDARY 3PH 3W 480V DELTA
(1) 100A FUSED AC DISCONNECT AND 100A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC
(1) 200A SUB PANEL WITH 100A MAIN 480V 3PH 3W NEMA3R 22KAIC
(1) 100A FUSED AC DISCONNECT WITH 100A FUSES 480V 3PH 3W NEMA3R 22KAIC

BUILDING 2: 2394 VIA MARIPOSA WEST, SYSTEM DETAILS: 86.328KWDC
(264) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)
(2) SMA TRI-POWER 24000TL-US, 24KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 29A
(1) SMA TRI-POWER 20000TL-US, 12KW 3PHASE INVERTER 3P/4W, 480/277Y. FLA 24A
(1) 200A FUSED AC DISCONNECT AND 110A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC
(1) 400A SUB-PANEL WITH 200A MAIN 480V 3PH 3W NEMA3R 22KAIC
(1) 200A MSP METER MAIN ONLY WITH 200A MCB 3PH 4W 480V NEMA3R 22K AIC

BUILDING 3: 2397 VIA MARIPOSA WEST, SYSTEM DETAILS: 75.864KWDC
(232) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)
(2) SMA TRI-POWER 24000TL-US, 24KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 29A
(1) SMA TRI-POWER 12000TL-US, 12KW 3PHASE INVERTER 3P/4W, 480/277Y. FLA 14.4A
(1) TRANSFORMER 75KVA 22KAIC PRIMARY 3PH 4W 480V/277Y SECONDARY 3PH 3W 480V DELTA
(1) 100A FUSED AC DISCONNECT AND 100A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC
(1) 200A SUB PANEL WITH 100A MAIN 480V 3PH 3W NEMA3R 22KAIC
(1) 100A FUSED AC DISCONNECT WITH 100A FUSES 480V 3PH 3W NEMA3R 22KAIC

BUILDING 4: 2399 VIA MARIPOSA WEST, SYSTEM DETAILS: 66.708KWDC
(204) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)
(1) SMA TRI-POWER 24000TL-US, 24KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 29A
(1) SMA TRI-POWER 15000TL-US, 15KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 18A
(1) SMA TRI-POWER 12000TL-US, 12KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 14.4A
(1) TRANSFORMER 75KVA 22KAIC PRIMARY 3PH 4W 480V/277Y SECONDARY 3PH 3W 480V DELTA
(1) 100A FUSED AC DISCONNECT AND 80A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC
(1) 200A SUB PANEL WITH 100A MAIN 480V 3PH 3W NEMA3R 22KAIC
(1) 100A FUSED AC DISCONNECT WITH 100A FUSES 480V 3PH 3W NEMA3R 22KAIC

BUILDING 5: 3242 SAN AMADEO, SYSTEM DETAILS: 69.324KWDC
(212) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)
(1) SMA TRI-POWER 24000TL-US, 24KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 29A
(1) SMA TRI-POWER 20000TL-US, 20KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 24A
(1) SMA TRI-POWER 12000TL-US, 12KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 14.4A
(1) TRANSFORMER 75KVA 22KAIC PRIMARY 3PH 4W 480V/277Y SECONDARY 3PH 3W 480V DELTA
(1) 100A FUSED AC DISCONNECT AND 90A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC
(1) 200A SUB PANEL WITH 100A MAIN 480V 3PH 3W NEMA3R 22KAIC
(1) 100A FUSED AC DISCONNECT WITH 100A FUSES 480V 3PH 3W NEMA3R 22KAIC

BUILDING 6: 3243 SAN AMADEO, SYSTEM DETAILS: 60.495KWDC
(185) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)
(1) SMA TRI-POWER 20000TL-US, 20KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 24A
(1) SMA TRI-POWER 15000TL-US, 15KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 18A
(1) SMA TRI-POWER 15000TL-US, 15KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 18A
(1) TRANSFORMER 75KVA 22KAIC PRIMARY 3PH 4W 480V/277Y SECONDARY 3PH 3W 480V DELTA
(1) 100A FUSED AC DISCONNECT AND 80A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC
(1) 200A SUB PANEL WITH 100A MAIN 480V 3PH 3W NEMA3R 22KAIC
(1) 100A FUSED AC DISCONNECT WITH 100A FUSES 480V 3PH 3W NEMA3R 22KAIC

BUILDING 7: 3420 CALLE AZUL, SYSTEM DETAILS: 48.396KWDC
(148) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)
(1) SMA TRI-POWER 24000TL-US, 24KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 29A
(1) SMA TRI-POWER 15000TL-US, 15KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 18A
(1) TRANSFORMER 50KVA 22KAIC PRIMARY 3PH 4W 480V/277Y SECONDARY 3PH 3W 480V DELTA
(1) 100A FUSED AC DISCONNECT AND 60A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC
(1) 200A SUB PANEL WITH 100A MAIN 480V 3PH 3W NEMA3R 22KAIC
(1) 100A FUSED AC DISCONNECT WITH 100A FUSES 480V 3PH 3W NEMA3R 22KAIC

BUILDING 8: 5372 PUNTA ALTA, SYSTEM DETAILS: 69.324KWDC
(212) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)
(1) SMA TRI-POWER 24000TL-US, 24KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 29A
(1) SMA TRI-POWER 20000TL-US, 20KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 24A
(1) SMA TRI-POWER 12000TL-US, 12KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 14.4A
(1) TRANSFORMER 75KVA 22KAIC PRIMARY 3PH 4W 480V/277Y SECONDARY 3PH 3W 480V DELTA
(1) 100A FUSED AC DISCONNECT AND 90A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC
(1) 200A SUB PANEL WITH 100A MAIN 480V 3PH 3W NEMA3R 22KAIC
(1) 100A FUSED AC DISCONNECT WITH 100A FUSES 480V 3PH 3W NEMA3R 22KAIC

BUILDING 9: 5510 PASEO DEL LAGO WEST, SYSTEM DETAILS: 47.088KWDC
(144) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)
(1) SMA TRI-POWER 24000TL-US, 24KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 29A
(1) SMA TRI-POWER 12000TL-US, 20KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 14.4A
(1) TRANSFORMER 50KVA 22KAIC PRIMARY 3PH 4W 480V/277Y SECONDARY 3PH 3W 480V DELTA
(1) 100A FUSED AC DISCONNECT AND 80A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC
(1) 200A SUB PANEL WITH 100A MAIN 480V 3PH 3W NEMA3R 22KAIC
(1) 100A FUSED AC DISCONNECT WITH 100A FUSES 480V 3PH 3W NEMA3R 22KAIC

BUILDING 10: 2353 VIA MARIPOSA ST, SYSTEM DETAILS: 78.480KWDC
(240) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)
(2) SMA TRI-POWER 24000TL-US, 24KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 29A
(1) SMA TRI-POWER 12000TL-US, 12KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 14.4A
(1) TRANSFORMER 75KVA 22KAIC PRIMARY 3PH 4W 480V/277Y SECONDARY 3PH 3W 480V DELTA
(1) 100A FUSED AC DISCONNECT AND 100A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC
(1) 200A SUB PANEL WITH 100A MAIN 480V 3PH 3W NEMA3R 22KAIC
(1) 100A FUSED AC DISCONNECT WITH 100A FUSES 480V 3PH 3W NEMA3R 22KAIC

BUILDING 11: 2381 VIA MARIPOSA ST, SYSTEM DETAILS: 81.750KWDC
(250) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)
(2) SMA TRI-POWER 24000TL-US, 24KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 29A
(1) SMA TRI-POWER 20000TL-US, 15KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 24A
(1) 200A FUSED AC DISCONNECT AND 110A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC
(1) 400A SUB-PANEL WITH 200A MAIN 480V 3PH 3W NEMA3R 22KAIC
(1) 200A MSP METER MAIN ONLY WITH 200A MCB 3PH 4W 480V NEMA3R 22K AIC

BUILDING 12: 2400 VIA MARIPOSA WEST, SYSTEM DETAILS: 79.788KWDC
(244) SUNPOWER 327W PV MODULES (MODEL No. SPR-E20-327W-COM)
(2) SMA TRI-POWER 24000TL-US, 24KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 29A
(1) SMA TRI-POWER 15000TL-US, 15KW 3 PHASE INVERTER 3P/4W, 480/277Y. FLA 18A
(1) TRANSFORMER 112KVA 22KAIC PRIMARY 3PH 4W 480V/277Y SECONDARY 3PH 3W 480V DELTA
(1) 100A FUSED AC DISCONNECT AND 100A FUSE WITH VIEWING WINDOW 480V 3PH 3W NEMA3R 22KAIC
(1) 200A SUB PANEL WITH 100A MAIN 480V 3PH 3W NEMA3R 22KAIC
(1) 100A FUSED AC DISCONNECT WITH 100A FUSES 480V 3PH 3W NEMA3R 22KAIC

PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

24351 EL TORO RD.
LAGUNA WOODS, CA 92637

PROJECT DEVELOPER



SOLAR OPTIMUM, INC
501 WEST GLENOAKS BLVD.
GLENDAL, CA 91202
800-552-9970
WWW.SOLAROPTIMUM.COM
LICENSE NUMBER 972228 C10

CONTRACTOR



SOLAR OPTIMUM, INC
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GLENDAL, CA 91202
800-552-9970
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LICENSE NUMBER 972228 C10

SIGNATURE



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CITY APPROVAL STAMP

REVISION		
MARK	DATE	DESCRIPTION
△	11/14/16	AS BUILT
△	12/14/16	AS BUILT

DRAWN BY: SCOTT
CHECKED BY: T.T.T.
SCALE: AS SHOWN
DATE: 12/21/16

SHEET TITLE

SCOPE OF WORK

SHEET NUMBER

T1.1



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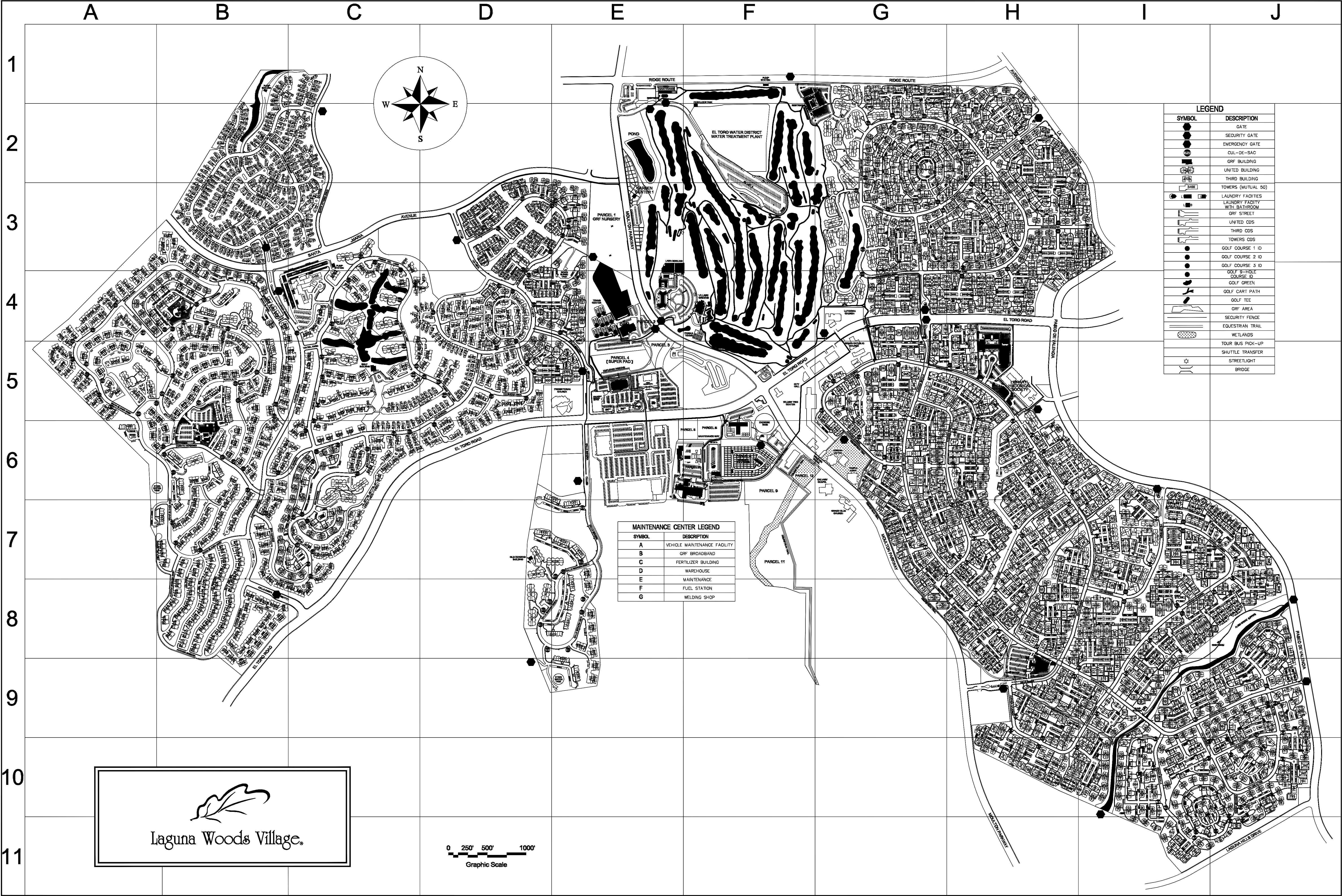
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GENERAL NOTES

1. ALL ELECTRICAL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BE LISTED BY UNDERWRITER'S LABORATORIES (UL) AND BEAR THEIR LABEL, OR LISTED AND CERTIFIED BY A NATIONALLY RECOGNIZED TESTING AUTHORITY WHERE UL DOES NOT HAVE A LISTING. CUSTOM MADE EQUIPMENT SHALL HAVE COMPLETE TEST DATA SUBMITTED BY THE MANUFACTURER ATTESTING TO ITS SAFETY. IN ADDITION, THE MATERIALS, EQUIPMENT, AND INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF THE FOLLOWING:

- AMERICAN SOCIETY OF TESTING MATERIALS (ASTM)
INSULATED POWER CABLE ENGINEERS ASSOCIATION (IPCEA)
NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
AMERICAN STANDARD ASSOCIATION (ASA)
NATIONAL FIRE PROTECTION AGENCY (NFPA)
AMERICAN NATIONAL STANDARD INSTITUTE (ANSI)
CALIFORNIA ELECTRICAL CODE (CEC) – LATEST EDITION
CALIFORNIA CODE OF REGULATIONS TITLE 24 (CCR)
INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE)
ALL LOCAL CODES HAVING JURISDICTION.

WHERE THE CODES HAVE DIFFERENT LEVELS OF REQUIREMENTS, THE MOST STRINGENT RULE SHALL APPLY.

2. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER TRADES AT THE SITE. ANY COSTS TO INSTALL WORK TO ACCOMPLISH SAID COORDINATION WHICH DIFFERS FROM THE WORK AS SHOWN ON THE DRAWINGS SHALL BE INCURRED BY THE CONTRACTOR. ANY DISCREPANCIES, AMBIGUITIES OR CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION.

3. THE CONTRACTOR SHALL PROVIDE AND KEEP UP-TO-DATE A COMPLETE RECORD SET OF DRAWINGS. THESE PRINTS SHALL BE CORRECTED DAILY AND SHOW EVERY CHANGE FROM THE ORIGINAL DRAWINGS. THIS SET OF DRAWINGS SHALL BE KEPT ON THE JOB SITE AND SHALL BE USED ONLY AS A RECORD SET. THIS SHALL NOT BE CONSTRUED AS AUTHORIZATION FOR THE CONTRACTOR TO MAKE CHANGES IN THE LAYOUT WITHOUT DEFINITE INSTRUCTION IN EACH CASE. UPON COMPLETION OF THE WORK, A SET OF REPRODUCIBLE CONTRACT DRAWINGS SHALL BE OBTAINED FROM THE ENGINEER, AND ALL CHANGES AS NOTED ON THE RECORD SET OF DRAWINGS SHALL BE INCORPORATED THEREON WITH BLACK INK IN A NEAT, LEGIBLE, UNDERSTANDABLE AND PROFESSIONAL MANNER. FAILURE TO KEEP RECORD DRAWINGS UP-TO-DATE SHALL CONSTITUTE CAUSE FOR WITHHOLDING OF PROGRESS PAYMENTS.

4. ALL INTERRUPTION OF ELECTRICAL POWER SHALL BE KEPT TO A MINIMUM. HOWEVER, WHEN AN INTERRUPTION IS NECESSARY, THE SHUTDOWN MUST BE COORDINATED WITH THE CLIENT/OWNER AND TE CONTRACTOR PRIOR TO THE OUTAGE. ANY OVERTIME PAY SHALL BE INCLUDED IN THE CONTRACTOR'S PRICE. WORK IN EXISTING SWITCHBOARDS OR PANELBOARDS SHALL BE COORDINATED WITH THE COLLEGE PRIOR TO REMOVING ACCESS PANELS OR DOORS.

5. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE TEMPORARY POWER FACILITIES AND CONNECTIONS FOR ALL FEEDERS OR SYSTEMS BEING DISCONNECTED IN ORDER TO MAINTAIN SYSTEMS IN OPERATION OR WHERE SAID FEEDERS OR SYSTEMS REQUIRE EMERGENCY STANDBY POWER.

6. AFTER ALL REQUIREMENTS OF THE DRAWINGS HAVE BEEN FULLY COMPLETED, REPRESENTATIVES OF THE OWNER AND CONTRACTOR WILL INSPECT THE WORK. THE CONTRACTOR SHALL PROVIDE COMPETENT PERSONNEL TO DEMONSTRATE THE OPERATION OF ANY ITEM OR SYSTEM TO THE FULL SATISFACTION OF EACH REPRESENTATIVE. FINAL ACCEPTANCE OF THE WORK WILL BE MADE BY THE OWNER AFTER RECEIPT OF APPROVAL AND RECOMMENDATION OF ACCEPTANCE FROM EACH REPRESENTATIVE.

