

WARNING: PHOTOVOLTAIC
POWER SOURCE

LABEL "PHOTOVOLTAIC POWER SOURCE" SHALL BE PERMANENTLY AFFIXED ON ALL EXPOSED RACEWAYS, CABLE TRAYS, PULL BOXES, AND JUNCTION BOXES. LABELS SHALL BE SPACED NO GREATER THAN 10 FEET APART AND SUITABLE FOR THE ENVIRONMENT IN WHICH THEY ARE INSTALLED.

**WARNING**

ARC FLASH AND SHOCK HAZARD
APPROPRIATE PPE AND TOOLS REQUIRED
WHEN WORKING ON THIS EQUIPMENT

OUTDOOR RATED ARC FLASH STICKER MOUNTED ON ALL EQUIPMENT

NOTES:
1. ORANGE BACKGROUND
2. BLACK LETTERING
3. MINIMUM 3/8" LETTER HEIGHT
4. ALL CAPITAL LETTERS
5. ARIAL OR SIMILAR FONT, NON-BOLD
6. WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT

INVERTER 1: 24kW
WARNING: ELECTRIC SHOCK HAZARD

THE DC CONDUCTORS OF THIS PHOTOVOLTAIC ARRAY ARE UNGROUNDED AND MAY BE ENERGIZED

DC DISCONNECT
OPERATING CURRENT: 29.6 A
OPERATING VOLTAGE: 748.2 V
MAXIMUM CURRENT: 32.2A
MAXIMUM VOLTAGE: 887.8 V

AC DISCONNECT
MAXCIMUM AC 36.25 A
OPERATING CURRENT: 29 A
NOMINAL AC 480 V
OPERATING VOLTAGE: 480 V

INVERTER 2: 15kW
WARNING: ELECTRIC SHOCK HAZARD

THE DC CONDUCTORS OF THIS PHOTOVOLTAIC ARRAY ARE UNGROUNDED AND MAY BE ENERGIZED

DC DISCONNECT
OPERATING CURRENT: 22.2 A
OPERATING VOLTAGE: 623.5 V
MAXIMUM CURRENT: 24.2 A
MAXIMUM VOLTAGE: 739.8 V

AC DISCONNECT
MAXCIMUM AC 22.5 A
OPERATING CURRENT: 18 A
NOMINAL AC 480 V
OPERATING VOLTAGE: 480 V

INVERTER 1: 12kW
WARNING: ELECTRIC SHOCK HAZARD

THE DC CONDUCTORS OF THIS PHOTOVOLTAIC ARRAY ARE UNGROUNDED AND MAY BE ENERGIZED

DC DISCONNECT
OPERATING CURRENT: 14.8 A
OPERATING VOLTAGE: 748.2 V
MAXIMUM CURRENT: 16.1 A
MAXIMUM VOLTAGE: 887.8 V

AC DISCONNECT
MAXCIMUM AC 18.75 A
OPERATING CURRENT: 14.4 A
NOMINAL AC 480 V
OPERATING VOLTAGE: 480 V

WARNING!
**INVERTER OUTPUT CONNECTION
DO NOT RELOCATE THIS
OVERCURRENT DEVICE**

MARKING FOR MAIN SERVICE

PHOTOVOLTAIC POWER SOURCE

OPERATING AC VOLTAGE: 277/480 V
MAXIMUM OPERATING AC OUTPUT
CURRENT: 76.75 AMPS

MARKING FOR MAIN PANEL COVER

CAUTION:
**SOLAR ELECTRIC
SYSTEM CONNECTED**

MARKING FOR MAIN SERVICE

**SOLAR GENERATOR
AC DISCONNECT SWITCH**
WARNING: ELECTRIC SHOCK HAZARD

DO NOT TOUCH TERMINALS.
TERMINALS ON BOTH LINE &
LOAD SIDE MAY BE ENERGIZED
IN THE OPEN POSITION.

OPERATING CURRENT: 76.75 A
OPERATING VOLTAGE: 480 V

**SOLAR AC
COMBINER BOX -
PANELBOARD**
WARNING: ELECTRIC SHOCK HAZARD

DO NOT TOUCH TERMINALS.
TERMINALS ON BOTH LINE &
LOAD SIDE MAY BE ENERGIZED
IN THE OPEN POSITION.

OPERATING CURRENT: 76.75 A
OPERATING VOLTAGE: 480 V

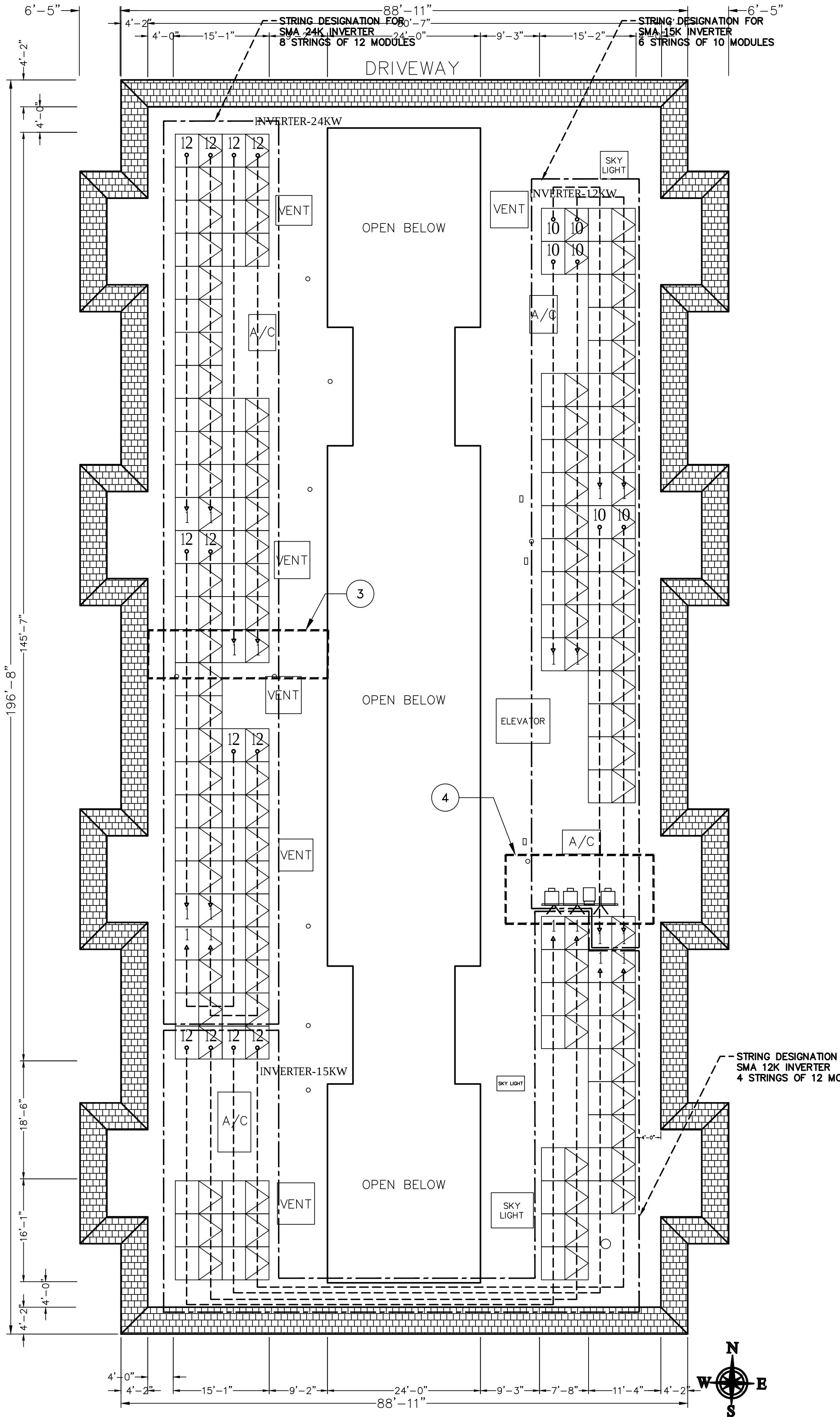
CAUTION:
**EMERGENCY AC
SOLAR DISCONNECT
RAPID SHUTDOWN SYSTEM
IS LOCATED AT THE
AC COMBINER BOX ON THE ROOF
"YOU MUST TURN OFF ALL
INVERTER BREAKERS"**

MARKING FOR MAIN SERVICE AND AC COMBINER

NOTES:
1. LETTERING ON SIGNS SHALL BE CAPITAL LETTERS, MINIMUM SIZE OF 1/8" HIGH. LETTERING SHALL BE REFLECTIVE RED ON WHITE BACKGROUND OR VICE VERSA.
2. CLEARLY LABEL ALL CIRCUIT BREAKERS IN THE PANELBOARD. THE LABEL SHALL INDICATE THE NAME OF THE DEVICE IT SERVES.

2399 VIA MARIPOSA WEST

- 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.



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

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

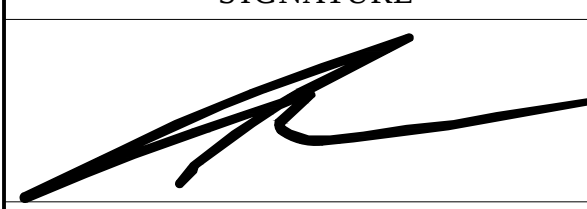
CONTRACTOR



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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: 12/22/16

SHEET TITLE

LABELS

SHEET NUMBER

S1.3L

CAUTION

POWER TO THIS BUILDING IS ALSO SUPPLIED
FROM THE FOLLOWING SOURCES WITH
DISCONNECTS LOCATED AS SHOWN:

The diagram is a floor plan of a building section. On the left is a large rectangle labeled 'TRASH CLOSET' with a door on its left side. Below it are two small circles. To the right of the trash closet is a horizontal line labeled 'DOOR'. Further right is a hatched rectangular area labeled '(E) SINGLE PHASE MSP'. To the right of that is a circular area with an upward arrow and the text 'YOU ARE HERE'. Below this circle is a dashed line leading to a small circle. To the right of this is another 'DOOR' label. Above the 'TRASH CLOSET' and 'DOOR' labels are three lines pointing to specific locations: one to the top right corner of the trash closet, one to the top of the 'DOOR' line, and one to the top of the 'YOU ARE HERE' circle. These lines are labeled: '200A SUB-PANEL W/100A MAIN, PV P.O.C.', 'MAIN 100A AC DISCONNECT', and '100A METER ONLY'. Below the 'YOU ARE HERE' circle is a line labeled '100A PV AC DISCONNECT' pointing to the dashed line.

200A SUB-PANEL
W/100A MAIN, PV P.O.C.

MAIN 100A
AC DISCONNECT

100A METER ONLY

TRASH CLOSET

DOOR

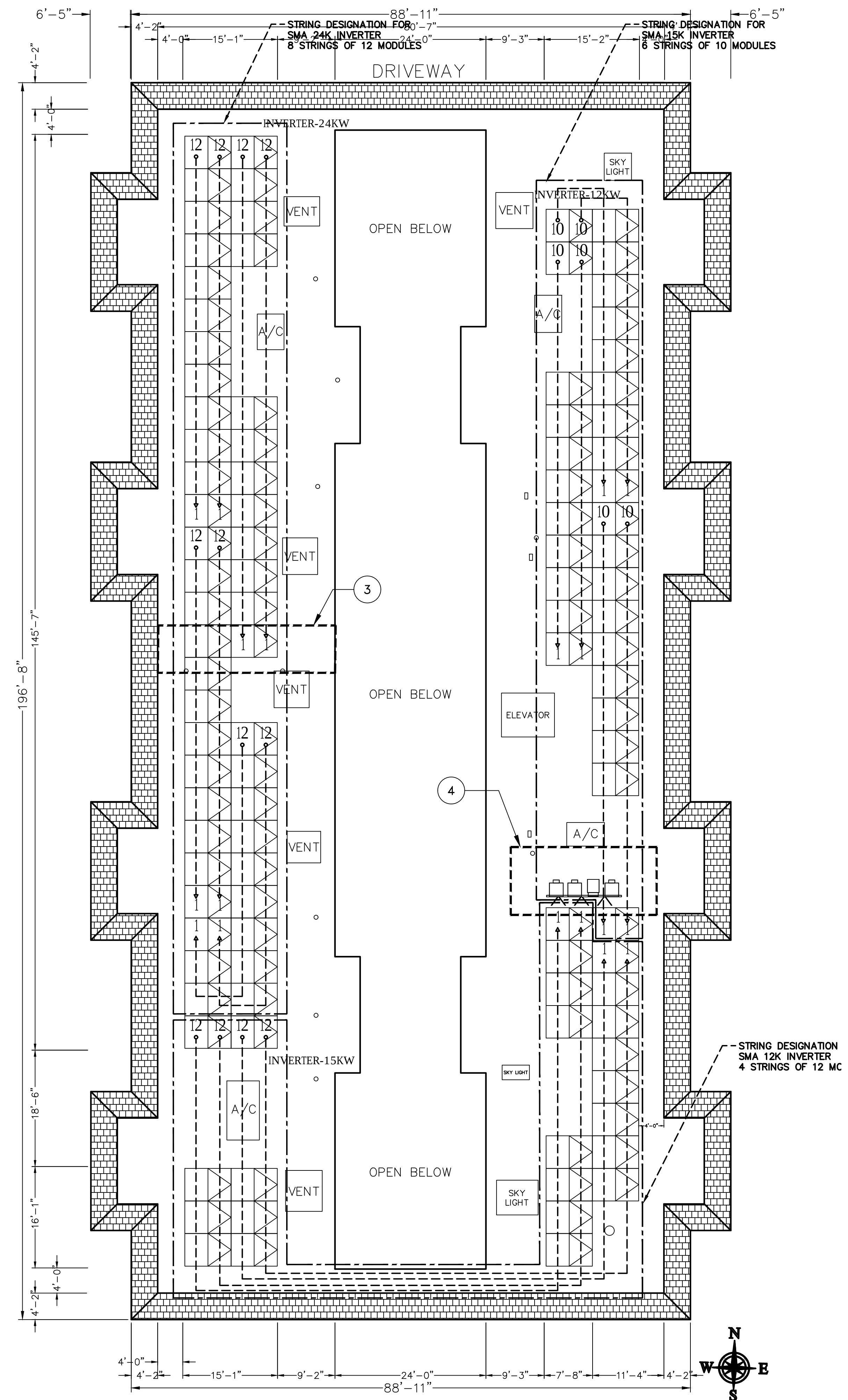
(E) SINGLE
PHASE MSP

YOU
ARE
HERE

100A PV
AC DISCONNECT

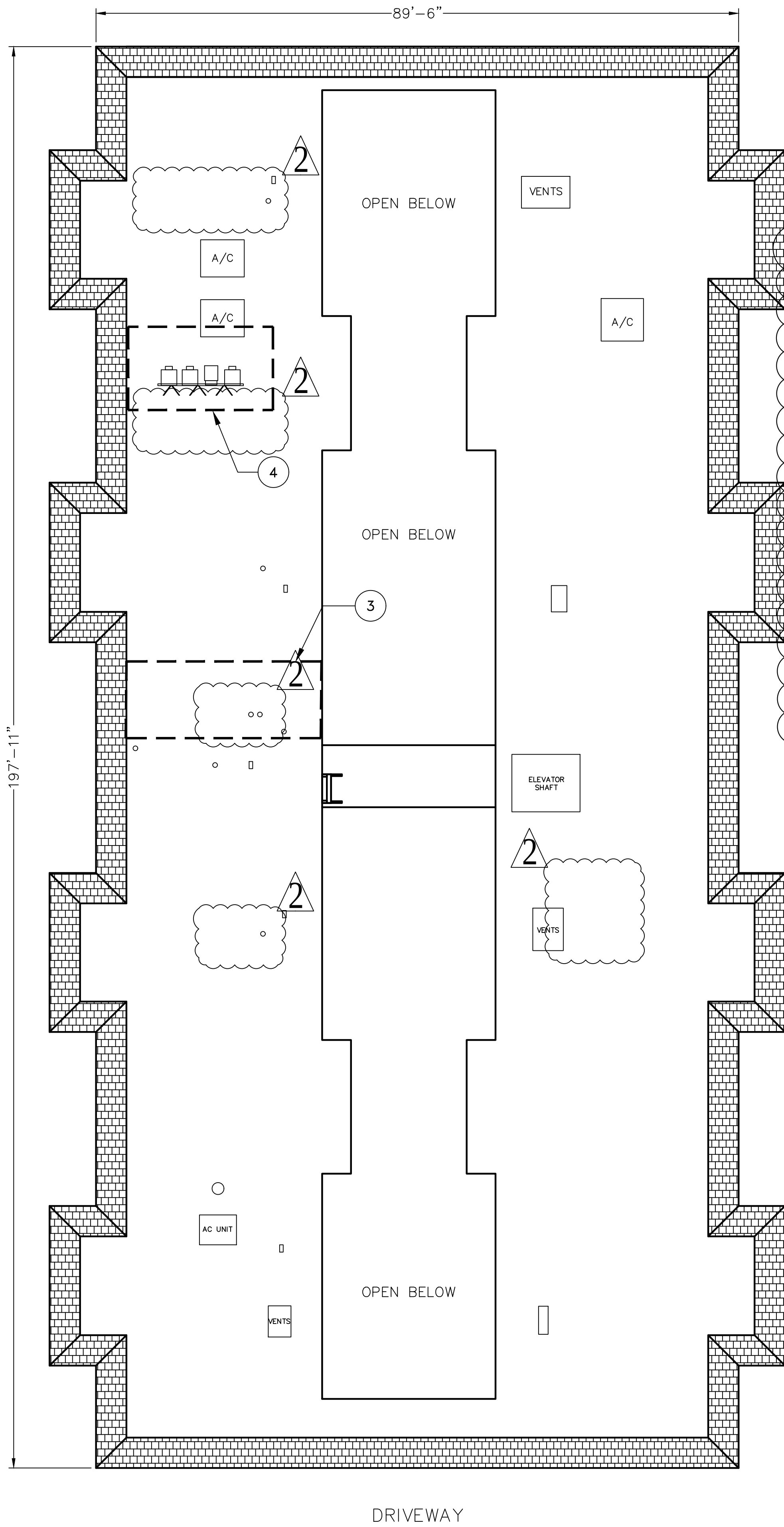
DOOR

1
DIRECTORY MAP
SCALE: N.T.S.



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

DIRECTORY MAP

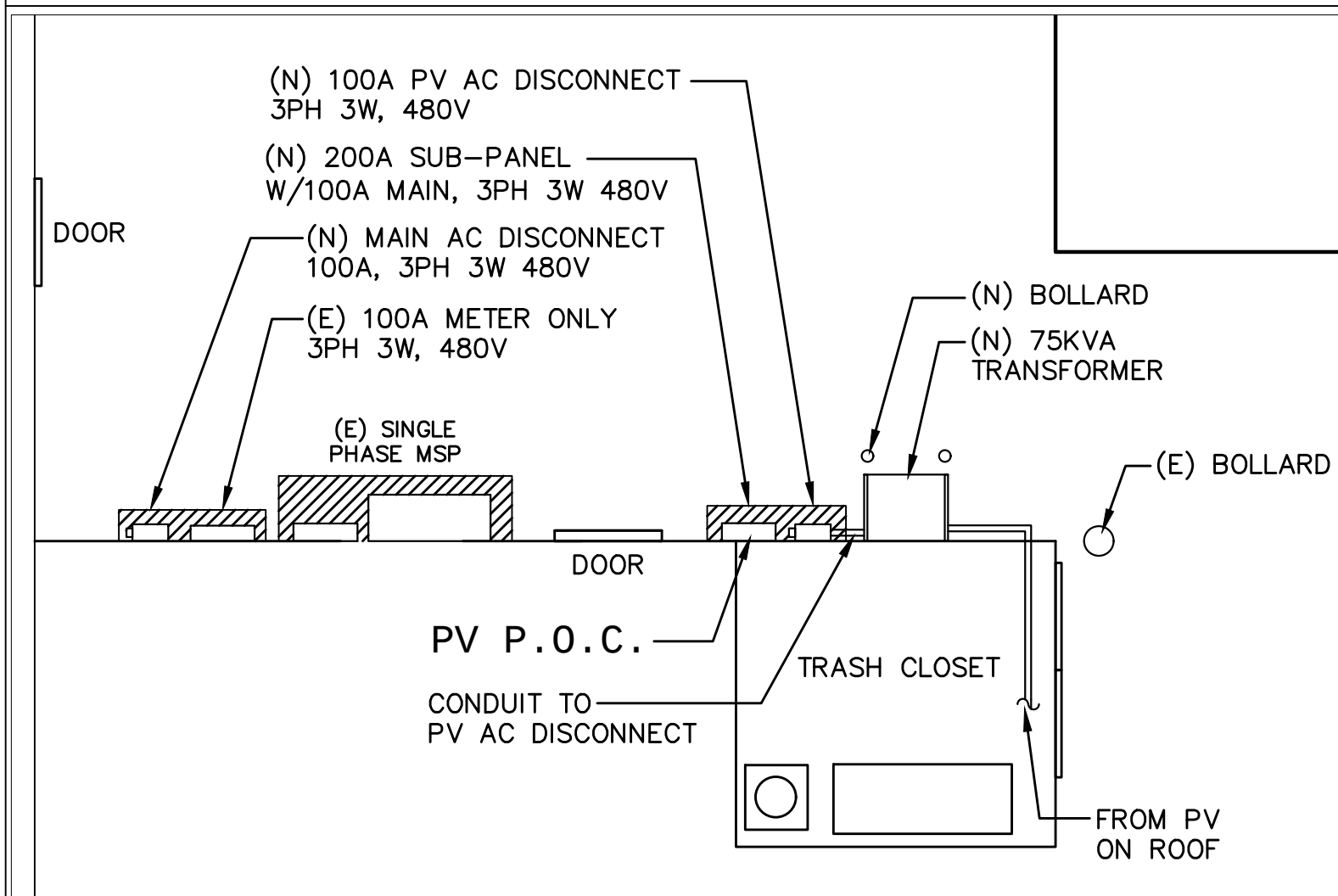


1 BUILDING LAYOUT
SCALE: 3/32"=1'-0"

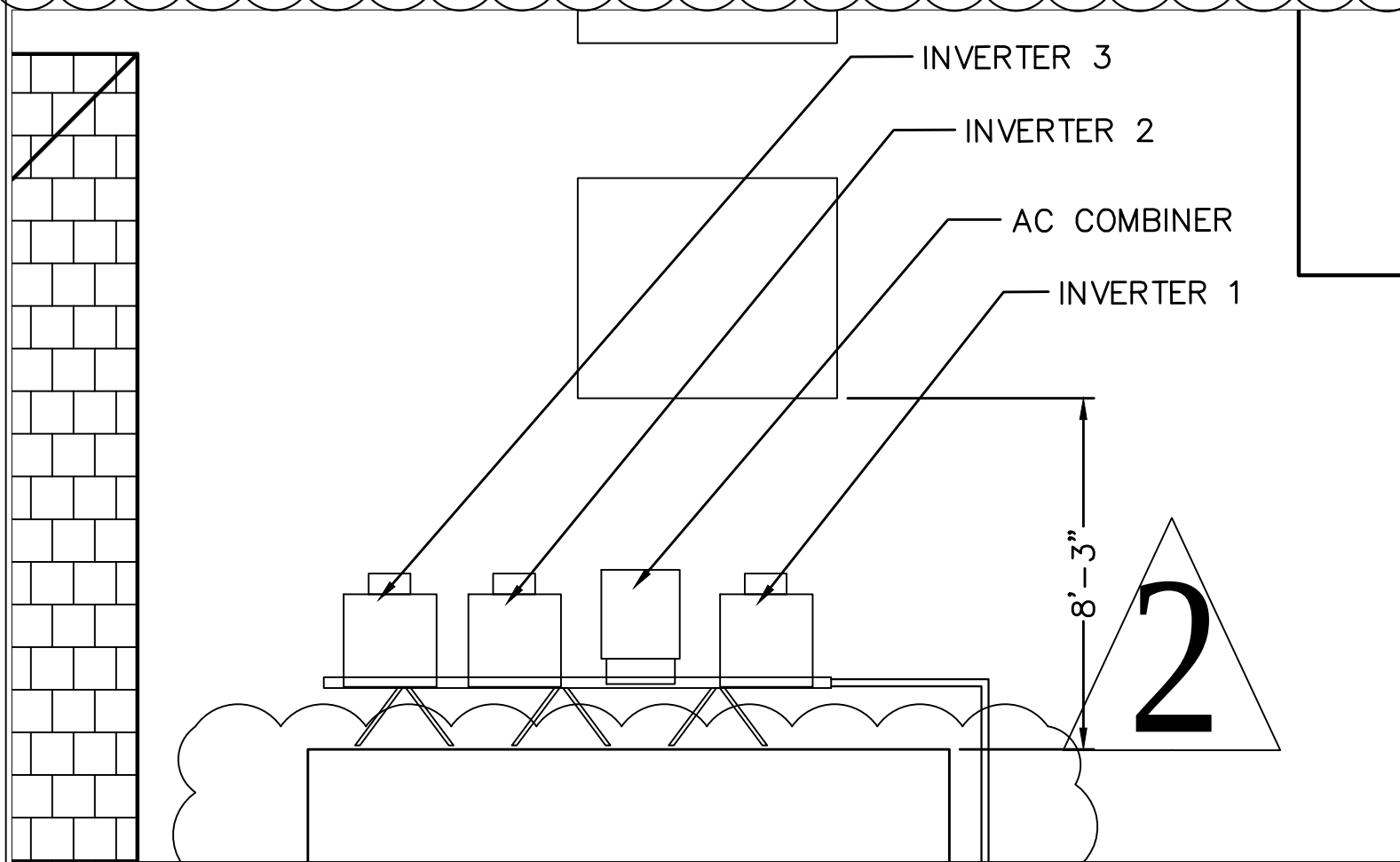
3242 SAN AMADEO VILLA PUERTA SITE PLAN

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.