7. ALL FINAL CONNECTIONS TO OWNER FURNISHED EQUIPMENT SHALL BE MADE BY THE CONTRACTOR.

8. CONNECTIONS TO VIBRATING EQUIPMENT AND SEISMIC SEPARATIONS:

LIQUID-TIGHT FLEXIBLE STEEL CONDUIT IN AREAS EXPOSED TO WEATHER, DAMP LOCATIONS, CONNECTIONS TO TRANSFORMER ENCLOSURES, AND FINAL CONNECTIONS TO MOTORS.

PROVIDE A SEPARATE INSULATED EQUIPMENT GROUNDING CONDUCTOR IN FLEXIBLE CONDUIT RUNS. MAXIMUM LENGTH SHALL BE SIX FEET UNLESS OTHERWISE NOTED.

9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAWCUTTING, TRENCHING, REMOVAL, BACKFILLING, COMPACTION AND PATCHING OF CONCRETE AS REQUIRED TO PERFORM HIS WORK. ATTENTION IS CALLED TO THE FACT THAT THERE ARE EXISTING UNDERGROUND UTILITY LINES. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN TRENCHING FOR HIS WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER AND APPROVED REPAIR OF ANY AND ALL DAMAGES CAUSED BY HIM OR HIS WORK.

10. WHENEVER A DISCREPANCY IN QUANTITY OR SIZE OF CONDUIT, WIRE, EQUIPMENT DEVICES, CIRCUIT BREAKERS, GROUND FAULT PROTECTION SYSTEMS, ETC. (ALL MATERIALS), ARISES ON THE DRAWINGS OR SPECIFICATIONS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL MATERIAL AND SERVICES REQUIRED BY THE STRICTEST CONDITIONS NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS TO ENSURE COMPLETE AND OPERABLE SYSTEMS AS REQUIRED BY THE ENGINEER.

11. REFER TO SINGLE LINE DIAGRAM AND FEEDER SCHEDULES FOR CONDUIT AND CONDUCTOR SIZE TO PANELS, ETC. CONDUIT RUNS MAY NOT BE SHOWN ON DRAWINGS, BUT ARE PART OF THIS CONTRACT.

12. STRAIGHT FEEDER, BRANCH CIRCUIT, AND CONDUIT RUNS SHALL BE PROVIDED WITH SUFFICIENT PULL BOXES OR JUNCTION BOXES TO LIMIT THE MAXIMUM LENGTH OF ANY SINGLE CABLE. PULL BOXES SHALL BE SIZED PER CODE OR AS INDICATED ON DRAWINGS. LOCATIONS SHALL BE DETERMINED IN THE FIELD OR AS INDICATED ON THE DRAWINGS.

13. MAXIMUM NUMBER OF CONDUCTORS IN OUTLET OR JUNCTION BOXES SHALL CONFORM TO THE CALIFORNIA ELECTRICAL CODE, ARTICLE 370-6, BUT IN NO CASE SHALL CONTAIN MORE THAN THE FOLLOWING NUMBER OF #12 AWG CONDUCTORS FOR THE SIZE OF BOX INDICATED. THE MINIMUM SIZE OUTLET OR JUNCTION BOX PERMITTED IN A AALL IS FOUR INCHES SQUARE BY 1-1/2 INCHES DEEP.

4" SQ. BY 1-1/2" D = 9 CONDUCTORS
4" SQ. BY 2-1/8" D = 13 CONDUCTORS
4-11/16" SQ. BY 1-1/2" D = 11 CONDUCTORS
4-11/16" SQ. BY 2-1/8" D = 18 CONDUCTORS

ALL OUTLET BOXES CONTAINING MORE THAN ONE DEVICE SHALL BE GANGED. TWO DEVICES DOUBLE GANGED, MINIMUM.

14. WHERE MULTI-HOMERUNS ARE INDICATED ON DRAWINGS INDICATING THE SAME PANELBOARD CIRCUIT NUMBER, PROVIDE JUNCTION BOX AND ROUTE ONE SET OF WIRES TO CIRCUIT BREAKERS.

15. IDENTIFICATION NAMEPLATES SHALL BE MICARTA 1/8 INCH THICK AND OF APPROVED SIZE WITH BEVELLED EDGES AND ENGRAVED WHITE LETTERS A MINIMUM OF 1/4 INCH HIGH ON BLACK BACKGROUND. NAMEPLATES SHALL BE PROVIDED FOR ALL CIRCUITS IN THE SERVICE DISTRIBUTION OR PANELBOARDS. ALL NAMEPLATES SHALL BE ATTACHED WITH SCREWS. PULL BOXES, JUNCTION BOXES, AND DEVICE BOXES SHALL BE MARKED WITH A PERMANENT MARKER.

16. DRAWINGS ARE DIAGRAMMATIC ONLY. ROUTING OF RACEAAYS AND COMBINING OF HOME RUNS ACCEPTABLE PER CODE. SHALL BE AT THE OPTION OF THE CONTRACTOR UNLESS OTHERWISE NOTED AND SHALL BE COORDINATED WITH OTHER SECTIONS. DO NOT SCALE THE ELECTRICAL DRAWINGS FOR LOCATIONS OF ANY ELECTRICAL, ARCHITECTURAL, STRUCTURAL, CIVIL, OR MECHANICAL ITEMS OR FEATURES.

17. ALL EXPOSED CONDUITS SHALL BE EMT (UNLESS STATED) CONDUIT, SCH. 40, WHERE EXPOSED TO POSSIBLE PHYSICAL DAMAGE. ALL OTHER OUTDOOR CONDUIT TO BE EMT RAIN-TIGHT FITTINGS. ALL INDOOR TO BE EMT SET SCREW STEEL.

18. CONTRACTOR SHALL PROVIDE LAMINATE RED NAMEPLATE ON ALL DISCONNECT SWITCHES, WITH CIRCUIT DESCRIPTIONS AND NUMBER.

19. OVERCURRENT PROTECTION SHALL COMPLY WITH CEC ARTICLE 240.

20. SOLAR PHOTOVOLTAIC SYSTEM INSTALLATION SHALL CONFORM TO CEC ARTICLE 690.

21. DEMOLITION/CONSTRUCTION SHALL CONFORM TO CEC ARTICLE 89.

22. SOLAR PHOTOVOLTAIC SYSTEM IS INTERACTIVE GRID PARALLEL MODE ONLY.

23. CONTRACTOR IS RESPONSIBLE TO INSTALL UNDERGROUND CONDUIT SYSTEM AND RESTORE ALL SURFACES REGARDLESS OF TYPE. (LANDSCAPE, PAVING, CEMENT OR OTHER)

24. CONTRACTOR IS RESPONSIBLE TO PROVIDE CATEGORY 6 OR FIBER CONNECTION FOR DATA ACQUISITION SYSTEM.

25. CONTRACTOR IS RESPONSIBLE TO SUPPLY UTILITY METERING VISIBLE BLADE DISCONNECT SWITCHBOARD AND ALL THEIR COMPONENTS NECESSARY TO CONNECT INVERTERS TO SITE DISTRIBUTION SYSTEM.

26. CONTRACTOR SHALL BE RESPONSIBLE TO PRE-COMMISSION AND PROVIDE A FULLY OPERATIONAL SYSTEM, FINAL COMMISSIONING BY OTHERS

ELECTRICAL SYMBOLS

-----	CONDUIT RUN UNDERGROUND.
_____	CONDUIT RUN EXPOSED.
_____B	CONDUIT STUBBED OUT AND CAPPED. PULL LINE IN PLACE.
KW	"KILOWATT"
KVA	"KILOVOLT – AMPERES"
V	"VOLTS"
A	"AMPS"
WP	WEATHERPROOF, NEMA 3R
UNO	UNLESS NOTED OTHERWISE
C.O	"CONDUIT ONLY". PROVIDE PULL ROPE FOR ALL EMPTY CONDUIT AS REQUIRED.
C.	"CONDUIT", WITH CONDUCTORS AS REQUIRED BY DRAWINGS OR SPECIFICATIONS.
N.I.C.	NOT IN CONTRACT
	CROSS LINES ON CONDUIT RUNS INDICATE NUMBER OF #12 CURRENT CARRYING CONDUCTORS CONTAINED THEREIN. TWO #12 AND ONE #12 GROUND WIRE ARE INDICATED WHEN CROSS LINES ARE NOT SHOWN. NUMERALS ADJACENT TO CROSS LINES ON CONDUIT RUNS INDICATE SIZE OF CONDUCTORS IN LIEU OF #12. ALL CONDUITS SHALL CONTAIN ONE GROUND WIRE SIZED PER C.E.C. TABLE 250-95, BUT NOT SMALLER THAN #12.
B-1,3	CONDUIT HOMERUN TO PANELBOARD. LETTER AND NUMERALS INDICATE ELECTRICAL PANEL AND CIRCUIT NUMBER.
HA	PANEL DESIGNATION.
M	UTILITY METER SOCKET, WITH C.T.S, CLIPS, ETC., PER SERVING UTILITY COMPANY.
	GROUND, "GND".
GFI	"GROUND FAULT INTERRUPTER"
GFP	GROUND FAULT PROTECTION DEVICE.
F	FUSED DISCONNECT SWITCH.
	NON-FUSED DISCONNECT SWITCH.
	COMBINATION STARTER
F	COMBINATION STARTER WITH FUSIBLE SWITCH
PC	PHOTO CELL
(E)	EXISTING
PV	PHOTOVOLTAIC
TYP	TYPICAL
MAX	MAXIMUM
MIN	MINIMUM
CONC	CONCRETE
LIG	CIRCUIT BREAKER ELECTRONIC TRIP FUNCTIONS: LONG TIME, INSTANTANEOUS, GROUND FAULT
LSIG	CIRCUIT BREAKER ELECTRONIC TRIP FUNCTIONS: LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND FAULT
CM	CIRCUIT MONITOR ELECTRONIC POWER QUALITY MONITOR
KV	KILO-VOLT
DIAM	DIAMETER
OD	OUTSIDE DIAMETER
REINF	REINFORCED
FIN	FINISHED
BF	BALLAST FACTOR
	GROUND WELL 3/4" X 10' COPPER CLAD STEEL GROUND ROD IN BROOKS BOX

DAS	DATA ACQUISITION SYSTEM
#	COMBINER BOX, # DENOTES FUSE SIZE
#	CIRCUIT BREAKER, # DENOTES AMPACITY
	TRANSFORMER
	DISCONNECT
#	FUSE, # DENOTES SIZE
	INVERTER
	CAMERA
	WEATHER STATION

APPLICABLE CALIFORNIA CODES

2013 CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE, PART 1 TITLE 24 C.C.R.
2013 RESIDENTIAL CODE
2013 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 C.C.R.
2013 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 C.C.R.
2013 CALIFORNIA REFERENCED STANDARDS, PART 12, TITLE 24 C.C.R.
2013 CALIFORNIA ELECTRICAL CODE (CEC) ARTICLE 240, OVERCURRENT PROTECTION
2013 CALIFORNIA ELECTRICAL CODE (CEC) ARTICLE 690, SOLAR PHOTOVOLTAIC SYSTEMS
2013 CALIFORNIA ELECTRICAL CODE (CEC) ARTICLE 89, GENERAL CODE PROVISIONS
2011 NFPA 70E NATIONAL ELECTRICAL CODE (NEC)

ABBREVIATIONS					
2P	2 POLE	J	JUNCTION BOX	R	RED, RAISE, RELAY OR REVERSE
3P	3 POLE	JB	JUNCTION BOX OR VAULT	RECP	RECEPTACLE
2/C	2 CONDUCTOR	KV	KILOVOLT	RMC	RIGID METAL CONDUIT
4"C	4" CONDUIT	KW	KILOWATT	RSG	RIGID STEEL GALVANIZED CONDUIT
#BG	#8 GROUND WIRE	KWH	KILOWATT HOUR	SCE	SOUTHERN CALIFORNIA EDISON
Ø	DIAMETER				
°F	DEGREES FARENHEIT	MAX	MAXIMUM,	SCH	SCHEDULE
A	AMP(S)	MCC	MOTOR CONTROL CENTER	SDG&E	SAN DIEGO GAS AND ELECTRIC
AC	ALTERNATING CURRENT	MCM	THOUSAND CIRCULAR MIL	SHLD	SHEILDED
AL	ALUMINUM	MIN	MINIMUM	SHT	SHEET
AWG	AMERICAN WIRE GAUGE	MISC	MISCELLANEOUS	SP	SINGLE POLE
BLDG	BUILDING			STD	STANDARD
BLK	BLACK	NEU	NEUTRAL	SWGR	SWITCHGEAR
BLU	BLUE	NC	NORMALLY CLOSED	SQ	SQUARE
C	COPPER	NEC	NATIONAL ELECTRIC CODE		
CB	COMBINER BOX	NEMA	NATIONAL ELECTRICAL MANUFACTURE'S ASSOC	TEMP	TEMPERATURE
CL	CENTER LINE	NO	NORMALLY OPEN	TYP	TYPICAL
CO	CONDUIT	NS	NORTH SOUTH		
COMM	COMMUNICATION	NTS	NOT TO SCALE	UG	UNDERGROUND
CONN	CONNECTION			UL	UNDERWRITERS LABORATORY
DC	DIRECT CURRENT	O	OPEN	UNO	UNLESS OTHERWISE NOTED
DIA	DIAMETER	OC	ON CENTER	UPS	UNINTERRUPTIBLE POWER SUPPLY
DWG	DRAWING				
(E)	EXISTING	P	PRIMARY OR POLE	V	VOLT(S)
EQUIP	EQUIPMENT	PB	PUSH BUTTON OR PULL BOX	VA	VOLT /AMPERES
EW	EAST WEST	PG&E	PACIFIC GAS AND ELECTRIC	W	WATTS, WIRE, WHITE OR WIDE
EMT	ELECTRO METALLIC TUBING	PH	PHASE	WP	WEATHERPROOF
G	GROUND OR GREEN	PNL	PANEL	XFMR	TRANSFORMER
GALV	GALVANIZED	PROT	PROTECTION	Y	YELLOW
GEC	GROUNDING ELECTRODE CONDUCTOR	PVC	POLYVINYL CHLORIDE		
GFCI	GROUND FAULT CIRCUIT INTERRUPTER				
HH	HANDHOLE	QTY	QUANTITY		

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LAGUNA WOODS, CA 92637

PROJECT DEVELOPER



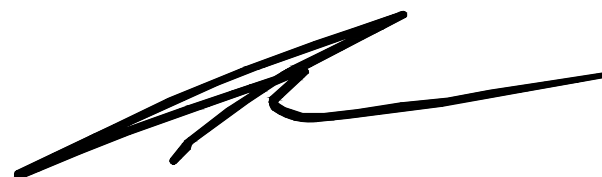
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GENERAL
NOTES

SHEET NUMBER

T2

CERTIFICATE OF COMPLIANCE

Certificate Number

20150223-E246423

Report Reference

E246423-20040917

Issue Date

2015-FEBRUARY-23

Issued to:

SUNPOWER CORP
77 RIO ROBLES
SAN JOSE CA 95134

This is to certify that
representative samples of

PHOTOVOLTAGIC MODULES AND PANELS
(See addendum for additional information.)

Standard(s) for Safety:

UL 1703, 3rd Edition, revised May 20, 2014, "Standard for
Safety for Flat-Plate Photovoltaic Modules and Panels."

Additional Information:

See the UL Online Certifications Directory at
www.ul.com/database for additional information

Only those products bearing the UL Listing Mark for the US and Canada should be considered as
being covered by UL's Listing and Follow-Up Service meeting the appropriate requirements for US
and Canada.
The UL Listing Mark for the US and Canada generally includes: the UL in a circle symbol with "C" and
"US" identifiers:  the word "LISTED", a control number (may be alphanumeric) assigned by UL,
and the product category name (product identifier) as indicated in the appropriate UL Directory.
Look for the UL Listing Mark on the product.


William H. Carney, Director, North American Certification Programs
UL LLC

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contact a local UL Customer Service Representative at usinfo@ul.com.

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CERTIFICATE OF COMPLIANCE

Certificate Number

20150223-E246423

Report Reference

E246423-20040917

Issue Date

2015-FEBRUARY-23

This is to certify that representative samples of the product as specified on this certificate were tested
according to the current UL requirements.

Photovoltaic Modules:

Models XXX-440 to -410, -408, -405, -402, -400, -398, -395, -392, -390, -388, -385, -382, -380, -375, -
345 to -293, -290, -285, -280, -250 to -225, followed by E or NE, may be followed by -BLK or -WHT,
followed by -D, -I, or -U, where XXX represents SPR or SPV.

Models XXX-EYY-### where XXX represents SPR or SPV, YY represents 18, 19, 20 or 21 and ### is
any number from 440 to 375 or 345 to 285 or 250 to 225 and may be followed by -COM and/or -BLK

Models XXX-450 to -435, XXX-345 to -311, XXX-262 to -233 followed by J, NJ, NX or X, may be
followed by -BLK or -WHT, followed by -D, -I, -or -U, where XXX represents SPR or SPV.

Models XXX-XY-### where XXX represents SPR or SPV, YY represents 18, 19, 20 or 21 and ### is
any number from 486 to 435 or 365 to 310 or 274 to 233 and may be followed by -COM and/or -BLK

Flat-Plate Photovoltaic Modules with construction compliant to Module Fire
Performance Type 2.


William H. Carney, Director, North American Certification Programs
UL LLC

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Page 2 of 2



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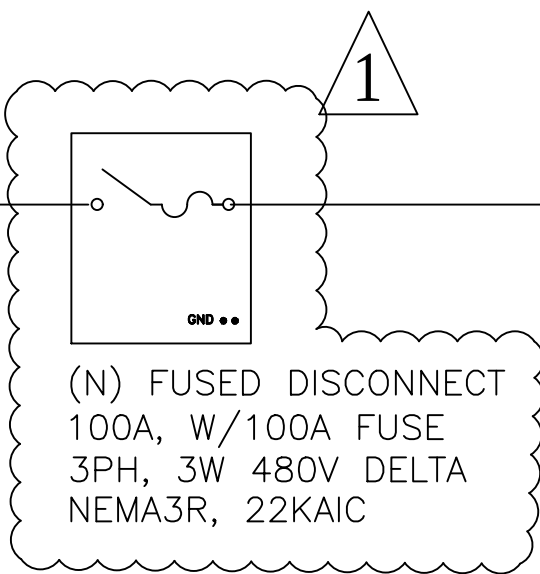
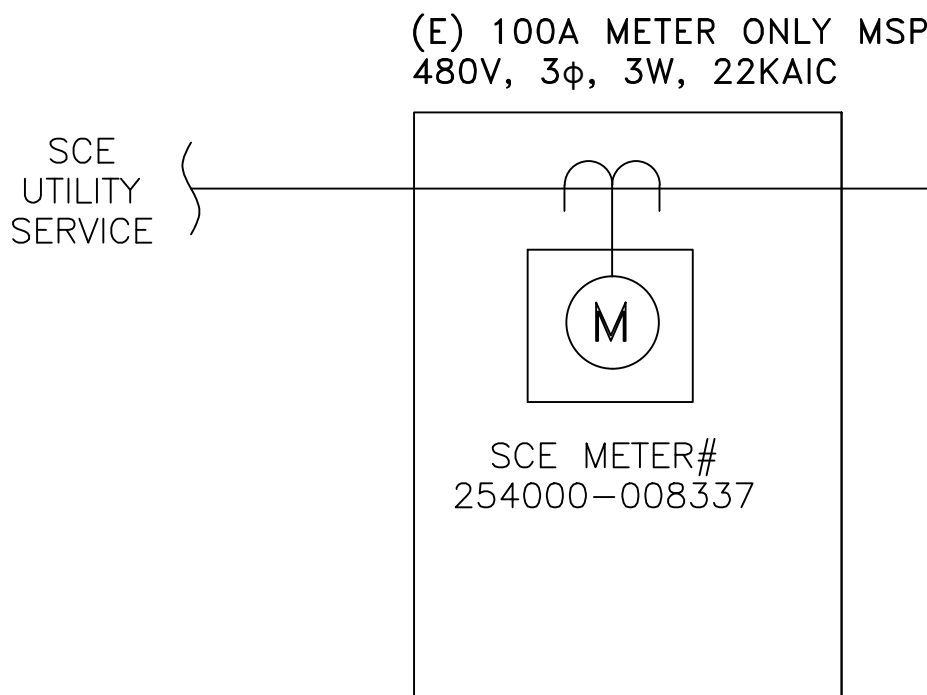
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CERTIFICATION

SHEET NUMBER

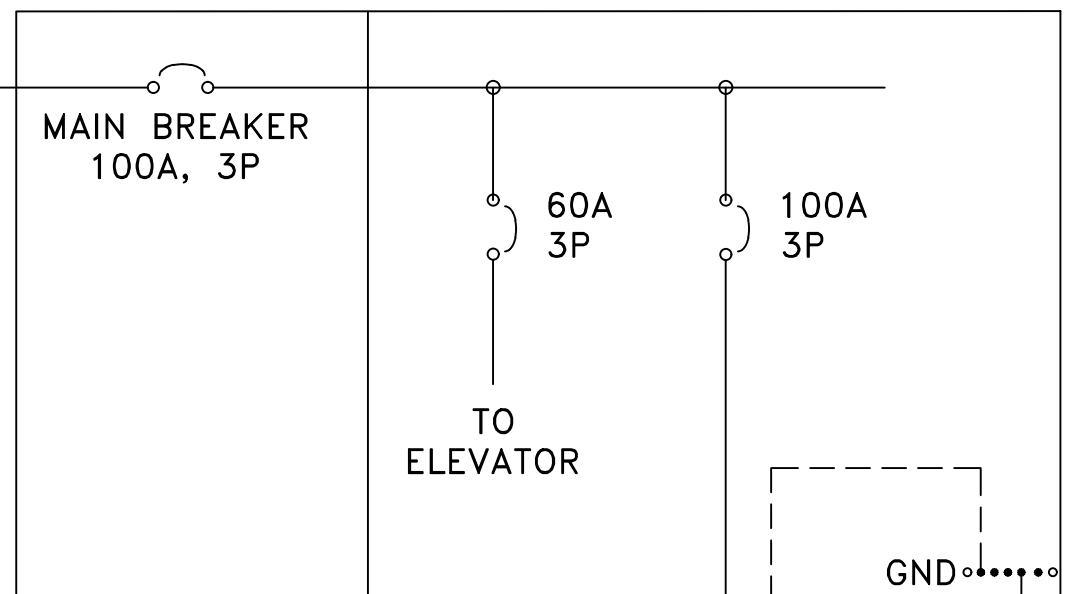
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2393 VIA MARIPOSA WEST SINGLE LINE

TOTAL SYSTEM:	LOAD SUMMARY FOR SPB01
HELIX SYSTEM 78.48 KWP 60 KWAC 240 MODULES, SUNPOWER SPR-E20-327-COM 12 MODULES PER STRING, 20 STRINGS	(3) INVERTERS= (2X24KW + 1X12KW) * 1.25 = 75KW (90.2A @ 480V, 3φ)



(N) SUB-PANEL
200A, W/100A MAIN
480V, 3φ, 3W, 22KAIC

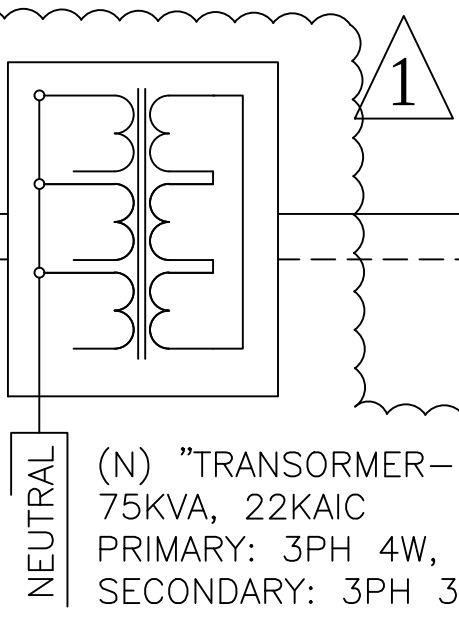


NEC 690.64B CALCULATION:
(200x1.2-100) ≥ 100

NOTE:
PV BREAKER MUST BE INSTALLED
AT THE END OF THE BUS

NOTE:
ADDITIONAL GROUND ROD TO
SUPPLEMENT EXISTING GEC ROD,
RAN UN-SPLICED TO TERMINATE
WITH IRREVERSIBLE CONNECTION.

(3) #3 AWG, THWN-2 (CU)
(1) #8 AWG INSULATED GND (CU)
(1) 1-1/4" EMT
LENGTH: 25FT
VD= 0.21%



NEC 690.10 (B) POWER TRANSFORMERS.

OVER CURRENT PROTECTION FOR A TRANSFORMER WITH A SOURCE(S) ON EACH SIDE SHALL BE PROVIDED IN ACCORDANCE WITH 450.3 BY CONSIDERING FIRST ONCE SIDE OF THE TRANSFORMER, THEN THE OTHERS SIDE OF THE TRANSFORMER, AS THE PRIMARY.

EXCEPTION: A POWER TRANSFORMER WITH A CURRENT RATING ON THE SIDE CONNECTED TOWARD THE UTILITY-INTERACTIVE INVERTER OUTPUT, NOT LESS THAN THE RATED CONTINUOUS OUTPUT CURRENT OF THE INVERTER, SHALL BE PERMITTED WITHOUT OVER CURRENT PROTECTION FROM THE INVERTER.

NOTE

(FOR UN-GROUNDED SYSTEM ONLY):
THIS IS UN-GROUNDED SYSTEM. BOTH POSITIVE AND
NEGATIVE CONDUCTORS SHALL BE UN-GROUNDED AND
FUSED/SWITCHED AS SPECIFIED IN THE DRAWINGS.

DC WIRING KEY NOTES:

1. PROVIDE A CONTINUOUS UNSPLICED PATH FROM INVERTER GROUND TO AC BUS BAR GROUND. SEE GROUNDING SCHEMATIC DIAGRAM DRAWING.
2. CONSULT INVERTER INSTALLATION GUIDE FOR WIRING METHODS AND OPERATIONS PROCEDURES.
3. NO SPLICES ARE ALLOWED IN DC STRING WIRING. ALL PV WIRE SHALL BE RATED FOR 1000V.

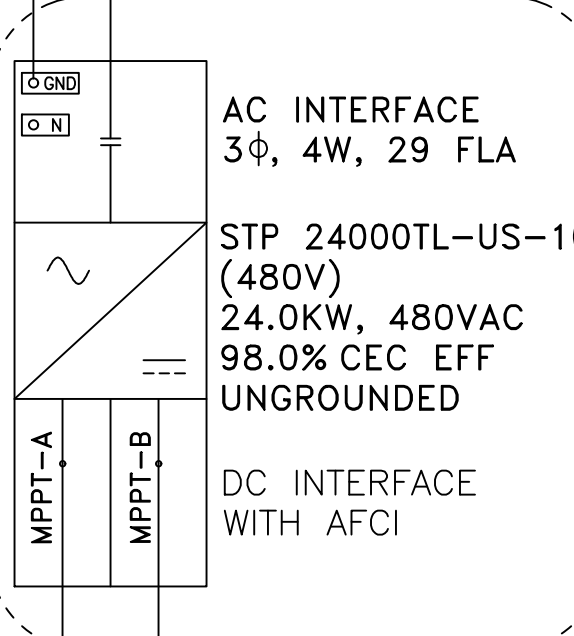
(N) SOLAR HELIX POWER STATION PANELBOARD
(SPB01) 250A, 480V, 3φ, 4W, 100 KAIC, NEMA 4X
(LOCATED ON ROOF/GROUND)

WILL REQUIRE CELL MODEM FOR
WIRELESS CONNECTION

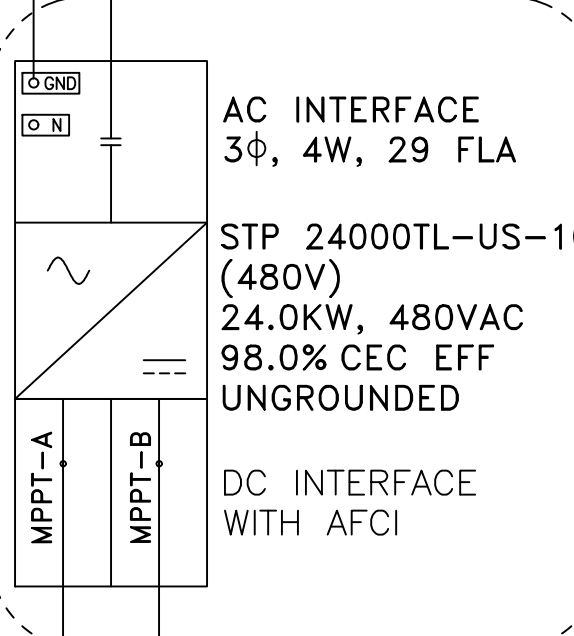
DAS

600V MULTI-CONDUCTOR TYPE TC-ER:
(3) #8 AWG XHHW-2 (CU)
(1) #8 AWG XHHW-2 GND (CU)
(1) #8 AWG XHHW-2 NEUTRAL REF (CU)

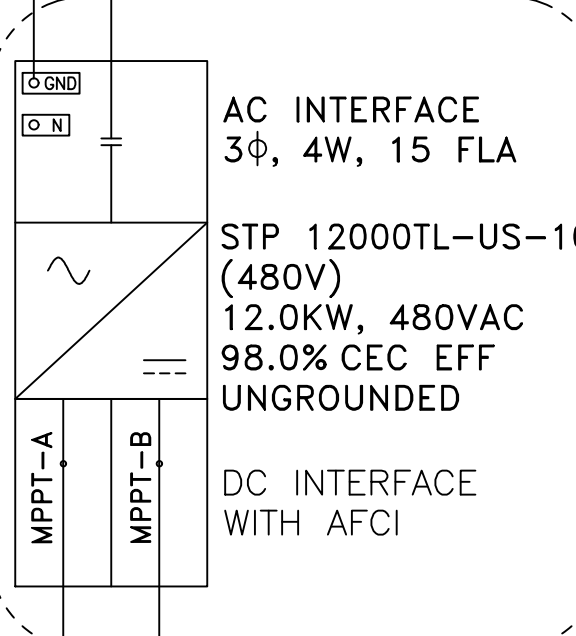
01-INV-01



01-INV-02



01-INV-03



(N) DC BRANCH,
SHOALS HARNESS
AND DC DISCONNECT
(TYP)

IN CABLE TRAY:
#10 AWG, 1000V PV WIRE

12 MODULES/STRING
8 STRINGS

12 MODULES/STRING
8 STRINGS

12 MODULES/STRING
4 STRINGS

SUB-ARRAY-1
96 MODULES, 12 MODULES PER STRING, 8 STRINGS (4 PER MPPT) STRING AMPERAGE: 5.98A IMP, 6.46A ISC: X 1.25= 8.07A STRING VOLTAGE: VMP HIGH TEMP 748.2V, MAX VOC 887.8V

TEMP. CORRECTION FACTOR: 1.14

SUB-ARRAY-3
48 MODULES, 12 MODULES PER STRING, 4 STRINGS (2 PER MPPT) STRING AMPERAGE: 5.98A IMP, 6.46A ISC: X 1.25= 8.07A STRING VOLTAGE: VMP HIGH TEMP 748.2V, MAX VOC 887.8V

TEMP. CORRECTION FACTOR: 1.14

SUB-ARRAY-2
96 MODULES, 12 MODULES PER STRING, 8 STRINGS (4 PER MPPT) STRING AMPERAGE: 5.98A IMP, 6.46A ISC: X 1.25= 8.07A STRING VOLTAGE: VMP HIGH TEMP 748.2V, MAX VOC 887.8V

TEMP. CORRECTION FACTOR: 1.14

PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

24351 EL TORO RD.
LAGUNA WOODS, CA 92637

PROJECT DEVELOPER



SOLAR OPTIMUM, INC
501 WEST GLENOAKS BLVD.
GLENDALE, CA 91202
800-552-9970
WWW.SOLAROPTIMUM.COM
LICENSE NUMBER 972228 C10

CONTRACTOR

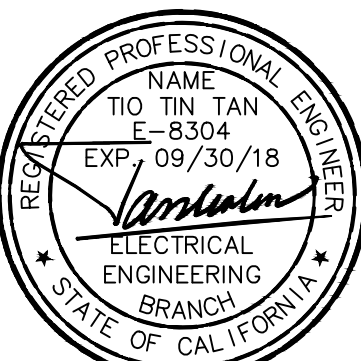


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SCALE: AS SHOWN
DATE: 12/21/16