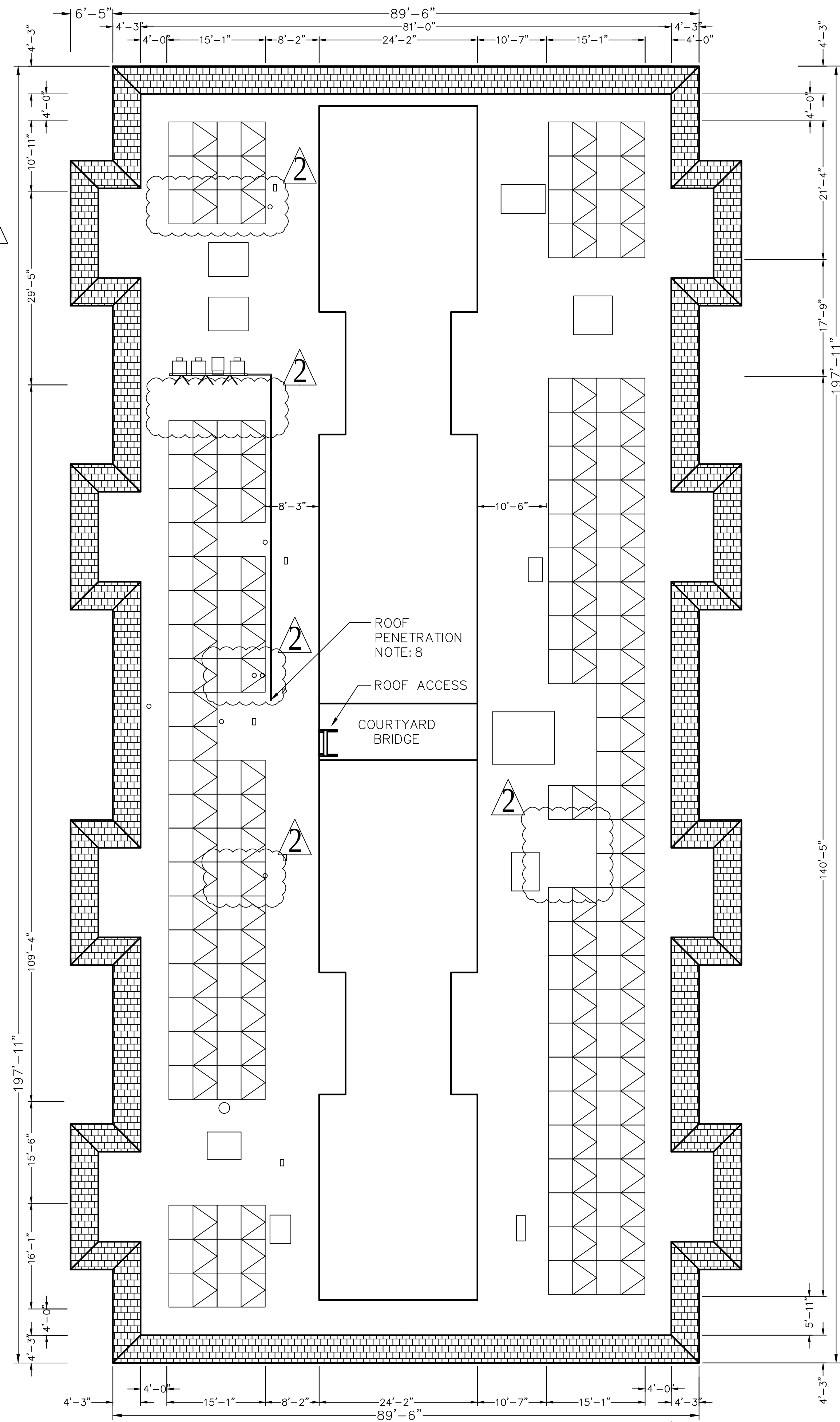
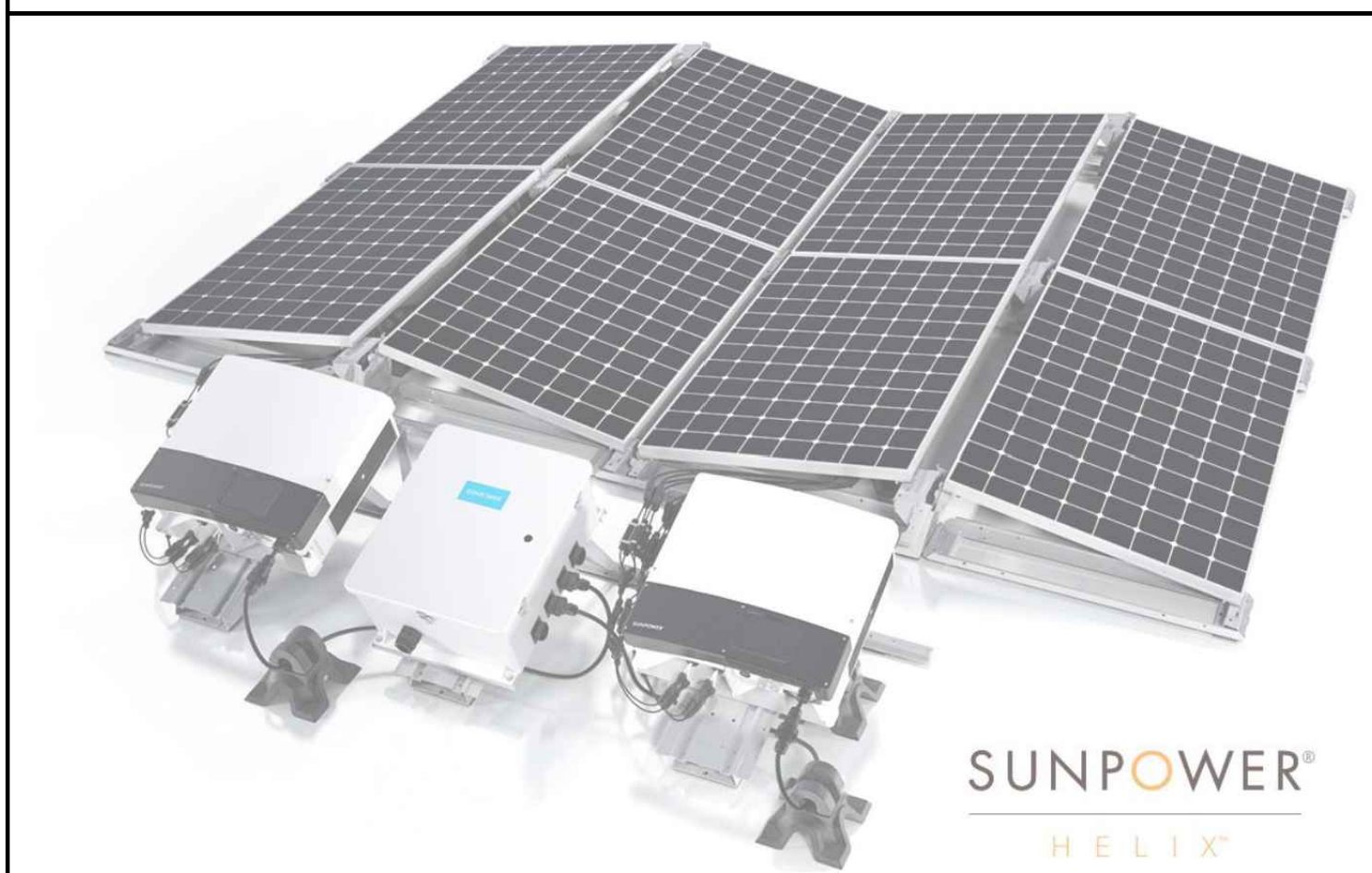


3 MAIN PANEL LOCATION 1ST FLOOR
SCALE: N.T.S.



4 POWER STATION LOCATION ROOF
SCALE: N.T.S.

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



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Δ	12/14/16	AS BUILT

DRAWN BY: SCOTT
CHECKED BY: T.T.T.
SCALE: AS SHOWN
DATE: 1/11/17

SHEET TITLE

SITE PLAN
3242 SAN AMADEO
VILLA PUERTA

SHEET NUMBER

S1.4

WIND LOAD SUMMARY						
OUTPUTS		WIND ZONES				
PANEL TYPES	ATTRIBUTES	A	B	C	D	E
1	Ballast Block(s)	3	0	11	4	0
	Wind Anchor(s)	1	1	0	0	0
	Pressure (psf)	3.49	2.40	6.47	3.85	2.40
2	Ballast Block(s)	0	0	8	2	0
	Wind Anchor(s)	1	1	0	0	0
	Pressure (psf)	2.40	2.40	5.34	3.12	2.40
3	Ballast Block(s)	0	0	8	2	0
	Wind Anchor(s)	1	1	0	0	0
	Pressure (psf)	2.26	2.26	5.22	2.98	2.26
4	Ballast Block(s)	15	8	3	0	0
	Wind Anchor(s)	0	0	0	0	0
	Pressure (psf)	7.81	5.22	3.34	2.26	2.26
Minimum Array Size by Zone (Tents)		18	15	17	17	6
L _B – BUILDING SCALING FACTOR (FT)		K _Z – SITE WIND PRESSURE FACTOR				
35.51		0.76				

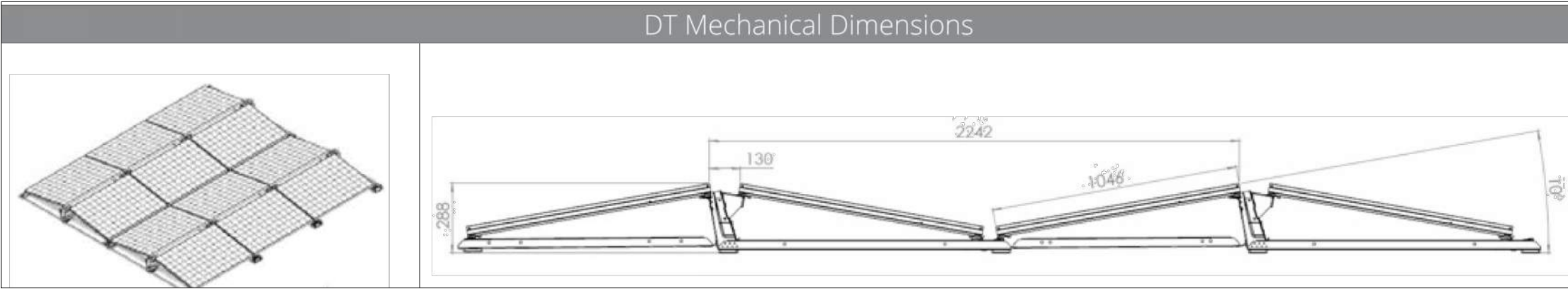
INVERTER SUMMARY TABLE				
ROOF	MODULES	INVERTER TYPE	INVERTER QTY	STRING CONFIGURATION
1	96	24kW	1	MPPT 1: 12 MODULES, 4 STRING MPPT 2: 12 MODULES, 4 STRING
	72	20kW	1	MPPT 1: 12 MODULES, 3 STRING MPPT 2: 12 MODULES, 3 STRING
	44	12kW	1	MPPT 1: 11 MODULES, 2 STRING MPPT 2: 11 MODULES, 2 STRING
TOTAL	212		3	

BALLAST AND ANCHOR SUMMARY					
ROOF	BALLAST COUNT	ANCHOR COUNT	ARRAY WEIGHT (LBS)	MAX. PSF	AVERAGE PSF
1	84	114	10,563	3.49	2.58
TOTAL	84	114			

- 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)	197	PARAPET HEIGHT (ft)	1.5
WIND SPEED (ASCE7-10) (mph)	130	EXPOSURE CATEGORY	B
EXPOSURE TRANSITION DISTANCE (ft)	–	BALLAST BLOCK WEIGHT (lbs)	14
MAX ALLOWABLE SYSTEM PRESSURE (psf)	10	ANCHOR TYPE	OMG POWERGRIP PLUS
DESIGN SPECTRAL RESPONSE ACCELERATION (S _{ps}) (g)	1.008	SEISMIC IMPORTANCE FACTOR (I _p)	1

Tilt angle	10 degrees
Module compatibility	SPR-E20-327-COM (327 W DC)*
Ground coverage ratio (GCR)	0.910.67
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®



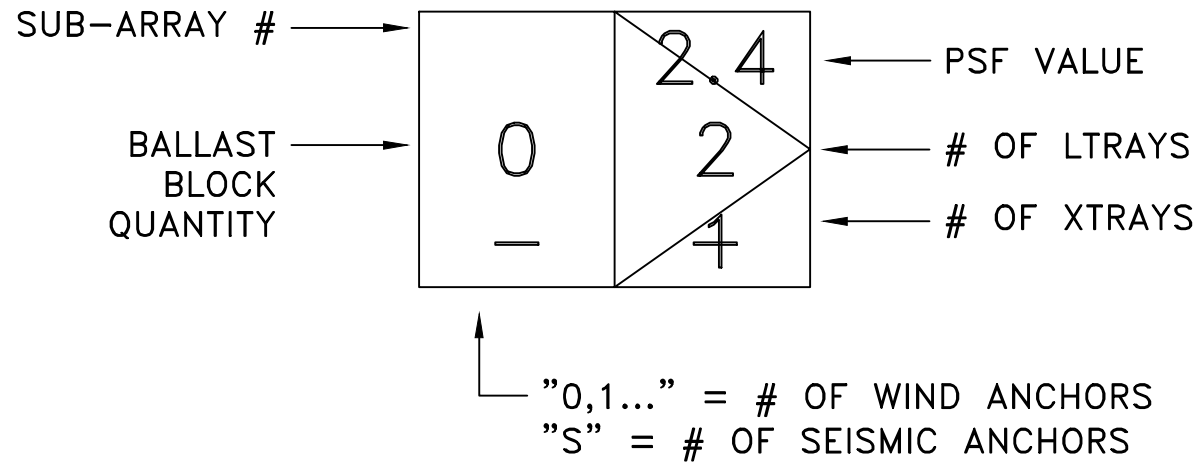
3242 SAN AMADEO PUERTA BALLAST AND PENETRATION PLAN

PROPOSED SYSTEM SPECIFICATION

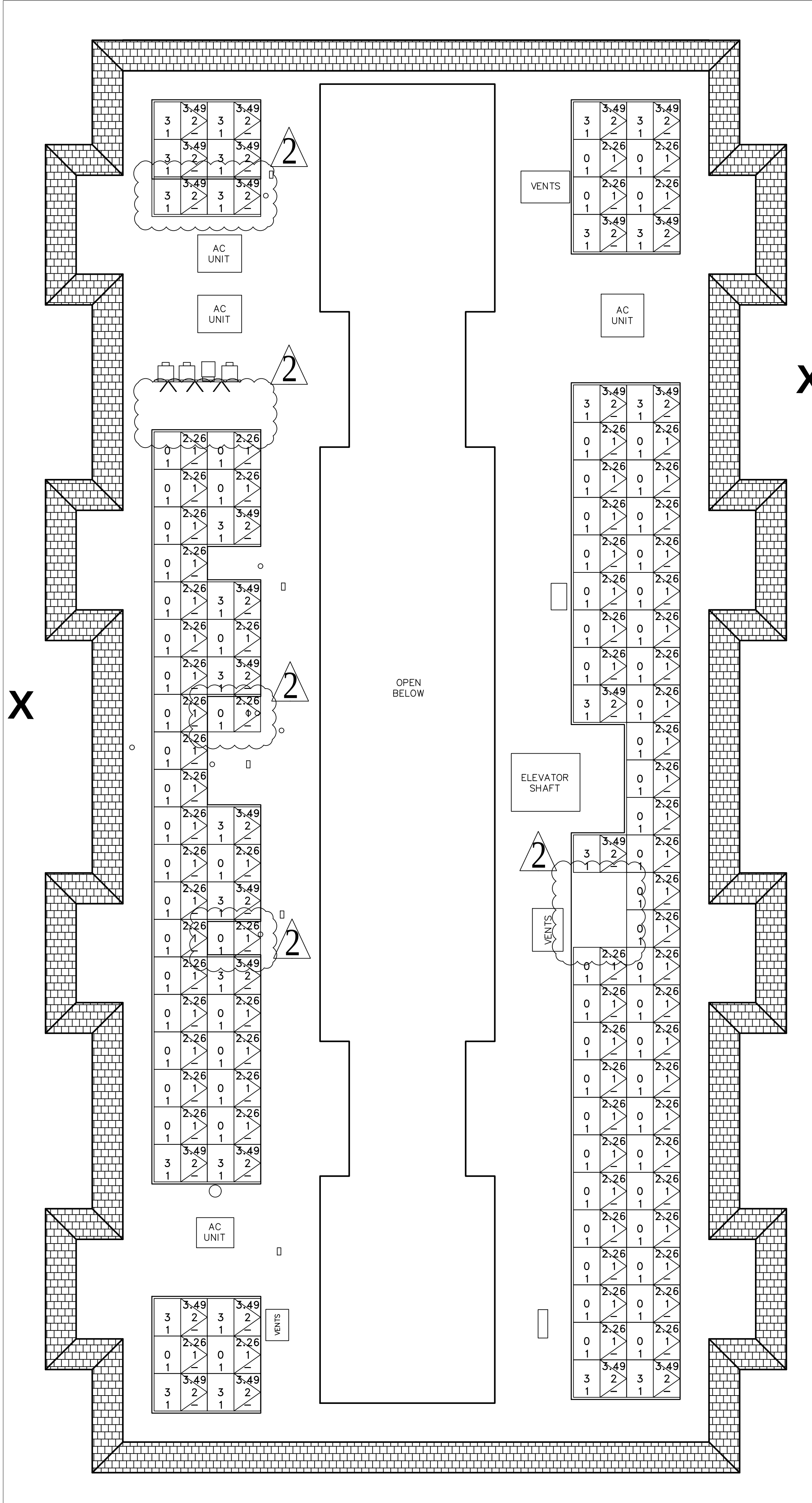
TOTALS:
69.324 kWp
212 HIGH EFF. (327W) MODULES
12 MODULES/STRING, 14 STRINGS
11 MODULES/STRING, 4 STRINGS
ROOF HEIGHT: 40'
ROOF PITCH: 0°

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 1: [3]
2.2 SUBARRAY 2: [2]
2.3 SUBARRAY 5: [3]
- ADDITIONAL ANCHORS CAN BE PLACED ANYWHERE WITHIN THE SUBARRAY, AND ADDITIONAL BALLAST MUST BE PLACED WHERE THE MODULE PSF IS LOWEST.



2 LEGEND
SCALE: N.T.S.



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

PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

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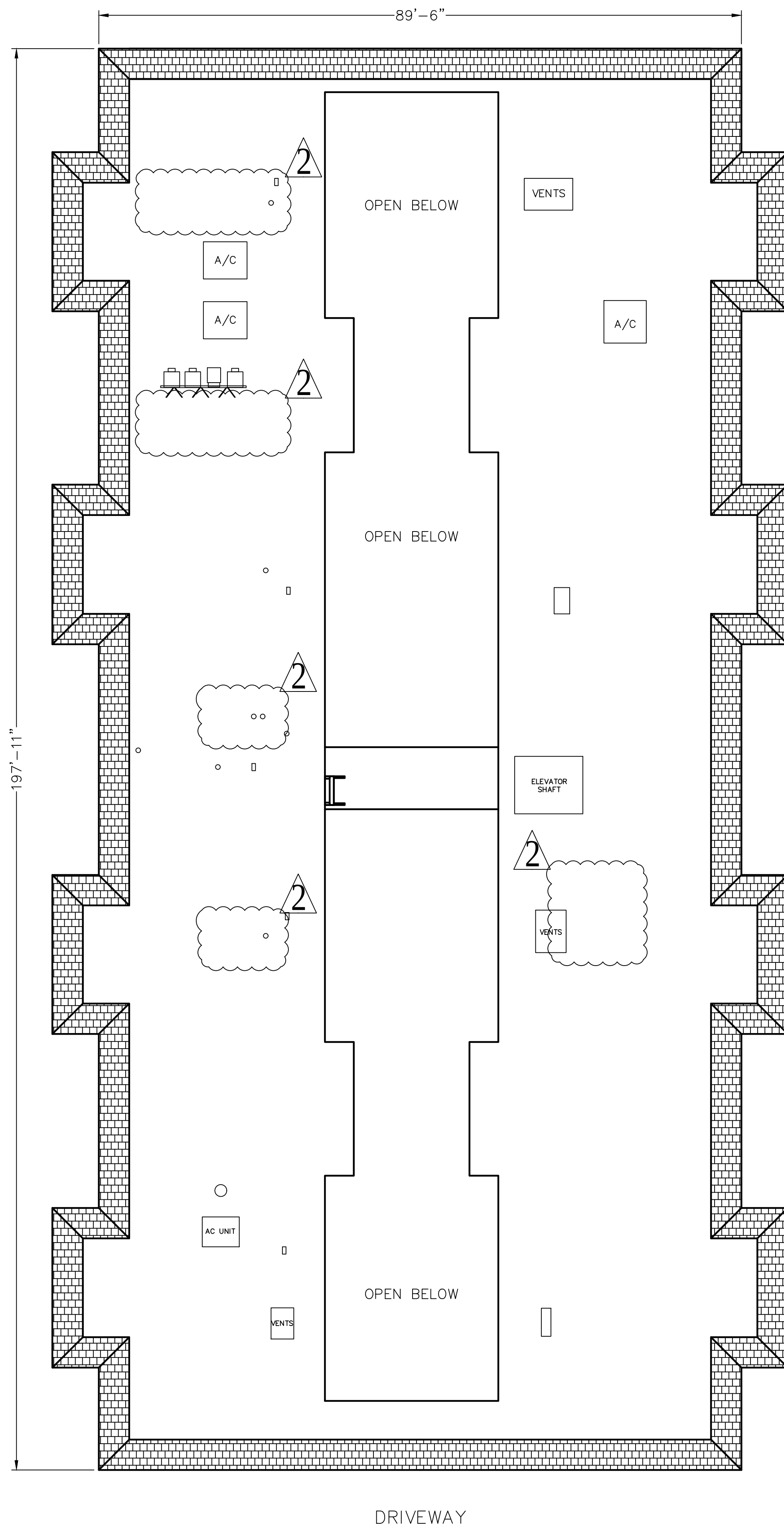
SHEET TITLE

BALLAST AND
PENETRATION PLAN
3242 SAN AMADEO
VILLA PUERTA

SHEET NUMBER

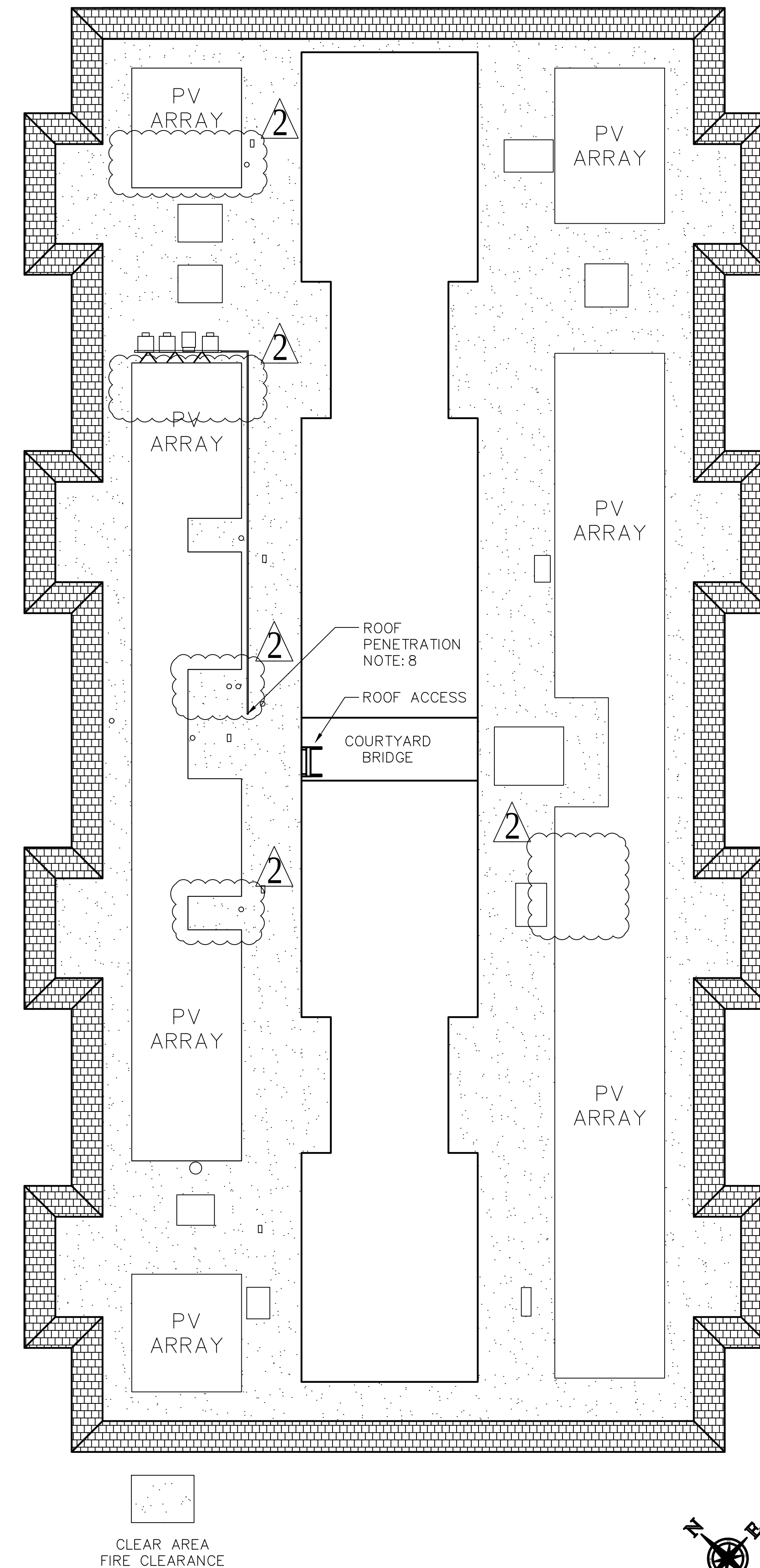
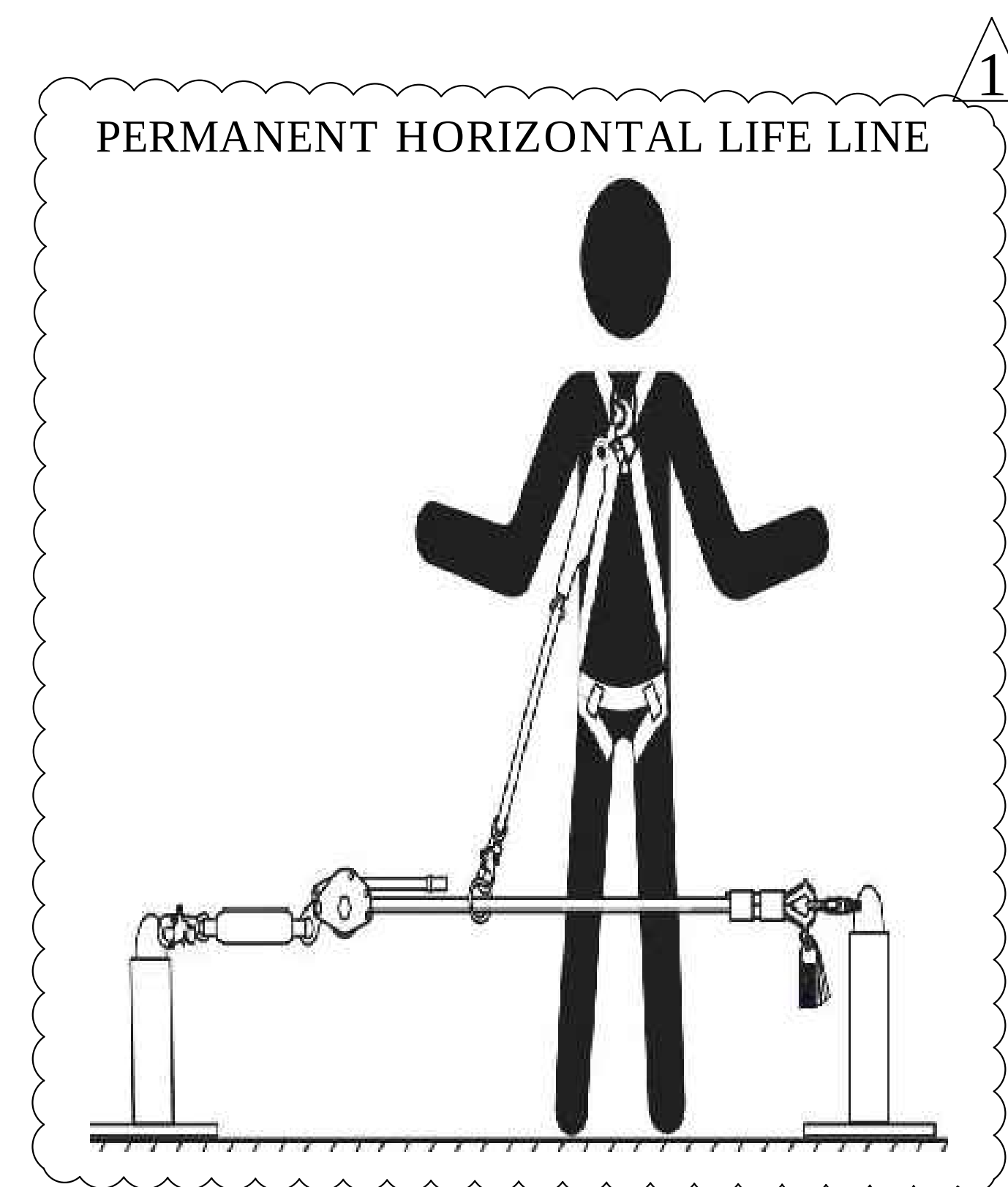
STR 1.4

3242 SAN AMADEO FIRE CLEARANCE SITE PLAN

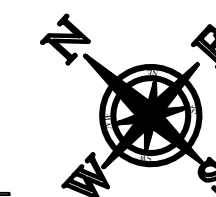


1 BUILDING LAYOUT

SCALE: 1"=10'-0"



② FIRE CLERANCE LAYOUT
SCALE: 1"=10'-0"



PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

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[illegible]

DRAWN BY:	SCOTT
CHECKED BY:	T.T.T
SCALE:	AS SHOWN
DATE:	1/11/17

SHEET TITLE

FIRE CLEARANCE
SITE PLAN
3242 SAN AMADEO
VILLA PUERTA
SHEET NUMBER

S 1.4F

3242 SAN AMADEO
STRING LAYOUT

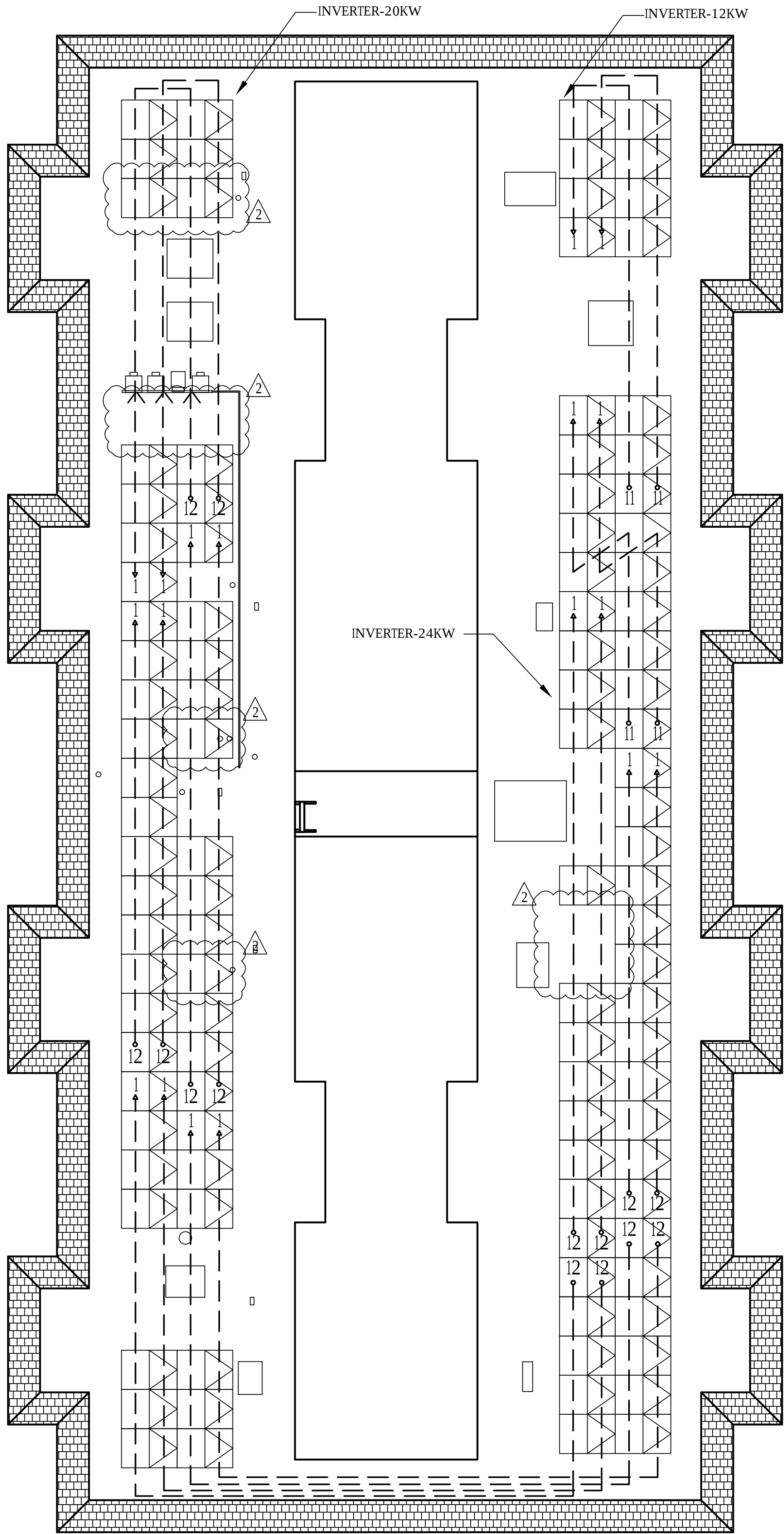
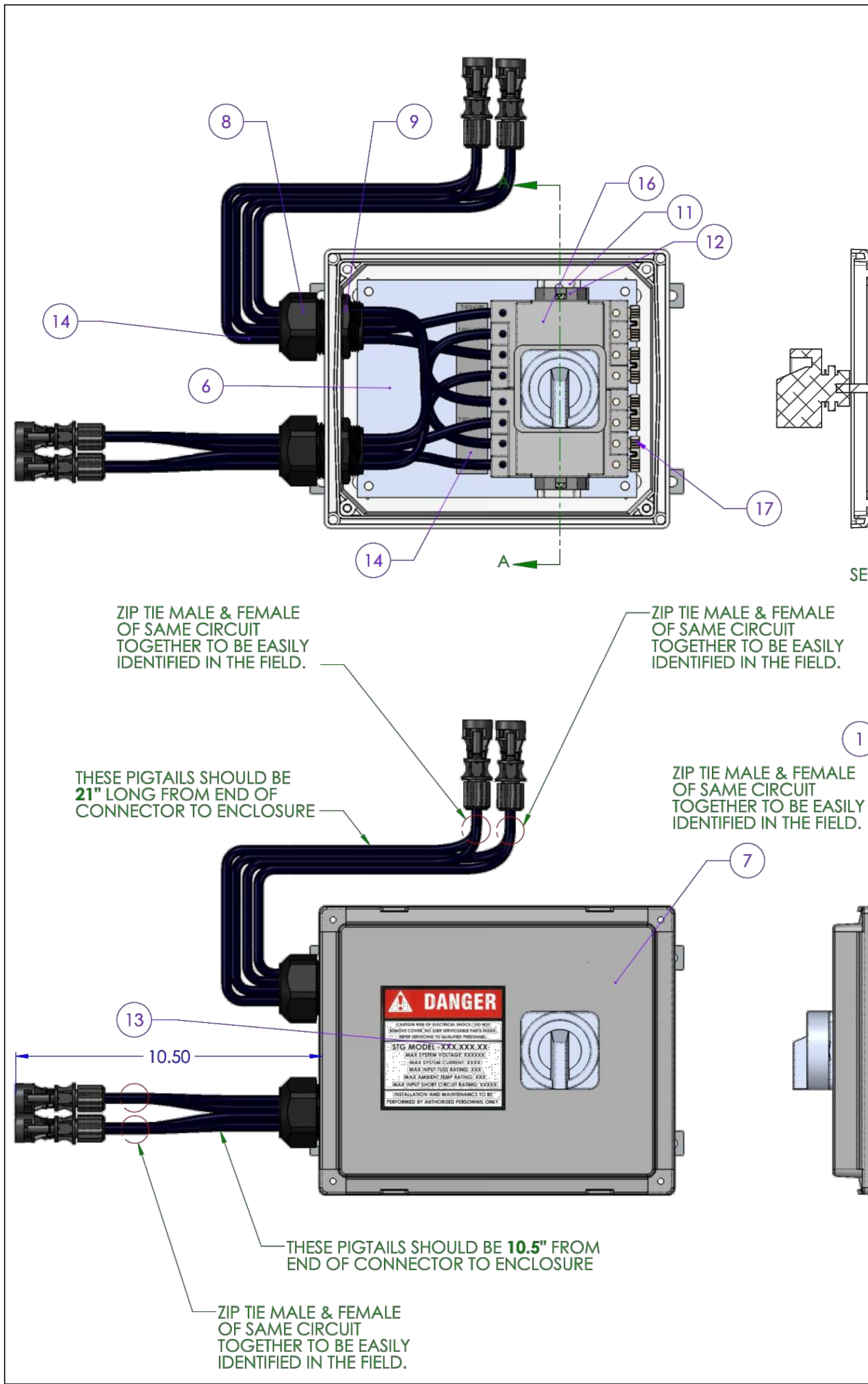
SunPower® | Helix Roof Solution

HELIX ROOF Power Station

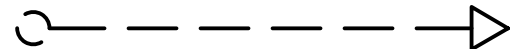


DC Branch

Model	Helix plug-and-play DC Branch
String input options	2, 3, and 4 string
String fuse rating	15 A
Conductor size	#12 to #8 AWG
Conductor insulation rating	Sunlight-resistant PV Wire
Voltage rating	2000 VDC
Fusing	12 A
Connectors	String side: Tyco PV4 Solarlock Combined side: Amphenol H4-UTX-XL



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

- LEGEND:
-  STRINGS
 -  INVERTER DESIGNATION

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STRING LAYOUT

SHEET NUMBER

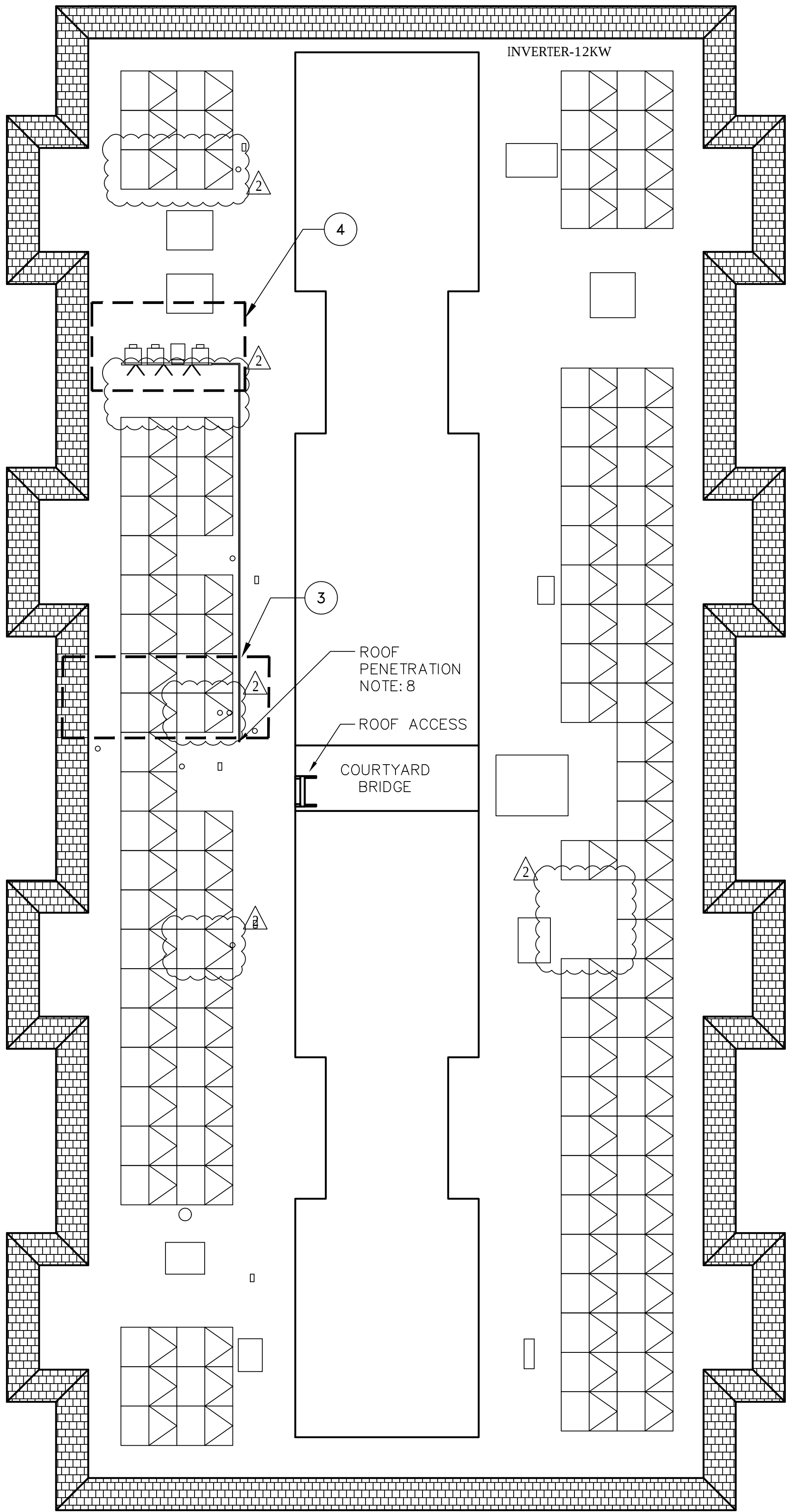
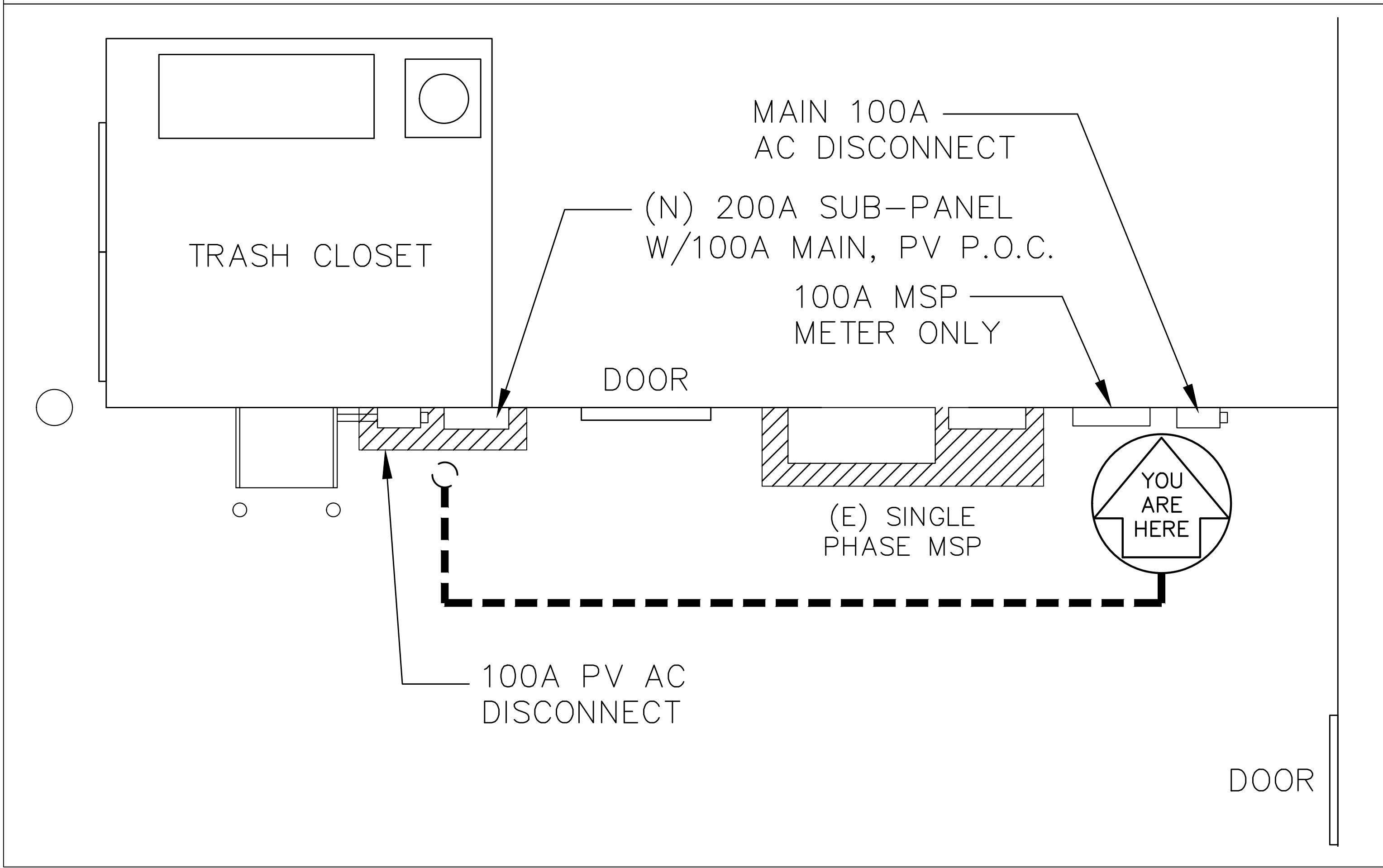
S1.1 ST