SHEET TITLE

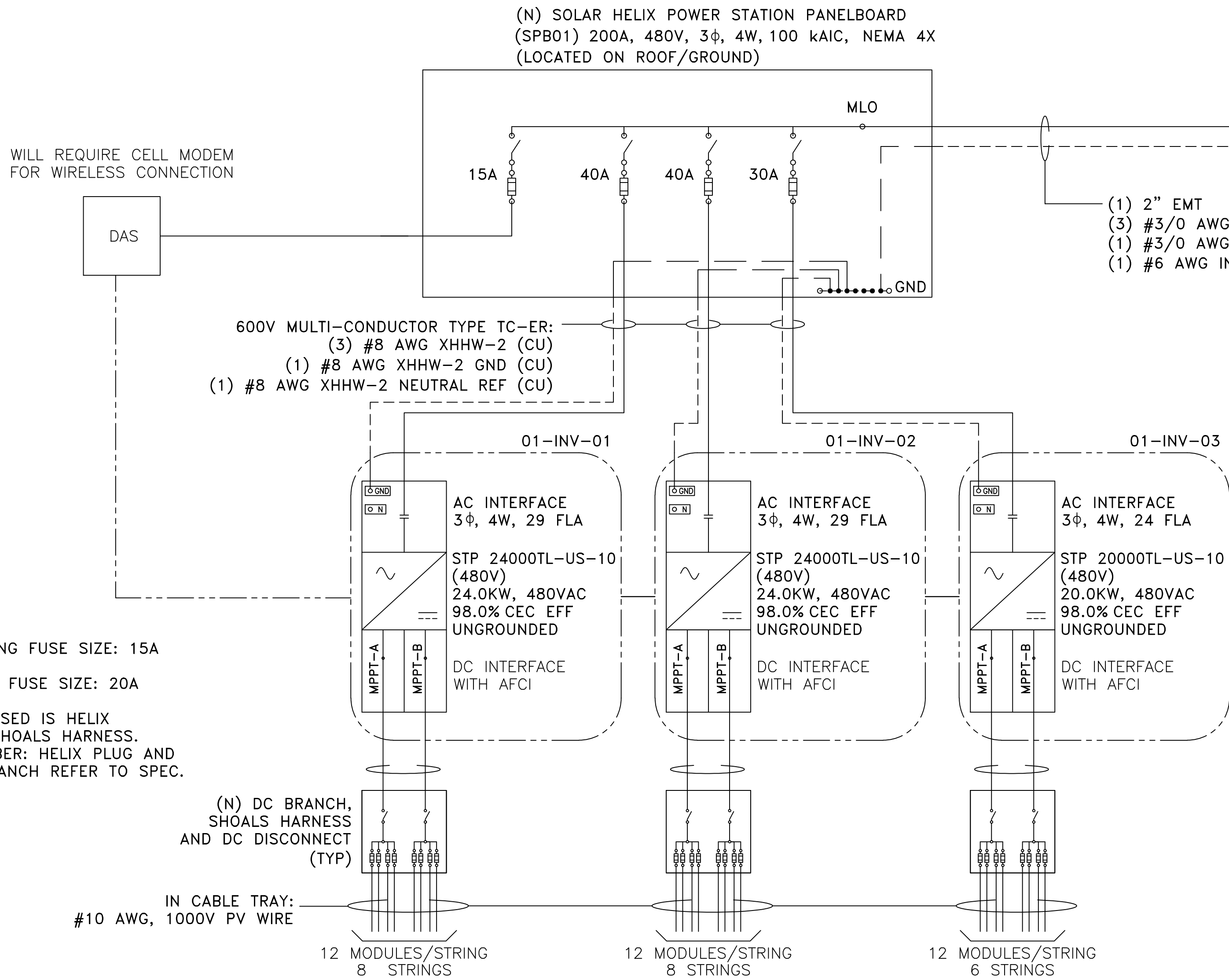
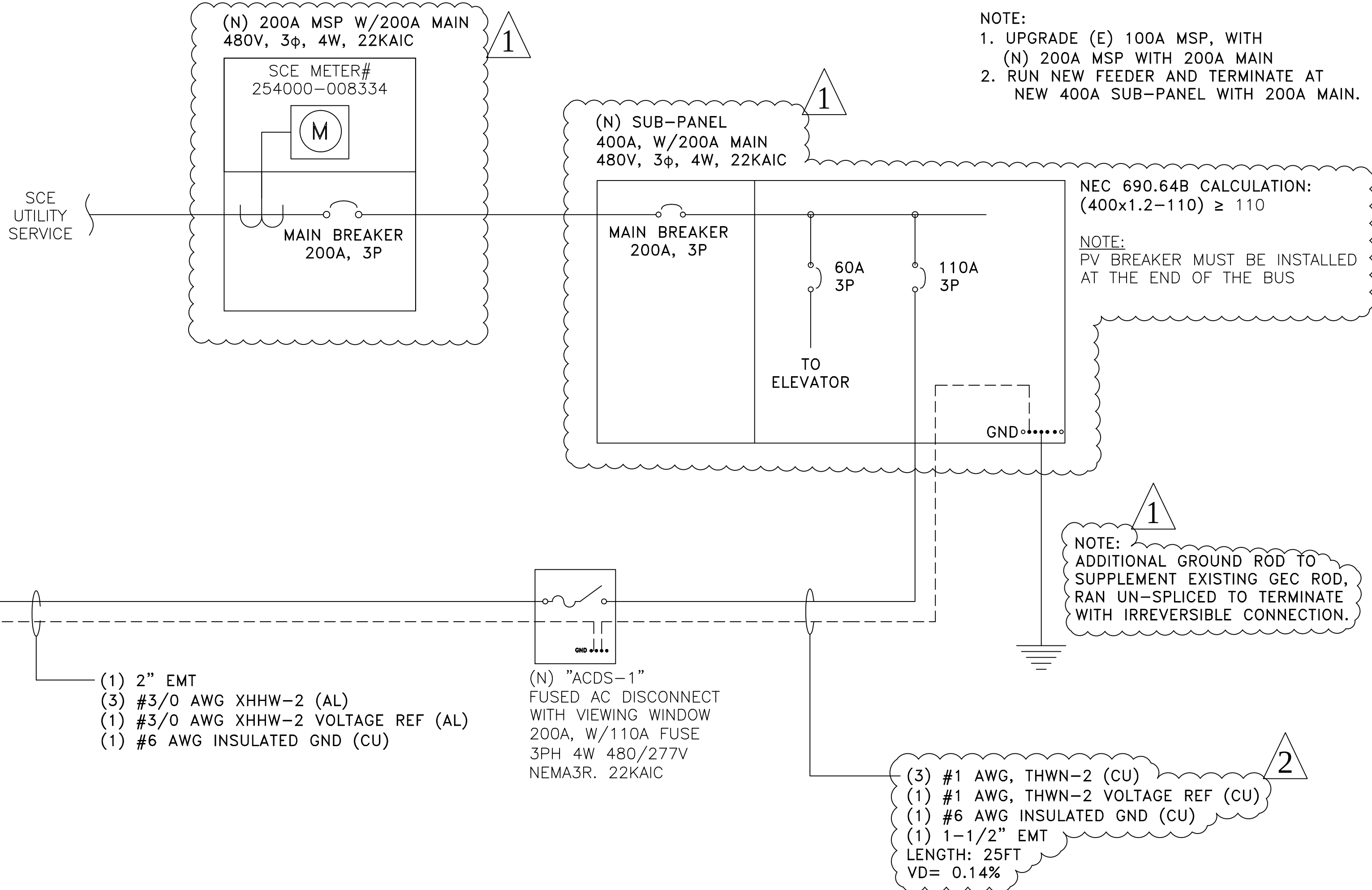
2393 VIA MARIPOSA
WEST SINGLE LINE

SHEET NUMBER

E1

2394 VIA MARIPOSA WEST SINGLE LINE

TOTAL SYSTEM:	LOAD SUMMARY FOR SPB01
HELIX SYSTEM 86.32 KWP 68 KWAC 264 MODULES, SUNPOWER SPR-E20-327-COM 12 MODULES PER STRING, 22 STRINGS	(3) INVERTERS= (2X24KW + 1X20KW) * 1.25 = 85KW (102.5A @ 480V, 3φ)



NOTE
(FOR UN-GROUNDED SYSTEM ONLY):
THIS IS UN-GROUNDED SYSTEM. BOTH POSITIVE AND
NEGATIVE CONDUCTORS SHALL BE UN-GROUNDED AND
FUSED/SWITCHED AS SPECIFIED IN THE DRAWINGS.

DC WIRING KEY
NOTES:
1. PROVIDE A CONTINUOUS UNSPLICED PATH FROM INVERTER GROUND TO AC BUS BAR GROUND.
SEE GROUNDING SCHEMATIC DIAGRAM DRAWING.
2. CONSULT INVERTER INSTALLATION GUIDE FOR WIRING METHODS AND OPERATIONS PROCEDURES.
3. NO SPLICES ARE ALLOWED IN DC STRING WIRING. ALL PV WIRE SHALL BE RATED FOR 1000V.

SUB-ARRAY-1

96 MODULES,
12 MODULES PER STRING, 8 STRINGS (4 PER MPPT)
STRING AMPERAGE: 5.98A IMP, 6.46A ISC: X 1.25= 8.07A
STRING VOLTAGE: VMP HIGH TEMP 748.2V, MAX VOC 887.8V

TEMP. CORRECTION FACTOR: 1.14

SUB-ARRAY-3

72 MODULES,
12 MODULES PER STRING, 6 STRINGS (3 PER MPPT)
STRING AMPERAGE: 5.98A IMP, 6.46A ISC: X 1.25= 8.07A
STRING VOLTAGE: VMP HIGH TEMP 748.2V, MAX VOC 887.8V

TEMP. CORRECTION FACTOR: 1.14

SUB-ARRAY-2

96 MODULES,
12 MODULES PER STRING, 8 STRINGS (4 PER MPPT)
STRING AMPERAGE: 5.98A IMP, 6.46A ISC: X 1.25= 8.07A
STRING VOLTAGE: VMP HIGH TEMP 748.2V, MAX VOC 887.8V

TEMP. CORRECTION FACTOR: 1.14

PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

24351 EL TORO RD.
LAGUNA WOODS, CA 92637

PROJECT DEVELOPER



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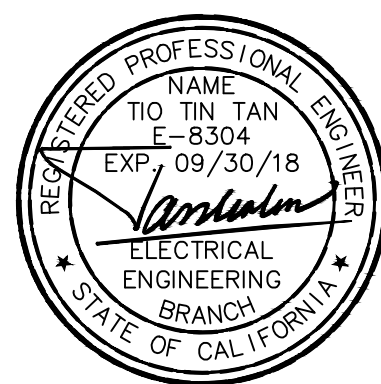


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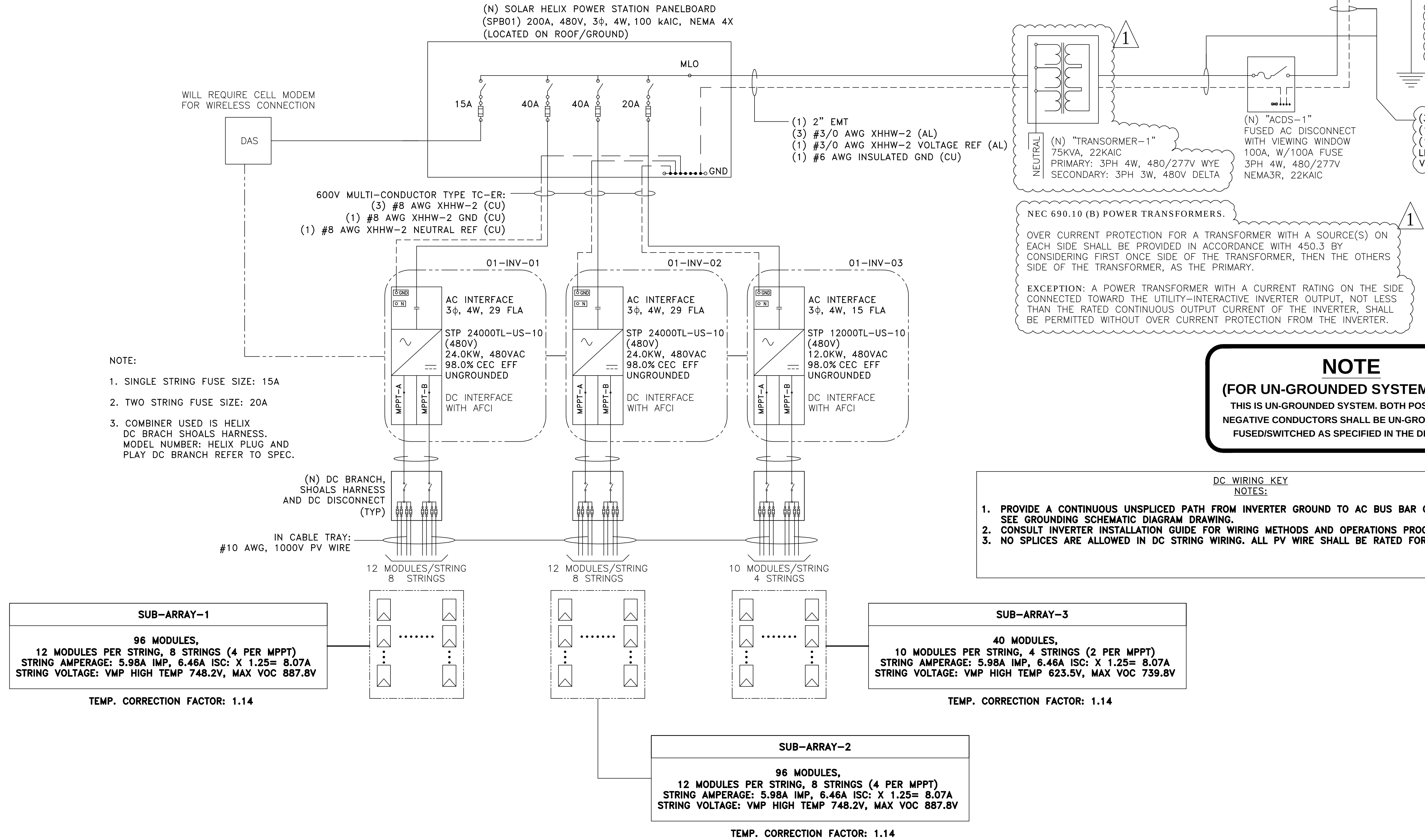
2394 VIA MARIPOSA
WEST SINGLE LINE

SHEET NUMBER

E1.1

2397 VIA MARIPOSA WEST SINGLE LINE

TOTAL SYSTEM:	LOAD SUMMARY FOR SPB01
HELIX SYSTEM 75.86 KWP 60 KWAC 232 MODULES, SUNPOWER SPR-E20-327-COM 12 MODULES PER STRING, 16 STRINGS 10 MODULES PER STRING, 4 STRINGS	(3) INVERTERS= (2X24KW + 1X12KW) * 1.25 = 75KW (72.4A @ 480V, 3φ)



PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

24351 EL TORO RD.
LAGUNA WOODS, CA 91267

PROJECT DEVELOPER

SOLAR OPTIMUM

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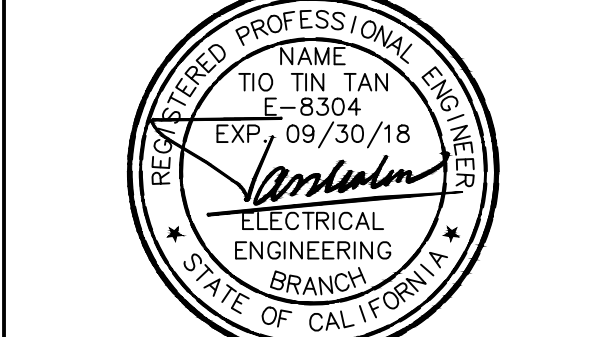
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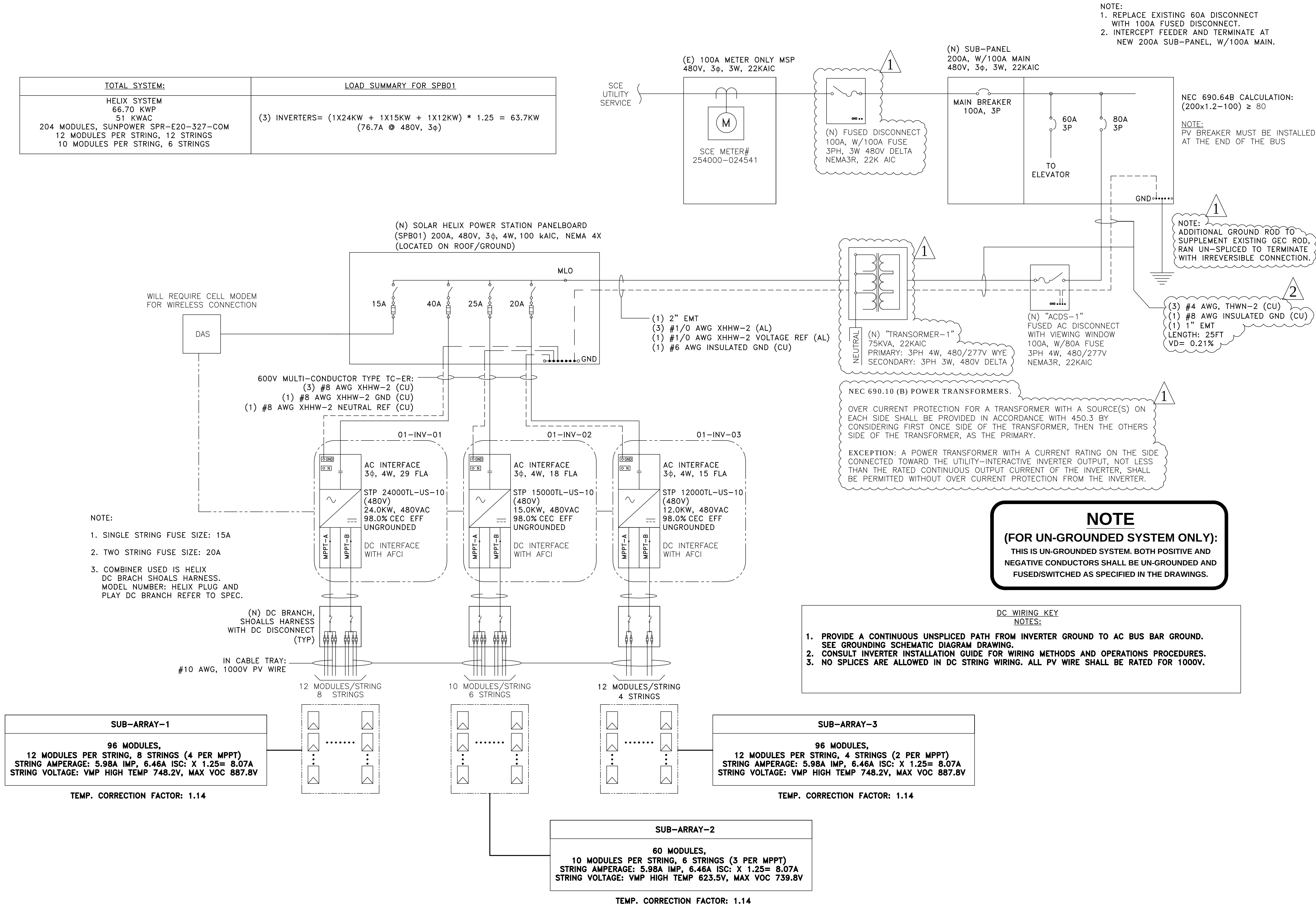
SHEET TITLE

2397 VIA MARIPOSA
WEST SINGLE LINE

SHEET NUMBER

2399 VIA MARIPOSA WEST SINGLE LINE

TOTAL SYSTEM:	LOAD SUMMARY FOR SPB01
HELIX SYSTEM 66.70 KWP 51 KWAC 204 MODULES, SUNPOWER SPR-E20-327-COM 12 MODULES PER STRING, 12 STRINGS 10 MODULES PER STRING, 6 STRINGS	(3) INVERTERS= (1X24KW + 1X15KW + 1X12KW) * 1.25 = 63.3KW (76.7A @ 480V, 3φ)



PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

24351 EL TORO RD.
LAGUNA WOODS, CA 92637

PROJECT DEVELOPER

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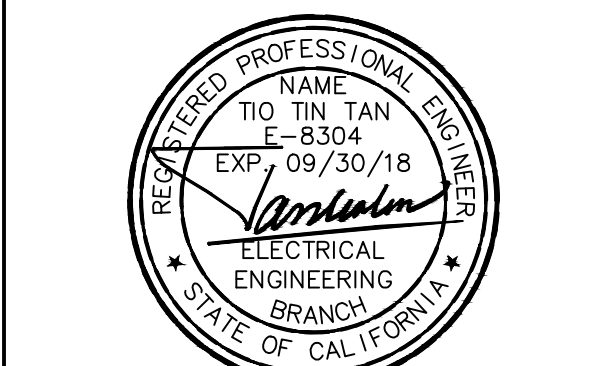
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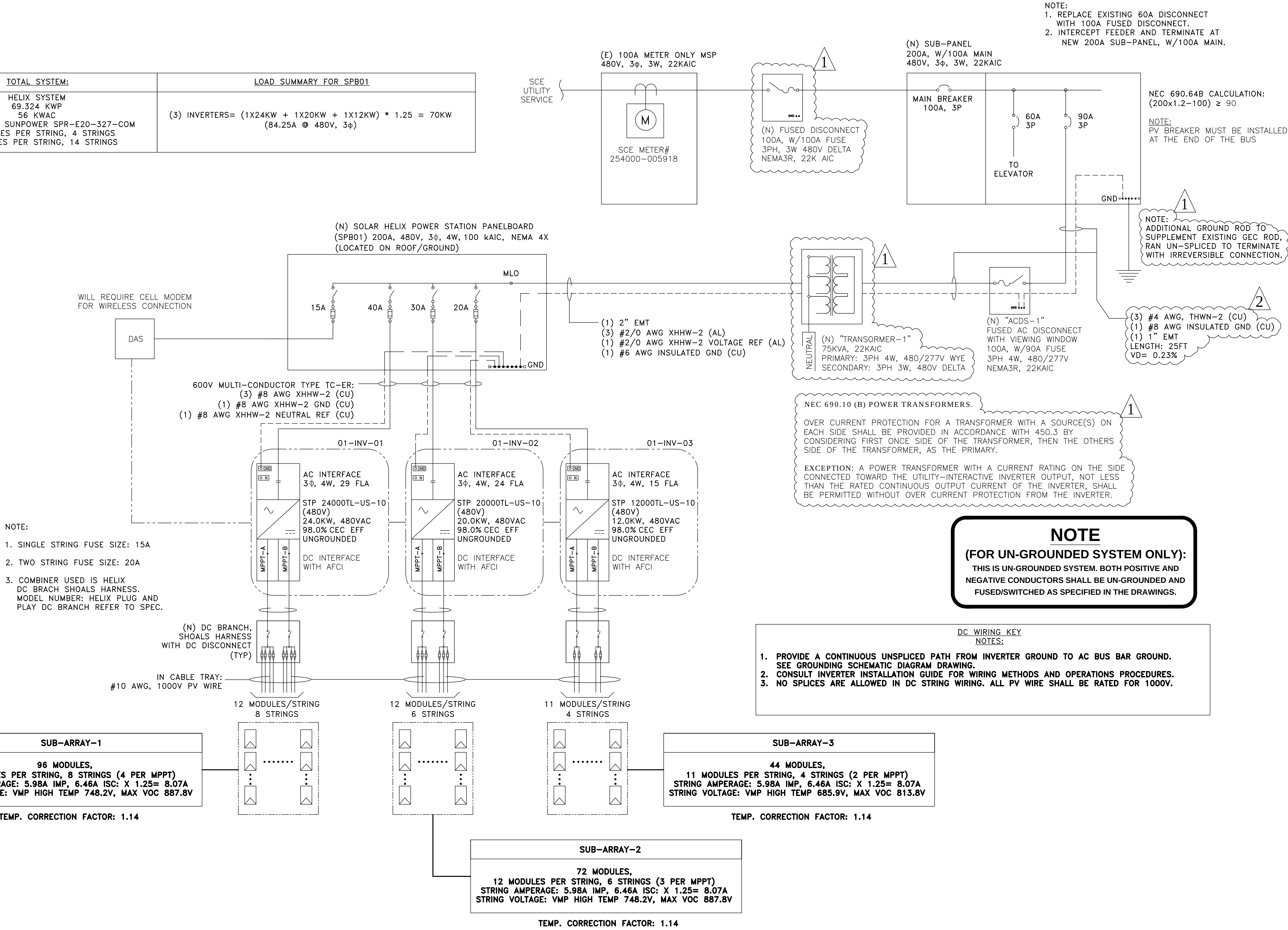
2399 VIA MARIPOSA
WEST SINGLE LINE

SHEET NUMBER

E1.3

3242 SAN AMADEO SINGLE LINE

TOTAL SYSTEM:	LOAD SUMMARY FOR SPB01
HELIX SYSTEM 69.324 KWP 56 KWAC 212 MODULES, SUNPOWER SPR-E20-327-COM 11 MODULES PER STRING, 4 STRINGS 12 MODULES PER STRING, 14 STRINGS	(3) INVERTERS= (1X24KW + 1X20KW + 1X12KW) * 1.25 = 70KW (84.25A @ 480V, 3φ)



PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

24351 EL TORO RD.
LAGUNA WOODS, CA 91267

PROJECT DEVELOPER



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SHEET TITLE

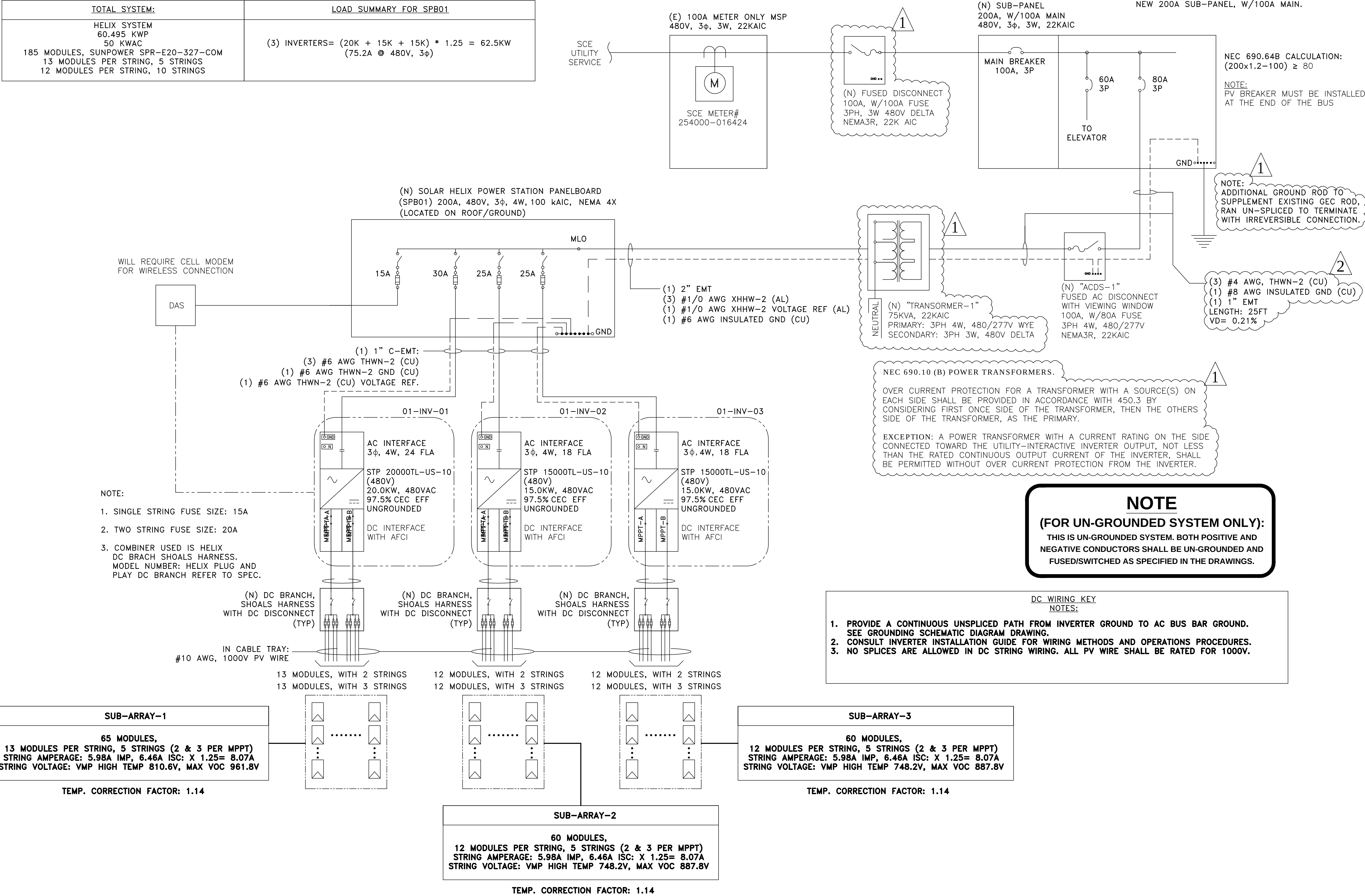
3242 SAN AMADEO
SINGLE LINE

SHEET NUMBER

E1.4

3243 SAN AMADEO SINGLE LINE

TOTAL SYSTEM:	LOAD SUMMARY FOR SPB01
HELIX SYSTEM 60.495 KWP 50 KWAC 185 MODULES, SUNPOWER SPR-E20-327-COM 13 MODULES PER STRING, 5 STRINGS 12 MODULES PER STRING, 10 STRINGS	(3) INVERTERS= (20K + 15K + 15K) * 1.25 = 62.5KW (75.2A @ 480V, 3φ)



PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

24351 EL TORO RD.
LAGUNA WOODS, CA 92637

PROJECT DEVELOPER


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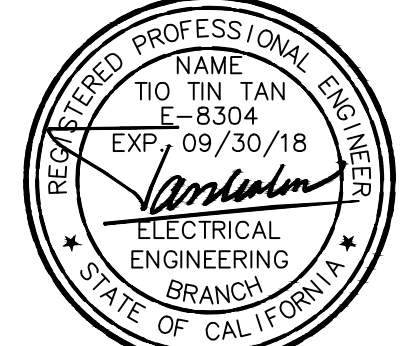
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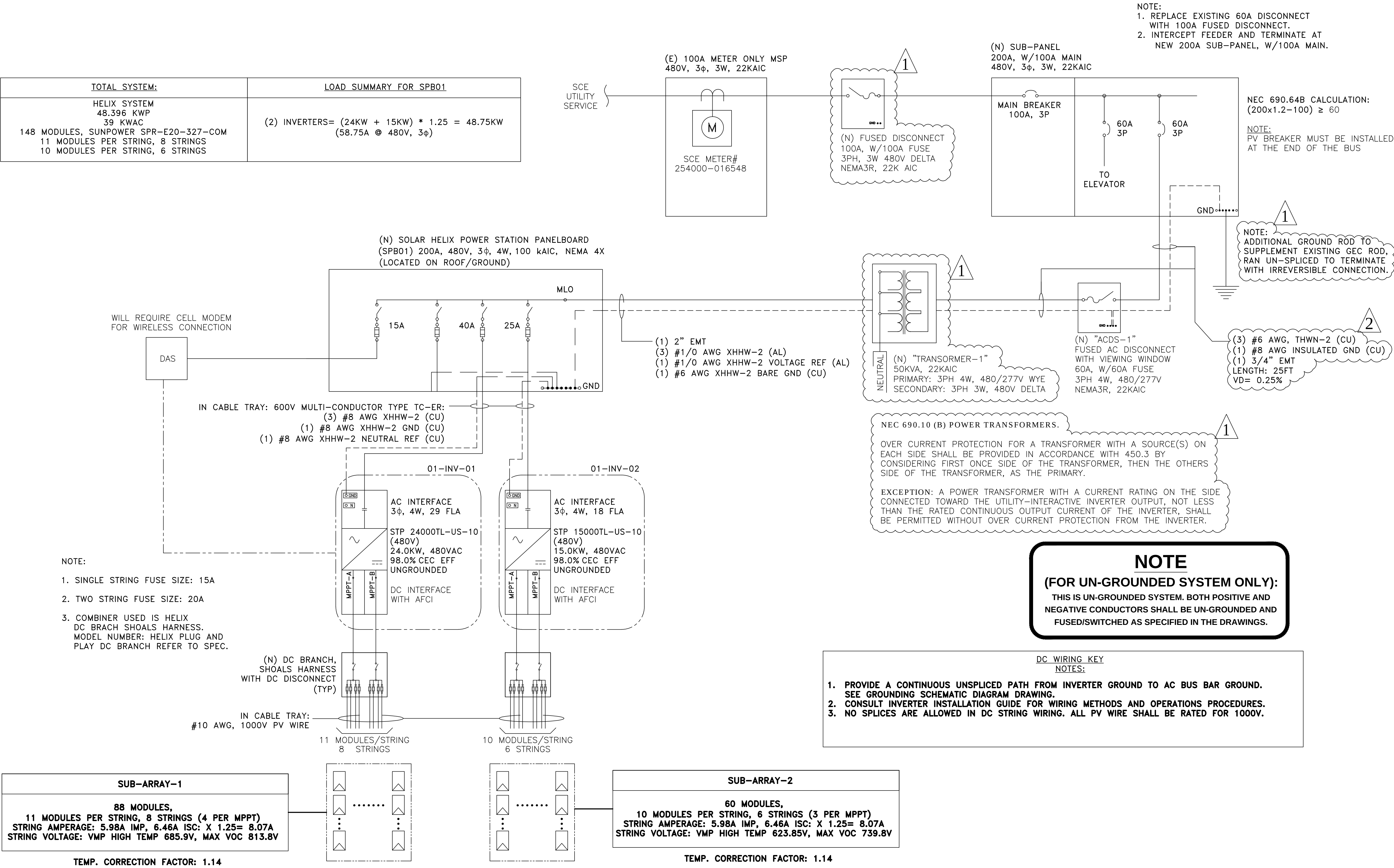
3243 SAN AMADEO
SINGLE LINE

SHEET NUMBER

E1.5

3420 CALLE AZUL SINGLE LINE

TOTAL SYSTEM:	LOAD SUMMARY FOR SPB01
HELIX SYSTEM 48.396 KWP 39 KWAC 148 MODULES, SUNPOWER SPR-E20-327-COM 11 MODULES PER STRING, 8 STRINGS 10 MODULES PER STRING, 6 STRINGS	(2) INVERTERS= (24KW + 15KW) * 1.25 = 48.75KW (58.75A @ 480V, 3φ)



PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

24351 EL TORO RD.
LAGUNA WOODS, CA 92637

PROJECT DEVELOPER


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SHEET TITLE

3420 CALLE AZUL
SINGLE LINE

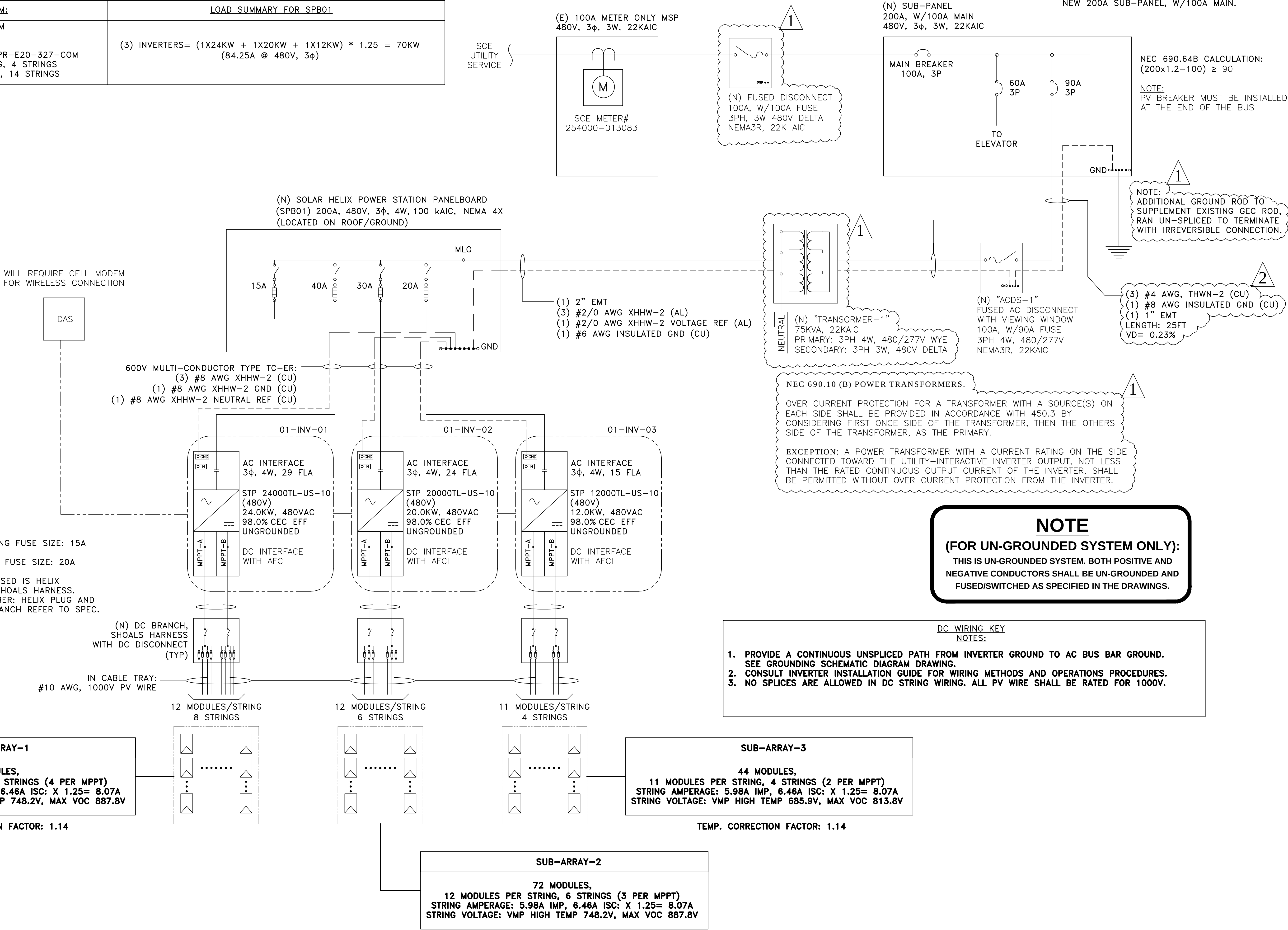
SHEET NUMBER

E1.6

5372 PUNTA ALTA SINGLE LINE

TOTAL SYSTEM:	LOAD SUMMARY FOR SPB01
HELIX SYSTEM 69.324 KWP 56 KWAC 212 MODULES, SUNPOWER SPR-E20-327-COM 11 MODULES PER STRING, 4 STRINGS 12 MODULES PER STRING, 14 STRINGS	(3) INVERTERS= (1X24KW + 1X20KW + 1X12KW) * 1.25 = 70KW (84.25A @ 480V, 3φ)

- NOTE:
1. REPLACE EXISTING 60A DISCONNECT WITH 100A FUSED DISCONNECT.
 2. INTERCEPT FEEDER AND TERMINATE AT NEW 200A SUB-PANEL, W/100A MAIN.



PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

24351 EL TORO RD.
LAGUNA WOODS, CA 92637

PROJECT DEVELOPER



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501 WEST GLENOAKS BLVD.
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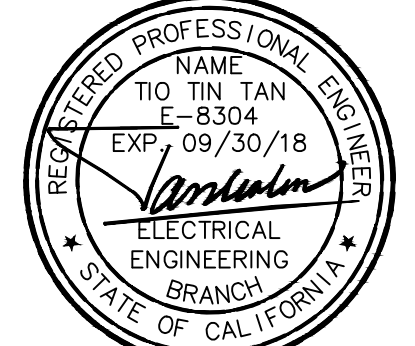


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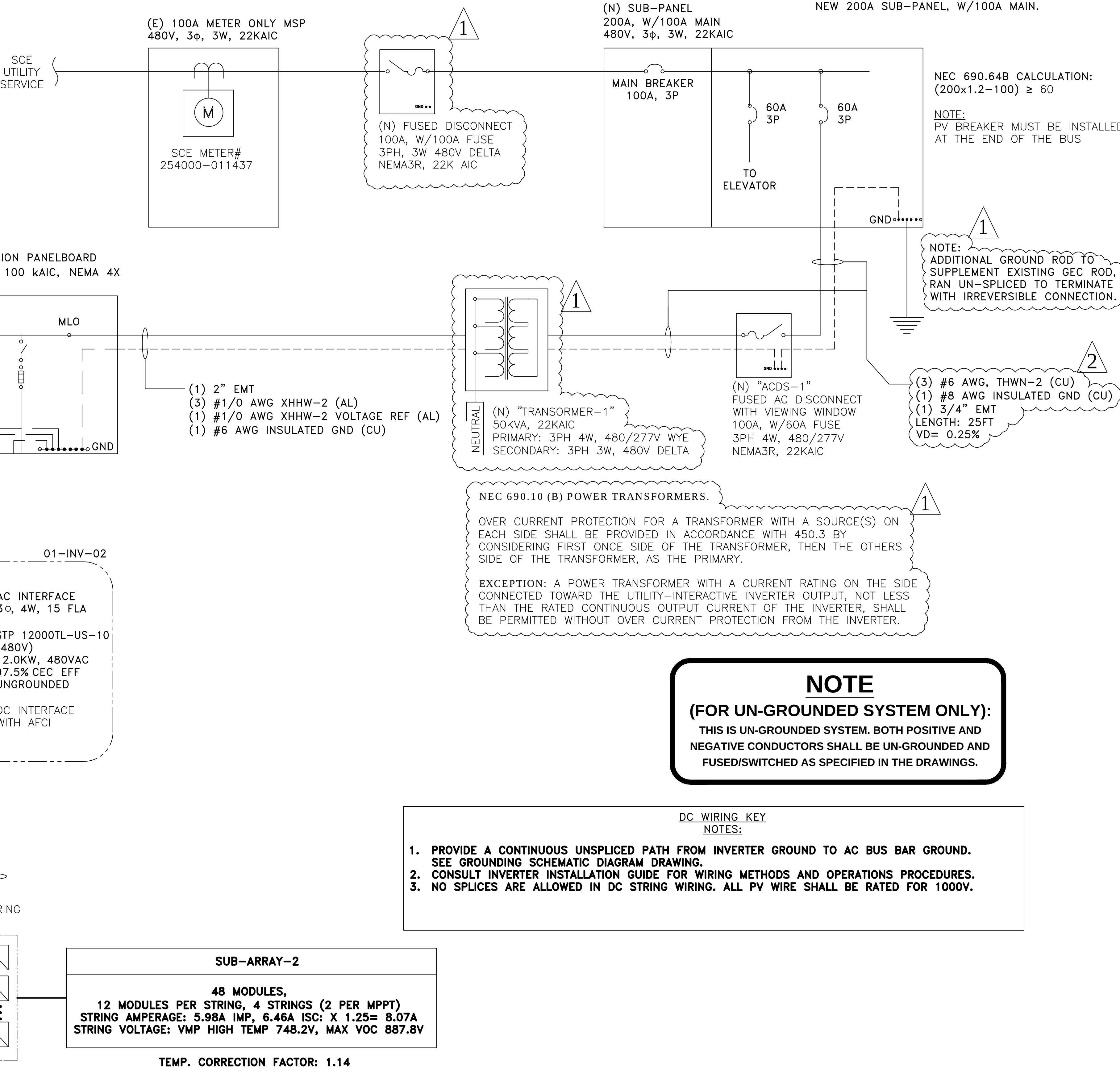
5372 PUNTA ALTA
SINGLE LINE

SHEET NUMBER

E1.7

5510 PASEO DEL LAGO WEST SINGLE LINE

TOTAL SYSTEM:	LOAD SUMMARY FOR SPB01
HELIX SYSTEM 47.088 KWP 36 KWAC 144 MODULES, SUNPOWER SPR-E20-327-COM 12 MODULES PER STRING, 4 STRINGS 12 MODULES PER STRING, 8 STRINGS	(2) INVERTERS= (1) 24kW + 15kW * 1.25 = 48.75KW (58.7A @ 480V, 3φ)



- NOTE:
1. SINGLE STRING FUSE SIZE: 15A
 2. TWO STRING FUSE SIZE: 20A
 3. COMBINER USED IS HELIX DC BRACH SHOALS HARNESS. MODEL NUMBER: HELIX PLUG AND PLAY DC BRANCH REFER TO SPEC.

SUB-ARRAY-1
96 MODULES, 12 MODULES PER STRING, 8 STRINGS (4 PER MPPT) STRING AMPERAGE: 5.98A IMP, 6.46A ISC: X 1.25= 8.07A STRING VOLTAGE: VMP HIGH TEMP 748.2V, MAX VOC 887.8V

SUB-ARRAY-2
48 MODULES, 12 MODULES PER STRING, 4 STRINGS (2 PER MPPT) STRING AMPERAGE: 5.98A IMP, 6.46A ISC: X 1.25= 8.07A STRING VOLTAGE: VMP HIGH TEMP 748.2V, MAX VOC 887.8V

PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

24351 EL TORO RD.
LAGUNA WOODS, CA 92637

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SHEET TITLE

5510 PASEO DEL LAGO
WEST SINGLE LINE

SHEET NUMBER

E1.8

PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

24351 EL TORO RD.
LAGUNA WOODS, CA 92637

PROJECT DEVELOPER



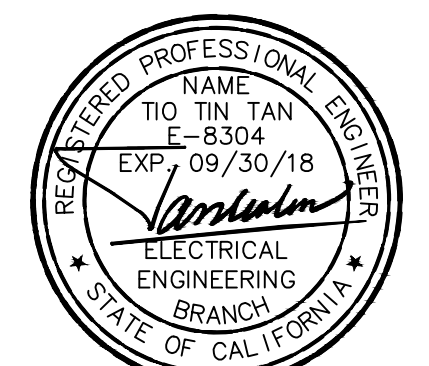
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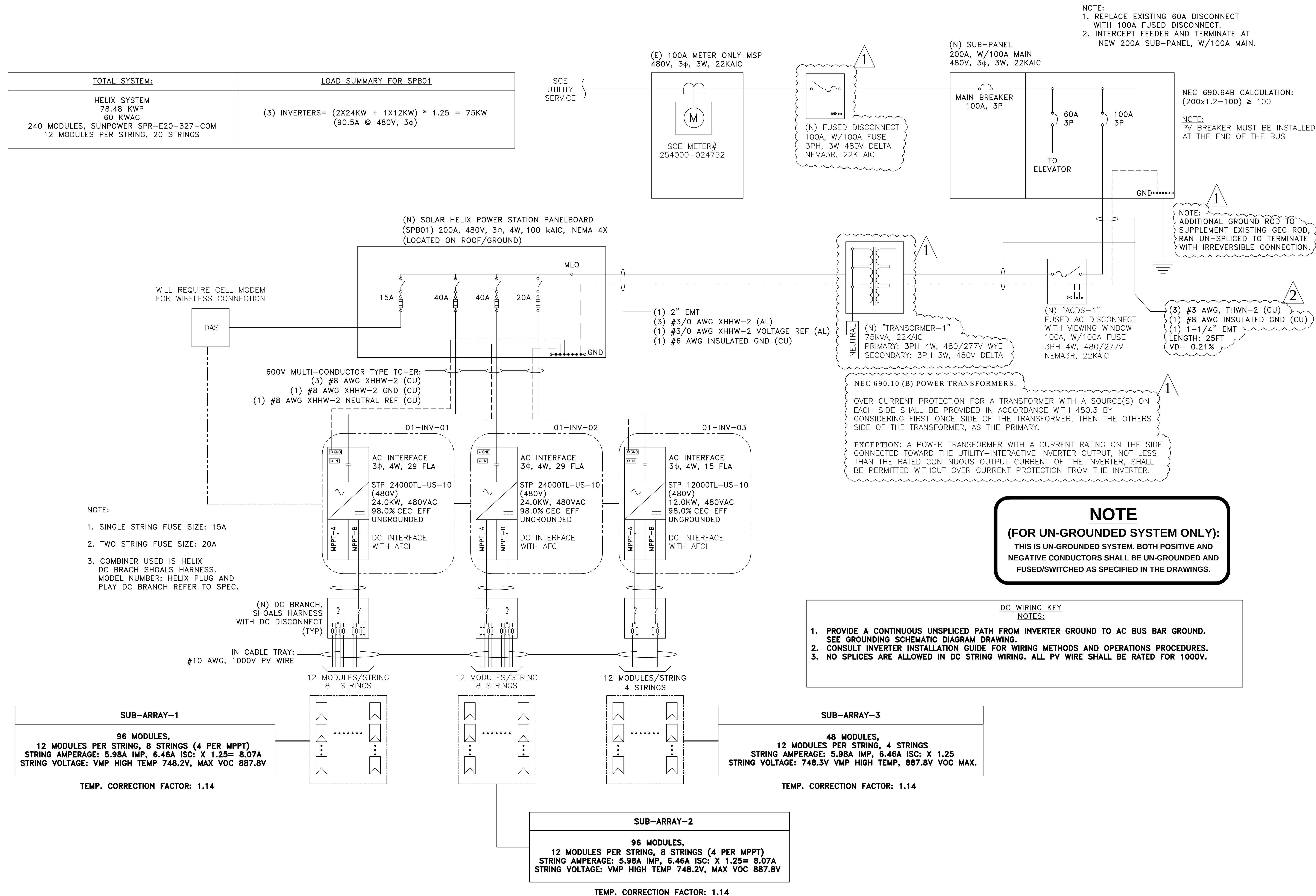
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SHEET TITLE

2353 VIA PUERTA
SINGLE LINE

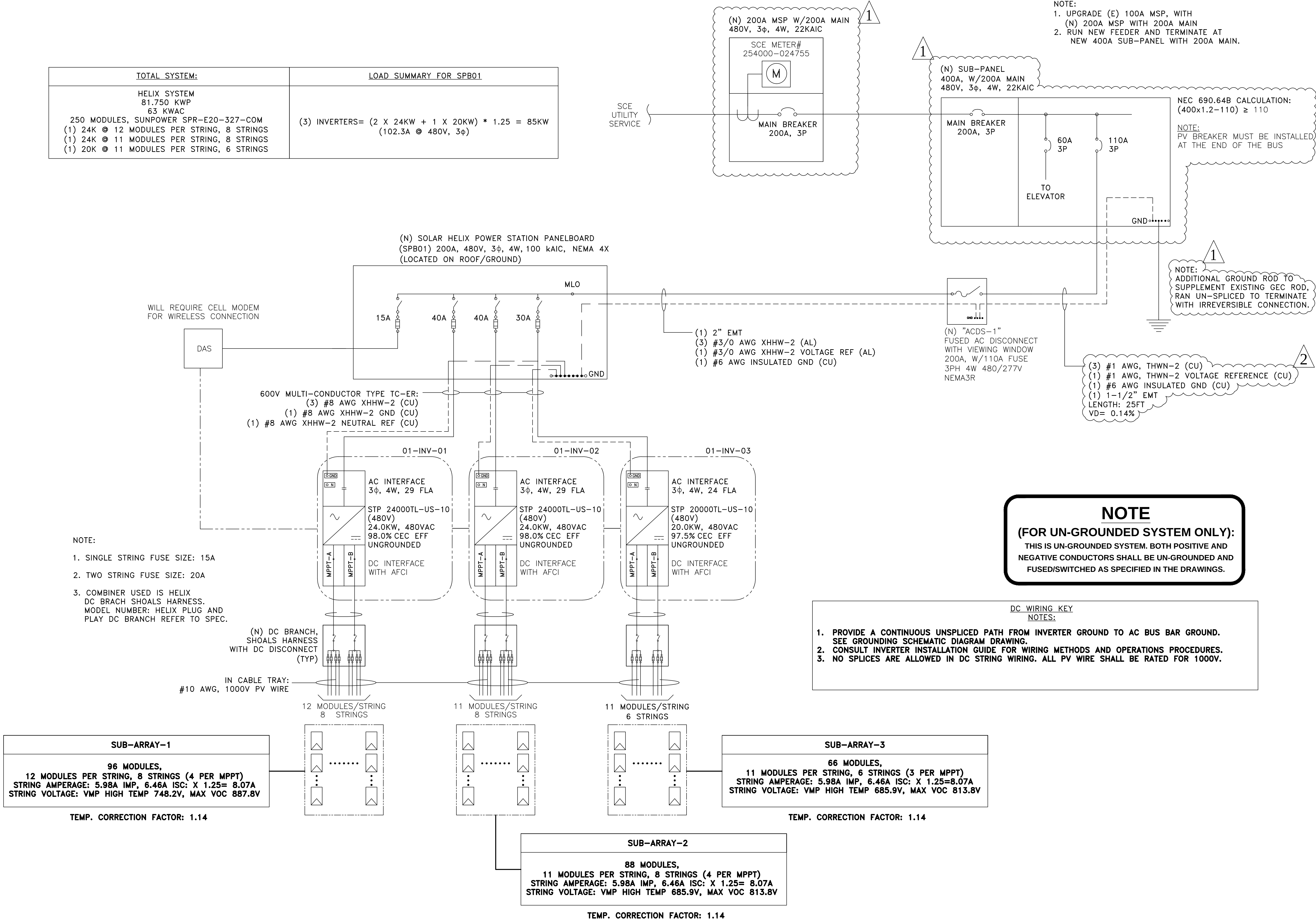
SHEET NUMBER

E 1.9



2381 VIA MARIPOSA SINGLE LINE

TOTAL SYSTEM:	LOAD SUMMARY FOR SPB01
HELIX SYSTEM 81.750 KWP 63 KWAC 250 MODULES, SUNPOWER SPR-E20-327-COM (1) 24K @ 12 MODULES PER STRING, 8 STRINGS (1) 24K @ 11 MODULES PER STRING, 8 STRINGS (1) 20K @ 11 MODULES PER STRING, 6 STRINGS	(3) INVERTERS= (2 X 24KW + 1 X 20KW) * 1.25 = 85KW (102.3A @ 480V, 3φ)



PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

24351 EL TORO RD.
LAGUNA WOODS, CA 92637

PROJECT DEVELOPER

SOLAR OPTIMUM

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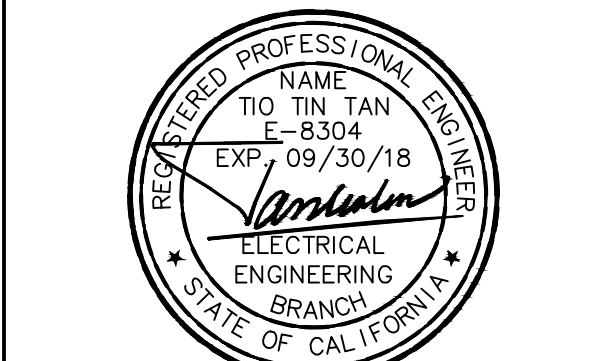
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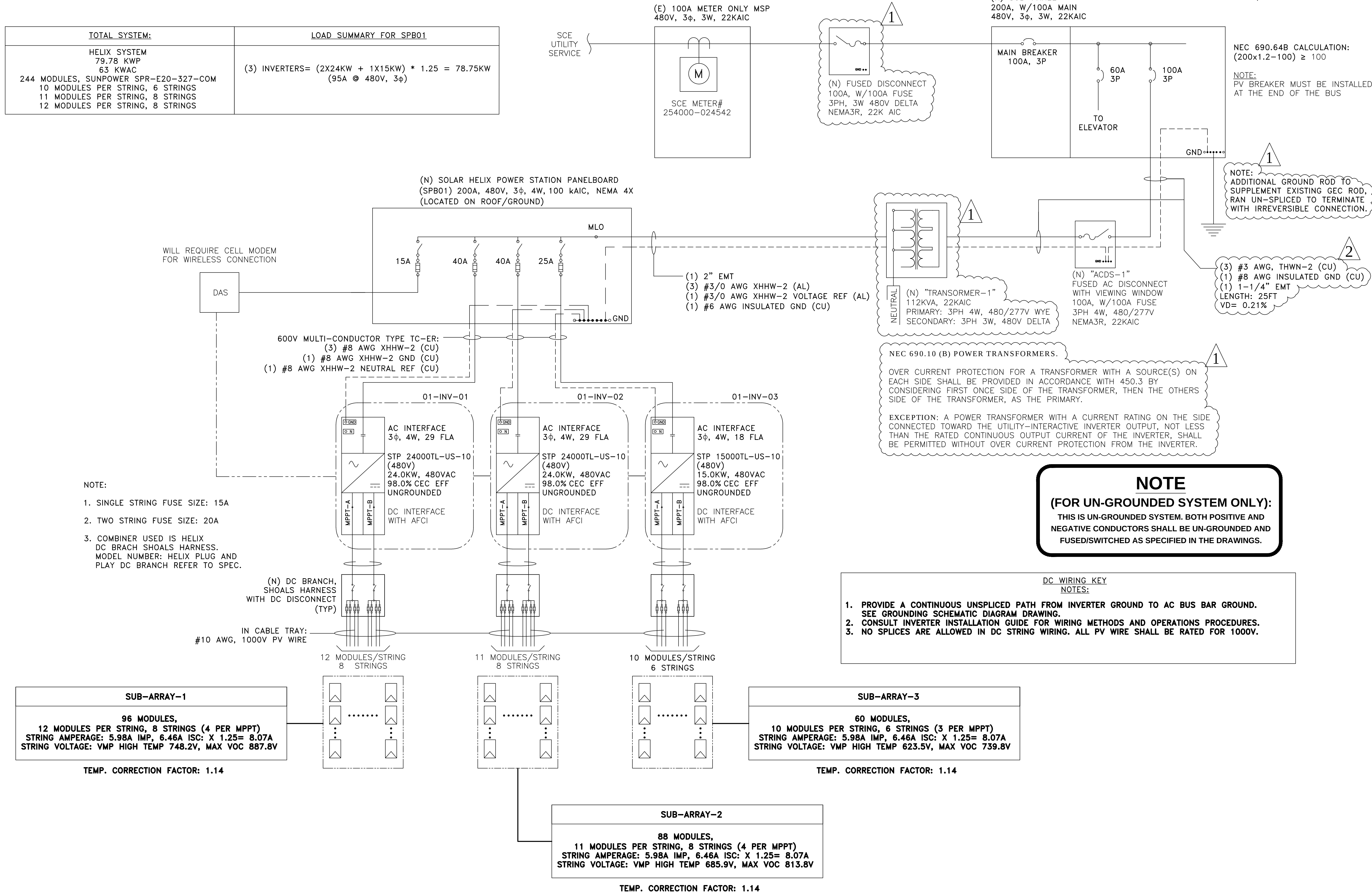
2381 VIA MARIPOSA
SINGLE LINE