S 1.4L

3242 SAN AMADEO
SITE PLAN

CAUTION

POWER TO THIS BUILDING IS ALSO SUPPLIED
FROM THE FOLLOWING SOURCES WITH
DISCONNECTS LOCATED AS SHOWN:



2 ARRAY LAYOUT
SCALE: 1"=10'-0"



PROJECT SITE

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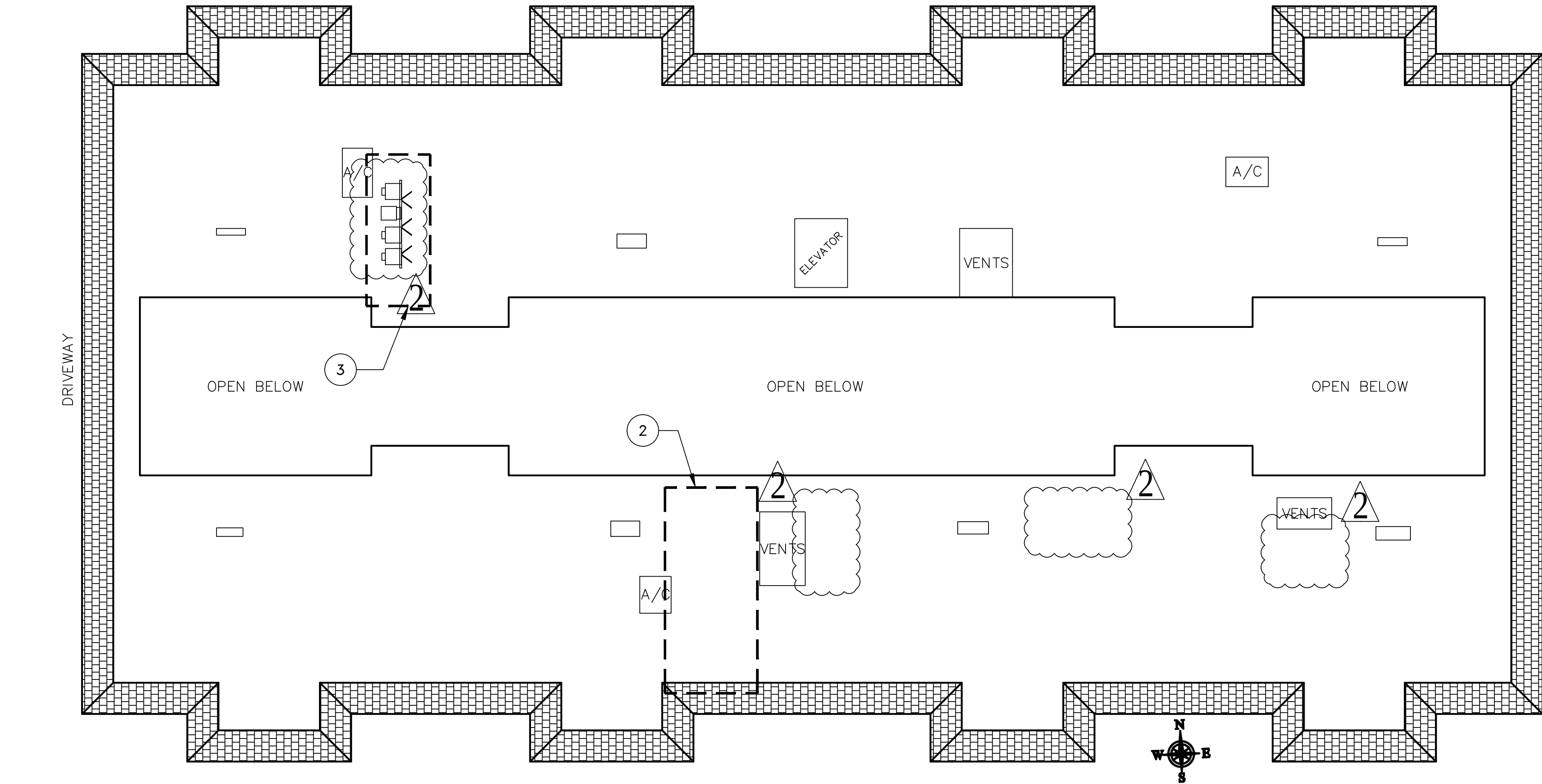
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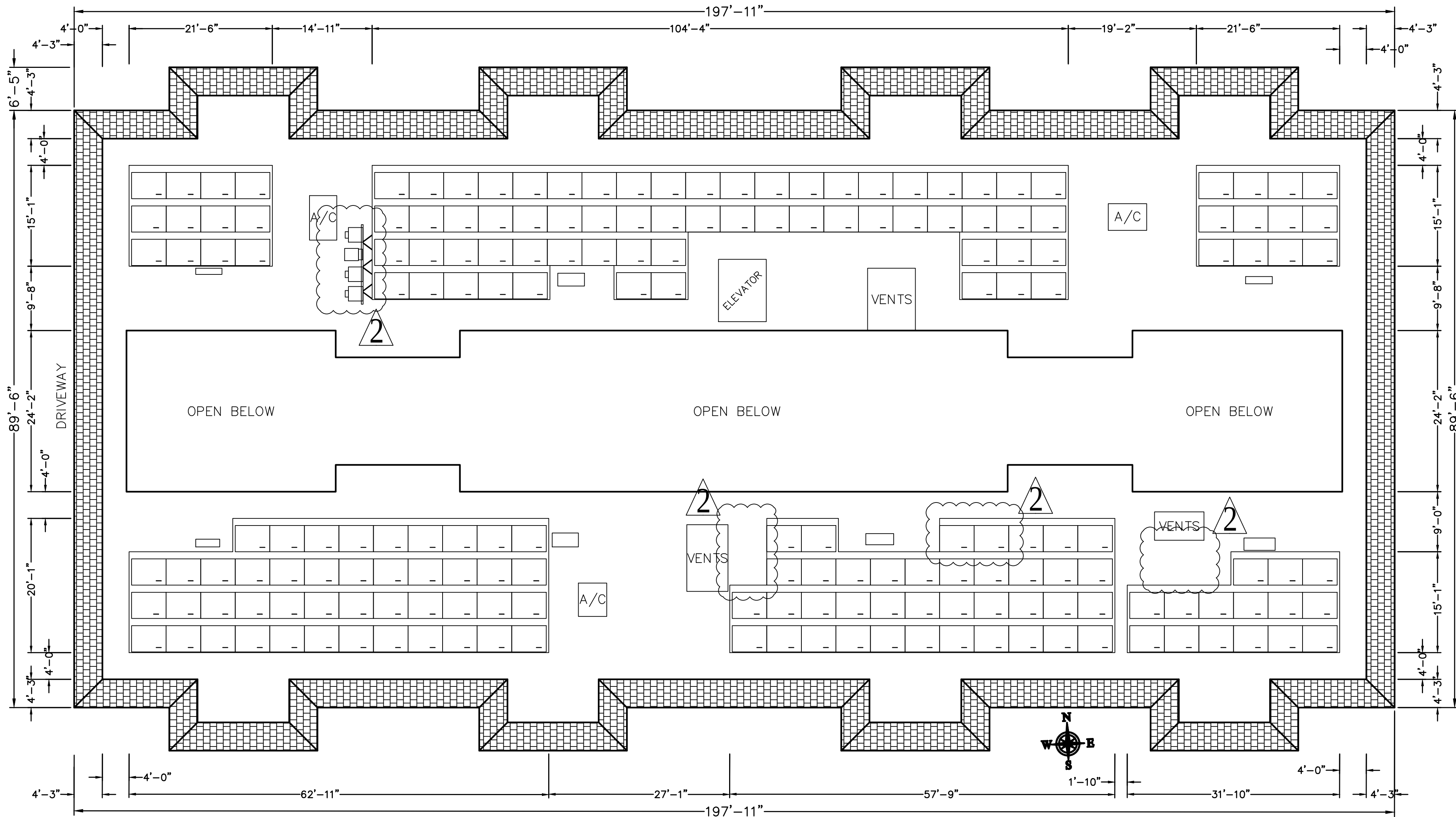
LABELS

SHEET NUMBER

DIRECTORY MAP



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

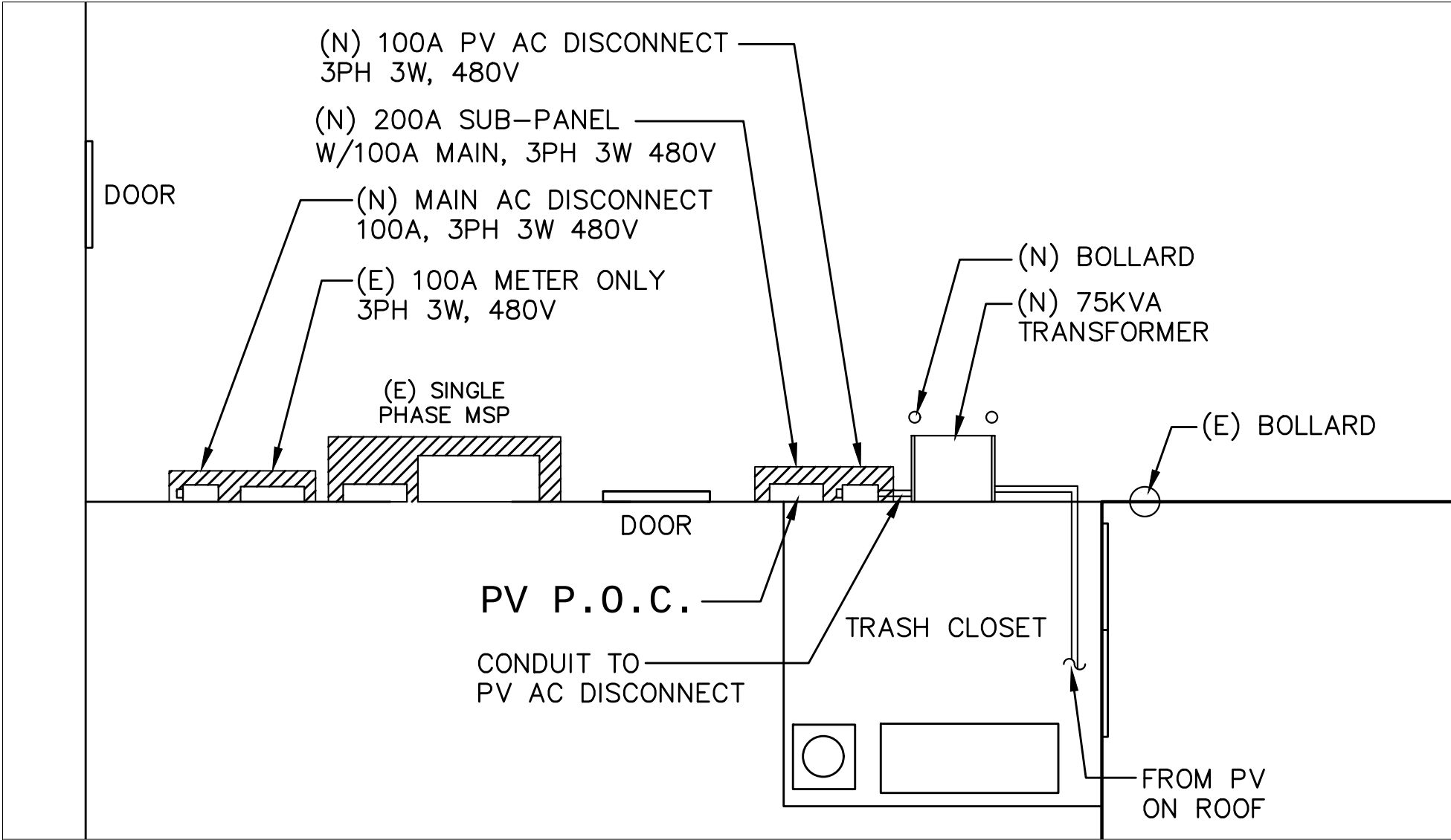


2 ARRAY LAYOUT
SCALE: 3/32"=1'-0"

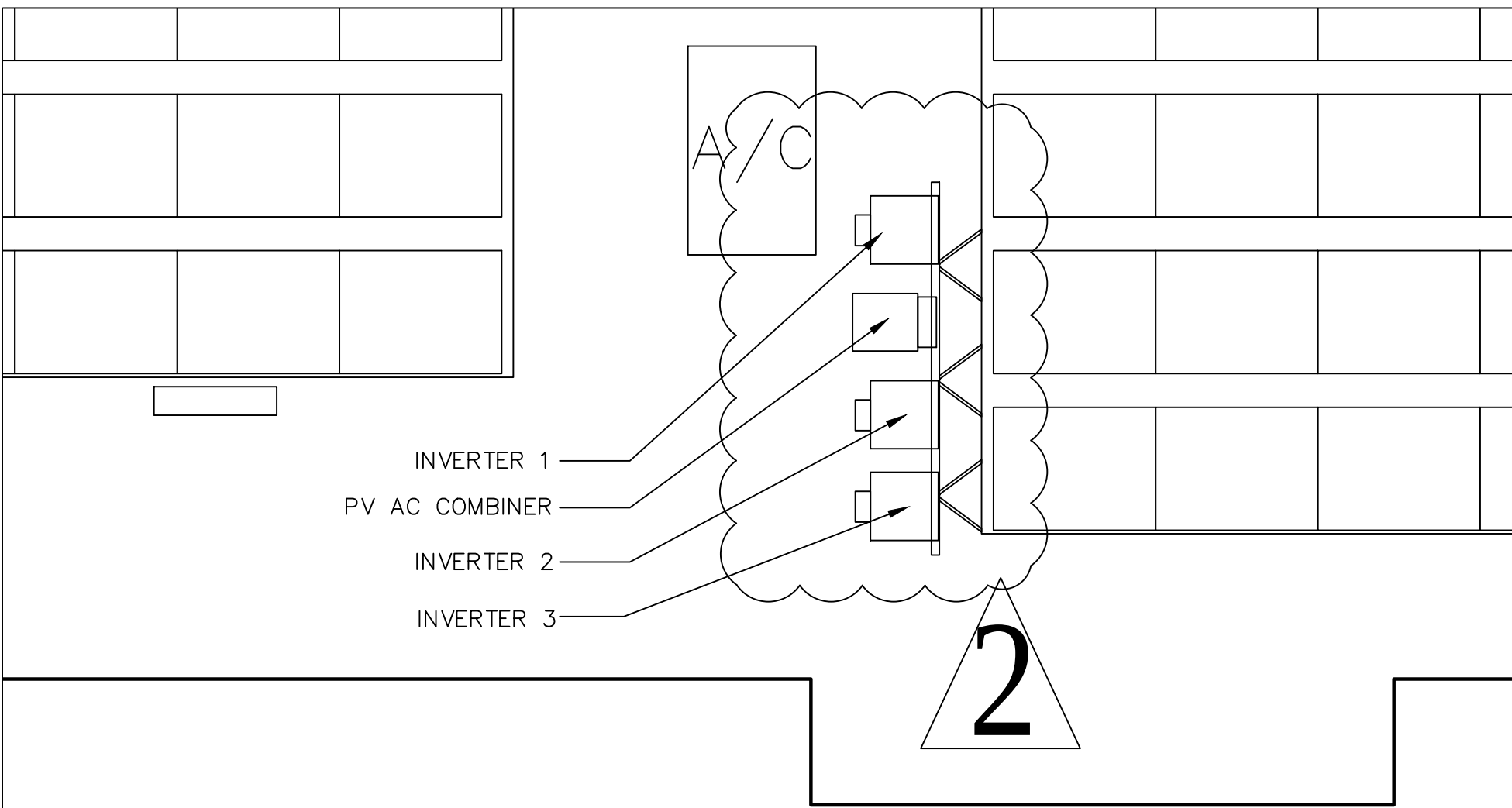
3243 SAN AMADEO VILLA PUERTA SITE PLAN

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.



2 MAIN PANEL LOCATION 1ST FLOOR
SCALE: N.T.S.



3 POWER STATION LOCATED ON ROOF
SCALE: N.T.S.

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
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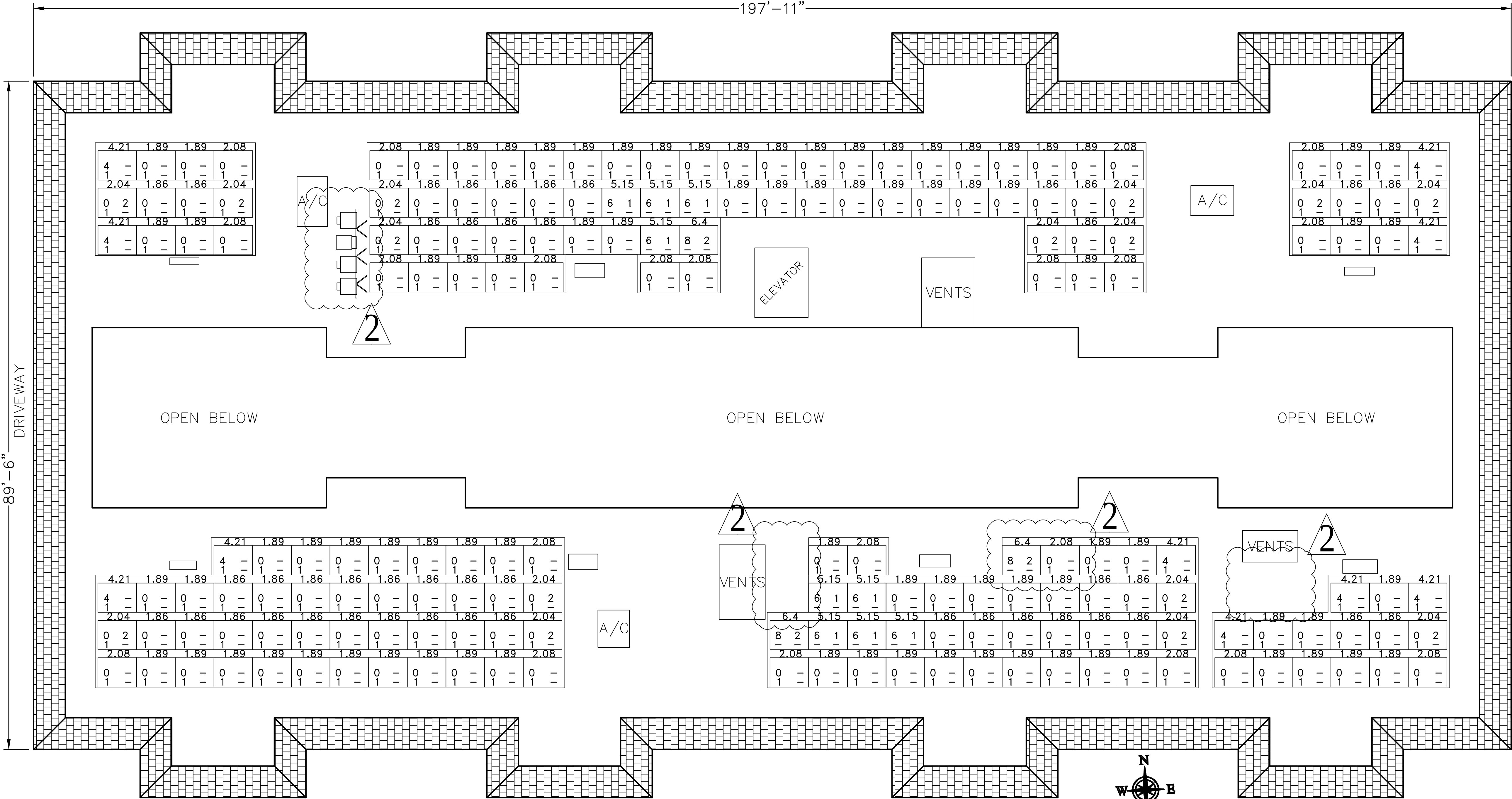
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SCALE: AS SHOWN
DATE: 12/21/16

SHEET TITLE

SITE PLAN
3243 SAN AMADEO
VILLA PUERTA

SHEET NUMBER

S1.5



1 BALLAST AND PENETRATION LAYOUT

SCALE: N.T.S.

PROPOSED SYSTEM SPECIFICATION
TOTALS: 60.495 kWp 185 HIGH EFF. (327W) MODULES 13 MODULES/STRING, 5 STRINGS 12 MODULES/STRING, 10 STRINGS ROOF HEIGHT: 40' ROOF PITCH: 0° AZIMUTH: 3°

- 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.
ROOF X:
2.1 SUBARRAY 1: [5] ADDITIONAL ANCHOR
2.2 SUBARRAY 3: [5] ADDITIONAL ANCHOR
2.3 SUBARRAY 4: [1] ADDITIONAL ANCHOR
2.4 SUBARRAY 5: [2] ADDITIONAL ANCHOR
2.5 SUBARRAY 6: [4] ADDITIONAL ANCHOR
 - ADDITIONAL ANCHORS CAN BE PLACED ANYWHERE WITHIN THE SUBARRAY, AND ADDITIONAL BALLAST MUST BE PLACED WHERE THE MODULE PSF IS LOWEST.

WIND LOAD SUMMARY												
WIND LOAD SUMMARY												
Summary												
OUTPUTS			WIND ZONES									
PANEL TYPES	ATTRIBUTES	A	B	C	D	E	F	G	H	I	J	K
1	Ballast Block(s)	4	0	0	0	8	7	3	9	0	0	3
	Wind Anchor(s)	1	1	1	1	0	0	0	0	1	1	0
	Pressure (psf)	4.21	2.08	2.08	2.08	6.35	5.82	3.68	6.88	2.08	2.08	3.68
2	Ballast Block(s)	0	0	0	9	3	5	2	7	0	0	2
	Wind Anchor(s)	1	1	1	0	0	0	0	0	1	1	0
	Pressure (psf)	1.89	1.89	1.89	6.78	3.49	4.56	2.95	5.62	1.89	1.89	2.95
3	Ballast Block(s)	0	0	8	6	6	3	1	7	0	4	0
	Wind Anchor(s)	1	1	0	0	0	0	0	0	1	0	0
	Pressure (psf)	2.04	2.04	6.40	5.24	5.24	3.64	2.57	5.86	2.04	4.17	2.04
4	Ballast Block(s)	0	0	6	3	1	2	1	4	9	2	0
	Wind Anchor(s)	1	1	0	0	0	0	0	0	0	0	0
	Pressure (psf)	1.86	1.86	5.15	3.46	2.39	2.93	2.39	3.99	6.75	2.93	1.86
Minimum Array Size by Zone		51	59	55	162	61	55	102	40	21	28	9
L ₃ – BUILDING SCALING FACTOR (FT)						K ₂ – SITE WIND PRESSURE FACTOR						
35.78						0.76						
L ₀ – BUILDING SCALING FACTOR (FT)						K ₂ – SITE WIND PRESSURE FACTOR						
35.78						0.76						

SITE CHARACTERIZATION			
BUILDING HEIGHT (ft)	40	BUILDING WIDTH (ft)	88.5
BUILDING LENGTH (ft)	200	PARAPET HEIGHT (ft)	1
WIND SPEED (ASCE7-10) (mph)	130	EXPOSURE CATEGORY	B
EXPOSURE TRANSITION DISTANCE (ft)	-	BALLAST BLOCK WEIGHT (lbs)	14
MAX ALLOWABLE SYSTEM PRESSURE (psf)	8	ANCHOR TYPE	OMG POWERGRIP PLUS
DESIGN SPECTRAL RESPONSE ACCELERATION (S _{DS}) (g)	1	SEISMIC IMPORTANCE FACTOR (I _p)	1

INVERTER SUMMARY TABLE				
ROOF	MODULES	INVERTER TYPE	INVERTER QTY	STRING CONFIGURATION
1	65	20KW	1	MPPT 1: 13 MODULES, 2 STRING
				MPPT 2: 13 MODULES, 3 STRING
	120	15KW	2	MPPT 1: 12 MODULES, 3 STRING
				MPPT 2: 12 MODULES, 2 STRING
TOTAL	185		3	

BALLAST AND ANCHOR SUMMARY					
ROOF	BALLAST COUNT	ANCHOR COUNT	ARRAY WEIGHT (LBS)	MAX. PSF	AVERAGE PSF
1	118	190	11,020	6.4	2.27
TOTAL	118	190			

NOTES:
ALREADY INCLUDED THE ADDITIONAL ANCHOR & BALLAST IDENTIFIED IN NOTES ITEM#2.

PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

24351 EL TORO RD.
LAGUNA WOODS, CA 92637

PROJECT DEVELOPER



SOLAR OPTIMUM, INC
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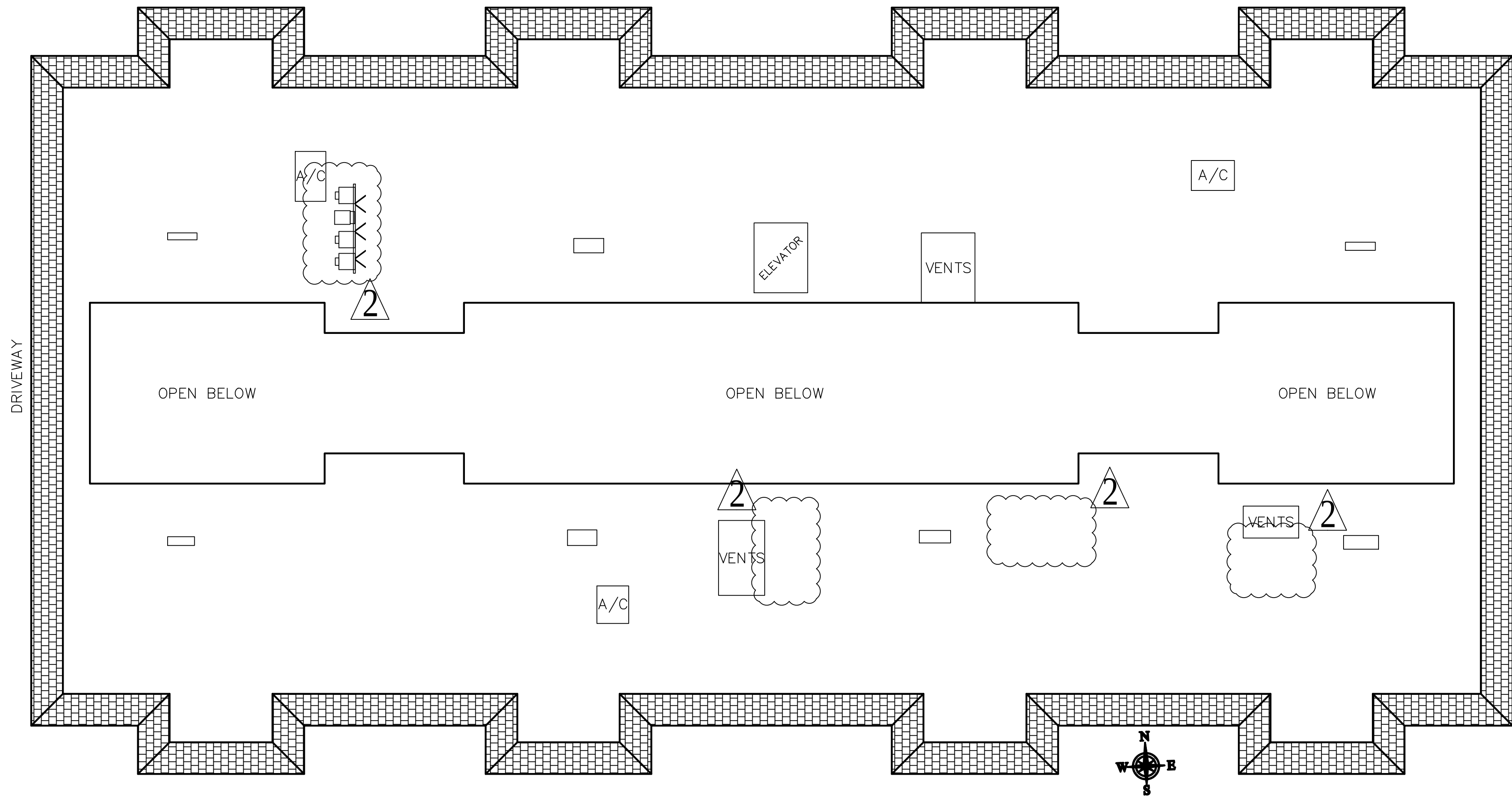
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CHECKED BY: T.T.T.
SCALE: AS SHOWN
DATE: 12/21/16

SHEET TITLE

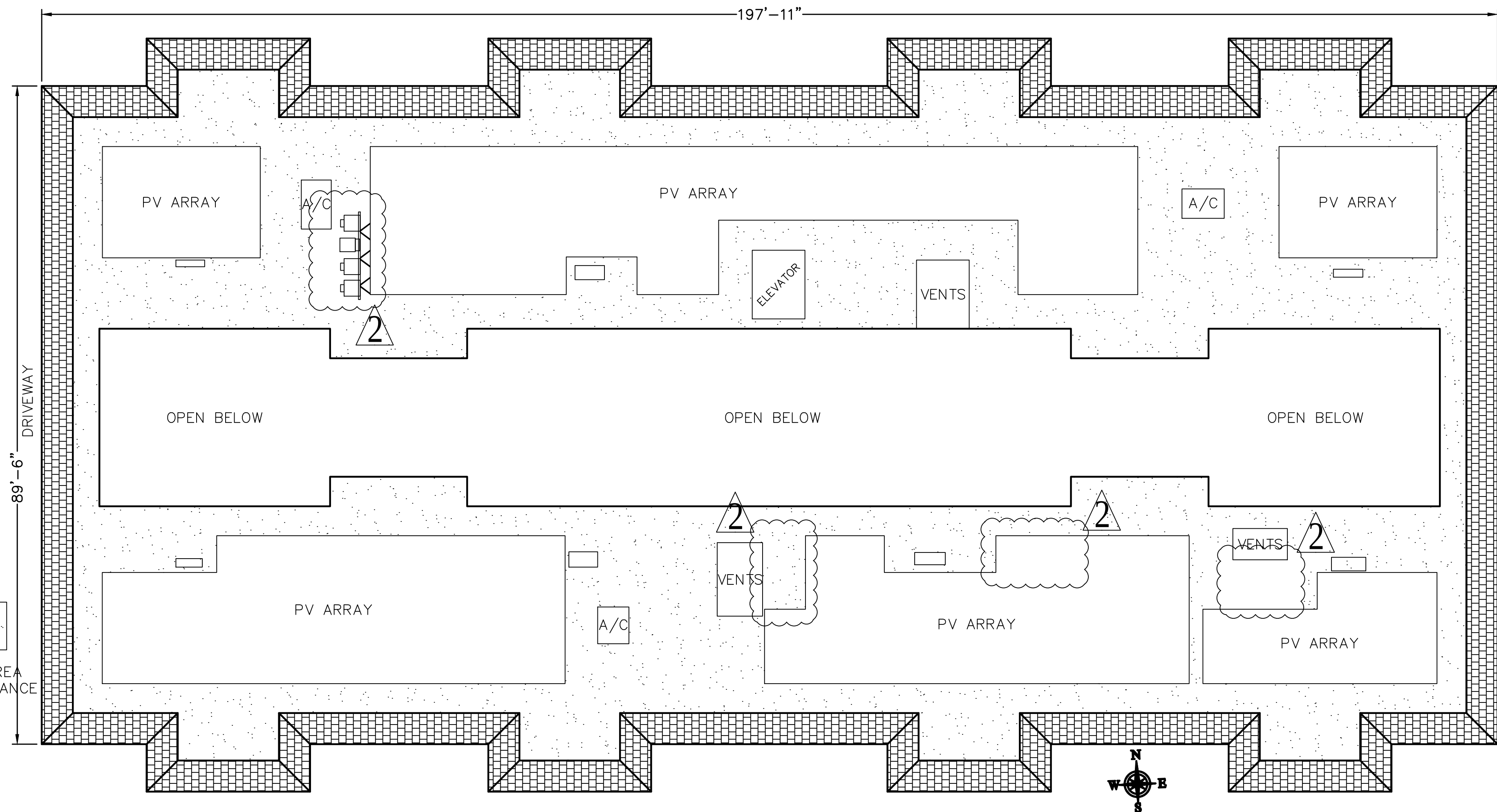
SITE PLAN
3243 SAN AMADEO
VILLA PUERTA

SHEET NUMBER

STR 1.5

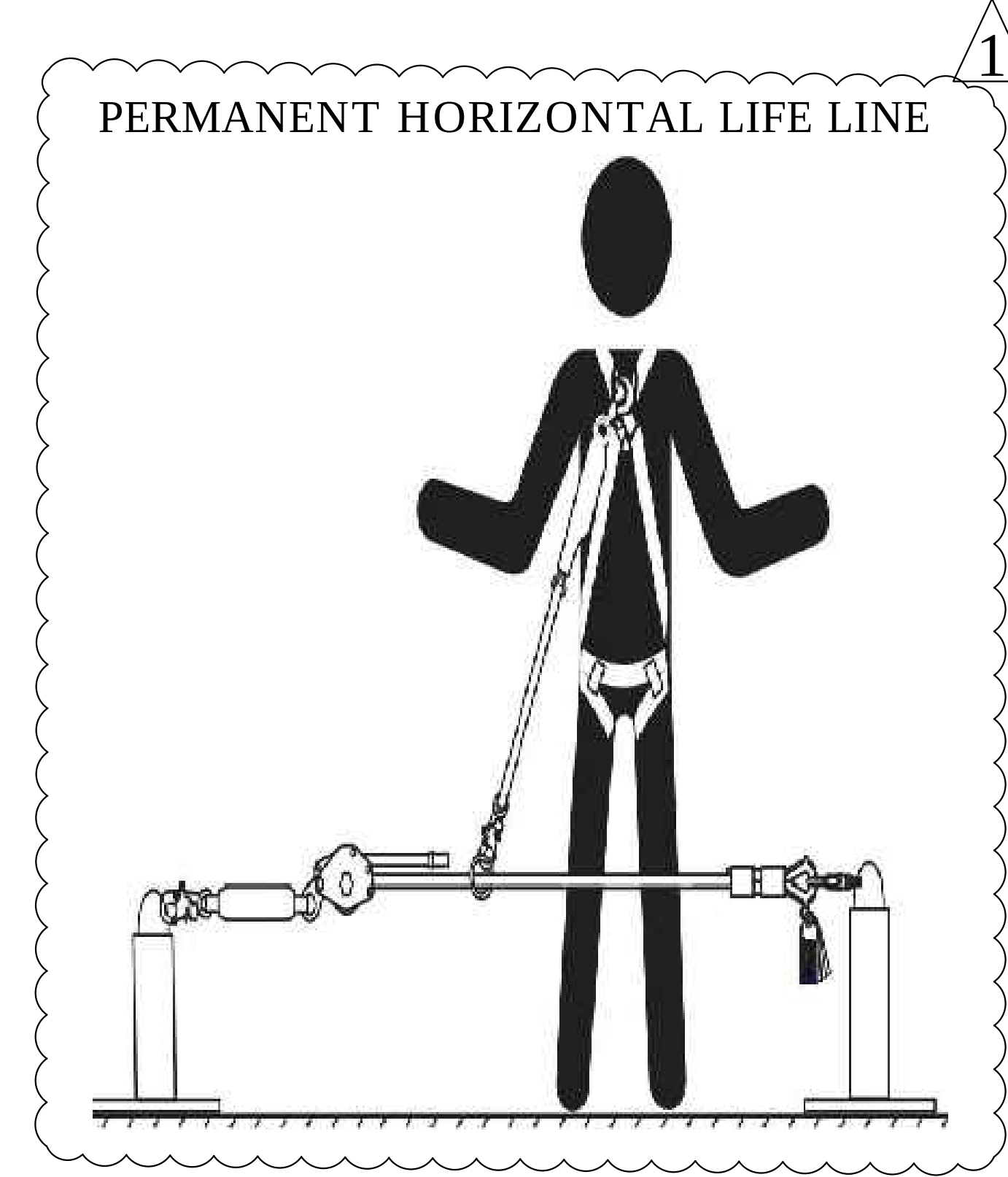


1 BUIDLING LAYOUT
SCALE: 3/32"=1'-0"



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

3243 SAN AMADEO VILLA PUERTA FIRE CLEARANCE SITE PLAN



SUNPOWER HELIX SINGLE TILT



HELIX ST

PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

24351 EL TORO RD.
LAGUNA WOODS, CA 92637

PROJECT DEVELOPER



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T.T.T.

SCALE:

AS SHOWN

DATE:

12/21/16

SHEET TITLE

SITE PLAN
3243 SAN AMADEO
VILLA PUERTA

SHEET NUMBER

S1.5F

WARNING: PHOTOVOLTAIC
POWER SOURCE

LABEL "PHOTOVOLTAIC POWER SOURCE" SHALL BE PERMANENTLY AFFIXED ON ALL EXPOSED RACEWAYS, CABLE TRAYS, PULL BOXES, AND JUNCTION BOXES. LABELS SHALL BE SPACED NO GREATER THAN 10 FEET APART AND SUITABLE FOR THE ENVIRONMENT IN WHICH THEY ARE INSTALLED.

SOLAR GENERATOR
AC DISCONNECT SWITCH

WARNING: ELECTRIC SHOCK HAZARD

DO NOT TOUCH TERMINALS.
TERMINALS ON BOTH LINE &
LOAD SIDE MAY BE ENERGIZED
IN THE OPEN POSITION.

OPERATING CURRENT: 75 A
OPERATING VOLTAGE: 480 V

CAUTION:
EMERGENCY AC
SOLAR DISCONNECT
RAPID SHUTDOWN SYSTEM
IS LOCATED AT THE
AC COMBINER BOX ON THE ROOF
"YOU MUST TURN OFF ALL
INVERTER BREAKERS"

MARKING FOR MAIN SERVICE
AND AC COMBINER



WARNING

ARC FLASH AND SHOCK HAZARD

APPROPRIATE PPE AND TOOLS REQUIRED
WHEN WORKING ON THIS EQUIPMENT

OUTDOOR RATED ARC FLASH STICKER MOUNTED ON ALL EQUIPMENT

NOTES:
1. ORANGE BACKGROUND
2. BLACK LETTERING
3. MINIMUM 3/8" LETTER HEIGHT
4. ALL CAPITAL LETTERS
5. ARIAL OR SIMILAR FONT, NON-BOLD
6. WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT

SOLAR AC
COMBINER BOX -
PANELBOARD
WARNING: ELECTRIC SHOCK HAZARD

DO NOT TOUCH TERMINALS.
TERMINALS ON BOTH LINE &
LOAD SIDE MAY BE ENERGIZED
IN THE OPEN POSITION.

OPERATING CURRENT: 75 A
OPERATING VOLTAGE: 480 V

NOTES:

- LETTERING ON SIGNS SHALL BE CAPITAL LETTERS, MINIMUM SIZE OF 1/8" HIGH. LETTERING SHALL BE REFLECTIVE RED ON WHITE BACKGROUND OR VICE VERSA.
- CLEARLY LABEL ALL CIRCUIT BREAKERS IN THE PANELBOARD. THE LABEL SHALL INDICATE THE NAME OF THE DEVICE IT SERVES.

PHOTOVOLTAIC POWER SOURCE

OPERATING AC VOLTAGE: 277/480 V

MAXIMUM OPERATING AC OUTPUT

CURRENT: 75 AMPS

MARKING FOR MAIN PANEL COVER

CAUTION:
SOLAR ELECTRIC
SYSTEM CONNECTED

MARKING FOR MAIN SERVICE

INVERTER 1: 20kW

WARNING: ELECTRIC SHOCK HAZARD

THE DC CONDUCTORS OF THIS PHOTOVOLTAIC ARRAY
ARE UNGROUNDED AND MAY BE ENERGIZED

DC DISCONNECT

OPERATING CURRENT: 22.2 A
OPERATING VOLTAGE: 810.6 V
MAXIMUM CURRENT: 24.2 A
MAXIMUM VOLTAGE: 961.8 V

AC DISCONNECT

MAXCIMUM AC 30 A
OPERATING CURRENT: 24 A
NOMINAL AC 480 V
OPERATING VOLTAGE: 480 V

WARNING!

INVERTER OUTPUT CONNECTION
DO NOT RELOCATE THIS
OVERCURRENT DEVICE

MARKING FOR MAIN SERVICE

INVERTER 2: 15kW

WARNING: ELECTRIC SHOCK HAZARD

THE DC CONDUCTORS OF THIS PHOTOVOLTAIC ARRAY
ARE UNGROUNDED AND MAY BE ENERGIZED

DC DISCONNECT

OPERATING CURRENT: 22.2 A
OPERATING VOLTAGE: 748.2 V
MAXIMUM CURRENT: 24.2 A
MAXIMUM VOLTAGE: 887.8 V

AC DISCONNECT

MAXCIMUM AC 22.5 A
OPERATING CURRENT: 18 A
NOMINAL AC 480 V
OPERATING VOLTAGE: 480 V

INVERTER 3: 15kW

WARNING: ELECTRIC SHOCK HAZARD

THE DC CONDUCTORS OF THIS PHOTOVOLTAIC ARRAY
ARE UNGROUNDED AND MAY BE ENERGIZED

DC DISCONNECT

OPERATING CURRENT: 22.4 A
OPERATING VOLTAGE: 748.2 V
MAXIMUM CURRENT: 24.2 A
MAXIMUM VOLTAGE: 887.8 V

AC DISCONNECT

MAXCIMUM AC 22.5 A
OPERATING CURRENT: 18 A
NOMINAL AC 480 V
OPERATING VOLTAGE: 480 V

3243 SAN AMADEO VILLA
SITE PLAN

NOTES:

- ROOF PERIMETER FIRE CLEARANCE: MIN 4'-0".
- FIRE CLEARANCE AROUND SKYLIGHT: MIN 4'-0".
- FIRE CLEARANCE AROUND OPENINGS: MIN 4'-0".
- ROOF HEIGHT: 40'-0" APPROXIMATE.
- ROOF PITCH: 0°
- 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.