SHEET NUMBER

E1.10

2400 VIA MARIPOSA WEST SINGLE LINE

TOTAL SYSTEM:	LOAD SUMMARY FOR SPB01
HELIX SYSTEM 79.78 KWP 63 KWAC 244 MODULES, SUNPOWER SPR-E20-327-COM 10 MODULES PER STRING, 6 STRINGS 11 MODULES PER STRING, 8 STRINGS 12 MODULES PER STRING, 8 STRINGS	(3) INVERTERS= (2X24KW + 1X15KW) * 1.25 = 78.75KW (95A @ 480V, 3φ)



PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

24351 EL TORO RD.
LAGUNA WOODS, CA 92637

PROJECT DEVELOPER

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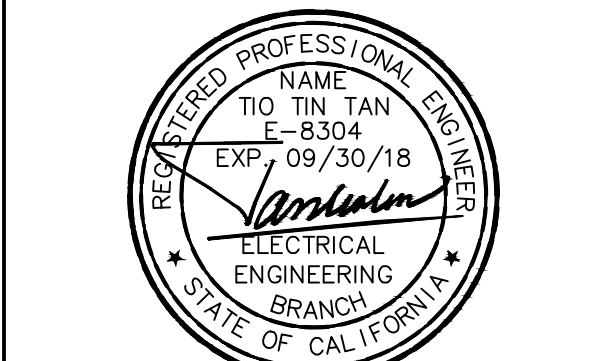
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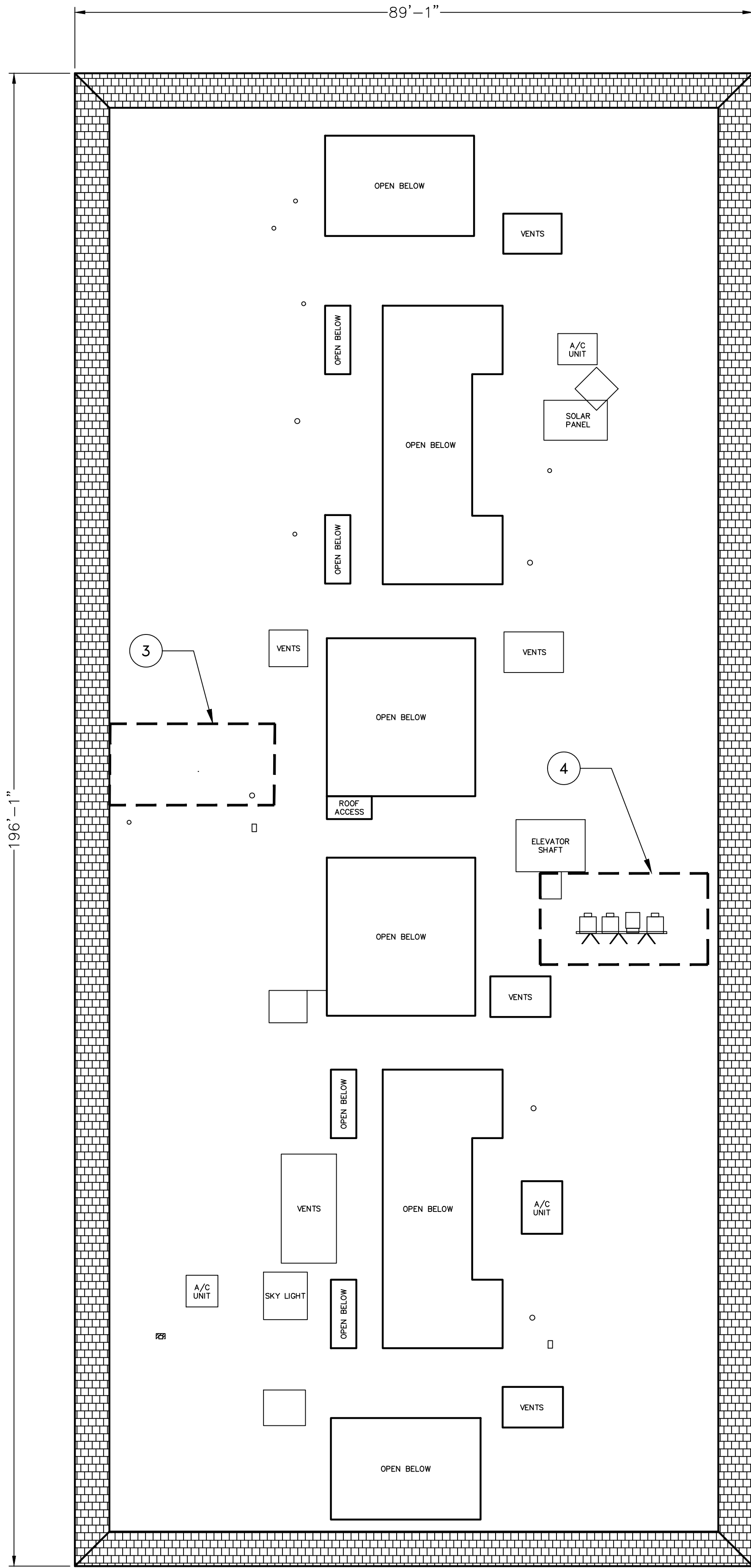
DRAWN BY: SCOTT
CHECKED BY: T.T.T.
SCALE: AS SHOWN
DATE: 12/21/16

SHEET TITLE

2400 VIA MARIPOSA
SINGLE LINE

SHEET NUMBER

E1.11

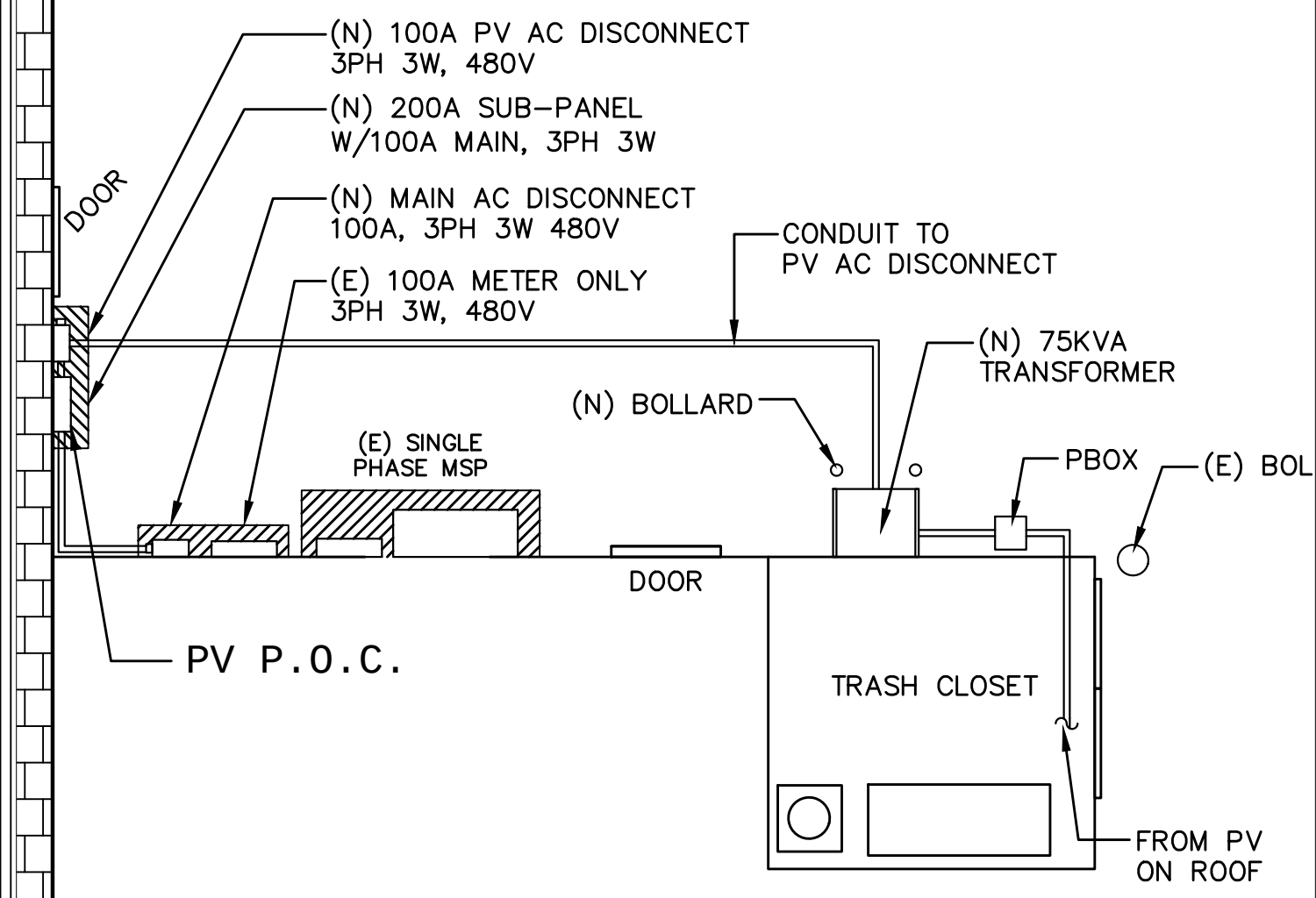


1 BUILDING LAYOUT
SCALE: 3/32"=1'-0"

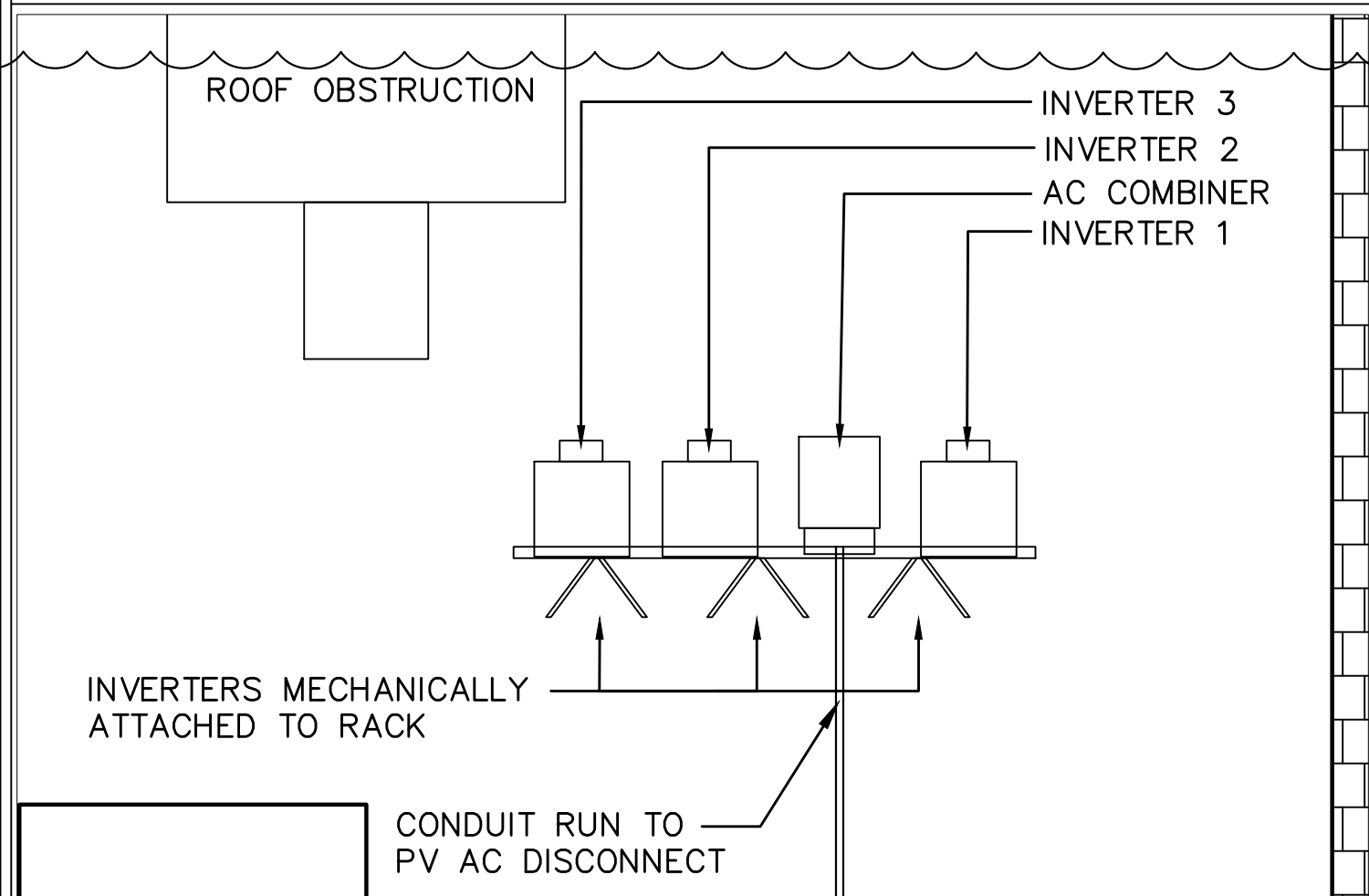
2393 VIA MARIPOSA WEST SITE PLAN

NOTES:

1. ROOF PERIMETER FIRE CLEARANCE: MIN 4'-0".
2. FIRE CLEARANCE AROUND SKYLIGHT: MIN 4'-0".
3. FIRE CLEARANCE AROUND OPENINGS: MIN 4'-0".
4. ROOF HEIGHT: 40'-0" APPROXIMATE.
5. ROOF PITCH: 0"
6. CONDUIT TO PENETRATE ROOF AND ENTER THIRD FLOOR LAUNDRY ROOM. CONDUIT RUN WILL CONTINUE DOWN ALONG SIDE THE TRASH SHOOT FINALLY ENTERING TRASH CLOSET AT GROUND LEVEL. CONDUIT WILL THEN PENETRATE WALL INSIDE OF TRASH CLOSET AND TERMINATE AT PV AC DISCONNECT ON OPPOSITE SIDE OF WALL, USE ADEQUATE SLEEVE TO PROTECT CONDUIT FROM ELEMENTS.