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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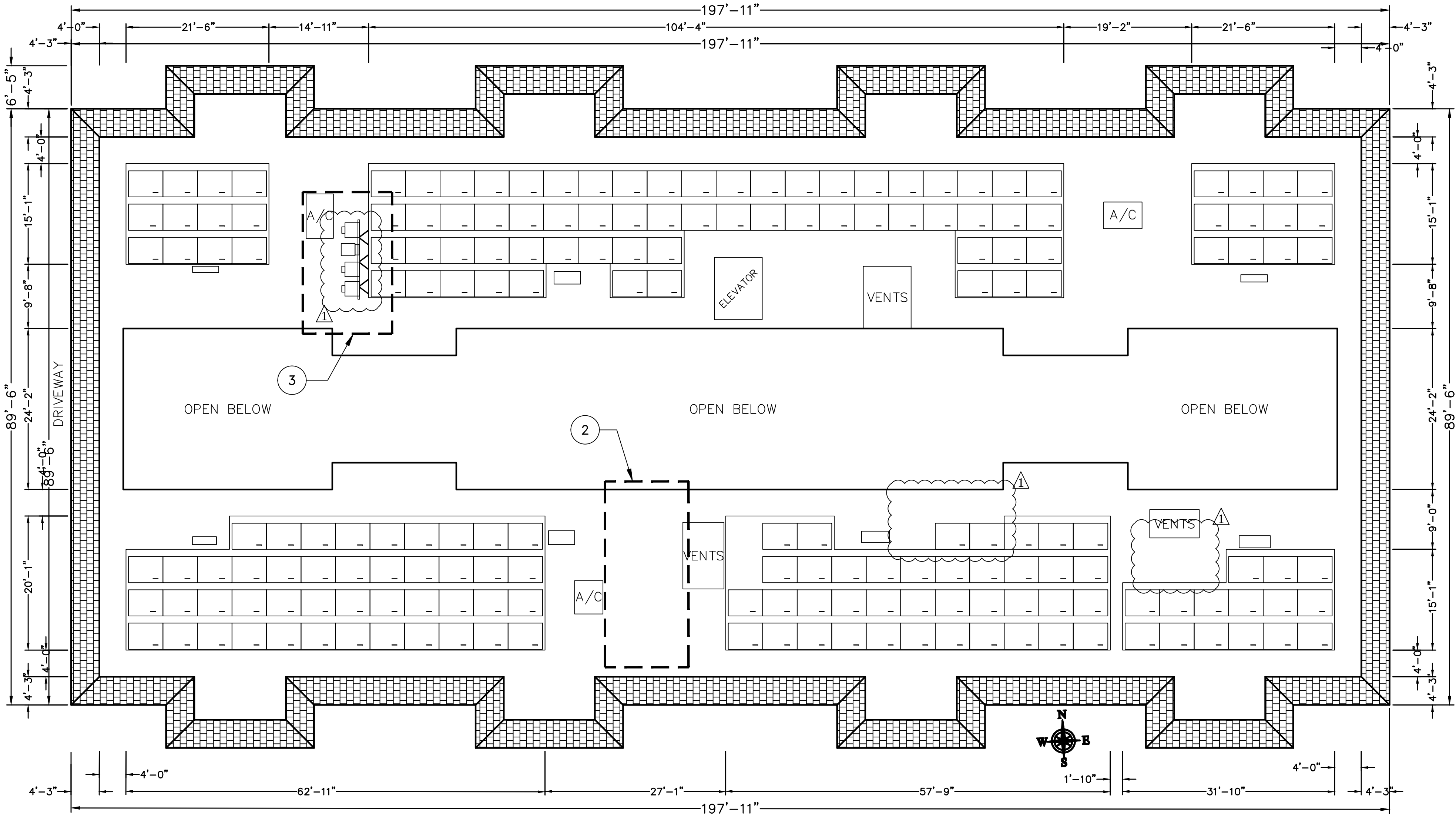
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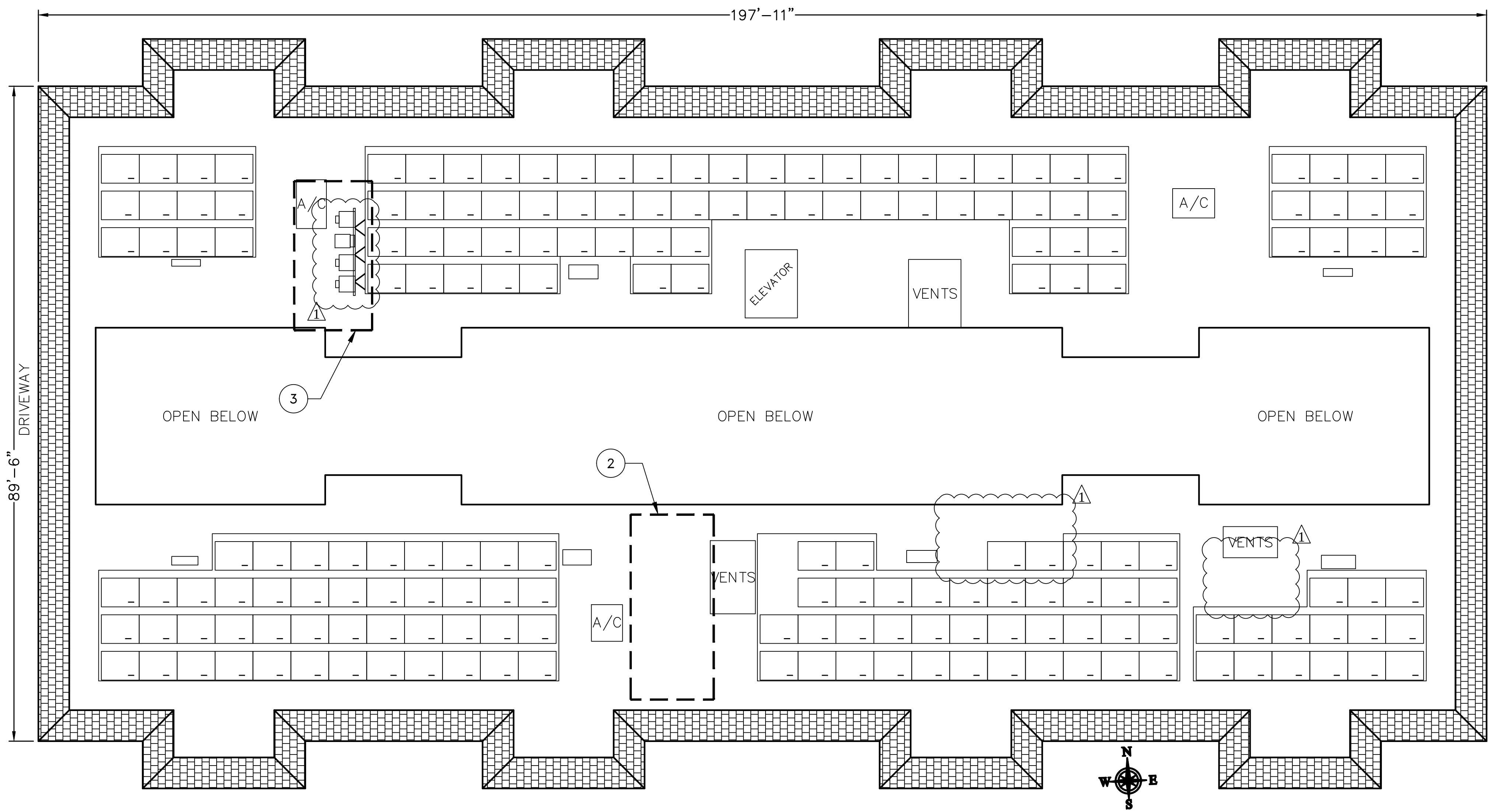
LABELS

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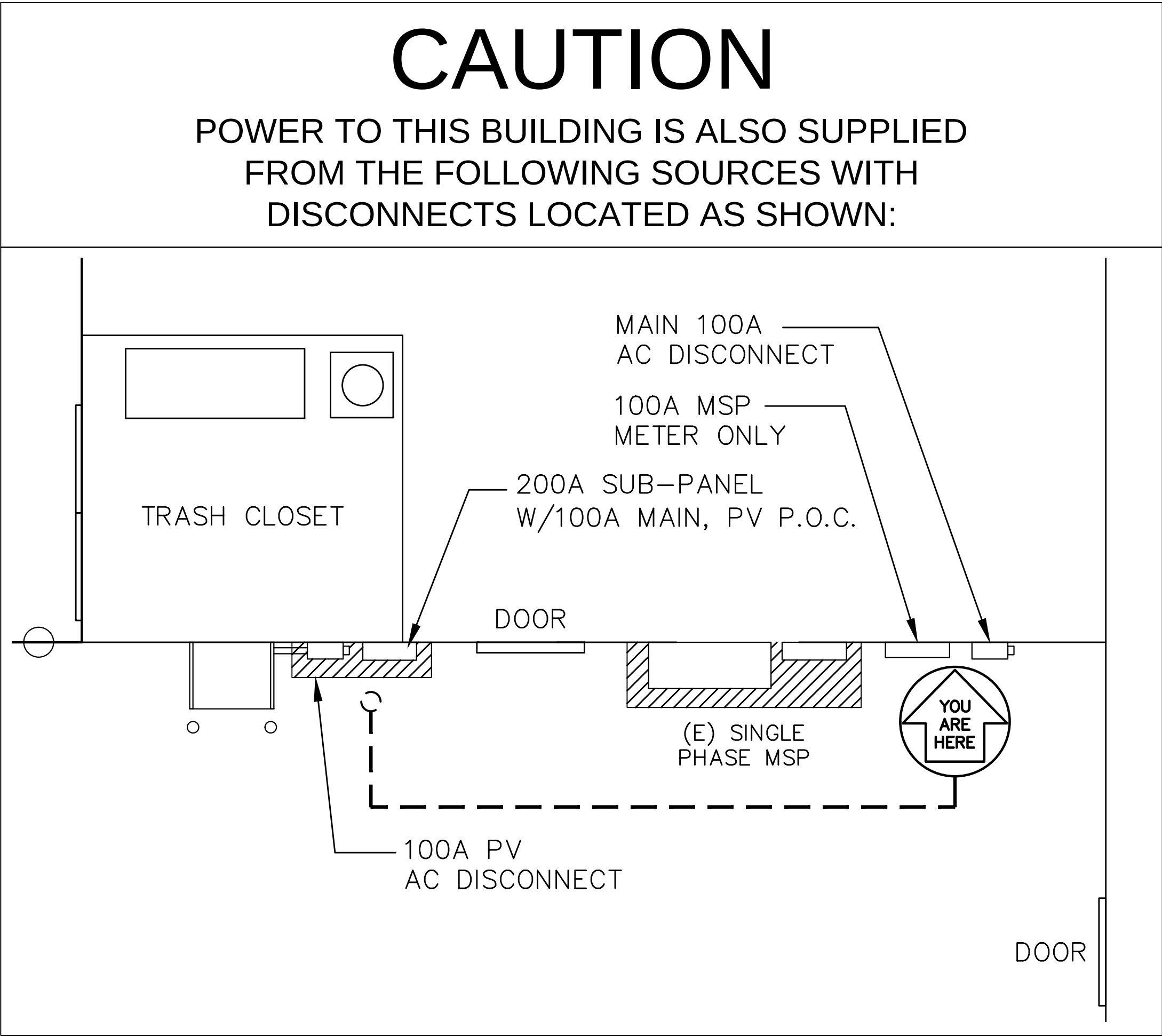
S1.5L



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



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



3243 SAN AMADEO VILLA
SITE PLAN

PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

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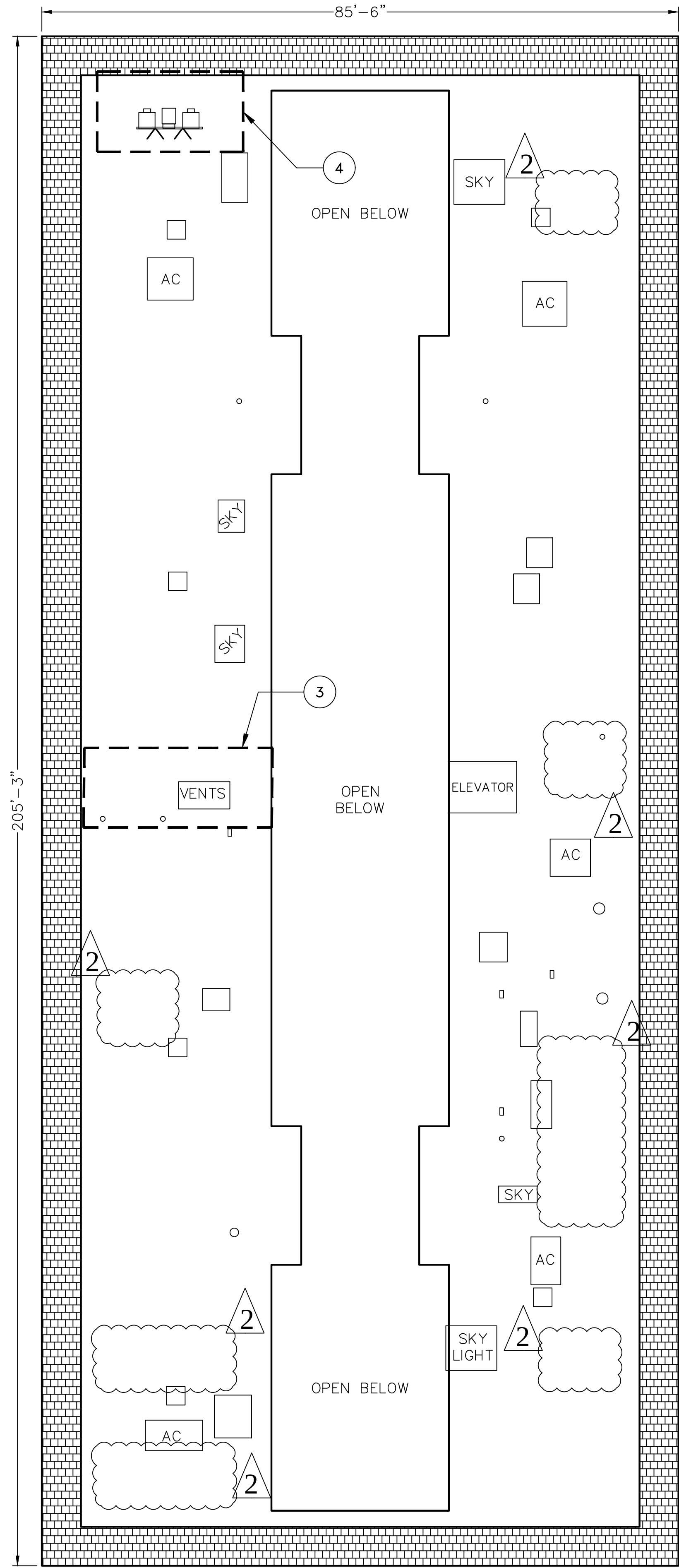
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CHECKED BY: T.T.T.
SCALE: AS SHOWN
DATE: 12/22/16

SHEET TITLE

"YOU ARE HERE"

SHEET NUMBER

DIRECTORY MAP



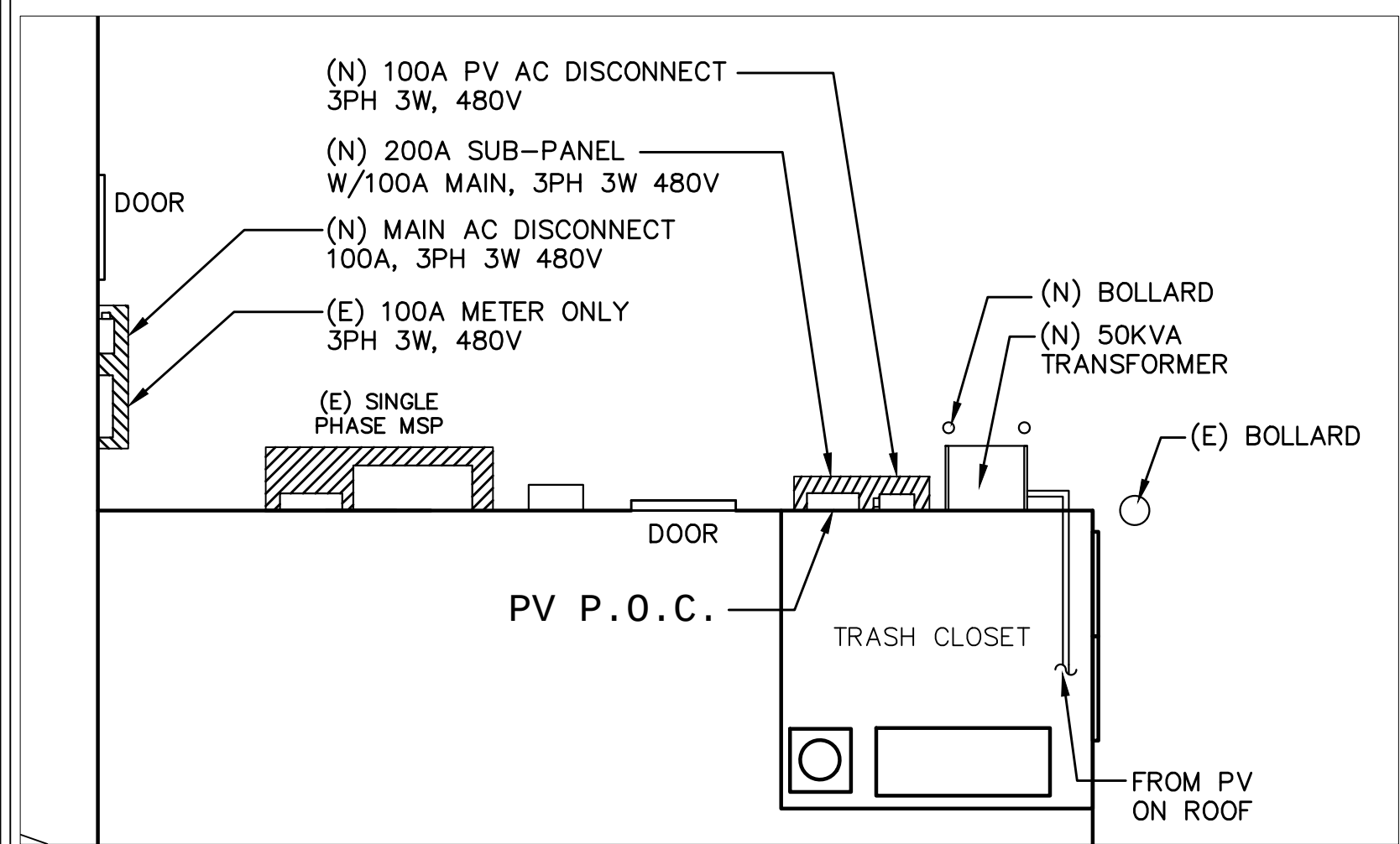
1 BUILDING LAYOUT
SCALE: 3/32"=1'-0"



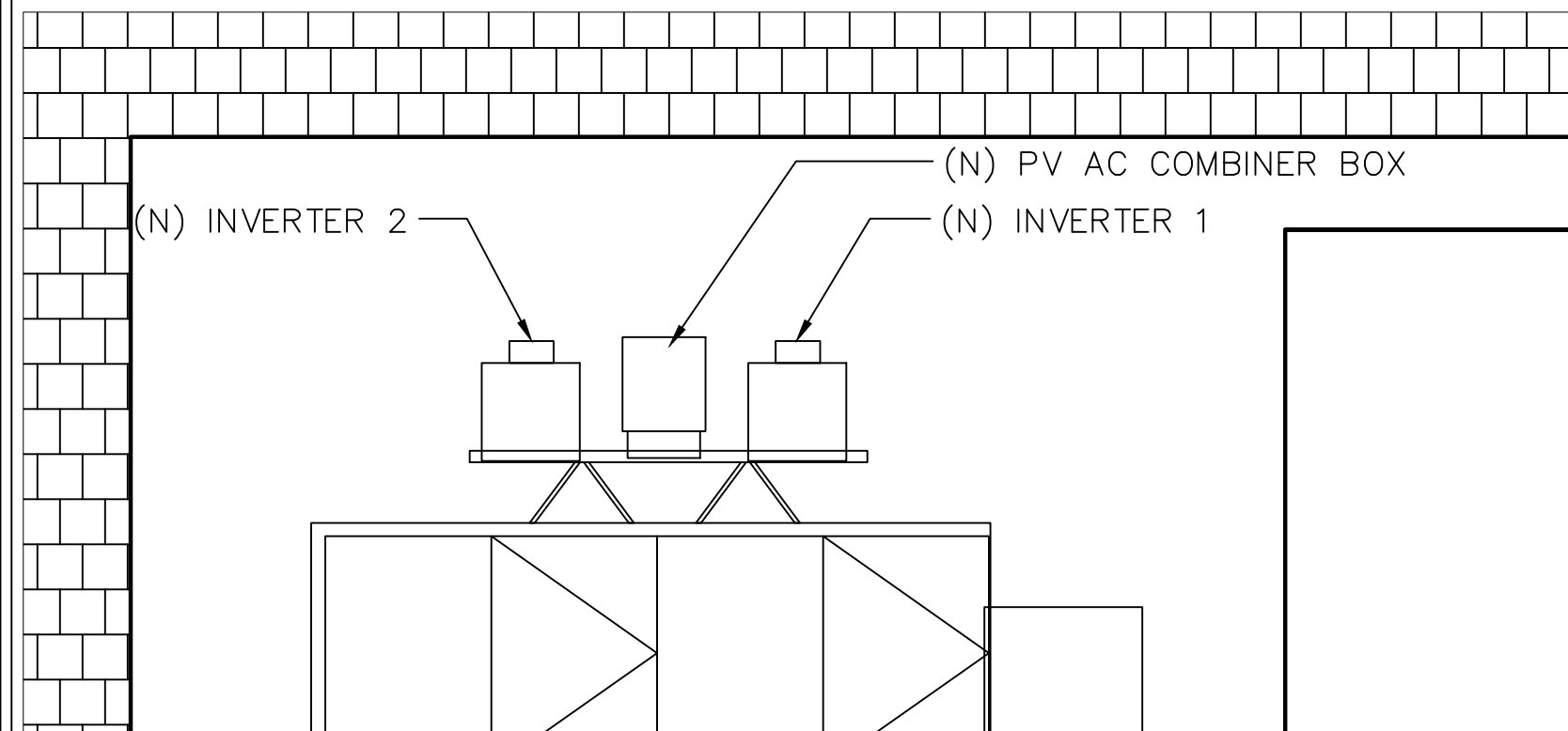
3420 CALLE AZUL SITE PLAN

NOTES:

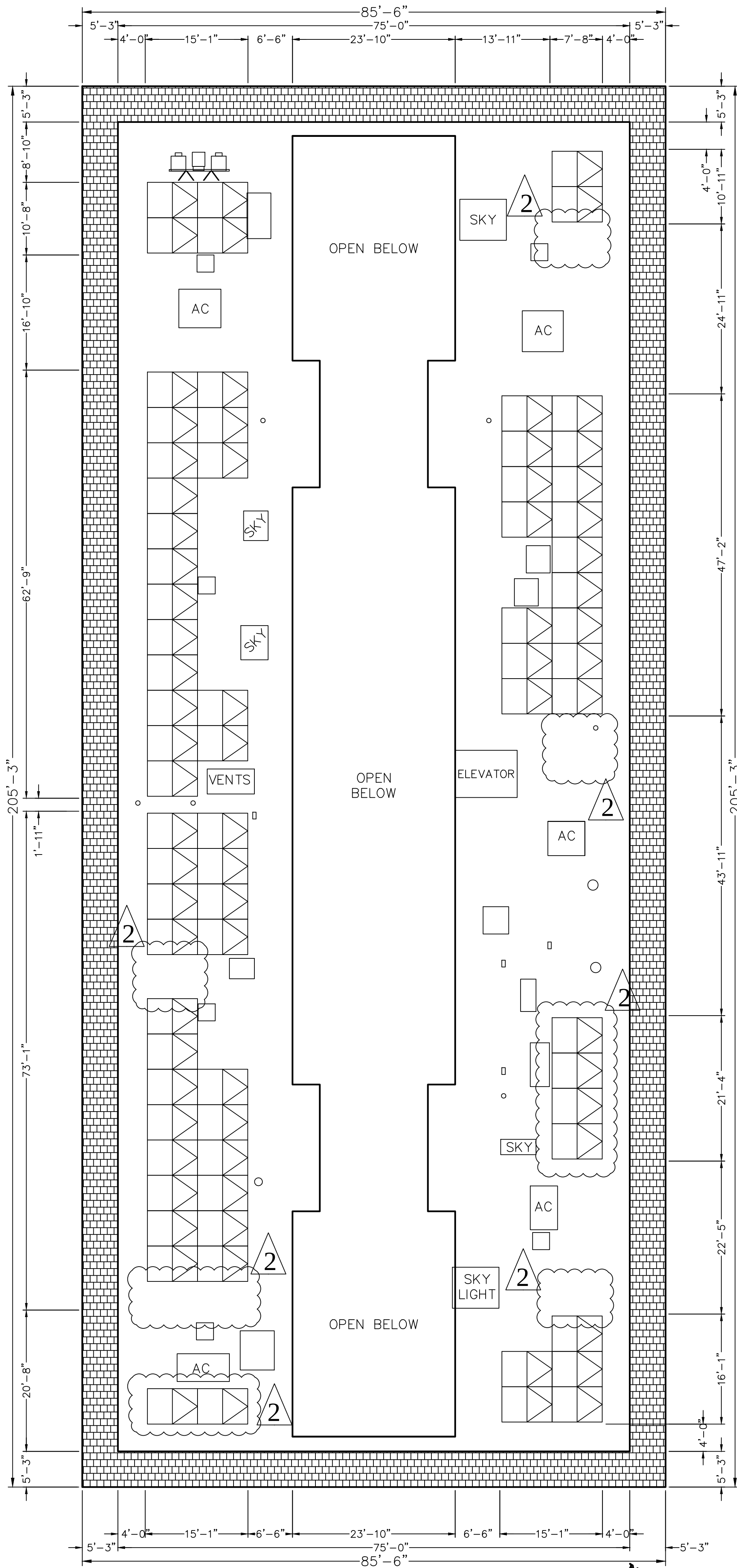
1. ROOF PERIMETER FIRE CLEARANCE: MIN 4'-0".
2. FIRE CLEARANCE AROUND SKYLIGHT: MIN 4'-0".
3. FIRE CLEARANCE AROUND OPENINGS: MIN 4'-0".
4. ROOF HEIGHT: 40'-0" APPROXIMATE.
5. ROOF PITCH: 0°
6. CONDUIT TO PENETRATE ROOF AND ENTER THIRD FLOOR LAUNDRY ROOM. CONDUIT RUN WILL CONTINUE DOWN ALONG SIDE THE 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: N.T.S.



4 POWER STATION LOCATION ROOF
SCALE: N.T.S.



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


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SHEET TITLE

SITE PLAN
3420 CALLE AZUL
VILLA PUERTA

SHEET NUMBER

S1.6

WIND LOAD SUMMARY						
WIND LOAD SUMMARY						
Summary						
OUTPUTS		WIND ZONES				
PANEL TYPES	ATTRIBUTES	A	B	C	D	E
1	Ballast Block(s)	7	0	13	5	0
	Wind Anchor(s)	1	1	0	0	0
	Pressure (psf)	4.98	2.40	7.20	4.21	2.40
2	Ballast Block(s)	0	0	10	3	0
	Wind Anchor(s)	1	1	0	0	0
	Pressure (psf)	2.40	2.40	6.07	3.49	2.40
3	Ballast Block(s)	0	0	10	3	0
	Wind Anchor(s)	1	1	0	0	0
	Pressure (psf)	2.26	2.26	5.94	3.34	2.26
4	Ballast Block(s)	0	10	4	0	0
	Wind Anchor(s)	1	0	0	0	0
	Pressure (psf)	2.26	5.94	3.71	2.26	2.26
Minimum Array Size by Zone (Tents)		18	15	17	17	6
Minimum Array Size by Zone (Tents)		18	15	17	17	6
L _B – BUILDING SCALING FACTOR (FT)		K _Z – SITE WIND PRESSURE FACTOR				
36.31		0.89				
L _B – BUILDING SCALING FACTOR (FT)		K _Z – SITE WIND PRESSURE FACTOR				
36.31		0.89				

INVERTER SUMMARY TABLE				
ROOF	MODULES	INVERTER TYPE	INVERTER QTY	STRING CONFIGURATION
1	88	24kW	1	MPPT 1: 11 MODULES, 4 STRING
				MPPT 2: 11 MODULES, 4 STRING
	60	15kW	1	MPPT 1: 10 MODULES, 3 STRING
				MPPT 2: 10 MODULES, 3 STRING
TOTAL	148		2	

BALLAST AND ANCHOR SUMMARY					
ROOF	BALLAST COUNT	ANCHOR COUNT	ARRAY WEIGHT (LBS)	MAX. PSF	AVERAGE PSF
1	133	89	8,695	4.98	2.98
TOTAL	133	89			

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)	86
BUILDING LENGTH (ft)	206	PARAPET HEIGHT (ft)	0
WIND SPEED (ASCE7-10) (mph)	130	EXPOSURE CATEGORY	C TO B
EXPOSURE TRANSITION DISTANCE (ft)	530	BALLAST BLOCK WEIGHT (lbs)	14
MAX ALLOWABLE SYSTEM PRESSURE (psf)	8	ANCHOR TYPE	OMG POWERGRIP PLUS
DESIGN SPECTRAL RESPONSE ACCELERATION (S _{DS}) (g)	1.0	SEISMIC IMPORTANCE FACTOR (I _p)	1

3420 CALLE AZUL VILLA PUERTA BALLAST AND PENETRATION PLAN

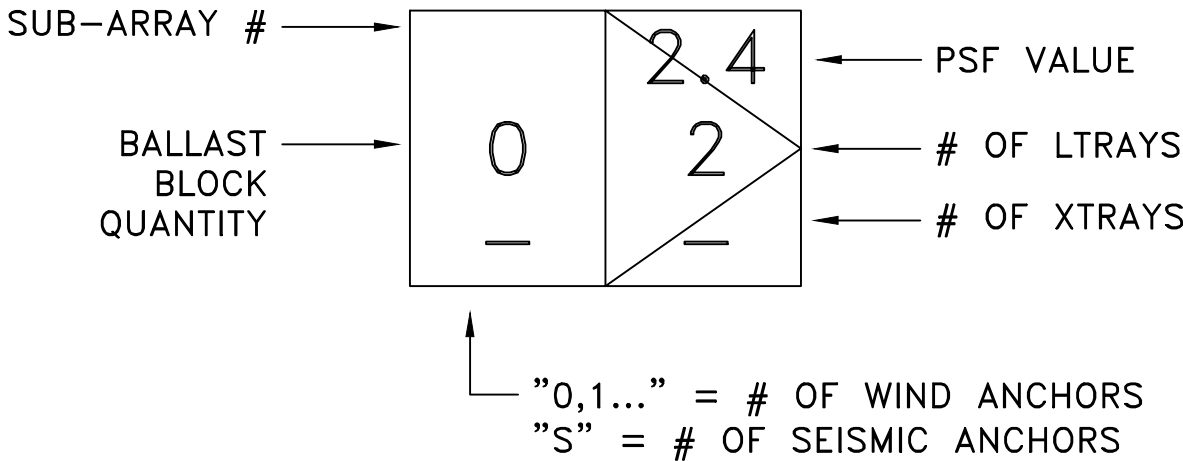
PROPOSED SYSTEM SPECIFICATION

TOTALS:

48,396 kWp
148 HIGH EFF. (327W) MODULES
11 MODULES/STRING, 8 STRINGS
10 MODULES/STRING, 6 STRINGS
ROOF HEIGHT: 40'
ROOF PITCH: 0°
AZIMUTH: -30°

NOTES:

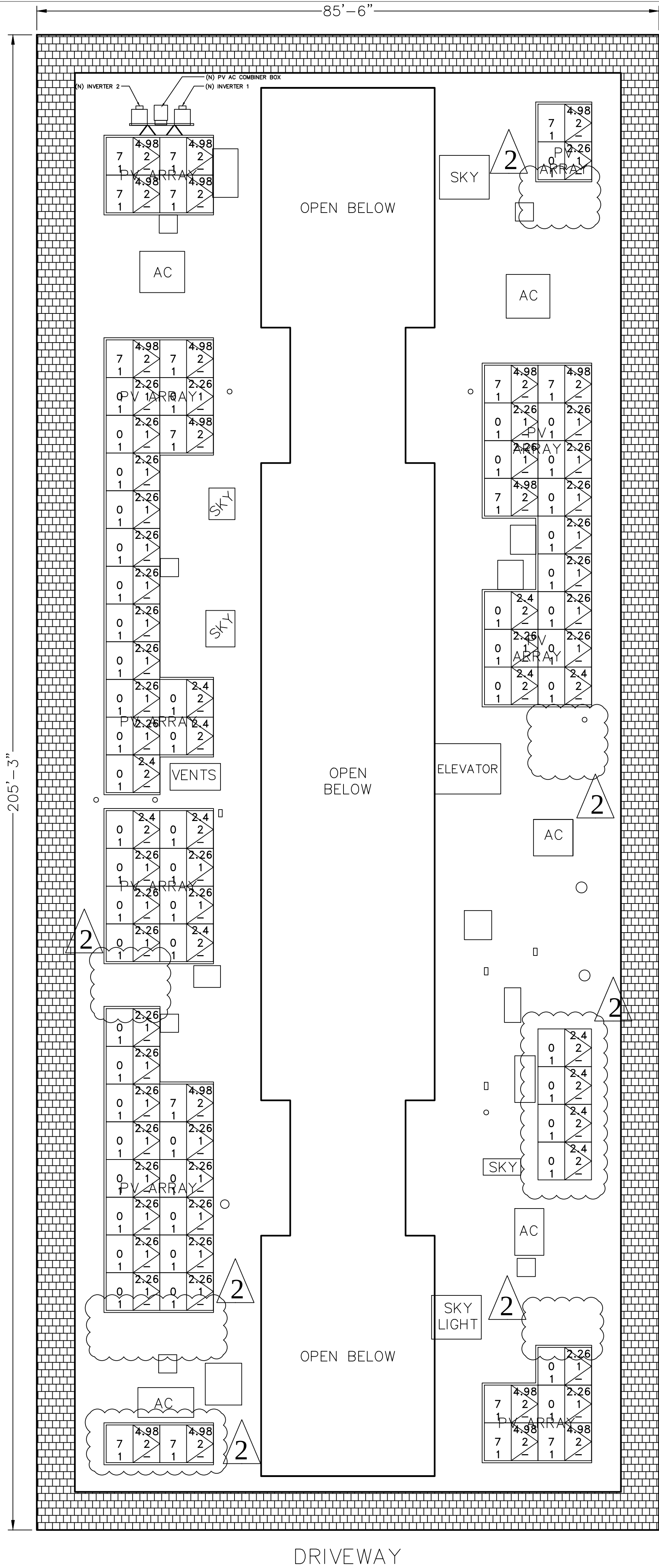
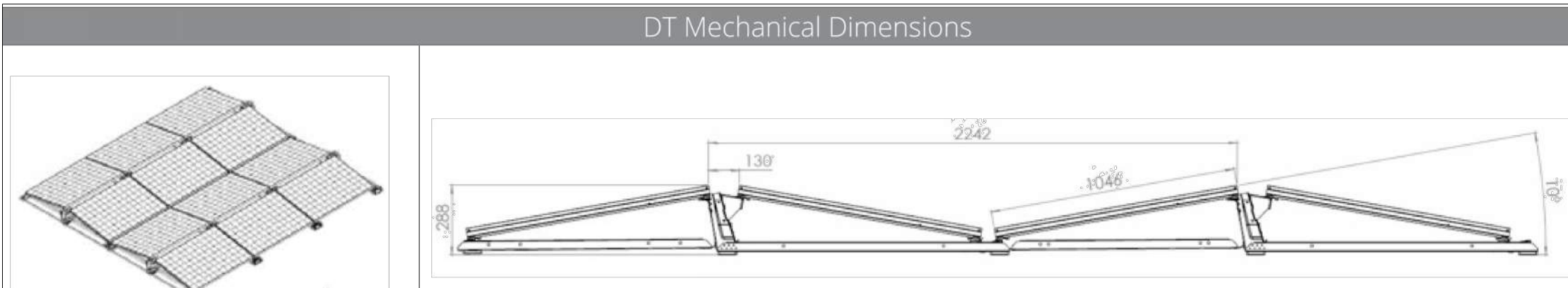
- SUBARRAYS THAT DID NOT MEET THE REQUIRED MINIMUM ARRAY SIZE WILL REQUIRE ADDITIONAL ANCHORING. PLEASE CONSULT STRUCTURAL ENGINEERING.
- ADDITIONAL ANCHORS REQUIRED PER SUBARRAY FOR LATERAL LOADS.
2.1 SUBARRAY 1: [3]
2.2 SUBARRAY 2: [1]
2.3 SUBARRAY 4: [3]
2.4 SUBARRAY 5: [1]
2.5 SUBARRAY 6: [4]
2.6 SUBARRAY 7: [3]
- ADDITIONAL ANCHORS CAN BE PLACED ANYWHERE WITHIN THE SUBARRAY, AND ADDITIONAL BALLAST MUST BE PLACED WHERE THE MODULE PSF IS LOWEST.



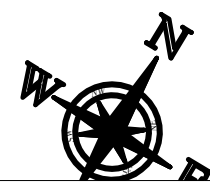
2 LEGEND
SCALE: N.T.S.



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

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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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

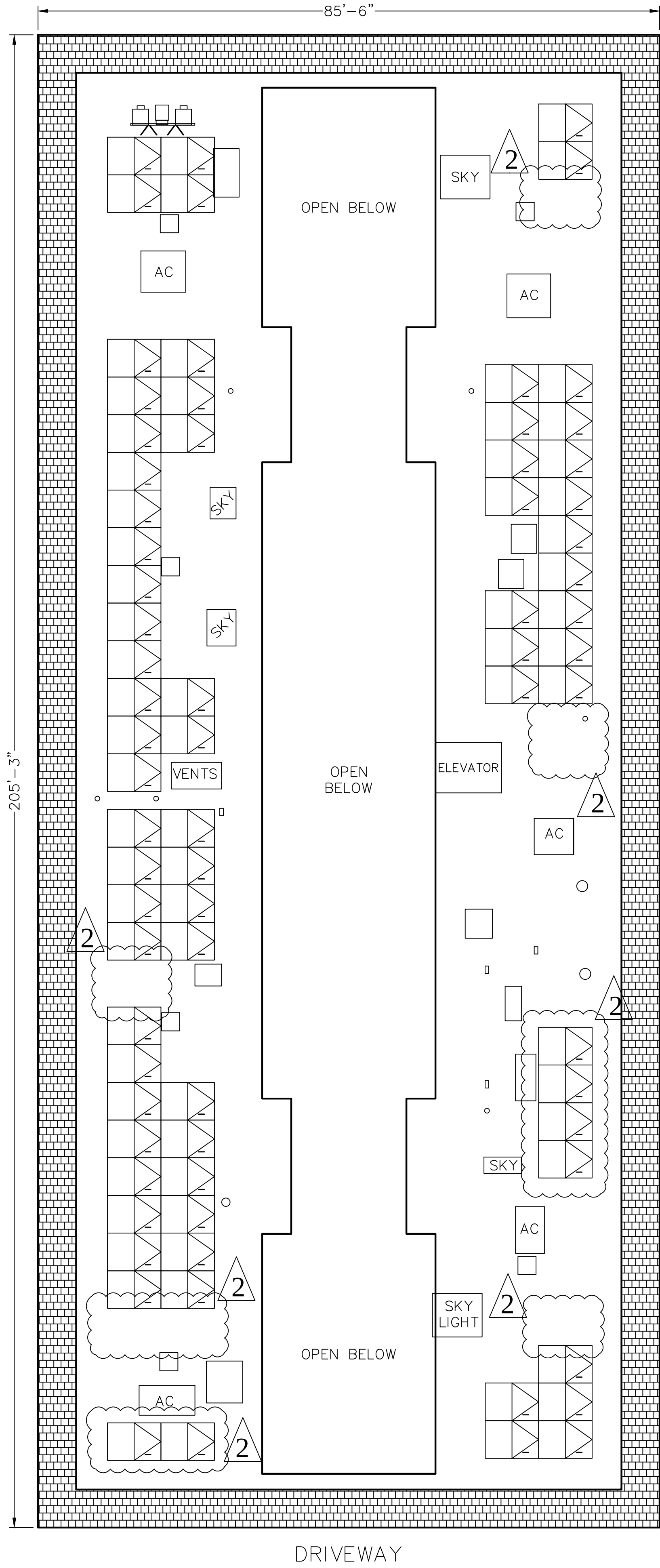
SHEET TITLE

SITE PLAN
3420 CALLE AZUL
VILLA PUERTA

SHEET NUMBER

STR 1.6

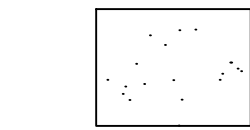
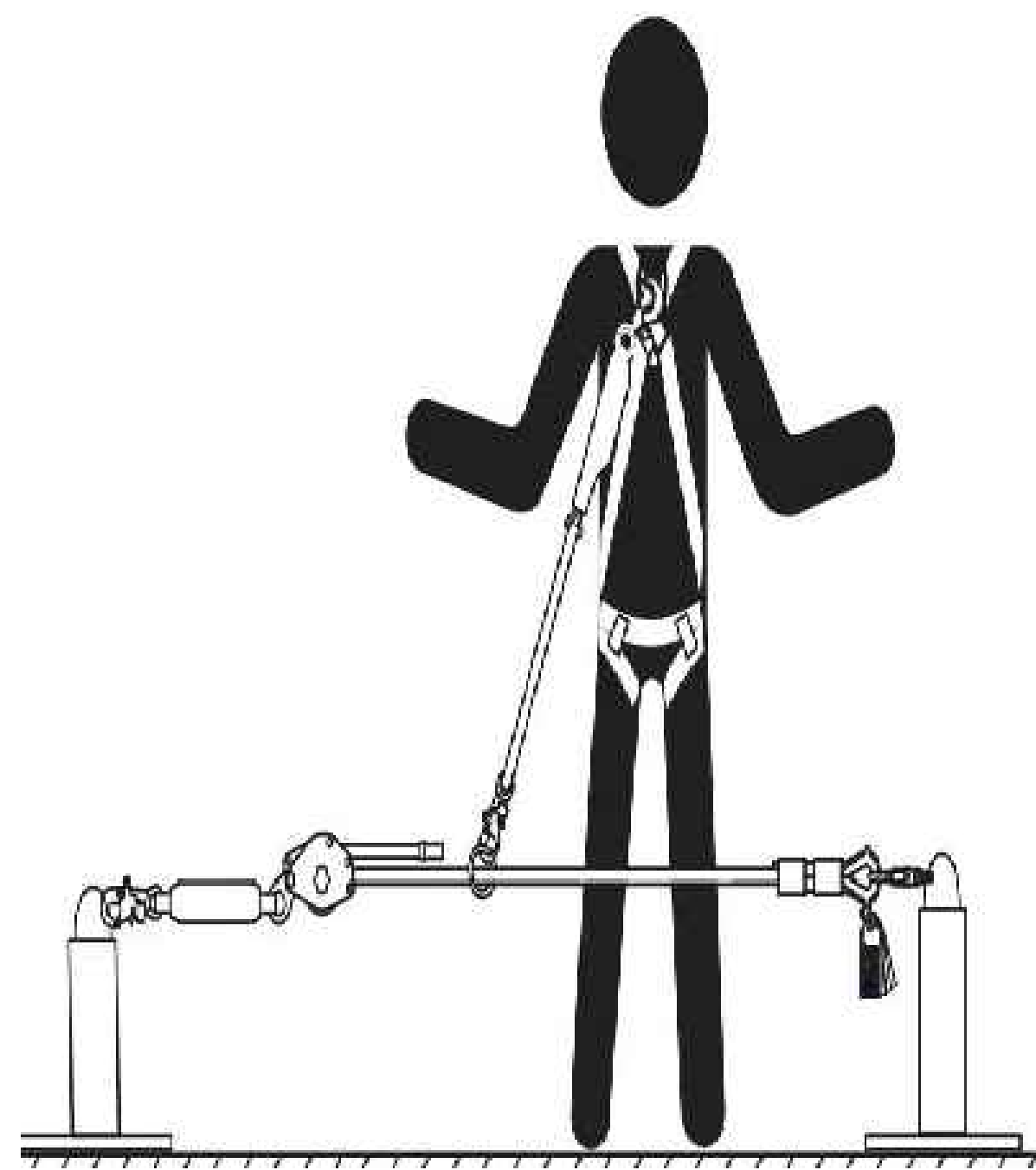
3420 CALLE AZUL VILLA PUERTA
FIRE CLEARANCE SITE PLAN



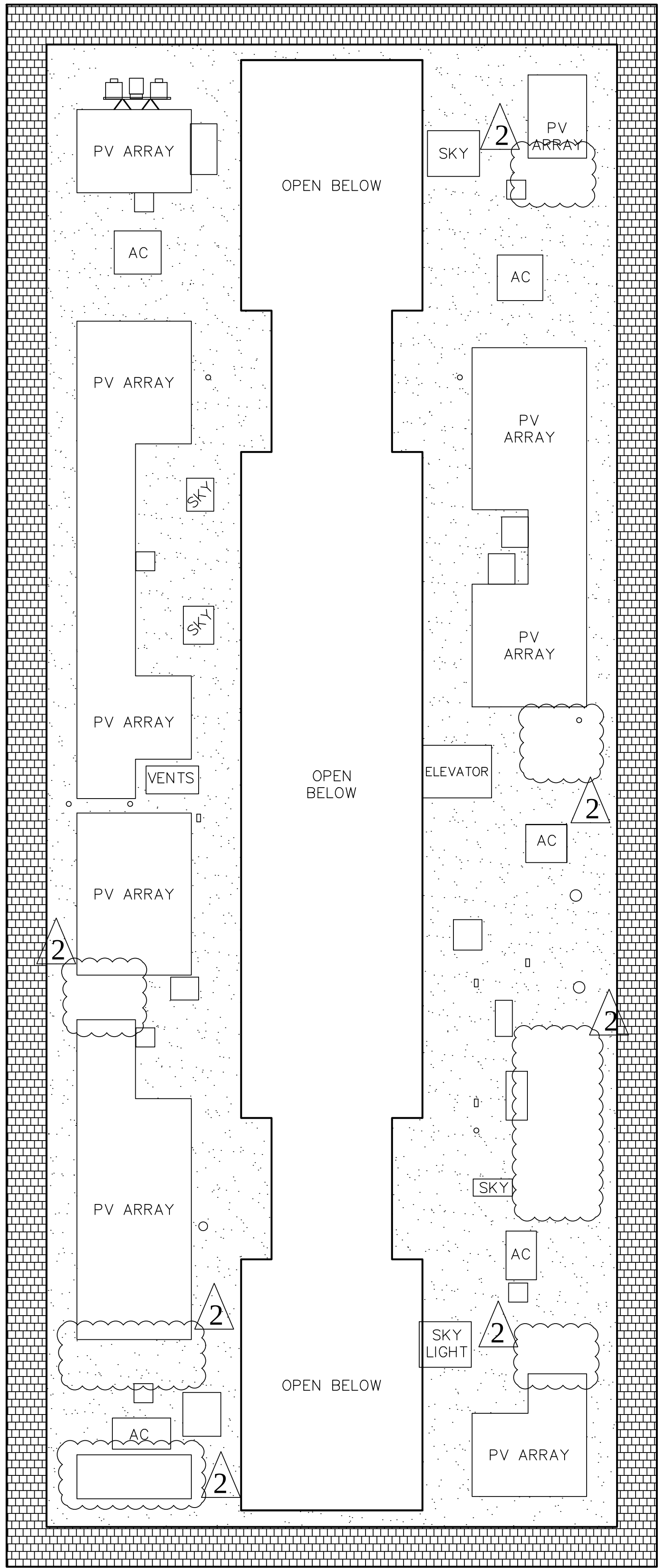
1 BUILDING LAYOUT
SCALE: 3/32"=1'-0"