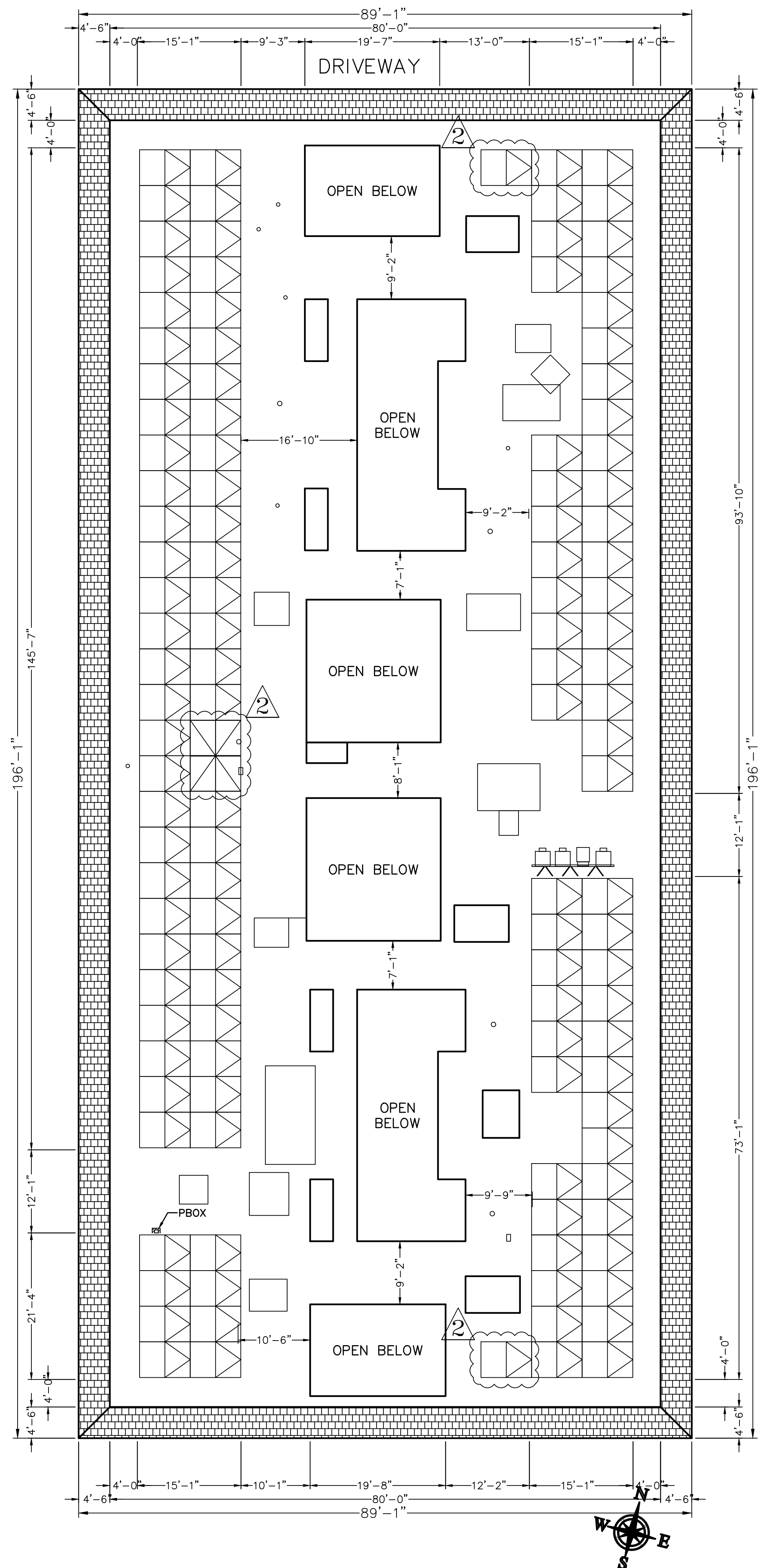
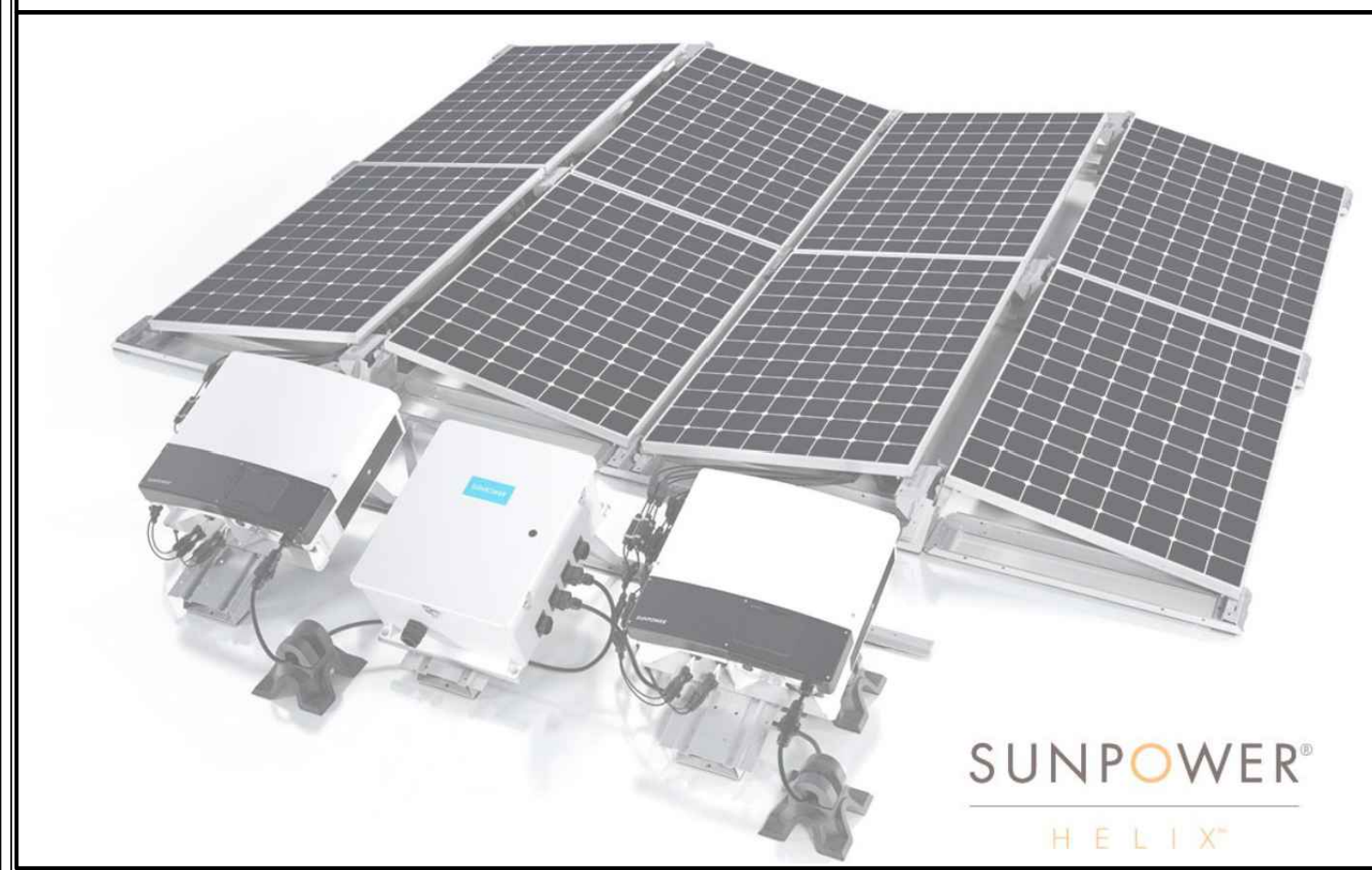


3 MAIN PANEL LOCATION 1ST FLOOR
SCALE: 1/4" = 1'-0"



4 POWER STATION LOCATION ROOF
SCALE: 1/4" = 1'-0"

SUNPOWER HELIX DUAL TILT



2 ARRAY LAYOUT
SCALE: 3/32"=1'-0"

PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

24351 EL TORO RD.
LAGUNA WOODS, CA 92637

PROJECT DEVELOPER



SOLAR OPTIMUM, INC
501 WEST GLENOAKS BLVD.
GLENDALE, CA 91202
800-552-9970
WWW.SOLAROPTIMUM.COM
LICENSE NUMBER 972228 C10

CONTRACTOR



SOLAR OPTIMUM, INC
501 WEST GLENOAKS BLVD.
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SIGNATURE

STAMP

CITY APPROVAL STAMP

REVISION		
MARK	DATE	DESCRIPTION
△	11/14/16	AS BUILT
△	12/14/16	AS BUILT

DRAWN BY: SCOTT
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SHEET TITLE

SITE PLAN
2393 VIA MARIPOSA
WEST GARDEN VILLA

SHEET NUMBER

S 1

WIND LOAD SUMMARY						
OUTPUTS		WIND ZONES				
PANEL TYPES	ATTRIBUTES	A	B	C	D	E
1	Ballast Block(s)	6	0	12	5	0
	Wind Anchor(s)	1	1	0	0	0
	Pressure (psf)	4.62	2.40	6.84	4.21	2.40
2	Ballast Block(s)	0	0	9	3	0
	Wind Anchor(s)	1	1	0	0	0
	Pressure (psf)	2.40	2.40	5.71	3.49	2.40
3	Ballast Block(s)	0	0	9	3	0
	Wind Anchor(s)	1	1	0	0	0
	Pressure (psf)	2.26	2.26	5.58	3.34	2.26
4	Ballast Block(s)	0	9	3	0	0
	Wind Anchor(s)	1	0	0	0	0
	Pressure (psf)	2.26	5.58	3.34	2.26	2.26
Minimum Array Size by Zone (Tents)		18	15	16	17	6
L _B – BUILDING SCALING FACTOR (FT)		K _Z – SITE WIND PRESSURE FACTOR				
35.42		0.86				

INVERTER SUMMARY TABLE				
ROOF	MODULES	INVERTER TYPE	INVERTER QTY	STRING CONFIGURATION
1	192	24kW	2	MPPT 1: 12 MODULES, 4 STRING
				MPPT 2: 12 MODULES, 4 STRING
	48	12kW	1	MPPT 1: 12 MODULES, 2 STRING
				MPPT 2: 12 MODULES, 2 STRING
TOTAL	240		3	

BALLAST AND ANCHOR SUMMARY					
ROOF	BALLAST COUNT	ANCHOR COUNT	ARRAY WEIGHT (LBS)	MAX. PSF	AVERAGE PSF
1	96	122	11,934	4.62	2.58
TOTAL	96	122			

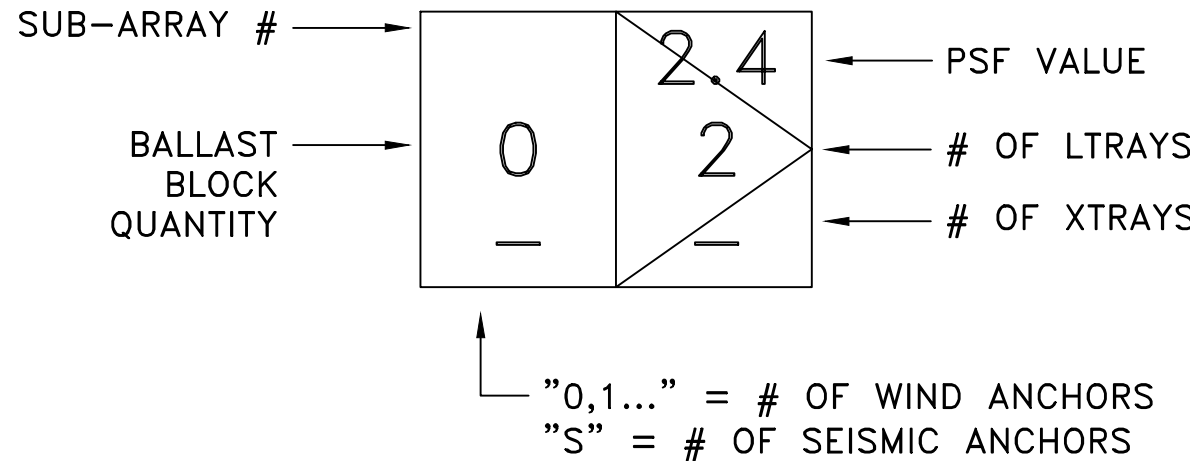
- NOTES:
- ALREADY INCLUDED THE ADDITIONAL ANCHOR & BALLAST IDENTIFIED IN NOTES ITEM#2.
 - EXISTING TRUSSES TYPICAL: 2" X 4" @ 24" O.C.
 - MAXIMUM 8PSF FOR BALLAST SYSTEM.

SITE CHARACTERIZATION			
BUILDING HEIGHT (ft)	40	BUILDING WIDTH (ft)	89
BUILDING LENGTH (ft)	196	PARAPET HEIGHT (ft)	0.333
WIND SPEED (ASCE7-10) (mph)	130	EXPOSURE CATEGORY	B TO C
EXPOSURE TRANSITION DISTANCE (ft)	1,446	BALLAST BLOCK WEIGHT (lbs)	14
MAX ALLOWABLE SYSTEM PRESSURE (psf)	8	ANCHOR TYPE	OMG POWERGRIP PLUS
DESIGN SPECTRAL RESPONSE ACCELERATION (S _{DS}) (g)	0.994	SEISMIC IMPORTANCE FACTOR (I _p)	1

2393 VIA MARIPOSA WEST BALLAST AND PENETRATION PLAN

PROPOSED SYSTEM SPECIFICATION
TOTALS: 78.480 kWp 240 HIGH EFF. (327W) MODULES 12 MODULES/STRING, 20 STRINGS ROOF HEIGHT: 40' ROOF PITCH: 0°

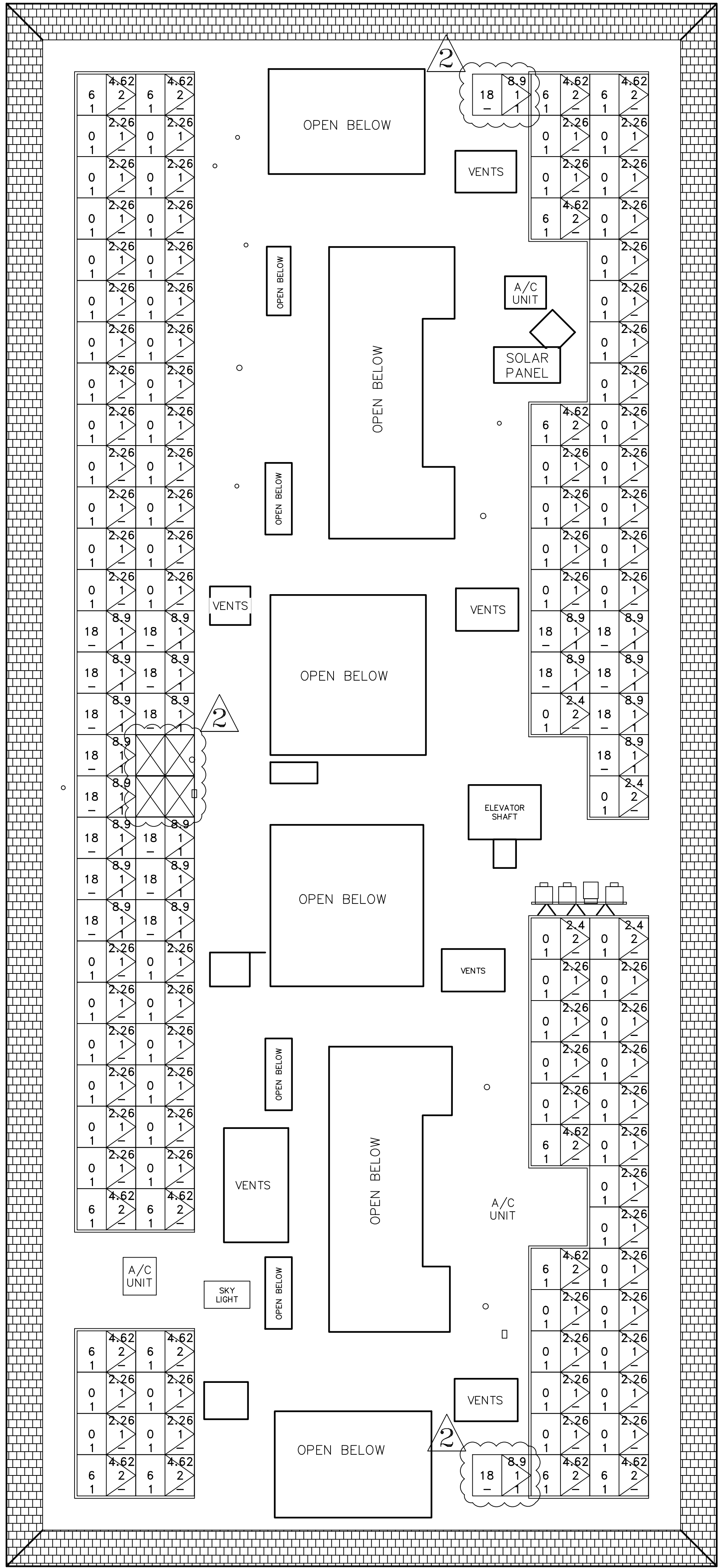
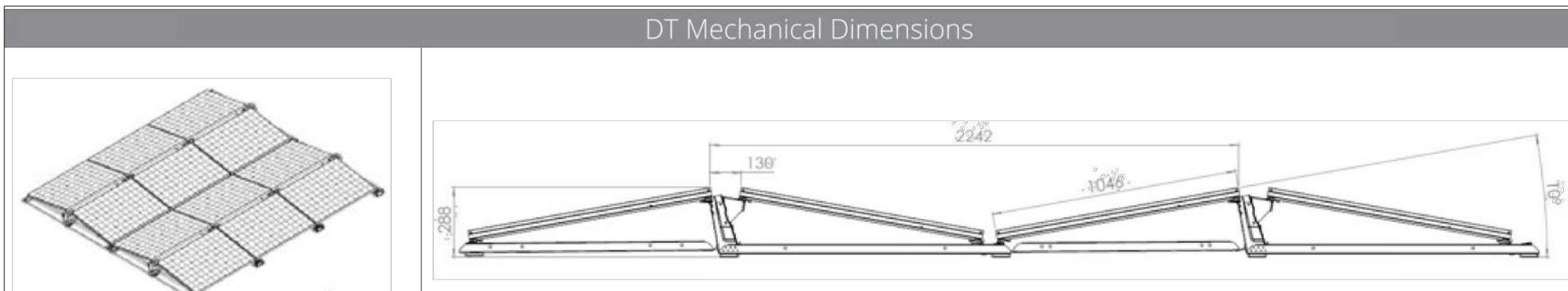
- NOTES:
- SUBARRAYS THAT DID NOT MEET THE REQUIRED MINIMUM ARRAY SIZE WILL REQUIRE ADDITIONAL ANCHORING. PLEASE CONSULT STRUCTURAL ENGINEERING.
 - ADDITIONAL ANCHORS REQUIRED PER SUBARRAY FOR LATERAL LOADS.
2.1 SUBARRAY 3: [2]
 - ADDITIONAL ANCHORS CAN BE PLACED ANYWHERE WITHIN THE SUBARRAY, AND ADDITIONAL BALLAST MUST BE PLACED WHERE THE MODULE PSF IS LOWEST.



LEGEND
SCALE: N.T.S.



Tilt angle	10 degrees
Module compatibility	SPR-E20-327-COM (327 W DC)*
Ground coverage ratio (GCR)	0.91 0.67
Base system weight	9.3 kg/m² (1.9 psf) 12.2 kg/m² (2.5 psf)
Maximum ballast capacity	58.6 kg/m² (12 psf)
Warranty	25 years
Certifications	UL 2703 (pending)
Wind tunnel testing	ASCE 7-10 and SEAOC PV2 compliant
Material (structure)	5052 H32 aluminum and 301 stainless steel
Material (foot pad)	Recycled rubber (92% approx.), polyurethane binder (8% approx.)
Compatible roof anchors	EcoFasten Solar® Eco-65/F-202, OMG PowerGrip®, OMG PowerGrip Plus®



1 BALLAST AND PENETRATION LAYOUT
SCALE: N.T.S.

PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

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SHEET TITLE

BALLAST AND PENETRATION
SITE PLAN
2393 VIA MARIPOSA
WEST GARDEN VILLA

SHEET NUMBER

STR 1