PERMANENT HORIZONTAL LIFE LINE



CLEAR AREA
FIRE CLEARANCE



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



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FIRE CLEARANCE
SITE PLAN
3420 CALLE AZUL
VILLA PUERTA

SHEET NUMBER

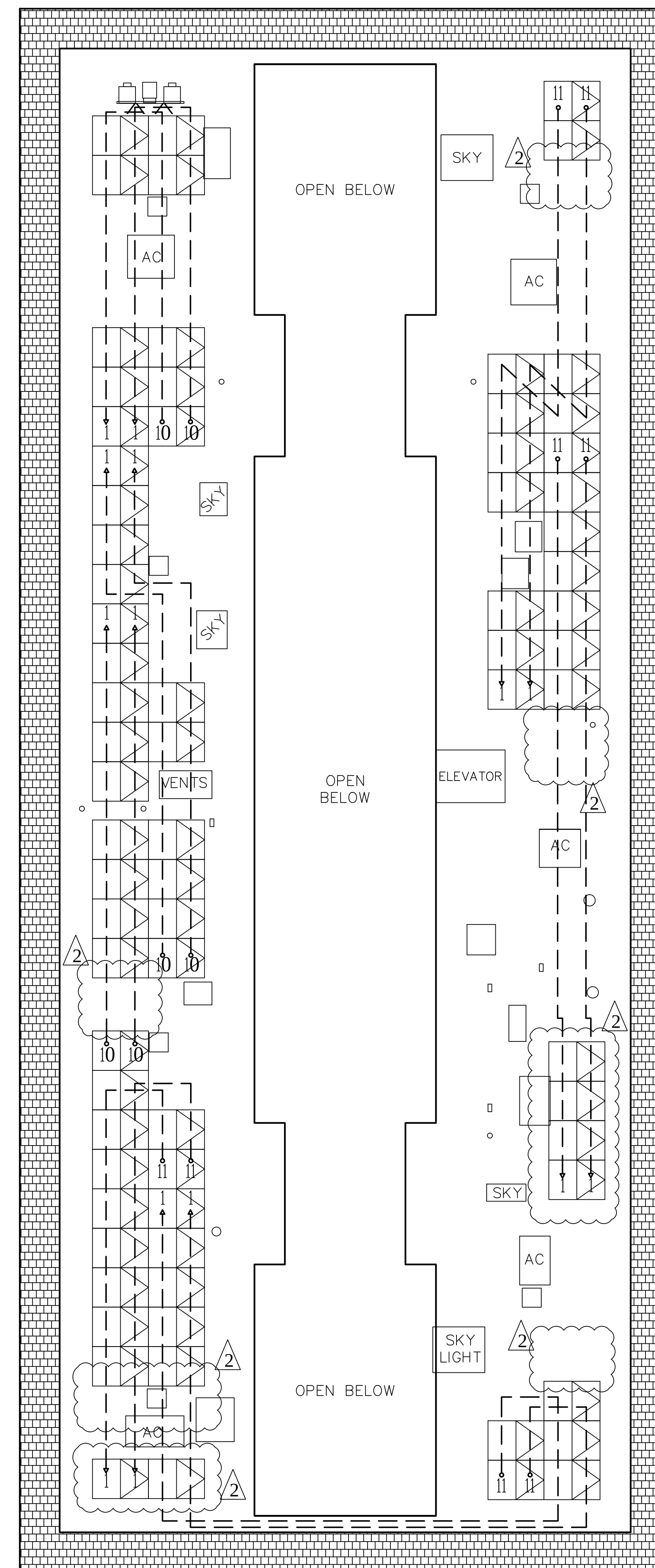
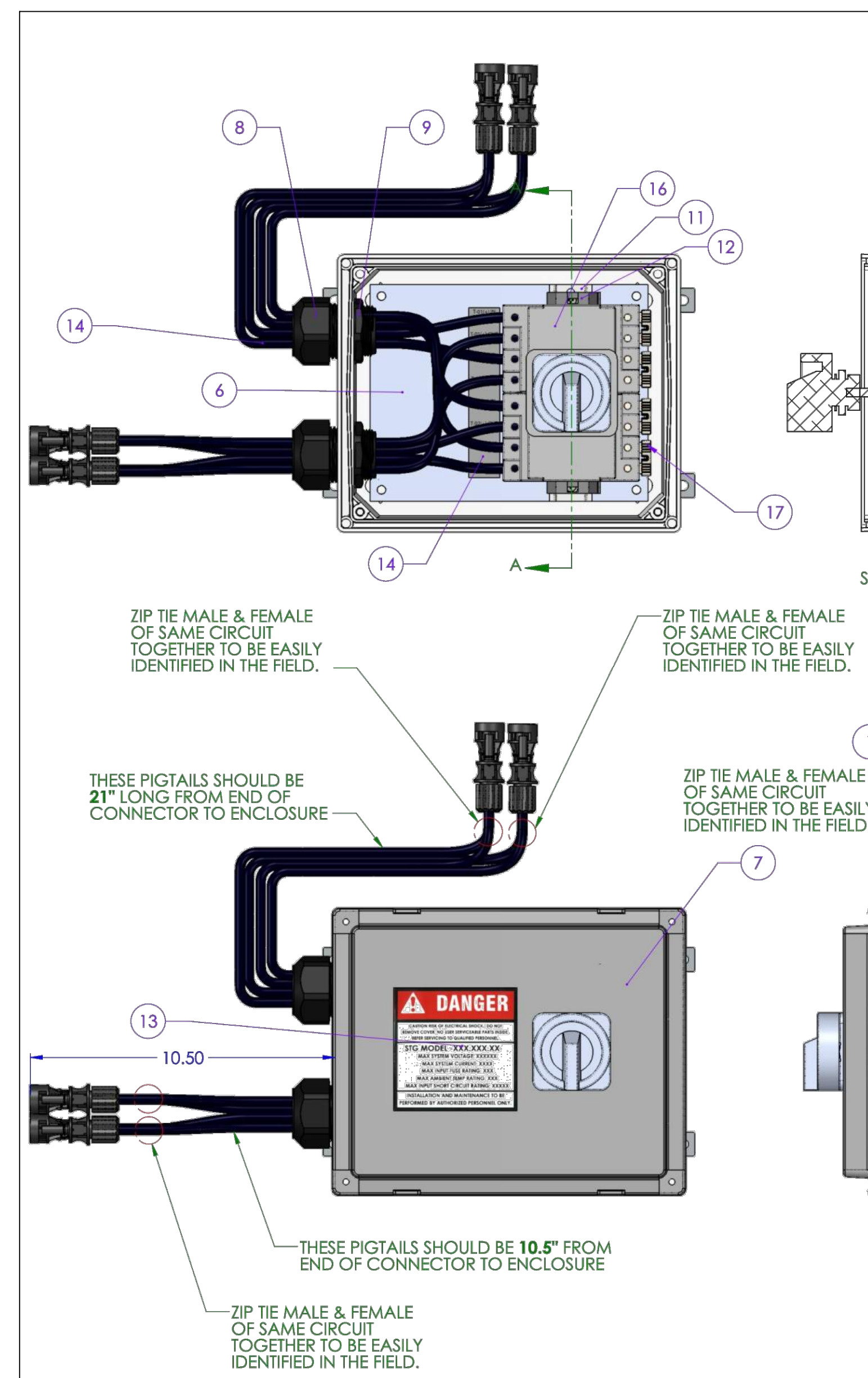
S 1.6F

SunPower® | Helix Roof Solution

HELIX ROOF Power Station



DC Branch	
Model	Helix plug-and-play DC Branch
String input options	2, 3, and 4 string
String fuse rating	15 A
Conductor size	#12 to #8 AWG
Conductor insulation rating	Sunlight-resistant PV Wire
Voltage rating	2000 VDC
Fusing	12 A
Connectors	String side: Tyco PV4 Solarlock Combined side: Amphenol H4-UXT-XL



 STRINGS
 INVERTER DESIGNATION

S 1.1 S T

WARNING: PHOTOVOLTAIC
POWER SOURCE

LABEL "PHOTOVOLTAIC POWER SOURCE" SHALL BE PERMANENTLY AFFIXED ON ALL EXPOSED RACEWAYS, CABLE TRAYS, PULL BOXES, AND JUNCTION BOXES. LABELS SHALL BE SPACED NO GREATER THAN 10 FEET APART AND SUITABLE FOR THE ENVIRONMENT IN WHICH THEY ARE INSTALLED.

INVERTER 1: 24kW

WARNING: ELECTRIC SHOCK HAZARD

THE DC CONDUCTORS OF THIS PHOTOVOLTAIC ARRAY ARE UNGROUNDED AND MAY BE ENERGIZED

DC DISCONNECT AC DISCONNECT

OPERATING CURRENT: 29.6 A MAXIMUM AC 36.25 A

OPERATING VOLTAGE: 685.9 V OPERATING CURRENT: 29 A

MAXIMUM CURRENT: 32.2 A NOMINAL AC 480 V

MAXIMUM VOLTAGE: 813.8 V OPERATING VOLTAGE: 480 V

PHOTOVOLTAIC POWER SOURCE

OPERATING AC VOLTAGE: 277/480 V

MAXIMUM OPERATING AC OUTPUT CURRENT: 58.75 AMPS

MARKING FOR MAIN PANEL COVER

SOLAR GENERATOR
AC DISCONNECT SWITCH

WARNING: ELECTRIC SHOCK HAZARD

DO NOT TOUCH TERMINALS.
TERMINALS ON BOTH LINE &
LOAD SIDE MAY BE ENERGIZED
IN THE OPEN POSITION.

OPERATING CURRENT: 58.75 A

OPERATING VOLTAGE: 480 V

CAUTION:
EMERGENCY AC
SOLAR DISCONNECT
RAPID SHUTDOWN SYSTEM
IS LOCATED AT THE
AC COMBINER BOX ON THE ROOF
"YOU MUST TURN OFF ALL
INVERTER BREAKERS"

MARKING FOR MAIN SERVICE AND AC COMBINER

- NOTES:
- LETTERING ON SIGNS SHALL BE CAPITAL LETTERS, MINIMUM SIZE OF 1/8" HIGH. LETTERING SHALL BE REFLECTIVE RED ON WHITE BACKGROUND OR VICE VERSA.
 - CLEARLY LABEL ALL CIRCUIT BREAKERS IN THE PANELBOARD. THE LABEL SHALL INDICATE THE NAME OF THE DEVICE IT SERVES.

**WARNING**

ARC FLASH AND SHOCK HAZARD

APPROPRIATE PPE AND TOOLS REQUIRED
WHEN WORKING ON THIS EQUIPMENT

OUTDOOR RATED ARC FLASH STICKER MOUNTED ON ALL EQUIPMENT

NOTES:
1. ORANGE BACKGROUND
2. BLACK LETTERING
3. MINIMUM 5/8" LETTER HEIGHT
4. ALL CAPITAL LETTERS
5. ARIAL OR SIMILAR FONT, NON-BOLD
6. WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT

INVERTER 2: 15kW

WARNING: ELECTRIC SHOCK HAZARD

THE DC CONDUCTORS OF THIS PHOTOVOLTAIC ARRAY ARE UNGROUNDED AND MAY BE ENERGIZED

DC DISCONNECT AC DISCONNECT

OPERATING CURRENT: 29.6 A MAXIMUM AC 22.5 A

OPERATING VOLTAGE: 685.9 V OPERATING CURRENT: 18 A

MAXIMUM CURRENT: 32.2 A NOMINAL AC 480 V

MAXIMUM VOLTAGE: 813.8 V OPERATING VOLTAGE: 480 V

WARNING!
INVERTER OUTPUT CONNECTION
DO NOT RELOCATE THIS
OVERCURRENT DEVICE

MARKING FOR MAIN SERVICE

CAUTION:
SOLAR ELECTRIC
SYSTEM CONNECTED

MARKING FOR MAIN SERVICE

SOLAR AC
COMBINER BOX -
PANELBOARD

WARNING: ELECTRIC SHOCK HAZARD

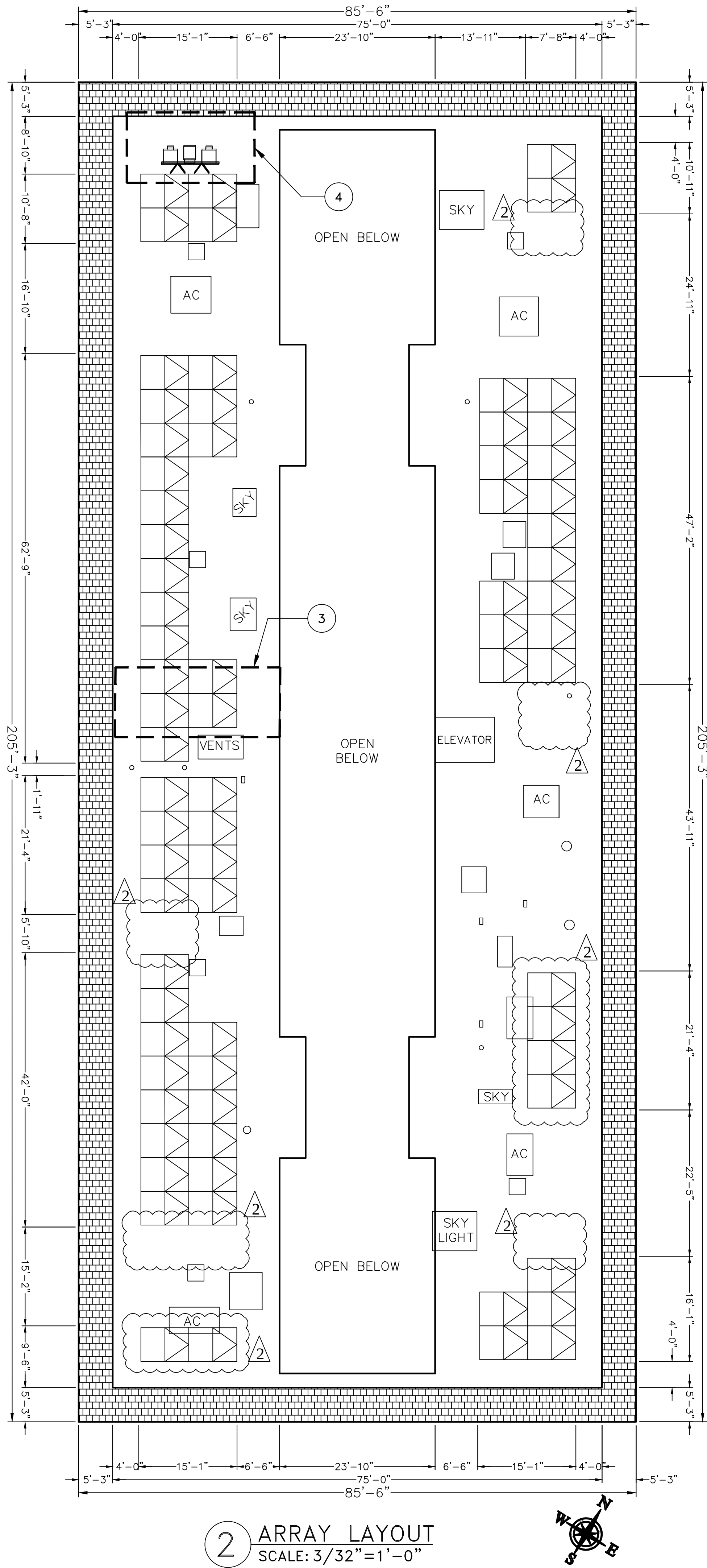
DO NOT TOUCH TERMINALS.
TERMINALS ON BOTH LINE &
LOAD SIDE MAY BE ENERGIZED
IN THE OPEN POSITION.

OPERATING CURRENT: 58.75 A

OPERATING VOLTAGE: 480 V

3420 CALLE AZUL
SITE PLAN

- NOTES:
- ROOF PERIMETER FIRE CLEARANCE: MIN 4'-0".
 - FIRE CLEARANCE AROUND SKYLIGHT: MIN 4'-0".
 - FIRE CLEARANCE AROUND OPENINGS: MIN 4'-0".
 - ROOF HEIGHT: 40'-0" APPROXIMATE.
 - ROOF PITCH: 0"
 - 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.



PROJECT SITE

THIRD MUTUAL
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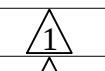
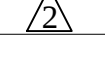
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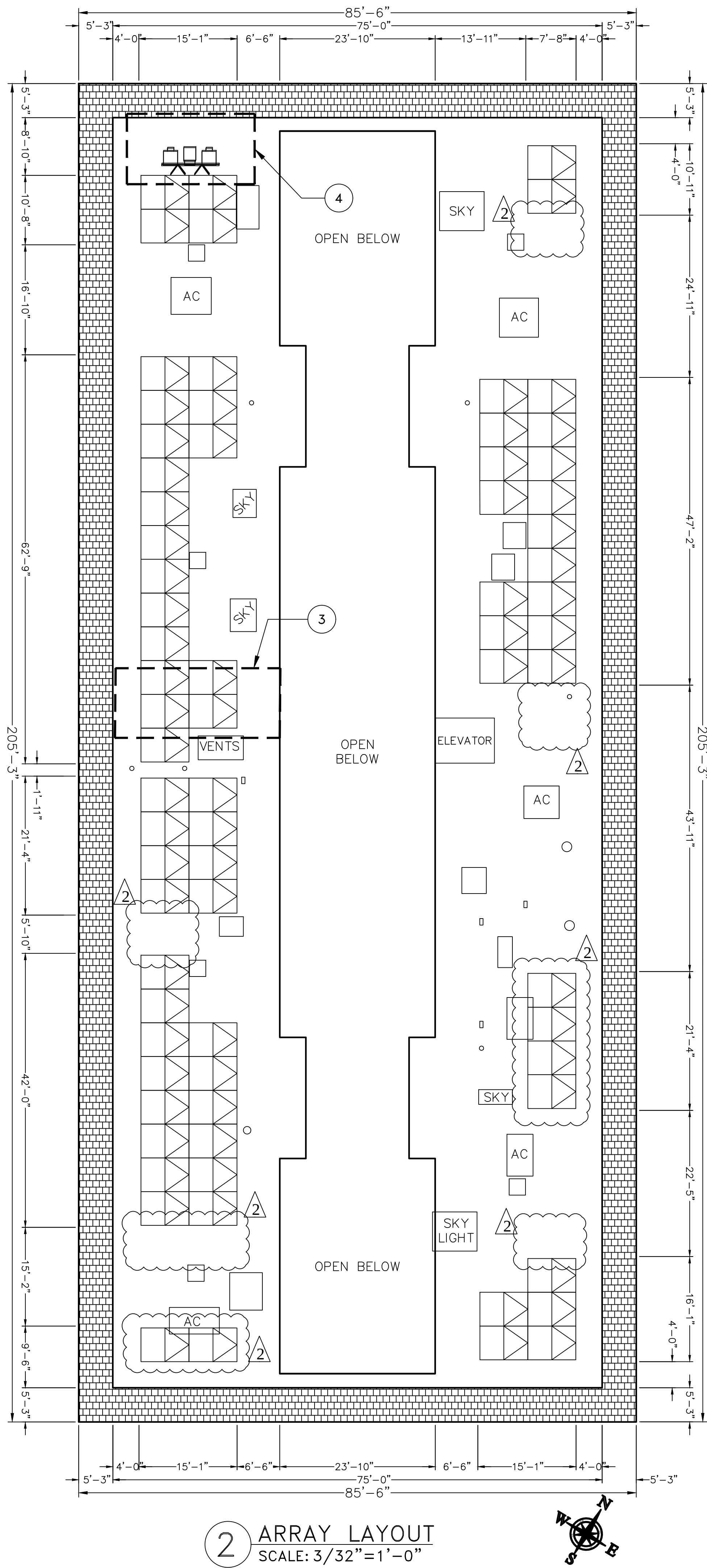
DATE: 12/22/16

SHEET TITLE

LABELS

SHEET NUMBER

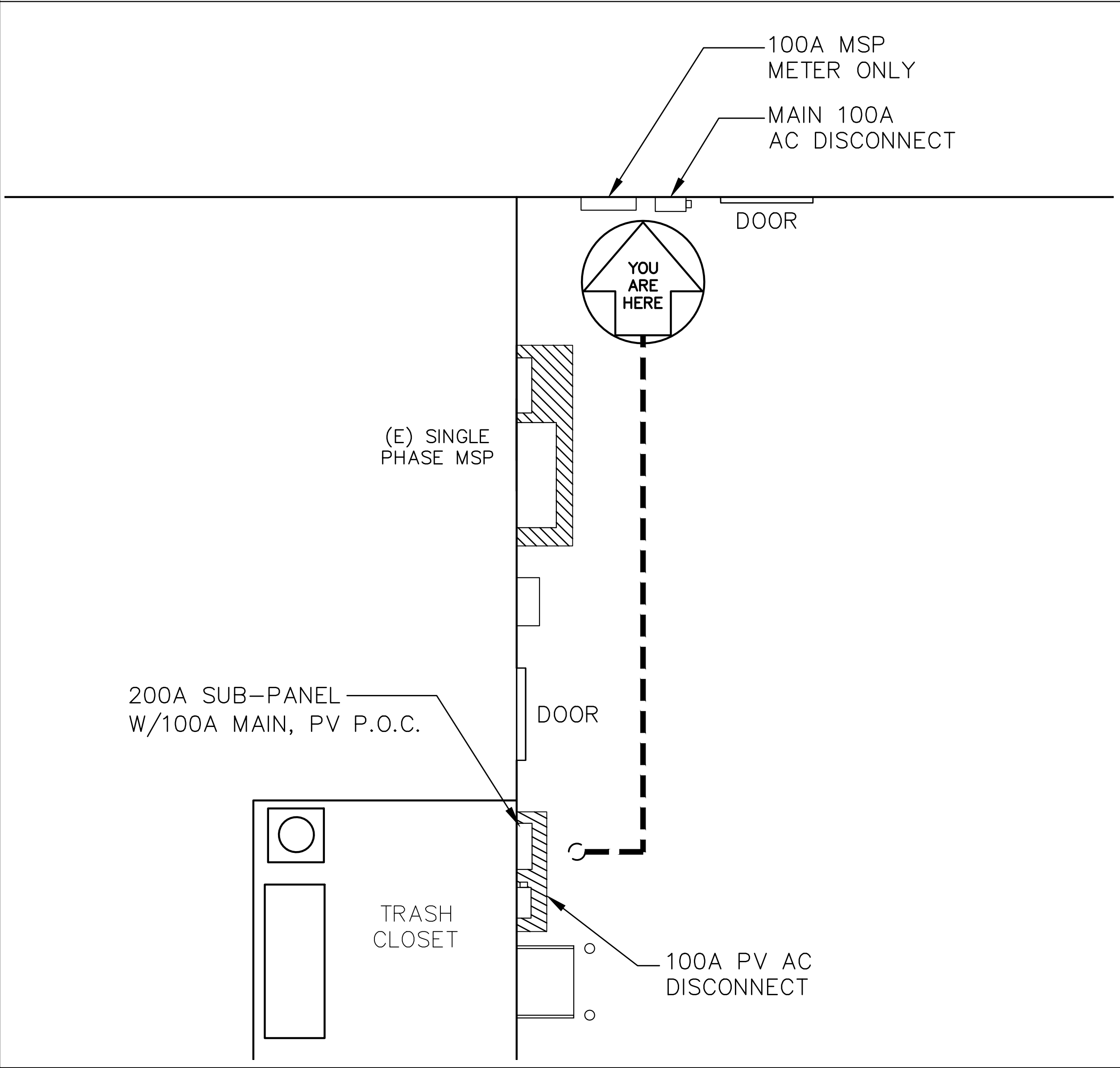
S1.6L



3420 CALLE AZUL SITE PLAN

CAUTION

POWER TO THIS BUILDING IS ALSO SUPPLIED
FROM THE FOLLOWING SOURCES WITH
DISCONNECTS LOCATED AS SHOWN:



PROJECT SITE

THIRD MUTUAL
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SHEET TITLE

LABELS

SHEET NUMBER

DIRECTORY MAP